Project Name: Gainsborough Lodge stage 1
Drawing No: 3592-E01-E07-Rev C

Council: Toowoomba Regional Council

spa
consulting engineers (QLD)

I certify this design meets the compliance requirements of AS/NZS 1158.1.1 & 2:2005

Jane Errey RPEQ 6863

LUMINAIRE / POLE / PHOTOMETRIC INFORMATION TABLE			
Category	V4	Road Surface Luminaire Type	R3 IV
Pole Type	Single (BPM)	Luminaire Type	SLEDPH0912A
Mounting Height	10.5 m	Luminaire Outreach (m)	0.4
Pole Height (m)	8.5	Outreach (m)	Major 3m
Uplift Height (m)	2	Upcast Angle	0
Foundation Depth (mm)	2250	Cleaning / Replacement Interval	36 Months
Lamp	LED	Pollution Level	Medium
Photometric File	BRP392 LED108NW 90W DWV	IP Rating	IP6x
Lamp Type	LED	LLMF	0.86
Lumens	10800	MF	0.75

LIMITING LTPs			
Ave L (cd/m²)	0.5	Point Horizontal (Eph)	5
Overall Uniformity (Uo)	0.33	Horizontal Uniformity (Ue1)	8
Long Uniformity (UL)	0.5	Upward Light Ratio (UWLR)	3
Max Threshold Inc (TI)	20	Min Surround Illum (Es)	50

HAS COMPLIANCE WITH THE FOLLOWING ELEMENTS BEEN MET?				
All parameters specified in Clause 3.2 are achieved on all Straight Sections?	YES			
All parameters specified in Clause 3.3 are achieved on all Longer Radius Curves?	N/A			
All parameters specified in Clause 3.4 are achieved on all Intersections and other Specified Locations?	YES			
All parameters specified in Clause 3.5 are achieved on all Isolated Intersections	N/A			
All poles are setback within the acceptable location as per Clause B6	YES			
All parameters specified in Table 2.2 maintained over the surface for the design areas defined below:				Modelling Software Used:
Intersection (see below)	YES	Shorter Radius Bends (see below)	N/A	
Other specified locations (see below)	YES	Isolated intersections (see below)	N/A	AGi 32 & PleVcat

Nominal Street Light Offset	1.3m from Edge of Bitum	Rate	Rate 2

ROAD INFORMATION TABLE						RESULTS TABLE (luminance)							RESULTS TABLE (Illuminance)		
Road / Intersection Name	Street Lighting Arrangement as per 8.1.3	Carriage Width (Wk)	Median Width	Overhang 1st Row	Overhang 2nd Row	Spacing	Ave L(Cd/m²)	Overall Uo	Min UL	Max TI	Min Es %	Max UWLR %	Min Eph (lux)	Max Eph (lux)	Max / Min
Hursley Road	1,2 Single Side (Single Carriage	9.3		-2.1		45	0.5	0.48	0.85	12.59	107.2	0			
Hursley Road	1,2 Single Side (Single Carriage	11.33		2.31		59	0.54	0.4	0.59	9.41	73.4	0			
Hursley Road	1,2 Single Side (Single Carriage	9.5		1.85		59	0.55	0.38	0.5	13.27	63.82	0			
Hursley Road	1,2 Single Side (Single Carriage	12.36		2.1		58	0.5	0.37	0.52	14.68	63.76	0			
london Street Intersection-Full													5.4	23.65	4.38
london Street Intersection-Half NE													3.68	7.6	2.07
london Street Intersection-Half NW													5.92	13.48	2.28
london Street Intersection-STH													4.38	7.89	1.8
Pedstrian Crossing													10.24	24.11	2.35
Hursely Rd Divergence East- Full													7.34	15.96	2.17
Hursely Rd Divergence East- Half													8.04	20.97	2.61

Additional Comments: Lights 100-107 are 170W LED 12m MH, 4.5m OR, SBM footing. Lights 114 & 115 to be setback 1m behind footpath. Existing luminaires 111-113 & 174 to be upgraded to 90W LEDs.

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LUMINAIRE / POLE / PHOTOMETRIC INFORMATION TABLE			
Category	V4	Road Surface Luminaire Type	R3 IV
Pole Type	Single (SBM)	Luminaire Type	SLEDPH1716A
Mounting Height	12 m	Luminaire Outreach (m)	0.4
Pole Height (m)	10	Outreach (m)	Major 4.5m
Uplift Height (m)	2	Upcast Angle	0
Foundation Depth (mm)	2250	Cleaning / Replacement Interval	36 Months
Lamp	LED	Pollution Level	Medium
Photometric File	BRP393 LED204NW 170W DWV	IP Rating	IP6x
Lamp Type	LED	LLMF	0.86
Lumens	20400	MF	0.75

LIMITING LTPs			
Ave L (cd/m²)	0.5	Point Horizontal (Eph)	5
Overall Uniformity (Uo)	0.33	Horizontal Uniformity (Ue1)	8
Long Uniformity (UL)	0.5	Upward Light Ratio (UWLR)	3
Max Threshold Inc (TI)	20	Min Surround Illum (Es)	50

HAS COMPLIANCE WITH THE FOLLOWING ELEMENTS BEEN MET?				
All parameters specified in Clause 3.2 are achieved on all Straight Sections?	YES			
All parameters specified in Clause 3.3 are achieved on all Longer Radius Curves?	N/A			
All parameters specified in Clause 3.4 are achieved on all Intersections and other Specified Locations?	YES			
All parameters specified in Clause 3.5 are achieved on all Isolated Intersections	N/A			
All poles are setback within the acceptable location as per Clause B6	YES			
All parameters specified in Table 2.2 maintained over the surface for the design areas defined below:				Modelling Software Used:
Intersection (see below)	YES	Shorter Radius Bends (see below)	N/A	
Other specified locations (see below)	YES	Isolated intersections (see below)	N/A	AGi 32 & PleVcat

Nominal Street Light Offset	1.3m from Edge of Bitum	Rate	Rate 2

ROAD INFORMATION TABLE						RESULTS TABLE (Iuminance)							RESULTS TABLE (Illuminance)		
Road / Intersection Name	Street Lighting Arrangement as per 8.1.3	Carriage Width (Wk)	Median Width	Overhang 1st Row	Overhang 2nd Row	Spacing	Ave L(Cd/m²)	Overall Uo	Min UL	Max TI	Min Es %	Max UWLR %	Min Eph (lux)	Max Eph (lux)	Max / Min
Hursley Road	1,2 Single Side (Single Carriage	11.3		0.83		67	0.74	0.38	0.52	14.83	77.25	0			
Hursley Road	1,2 Single Side (Single Carriage	14.3		2.41		63	0.74	0.38	0.59	14.91	68.45	0			
Hursley Road	1,2 Single Side (Single Carriage	11.3		0.61		67	0.73	0.38	0.53	14.97	79.1	0			
Hursley Road	1,2 Single Side (Single Carriage	11.3		0.47		66	0.73	0.38	0.55	14.9	80.27	0			
Hursley Road	1,2 Single Side (Single Carriage	14.3		2.33		64	0.73	0.37	0.57	14.9	67.4	0			
Hursley Road & Road 1 Intersection- Full													6.45	26.86	4.16
Hursley Road & Road 1 Intersection- Half Nth													8.19	20.54	2.51
Hursley Road & Road 1 Intersection- Half SE													4.52	9.25	2.05
Hursley Road & Road 1 Intersection- Half SW													5.44	12.78	2.35
Hursley Rd Divergence West-Full													11.55	24.01	2.08
Hursley Rd Divergence West-Half													10.96	20.7	1.89

Additional Comments: Lights 108, 109, 170, 111, 112, 113, 114 & 115 are 90W LED 10.5m MH, 3m OR BPM footings. Light poles 100-107 to be installed behind existing services as per coordinates on design.

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LUMINAIRE / POLE / PHOTOMETRIC INFORMATION TABLE			
Category	P4	**Luminaire Type**	IV
Luminaire Type	Sylvania Street - Single	**Luminaire Wattage**	SLED SY 0137 N
Pole Height (m)	5.5	**Luminaire Outreach (m)**	0.3
Foundation Depth (mm)	1200	**Outreach (m)**	Standard 1.5m
Upcast	0	**Uplift (m)**	2
Mounting Height (m)	7.5	**Cleaning / Replacement**	36 Months
Lamp	LED 13.7W	**Pollution Level**	Medium
Photometric File	StreetLED3 13.7W 4K - 200375BPH.cie	**IP Rating**	IP6x
Lamp Type	LED	**LLMF**	0.8
Lumens	1825	**MF**	0.75
Ergon Construction Code	SLEDSY0137N		

LIMITING LTPs			
Min Av E_H	0.85	**Min E_H Maint**	0.14
Lamp Type	4	**U_p Maint**	10

HAS COMPLIANCE WITH THE FOLLOWING ELEMENTS BEEN MET?	
Is compliance with the maximum permissible spacing achieved on all straights and curves?	YES
For curved sections, does a straight line joining successive luminaries lie within the road reserve or is at least one luminaire located within the hatched area, as shown in figure 3.1?	YES
Has a luminaire associated with one of the intersecting roads been located within the hatched area shown in figure 3.1, and where differing levels of Category P lighting are provided, the luminaire is a type that complies with the higher lighting category?	YES
For Tee-intersections, has the first luminaire in the joining road been located no more than 50% of the maximum spacing detailed in clause 3.2.1 from the limits of the junction defined by the prolongation of the property lines?	YES
Where pedestrian refuges are located on roads requiring category P lighting, is the maintained horizontal illuminance over the surface of the refuge, within the design area shown in figure 3.3, not less than 3.5 Lux?	N/A
Do maximum spacing for luminaries in cul-de-sacs comply with Clause 3.2.1.and are the provisions of Clauses 3.2.5.2, 3.2.5.3 or 3.2.5.4 met?	YES

Lighting design compliance is conditional on all lights being operational.

Is the maintained horizontal illuminance over the surface not be less than 3.5 lux for the design areas defined below:				Modelling Software Used:
Roundabouts	YES	LATMDs	N/A	AGi 32 & PlePcat

ROAD INFORMATION TABLE				RESULTS TABLE				ELEMENTS FOR THIS ROAD							
Road Name	Road Reserve Width (m)	Distance to Kerb (m)	Offset (m)	Spacing Value from PlePal S	Min Av E_H	Min E_H Maint	U_p Maint	Straights Single Sided	Straights Staggered	Curves (Single or Staggered)	T-Inter sections	Pedestrian Refuges	LATMDs	Cul-de-sacs	Round abouts
Road 3 & 4	17	5.2	6.6	65.6	0.85	0.17	5	☑	☐	☐	☑	☐	☐	☑	☐
Road 3 & 5	17	5.2	6.6	64.4	0.85	0.18	5	☐	☑	☐	☑	☐	☐	☑	☐
Road 2 & 3	18	5.2	6.6	63.7	0.85	0.18	5	☑	☐	☑	☑	☐	☐	☐	☑
Road 2 & 4	18	5.2	6.6	62.5	0.85	0.2	5	☐	☑	☑	☑	☐	☐	☐	☑
								☐	☐	☐	☐	☐	☐	☐	☐
								☐	☐	☐	☐	☐	☐	☐	☐
								☐	☐	☐	☐	☐	☐	☐	☐

Additional Comments: Road 1 lit to CAT V5 with 90W LED, 10.5m MH, 3m OR lights.

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LUMINAIRE / POLE / PHOTOMETRIC INFORMATION TABLE			
Category	V5	Road Surface Luminaire Type	R3 IV
Pole Type	Single (BPM)	Luminaire Type	SLEDPH0912A
Mounting Height	10.5 m	Luminaire Outreach (m)	0.4
Pole Height (m)	8.5	Outreach (m)	Major 3m
Uplift Height (m)	2	Upcast Angle	0
Foundation Depth (mm)	2250	Cleaning / Replacement Interval	36 Months
Lamp	LED	Pollution Level	Medium
Photometric File	BRP392 LED108NW 90W DWV	IP Rating	IP6x
Lamp Type	LED	LLMF	0.86
Lumens	10800	MF	0.75

LIMITING LTPs			
Ave L (cd/m²)	0.35	Point Horizontal (Eph)	3.5
Overall Uniformity (Uo)	0.33	Horizontal Uniformity (Ue1)	8
Long Uniformity (UL)	0.5	Upward Light Ratio (UWLR)	3
Max Threshold Inc (TI)	20	Min Surround Illum (Es)	50

HAS COMPLIANCE WITH THE FOLLOWING ELEMENTS BEEN MET?				
All parameters specified in Clause 3.2 are achieved on all Straight Sections?	YES			
All parameters specified in Clause 3.3 are achieved on all Longer Radius Curves?	N/A			
All parameters specified in Clause 3.4 are achieved on all Intersections and other Specified Locations?	YES			
All parameters specified in Clause 3.5 are achieved on all Isolated Intersections	N/A			
All poles are setback within the acceptable location as per Clause B6	YES			
All parameters specified in Table 2.2 maintained over the surface for the design areas defined below:				Modelling Software Used:
Intersection (see below)	YES	Shorter Radius Bends (see below)	YES	
Other specified locations (see below)	YES	Isolated intersections (see below)	N/A	AGi 32 & PleVcat

Nominal Street Light Offset	0.4m from back of Kerb	Rate	Rate 2

ROAD INFORMATION TABLE						RESULTS TABLE (luminance)							RESULTS TABLE (Illuminance)		
Road / Intersection Name	Street Lighting Arrangement as per 8.1.3	Carriage Width (Wk)	Median Width	Overhang 1st Row	Overhang 2nd Row	Spacing	Ave L(Cd/m²)	Overall Uo	Min UL	Max TI	Min Es %	Max UWLR %	Min Eph (lux)	Max Eph (lux)	Max / Min
Road 1	1,2 Single Side (Single Carriage	11.1		3		59	0.55	0.41	0.61	10.36	77.67	0			
Road 1	3 Staggered (Single Carriagewa	11.1		3	3	46	0.69	0.42	0.5	10.68	68.16	0			
Roundabout full													3.82	23.04	6.03
Roundabout-Half NE													4.88	13.22	2.71
Roundabout-Half NW													2.57	13.08	5.09
Roundabout-Half SE													2.72	10.8	3.97
Roundabout-Half SW													3.35	11.99	3.58
Roundabout-Half Centre													5.82	14.29	2.4
Road 1 Bend full													3.75	21.5	5.73
Road 1 Bend Half W													2.5	10.96	4.38
Road 1 Bend Half E													3.52	9.04	2.57
221m Curve adjustment						59									

Additional Comments: Hursley Road Intersection lit to Cat V4 with 170W LED, 12m MH, 4.5m OR SBM footings