

Mr. Bailey Stewart
Contract Administrator
FDC Building
By email: baileys@fdcbuilding.com.au

05 Sep 2024

Re: GWS Tom Wills Oval – Proposed LED Digital Scoreboard – AS4282:2023 Compliance

1.0. INTRODUCTION

VAILO Pty Ltd has been engaged by FDC Building to verify that a proposed LED Digital Scoreboard for the Tom Wills Oval complies with Standard AS/NZS 4282:2023 "Control of the obtrusive effects of outdoor lighting".

The proposed LED Digital Screen/Scoreboard is 12.8m long x 3.6m tall and proposed to be mounted directly to the existing building along the Western boundary line.

VAILO has been advised that the closest residence that may be affected by the LED digital scoreboard is over 300m from the proposed installation location.

VAILO has been advised that the proposed location of the LED digital scoreboard is not visible to drivers.



2.0. VERIFICATION TO STANDARD

AS/NZS 4282:2023 is the current version of the Australian Standard for the “Control of the obtrusive effect of outdoor lighting”.

Tom Wills Oval is designated to be an Environmental Zone A3 – Medium District Brightness, as defined in Table 3.1 – Environmental Zones of AS/NZS 4282:2023.

Section 3.3.3 of AS/NZS 4282 defines the Light Technical Parameters (LTPs) for Lit Surfaces, specifically the requirement to meet the specifications outlines in Tables 3.2 and 3.4.

VAILO has conducted a simulated lighting design using the industry standard lighting simulation software, AGi32, to verify that the proposed installation is compliant. It should be noted that this report has also been calculated with the proposed sports lighting upgrade luminaires also switched on. In effect, this report is being generated in the real-world condition of LED lights and screens operating at once.

Regarding the requirements of Table 3.2 – Light technical parameter limits:

- Requirement 1:
 - Maximum vertical illuminance (Ev) lux for Zone A3 is defined as 10 lux for Non-Curfew and 2 lux for Curfew.
 - Since there is no residential dwelling within 100m, clause 3.3.3.2 for dynamic content is deemed to not apply.
 - **Outcome = PASS.** Refer AGi32 report. *Note: As measured at the maximum allowable average luminance value as defined in Table 3.4, being 250 cd/m² refer Requirement 4 (below).*
- Requirement 2:
 - Threshold Increment (TI) only applies where the light emitting surface can be seen by drivers (refer section 3.3.3.3.1 Internally lit and light emitting surface).
 - **Outcome = Not Applicable.** This requirement does not apply for this proposed install location.
- Requirement 3:
 - Maximum Upward Light Ratio is defined as ≤0.50 for an internally illuminated object (refer section 3.3.3.4(a) Control of upward waste light).
 - **Outcome = PASS.** Refer AGi32 report.

Regarding to the requirements of Table 3.4 – Maximum average luminance of surfaces (cd/m²):

- Requirement 4:
 - At night, the maximum average luminance of surfaces is 250 cd/m².
 - Since the proposed LED scoreboard location is not within a NSW Transport Corridor, there is no brightness limit during daylight hours.
 - **Outcome = PASS.** Note: VAILO will program a defined “night mode” brightness setting for the LED digital screen/scoreboard that will dim the surface to the defined 250 cd/m² limit.

3.0. SUMMARY

The proposed LED Digital scoreboard installed in the proposed location complies with the applicable Australian Standards.

4.0. APPENDICES and REFERENCES

- AGi32 report (attached)
- AS/NZS 4282:2023 “Control of the obtrusive effects of outdoor lighting” (refer Standards Australia)

Yours faithfully,



Phil McKenzie
GM Engineering & Production
VAILO Pty Ltd
BEng (Hons 1), BScMCS, AssocIES

Obtrusive Light - Compliance Report

Filename: 030A Tom Wills Oval - LED DISPLAY ONLY
5/09/2024 3:52:50 PM

Illuminance

Maximum Allowable Value: 10 Lux

Calculations Tested (27):

Calculation Label	Test Results	Max. Illum.
11 Southern Creek Area_III_Seg1	PASS	0
07 Sarah Durak Ave 200-300_III_Seg1	PASS	0
08 Opal Tower 200-300_III_Seg1	PASS	0
08 Opal Tower 200-300_III_Seg2	PASS	0
08 Opal Tower 200-300_III_Seg3	PASS	0
08 Opal Tower 200-300_III_Seg4	PASS	0
08 Opal Tower 200-300_III_Seg5	PASS	0
08 Opal Tower 200-300_III_Seg6	PASS	0
05 Boomerang Tower 50-100_III_Seg1	PASS	0
05 Boomerang Tower 50-100_III_Seg2	PASS	0
05 Boomerang Tower 50-100_III_Seg3	PASS	0
05 Boomerang Tower 50-100_III_Seg4	PASS	0
05 Boomerang Tower 50-100_III_Seg5	PASS	0
05 Boomerang Tower 50-100_III_Seg6	PASS	0
05 Boomerang Tower 50-100_III_Seg7	PASS	0
05 Boomerang Tower 50-100_III_Seg8	PASS	0
05 Boomerang Tower 50-100_III_Seg9	PASS	0
05 Boomerang Tower 50-100_III_Seg10	PASS	0
06 Boomarang Tower 100-200_III_Seg1	PASS	0
09 Opal Tower 300+_III_Seg1	PASS	0
09 Opal Tower 300+_III_Seg2	PASS	0
09 Opal Tower 300+_III_Seg3	PASS	0
09 Opal Tower 300+_III_Seg4	PASS	0
09 Opal Tower 300+_III_Seg5	PASS	0
09 Opal Tower 300+_III_Seg6	PASS	0
09 Opal Tower 300+_III_Seg7	PASS	0
10 Lake Belvedere_III_Seg1	PASS	0

Luminous Intensity (Cd) At Vertical Planes

Maximum Allowable Value: 12500 Cd

Calculations Tested (27):

Calculation Label	Test Results
11 Southern Creek Area_Cd_Seg1	PASS
07 Sarah Durak Ave 200-300_Cd_Seg1	PASS
08 Opal Tower 200-300_Cd_Seg1	PASS
08 Opal Tower 200-300_Cd_Seg2	PASS
08 Opal Tower 200-300_Cd_Seg3	PASS
08 Opal Tower 200-300_Cd_Seg4	PASS
08 Opal Tower 200-300_Cd_Seg5	PASS
08 Opal Tower 200-300_Cd_Seg6	PASS
05 Boomerang Tower 50-100_Cd_Seg1	PASS
05 Boomerang Tower 50-100_Cd_Seg2	PASS
05 Boomerang Tower 50-100_Cd_Seg3	PASS
05 Boomerang Tower 50-100_Cd_Seg4	PASS
05 Boomerang Tower 50-100_Cd_Seg5	PASS
05 Boomerang Tower 50-100_Cd_Seg6	PASS
05 Boomerang Tower 50-100_Cd_Seg7	PASS
05 Boomerang Tower 50-100_Cd_Seg8	PASS
05 Boomerang Tower 50-100_Cd_Seg9	PASS
05 Boomerang Tower 50-100_Cd_Seg10	PASS
06 Boomarang Tower 100-200_Cd_Seg1	PASS
09 Opal Tower 300+_Cd_Seg1	PASS
09 Opal Tower 300+_Cd_Seg2	PASS
09 Opal Tower 300+_Cd_Seg3	PASS
09 Opal Tower 300+_Cd_Seg4	PASS
09 Opal Tower 300+_Cd_Seg5	PASS
09 Opal Tower 300+_Cd_Seg6	PASS
09 Opal Tower 300+_Cd_Seg7	PASS
10 Lake Belvedere_Cd_Seg1	PASS

Threshold Increment (TI)

Maximum Allowable Value: 20 %

Calculations Tested (8):

Calculation Label	Adaptation Luminance	Test Results
Australia Ave Sth_TI_1	1	PASS
Shirley Strickland Ave East_TI_7	1	PASS
Shirley Strickland Ave West_TI_6	1	PASS
Olympic Blvd Sth_TI_4	1	PASS
Olympic Blvd Nth_TI_3	1	PASS
Sarah Durack Ave East_TI_6	1	PASS
Sarah Durack Ave West_TI_5	1	PASS
Australia Ave Nth_TI_2	1	PASS

Upward Waste Light Ratio (UWLR)

Maximum Allowable Value: 50.0 %

Calculated UWLR: 50.0 %

Test Results: PASS