Proposed Expansion of McWilliams Winery

Jack McWilliam Road, Hanwood

TRAFFIC AND PARKING ASSESSMENT REPORT

17 July 2012

Ref 10093

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1. INTRODUCTION

This report has been prepared to accompany an application for a proposal to expand the existing McWilliams Winery which is located in Jack McWilliam Road, Hanwood (Figures 1 and 2).

The expansion is expected to be undertaken progressively, in stages from an existing crush capacity of 34,000 tonnes up to a maximum crush capacity of 65,000 tonnes.

No change is proposed to the existing vehicular access arrangements. The existing access arrangements comprise 3 separate driveways off Jack McWilliam Road which (from east to west) cater for heavy vehicle access, staff/visitors and vintage trucks (during the vintage only).

As part of the expansion proposals, staff numbers are expected to increase from an existing 81 staff up to a maximum of 201 staff. It is pertinent to note that not all staff are present on the site simultaneously, as staff work on various shifts, particularly during the vintage.

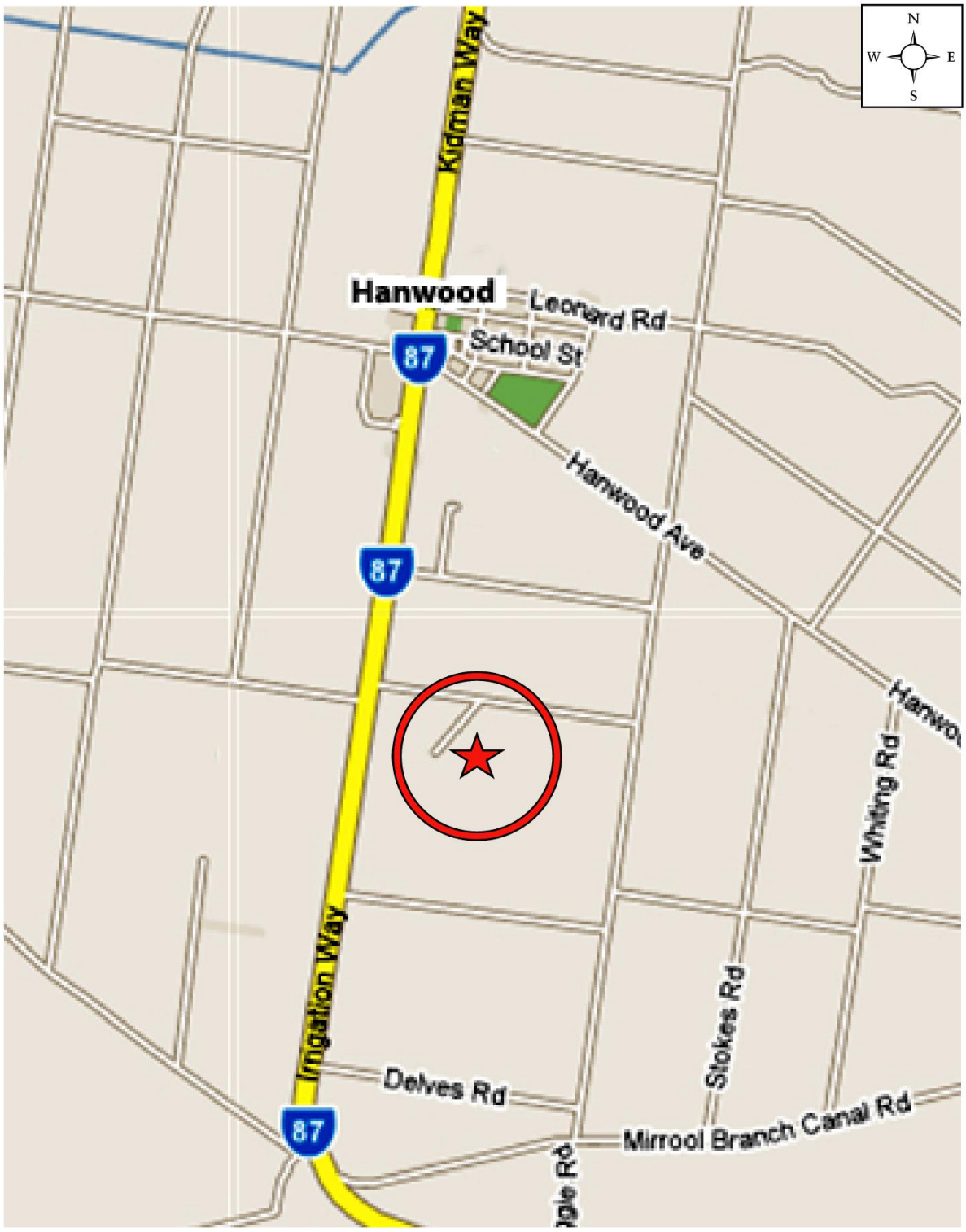
All car parking demands generated by staff and visitors will be fully accommodated on the site.

The purpose of this report is to assess the traffic and parking implications of the expansion proposals and to that end this report:

- describes the site and provides details of the development proposal
- reviews the road network in the vicinity of the site, and the traffic conditions on that road network
- estimates the traffic generation potential of the development proposal
- assesses the traffic implications of the development proposal in terms of road network capacity

- reviews the geometric design features of the existing car parking facilities for compliance with the relevant codes and standards

- assesses the adequacy and suitability of the quantum of off-street car parking provided on the site.



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LOCATION
FIGURE 1

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SITE
FIGURE 2

2. PROPOSED DEVELOPMENT

Site

The subject site is located on the southern side of Jack McWilliam Road, approximately midway between Kidman Way and Old Willbriggie Road. The site has a street frontage approximately 290m in length to Jack McWilliam Road.

The site also has a secondary street frontage to Ben Martin Road to the south, however there is no vehicular access provided to the site from this street frontage.

The site is occupied by the McWilliams Winery, with vehicular access to the site currently provided via 3 separate driveways as follows:

- a heavy vehicle trucks-only driveway located adjacent to the eastern boundary of the site which is used throughout the year

- a light vehicles only driveway for staff and visitors which is centrally located on the site, and is used throughout the year, and

- a heavy vehicle trucks-only "vintage" driveway located adjacent to the western boundary of the site. The driveway is used only during the vintage, and is largely unused at other times of the year.

In addition, there are 2 domestic driveways located along the western portion of the site frontage (ie; between the staff/visitors and vintage driveways) which are used to provide vehicular access to a number of domestic dwellings on the site which are not the subject of this application.

Off-street car parking is currently provided on the site in a number of informal car parking areas, as well as a formal, linemarked car parking area which has a capacity of 55 spaces.

Proposed Development

The proposed development envisages the expansion of the existing winery over a number of stages, from an existing capacity of 38,000 tonnes up to a maximum capacity of 65,000 tonnes. The latter stages of the expansion will also involve the provision of a bottling plant and a packaging plant on the site.

Staff numbers are expected to increase progressively from an existing 81 staff to a maximum of 201 staff. Staff will work a variety of shifts, such that not all staff will be present on the site simultaneously, as set out in Table 2.1 below:

Table 2.1 - Existing and Projected Future Staff Numbers during Vintage

Staff	Shift	34,000t 2010	45,000t 2014	55,000t n.k.	65,000t n.k.
Administration	8am-5pm	9	13	24	28
Winery	6am-4pm	34	38	45	56
	4pm-2am	26	29	33	34
Crushing Shifts	7am-5pm	5	5	6	8
(Vintage Only)	10pm-8am	6	6	7	9
Cellar Door	10am-5pm	1	1	1	1
Packaging	7.30am-4.00pm	0	16	43	65
	3.30pm-11.30pm	0	0	0	0
TOTAL STAFF		**81**	**108**	**159**	**201**

It is pertinent to note that the arrival and departure of staff will *not* coincide with the *peak hour* traffic volumes recorded on the nearby road network. In particular, it is noted that the majority of winery staff will arrive for work before 6am, and that the main winery shift change in the afternoon will occur around 4pm.

No change is proposed to the existing vehicular access arrangements serving the site, however the number of car parking spaces in formal, linemarked car parking areas is to be increased from 55 spaces to 209 parking spaces.

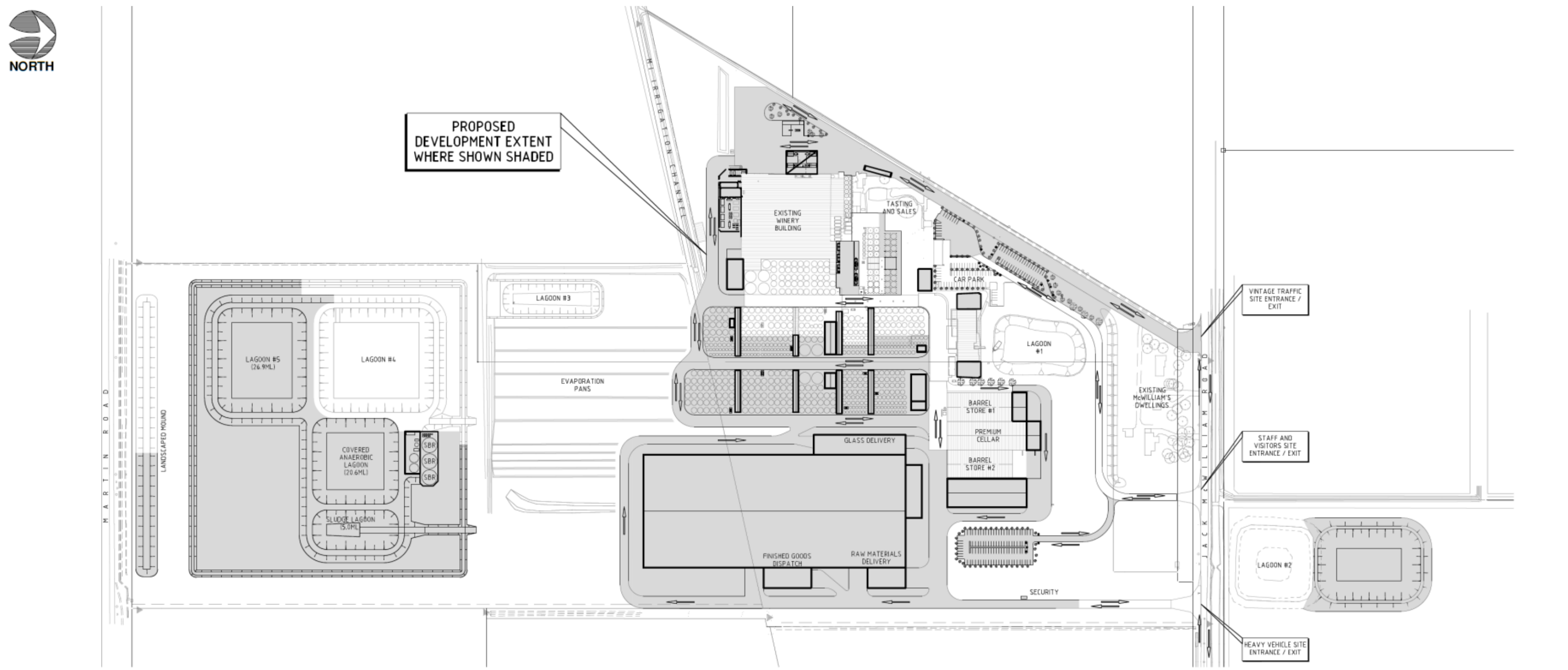
Plans of the expansion proposals have been prepared by *Linney Engineering Services Pty Ltd* and are reproduced in the following pages.

The plans also provide a detailed breakdown of projected future traffic volumes for each stage of expansion during both the “vintage” and “non-vintage” periods.

The vintage occurs for a period of approximately 6 weeks towards the end of February each year when grapes are harvested and delivered to the site for crushing. The vintage generates additional truck traffic activity, in the order of an additional 10 to 20 truck movements per hour (IN/OUT combined) during the delivery of grapes to the site. These trucks will use only the vintage driveway located along the western boundary of the site. The vintage driveway provides direct access to the weigh bridge and enables vintage trucks to access the site in a safe and efficient manner, without the need to traverse any other part of the site. The vintage driveway will remain largely unused at other times of the year.

The vintage will also generate additional staff vehicle movements associated with the crush, in the order of 10 to 20 additional vehicle movements (IN/OUT combined) during shift changes.

The additional traffic movements expected to be generated by the expansion proposals are examined in more detail in the following section of this report.



VINTAGE TRAFFIC PEAKS

DEVELOPMENT STAGE	VINTAGE TRAFFIC ROADWAY – TIPPERS & SEMIS – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	VINTAGE TRAFFIC ROADWAY – B DOUBLE (VIA KIDMAN WAY) – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	VINTAGE TRAFFIC ROADWAY TOTAL – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	HEAVY TRAFFIC ROADWAY – SEMIS – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	HEAVY TRAFFIC ROADWAY – B DOUBLE (VIA KIDMAN WAY) – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	HEAVY TRAFFIC ROADWAY TOTAL – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	STAFF/VISITORS ROADWAY – CARS – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	STAFF/VISITORS ROADWAY – BUSES – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	STAFF/VISITORS ROADWAY TOTAL – VEHICLES / HR (AM PEAK) IN	VEHICLES / HR (AM PEAK) OUT	VEHICLES / HR (PM PEAK) IN	VEHICLES / HR (PM PEAK) OUT	VEHICLES/DAY	VINTAGE TRAFFIC PEAKS TOTAL – VEHICLES/HR (AM PEAK)	VEHICLES/HR (PM PEAK)	VEHICLES/DAY
CURRENT	11	2	109	1	0	11	12	2	120	1	1	7	2	2	12	3	3	19	35	63	191	0	0	1	35	0	34	29	192	50	68	331
45,000 T CRUSH	14	2	168	1	0	17	15	2	185	1	1	6	12	12	92	13	13	98	40	86	249	0	0	1	40	0	29	57	250	68	101	533
50,000 T CRUSH	16	2	186	1	0	18	17	2	204	1	1	5	13	13	96	14	14	101	56	106	304	0	0	1	52	4	31	75	305	87	122	610
55,000 T CRUSH	17	2	205	2	0	20	19	2	225	1	1	6	13	13	97	14	14	103	71	125	359	0	0	1	64	7	33	92	360	104	141	688
65,000T CRUSH	20	3	242	2	0	24	22	3	266	1	1	10	17	17	126	18	18	136	100	160	450	0	0	1	91	9	34	126	451	140	181	853

NON VINTAGE TRAFFIC PEAKS

DEVELOPMENT STAGE	VINTAGE TRAFFIC ROADWAY – TIPPERS & SEMIS – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	VINTAGE TRAFFIC ROADWAY – B DOUBLE (VIA KIDMAN WAY) – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	VINTAGE TRAFFIC ROADWAY – TOTAL – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	HEAVY TRAFFIC ROADWAY – SEMIS – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	HEAVY TRAFFIC ROADWAY – B DOUBLE (VIA KIDMAN WAY) – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	HEAVY TRAFFIC ROADWAY – TOTAL – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	STAFF/VISITORS ROADWAY – CARS – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	STAFF/VISITORS ROADWAY – BUSES – VEHICLES / HR (AM PEAK)	VEHICLES / HR (PM PEAK)	VEHICLES/DAY	STAFF/VISITORS ROADWAY – TOTAL – VEHICLES / HR (AM PEAK) IN	VEHICLES / HR (AM PEAK) OUT	VEHICLES / HR (PM PEAK) IN	VEHICLES / HR (PM PEAK) OUT	VEHICLES/DAY	NON VINTAGE TRAFFIC PEAKS TOTAL – VEHICLES/HR (AM PEAK)	VEHICLES/HR (PM PEAK)	VEHICLES/DAY
CURRENT	0	0	0	0	0	0	0	0	0	1	1	7	2	2	12	3	3	19	23	23	107	0	0	1	23	0	0	23	108	26	26	127
45,000 T CRUSH	0	0	0	0	0	0	0	0	0	1	1	6	12	12	92	13	13	98	41	50	179	0	0	1	41	0	9	41	180	54	63	278
50,000 T CRUSH	0	0	0	0	0	0	0	0	0	1	1	5	13	13	96	14	14	101	59	78	252	0	0	1	59	0	20	58	253	73	92	354
55,000 T CRUSH	0	0	0	0	0	0	0	0	0	1	1	6	13	13	97	14	14	103	78	105	325	0	0	1	78	0	31	74	326	92	119	429
65,000T CRUSH	0	0	0	0	0	0	0	0	0	1	1	10	17	17	126	18	18	136	106	144	427	0	0	1	106	0	40	104	428	124	162	564

FOR INFORMATION ONLY
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0 50 100 150 200 250m
HORIZONTAL SCALE (A1) 1 : 2000

Rev.	Drawing Issue	Drn	Ckd	Date
F	LAYOUT REVISED - ISSUED FOR INFORMATION	MB	JL	16.07.12
E	ISSUED FOR INFORMATION	MB	JL	5.07.12
D	TABLE REVISED - PRELIMINARY ISSUE	MB	JL	9.05.12
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Client: McWILLIAM'S WINES GROUP
Six generations of winemaking since 1877
HANWOOD WINERY

Project: ENVIRONMENTAL IMPACT STUDY
Title: PRELIMINARY PROPOSED DEVELOPMENT TRAFFIC ASSESSMENT SITE MASTER PLAN

Designer: J.LINNEY Date: MAY 2010
Drawn By: M.BOSSY Date: MAY 2010
Drawing No: 0802-05-PR110
Sheet Size: A1
Scale: 1 : 2000 (A1) 1 : 4000 (A3)
Rev: F

3. TRAFFIC ASSESSMENT

Road Hierarchy

The road hierarchy allocated to the road network in the vicinity of the site by the Roads and Traffic Authority is illustrated on Figure 3.

Kidman Way (MR321) is classified by the RTA as a *State Road* and provides the key north-south road link in the area. It typically comprises 2 traffic lanes (ie. 1 lane in each direction), with additional auxiliary turning lanes provided at key intersections, such as the intersection with Jack McWilliam Road.

Old Willbriggie Road is a local, unclassified road which provides a secondary north-south road link and follows an approximately parallel alignment with Kidman Road. It generally performs the function of a *collector route* and carries 1 traffic lane in each direction on a sealed road pavement. Road linemarking in Old Willbriggie Road is minimal, and generally comprises a centreline marking at selected locations only.

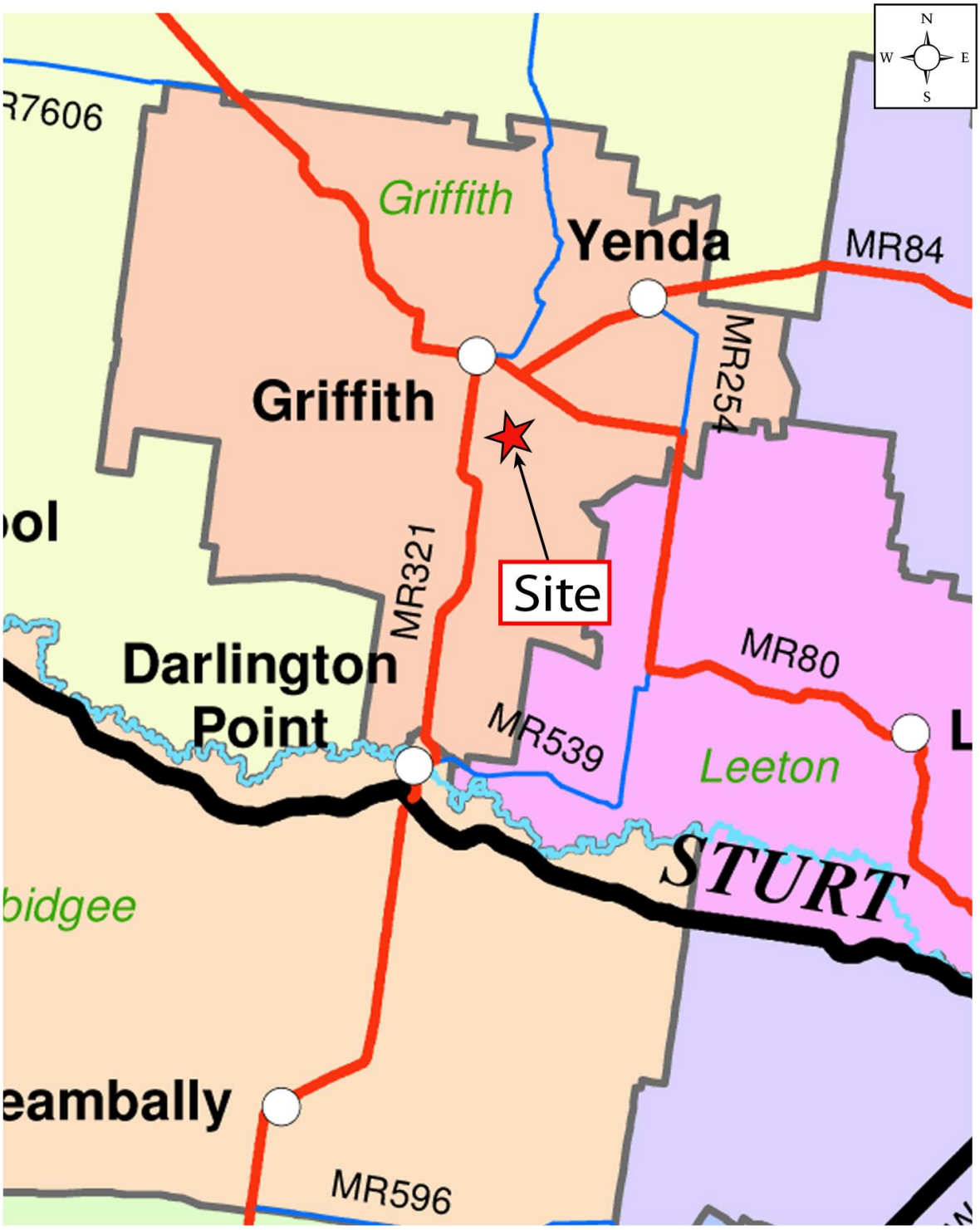
Jack McWilliam Road is a local, unclassified road which follows a straight east-west alignment with good visibility from one end to the other. It has a length of approximately 1.4km and extends from a T-junction at Kidman Way to another T-junction at Old Willbriggie Road. It carries limited volumes of two-way traffic flows and is not linemarked.

The volume of traffic using Jack McWilliam Road is very low as the road essentially provides vehicular access to only 3 properties as follows:

- the McWilliams Winery which is located approximately mid-way between Kidman Way and Old Willbriggie Road, on the southern side of Jack McWilliam Road

- the Baiada factory which is also located on the southern side of Jack McWilliam Road, immediately to the west of the subject winery, and

- another property also operated by Baiada which is located on the northern side of Jack McWilliam Road (this property also has vehicular access to Murphy Road).



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ROAD HIERARCHY
FIGURE 3

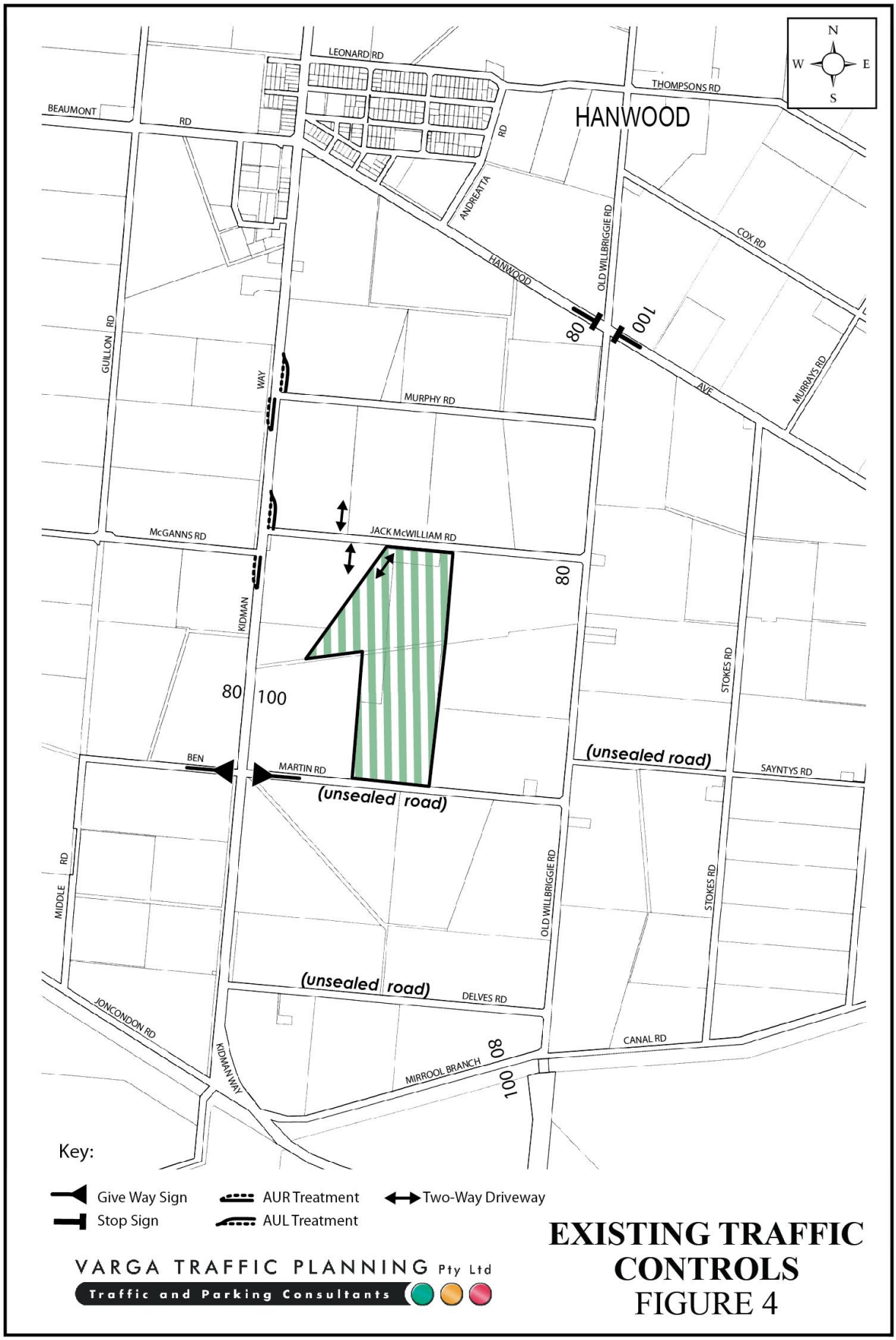
There are no other significant vehicular access driveways located in Jack McWilliam Road and accordingly, the road operates *almost* as a *private road* which is used *only* by traffic accessing the Baiada or McWilliams sites. Jack McWilliam Road does not perform a "through-traffic" function and therefore does not carry any through-traffic volumes.

Existing Traffic Controls

The existing traffic controls which apply to the road network in the vicinity of the site are illustrated on Figure 4. Key features of those traffic controls are:

- an 80 km/h SPEED LIMIT which applies to the full length of Jack McWilliam Road
- an 80 km/h SPEED LIMIT which applies to the full length of Old Willbriggie Road
- an 80 km/h SPEED LIMIT which applies in Kidman Way to the north of McGanns Road
- a 100 km/h SPEED LIMIT which applies to Kidman Way to the south of Ben Martin Road
- AUR (auxiliary right-turn lanes) in Kidman Way at its intersection with Jack McWilliam Road and with Murphy Road
- AUL (Auxiliary left-turn lanes) in Kidman Way at its intersections with Jack McWilliam Road and with Murphy Road.

It is noted that combined AUR and AUL treatments are located in Kidman Way at its intersections with Murphy Road and with Jack McWilliam Road to cater for turning movements which might otherwise impede the movement of through-traffic using Kidman Way. Surveys of traffic flows undertaken in Kidman Way have identified average daily traffic flows on weekdays (two-way) in the order of 3,500 vehicles per day (vpd), on weekdays, with an AADT of approximately 3,100 vpd as detailed below.


N
W
E
S
HANWOOD
LEONARD RD
THOMPSONS RD
BEAUMONT RD
ANDREATTA RD
HANWOOD
OLD WILLBRIGGIE RD
COX RD
MURRAYS RD AVE
GUILLON RD
WAY
MURPHY RD
McGANNS RD
JACK McWILLIAM RD
KIDMAN
STOKES RD
BEN
MARTIN RD
(unsealed road)
SAYNTYS RD
MIDDLE RD
DELVES RD
JONCONDON RD
KIDMAN WAY
MIRROOL BRANCH
CANAL RD
80
100
Key:
Give Way Sign
Stop Sign
AUR Treatment
AUL Treatment
Two-Way Driveway
VARGA TRAFFIC PLANNING Pty Ltd
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EXISTING TRAFFIC CONTROLS
FIGURE 4

Existing Traffic Volumes

In order to gain an accurate appreciation of the level of traffic activity using the adjacent road network *and* the existing driveway, a series of detailed traffic surveys was undertaken over a period of several weeks during and after the 2007 vintage.

The traffic surveys were undertaken using "tube" counters in Kidman Way (south of McGanns Road) and in Jack McWilliam Road to the east and west of the existing winery access driveway. Similar traffic surveys were also undertaken in the vehicular access driveway serving the winery.

The results of the traffic surveys undertaken in Kidman Way are summarised in Table 3.1 below, revealing that two-way traffic flows in Kidman Way are typically in the order of 3,500 vpd on weekdays with an AADT of approximately 3100 vpd.

Table 3.1 - Daily Traffic Volumes
(vehicles per day, two-way)
Kidman Way, South of McGanns Road

Week Commencing	19/2/07	26/2/07	5/3/07	12/3/07	19/3/07
Monday	0	3384	3319	3265	3143
Tuesday	2883	3549	3469	3275	3149
Wednesday	3465	3542	3526	3374	-
Thursday	3714	3514	3599	3546	-
Friday	3683	3652	3575	3596	-
Saturday	2595	2464	2518	2625	-
Sunday	2187	1993	2093	1958	-
AADT	3128	3156	3156	3091	-
Average Week Day	3620	3528	3497	3410	-

The results of the traffic surveys undertaken in Jack McWilliam Road are summarised in Tables 3.2 and 3.3 for the surveys located to the west and east and the winery access driveway respectively. The results of those traffic surveys indicate that two-way traffic flows in Jack McWilliam Road on weekdays are typically in the order of 400 to 500 vpd during the vintage, decreasing to around 250 vpd after the vintage had ended. AADT's in Jack McWilliams Road were in the order of 300 to 400 vpd, reducing to 200 vpd at the conclusion of the vintage.

Table 3.2 - Daily Traffic Flows
(vehicles per day, two-way)
Jack McWilliam Road, West of Winery Driveway

Week Commencing	12/2/07	19/2/07	26/2/07	5/3/07	12/3/07	19/3/07	26/3/07	2/4/07
Monday	465	461	372	333	307	355	357	363
Tuesday	539	445	438	362	366	450	383	373
Wednesday	576	488	440	363	386	452	390	351
Thursday	549	449	447	411	374	368	314	267
Friday	482	438	427	376	348	345	301	69
Saturday	381	280	188	181	155	134	136	168
Sunday	161	157	82	79	101	79	75	151
AADT	450	387	341	300	290	311	279	248
Average Week Day	512	455	424	368	355	393	348	284

Table 3.3 - Daily Traffic Volumes
(vehicles per day, two-way)
Jack McWilliam Road, East of Winery Access

Week Commencing	12/2/07	19/2/07	26/2/07	5/3/07	12/3/07	19/3/07	26/3/07	2/4/07
Monday	415	335	280	279	262	262	260	263
Tuesday	430	317	346	272	285	265	277	229
Wednesday	389	369	318	314	274	345	279	237
Thursday	387	377	302	309	265	294	221	177
Friday	406	303	334	221	230	251	230	39
Saturday	205	202	131	140	102	90	91	63
Sunday	75	85	56	62	76	64	56	71
AADT	328	283	252	227	213	223	201	154
Average Week Day	404	339	315	278	262	283	252	188

It is clear from the above survey results that Jack McWilliam Road carries *very low* volumes of traffic, typically in the order of only 45 to 60 vph during the vintage, and approximately 30 vph throughout the remainder of the year. To put those traffic flows in context, the peak hour traffic flows equate to less than 1 vehicle per minute, which suggests that, on most occasions, a driver travelling along Jack McWilliam Road is unlikely to encounter another vehicle on the road when turning in or out of the subject site.

The results of the traffic surveys undertaken in the existing staff/visitors access driveway serving the McWilliams Winery are summarised in Table 3.4 below. The traffic surveys indicate that weekday traffic flows were typically in the order of 400 to 500 vpd during the vintage in early February, decreasing to around 250 vpd after the vintage had ended in mid-

March. AADT traffic flows were in the order of 300 to 400 vpd, decreasing to less than 200 vpd after the end of the vintage.

Table 3.4 - Daily Traffic Flows
(vehicles per day, two-way)
McWilliams Winery Staff/Visitors Access Driveway

Week Commencing	12/2/07	19/2/07	26/2	5/3/07	12/3/07	19/3/07	26/3/07	2/4/07
Monday	597	436	311	211	232	265	248	260
Tuesday	645	415	437	323	340	354	332	258
Wednesday	591	455	451	374	324	410	257	273
Thursday	568	439	255	411	322	291	261	196
Friday	583	418	31	319	277	283	239	37
Saturday	405	293	-	175	119	98	90	139
Sunday	138	107	-	43	48	34	33	128
AADT	503	365	-	264	236	247	207	184
Average Week Day	596	432	-	327	298	320	265	204

Intersection Traffic Surveys

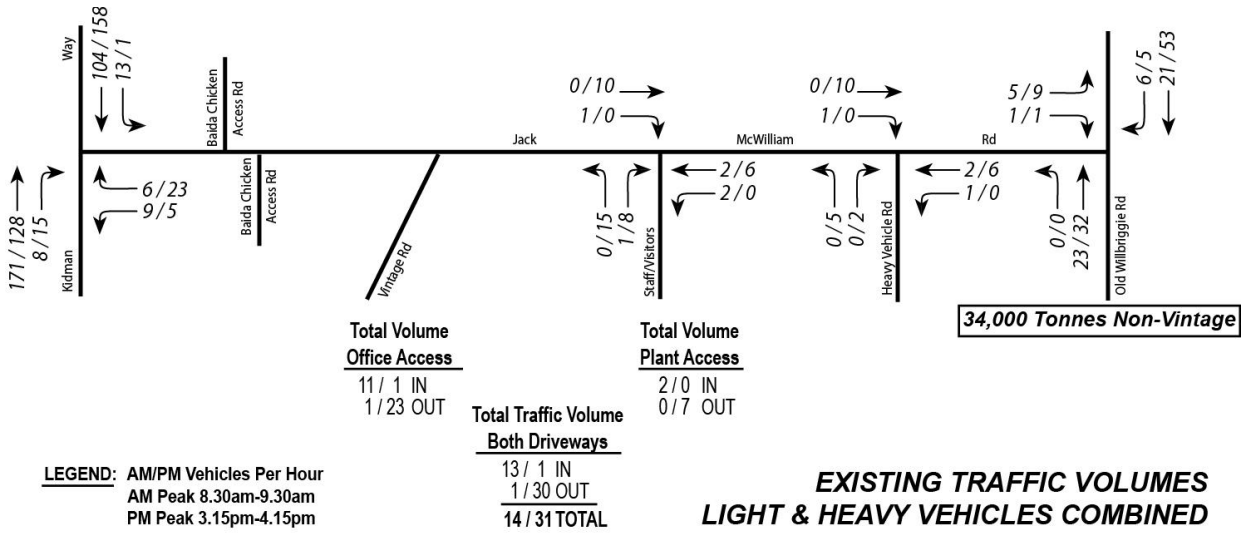
A more accurate and detailed indication of the existing levels of traffic activity on the road network in the immediate vicinity of the site is provided by detailed peak period traffic surveys undertaken as part of this traffic study. The traffic surveys were undertaken on 13 May, 2010 at the following locations:

Kidman Way/Jack McWilliam Road intersection
Jack McWilliam Road/staff and visitors site access driveway
Jack McWilliam Road and heavy vehicle access driveway
Old Willbriggie Road and Jack McWilliam Road intersection

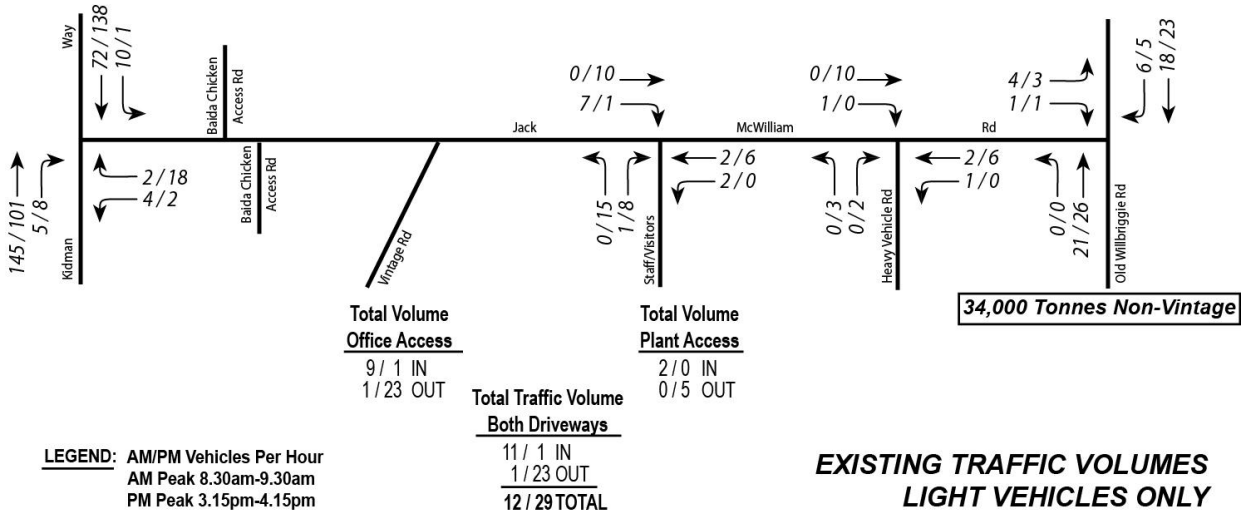
An analysis of the survey data revealed that the *peak hour* at the Kidman Way/Jack McWilliam Road intersection occurred between 8.30am-9.30am in the morning, and between 3.15pm-4.15pm in the afternoon.

The results of the intersection surveys are summarised on Figure 5, revealing that:

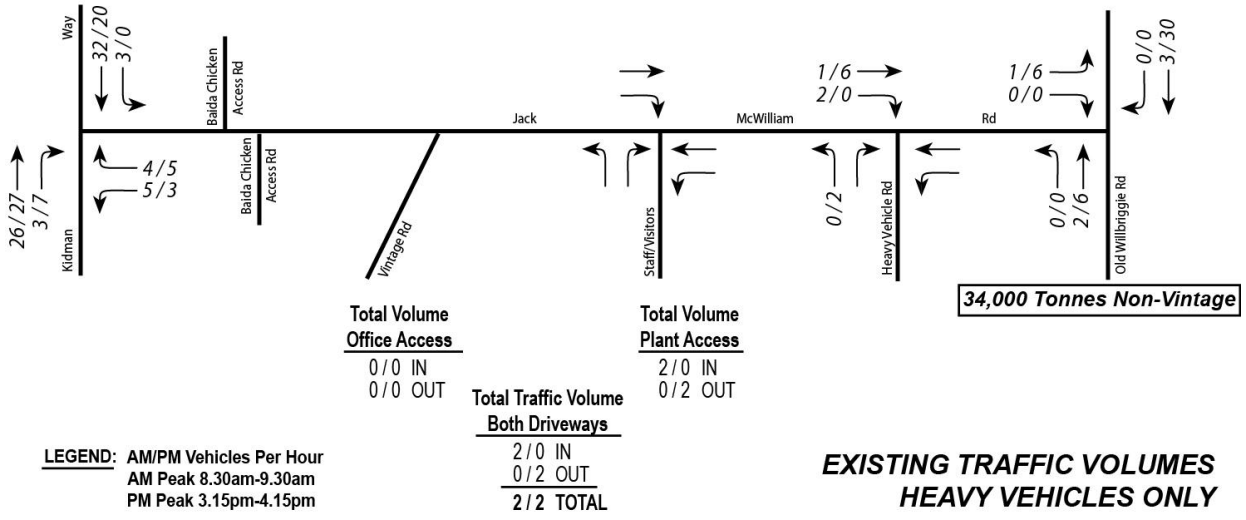
- two-way traffic flows in Kidman Way are typically in the order of 300 vehicles per hour during both the morning and afternoon peak hours



EXISTING TRAFFIC VOLUMES
LIGHT & HEAVY VEHICLES COMBINED



EXISTING TRAFFIC VOLUMES
LIGHT VEHICLES ONLY



EXISTING TRAFFIC VOLUMES
HEAVY VEHICLES ONLY

EXISTING PEAK HOUR TRAFFIC VOLUMES
FIGURE 5

- two-way traffic flows in Old Willbriggie Road are typically in the order of 50 vph during the AM peak hour, increasing to approximately 90 vph during the afternoon peak hour

- two-way traffic flows in Jack McWilliam Road are typically in the order of 15 vehicles per hour during the AM peak hour, increasing to approximately 30 vph during the afternoon peak hour, and

- two-way traffic flows using the McWilliams site access driveways off Jack McWilliam Road were also in the order of 15 to 30 vph during the morning and afternoon peak hours respectively.

The results of the traffic surveys tend to confirm that Jack McWilliam Road operates *almost* as a *private road* which is used *only* by traffic accessing the Baiada or McWilliams site. Jack McWilliam Road does not perform a "through-traffic" function, and therefore does not carry any through-traffic volumes between Kidman Way and Old Willbriggie Road.

Projected Future Traffic Volumes

Estimates of projected future peak hour traffic volumes expected to be generated by the expansion proposals have been made by *Linney Engineering Services Pty Ltd*, based on the following factors:

- existing peak hour traffic volumes

- existing and projected future shift work/staff number arrangements, and

- projected crush capacities and known truck operating characteristics.

The traffic flow projections were made for each stage of expansion, for both the "vintage" and "non-vintage" periods respectively.

The key differences between the "vintage" and "non-vintage" periods are:

- an additional 10 to 20 truck movements per hour are generated during the vintage, associated with the delivery of grapes to the site for crushing, and

- an additional 10-20 vehicle movements per hour during shift changes associated with increased staff numbers/shifts

- the projected future traffic flows were assigned to the surrounding road network in accordance with the trends identified by the surveys of existing traffic activity which are illustrated on Figure 5. Separate traffic assignments were prepared for the "vintage" and "no-vintage" periods

- the projected additional traffic flows expected to be generated by each stage of expansion during the vintage are illustrated on Figure 6, and will apply for a period of approximately 6 weeks towards the end of February each year, and

- the projected additional traffic flows expected to be generated by each stage of expansion throughout the remainder of the year (ie; non-vintage) are illustrated on Figure 7.

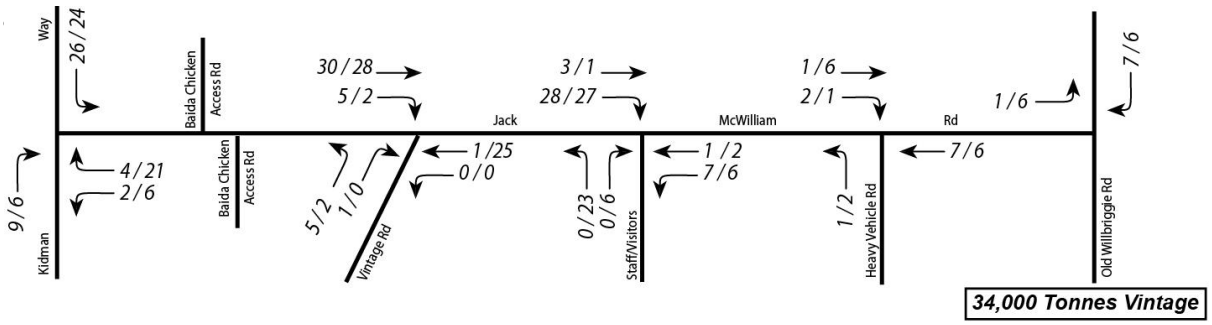
Traffic Implications – Road Network Capacity

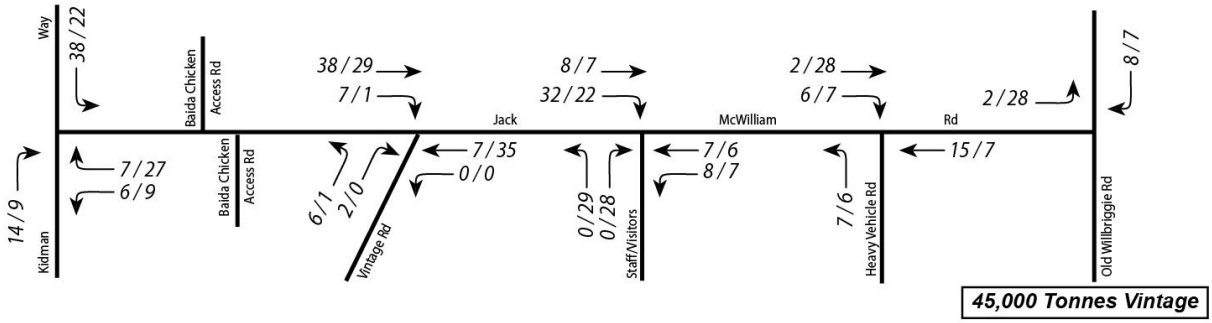
The traffic implications of development proposals primarily concern the effects that the projected *additional* traffic flows may have on the operating performance of the nearby road network.

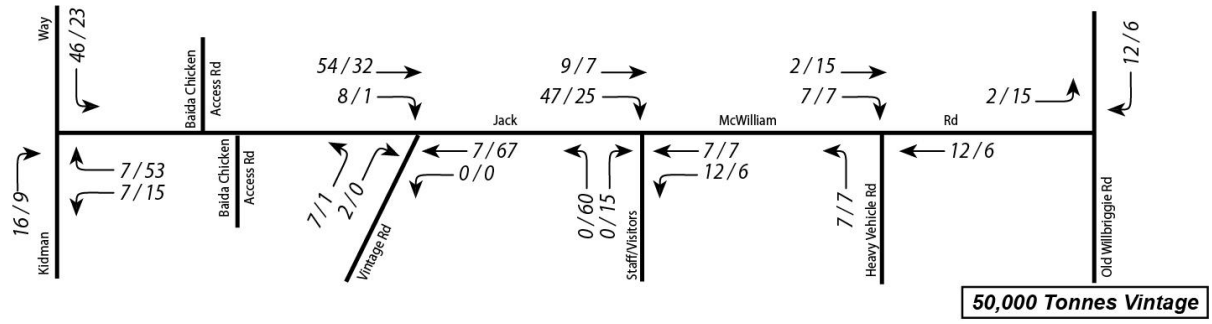
Those effects can be assessed using the SIDRA programs as is widely used by the RMS and many LGA's. Criteria for evaluating the results of SIDRA capacity analysis are reproduced in the following pages.

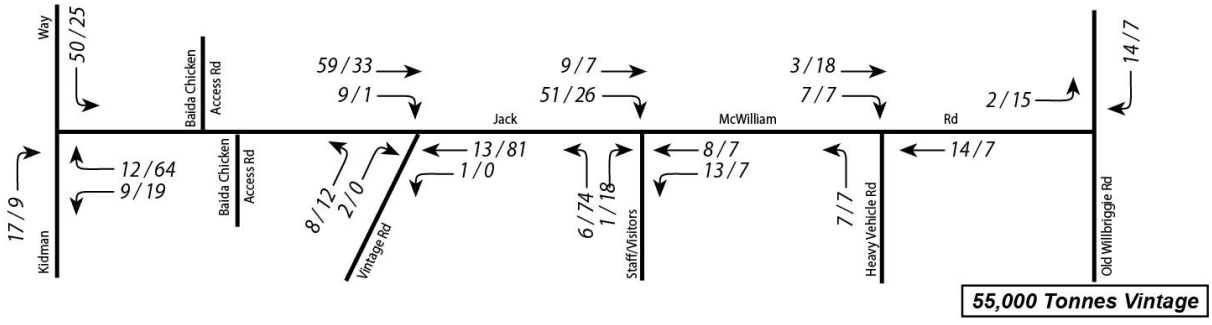
The results of the SIDRA capacity analysis are summarised in Table 3.5 below, revealing that:

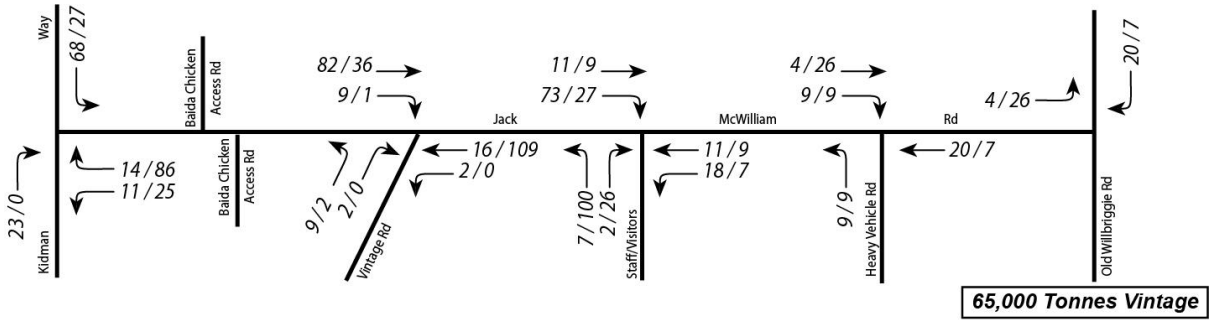
- the Jack McWilliam Road/Kidman Way intersection currently operates at *Level of Service "A"*, with total average vehicle delays in the order of 3 seconds per vehicle





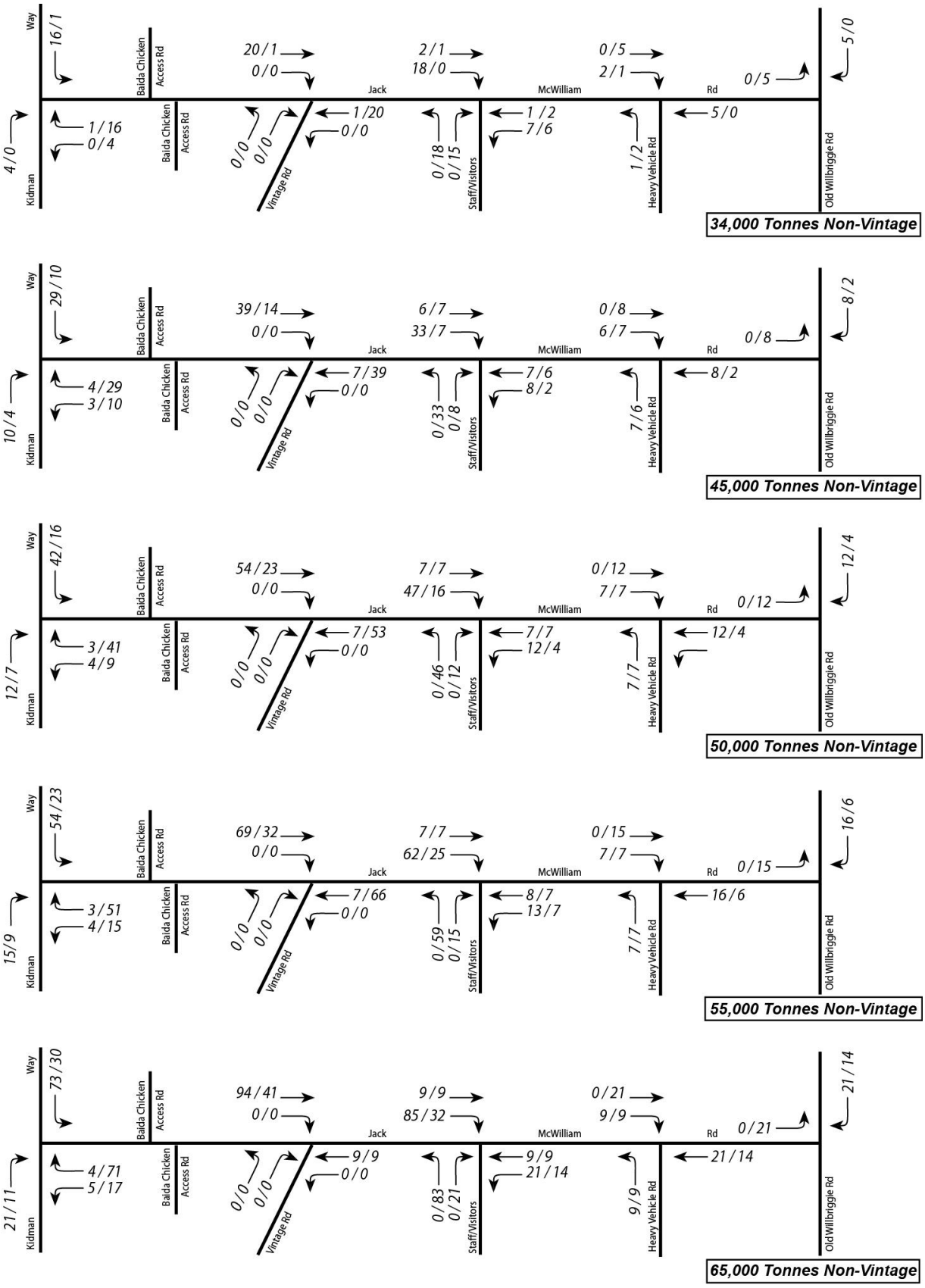






LEGEND: AM/PM Vehicles Per Hour

PROJECTED FUTURE PEAK HOUR TRAFFIC VOLUMES - VINTAGE
FIGURE 6



LEGEND: AM/PM Vehicles Per Hour

PROJECTED FUTURE PEAK HOUR TRAFFIC VOLUMES - NON-VINTAGE
FIGURE 7

- under the projected future traffic demands expected to be generated by the *maximum* development potential of 65,000 tonnes, the Jack McWilliam Road/Kidman Way intersection will continue to operate at *Level of Service "A"*, with total average vehicle delays in the order of 5 seconds per vehicle (ie; an increase in delays of approximately 2 seconds per vehicle)

- each of the existing access driveways will continue to operate at *Level of Service "A"* and with minimal delays under both the existing and *maximum* development potential of 65,000 tonnes

- similarly, the Old Willbriggie Road/Jack McWilliam Road intersection will continue to operate at *Level of Service "A"* and with minimal delays under the *maximum* development potential of 65,000 tonnes.

In summary, the results of the capacity analysis confirm that each of the intersections and driveways located in the immediate vicinity of the site will continue to operate at current *Levels of Service*, with only minimal increases in total average vehicle delays.

It is therefore reasonable to conclude that the expansion proposal will not have any unacceptable traffic implications in terms of road network capacity, and that no remedial works or upgrades are required to improve the capacity of nearby intersections.

Warrants for Rural Turn Lanes

The warrants for turn lane treatments on major roads are specified in the AUSTROADS publication *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*, and are based on an assessment of turning volumes and through-traffic volumes for the design "peak hour".

The projected peak hour traffic volumes illustrated on Figures 6 and 7 have been used in conjunction with the "existing" peak hour traffic flows identified in Figure 5 to assess the need for the provision of turning lanes.

TABLE 3.5 – RESULTS OF SIDRA CAPACITY ANALYSIS PROJECTED FUTURE TRAFFIC FLOWS DURING THE VINTAGE PERIOD					
Intersection	**Capacity**	**AM/PM**	**Level of Service**	**Degree of Saturation**	**Total Average Delay (seconds/vehicle)**
Jack McWilliam Rd & Kidman Way	34,000 Tonnes	AM	LOS A	0.081	2.9
		PM	LOS A	0.081	3.6
	45,000 Tonnes	AM	LOS A	0.086	3.5
		PM	LOS A	0.090	3.8
	50,000 Tonnes	AM	LOS A	0.086	3.8
		PM	LOS A	0.136	4.6
	55,000 Tonnes	AM	LOS A	0.086	4.1
		PM	LOS A	0.156	5.0
	65,000 Tonnes	AM	LOS A	0.091	4.6
		PM	LOS A	0.193	5.5
Jack McWilliam Rd & Vintage Rd	34,000 Tonnes	AM	LOS A	0.019	2.5
		PM	LOS A	0.016	1.0
	45,000 Tonnes	AM	LOS A	0.024	3.2
		PM	LOS A	0.022	1.4
	50,000 Tonnes	AM	LOS A	0.033	2.1
		PM	LOS A	0.035	0.4
	55,000 Tonnes	AM	LOS A	0.037	2.0
		PM	LOS A	0.042	1.0
	65,000 Tonnes	AM	LOS A	0.048	1.7
		PM	LOS A	0.056	0.4
Jack McWilliam Rd & Staff/Visitor Driveway	34,000 Tonnes	AM	LOS A	0.022	8.8
		PM	LOS A	0.033	7.6
	45,000 Tonnes	AM	LOS A	0.027	7.4
		PM	LOS A	0.085	6.8
	50,000 Tonnes	AM	LOS A	0.039	7.9
		PM	LOS A	0.063	6.9
	55,000 Tonnes	AM	LOS A	0.042	8.0
		PM	LOS A	0.075	7.0
	65,000 Tonnes	AM	LOS A	0.059	8.2
		PM	LOS A	0.098	7.0
Jack McWilliam Rd & Heavy Vehicle Rd	34,000 Tonnes	AM	LOS A	0.005	3.5
		PM	LOS A	0.009	2.3
	45,000 Tonnes	AM	LOS A	0.009	4.1
		PM	LOS A	0.024	2.6
	50,000 Tonnes	AM	LOS A	0.008	4.7
		PM	LOS A	0.018	3.3
	55,000 Tonnes	AM	LOS A	0.009	4.3
		PM	LOS A	0.019	3.1
	65,000 Tonnes	AM	LOS A	0.012	4.1
		PM	LOS A	0.006	2.2
Jack McWilliam Rd & Old Willbriggie Rd	34,000 Tonnes	AM	LOS A	0.017	3.6
		PM	LOS A	0.029	2.8
	45,000 Tonnes	AM	LOS A	0.017	3.8
		PM	LOS A	0.032	4.2
	50,000 Tonnes	AM	LOS A	0.020	4.2
		PM	LOS A	0.029	3.4
	55,000 Tonnes	AM	LOS A	0.021	4.4
		PM	LOS A	0.030	3.5
	65,000 Tonnes	AM	LOS A	0.024	5.0
		PM	LOS A	0.030	4.1

TABLE 3.6 – RESULTS OF SIDRA CAPACITY ANALYSIS PROJECTED FUTURE TRAFFIC FLOWS DURING THE VINTAGE PERIOD					
Intersection	**Capacity**	**AM/PM**	**Level of Service**	**Degree of Saturation (v/c)**	**Total Average Delay (seconds/vehicle)**
Jack McWilliam Rd & Kidman Way	34,000 Tonnes	AM	LOS A	0.078	2.3
		PM	LOS A	0.081	2.6
	45,000 Tonnes	AM	LOS A	0.082	3.0
		PM	LOS A	0.092	3.5
	50,000 Tonnes	AM	LOS A	0.083	3.4
		PM	LOS A	0.114	4.0
	55,000 Tonnes	AM	LOS A	0.085	3.8
		PM	LOS A	0.133	4.6
	65,000 Tonnes	AM	LOS A	0.090	4.3
		PM	LOS A	0.170	5.2
Jack McWilliam Rd & Vintage Rd	34,000 Tonnes	AM	LOS A	0.011	1.4
		PM	LOS A	0.011	1.4
	45,000 Tonnes	AM	LOS A	0.021	0.7
		PM	LOS A	0.021	0.7
	50,000 Tonnes	AM	LOS A	0.028	0.6
		PM	LOS A	0.028	0.5
	55,000 Tonnes	AM	LOS A	0.036	0.5
		PM	LOS A	0.034	0.4
	65,000 Tonnes	AM	LOS A	0.049	0.4
		PM	LOS A	0.022	0.7
Jack McWilliam Rd & Staff/Visitor Driveway	34,000 Tonnes	AM	LOS A	0.053	8.6
		PM	LOS A	0.014	6.2
	45,000 Tonnes	AM	LOS A	0.041	7.6
		PM	LOS A	0.027	5.8
	50,000 Tonnes	AM	LOS A	0.038	8.1
		PM	LOS A	0.052	6.4
	55,000 Tonnes	AM	LOS A	0.048	8.4
		PM	LOS A	0.063	6.9
	65,000 Tonnes	AM	LOS A	0.066	8.7
		PM	LOS A	0.083	7.2
Jack McWilliam Rd & Heavy Vehicle Rd	34,000 Tonnes	AM	LOS A	0.004	4.0
		PM	LOS A	0.008	2.8
	45,000 Tonnes	AM	LOS A	0.006	5.3
		PM	LOS A	0.014	3.9
	50,000 Tonnes	AM	LOS A	0.008	4.8
		PM	LOS A	0.016	3.5
	55,000 Tonnes	AM	LOS A	0.010	4.3
		PM	LOS A	0.018	3.3
	65,000 Tonnes	AM	LOS A	0.012	4.2
		PM	LOS A	0.022	3.0
Jack McWilliam Rd & Old Willbriggie Rd	34,000 Tonnes	AM	LOS A	0.015	3.2
		PM	LOS A	0.026	2.2
	45,000 Tonnes	AM	LOS A	0.017	3.6
		PM	LOS A	0.027	2.6
	50,000 Tonnes	AM	LOS A	0.020	4.0
		PM	LOS A	0.028	3.1
	55,000 Tonnes	AM	LOS A	0.022	4.4
		PM	LOS A	0.029	3.4
	65,000 Tonnes	AM	LOS A	0.025	4.9
		PM	LOS A	0.034	4.2

The existing and projected future traffic flows expected to be generated by each stage of expansion at the Kidman Way/Jack McWilliam Road intersection were applied to AUSTROADS *Figure 4.9 - Warrants for Turn Treatments on the Major Road at Unsignalised Intersections* for both the "vintage" and "non-vintage" periods as indicated in the graph shown on Figures 8 & 9.

The analysis of the Kidman Way/Jack McWilliam Road indicates that, under the maximum traffic volumes expected to be generated by the *maximum* development potential of 65,000 tonnes (ie; the final stage of the expansion proposal), only a basic BAR/BAL treatment *without* left/right turning lanes would be required at the intersection. It is noted however, that this intersection has already been upgraded to provide AUR/AUL treatments incorporating separate left and right-turn storage/deceleration lanes approximately 130m long each, and that no further improvements are therefore required.

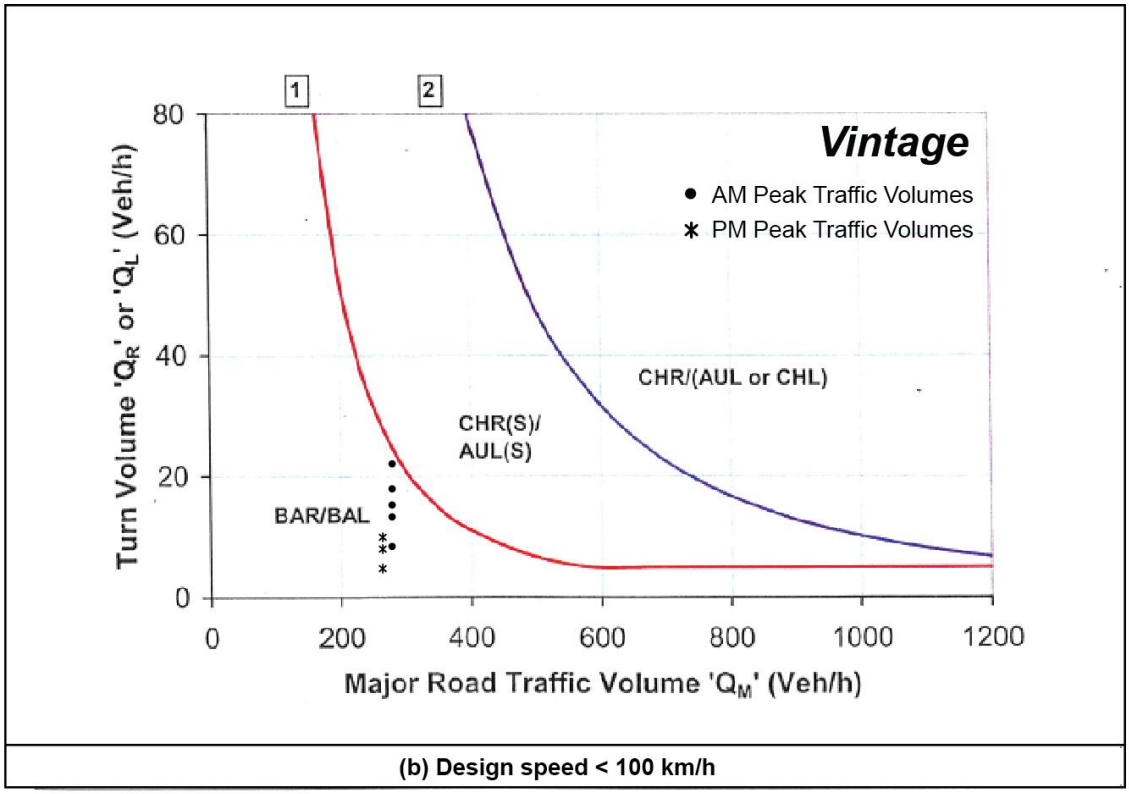
Similar assessments were also undertaken at the vintage roadway and at the staff/visitors roadway intersections in Jack McWilliam Road, as illustrated on Figures 10 & 11 respectively. The assessment indicates that no further improvements were required in Jack McWilliam Road.

A preliminary assessment was also undertaken at the heavy vehicle access road intersection with Jack McWilliam Road, however it was evident that, due to the very low traffic volumes involved, no further improvements would be required at that intersection.

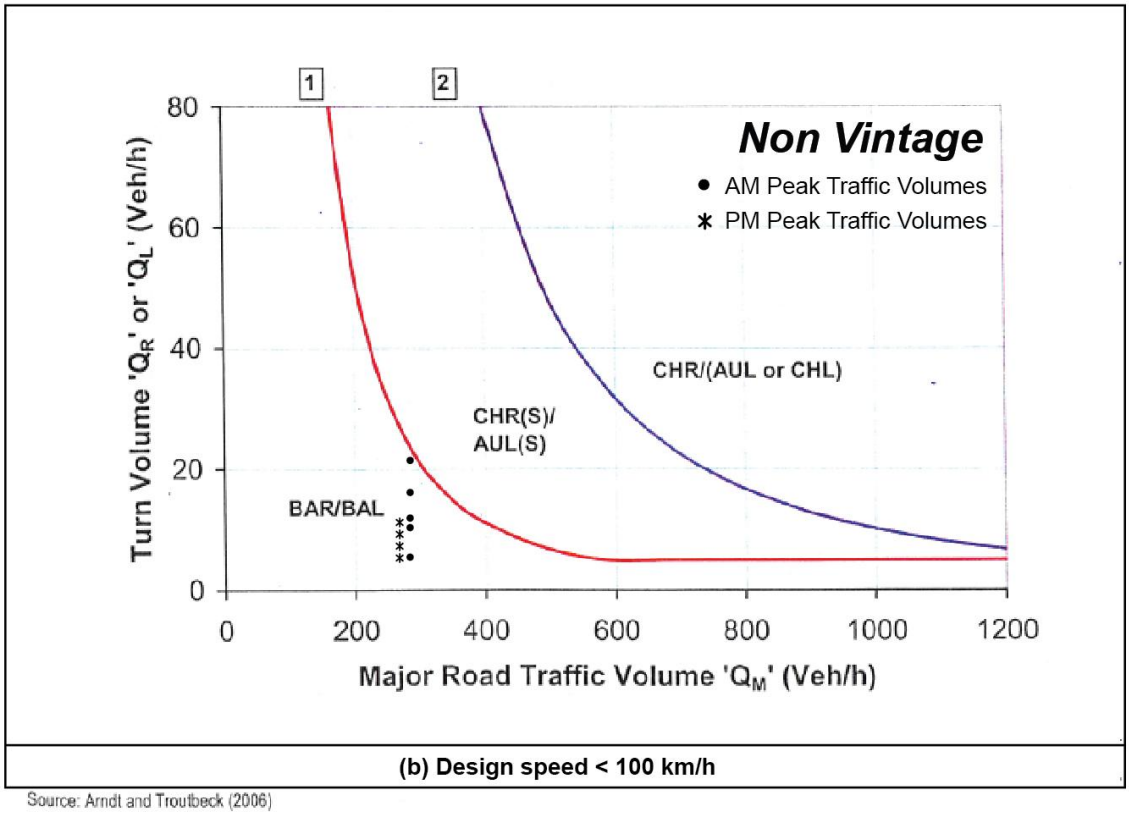
In summary, the assessment of the need for any *auxiliary* turn lanes as specified by AUSTROADS has found that:

- the *auxiliary* turning lanes already provided at the Kidman Way/Jack McWilliam Road intersection will satisfactorily accommodate the *maximum* traffic flows expected to be generated by the *maximum* development potential of 65,000 tonnes envisaged by the expansion proposals, and

- additional *auxiliary* turn lanes will not be required in Jack McWilliam Road at any of the existing site access road intersections.



(b) Design speed < 100 km/h

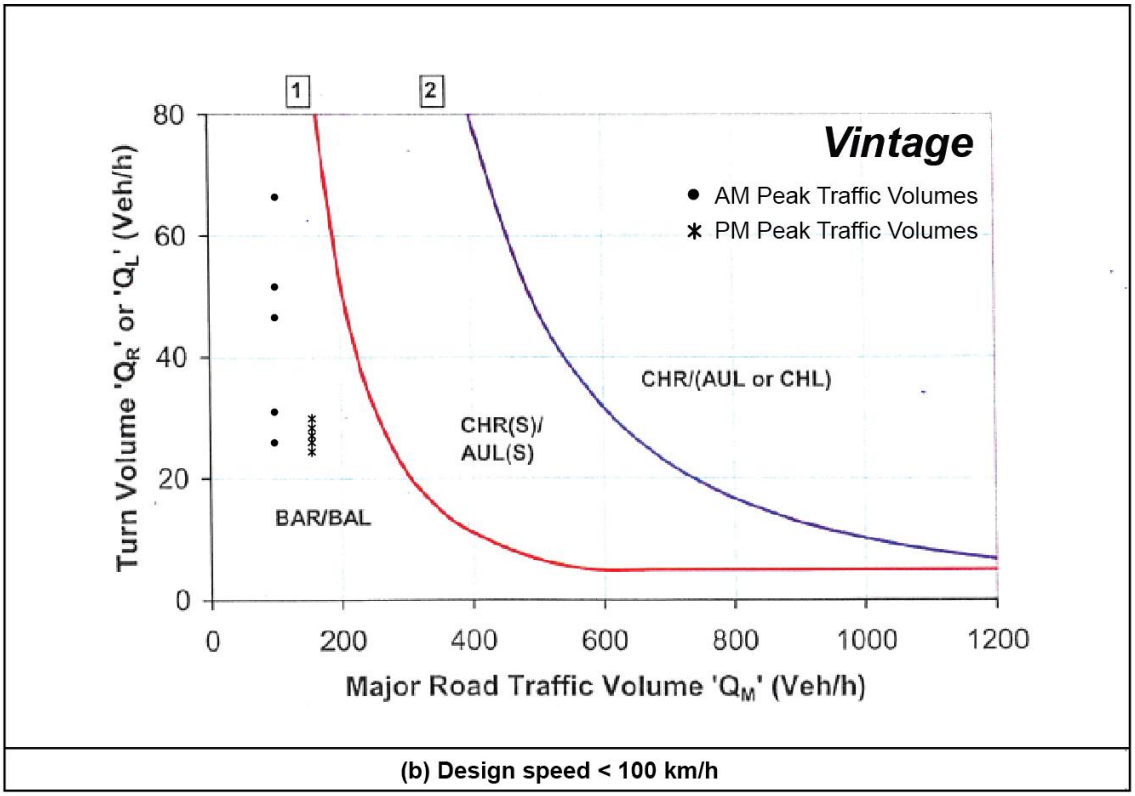


(b) Design speed < 100 km/h

Source: Arndt and Troutbeck (2006)

Figure 4.9: Warrants for turn treatments on the major road at unsignalised intersections

Assessment of Warrants for Provision of Auxiliary Right-Turn Lane
Kidman Way & Jack McWilliam Rd, Hanwood
Figure 8



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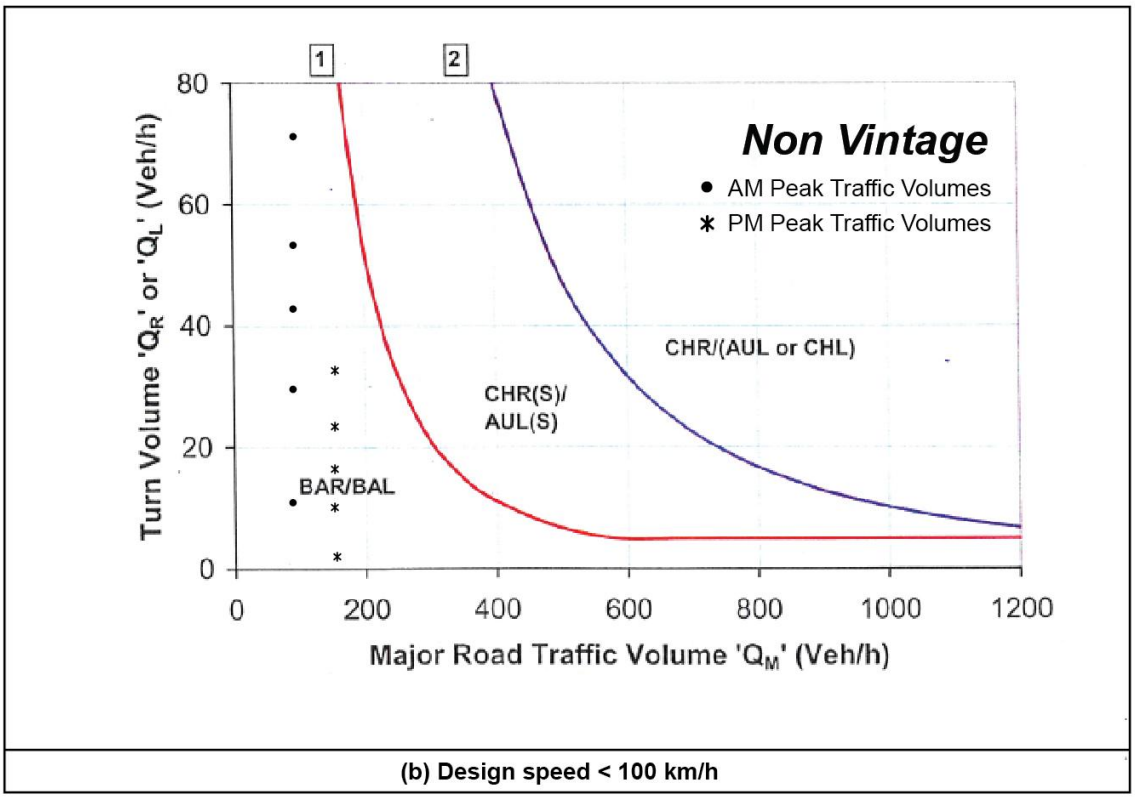
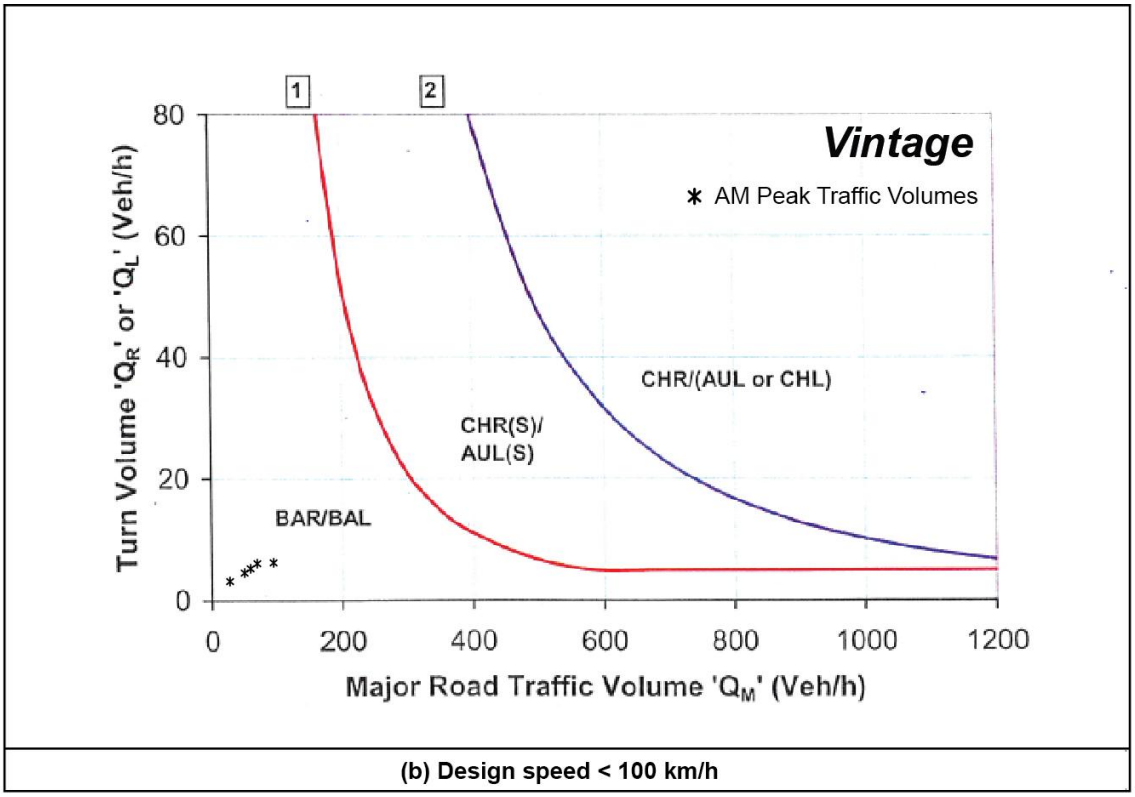


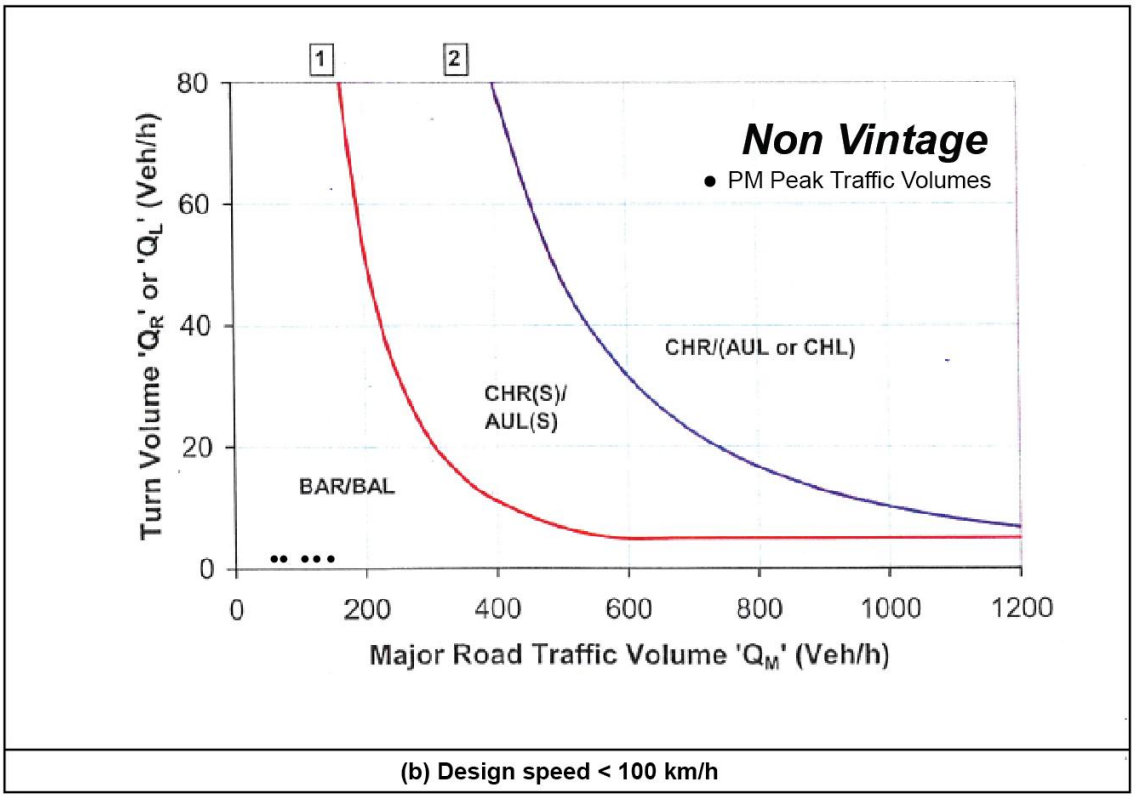
(b) Design speed < 100 km/h

Figure 4.9: Warrants for turn treatments on the major road at unsignalised intersections

Assessment of Warrants for Provision of Auxiliary Left-Turn Lane
Kidman Way & Jack McWilliam Rd, Hanwood
Figure 9



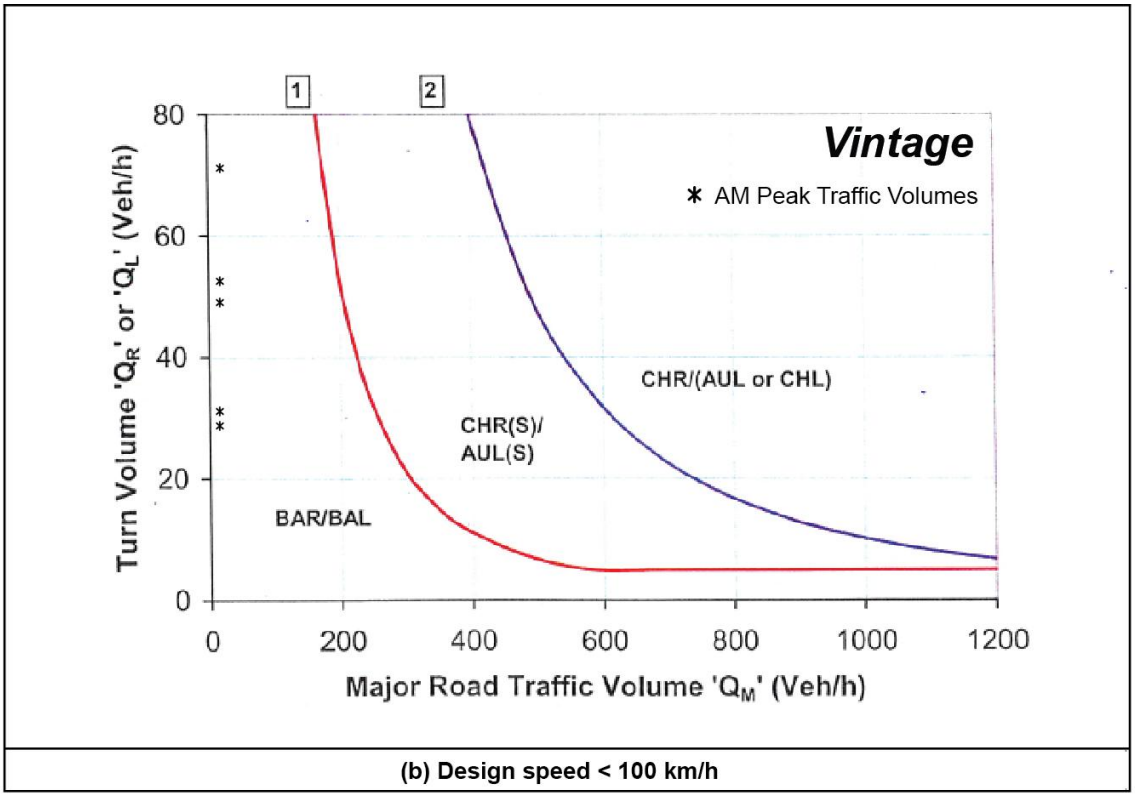
(b) Design speed < 100 km/h



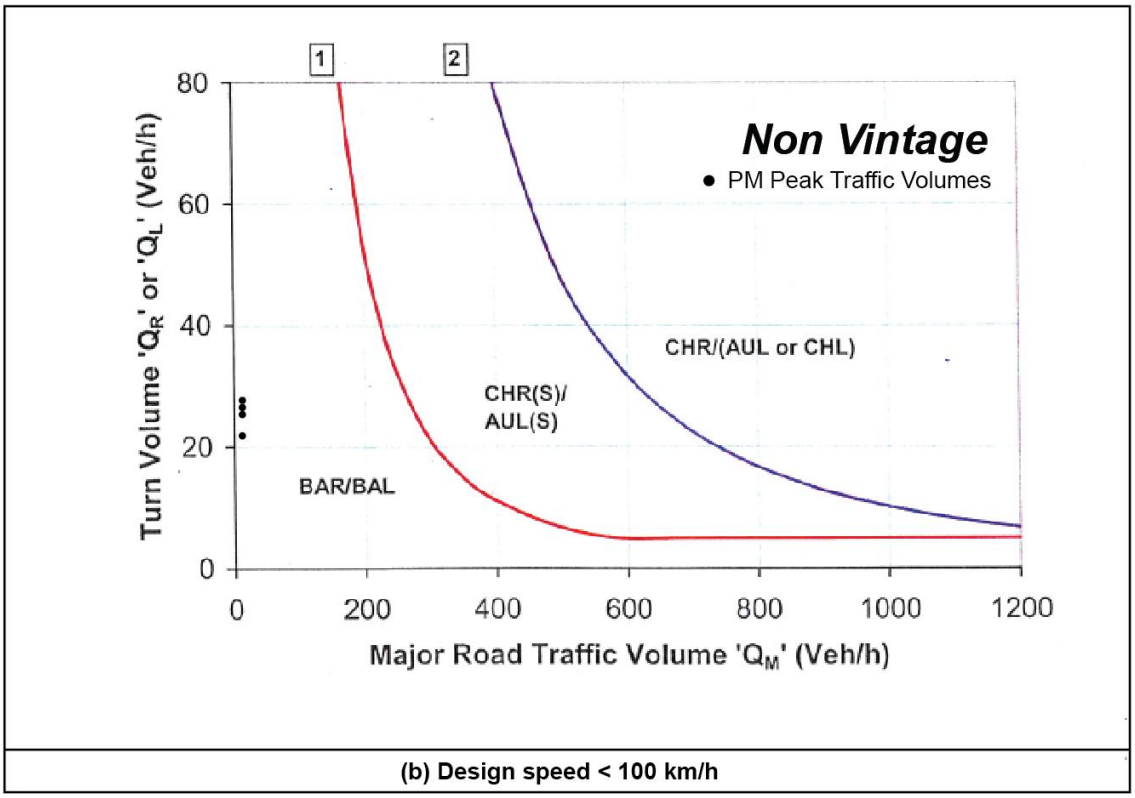
(b) Design speed < 100 km/h

Figure 4.9: Warrants for turn treatments on the major road at unsignalised intersections

Assessment of Warrants for Provision of Auxiliary Right-Turn Lane
Jack McWilliam Rd & Vintage Roadway, Hanwood
Figure 10



(b) Design speed < 100 km/h



(b) Design speed < 100 km/h

Figure 4.9: Warrants for turn treatments on the major road at unsignalised intersections

Assessment of Warrants for Provision of Auxiliary Right-Turn Lane
Jack McWilliam Rd & Staff/Visitor Roadway, Hanwood
Figure 11

Conclusion

The foregoing assessment has found that:

- the additional traffic flows expected to be generated by each stage of the expansion proposal will be relatively modest. The largest increases in traffic flows will occur during staff shift changes, however it should be noted in this regard that:
    - the majority of staff will arrive for work in the morning *before 6am* such that the peak traffic flows generated by the site will *not* coincide with the morning *peak hour* on Kidman Way which occurs 2.5 hours later, between 8.30am-9.30am, and
    - the highest traffic flows in the afternoon will occur around the 4pm staff shift change
- under the increased traffic flows expected to be generated by the maximum development potential of 65,000 tonnes, the Kidman Way/Jack McWilliam Road will continue to operate at *Level of Service "A"*, with increases in total average vehicle delays in the order of approximately 2 to 3 seconds per vehicle when compared with the existing intersection performance
- each of the other intersections in Jack McWilliam Road will also continue to operate at *Level of Service "A"* under the projected future traffic demands, with absolutely minimal vehicle delays
- an assessment of the AUSTROADS criteria for the provision of *auxiliary* turning lanes has found that:
    - the existing *auxiliary* left/right turning lanes provided in Kidman Way at the Jack McWilliam Road intersection will satisfactorily accommodate projected future traffic demands, and
    - the projected increases in traffic flows do not warrant the provision of any *auxiliary* turning lanes in Jack McWilliam Road.

In essence, this assessment has found that the existing traffic flows currently using Jack McWilliam Road are *very low*, and that the increased traffic flows expected to be generated by the expansion proposals can be comfortably accommodated *without* the need for any road improvements.

4. PARKING ASSESSMENT

The off-street parking requirements applicable to most types of developments in Griffiths are specified in Council's *Development Control Plan No 20: Off-Street Parking (2011)* as follows:

Cellar Door Premises:	as per *retail premises* requirement
Retail Premises:	1 space per 40m^2 GFA outside CBD

Application of the above parking rate to the 214m^2 floor are of the Cellar Door Premises yields an off-street car parking requirement of 6 parking spaces.

The Parking Code does not nominate an off-street car parking requirement which is specifically applicable to wineries, and accordingly, for the purposes of this assessment, a parking requirement of *1 space per staff member* has been adopted.

It is noted that under the maximum development potential of 65,000 tonnes there will be a maximum of 192 staff on the site at any one time during the vintage. If a parking rate of 1 space per staff member is adopted, this would require the provision of 192 car parking spaces for staff.

Accordingly, the peak parking demand expected to be generated by the maximum development potential of the site is expected to be in the order of 198 spaces as set out below:

Cellar Door (214m^2):	6 spaces
Maximum Staff Numbers (192 staff):	192 spaces
TOTAL PARKING REQUIRED:	**198 spaces**

In practice however, the actual parking requirements expected to be generated by the development proposal will be somewhat less than is set out above, as some staff are expected to travel to work by carpooling, or will be dropped-off/picked-up, and may therefore not require a parking space.

Notwithstanding, the proposed development makes provision for a total of 209 car parking spaces, thereby satisfying the above parking requirements.

The geometric design layout of the proposed off-street car parking facilities has been designed to comply with the relevant aspects of the Standards Australia publication *Parking Facilities Part 1: Off-Street Car Parking AS2890.1 - 2004* in respect of parking bay dimensions, aisle widths and gradients.

In the circumstances, it is reasonable to conclude that the proposed development will not have any unacceptable parking implications.