

UPPER HUNTER HOLDINGS PTY LTD

TRAFFIC REPORT FOR
PROPOSED GRAVEL QUARRY,
MERRIWA ROAD, DENMAN

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I. INTRODUCTION

- I.1 Colston Budd Hunt and Kafes Pty Ltd has been commissioned by Upper Hunter Holdings Pty Ltd to prepare a report examining the traffic implications of a proposed gravel quarry at lot 2, DP 1160936, on the Golden Highway at Denman. The site location is shown on Figures 1 and 2.
- I.2 The site forms part of a rural land holding north of the Golden Highway. It is proposed to extract up to 250,000 tonnes per year from the quarry. Vehicular access to the site is proposed via a new intersection on Golden Highway, east of Rosemount Road.
- I.3 This report assesses the traffic implications of the proposed development through the following chapters:
- Chapter 2 - describing the existing conditions; and
 - Chapter 3 - assessing the traffic implications of the proposed development.
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2. EXISTING CONDITIONS

Site Location and Road Network

- 2.1 The site is at lot 2, DP 1160936, on the Golden Highway, some seven kilometres west of Denman. It is part of a rural land holding north of the Golden Highway. Surrounding land use is primarily rural. The site location is shown in Figures 1 and 2.
- 2.2 The Golden Highway connects Singleton, Jerrys Plains and Denman in the east with Merriwa and Dubbo in the west. In the vicinity of the site it provides a two lane two-way carriageway with sealed shoulders and a 100 kilometre per hour speed limit.
- 2.3 Rosemount Road intersects Golden Highway near the site. It provides a two lane, two-way road which connects back to Denman. The intersection of Golden Highway with Rosemount Road is a t-intersection controlled by give way signs. There is a short left turn deceleration lane on the highway for turns into Rosemount Road.

Traffic Flows

- 2.4 Traffic generated by the proposed gravel quarry would have its greatest effects during weekday mornings and afternoons when it combines with other traffic on the surrounding road network. In order to gauge traffic conditions, counts were undertaken during weekday morning and afternoon peak periods at the intersection of Golden Highway with Rosemount Road.
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- 2.5 The results of the surveys are shown in Figures 2 and 3, and summarised in Table 2.1.

Road	Location	AM peak hour	PM peak hour
Golden Highway	East of Rosemount Road	190	170
	West of Rosemount Road	190	160
Rosemount Road	South of Golden Highway	10	20

- 2.6 Table 2.1 shows that the Golden Highway carried some 160 to 190 vehicles per hour during the surveyed morning and afternoon peak hours. Rosemount Road carried very low flows of some 10 and 20 vehicles per hour during the morning and afternoon peak hours respectively.

Intersection Operation

- 2.7 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The intersection of Golden Highway with Rosemount Road has been analysed using the SIDRA program for the traffic flows shown in Figures 3 and 4.
- 2.8 SIDRA simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle.
- 2.9 Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

ρ For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

ρ For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode

2.10 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all

movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

- 2.11 The SIDRA analysis found that the intersection of Golden Highway with Rosemount Road is operating with average delays for the highest delayed movement of less than 15 seconds per vehicle during morning and afternoon peak periods. This represents levels of service A/B, a good level of service.

3. IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1 It is proposed to extract up to 250,000 tonnes per year from the quarry. Vehicular access to the site is proposed via a new intersection on Golden Highway, east of Rosemount Road.

3.2 This chapter assesses the implications of the proposed development through the following sections:

- parking provision;
- access, internal circulation and layout;
- traffic generation and effects; and
- summary.

Parking Provision

3.3 Section 16 of the Muswellbrook Shire Development Control Plan does not include parking requirements for quarries. On-site parking will be provided for the small number of employees expected at the development (some three to five employees).

Access, Internal Circulation and Layout

3.4 Vehicular access to the site is proposed via a new intersection on Golden Highway, some 100 to 120 metres east of Rosemount Road. The new access road would run north from Golden Highway and provide a two-way connection between the Golden Highway and the proposed quarry area.

- 3.5 There are good sight lines at the proposed access point on Golden Highway in both directions (some 350 metres to the east and some 250 to the west).
- 3.6 As discussed in the following section on traffic generation and effects, the very low traffic volumes turning to and from the proposed new access road would not require special treatment at the intersection of Golden Highway. The intersection would operate at a good level of service, and there are good sight lines in both directions on Golden Highway.
- 3.7 The small number of on-site parking spaces will be 2.5 metres wide by 5.4 metres long, with appropriate manoeuvring area. These dimensions are considered appropriate, being in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS 2890.1:2004.

Traffic Generation and Effects

- 3.8 Material extracted from the quarry would be carried by truck/trailer combinations and b-doubles, which carry some 33 and 39 tonnes each respectively. Based on an extraction rate of up to 250,000 tonnes per annum, and some 270 days operation per year, the proposed quarry would generate up to some 25 to 30 laden vehicles per day.
- 3.9 Over a 12 hour working day, this is equivalent to some two to three trucks per hour (four to six vehicles two-way). This is a very low number, equivalent to an average of only one vehicle every 10 to 15 minutes.
- 3.10 Such a low traffic generation would not have noticeable effects on the operation of the surrounding road network. Turning volumes at the intersection of Golden
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Highway with the quarry access road would be less than the existing turning volumes at the Golden Highway/Rosemount Road intersection. The proposed access intersection would operate with average delays of less than 15 seconds per vehicle. This represents level of service A/B, a good level of service.

- 3.11 As previously noted, there are good sight lines along the Golden Highway in both directions at the location of the proposed quarry access road. Traffic from the proposed development is therefore not expected to result in any unusual safety issues at the intersection.

Summary

- 3.12 In summary, the main points relating to the traffic implications of the proposed gravel quarry are as follows:
- i) it is proposed to extract up to 250,000 tonnes per year from the quarry;
 - ii) appropriate on-site parking will be provided;
 - iii) access is proposed from a new road which would connect to the Golden Highway, east of Rosemount Road;
 - iv) the intersection of the access road with Golden Highway will operate at a good level of service, with good sight lines in both directions;
 - v) the proposed quarry would have a very low traffic generation, equivalent to only one laden vehicle every 10 to 15 minutes; and
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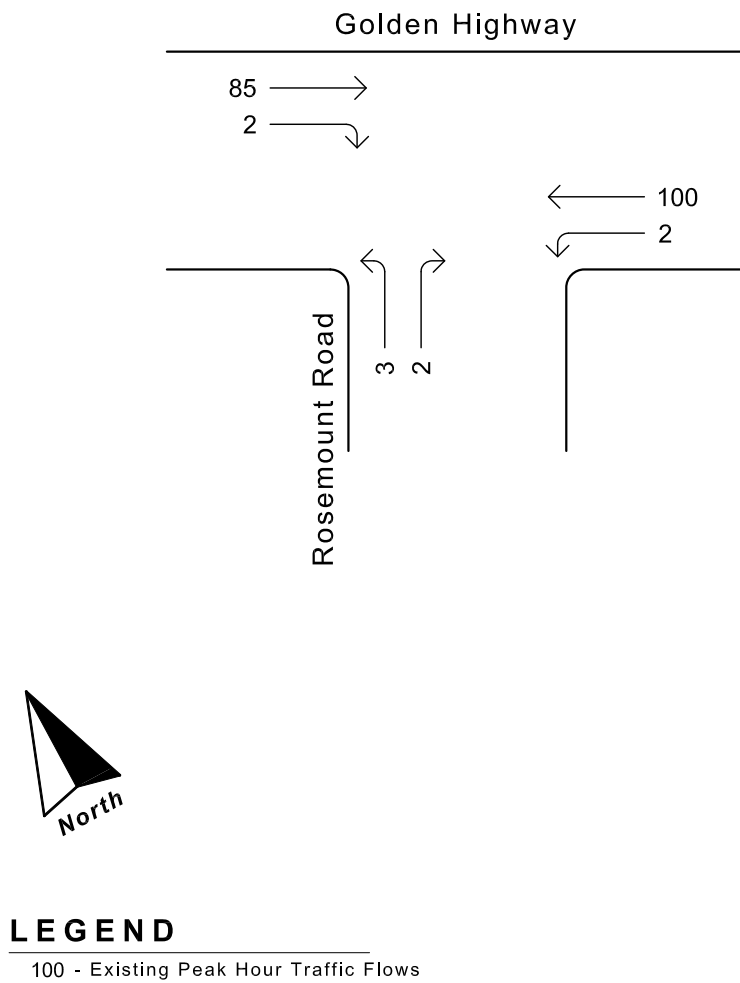
- vi) such a low traffic generation would not have noticeable effects on the operation of the surrounding road network.



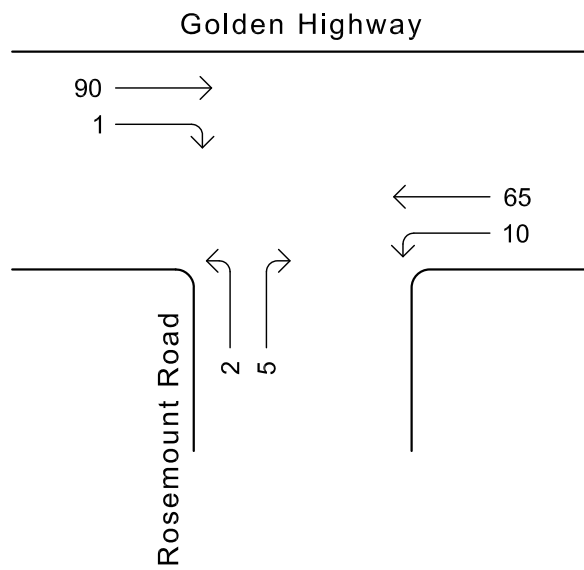
Location Plan



Location Plan



**Existing weekday morning
peak hour traffic flows**



LEGEND

100 - Existing Peak Hour Traffic Flows

**Existing weekday afternoon
peak hour traffic flows**