

Ref: 1261027-2

BY E-MAIL

27 April 2026

Aimi Macfarlane
McDonald's Restaurants Limited
11-59 High Road
East Finchley
London
N2 8AW

Dear Aimi,

Re: McDonald's Gravesend – Illuminated Signage 'Light Intrusion' Assessment

As requested, please find below 'light intrusion' assessment of the proposed illuminated signage at McDonald's Gravesend in accordance with national guidelines. This document shall be read in conjunction with Strenger drawing Ref: SK-01 Residential Receptor Location Plan.

This assessment has involved the following:

- setting out the illuminated signage proposals;
- setting out the relevant policy, standards and guidance;
- defining a suitable environmental zone classification;
- defining suitable illuminance criteria in accordance with national guidelines;
- comparison of the calculated levels of illuminance against the criteria; and
- forming conclusions.

Author Pen Profile

My name is [REDACTED] I have over 20 years' experience of technical input for environmental assessment. I hold a BEng (Hons) degree in Mechanical Engineering, the Lighting Education Trust (LET) Lighting Diploma and the Institute of Acoustics (IOA) post-graduate Diploma in Acoustics & Noise Control. I am a Lighting Consultant specialising in the environmental assessment of artificial lighting, and I am Director of Strenger Ltd, registered at Clavering House, Newcastle upon Tyne.

I established Strenger Ltd in 2015 and have acted as lighting consultant for a wide range of clients on a range of schemes; including, waste, power generation (incl' nuclear), oil & gas, industrial, commercial, residential, sports facilities and transportation schemes. I have a broad experience of large-scale projects, including those falling under EIA regulations, Critical National Infrastructure and Nationally Significant Infrastructure Projects and have acted as technical expert representing local authorities for such projects. I have specific experience of undertaking lighting assessments for illuminated signage on behalf of clients such as, Costa Coffee, LIDL UK, Mollies, Enterprise Rent-A-Car and Marriott Hotels. I am currently acting as Lighting Consultant for the Proposed Advertisement.

Technical Concepts

ILP Environmental Zone

ILP Guidance Note 01/21: The Reduction of Obtrusive Light sets out a series of environmental zones for classifying lighting assessment study areas based on their surroundings type e.g. rural, suburban etc., and the lighting environment e.g. low district brightness, medium district brightness etc. Based on the surroundings type and lighting environment, an environmental zone can be selected, from Zone E0 to Zone E4. The obtrusive light limits associated with the relevant environmental zone(s) are then adopted for assessment purposes.

Lighting curfew

A lighting curfew is an agreed time, beyond which, a lighting installation is subject to more stringent environmental control, generally as agreed with the local planning authority (LPA). Such controls may take the form of switching the lighting installation off in its entirety, switching the lighting installation off in part, dimming the lighting installation, or the implementation of smart lighting controls. Lighting curfews are generally best suited to facilities where a specific activity requiring artificial lighting ceases at a specific time e.g. a floodlit sports pitch, or a supermarket. However, in many cases, particularly 24-hour operations there is no clear change in activities requiring artificial lighting. In such cases, LPAs seldom impose a lighting curfew per se. However, for the sake of robustness in assessing obtrusive light, it is usual to adopt the ILP post-curfew obtrusive light criteria beyond a certain time. Where this time is not imposed by the LPA, 23:00 hours is generally adopted for general exterior lighting and between 00:00 – 05:00 hours for media installations.

Vertical Illuminance ('Light intrusion')

This occurs as a result of light spill falling on to a receptor, generally onto a residential property window (hence the term 'light intrusion') but equally could be any light-sensitive human receptor. It is assessed in terms of the amount of light falling on a surface i.e. illuminance (E) and is measured in lux. Where the receptor is a residential window, the level of perpendicular illuminance is measured in the vertical plane, to give the vertical illuminance (E – lux).

Luminance ('Glow')

This is the amount of light emanating from a surface, either by means of reflected light off the surface, or directly from a light source itself e.g. internally illuminated signage. In the case of reflected light, luminance is a function of the light falling on a surface (illuminance) and the light reflectance properties associated with the reflecting surface.

Summary

Strenger Ltd was requested by McDonald's Restaurants Limited to undertake a 'light intrusion' assessment of proposed illuminated signage at a McDonald's restaurant, Wrotham Road, Gravesend DA11 7LF (hereon in, the 'Proposed Advertisement').

Illuminated Signage Details

The signs which this assessment relates to are as follows:

SIGN-01 Golden Arch fascia mounted sign to east elevation at FGL +4,057 mm

- (1 off) 1,375 mm x 1,200 mm (landscape) aluminium sign frame with yellow (2252) Perspex sign face. Internally illuminated via LED lighting. Maximum luminance = 500 cd/m².

SIGN-02 McDonald's lettering fascia mounted sign to east elevation at FGL +2,778 mm

- (1 off) 5,261 mm x 600 mm (landscape) aluminium sign frame with opal (050) Perspex sign face. Internally illuminated via LED lighting. Maximum luminance = 500 cd/m².

SIGN-03 Totem sign to site entrance

- (1 off) 1,075 x 934 mm (landscape) LED backlit Golden Arch yellow (2252) polycarbonate sign face. Maximum luminance = 500 cd/m².

Proposed Hours of Operation

The proposed hours of operation for the illuminated signage are aligned with the proposed restaurant opening hours, which are as follows:

- 06:30 – 22:30 (Mon – Fri)
- 06:30 – 22:30 (Sat)
- 06:30 – 22:30 (Sun & Bank Holiday)

Legislation

The Town and Country Planning (Control of Advertisements) (England) Regulations 2007

Illumination requirements in the form of luminance limits are set out within Part 2 Paragraph 2 of the regulations. The Proposed Advertisement adopts a luminance limit that is 100 cd/m² lower than the maximum allowable 600 cd/m² luminance limit. The 'light intrusion' predictions have been undertaken accordingly.

Clean Neighbourhoods and Environment Act (CNEA), 2005

Light pollution was introduced within the Clean Neighbourhoods and Environment Act 2005 ('CNEA 2005') as a form of statutory nuisance under the Environmental Protection Act 1990 (the 'EPA 1990') which was amended in 2006 to include the following nuisance definition:

"(fb) artificial light emitted from premises so as to be prejudicial to health or a nuisance;"

Guidance produced in Sections 101 to 103 of the CNEA 2005 by the Department of Environment, Food and Rural Affairs (DEFRA) in April 2006 extends the duty on local authorities to ensure their areas are checked periodically for existing and potential sources of statutory nuisances including nuisances arising from artificial lighting. Local authorities must take reasonable steps to investigate complaints of such nuisances from artificial light. Once satisfied that a statutory nuisance exists or may occur or recur, local authorities must issue an abatement notice (in accordance with section 80(2) of the EPA 1990, requiring that the nuisance cease or be abated within a set timescale.

Although light was described as having the potential to cause statutory nuisance in the CNEA 2005, no prescriptive limits or rules were set for impact assessment purposes. The Guidance Notes for the Reduction of Obtrusive Light produced by the ILP has, therefore, been referred to for the purposes of this assessment.

Guidance produced by DEFRA, Statutory Nuisance from Insects & Artificial Light (2006) on s101 to s103 of the CNEA has also been referred to which places a duty on local authorities to ensure that their areas are checked periodically for existing and potential sources of statutory nuisances - including nuisances arising from artificial lighting. Local authorities must take reasonable steps to investigate complaints of such nuisances from artificial light. Once satisfied that a statutory nuisance exists or may occur or recur, local authorities must issue an abatement notice (in accordance with s80(2) of the EPA 1990), requiring that the nuisance cease or be abated within a set timescale.

Policy

National Planning Policy

National Planning Policy Framework, 2024

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans can provide for housing and other development in a sustainable manner. The NPPF states that the purpose of the planning system is to contribute to the achievement of sustainable development, including the provision of homes, commercial development and supporting infrastructure in a sustainable manner. With regard to artificial lighting, the NPPF states the following:

'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.'

Guidance

International Guidance

Commission Internationale De L'Eclairage 150: Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations, 2017 (CIE-150)

The purpose of CIE-150: Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations, 2017 is to help formulate guidelines for assessing the environmental impacts of outdoor lighting and to give recommended limits for relevant lighting parameters to contain the obtrusive effects of outdoor lighting within tolerable levels. As the obtrusive effects of outdoor lighting are best controlled initially by appropriate design, the guidance given is primarily applicable to new installations; however, some advice is also provided on remedial measures which may be taken for existing installations. This Guide refers to the potentially adverse effects of outdoor lighting on both natural and man-made environments for people in most aspects of daily life, from residents, sightseers, transport users to environmentalists and astronomers.

National Guidance

Institution of Lighting Professionals (ILP) PLG 05/23 - The Brightness of Illuminated Advertisement Including Digital Displays, 2023

This document has been prepared on behalf of the ILP Technical Committee, for study and application. The document reports on current knowledge and experience within the specific fields of light and lighting described and is intended to be used by the ILP membership and other interested parties.

Lighting guidance issued by the ILP is recognised as the authority document when it comes to assessing illuminated advertisements by Local Planning Authority planning officers, planning inspectors, lighting professionals and advertising industry planning professionals. It is also specifically referenced in government guidance. It is the only authoritative lighting guidance in the United Kingdom on which those involved in the planning process.

Institution of Lighting Professionals (ILP) GN 01/21 Guidance Notes for the Reduction of Obtrusive Light, 2021

The ILP has proposed obtrusive lighting guidance and criteria for local authorities with a recommendation that these are incorporated at the local plan level. The ILP Guidance Notes define various forms of light pollution and describe a series of environmental zones. The ILP Guidance Notes provide suitable criteria against which the effects of artificial lighting can be assessed.

Institute of Lighting Professionals (ILP) PLG 04 - Guidance on Undertaking Environmental Lighting Impact Assessments, 2013

The aim of the Guidance on Undertaking Environmental Lighting Impact Assessments (ILP PLG04:2013) is to outline good practice in lighting design and provide practical guidance on production and assessment of lighting impacts within new developments.

The document was produced following the publication of the NPPF in April 2012 and the importance of lighting design being part of a planning application, this document aims to:

- provide an explanation of, and guidance on, the process for producing a lighting assessment;
- prompt the lighting designer on important aspects of specific projects which should be used to remove or minimise potential environmental problems; and
- look at the overall processes and evaluation procedures regarding lighting which are considered to be relevant.

Criteria

In order to define suitable illuminance criteria for the proposed illuminated signage, it is first necessary to define the environmental zone for which the Proposed Advertisement site falls within, in accordance with ILP GN 01/21 Guidance Notes for the Reduction of Obtrusive Light.

ILP Environmental Zone Classification

The ILP has developed an environmental zone classification system for the categorisation of areas with regard to suitable obtrusive light limits. The environmental zone classifications are reproduced in Table 1.

Table 1: ILP Environmental Zone Classification			
Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM 15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

Determination of ILP Environmental Zone

The Proposed Advertisement site lies within a suburban area in Gravesend. Based on the site surroundings, it is considered that ILP Environmental Zone E3 is the most appropriate classification for the purposes of this assessment. Such a classification will ensure that residential amenity is suitably preserved when the Proposed Advertisement is illuminated.

Vertical Illuminance ('light intrusion') Limits

In accordance with ILP GN 01/21, the maximum allowable pre-curfew and post-curfew levels of 'light intrusion' are set out below in Table 2 according to the ILP environmental zone classification.

Table 2: Maximum values of 'light intrusion' (vertical illuminance – lux)						
Light Technical Parameter	Application Conditions	Environmental Zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	< 0.1 lx	1 lx	2 lx	5 lx

As can be seen in Table 2, the maximum permitted recommended levels of 'light intrusion' within ILP Environmental Zone E3 are 10 lux during pre-curfew hours and 2 lux during post-curfew hours. As the Proposed Advertisement would be switched off outside of the proposed opening hours, only the pre-curfew criterion of 10 lux has been adopted within this assessment.

Assessment

Vertical Illuminance ('light intrusion')

Based on the approximate method to calculate illuminance at a point facing a sign as set out in Appendix 2 of ILP PLG 05/23, the levels of 'light intrusion' to surrounding properties have been predicted and are set out in Table 3 below. The assessed receptors are set out in Strenger Drawing Ref: SK-01 Residential Receptor Location Plan.

Table 3: Predicted 'Light Intrusion' Levels (E – lux)		
Sign	RES-01	RES-02
SIGN-01	0.413	0.180
SIGN-02	0.812	0.188
SIGN-03	0.149	0.118
Total	1.37	0.49

The levels of 'light intrusion' from the illuminated signage associated with the Proposed Advertisement have been predicted at surrounding residential receptors. The resultant levels of 'light intrusion' are set out in Table 4 against the ILP pre-curfew 'light intrusion' criterion of 10 lux for ILP Environmental Zone E3. Each receptor has been assigned a PASS / FAIL outcome accordingly.

Table 4: 'Light Intrusion' Assessment			
Receptor	'Light Intrusion' Criterion (E - lux)	Predicted 'Light Intrusion' (E - lux)	Outcome
RES-01	10	1.37	PASS
RES-02	10	0.49	PASS

As can be seen from Table 4 above, the predicted levels of 'light intrusion' at residential receptors from illuminated signage associated with the Proposed Advertisement are compliant with the ILP pre-curfew 'light intrusion' criterion of 10 lux for ILP Environmental Zone E3.

Conclusions

It has been demonstrated that the Proposed Advertisement is compliant with national guidelines for the control of obtrusive light relating to illuminated advertisements. By demonstrating compliance with the ILP national guidelines, it is ensured that the impact of artificial lighting on local amenity is suitably limited, consistent with the requirements of The Town and Country Planning (Control of Advertisements) (England) Regulations 2007 and the NPPF.

Specifically, the illuminated signage is compliant with the illuminance limits as set out in ILP GN 01/21: The Reduction of Obtrusive Light.

Therefore, by means of controlled application of such artificial light sources in accordance with national guideline values, it has been demonstrated that with regard to 'light intrusion', residential amenity will be suitably preserved when the Proposed Advertisement is illuminated.

Should you have any queries regarding the above then please do not hesitate to contact the undersigned.

Yours sincerely
for **Strenger Ltd**



Managing Director