



Catesby Strategic Land Limited

Land south of Burford Road, Minster Lovell

Lighting Impact Assessment

714262R01

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RSK



RSK GENERAL NOTES

Project No.: 714262R01

Title: Land south of Burford Road, Minster Lovell- Lighting Impact Assessment Report

Client: Catesby Strategic Land Limited

Date: 21st October 2022

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CONTENTS

1	INTRODUCTION	1
1.1	Background	1
1.2	Aim of the Report.....	1
2	PLANNING POLICY CONTEXT	2
2.1	National Planning Policy Framework.....	2
2.2	West Oxfordshire Local Plan 2031	2
3	SITE LOCATION	3
3.1	Introduction.....	3
4	ASSESSMENT SCOPE AND METHODOLOGY.....	4
4.1	Approach	4
4.2	Lighting Assessment Guidance	4
4.3	Measurement Locations	5
5	BASELINE CONDITIONS.....	7
5.1	Within the Site	7
5.2	Surrounding Area	7
6	DEVELOPMENT LIGHTING	9
6.1	Indicative Lighting Design	9
7	ASSESSMENT OF IMPACTS.....	10
7.1	Surrounding Area	10
8	CONCLUSION.....	12
	APPENDIX A: SITE LOCATION PLAN	1
	APPENDIX B: DEVELOPMENT PLAN.....	2
	APPENDIX C: MEASURING ELEMENT LOCATIONS	3
	APPENDIX D: PREDICTED LIGHT SPILLAGE	4

1 INTRODUCTION

1.1 Background

RSK Environment Ltd (RSK) has been appointed by Catesby Strategic Land Limited to prepare this Lighting Impact Assessment in support of the Outline planning permission for the development of up to 140 dwellings (Use Class C3) including means of access into the site (not internal roads) and associated highway works, with all other matters (relating to appearance, landscaping, scale and layout) reserved' on land south of Burford Road, Minster Lovell.

1.2 Aim of the Report

This report presents the findings of an assessment of existing / baseline artificial lighting levels in the area of the development and the predicted effects of new artificial lighting installed as part of the proposed scheme on the existing potentially sensitive receptors (e.g residential properties and wildlife) present in the locality.

2 PLANNING POLICY CONTEXT

2.1 National Planning Policy Framework

In July 2021 The National Planning Policy Framework (NPPF) was revised, superseding the bulk of previous Planning Policy Statements with immediate effect. The National Planning Policy Framework was intended to simplify the planning system and includes a presumption in favour of sustainable development.

Section 15 of the NPPF deals with Conserving and Enhancing the Natural Environment, and states that the intention is that the planning system should prevent new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans. The document also states that 'new development [should be] appropriate for its location' and 'the effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account'.

2.2 West Oxfordshire Local Plan 2031

POLICY EH2: Landscape character

Proposed development should avoid causing pollution, especially noise and light, which has an adverse impact upon landscape character and should incorporate measures to maintain or improve the existing level of tranquillity and dark-sky quality, reversing existing pollution where possible.

POLICY EH4: Public realm and green infrastructure

Demonstrate how lighting will not adversely impact on green infrastructure that functions as nocturnal wildlife movement and foraging corridors.

POLICY EH8: Environmental protection

Artificial light

The installation of external lighting and lighting proposals for new buildings, particularly those in remote rural locations, will only be permitted where:

- the means of lighting is appropriate, unobtrusively sited and would not result in excessive levels of light;
- the elevations of buildings, particularly roofs, are designed to limit light spill;
- the proposal would not have a detrimental effect on local amenity, character of a settlement or wider countryside, intrinsically dark landscapes or nature conservation.

3 SITE LOCATION

3.1 Introduction

The proposed development site is located on land south of Burford Road, Minster Lovell. The site is bordered by Burford Road to the North residential properties and the new Bovis Homes development to the East, open fields to the south and residential properties and open fields to the west. The development has hedgerows and trees around the site, giving a natural barrier to artificial light that may spill beyond the site boundary.

A location plan of the current site can be seen in Appendix A, with the proposed development in Appendix B.

4 ASSESSMENT SCOPE AND METHODOLOGY

4.1 Approach

In order to assess the baseline artificial lighting levels in the area, a site visit was conducted by RSK on Tuesday 9th August 2022. Measurements were taken at a height of 1.5m above ground level under an overcast sky between 21:30 and 23:30 hours using an Isotech ILM 01 Digital Light Meter at the position of each measurement location identified (see section 5.0 baseline conditions). The measurement locations where the baseline measurements were taken are shown in Appendix C.

A computer model has been constructed of the proposed development using Relux Pro lighting software version 2022.3.3.0 using an assumed lighting scheme to assess the potential effect of the development on the existing area.

4.2 Lighting Assessment Guidance

The Clean Neighbourhoods and Environment Act 2005 made light pollution a statutory nuisance under the Environmental Protection Act 1990, which came into force on 6th April 2006. Section 79 of the Environmental Protection Act 1990 has been amended to include artificial light emitted from premises that potentially could be prejudicial to health or a nuisance.

No prescriptive limits or rules are set for such assessments, but the following guidance documents have been referred to while compiling this assessment:

- The SLL Lighting Handbook – The Society of Light and Lighting (SLL), this provides guidance on maximum recommended vertical illuminance levels measured at the sensitive receptors windows.
- Lighting Guide 6 The Outdoor Environment – The Society of Light and Lighting (SLL), this gives minimum safe lighting levels for the footpaths.
- ILP Guidance Notes for the Reduction of Obtrusive Light (2011) provides measurable design guidance limits and recommendations to ascertain acceptability of obtrusive light levels at night.
- CPRE _ Night Blight: Mapping England's light pollution and dark skies, provides maps of Great Britain's light pollution and dark skies.

Table 1 from the SLL Handbook shows the five qualitative environmental zones identified by the International Commission on Illumination (CIE) which reflect differing levels of light pollution which can affect an area. The limits recommended by the SLL for limiting light trespass are given in Table 2.

Table 1 - The Environmental Zoning system of the CIE

Environmental Zones	Zone description and examples of sub-zones
E0	Areas with dark landscapes: UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Areas with intrinsically dark landscapes: National Parks, areas of outstanding natural beauty (where roads are usually unlit)
E2	Areas of 'low district brightness': outer urban and rural residential areas (where roads are lit to residential road standard)
E3	Areas of 'middle district brightness': generally urban residential areas (where roads are lit to traffic route standard)
E4	Areas of 'high district brightness': generally, urban areas having mixed recreational and commercial land use with high night-time activity

Table 2 - Maximum vertical illuminance on windows, maximum luminous intensity for obtrusive luminaires and maximum building luminance produced by floodlighting, for five environmental zones

Environmental Zones	Maximum vertical illuminance on windows (Lux)		Maximum luminous intensity (cd)		Maximum building luminance (cd/m ²)
	Before curfew	After Curfew	Before curfew	After curfew	
E0	0	0	0	0	0
E1	2	1	2500	0	0
E2	5	1	7500	500	5
E3	10	2	10000	1000	10
E4	25	5	25000	2500	25

4.3 Measurement Locations

Measurement Locations are initially physical measuring positions in and around the development site. These locations are chosen to give a general idea of lighting levels across the site, but also at potentially sensitive receptors (residential properties, wildlife, etc) in and outside of the development boundary. All measurement locations are then uploaded into the software model as virtual surfaces that are used to calculate illuminance of the development post construction.

Measurements were taken around the whole perimeter of the site, with particular interest at sensitive locations close to the site boundary.

Please refer to Table 3 for a full list of measurement locations and identified potentially sensitive receptors. A plan view of the site showing the measuring element locations is shown in Appendix C.

5 BASELINE CONDITIONS

5.1 Within the Site

The site is currently unlit with no existing sources of artificial light present, however the neighbouring Bovis Homes development does have street lighting and security lighting although no light spill onto the site was observed.

5.2 Surrounding Area

Twenty-six measurement locations were identified around the site boundary and surrounding area. The minimum recorded level across the whole site was 0.48 Lux. Table 1 above, indicates that the area would be classified as E2, Areas of low district brightness and in line with the SLL guidelines, the vertical illuminance on windows of identified receptors must be less than 5 Lux before and 1 Lux after curfew as indicated in Table 2. The locations of the measuring points are presented in Appendix C.

Table 3 –Baseline Lighting Levels

Measurement Location	Measuring Element	Measured Illuminance (Lux)
1	MP1	0.48
2	MP2	0.49
3	MP3	0.48
4	MP4	0.50
5	MP5	0.48
6	MP6	0.48
7	MP7	0.49
8	MP8	0.48
9	MP9	0.48
10	MP10	0.48
11	MP11	0.50
12	MP12	0.48
13	MP13	0.48
14	MP14	0.48
15	MP15	0.48
16	MP16	0.49
17	MP17	0.48
18	MP18	0.48
19	MP19	0.48
20	MP20	0.48
21	MP21	0.47
22	MP22	0.48
23	MP23	0.48
24	MP24	0.48
25	MP25	0.47
26	MP26	0.48

The results in table 3 above show that the development site itself is unlit, and there is no light spill into the site from the neighbouring development which is currently under construction.

The locations of the measuring points are presented in Appendix C. When considering direct Sky Glow, as a result of direct upwards light, there is the possibility of a site wide effect being visible from darker environments, however, direct Sky Glow cannot be measured. The baseline is assessed relative to visual baseline survey conditions and published Campaign to Protect Rural England (CPRE) – Night Blight data. Taken on a local scale, existing saturated Sky Glow was noticeable from the east towards Witney at the time of the site visit.

6 DEVELOPMENT LIGHTING

6.1 Indicative Lighting Design

In the absence of a detailed lighting design for the development, broad assumptions on the likely lighting design and locations of luminaires for the purposes of the assessment have been made. The indicative design uses lighting with 0% upward light to minimise Sky Glow and promote a Dark Skies policy. A column height of 5m has been used for the development street lighting. General recommendations for the detailed lighting scheme will be provided and these include:

- Wherever possible, ensuring the use of controlled light distribution, optimised optics, and considered luminaire positioning.
- Modern LED luminaires should be employed to minimise the obtrusive light spill and be as energy efficient as possible.
- Lighting throughout the site will be designed to minimise horizontal spill of light to hedgerows.
- Dimmed and reactive lighting will be used where appropriate.
- Lighting will be directed away from the site boundaries.
- Lighting will be designed in accordance with ILP Guidance Notes for Reduction of Obtrusive Light and CIE 126 (1997) Guidelines for Minimising Sky Glow.

The indicative lighting design is in accordance with the above recommendations. The indicative lighting design includes column mounted luminaires selected to have no upward light as well as sharp cut off characteristics. Lighting has been selected to provide adequate illumination of footpaths and roads without polluting the site boundary and also reducing upward light to minimise Sky Glow. Smart controls will be used including time clocks and photocells but for the purpose of this report, all lighting was assumed to be on to show the worst-case effect. Appendix B shows the proposed development.

7 ASSESSMENT OF IMPACTS

7.1 Surrounding Area

Table 4 shows the results of the calculations and the predicted light levels at all measurement locations. This has been presented as an after-curfew scenario, where light levels are recommended not to exceed 1 Lux at the windows of nearby residential properties. For the purpose of this report, the calculations have been performed with all development lighting switched on across the site to show the potential worst-case effect. The increase in illuminance column represents the increase on the baseline results as a result of the development. The maximum illuminance column represents the maximum lighting levels at that specific measurement location. The measurement locations are presented in Appendix C.

Table 4 – Results For Proposed Scheme

Measurement Location	Increase in Illuminance (Lux)	Maximum Illuminance (Lux)	Maximum Recommended Illuminance (Lux)
1	0.00	0.48	1
2	0.00	0.49	1
3	0.42	0.90	1
4	0.01	0.51	1
5	0.00	0.48	1
6	0.00	0.48	1
7	0.07	0.56	1
8	0.00	0.48	1
9	0.01	0.49	1
10	0.40	0.88	1
11	0.17	0.67	1
12	0.00	0.48	1
13	0.00	0.48	1
14	0.00	0.48	1
15	0.00	0.48	1
16	0.00	0.49	1
17	0.00	0.48	1
18	0.01	0.49	1
19	0.00	0.48	1
20	0.00	0.48	1
21	0.00	0.47	1
22	0.00	0.48	1
23	0.01	0.49	1
24	0.01	0.49	1
25	0.00	0.47	1
26	0.01	0.49	1

The results presented in Table 4 indicate there is only a relatively small increase predicted across the site with a maximum increase of 0.42 Lux at measuring position 3. The results show the scheme will not cause significant light spillage beyond the developed area with all receptor locations recording predicted levels below 1 lux. Predicted light spill is shown in Appendix D.

8 CONCLUSION

The proposed development will have a negligible impact on the area surrounding the site. Although light spill from the site will increase in some locations the impact of the new development will be negligible in these locations.

The assumed luminaires to be installed on the site have minimal light spill due to housings that direct the light down and minimise unwanted sideways illumination. This results in a development that will have little or negligible impact on the surrounding area in line with the SLL recommendations.

In summary it has been shown that the proposed development will have an insignificant effect on the immediate environment with respect to lighting pollution. Although light spill has increased illuminance levels at some locations, the potential increase in illuminance is considered negligible.



APPENDIX A: SITE LOCATION PLAN



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PRELIMINARY

— Site boundary (1007x10)

Rev.	Date	Description
B	22/10/22	Amended site boundary
A	22/10/22	Amended site boundary

Land to the west of
MINSTER LOVELL

Site Location Plan

Job ref:	Drawing number:	Revision:
466	L01	B
Scale:	Date:	
1:2,500 @ A3	October 2022	



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APPENDIX B: DEVELOPMENT PLAN

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PRELIMINARY

- 1 Site boundary (10.07ha)
- 2 Proposed vehicular and pedestrian access
- 3 Proposed pedestrian/cycle connection
- 4 Primary street
- 5 Secondary street
- 6 Private drive
- 7 Proposed recreational route
- 8 Proposed playground
- 9 Proposed attenuation basin
- 10 Existing vegetation retained and enhanced as necessary with locally characteristic and native species
- 11 Proposed woodland edge
- 12 Proposed green buffer to existing property
- 13 Proposed pumping station
- 14 Proposed footpath along Burford Road

Rev.	Date	Description
D	22.10.13	Amended site boundary
C	22.10.12	Amended site boundary
B	22.10.12	Amended site boundary
A	22.09.29	Amended proposed layout

Land to the west of
MINSTER LOVELL

Illustrative Masterplan

Job ref:	Drawing number:	Revision:
466	P03	D
Scale:	Date:	
1:2,500 @ A3	October 2022	

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APPENDIX C: MEASURING ELEMENT LOCATIONS

Appendix C Measuring Element Positions



APPENDIX D: PREDICTED LIGHT SPILLAGE

