
TRANSPORT AND TRAFFIC PLANNING ASSOCIATES

**PROPOSED
BUNNINGS DEVELOPMENT
CNR JEWRY STREET AND LOCKHEED STREET,
TAMINDA (TAMWORTH)**

***Traffic Assessment for
Section 96 Application***

March 2010

Reference 10042

***TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Transportation, Traffic and Design Consultants
Suite 502, Level 5
282 Victoria Avenue
CHATSWOOD 2067
Telephone (02) 9411 5660
Facsimile (02) 9904 6622
Email: tpa@tpa.com.au***

INTRODUCTION

This report has been prepared to accompany a Section 96 Application to Tamworth Regional Council which seeks to amend Consent Conditions for a new Bunnings warehouse at Taminda (Figure1).

Development Application № 0322/2010 was submitted for the new Bunnings warehouse on a site bounded by Jewry Street, Lockheed Street, Beaufort Street and the proposed extension of Wirraway Street.

Consent Conditions № 32 and 33 require the following:

Roads

32. *A new roundabout shall be constructed at the intersection of Jewry Street and Lockheed Street to cater for the increased traffic demand at this location as a result of the development.*
33. *The intersection of Jewry Street and Wirraway Street shall be upgraded to a Modified 'Type B' Right Turn treatment as per the ATTACHED plan to cater for the traffic demand at this location as a result of the development.*

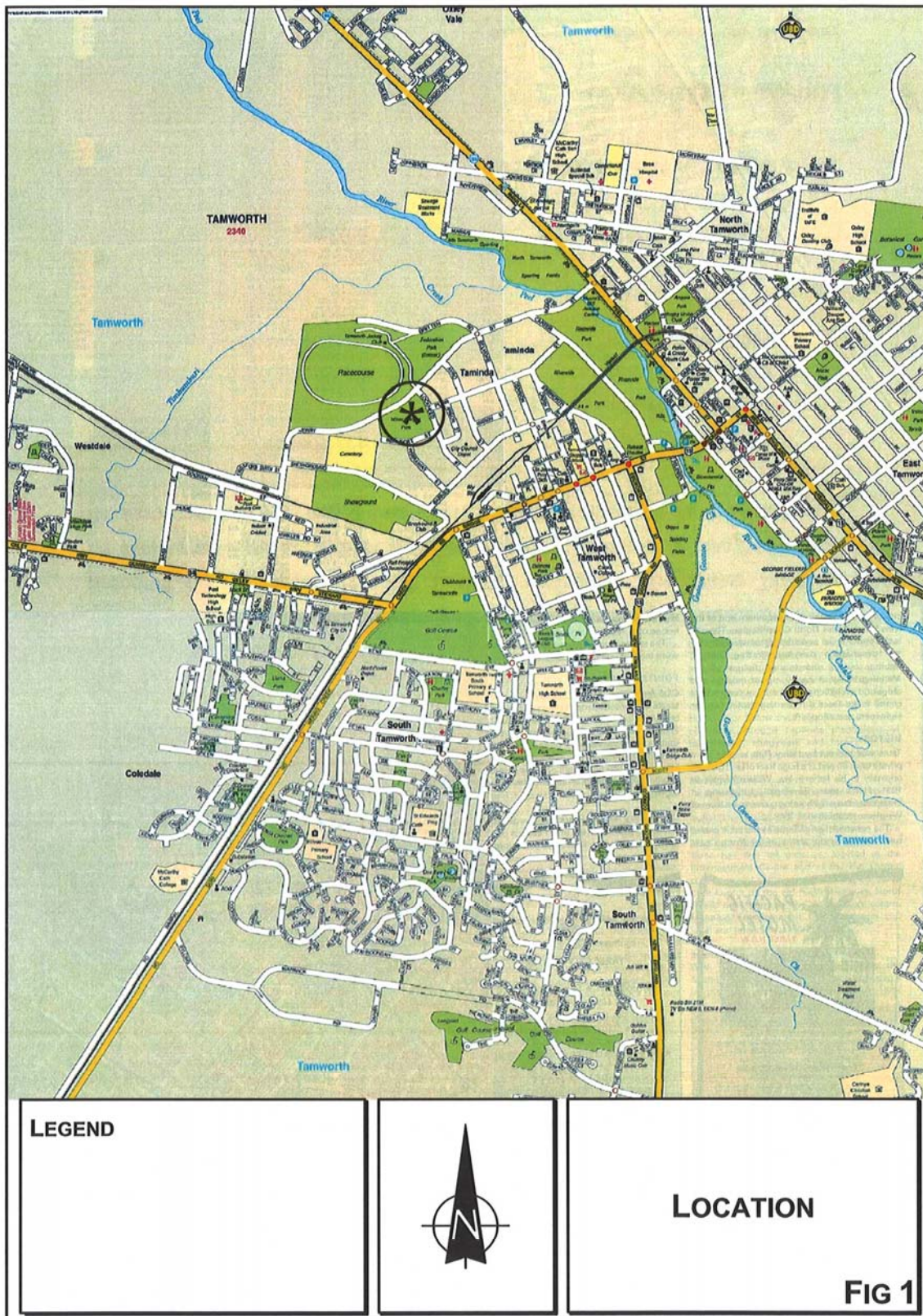
The purpose of this report is to provide a review of the existing and projected future traffic demands at the subject intersections in relation to the proposed Bunnings development and the need (if any) for upgrading works.

PROPOSED DEVELOPMENT

The proposed development comprises:

Warehouse and entry	8,937m ²
Timber trade	
Nursery	
Bagged goods	
Bulk trade	
Landscape yard	
Carparking	437 spaces

The carpark is to be located on the eastern part of the site with accesses on Lockheed Street and Beaufort Street while the loading dock will have ingress on Wirraway Street and egress on Beaufort Street. Details of the proposed development are provided on the architectural drawing overleaf.



TRAFFIC GENERATION

Bunnings stores have somewhat unique traffic generation characteristics (compared to other retail type uses) and the circumstances in Country Regional stores are also different to those in Capital City Metropolitan Area stores. In order to establish the Country regional characteristics surveys and research have been undertaken for the existing Bunnings stores at Tamworth, Bathurst and Orange.

The results of this survey data in relation to the peak traffic generation circumstances are summarised in the following:

	Weekday 4-5pm			Saturday Midday		
	IN	OUT	Total	IN	OUT	Total
Tamworth	124	165	289	186	201	387
Bathurst	74	88	162	111	107	218
Orange*	152	152	304	228	216	444

* Contained in a complex of 12 tenancies - traffic generation is for total complex

It is a Bunnings circumstance that traffic generation is not necessarily a pro-rata factor of floorspace as the smaller stores only represent a reduced range/stock situation rather than a fundamentally different trading circumstance. It is the latent population base of regional centres which influences the activity and in this respect it is noted that Tamworth and Orange have similar populations, while that of Bathurst is somewhat lower. This factor is reflected in the recorded peak traffic generation circumstances at these stores.

The TTPA assessed traffic generation projection for the proposed new store based on the surveys and the Bunnings experience is as follows:

Weekday PM			Saturday		
IN	OUT	Total	IN	OUT	Total
170	170	340	220	220	440

Bunnings stores like all major retail facilities have an element of 'passing trade' being customers which are already travelling past the site in the course of their trip (eg to/from the existing Taminda store) or 'spur of the moment' customers travelling along Jewry Street past the site.

These movements do not represent 'additional trips' and this factor should be taken into account in assessment of the traffic outcome. The RTA notes that a normal passing trade element for a major retail element** would be as follows:

Trip Type	Proportion of Trips	
	Thursday	Saturday
New Type	50%	68%
Diverted Trip	30%	20%
Drop IN trip	20%	12%

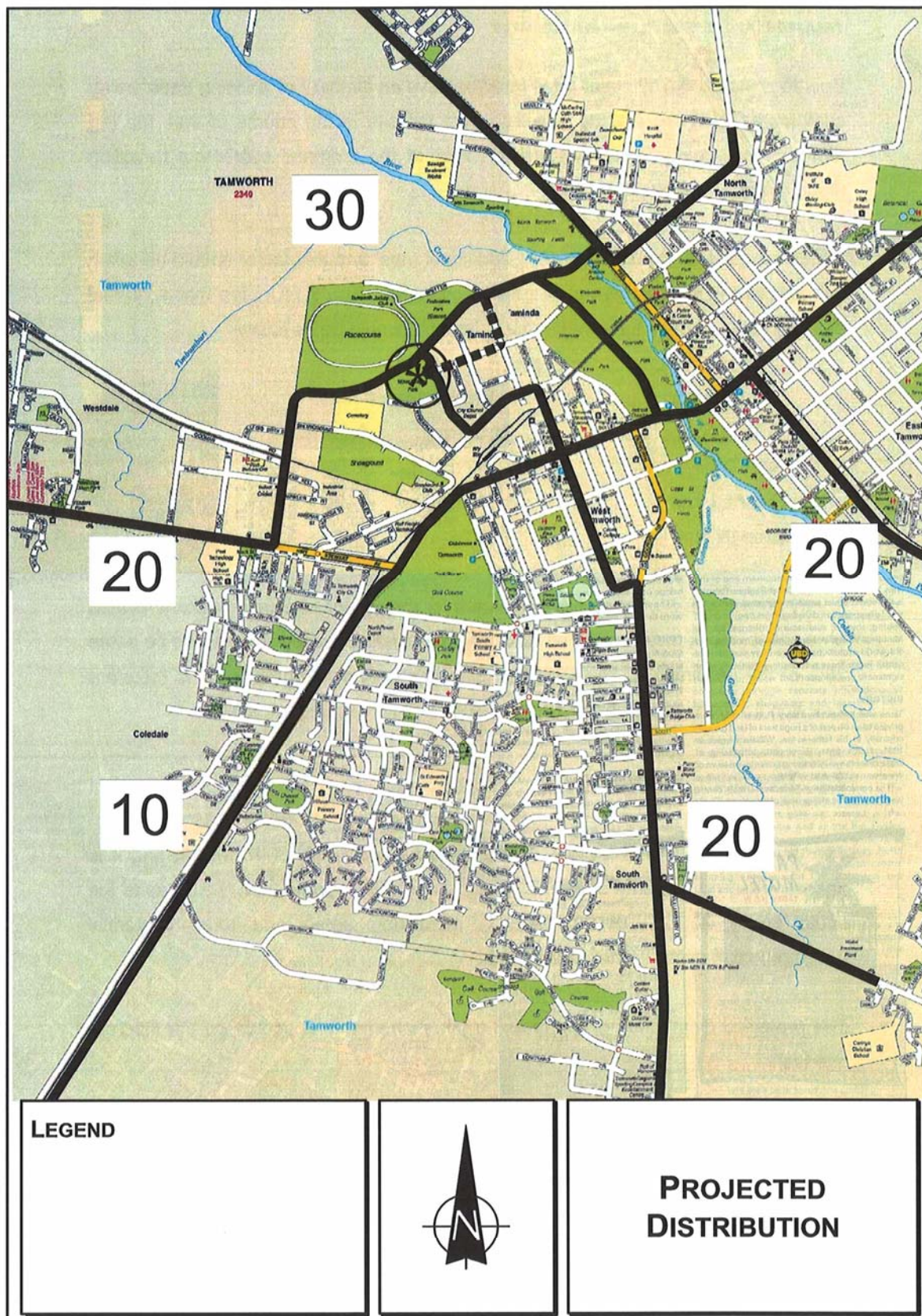
A very conservative 'passing trade' element for the proposed Bunnings store located on a conspicuous major road and replacing the existing nearby store would be some 30% of the generation. The resultant total additional traffic generation is therefore 238 vtpm for the weekday afternoon and 308 for Saturday midday periods.

2.2 TRIP DISTRIBUTION

The development site is located in the north-western edge of Tamworth and it is apparent that the majority of Bunnings patronage will originate from the areas to the south and east. However, there is increasing urban and rural residential development in areas further to the north.

The projected distribution of generated traffic movements is shown on the diagram overleaf.

** DMR (Qld) Road Planning and Design Manual (referring to research for RTA)



EXISTING TRAFFIC

Bunnings generate their peak traffic during the weekday afternoon and weekend midday periods while activity during weekday mornings is relatively minor. Traffic surveys have been undertaken at the Jewry Street/Lockheed Street intersection during the weekday afternoon and Saturday midday periods.

The results of those surveys (Appendix A) are summarised in the following:

		WD PM	WE MD
Jewry Street	Eastbound	394	278
	Right-turn	46	30
	Left-turn	8	-
	Westbound	360	222
	Right-turn	5	1
	Left-turn	95	62
Lockheed Street	Northbound	4	-
	Right-turn	57	45
	Left-turn	61	42
Access Track	Southbound	1	-
	Right-turn	7	1
	Left-turn	3	-

EXISTING AND PROPOSED ROAD GEOMETRY

Existing Geometry

The carriageway characteristics of Jewry Street are variable with the following prevailing at the Lockheed intersection:

East of Intersection

Southern edge

Kerb and gutter

9 metres to 'centre line'

4.9 metres to shoulder (2.9 metres)

West of Intersection

Shoulder (2.0 metres)

5.3 metres to 'centre line'

5.5 metres to shoulder (1.8 metres)

These circumstances are displayed on the Google image, site photos and engineering survey provided in Appendix B.

Future Geometry

It is understood that in conjunction with the development taking place Council will:

- * construct kerb and gutter (with road and footway adjustments) along the Jewry Street site frontage
- * construct kerb and gutter (with road and footway adjustments) along the Lockheed Street frontage
- * construct the extension of Wirraway Street through to Jewry Street.

It is assumed that the kerb and gutter along Jewry Street will quite naturally be on the same alignment as that on the eastern side of the intersection. As such there will be a total road pavement width (southern kerb to northern shoulder) of some 15 metres.

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The implications of this circumstance are that:

- * eastbound vehicles can pass vehicles waiting to turn right into Lockheed Street at present
- * the ability/arrangement for eastbound vehicles to pass right-turn vehicles can be enhanced in conjunction with the works to be undertaken by Council by relocation of the centreline marking to create a formal Type AUR treatment.

FUTURE ROAD PLANNING

Council engaged consultants GHD to undertake a Traffic Study of the Taminda area as recommended in the Taminda Revitalisation and Economic Development Strategy.

The study assessed the existing circumstances, identified some road network and traffic management options and assessed the envisaged network. However, the study does not enunciate what the future demand circumstances will be (ie natural growth, development growth or redistribution due to the changed road pattern). The study does however conclude that the existing traffic flows on Lockheed Street will be significantly reduced as a result of the extension of Wirraway Street.

The study recommends the provision of a roundabout at the Jewry Street/Lockheed Street intersection, however it is apparent that no other option was considered while the traffic modelling does not appear to reflect the ability for through vehicles to pass waiting right-turn vehicles.

TRAFFIC IMPLICATIONS

Jewry Street and Lockheed Street Intersection

The future traffic circumstances at this intersection have been assessed with regard to:

- * the existing peak traffic demands
- * the increased demands as a consequence of the Bunnings development
- * the increased demands as a result of regional growth
- * the roadworks which are to be undertaken by Council.

The operational performance of the intersection has been assessed using SIDRA for 3 circumstances, namely:

- A. Existing
- B. With Bunnings and Council road widening
- C. With future growth (+15%).

The TRS Traffic Study did not attempt to establish the future traffic demands as a result of regional growth and road network changes. Instead it only attempted to assess the subject intersection on the basis of a nominal traffic increase of 15%. Reference is made to the traffic growth between 2006 and 2009, however the quoted growths of 20% and 40% pa would appear to be questionable and based on spurious random data rather than actual AADT data.

The assessed traffic demands for these 3 identified circumstances are as follows:

		A		B		C	
		WD PM	WE MD	WD PM	WE MD	WD PM	WE MD
Jewry Street	Eastbound	394	278	344	212	396	244
	Right-turn	46	30	120	124	120	124
	Left-turn	8	1	8	1	8	1
	Westbound	360	222	346	202	398	232
	Right-turn	5	1	5	1	5	1
	Left-turn	95	62	145	128	145	128
Lockheed Street	Northbound	4	1	4	1	4	1
	Right-turn	57	45	100	101	115	116
	Left-turn	61	42	61	42	61	42
Access	Southbound	1	1	1	1	1	1
	Right-turn	7	1	7	1	7	1
	Left-turn	3	1	3	1	3	1

The intersection has been treated as a modified Type 'B' (or a Type AUR in current Austroads terminology) because through cars can pass waiting right-turn cars now and this provision can be upgraded and formalised with the proposed Council roadworks.

The results of that traffic modelling using SIDRA are provided in Appendix C and summarised in the following:

	A			B			C		
	LOS	DS	AVD	LOS	DS	AVD	LOS	DS	AVD
WD PM	A-C	0.403	5.9	A-D	0.674	9.0	A-D	0.688	8.5
WE MD	A-B	0.200	3.9	A-C	0.376	6.6	A-C	0.500	7.2

The results for all circumstances are satisfactory while the lower AVD for weekday PM is a quirk of the SIDRA program and the individual movement delays need to be referred to.

Jewry Street and Wirraway Street Intersection

There is no assessment provided in the GHD Report for the requirements of this intersection except the statement in the final paragraph on Page 18 that the intersection is '*assumed to require a similar intersection improvement to that of the Lockheed Street intersection*'. On Page 21 of the report it is identified that a roundabout should be provided at this intersection, although it is given the lowest priority of all the works identified.

The Consent Condition calls for the provision of a modified Type B treatment at this intersection without any analysis or justification in relation to the Bunnings development.

The Bunnings development will add some traffic to the through movements along Jewry Street but will not essentially increase the right-turn movements at the intersection as the main carpark access will be in Lockheed Street. The traffic report which accompanied the Bunnings DA showed a turning path for the delivery vehicle turning right from Jewry Street to Wirraway Street, however this is not correct. The delivery vehicle will approach/depart along the New England Highway and such the access movements will be:

- * ingress left-turn from Jewry Street to Wirraway Street
- * egress right-turn from Lockheed Street to Jewry Street.

CONCLUSION

This assessment has concluded that:

- * the traffic generated by the proposed Bunnings development will not create the need for the construction of a roundabout at the Jewry Street/Lockheed Street intersection. However, in conjunction with the road widening to be undertaken by Council the linemarking should be altered to upgrade the provision for eastbound vehicles to pass right-turn vehicles
- * the traffic generated by the proposed Bunnings development will not create the need for a modified Type B treatment at the Jewry Street/Wirraway Street intersection. However, the road widening to be undertaken by Council will presumably incorporate an appropriate 'taper out' for eastbound vehicles and in conjunction with this the centreline could be relocated in a manner to formalise the passing by westbound vehicles of vehicles waiting to turn right into the new section of Wirraway Street
- * the TRS Traffic Study made recommendations on the future treatments at the subject intersections without establishing the future traffic demand circumstance. There has also been no attempt to establish whether there is any 'nexus' between the traffic generation of the Bunnings development and the proposed intersection treatments.

APPENDIX A

TRAFFIC SURVEYS



R.O.A.R. DATA

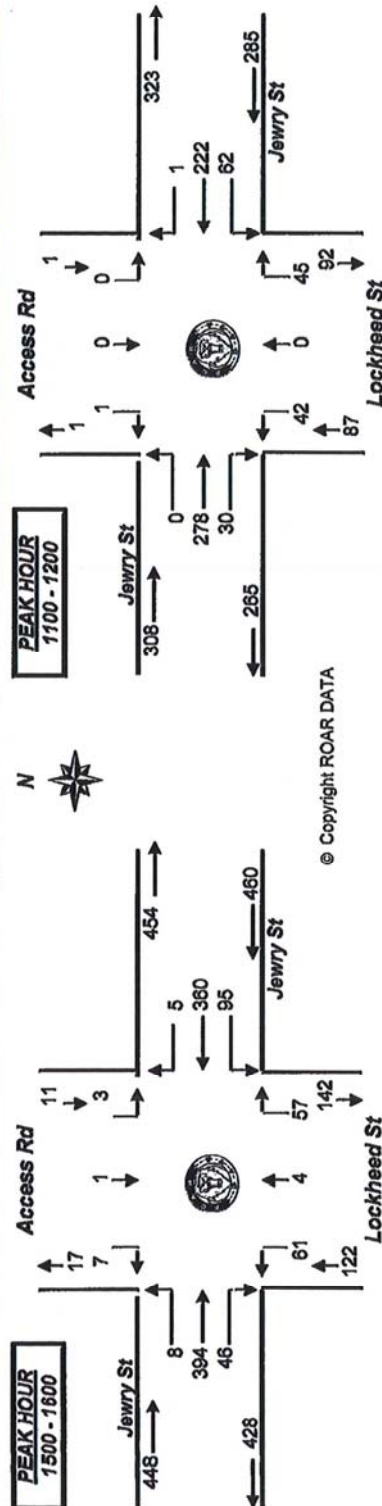
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : T.T.P.A.

Job No/Name : 2986 TAMMORTH Jewry St Surveys
Day/Date : Fri 19th & Sat 20th February 2010

All Vehicles	NORTH				WEST				SOUTH				EAST				TOT
	Access Rd	Jewry St	Jewry St	Jewry St	Access Rd	Jewry St	Jewry St	Jewry St	Access Rd	Jewry St	Jewry St	Jewry St	Access Rd	Jewry St	Jewry St	Jewry St	
Time Per	L	I	R	B	L	I	R	B	L	I	R	B	L	I	R	B	
1100 - 1115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	168
1115 - 1130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	167
1130 - 1145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177
1145 - 1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	149
1200 - 1215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	165
1215 - 1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	140
1230 - 1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134
1245 - 1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134
1300 - 1315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	121
1315 - 1330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	131
1330 - 1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	107
1345 - 1400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	118
Period End	1	0	4	1	0	4	1	0	0	4	1	0	0	4	1	0	1732

All Vehicles	NORTH				WEST				SOUTH				EAST				TOT
	Access Rd	Jewry St	Jewry St	Jewry St	Access Rd	Jewry St	Jewry St	Jewry St	Access Rd	Jewry St	Jewry St	Jewry St	Access Rd	Jewry St	Jewry St	Jewry St	
Time Per	L	I	R	B	L	I	R	B	L	I	R	B	L	I	R	B	
1100 - 1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	881
1115 - 1215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	878
1130 - 1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	831
1145 - 1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	888
1200 - 1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	873
1215 - 1315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	829
1230 - 1330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	888
1245 - 1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	881
1300 - 1400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	881
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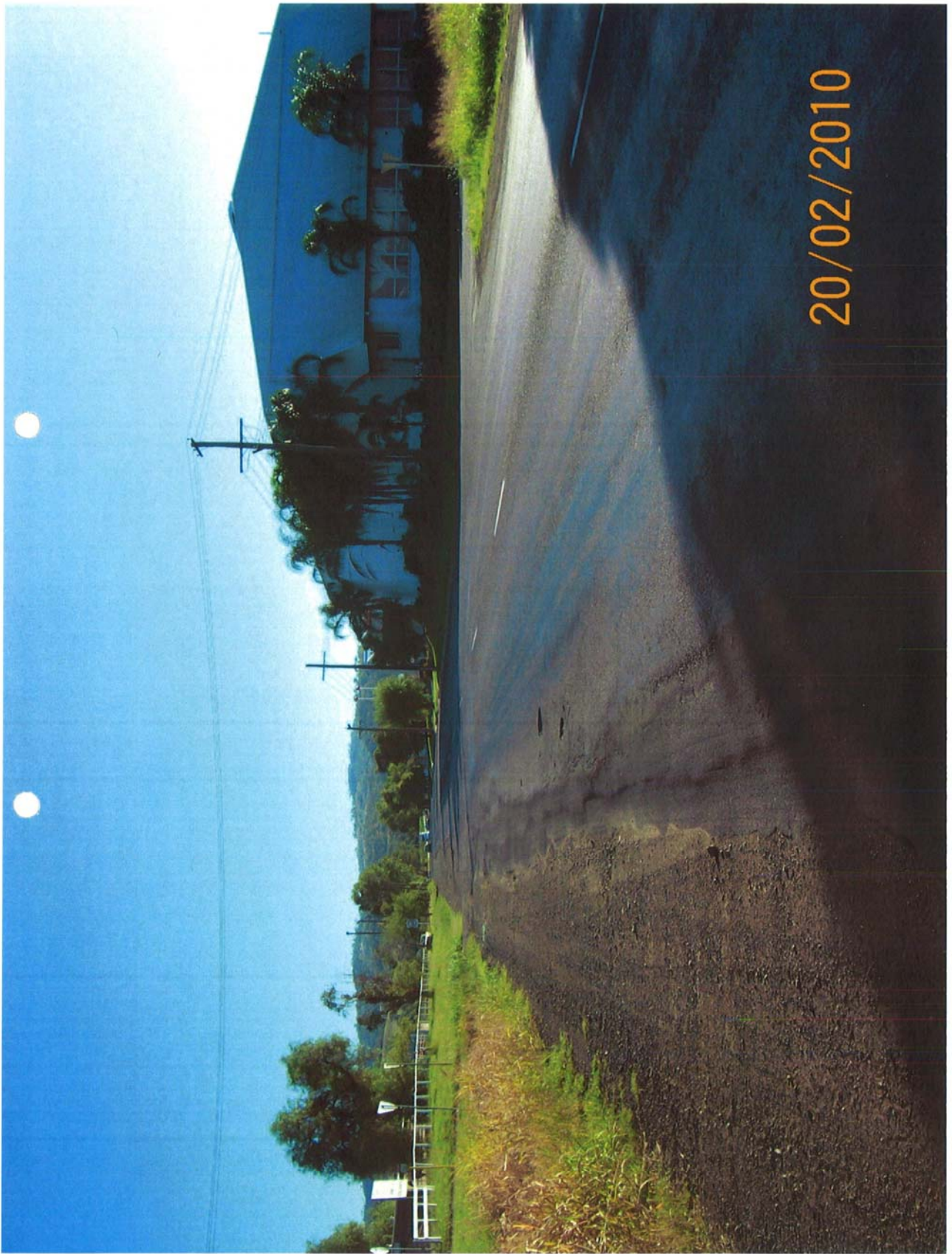


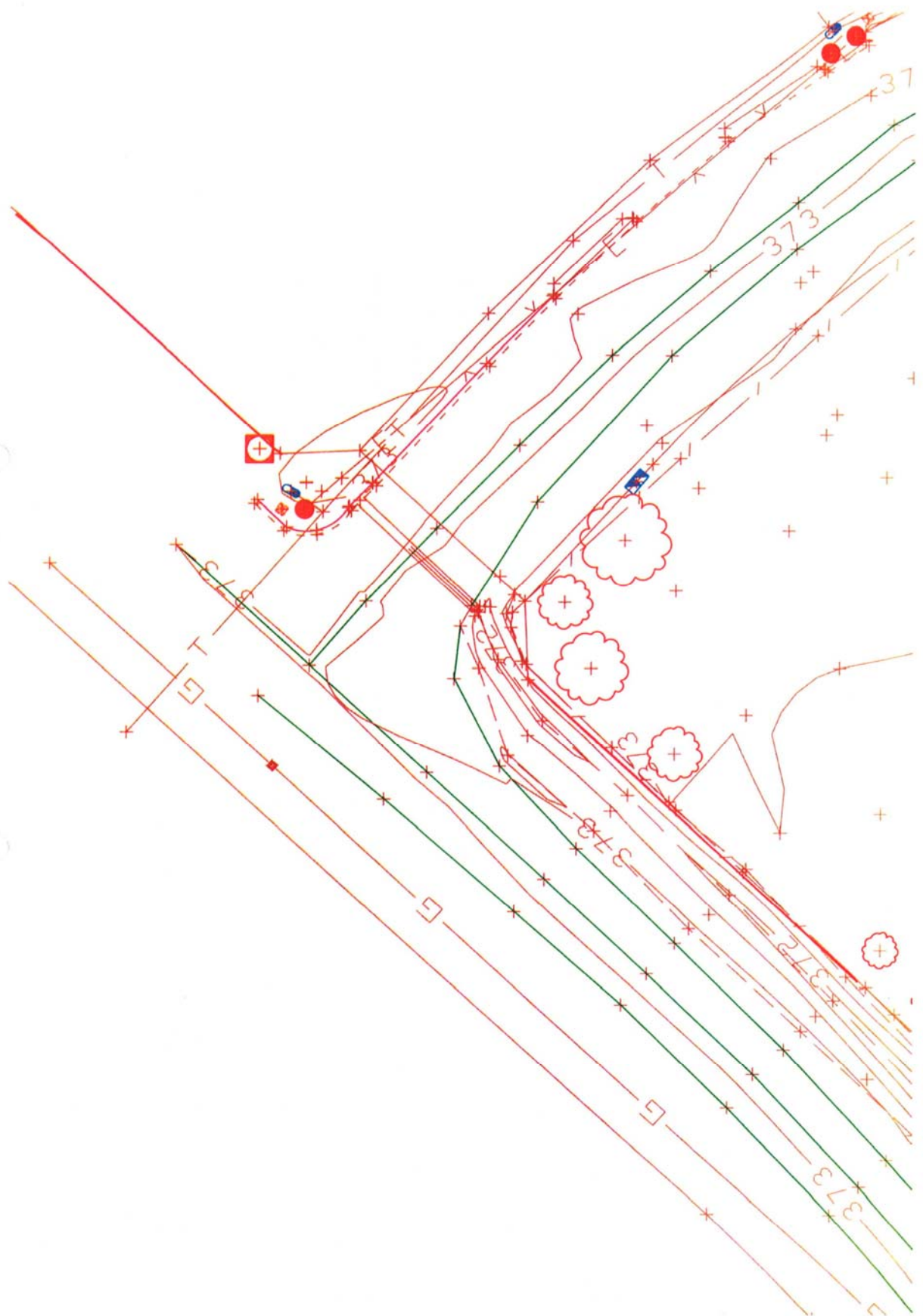
APPENDIX B

INTERSECTION DETAILS









APPENDIX C

SIDRA MODELLING

SIDRA INTERSECTION

Movement Summary

Jewry Street and Lockheed Street

A WD PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
New S leg										
1	L	64	0.0	0.403	22.1	LOS C	16	0.72	0.98	37.3
2	T	4	0.0	0.400	20.9	LOS C	16	0.72	0.96	38.0
3	R	60	0.0	0.403	22.3	LOS C	16	0.72	0.98	37.1
Approach		128	0.0	0.403	22.2	LOS C	16	0.72	0.98	37.2
New E leg										
4	L	100	0.0	0.054	8.2	LOS A	0	0.00	0.67	49.0
5	T	379	0.0	0.200	2.4	LOS A	16	0.58	0.00	52.8
6	R	5	0.0	0.200	10.6	LOS B	16	0.58	0.77	46.4
Approach		484	0.0	0.200	3.7	LOS A	16	0.46	0.15	51.9
New N leg										
7	L	3	0.0	0.045	21.2	LOS C	1	0.72	0.74	37.9
8	T	1	0.0	0.045	19.9	LOS C	1	0.72	0.88	38.7
9	R	7	0.0	0.045	21.3	LOS C	1	0.72	0.81	37.8
Approach		11	0.0	0.045	21.1	LOS C	1	0.72	0.80	37.9
New W leg										
10	L	8	0.0	0.045	8.2	LOS A	0	0.00	0.67	49.0
11	T	415	0.0	0.226	2.4	LOS A	18	0.49	0.00	53.8
12	R	48	0.0	0.226	11.2	LOS B	18	0.61	0.81	45.8
Approach		471	0.0	0.226	3.4	LOS A	18	0.49	0.09	52.8
All Vehicles		1094	0.0	0.403	5.9	Not Applicable	18	0.51	0.23	49.8

Symbols which may appear in this table:

Following Degree of Saturation

x = 1.00 for Short Lane with resulting Excess Flow

* x = 1.00 due to minimum capacity

Following LOS

- Based on density for continuous movements

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SIDRA INTERSECTION

Movement Summary

Jewry Street and Lockheed Street

A WE MD

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
New S leg										
1	L	44	0.0	0.184	13.5	LOS B	6	0.53	0.71	43.7
2	T	1	0.0	0.200	12.3	LOS B	6	0.53	0.81	44.8
3	R	47	0.0	0.184	13.6	LOS B	6	0.53	0.82	43.6
Approach		92	0.0	0.184	13.6	LOS B	6	0.53	0.77	43.7
New E leg										
4	L	65	0.0	0.035	8.2	LOS A	0	0.00	0.67	49.0
5	T	234	0.0	0.121	1.4	LOS A	8	0.45	0.00	54.3
6	R	1	0.0	0.125	9.6	LOS A	8	0.45	0.68	47.0
Approach		300	0.0	0.121	2.9	LOS A	8	0.35	0.15	53.0
New N leg										
7	L	1	0.0	0.006	13.5	LOS B	0	0.53	0.61	43.7
8	T	1	0.0	0.006	12.2	LOS B	0	0.53	0.68	44.9
9	R	1	0.0	0.006	13.6	LOS B	0	0.53	0.68	43.6
Approach		3	0.0	0.006	13.1	LOS B	0	0.53	0.65	44.1
New W leg										
10	L	1	0.0	0.030	8.2	LOS A	0	0.00	0.67	49.0
11	T	293	0.0	0.150	1.2	LOS A	10	0.36	0.00	55.3
12	R	32	0.0	0.150	9.7	LOS A	10	0.45	0.69	47.0
Approach		326	0.0	0.150	2.0	LOS A	10	0.37	0.07	54.4
All Vehicles		721	0.0	0.200	3.9	Not Applicable	10	0.38	0.19	52.1

Symbols which may appear in this table:

Following Degree of Saturation

x = 1.00 for Short Lane with resulting Excess Flow

* x = 1.00 due to minimum capacity

Following LOS

- Based on density for continuous movements

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SIDRA INTERSECTION

Movement Summary

Jewry Street and Lockheed Street

B WD PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
New S leg										
1	L	64	0.0	0.674	34.7	LOS D	35	0.84	1.25	30.7
2	T	4	0.0	0.667	33.4	LOS D	35	0.84	1.16	31.2
3	R	105	0.0	0.669	34.8	LOS D	35	0.84	1.16	30.6
Approach		173	0.0	0.671	34.7	LOS D	35	0.84	1.20	30.6
New E leg										
4	L	153	0.0	0.082	8.2	LOS A	0	0.00	0.67	49.0
5	T	364	0.0	0.192	2.0	LOS A	15	0.54	0.00	53.3
6	R	5	0.0	0.192	10.2	LOS B	15	0.54	0.74	46.6
Approach		522	0.0	0.192	3.9	LOS A	15	0.38	0.20	51.9
New N leg										
7	L	3	0.0	0.046	21.5	LOS C	1	0.71	0.71	37.6
8	T	1	0.0	0.045	20.3	LOS C	1	0.71	0.88	38.4
9	R	7	0.0	0.046	21.7	LOS C	1	0.71	0.81	37.5
Approach		11	0.0	0.046	21.5	LOS C	1	0.71	0.79	37.6
New W leg										
10	L	8	0.0	0.056	8.2	LOS A	0	0.00	0.67	49.0
11	T	362	0.0	0.283	2.6	LOS A	21	0.45	0.00	54.3
12	R	126	0.0	0.283	11.9	LOS B	21	0.63	0.86	45.2
Approach		496	0.0	0.282	5.0	LOS A	21	0.49	0.23	51.5
All Vehicles		1202	0.0	0.674	9.0	Not Applicable	35	0.49	0.36	46.9

Symbols which may appear in this table:

Following Degree of Saturation

x = 1.00 for Short Lane with resulting Excess Flow

* x = 1.00 due to minimum capacity

Following LOS

- Based on density for continuous movements

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SIDRA INTERSECTION

Movement Summary

Jewry Street and Lockheed Street

B WE MD

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
New S leg										
1	L	44	0.0	0.376	18.0	LOS C	16	0.64	0.85	40.1
2	T	1	0.0	0.333	16.8	LOS C	16	0.64	0.91	41.0
3	R	106	0.0	0.376	18.1	LOS C	16	0.64	0.94	40.0
Approach		151	0.0	0.376	18.1	LOS C	16	0.64	0.92	40.0
New E leg										
4	L	135	0.0	0.073	8.2	LOS A	0	0.00	0.67	49.0
5	T	213	0.0	0.110	1.0	LOS A	7	0.38	0.00	55.1
6	R	1	0.0	0.111	9.2	LOS A	7	0.38	0.65	47.3
Approach		349	0.0	0.110	3.8	LOS A	7	0.23	0.26	52.5
New N leg										
7	L	1	0.0	0.007	13.9	LOS B	0	0.51	0.58	43.4
8	T	1	0.0	0.007	12.6	LOS B	0	0.51	0.69	44.5
9	R	1	0.0	0.007	14.0	LOS B	0	0.51	0.68	43.2
Approach		3	0.0	0.007	13.5	LOS B	0	0.51	0.65	43.7
New W leg										
10	L	1	0.0	0.040	8.2	LOS A	0	0.00	0.67	49.0
11	T	223	0.0	0.203	1.2	LOS A	11	0.30	0.00	56.0
12	R	131	0.0	0.202	10.1	LOS B	11	0.47	0.72	46.9
Approach		355	0.0	0.203	4.5	LOS A	11	0.36	0.27	52.2
All Vehicles		858	0.0	0.376	6.6	Not Applicable	16	0.36	0.38	49.6

Symbols which may appear in this table:

Following Degree of Saturation

x = 1.00 for Short Lane with resulting Excess Flow

* x = 1.00 due to minimum capacity

Following LOS

- Based on density for continuous movements

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10/03/2010

SIDRA INTERSECTION

Movement Summary

Jewry Street and Lockheed Street

C WE MD

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
New S leg										
1	L	44	0.0	0.473	21.6	LOS C	22	0.71	0.96	37.6
2	T	1	0.0	0.500	20.4	LOS C	22	0.71	0.99	38.4
3	R	122	0.0	0.473	21.7	LOS C	22	0.71	1.01	37.5
Approach		167	0.0	0.474	21.7	LOS C	22	0.71	1.00	37.5
New E leg										
4	L	135	0.0	0.073	8.2	LOS A	0	0.00	0.67	49.0
5	T	244	0.0	0.126	1.2	LOS A	8	0.42	0.00	54.6
6	R	1	0.0	0.125	9.4	LOS A	8	0.42	0.67	47.1
Approach		380	0.0	0.126	3.7	LOS A	8	0.27	0.24	52.4
New N leg										
7	L	1	0.0	0.008	14.9	LOS B	0	0.55	0.59	42.5
8	T	1	0.0	0.008	13.6	LOS B	0	0.55	0.71	43.6
9	R	1	0.0	0.008	15.0	LOS C	0	0.55	0.69	42.4
Approach		3	0.0	0.008	14.5	LOS B	0	0.55	0.67	42.8
New W leg										
10	L	1	0.0	0.043	8.2	LOS A	0	0.00	0.67	49.0
11	T	257	0.0	0.221	1.4	LOS A	13	0.33	0.00	55.6
12	R	131	0.0	0.221	10.4	LOS B	13	0.50	0.74	46.6
Approach		389	0.0	0.221	4.4	LOS A	13	0.39	0.25	52.2
All Vehicles		939	0.0	0.500	7.2	Not Applicable	22	0.40	0.38	48.9

Symbols which may appear in this table:

Following Degree of Saturation

x = 1.00 for Short Lane with resulting Excess Flow

* x = 1.00 due to minimum capacity

Following LOS

- Based on density for continuous movements

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12/03/2010

SIDRA INTERSECTION

Movement Summary

Jewry Street and Lockheed Street

C WD PM

Give-way

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
New S leg										
1	L	64	0.0	0.688	30.3	LOS D	32	0.84	1.24	32.7
2	T	4	0.0	0.667	29.1	LOS D	32	0.84	1.15	33.3
3	R	121	0.0	0.688	30.5	LOS D	32	0.84	1.16	32.6
Approach		189	0.0	0.687	30.4	LOS D	32	0.84	1.19	32.6
New E leg										
4	L	153	0.0	0.082	8.2	LOS A	0	0.00	0.67	49.0
5	T	419	0.0	0.220	2.5	LOS A	18	0.59	0.00	52.6
6	R	5	0.0	0.217	10.7	LOS B	18	0.59	0.78	46.3
Approach		577	0.0	0.220	4.1	LOS A	18	0.44	0.18	51.5
New N leg										
7	L	3	0.0	0.043	19.7	LOS C	1	0.70	0.74	38.9
8	T	1	0.0	0.043	18.4	LOS C	1	0.70	0.88	39.7
9	R	7	0.0	0.043	19.8	LOS C	1	0.70	0.83	38.8
Approach		11	0.0	0.043	19.7	LOS C	1	0.70	0.81	38.9
New W leg										
10	L	8	0.0	0.063	8.2	LOS A	0	0.00	0.67	49.0
11	T	417	0.0	0.314	3.3	LOS A	27	0.50	0.00	53.7
12	R	126	0.0	0.314	12.8	LOS B	27	0.68	0.93	44.4
Approach		551	0.0	0.314	5.5	LOS A	27	0.53	0.22	51.2
All Vehicles		1328	0.0	0.688	8.5	Not Applicable	32	0.53	0.35	47.4

Symbols which may appear in this table:

Following Degree of Saturation

x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS

- Based on density for continuous movements

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12/03/2010

ATTACHMENT 3 - MODIFIED CONDITIONS

Deferred Commencement Matters

Prior to this consent becoming operational, and as provided for by Section 80(3) of the Environmental Planning & Assessment Act 1979, documentary evidence is to be submitted which confirms registration of the Land Title for Proposed Lot 10 in a Subdivision of Lot 3, DP 217032 pursuant to Development Application No.0322/2010.

Prior to Work Commencing

1. Pursuant to s.81A of the Act, the following matters must be satisfied prior to the commencement of work:-
 - (i) obtain a construction certificate from either Council or an accredited certifier; and
 - (ii) appoint a Principal Certifying Authority (and advise Council of the appointment, if it is not the Council).
2. A licensed plumber and/or drainer shall obtain a permit prior to the commencement of work of water supply and/or sanitary plumbing and drainage.
3. A sign is to be erected in a prominent position on any work site on which work involved in the erection or demolition of a building is being carried out stating that unauthorised entry to the work site is prohibited and showing the name of the person in charge of the work site and a telephone number at which that person may be contacted outside working hours. The sign is to be removed when the work has been completed. This condition does not apply to building work carried on inside an existing building, or building work carried out on premises that are to be occupied continuously (both during and outside working hours) while the work is carried out.
4. Toilet facilities are to be provided, prior to the commencement of work, at or in the vicinity of the work site on which work involved in the erection or demolition of a building is being carried out.

Facilities are to be provided at the rate of one toilet for every 20 persons or part of 20 persons employed at the site. Each toilet provided must be a standard flushing toilet, and must be connected to a public sewer. If connection to a public sewer is not practicable, then the toilet is to be connected to an accredited sewage management facility approved by the council. If connection to a public sewer or an accredited sewage management facility is not practicable, then connection to some other sewage management facility approved by the council is required.

5. Traffic Control Plans are to be prepared by a certified and approved person in accordance with AS1742.3-1996 and the Road and Traffic Authority's current version of the "Traffic Control at Worksites" Manual.

6. An Erosion and Sediment Control Management Plan shall be prepared by suitably qualified persons, for approval by Council, prior to the commencement of any construction.

Erosion and sediment controls for the construction works are to be installed and approved by Council before any site works begin, and maintained effectively for the duration of the construction works.

7. A Traffic Management Plan (TMP) shall be prepared by suitably qualified persons which specifically address the haulage route, expected tonnages and vehicle sizes with regard to the importation of fill required for the development. The TMP shall be submitted to Council and approved prior to the commencement of any construction works. The nominated haulage route/s are to be located away from residential areas and school zones where possible.
8. A site specific Earthworks Plan shall be prepared by a suitably qualified and experienced geotechnical engineer in order to determine the most appropriate and suitable procedure for earthworks operations for the allotment filling required to raise the site to the required subgrade levels. This report shall include drawings/specifications which shall clearly indicate the depth and location of proposed filling. Matters to be taken into consideration in the report include drainage, fill material standards, compaction standards, dust control and impact on adjacent lands.

The Earthworks Plan shall be submitted to and approved by Council prior to the commencement of any works.

9. A minimum of one (1) weeks notice, in writing, of the intention to commence works on public land is required to be given to Council together with the name of the principal contractor and any major subcontractors engaged to carry out the works.
10. The contractors engaged on the development must maintain public liability insurance cover to the minimum value of \$20 million. The policy shall specifically indemnify Council from all claims arising from the execution of the works. Documentary evidence of the currency of the policy shall be provided to Council prior to the commencement of work and upon request, during the progress of the work.
11. Prior to construction of the café and food production areas a plan will be required to be submitted and approved by Council detailing the layout of the café, including location of equipment, all sink locations, and wall, floor and ceiling construction details.
12. Pursuant to Section 68 of the Local Government Act 1993, the following approvals must be obtained from Council prior to the issue of a Construction Certificate:-
 - (i) Carry out water supply works;
 - (ii) Carry out sewerage works;
 - (iii) Carry out stormwater drainage work; and
 - (iv) Dispose of waste into a sewer of the Council (Trade Waste).

13. Prior to landscape works commencing, a Landscape Design Plan shall be submitted and approved. The Plan is to include details of species, planting densities, methodology and placement.

Prior to issue of a Construction Certificate

14. A compliance certificate under Section 306 of the Water Management Act 2000 must be obtained from the Council (as the local water supply authority) prior to the issue of a Construction Certificate. All infrastructure design, including engineering drawings and construction specifications for water and sewer supply (prepared in accordance with Council's Engineering Guidelines for Subdivisions and Developments), must be approved and payments for water and sewer headworks contributions made prior to the issue of the compliance certificate.
15. An Erosion and Sediment Control Management Plan prepared in accordance with the relevant sections of the Department of Housing Manual "Soil and Water Management for Urban Development", and Council's current Engineering Guidelines for Subdivisions and Developments shall be submitted to and approved by Council with the application for Construction Certificate.

The plan shall include :

- (i) Measures to prevent site vehicles tracking sediment and other pollutants from the development site;
- (ii) Dust control measures;
- (iii) Control structures such as sediment basins, sediment fences and sediment traps to trap sediment and allow filtered water to pass through;
- (iv) Safety measures for temporary and permanent water bodies including fencing and maximum batter slopes;
- (v) Contingencies in the event of flooding.

The erosion and sediment control measures shall be provided to avoid damage to the environment during construction and are to be maintained throughout the construction of the development.

16. Detailed engineering drawings specific to the works and prepared in accordance with Council's Engineering Guidelines for Subdivisions and Developments, are required for the following, as a minimum, to ensure all works are designed and constructed in accordance with recognised and accepted standards and guidelines:-
 - (i) Stormwater drainage;
 - (ii) Carparks and internal roads;
 - (iii) Works required by Condition 32 at the intersection of Jewry Street and Lockheed Street;
 - (iv) DELETED
 - (v) Erosion and Sedimentation Control;

The engineering drawings including stormwater drainage calculations shall be submitted to Council for approval prior to the issue of a Construction Certificate.

All engineering drawings and specifications are to be certified by a Chartered Professional Engineer or a registered Consultancy.

17. DELETED

18. Prior to issue of a construction certificate, certification shall be submitted which confirms that all external lighting satisfies the provisions of Tamworth Development Control Plan No. 9 – Guidelines for Outdoor Lighting and AS4282: Control of the obtrusive effects of outdoor lighting.

19. Prior to the issue of a construction certificate, a Construction Management Plan is to be submitted and approved by Council. The plan is to identify the methodology of managing all construction impacts, including those generated from the fill placement and building works.

General

20. The development must be carried out in accordance with the Development Application and accompanying plans, drawings and other documents as amended by conditions of this consent.

21. All proposed building, site works or property improvement indicated on the submitted plans or otherwise required under the terms of this consent shall be completed prior to occupation of the premises to ensure compliance with the provisions of the Environmental Planning and Assessment Act, 1979.

22. All building work must be carried out in accordance with the provisions of the Building Code of Australia.

23. To restrict entry of termites to the timber structure of the building, the building is to be protected from subterranean termites in accordance with Building Code of Australia except that a hand-sprayed chemical barrier will not be accepted unless a reticulation system is incorporated in accordance with Council's Policy. Council is to be informed of the proposed method of protection and, where applicable, should be supplied with certification from the installer.

24. The Developer is responsible for any costs relating to minor alterations and extensions of existing roads, drainage and Council services for the development.

Stormwater

25. All roof water and surface stormwater discharging from the proposed development site, buildings and works must be conveyed by underground pipe drains complying with AS3500.3 to the satisfaction of Council. No effluent or polluted water of any type may be allowed to enter the Council's stormwater drainage system.

In this regard, stormwater discharge from the site shall be as follows and generally in accordance with the Concept Stormwater and Levels Plan (C01_DA) provided with the Development Application:-

- (i) The surface stormwater discharging from the carpark, access driveway and loading dock areas are to be directed to the underground drainage system within Jewry Street, Beaufort Street and Wirraway Street. Water quality treatment devices shall be required for the development for runoff derived onsite prior to discharge from the site and connection to Council's underground drainage system. (Note: The underground stormwater infrastructure in Jewry Street, Beaufort Street and Wirraway Street shall be constructed as part of the subdivision of land under a separate Development Consent.);
- (ii) A purpose built underground treatment tank collecting runoff from the outdoor garden area in the warehouse shall be constructed and located at the north eastern end of the site; and
- (iii) All roof waters from the development site are to be collected and stored for reuse (irrigation and washdown) in a new underground reuse tank to be located at the north eastern corner of the site.

The stormwater discharge drainage system must be constructed to comply with the following requirements as a minimum:-

- (i) All plumbing within the site must be carried out in accordance with relevant provisions of Australian Standard AS/NZS 3500.3 – 2003 Plumbing and Drainage – Stormwater Drainage;
- (ii) Temporary down pipes shall be connected as soon as the roof has been covered so as to not cause a nuisance to adjoining properties;
- (iii) All surface flow paths must have a practical and satisfactory destination with due consideration to erosion and sediment control during all stages of development; and
- (iv) Any interruption to the natural overland flow of stormwater drainage which could result in the disruption of amenity, or drainage or deterioration to any other property is not permitted.

Traffic and Parking

- 26. All internal driveways, parking areas, loading bays and vehicular turning areas to be constructed with a base course of adequate depth to suit design traffic, being sealed with either asphaltic concrete, concrete or interlocking pavers and being properly maintained to facilitate the use of vehicular access and parking facilities and to minimise any associated noise and dust nuisance. Full details of compliance are to be included on the plans accompanying the Construction Certificate application.
- 27. Vehicle crossings shall be provided at the following locations and in accordance with the plans submitted with the Development Application:-

- (i) Lockheed Street for ingress and egress to the carpark;
 - (ii) Beaufort Street for ingress and egress to the carpark;
 - (iii) Wirraway Street for ingress only to the “goods inward yard”; and
 - (iv) Beaufort Street for egress only from the “goods inward yard”.
28. Vehicle crossings shall be constructed in accordance with Council’s current Engineering Guidelines for Subdivisions and Developments to the satisfaction of the Responsible Authority, before the use is commenced or building occupied and shall comply with the following:-
- (i) The alignment of the driveways across the verge in Lockheed Street and Beaufort Street shall be at right angles to the kerb;
 - (ii) The alignment of the driveway across the verge in Wirraway Street shall be designed such that vehicles travelling north along Wirraway Street are prevented from accessing the site;
 - (iii) Any proposed vehicular crossing shall have satisfactory clearance to any drainage pit, power pole or telecommunications pole, manhole cover or marker, or street tree. Any relocation, alteration or replacement required shall be in accordance with the requirements of the relevant Authority and shall be at the Developer’s expense;
 - (iv) The vehicle crossings shall have adequate pavement depth to accommodate the likely traffic generated on the lot and shall be paved.
The paving shall consist of either asphaltic concrete, concrete or interlocking pavers; and
 - (v) The footpath from the back of the kerb and gutter to the property boundary shall be between 2% and 6% falling to the kerb line. The design of the driveway shall be undertaken to ensure that the access is suitable for all types of vehicles.
29. All parking and loading bays shall be permanently marked out on the pavement surface and being clearly indicated by means of appropriate signs to facilitate the orderly and efficient use of onsite parking and loading/unloading facilities.
30. All traffic management facilities (including medians and linemarking) are to be contained within the development site.
31. The direction of traffic movement within the site shall be clearly indicated by means of suitable signs and pavement markings to ensure that clear direction is provided to the drivers of vehicles entering and leaving the premises in order to facilitate the orderly and efficient use of on-site parking and driveway access and in the interest of traffic safety and convenience.

Roads

32. An Urban Basic Right-turn (BAR) Treatment in accordance with Figure 7.17 of the Austroads 2009 Guide to Road Design - Part 4A: Unsignalised and Signalised Intersections shall be constructed at the intersection of Lockheed Street and Jewry Street to facilitate the safe passage of traffic on Jewry Street around right turning traffic into Lockheed Street. The design speed for the treatment shall be 60km/h and the

width of the widening from the centreline to the new edge line shall be 6.5m. A 2.0 metre wide shoulder shall be provided outside the edgeline and the entire passing lane plus 1 metre of the shoulder shall be bitumen sealed with a two coat 14/7 application. The new bitumen seal shall extend over the existing seal at least 300mm. The depth of the pavement for the widening shall match the existing pavement thickness and the existing table drain and culvert under the entry/exit into the Racecourse shall be re-aligned as required. The safety of vehicles exiting the Racecourse must be considered and a holding line installed on the driveway between the existing 'Give Way' signs.

33. DELETED

Allotment Filling

34. All allotment filling shall meet the requirements of AS3798 (as amended) – Guidelines on Earthworks for Commercial and Residential Developments.
35. Certification of the allotment filling shall be provided by a geotechnical testing authority registered under NATA. The testing authority shall be required to certify whether the fill complies with the requirements of AS3798 (as amended) – Guidelines on Earthworks for Commercial and Residential Developments, as controlled fill.
36. Where allotment filling has been carried out, the Works-As-Executed (WAE) plans shall indicate the contours prior to and after filling and also the compaction test results.

Site Levels to Mitigate against Flooding

37. In accordance with the engineering report submitted with the Development Application, the proposed levels for the main carpark are to be between 300mm and 700mm above the existing ground levels.
38. In accordance with the engineering report submitted with the Development Application, the proposed building floor level of the warehouse is to be 374.20m AHD which corresponds to 500mm above the 1 in 20 year peak flood and is higher than the 1 in 100 year peak flood. (374.10m AHD)

During Construction

39. Work on the project shall be limited to the following hours to prevent unreasonable disturbance to the amenity of the area:-

Monday to Friday – 7.00am to 5.00pm;

Saturday – 8.00am to 1.00pm if audible on other residential premises, otherwise 7.00am to 5.00pm;

No work to be carried out on Sunday or Public Holidays if it is audible on other residential premises.

The builder shall be responsible to instruct and control his sub-contractors regarding the hours of work.

40. A site rubbish enclosure shall be provided on the site for the period of the proposed construction works.
41. A copy of the current stamped approved engineering construction plans and specification must be kept on site for the duration of the works and be made available upon request to either the Principal Certifying Authority or an officer of the Council.
42. The Developer shall ensure that dust suppression is undertaken to the satisfaction of the Responsible Authority, in the form of constant water spraying or other natural based proprietary dust suppressant, to ensure that dust caused by any vehicles moving within the site does not cause a nuisance to surrounding properties.
43. Stockpiles of topsoil, sand, aggregates, spoil or other material shall be stored clear of any natural drainage path, constructed drainage systems, easement, water bodies, or road surface and located wholly within the site with measures in place to prevent erosion or movements of sediment in accordance with the approved erosion and sediment control management plan.
44. All spillage of materials, as a result of delivery or handling, must be removed as soon as practicable and placed into suitable receptacles for reclamation or disposal in a manner that does not cause pollution of the environment.
45. Open and piped drains, gutters, roadways and access ways shall be maintained free of sediment for the duration of the work. When necessary, roadways shall be swept and drains and gutters cleaned of sediment build up.
46. The footpath and/or road reserve is not to be used for construction purposes or placing of building materials (without Council's prior consent) to ensure safe and unobstructed access for pedestrians and motorists. Where necessary, application may be made by contacting Council's Development and Approvals Division.
47. All works undertaken on a public road are to be maintained in a safe condition at all times. Council may at any time and without prior notification make safe any such works it considers unsafe and recover all reasonable costs incurred from the Developer.
48. Any damage caused to the road pavement, kerb and guttering and /or footpath during building operations shall be rectified by the Developer or the builder to the satisfaction of Council to ensure the integrity of Council's road infrastructure is maintained to an acceptable standard.
49. Traffic Management measures as a result of the works are to be maintained at all times in accordance with the approved Traffic Control Plans and Traffic Management Plans.

Inspections

50. As a consent authority under the Water Management Act 2000, the following inspections are required to be carried out by Council. Where Council is not the Principal Certifying Authority, an additional fee for each inspection will apply.
- (i) Underfloor drainage under hydrostatic test prior to covering;
 - (ii) Internal stackwork under hydrostatic test prior to covering;
 - (iii) Hot and cold water plumbing under pressure test prior to covering;
 - (iv) Sanitary drainage (under hydrostatic test) prior to backfilling trenches or covering;
 - (v) The installation of the Trade Waste Facility prior to backfilling or covering; and
 - (vi) Final inspection of all plumbing and drainage works.
51. It is required that a Principal Certifying Authority (PCA) be appointed to undertake all critical stage inspections as prescribed under the Environmental Planning and Assessment Regulations, 2000. The owner may appoint either the Council or an accredited certifier to be the PCA.
52. Inspections are required to be carried out by Council for works as specified below:-
- (i) Stormwater drainage infrastructure prior to backfilling trenches;
 - (ii) Road pavement prior to sealing;

Please note that Council requires a minimum of 24 hours notice to undertake inspections.

Prior to Occupation

53. To ensure that the building work is completed in accordance with the approval and is in a safe and healthy condition for use by the occupants, the building (or part of the building in the case of alterations and additions) shall not be occupied or used until -
- (a) it is completed in accordance with the approval and the principal certifying authority has completed a satisfactory final inspection; or
 - (b) the principal certifying authority gives written permission to allow the building to be occupied or used before it is completed.
54. One A1 set of approved construction drawings for the works at the intersection of Jewry Street and Lockheed Street required by Condition 32 shall be amended to show the "work-as-executed" and submitted to Council. The drawings shall be revision/version "W" and be certified by a Registered Surveyor or a Chartered Professional Civil Engineer.

An 'AutoCAD' file of the "work-as-executed" plans shall be submitted to Council to upload into Council's Geographic Information System.

A 'pdf' version of the "work-as-executed" plans shall also be submitted to ensure that adequate electronic records are maintained of community infrastructure.

Continued Operations

55. The sealing of all vehicular parking, manoeuvring and loading and unloading areas is to be maintained at all times.
56. The pavement markings of all vehicular parking areas and directional pavement markings is to be maintained at all times.
57. All vehicular movement to and from the site shall be in a forward direction to ensure that the proposed development does not give rise to vehicle reversing movements on or off the public road with consequent traffic accident potential and reduction in road efficiency.
58. To ensure that the required car parking areas, associated driveways and manoeuvring areas are able to function efficiently for their intended purpose, they shall be maintained clear of obstruction and be used exclusively for the purposes of car parking and vehicle access and under no circumstances are such areas to be used for the storage of goods or waste materials.