

TECHNICAL NOTE - LIGHTING

DATE: 21/07/2025

TO: JOHN LEWIS PARTNERS

FROM: DFL-UK

SUBJECT: ADDENDUM TO TECHNICAL REPORT ON LIGHTING DESIGN AT FORMER JOHN LEWIS DEPOT, LETCOMBE STREET, READING [3339-DFL-ELG-XX-RP-EO-13001-S3-P04]

ADDENDUM TO TECHNICAL REPORT ON LIGHTING DESIGN AT FORMER JOHN LEWIS DEPOT, LETCOMBE STREET, READING

This addendum addresses concerns raised by planners and the Highway Authority regarding the proposed lighting design, particularly focusing on column heights, land ownership constraints, and mitigation of rear light spill.

TECHNICAL SUMMARY BASED ON 3339-DFL-ELG-XX-RP-EO-13001-S3-P04:

The lighting design at the former John Lewis Depot, Letcombe Street, Reading, has undergone a detailed review to minimise light spill onto the proposed residential developments. The primary change from the existing street lighting involves replacing the existing high-mast lighting with a combination of 16m and 8m lighting columns. Since the initial lighting assessment, the proposed redevelopment of the cinema site opposite the Application Site has been submitted to the LPA (221916 and 221917)

The updated design adheres strictly to relevant local planning policies (Reading Borough Council Local Plan) and follows guidance outlined in British Standards (BS 5489-1:2020) and the Institution of Lighting Professionals (ILP) guidelines (GN01:2021). The environmental context classified for this area is Urban, Zone E4, characterised by high district brightness levels and considerable nighttime activity.

Three scenarios were originally considered:

- Scenario 1 - Relocating the west high mast.
- Scenario 2 - Removing the west high mast and installing localised lighting.
- Scenario 3 - Removing both high masts and installing a combination of 16m and additional 8m columns.

Scenario 1 & 2 failed to reduce spill light onto proposed buildings and would not comply with GN01-2021 guidance. Scenario 3 was selected as optimal, ensuring compliance with class C2 lighting standards for roadways and footways whilst reducing vertical illuminance onto adjacent residential windows (as detailed in Table 4 of the report).

The use of external rear shields has been considered and used as mitigation to reduce light spill, proving necessary as rear louvres alone were insufficient to reduce the rear light spill to acceptable levels.

Further, the revised approach offers an approximate 22% reduction in energy consumption compared to the existing high-mast configuration.

In conclusion, all reasonable and practical measures, including strategic column placement and utilisation of rear shields, have been taken to minimise obtrusive light impact on neighbouring developments, satisfying regulatory criteria and demonstrating responsible design practices.

COLUMN HEIGHTS AND LAND OWNERSHIP

Following a survey by DFL, the first existing column adjacent to the roundabout [numbered on site as 23] has been approximated at 16m height. This has informed our 3D modelling and revised lighting solution. The gap in land ownership necessitates strategic placement of lighting columns: the first proposed 16m column [LC01] is located approximately 23.5m from the existing column, with subsequent columns at intervals of approximately 43m [LC02] and 29m [LC03], respectively. A 2.5m bracket is required on the first column [LC01], and a 1.0m bracket on subsequent columns [LC02 & LC03]. Next to the east an 8m column [LC04] will require 0.5m twin arm bracket. Two 8m columns [LC05 & LC06] in front of the cinema will be equipped with 0.2m brackets allowing for the installation of rear shields if deemed needed. On the opposite side of the road starting from the west, two 8m columns [LC07 & LC08] with 1m brackets are required in front of the hotel. Three 8m columns [LC09, LC10 & LC11] in front of the proposed residential building at the site of the former John Lewis Depot will have 0.2m brackets equipped with rear shields to minimise rear spill light effectively. Further to the east two 8m columns [LC12 & LC13] will be equipped with 0.2m stub brackets to allow for the installation of rear shields on these brackets if deemed necessary. Additionally, on Letcombe Street 6m post top column [LC13] is required to compensate the removal of the high mast. Please refer to the **Appendix B**.

REVISED COLUMN HEIGHTS AND FEASIBILITY

Despite the Highway Authority's preference for 12m columns due to potential maintenance constraints, our 3D modelling demonstrates that 16m columns remain essential to achieve the required lighting levels and uniformity on the elevated road. The 16m columns are located next to the overpass; thus, the actual distance from the road surface to the luminaires will be less than 16m, making the use of shorter columns impractical for achieving the required lighting levels and would result in insufficient vertical clearance between the luminaire and carriageway potentially compromising safety. It should be noted that the 16m columns are situated adjacent to the overpass, allowing maintenance to be conducted from this location. As a result, MEWPs will have appropriate access to these columns.

MITIGATION OF REAR LIGHT SPILL

To significantly reduce rear light spill onto adjacent and proposed residential developments, the current high mast lighting will be replaced with a combination of strategically positioned 16m columns complemented by additional 8m columns.

The proposed building at the former John Lewis site.

Our 3D modelling confirms that the proposed 16m columns will not cause obtrusive light into residential windows. However, lanterns mounted on 8m columns adjacent to the proposed building at the former John Lewis site, despite being fitted with external rear shields, result in spill light exceeding the stipulated post curfew 5 lux threshold (GN01:2021) on the first floor of the proposed buildings, but not more than 12lux. The ground floor is designated for commercial use, so this aspect does not pose an issue for that level of the building. As a comparison, the existing floodlights would cause vertical illuminance levels above 5 lux reaching levels in the region of 50-100 lux. Given the urban context (Environmental Zone E4), where obtrusive light thresholds are exceeded, these are acknowledged by ILP guidelines (GN01:2021) as potentially acceptable, provided that:

- All feasible mitigation measures are incorporated to minimise spill light.
- The exceedance remains minimal, avoiding significant impacts on residential amenity.
- The lighting solution aligns with broader urban lighting objectives for safety and functionality.

During the detailed design phase, it is likely that the residual vertical light spill issue can be resolved through close collaboration with luminaire suppliers to further reduce these levels.

Refer to **Appendix A Figure 1** for a 3D model of the proposed building at the former John Lewis site showing vertical light spill. The area representing more than 5 lux vertical iso lux level is shown in red for residential properties, the yellow areas also show areas where the vertical levels are greater than 5 lux but are for commercial areas of the development.

Proposed residential development that is planned to replace the cinema complex.

The 8m columns located adjacent to the proposed residential development, which is set to replace the existing cinema complex, do not necessitate the installation of rear shields. This determination is based on the designation of the ground floor for commercial purposes. Furthermore, the first-floor windows that might typically benefit from rear shielding are currently associated with the cinema rather than residential units.

Refer to **Appendix A Figure 2** for a 3D model of the proposed residential development that is planned to replace the cinema complex showing vertical light spill. The area representing more than 5 lux vertical iso lux level is shown in red for residential properties, the yellow areas also show areas where the vertical levels are greater than 5 lux but are for commercial areas of the development.

THE ORACLE BUILDING CONSTRAINTS

Following a visual survey on site, which included photographs and video footage conducted by DFL, it has been determined that the gap between the elevated roadway and the Oracle building is approximately 1.0m. This gap is sufficient for the installation proposed columns LC01 & LC02. The luminaires mounted on the 16m columns will be maintained by a MEWP from the elevated road. Please refer to **Appendix B**.

The gap in land ownership as provided in “Highway Extent” document has been addressed as well, ensuring proposed location to be only on adoptable lane. Please refer to section “**Column Heights and Land Ownership**”.

POTENTIAL RESIDENTIAL DEVELOPMENT (CINEMA SITE)

We acknowledge planning applications 221916 and 221917, proposing residential developments at the Oracle cinema site. Our revised lighting model anticipates this potential change, relocating 8m columns to locations that minimise potential conflict with any future residential use.

Refer to **Appendix A Figure 2** for a 3D model of the Cinema building with 5lux vertical spill [post curfew threshold GN01:2021] area.

COMPARISON WITH CURRENT HIGH MASTS

In conclusion, the revised lighting scheme, incorporating 16m and strategically placed 8m columns with necessary rear shields, effectively addresses regulatory and practical concerns, providing substantial improvements compared to the existing high mast arrangement. The proposed solution significantly reduces rear light spill and greatly minimises potential light intrusion issues. Minor exceedances of spill light thresholds are considered acceptable within the urban E4 context, especially given the substantial enhancement over the current situation.

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Figure 1: Proposed residential building at former John Lewis site showing areas that exceed 5lux on the vertical



Figure 2: Proposed residential building to replace the existing cinema building showing areas that exceed 5lux on the vertical

Appendix B

Columns locations and specifications

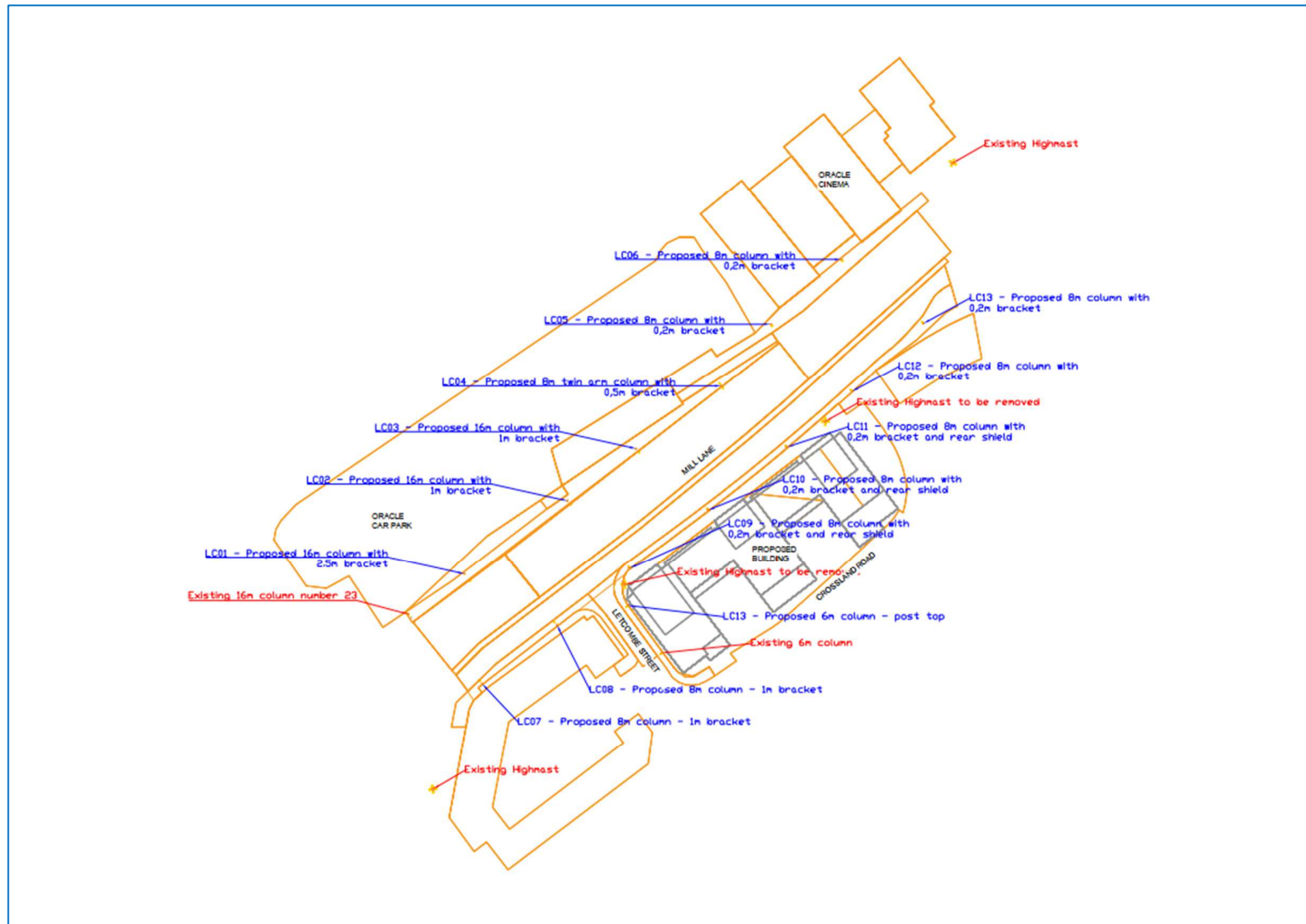


Figure 3: Columns locations and specifications.

APPENDIX C

Highway Authority Comments and Responses

Comments from the Highway Authority:

Question: *"The Highway Authority does not agree with the proposed street lighting design given that 16m columns will still create maintenance issues for the Council, as standard MEWPS go to 12m/15m, The Highway Authority requests that the proposed lighting design is revised utilising 12m columns instead of the proposed 16m, which may in turn result in some of the proposed 8m columns needing to be 10 or 12m instead.*

Further to this I provide a copy of the Highway Extent along the Oracle boundary and the IDR which identifies that not all of the land is in fact adopted Highway that would limit the locations for columns as well as images of The Oracle car park elevation which includes lighting and support cables and protruding arched metal structures along its length which will make siting any columns along this elevation extremely difficult at best."

Answer: Based on the 3D modelling analysis, it is determined that 16m columns are necessary to achieve the required lighting levels, particularly with regard to uniformity over the overpass. The placement of 8m columns on the opposite side of the road remains essential to ensure that the lighting levels for the specified lighting class are achieved. Given the height of the overpass, utilising columns below 16m would result in the light source being positioned too low relative to the carriageway, which would be problematic both in terms of lighting levels and physical clearance. Please refer to the addendum section titled **"REVISED COLUMN HEIGHTS AND FEASIBILITY"** for further details.

We have also conducted a thorough review of the provided Highway Extent documentation and have successfully arranged the 16m columns at suitable intervals to mitigate any potential land ownership conflicts. For more information, please see the addendum section **"COLUMN HEIGHTS AND LAND OWNERSHIP."**

Question: *"The lighting design report states the following at Paragraph 6.5.1: "The light spill modelled to show how the light emitted from the existing and proposed light source would affect the proposed building. The results from the modelling show that any use of the high mast, either existing location or relocation, would result in unacceptable light intrusion into windows."*

Answer: The latest modelling uses a combination of 16m, and 8m columns is necessary to minimise light spill. The modelling confirms that the utilisation of 16m columns will not result in unacceptable intrusion of light into windows. Please refer to the addendum, particularly the section titled **"MITIGATION OF REAR LIGHT SPILL"** as well as **"COMPARISON WITH CURRENT HIGH MASTS"**.

Question: *"Paragraph 7.1.3 continues to state that: The use of shields on a high mast has been considered but due to their close proximity to the building it would not be possible to get shields big enough to effectively reduce the light spill across the whole building and at the same time small enough to avoid sail effect on the high mast itself that would not create oscillation or structural damage.*

Answer: As the intention is to remove some of the high masts this will now not be an issue. It should be noted that some of the luminaires mounted on 8m columns will still necessitate the use of shields, the proposed columns and brackets that these luminaires will be mounted on would be suitable for the shields proposed. Please refer to the addendum section titled **"MITIGATION OF REAR LIGHT SPILL"** for further details.

Question: *"Given that the revised lighting scheme is fundamental to the delivery of this development the lighting report must therefore be updated not only to reflect the requirements set out above but also to provide clarity that the columns can in fact be located where necessary to ensure that a compliant lighting scheme can be delivered."*

Answer: Based on the site survey conducted by DFL and the accompanying documentation outlining the parameters of the adoptable land, we can confirm that the proposed solution effectively addresses both identified constraints. The placement of columns can be optimised in accordance with the guidelines specified in **"COLUMN HEIGHTS AND LAND OWNERSHIP"** and **"THE ORACLE BUILDING CONSTRAINTS"** included in the addendum.

Question: "I would also advise that the applicant should be made aware of planning applications 221916 and 221917 relating to The Oracle site which proposes residential uses on the current cinema site and as such any revised lighting scheme should take this into account to ensure that conflict between the proposed lighting scheme and potential residential element of that development does not occur."

Answer: The potential residential development that is intended to replace the existing cinema has been acknowledged and added to the 3D model. Please refer to the section titled "**POTENTIAL RESIDENTIAL DEVELOPMENT (CINEMA SITE)**" in the addendum for further details.