

LAND TO THE EAST OF LONGWATER ROAD, FINCHAMPSTEAD

Lighting Impact Assessment

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Land to the East of
Longwater Road - Lighting
Impact Assessment
LIA-P03
13 June 2024

LIGHTING IMPACT ASSESSMENT

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Prepared by:

Prepared for:

RPS

**Catesby Estates Limited and
Stonebond Properties (Guilford) Limited**

Rajendra Patel
Technical Director - Building Services

1 Newhall Street
Birmingham, West Midlands B3 3NH

T +44 121 622 8520
E rajendra.patel@rpsgroup.com

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ISSUE	DATE	REMARKS
LIA-P01	April 2024	First Issue – Draft.
LIA-P02	May 2024	Report title corrected. Amendments made to clauses 1.1, 3.3, 4.4, 10.3. Clauses 2.6 and 2.7 added. Site plan updated.
LIA-P03	June 2024	Clause 4.4 amended.

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1 INTRODUCTION

- 1.1 A full planning application is to be made for erection of 40 No. dwellings (Use Class C3), together with associated outdoor space and landscaping, drainage infrastructure, hard and soft landscaping, parking, access, and associated works. ("the Site"):
- 1.2 This report assesses, in terms of artificial lighting, the likely effects of the Site. It incorporates a summary of the impacts which are detailed in Table 10.2.
- 1.3 The report describes the:
- assessment methodology;
 - baseline conditions at the Application Site and surroundings;
 - likely environmental effects;
 - mitigation measures required to prevent, reduce or offset any adverse effects;
 - likely residual effects after these measures have been employed.

2 PLANNING POLICY CONTEXT

2.1 National Legislation

European Union (EU) legislation forms the basis for defining light pollution in the UK. The EU Environmental Impact Assessment (EIA) Directive 85/337/EEC came into force in 1985 and applies to a wide range of public and private projects, specifically concerns the use of artificial lighting and its effects upon the environment.

The Environmental Protection Act 1990ⁱⁱ is an Act of UK Parliament that defines, as of 2008, within England and Wales and Scotland, the fundamental structure and authority for waste management and control of emissions into the environment, including that of artificial lighting. The Environmental Protection Act, Part III, Section 79 - Statutory Nuisances states that artificial light emitted from premises may be interpreted as having adverse effects towards health and may lead to nuisances.

British Standards Institution, BS EN 12464-2 – Lighting of Work Places – Part 2, Outdoor Work Places outlines the specific lighting requirements to enable people to perform outdoor visual tasks efficiently and accurately, especially during the hours of darkness. The degree of visibility and comfort required in a wide range of outdoor places is governed by the type and duration of activity. This standard specifies requirements for lighting of tasks in most outdoor places and their associated areas in terms of quantity and quality of illumination.

Other national legislation includes:

- British Standards Institution, BS EN 13201-2 – Road lighting – Part 2, Performance requirements. This national legislation outlines the standards for the lighting of roadways.
- The Chartered Institute of Building Services Engineers (CIBSE) Lighting Guide. This national legislation outlines outdoor lighting design considerations. The document provides valuable assistance for lighting designers to make decisions about how the health and safety of the environment is enhanced, whilst considering the visual pleasantness of artificial lighting in urban and rural areas.

2.2 National Planning Policy Framework (NPPF) (December 2023)

Section 15 of the NPPF, titled “Conserving and enhancing the natural environment”, paragraph 191, discusses the approach to minimising the impact of light pollution.

- “191c). 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 limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

2.3 Planning Practice Guidance (PPG) Natural Environment

This Guidance details key issues in implementing policy to regulate artificial light and light pollution. The guidance identifies that artificial light offers valuable benefits to society. It also identifies artificial light is not always necessary and has the potential to create '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.

PPG outlines the possibility of when light pollution may arise. This can be defined as below:

- Does the new development proposal, materially alter light levels outside the development and/or have the potential to adversely affect the use or enjoyment of nearby buildings or open spaces?
- Does an existing lighting installation make the proposed location for a development unsuitable, for example, this might be because:
 - the artificial light has a significant effect on the locality;
 - users of the proposed development (e.g. a hospital) may be particularly sensitive to light intrusion from the existing light source.
- Does the proposal have a significant impact on a protected site or species e.g. located on, or adjacent to, a designated European site or where there are designated European protected species that may be affected?
- Is the proposed development in or near to a protected area of dark sky or an intrinsically dark landscape where it may be desirable to minimise new light sources?
- Are forms of artificial light with a potentially high impact on wildlife (e.g. white or ultraviolet light) being proposed close to sensitive wildlife receptors or areas, including where the light shines on water?
- Does the proposed development include smooth, reflective building materials, including large horizontal expanses of glass, particularly near water bodies because it may change natural light, creating polarised light pollution that can affect wildlife behaviour)?

2.4 Local Policy - Living Streets a Highways Guide for Developers in Wokingham

- The Developer is responsible for providing street lighting on all new roads and footpaths for adoption unless there is agreement with Wokingham Borough Council (WBC) that the site should not be lit.

- All developments of 5 dwellings or more should also have street lighting unless otherwise agreed in writing by WBC.
- New lighting must comply with current British Standards [including Electrical Standards] as well as WBC Street lighting design standards.
- Consultation with Parish Councils is advised with regards design and location.
- All street lighting layouts and equipment specifications on new housing developments will require acceptance from WBC before they are accepted as part of an agreement to adopt a road as public highway.
- All street lighting energy charges will be paid by the developer until the lights are adopted by WBC.

2.5 Local Policy – WBC Highway Maintenance Management Plan - Volume 8 – Street Lighting

- The amount of upward light from the lantern should be kept to a minimum.
- Seek to minimise the amount of streetlight needed whilst providing a better light appearance through the use of white light.
- Part-night lighting is a principle adopted by the council in order to use night-time lighting only where needed. Any light can be considered for part night operation, i.e. be switched off from 00:30am to 5:30am.
- In some cases, street lighting may be considered by the council as unnecessary on new developments.

2.6 Local Policy – Draft Local Plan Update Wokingham Borough Council

Policy NE6: Landscape Character, Value and Green Routes states “Development proposals must take into account key characteristics and sensitivities of the landscape, in order to safeguard intrinsic character, scenic beauty and perceptual qualities, for example tranquillity and dark skies, as set out in the Landscape Character Assessment.”.

2.7 Local Policy – Finchampstead Neighbourhood Development Plan - Local Green Spaces -Topic Paper

The Moor Green Lakes and Manor Farm gravel extraction quarry located to the south of the Site is cited as an area popular for its beauty and tranquillity.

3 ASSESSMENT METHODOLOGY

- 3.1 Guidance Note¹ for the Reduction of Obtrusive Light 2021, (GN01-21), published by the Institute of Lighting Professionals (ILP) and Town and Country Planning (Environmental Impact Assessment) Regulations 2017 provide the basis for the methodology of this assessment.
- 3.2 The Site was visited on 22nd April 2024, during the daytime and again at night-time, to assess the general ambience from the Site itself and from each of the viewpoints discussed in Section 4 and which are detailed in Appendix A. From the visit an assessment of magnitude and significance was made. This was based upon the criteria and gradings provided in the significance matrix as follows:-

Table 3.1 : Significance Matrix

Sensitivity / Value of Receptor	Magnitude of Effect		
	High	Medium	Low
High (England/UK/International)	Major	Major/ Moderate	Moderate
Medium (County/Region)	Major/ Moderate	Moderate	Moderate/ Minor
Low (Local/Unitary Authority)	Moderate	Moderate/ Minor	Minor

- 3.3 It is important to consider the effects of lighting on different potential receptors of landscape. These receptors include:
- specific areas or features of historical or wildlife interest such as conservation areas, listed buildings, nature reserves or known populations of rare species. Viewpoints are taken to the south of the restored quarry site which is due to become a nature reserve;
 - dark landscapes and other relevant countryside designations that may be included in structure or local plans;
 - the appearance of the landscape by day, including the effects of lighting apparatus on skylines, key views, and landscape character generally;

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- local residents, especially where bedrooms may be affected by increased light levels at night;
- astronomers, including local observers and astronomical societies, as well as any scientific observatories; and
- motorists, cyclists and pedestrians, together with any traffic lights, junctions or transport signalling systems in the locality.

The aim is to identify and predict, in an appropriate level of detail, the effects of the proposed lighting on built heritage, local wildlife resources, the landscape and local communities during the construction phase and, finally, at occupancy of the development.

4 BASELINE CONDITIONS

- 4.1 The assessment site for the proposed development currently comprises farmland / grassland. There are no buildings on the site. The site, therefore, does not produce sky glow.
- 4.2 To the north of the site there are domestic dwellings on Wood Moor estate.
- 4.3 To the east of the site is farmland.
- 4.4 To the south is a restored quarry with features including footpaths, ponds, waterways and grassland.
- 4.5 Immediately to the west of the site is Longwater Road. Beyond Longwater Road is farmland.
- 4.6 Weather conditions during the survey were dry with light cloud.
- 4.7 The table below lists the potential receptors at the viewpoints used for the assessment which are graphically detailed in Appendix A.

Table 4.1: Receptor Locations

Viewpoint	Location	Visual Receptor(s)
VP1	PRoW	Users of Public Right of Way, local residents
VP2	Lower Sandhurst Road	Road users / pedestrians
VP3	Long Water Road	Road users / pedestrians
VP4	Long Water Road	Road users / pedestrians
VP5	PRoW	Users of Public Right of Way
VP5a	PRoW	Users of Public Right of Way
VP5b	PRoW	Users of Public Right of Way
VP6	PRoW	Users of Public Right of Way
VP7	PRoW (Eversley Footpath 23)	Users of Public Right of Way

5 LIKELY EFFECTS

5.1 Environmental Zone

In order to provide a guide with regard to the acceptable level of brightness within a site, the Environmental Zone in which the site is situated needs to be identified in accordance with the Institute of Lighting Professionals (ILP) Guidance Note for the Reduction of Obtrusive Light 2021, (GN01-21). From table 5.1, we would classify the Environmental Zone of the Site as being E2.

Table 5.1: Environmental Zones

Sensitivity	Definition
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

5.2 Receptor Sensitivity

The receptor groups are defined in order to identify their sensitivity in relation to the proposed development. This is dependent upon:

- the duration of the view of the proposed works or site;
- their interest in the visual environment; and
- their juxtaposition in relation to the site and resulting sightlines.

The sensitivity of the receptor groups is broadly defined as:-

Table 5.2: Receptor Sensitivity

Sensitivity	Definition
Critical	The duration of their view is continuous, dusk till dawn, • or their interest in the visual environment is critical. • or their activity requires excellent viewing conditions (For example train drivers). • or their juxtaposition to the site provides excellent sightlines.
High	The duration of their view is prolonged; dusk till dawn, • or their interest in the visual environment is high. • or their juxtaposition to the site provides good sightlines.
Moderate	The duration of their view is moderate; day and evening, • or their interest in the visual environment is low. • or their juxtaposition to the site provides moderate sightlines.
Low	The duration of their view is low; transient, • or their interest in the visual environment is low. • or their juxtaposition to the site provides poor sightlines.

5.3 Viewpoints

Each of the following viewpoints has been assessed in relation to the potential effects of lighting on the receptors. The potential effects identified generally take the form of sky glow, light presence and glare. Different receptor groups are affected to a greater or lesser extent dependent on their sensitivity. The table below summarises the receptor sensitivity at each of the viewpoints.

Table 5.2: Receptor at Viewpoint

Viewpoint	Visual Receptor(s)	Sensitivity at night
VP1	Local residents PRoW Users	Moderate N/A
VP2	Road users / pedestrians	Low
VP3	Road users / pedestrians	Low
VP4	Road users	Low
VP5	PRoW / nature reserve users	N/A
VP5a	PRoW / nature reserve users	N/A
VP5b	PRoW / nature reserve users	N/A
VP6	PRoW users	N/A
VP7	PRoW users	N/A

5.4 Summary

Based on an environmental zone classification of E2 the likely effects of the proposals are as follows:

- A slight increase in sky glow, site aura and light presence, during both construction and occupation, may be perceived by the local population and may result in the alteration of wildlife patterns in the area.
- A possible increase in light 'glare', during both construction and occupation, which may have an effect on the visual comfort of local residents.
- Temporary visual intrusion of the construction processes upon the surrounding landscape.

The above effects can be mitigated as detailed in the following section.

6 MITIGATION MEASURES

- 6.1 The final lighting scheme to the Proposed Development will need to be calculated and designed to meet the following criteria, regulations, standards and guidelines:

Regulations

- Health & Safety at Work etc, 1974
- Health & Safety Commission, Approved Code of Practice 1992
- Regulations 8 of the Workplace (Health, Safety and Welfare) Regulations 1992 (Lighting)

Good Practice Guidance

- International Commission on Illumination (CIE).
- CIE 115 - Recommendations for the lighting of roads for motor and pedestrian traffic Second Edition (2010)
- CIE 136-2000 Guide to the Lighting of Urban Areas (2000)
- Society of Light and Lighting (SLL) – Code of Lighting
- Society of Light and Lighting – Lighting Guides
- Society of Light and Lighting – Fact Files

British Standards Institution (BSI)

- BS EN 13201-2 Road Lighting
- BS5489-1: Code of practice for the design of road lighting Part 1 : Lighting of Roads and public amenity areas.

The Institution of Lighting Professionals (ILP)

- Lighting the Environment: A Guide to Good Urban Lighting, 1995 (ILP);

Bat Conservation Trust

- Artificial Lighting and Wildlife

- 6.2 Lighting solutions will be selected to avoid over-lighting thus reducing light pollution. Luminaires will be selected to minimise the upward spread of light near to, or above, the horizon. Luminaire controllers will reduce spill light and glare.

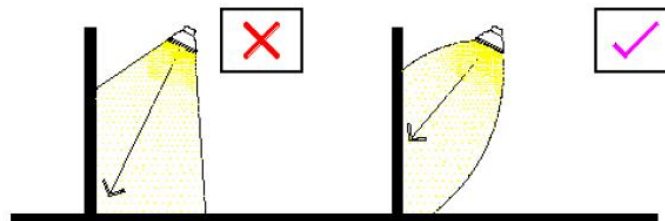
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6.3 Glare will be kept to a minimum by ensuring the main beam angle of luminaires directed towards any potential observer is kept below 70°. Higher mounting heights will allow for lower beam angles to be installed, which will assist in reducing glare.

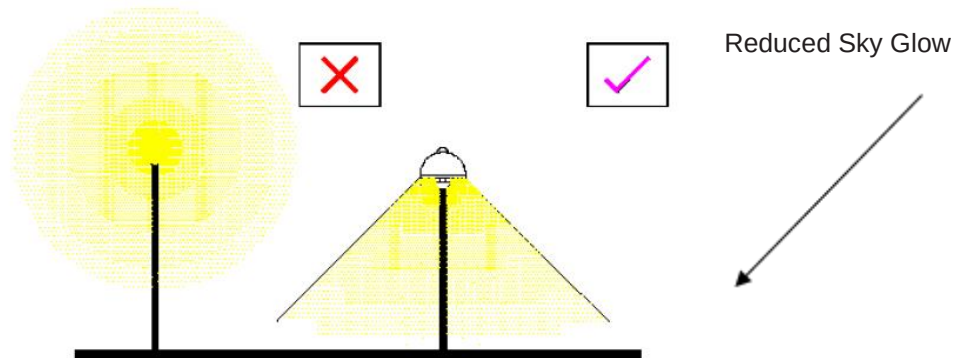
6.4 Solutions which will comply with the mitigation measures detailed above are set out below:-

- Lighting will be provided in the form of column mounted lanterns. Where possible, lanterns will be pointed into the development and away from the adjacent sites. The optics in the lanterns will control the distribution of light avoiding overspill, sky glow and glare.
- Glare will be kept to a minimum by ensuring the main beam angle of luminaires directed towards any potential observer is kept below 70°. Higher mounting heights allow for the provision of lower beam angles, which assists in reducing glare.

Spill Light evident in Example 1 may be reduced.



Obtrusive Sky Glow evident in Example 2 may be reduced.



6.5 In order to comply with recommendations made by the Bat Conservation Trust, the following measures will be implemented in the technology used to deliver the lighting installation:-

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- Use of narrow spectrum light sources to lower the range of species affected by lighting.
- Use of light sources that emit minimal ultra-violet light.
- Lights that peak higher than 550 nm.
- Avoidance of white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are installed in order to manage the blue short wavelength content they will be of a warm / neutral colour temperature >4,200 kelvin.

7 DESIGN PROPOSALS

7.1 Proposed Development

Street lighting will be provided in the form of column mounted LED lanterns similar to those detailed below. Lanterns will be pointed into the development and away from the adjacent sites. Lantern optics will control the distribution of light avoiding overspill, sky glow and glare. If required, street lighting will be provided with timeclock controls enabling switching off of fittings which will reduce the night time effect of the lighting installation on the surrounding environment.



Figure 7.1 Typical Dark Sky Compliant Lanterns

8 RESIDUAL EFFECTS

- 8.1 The assessment has identified that the application site is on the border of a residential location and for safety reasons, artificial light will be required. There are two adjacent residential estates. Wood Moor estate has no street lighting. Burnmoor Meadow benefits from LED lanterns. LED lanterns are dark-sky type. Long Water Road has intermittent street lighting at road junctions. The proposed lighting solution for the new residential development, if artificial lighting is required, will be based on BS5489-1 (P4 for low traffic flow).

Construction Effects

- 8.2 During the construction phase, there will be occasions when work extends into the hours of darkness, with the consequent need for vehicular lighting and task lighting for particular operations.
- 8.3 In order that the effect from lighting associated with the construction phase activities is minimised, measures will need to be incorporated to minimise light spill.
- 8.4 Additional measures, such as anti-glare barriers could also be provided, where deemed appropriate.
- 8.5 Any new sources of lighting would be temporary and short term during this phase. On this basis the effect of lighting during the construction phase is considered to be Minor Adverse.

Effects on Completion and Occupation

- 8.6 On completion and occupation, artificial lighting will be present. By use of dark sky compliant lanterns and the avoidance of over lighting, light spill will be minimised. Luminaires will be installed facing into the Site.
- 8.7 Overall, although the introduction of artificial lighting at the site will have an effect, the mitigation measures incorporated into the design will mean that the significance of the impact is considered to be Minor Adverse.

9 CUMULATIVE EFFECTS

- 9.1 The likely cumulative effect of artificial lighting may be a slight increase in sky glow when viewed locally to the Site.

10 SUMMARY

- 10.1 The existing site currently consists of unlit grassland / farmland. The proposed lighting solution will be sympathetic to the local surroundings to avoid over lighting, sky glow and glare.
- 10.2 The lighting solution will need to provide greater levels of light than the baseline conditions, to comply with current standards and to provide a safe and secure environment for residents.
- 10.3 The proposed lighting solution for the residential areas will be based on BS5489-1:2020 Class P4 scheme (for low traffic flow) producing an average illuminance of 3 lux and other roads appropriate to the class of use. Where ecology surveys have identified the presence of bat species through the site, the movement patterns will affect the street lighting design and areas of “dark corridor” will need to be maintained.
- 10.4 By careful selection and location of luminaires the development will be successfully lit with minor adverse effects to the adjacent areas.
- 10.5 The potential effects will be managed such that the potential increase in the general ambience of the area will be balanced against the overall existing illuminance in order to minimise sky glow.
- 10.6 The overall impact of the lighting to the Site will be Minor Adverse based on **Table 10.1:** Residual Effects taken from Professional Lighting Guide – PLG 04 – Guidance on Undertaking Environmental Lighting Impact Assessments – Institute of Lighting Professionals).

Table 10.1: Residual Effects				
Nature	Ref	Level	Descriptions	Remedial needs
Positive	1	Major/substantial beneficial effects	Significant improvement in night environment and/or reductions in glare, spill light and sky glow etc	
	2	Moderate beneficial effects	Noticeable improvement in night environment and/or reductions in glare, spill light and sky glow etc	
	3	Minor beneficial effects	Slight improvement in night environment and/or reductions in glare, spill light and sky glow	
Neutral	4	None/negligible	No significant effect or overall effects balancing out.	None
Negative	5	Minor adverse effects	Slight increase in visibility of site, glare, and sky glow etc	Develop appropriate levels and type of mitigation
	6	Moderate adverse effects	Noticeable increase in visibility of site, glare, and sky glow etc	
	7	Major adverse effects	Significant problems with increase in visibility of site, glare, and sky glow etc	

- 10.7 **Table 10.2** contains a summary of the likely effects of the proposed development.

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Table 10.2: Level of Effect – Lighting

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)	
				I	UK	E	R	C	B	L		
Construction												
Increase in sky glow, site aura and light presence to local residences.	Temporary	Major	Minimise site glow and use of anti-glare barriers.							√	Minor Adverse	
Increase in light 'glare' to local residences.	Temporary	Moderate	Minimise site glow and use of anti-glare barriers.							√	Minor Adverse	
Increase in light 'glare' to drivers on local roads	Temporary	Minor	Minimise site glow and use of anti-glare barriers.							√	Minor Adverse	
Temporary visual intrusion of the construction processes to local residence	Temporary	Moderate	Minimise site glow and use of anti-glare barriers.							√	Minor Adverse	
Completed Development (change of use from farmland / grazing land to residential area)												
Increase in sky glow, site aura and light presence	Permanent	Major	Specification of dark sky compliant luminaires and avoid over lighting. Time-clock controlled circuits will reduce the overall night-time impact of the artificial lighting installation.							√	Minor Adverse	
Increase in light 'glare' to local residences	Permanent	Moderate	Specification of dark sky compliant luminaires and avoid over lighting.							√	Minor Adverse	
Increase in light 'glare' to drivers on local roads	Permanent	Minor	Specification of dark sky compliant luminaires and avoid over lighting.							√	Minor Adverse	
Cumulative Effects to site												
Increase in sky glow, site aura, light presence and glare.	Permanent	Moderate	Specification of dark sky compliant luminaires and avoid over lighting.							√	Minor Adverse	

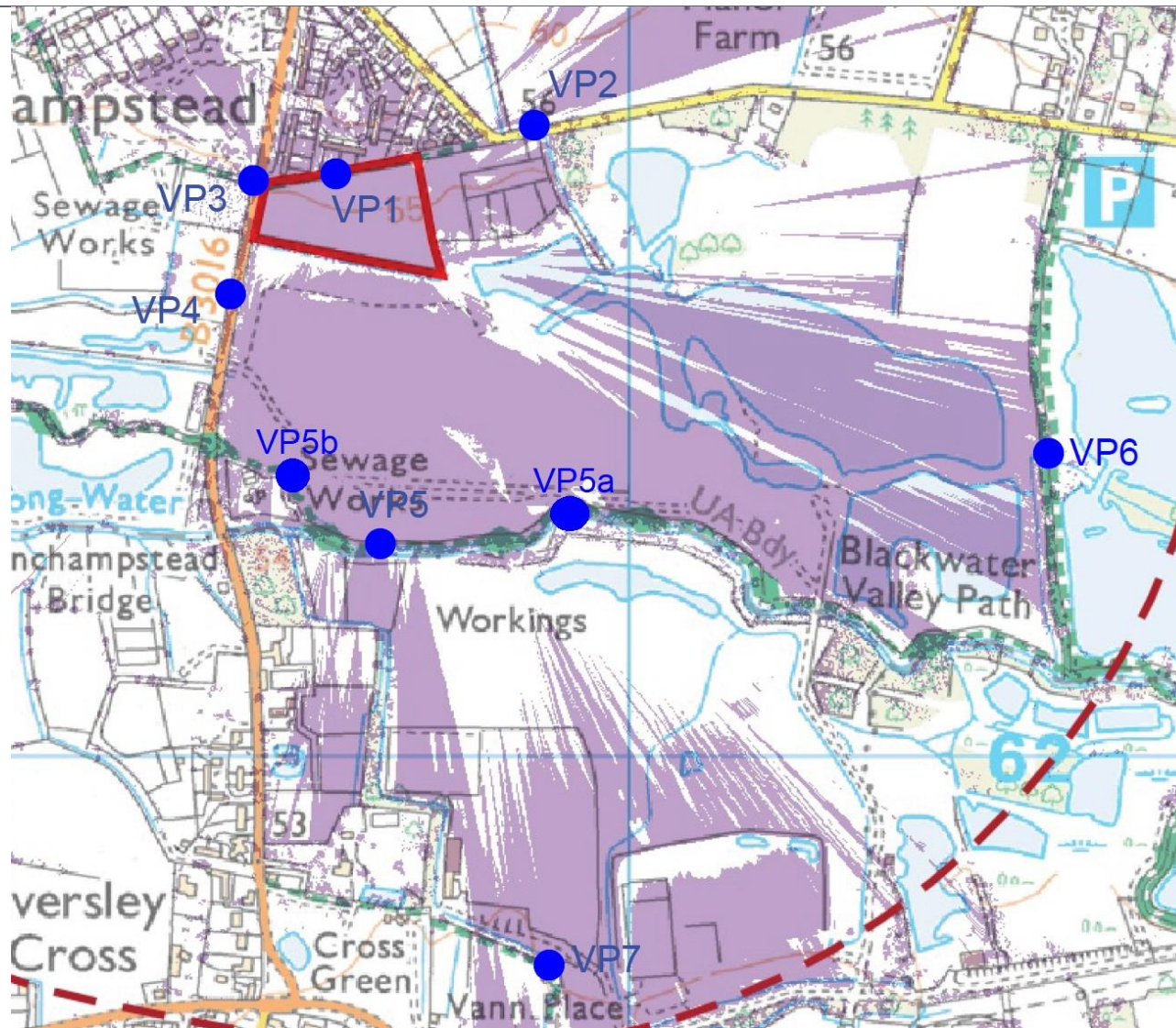
*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

Appendix A

Viewpoints

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Appendix B

Viewpoint Photographs

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	Day	Night
VP1		
VP2		
VP3		

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	Day	Night
VP4		
VP5		
VP5a		

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	Day	Night
VP5b		
VP6		
VP7		 (Glow of light from cricket centre)

Appendix C

Site Layout

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