



• LIGHTING DESIGN • ELECTRICAL • SMART CITIES •
ENERGY REDUCTION • LIGHTING IMPACT

SOUTHVIEW FARM

LIGHTING STRATEGY

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Designs for Lighting (DFL) is a business built on successfully collaborating with our clients. We have over 20 years proven experience in our industry, listening to the challenges our clients face, developing the best solutions and being innovators in our specialism. Our role is to find the most effective and sustainable outcome to enhance and support your projects. We proudly work with recognised industry bodies to promote and shape the future of the industry and ensure our staff are trained to exceed the required competency levels of our industries. Above all, we ensure each project delivers against our values.



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1. INTRODUCTION

1.1. Executive Summary

- 1.1.1. This Lighting Strategy 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 proposes good practice and outlines a suitable approach for the proposed lighting at Southview Farm, Drynham Road, Trowbridge, BA14 0PJ, for the purpose of safety, security, wayfinding and amenity. The Lighting Strategy 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. The Proposed Development is for a proposed nursery with parking arrangements as well as a farmhouse on the southern side of the Application Site.
- 1.1.4. 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.
- 1.1.5. This report outlines the following:
 - Relevant obtrusive light policies in direct relation to the Proposed Development;
 - Relevant National and Local Policies;
 - Why the Proposed Development requires artificial lighting; and
 - Details as to how lighting will be implemented for the Proposed Development.
- 1.1.6. It has been identified that the Application Site is set near a village (E2).
- 1.1.7. As evidenced within **Table 6** and **Table 7** the lighting for the Proposed Development will result in Negligible effects upon the identified receptors detailed within this report and highlighted within **Appendix 3**. Therefore, the Lighting Strategy is fully compliant with the parameters agreed during the outline application, and light spill does not intrude on the dark zone alongside the railway corridor.
- 1.1.8. Through careful design and mitigation, this Lighting Strategy ensures the lighting installation at the Proposed Development will comply 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:

“Artificial light emitted from premises so as to be prejudicial to health and nuisance constitutes a ‘Statutory 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 (Amended 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 December 2023 and states that the following elements are to be considered:

“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.”*

2.3. 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:

“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.)”*

3. LOCAL POLICIES

3.1. Wiltshire Local Development Framework – Wiltshire Core Strategy: January 2015.

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

The applicable policies are:

Core Policy 57: Ensuring high quality design and place shaping

“A high standard of design is required in all new developments, including extensions, alterations, and changes of use of existing buildings. Development is expected to create a strong sense of place through drawing on the local context and being complementary to the locality. Applications for new development must be accompanied by appropriate information to demonstrate how the proposal will make a positive contribution to the character of Wiltshire through:

...

vii. having regard to the compatibility of adjoining buildings and uses, the impact on the amenities of existing occupants, and ensuring that appropriate levels of amenity are achievable within the development itself, including the consideration of privacy, overshadowing, vibration, and pollution (e.g. light intrusion, noise, smoke, fumes, effluent, waste or litter)

...

x. the sensitive design of advertisements and signage, which are appropriate and sympathetic to their local setting by means of scale, design, lighting and materials

...”

Core Policy 51 Landscape

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:

...

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

...”

Core Policy 50 Biodiversity and Geodiversity

“Protection

Development proposals must demonstrate how they protect features of nature conservation and geological value as part of the design rationale. There is an expectation that such features shall be retained, buffered, and managed favourably in order to maintain their ecological value, connectivity and functionality in the long-term. Where it has been demonstrated that such features cannot be retained, removal or damage shall only be acceptable in circumstances where the anticipated ecological impacts have been mitigated as far as possible and appropriate compensatory measures can be secured to ensure no net loss of the local biodiversity resource, and secure the integrity of local ecological networks and provision of ecosystem services.

All development proposals shall incorporate appropriate measures to avoid and reduce disturbance of sensitive wildlife species and habitats throughout the lifetime of the development.

Any development potentially affecting a Natura 2000 site must provide avoidance measures in accordance with the strategic plans or guidance set out in paragraphs 6.75-6.77 above where possible, otherwise bespoke measures must be provided to demonstrate that the proposals would have no adverse effect upon the Natura 2000 network. Any development that would have an adverse effect on the integrity of a European nature conservation site will not be in accordance with the Core Strategy.

...”

4. BRITISH STANDARDS

4.1. BS 5489-1:2020 - Lighting of Roads and Public Amenity Areas - Code of practice.

- 4.1.1. This standard gives recommendations on the general principles of road lighting, its aesthetics and technical aspects and provides guidance on operational maintenance. It also provides guidance on means of minimizing energy consumption and limiting the impacts on the environment and adjacent properties.

4.2. BS EN 13201-2:2015 - Road lighting. Performance requirements.

- 4.2.1. This British and European standard defines the performance requirements specified as lighting classes for road lighting aiming at the visual needs of the road users, as well as the consideration of the environmental aspects of the road lighting to be applied.

4.3. BS EN 12464-2:2024 - Light and Lighting – Lighting of workplaces

- 4.3.1. This British and European standard specifies lighting requirements for outdoor workplaces which meet the needs for visual and performance. All visual tasks are considered with the exclusion of lighting specified for the use of lighting required in an emergency.

5. GUIDANCE

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

5.1.1. The Lighting Strategy is informed by industry guidance notes which aim to reduce the potential for obtrusive light to occur, which is typically caused by poorly designed and installed exterior artificial lighting. The Lighting Strategy is informed by the most relevant sections of GN01:2021 that has recently been published to reduce the potential for obtrusive light from a wide range of exterior 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 ² (Max %)	Light Trespass (Into Windows) E _v (lux)		Building Luminance Average, Pre-curfew
		Pre-Curfew	Post-Curfew ³	Average L (cd/m ²)
E0	0	0	0	0
E1	0	2	0 (1*)	0
E2	2.5	5	1	5
E3	5	10	2	10
E4	15	25	5	25

Table 2: Obtrusive Light Criteria

² ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directly into the sky.

³ 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

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 (2700Kelvin 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**)."*

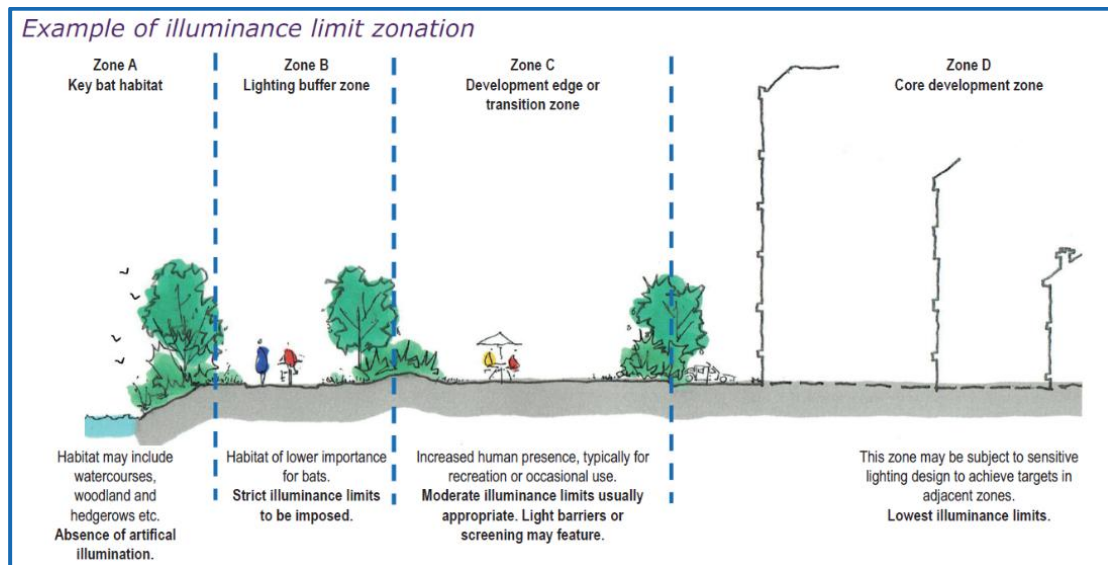


Figure 1: Example of lighting zonation near sensitive boundaries and known ecological habitat

5.3. Cotswolds National Landscape

5.3.1. Due to the Application Sites vicinity to the Cotswolds National Landscape policies within the Cotswolds National Landscape Management Plan 2025 – 2030 is used as guidance.

The relevant policies area:

“Policy CE6: Dark skies

CE6.1. Proposals that have the potential to impact on the dark skies of the Cotswolds National Landscape (CNL) should be delivered in a way that is compatible with and seek to further the conservation and enhancement of these dark skies, by seeking to avoid and where avoiding is not possible, minimise lighting.

CE6.2. Measures should be taken to increase the area of dark skies in the CNL by removing and, where removal is not possible or appropriate, reducing existing sources of lighting.

CE6.3. Proposals that have the potential to impact on the dark skies or dark landscapes of the CNL should have regard to and be compatible with:

- *The National Landscapes Board’s Dark Skies & Artificial Light Position Statement.*
- *Cotswolds National Landscape Technical Lighting Design Guidance*
- *Best practice standards and guidance, in particular, that published by the Institution of Lighting Professionals.*

CE6.4. Consideration will be given to seeking a formal dark sky designation for those parts of the Cotswolds National Landscape that are least affected by light pollution.”

1.1.3. Cotswolds National Landscape will publish Technical Lighting Design Guide. However, at the time of writing this document is yet to be published, but as detailed within Policy CE6 best practice standards and guidance from the Institution of Lighting Professionals will be used within this Lighting Technical Report.

5.4. Trowbridge Bat Mitigation Strategy

- 5.4.1. In the development of this Lighting Strategy reference has been made to the Trowbridge Bat Mitigation Strategy. This strategy document has informed the mitigation that will be embedded into the lighting design, and has inform the locations of the receptors identified within this Lighting Strategy.

6. ASSUMPTIONS AND LIMITATIONS

- 6.1.1. During the production of this Lighting Strategy, several assumptions have been made. These will be confirmed or amended during the detailed design once full details of the design constraints have been confirmed and it has been possible to liaise with the Highway Authority where relevant.
- 6.1.2. It is assumed that the speed limit of all roads within the Proposed Development will be ≤30mph, and that carparking will not be allowed on the roadway other than in the designated parking bays.
- 6.1.3. The baseline lighting assessment has been conducted by desktop assessment using aerial imagery, CPRE night blight mapping data and local council mapping data. No on-site lighting baseline surveys have been conducted. It is assumed that there is no existing lighting infrastructure within the Application Site. Due to the assumed lack of existing lighting within the Application Site, the worst-case for the assessment of effects has been assumed, and it is assumed the Application Site is “dark”.
- 6.1.4. The Environmental Zone for the Application Site has also been assessed via desktop assessment and has been found to be E2. Prior to detailed design this will be confirmed by the LPA and/or the Environmental Health Officer, either through planning comments or liaison.
- 6.1.5. Due to the rural location of the Application Site, it is assumed that the area experiences a low crime rate, and that the traffic flow through the Proposed Development will be low but of mixed use. Data obtained from the Police.uk shows a crime rate for this area of 50 total reported crimes per 1,000 people in 2023.
- 6.1.6. The cleaning frequency of the luminaires have been assumed to be 72 months. This is the worst-case scenario for the maintenance factor calculations and provides the worst-case scenario for the obtrusive lighting calculations once a maintenance factor of 1 is used.

- 6.1.7. All lighting calculations have been conducted using Lighting Reality Pro Version 2.3.0. This is a 2-dimensional lighting calculation software that does not account for reflected light within the calculations.
- 6.1.8. No utilities searches have been conducted at this stage. It is assumed that the column and bollard locations shown in **Appendix 1** do not conflict with any underground services. However, if future utilities searches uncover any underground services the lighting column and bollard positions may need to be moved to account for this.
- 6.1.9. It is assumed that all lighting within the Application Site will remain unadopted and therefore not be required to follow the Local Highway Authority lighting specification. If this changes, then the lighting design will require updating to ensure compliance with the adoptable specification of Wiltshire Council.

7. DESKTOP STUDY

7.1. Site Description and Context

- 7.1.1. The Application Site located at Southview Farm, is a parcel of mixed green field and disused residential land on the edge of Trowbridge. The Application Site boundary and Proposed Development layout can be seen in **Figure 2**.



Figure 2: The Application Site location and boundary, and Proposed Development layout

Source: Mitchell Eley Gould Ltd 23/01/2026

7.2. Designations

- 7.2.1. According to Natural England the Application Site is not within a designated SAC⁴, SSSI⁵, National Landscape⁶ or a National Park⁷.
- 7.2.2. However, the Application Site is within 6km of the Cotswold National Landscape and 2.2km of the Picket and Clanger Wood Site of Special Scientific Interest. Both of these are too far from the Application Site for there to be any effects of lighting.

⁴ [Natural England: Special Areas of Conservation \(England\)](#)

⁵ [Natural England: Sites of Special Scientific Interest \(England\)](#)

⁶ [Natural England: Areas of Outstanding Natural Beauty \(England\)](#)

⁷ [Natural England: National Parks \(England\)](#)

7.2.3. Although not a designated site, the Application Site is within the 'Yellow Zone' of the Trowbridge Bat Mitigation Strategy. This informs the identification of ecology receptors within the Lighting Strategy and the locations of vertical calculation grids.

7.3. Baseline lighting

7.3.1. The existing lighting conditions within and surrounding the Application Site have been assessed via a desktop assessment only.

7.3.2. Due to the green field nature of the Application Site and the fact the residential property on the land is disused, it is assumed that there is no functional lighting within the Application Site.

7.3.3. All the surrounding roads contain existing road lighting. This includes:

1. Drynham Road,
2. Southview Road,
3. Drynham Park,
4. Toucan Street,
5. Pheasant Drive, and;
6. The unnamed footpath North of the Application Site.

7.3.4. Much of this lighting will be visible from within the Application Site, and is likely to be contributing light spill onto the North and West boundaries of the Application Site.

7.4. CPRE Night Blight Mapping⁸

7.4.1. To inform our understanding of the nighttime environment, we look to use the CPRE Nightblight map to better appreciate the current baseline light levels. The CPRE Night Blight Mapping provides an indication of the existing skyward radiance within the vicinity of the Application Site. This is shown to be between 8 - 16 Nano Watts/cm²/sr. As shown in **Figure 3**, the likely levels of skyglow within the vicinity of the Application Site are similar to those expected within an E2 Environmental Zone.

⁸ NightBlight Map is a visual representation of light pollution as a view from above the earth's atmosphere and indicates upward light spill based on sky glow.

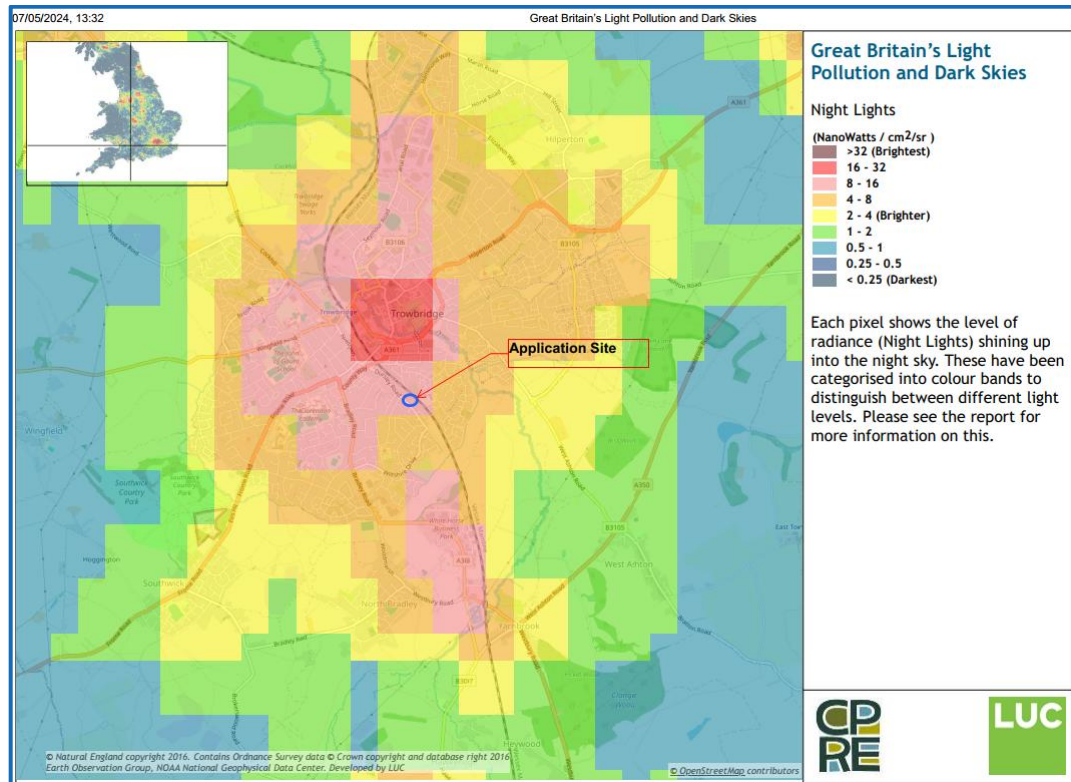


Figure 3: CPRE Light Pollution Map

7.5. Environmental Zone Classification

- 7.5.1. As shown in **Figure 3** the levels of skyward radiance within and surrounding the Application Site are in the top three bands of the CPRE night blight mapping data. However, the Application Site is located on the edge of Trowbridge and the area is typical of a rural town. Therefore, the Application Site and the surrounding area has been identified as a E2 Environmental Zone.
- 7.5.2. The requirements of an E2 Environmental Zone in terms of the limitation on light intrusion and sky glow can be seen in **Table 3**.

Zone	Surrounding	Examples	Limitations on lighting intrusion		Sky Glow ULR (Max)
			Pre-curfew	Post-curfew	
E2	Rural	Sparsely inhabited rural areas, Village or relatively dark outer suburban locations	5	1	2.5%

Table 3: Limitations of identified Environmental Zone.

8. IDENTIFIED RECEPTORS

8.1. Ecological

- 8.1.1. The northeast and northwest boundaries of the Application Site have been identified as ecologically sensitive due to the presence of bats using this route for foraging. This is shown in the Ecology and Landscape Parameters Plan (038-021_R).
- 8.1.2. Therefore, this Lighting Strategy has been written in accordance with GN08:2023 where relevant for these boundaries.
- 8.1.3. The identified Ecology Receptors are shown in **Appendix 3**.

Receptor Type	Receptor No. (Appendix 3)	Description	Sensitivity
Ecology	001	Northeast boundary of the Application Site – Bat Corridor	High
Ecology	002	North / Northwest boundary of the Application Site – Bat Corridor	High

Table 4: Potentially Sensitive Ecological Receptors (PSER)

8.2. Human Amenity

- 8.2.1. To the southeast and southwest of the site, human receptors have been identified as shown in **Appendix 3**. Therefore, this Lighting Strategy has been written in accordance with GN01:2021 where relevant for these receptors.

Receptor Type	Receptor No. (Appendix 3)	Description	Sensitivity
Human Amenity	001	Proposed Dwellings South of the Application Site	Medium
Human Amenity	002	Dwellings West of the Application Site	Medium

Table 5: Potential Human Amenity Receptors (PHAR)

9. LIGHTING STRATEGY

9.1. Summary

- 9.1.1. The Proposed Development will require lighting for safety and amenity at limited times during the hours of darkness.
- 9.1.2. Lighting will be of an appropriate specification and designed in accordance with British Standards.
- 9.1.3. Amenity lighting for the Proposed Development will be applied sensitively to account for the receptors identified surrounding the Application Site.
- 9.1.4. 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.
- 9.1.5. 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.
- 9.1.6. All lighting unless otherwise stated is to emit a warm white colour temperature light (3000 Kelvin or less) to reduce the potential for adverse effects onto potentially sensitive receptors.
- 9.1.7. Lighting in unadopted areas will follow British standards as follows:
 - Car park illumination as per BS 5489-1:2020
 - Nursery Outdoor Play Areas as per BS EN 12464-2:2024

9.2. Nursery Car Park

- 9.2.1. The Nursery car park within the Proposed Development will be lit as outlined within BS 5489-1:2020 Table 4 within BS 5489-1:2020 (**Figure 4**).
- 9.2.2. The car parks on site are small, with no more than 19 parking spaces being provided. Therefore, they are defined as “Light traffic, e.g. parking areas of shops, terraced and apartment houses; cycle parks”.

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

Figure 4: BS 5489-1:2020 Table 4

Source: BS 5489-1:2020

9.3. Nursery Outdoor Play Areas

- 9.3.1. The Nursery Play Areas within the Proposed Development will be lit as outlined within BS EN12464-2:2024 Table 10 (**Figure 5**)

Table 10 — Outdoor areas in educational facilities and kindergartens							
Ref. no.	Type of area, task or activity	$\bar{E}_m$ lx		U_o	R_{GL}	R_a	Specific requirements
		required ^a	modified ^b				
10.1	Common play areas	7,5	10	0,20	50	70	Pay attention to the illuminance levels of the surrounding areas (5.3.4).
10.2	Play areas with play-equipment that requires lighting for safety reasons	10	15	0,20	50	80	Pay attention to the illuminance levels of the surrounding areas (5.3.4).
10.3	Schoolyards with a need of schoolyard guards during the hours with no daylight	30	—	0,25	50	80	Pay attention to the illuminance levels of the surrounding areas (5.3.4).
10.4	Play areas for ball playing and games to be used during the hours with no daylight	15	20	0,40	50	70	Pay attention to the illuminance levels of the surrounding areas (5.3.4).
^a Required: minimum value.							
^b Modified: considers common context modifiers in 5.3.3.							

Figure 5 - BS EN12464-2:2024 Table 10

9.4. Footpaths and Frontages and Rears

- 9.4.1. Where footpaths and frontages and rears are separate from the Nursery, they will be illuminated for way finding only.
- 9.4.2. This will be achieved using bollards and building mounted down lighters only.

9.5. Luminaire Performance Requirements

- 9.5.1. All luminaire performance requirements are outlined in **Appendix 4**.
- 9.5.2. A Light Spill Diagram and vertical lighting calculation have been conducted for the Proposed Development. These are detailed within **Appendix 1** and **Appendix 2**.

10. SUMMARY OF RESULTS

10.1. Overview

10.1.1. The Light Spill Diagram shown in **Appendix 1 & 2** demonstrates that the Light Spill Levels associated with the proposed lighting would comply with the obtrusive light guidance set out in ILP GN01:2021 and GN08:2023, at the 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 = 1.0⁹. 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 with 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**. The light levels based on the modelling do not exceed 0.02 Lux, keeping the light levels within the guidance given within GN08:2023 (**Table 6**).

Receptor No	GN08 requirements	Maximum vertical Illuminance (Lux)	Pass/fail
Ecology Receptor 001	0.40	0.00	Pass
Ecology Receptor 002	0.40	0.02	Pass

Table 6: Ecology Receptor results table, maximum illuminance.

⁹ <https://www.dfl-uk.com/knowledge-hub/faqs/>

10.2.3. Where human receptors are potentially sensitive to vertical light spill, a vertical illumination grid has been modelled, as shown in **Appendix 2**. The light levels based on the modelling do not exceed 1 Lux, keeping the light levels within the guidance given within GN01:2021 for an area identified as an E2 environment (**Table 7**).

Receptor No	GN01 requirements		Maximum vertical Illuminance (Lux)	Pass/fail
	Pre-curfew	Post Curfew		
Human Receptor 001	5 Lux	1 Lux	0.01	Pass
Human Receptor 002 #1	5 Lux	1 Lux	0.76	Pass
Human Receptor 002 #2	5 Lux	1 Lux	0.02	Pass

Table 7: Human Receptor results table, maximum illuminance

10.3. Mitigation

- 10.3.1. Careful design ensures the lighting has been minimised onto sensitive receptors in accordance with standards and guidance.
- 10.3.2. The nursery car park will be lit to a standard and recognised level of light as detailed within BS 5489-1:2020, and the lowest applicable level of light will be used. This will ensure those using the space are provided with a comfortable environment but will avoid the over lighting of the area.
- 10.3.3. All luminaires used within the Proposed Development will have an ULOR of 0%. This will ensure there is no direct upward light produced by the proposed lighting.
- 10.3.4. Additionally, all luminaires within the Proposed Development will not use a Glare Class (G Class) less than G3. This combined with the 0% ULOR of the luminaire will reduce levels of sky glow and light spill.
- 10.3.5. The lighting column heights used through the Proposed Development will not exceed 6m. This will reduce the visibility of lighting within the landscape, by ensure lighting columns are lower than many of the surrounding trees and dwellings.
- 10.3.6. The detailed design is to be completed by a competent person or persons in accordance with the details within this Lighting Strategy, to ensure all mitigation is carried through to the detailed design.

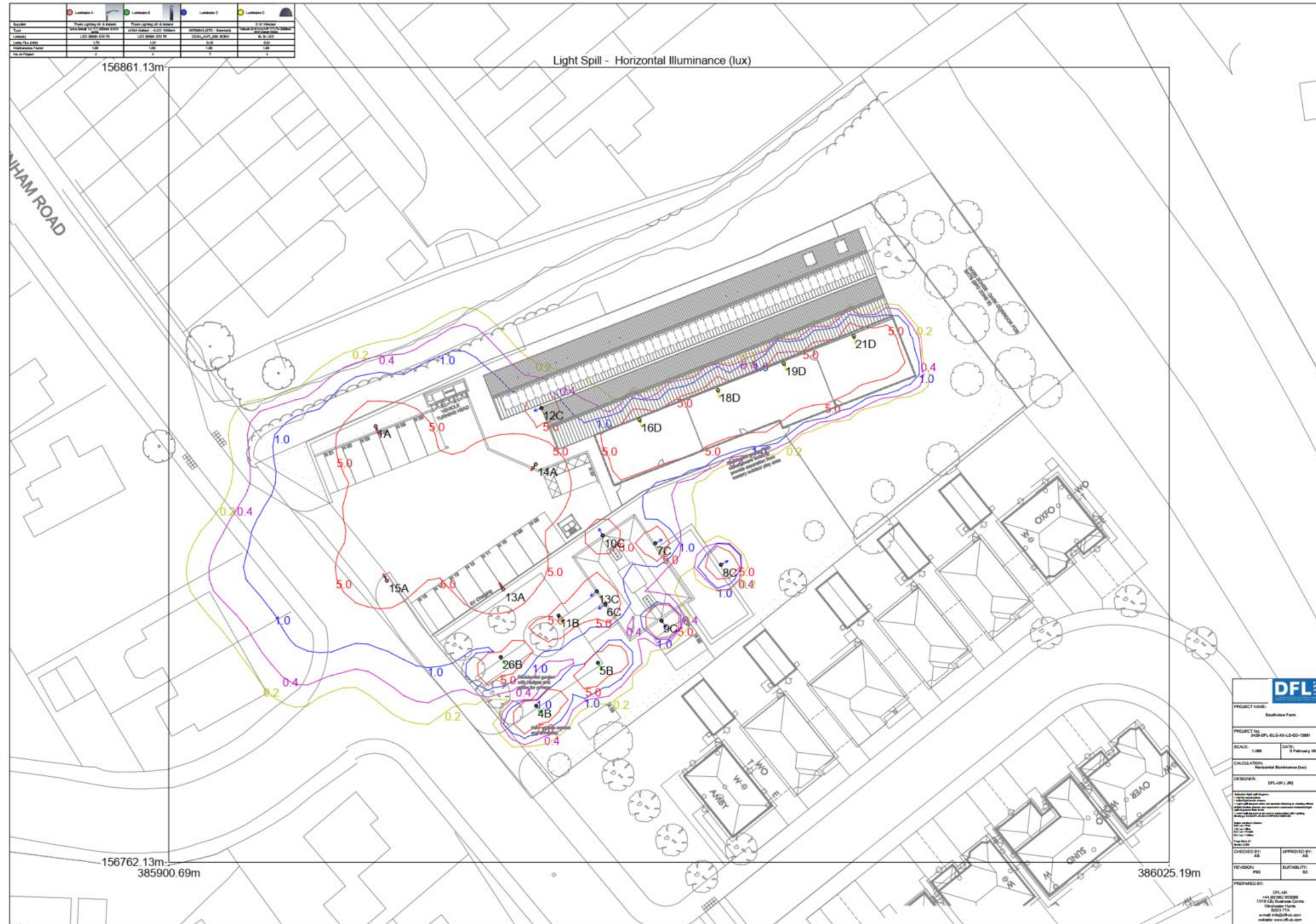
11. CONCLUSION

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** and **Appendix 4**.
- 11.1.2. This Lighting Strategy 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 human, environmental and ecological receptors.
- 11.1.3. Through the application of this Lighting Strategy sensitive receptors will not be adversely affected by obtrusive light, as shown in **Appendix 1 & 2**. Therefore, the Lighting Strategy is fully compliant with the parameters agreed during the outline application, and light spill does not intrude on the dark zone alongside the railway corridor.
- 11.1.4. Through careful design and mitigation, this Lighting Strategy ensures the lighting installation at the Proposed Development will be in accordance with British Standards, Guidance and Local Policy.

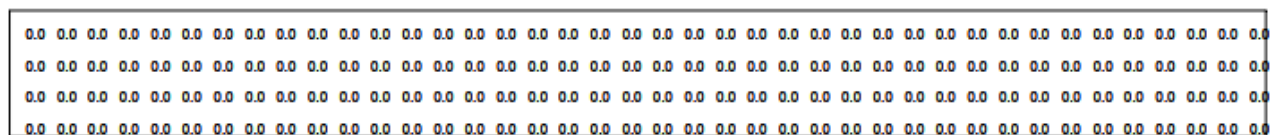
APPENDIX 1 – HORIZONTAL LIGHT SPILL DIAGRAM

See accompanying document 3420-DFL-ELG-XX-LD-EO-13001-S3



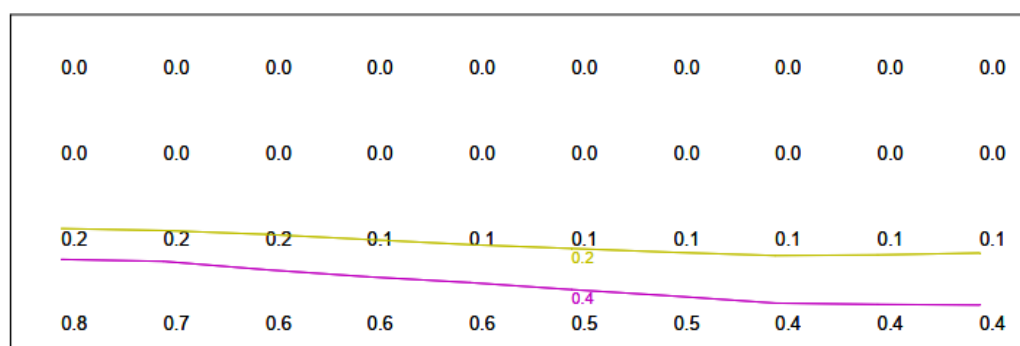
See accompanying document 3420-DFL-ELG-XX-LD-EO-13002-S3

Human Receptor 001



Eav	0.00
Emin	0.00
Emax	0.01
Emin/Emax	0.00
Emin/Eav	0.00

Human Receptor 002 #1



Eav	0.17
Emin	0.00
Emax	0.76
Emin/Emax	0.00
Emin/Eav	0.00

Illuminance (lux)

Human Receptor 002 #2

0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0

Results

Eav	0.01
Emin	0.00
Emax	0.02
Emin/Emax	0.15
Emin/Eav	0.44

Illuminance (lux)

Ecology Receptor 001

[illegible]

Results

Eav	0.00
Emin	0.00
Emax	0.00
Emin/Emax	0.00
Emin/Eav	0.00

Illuminance (lux)

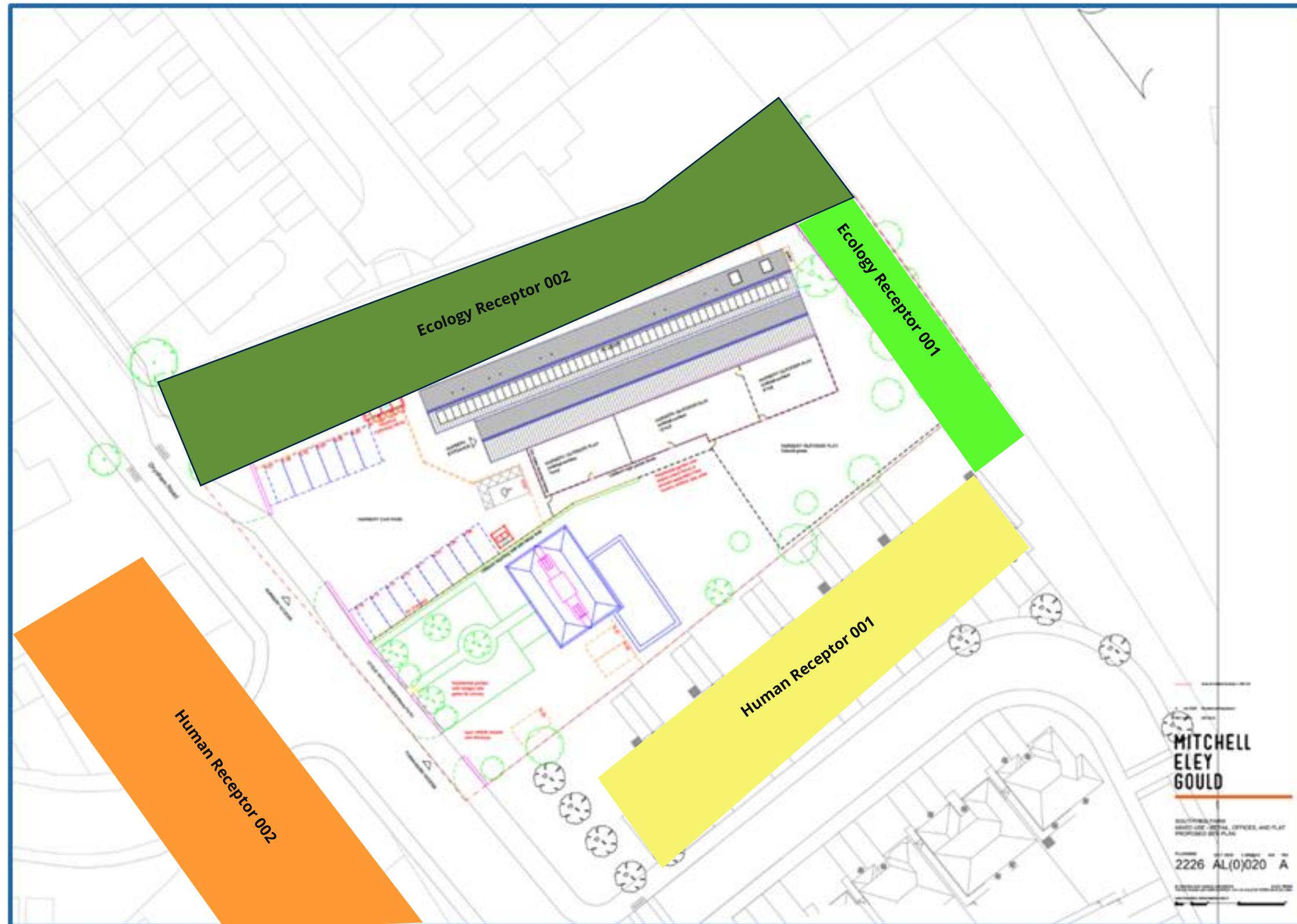
Ecology Receptor 002

[illegible]

Results

Eav	0.00
Emin	0.00
Emax	0.02
Emin/Emax	0.00
Emin/Eav	0.00

APPENDIX 3 – SENSITIVE RECEPTORS



APPENDIX 4 – EXTERNAL LIGHTING EQUIPMENT SPECIFICATION

11.2. Luminaire and control specification

11.2.1. The luminaire performance requirements are outlined in **Table 8 - Table 10**.

Equipment Specification	
Application Area	Car Park
Correlated Colour Temperature (Kelvin)	≤3000K
Luminaire Manufacturer	Thorn Lighting (Or Similar Approved)
Luminaire Model	Urba (Or Similar Approved)
Light Source	LED ≤1.69 klm
Reference	Type - Urba Small 12LED 350mA SR optic
Height	≤6m
Mounting Arrangement	Post Top
Glare Class	G3 minimum
Luminaire Tilt	0°
Upward Light Output Ratio E2 < 2.5%	0%
Example Luminaire Image	
Controls	Photocell: Dusk-till-dawn control (18lux on and 32lux off)

Table 8: Luminaire performance requirements – Car Parks

Equipment Specification	
Application Area	External Amenity Bollard
Correlated Colour Temperature (Kelvin)	≤2700K
Luminaire Manufacturer	Thorn Lighting (Or Similar Approved)
Luminaire Model	Urba Bollard (Or Similar Approved)
Light Source	LED ≤1.01 klm
Reference	Type - URBA Bollard - 4LED 1050mA
Height	≤1m
Mounting Arrangement	Root Mounted
Glare Class	G3 minimum
Luminaire Tilt	0°
Upward Light Output Ratio E1 < 0%	0%
Example Luminaire Image	
Controls	Photocell: Dusk-till-dawn control (18lux on and 32lux off)

Table 9: Luminaire performance requirements – External Amenity Bollard

Equipment Specification	
Application Area	External Amenity Down Lighter
Correlated Colour Temperature (Kelvin)	≤2700 Kelvin
Luminaire Manufacturer	Ligman (Or Similar Approved)
Luminaire Model	Jet 31 (Or Similar Approved)
Light Source	LED ≤0.25 klm
Reference	Type – JE-30351-M-W27
Height	≤2.5m
Mounting Arrangement	Wall Surface Mounted
Glare Class	G3 minimum
Luminaire Tilt	0°
Upward Light Output Ratio E1 < 0%	0%
Example Luminaire Image	
Controls	Photocell: Dusk-till-dawn control (18lux on and 32lux off)

Table 10: Luminaire performance requirements - External Amenity Down Lighter

Equipment Specification	
Application Area	Nursery Play Areas
Correlated Colour Temperature (Kelvin)	≤2700 Kelvin
Luminaire Manufacturer	DW Windsor (Or Similar Approved)
Luminaire Model	Kirium Wall (Or Similar Approved)
Light Source	LED ≤0.92 klm
Reference	Type – 8 LED Wide Optic
Height	≤2.5m
Mounting Arrangement	Wall Surface Mounted
Luminaire Tilt	0°
Upward Light Output Ratio E2 < 2.5%	0%
Example Luminaire Image	
Controls	Photocell: Dusk-till-dawn control (18lux on and 32lux off)

Table 11 - Luminaire performance requirements - Nursery Play Area

TECHNICAL DESCRIPTIONS, DEFINITIONS & 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&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&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&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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- **Public Realm** teams that are experts in enhancing night-time public spaces to create inviting spaces and opportunity for local economies to thrive during the hours of darkness.
- **Electrical** teams – we don't just put a light in the ground, we can help you get power to it as well! Additionally, we also offer design services for EV charging. As this market rapidly expands, make sure you have the experts managing the load, otherwise your EV charging solutions might not live up to expectations.
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