Luminaire Location Summary								
Scene: AFL Switch 3								
LumNo	Label	Pole	X	Y	Z	Orient	Tilt	Switched
1	FL2[1]+R	1	62.655	-47.877	27.68	75	5	On
2	FL2[3]+R	1	62.655	-47.877	30.18	143	2.5	Off
3	FL2[1]+R	1	62.655	-47.877	26.68	75	5	On
4	FL2[1]+R	1	62.655	-47.877	28.18	75	5	On
5	FL2[2]+R	1	61.827	-48.438	28.18	108	5	On
6	FL2[3]+R	1	61.827	-48.438	26.68	125	2.5	Off
7	FL2[2]+R	1	61.827	-48.438	27.68	108	5	On
8	FL2[3]+R	1	61.827	-48.438	30.18	143	2.5	Off
9	FL2[3]+R	1	61	-49	27.68	140	2.5	On
10	FL2[3]+R	1	61	-49	26.68	140	2.5	On
11	FL2[3]+R	1	61	-49	28.18	140	2.5	On
12	FL2[3]+R	1	61	-49	30.18	143	2.5	Off
13	FL2[3]+R	1	60.173	-49.562	28.18	160	2.5	On
14	FL2[3]+R	1	60.173	-49.562	27.68	160	2.5	On
15	FL2[3]+R	1	60.173	-49.562	26.68	160	2.5	On
16	FL2[3]+R	1	60.173	-49.562	30.18	143	2.5	Off
17	FL2[2]	1	59.345	-50.123	27.68	176	2.5	On
18	FL2[2]	1	59.345	-50.123	26.68	176	2.5	On
19	FL2[3]+R	1	59.345	-50.123	30.18	143	2.5	Off
20	FL2[2]	1	59.345	-50.123	28.18	176	2.5	On
21	FL2[3]+R	2	-59.345	-50.123	30.18	37	2.5	Off
22	FL2[2]	2	-59.345	-50.123	26.68	4	2.5	On
23	FL2[2]	2	-59.345	-50.123	28.18	4	2.5	On
24	FL2[2]	2	-59.345	-50.123	27.68	4	2.5	On
25	FL2[3]+R	2	-60.173	-49.562	26.68	20	2.5	On
26	FL2[3]+R	2	-60.173	-49.562	27.68	20	2.5	On
27	FL2[3]+R	2	-60.173	-49.562	28.18	20	2.5	On
28	FL2[3]+R	2	-60.173	-49.562	30.18	37	2.5	Off
29	FL2[3]+R	2	-61	-49	27.68	40	2.5	On
30	FL2[3]+R	2	-61	-49	28.18	40	2.5	On
31	FL2[3]+R	2	-61	-49	30.18	37	2.5	Off
32	FL2[3]+R	2	-61	-49	26.68	40	2.5	On
33	FL2[2]+R	2	-61.827	-48.438	28.18	72	5	On
34	FL2[3]+R	2	-61.827	-48.438	30.18	37	2.5	Off
35	FL2[2]+R	2	-61.827	-48.438	27.68	72	5	On
36	FL2[3]+R	2	-61.827	-48.438	26.68	55	2.5	Off
37	FL2[3]+R	2	-62.655	-47.877	30.18	37	2.5	Off
38	FL2[1]+R	2	-62.655	-47.877	28.18	105	5	On
39	FL2[1]+R	2	-62.655	-47.877	27.68	105	5	On
40	FL2[1]+R	3	-62.655	-47.877	26.68	105	5	On
41	FL2[1]+R	3	-62.655	47.877	26.68	255	5	On
42	FL2[3]+R	3	-62.655	47.877	30.18	323	2.5	Off
43	FL2[1]+R	3	-62.655	47.877	27.68	255	5	On
44	FL2[1]+R	3	-62.655	47.877	28.18	255	5	On
45	FL2[2]+R	3	-61.827	48.438	27.68	288	5	On
46	FL2[3]+R	3	-61.827	48.438	30.18	323	2.5	Off
47	FL2[2]+R	3	-61.827	48.438	28.18	288	5	On
48	FL2[3]+R	3	-61.827	48.438	26.68	305	2.5	Off
49	FL2[3]+R	3	-61	49	26.68	320	2.5	On
50	FL2[3]+R	3	-61	49	30.18	323	2.5	Off
51	FL2[3]+R	3	-61	49	27.68	320	2.5	On
52	FL2[3]+R	3	-61	49	28.18	320	2.5	On
53	FL2[3]+R	3	-60.173	49.562	27.68	340	2.5	On
54	FL2[3]+R	3	-60.173	49.562	30.18	323	2.5	Off
55	FL2[3]+R	3	-60.173	49.562	26.68	340	2.5	On
56	FL2[3]+R	3	-60.173	49.562	28.18	340	2.5	On
57	FL2[2]	3	-59.345	50.123	26.68	356	2.5	On
58	FL2[2]	3	-59.345	50.123	28.18	356	2.5	On
59	FL2[3]+R	3	-59.345	50.123	30.18	323	2.5	Off
60	FL2[2]	4	-59.345	50.123	27.68	356	2.5	On
61	FL2[3]+R	4	59.345	50.123	30.18	217	2.5	Off
62	FL2[2]	4	59.345	50.123	26.68	184	2.5	On
63	FL2[2]	4	59.345	50.123	27.68	184	2.5	On
64	FL2[2]	4	59.345	50.123	28.18	184	2.5	On
65	FL2[3]+R	4	60.173	49.562	30.18	217	2.5	Off
66	FL2[3]+R	4	60.173	49.562	26.68	200	2.5	On
67	FL2[3]+R	4	60.173	49.562	27.68	200	2.5	On
68	FL2[3]+R	4	60.173	49.562	28.18	200	2.5	On
69	FL2[3]+R	4	61	49	26.68	220	2.5	On
70	FL2[3]+R	4	61	49	27.68	220	2.5	On
71	FL2[3]+R	4	61	49	30.18	217	2.5	Off
72	FL2[3]+R	4	61	49	28.18	220	2.5	On
73	FL2[2]+R	4	61.827	48.438	27.68	252	5	On
74	FL2[2]+R	4	61.827	48.438	28.18	252	5	On
75	FL2[3]+R	4	61.827	48.438	30.18	217	2.5	Off
76	FL2[3]+R	4	61.827	48.438	26.68	235	2.5	Off
77	FL2[1]+R	4	62.655	47.877	27.68	285	5	On
78	FL2[1]+R	4	62.655	47.877	26.68	285	5	On
79	FL2[3]+R	4	62.655	47.877	30.18	217	2.5	Off
80	FL2[1]+R	4	62.655	47.877	28.18	285	5	On
Total Quantity: 80								

Luminaire Schedule					
Scene: AFL Switch 3					
Symbol	Label	Qty	Description	Lumens/Lamp	MF
	FL2[1]+Rv	12	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 1	220000	0.800
	FL2[2]	12	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, lamp pos 2	220000	0.800
	FL2[2]+Rv	8	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 2	220000	0.800
	FL2[3]+Rv	48	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 3	220000	0.800

Calculation Summary						
Scene: AFL Switch 3						
Label	Description	Avg	Max	Min	Min/Avg	Min/Max
AFL Eh	Horizontal plane illuminance on AFL principle playing area at 0m afgl	312.36	432	221	0.71	0.51
Cricket Infield Eh	Horizontal plane illuminance on Cricket infield at 0m afgl	315.14	360	274	0.87	0.76
Cricket Outfield Eh	Horizontal plane illuminance on Cricket outfield at 0m afgl	313.31	432	211	0.67	0.49
Evs_1_Ill_Seg1	Vertical 'wall' illuminance on the southern boundary	1.07	3	0	0.00	0.00
Evs_2_Ill_Seg1	Vertical 'wall' illuminance on the western boundary	1.15	2	0	0.00	0.00
Evs_3_Ill_Seg1	Vertical 'wall' illuminance on the northern boundary	0.83	1	0	0.00	0.00
TI_1	Threshold increment calculations on Gilruth Avenue south west bound	0.94	4	0	0.00	0.00
TI_2	Threshold increment calculations on Gilruth Avenue north east bound	0.00	0	0	N.A.	N.A.
TI_3	Threshold increment calculations on Gardens Rd north east bound	2.13	7	0	0.00	0.00
Cricket Square Eh	Horizontal plane illuminance on the cricket square at 0m afgl	328.92	333	325	0.99	0.98

Note:
Refer to installation instructions for details on lampholder positional adjustment

Note:

1.This design is compliant with the light technical parameters of Australian Standards AS2560.2.3-2007 'Lighting of Football' semi-professional level competition play, however it should be taken as provisional only as all dimension, pole locations and heights must be confirmed before installation.

2. This design is based on the information extrapolated from an aerial image of the area and therefore can only be considered as provisional due to the inherent inaccuracies involved in the interpretation process. Therefore all the information supplied in this design is subject to verification, which can be provided on the receipt of accurate surveyed drawings in AutoCAD format.

3. An assessment of the floodlight system in accordance with the requirements of AS4282-1997 'The obtrusive effect of outdoor lighting' has been performed and the system is fully compliant for pre-curfew conditions for a large area [i.e. >75m] in a control level 1.

4. The pole heights specified in this design proposal should be taken as notional and are taken as the vertical distance from the base of the pole to the top cross-arm and assumes that the base is at the same relative height as the centre of the field. They therefore do not take into consideration the topography of the site. An analysis of the site topography should be taken into account when determining the actual required heights of each poles.

5. The proposed floodlights are 2kW metal halide operating on 415V (phase phase) reactor/ignitor control gear.

zumtobel group

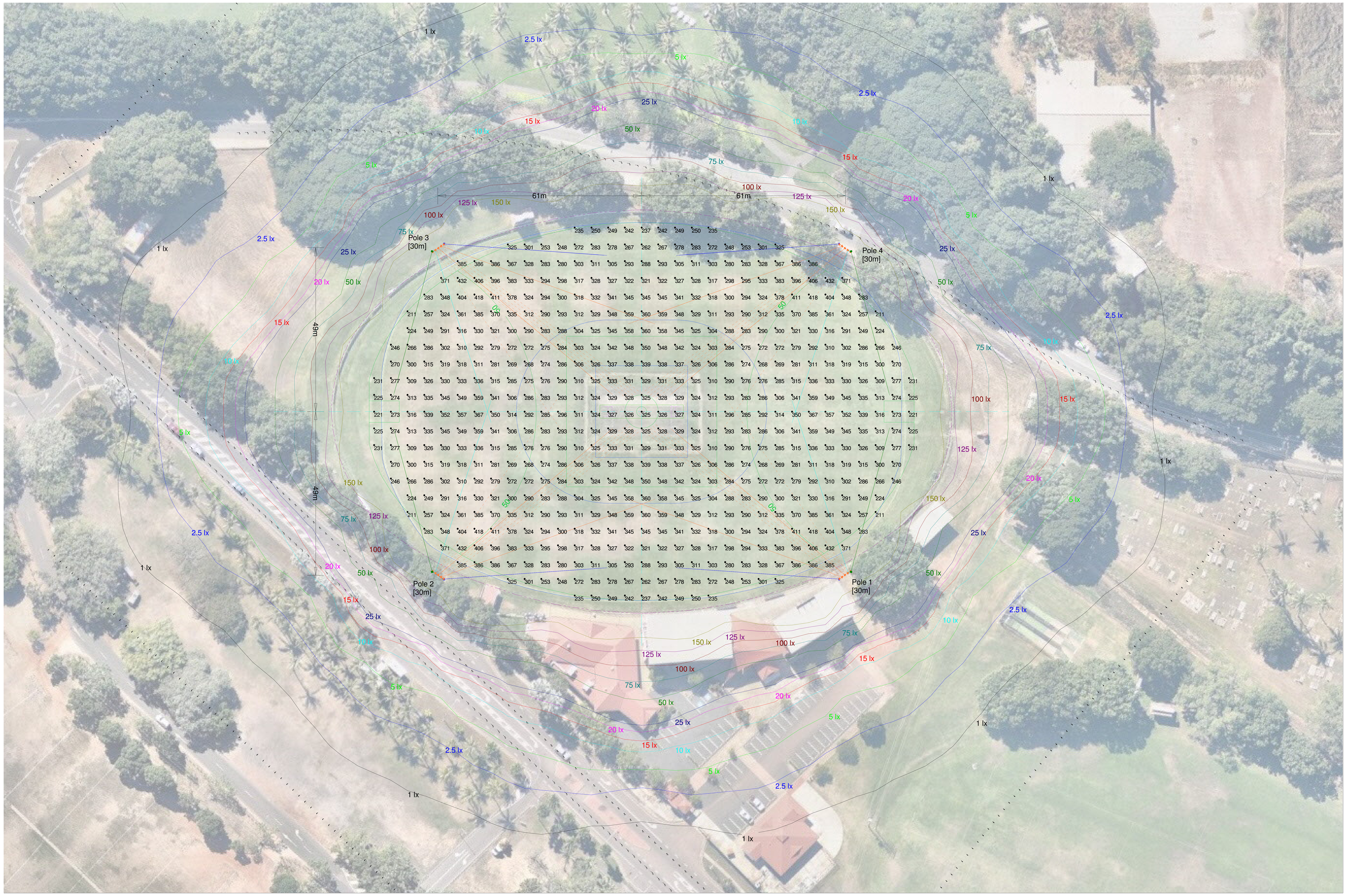
43-47 Newton Road, Wetherill Park NSW 2164

Project: Gardens Oval - Darwin
Sport Lighting Layout - AFL Mode

Client:

Project No:	6770	PT/Quote No:	1913664	Date:	17/05/2017
Drawing No:	2c	Lighting Engineer:	Peter Jones		
Revision No:		File:	6770-2.AGI		

THORN ZUMTOBEL



Obtrusive Light - Compliance Report

AS 4282-1997, Pre-Curfew, Residential - Light Surrounds
Filename: 6770-1
17/05/2017 9:49:29 AM

Illuminance

Maximum Allowable Maintained Value: 10 Lux

Calculations Tested (3):

Calculation Label	Test Results	Max. Illum.
Evs_1_Ill_Seg1	PASS	4
Evs_2_Ill_Seg1	PASS	3
Evs_3_Ill_Seg1	PASS	2

Luminous Intensity (Cd) Per Luminaire

Maximum Allowable Value: 7500 Cd
Control Angle: 83 Degrees

Luminaire Locations Tested (80)
Test Results: **PASS**

Threshold Increment (TI)

Maximum Allowable Value: 20 %

Calculations Tested (3):

Calculation Label	Adaptation Luminance	Test Results
TI_3	10	PASS
TI_1	10	PASS
TI_2	10	PASS

1.This design is compliant with the light technical parameters of Australian Standards AS2560.2.3-2007 'Lighting of Football' semi-professional level competition play, however it should be taken as provisional only as all dimension, pole locations and heights must be confirmed before installation.

2. This design is based on the information extrapolated from an aerial image of the area and therefore can only be considered as provisional due to the inherent inaccuracies involved in the interpretation process. Therefore all the information supplied in this design is subject to verification, which can be provided on the receipt of accurate surveyed drawings in AutoCAD format.

3. An assessment of the floodlight system in accordance with the requirements of AS4282-1997 'The obtrusive effect of outdoor lighting' has been performed and the system is fully compliant for pre-curfew conditions for a large area [i.e. >75m] in a control level 1.

4. The pole heights specified in this design proposal should be taken as notional and are taken as the vertical distance from the base of the pole to the top cross-arm and assumes that the base is at the same relative height as the centre of the field. They therefore do not take into consideration the topography of the site. An analysis of the site topography should be taken into account when determining the actual required heights of each poles.

5. The proposed floodlights are 2kW metal halide operating on 415V (phase phase) reactor/ignitor control gear.

Luminaire Schedule
Scene: AFL Switch 3

Symbol	Label	Qty	Description	Lumens/Lamp	MF
	FL2[1]+Rv	12	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 1	220000	0.800
	FL2[2]	12	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, lamp pos 2	220000	0.800
	FL2[2]+Rv	8	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 2	220000	0.800
	FL2[3]+Rv	48	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 3	220000	0.800

Calculation Summary
Scene: AFL Switch 3

Label	Description	Avg	Max	Min	Min/Avg	Min/Max
AFL Eh	Horizontal plane illuminance on AFL principle playing area at 0m afgl	312.36	432	221	0.71	0.51
Cricket Infield Eh	Horizontal plane illuminance on Cricket infield at 0m afgl	315.14	360	274	0.87	0.76
Cricket Outfield Eh	Horizontal plane illuminance on Cricket outfield at 0m afgl	313.31	432	211	0.67	0.49
Evs_1_Ill_Seg1	Vertical 'wall' illuminance on the southern boundary	1.07	3	0	0.00	0.00
Evs_2_Ill_Seg1	Vertical 'wall' illuminance on the western boundary	1.15	2	0	0.00	0.00
Evs_3_Ill_Seg1	Vertical 'wall' illuminance on the northern boundary	0.83	1	0	0.00	0.00
TI_1	Threshold increment calculations on Gilruth Avenue south west bound	0.94	4	0	0.00	0.00
TI_2	Threshold increment calculations on Gilruth Avenue north east bound	0.00	0	0	N.A.	N.A.
TI_3	Threshold increment calculations on Gardens Rd north east bound	2.13	7	0	0.00	0.00
Cricket Square Eh	Horizontal plane illuminance on the cricket square at 0m afgl	328.92	333	325	0.99	0.98

Note:
Refer to installation instructions for details
on lampholder positional adjustment

Ordering Guide

Qty	Description	SAP code	Type
80	CHAMPION 2kW MHNLA	96261230	2 kW metal halide floodlight
80	CHAMPION Rear Visor	96261971	Rear visor
80	HIT-DE2000W/842MHNLA	96009899	2 kW metal halide lamp
80	CGTM2MHNLA415NIF	96038307	Tray mounted control gear
alternatively			
80	CGWP2MHNLA415NIF	96038308	Weatherproof control gear

Installation Details

No. of floodlights	80
No. of poles	4
Height of poles (nom)	30m
Total power (nom)	170 kW
Start current (nom)	6.32 amps
Run current (nom)	5.363 amps

Note 1 - phase/phase 415 volt, nominal
Note 2 - per each lamp, power factor 0.9

zumtobel group
43-47 Newton Road, Wetherill Park NSW 2164

Project: **Gardens Oval - Darwin**
Sport Lighting Layout - AFL Mode

Client:

Project No:	6770	PT/Quote No:	1913664	Date:	17/05/2017
Drawing No:	2d	Lighting Engineer:	Peter Jones		
Revision No:		File:	6770-2.AGI		

THORN ZUMTOBEL

Luminaire Location Summary								
Scene: Cricket Switch 4								
LumNo	Label	Pole	X	Y	Z	Orient	Tilt	Switched
1	FL2[1]+R	1	62.655	-47.877	27.68	75	5	On
2	FL2[3]+R	1	62.655	-47.877	30.18	143	2.5	On
3	FL2[1]+R	1	62.655	-47.877	26.68	75	5	On
4	FL2[1]+R	1	62.655	-47.877	28.18	75	5	On
5	FL2[2]+R	1	61.827	-48.438	28.18	108	5	On
6	FL2[3]+R	1	61.827	-48.438	26.68	125	2.5	On
7	FL2[2]+R	1	61.827	-48.438	27.68	108	5	On
8	FL2[3]+R	1	61.827	-48.438	30.18	143	2.5	On
9	FL2[3]+R	1	61	-49	27.68	140	2.5	On
10	FL2[3]+R	1	61	-49	26.68	140	2.5	On
11	FL2[3]+R	1	61	-49	28.18	140	2.5	On
12	FL2[3]+R	1	61	-49	30.18	143	2.5	On
13	FL2[3]+R	1	60.173	-49.562	28.18	160	2.5	On
14	FL2[3]+R	1	60.173	-49.562	27.68	160	2.5	On
15	FL2[3]+R	1	60.173	-49.562	26.68	160	2.5	On
16	FL2[3]+R	1	60.173	-49.562	30.18	143	2.5	On
17	FL2[2]	1	59.345	-50.123	27.68	176	2.5	On
18	FL2[2]	1	59.345	-50.123	26.68	176	2.5	On
19	FL2[3]+R	1	59.345	-50.123	30.18	143	2.5	On
20	FL2[2]	1	59.345	-50.123	28.18	176	2.5	On
21	FL2[3]+R	2	-59.345	-50.123	30.18	37	2.5	On
22	FL2[2]	2	-59.345	-50.123	26.68	4	2.5	On
23	FL2[2]	2	-59.345	-50.123	28.18	4	2.5	On
24	FL2[2]	2	-59.345	-50.123	27.68	4	2.5	On
25	FL2[3]+R	2	-60.173	-49.562	26.68	20	2.5	On
26	FL2[3]+R	2	-60.173	-49.562	27.68	20	2.5	On
27	FL2[3]+R	2	-60.173	-49.562	28.18	20	2.5	On
28	FL2[3]+R	2	-60.173	-49.562	30.18	37	2.5	On
29	FL2[3]+R	2	-61	-49	27.68	40	2.5	On
30	FL2[3]+R	2	-61	-49	28.18	40	2.5	On
31	FL2[3]+R	2	-61	-49	30.18	37	2.5	On
32	FL2[3]+R	2	-61	-49	26.68	40	2.5	On
33	FL2[2]+R	2	-61.827	-48.438	28.18	72	5	On
34	FL2[3]+R	2	-61.827	-48.438	30.18	37	2.5	On
35	FL2[2]+R	2	-61.827	-48.438	27.68	72	5	On
36	FL2[3]+R	2	-61.827	-48.438	26.68	55	2.5	On
37	FL2[3]+R	2	-62.655	-47.877	30.18	37	2.5	On
38	FL2[1]+R	2	-62.655	-47.877	28.18	105	5	On
39	FL2[1]+R	2	-62.655	-47.877	27.68	105	5	On
40	FL2[1]+R	3	-62.655	-47.877	26.68	105	5	On
41	FL2[1]+R	3	-62.655	47.877	26.68	255	5	On
42	FL2[3]+R	3	-62.655	47.877	30.18	323	2.5	On
43	FL2[1]+R	3	-62.655	47.877	27.68	255	5	On
44	FL2[1]+R	3	-62.655	47.877	28.18	255	5	On
45	FL2[2]+R	3	-61.827	48.438	27.68	288	5	On
46	FL2[3]+R	3	-61.827	48.438	30.18	323	2.5	On
47	FL2[2]+R	3	-61.827	48.438	28.18	288	5	On
48	FL2[3]+R	3	-61.827	48.438	26.68	305	2.5	On
49	FL2[3]+R	3	-61	49	26.68	320	2.5	On
50	FL2[3]+R	3	-61	49	30.18	323	2.5	On
51	FL2[3]+R	3	-61	49	27.68	320	2.5	On
52	FL2[3]+R	3	-61	49	28.18	320	2.5	On
53	FL2[3]+R	3	-60.173	49.562	27.68	340	2.5	On
54	FL2[3]+R	3	-60.173	49.562	30.18	323	2.5	On
55	FL2[3]+R	3	-60.173	49.562	26.68	340	2.5	On
56	FL2[3]+R	3	-60.173	49.562	28.18	340	2.5	On
57	FL2[2]	3	-59.345	50.123	26.68	356	2.5	On
58	FL2[2]	3	-59.345	50.123	28.18	356	2.5	On
59	FL2[3]+R	3	-59.345	50.123	30.18	323	2.5	On
60	FL2[2]	4	-59.345	50.123	27.68	356	2.5	On
61	FL2[3]+R	4	59.345	50.123	30.18	217	2.5	On
62	FL2[2]	4	59.345	50.123	26.68	184	2.5	On
63	FL2[2]	4	59.345	50.123	27.68	184	2.5	On
64	FL2[2]	4	59.345	50.123	28.18	184	2.5	On
65	FL2[3]+R	4	60.173	49.562	30.18	217	2.5	On
66	FL2[3]+R	4	60.173	49.562	26.68	200	2.5	On
67	FL2[3]+R	4	60.173	49.562	27.68	200	2.5	On
68	FL2[3]+R	4	60.173	49.562	28.18	200	2.5	On
69	FL2[3]+R	4	61	49	26.68	220	2.5	On
70	FL2[3]+R	4	61	49	27.68	220	2.5	On
71	FL2[3]+R	4	61	49	30.18	217	2.5	On
72	FL2[3]+R	4	61	49	28.18	220	2.5	On
73	FL2[2]+R	4	61.827	48.438	27.68	252	5	On
74	FL2[2]+R	4	61.827	48.438	28.18	252	5	On
75	FL2[3]+R	4	61.827	48.438	30.18	217	2.5	On
76	FL2[3]+R	4	61.827	48.438	26.68	235	2.5	On
77	FL2[1]+R	4	62.655	47.877	27.68	285	5	On
78	FL2[1]+R	4	62.655	47.877	26.68	285	5	On
79	FL2[3]+R	4	62.655	47.877	30.18	217	2.5	On
80	FL2[1]+R	4	62.655	47.877	28.18	285	5	On
Total Quantity: 80								

Luminaire Schedule					
Scene: Cricket Switch 4					
Symbol	Label	Qty	Description	Lumens/Lamp	MF
	FL2[1]+Rv	12	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 1	220000	0.800
	FL2[2]	12	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, lamp pos 2	220000	0.800
	FL2[2]+Rv	8	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 2	220000	0.800
	FL2[3]+Rv	48	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 3	220000	0.800

Calculation Summary						
Scene: Cricket Switch 4						
Label	Description	Avg	Max	Min	Min/Avg	Min/Max
AFL Eh	Horizontal plane illuminance on AFL principle playing area at 0m afgl	467.82	620	231	0.49	0.37
Cricket Infield Eh	Horizontal plane illuminance on Cricket infield at 0m afgl	551.15	604	462	0.84	0.76
Cricket Outfield Eh	Horizontal plane illuminance on Cricket outfield at 0m afgl	445.47	620	266	0.60	0.43
Evs_1_lll_Seg1	Vertical 'wall' illuminance on the southern boundary	1.33	3	1	0.75	0.33
Evs_2_lll_Seg1	Vertical 'wall' illuminance on the western boundary	1.41	3	1	0.71	0.33
Evs_3_lll_Seg1	Vertical 'wall' illuminance on the northern boundary	1.04	2	0	0.00	0.00
TI_1	Threshold increment calculations on Gilruth Avenue south west bound	1.03	4	0	0.00	0.00
TI_2	Threshold increment calculations on Gilruth Avenue north east bound	0.00	0	0	N.A.	N.A.
TI_3	Threshold increment calculations on Gardens Rd north east bound	2.37	7	0	0.00	0.00
Cricket Square Eh	Horizontal plane illuminance on the cricket square at 0m afgl	601.76	604	600	1.00	0.99

Note:
Refer to installation instructions for details on lampholder positional adjustment

Note:

1. This design is compliant with the light technical parameters of Cricket Australia Guideline 2015 lighting of class II play competition play, however it should be taken as provisional only as all dimension, pole locations and heights must be confirmed before installation.

2. This design is based on the information extrapolated from an aerial image of the area and therefore can only be considered as provisional due to the inherent inaccuracies involved in the interpretation process. Therefore all the information supplied in this design is subject to verification, which can be provided on the receipt of accurate surveyed drawings in AutoCAD format.

3. An assessment of the floodlight system in accordance with the requirements of AS4282-1997 'The obtrusive effect of outdoor lighting' has been performed and the system is fully compliant for pre-curfew conditions for a large area [i.e. >75m] in a control level 1.

4. The pole heights specified in this design proposal should be taken as notional and are taken as the vertical distance from the base of the pole to the top cross-arm and assumes that the base is at the same relative height as the centre of the field. They therefore do not take into consideration the topography of the site. An analysis of the site topography should be taken into account when determining the actual required heights of each poles.

5. The proposed floodlights are 2kW metal halide operating on 415V (phase phase) reactor/ignitor control gear.

zumtobel group

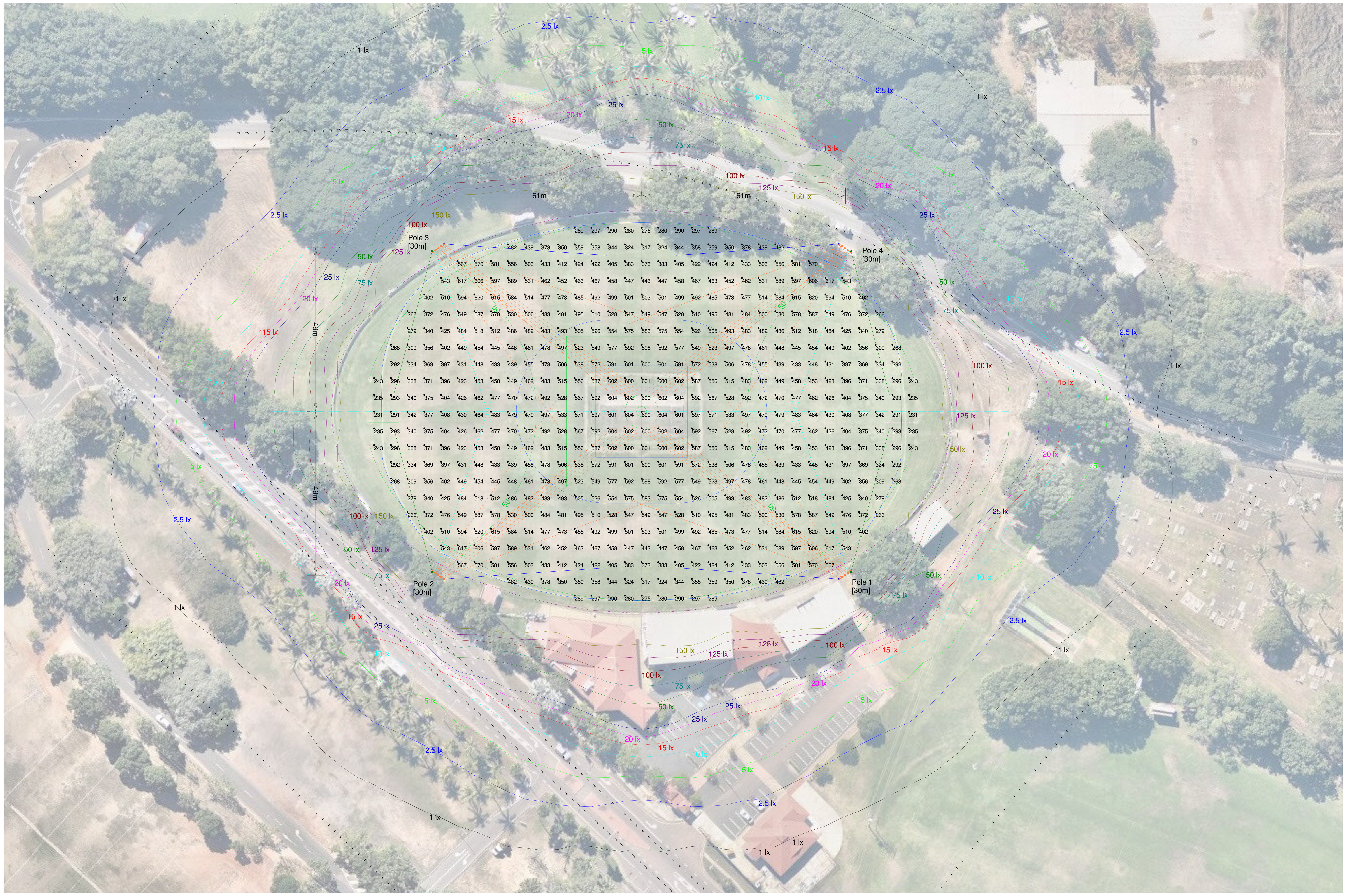
43-47 Newton Road, Wetherill Park NSW 2164

Project: Gardens Oval - Darwin
Sport Lighting Layout - Cricket Mode

Client:

Project No:	6770	PT/Quote No:	1913664	Date:	17/05/2017
Drawing No:	2a	Lighting Engineer:	Peter Jones		
Revision No:		File:	6770-2.AGI		

THORN ZUMTOBEL



Obtrusive Light - Compliance Report

AS 4282-1997, Pre-Curfew, Residential - Light Surrounds
Filename: 6770-1
17/05/2017 9:49:29 AM

Illuminance

Maximum Allowable Maintained Value: 10 Lux

Calculations Tested (3):

Calculation Label	Test Results	Max. Illum.
Evs_1_Ill_Seg1	PASS	4
Evs_2_Ill_Seg1	PASS	3
Evs_3_Ill_Seg1	PASS	2

Luminous Intensity (Cd) Per Luminaire

Maximum Allowable Value: 7500 Cd
Control Angle: 83 Degrees

Luminaire Locations Tested (80)
Test Results: **PASS**

Threshold Increment (TI)

Maximum Allowable Value: 20 %

Calculations Tested (3):

Calculation Label	Adaptation Luminance	Test Results
TI_3	10	PASS
TI_1	10	PASS
TI_2	10	PASS

Note:
1.This design is compliant with the light technical parameters of Cricket Australia Guideline 2015 lighting of class II play competition play, however it should be taken as provisional only as all dimension, pole locations and heights must be confirmed before installation.

2. This design is based on the information extrapolated from an aerial image of the area and therefore can only be considered as provisional due to the inherent inaccuracies involved in the interpretation process. Therefore all the information supplied in this design is subject to verification, which can be provided on the receipt of accurate surveyed drawings in AutoCAD format.

3. An assessment of the floodlight system in accordance with the requirements of AS4282-1997 'The obtrusive effect of outdoor lighting' has been performed and the system is fully compliant for pre-curfew conditions for a large area [i.e. >75m] in a control level 1.

4. The pole heights specified in this design proposal should be taken as notional and are taken as the vertical distance from the base of the pole to the top cross-arm and assumes that the base is at the same relative height as the centre of the field. They therefore do not take into consideration the topography of the site. An analysis of the site topography should be taken into account when determining the actual required heights of each poles.

5. The proposed floodlights are 2kW metal halide operating on 415V (phase phase) reactor/ignitor control gear.

Luminaire Schedule
Scene: Cricket Switch 4

Symbol	Label	Qty	Description	Lumens/Lamp	MF
	FL2[1]+Rv	12	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 1	220000	0.800
	FL2[2]	12	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, lamp pos 2	220000	0.800
	FL2[2]+Rv	8	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 2	220000	0.800
	FL2[3]+Rv	48	CHAMPION - 2000W MHN-LA (MD) Asymmetric floodlight, c/w rear visor, lamp pos 3	220000	0.800

Ordering Guide

Qty	Description	SAP code	Type
80	CHAMPION 2kW MHNLA	96261230	2 kW metal halide floodlight
80	CHAMPION Rear Visor	96261971	Rear visor
80	HIT-DE2000W/842MHNLA	96009899	2 kW metal halide lamp
80	CGTM2MHNLA415NIF	96038307	Tray mounted control gear
alternatively			
80	CGWP2MHNLA415NIF	96038308	Weatherproof control gear

Calculation Summary
Scene: Cricket Switch 4

Label	Description	Avg	Max	Min	Min/Avg	Min/Max
AFL Eh	Horizontal plane illuminance on AFL principle playing area at 0m afgl	467.82	620	231	0.49	0.37
Cricket Infield Eh	Horizontal plane illuminance on Cricket infield at 0m afgl	551.15	604	462	0.84	0.76
Cricket Outfield Eh	Horizontal plane illuminance on Cricket outfield at 0m afgl	445.47	620	266	0.60	0.43
Evs_1_Ill_Seg1	Vertical 'wall' illuminance on the southern boundary	1.33	3	1	0.75	0.33
Evs_2_Ill_Seg1	Vertical 'wall' illuminance on the western boundary	1.41	3	1	0.71	0.33
Evs_3_Ill_Seg1	Vertical 'wall' illuminance on the northern boundary	1.04	2	0	0.00	0.00
TI_1	Threshold increment calculations on Gilruth Avenue south west bound	1.03	4	0	0.00	0.00
TI_2	Threshold increment calculations on Gilruth Avenue north east bound	0.00	0	0	N.A.	N.A.
TI_3	Threshold increment calculations on Gardens Rd north east bound	2.37	7	0	0.00	0.00
Cricket Square Eh	Horizontal plane illuminance on the cricket square at 0m afgl	601.76	604	600	1.00	0.99

Note:
Refer to installation instructions for details on lampholder positional adjustment

Installation Details

No. of floodlights	80
No. of poles	4
Height of poles (nom)	30m
Total power (nom)	170 kW
Start current (nom)	6.32 amps
Run current (nom)	5.363 amps

Note 1 - phase/phase 415 volt, nominal
Note 2 - per each lamp, power factor 0.9

zumtobel group
43-47 Newton Road, Wetherill Park NSW 2164

Project: Gardens Oval - Darwin
Sport Lighting Layout - Cricket Mode

Client:

Project No:	6770	PT/Quote No:	1913664	Date:	17/05/2017
Drawing No:	1b	Lighting Engineer:	Peter Jones		
Revision No:		File:	6770-2.AGI		

THORN ZUMTOBEL