

**Hard Rock Quarry
Maytoms Lane, Booral**

**Review of
McLaren's Traffic and
Parking Assessment**

Prepared by

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1. INTRODUCTION

As a Traffic Engineer and Transport Planner with over 40 years of experience I have reviewed the Traffic & Parking Assessment of Proposed Hard Rock Quarry at 67 Maytoms Lane Booral, dated 12 December 2024 prepared by McLaren Traffic Engineering and Road Safety Consultants.

This report provides a brief assessment of key issues relating to the assessment of the proposed Hard Rock Quarry at Booral in relation to the predicted impact on traffic flows on the Buckets Way and at the intersection of The Buckets Way / Pacific Highway.

2. EXISTING TRAFFIC FLOWS

The assessment presented in the McLaren Report references surveys of existing traffic flows detailed below:

- The Buckets Way/Pacific Hwy Monday 6th February 2023 6am to 10am and 2:30pm to 7pm
- Booral Rd/The Buckets Way Monday 6th February 2023 6am to 10am and 2:30pm to 7pm.

The report states that these surveys are “representing a typical operating weekday” (Page 9 of 66).

Discussion

It is considered that data collected on only one day is inadequate for the assessment of such a significant development.

3. SIDRA ASSESSMENT

The McLaren Report has provided an assessment of the performance of the intersection of The Buckets Way / Pacific Hwy.

As part of this assessment it is acknowledged that SIDRA uses critical Gap Acceptance values of 7 seconds and a follow up headway of 4 seconds for a vehicle turning right out of a side road such as The Buckets Way.

McLaren found that the intersection failed with the use of these values. The McLaren Report goes on to justify the use of a Gap Acceptance values of 5.25 seconds and follow up headway of 3 seconds based on average delay observations of vehicles negotiating this right turn out of The Buckets Way (page 10 of 66).

By using the average delay for all light and heavy vehicles this assessment fails to acknowledge that heavy vehicles require significantly more time to negotiate this right turn out of The Buckets Way.

I have carried out a SIDRA assessment using the traffic flows adopted by McLaren and the recommended gap acceptance of 7 seconds and follow up headway of 4 seconds to compare with the results obtained by McLaren using the reduced values. The results of this SIDRA assessment carried out by me compared with the results obtained by McLaren are detailed in Figure 3-1 below:

AM MOVEMENT SUMMARY Gap Acceptance 7 sec Follow up Headway 4 sec

Site: 101 [Bucketts Way / Pacific Hwy AM Peak 2023 + Deep Ck [Site Folder: General]]

AM Peak Existing + Deep Ck

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh. Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	v/c	sec		[Veh. m]				km/h
East: Pacific Hwy													
6	R2	33	22.6	33	22.6	0.093	15.1	LOS B	0.3	2.7	0.75	0.89	0.75
Approach		31	7	33	22.6	0.093	15.1	NA	0.3	2.7	0.75	0.89	0.75
North: Bucketts Way													
7	L2	28	33.3	28	33.3	0.055	14.6	LOS B	0.2	1.7	0.53	0.96	0.53
9	R2	152	18.1	152	18.1	1.61	612.7	LOS F	42.3	342	1	3.19	9.88
Approach		180	20.5	180	20.5	1.61	519.6	LOS F	42.3	342	0.93	2.84	8.26
West: Pacific Hwy													
10	L2	152	20.1	152	20.1	0.106	6	LOS A	0.5	3.7	0.12	0.51	0.12
11	T1	918	15	918	15	0.258	0.1	LOS A	0	0	0	0	0
Approach		1070	15.7	1070	15.7	0.258	0.9	LOS A	0.5	3.7	0.02	0.07	0.02
All Vehicles		2304	15.9	2304	15.9	1.61	41.3	NA	42.3	342	0.09	0.27	0.66

PM MOVEMENT SUMMARY Gap Acceptance 7 sec Follow up Headway 4 sec

Site: 101 [Bucketts Way / Pacific Hwy - PM Peak 2023 + Deep Ck [Site Folder: General]]

PM Peak Existing + Deep Creek

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh. Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	v/c	sec		[Veh. m]				km/h
East: Pacific Hwy													
6	R2	38	38.9	38	38.9	0.113	15.8	LOS B	0.4	3.7	0.74	0.89	0.74
Approach		38	38.9	38	38.9	0.113	15.8	NA	0.4	3.7	0.74	0.89	0.74
North: Bucketts Way													
7	L2	21	50	21	50	0.043	15.5	LOS B	0.1	1.5	0.53	0.96	0.53
9	R2	117	26.1	117	26.1	1.239	308.9	LOS F	20.1	172.5	1	2.34	6.15
Approach		138	29.7	138	29.7	1.239	264.2	LOS F	20.1	172.5	0.93	2.13	5.29
West: Pacific Hwy													
10	L2	186	16.4	186	16.4	0.128	5.9	LOS A	0.6	4.5	0.13	0.51	0.13
11	T1	856	14.4	856	14.4	0.24	0.1	LOS A	0	0	0	0	0
Approach		1042	14.8	1042	14.8	0.24	1.1	LOS A	0.6	4.5	0.02	0.09	0.02
All Vehicles		1952	16.4	1952	16.4	1.239	19.6	NA	20.1	172.5	0.09	0.22	0.4

McLaren AM MOVEMENT SUMMARY Gap Acceptance 5.25 sec Follow up Headway 3 sec

Site: 101 [The Bucketts Way / Pacific Highway AM Peak EX + Deep Creek Quarry (Site Folder: Existing + Deep Creek Quarry)]

The Bucketts Way / Pacific Highway

AM Peak

Existing + Deep Creek Quarry

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh. Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	v/c	sec		[Veh. m]				km/h
East: Pacific Highway (E)													
6	R2	31	7	33	22.6	0.092	15.1	LOS B	0.3	2.7	0.75	0.89	0.75
Approach		31	7	33	22.6	0.092	15.1	NA	0.3	2.7	0.75	0.89	0.75
North: The Bucketts Way													
7	L2	27	9	28	33.3	0.036	8.6	LOS A	0.1	1.2	0.50	0.66	0.50
9	R2	144	26	152	18.1	0.711	42.0	LOS C	3.8	30.7	0.94	1.24	1.80
Approach		171	35	180	20.5	0.711	36.7	LOS C	3.8	30.7	0.87	1.15	1.59
West: Pacific Highway (W)													
10	L2	144	29	152	20.1	0.105	6.0	LOS A	0.5	3.7	0.12	0.51	0.12
11	T1	872	131	918	15.0	0.258	0.1	LOS A	0.0	0.0	0.00	0.00	0.00
Approach		1016	160	1069	15.7	0.258	0.9	LOS A	0.5	3.7	0.02	0.07	0.02
All Vehicles		1218	202	1282	16.6	0.711	6.3	NA	3.8	30.7	0.15	0.24	0.26

McLaren PM MOVEMENT SUMMARY Gap Acceptance 5.25 sec Follow up Headway 3 sec

Site: 101 [The Bucketts Way / Pacific Highway PM Peak EX + Deep Creek Quarry (Site Folder: Existing + Deep Creek Quarry)]

The Bucketts Way / Pacific Highway

PM Peak

Existing + Deep Creek Quarry

Site Category: (None)

Stop (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh. Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	v/c	sec		[Veh. m]				km/h
East: Pacific Highway (E)													
6	R2	36	14	38	38.9	0.112	15.8	LOS B	0.4	3.7	0.74	0.89	0.74
Approach		36	14	38	38.9	0.112	15.8	NA	0.4	3.7	0.74	0.89	0.74
North: The Bucketts Way													
7	L2	20	10	21	50.0	0.028	8.9	LOS A	0.1	1.0	0.50	0.64	0.50
9	R2	111	29	117	26.1	0.554	35.3	LOS C	2.5	21.4	0.90	1.14	1.37
Approach		131	39	138	29.8	0.554	31.3	LOS C	2.5	21.4	0.84	1.06	1.24
West: Pacific Highway (W)													
10	L2	177	29	186	16.4	0.128	5.9	LOS A	0.6	4.5	0.13	0.51	0.13
11	T1	813	117	856	14.4	0.240	0.1	LOS A	0.0	0.0	0.00	0.00	0.00
Approach		990	146	1042	14.7	0.240	1.1	LOS A	0.6	4.5	0.02	0.09	0.02
All Vehicles		1157	199	1218	17.2	0.554	5.0	NA	2.5	21.4	0.14	0.23	0.18

Figure 3-1: Movement Summary – Comparison of Assessment using 7 sec and 4 sec vs 5.25 sec and 3 sec

Discussion

It is considered that the results of this assessment using 7 sec and 4 sec indicates that the intersection would have failed with existing 2023 traffic volumes plus the heavy vehicles predicted to be generated by the approved Deep Creek Quarry.

Accordingly, it is considered that the following statement presented in the McLaren Report cannot be justified:

Although when considered as part of a cumulative assessment with the Deep Creek Quarry, the combined impacts of both developments result in a LoS “D” for the intersection of The Bucketts Way / Pacific Highway. This results in an acceptable operation, although the intersection is approaching its operating capacity.
McLaren Report (Page 26 of 66).

It is considered that an assessment based on realistic gap acceptance and follow up headway indicates that the intersection will exceed its capacity when the approved Deep Creek Quarry commences to operate.

4. CONTRADICTORY ASSESSMENT OF SIDRA VS OBSERVED AVE DELAY

The McLaren Report provides details in Table 3 (Page 11 of 66) referencing the results of a comparison of SIDRA Output Average Delay and Observed Average Delay. A copy of Table 3 is presented below:

TABLE 3: SIDRA OUTPUT AVERAGE DELAY AGAINST OBSERVED AVERAGE DELAY

Peak Period	Turn Movement	Sample Size	Observed Average Delay	SIDRA Output Average Delay
AM (9:00am to 10:00am)	Right turn from Pacific Highway into The Bucketts Way	24	7.25 seconds	13.2 seconds
PM (2:45pm to 3:45pm)		25	5.4 seconds	14.6 seconds
AM (9:00am to 10:00am)	Right turn from The Bucketts Way into Pacific Highway (Stage 1 movement)	125	27.5 seconds	27.8 seconds
PM (2:45pm to 3:45pm)		97	22.3 seconds	24.8 seconds

Discussion

It is difficult to see how these observations add any weight to the suggestion that the gap acceptance and follow up headway values used in the SIDRA assessment can be adjusted down in order to better reference the performance of the “Right turn from The Bucketts Way into Pacific Highway”.

5. USE OF THE U-TURN FACILITY 4KM NORTH OF THE BUCKETTS WAY

The McLaren Report provides the following instruction as part of a suggested Drivers Code of Conduct (Page 66 of 66):

- h) *If drivers of heavy vehicles upon attempting to enter the Pacific Highway and the time taken to turn right exceeds a two (2) minute wait time, they are to proceed to turn left onto the Pacific Highway and utilise Tarean Road to undertaken a safe U-turn to proceed westbound along the Pacific Highway*

Discussion

It is considered that this suggestion is an acknowledgement that the additional traffic predicted to be generated by the proposed quarry will lead to unacceptable delays at the intersection of The Bucketts Way / Pacific Hwy.

6. QUARRY TRUCKS TURNING RIGHT ONTO THE BUCKETTS WAY

The proposed layout of the intersection of Maytoms Lane / Bucketts Way is based on the measurements provided in the McLaren Report. This layout is illustrated in Figure 6-1 below:

Figure A 6: Basic right (BAR) turn treatment on a two-lane rural road

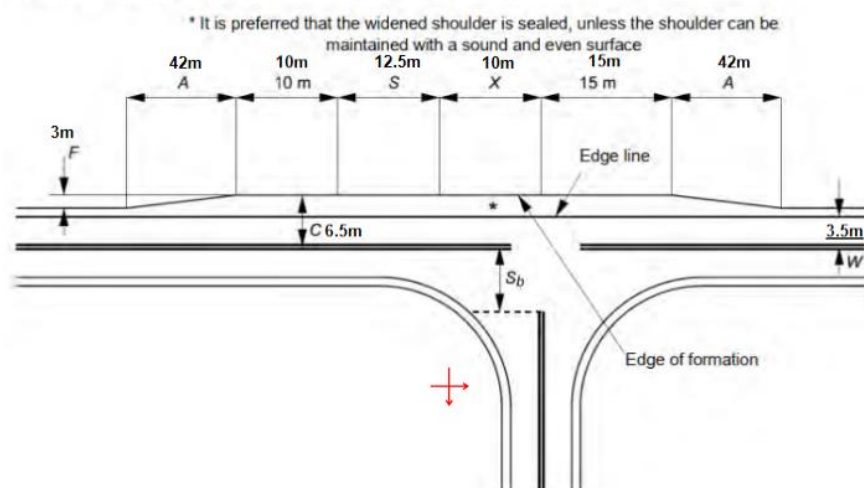


Figure 8.3: Rural AUL(S) treatment with a short left-turn lane

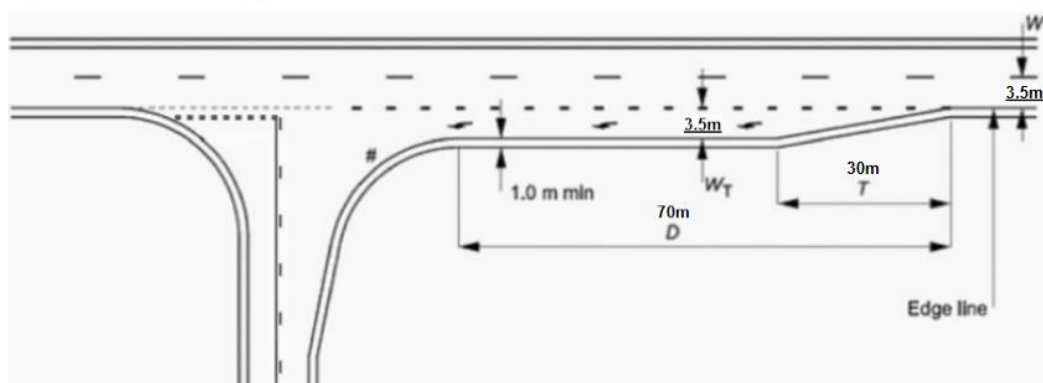


Figure 6-1: BAR and AUL Measurements for the Proposed Intersection of Maytoms Lane / Bucketts Way

Discussion

The BAR Right Turn measurements and intersection layout detailed in Figure 6-1 provides a widening that allows vehicles to overtake on the left vehicles turning right into Maytoms Lane of turning right out of Maytoms Lane. The distance provided for a southbound vehicle to pass a show moving Truck turning right out of Maysoms Lane is 15m.

It is considered that the widening provided on the eastern side of The Bucketts Way is inadequate and will need to be extended by at least 100m in order to allow southbound traffic to overtake a truck leaving Maytoms Lane as he accelerates up to 100kph.

7. CONCLUSION

Based on this review of the McLaren Report it is considered that the proposed Hard Rock Quarry off Maytoms Lane will lead to unacceptable delays at the intersection of The Bucketts Way / Pacific Hwy.

It is acknowledged that the intersection of The Bucketts Way / Pacific Highway has reached its capacity and will require a major upgrade before any further major trip generating developments in the surrounding area are approved.