



INDUSTRIAL & COMMERCIAL BUILDING SERVICES ENGINEERS



LIGHTING ASSESSMENT REPORT

FOR THE PROPOSED CAR PARK LIGHTING ALTERATIONS ADJACENT THE NEW SUB-STATION

AT

**THE GEORGE HOTEL
HUDDERSFIELD**

DOCUMENT REF: L054-AFC-96-XX-XX-T-E-9600

DATE: 30/07/2026

REV: P02

Document History

Revision	Revised by	Description
P01	JLW	Initial Issue for Design Review / Draft for Planning
P02	JLW/TO (AHR)	Addendum 8.1 added – For Planning

Lighting Assessment Report

Relocation / Impact of Lighting Column Adjacent to Proposed New Substation

The George Hotel, Huddersfield

1. Introduction

A.F. Connell have been requested to undertake a preliminary lighting assessment in relation to the proposed installation of a new electrical substation adjacent to an existing external lighting column at The George Hotel, Huddersfield.

The purpose of this report is to review the potential impact of the proposed substation on the existing external lighting provision and to assess whether relocation of the existing lighting column may be necessary to maintain acceptable lighting levels within the affected area.

The introduction of a new substation structure has the potential to obstruct a proportion of the light distribution from the existing luminaire, resulting in localised reductions in illuminance, increased shadowing and potential non-uniformity of lighting. Such impacts may affect pedestrian routes, service areas and adjacent external spaces depending upon the relative position of the lighting column and the proposed substation.

As part of this assessment, indicative lighting calculations have been prepared for the following scenarios:

1. **Existing Arrangement** – lighting column and luminaire in the current location.
2. **Substation Installed** – existing lighting column retained in its current position with the proposed substation obstructing a portion of the luminaire output.
3. **Lighting Column Relocated** – lighting column repositioned to the opposite side of the proposed substation to restore light distribution.

It should be noted that details of the existing lighting column, luminaire type, lamp output and optical distribution are presently unknown. Consequently, the calculations presented within this report should be regarded as indicative only and have been based upon reasonable engineering assumptions representative of a typical external lighting installation. Final lighting performance can only be confirmed following site verification of the installed equipment and the preparation of detailed photometric calculations using the manufacturer's photometric data.

2. Scope of Assessment

The assessment has been undertaken to:

- Establish the likely effect of the proposed substation on the existing lighting arrangement.
- Identify reductions in lighting performance resulting from obstruction of the luminaire output.
- Assess the potential benefits of relocating the lighting column.
- Provide guidance regarding the suitability of the proposed arrangements.

3. Existing Installation

Based upon information available at the time of writing, the existing installation comprises:

- One twin head external lighting column located adjacent to the proposed substation position.
- Identical twin head lighting columns spread out uniformly providing illumination to the surrounding hardstanding and pedestrian areas.
- Typical mounting height assumed to be 3.5 m.
- Typical LED lantern output assumed for calculation purposes.

As the precise luminaire details are unavailable, assumptions have been applied solely to establish comparative performance between the three scenarios considered.

Whilst not part of the lighting installation or forming part of this report, it should be noted that there are mature deciduous trees in close proximity (circa 1m at times) to the lighting columns which affect the current lighting levels to the area in question. These have been shown on the calculation and are indicative only but should provide a more realistic output on the calculation.

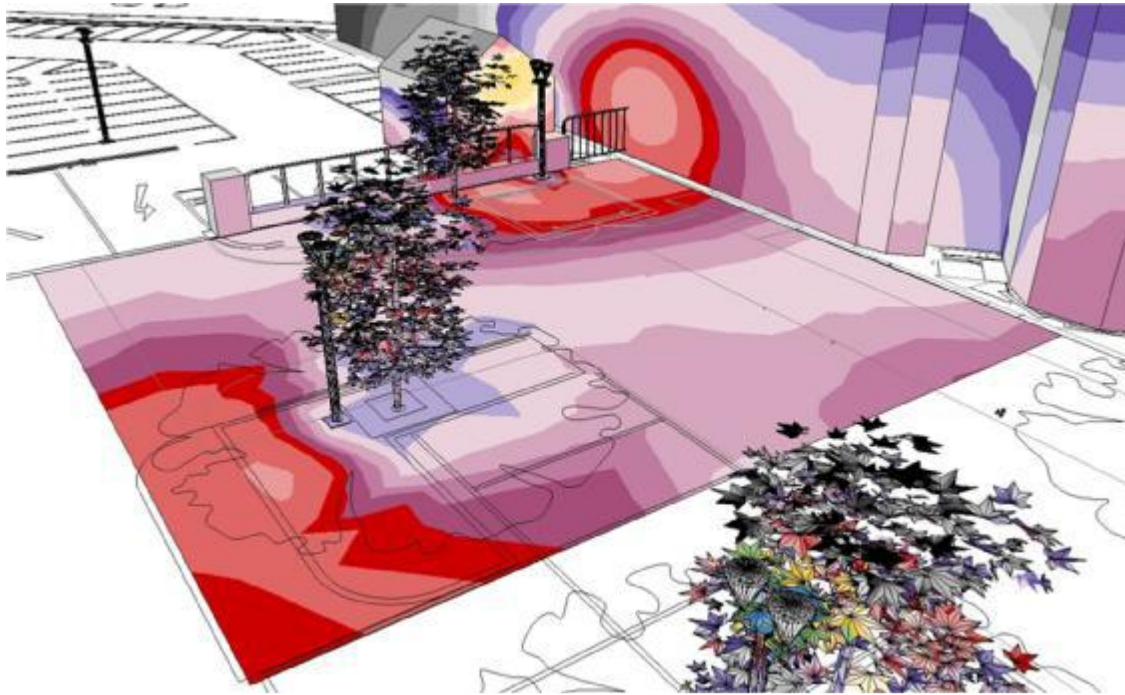
4. Calculation Methodology

The indicative calculations have been undertaken using assumed lighting parameters representative of a modern LED exterior lighting installation on industry standard lighting calculation software (Relux).

The assessment considers:

- Average maintained illuminance (E_m)
- Minimum illuminance (E_{min})
- Uniformity ($U_o = E_{min} / E_m$)
- Relative changes between the assessed arrangements

The calculations are intended to demonstrate the comparative impact of the proposed substation and potential column relocation rather than provide absolute design values.



5. Calculation Results

Scenario 1 – Existing Arrangement

The existing lighting column provides an unrestricted light distribution across the assessment area.

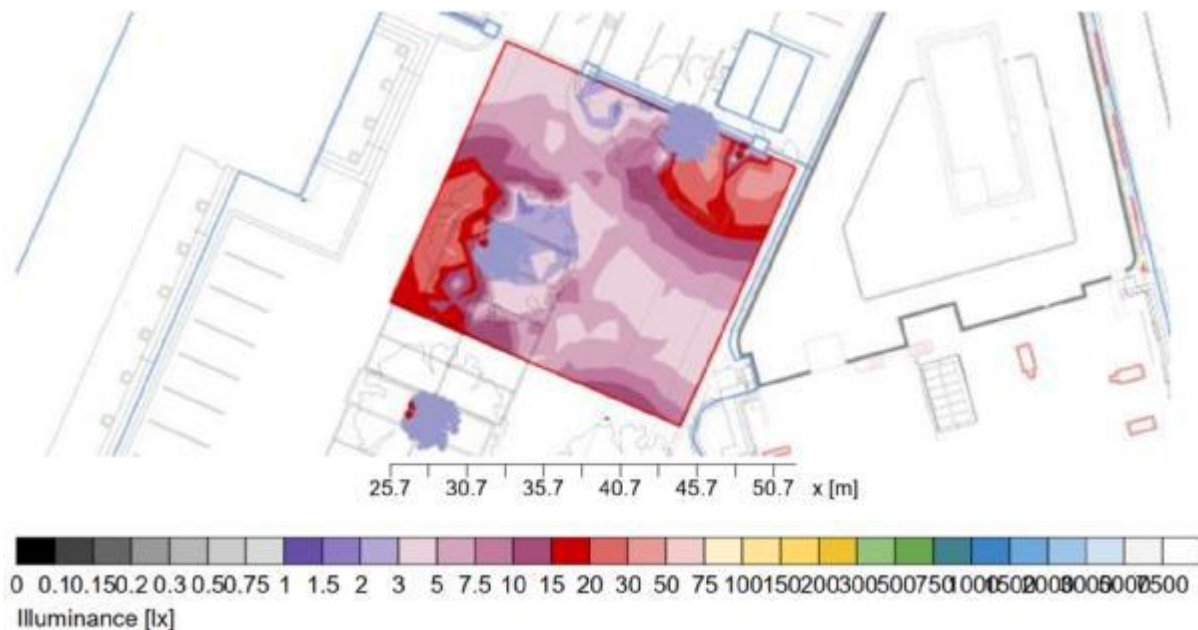
Indicative Results

Parameter	Result
Average Illuminance	9.7 lux
Minimum Illuminance	2.1 lux
Uniformity	0.21

Assessment

The existing arrangement provides the benchmark against which subsequent scenarios have been assessed.

Calculation extract below:



Scenario 2 – Existing Column Retained with Proposed Substation

The proposed substation creates a physical obstruction within the light path, reducing the amount of light reaching areas located behind the structure.

Indicative Results

Parameter	Result
Average Illuminance	6.7 lux
Minimum Illuminance	0.1 lux
Uniformity	0.01

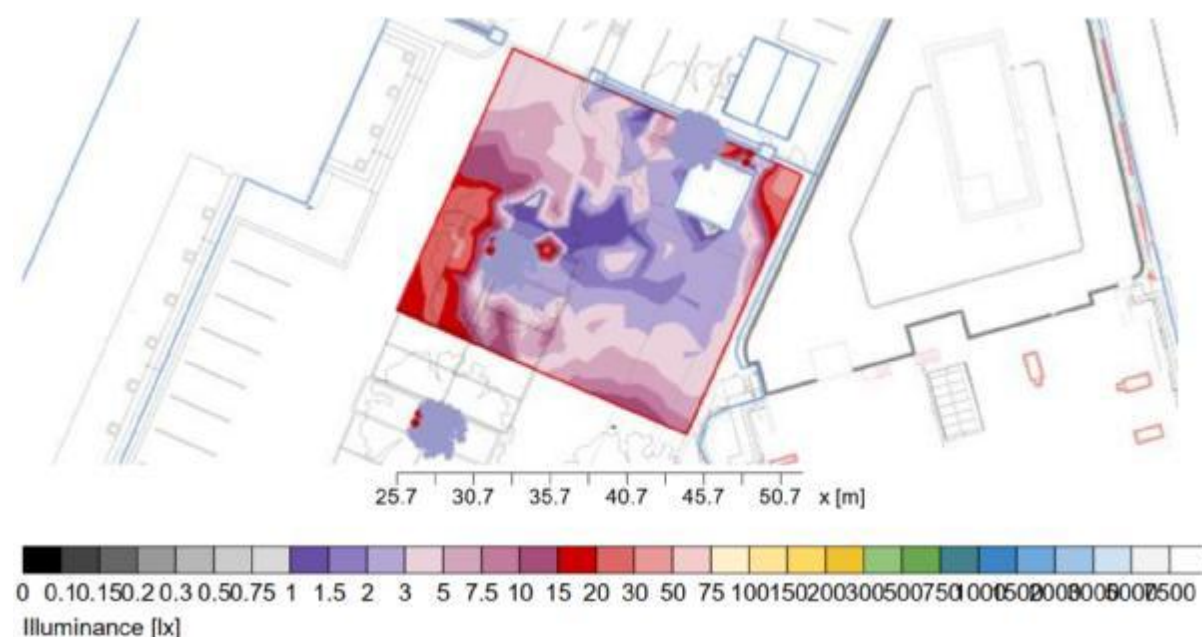
Assessment

The introduction of the substation is predicted to:

- Create a shadow zone behind the structure.
- Reduce average illuminance levels.
- Significantly reduce minimum illuminance values.
- Deteriorate lighting uniformity.

The impact is particularly evident within the immediate vicinity beyond the substation where direct light from the lantern is obstructed.

Calculation extract below:



Scenario 3 – Lighting Column Relocated Beyond the Proposed Substation

The lighting column is assumed to be relocated to the opposite side of the proposed substation, allowing the luminaire to provide unobstructed coverage of the affected area.

Indicative Results

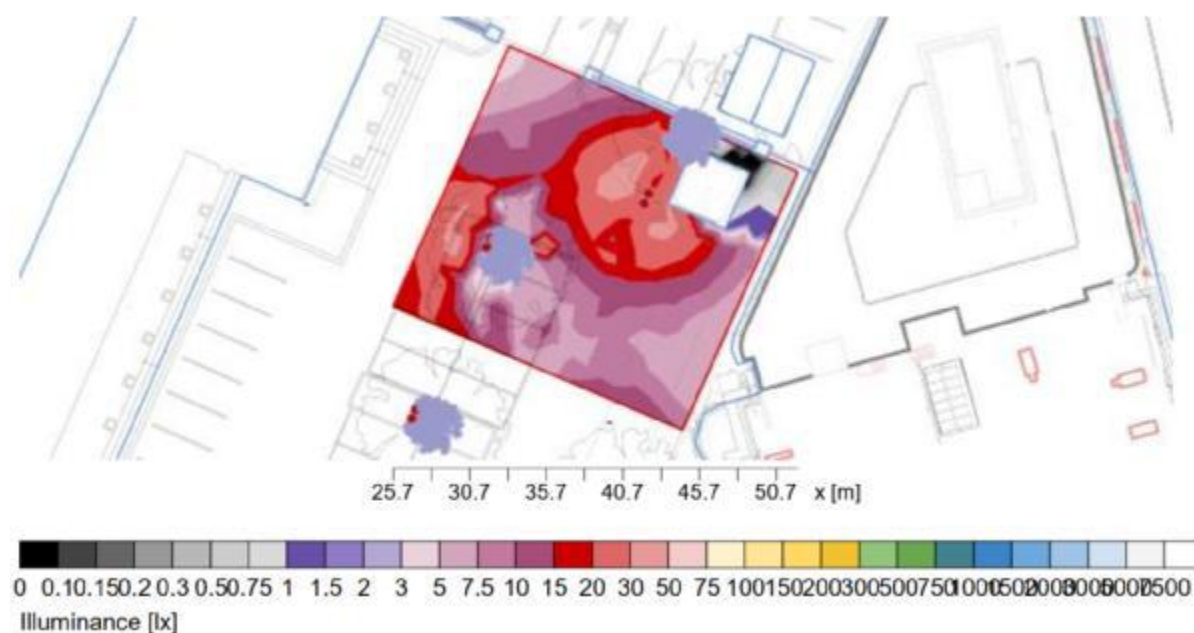
Parameter	Result
Average Illuminance	12.9 lux
Minimum Illuminance	0.1 lux
Uniformity	0.01

Assessment

Relocation of the lighting column substantially restores the lighting performance to levels comparable with the existing arrangement.

The revised position:

- Eliminates the principal shadowing effect caused by the substation.
- Restores average illuminance levels.
- Improves minimum illuminance values.
- Improves lighting uniformity across the assessment area. Calculation extract below:



6. Discussion

The indicative calculations demonstrate that retaining the lighting column in its current position after construction of the proposed substation is likely to result in a noticeable reduction in lighting performance due to obstruction of the luminaire output.

Whilst the extent of the impact will depend upon the actual lantern optics, mounting height and final substation dimensions, it is expected that some degree of shadowing will occur whenever the substation is positioned within the primary light distribution zone.

Relocating the lighting column beyond the substation appears to provide the most effective means of mitigating this impact by reinstating a direct light path to the affected areas.

As can be seen in the calculation extracts for scenarios 2 & 3, the minimum illuminance of 0.1 lux is created by the sub-station. It has been suggested that the area to the rear of the sub-station can be fenced off for security / safety where the lighting is low.

It should be recognised that these findings are based upon assumed luminaire data and therefore represent an engineering assessment rather than a final lighting design.

7. Conclusions

A.F. Connell have undertaken an indicative assessment of the potential lighting implications associated with the proposed new electrical substation at The George Hotel, Huddersfield.

The assessment indicates that:

- The proposed substation will partially obstruct the output of the existing lighting column if it remains in its current location.
- This obstruction is likely to reduce illuminance levels and lighting uniformity within adjacent external areas.
- Relocation of the lighting column to the opposite side of the proposed substation generally restores lighting performance to a level comparable with the existing arrangement.
- Relocation therefore represents the preferred solution from a lighting perspective.

The lighting calculations presented within this report should be considered indicative only due to the absence of confirmed details relating to the existing lighting column and luminaire. A final assessment should be undertaken once the existing equipment specification and the final substation arrangement have been confirmed.

13.08.26 – See Addendum 8.1 (end of report) for details relating to area between the proposed sub-station and the Hotel

Prepared by:

Carl Wood, on behalf of A.F. Connell Ltd

Project: The George Hotel, Huddersfield

Subject: Relocation of Lighting Column Adjacent to Proposed New Substation

Issue: For Planning / Design Review

Date: July 2026

ADDENDUM 8.1

Email Correspondence re proposed hotel fixed lighting to address the dark area between the proposed sub station and hotel to bring levels up to 12.9 lux (0.1 Lux Min & Uniformity 0.01):

From: Carl Wood <carl.wood@afconnell.com>

Sent: 13 August 2026 09:01

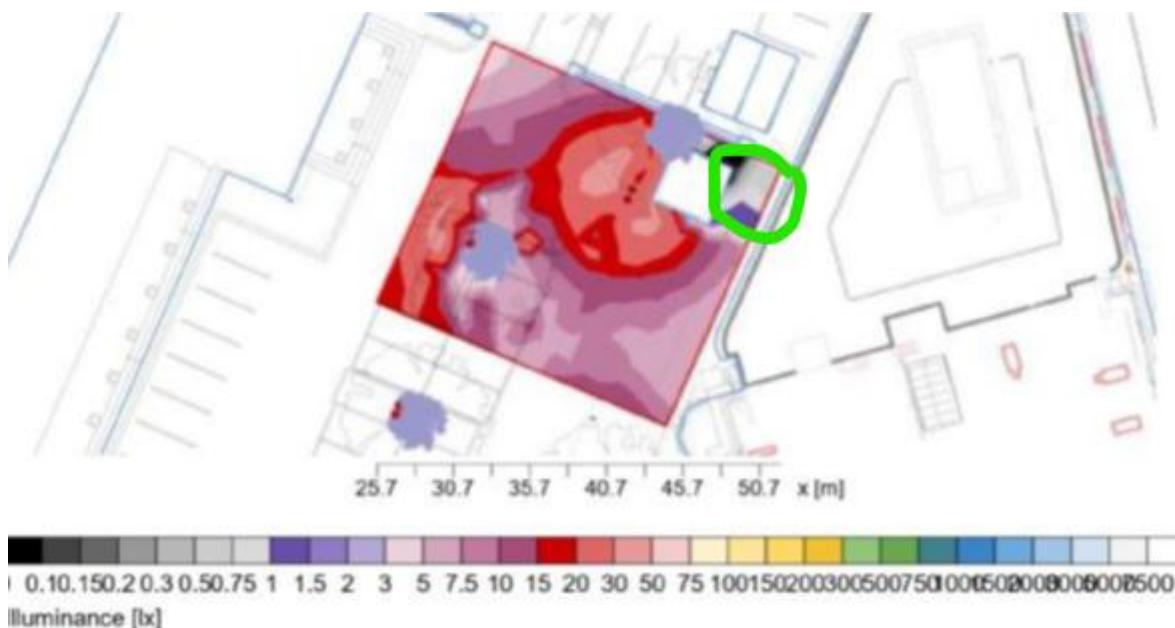
To: Al Whitehead <Alex.Whitehead@gmi.co.uk>; Jon Wade <jon.wade@afconnell.com>; Timothy Ordway <Timothy.Ordway@ahr.co.uk>

Cc: David McKeever <David.McKeever@gmi.co.uk>; Charlie Bagnall <Charlie.Bagnall@gmi.co.uk>; Jensen Vyse <Jensen.Vyse@gmi.co.uk>; James Hendry <james.hendry@adeptcsce.com>; Matt Stephenson <Matt.Stephenson@ahr.co.uk>; Martin Langan <martin.langan@adeptcsce.com>

Subject: RE: Substation Planning submission - target 31st July 2026

Morning All,

Further to yesterdays meeting and the discussion of the dark spot behind new sub-station. We propose installing 1No. Southgate Lighting – Moonlight LED Eyelid on the Hotel façade within the fenced area to eliminate the dark spot, the luminaire will be controlled via an integral PIR (can be switched dusk-dawn if required). Luminaire is to be colour coded to suit building fabric (eg RAL 1001, colour TBC by architect).



Regards,

Carl Wood TMIET

Associate Director – Design Manager

✉ carl.wood@afconnell.com

Moonlight LED Eyelid

Outdoor Luminaires



CE

LED

IP65

IK10

BIM

RAL 1001
BEIGE

Moonlight LED Eyelid

Outdoor Luminaires

Order Codes

Wattage	Luminous Flux	lm/W	Diameter	Depth	Product Code
9.2 W	1294 lm	140.7 lm/W	360 mm	80 mm	SGL/LED/1710/ML/EL
13.1 W	1817 lm	138.7 lm/W	360 mm	80 mm	SGL/LED/2400/ML/EL
17.1 W	2332 lm	136.4 lm/W	360 mm	80 mm	SGL/LED/3080/ML/EL

Additional lumen outputs are available due to mA ratings and codes may vary from those stated. Please contact us for further details.

Sizes

- Diameter: 360mm
- Depth: 80mm

Code Options

- Add /EMG to codes for Emergency
- Add /EMG/ST to codes for Self-Test Emergency
- Add /EMG/AD to codes for Addressable Emergency
- Add /DALI to codes for DALI Dimming
- Add /PIR to codes for Inbuilt PIR

LED Boards

- Tridonic/OSRAM LED
- Colour Temperatures Available: 3000k/4000k/5000k
- All LED data and performance data is taken at an ambient temperature of +25°C

Control Gear

Tridonic/OSRAM

- Standard LED
- DALI Dimming LED
- Wireless Bluetooth

Main Attributes

- Module efficacy up to 150 lm/W
- 50,000h L90/F10 at 25°C - F value is derived by combining B (number of units under L threshold) and C (number of fatal unit failures). F value demonstrates a far more realistic value of life expectancy.**
- Self Cooling
- Colour Rendering Index >80
- 7 Year Guarantee*
- CE Marked

* Please refer to the Warranty for more information.

** Subject to change.

Photometrics

