Ref: 18/035

16th August 2022

Rosebrook Sand & Gravel
C/- HDB Pty Ltd
PO Box 40
MAITLAND NSW 2320

Attention: Mark Ihlein

Dear Mark,

RE: Dalswinton Quarry – Lot 72 DP1199484 - 511 Dalswinton Road, Dalswinton – Turn Lane warrant assessment.

Intersect Traffic has undertaken a turn lane warrant assessment for the access to Rosebrook Sand & Gravel's Dalswinton Quarry, 511 Dalswinton Road, Dalswinton. The access is located off the Golden Highway.

The critical graphs used for this assessment are taken from *Austroads – Guide to Traffic Management – Part 6 – Intersections, Interchanges and Crossings (2020)* and reproduced below.

Figure 3.25: Warrants for turn treatments on major roads at unsignalised intersections

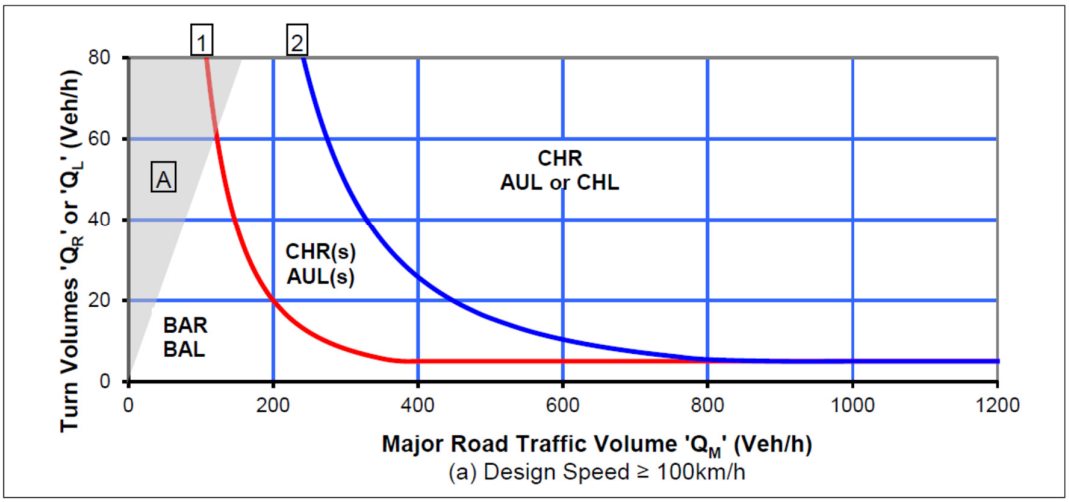
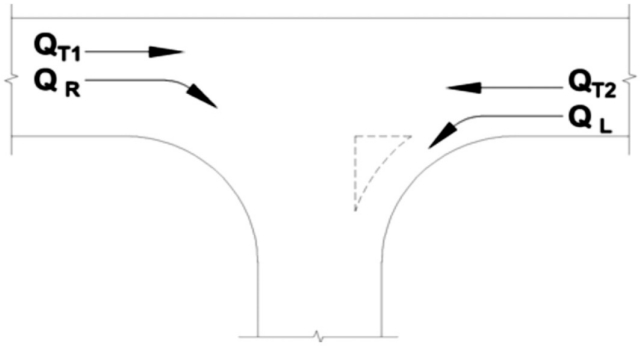


Figure 3.26: Calculation of the major road traffic volume Q_M



Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	= $Q_{T1} + Q_{T2} + Q_L$
		Yes	= $Q_{T1} + Q_{T2}$
	Left	Yes or no	= Q_{T2}
Four-lane two-way	Right	No	= 50% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 50% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 50% x Q_{T2}
Six-lane two-way	Right	No	= 33% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 33% x $Q_{T1} + Q_{T2}$
	Left	Yes or no	= 33% x Q_{T2}

Source: TMR (2016a).

Post development the peak quarry traffic is expected to be approximately 24 vtph and likely to be split 25 % west (to Denman) and 75 % east (to Singleton). Employee traffic represents 50 % of this traffic for both the AM and PM peak with the AM peak being inbound movements and the PM peak being outbound movements. Truck movements are 50 % inbound and 50 % outbound.

Therefore right turn movements into the site are as follows;

- AM peak = 2 staff + 2 trucks = 4 vtph
- PM peak = 0 staff + 2 Trucks = 2 vtph.

Therefore the critical peak for assessment is the AM peak. The left turn movements into the site are as follows;

- AM peak = 5 staff + 5 trucks = 10 vtph
- PM peak = 0 staff + 5 Trucks = 5 vtph.

Therefore the AM peak is also the critical peak for assessment associated with staff entering the site.

The data from the traffic classifier counts from NTPE shows the peak AM volumes for 2018 on the Golden Highway was 236 vtph with a 60% split eastbound. Therefore the following 2018 traffic volumes have been adopted for assessment;

2018 Golden Highway eastbound towards Singleton = 142 vtph; and
2018 Golden Highway westbound towards Denman = 94 vtph.

2032 traffic volumes have been determined adopting a 1.5 % per annum traffic growth for a period of 14 years with the resulting peak traffic volumes being;

2032 Golden Highway eastbound towards Singleton = 175 vtph; and
2032 Golden Highway westbound towards Denman = 115 vtph.

Therefore the relevant variables for the turn lane warrant assessment are as follows;

Q_{T1} = 175 vtph, Q_{T2} = 115 vtph, Q_R = 4 and Q_L = 10.

QMR = 175 + 115 + 10 = 300 vtph
QML = 115 vtph

Therefore the warrant assessment for right turn movement is a BAR which is considered equivalent to what is already provided at the intersection. The warrant assessment for the left turn movement is a BAL which is considered equivalent to what is currently provided.

Therefore based on the turn lane warrant assessment undertaken for the Dalswinton Quarry access it is considered the existing access without any upgrade is suitable for the development as it already meets the requirements of Austroads in regard to the intersection layout and provision of turning lanes. The turn lane warrant assessment has determined that dedicated left and right turn turning lanes are not required at the quarry access.

For further information or clarification please do not hesitate to contact me on 0423 324 188.

Yours sincerely

Jeff Garry

Director
Intersect Traffic