



Loveday Lighting Limited

Exterior Lighting Design & Consultation

Ramridge Farm, Hitchin

Lighting Strategy

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Report Prepared By: Aimie Spooner-Loveday (Director)

Issued By:
Loveday Lighting Limited
Tel: +44 (0) 7400 559 789
Email: aimie@lovedaylighting.com
Web: www.lovedaylighting.com



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1.0 INTRODUCTION

- 1.0 This external lighting environmental impact assessment is a desk top exercise to establish the baseline conditions and the likely impact to the surrounding environment of the proposed lighting at Ramridge Farm, Hitchin for a proposed Agricultural Barn.
- 1.2 The report has been prepared by Loveday Lighting to the best of our knowledge using information provided by Ceres Property.
- 1.3 Loveday Lighting Limited accepts no responsibility or liability for:
 - a) The consequence of this documentation being used for any purpose or project other than that for which it was commissioned.
 - b) The issue of this document to any third party with whom approval for use has not been agreed.

2.0 LEGAL REQUIREMENTS

- 2.1 This section summarises government policy on the environment with respect to external lighting.

3.0 STATUTORY DOCUMENTS

Environmental Protection Act 1990 / Clean Neighbourhoods and Environment Act 2005

- 3.1 Light pollution was introduced within the Clean Neighbourhoods and Environment Act (2005) as a form of statutory nuisance under the Environmental Protection Act (the 'EPA', 1990), states: "artificial light emitted from premises so as to be prejudicial to health or nuisance."

National Planning Policy Framework

- 3.2 The National Planning Policy Framework (NPPF), published in December 2023, sets out the governments planning policies for England and how they are expected to be applied and provides a framework for local plans. 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 impact 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.
 - Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.



Relevant British Standards

- 3.3 The most applicable British Standards for lighting that relates to the proposed development are:
- BS5489-1:2020 Code of practice for the design of road lighting Part 1: Lighting of roads and public amenity areas
 - BS EN 13201 2015 – Road Lighting. Performance Lighting

Institution of Lighting Professionals, Bat Conservation Trust Lighting Guidance (August 2023)

- 3.4 The Bat Conservation Trust and the ILP produced a paper in 2023, “Bats and Lighting in the UK”, discussing the appropriate lighting levels, types of lamps, colour temperatures etc. which are suitable for lighting areas adjacent to bat houses.

Bat Conservation Trust 2014 Interim Guidance

- 3.5 The Bat Conservation Trust 2014 interim guidance provides recommendation to help minimise the impact of artificial lighting.

Guidance Notes for the Reduction of Obtrusive Light; 2021 Institution of Lighting Professionals (ILP)

- 3.6 Guidance notes produced by the Institution of Lighting Professionals are among the most commonly referenced guidance notes for good practice within the lighting design industry.
- 3.7 Obtrusive light (or sometimes referred to as light pollution) refers to any light emitted in a direction in which it is not required or wanted and as such is detrimental to other users. The assessment has been carried out in accordance with the published guidance documents from the ILP.
- 3.8 Light intrusion refers to the spilling of light beyond the boundary of the area to be lit. This includes the intrusion of light into bedroom windows.
- 3.9 Sky glow refers to the brightening of the sky above towns cause by direct or reflected upward light.
- 3.10 Glare refers to the uncomfortable brightness of a light source when viewed against a dark background. Figure 3.0: illustrates the different types of intrusive light taken from Guidance Notes for the Reduction of Obtrusive Light; 2021 Institution of Lighting Professionals (ILP).

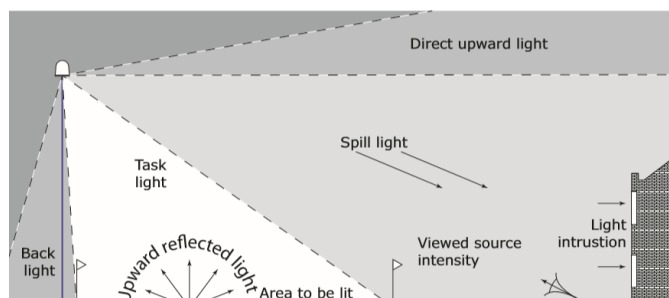


Figure 1: Light Obtrusion characteristics



4.0 SITE LOCATION

4.1 The site location plan for Ramridge Farm is presented in Figure 2:

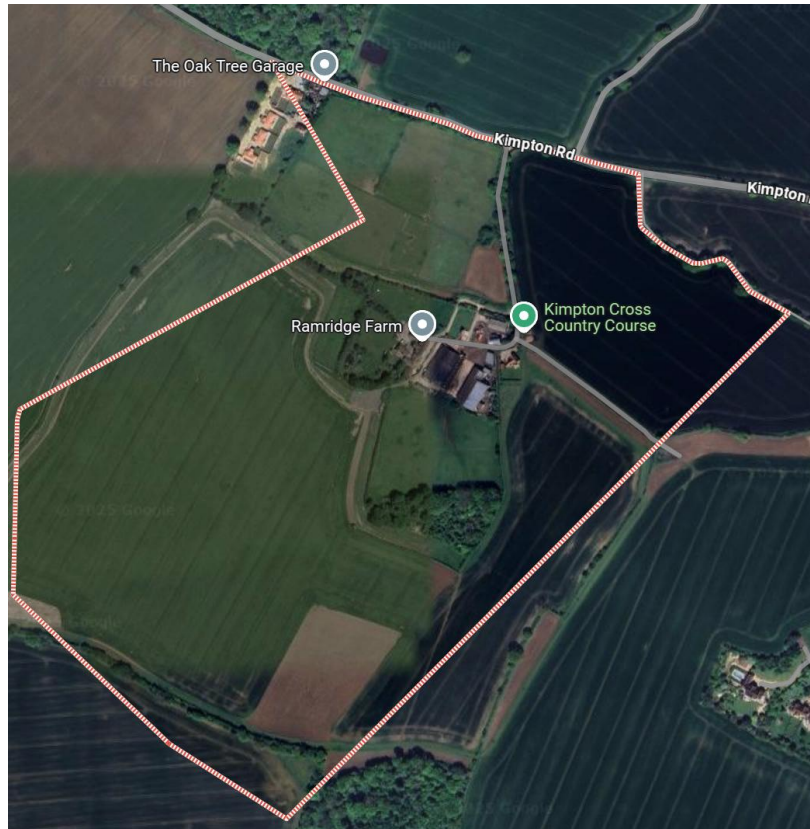


Figure 2: Location Plan

Proposed Plans

4.2 The proposals for the Agricultural Barn are shown below in Figure 3:

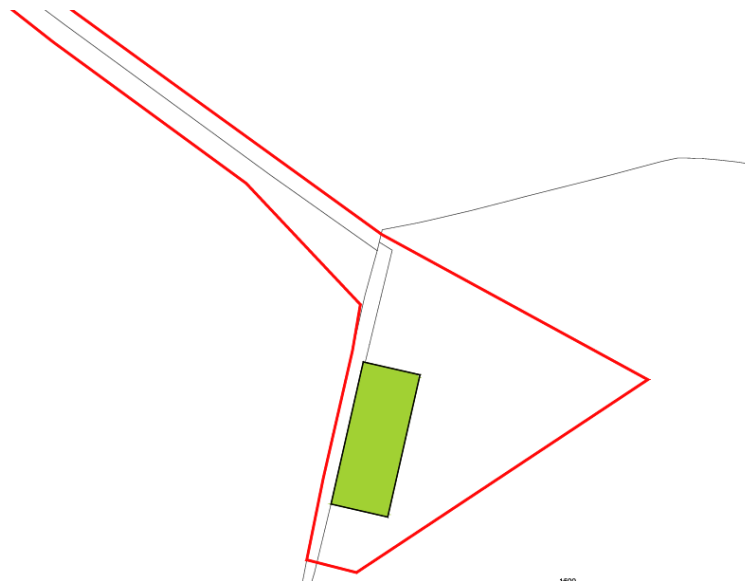


Figure 3: Proposed plans



5.0 BASELINE CONDITIONS

- 5.1 The baseline conditions for the proposed agricultural barn at Ramridge Farm, Hitchin, reflect the site's current rural character and its primary use for farming activities. Located within the Hertfordshire countryside, the site is part of an established agricultural holding, comprising arable fields and existing farm infrastructure. The land is generally flat with good access from nearby rural roads, and it is bordered by hedgerows and occasional trees that contribute to the local landscape.
- 5.2 The Institution of Lighting Professionals published a reference document GN01/21 – Guidance notes for the reduction of obtrusive light, which provides definitions of environmental zones and levels of permissible light trespass.

Using table 12.1 below, it would indicate that the area would be classified as E2 Low District Brightness Areas.

Table 12.1: Obtrusive Light Limitations for Exterior Lighting Installations

Guidelines and threshold values for the environmental zones published by the ILP provides a guideline on technical limits shown in figure 3 below:

Table 2: Environmental zones			
Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

Figure 3: Environmental Zone Table from ILP GN01/21

- 5.3 **Note 1:** Where an area to be lit lies close to the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone (see comment below):



6.0 ECOLOGY

- 6.1 Loveday Lighting Limited has made ecology a central consideration in the planning and design of lighting for this development site. The company recognises the importance of protecting sensitive receptors, such as local wildlife habitats, from the potential negative impacts of artificial lighting. In particular, careful attention is given to preserving natural behaviours and ecological balance by avoiding light intrusion into key areas. This includes maintaining established flight paths / dark corridors for bats, safeguarding feeding grounds, and protecting nesting and mating sites. By doing so, Loveday Lighting aims to minimise disruption to local species and support biodiversity. Any proposed street lighting solutions will be thoughtfully designed and positioned to reduce glare, limit light spill, and use appropriate colour temperatures to ensure the continued health and flourishing of the area's ecosystem.
- 6.2 Within the development, it is proposed that LED lighting with a correlated colour temperature (CCT) of 2700 Kelvin be utilised. This specification has been carefully selected based on ecological considerations and current best practices in environmentally responsible lighting design. LED light sources at this CCT emit a warmer light with significantly reduced output in the blue spectrum, specifically limiting emissions beyond the 550-nanometre wavelength range. Additionally, these LEDs do not produce ultraviolet (UV) wavelengths, which are known to attract insects and disrupt the natural behaviours of nocturnal wildlife.
- 6.3 This approach aligns with the latest scientific guidance on the ecological impacts of artificial lighting, particularly on bat populations. Research published by the Bat Conservation Trust (2023) underscores the importance of using warm-colour lighting to minimise disturbance to bats, whose feeding and commuting behaviour can be adversely affected by cooler, blue-rich light. The use of 2700K LEDs is therefore not only a mitigation measure but also a demonstration of compliance with recognised standards for good practice in external lighting design, contributing to the protection and conservation of local biodiversity.
- 6.4 Light spill has the potential to affect both flora (plants etc) and fauna (from insects through to bats). Light spill can disrupt feeding patterns and force ecological receptors to leave their habitat. The lighting strategy will seek to avoid and mitigate light spill where there are potential ecological receptors that could be adversely affected. This will be sought through guidance provided by the ILP for the reduction of obtrusive light.
- 6.5 Lighting should be minimised using approved lighting control methods, focusing on limiting illuminance and reducing light spill. The proposed external lighting will consist of wall-mounted downlighters, designed to enhance safety and security while preventing light pollution beyond the site boundary.
- 6.6 Lighting in sensitive areas can be greatly reduced or turned off entirely during nighttime hours. However, the timing of dimming or switching off lights should be carefully coordinated with the Local Authority and the Ecologist, as wildlife activity varies throughout the year.



- 6.7 Dimming and/or switch off the lighting output at strategic times of the evening allows for a reduction in the overall lighting impact on ecologically sensitive areas and will help to reduce the general evening 'sky glow' from the site. It is recommended that an appropriate 'Stepped Dimming' profile be considered for this site and that should look similar to the profile that is set out below:

Example of suitable Stepped Dimming profile: -

Dusk – 20.00 – 100% output
 20.00 – 00.30 – 75% output
 00.30 – 05.30 – 0% output
 05.30 – 06.00 – 75% output
 06.00 – Dawn – 100% output

Example of switch off profile:-

Dusk – 20:00 – 100% output
 20:00 – 05:30 – switch off 0% output
 05:30 – Dawn – 100% output

*** To be agreed by the overseeing organisation.**

7.0 DESIGN PROPOSALS & LIGHTING LEVELS

- 7.1 The exterior and internal lighting scheme has been designed solely to provide appropriate illuminance levels for amenity purposes.
- 7.2 Artificial lighting will be required as part of amenity, safe passage, security and health and safety requirements during periods of darkness. The associated potential obtrusive light effects toward surrounding light-sensitive receptors would be minimised through the controlled application of lighting in accordance with current best practice.
- 7.3 The indicative lighting criteria adopted for the purposes of this assessment are taken from relevant recognised national guidance documentation.
- 7.4 The exterior lighting proposals for the agricultural barn have been submitted using a total number of **thirteen** low-level wall light LED 2700 Kelvin downlighter. External lights shall have electronic control gear, so they are capable to dim and/or switch off.
- 7.5 The guidance notes of The Reduction of Obtrusive Light GN01/21 published by the Institution of Lighting Professionals recommend maximum values of light parameters for the control of obtrusive light for each environmental zone. Hitchin is situated in environmental zone E2; therefore, the maximum value of vertical illuminance is 5 lux (pre-curfew) & 1 lux (post-curfew) as shown below in Figure 4:



Table 3 (CIE 150 table 2): Maximum values of vertical illuminance on premises

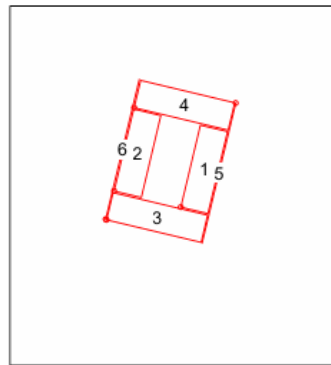
Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E_v)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx*	1 lx	2 lx	5 lx

Figure 4: ILP GN01/21 Table 3 – Maximum values of vertical illuminance on properties

7.6 Vertical and horizontal illuminance calculations were conducted using industry-standard Relux software. The summary table is presented below in Figure 5:

2.2 Summary, Exterior 1

2.2.8 Result overview, Group 2



Illuminance		Grid	E_m	E_{min}	E_{max}	U_o	U_d
No.	Measuring surface						
2.1	Behind Barn	10 x 30	0.8 lx	0 lx	38.6 lx	0.00	0.00
2.2	Front of Barn	10 x 30	1.2 lx	0 lx	35.8 lx	0.02	0.00
2.3	Right Side of Barn	35 x 10	0.8 lx	0 lx	37.6 lx	0.01	0.00
2.4	Left Side of Barn	35 x 10	0.8 lx	0 lx	38.3 lx	0.01	0.00
2.5	Vertical Behind 10m Away 5m High	84 x 8	0.1 lx	0 lx	0.2 lx	0.26	0.11
2.6	Vertical Front 10m Away 5m High	84 x 8	0.2 lx	0.1 lx	0.4 lx	0.38	0.21
Summary			0.7 lx	0 lx	38.6 lx	0.00	0.00

Figure 5: Vertical & Horizontal calculations

7.7 In accordance with the ILP 08/23 *Bats & Artificial Lighting in the UK* (2023) guidance, it is recommended that areas requiring complete darkness on a feature or buffer maintain illuminance levels below 0.2 lux on the horizontal plane and below 0.4 lux on the vertical plane.



- 7.8 Referring to Figure 5, we acknowledge the proposed lighting scheme for the agricultural barn exceeds the recommended illuminance levels outlined in BCT Guidance Note GN08/23. However, it is important to note that our primary concern lies with the impact of lighting during the winter months, when daylight hours are significantly reduced and adequate illumination is necessary for safety, security, and operational purposes. During the summer months, extended natural light significantly reduces the need for artificial illumination, mitigating potential impacts.
- 7.9 To address any potential concerns and minimise disruption to local wildlife and the surrounding environment, we propose that all non-essential lighting particularly external lighting be either switched off or dimmed to the agreed post curfew hours each evening. This timing ensures sufficient illumination during operational hours while aligning with best practices for environmental sensitivity during nocturnal hours.
- 7.10 Using industry-standard lighting software, Relux, the images in Figure 6 illustrate the typical light spread of the proposed luminaires.

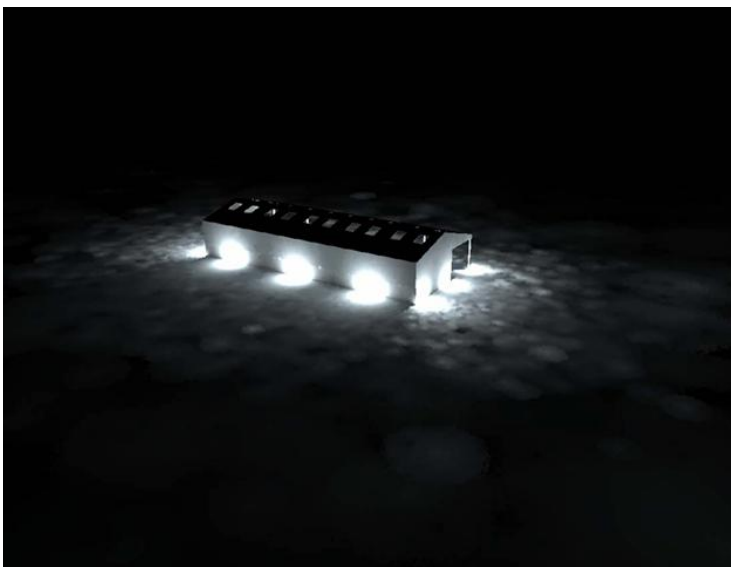
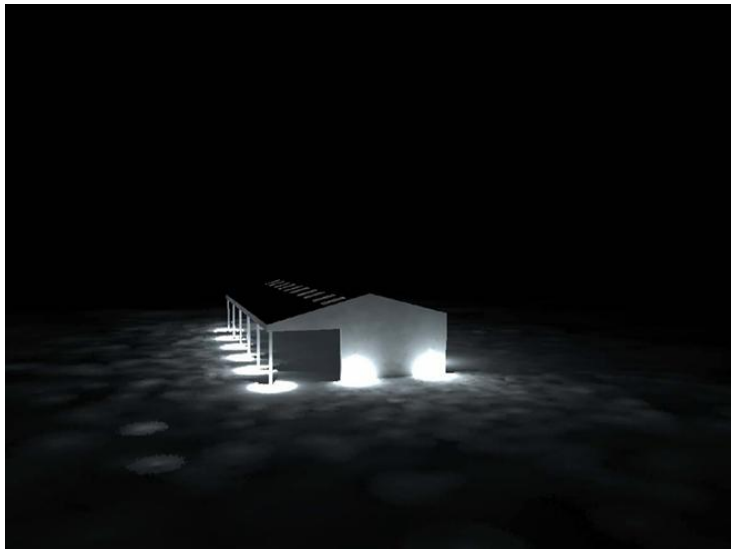


Figure 7: Proposed external lighting images



8.0 CONCLUSION AND SUMMARY

- 8.1 In conclusion, provided that the proposed lighting strategies and controls outlined above are effectively implemented, it is entirely feasible to design and install a lighting scheme that achieves an acceptably low level of impact. This approach will safeguard the amenity of nearby residential properties by minimising light intrusion and glare, thereby preserving residents' comfort and privacy. At the same time, the scheme will protect local wildlife by adhering to ecological best practices reducing disturbance to sensitive species and maintaining natural behaviours within the surrounding habitats. Furthermore, careful attention to light spill and spectral output will ensure that the wider landscape retains its natural nighttime character, preventing unnecessary skyglow and preserving the ecological and aesthetic qualities of the area. Together, these measures demonstrate a responsible and balanced approach to external lighting that supports both human needs and environmental.
- 8.2 The potential effects on sensitive receptors will be carefully mitigated through the adoption of a stringent and thoughtfully engineered lighting design. This design will prioritise the use of low light pollution fittings, specifically chosen to confine light spill strictly within the boundaries of the development site. By doing so, the scheme will significantly reduce the amount of light lost to the night sky, thereby minimising skyglow and preserving the natural darkness of the surrounding environment. Additionally, these fittings will be selected and installed to limit glare, reducing discomfort and visual disturbance for both on-site users and neighbouring receptors, including local residents and wildlife. This targeted approach ensures that lighting serves its intended purpose providing safety and visibility while protecting the integrity of sensitive ecological and human receptors in the vicinity.
- 8.3 Potential effects would be managed such that the potential increase in the general ambience of the area would be balanced against the overall existing illuminance in order to minimise sky glow.
- 8.4 This report has been prepared to the best of our knowledge; any lighting designs proposed shall be carried out by a competent lighting consultant in accordance with the client's specification.
- 8.5 Loveday Lighting Limited. Light Spill Contour Layout (LL1921-001) should be read in conjunction with this document.

Prepared By: -

Aimie Spooner-Loveday

11.06.2025

..... (Signed) (Print Name) (Date)