

The values of light technical parameters shown in this lighting design calculation are nominal. They are based on parameters provided by the client and the specific details as reported in this document. Results in practice may be different due to variations such as luminaire positioning/aiming, surface reflectance, supply voltage, local luminaire ambient temperature, obstacles/furniture, etc. They are also subject to normally accepted photometric tolerances, and calculation/program uncertainties. Apex Lighting shall be under no liability to the Customer for failure to attain such performance figures. Commercial in confidence.

Design Notes:

Draft Design for review.

Dimensions and set-out have been taken from a pdf/satellite image, subject to confirmation prior to installation/commissioning. For further calculations and/or for installation/aiming details please contact Apex Lighting.

MH = the nominal luminaire height above the target playing surface, as shown. No account is taken for any difference in height of the pole base and the playing surface. Any significant difference should be advised. The cross-arm design should be checked so that luminaires can be aimed without obstruction. The suitability of new/existing poles to support floodlights must be confirmed by others.

Philips OptiVision LED gen3.5-4S CCT=5700K, Ra8=70. DALI (max. dim level 10%). BV version has remote driver, poles must be checked for capacity to house. BVP528-4S BV 50K 757 T30 IP66 3 module, Weight=25 kg (remote driver 5.3 kg). SCx=0.29 (at 30° uplift), SCx=0.33 (at 40-50° uplift) For A35 types subtract 35° from "Tilt" to get the uplift of the body (do not use the clear visor). All A35 luminaires have uplift <= 37°. LTM and LO versions use integral shields to mitigate obtrusive light. Floodlights should be spaced at least 95cm apart. Note truncheon depth is 30 mm, longer bolts may be required. Driver rating: 230-400V +/-10% 50Hz. Single phase preferred where supply voltage is high, two phase preferred where supply voltage is low. Supplemental SPD recommended (supplied by others). Refer to Mounting instructions for inrush current details. Cable from driver to floodlight 6C+E 1000V (by others): Length<25m use 1.5mm², Length<=50m use 2.5mm². <= 200m possible with extra core. Can be mounted over/under without modification/accessories, (single cross-arm only, if two or more cross-arms are required, then provision must be made for sufficient offset to avoid the luminaires on the lower arm/s shadowing those on the upper arm).

GRmax <=50 for observers per AS2560.2:2021 Figure 2.6.7 for outdoor football. Glare Ratings (GR) are based on a diffuse playing surface reflectance of 25%.

A maintenance factor (LLF) of 0.90 has been allowed to apply to all luminaires. A maintenance policy should be adopted to support the maintenance factor. These calculations use LLF = 1.0 to show obtrusive light initial values. All illuminance values should multiplied by the maintenance factor for maintained values.

AS/NZS 4282:2019 Obtrusive light assessment:

- Conforms to Environmental Zone A3 - Medium District Brightness (suburban) limits:
- Maximum luminous intensity per luminaire (I) < 12500 cd non-curfew (Level 1)
 - Vertical illuminance (Ev) <= 10 lux
 - Threshold Increment (TI) <= 20% (Lad = 1 cd/m², or as shown)
 - ULR (UWLR) <= 0.02

All luminaires on, direct flux only, no obstructions such as trees are included. Ev and I calculated at building lines or other appropriate boundaries at the heights as shown. For TI the carriageway plane is assumed to be horizontal at z = 0. Iso-lux lines show horizontal illuminance at z = 0.

Ev I

Project: Ev I				
Label	CalcType	Units	Description	Max
Ev 1_PROP_Cd_Seg1	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	5835
Ev 1_PROP_Cd_Seg2	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	5709
Ev 1_PROP_III_Seg1	Obtrusive - III	Lux	z = 1.5 - 20 m	1.5
Ev 1_PROP_III_Seg2	Obtrusive - III	Lux	z = 1.5 - 20 m	1.4
Ev 2_PROP_Cd_Seg1	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	7201
Ev 2_PROP_Cd_Seg2	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	6759
Ev 2_PROP_Cd_Seg3	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	5905
Ev 2_PROP_III_Seg1	Obtrusive - III	Lux	z = 1.5 - 20 m	4.0
Ev 2_PROP_III_Seg2	Obtrusive - III	Lux	z = 1.5 - 20 m	0.8
Ev 2_PROP_III_Seg3	Obtrusive - III	Lux	z = 1.5 - 20 m	0.6
Ev 3_PROP_Cd_Seg1	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	6498
Ev 3_PROP_III_Seg1	Obtrusive - III	Lux	z = 1.5 - 20 m	2.7
Ev 4_PROP_Cd_Seg1	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	4891
Ev 4_PROP_Cd_Seg2	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	3318
Ev 4_PROP_III_Seg1	Obtrusive - III	Lux	z = 1.5 - 20 m	0.5
Ev 4_PROP_III_Seg2	Obtrusive - III	Lux	z = 1.5 - 20 m	0
Ev 5_PROP_Cd_Seg1	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	0.5
Ev 5_PROP_Cd_Seg2	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	8562
Ev 5_PROP_Cd_Seg3	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	4952
Ev 5_PROP_III_Seg1	Obtrusive - III	Lux	z = 1.5 - 20 m	0.0
Ev 5_PROP_III_Seg2	Obtrusive - III	Lux	z = 1.5 - 20 m	4.5
Ev 5_PROP_III_Seg3	Obtrusive - III	Lux	z = 1.5 - 20 m	0.1
Ev 6_PROP_Cd_Seg1	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	2964
Ev 6_PROP_III_Seg1	Obtrusive - III	Lux	z = 1.5 - 20 m	0.5
Ev 7_PROP_Cd_Seg1	Obtrusive - Cd	N.A.	z = 1.5 - 20 m	8796
Ev 7_PROP_III_Seg1	Obtrusive - III	Lux	z = 1.5 - 20 m	3.6

Luminaire Schedule

Symbol	Qty	Label	Description	Source	Power	LLF
	4	BVP528_4S A35 NB LO	Apex OptiVision LED Gen3.5-4S 3-module 5700K	LED2590-4S/757 OUT T35	1506	1.000
	12	BVP528_4S A35 NB LTM	Apex OptiVision LED Gen3.5-4S 3-module 5700K	LED2590-4S/757 OUT T35	1506	1.000
	4	BVP528_4S A35 MB LO	Apex OptiVision LED Gen3.5-4S 3-module 5700K	LED2590-4S/757 OUT T35	1506	1.000

UWLR Area Summary

Label	UWLR
UWLR	0.001

GR

Project: GR

Label	CalcType	Refl.	Max
GR	Glare Rating	r = 0.25	42.9

TI

Project: TI

Label	CalcType	Lad	TI (%)
Frank St NB	Obtrusive - TI	0.2	1.3
Frank St SB	Obtrusive - TI	0.2	0.7

Calculation Summary

Project: Illuminance

Label	CalcType	Avg (lx)	Min/Avg	Min/Max	UG
Oval	Illuminance	215	0.64	0.50	1.36
Rugby	Illuminance	226	0.71	0.58	1.32

LEGEND

	3 ASPECT LANTERN (200mm)		EXISTING PEDESTAL		WATER METER		WATER VALVE		STORMWATER (EXISTING)
	MAST ARM (OUTREACH AS INDICATED)		NEW PEDESTAL		TAP		TELSTRA PILLAR		STORMWATER (PROPOSED)
	PED. PUSH BUTTON & LANTERN		RUBBISH BIN		ELECTRIC PIT		MAJOR TELSTRA PIT		SEWER
	INTERNALLY ILLUMINATED SIGN		SIDE ENTRY PIT		PERMANENT SURVEY MARK		MINOR TELSTRA PIT		GAS
	EXISTING STREET LIGHTING LANTERN		GRATED PIT		SURVEY MARK OR STATION		TELSTRA		ELECTRICITY (UNDERGROUND)
	PROPOSED STREET LIGHTING LANTERN		FENCE		TREE		ELECTRICITY (OVERHEAD)		EXISTING KERB & CHANNEL
			TRAFFIC SIGNAL CONTROLLER		WOODEN POST		PROPOSED KERB & CHANNEL		EXISTING KERB
			EXISTING DETECTOR LOOP		STEEL POST		PROPOSED KERB		PROPOSED KERB

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION



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AMENDMENTS		DATE	BY	NO.	INFRASTRUCTURE DEPARTMENT		PENINSULA RESERVE FLOODLIGHTING INSTALLATIONS FRANK STREET, FRANKSTON ELECTRICAL SERVICE PROPOSED FLOODLIGHTING PHOTOMETRIC PLOT		DRAWING No. 2860 - E4	Rev. No. P2
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				7	DESIGN CHECKED	NW	APPROVED BY Infrastructure Manager	DATE / /		
				9	APPROVED BY C.W.C.					
				10						
				11						
				12	DATE / /					