

Our Ref: 24168

1 August 2024

Maas Group
PO Box 4921
DUBBO NSW 2141

Attention: Rowan McKay

Dear Rowan,

RE: RALSTON QUARRY MOUNT TENANDRA – MODIFICATION TO DA027/2020

The Transport Planning Partnership (TPPP) has been commissioned by Maas Group to review the traffic and road implications of a proposed modification to Ralston Quarry (the Quarry), an approved hard rock quarry located at 4948 Tooraweenah Road, Mount Tenandra.

Background

DA027/2020 for the Quarry was approved in April 2021, and permits a two-stage quarry operation. TPPP¹ assessed the road transport aspects of the approved Quarry, which has its access on Weenya Road approximately 1.7 km south of the intersection with Tooraweenah Road. Stage 1 of the approved Quarry includes the extraction and transport of up to 490,000 tonnes per annum (tpa) of material for five years, to service construction of the Inland Rail Project. Stage 2 includes the extraction and transport of up to 100,000 tpa of material for up to 20 years, to service projects in the local region. Development Consent is subject to conditions relating to road and intersection upgrades required prior to commencement of any haulage operations.

Due to delays to construction of the Inland Rail Project, Maas Group is seeking a modification to DA027/2020 to permit operation of the Quarry at an initially reduced production rate of up to 150,000 tpa to service local road projects, with amendments to the conditions relating to the timing of the road and intersection upgrades. This initial operational period would be Stage 1, and the approved Stages 1 and 2 would become Stages 2 and 3 respectively.

¹ TPPP (2020), *Ralston Quarry, Mount Tenandra Road Transport Assessment*.

Modified Quarry Operations

The modification would permit initial Quarry operations with extraction and transport of up to 150,000 tpa of material to service construction activity related to the Tooraweenah Road Upgrade. The Tooraweenah Road Upgrade is scheduled to commence in late 2024, and will reconstruct and seal the unsealed lengths of Tooraweenah Road, and rehabilitate sealed lengths, including reconstruction and widening of shoulders. The project includes the 56.8 km length of Tooraweenah Road from King Street at the eastern side of Coonamble to the Gilgandra Shire boundary. Weenya Road intersects Tooraweenah Road approximately 7 km to the west of the Gilgandra Shire boundary. The design plans for the upgrade include sealing of a short length of Weenya Road approaching the intersection of Tooraweenah Road.

To access the Tooraweenah Road Upgrade from the Quarry, laden trucks would depart the Quarry by a left turn on to Weenya Road, then travel northbound on Weenya Road to Tooraweenah Road. At most times, the laden trucks would then turn left on to Tooraweenah Road to access the upgrade project construction or stockpile sites. When upgrade activities occur south of Weenya Road, the laden trucks would turn right from Weenya Road onto Tooraweenah Road. Empty trucks would return to the Quarry via the same routes. All Quarry-generated trucks servicing the Tooraweenah Road Upgrade would therefore turn left from the Quarry access on to Weenya Road, and right into the Quarry access.

The initial quarrying activity is anticipated to use 19 m long rigid truck and trailer combinations, with a typical payload of 38 t. Allowing for operations to occur over 50 weeks per year, the haulage of 150,000 tpa would generate an average of 14 loads per weekday and 8 loads per Saturday. The amount of material transported on any one day would vary from the average, due to the campaign nature of quarrying activities. A maximum of 1,500 t per day would be transported to meet the needs of the Tooraweenah Road Upgrade, generating 40 loads per day. Laden truck departures would be limited to a maximum of four loads per hour. Consistent with the approved operations, laden trucks would not depart the Quarry in convoy, with a minimum five minute headway to be imposed between departing trucks.

Between two and four people would be employed on-site, who would generate up to 8 light vehicle trips per day.

A Traffic Management Plan (TMP) has been prepared for the heavy vehicle transport associated with the Quarry. With the Modification, the TMP would be updated to include a requirement for inbound haulage truck drivers to communicate via radio with the haulage fleet drivers when approaching the Quarry on Weenya Road during the initial quarrying activities. Any driver preparing to leave the Quarry would wait for the arrival of the inbound truck before departing. This would give priority to inbound trucks to minimise any disruption to through traffic on Weenya Road. Heavy vehicles would not need to pass each other when turning into or out of the Quarry access at Weenya Road.

Quarry Trip Generation Summary

Table 1 summarises the daily trip² generation of the approved and modified Quarry operations on an average weekday, and on a peak day.

Table 1: Quarry Traffic Generation Summary

	Average Weekday (vehicle trips per day)			Peak Day (vehicle trips per day)			Maximum Haulage Trips per Hour
	Light Vehicles	Heavy Vehicles	Total Vehicles	Light Vehicles	Heavy Vehicles	Total Vehicles	
Approved ^A							
Stage 1 – 490,000 tpa	20	92	112	20	264	284	24
Stage 2 – 100,000 tpa	8	20	28	8	40	48	-
Modification							
Stage 1 – 150,000 tpa	8	28	36	8	80	88	8
Stage 2 – 490,000 tpa	20	92	112	20	264	284	24
Stage 3 – 100,000 tpa	8	20	28	8	40	48	-

^A Source TTPP, 2020

Traffic Volumes

TTPP (2020) collated traffic volume data on surrounding local roads. Allowing for background growth since that data was collected, Table 2 summarises estimated weekday traffic volumes on roads in the immediate vicinity of the Quarry in 2025, being representative of the scheduled timing of the Tooraweenah Road Upgrade works.

Considering the connectivity of the road network, it is expected that existing traffic volumes on Weenya Road are below those on Tooraweenah Road near Mungery Road, and less than the existing volumes on Box Ridge Road and National Park Road. Peak hour volumes would typically be expected to be in the order of eight to 12 per cent of daily volumes.

Table 2: Estimated 2025 Weekday Two-Way Traffic Volumes (vehicles per day)

	Light Vehicles	Heavy Vehicles	Total Vehicles
Tooraweenah Road near Mungery Road	42	26	68
Box Ridge Road west of National Park Road	39	11	50
National Park Road south of Box Ridge Road	25	22	47

The initial haulage activity would be limited to the Quarry access road, Weenya Road between the Quarry and Tooraweenah Road, and Tooraweenah Road between Weenya Road and the Upgrade project construction/stockpile sites, which would vary over time. The average weekday 28 truck trips per day and peak 80 truck trips per day generated during

² For clarity, and consistent with Austroads definitions, a trip is a one way movement. A vehicle arriving at the Quarry and departing the Quarry generates two vehicle trips.

the initial quarrying activity (refer to Table 1) would therefore occur only on those parts of the local road network.

It has conservatively been assumed that Weenya Road carries similar traffic volumes to those on National Park Road and Box Ridge Road, and that all workforce-generated trips approach and depart via Weenya Road north of the Quarry. On this basis, with the proposed initial quarrying activity, Weenya Road north of the Quarry access would be expected to carry in the order of 86 vehicles per day on an average weekday, and in the order of 138 vehicles per day on a peak haulage day. South of the Quarry access, Weenya Road would carry approximately 50 vehicles per day.

Property Access Upgrade

Condition 19 of DA027/2020 requires upgrading of the property access intersection on Weenya Road and the provision/maintenance of Safe Intersection Sight Distance (SISD) in accordance with Austroads³ requirements, as below:

Prior to the commencement of any haulage operations, the Proponent is to upgrade the existing Northwood property access to Weenya Road to form a Basic Auxiliary Left (BAL) and Basic Auxiliary Right (BAR) to the satisfaction of Coonamble Shire Council, including the provision / maintenance of Safe Intersection Sight Distance in accordance with Part 4A of the Austroads Guide to Road Design prior to the commencement of any haulage operations on the local road network.

The Austroads (2020)⁴ warrants for major road treatments at intersections such as BAL and BAR treatments are not intended for direct application to accesses and driveways, however may be used as a reference for such. TTPP has reviewed the reduced demands generated by the initial quarrying activity with the Modification with respect to those warrants.

With the Modification, Stage 1 would generate a maximum of eight heavy vehicle movements in any one hour (four inbound and four outbound) on a peak haulage day, and an average of fewer than three heavy vehicle movements per hour on an average day. All truck movements for the Tooraweenah Road Upgrade would be left out to Weenya Road and right in from Weenya Road. This is significantly below the peak of 24 heavy vehicle movements (12 inbound and 12 outbound) on a peak haulage day anticipated with the approved Stage 1 operations.

With regard to the warrants, the Modification, the Quarry trucks servicing the Tooraweenah Road Upgrade would not generate any demand for left turns from Weenya Road into the Quarry. The initial quarrying activity with the Modification would therefore not contribute to

³ Austroads (2023a), *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*.

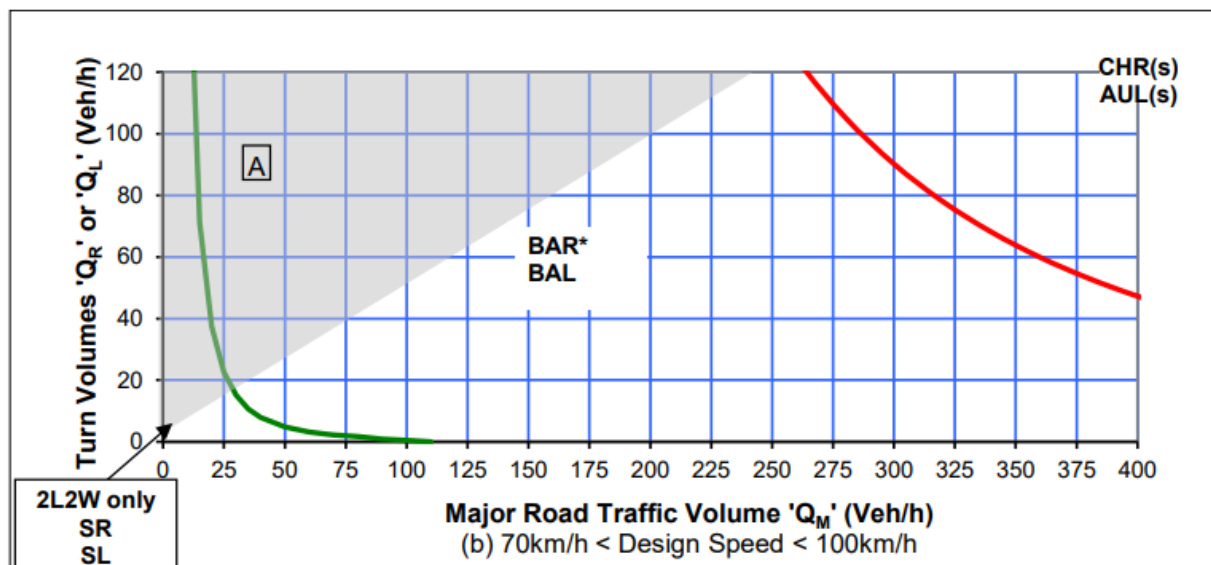
⁴ Austroads (2020), *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management*.

any need to provide a BAL treatment in Weenya Road at the Quarry access based on direct application of the Austroads intersection treatment warrant to the access.

With the Modification, the Quarry trucks servicing the Tooraweenah Road Upgrade would generate a demand for a maximum of four trucks turning right from Weenya Road to the Quarry access in one hour. The Quarry would not generate any demand for through movements along Weenya Road past the Quarry access nor left turns into the Quarry access road. Based on the estimated 2024 daily traffic volumes (refer to Table 2), two-way background volumes on Weenya Road are anticipated to be approximately six vehicles per hour.

At these very low volumes, the benefits provided by formal major road treatments are low. Noting that the Austroads warrants are not intended for use at property accesses, this is recognised by the Queensland TMR supplement to Austroads⁵, which presents a warrant for Simple Intersection Treatments on two-way two-lane roads in rural situations where volumes are very low, as illustrated below for a road with design speed of between 70 km/h and 100 km/h.

Figure 1: Warrants Major Road Turn Treatments Extended Domain Design



2L2W is two-lane, two-way road, SR/SL is simple right/simple left intersection treatment

In the case of the right-turn peak hour demands on a peak haulage day at the Quarry access, Q_M is approximately 6 vehicles per hour, and Q_R is a maximum of 4 vehicles per hour. Comparison with the TMR warrant indicates that a simple intersection treatment would be satisfactory for the peak traffic demands during the initial haulage activity, assuming normal domain design layout is provided. A simple intersection treatment has no pavement widening, or has a level of widening less than that required for a BAL or BAR treatment.

⁵ Transport and Main Roads (2021), *Supplement to Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*.

On this basis, provision of a BAR treatment in Weenya Road at the Quarry access is not warranted by the initial haulage activity demands, subject to the layout being suitable for the largest vehicles likely to use the access, in accordance with Austroads (2023b)⁶. TPPP has reviewed the suitability of the existing layout to accommodate the largest vehicle entering or exiting the Quarry during the initial quarrying activity, being a 19 m truck and trailer combination.

Considering the proposed communication protocol between truck drivers, during the initial haulage activity, the Quarry access would need to accommodate the movement of an inbound or outbound heavy vehicle, without needing to accommodate both movements concurrently. Attachment One presents the swept paths of the largest vehicle during the initial quarrying activity using the existing Quarry Access Road intersection. TPPP understands that the access has been widened since the most recently available aerial image was collected, and the review has made reference to a recent photo of the access.

As a worst case, the review has considered the situation in which a light vehicle (whose driver is not part of the TMP communication protocol and so not aware of the approaching truck) is exiting the Quarry when a truck is approaching. The likelihood of that event is very low as the workforce would not typically travel to or from the site during haulage hours, and other visitors to the site would be very infrequent. Nevertheless, Figure 1 demonstrates that an inbound truck can safely pass a light vehicle that is waiting to exit the site. Figure 2 demonstrates that an outbound truck from the Quarry would not impede the path of a southbound vehicle on Weenya Road.

The existing intersection of Weenya Road and the Quarry Access Road is therefore considered to be of a suitable layout for the largest vehicles likely to use the access.

As discussed in TPPP (2020), observations on-site indicate that sight distances along Weenya Road in the region of the Quarry access exceed 300 m in both directions, thus SISD requirements would be met in accordance with Condition 19.

Local Road Upgrades

Condition 20 of DA0027/2020 requires that parts of local roads be upgraded to a rural unsealed standard in accordance with the Austroads Guide to Road Design and the Austroads Guide to Pavement Technology⁷.

Prior to the commencement of any haulage operations on the local road network, the following sections of local roads shall be upgraded:

⁶ Austroads (2023b), *Guide to Road Design Part 4: Intersections and Crossings: General*.

⁷ Austroads (2009), *Guide to Pavement Technology Part 6: Unsealed Pavements*.

- a) *Weenya Road to a rural unsealed standard as per the Austroads Guide to Road Design 2017 and the Austroads Guide to Pavement Technology Part 6, and to the satisfaction of Coonamble Shire Council.*
- b) *Tooraweenah Road to a rural unsealed standard 50 metres east and west of its intersection with Weenya Road as per the Austroads Guide to Road Design 2017 and the Austroads Guide to Pavement Technology Part 6, and to the satisfaction of Coonamble Shire Council.*
- c) *National Park Road to a rural unsealed standard 50 metres east and west of its intersection with Weenya Road as per the Austroads Guide to Road Design 2017 and the Austroads Guide to Pavement Technology Part 6, and to the satisfaction of Coonamble Shire Council.*

In relation to the design of unsealed roads, the Austroads Guide to Road Design (2021)⁸ refers designers to ARRB (2009)⁹ which has since been superseded by ARRB (2020)¹⁰. The Austroads Guide to Pavement Technology Part 6 (2009) referred to in Condition 19 presents a suggested (but not agreed) hierarchy for unsealed roads, which predates the ARRB (2020) hierarchy. The ARRB (2020) unsealed road functional hierarchy is adapted from the Austroads classification system. TTPP has therefore considered the local road upgrades with respect to the ARRB (2020) functional classification system, being the most current reference. The construction standard of any upgrades would be in accordance with Austroads (2009).

Weenya Road

Functionally, Weenya Road is a minor local road that links Tooraweenah Road and National Park Road. Based on observed conditions (TTPP, 2020), the operating speed and general geometry of Weenya Road exceeds that required for its minor road function, and is consistent with a that of a "Class 4A" unsealed road (ARRB, 2020), which can carry over 150 vehicles per day and can carry heavy vehicles. Class 4A roads are two-lane roads which in flat terrain have a minimum carriageway width of 9 m (lanes and shoulders) and operating speed standard of up to 80 km/h. Weenya Road is approximately 12 m wide and supports comfortable travel speeds by passenger car of 80 km/h.

Considering the estimated background traffic volume on Weenya Road of 49 vehicles per day (Table 2) and the Quarry's contribution of 36 vehicles per day (average) and 88 vehicles per day (maximum) (Table 1) during initial quarrying activities, the existing standard of Weenya Road is suitable to accommodate the initial quarrying activity without upgrading.

The upgrading of Weenya Road required by Condition 20 (a) of DA0027/2020 can reasonably be delayed until prior to commencement of the modified Stage 2 activities (equivalent to approved Stage 1), when Quarry-generated traffic demands would be higher.

⁸ Austroads (2021), *Guide to Road Design Part 3: Geometric Design*.

⁹ ARRB (2009), *Unsealed Roads Manual: Guidelines to Good Practice*.

¹⁰ ARRB (2020), *Unsealed Roads Best Practice Guide*.

Tooraweenah Road

The initial quarrying activity would service the Tooraweenah Road Upgrade project, which includes reconstruction and sealing of the unsealed portions of Tooraweenah Road, including a short length of Weenya Road approaching the Tooraweenah Road intersection. Tooraweenah Road will be constructed with a 9.0 m wide sealed surface (two 3.5 m wide travel lanes and 1.0 m wide sealed shoulder each side) with table drains.

As the initial quarrying activity would service only the activities associated with upgrading of Tooraweenah Road to a sealed standard, the upgrading of Tooraweenah Road to a rural unsealed standard 50 m east and west of its intersection with Weenya Road required by Condition 20 (b) of DA0027/2020 would no longer be relevant. Should the Tooraweenah Road Upgrade project not proceed for any reason, the initial quarrying activity would also not proceed, and Condition 20 (b) would remain relevant.

National Park Road

The initial quarrying activity would service the Tooraweenah Road Upgrade project, which would not require Quarry trucks to use Weenya Road south of the Quarry to National Park Road. The upgrading of National Park Road near its intersection with Weenya Road required by Condition 20 (c) of DA0027/2020 would therefore not be required during the initial quarrying activities. Implementation of those upgrades can reasonably be delayed until prior to commencement of the modified Stage 2 (equivalent to approved Stage 1).

Conclusions

This assessment has demonstrated that the proposed modification to Quarry operations to permit a maximum of 150,000 tpa of material to be extracted and transported to service local road projects, principally the Tooraweenah Road Upgrade project, would have acceptable impacts on the road network.

Due to the lower Quarry-generated transport demands, the modified Stage 1 operations would not require formal upgrading of the Quarry access intersection with Weenya Road to BAL and BAR treatments. Sight distances at existing site access exceed Austroads SISD requirements, and the existing intersection layout is suitable for the largest vehicle that would access the Quarry during the modified Stage 1 activities.

Due to the lower transport demands, the modified Stage 1 operations would not trigger a need for the upgrades to local roads required by Condition 20 of DA0027/2020. The upgrades to Weenya Road and National Park Road (Condition 20 (a) and (c)) can reasonably be delayed until prior to commencement of the modified Stage 2 activities (equivalent to approved Stage 1). The upgrade to Tooraweenah Road (Condition 20 (b)) would no longer be relevant as a result of the Tooraweenah Road Upgrade program.

The current TMP would be updated to include a communication protocol that would give priority to inbound trucks to minimise any disruption to through traffic on Weenya Road, and

would ensure that heavy vehicles would not need to pass each other when turning into or out of the Quarry access at Weenya Road.

We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

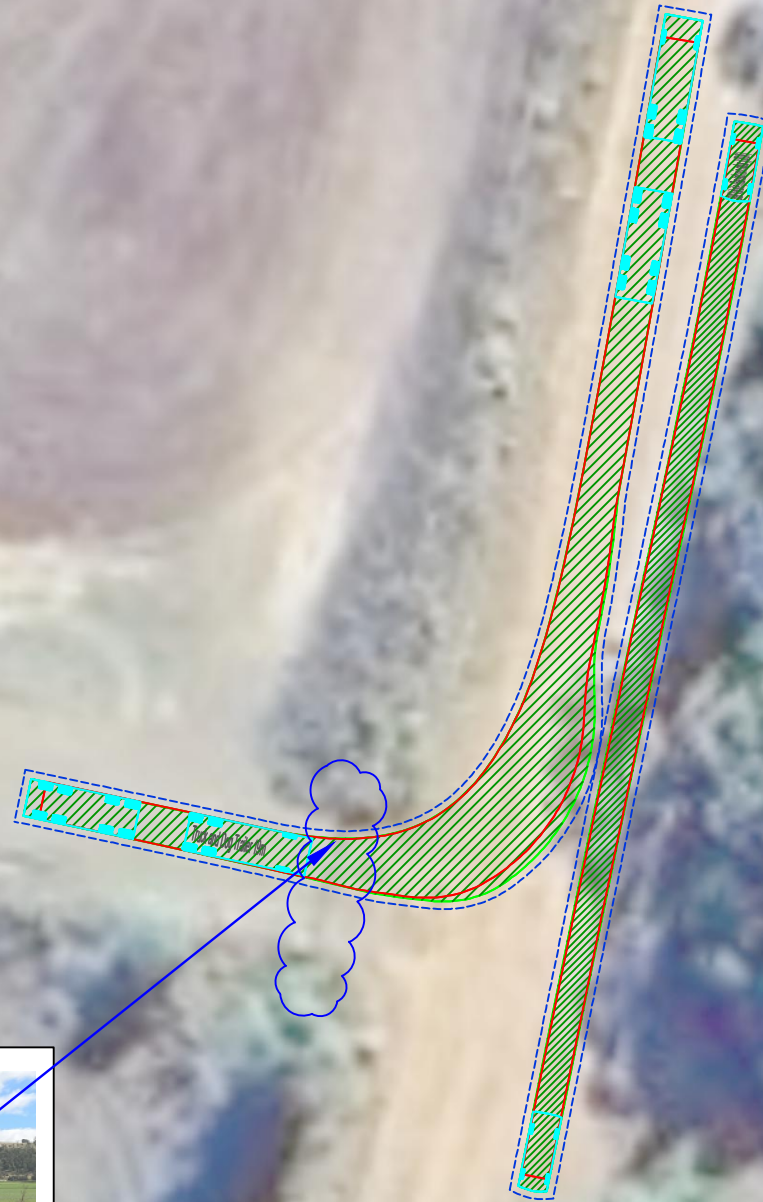
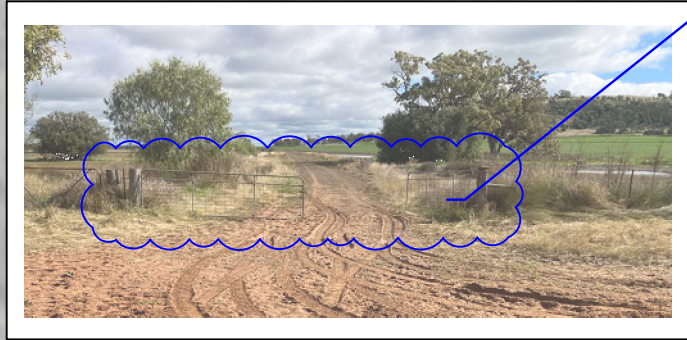
Yours sincerely,



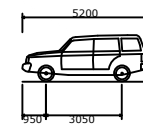
Penny Dalton
Associate Director

Attachment One

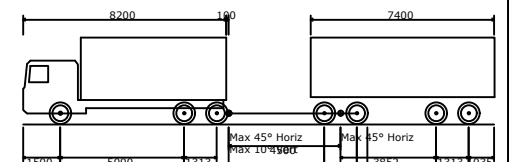
Truck Swept Path at Quarry Access Road



KEY:		
	Forward	Reverse
Wheel path	—	—
Body envelope	▨	▨
500mm clearance	---	---



B99 Vehicle (Realistic min radius) (2004)	
Overall Length	5200mm
Overall Width	1940mm
Overall Body Height	1878mm
Min Body Ground Clearance	272mm
Track Width	1840mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6250mm



Truck and Dog Trailer 19m	
Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	3500mm
Min Body Ground Clearance	427mm
Track Width	2500mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	HT	PD	PD	31/07/24



PROJECT		RALSTON QUARRY - WEENYA ROAD ACCESS	
TITLE		SWEPT PATH ANALYSIS 19M RUCK AND DOG TRAILER - VEHICLE TURNS LEFT FROM SITE	

DWG No. 24168CAD001 FIGURE 1	
DATE STAMP 31 July 2024	
PROJECT No. 24168	SCALE 1:500 @A3
REV. A	



KEY:		
	Forward	Reverse
Wheel path	—	—
Body envelope	▨	▨
500mm clearance	---	---

B99 Vehicle (Realistic min radius) (2004) Overall Length 5200mm Overall Width 1940mm Overall Body Height 1878mm Min Body Ground Clearance 272mm Track Width 1840mm Lock-to-lock time 4.00s Curb to Curb Turning Radius 6250mm	Truck and Dog Trailer 19m Overall Length 19000mm Overall Width 2500mm Overall Body Height 3500mm Min Body Ground Clearance 427mm Track Width 2500mm Lock-to-lock time 4.00s Curb to Curb Turning Radius 12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	HT	PD	PD	31/07/24



PROJECT	RALSTON QUARRY - WEENYA ROAD ACCESS	
TITLE	SWEPT PATH ANALYSIS 19M TRUCK AND DOG TRAILER - VEHICLE TURNS RIGHT INTO SITE	

DWG No.	24168CAD001 FIGURE 2		
DATE STAMP	31 July 2024		
PROJECT No.	SCALE	REV.	
24168	1:500 @A3	A	