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Attention: Dean Williams
Level 4, 69 Reservoir St
Surry Hills, NSW, 2010

Mercantile Hotel, The Rocks
25 George Street
The Rocks, 2000

Intrusive Lighting Assessment

This report assesses the impacts of intrusive lighting/illumination on potentially affected surrounding buildings resulting from the addition of artificial lighting on the rooftop level only of the Mercantile Hotel. The new artificial lighting will be the result of proposed re-development works at the hotel which include the addition of a rooftop balcony and restaurant area. The requirement of this assessment is detailed in the Secretary's Environmental Assessment Requirement (SEAR) report.

The report will firstly state the preliminary design details for artificial lighting in the rooftop area together with any design assumptions. Secondly calculation methods and compliance checks against the latest Australian Standard *AS4282(1997) – Control of the obtrusive effects of outdoor lighting* will be detailed. Finally the results of the calculations will be presented with a conclusion and any recommendations, if required.

Preliminary Lighting Design of Mercantile Hotel Rooftop Area.

The artificial lighting design for this area consists of the use of LED downlight fittings for the internal restaurant area, and both LED downlight and surface mount fittings in the adjacent external balcony area. The following table outlines the design maintained illuminance levels for both area:

Area	Maintained Average Illuminance
Internal Restaurant Area	200 lx
External Balcony Area	100 lx

The lighting design addresses the relevant performance recommendations:

1. Luminaire selections and luminaire aiming considers the illuminance cut-off, as best as practically possible, from the horizontal and upward direction. Downlight fitting beam angles are restricted to <= 60° and aimed directly downward toward to the horizontal floor plane. External surface mount fittings mounted on the vertical plane are provided with eyelid features to reduce light throw in the horizontal and upward direction, and are pointed toward the building structure (away from other affected premises').
2. Time clock switching device in accordance with NCC/BCA Section J6 to be used to automatically turn "on" lighting at sunset and automatically turn "off" lighting outside regular rooftop/hotel trading hours. By-pass manual override switch for rooftop lighting to be provided in accordance with NCC/BCA Section J6.

Design Assumptions

The following assumptions are made regarding the roof top area artificial lighting design:

- Glass used on the West and East facing walls of the rooftop restaurant structure account for 70% of the surface area of these walls, and has a transparency of around 50%. All other walls will not transmit light from the internal to external space.
- No temporary additional lighting is to be used in the area for other purposes including but not limited to entertainment and feature lighting, in times such as special events and functions.
- Existing light emitted from the building to affected surrounding areas are already well within the recommended limits for intrusive lighting stated in AS4282, and therefore considered of little significance to these calculations.
- Operation of the rooftop area and subsequent lighting will exceed the curfew hour of 11pm, but cannot be limited or reduced in curfewed hours (after 11pm). As such the design and subsequent calculations are based entirely on recommended 'Curfewed Hours' parameters stated in AS4282 table 2.1.

- The lighting design used in this intrusive lighting assessment represents a 'Schematic Design' and is based on current architectural drawings and information current at the date of this assessment (26/10/2017). This design is subject to changes in a future 'Detailed Design' stages. The intrusive light assessment is to be re-assessed at the subsequent future stages of design to ensure compliance with relevant authorities and bodies.

Calculations

Calculations to test against the requirements of AS4282 were completed using the latest version of software package AGI32 (v.18.3). The test comprises of placement of vertical lighting planes at the windows or relevant boundary of the affected properties based on the 'Curfewed Hours' method of AS4282. The affected properties and approximate vertical calculation plane locations are highlighted in Figure 1 below.

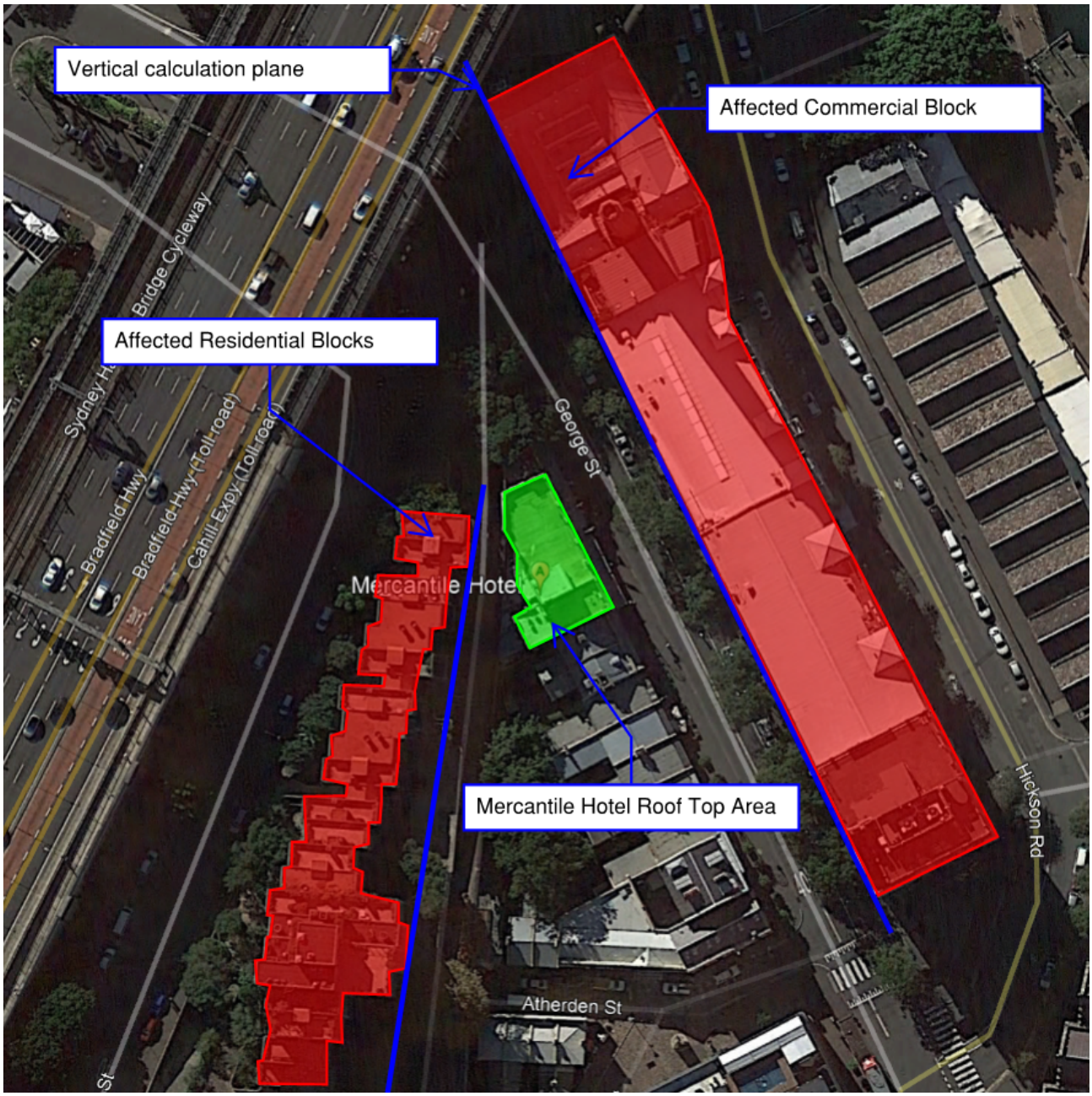

Figure 1: AS 4282 Calculation Arial Overview

Results and Conclusion

The following table shows both the maximum allowed values and calculated results for Illuminance and Luminous Intensity at the vertical planes of the affected properties.

Calculation Type	Maximum Value Allowed from AS4282 Table 2.1 for 'Curfewed Hours'	Affected Property	Calculation Results
Illuminance	4 lx	Residential Blocks	**PASS**
		Commercial Block	**PASS**
Luminous Intensity	2500 cd	Residential Blocks	**PASS**
		Commercial Block	**PASS**

Based on the artificial lighting schematic design indicated above, and the subsequent design assumptions at the date and time of this assessment, the requirements for the *Control of the obtrusive effects of outdoor lighting* in AS 4282 are met.

Regards,

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