# CALDECOTE FARM

NEWPORT PAGNELL · MILTON KEYNES

CHAPTER 11

*ENVIRONMENTAL STATEMENT*

## LIGHTING

JULY 2021

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# 11.0 LIGHTING

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# LIGHTING

## 11.1 INTRODUCTION

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# 11.1 INTRODUCTION

11.1.1. This chapter describes the external lighting for the Proposed Development and assesses the potential for any adverse effects, showing how it would meet the requirements of both local and national planning policy. It sets out the assessment methodology; the baseline conditions currently existing at the Application Site and in the surrounding area; the likely significant environmental effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; the likely residual effects after these measures have been employed; and the cumulative effects associated with the Proposed Development in combination with other committed development.

11.1.2. This chapter has been prepared by Tony Price BSc (Hons), CEng, MILP of Vanguardia Ltd. Tony has many years' experience in lighting assessments including those for EIA. Recently, these have included West Midlands Interchange (NSIP), Northampton Gateway (NSIP), Coventry and Warwickshire Gateway, Warth Park (Raunds), Sturry and Broad Oak residential developments (Canterbury) and a sequence of projects at Rushden Lakes (East Northampton). Vanguardia has provided consultancy services in the fields of Noise, Air Quality and Lighting since 2006 and retains the expertise for the specialised assessment techniques necessary for undertaking Environmental Impact Assessments in these three disciplines. Vanguardia has produced Environmental Statement Chapters and supporting technical documentation across a wide range of projects of all types and scales.

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## 11.2 RELEVANT POLICY

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# 11.2 RELEVANT POLICY

## THE NATIONAL PLANNING POLICY FRAMEWORK[1]

11.2.1. The National Planning Policy Framework provides guidance relating to planning and pollution control and new development in England. The purpose of the planning system is to contribute to the achievement of sustainable development. In relation to lighting and night time paragraph 180 states:

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

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

11.2.2. This policy encourages limitation of impacts, on both humans and ecology, by good design. Its premise is that the potential effects caused by external lighting should not normally be a reason for refusal; instead the design should be refined to minimise these effects.

### National Planning Practice Guidance[2]

11.2.3. The Light Pollution Planning Practice Guidance advises on how to consider light within the planning system. It recognises that artificial light provides valuable benefits to society, including through extending opportunities for sport and recreation, and can be essential to a new development. Equally, artificial light is not always necessary and has the potential to become what is termed 'light pollution' or 'obtrusive light'. It can be a source of annoyance to people, harmful to wildlife, undermine enjoyment of the countryside or detract from enjoyment of the night sky.

### Local Planning Policy – Milton Keynes Council Plan:MK 2016-2031[3]

11.2.4. The Milton Keynes Council Plan:MK contains policies that seek to control external lighting in new development.

11.2.5. Policy NE5, Conserving and Enhancing Landscape Character, states:

*Where development in the open countryside is acceptable in principle under other policies in this plan, it will need to be undertaken in a manner that respects the particular character of the surrounding landscape.*

*In particular, development 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*

1 Ministry of Housing, Communities and Local Government (February 2019) National Planning Policy Framework
2 Ministry of Housing, Communities and Local Government (March 2014) National Planning Practice Guidance Light Pollution. ID: 31 available at https://www.gov.uk/guidance/light-pollution
3 Milton Keynes Council (2019) Plan:MK 2016-2031

11.2.6. Policy NE6, Environmental Pollution, states:

*When considering development proposals, the Council will adopt the approach set out below to ensure that pollution will not have an unacceptable impact on human health, general amenity, biodiversity or the wider natural environment.*

*[...]*

D. Light pollution

1. Proposals that include external lighting schemes, including floodlighting, will be approved where it can be demonstrated through a Lighting Assessment that all of the following criteria can be satisfied:

a. The lighting scheme is the minimum required for security and operational purposes;
b. Glare and light spillage are minimised;
c. The amenity of residential areas is not adversely affected;
d. There would be no unacceptable adverse impact on the character and beauty, openness, tranquillity, dark landscapes or enjoyment of the night sky of the countryside;
e. The visual character of historic buildings and conservation areas are not adversely affected;
f. There would be no dazzling or distraction of drivers using nearby roads;
g. There would be no unacceptable adverse effects on species, habitats or the wider natural environment.

11.2.7. This ES Chapter seeks to demonstrate that the Proposed Development would fully comply with these policies.

## ILP Guidance notes for the reduction of obtrusive light

*11.2.8.* Professional design guidance is given in Guidance Notes for the Reduction of Obtrusive Light[1] (ILP Guidance Notes). This guidance is intended to be used in the planning context and can be applied through planning conditions. It sets out best practice for lighting design and control of obtrusive light (light pollution), defines environmental zone categories based on their capacity to absorb lighting effects, and gives guidance on the limitation of obtrusive light in terms of sky glow, glare and light trespass for each category. It therefore echoes the approach set out in the National Planning Policy Framework that impacts can and should be controlled by appropriate design.

11.2.9. ILP Guidance Notes recommends that the immediate environment is classified systematically as shown in Table 11.1.

**Table 11.1 - ILP Guidance Notes environmental zones**

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

**Source: ILP**

11.2.10. ILP Guidance Notes then makes recommendations for limiting obtrusive light (light pollution) appropriately according to the environmental zone in which the lighting would be situated. The stringency depends on the capacity to absorb lighting effects, with E0 requiring the tightest level of control and E4 the lowest.

1 Institution of Lighting Professionals (2020) Guidance Note 01/20 – Guidance notes for the reduction of obtrusive light

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## 11.3 ASSESSMENT METHODOLOGY & SIGNIFICANCE CRITERIA

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# 11.3 RELEVANT POLICY

## METHODOLOGY – GENERAL

11.3.1. The assessment methodology is qualitative and desk based, looking at the likely effects of the Proposed Development during both construction and operation. The baseline conditions are determined by the existing provision of lighting on the Application Site and in the surrounding area.

11.3.2. The methodology is based on the principles set out in Guidance on Undertaking Environmental Lighting Impact Assessments[1] . This guidance is supplemented for this assessment by Controlling Light Pollution and Reducing Energy Consumption[2] which introduces additional assessment parameters that are particularly relevant for rural settings. Reference is also made to ILP Guidance Notes.

### Study area

11.3.3. Lighting effects can be experienced over a considerable distance and therefore the area for assessment includes receptors with more distant views in the direction of the Application Site as well as those closer to the Application Site.

### Baseline condition methodology

11.3.4. The night time baseline condition is assessed by a combination of desk study and night time survey, taking in sensitive receptor viewpoints. The location, type and intensity of existing sources of light is identified in relation to each viewpoint and the sensitivity of each receptor to any future change in the lighting conditions is judged. As far as possible night time surveys are conducted in good weather.

### Effect assessment and significance

11.3.5. Artificial lighting can give rise to several types of light pollution impact. Details are given in Appendix 11.1. Their relevance for different receptors types is set out in Table 11.2 below.

**Table 11.2 - Receptor types and lighting effects**

| Category of receptor | Surrounding |
|---|---|
| **(A) Residential properties within 100m of new lit development** | (1) Nuisance: excessive illumination falling on bedroom windows<br>(2) Nuisance: glare causing visual disability or discomfort<br>(3) Loss of amenity: light spill onto property/gardens, changing their character after dark<br>(4) Visual: light presence – light sources and other lit elements appearing in dark views<br>(5) Visual: local sky glow appearing over new lit development |
| **(B) Residential properties more than 100m away from new lit development** | (4) Visual: light presence – light sources and other lit elements appearing in dark views<br>(5) Visual: local sky glow appearing over new lit development |
| **(C) Night time views from dark non-residential areas** | (4) Visual: light presence – light sources and other lit elements appearing in dark views<br>(5) Visual: local sky glow appearing over new lit development |
| **(D) Transport (roads, railways, airports, navigation)** | (7) Hazard: glare causing visual disability<br>(8) Hazard: light sources affecting visibility and interpretation of signals, runway lights, etc. |
| **(E) Night sky views** | (6) Visual: general brightening of night sky, reducing visibility of stars and affecting astronomical observation |

1 Institution of Lighting Professionals (2013) Professional Lighting Guide 04: Guidance on Undertaking Environmental Lighting Impact Assessments

2 Scottish Executive (March 2007) Controlling Light Pollution and Reducing Energy Consumption

| Category of receptor | Surrounding |
|---|---|
| **(F) Light-sensitive ecology close to new lit development** | (9) Disturbance: light spill onto dark habitat, reducing its ecological value (esp. in relation to bats)<br>(10) Disturbance: UV light emission, affecting airborne invertebrates |

Source: Vanguardia Ltd

11.3.6. The magnitude of a lighting effect is assessed as a change from the baseline condition, taking into account the relative scale of the new effect. To do this, a Lighting Strategy has been set out for the Proposed Development and is included in Appendix 11.2. The Strategy is based on employing best practice design principles as appropriate to the sensitivity of the Application Site's surroundings, with a view to preventing adverse effects or, where that is not possible, keeping them to the absolute minimum. It sets out the parameters and characteristics of the lighting systems and their performance, and thus defines the principles of a future detailed lighting strategy ahead of the precise details regarding the location of all lighting on the Proposed Development.

11.3.7. The magnitude of a lighting impact is assessed on the basis that this Strategy has been implemented. The details of the position, specification and number of lighting units would be prepared and submitted in accordance with the principles of the Lighting Strategy, for agreement by the Local Authority post approval of the application.

11.3.8. Table 11.3 sets out the criteria for assessing the magnitude of impacts.

**Table 11.3 - Lighting impact magnitudes**

| Magnitude of impact | Criteria for assessing impact |
|---|---|
| **Large** | The light pollution associated with the Proposed Development is considerably greater than the baseline situation, thus fundamentally changing the character of the nights-cape (visual impacts) or exceeding ILP Guidance Notes recommendations (nuisance, loss of amenity and hazard impacts). |
| **Medium** | The light pollution associated with the Proposed Development is of a similar mag-nitude to the baseline situation, thus noticeably adding to it, but not fundamentally changing the character of the nightscape (visual impacts) or exceeding ILP Guidance Notes recommendations (nuisance, loss of amenity and hazard impacts). |
| **Small** | The light pollution associated with the Proposed Development is discernible but its magnitude and type are not noticeably different from the pre-development situation. |
| **Negligible** | The light pollution associated with the Proposed Development is barely distinguisha-ble, approximating to a 'no change' situation. |

**Source: Vanguardia Ltd**

11.3.9. To assess the significance of lighting effects it is first necessary to determine the sensitivity of the receptors. This is set out in Table 11.4.

**Table 11.4 - Receptor sensitivity to lighting impacts**

| Sensitivity | Examples of receptor |
|---|---|
| **High** | Rural and dark landscapes. Views over significant water bodies and large unlit spaces. SSSIs and SINCs. Astronomical observatories. |
| **Medium** | Views with existing lighting visible in the middle distance or beyond. Larger villages. Conservation areas. Railways, major roads, aerodromes and navigable waterways. |
| **Low** | Urban and suburban environments. Commercial and industrial premises. |

**Source: Vanguardia Ltd**

11.3.10. The significance of a lighting effect is determined by the interaction of impact magnitude and receptor sensitivity. This is set out in Table 11.5. In some instances, a distinction is made between the significance of different types of lighting effects; see Table 11.2 and Appendix 11.1 for further information. For the purposes of this assessment, a significant effect is any effect greater than minor adverse.

**Table 11.5 - Significance matrix for lighting effects**

| Sensitivity | Examples of receptor | | |
|---|---|---|---|
| | High | Medium | Low |
| **Large** | Major | Major* / Moderate** | Moderate* / Minor** |
| **Medium** | Major* / Moderate** | Moderate* / Minor** | Minor |
| **Small** | Moderate* / Minor** | Minor | Negligible |
| **Negligible** | Negligible | Negligible | Negligible |
| *** for nuisance, loss of amenity and hazard effects ** for visual effects** | | | |

Source: Vanguardia Ltd

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## 11.4 BASELINE CONDITIONS

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# 11.4 BASELINE CONDITIONS

## NIGHT TIME SURVEY

11.4.1. A survey was carried out on 8th March 2017. The weather was calm and dry with some cloud cover and the moon phase was 85% full. Several locations were visited and photographs were taken. Details of the survey are given in Appendix 11.3.

### Assessment of baseline conditions

11.4.2. The surrounding rural area to the east of the Application Site is largely devoid of lighting, however on all other sides the Application Site is surrounded by illuminated conurbation and industrial/commercial estates.

11.4.3. The M1 motorway and A422, which border the Application Site, are largely unlit. Willen Road, on the other hand, which borders the eastern perimeter, is lit.

11.4.4. All views towards the Application Site, whether from rural areas to the east or from within built-up areas to the north, west and south, currently see significant evidence of lighting in terms of local sky glow and, usually, individual light sources.

11.4.5. Based on the assessments undertaken, and referring to the environmental zone categorisation set out in ILP Guidance Notes, rural sensitive receptors would be considered as lying within Environmental Zone E2 (defined as sparsely inhabited rural areas, village or relatively dark outer suburban locations), as would receptors on the extreme fringes of built-up areas, whereas receptors within built-up areas would be considered as lying within Environmental Zone E3 (well inhabited rural and urban settlements, small town centres of suburban locations).

11.4.6. Table 11.6 summarises the existing sources of light in the area.

**Table 11.6 - Existing sources of light**

| Type | Examples of receptor | |
|---|---|---|
| **Commercial, industrial and other non-residential areas** | Interchange Park, Blakelands Estate, Tongwell industrial/ commercial area. | Floodlighting and area lighting, principally with white light sources. |
| **Highways** | Willen Road, A422 roundabouts. | High pressure sodium lighting, currently in process of being upgraded to white light LED lighting units giving rise to less light pollution. |
| **Conurbations** | Milton Keynes, Newport Pagnell. | High pressure sodium and low pressure sodium lighting, currently in process of being upgraded to white light LED lighting units giving rise to less light pollution. |

**Source: Vanguardia Ltd**

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## 11.5 ASSESSMENTS OF LIKELY SIGNIFICANT ENVIRONMENTAL EFFECTS

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# 11.5 ASSESSMENTS OF LIKELY SIGNIFICANT ENVIRONMENTAL EFFECTS

## CONSTRUCTION

11.5.1. Construction related effects are temporary by nature and change over the course of the construction period. Measures to prevent light spill and glare as well as to minimise the usage of lighting during the construction phase will be contained in a Construction Environmental Management Plan (CEMP) or similar provision.

11.5.2. Details of the significance of effects on receptors during construction have been determined and are given in Appendix 11.4. No significant effects are predicted.

### Operation

11.5.3. Lighting will operate in all external working areas in order to provide a safe and secure working environment after dark. The design principles to be applied to the external lighting on the Proposed Development are set out in the Lighting Strategy given in Appendix 11.2 and the assessment of potential lighting effects in this ES chapter is based on this Strategy, in conjunction with proposed landscaping and planting.

11.5.4. Details of the significance of effects on receptors during operation have been determined and are given in Appendix 11.4. No significant effects are predicted.

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## 11.6 MITIGATION

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# 11.6 MITIGATION

11.6.1. Construction: The CEMP (or similar provision) will ensure that, inter alia, any potentially significant lighting effects are already sufficiently mitigated. No further mitigation is considered necessary.

11.6.2. Operation: The Lighting Strategy (Appendix 11.2) in conjunction with proposed landscaping and planting will incorporate all necessary mitigation and design measures (embedded mitigation) to limit adverse lighting effects. No further mitigation is considered necessary.

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## 11.7 RESIDUAL EFFECTS

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# 11.7 RESIDUAL EFFECTS

11.7.1. The residual effects will be as set out in Appendix 11.4.

11.7.2. As a result of the proposed approach to mitigation and associated design measures, including the principles set out in the Lighting Strategy, all residual effects are considered minor adverse or negligible and are therefore not significant.

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## 11.8 CUMULATIVE EFFECTS

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# 11.8 CUMULATIVE EFFECTS

11.8.1. With regard to cumulative impacts, this assessment has considered the remainder of the Milton Keynes East Strategic Urban Extension, which is allocated through Plan:MK.

11.8.2. The allocation is being delivered through three separate planning applications, delivering housing and employment. The collective allocation will inevitably introduce light into the environment and each submission will evaluate its own lighting impacts.

11.8.3. The Application Site is separated from the remainder of the site allocation by Willen Road. As such, the Application Site forms a discrete parcel of land in the wider allocation which is already segregated from the wider scheme by a corridor of lighting (along Willen Road).

11.8.4. In this context, it is not anticipated that the light produced by the Proposed Development will have an interrelationship with the committed development to its east which would result in any significant lighting effects. This is specifically the case due to the proposed lighting mitigation and best practice standards which will be employed on the site combined with the use of modern lighting methods which will be employed on the Application Site and are expected to be used on the adjacent sites, all of which should minimise light pollution.

11.8.5. The surrounding area already contains a significant amount of lighting and the Proposed Development will contribute little to these prevailing conditions; indeed, it is expected that the lighting for the Proposed Development will be limited to the Application Site itself, leading to little discernible change to the surrounding area.

11.8.6. In this overall regard it is therefore considered that there are no committed developments that could lead to likely significant cumulative lighting effects on the environment when considered with the Development.

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## 11.9 CLIMATE CHANGE

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# 11.9 CLIMATE CHANGE

11.9.1. External lighting associated with the Proposed Development will not directly contribute to climate change, nor will it be affected by climate change. It will indirectly contribute only insofar as its comparatively low consumption of electricity is derived from fossil fuel generation rather than renewables.

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## 11.10 CONCLUSIONS

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# 11.10 CONCLUSIONS

11.10.1. The Proposed Development will include external lighting that has the potential to give rise to adverse effects. This is to be seen in the context of the existing conditions in the surrounding area, which already contains a significant amount of lighting.

11.10.2. A Lighting Strategy (Appendix 11.2) has been set out enabling assessment of potential operational lighting effects on sensitive receptors. The Strategy will minimise light pollution in all its forms to appropriate levels.

11.10.3. The assessment has found that no significant effects (that is, an effect exceeding minor adverse) are likely. Thus it has been demonstrated that lighting associated with the Proposed Development would comply with Local Policy.

11.10.4. A detailed lighting strategy, including specific details on the position and type of lighting units to be used for the built (operational) lighting, will be provided in response to planning conditions if required. The detailed strategy will conform with the assumptions and approach set out in this ES Chapter, including the Lighting Strategy given in Appendix 11.2.