

Note: The arena and arena lights are the only development subject to this determination.



commercial parking
inside shed and on
the side / back of shed.

- Proposed Paddocks
- Tree Removal Area (26) trees.
- Trees (308) trees
- Horse Shelters + Tack shed.
- Arena lights.
- Tree Removal area (Additional) Close to Paddock 5

OVERALL SITE PLAN
SCALE 1:1000 @ A3 SIZE

LOT 87, 26 KARBRO DRIVE, CARDUP
SITE AREA 26263m²

Upgrade existing fencing with RL5 Post and Rail

Perth Lighting Consultants

ABN:69 609 527 586

27/03/2023

Project Title

Spill light Compliance 26 Karbro Drive Cardup WA 6122



Summary
Requirements
Calculation areas
Calculation Results
Luminaire Product Details
Conclusions
Project Review and Signoff

Summary

The intent of this report serves as confirmation for the compliance of the attached design and serves as prove that the installation upgrade was done to achieve compliance to Australian standards ASNZS4282-2019 Control of obtrusive effect of outdoor lighting to existing infrastructure .

Requirements.

The following standards has been nominated for the areas as stated below for performance levels for the area.

- ASNZS4282-2019 Control of obtrusive effect of outdoor lighting Table 3.2 and Table 3.3
- This area is classified as a Class A2 area Low district brightness area- sparsely inhabited rural and semi-rural areas.

Lighting parameters for these areas as follows.

Maximum (lux) level at property building line 5 lux max before curfew and 1 lux max after curfew typical after 10pm)

Max illuminance intensity (Candela) of 7500Cd before curfew and 1000Cd after curfew

All these measurement are taken in a vertical plane (line of site)

Calculation areas:

Calculations measurements are done at the following areas.

- Building Line of 42 Karbro Drive
- Building Line of 28 Karbro Drive
- Fence line that forms part of fence between 42 Karbro Drive, 26 Karbro Drive and 28 Karbro Drive

Calculation results:

- All calculations as displayed below results in measurements below max allowed according to ASNZS4282-2019 Control of obtrusive effect of outdoor lighting Table 3.2 and Table 3.3 for area Class A2
Calculations results shows results that will cause no discomfort to inhabitants adjacent to 26 Karbro drive . All these results expected to be even lower as all calculations are done without any obstructions in the way like trees etc.

All calculations applied to curfewed as well as non-curfewed time. Lighting can be used at any time of night or early morning and still comply to curfewed requirements

Calculation Summary				
Label	CalcType	Units	Max	Pass/Fail
ObtrusiveLight 28 Karbo Drive_Cd_Seg1	Obtrusive - Cd	Cd	781	Pass
ObtrusiveLight 28 Karbo Drive_Cd_Seg2	Obtrusive - Cd	Cd	927	Pass
ObtrusiveLight 28 Karbo Drive_Cd_Seg3	Obtrusive - Cd	Cd	927	Pass
ObtrusiveLight 28 Karbo Drive_III_Seg1	Obtrusive - Lux	Lux	0.4	Pass
ObtrusiveLight 28 Karbo Drive_III_Seg2	Obtrusive - Lux	Lux	0.5	Pass
ObtrusiveLight 28 Karbo Drive_III_Seg3	Obtrusive - Lux	Lux	0.2	Pass
ObtrusiveLight 42 Karbo Drive_Cd_Seg1	Obtrusive - Cd	Cd	273	Pass
ObtrusiveLight 42 Karbo Drive_Cd_Seg2	Obtrusive - Cd	Cd	436	Pass
ObtrusiveLight 42 Karbo Drive_Cd_Seg3	Obtrusive - Cd	Cd	0	Pass
ObtrusiveLight 42 Karbo Drive_Cd_Seg4	Obtrusive - Cd	Cd	455	Pass
ObtrusiveLight 42 Karbo Drive_III_Seg1	Obtrusive - Lux	Lux	0.1	Pass
ObtrusiveLight 42 Karbo Drive_III_Seg2	Obtrusive - Lux	Lux	0.3	Pass
ObtrusiveLight 42 Karbo Drive_III_Seg3	Obtrusive - Lux	Lux	0	Pass
ObtrusiveLight 42 Karbo Drive_III_Seg4	Obtrusive - Lux	Lux	0.1	Pass
ObtrusiveLight Boundary Line_Cd_Seg1	Obtrusive - Cd	Cd	791	Pass
ObtrusiveLight Boundary Line_III_Seg1	Obtrusive - Lux	Lux	0.6	Pass

Obtrusive Light - Compliance Report

AS/NZS 4282:2019, A2 - Low District Brightness, Curfew
 Filename: 26 Karbro Drive, Cardup WA, Australia
 3/29/2023 6:53:07 AM

Illuminance

Maximum Allowable Value: 1 Lux

Calculations Tested (8):

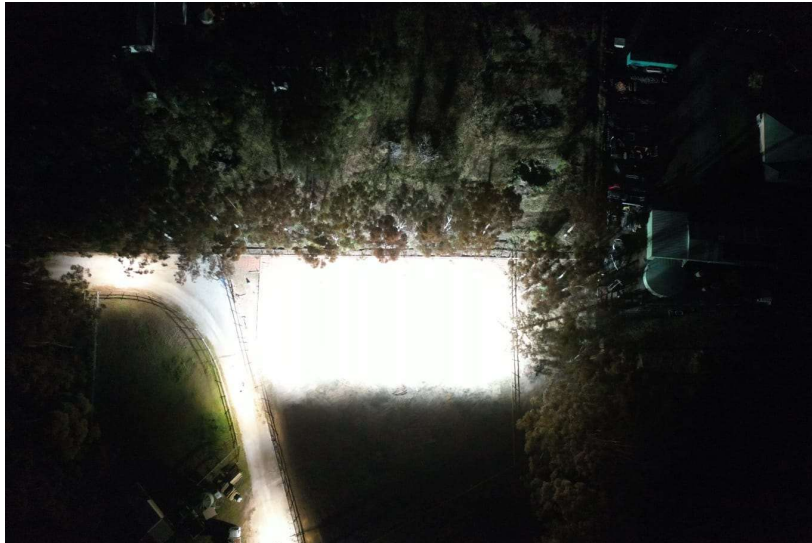
Calculation Label	Test Results	Max. Illum.
ObtrusiveLight Boundary Line_III_Seg1	PASS	0.6
ObtrusiveLight 42 Karbro Drive_III_Seg1	PASS	0.1
ObtrusiveLight 42 Karbro Drive_III_Seg2	PASS	0.3
ObtrusiveLight 42 Karbro Drive_III_Seg3	PASS	0.0
ObtrusiveLight 42 Karbro Drive_III_Seg4	PASS	0.1
ObtrusiveLight 28 Karbro Drive_III_Seg1	PASS	0.4
ObtrusiveLight 28 Karbro Drive_III_Seg2	PASS	0.5
ObtrusiveLight 28 Karbro Drive_III_Seg3	PASS	0.2

Luminous Intensity (Cd) At Vertical Planes

Maximum Allowable Value: 1000 Cd

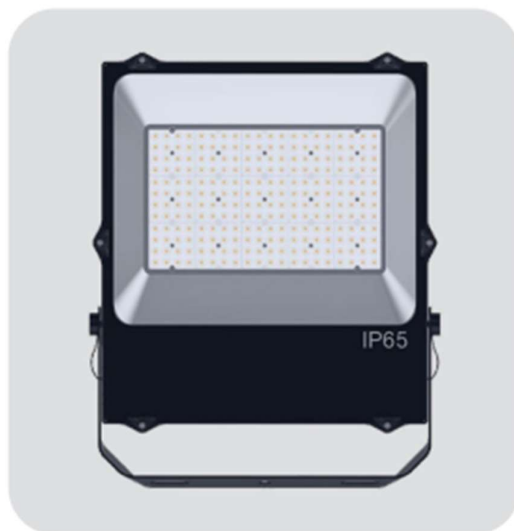
Calculations Tested (8):

Calculation Label	Test Results
ObtrusiveLight Boundary Line_Cd_Seg1	PASS
ObtrusiveLight 42 Karbro Drive_Cd_Seg1	PASS
ObtrusiveLight 42 Karbro Drive_Cd_Seg2	PASS
ObtrusiveLight 42 Karbro Drive_Cd_Seg3	PASS
ObtrusiveLight 42 Karbro Drive_Cd_Seg4	PASS
ObtrusiveLight 28 Karbro Drive_Cd_Seg1	PASS
ObtrusiveLight 28 Karbro Drive_Cd_Seg2	PASS
ObtrusiveLight 28 Karbro Drive_Cd_Seg3	PASS



Luminaire Product details:

A total of 6 x Luminaires are installed at 7m height with a max allowable tilt angle of 35 deg to achieve compliance



**ETG-ESFL200
200W**



Conclusion

All design parameters of the relevant Australian standards were met in this report.

Reviewer

A handwritten signature in blue ink, appearing to read 'FW Strydom', with a horizontal line underneath.

FW Strydom Mies Lighting Engineer

Registration number 2367

Contact 0415774615



PERTH LIGHTING CONSULTANTS

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Project: 26 KARBO DRIVE CARDU WA AUSTRALIA

Client:

This design calculation is based upon specified parameters supplied by the client, and other design inputs assumed by us, as detailed in this document. In practice, the accuracy of the values will differ due to environmental variations such as actual luminaire positioning, room surface reflectance, supply voltage, local luminaire ambient temperature, obstacles/furniture, etc. These results are also subject to normally accepted photometric tolerances, and calculation/program uncertainties.

Perth Lighting consultants provides this calculation "as is" without any representation or warranty of any kind. The Company shall be under no liability to the Customer for failure to attain such performance figures unless the performance of the Goods supplied is specifically guaranteed in writing, and any such written guarantee shall be subject to recognised manufacturing variations and tolerances applicable to the Goods.

Rev:	Date:	Comments:

File Name:

Project No:	
Designer: FWS	
Drawn Date: 27/03/2023	Scale: Not to scale
Page Size: A3	Page 1 of 2

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts	
—+□	6	F1	Single	ETG-ESFL200	1.000	28000	48.4	290.4	

Calculation Summary						
Label	CalcType	Units	Avg	Max	Min/Max	
ObtrusiveLight 28 Karbro Drive_Cd_Seg1	Obtrusive - Cd	N.A.	741.39	781	0.90	
ObtrusiveLight 28 Karbro Drive_Cd_Seg2	Obtrusive - Cd	N.A.	854.23	927	0.83	
ObtrusiveLight 28 Karbro Drive_Cd_Seg3	Obtrusive - Cd	N.A.	905.29	927	0.95	
ObtrusiveLight 28 Karbro Drive_Ill_Seg1	Obtrusive - Ill	Lux	0.32	0.4	0.75	
ObtrusiveLight 28 Karbro Drive_Ill_Seg2	Obtrusive - Ill	Lux	0.47	0.5	0.80	
ObtrusiveLight 28 Karbro Drive_Ill_Seg3	Obtrusive - Ill	Lux	0.13	0.2	0.50	
ObtrusiveLight 42 Karbro Drive_Cd_Seg1	Obtrusive - Cd	N.A.	145.98	273	0.21	
ObtrusiveLight 42 Karbro Drive_Cd_Seg2	Obtrusive - Cd	N.A.	348.17	436	0.61	
ObtrusiveLight 42 Karbro Drive_Cd_Seg3	Obtrusive - Cd	N.A.	0.00	0	N.A.	
ObtrusiveLight 42 Karbro Drive_Cd_Seg4	Obtrusive - Cd	N.A.	333.69	455	0.42	
ObtrusiveLight 42 Karbro Drive_Ill_Seg1	Obtrusive - Ill	Lux	0.03	0.1	0.00	
ObtrusiveLight 42 Karbro Drive_Ill_Seg2	Obtrusive - Ill	Lux	0.29	0.3	0.67	
ObtrusiveLight 42 Karbro Drive_Ill_Seg3	Obtrusive - Ill	Lux	0.00	0.0	N.A.	
ObtrusiveLight 42 Karbro Drive_Ill_Seg4	Obtrusive - Ill	Lux	0.10	0.1	1.00	
ObtrusiveLight Boundary Line_Cd_Seg1	Obtrusive - Cd	N.A.	689.10	791	0.25	
ObtrusiveLight Boundary Line_Ill_Seg1	Obtrusive - Ill	Lux	0.25	0.6	0.17	

Obtrusive Light - Compliance Report
 AS/NZS 4282:2019, A2 - Low District Brightness, Curfew
 Filename: 26 Karbro Drive, Cardup WA, Australia
 3/29/2023 6:53:55 AM

Illuminance
 Maximum Allowable Value: 1 Lux

Calculations Tested (8):
 TestMax.
 Calculation LabelResultsIllum.
 ObtrusiveLight Boundary Line_Ill_Seg1PASS0.6
 ObtrusiveLight 42 Karbro Drive_Ill_Seg1PASS0.1
 ObtrusiveLight 42 Karbro Drive_Ill_Seg2PASS0.3
 ObtrusiveLight 42 Karbro Drive_Ill_Seg3PASS0.0
 ObtrusiveLight 42 Karbro Drive_Ill_Seg4PASS0.1
 ObtrusiveLight 28 Karbro Drive_Ill_Seg1PASS0.4
 ObtrusiveLight 28 Karbro Drive_Ill_Seg2PASS0.5
 ObtrusiveLight 28 Karbro Drive_Ill_Seg3PASS0.2

Luminous Intensity (Cd) At Vertical Planes
 Maximum Allowable Value: 1000 Cd

Calculations Tested (8):
 Test
 Calculation LabelResults
 ObtrusiveLight Boundary Line_Cd_Seg1PASS
 ObtrusiveLight 42 Karbro Drive_Cd_Seg1PASS
 ObtrusiveLight 42 Karbro Drive_Cd_Seg2PASS
 ObtrusiveLight 42 Karbro Drive_Cd_Seg3PASS
 ObtrusiveLight 42 Karbro Drive_Cd_Seg4PASS
 ObtrusiveLight 28 Karbro Drive_Cd_Seg1PASS
 ObtrusiveLight 28 Karbro Drive_Cd_Seg2PASS
 ObtrusiveLight 28 Karbro Drive_Cd_Seg3PASS

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Project: 26 KARBO DRIVE CARDUP WA AUSTRALIA
Client:

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Designer: FWS

Drawn Date: 27/03/2023 **Scale:** Not to scale

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