11. Attachment K – Preliminary Route Assessment

GARFIELD NORTH QUARRY, SANDERS ROAD

Preliminary Traffic Assessment

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Hanson Construction Materials Pty Ltd

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GARFIELD NORTH QUARRY, SANDERS ROAD
PRELIMINARY TRAFFIC ASSESSMENT

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1. INTRODUCTION

Cardno Victoria Pty Ltd has been commissioned by Hanson Construction Materials Pty Ltd to conduct a preliminary traffic assessment of a proposed hard rock quarry, known as Garfield North Quarry located south east of Melbourne.

2. BACKGROUND

2.1 Site Location and Land Use

The Garfield North Quarry is approximately 80 kilometres south east of Melbourne. The project area is irregular in shape with frontage of approximately 1.7 kilometres to Sanders Road and includes an adjacent lot providing vehicle access via Tonimbuk Road.

The land uses surrounding the project area are agricultural as well as light residential. The locality is shown below in Figure 1.

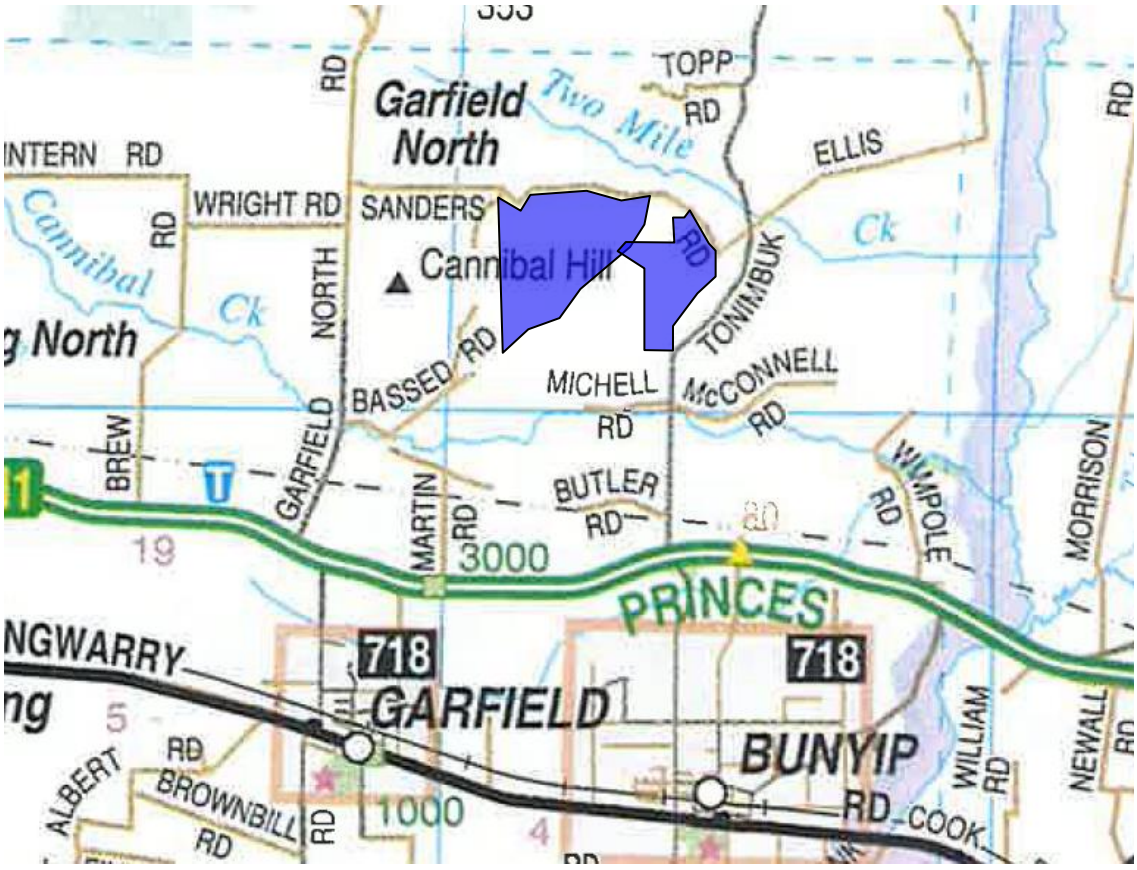

Figure 1 - Locality Plan

3. EXISTING CONDITIONS

3.1 Roads

Cardno Victoria conducted a detailed review of the condition and type of roads within the proposed Garfield North Quarry project area. The review and investigation involved an on-site inspection of sections of roads leading to the project area observing:-

- Pavement type
- Condition
- Width

A summary of the road type and condition of roads in the vicinity is shown in Figure 2, while the road inventory is provided in , using the following classification:-

- Light Blue – Sealed, average condition
- Orange – Unsealed, average condition
- Pink – Sealed, good condition
- Sea Green – Non Trafficable

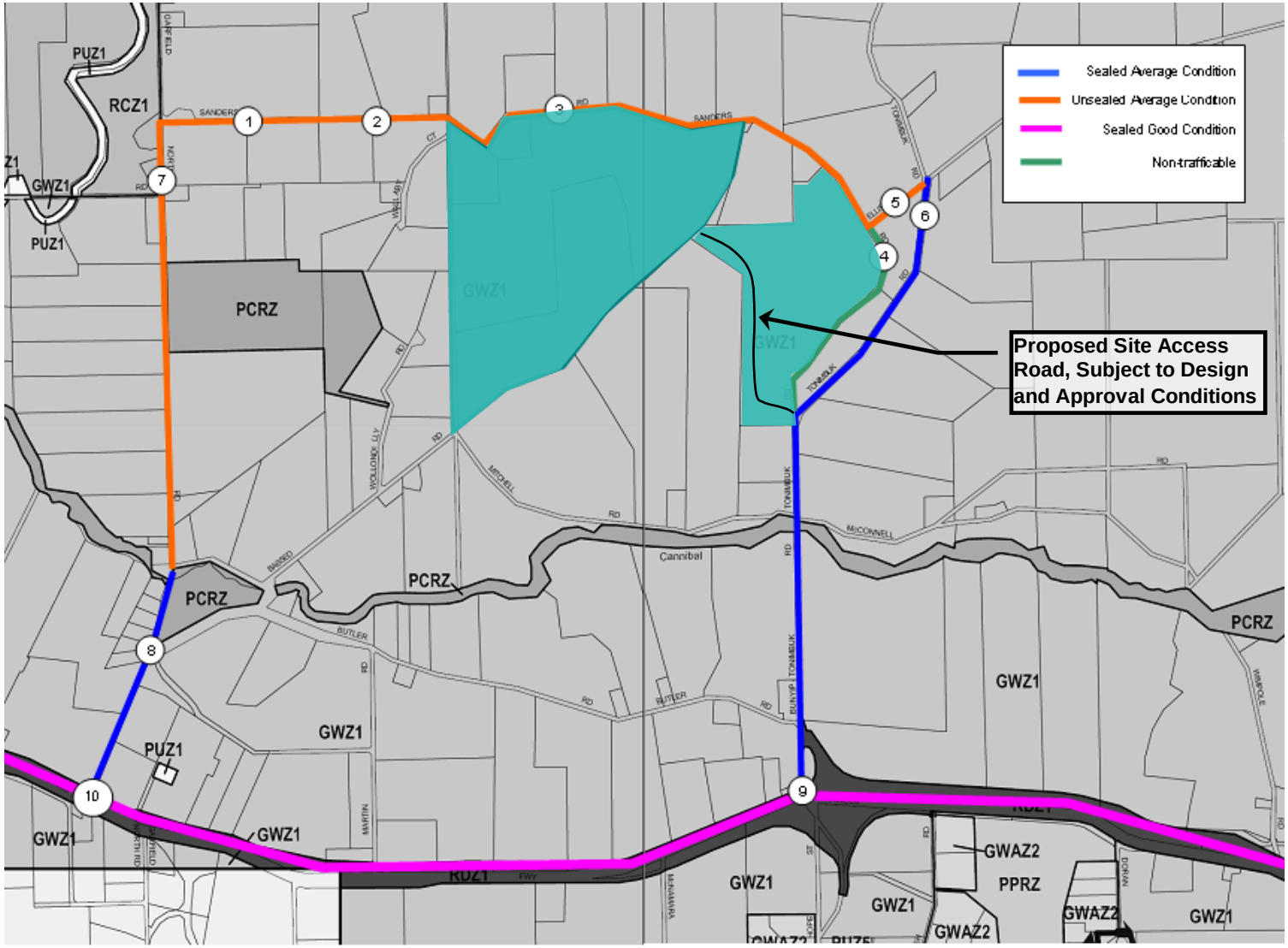

Figure 2 - Existing Road Condition and Pavement Type within Project Area

Table 1: Road Inventory

No.	Road	Location	Condition	Comments
1	Sanders Road	Just east of intersection with Garfield North Road	Unsealed Average Condition	Road Width 6.5m, School Bus Route
2	Sanders Road	West of site	Unsealed Average Condition	Very steep grade east to west, School Bus Route
3	Sanders Road	Along site frontage	Unsealed Average Condition	Road Width 5.8m, School Bus Route
4	Sanders Road	Just west of intersection with Tonimbuk Road	Non-trafficable	Was formerly used as an access point to Tonimbuk Road but appears to be closed
5	Sanders Road	Just west of intersection with Tonimbuk Road	Unsealed Average Condition	Road Width 7.0m, School Bus Route
6	Tonimbuk Road	Just south of intersection with Sanders and Ellis Road	Sealed Average Condition	Road width of 7.2m, School Bus Route, sight distance assessment required to the south.
7	Garfield North Road	Just south of intersection with Sanders Road	Unsealed Average Condition	Road Width 6.5m
8	Garfield North Road	Just south of intersection with Old Sale Road	Sealed Average Condition	No shoulders
9	Princes Freeway	Intersection of Tonimbuk Road and Princes Freeway	Sealed Good Condition	Two through lanes in each direction separated by central median, auxiliary right and left turn lanes for east bound traffic and auxiliary right turn lane for west bound traffic
10	Princes Freeway	Intersection of North Garfield Road and Princes Freeway	Sealed Good Condition	Two through lanes in each direction separated by central median, auxiliary left turn and u-turn lanes for east bound traffic and auxiliary right turn lane for west bound traffic

Figure 3 - Sanders Road, unsealed average condition

Figure 4 - Tonimbuk Road, sealed average condition

Figure 5 - North Garfield Road just south of its intersection with Sanders Road, unsealed average condition

Figure 6 - North Garfield Road just north of its intersection with Princes Freeway, sealed average condition

Figure 7 - Princes Freeway at its intersection with North Garfield Road, sealed good condition

3.2 Existing Traffic

Cardno Victoria sourced traffic volume data from the Shire of Cardinia and VicRoads, to ascertain the existing traffic volume characteristics along possible trucking routes from the project area to the Princes Freeway.

The traffic counts on Tonimbuk Road recorded a peak of 596 vehicles per day between Princes Freeway and Mc Connell Road, reducing to 277 vehicles per day 50 metres north of its intersection with Sanders and Ellis Road. Sanders Road showed a low level of traffic with a recorded 67 vehicles per day.

Garfield North Road recorded 495 vehicles movements per day at its southern most end, reducing to 310 vehicles per day north of Old Sale Road. Further north, volumes stayed generally constant to the intersection with Sanders Road where the volume reduced further to 67 vehicles per day.

A summary of the traffic counts is shown in Figure 8.

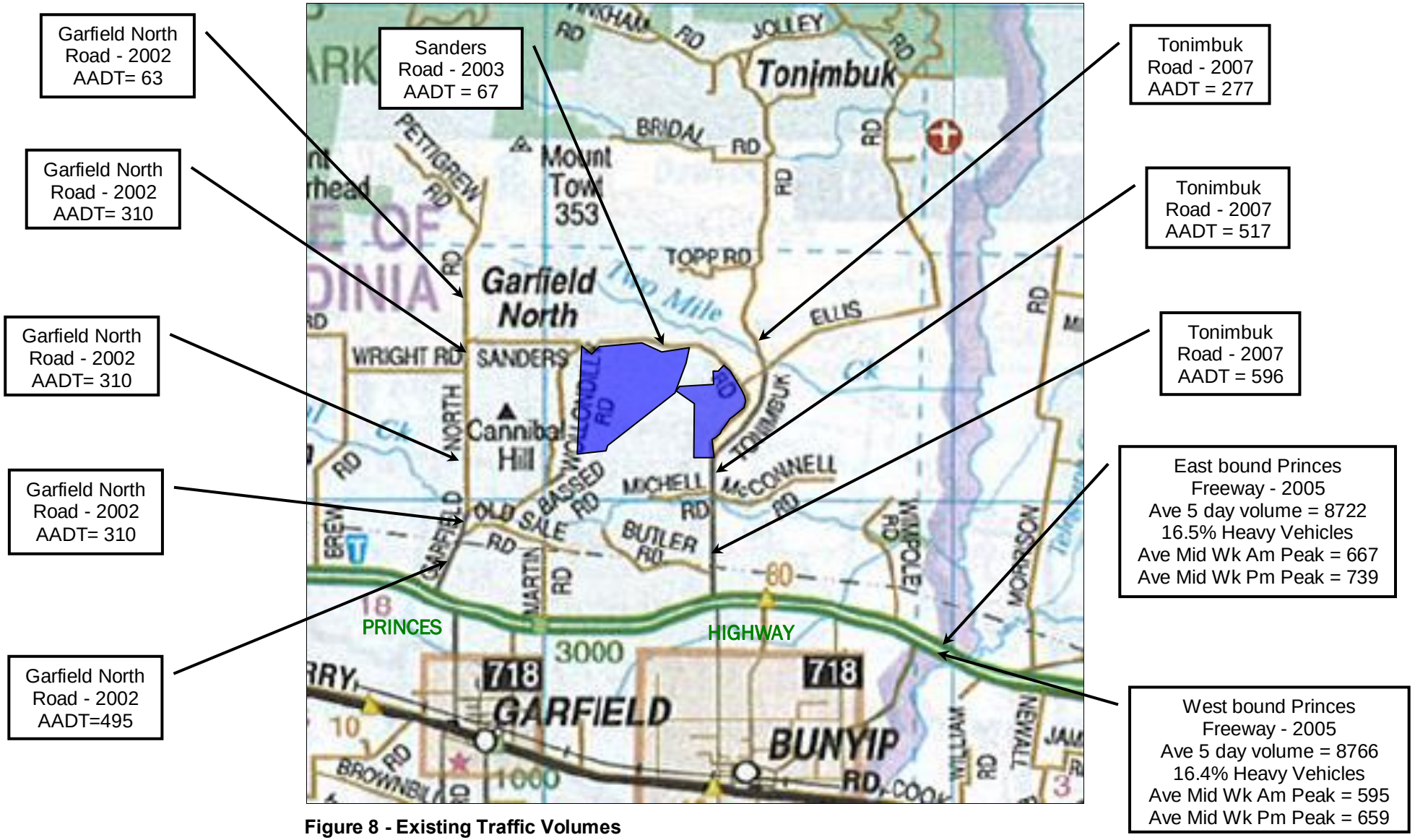

Figure 8 - Existing Traffic Volumes

4. ROAD TRANSPORT ROUTES

Once operation commences for the quarry, it is proposed to transport quarried materials by road from the subject site to Princes Highway and beyond.

A number of road routes were considered, as shown in Figure 9, and described below.

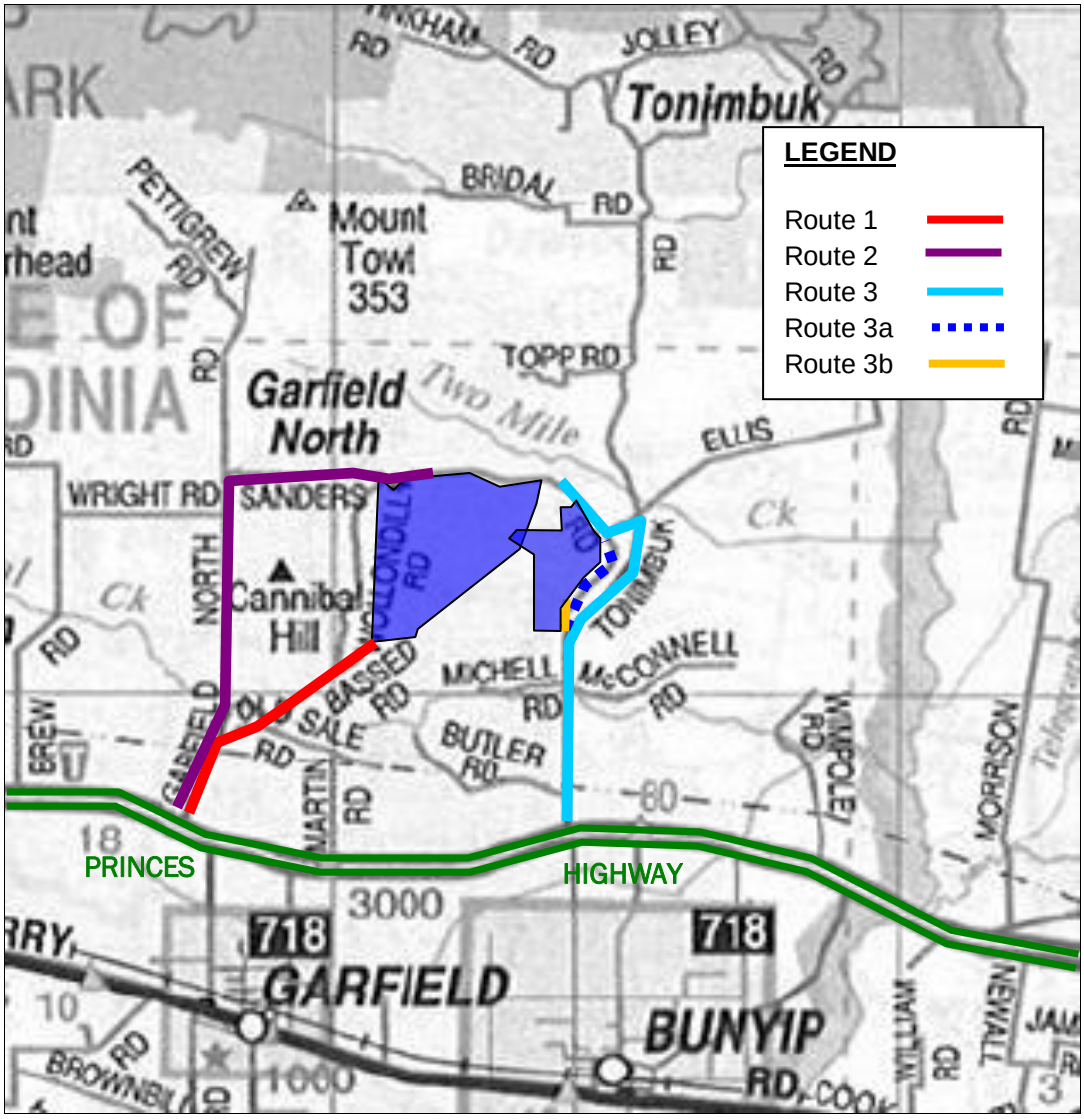

Figure 9: Potential Haul Routes

Route 1 (red) – travels north along Garfield North Road, turns right at Old Sale Road, then proceeds on to Bassed Road, and then to the subject site at the south west corner.

Route 2 (purple) - travels north along Garfield North Road, turns right at Sanders Road then proceeds to the subject site adjacent to the north west corner.

Route 3 (sky blue) - travels north along Tonimbuk Road, turns left at Sanders Road, and travels through to the north east corner of the subject site.

Route 3a (dotted dark blue) - travels north along Tonimbuk Road, through to the extension of Sanders Road to the north east corner of the subject site.

Route 3b (orange) – travels north along Tonimbuk Road turns into south section of 195 Tonimbuk Road.

A comparison of the routes is provided in Table 2.

Table 2: Route Comparison

Route	Distance to Princes Highway	Via sealed roads	Via unsealed roads	Comments
1	3 kms	1 kms	2 kms	Predominantly residential frontages on Old Sale Road.
2	5.8 kms	1.2 kms	4.6kms	Significant travel along unsealed roads which will need to be upgraded. Intersection of Sanders Road and Garfield North Road likely to require upgrade. Route has a level of residential uses on frontages.
3	4.2 kms	3 kms	1.2 kms	Utilises a high level of existing sealed road. Sanders Road is signed as a school bus route. Requires negotiation of a relatively constrained bend in the road.
3a	3.8 kms	2 kms	1.8 kms	Dotted portion is currently non-trafficable, however will provide for a more direct route to the subject site albeit will require a level of negotiation with neighbouring property owners.
3b	2 kms	2 kms	0 kms	Accessed from Tonimbuk Road via Princes Highway. Sealed road, one lane in each direction.

Based on the surrounding road network, and surrounding land uses, it is considered that there are two possible haul routes which could be considered as part of the project, Route 3, and Route 3a.

It is considered that Route 1 is not appropriate due to the high level of interaction with residential traffic, albeit Route 1 does provide for the shortest travel route from Princes Highway to the subject site.

With regards to Route 2, as there is a significant level of travel along currently unsealed roads, it is likely that these roads will need to be upgraded to accommodate the additional heavy vehicle traffic, and as such may not be the most economical option particularly as it is also the longest of the routes.

Route 3 utilises 3 kilometres of existing sealed roads, which while in the short term can operate satisfactorily are likely to require an upgrade to accommodate the additional traffic. The integration with the existing school bus route requires consideration, and the operation of the intersection of Sanders Road and Tonimbuk Road.

Route 3a provides for an opportunity to bypass some of the school bus route, however appears to be currently located within private property. Route 3b provides an opportunity to bypass Sanders Road and past school bus route. Investigation into the viability of providing an access road through this area is recommended. Intersection works are likely to be required at the access roads intersection with Tonimbuk Road.

5. TRAFFIC CONSIDERATIONS - OPERATION

5.1 Traffic Generation

5.1.1 Staff

For the purposes of this assessment, it will be assumed that each employee travels to the project area independently of each other, and as such a daily employee traffic generation of 60 vehicle movements is expected.

Daily generation
30 employees x 2 vehicle movements per day = 60 vehicles per day

5.1.2 Haulage

In order to estimate peak truck activity which will be generated by the proposal, review of the proposed production rates has been conducted.

We have been advised that a maximum production of 2,000,000 tonnes per annum is anticipated, with operation occurring six days per week for 48 weeks per year.

Accordingly, peak average haulage of 41,670 tonnes per week and 6,944 tonnes per day have been adopted.

Haulage will be undertaken primarily by B-double trucks carrying a net load of approximately 33 tonnes.

Based on the foregoing, a total of 211 collections per day equating 422 vehicle movements per day are expected for B-doubles.

211 x B-double @ 33 tonnes/load = 6,963 tonnes

5.1.3 Service and Supply Vehicles

Depending on the level of operation, a proportion of activity to the site will be ancillary to the quarry operations for supplies, and general deliveries.

Due to the uncertainty of the frequency for deliveries it will be assumed that 10% of the total generation will be attributed to service and supply vehicles, 30% of which being heavy vehicle traffic.

5.1.4 Total

It is projected that the quarry will generate 530 vehicle movements per day as shown in Table 3.

Table 3: Projected Traffic Generation – vehicles per day

	Staff	*Haulage*	*Services (H.V)*	*Total*	*% H.V*
B-doubles	60	422	48 (14)	530	89%

--- The End ---