

**On behalf of
Kraft Foods UK Ltd and
Barwood Developments Ltd**

**Southam Road Retail Park,
Banbury**

Lighting Assessment

Project Ref: 26004/009

Doc Ref: Rev002

March 2012

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Document Control Sheet

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| For and on behalf of Peter Brett Associates LLP | | | | |

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1 Introduction

1.1 Background

- 1.1.1. Peter Brett Associates LLP (PBA) has been commissioned by Barwood Developments Ltd to undertake a Lighting Assessment in support of an outline planning application for new retail units, a food store, petrol filling station, associated access including a new junction and car parking.
- 1.1.2. The Application Site is 5.63 hectares and is located 800m to the north west of Banbury town centre in Oxfordshire and forms a proportion of the southern part of a site currently occupied by Kraft Foods UK. There is existing commercial development to the east and west of the site beyond Ruscote Avenue and Southam Road and immediately to the north of the proposed retail park site lies Kraft Foods UK. A Kraft staff car park lies to the west of the Application Site, and a green area and cemetery to the south east. Existing residential areas served from Nursery Drive are located to the south west of the site. An Application Site location plan is provided in Appendix A.
- 1.1.3. This report describes a desktop assessment which considers the existing levels of lighting in the area of the proposed development. The potential requirement of artificial lighting arising from construction activities and the operational phase of the development are considered with light pollution control measures recommended. Cherwell District Council's requirements are noted in section 3.1 which also describes how these have been addressed.
- 1.1.4. It is concluded that, if the recommended control measures are implemented at the detailed design stage, the proposed lighting levels would be in keeping with the surrounding environment, and would not result in adverse impact on identified receptors.

2 Policy, Legislation and Guidance

2.1 National Policy

- 2.1.1. **PPS 1** states that "...Development plan policies should take account of environmental issues such as: ...noise and light pollution..."
- 2.1.2. **PPS 23** states that "...the need to limit and, where possible, reduce the adverse impact of light pollution, e.g. on local amenity, rural tranquillity and nature conservation should be considered in the preparation of development plan documents and where material within individual planning applications..." The introduction to PPS 23 advised that an Annex on Planning and Light Pollution would be prepared for consultation in due course, but this has not yet been issued.

Local Policy

- 2.2.1. The Draft Core Strategy published by Cherwell District Council in 2010 allocates the majority of the site for employment development. Full details of the planning policy context are set out in the accompanying planning supporting statement submitted with this application.
- 2.1.3. Cherwell District Council's planning application validation document states the following:

"Proposals involving the provision of publicly accessible developments, in the vicinity of residential property, a listed building or a conservation area, or open countryside, where external lighting would be provided or made necessary by the development, should be required to be accompanied by details of external lighting and the proposed hours when the lighting would be switched on. These details shall include a layout plan with beam orientation and a schedule of the equipment in the design."

2.2 Guidance

- 2.2.2. The Institution of Lighting Professionals (ILP) *Guidance Notes for the Reduction of Obtrusive Light*, (2011) provides advice on lighting including the recommendation to local planning authorities to specify Environmental Zones for exterior lighting based on the existing external lighting levels in the area. The document also provides design guidance including maximum lighting level limits for each environmental zone.
- 2.2.3. DCLG guidance *Lighting in the Countryside: Towards Good Practice* (1997) provides advice on the assessment of lighting schemes in the countryside and recommends good practice measures. The document provides advice on the principles of lighting and the effects on people and the environment; gives guidance on how to prepare, design and assess lighting schemes and suggests how local authorities can implement the recommendations within their policies.
- 2.2.4. The document *Assessment of the Problem of Light Pollution from Security and Decorative Light* produced by Temple and NEP Lighting Consultancy on behalf of Defra is a summary of current legislation and guidance relating to external artificial lighting. The document is aimed at providing advice to local authority officers on assessing whether lighting is causing a statutory nuisance, and providing advice on how to mitigate such impacts

2.3 Legislation

- 2.3.1. The Clean Neighbourhoods and Environment Act 2005 (CNEA) amended the Environmental Protection Act 1990 to include within section 79 (statutory nuisance "...artificial light emitted from premises so as to be prejudicial to health or a nuisance..." Therefore since 6 April 2006, artificial light can be considered to be a statutory nuisance. If a light nuisance is

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considered by a local authority to exist, the local authority must serve a notice on the person responsible requiring the abatement of the nuisance, and/or restricting or prohibiting it's recurrence.

3 Methodology

3.1 Scope

- 3.1.1. The scope for assessment was confirmed by email with the EHO at Cherwell District Council (CDC), Rob Lowther on Tuesday 3rd January 2012. A copy of the email correspondence is provided in Appendix C. Assessment will be undertaken in accordance with the guidelines noted in section 2 of this report. It was noted by CDC that a reasoned argument for defining the site and its surroundings in a specific category was required and that a desk based study would be adequate.
- 3.1.2. It was also noted that the following is required - the location, type, mounting height and aiming angle of individual lighting elements together with a description and specification for the luminaires to be used along with a ground level lighting plot. Whilst this level of detail is not available at the outline design stage, this report sets control measures for lighting based on the baseline assessment and recommends the detail which is to be submitted at the detailed design stage. This requirement can form the basis of a condition associated with a planning consent.

3.2 Baseline data

- 3.2.1. A desk study has been undertaken to identify the current baseline conditions and Environmental Zone of the site in accordance with the ILP guidance notes for the reduction of obtrusive light (2011). This should be confirmed prior to the development of any lighting scheme for the proposed development.

3.3 Assessment

Parameters for assessment

- 3.3.1. This assessment is based on the plan 0200 Rev C as shown in Appendix B.
- 3.3.2. To the west of the application site, adjacent to the existing staff car park, the master plan indicates there will be a small area of additional staff car parking, delivery areas and retail units A-G. East of the retail units and also on the southern boundary of the site there are large car parking areas. A food store with petrol filling station is located in the northern central portion of the site with associated delivery areas. A new junction is proposed on the eastern boundary.

Receptors Considered

- 3.3.3. The following receptors are considered to be sensitive to light pollution and were considered in the context of the site and surroundings:

Table 1 Sensitive Receptors

| Receptor | Description |
|------------------------------|---|
| Dwellings | Light intrusion into windows, awareness of external lighting, especially where bedroom windows may be affected by increased light levels at night; security and feelings of improved safety |
| Historical/Wildlife Features | Such as conservation areas, listed buildings, nature reserves or known populations of rare species. Effects can be beneficial. |
| Astronomers | Including local observers and astronomical societies, as well as |

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| Receptor | Description |
|------------------|---|
| | any scientific observatories |
| Dark Landscapes | AONBs, National Parks and any other relevant countryside designations that may be included in Structure or Local Plans |
| Landscape by Day | The appearance of the landscape by day, including the effects of lighting apparatus on skylines, key views, and landscape character generally |
| Road Users | Motorists, cyclists and pedestrians, together with any traffic lights, junctions or transport signalling systems in the locality |

Assessment

- 3.3.4. A qualitative assessment has been undertaken to establish if any receptors will be affected by the following forms of obtrusive light.

Sky Glow – The brightening of the night sky above our towns, cities and countryside

Glare – The uncomfortable brightness of a light source when viewed against a dark background

Light Intrusion – The spilling of light beyond the boundary of the property or area being lit.

- 3.3.5. Exact details of the lighting design are not yet known, however, potential requirements for outdoor lighting are identified within this chapter. Potential receptors to light from these identified requirements are identified and a design target is recommended, based on the ILP Guidelines (2011).

4 Baseline Conditions

4.1 The Site

- 4.1.1 The locational context of the Application Site is set out in section 1. The site is currently occupied by Kraft Foods UK and is contiguous with the full extent of the operational Kraft Foods UK site off Ruscote Avenue and Southam Road. The site currently comprises a large warehouse unit and ancillary offices with associated car parking and servicing areas. There is external lighting associated with the existing usage at the site.
- 4.1.2 An extended phase 1 habitat survey undertaken in 2010¹ identified that the trees, hedgerows and to a limited extent the stream on site all provide some suitability for foraging bats. These should be considered as sensitive receptors to light where retained.

4.2 Site Surroundings

- 4.2.1. The site is bordered immediately to the east by Southam Road (A361) which is lit, beyond which a large commercial area is located containing a number of units. It is assumed that these units have external security lighting and car park lighting.
- 4.2.2. The operational Kraft site and factory buildings adjoin the Application Site to the north. To the north west is Ruscote Avenue (the A422) and a large retail park beyond. The A422 continues to the west of the Kraft site.
- 4.2.3. To the west of the Application Site is a small green area and a staff car park which will be retained by Kraft and is lit by flood lighting from the periphery. Beyond the car park to the south west are the closest residential properties to the Application Site, located in the Neithrop area of Banbury. Lighting in this area includes typical residential street lighting columns.
- 4.2.4. The south eastern edge of the site is bordered by Banbury Cemetery, which is a 21 acre site comprising scattered mature trees and grassland with no obvious lighting. The phase 1 habitat survey predominantly considered the on site effects of proposals. However, it identified that the site is likely to provide foraging opportunities for pipistrelle bats, particularly in combination with the cemetery, which comprises abundant tree cover.
- 4.2.5. The Neithrop Cutting SSSI, is located 1.2km to the West of the site. Tooley's Boatyard is a scheduled ancient monument 0.75km to the south east. Given the distance of the site from any designated sites and the intervening built development, it is unlikely that development proposals will have any direct or indirect impacts on the features for which they were designated.
- 4.2.6. An internet search has not revealed any Astronomical Societies based in Banbury.
- 4.2.7. With regards to the ILP *Guidance Notes for the Reduction of Obtrusive Light*, it is considered that The Environmental Zone for the wider commercial area including the site is likely to be E3: Medium district brightness area. Some large commercial areas to the north and east potentially even fall into E4: High district brightness.
- 4.2.8. Due to the lack of lighting present in the cemetery to the south of the site that area is likely to be classified as E2: Low District brightness area.

¹ Ecosulis Ltd (2010) Extended Phase 1 Habitat Survey of Land at Kraft, Southam Road, Banbury, Oxfordshire

5 Lighting Requirement

5.1 Construction

- 5.1.1. During the construction phase, lighting may be required on site after dusk during the winter months, and overnight for security of the site compound (offices, facilities etc).

5.2 Operation

- 5.2.1. External lighting will be required to comply with road safety, personal safety and crime reduction objectives as well as for commercial marketing purposes.
- 5.2.2. The completed development will include external lighting to the following areas:
- **Building Peripheries** (retail units and food store) particularly frontages
 - **Unloading and servicing areas** (including recycling centre and petrol filling station)
 - **Car parking** – HGV, retail and food store car parking. The retail parking will be lit during the hours of darkness when the stores are operational to the public to an appropriate standard to provide sufficient levels of illumination to act as a visual aid and to create a safe environment.
 - **Access Roads and new junction**
 - **Footpaths**

5.3 Key Receptors and Potential Impact

- 5.3.1. Key receptors include:
- Dwellings - Closest dwellings to the south west could be affected by light intrusion from the new retail units and delivery areas, although this will be buffered by the staff car park to be retained and dwellings may already be affected by lighting in the car park and the existing commercial development on the site.
 - Historical/Wildlife Features – No historic receptors identified. Potential for bat habitat in the cemetery to the south east and any retained hedgerows and trees on site. Artificial lighting can affect bats by:
 - Illuminating a bat roost creates disturbance (no bat roosts identified)
 - Impact on the feeding behaviour of bats - many night flying species of insect are attracted to light
 - Bright light may reduce social flight activity and cause bats to move away from the light area (although pipistrelle bats swarm around white mercury street lights)
 - Artificial lighting is thought to increase the chances of bats being preyed upon. Lighting can be particularly harmful if used along river corridors, near woodland edges and near hedgerows used by bats.
 - Astronomers – None identified but refer to discussion on dark landscapes
 - Dark Landscapes – Potential for effects of sky glow which could be observed from

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dwellings and landscapes. There is likely to be an existing sky glow effect in the area.

- Landscape by Day – The appearance of light fittings is outside the scope of this study
- Road Users - Road users on the A361 (Southam Road) and the proposed new junction could be affected by glare from the site. It is unlikely the new development will cause any greater impact on the A422, due to the distance between the road and the Application Site.

5.3.2. Measures to minimise and control potential effects are noted in section 6 of this report.

6 Control of Light Pollution

6.1 Construction

- 6.1.1. The construction compound will be located with due consideration to surrounding receptors in particular the dwellings to the west and bat habitats to the south but also road users on the A361 and A422.
- 6.1.2. In relation to the various types of lighting used during the construction phases, these will be selected and installed to negate pollution with due consideration to the functional requirements of the lighting and receptors. This approach will negate the unnecessary spillage and glare of lighting commonly experienced during development construction. The selection of lighting fittings and illumination levels will be in accordance with **Section 2** of this document, the recommendations of CIBSE and relevant Health & Safety Regulations.

6.2 Operation

- 6.2.1. Where possible, activities requiring illumination will be located and orientated to have the least effect on the existing or proposed receptors.
- 6.2.2. Advantage will be taken of existing or proposed screening, such as buildings, trees and embankments. Planting on the southern, western and eastern boundaries can be specified to assist in mitigating lighting impacts.
- 6.2.3. A major cause of obtrusive light is over lighting – using more light than is required. The lighting scheme will consider the purpose of the lighting proposed, and use the lowest appropriate and safe levels for the purpose.
- 6.2.4. Lighting equipment should be selected which will minimise the upward spread of light, thereby reducing sky glow. For road and amenity lighting installations, light near to and above the horizontal should normally be minimised to reduce glare and sky glow. Lights should be positioned to avoid causing glare by ensuring that the main beam angle of lights directed to any potential observer is not more than 70°, particularly for the loading / unloading bays.
- 6.2.5. The use of directional lighting/shielding of lights will be used to reduce light spill, (especially on the southern boundary where the cemetery may provide bat habitat), lighting with a low UV component to reduce invertebrate attraction will be used along with sensors to trigger security lighting, and timing of lights wherever possible (i.e. lights illuminated during working hours only). The Bat Conservation Trusts/Institution of Lighting Engineers (now ILP) publication *Bats and Lighting in the UK* will be considered.
- 6.2.6. As noted in the baseline assessment, with regard to the ILP *Guidance Notes for the Reduction of Obtrusive Light*, it is considered that The Environmental Zone for the wider commercial area including the site is likely to be E3: Medium district brightness area. Some large commercial areas potentially even fall into E4: High district brightness.
- 6.2.7. Due to the lack of lighting present in the cemetery to the south of the site that area is likely to be E2: Low District brightness area.
- 6.2.8. Therefore it is recommended that a design target of E2 is set for the southern periphery of the site which is adjacent to the cemetery and also closest to the existing dwellings, but E3 elsewhere on the site.
- 6.2.9. **Table 2** summarises the maximum design targets recommended for Zone E2 and E3 by the

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ILP guidelines.

Table 2: Targets recommended for Zone E2

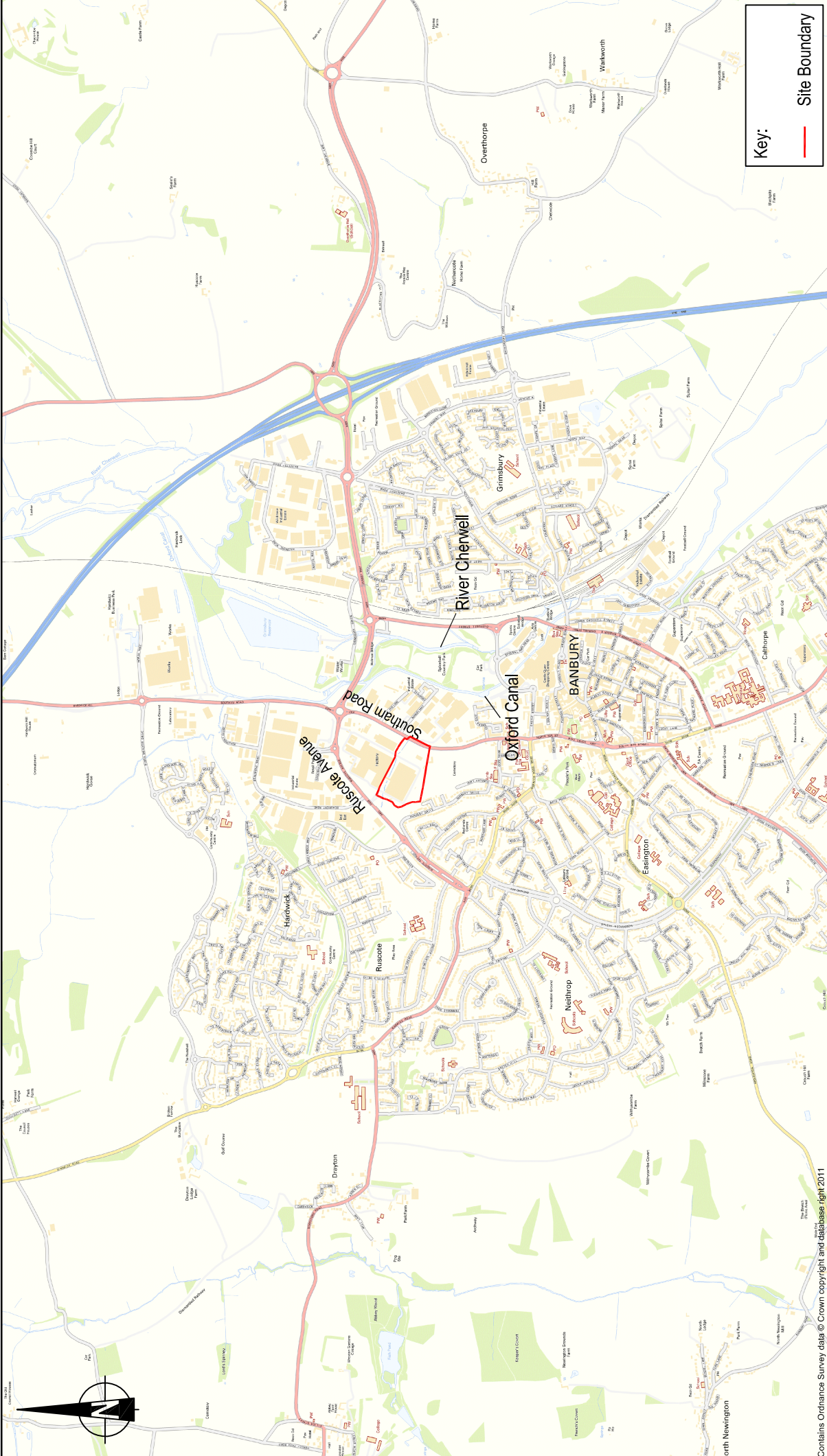
| Environmental Zone | Sky Glow ULR [Max%] | Light intrusion (into Windows) Ev [Lux] | | Luminaire Intensity I [candelas] | | Building Luminance pre-curfew |
|---|---------------------|--|-------------|----------------------------------|-------------|---|
| | | Pre Curfew | Post Curfew | Pre Curfew | Post Curfew | Average L ² [cd/m ²] |
| E2 | 2.5 | 5 | 1 | 7500 | 500 | 5 |
| E3 | 5.0 | 10 | 2 | 10,000 | 1,000 | 10 |
| <p>Definitions</p> <p>ULR = Upward Light Ratio of the Installation is the maximum permitted percentage of luminaire flux for that goes directly into the sky.</p> <p>Ev = Vertical Illuminance in Lux and is measured flat on the glazing at the centre of the window</p> <p>I = Light Intensity in Cd</p> <p>L = Luminance in Candelas per Square Metre Cd/m²</p> <p>Curfew = The time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of use of lighting applied by the local planning authority.</p> <p>(1) Upward Light Ratio – Some lighting schemes will require the deliberate and careful use of upward light – e.g. ground recessed luminaires, ground mounted floodlights, festive lighting – to which these limits cannot apply. However, care should always be taken to minimise any upward waste light by the proper application of suitably directional luminaires and light controlling attachments.</p> <p>(2) Light Intrusion (into Windows) – These values are suggested maxima and need to take account of existing light intrusion at the point of measurement. In the case of road lighting on public highways where building facades are adjacent to the lit highway, these levels may not be obtainable. In such cases where a specific complaint has been received, the Highway Authority should endeavour to reduce the light intrusion into the window down to the post curfew value by fitting a shield, replacing the luminaire, or by varying the lighting level.</p> <p>(3) Luminaire Intensity – This applies to each source in the potentially obtrusive direction, outside of the area being lit. The figures given are for general guidance only and for some sports lighting applications with limited mounting heights, may be difficult to achieve.</p> <p>(4) Building Luminance – This should be limited to avoid over lighting, and related to the general district brightness. In this reference building luminance is applicable to buildings directly illuminated as a night-time feature as against the illumination of a building caused by spill light from adjacent luminaires or luminaires fixed to the building but used to light an adjacent area.</p> <p>Source: ILP Guidance Notes for the Reduction of Obtrusive Light 2011</p> | | | | | | |

7 Conclusion

7.1 Conclusion

- 7.1.1. Key potential effects of the external lighting required for the scheme include:
- Closest dwellings to the south west could be affected by light intrusion, although this will be buffered by the staff car park to be retained and dwellings may already be affected by lighting associated with the car park and existing commercial development on the site.
 - Potential effects of lighting on bats in the cemetery to the south and any retained hedgerows and trees on site.
 - Potential for effects of sky glow which could be observed from dwellings and landscapes. There is likely to be an existing sky glow effect in the area.
 - Road users on the A361 and proposed new junction could be affected by glare from the site. It is unlikely the new development will cause any greater impact on the A422, due to the distance between the road and the Application Site.
- 7.1.2. It is considered that the Environmental Zone for the wider commercial area including the site is likely to be E3: Medium district brightness area. Some large commercial areas potentially even fall into E4: High district brightness. Due to the lack of lighting present in the cemetery to the south of the site that area is likely to be E2: Low District brightness area.
- 7.1.3. Therefore it is recommended that a design target of E2 is set for the southern portion of the site which is adjacent to the cemetery and also closest to the existing dwellings, but E3 elsewhere on the site.
- 7.1.4. The location, type, mounting height and aiming angle of individual lighting elements together with a description and specification for the luminaires to be used and a ground level lighting plot will be provided at the detailed design stage, demonstrating compliance with these design targets.
- 7.1.5. It is concluded that if the recommended control measures are implemented at the detailed design stage, the proposed lighting levels would be in keeping with the surrounding environment and would not result in adverse impact on receptors identified.

Appendix A: Location Plan



Key:
— Site Boundary

| Mark | Revision | Drawn | Date | Chkd |
|-------------------|------------|----------------|----------|------|
| Drawing Status | | | | |
| INFORMATION | | | | |
| Date of 1st Issue | 23.02.2012 | Drawing Number | Revision | |
| A4 Scale | NTS | | - | |
| Drawn by | DS | 26004/001/001 | | |
| Checked by | ES | | | |

Southam Road Retail Park, Banbury

Site Location Plan

Client
Barwood Developments Ltd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may be present and the user is advised to conduct their own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.



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Appendix B: Masterplan

Appendix C: Correspondence

Sarah Kirby

Subject: RE: Southam Road, Lighting assessment
From: Rob Lowther [mailto:Rob.Lowther@Cherwell-DC.gov.uk]
Sent: 03 January 2012 13:51
To: Lucy Whitter
Subject: RE: Southam Road, Lighting assessment

Lucy,

Thank you for the prompt I am now up to speed with the latest version of the ILP Guidance.

Considering there is some similarity between your Southam Road site and the Central M40 scheme I can confirm that my comments made in respect of Sues' enquiry would apply equally to your site.

Rob Lowther
ASB Manager

From: Lucy Whitter [mailto:lwhitter@peterbrett.com]
Sent: 03 January 2012 11:39
To: Rob Lowther
Subject: Southam Road, Lighting assessment

Rob,

I am working with Sue Parr on a lighting assessment for an outline planning application for demolition of existing buildings, enabling works, new retail units, associated access and car parking at the attached site (Southam Road). We intend to work within the guidelines specified in Sue's email below used for the Central M40 scheme (although using the ILP 2011 guidelines which superseded the ILE 2005 guidelines).

Could you let me know if your comments below would also be applicable to Southam Road? Many thanks

Regards,

Lucy Whitter
Environmental Scientist

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Roger Tym & Partners and Baker Associates are now part of Peter Brett Associates LLP.

From: Rob Lowther [mailto:Rob.Lowther@Cherwell-DC.gov.uk]
Sent: 14 November 2011 12:05
To: Sue Parr
Subject: RE: Banbury Central 40 - Lighting Impacts Assessment

Sue,

Apologies for the delay.

As far as specifying a light zone for the development site we do not have a lighting zoning map for the district so what we would be looking for would be a reasoned argument for defining the site and its surroundings in a specific category. A desk based study would be perfectly adequate for the purposes of this exercise.

07/03/2012

In looking at the details of the specific scheme what we would be looking for is the location, type, mounting height and aiming angle of individual lighting elements together with a description and spec for the luminaires to be used.

Finally a ground level lighting plot for the scheme is also useful.

Rob Lowther
ASB Manager

From: Sue Parr [mailto:sparr@peterbrett.com]
Sent: 04 November 2011 16:25
To: Rob Lowther
Cc: Lucy Whitter
Subject: Banbury Central 40 - Lighting Impacts Assessment

Dear Rob

I have been asked to prepare a scope of work for carrying out a lighting impact assessment of the above development, which I understand my colleague Esteban Olmos has been in touch with you about in relation to noise. The proposals are for an employment based development adjacent to the M40.

I am therefore contacting you to confirm the methodology that you will be expecting to see for the lighting assessment.

- Do you know whether the area has been categorised into a particular environmental zone having regard to the ILE guidelines?
- Do you anticipate a baseline lighting survey to confirm that the site currently falls within a particular zone, or would you accept a desk based assessment of this aspect?

We will reference the following guidance:

- The Institution of Lighting Engineers (ILE) *Guidance Notes for the Reduction of Obtrusive Light*, (2005) provides advice on lighting including the recommendation to local planning authorities to specify Environmental Zones for exterior lighting based on the existing external lighting levels in the area. The document also provides design guidance including maximum lighting level limits for each environmental zone.
- DCLG guidance *Lighting in the Countryside: Towards Good Practice* (1997) provides advice on the assessment of lighting schemes in the countryside and recommends good practice measures. The document provides advice on the principles of lighting and the effects on people and the environment; gives guidance on how to prepare, design and assess lighting schemes and suggests how local authorities can implement the recommendations within their policies.
- The document *Assessment of the Problem of Light Pollution from Security and Decorative Light* produced by Temple and NEP Lighting Consultancy on behalf of Defra is a summary of current legislation and guidance relating to external artificial lighting. The document is aimed at providing advice to local authority officers on assessing whether lighting is causing a statutory nuisance, and providing advice on how to mitigate such impacts.

In carrying out the assessment, we would seek to ensure that the lighting impact is minimised, and that any increases in lighting level did not result in an increase to more than the adjacent Environmental Zone light levels.

Please would you advise me whether you accept our methodology and if you have any other specific requirements for the lighting impact assessment.

Many thanks

07/03/2012

Regards,

Sue Parr BSc(Hons) MCIEH MIOA MEnvSc MIAQM FRSPH
Chartered Environmental Health Practitioner
Principal Environmental Scientist

For and on behalf of Peter Brett Associates LLP

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