Appendix 9

Traffic Assessment

prepared by

Tonkin Consulting Pty Ltd

(Total No. of pages including blank pages = 95)

Copi Mineral Sands Project

Stage 3 – Traffic Assessment: Environmental Impact Assessment

Prepared for R.W. Corkery & Co Pty Limited

15 March 2024
Ref: 20180871R04C

Building exceptional
outcomes together

Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
A	Draft Traffic Impact Assessment for Client Review	SS	NF	NF	25/01/2024
B	Updated Following Client Review	SS	NF	NF	9/02/2024
C	Updated Following Finalisation of Figures	SS	NF	NF	15/03/2024

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1 Introduction

R.W. Corkery Pty Limited (RWC) on behalf of RZ Resources Limited (The Proponent) has engaged Tonkin to undertake a Traffic Impact Statement to support the Environmental Impact Statement for the Copi Mineral Sands Project in the Far West Region of New South Wales (the Project). The Proponent proposes to develop the project on a site within the Wentworth local government area (LGA), approximately 75 kilometres (km) north of the township of Wentworth.

As a mineral sands mine, the Project is classified as a State Significant Development (SSD) under Clause 5(1)(a) of Schedule 1 of the State Environmental Planning Policy (SEPP) (State and Regional Development) 2011. As such, the Project requires an Environmental Impact Statement (EIS) to accompany the application made under Part 4 Division 4.1 of the Environmental Planning & Assessment Act 1979 (EP&A Act).

An Environmental Impact Statement (EIS) is a requirement of the approval process. This Traffic Impact Assessment (TIA) forms part of the EIS. It documents the traffic impact assessment methods and results, and the methods proposed to avoid and minimise associated traffic impacts, and the additional mitigation and management measures proposed to address any outstanding impacts not able to be avoided.

2 Methodology and Data Sources

The assessment has been undertaken with the relevant governmental assessment requirements, guidelines and policies, and in consultation with the relevant government agencies.

The assessment is based on the following general scope for matters to consider in a TIA which is defined by TfNSW Guide to Traffic Generating Developments (RTA 2013).

- the existing locality and surrounding land uses;
- the existing road network and intersections;
- traffic generation characteristics of the project;
- traffic impacts of the project, and
- a summary of the assessed traffic impacts and any traffic management or mitigation measures.

In addition to the above, the following Austroads Guidelines have been referred to in preparation of this report including the relevant TfNSW Supplements to Austroads guides:

- Austroads Guide to Road Design Part 3 – Geometric Design
- Austroads Guide to Road Design Part 4 – Intersections and Crossings - General
- Austroads Guide to Road Design Part 4A – Unsignalised intersections and signalised intersections
- Austroads Guide to Road Design Part 4B – Roundabouts
- Austroads Guide to Traffic Management Part 6 – Intersections, Interchanges and Crossings
- Austroads Guide to Traffic Management Part 12 – Traffic Impacts of Developments
- Austroads Guide to Traffic Management Part 13 – Traffic Studies and Analysis
- Austroads Guide to Pavement Technology Part 5 – Evaluation Treatment Design
- ARRB Unsealed Roads – Best Practice Guide
- National Heavy Vehicle Regulator (NHVR) Performance-Based Standards (PBS) Guidelines

This TIA will also address the requirements of the Secretary's Environmental Assessment Requirements once received.

A site inspection of the Anabranch Mail Road and the junction with the Silver City Highway was undertaken on 13 August 2018 to establish the existing road arrangements, geometry, sight distances and pavement conditions so as to identify any constraints to the development of the Project and develop measures to address any identified constraints. A further inspection was undertaken on 8 January 2020.

A site inspection of the proposed haul route through the Broken Hill township was undertaken on the 16th of May 2022 to establish the existing road arrangements, geometry, sight distances and pavement conditions to identify any constraints to the development of the project and develop measures to address any identified constraints.

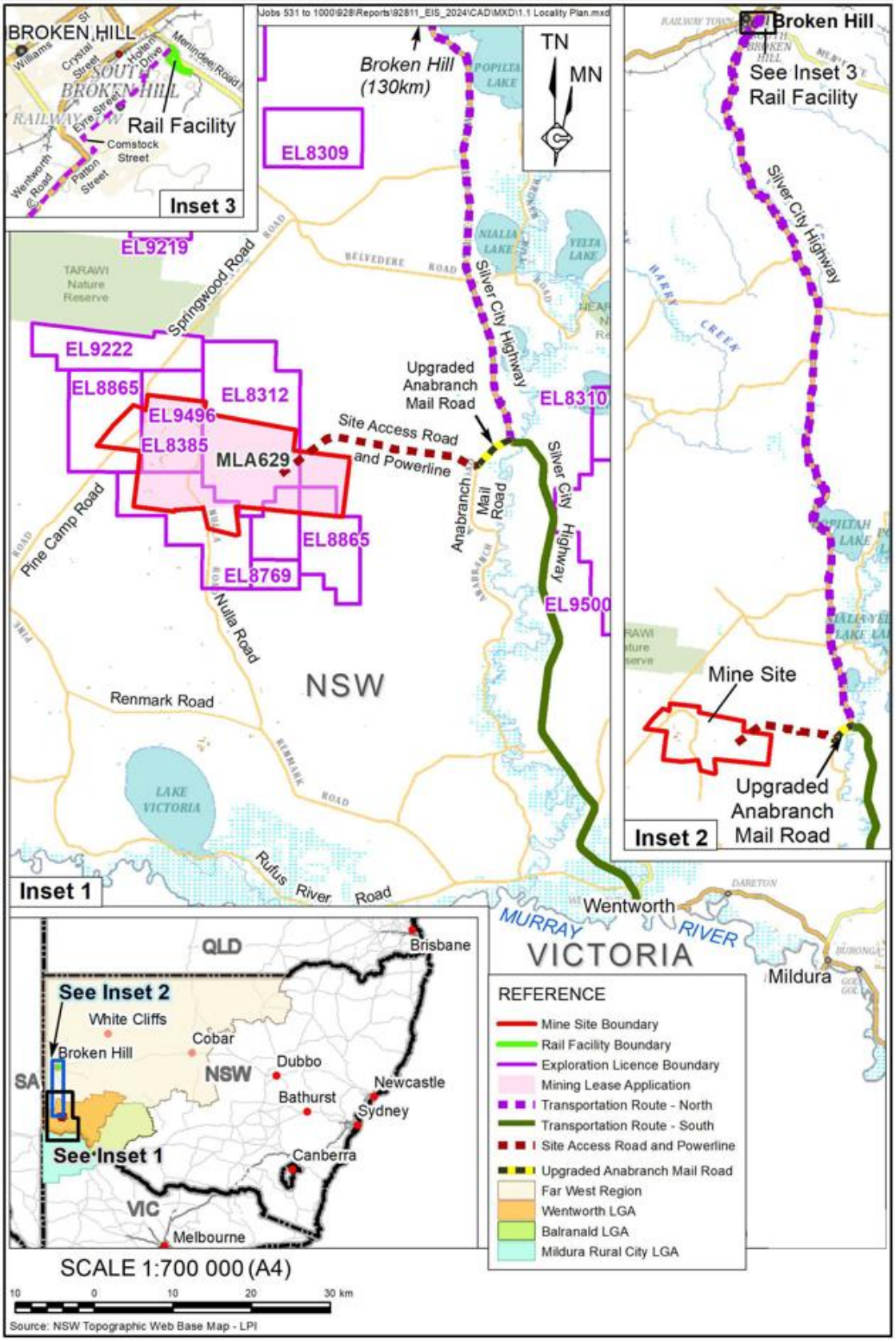


Figure 1: Site Locality Plan

3 Consultation with Stakeholders

Consultation with key stakeholders has involved discussions with Wentworth Shire Council, Broken Hill City Council and TfNSW with the key points identified below. It is noted that all previous consultation undertaken was related to previous revisions and proposals. Additional consultation with the relevant authorities (particularly Wentworth Shire Council) will be required.

Wentworth Shire Council

- Requirement for width of travel on a roadway to be a minimum of 7.5m (not including shoulders).
- Contribution required for deterioration of the pavement (additional sheeting) over the life of the project on Anabranch Mail Road.
- Upgrade the single grids to double grids at the grid locations along Anabranch Mail Road between the proposed Site Access Road and the Silver City Highway.
- Identify the locations and the duration of roads closures listed in the Planning Secretary's Environmental Assessment Requirements.
- What will be done to offset any disruption to local residents and frequent road users on Anabranch Mail Road?
- List of road maintenance operations that will be undertaken and the intervention frequency on Council roads.

Broken Hill City Council (points identified in the SEARs and meetings with Council)

- Transportation route within the Broken Hill Local Government Area.
- Type of trucks/vehicles for transportation of concentrate.
- Volume/number of truck movements.
- Overall assessment of likely transport impacts on the existing road network.
- Ensure geometric design of the road network is suitable for the design vehicle to safety travel through Broken Hill.

Transport for NSW (points identified in SEARs)

- No future works identified for this section.
- Mainly concerned with the provision of safe access between the subject site and the road network and the impact on the safety and efficiency of the Classified Road network (i.e. Silver City Highway).
- Concept design of the proposed upgrade for the Silver City Highway / Anabranch Mail Road intersection prepared in accordance with relevant Austroads Guides, Australian Standards and TfNSW supplements. Concept drawings should also include a swept path analysis for the largest design vehicle.
- Consider project schedule (i.e. hours and days of work, number of shifts and start and end times, transport considerations at each phase and stage of the project, including construction, operation, and decommissioning/rehabilitation).
- The total impact of existing and proposed development on the road network with consideration for a 10-year horizon.
- The type and frequency of vehicles accessing the development site including the issues of fatigue and potential to mitigate this issue.
- The origins, destinations and routes for all vehicles accessing the development.
- Details of the road geometry and alignment along the identified transport route/s.
- Identification and assessment of potential impacts the proposal may have along the proposed transport route/s.
- A review of crash data and an assessment of road safety along the identified transport route/s.
- Site plan demonstrating site access, internal manoeuvring, servicing and parking areas consistent with the relevant parts of AS 2890 and Council requirements.

- Details of any Traffic Management Plan (TMP) proposed to address the construction, operation and decommission phases of the proposed development.
- Propose a Driver Code of Conduct for haulage operations.
- An assessment of the likely risks to public safety.
- Side road approach to the Anabranch Mail Road / Silver City Highway intersection should provide an appropriate surface for safe turn manoeuvres as well as minimise the impact of dust and debris at the intersection.

4 Existing Road Network

The majority of vehicles entering and exiting the Project Site from the external road network will originate or have their destinations being either to the south (Wentworth, NSW) or north (Broken Hill, NSW).

Access to the project site is proposed to occur from either the north or south via the Silver City Highway, and onto Anabranch Mail Road and the proposed Site Access Road to access the site.

Access to the Rail Facility is proposed to occur from the south through Broken Hill via the Silver City Highway, Wentworth Road, Patton Street, Comstock Street, Eyre Street and Holten Drive. Light vehicles accessing the Rail Facility that originate from Broken Hill may also enter from the north off Holten Drive.

4.1 Silver City Highway

4.1.1 Function and Geometry

The Silver City Highway is a two lane two-way road under the care and control of TfNSW. This section of the road is currently posted as a 110km/hr speed limit and is the primary route for transport linking Wentworth in the south to Broken Hill in the north, in south-western NSW. The road extends from Buronga at the Sturt Highway in the south, all the way to the Queensland/NSW border to the north and intersects other major highways including the Sturt Highway, Calder Highway and Barrier Highway.

The Highway has approval for travel by Type (1) A-Double, Modular B-triple, B-triple and AB-triple vehicles. It is noted that Type 2 Road Trains do currently operate between the Snapper and Ginkgo Mines and Broken Hill under a permit.

While the sealed width and lane width varies along the alignment, near the intersection of Anabranch Mail Road it was measured to have a 7.0m seal width, with 3.4m marked lanes. Sealed width along the rest of the highway varies, however measurements taken varied between approximately 7.0m and 9.0m. Unsealed shoulder widths varied along the alignment.

Figure 2: Silver City Highway approaches to Anabranch Mail Road junction south (left) and north (right)

The Silver City Highway alignment is curvilinear at the junction with the Anabranch Mail Road and is located on a flat section of the Highway as shown above. On the southern approach to the junction, the Silver City Highway rises from the bridge crossing of the Darling River Anabranch.

4.1.2 Road condition

The condition of the Highway appears satisfactory with minimal rutting or surface defects suggesting the underlying pavement is in good condition. Note the condition of the highway does vary between Anabranch Mail Road and Broken Hill.

4.1.3 Traffic and Safety

Baseline daily traffic volumes were obtained from TfNSW Traffic Volume Viewer, Wentworth Shire Council provided counts and independent traffic counts undertaken by Austraffic. TfNSW Traffic Volume Viewer counts were available from the years 2006 and 2010, with Wentworth Shire Council provided counts available from 2021 and 2022. The independent counts undertaken by Austraffic were completed in September 2022. To determine a baseline year 2024 daily traffic volume where recent data was not available, +1% annual traffic growth has been added to the most recent survey at each point. Traffic volumes are presented in Table 4.1 below, along with a map of survey locations in Figure 3.

Table 4.1 Historic and projected traffic volumes for Silver City Highway

I.D. Number	Section of Highway	Historic daily traffic volumes				2024 Projected Daily Traffic Volumes	Average proportion of heavy vehicles
		2006	2010	2021	2022		
1	9.86km south of Wentworth Road, Broken Hill	295	N/A	N/A	N/A	353	16%
2	14.4km south of Kanandah Road, Broken Hill	N/A	N/A	N/A	428	437	25.5%
3	12.5km north of Anabranch Mail Road	N/A	N/A	110	N/A	113	45.3%
4	17.42km south of Anabranch Mail Road, Anabranch South	319	358	N/A	N/A	412	N/A
5	80m north of Renmark Road	N/A	N/A	N/A	1071	1093	19%

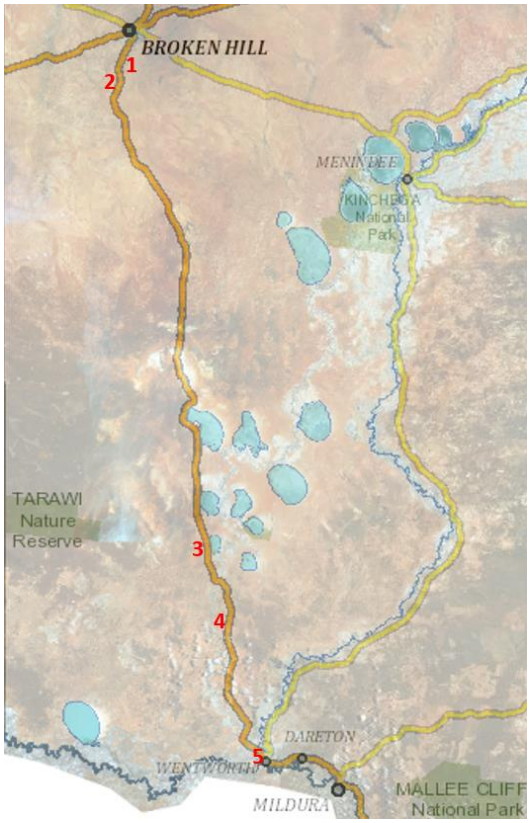


Figure 3: Traffic count locations (approximate)

Road width design standards for low volume rural roads are defined by the Austroads Guide to Road Design Part 3 (2021) and the NHVR PBS Guidelines and are based on daily traffic volumes. However, it is noted that as the Silver City Highway is a designated heavy vehicle route (and contains more than 15% heavy vehicles) therefore a minimum 7.0 metre seal should be provided as recommended in Austroads (Table 4.5 in the guide).

A review of published crash data (5 year period 2018 to 2022) by the Centre for Road Safety illustrates that there were 17 reported crashes on the Silver City Highway between Renmark Road and the Wentworth Shire Council boundary to the North. Of the 17 crashes that occurred, 9 were reported as minor injuries, 4 as non-casualty (towaway), 2 fatalities, and 2 serious injuries. The majority of the crashes reported were due to run off road incidents. 3 crashes were reported on the Silver City Highway between the northern Wentworth Shire Council border and the Broken Hill City Council township. All 3 crashes were run off road incidents. The crashes resulted in a moderate injuries, a non-casualty (towaway) and a serious injury.

4.2 Anabranch Mail Road

4.2.1 Function and Geometry

The Anabranch Mail Road is an unsealed road under the care and control of the Wentworth Shire Council. It is subject to the default speed limit under all other roads other than urban roads of 100km/hr. It provides access to properties on the west side of the Great Darling Anabranch and extends from the Silver City Highway to the north and Renmark Road to the south.

The section between the Silver City Highway and the proposed mine access road varies in width between 6.5 and 7.5m for the main formation. In some locations the actual travel width reduces to 4 to 5m in places. There are three grids located along the road, two east of the proposed mine access road, and one immediately south. These are well sign posted with good sight distance on both approaches. At

the grid locations, the road reduces in width to approximately 3.6m and is sealed 20m either side of the grid.

The road alignment of the Anabranch Mail Road is considered satisfactory however due to narrow travel width in sections, it is unlikely to support 100km/hr operating speeds. A crest is located approximately 1.8 to 2.0km from the Highway which is not signposted and sightlines are restricted in both directions. The ARRB Unsealed Roads Best Practice Guide provides guidance on the recommended minimum length of a crest vertical curve based on reaction time, operating speed, stopping sight distance and change in grade.

There is a horizontal curve approximately 5.3km from the Highway which is not well delineated and has an approximate radius of 440m. In accordance with the ARRB Unsealed Roads Best Practice Guide, Anabranch Mail Road would be classified as a Class 4A road. Based on this, the guide assumes an operating speed of approximately 80km/hr in flat terrain. For a Class 4A road in flat terrain, the guide also recommends a minimum curve radius of 320m assuming a superelevation of 6%.

Figure 4: Anabranch Mail Road - approach to curve (left) and crest (right)

Figure 5: Anabranch Mail Road - approach to grid

4.2.2 Road Condition

The condition of the road appears satisfactory with the majority of its length being sheeted with gravel. However, it was observed that there are locations within the first 2.0km where the subgrade is exposed and lacking sheeting material. It was noted that the sheeting material provided provides for a rough ride in a light vehicle currently, therefore operating conditions are likely to vary based on road surface condition.

Figure 6: Anabranch Mail Road - poor pavement condition

4.2.3 Traffic and Safety

No traffic volume data is available for this road, but it is not expected to be more than 100 vehicles per day, with most traffic associated with access to abutting properties. There may be additional traffic during years where there is water flow within the Darling River Anabranch.

Road design width for unsealed road networks is based on traffic volume and traffic composition as detailed in the ARRB Unsealed Roads Best Practice Guide. Based on Table 3.10 in the manual, the minimum standard for a Class 4A road is a minimum carriageway width of 7 metres, not inclusive of shoulders. Shoulder widths should be 1 metre giving an effective minimum carriageway of 9 metres.

A review of published crash data (5 year period 2018 to 2022) by the Centre for Road Safety illustrates that no crashes were reported on Anabranch Mail Road in the reported period.

4.3 Wentworth Road

4.3.1 Function and Geometry

Wentworth Road forms part of the Silver City Highway and is a two lane two-way road at the southern and western extent of the Broken Hill township under the care and control of TfNSW. This section of the road changes from 80km/hr (south-west) to 50km/hr (north-east) approximately 90m south-west of the main Perilya Limited access. Wentworth Road forms part of the Silver City Highway and is part of the primary route for transport linking Wentworth in the south to Broken Hill in the north, in south-western NSW, along with providing access for some local landmarks (Robinson College, Zinc Lakes, Perilya Limited and some residential areas). The road extends from the south-west of Broken Hill, and into the township, where the road transitions to Patton Street.

The road has approval for travel by Type (1) A-Double, Modular B-triple, B-triple and AB-triple vehicles.

The sealed width of Wentworth road was generally measured at approximately 9.1m – 9.4m along the alignment and lane widths ranged from 3.5m – 3.6m. Shoulder widths also varied ranging from 1m – 2m both sides of the road. A photo of the typical cross section of Wentworth Road can be seen below.

Figure 7: Wentworth Road - typical cross section

4.3.2 Road condition

The condition of the Highway appears satisfactory with minimal rutting or surface defects suggesting the underlying pavement is in good condition. Some minor flushing was observed in the wheel tracks, typical of a spray seal surface.

4.3.3 Traffic and Safety

No recent traffic counts have been provided for Wentworth Road, however an estimate of traffic volumes can be taken from nearby traffic counts on Patton Street and the Silver City Highway south of Broken Hill. Based on nearby traffic counts, it is likely traffic volumes on this section of road are in the vicinity of 1500 vehicles per day.

Assessed against the NHVR PBS Guidelines based on an assumed AADT of 1500-3000 vehicles per day, the road meets the carriageway width requirements for Level 4 vehicles (Type 2 Road Trains). Road width design standards for urban roads are defined in Austroads Guide to Road Design Part 3 (2021). Lane widths of 3.5m should be provided as recommended in Austroads (Table 4.3 in the guide).

A review of published crash data (5 year period 2018 to 2022) by the Centre for Road Safety illustrates that no crashes were reported on Wentworth Road in the reported period.

4.4 Patton Street

4.4.1 Function and Geometry

Patton Street is a two lane two-way road, partly under the care and control of TfNSW (south-west of the roundabout) and partly under the care and control of Broken Hill City Council (north-east of the roundabout). Patton Street is currently posted as a 50km/hr speed limit, however transitions to 40km/hr near the local traffic area (Patton Street/Comstock Street intersection to the north). Patton Street forms part of a heavy vehicle route through the southern Broken Hill township.

The Section of Patton Street that forms part of the heavy vehicle route has approval for travel by Type (1) A-Double, Modular B-triple, B-triple and AB-triple vehicles.

The sealed width and lane width varies along the alignment of Patton Street. South-west of the roundabout sealed widths ranged from 13.4m to 15.2m and lane widths were in the vicinity of 7.2-7.4m (3.6-3.7m lanes). North-east of the roundabout, the sealed width was measured at 20m, however no

edge lines were provided. Kerbing is located on each side of Patton Street. Typical photos of Patton Street have been provided below.

Figure 8: Patton Street (south-west of roundabout) - typical cross section

Figure 9: Patton Street (north-east of roundabout) - typical cross section

4.4.2 Road condition

The condition of Patton Street was generally satisfactory, with minimal rutting or surface defects observed. Some defects were observed at the roundabout which have been outlined in Sections 4.8.3 and 4.11 below.

4.4.3 Traffic and Safety

Traffic count data for Patton Street was provided by Broken Hill City Council for 2016, and independent traffic counts undertaken in September 2022. This data was used to determine a baseline year 2024

daily traffic volume, with a +1% annual traffic growth added to the most recent survey. Traffic volumes are presented in Table 4.2 below.

Table 4.2: Traffic volumes for Patton Street

	2016 Daily Traffic Volume (BHCC)	2022 Daily Traffic Volume (Austraffic)	2024 Projected Daily Traffic Volume
	2117	2441	2490
%HV	8.2%	16.4%	16.4%

Assessed against the NHVR PBS Guidelines, the road meets the carriageway width requirements for Level 4 vehicles for urban roads. Road width design standards for urban roads are defined in Austroads Guide to Road Design Part 3 (2021). Lane widths of 3.5m should be provided as recommended in Austroads (Table 4.3 in the guide).

A review of published crash data (5 year period 2018 to 2022) by the Centre for Road Safety illustrates that two crashes occurred at the roundabout on Patton Street in the reported period. The crashes were a run off road incident which resulted in a non-casualty (towaway) and a collision (right) in the roundabout that resulted in a moderate injury.

4.5 Comstock Street

4.5.1 Function and Geometry

Comstock Street is a two lane two-way road under the care and control of Broken Hill City Council. It is currently posted as a 50km/hr speed limit at the north-western end, and transitions to a 40km/hr zone near the local traffic area (Comstock Street/Patton Street intersection). Comstock Street forms part of a heavy vehicle route through the southern Broken Hill township.

The Section of Comstock Street that forms part of the heavy vehicle route has approval for travel by Type (1) A-Double, Modular B-triple, B-triple and AB-triple vehicles.

The sealed width of Comstock Street was measured at approximately 15.2m, however no edge lines were present. A typical photo of Comstock Street has been provided below.

Figure 10: Comstock Street - typical cross section

4.5.2 Road condition

The condition of Comstock Street was in good condition, with new surfacing and intersection treatments undertaken recently.

4.5.3 Traffic and Safety

The most recent traffic count data available for Comstock Street was from 2016 provided by Broken Hill City Council. This data was used to determine a baseline year 2024 daily traffic volume, with a +1% annual traffic growth added to the most recent survey. Traffic volumes are presented in Table 4.3 below.

Table 4.3: Historical and projected traffic volumes for Comstock Street

2016 Daily Traffic Volume	2024 Projected Traffic Volume	%HV
562	609	14.1

Assessed against the NHVR PBS Guidelines, the road meets the carriageway width requirements for Level 4 vehicles for urban roads. Road width design standards for urban roads are defined in Austroads Guide to Road Design Part 3 (2021). Lane widths of 3.5m should be provided as recommended in Austroads (Table 4.3 in the guide).

A review of published crash data (5 year period 2018 to 2022) by the Centre for Road Safety illustrates that no crashes were reported on Comstock Street in the reported period.

4.6 Eyre Street

4.6.1 Function and Geometry

Eyre Street is a two lane two-way road under the care and control of Broken Hill City Council. It is currently posted as a 50km/hr speed limit at the south-western end, and transitions to a 60km/hr zone at the north-eastern end. Eyre Street forms part of a heavy vehicle route through the southern Broken Hill township.

The Section of Eyre Street that forms part of the heavy vehicle route has approval for travel by Type (1) A-Double, Modular B-triple, B-triple and AB-triple vehicles.

The sealed width of Eyre Street was measured at approximately 13.5m at the south-western end (50km/hr zone) with no edge lines. At the north-eastern end of Eyre Street, a sealed width of 9.8m was measured, with a 6.4m edge line to edge line width (3.2m lanes). A bike lane is located along the north-western side of the road where no kerb is present (i.e. north-eastern end of Eyre Street). Typical photos of Eyre Street have been provided below.

Figure 11: Eyre Street (south-west) - typical cross section

Figure 12: Eyre Street (north-east) - typical cross section

4.6.2 Road condition

Eyre Street was in reasonable condition, with some minor rutting and cracking observed in the older spray seal, however the south-western end of Eyre Street had recently been resealed. A sealed swale was also observed adjacent the road at the north-eastern end.

4.6.3 Traffic and Safety

Traffic count data for Eyre Street was provided by Broken Hill City Council for 2016, and independent traffic counts undertaken in September 2022. This data was used to determine a baseline year 2024 daily traffic volume, with a +1% annual traffic growth added to the most recent survey. Traffic volumes are presented in Table 4.4 below.

Table 4.4: Traffic volumes for Eyre Street

	2016 Daily Traffic Volume (BHCC)	2022 Daily Traffic Volume (Austraffic)	2024 Projected Daily Traffic Volume
	2274	2150	2194
%HV	7.4%	13.3%	13.3%

Assessed against the NHVR PBS Guidelines, the road at the south-western end (kerbed) meets the carriageway width requirements for Level 4 vehicles, however only meets the carriageway width requirements for Level 3 vehicles (Type 1 Road Trains) at the north-eastern end where no kerbing and the bike lane is present. It should be noted that if the bike lane was removed and lanes widened to 3.5m, the unkerbed section of Eyre Street would meet the width requirements for Level 4 vehicles. Road width design standards for urban roads are defined in Austroads Guide to Road Design Part 3 (2021). Lane widths of 3.5m should be provided as recommended in Austroads (Table 4.3 in the guide).

A review of published crash data (5 year period 2018 to 2022) by the Centre for Road Safety illustrates that 2 crashes occurred on Eyre Street on the proposed haul route. One of the crashes was a leaving parking incident that resulted in a serious injury, and the other a run off road incident that resulted in moderate injury.

4.7 Holten Drive

4.7.1 Function and Geometry

Holten Drive is a two lane two-way road under the care and control of Broken Hill City Council. It is currently posted as a 60km/hr speed limit at the south-western end, and transitions to a 50km/hr zone at the north-eastern end close to the intersection of Menindee Road. Holten Drive forms part of a heavy vehicle route through the southern Broken Hill township.

Holten Drive has approval for travel by Type (1) A-Double, Modular B-triple, B-triple and AB-triple vehicles.

The sealed width of Holten Drive was measured at 11.2m with the edge line to edge line width of 6.6m (3.3m lanes). A typical photo of Holten Drive has been provided below.

Figure 13: Holten Drive - typical cross section

4.7.2 Road condition

Holten Drive was in reasonable condition, with some minor rutting observed. It is expected that the underlying pavement is in adequate condition.

4.7.3 Traffic and Safety

Traffic count data for Holten Drive was obtained via independent traffic counts undertaken by Austraffic in September 2022. This data was used as a baseline year 2024 daily traffic volume, with a +1% annual traffic growth added to the most recent survey. Traffic volumes are presented in Table 4.5 below.

Table 4.5: Traffic volumes for Holten Drive

2022 Daily Traffic Volume (Austraffic)	2024 Projected Daily Traffic Volume	%HV
2633	2686	10.7

Assessed against the NHVR PBS Guidelines, the road meets the carriageway width requirements for Level 3 vehicles, predominately due to the bike lane observed alongside Holten Drive. If the bike lane was removed and traffic lanes widened to 3.5m, Holten Drive would meet the requirements for Level 4 vehicles based on the sealed width. Road width design standards for urban roads are defined in Austroads Guide to Road Design Part 3 (2021). Lane widths of 3.5m should be provided as recommended in Austroads (Table 4.3 in the guide).

A review of published crash data (5 year period 2018 to 2022) by the Centre for Road Safety illustrates that two crashes occurred on Holten Drive. Both crashes were at/near the intersection of Menindee Road. One of the crashes was a run off end of road that resulted in a non-casualty (towaway), with the other an overtaking incident, also resulting in a non-casualty (towaway).

4.8 Intersections

4.8.1 Silver City Highway / Anabranch Mail Road Junction

The sight distance at the Silver City Highway / Anabranch Mail Road intersection was assessed using Austroads Guide to Road Design Part 4A the Safe Intersection Sight Distance (SISD). For a posted speed limit of 110km/hr (assumed to be the operating speed) and based on the guidance presented in

Austroads and the RMS Supplement to Austroads. The minimum required SISD is 300m based on a 2.5 second driver reaction time.

On-site measurements indicate that this minimum sight distance for southbound traffic on the Silver City Highway (i.e. to the north of the intersection) is easily met with almost unrestricted visibility. For northbound traffic on the Silver City Highway, sight distances from the southern approach to the intersection are reduced due to the road geometry and some minor vegetation which limit the sight distance to 400m. This notwithstanding, the sight distances associated with this intersection are compliant with Austroads guidance and the RMS Supplements.

4.8.2 Anabranch Mail Road / Site Access Road Junction

The sight distance has been checked at the proposed Site Access Road junction with Anabranch Mail Road. The operating speed of the road is likely to be 80km/hr which equates to a SISD of 204m permitting a reaction time of 3.5 seconds and allowing for a lower coefficient of deceleration of 0.2 as recommended in the ARRB Unsealed Roads Best Practice Guide for Type 2 Road Trains. Measurements on site indicate that sight distance is achieved in both directions. However, it is noted that that there is a slight depression in the Anabranch Mail Road just north of the junction but has minimal impact on sight lines.

4.8.3 Patton Street Roundabout

The roundabout located on Patton Street is currently located on an existing heavy vehicle route in Broken Hill. The roundabout currently consists of partial concrete / partial asphalt pavement. Extensive cracking was observed in the pavement, with crack sealing provided. Roundabout signage is provided at each approach. The roundabout layout including throat widths can be seen in Figure 14 below.

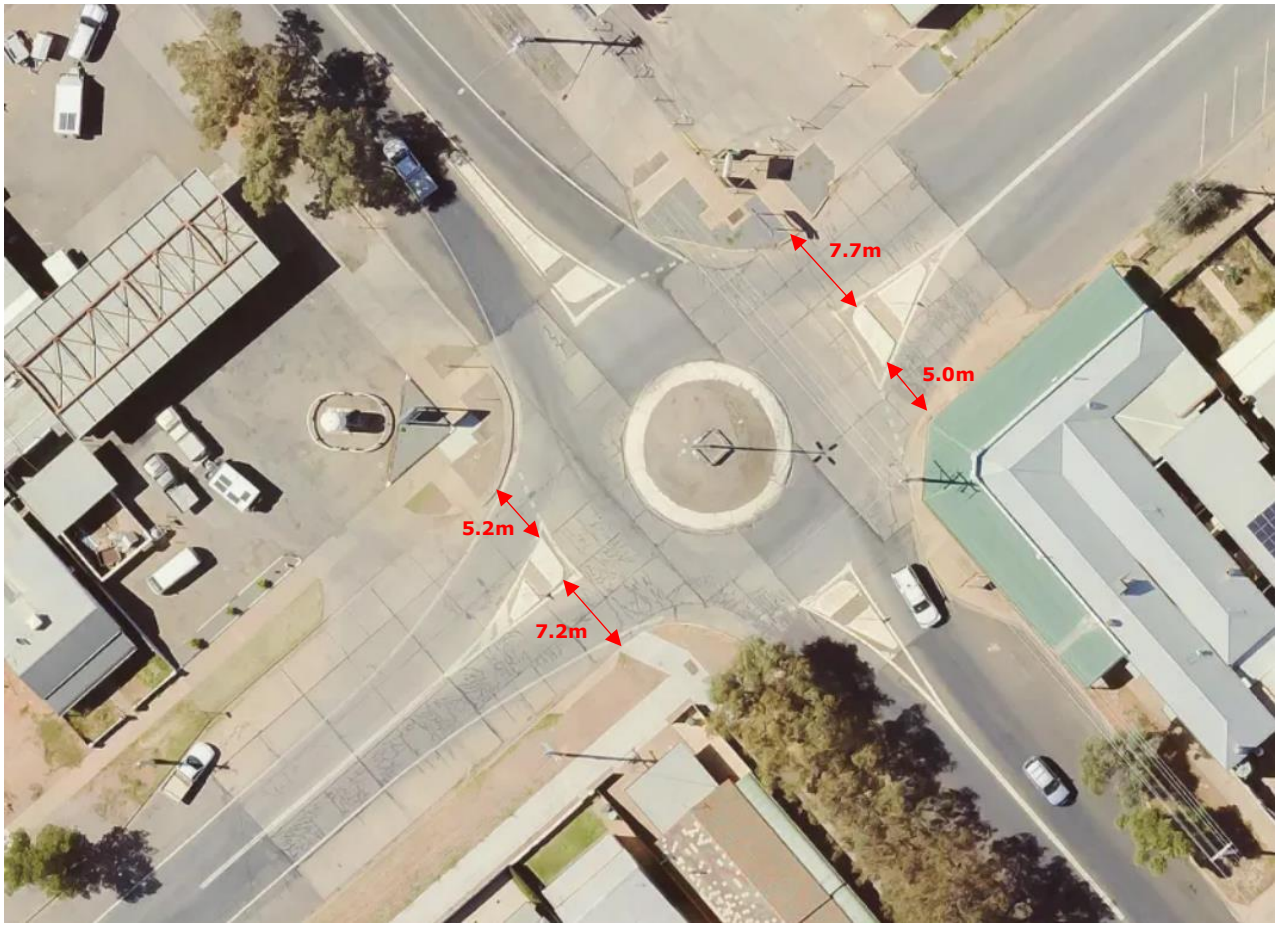


Figure 14: Patton Street roundabout layout

Approach sight distance (ASD) is satisfactory at each approach. Minimum gap sight distance (MGSD) has been checked using aerial imagery of the roundabout in accordance with Austroads Guide to Road Design Part 4B: Roundabouts. This can be seen in Figure 15 and 16 below.

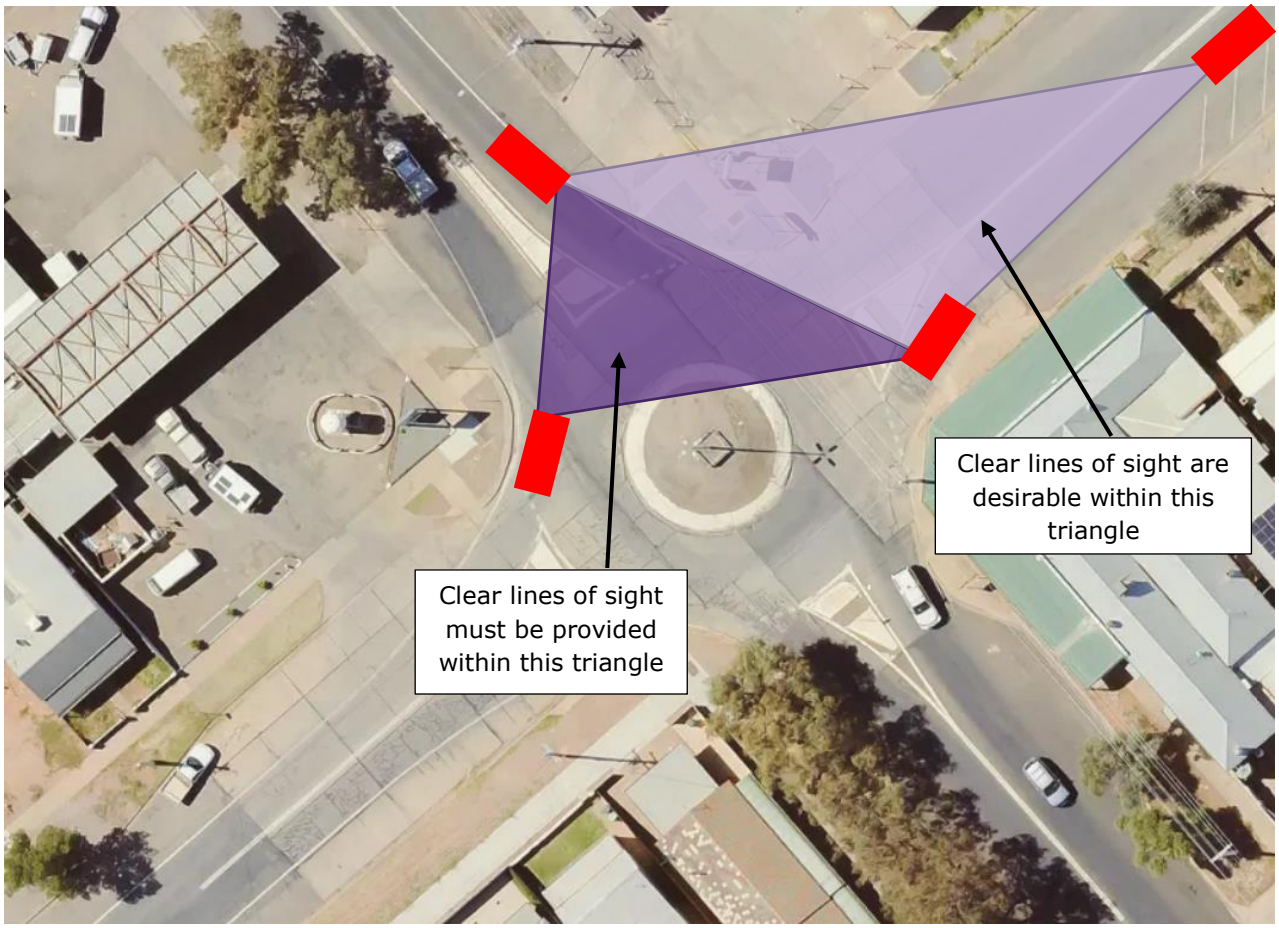


Figure 15: MGSD assessment (north-eastern approach)

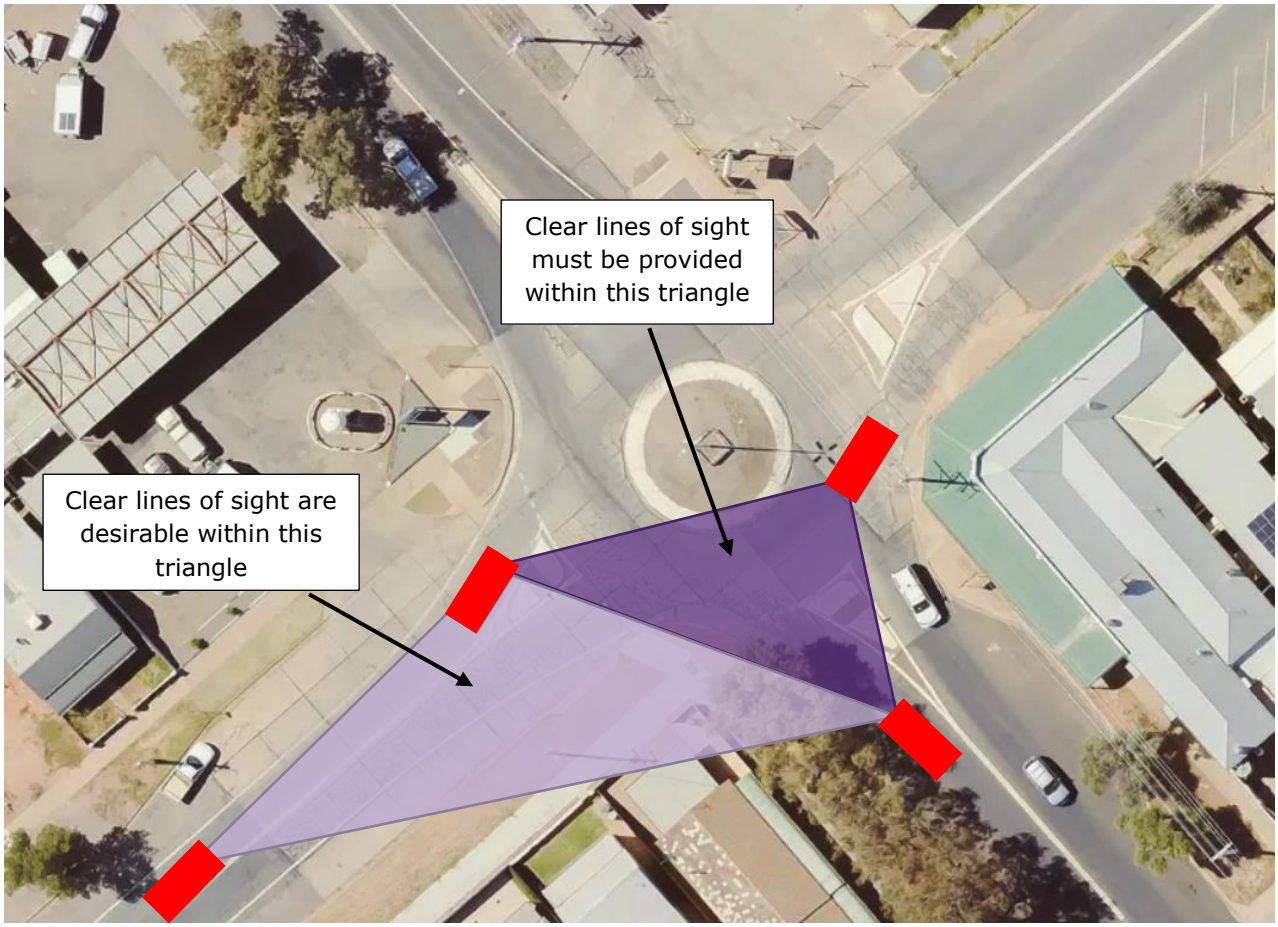


Figure 16: MGSD assessment (south-western approach)

Clear sight lines are provided where required in accordance with the Austroads Guide with no obstructions observed for the north-eastern approach and only momentary sight line obstructions (narrow tree trunks and a pole) from the south-western approach. Where clear sight lines are desirable, this area is mostly free of obstacles, however some minor signage may impact sight lines slightly at the north-eastern approach, with some trees and fences impacting desirable sight lines slightly at the south-western approach.

Figure 17: Sight distance (north-eastern approach, looking north-west)

Figure 18: Sight distance (south-western approach, looking south-east)

The current roundabout configuration is suitable for use by Type 2 Road Trains for the required movements in its current configuration. A turning path assessment has been undertaken confirming the adequacy of the roundabout. This can be seen in Appendix B.

4.8.4 Patton Street / Comstock Street Junction

The Patton Street / Comstock Street junction is currently located on a designated heavy vehicle route through Broken Hill with Patton Street having priority. It is also within a local traffic area with high pedestrian activity likely. The intersection currently consists of a concrete pavement. A give way sign and hold line were observed on Comstock Street. It was noted that the hold line on Comstock Street was approximately 2m back from the kerb line.

Sight distances were taken from Comstock Street to assess SISD for the intersection. Sight distances were taken 5m behind the hold line, and from 2m in front of the hold line. The SISD assessment for trucks has been presented in Table 4.6 below.

Table 4.6: Patton Street / Comstock Street junction sight distances

5m Back from Hold Line			2m In Front of Hold Line		
Required	Observed (south-west)	Observed (north-east)	Required	Observed (south-west)	Observed (north-east)
97m	50m	85m	97m	220m	>280m

Observed sight distances are not sufficient for the current hold line configuration. It should be noted that sight distances are limited by parked cars on Patton Street. It is expected that if the hold line was moved forwards, sight distances would be sufficient at this intersection.

Figure 19: Sight distance (north-east)

Figure 20: Sight distance (south-west)

The current intersection configuration is not suitable for use by Type 2 Road Trains in its current configuration. A concept design has been completed at the intersection where pavement widening has been proposed to allow turn movements of the design vehicle to be undertaken without crossing existing road centrelines. A turn path assessment has been completed at the intersection to confirm the adequacy of the proposed concept design. This can be seen in Appendix B.

4.8.5 Comstock Street / Eyre Street Junction

The Comstock Street / Eyre Street junction is currently located on a designated heavy vehicle route through Broken Hill with Eyre Street having priority. The intersection currently consists of a concrete pavement. No give way sign/stop sign or hold line was present on Comstock Street at the time of inspection.

Sight distances were taken from Comstock Street to assess SISD for the intersection. Sight distances were taken from approximately in line with the kerb as no hold line was present. The SISD assessment for trucks has been presented in Table 4.7 below.

Table 4.7: Comstock Street / Eyre Street junction sight distances

Required	Observed (south-west)	Observed (north-east)
124m	220m	70m

Sight distance observed to the south-west was well over what is required in accordance with the Austroads Guide, however sight distance to the north-east was not sufficient. It should be noted that sight distance to the north-east was limited by a parked car on Eyre Street and would have been far greater than required if no cars were parked on the side of the road and requires vehicles to pull into the carriageway to observe traffic approaching.

Figure 21: Sight distance (north-east)

Figure 22: Sight distance (south-west)

The intersection is not suitable for use by Type 2 Road Trains in its current configuration. A concept design has been completed at the intersection where pavement widening has been proposed to allow turn movements of the design vehicle to be undertaken without crossing road centrelines. A turn path assessment has been completed at the intersection to confirm the adequacy of the proposed concept design. This can be seen in Appendix B.

4.8.6 Holten Drive / Rail Facility Entrance Junction

There are two existing entrances into the Rail Facility located off Holten Drive. No formalised signage or line marking is present at these intersections. A bike lane is currently in place on Holten Drive on the same side of the road that the entrances to the Rail Facility are present. These two entrances have been shown below in Figure 23.

Figure 23: Existing Rail Facility entrances off Holten Drive

Sight distances were taken from both Rail Facility entrances to assess SISD for the proposed intersection. Sight distances were taken from approximately 7m back from the edge line of Holten Drive. The SISD assessment for trucks has been presented in Table 4.8.

Table 4.8: Holten Drive / Rail Facility junction sight distances

Entrance 1 (~100m from Menindee Road)			Entrance 2 (~150m from Menindee Road)		
Required	Observed (south-west)	Observed (north-east)	Required	Observed (south-west)	Observed (north-east)
124m	424m	112m	124m	350m	160m

Sight distances observed from entrance 2 were in accordance with the Austroads Guide, however sight distance to the south-west from entrance 1 was 12m short of the recommendations in the Austroads Guide due to the presence of the intersection with Menindee Road.

Figure 24: Entrance 1 sight distance (north-east)

Figure 25: Entrance 1 sight distance (south-west)

Figure 26: Entrance 2 sight distance (north-east)

Figure 27: Entrance 2 sight distance (south-west)

Based on existing sight distances at the two intersections, it is proposed that entrance 2 be utilised for access to the Rail Facility.

The entrance is not suitable for use by Type 2 Road Trains in its current configuration. A concept design has been completed at the intersection where a new all weather sealed driveway has been proposed to allow turn movements of the design vehicle to be undertaken. A turn path assessment has been completed to ensure the adequacy of the proposed concept design. This can be seen in Appendix B.

4.9 Existing Constraints

Whilst the traffic volumes for the Silver City Highway and Anabranch Mail Road are currently low and any increased traffic volumes on these roads as a consequence of the development of the Project are not expected to impact on the operation of the roads in terms of delays, some key deficiencies /

constraints of the existing road network have been identified in respect to the Austroads Guidelines, ARRB Unsealed Roads Best Practice Guide and the NHVR PBS Guidelines and are detailed below:

- The Silver City Highway meets the minimum widths required by the PBS Guidelines for a Level 4 vehicle, however falls short on sealed shoulder and lane width as defined by Austroads.
- The road and travel width of Anabranch Mail Road generally meets the requirements to support use by Level 3 vehicles (Type 1 Road Trains) as stipulated by the NHVR PBS Guidelines although some sections may need localised widening. Level 4 vehicles would not be suitable for use on this road without road widening. The use of the road by larger vehicles is likely to be constrained by the Wentworth Shire requirements.
- There are several existing grids along Anabranch Mail Road, with all currently single lane width. Wentworth Shire require these be upgraded and widened to enable two-way traffic to pass.
- A connection between Anabranch Mail Road and the Mine Site will be required. The length of the connection is anticipated to be approximately 35 kilometres.
- Eyre Street only meets the minimum widths required by the NHVR PBS Guidelines for a Level 3 vehicle at the north-eastern, unkerbed end of the alignment. Lane widths do not meet the requirements outlined in Austroads Guide to Road Design Part 3: Geometric Design (Table 4.3) at the same location. At the south-western end of the alignment (kerbed), the road meets the minimum widths required by the NHVR PBS Guidelines for Level 4 vehicles, and meets the lane width requirements from the Austroads Guide.
- Holten Drive only meets the minimum widths required by the NHVR PBS Guidelines for a Level 3 vehicle and does not currently meet the lane width requirements outlined in Austroads Guide to Road Design Part 3: Geometric Design (Table 4.3). It should be noted that seal widths are sufficient, however lane markings have been compromised to accommodate a bike lane.
- Required sight distance is achieved from both approaches at the Patton Street roundabout, however desirable sight distance is not achieved as per Austroads Guide to Road Design Part 4B: Roundabouts.
- Required sight distance is not observed at the Patton Street / Comstock Street intersection in either direction. The sight distance at this location is limited by the hold line being situated approximately 2m back from the kerb line, and car parking (especially angled parking to the south-west). Sight distance may be suitable if adjustment of the hold line and car parking is undertaken.
- Required sight distance is achieved at the Comstock Street / Eyre Street intersection to the south-west however is not achieved to the north-east. Sight distance to the north-east is limited by carparking adjacent to the road.
- Required sight distance is not achieved at the Holten Drive / Rail Facility entrance 1 to the north-east. This sight distance is limited by the intersection of Holten Drive with Menindee Road. It is noted that this entrance is not proposed to be used.
- Existing intersection geometries at the Patton Street / Comstock Street, Comstock Street / Eyre Street, and Holten Drive / Rail Facility intersections are insufficient to accommodate the turn movements for the design vehicle. Turn path assessments and concept designs for the upgraded intersections have been completed and can be found in Appendix B.

4.10 Warrants for Intersection Improvements

Intersection upgrade warrants are assessed from the combination of the peak hourly through and turning traffic movements which occur at the intersection. This will determine the need for turning lanes in accordance with current Austroads Guide to Traffic Management Part 6.

4.10.1 Silver City Highway / Anabranch Mail Road Junction

As there are separate design charts for roads with either 100 km/hr or higher design speeds or design speeds for lower than 100km/hr. The design speed for the intersection of the Silver City Highway and Anabranch Mail Road will be 100km/hr or greater. For this design speed, additional left or right turn traffic lanes are only required where the combination of the major road peak hourly traffic volume and the minor road traffic exceeds the curve 1 as shown in the chart in Figure 28.

The current year 2024 baseline traffic volumes for Silver City Highway both north and south of the site (Table 4.1) have been determined to be between 113 and 437 daily vehicles. For the purpose of this assessment 437 daily vehicles has been assumed at the Silver City Highway / Anabranch Mail Road

intersection. All data relating to the independent traffic counts undertaken on the Silver City Highway in September 2022 have been adopted with +1% annual growth rates applied for the traffic on Silver City Highway at the Anabranch Mail Road intersection. 46 vehicles per hour (two-way) in the peak hour period has been adopted for the Silver City Highway through volumes as per the independent traffic count data. Turning traffic volumes have been determined based on anticipated Mine Site traffic and existing expected peak hourly Anabranch Mail Road traffic.

The existing intersection of Silver City Highway and Anabranch Mail Road therefore does not warrant additional formalised turn lanes, however there is currently no provision of a BAR or BAL treatment at the intersection and is the minimum that should be provided at an intersection based on Austroads requirements.

4.10.2 Anabranch Mail Road / Site Access Road Junction

An assessment was undertaken for the proposed intersection at Anabranch Mail Road and the Site Access Road utilising estimated existing Anabranch Mail Road volumes and anticipated Mine Site traffic volumes. The design chart for roads with a design speed of 100km/hr or greater (Figure 28) has been used from the Austroads Guide to determine the likely turn treatment at this intersection.

An estimated 10 vehicles in the peak hour has been assumed for existing Anabranch Mail Road traffic, which has been adopted for the left turning traffic from Anabranch Mail Road to continue on Anabranch Mail Road. Through traffic from Anabranch Mail Road to continue on the Site Access Road has been based on anticipated peak hour Mine Site traffic. It is noted that no/negligible traffic is expected to turn right onto Anabranch Mail Road from the Site Access Road.

Based on this information it has been determined that a BAL turn treatment is required at the proposed intersection to accommodate traffic turning from Anabranch Mail Road to continue on Anabranch Mail Road in accordance with Austroads Guide to Traffic Management Part 6. Although no/negligible traffic is anticipated to turn right onto Anabranch Mail Road from the Site Access Road, it may be desirable to provide some minor pavement widening to accommodate a BAR turn treatment at this location.

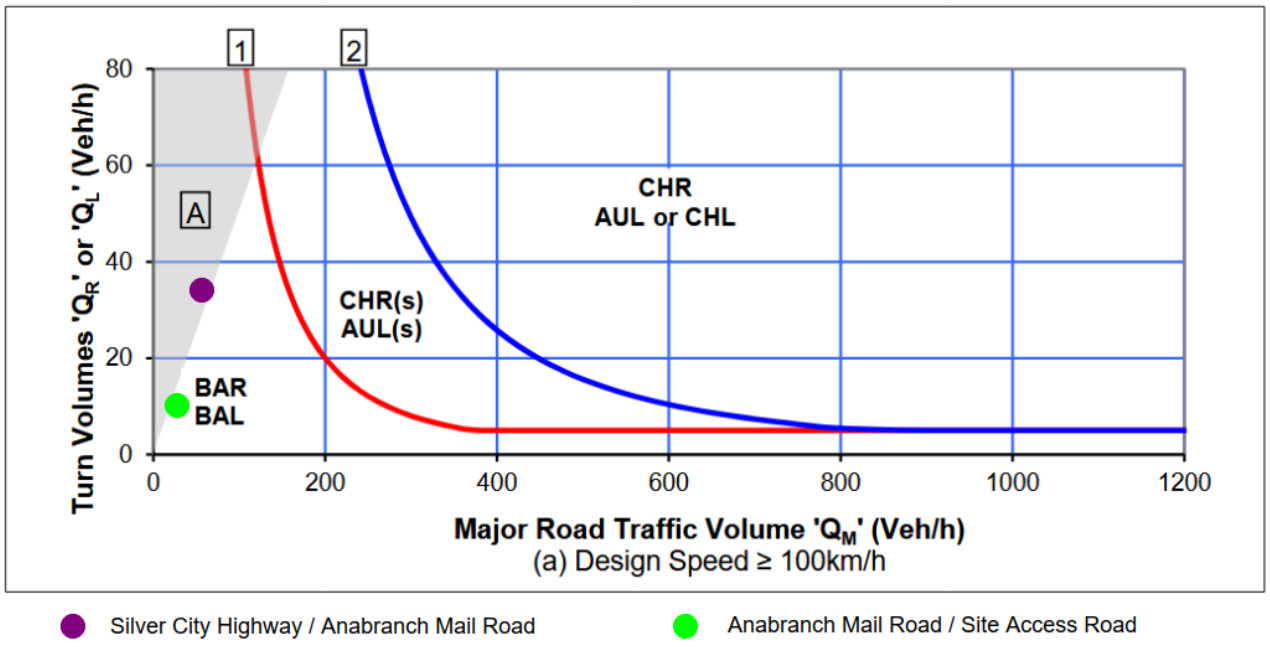


Figure 28: Warrants for additional turn lanes at intersections on major roads

4.10.3 Patton Street / Comstock Street Junction

An assessment was undertaken for the intersection at Patton Street and Comstock Street utilising the independent traffic count data undertaken in September 2022 on Patton Street. The design chart for roads with a design speed of less than 70km/hr (Figure 29) has been used from the Austroads Guide to determine the likely turn treatment at this intersection.

2024 baseline traffic volumes for Patton Street have been determined as 2490 daily vehicles, with approximately 237 vehicles per hour (two-way) in the peak hour period. Peak hour volumes on Comstock Street have been determined as approximately 82 vehicles per hour (two-way). It has been assumed that this is split into 50% travelling in each direction for the purpose of the turn treatment assessment.

Based on this information it has been determined that a BAL turn treatment is required on Patton Street to turn onto Comstock Street in accordance with Austroads Guide to Traffic Management Part 6. Based on the current seal widths, sufficient space is provided on the approach to the intersection, however some pavement widening on the corner is required to allow the movement for Type 2 Road Trains (see Appendix B).

4.10.4 Comstock Street / Eyre Street Junction

An assessment was undertaken for the intersection at Comstock Street and Eyre Street utilising the independent traffic count data undertaken in September 2022 on Eyre Street. The design chart for roads with a design speed of less than 70km/hr (Figure 29) has been used from the Austroads Guide to determine the likely turn treatment at this intersection.

2024 baseline traffic volumes for Eyre Street have been determined as 2194 daily vehicles, with approximately 228 vehicles per hour (two-way) in the peak hour period. Peak hour volumes on Comstock Street have been determined as approximately 82 vehicles per hour (two-way). It has been assumed that this is split into 50% travelling in each direction for the purpose of the turn treatment assessment.

Based on this information it has been determined that a BAL turn treatment is required on Eyre Street to turn onto Comstock Street. Based on the current seal widths, sufficient space is provided on the approach to the intersection, however some pavement widening on the corner is required to allow the movement for Type 2 Road Trains (see Appendix B).

4.10.5 Holten Drive / Rail Facility Entrance Junction

An assessment was undertaken for the intersection at Holten Drive and the proposed Rail Facility entrance utilising the independent traffic count data undertaken in September 2022 on Holten Drive. The design chart for roads with a design speed of less than 70km/hr (Figure 29) has been used from the Austroads Guide to determine the likely turn treatment at this intersection.

2024 baseline traffic volumes for Holten Drive have been determined as 2686 daily vehicles, with approximately 251 vehicles per hour (two-way) in the peak hour period. Peak hour volumes turning into the Rail Facility have been estimated to be approximately 5 vehicles per hour.

Based on this information it has been determined that a BAR turn treatment is required on Holten Drive to turn into the Rail Facility in accordance with Austroads Guide to Traffic Management Part 6, however additional pavement widening is not proposed due to existing seal widths and infrequent access to the Rail Facility.

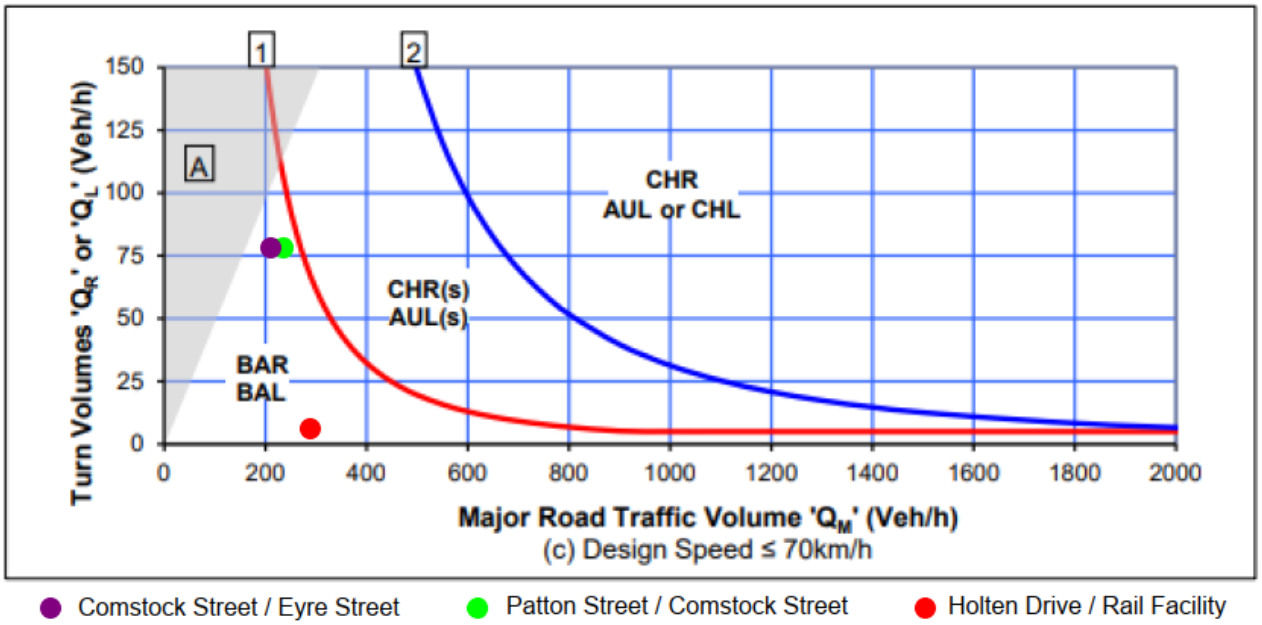


Figure 29: Warrants for additional turn lanes on major roads

It is noted that the provision of specific turn lane treatments to suit large vehicles (e.g. Quad configurations) may prove challenging in an urban environment due to existing constraints.

4.11 Required Improvements to the Road Network

Based on the above assessment the following infrastructure improvements would be required to facilitate vehicle access to the Rail Facility and along the alignment of the haul route through Broken Hill to the Rail Facility.

4.11.1 Silver City Highway/Anabranch Mail Road Junction

- Widening of the junction to accommodate the design vehicle.
- Provision of basic right turn treatment (BAR) for the right turn entry into Anabranch Mail Road from the Silver City Highway suitable for the design vehicle.
- Provision of basic left turn treatment (BAL) for left turn entry from Silver City Highway for vehicles accessing the site from the south.
- Introduce a sealed approach to the Silver City Highway on Anabranch Mail Road for minimum 100 metres or length of the design vehicle to limit drag of loose material onto the Silver City Highway.

4.11.2 Anabranch Mail Road / Site Access Road Junction

- Re-alignment of Anabranch Mail Road to form T-junction with new Site Access Road.
- Provision of basic left (BAL) for the left turn from Anabranch Mail Road to continue on Anabranch Mail Road.

4.11.3 Patton Street / Comstock Street Junction

- Alterations (likely line marking adjustment) to existing intersection to improve intersection sight distance.
- Intersection upgrades as per concept designs (Appendix B) to allow the intersection to accommodate the design vehicle.

4.11.4 Comstock Street / Eyre Street Junction

- Alterations (likely line marking adjustment) to existing intersection to improve intersection sight distance.
- Intersection upgrades as per concept designs (Appendix B) to allow the intersection to accommodate the design vehicle.

4.11.5 Holten Drive / Rail Facility Junction

- Intersection upgrades as per concept designs (Appendix B) to allow the intersection to accommodate the design vehicle.

4.11.6 Anabranch Mail Road

- Localised widening where carriageway width falls below minimum.
- Improvements to formal delineation along the alignment by way of installing guide posts.
- Signing of sub-standard sections of road including curves and crests.
- Widening of existing grids to facilitate two-way traffic.
- Potential re-sheeting of the road – to be negotiated with Wentworth Shire.
- Re-alignment at proposed new intersection with the Site Access Road.

Level 4 vehicles (additional requirements over and above Level 3 vehicles)

- Widening where carriageway width falls below minimum along much of alignment.
- Other requirements from Wentworth Shire TBC.

4.11.7 Proposed Site Access Road

- Construction of new road to accommodate vehicular access to the Mine Site.

4.11.8 Eyre Street

- Lane width widening where lanes fall below minimum.

4.11.9 Holten Drive

- Lane width widening where lanes fall below minimum.

As indicated by the NHVR, Level 4 access is unlikely to be gazetted, and would require an ongoing permit to operate. If Level 3 vehicles are adopted, then the route is already gazetted for use by Type 1 Road Trains (A-Doubles and Modular B-triples) theoretically the route would not require improvements other than connections to the Mine Site, Mine Camp, and Rail Facility.

5 Traffic and Parking Demands for the Proposal

5.1 Construction and Other Traffic Generating Activities

Construction of the Project is expected to take up to two years from the commencement of site establishment activities. Construction activities are expected to occur 7 days a week, 24 hours a day. During the construction period an average operational workforce of up to 480 persons at peak construction periods will be required. The expected order of construction activities is set out below. These are indicative and are likely to overlap.

- Construction of Silver City Highway and Anabranch Mail Road intersection upgrades.
- Upgrade of Anabranch Mail Road and construction of Mine Site Access Road.
- Establishment of Construction Camp and infrastructure required for construction.
- Initial earthworks and overburden prestrip.
- Construction of the 66kV transmission line.
- Importation and assembly of dredges, Wet Concentration Plant and Rare Earth Concentrate Plant – mostly prefabricated and containerised.
- Upgrade of roads and intersections within Broken Hill.

During the mining, processing, transportation and maintenance operations of the Project, the mine is expected to operate 7 days per week, 24 hours a day. Heavy Mineral Concentrate transportation within the Broken Hill LGA area is expected to occur between the hours of 7am and 10pm, 7 days per week. The operational phase of the mine is anticipated to last for approximately 17 years. An operational workforce of 240 persons will be required during the operations of the mine.

The rehabilitation phase will occur gradually over the life of the project and is expected to form part of daily mining operations from approximately Year 2 of the mine. The majority of movements associated with the rehabilitation phase are expected to remain on-site, with no transport of waste material to occur on the public road network. Decommissioning and rehabilitation activities would occur for approximately 7 years following the conclusion of mine operations and would require an operational workforce of up to 40 persons.

5.2 Site Access and Parking

Access is proposed via the Silver City Highway, Anabranch Mail Road and the proposed Site Access Road. The haul route along Anabranch Mail Road and the Site Access Road from the Silver City Highway will be approximately 35km long. Upgrades to the existing road network will be undertaken and a new Site Access Road will be constructed to facilitate the additional traffic associated with the mine.

Both TfNSW and Councils will be consulted further in relation to the detailed design requirements for the proposed upgrades on the respective road network prior to construction.

Access to the Mine Site will be via Anabranch Mail Road and a new Site Access Road, which will be upgraded where required/constructed to achieve an all-weather road with minimum widths sufficient to allow two-way traffic along the entire alignment of Anabranch Mail Road and the Site Access Road.

Separate access and parking for the Offices and Administration and Mine Camp will be provided to cater for the peak parking demand. This includes light vehicle parking areas and truck and bus parking areas where required. The proposed site layout can be seen below.

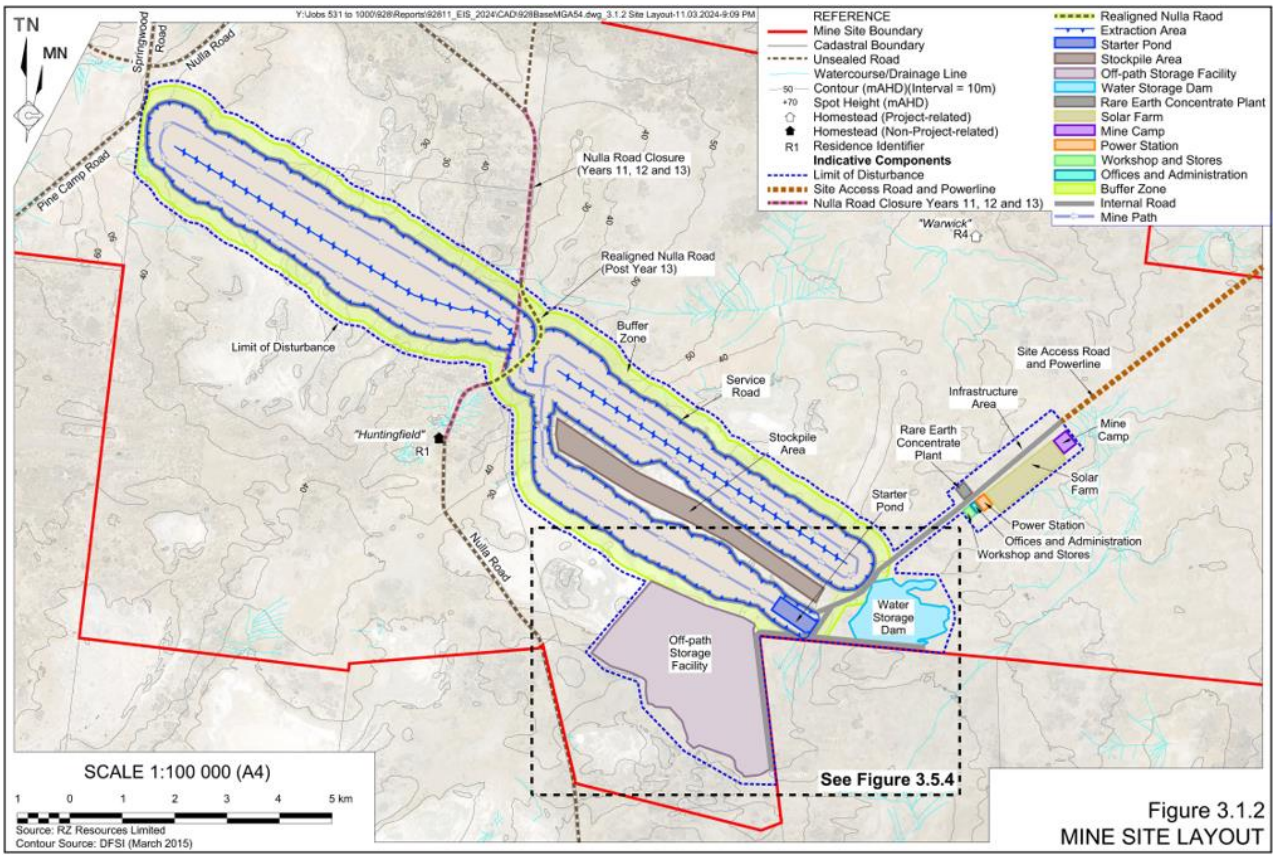


Figure 30: Proposed Mine Site layout

Access and parking for the Workshop and Stores will be provided to cater for the peak parking demand for these areas. This included light vehicle parking areas and a mining plant parking area.

Access to the Rail Facility will be via an existing access road, which will be upgraded to an all-weather road with minimum widths sufficient to allow two-way traffic of the largest design vehicle (i.e. BAB-Quads). It is expected that internal Rail Facility roads will be one-way with road width designed to accommodate all appropriate movements.

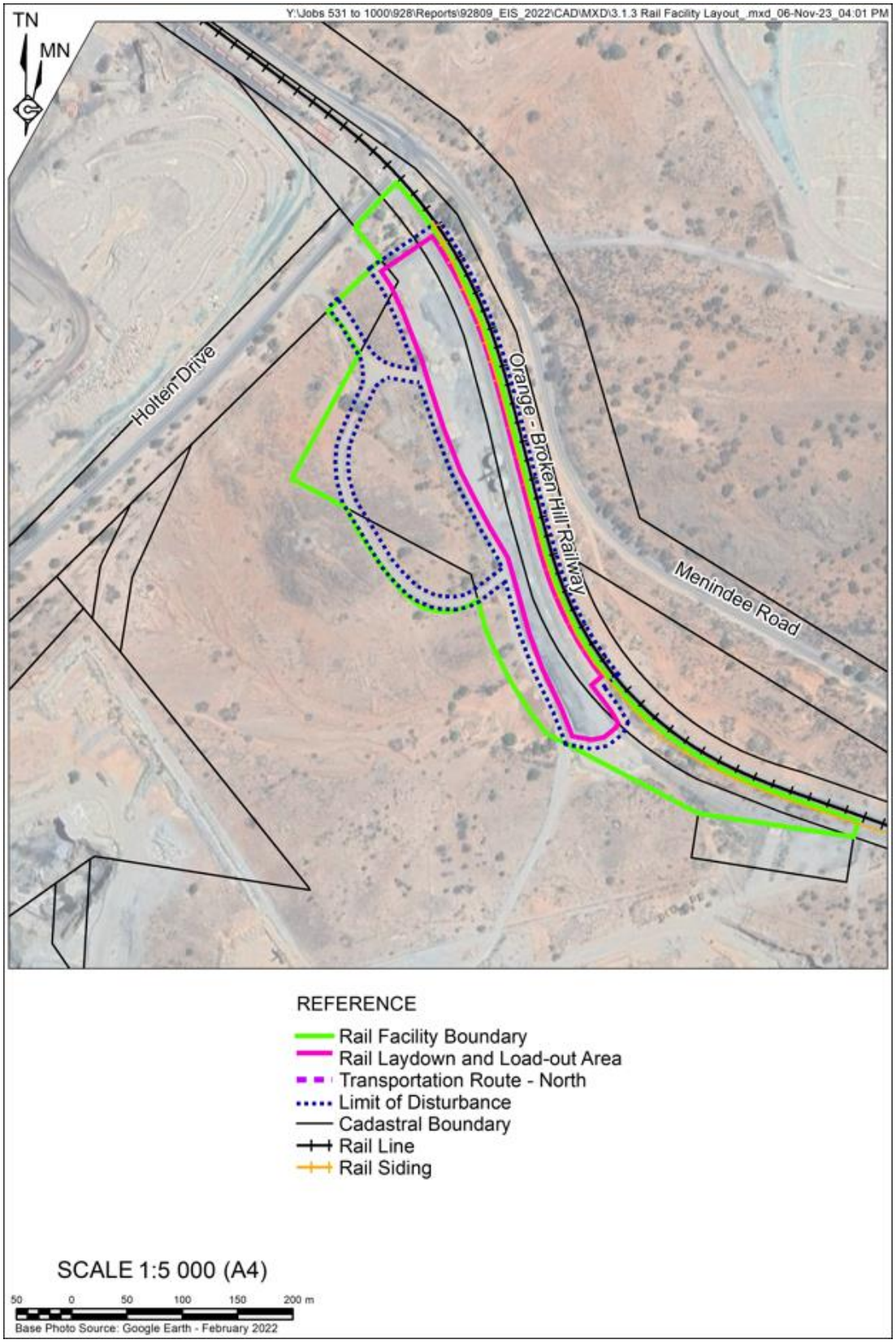


Figure 31: Proposed Rail Facility Layout

Parking for the Rail Facility workforce will be provided on-site on gravel surfaced parking areas with appropriate dimensions to accommodate the anticipated peak parking demand of eight light vehicles and provision for three BAB-Quads to enter, unload and exit per hour. The proposed layout of the Rail Facility is subject to further design.

5.3 Traffic Generation

Expected traffic volumes generated by the Project during construction, operations and rehabilitation have been provided by RW Corkery.

It has been specified that a variety of vehicles types will access the Mine Site with the largest to be BAB-Quad road trains (PBS Level 4 vehicle) used for transport of the heavy mineral concentrate (HMC) to the Rail Facility off Holten Drive in Broken Hill. It is noted that the Proponent will adopt Type 1 Road Trains (AB-Triples) (PBS Level 3 vehicle) to haul the HMC until appropriate permits are obtained to utilise the larger trucks. This assessment has been completed based on BAB-Quad road trains being utilised for the transport of HMC to account for the worst-case scenario. The typical vehicle types to access the Mine Site will include:

- Light vehicles for various operations.
- Bus for transport of workers.
- B-double trucks or similar for deliveries and dispatch of various goods.
- 3-axle rigid trucks or similar for collection of waste.
- BAB-quad / AB-triple road trains for transport of HMC off site.

During construction and at the commencement and completion of mining or processing, a limited number of low loaders transporting mobile plant and materials will access the Mine Site.

It is proposed to use buses to transport workers to and from the Mine Site to reduce the number of light vehicles travelling to and from the site. Additional buses may also be utilised during peak periods of construction, to reduce this even further.

For the purposes of the assessment, the following assumptions have been made about the construction and operations based on current information available:

- 100% of the expected workforce would reside in the Mine Camp, with the exception of the initial crew required to establish the Camp during the first weeks of the Project.
- Construction activities associated with hauling road building materials (i.e. fill and gravel) and water has been assumed to be sourced locally.

The total vehicle movements specified by RW Corkery for each phase are as follows:

- Average construction – this period would typically be the site establishment stage. There will be an **average** of:
    - six (6) daily truck deliveries (12 movements) to the Mine Site from the south via the Silver City Highway, Anabranch Mail Road the Site Access Road.
    - 21 light vehicle visits (42 movements) to the Mine Site with:
        - 90% from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road; and
        - 10% from the north via the Silver City Highway, Anabranch Mail Road and the Site Access Road .
    - one (1) bus (2 movements) to the Mine Site from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road for transport of workers at the beginning and end of their swings.
    - A total of 28 daily trips (56 movements in total).

- Peak construction – this period would typically occur during the early and mid-stages of construction. There will be a **peak** of:
    - 11 daily truck deliveries (22 movements) to the Mine Site via the Silver City Highway, Anabranch Mail Road and the Site Access Road.
    - 42 light vehicle visits (84 movements) to the Mine Site with:
        - 90% from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road; and
        - 10% from the north via the Silver City Highway, Anabranch Mail Road and the Site Access Road.
    - two (2) buses (4 movements) to the Mine Site from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road for transport of workers at the beginning and end of their swings.
    - A total of 55 daily trips (110 movements in total).
- Typical average mining operation – there will be an **average** of:
    - ten (10) BAB-Quad Road Train trips (20 movements) per day, or in the event that required approvals are not in place, 13 AB-Triple Road Train trips per day (26 movements) to the Mine Site to/from the north via the Silver City Highway, Anabranch Mail Road and the Site Access Road,
    - four (4) truck deliveries (8 movements) to the Mine Site via the Silver City Highway, Anabranch Mail Road and the Site Access Road.
    - 28 light vehicles (56 movements) to the Mine Site with
        - 90% from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road; and
        - 10% from the north via the Silver City Highway, Anabranch Mail Road and the Site Access Road.
    - one (1) bus (2 movements) to the Mine Site from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road for transport of workers at the beginning and end of their swings.
    - A total of 43 daily trips (86 movements in total).
- Typical peak mining operation – there will be a **peak** of:
    - 12 BAB-Quad Road Train trips (24 movements) per day, or in the event that required approvals are not in place, 16 AB-Triple Road Train trips per day (32 movements) to the Mine Site to/from the north via the Silver City Highway, Anabranch Mail Road and the Site Access Road,
    - seven (7) truck deliveries (14 movements) to the Mine Site via the Silver City Highway, Anabranch Mail Road and the Site Access Road.
    - 42 light vehicles (84 movements) to the Mine Site with
        - 90% from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road; and
        - 10% from the north via the Silver City Highway, Anabranch Mail Road and the Site Access Road.
    - two (2) buses (4 movements) to the Mine Site from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road for transport of workers at the beginning and end of their swings.
    - A total of 63 daily trips (126 movements in total).
- During rehabilitation, traffic generation will be significantly reduced, with a total of between 5 trips (10 Movements) and 11 trips (22 Movements) per day from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road.
- Typical average Rail Facility – there will be an **average** of:
    - ten (10) BAB-Quad Road Train trips (20 movements) per day, or in the event that required approvals are not in place, 13 AB-Triple Road Train trips (26 movements) per day to the Rail

Facility from the south via the Site Access Road, Anabranch Mail Road, Silver City Highway, Wentworth Road, Patton Street, Comstock Street, Eyre Street and Holten Drive.
    - four (4) light vehicles (8 movements) to the Rail Facility with
        - 40% from the south via Holten Drive; and
        - 60% from the north via Holten Drive.
- Typical peak Rail Facility – there will be a **peak** of:
    - 12 BAB-Quad Road Train trips (24 movements) per day, or in the event that required approvals are not in place, 16 AB-Triple Road Trains per day (32 movements) to the Rail Facility from the south via the Site Access Road, Anabranch Mail Road, Silver City Highway, Wentworth Road, Patton Street, Comstock Street, Eyre Street and Holten Drive.
    - Eight (8) light vehicles (16 movements) to the Rail Facility with
        - 40% from the south via Holten Drive; and
        - 60% from the north via Holten Drive.

Table 5.1: Additional daily and hourly traffic volumes generated by the Project

Project Phase	Construction				Operations				Rehabilitation	
	Average (daily trips in/out)	**Average (peak hour traffic in/out)**	**Peak (daily trips in/out)**	**Peak (peak hour traffic in/out)**	**Average (daily trips in/out)**	**Average (peak hour traffic in/out)**	**Peak (daily trips in/out)**	**Peak (peak hour traffic in/out)**	**Average (daily trips in/out)**	**Peak (daily trips in/out)**
Light vehicles for various operations	21	6	42	11	28	7	42	11	2	8
Bus for transport of workers	1	1	2	1	1	1	2	1	0	0
B-double or Semi-trailer trucks or similar for deliveries	6	2	11	3	4	1	7	2	3	3
AB-Triple road trains for transport of HMC off site (in absence of approval to use BAB-Quad road trains)	0	0	0	0	13	3	16	3	0	0
BAB-Quad road trains for transport of HMC off site	0	0	0	0	10	3	12	3	0	0
Total trips	28	9	55	15	43 or 46	12	63 or 66	17	5	11
Total site traffic movements *	**56**	**18**	**110**	**30**	**86 or 92**	**24**	**126 or 132**	**34**	**10**	**22**

The daily traffic will be the greatest during peak operation stage, with approximately 126 daily vehicle movements including up to 12 BAB-Quad Road Trains transporting HMC product. In the absence of approval to use BAB-Quad Road Trains, peak daily traffic will be 132 vehicle movements including up to 16 AB-Triple Road Trains transporting HMC product. Under either scenario, up to 34 peak hourly vehicle movements will occur. This consists of 22 light vehicles and 12 heavy vehicle movements during both the morning and afternoon peak hour traffic periods.

For the overall construction period, there will be on average 56 daily vehicle movements, including up to 18 peak hour vehicles during the morning and afternoon peak hour traffic periods.

During operations of the mine, the average overall traffic is expected to be slightly higher than the average construction including 86 daily vehicle movements, including 10 BAB-Quad Road / AB-Triple Trains transporting HMC product per day. In absence of approval to use BAB-Quad Road Trains, average daily traffic will be 92 vehicle movements including up to 13 AB-Triple Road Trains transporting HMC product. Under either scenario, up to 24 peak hour vehicle movements during the morning and afternoon peak hour traffic periods.

During the rehabilitation years of the mine, the daily traffic generation will be less than half of the average operations of the mine, with mainly on-site rehabilitation occurring during this period.

5.4 Traffic Distribution

The proposed transport routes for the Project, including workforce, heavy vehicle traffic and construction deliveries are as follows:

During the construction period for light vehicle and heavy vehicle traffic:

- 90% of traffic will be travelling to and from the south via the Silver City Highway, Anabranch Mail Road and the Site Access Road; and
- 10% of traffic will be travelling to and from the north via the Silver City Highway, Anabranch Mail Road and the Site Access Road (to account for the odd delivery and personnel that may originate in Broken Hill).

During the mining operations period:

- All HMC product will be transported directly to the Rail Facility off Holten Drive in Broken Hill via the Site Access Road, Anabranch Mail Road, Silver City Highway, Wentworth Road, Patton Street, Comstock Street, Eyre Street and Holten Drive (via BAB-quad Road Trains once approved, or AB-Triple Road Trains);
- 90% of all other light vehicle and heavy vehicle traffic will be travelling to and from the south from locations and equipment suppliers in Wentworth, Victoria and/or South Australia travelling via the Silver City Highway, Anabranch Mail Road and the Site Access Road;
- 10% of all other light vehicle and heavy vehicle traffic will be travelling to and from the north from locations and equipment suppliers in Broken Hill, NSW, also travelling via Silver City Highway, Anabranch Mail Road and the Site Access Road.

The majority of the generated car and truck traffic during the construction period will be travelling to and from the south via Silver City Highway, Anabranch Mail Road and the Site Access Road. Light vehicle traffic would mainly be travelling to and from the direction of Wentworth/Mildura area, with Wentworth the closest regional town to the Mine Site, and Mildura a major population centre in the region. Significant proportions of the truck traffic are likely to be travelling further, potentially to and from ports in Melbourne or Adelaide via the Calder and Sturt Highways respectively.

5.5 Other Developments in the Locality

Other significant proposed and approved projects in proximity to the site, and how they have been considered in this assessment are presented in Table 5.2.

Table 5.2: Other developments in the locality

Development	Consideration in this assessment
Snapper and Ginkgo Mineral Sands Mines. Tronox Mining Australia Limited (formally Cristal Mining) currently operates two mineral sands mines in the Murray Basin, with development consents permitting mining until 10 July 2026 for the Snapper Mine and 31 December 2025 for the Ginkgo Mine. Currently, processed ore is transported from the sites west of Pooncarie to Broken Hill via the Silver City Highway. Tronox currently operate BAB-quad Road Trains on the Silver City Highway between the intersection with the operation's Site Access Road, located approximately 37km north of Anabranch Mail Road, and Kanandah Road, approximately 2.5km south-west of the Patton Street roundabout, meaning there will be approximately 150km of overlap.	There will be some overlap in traffic generated by the Project and Snapper/Ginkgo Mines. Within the latest Road Transport Review for the Snapper Mine Northern extension (The Transport Planning Partnership, 2019), it is estimated there are on average 54 articulated vehicles travelling on the Haul Road from the mines to the Silver City Highway (two-way movements). It is assumed that these vehicle movements have been captured in recent traffic counts undertaken on the Silver City Highway.

A plan including the mine locations and transport route (green) has been provided below.

Figure 32: Snapper and Ginkgo Mine locations (The Transport Planning Partnership, 2019)

6 SIDRA Modelling

SIDRA modelling has been undertaken at the Patton Street roundabout to confirm that the roundabout has the capacity to cater for the increased traffic as a result of the increased vehicle numbers travelling through Broken Hill as a result of the proposed mine. Modelling was undertaken on the Transport for NSW (TfNSW) intersection on the proposed haul route through Broken Hill. Both AM and PM peaks were modelled for existing conditions, existing conditions in addition to the development traffic, along with a 10-year horizon model with an assumed growth rate of 1.5% per year.

SIDRA modelling was not undertaken at any of the Council intersections or the intersection of the Silver City Highway with Anabranch Mail Road, as these intersections are expected to be well within the capacity of the road network. It is not expected that capacity issues will be observed at these intersections, and only geometric constraints will be observed.

6.1 Assumptions

The following assumptions have been made in the SIDRA modelling process.

- Current AM and PM peak hour volumes have been taken from independent traffic counts conducted in September 2022.
- Additional future traffic volumes from the Project have been taken as the worst-case scenario from construction and operation phases of the mine.
- All road trains transporting heavy mineral concentrate will utilise the modelled roundabout in Broken Hill.
- 10% of all other light vehicle and heavy vehicle traffic associated with the Project will travel to/from Broken Hill and utilise the modelled roundabout.
- The approach distance from the south-west has been assumed to be 5000m. The actual approach distance is far greater than this.
- Heavy vehicle percentages have been taken from independent traffic counts conducted in September 2022.
- 1.5% annual growth in traffic volumes has been assumed for the 10-year horizon SIDRA model.
- Cyclists and pedestrian volumes have been assumed to be negligible and as such have not been assessed within the model.
- Gap acceptance inputs have been left as default SIDRA values.
- Vehicle movement data including approach cruise speed and exit cruise speed is assumed to be the current posted speed limits on the associated roads.

6.2 Outputs

SIDRA modelling was undertaken for the Patton Street roundabout. The following outputs were obtained from the SIDRA model.

6.2.1 AM Peak

Lane Use and Performance	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Bonanza Street													
Lane 1[d]	263	4.0	1100	0.239	100	4.7	LOS A	1.4	9.9	Full	140	0.0	0.0
Approach	263	4.0		0.239		4.7	LOS A	1.4	9.9				
NorthEast: Patton Street													
Lane 1[d]	100	2.1	1107	0.090	100	7.4	LOS A	0.4	2.7	Full	230	0.0	0.0
Approach	100	2.1		0.090		7.4	LOS A	0.4	2.7				
NorthWest: Bonanza Street													
Lane 1[d]	332	5.1	1389	0.239	100	4.9	LOS A	1.6	11.9	Full	380	0.0	0.0
Approach	332	5.1		0.239		4.9	LOS A	1.6	11.9				
SouthWest: Patton Street													
Lane 1[d]	113	7.5	930	0.121	100	5.9	LOS A	0.7	5.2	Full	5000	0.0	0.0
Approach	113	7.5		0.121		5.9	LOS A	0.7	5.2				
Intersection	807	4.7		0.239		5.3	LOS A	1.6	11.9				

Figure 33: AM Peak - Current

Lane Use and Performance	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Bonanza Street													
Lane 1[d]	263	4.0	1089	0.242	100	4.8	LOS A	1.4	10.0	Full	140	0.0	0.0
Approach	263	4.0		0.242		4.8	LOS A	1.4	10.0				
NorthEast: Patton Street													
Lane 1[d]	103	5.1	1059	0.097	100	7.4	LOS A	0.4	3.1	Full	230	0.0	0.0
Approach	103	5.1		0.097		7.4	LOS A	0.4	3.1				
NorthWest: Bonanza Street													
Lane 1[d]	334	5.4	1371	0.243	100	4.9	LOS A	1.7	12.3	Full	380	0.0	0.0
Approach	334	5.4		0.243		4.9	LOS A	1.7	12.3				
SouthWest: Patton Street													
Lane 1[d]	116	9.1	899	0.129	100	6.0	LOS A	0.7	5.8	Full	5000	0.0	0.0
Approach	116	9.1		0.129		6.0	LOS A	0.7	5.8				
Intersection	816	5.4		0.243		5.3	LOS A	1.7	12.3				

Figure 34: AM Peak - Current + development

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Bonanza Street													
Lane 1[d]	305	3.8	1061	0.288	100	5.1	LOS A	1.7	12.4	Full	140	0.0	0.0
Approach	305	3.8		0.288		5.1	LOS A	1.7	12.4				
NorthEast: Patton Street													
Lane 1[d]	119	4.4	1035	0.115	100	7.6	LOS A	0.5	3.8	Full	230	0.0	0.0
Approach	119	4.4		0.115		7.6	LOS A	0.5	3.8				
NorthWest: Bonanza Street													
Lane 1[d]	386	5.2	1362	0.284	100	5.0	LOS A	2.0	15.0	Full	380	0.0	0.0
Approach	386	5.2		0.284		5.0	LOS A	2.0	15.0				
SouthWest: Patton Street													
Lane 1[d]	135	8.6	864	0.156	100	6.4	LOS A	0.9	7.2	Full	5000	0.0	0.0
Approach	135	8.6		0.156		6.4	LOS A	0.9	7.2				
Intersection	945	5.1		0.288		5.5	LOS A	2.0	15.0				

Figure 35: AM Peak - 10 year horizon

6.2.2 PM Peak

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Bonanza Street													
Lane 1[d]	233	0.9	1204	0.193	100	4.4	LOS A	1.1	7.5	Full	140	0.0	0.0
Approach	233	0.9		0.193		4.4	LOS A	1.1	7.5				
NorthEast: Patton Street													
Lane 1[d]	74	8.6	1025	0.072	100	7.4	LOS A	0.3	2.3	Full	230	0.0	0.0
Approach	74	8.6		0.072		7.4	LOS A	0.3	2.3				
NorthWest: Bonanza Street													
Lane 1[d]	407	2.8	1365	0.298	100	4.4	LOS A	2.1	15.1	Full	380	0.0	0.0
Approach	407	2.8		0.298		4.4	LOS A	2.1	15.1				
SouthWest: Patton Street													
Lane 1[d]	174	6.7	988	0.176	100	5.6	LOS A	1.0	7.8	Full	5000	0.0	0.0
Approach	174	6.7		0.176		5.6	LOS A	1.0	7.8				
Intersection	887	3.6		0.298		4.9	LOS A	2.1	15.1				

Figure 36: PM Peak - Current

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Bonanza Street													
Lane 1[d]	233	0.9	1194	0.195	100	4.4	LOS A	1.1	7.6	Full	140	0.0	0.0
Approach	233	0.9		0.195		4.4	LOS A	1.1	7.6				
NorthEast: Patton Street													
Lane 1[d]	76	11.1	974	0.078	100	7.5	LOS A	0.3	2.7	Full	230	0.0	0.0
Approach	76	11.1		0.078		7.5	LOS A	0.3	2.7				
NorthWest: Bonanza Street													
Lane 1[d]	408	2.8	1348	0.303	100	4.5	LOS A	2.2	15.5	Full	380	0.0	0.0
Approach	408	2.8		0.303		4.5	LOS A	2.2	15.5				
SouthWest: Patton Street													
Lane 1[d]	179	8.8	960	0.186	100	5.7	LOS A	1.1	8.5	Full	5000	0.0	0.0
Approach	179	8.8		0.186		5.7	LOS A	1.1	8.5				
Intersection	896	4.2		0.303		4.9	LOS A	2.2	15.5				

Figure 37: PM Peak - Current + development

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Bonanza Street													
Lane 1[d]	269	0.8	1173	0.230	100	4.5	LOS A	1.3	9.3	Full	140	0.0	0.0
Approach	269	0.8		0.230		4.5	LOS A	1.3	9.3				
NorthEast: Patton Street													
Lane 1[d]	87	9.6	948	0.092	100	7.7	LOS A	0.4	3.2	Full	230	0.0	0.0
Approach	87	9.6		0.092		7.7	LOS A	0.4	3.2				
NorthWest: Bonanza Street													
Lane 1[d]	474	2.9	1332	0.356	100	4.6	LOS A	2.7	19.4	Full	380	0.0	0.0
Approach	474	2.9		0.356		4.6	LOS A	2.7	19.4				
SouthWest: Patton Street													
Lane 1[d]	207	8.6	926	0.224	100	6.1	LOS A	1.4	10.5	Full	5000	0.0	0.0
Approach	207	8.6		0.224		6.1	LOS A	1.4	10.5				
Intersection	1038	4.1		0.356		5.1	LOS A	2.7	19.4				

Figure 38: PM Peak - 10 year horizon

Relevant outputs from the SIDRA model have been summarised below.

Table 6.1: AM Peak SIDRA comparison

AM Peak											
	Degree of Saturation (v/c)			**Average Delay (sec)**			**Level of Service**			**95% Back of Queue (m)**	
	Current	Development	10 Yr	Current	Development	10 Yr	Current	Development	10 Yr	Current	Development	10 Yr
Bonanza Street (South-East)												
	0.239	0.242	0.288	4.7	4.8	5.1	LOS A	LOS A	LOS A	9.9	10.0	12.4
Patton Street (North-East)												
	0.090	0.097	0.115	7.4	7.4	7.6	LOS A	LOS A	LOS A	2.7	3.1	3.8
Bonanza Street (North-West)												
	0.239	0.234	0.284	4.9	4.9	5.0	LOS A	LOS A	LOS A	11.9	12.3	15.0
Patton Street (South-West)												
	0.121	0.129	0.156	5.9	6.0	6.4	LOS A	LOS A	LOS A	5.2	5.8	7.2
Intersection												
	0.239	0.243	0.288	5.3	5.3	5.5	LOS A	LOS A	LOS A	11.9	12.3	15.0

Table 6.2: PM Peak SIDRA comparison

PM Peak												
	Degree of Saturation (v/c)			**Average Delay (sec)**			**Level of Service**			**95% Back of Queue (m)**		
	Current	Development	10 Yr	Current	Development	10 Yr	Current	Development	10 Yr	Current	Development	10 Yr
Bonanza Street (South-East)												
	0.193	0.195	0.230	4.4	4.4	4.5	LOS A	LOS A	LOS A	7.5	7.6	9.3
Patton Street (North-East)												
	0.072	0.078	0.092	7.4	7.5	7.7	LOS A	LOS A	LOS A	2.3	2.7	3.2
Bonanza Street (North-West)												
	0.298	0.303	0.356	4.4	4.5	4.6	LOS A	LOS A	LOS A	15.1	15.5	19.4
Patton Street (South-West)												
	0.176	0.186	0.224	5.6	5.7	6.1	LOS A	LOS A	LOS A	7.8	8.5	10.5
Intersection												
	0.298	0.303	0.356	4.9	4.9	5.1	LOS A	LOS A	LOS A	15.1	15.5	19.4

The SIDRA outputs indicate that traffic at the Patton Street roundabout will be relatively unaffected. Slight increases in degrees of saturation and delay times are predicted, with the most significant increases being queue length. This was expected due to the increase in large trucks on the network. It is noted that queue length increases are not significant enough to be identified as a potential issue. All levels of service remain as LOS A throughout all future modelling. It is evident that the existing roundabout configuration will adequately accommodate the increased traffic volumes associated with the development well into the future based on existing traffic volumes and an assumed 1.5% annual growth rate.

7 Impact Assessment

7.1 Traffic Volumes on the Road Network

The existing daily traffic volumes for the roads in Broken Hill, the Silver City Highway and Anabranch Mail Road and the existing adequacy of the road design standards for these routes is discussed in Section 4.

Rural roads rarely operate at capacity, therefore the additional traffic generated by this development is unlikely to affect the operating capacity of the existing road network. However, the roadway Design Annual Average Daily Traffic (AADT) for single carriageway roads can be measured against the existing traffic lane and carriageway widths. Based on the existing cross sections of the road, the Design AADT for each road is below:

- Silver City Highway rural sections - 500-1000 vehicles per day
- Anabranch Mail Road – 1-150 vehicles per day
- Wentworth Road – 1000-3000 vehicles per day

The urban roads within the Broken Hill township currently facilitate relatively low traffic volumes based on current traffic counts undertaken, with additional traffic generated by the development unlikely to impact the operating capacity of the existing road network. Urban road widths are based on the type of road rather than AADT, and therefore a minor increase in traffic will not impact the adequacy of the road design in accordance with Austroads Guide to Road Design Part 3: Geometric Design. As only 10% of traffic is expected to travel north to Broken Hill from the Mine Site, the minor increase in traffic within the wider Broken Hill road network is unlikely to impact the adequacy of the existing road network.

The additional daily traffic volumes generated during the average construction period, peak construction, average operation and peak operation stages are summarised for the affected travel routes (Silver City Highway, Anabranch Mail Road and the roads in Broken Hill) are summarised in the following sections.

7.1.1 Average construction traffic

Table 7.1 summarises the baseline traffic conditions on the local road network and the predicted future daily traffic during the average construction phase of the Project.

Table 7.1: Future daily traffic assessment for average construction traffic

Traffic Generation Route	Baseline daily traffic volume (2024)	Daily traffic from the Project (vehicle movements)	Future total daily traffic (vehicle movements)	Percent traffic increase	Daily traffic volume design standard
Silver City Highway, north of Anabranch Mail Road	437	6	443	1.4%	500-1000
Silver City Highway, south of Anabranch Mail Road	412*	50	462	12.1%	500-1000
Anabranch Mail Road	50*	56	106	112%	150-500
Wentworth Road	1500*	6	1506	0.4%	1000-3000

Patton Street	2490	6	2496	0.2%	N/A
Comstock Street	609*	0	609	0%	N/A
Eyre Street	2194	0	2194	0%	N/A
Holten Dirve	2686	0	2686	0%	N/A

***Assumed daily traffic**

The results in Table 7.1 show that the highest proportional daily traffic increases from the Project will be Ananbranch Mail Road, where daily traffic volumes may increase by approximately 56 vehicles per day from a low base traffic volume (50). It is noted that the existing traffic volume on Anabranch Mail Road has been conservatively assumed due to lack of data. All other increases on the Silver City Highway are considered well within the operating capacity of the road and will not generally be noticeable for the future traffic using the road. It has been assumed that project traffic travelling towards Broken Hill during construction will utilise Wentworth Road and Patton Street, however will not utilise Comstock Street, Eyre Street or Holten Drive.

7.1.2 Peak construction traffic

Table 7.2 summarises the baseline traffic conditions on the local road network and the predicted future daily traffic during the peak construction phase of the Project.

Table 7.2: Future daily traffic assesment for peak construction traffic

Traffic Generation Route	Baseline daily traffic volume (2022)	Daily traffic from the Project (vehicle movements)	Future total daily traffic (vehicle movements)	Percent traffic increase	Daily traffic volume design standard
Silver City Highway, north of Anabranch Mail Road	437	11	448	2.5%	500-1000
Silver City Highway, south of Anabranch Mail Road	412*	99	511	24.0%	500-1000
Anabranch Mail Road	50*	110	160	220%	150-500
Wentworth Road	1500*	11	1511	0.7%	1000-3000
Patton Street	2490	11	2501	0.4%	N/A
Comstock Street	609*	0	609	0%	N/A
Eyre Street	2194	0	2194	0%	N/A
Holten Drive	2686	0	2686	0%	N/A

***Assumed daily traffic**

The results in Table 7.2 show the highest proportional daily traffic increases from the Project will be Anabranch Mail Road, where there will be a daily traffic volume of approximately 160 vehicles from a low base traffic volume (50). It is noted that the existing traffic volume on Anabranch Mail Road has been conservatively assumed due to lack of data. A 24% increase in daily traffic is expected on Silver City Highway south of the site, however still well within the operating capacity of the road.

7.1.3 Average Operational traffic

Table 7.3 summarises the baseline traffic conditions on the local road network and the predicted future daily traffic during the average operational phase of the Project. For the purpose of the traffic volume assessment below, traffic volumes for the use of AB-Triple Road Trains have been assessed as a worst-case scenario.

Table 7.3: Future daily traffic assesment for average operational traffic

Traffic Generation Route	Baseline daily traffic volume (2022)	Daily traffic from the Project (vehicle movements)	Future total daily traffic (vehicle movements)	Percent traffic increase	Daily traffic volume design standard
Silver City Highway, north of Anabranch Mail Road	437	33	470	7.6%	500-1000
Silver City Highway, south of Anabranch Mail Road	412*	59	471	14.3%	500-1000
Anabranch Mail Road	50*	92	142	184%	150-500
Wentworth Road	1500*	33	1533	2.2%	1000-3000
Patton Street	2490	33	2523	1.3%	N/A
Comstock Street	609*	26	635	4.3%	N/A
Eyre Street	2194	26	2220	1.2%	N/A
Holten Drive	2686	26	2712	1.0%	N/A

***Assumed daily traffic**

The results in Table 7.3 show the highest proportional daily traffic increases from the Project will be Anabranch Mail Road, where there will be a daily increase of approximately 92 vehicles from a low base traffic volume (50). A 14.3% increase in daily traffic is expected on Silver City Highway south of the site, however still well within the operating capacity of the road. A 7.6% increase is expected north of the site, higher than during the construction phase due to the movements of AB-Triple Road Trains between the site and Broken Hill. All roads within the Broken Hill township will experience 4.3% or less increases in daily traffic.

7.1.4 Peak Operational traffic

Table 7.4 summarises the baseline traffic conditions on the local road network and the predicted future daily traffic during the peak operational phase of the Project. For the purpose of the traffic volume assessment below, traffic volumes for the use of AB-Triple Road Trains have been assessed as a worst-case scenario.

Table 7.4: Future daily traffic assesment for peak operational traffic

Traffic Generation Route	Projected baseline daily traffic	Peak daily traffic from the Project	Future total daily traffic (vehicle movements)	Percent traffic increase	Daily traffic volume design standard

	volume (2020)	(vehicle movements)			
Silver City Highway, north of Anabranch Mail Road	437	42	479	9.6%	500-1000
Silver City Highway, south of Anabranch Mail Road	412*	92	504	22.3%	500-1000
Anabranch Mail Road	50*	132	182	264%	150-500
Wentworth Road	1500*	42	1542	2.8%	1000-3000
Patton Street	2490	42	2532	1.7%	N/A
Comstock Street	609*	32	641	5.3%	N/A
Eyre Street	2194	32	2226	1.5%	N/A
Holten Drive	2686	32	2718	1.2%	N/A

***Assumed daily traffic**

The peak operational period will result in the largest increases in daily traffic on the local road network of all scenarios, with an increase of 264% of daily traffic on Anabranch Mail Road, with 22.3% and 9.6% increases on Silver City Highway south and north of the site respectively. All roads within the Broken Hill township will experience 5.3% or less increases in daily traffic.

These daily increases are still expected to be within the design standards of the existing roads, however discussions with Wentworth Shire Council have also indicated a requirement to widen the road to a minimum carriageway width of 9.5m in all locations to allow safe passing of large heavy vehicles, with existing grids along the alignment required to be upgraded to double grids to improve safety along the road.

7.1.5 Rehabilitation traffic

Traffic impacts as a result of the rehabilitation phase will be well below the impacts associated with the other four scenarios assessed given that the maximum daily traffic during this phase is 22 movements. Table 7.5 summarises the baseline traffic conditions on the local road network and the predicted future traffic during the rehabilitation phase of the Project.

Table 7.5 Future daily traffic assesment for rehabilitation traffic

Traffic Generation Route	Projected baseline daily traffic volume (2020)	Daily traffic from the Project (vehicle movements)	Future total daily traffic (vehicle movements)	Percent traffic increase	Daily traffic volume design standard
Silver City Highway, north of	437	2	439	0.5%	500-1000

Anabranch Mail Road					
Silver City Highway, south of Anabranch Mail Road	412*	20	432	4.9%	500-1000
Anabranch Mail Road	50*	22	72	44%	0-150
Wentworth Road	1500*	2	1502	0.1%	1000-3000
Patton Street	2490	2	2492	0.1%	N/A
Comstock Street	609*	0	609	0%	N/A
Eyre Street	2194	0	2194	0%	N/A
Holten Drive	2686	0	2686	0%	N/A

***Assumed daily traffic**

7.2 Haulage along Silver City Highway

The existing Snapper and Ginkgo mines utilise the Silver City Highway as part of the haulage route to Broken Hill. The haulage trucks from the mines enter onto the Silver City Highway approximately 37km north of Anabranch Mail Road and exit the Silver City Highway at Kanandah Road, approximately 2.5km south-west of the Patton Street roundabout, meaning there will be approximately 150km of overlap between the haulage routes of the Project and the Snapper and Ginkgo mines. Development consents currently permit mining until the 10th of July 2026 for the Snapper mine and the 31st of December 2025 for the Ginkgo mine. There will be a brief period of overlap with haulage trucks from the Snapper and Ginkgo mines and haulage trucks from the Project, meaning there will be increased movements of large road train vehicles along this section of the Silver City Highway, while all mines are operating simultaneously.

It has been assumed there are currently up to 27 trips between Broken Hill and the Snapper and Ginkgo mines (54 movements) per day (The Transport Planning Partnership, 2019). The Copi Mineral Sands Project during peak operation will generate up to 12 BAB-quad or 16 AB-Triple trips between the site and Broken Hill (24 or 36 movements respectively) per day, which represents an increase of approximately 44% or 59% respectively of large heavy vehicles along this section of the Silver City Highway compared to existing volumes. The additional trips on the road network are not expected to affect the operating capacity of the road, however it could be expected there will be some minor additional inconvenience to other motorists utilising the road who may be required to overtake these vehicles. Notwithstanding this, the section of the Silver City Highway between Anabranch Mail Road and Broken Hill typically provides ample overtaking opportunities and the degree of inconvenience is expected to be limited. It is noted that an assessment of overtaking opportunities has not been undertaken.

Snapper and Ginkgo mine haulage trucks are required to be staggered, meaning there is no peak of haulage trucks on the road network. The Project should also stagger movements of its BAB-quad / AB-triple Road Trains on the road network in a similar way. The Applicant would also work with Tronox to ensure that each operations haulage vehicles maintain a suitable distance between road trains to permit following vehicles to overtake one road train at a time.

7.3 Traffic Impact at Intersections

The future volumes of turning traffic using the intersection of Silver City Highway and Anabranch Mail Road will increase as a result of the Project. This includes up to 34 peak hour movements (two-way) during the peak operational phase. The existing peak hourly traffic movements using the intersection of Anabranch Mail Road and Silver City Highway are not known but are assumed to be a maximum of 5 hourly vehicle movement (corresponding to 50 assumed daily vehicle movements).

The potential need for additional turning lanes at the Silver City Highway and Anabranch Mail Road intersection has been assessed by reference to the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections design chart in Figure 28.

From the forecast Project peak hourly traffic volumes in Table 5.1, the corresponding maximum peak hourly turning traffic volumes which will be using the intersection during each stage of the project construction and operations phases are summarised for typical future morning and afternoon peak hour traffic periods in Table 7.6 for Anabranch Mail Road and the Silver City Highway.

Table 7.6: Future forecast turning traffic volumes using the Anabranch Mail Road & Silver City Highway junction

Phase	Peak hour	Proposal-related Traffic			
		Hourly traffic entering the site		Hourly traffic leaving the site	
		From the north	From the south	To the north	To the south
Average Construction	Morning peak hour	2	14	0	2
	Afternoon peak hour	0	0	2	16
Peak Construction	Morning peak hour	3	24	0	3
	Afternoon peak hour	0	0	3	27
Average Operation	Morning peak hour	2	18	0	2
	Afternoon peak hour	0	0	2	22
Peak Operation	Morning peak hour	3	28	0	3
	Afternoon peak hour	0	0	3	31

The worst-case major road peak hourly traffic volume is approximately 15% of the AADT of the Silver City Highway based on independent traffic counts undertaken in September 2022, therefore equating to approximately 65 vehicles (two-way) in the peak hour.

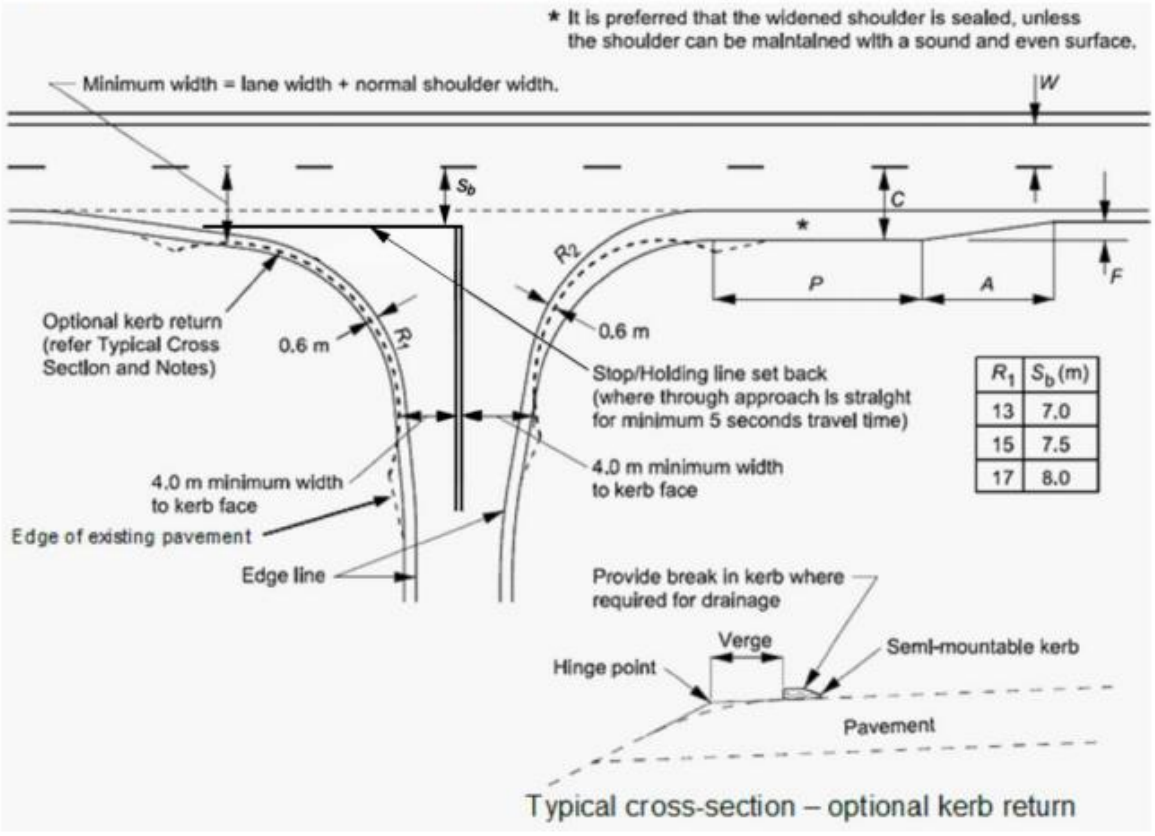
From the summary of the future turning movements in Table 7.6, the combination of future maximum site entry turning traffic volume from either the north or the south (34 hourly vehicles) when combined with the major road traffic flow using Silver City Highway (65 vehicles) the intersection would only require the minimum turn treatments for the left and right turns (Type BAR/BAL) according to the upper warrant chart which is shown in Figure 28. The existing intersection does not have a BAR/BAL treatment therefore is recommended to be upgraded to meet this requirement for the design vehicles. It is also proposed to seal at minimum the first 100m of Anabranch Mail Road to limit the potential tracking of dirt and debris onto Silver City Highway by large vehicles.

The assessment was also applied to the intersections at Anabranch Mail Road/Site Access Road, Patton Street/Comstock Street, Comstock Street/Eyre Street, and Holten Drive/Rail Facility entrance. BAL turn treatments are recommended for the left turns from Anabranch Mail Road (north-east) to continue on

Anabranch Mail Road (south-west), Patton Street onto Comstock Street and from Eyre Street onto Comstock Street, however due to the urban nature of the roads in Broken Hill, and current seal widths provided, no pavement widening is required other than that to allow the movement of the Type 2 Road Train (see Appendix B). A BAR turn treatment is recommended for the right turn into the Rail Facility off Holten Drive, however due to the existing seal widths and infrequent movements (3 trucks per hour) into the Rail Facility, additional pavement widening on Holten Drive is not proposed.

A turn treatment assessment was also undertaken for the proposed intersections at the Mine Camp and Mine Office and Workshop Area. It has been estimated that the peak daily volume on the Site Access Road (major road) will be in the vicinity of 126 vehicles per day (two-way). It is assumed that approximately 34 vehicles will utilise the intersections in the peak hour, with all of these proposed to enter/exit the Mine Camp/Mine Office and Workshop Area. All traffic associated with the Mine Site will enter and exit from the north-west (i.e. turn left into and right out of the Mine Camp/Mine Office and Workshop Area). Based on Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, localised widening at these intersections should be implemented to allow for BAL turn treatments to be implemented. While the traffic movements of within the Mine Site are unknown, it is likely that vehicles travelling around the Mine Site only will enter and exit the Mine Camp/Mine Office and Workshop Area from the south-west, and there may be a warrant for pavement widening to allow right turning vehicles. It is likely that BAR turn treatments would be warranted. The proposed BAL and BAR layouts as outlined in Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections can be seen below.

Figure 8.2: Rural basic left-turn treatment (BAL)



R_1	S_b (m)
13	7.0
15	7.5
17	8.0

Notes:

- *R_1 and R_2 are determined by the swept path of the design vehicle.*
- *The dimensions of the treatment are defined thus:*

W = *Nominal through lane width (m) (including widening for curves).*

C = *On straights – 6.0 m minimum.*
On curves – 6.0 m plus curve widening (based on widening for the design turning vehicle plus widening for the design through vehicle).

$A = \frac{0.5VF}{3.6}$

V = *Design speed of major road approach (km/h).*

F = *Formation/carriageway widening (m).*

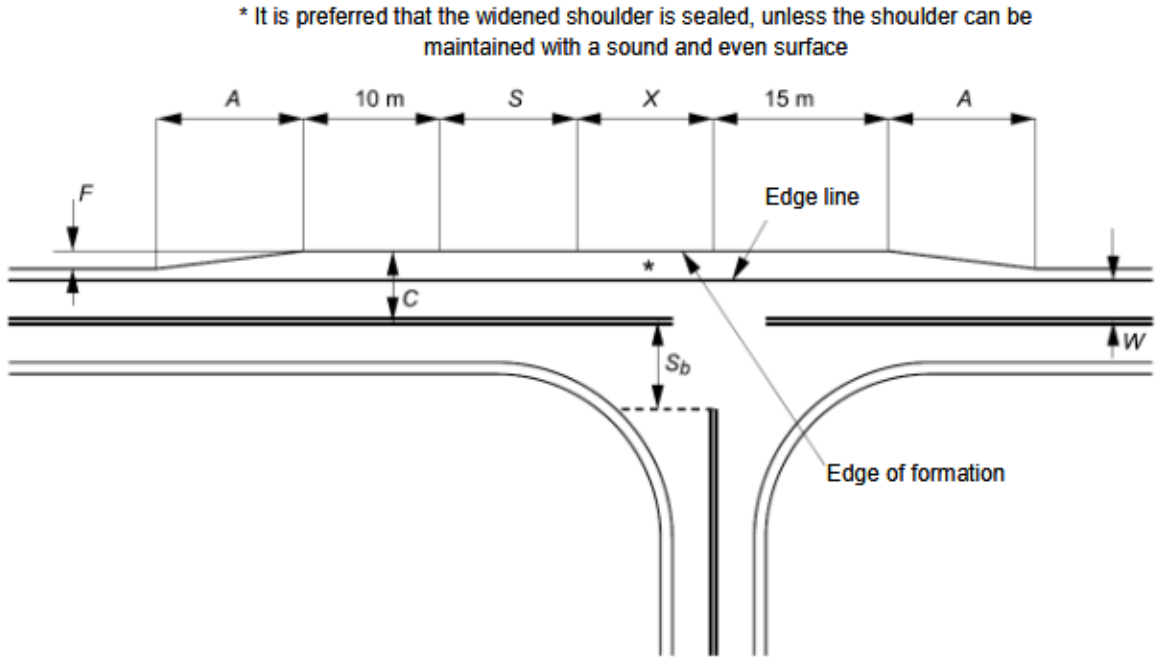
P = *Minimum length of parallel widened shoulder (Table 8.1).*

S_b = *Setback distance between the centre of the major road and the give way or stop line in the minor road.*

Figure 39: Rural BAL turn treatment

It is unclear what exact dimensions would be proposed at the intersections, however the minimum length of parallel widened shoulder that should be adopted is 35m. A design speed of 110km/hr will be used to determine all additional parameters based on existing road widths at the proposed intersections. It is noted that the above diagram is intended for sealed roads, however the same dimensions will be applied for the unsealed roads.

Figure 7.1: Basic right (BAR) turn treatment on a two-lane rural road



Notes:
This treatment applies to the right turn from a major road to a minor road.
The dimensions of the treatment are:

- *W* = *Nominal through lane width (m) (including widening for curves). Width to be continuous through the intersection*
- *C* = *On straights – 6.5 m minimum*
  7.0 m minimum for Type 1 & Type 2 road trains
  On curves – widths as above + curve widening (based on widening for the design turning vehicle plus widening for the design through vehicle)
- *A* = $\frac{0.5VF}{3.6}$
  Increase length A on tighter curves (e.g. those with a side friction demand greater than the maximum desirable). Where the design through vehicle is larger than or equal to a 19 m semi-trailer the minimum speed used to calculate A is 80 km/h
- *V* = *Design speed of major road approach (km/h)*
- *F* = *Formation/carriageway widening (m)*
- *S* = *Storage length to cater for one design turning vehicle (m) (minimum length 12.5 m)*
- *X* = *Distance based on design vehicle turning path, typically 10–15 m*
- *S_b* = *Setback distance between the centre of the major road and the give way or stop line in the minor road. The holding line is typically placed in prolongation of the kerb line or edge line, however, it may be set back if there is a problem with the design vehicle over-running the holding line, or if it is desired to hold vehicles back some distance from the intersecting roadway (AS 1742.2 - 2009). The setback needs to be balanced such that sight distance is not negatively impacted to create a safety issue and the needs of pedestrians is met.*

Figure 40: Rural BAR turn treatment

A design speed of 110km/hr will be used to determine parameters based on existing road widths at the proposed intersections. It is noted that the above diagram is intended for sealed roads, however the same dimensions will be applied for the unsealed roads.

It is also proposed to realign Anabranch Mail Road at the proposed connection to the Site Access Road to allow the through movement to be from Anabranch Mail Road (to/from the east) to the Site Access

Road. This would allow vehicles accessing the Mine Site to have priority, meaning vehicles wishing to continue on Anabranch Mail Road to the south-west or coming from Anabranch Mail Road from the south-west would be required to turn at the intersection. A give-way condition would be imposed on vehicles travelling on Anabranch Mail Road from the south-west to the north-east. Concept plans of the proposed intersection alterations can be seen in Appendix A.

7.4 Proposed Nulla Road Temporary Closure

The Applicant proposes to extract through a section of Nulla Road within the Mine Site. It is proposed to close the section of Nulla Road from the access point for the "Huntingfield" homestead to the southern entrance to the "Wenba" station (Figure 41) during years 11, 12 and 13 of the project.

Wentworth Shire Council has been consulted to understand their requirements for the closure of this section of Nulla Road to occur. The initial requirements outlined by Council based on a meeting held on the 13th of October 2022 are summarised below.

- Landholders that may be impacted by the closure of Nulla Road are required to be consulted prior to Council providing approval for the road closure.
- The closure of Nulla Road would need to consider turn around areas where Nulla Road is proposed to be terminated.
- Advanced warning and appropriate signage indicating the termination of the road and the road closure will be required.
- The reinstatement of Nulla Road is required to be of a better standard than current condition and must be in accordance with relevant Standards and Guidelines.

The Applicant proposes to realign a short section of Nulla Road within the proposed limit of disturbance. The proposed realignment would be constructed on "Warwick" and "Huntingfield" stations. A suitable realigned road reserve would need to be consulted and agreed with Wentworth Shire Council.

It is also noted that design parameters for the realignment of Nulla Road would have to be agreed upon with Wentworth Shire Council. It is likely that these would be the same as the proposed upgrades to Anabranch Mail Road. The Proponent proposes to reinstate the section of Nulla Road along the realigned alignment within three years of closure.

It is understood that the Proponent will seek to provide Wentworth Shire Council with detailed design plans of the realigned section of Nulla Road prior to the closure of the existing section of Nulla Road.

RZ Resources is currently in consultation with the potentially impacted landholders within the area to discuss the possibility of the road closure along the alignment of Nulla Road. Details regarding turnaround areas, signage, reinstatement/realignment, etc. are subject to further design.

The section of Nulla Road proposed to be temporarily closed and the proposed realignment can be seen below in Figure 41.

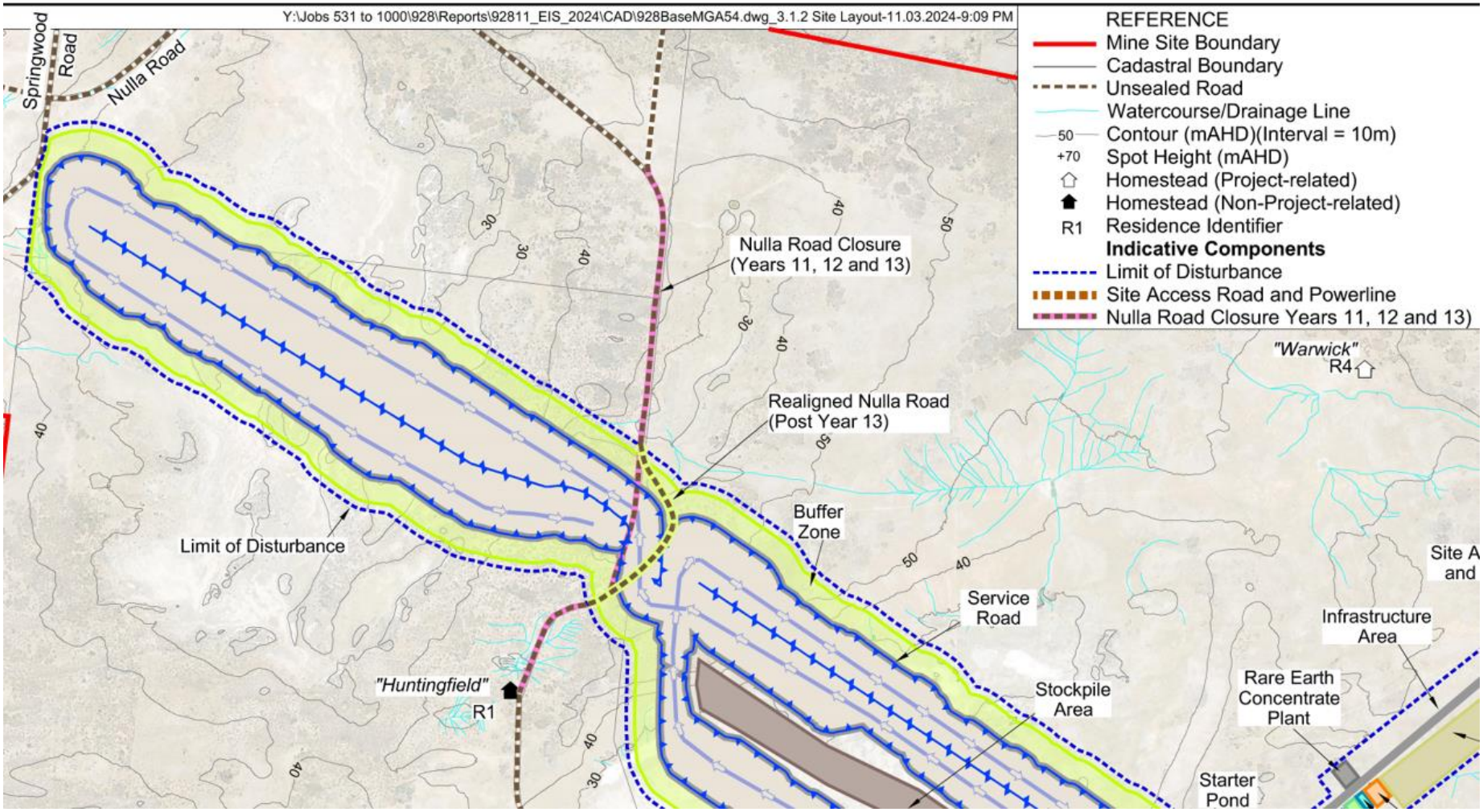


Figure 41: Proposed Nulla Road closure

7.5 Traffic and Transport Management

The proposed intersection treatments would be incorporated into a Construction Traffic Management Plan, which will utilise Austroads and TfNSW guidelines for the major road intersection operations and worksite traffic control throughout the project construction period.

Temporary traffic control arrangements would be required during construction of public road improvements. During construction period, the largest vehicles which are anticipated to be visiting the site for deliveries are B-Doubles. Low loaders will be required for transporting of floating and mobile plant and some materials.

The Applicant would prepare and implement a Traffic Management Plan that would describe how Project-related traffic utilising the public road network would be managed, including the following.

- Transportation routes for heavy mineral concentrate, other deliveries and personnel transport.
- Fatigue management, including for heavy and light vehicle operators, including personnel at the start and end of swings.
- Frequency of departures of BAB-quad / AB-triple road trains from the Mine Site and Rail Facility to minimise inconvenience for other road users required to overtake multiple long vehicles.
- Driver behaviour and expectations.

An Oversize Transport Management Plan would be required for any oversize and/or overmass vehicles and/or loads required to be delivered to the site. This document would be a comprehensive document describing how an oversize and/or overmass movement will be safely carried out in NSW and is required to be submitted to TfNSW prior to obtaining a permit for these movements.

7.6 Pavement Assessment

7.6.1 Existing and proposed traffic loadings

The traffic loading of the additional heavy vehicle traffic on Silver City Highway has been assessed to determine if there is an impact on the pavement life, which may require the roads to be rehabilitated. This assessment is based on the existing traffic data and the specified future traffic movements for the Project mining related traffic as indicated in Table 5.1. Average construction and operational volumes have been used to determine the impact over the life of the Project.

The estimated traffic loadings in terms of Equivalent Standard Axles (ESA's) have been estimated using the methodology in the Austroads Guide to Pavement Technology Part 2: Pavement Structural Design using ESA's per varying Heavy Vehicle Axle Group (HVAG). Based on this the following ESA's are used for each vehicle type.

Table 7.7: Estimated Traffic Loading per Vehicle Type

Vehicle Type	Austroads Classification	No of HVAG	Estimated ESA's per Vehicle Type
Rigid	Class 3 to 5	2	1.0
Semi-trailer	Class 6 to 9	3	1.9
B-Double	Class 10	4	3.2
Double Road Train or AB-Triple	Class 11	6	4.5

Triple / Quad Road Train (configuration varies)	Class 12	7	5.4

In terms of additional traffic generated by the Project the following is expected to occur:

7.6.1.1 Existing traffic loading

Based on the above and existing traffic counts available, the following existing pavement loadings have been estimated and are indicated in Table 7.8. It has been assumed that a maximum annual growth rate of 1% would occur for the life of the project (including construction) on the Silver City Highway. A remaining pavement life of 20 years has been assumed for Silver City Highway to determine the existing pavement loading for comparison with the anticipated loading taking into account the Project. This assumption has been taken only to undertake this assessment. The remaining life of the Silver City Highway will vary over the alignment of the road and would require extensive geotechnical testing to confirm the condition of the pavement along the alignment of the Silver City Highway.

Table 7.8: Existing Pavement Loadings (ESA's per lane)

Road Section	Estimated Existing Daily	Yearly	20 year Loading based on 1% annual growth
Silver City Highway – north of Anabranch Mail Road	175	63,875	1,406,464
Silver City Highway – south of Anabranch Mail Road	165	60,225	1,326,095

7.6.1.2 Project traffic loading

The proposed Project construction and operation has been calculated for the life of the project. It has been assumed that all BAB-quads / AB-Triples associated with operational phase of the mine would originate from the north, while all other heavy vehicles during construction, operation and rehabilitation would originate from the south.

Table 7.9: Project Pavement Loadings (ESA's per lane)

Road Section	Estimated Average Daily	Yearly	Total loading over the life of project	Estimated reduction in pavement life
Silver City Highway – north of the site	54 (BAB-Quads) 59 (AB-Triples)	19,710 21,353	335,070 362,993	23.8% or 4.75 years 25.8% or 5.15 years
Silver City Highway – south of the site	Varies between 14 and 20 per day.	Varies 5,037 to 7,373	104,062	7.8% or 1.5 years

The assessment above indicates there will be a reduction in existing pavement life of 23.8% or 25.8% dependent on whether AB-Triples or BAB-Quads are used for haulage of the HMC to Broken Hill, and 7.8% on the Silver City Highway to the north and south of Anabranch Mail Road respectively, assuming

the existing pavement on Silver City Highway has a remaining life of 20 years. The reduction in pavement life may bring forward some pavement related rehabilitation of the Silver City Highway, however the reduction in pavement life is considered relatively small.

It is understood that as the Silver City Highway is a state road, contributions to pavement rehabilitation/maintenance are not required by the Proponent.

Between the Mine Site and the Silver City Highway, Anabranch Mail Road and the Site Access Road will take the full pavement loading of the Project (estimated between 439,132 and 467,055 ESAs) over the design life. As Anabranch Mail Road and the Site Access Road are unsealed roads, the pavement loading of the project is expected to significantly affect the maintenance and degradation of the road. As part of the Project, Anabranch Mail Road will be widened to accommodate the additional traffic, as stipulated by Wentworth Shire Council. The new Site Access Road will be designed and constructed in accordance with relevant Standards and Guidelines to suit to proposed traffic volumes and design vehicles. Further, given the Project's contribution to the pavement loading on Anabranch Mail Road and the Site Access Road, the Applicant would contribute 100% of the cost of road maintenance activities on these roads throughout the life of the Project. It is expected that re-sheeting of the road would occur on an as needs basis and would be subject to the performance of locally available gravel material.

Finally, the Applicant would reinstate the impacted section of Nulla Road to a better standard than current condition and must be in accordance with relevant Standards and Guidelines.

7.7 Driver Fatigue Management

During construction, operation and rehabilitation of the mine, there is expected to be a number of vehicle trips between the Mine Site, Broken Hill, and Wentworth and surrounds, inclusive of light vehicles and bus transport. The Applicant will develop a Driver Fatigue Management Plan as part of the Project's Traffic Management Plan to address how fatigue of drivers will be managed during the Project. Expected measures to reduce the impacts of fatigue include:

- Provision of buses for workers travelling to and from the Mine Site.
- Identification of maximum periods door to door for light and heavy vehicle drivers.
- Circumstances in which drivers would be required to remain in the Mine Camp or would be prevented from returning to the Mine Site.
- Consideration of travel time between the Mine Site and a worker's places of residence.

7.8 Public Safety

The transportation route through the urban area of Broken Hill would pass through a shared pedestrian zone with pedestrian activity likely. Upgrades of two intersections, namely Patton Street/Comstock Street and Comstock Street/Eyre Street have been proposed, with vehicles travelling closer to existing footpaths to allow the movement of the vehicles. This risk will be mitigated via appropriate measures implemented within the detailed design of the proposed intersections, including provision of suitable crossing locations and street furniture.

A bike lane was observed on Eyre Street and Holten Drive at the time of inspection. It is not recommended to have large trucks and bicycles integrated, however as this is currently a designated heavy vehicle route, the bike lane is informal (only signage with no formal line marking), and existing vehicle and expected bicycle volumes are low, it is not anticipated that any increased risk will be introduced as a result of the minor increased traffic as a result of the Project. It is noted that at the time of inspection, no bicycles were observed utilising the bicycle lane and it is not expected to be well used.

It is not expected that the upgrades to the intersections at Holten Drive/Rail Facility intersection, Silver City Highway/Anabranch Mail Road, and the Mine Site and Mine Camp / Anabranch Mail Road

intersections will impact public safety due to the low existing traffic and pedestrian volumes at these locations.

No additional works are proposed at the Patton Street roundabout and only minimal traffic increases are observed at the roundabout.

It is noted that appropriate incident management strategies for transportation on public roads will be required. The transportation of dangerous goods including gas and diesel will be a predominant focus within the incident management strategies for transportation on public roads.

8 Summary and Conclusions

The traffic impacts from the proposed Copi Mineral Sands Mine have been assessed and the key findings are as follows:

- Access to the site will be via Anabranch Mail Road and a new Site Access Road, approximately 35km from the Silver City Highway/Anabranch Mail Road intersection.
- Anabranch Mail Road was identified as having some sub-standard road geometry that would be required to be improved including widening to a minimum 7.5m wide travel width (not including shoulders), upgrading of the existing single grids to double grids and improved delineation of the curve and crest alignments. The intersection arrangement to connect the new Site Access Road and Anabranch Mail Road will result in alignment changes to Anabranch Mail Road at this location.
- The intersection of Silver City Highway and Anabranch Mail Road has sufficient Safe Intersection Sight Distance to meet the design speed of traffic on Silver City Highway where the speed limit is 110km/hr.
- The existing traffic volumes of Silver City Highway, both north and south of the site have been determined through recent traffic counts undertaken by Austraffic and Wentworth Shire Council, as well as TfNSW data from 2006 and 2010 with +1% annual traffic growth rates applied. The existing daily traffic volumes satisfy the design cross section widths of the road in line with Austroads.
- The existing traffic volumes for the road network through the Broken Hill township have been determined from Austraffic traffic count data. Wentworth Road, Patton Street and Comstock Street satisfy required cross section widths in line with Austroads, however some sections of Eyre Street and Holten Drive fall below the minimum width requirements for Level 4 vehicles. Minimum width requirements would be met if the bike lane located along these roads was removed, and lane marking was re-aligned.
- Pavement widening is required at a number of intersections through the Broken Hill township and at the Silver City Highway / Anabranch Mail Road intersection. The alignment of Anabranch Mail Road is proposed to be altered to suit the connection to the new Site Access Road. See Appendix A and B for Tonkin's concept designs at these intersections.
- The predicted additional daily traffic during the peak of construction will be approximately 110 daily vehicle movements, with an average of 56 daily vehicle movements over the entire construction period.
- The predicted additional daily traffic during the peak operation will, assuming the use of BAB Quad Road Trains, be approximately 126 daily vehicle movements, with an average of 86 daily vehicle movements over the entire operation period. Should AB-Triple Road Trains be used instead, peak operation will be approximately 132 daily vehicle movements, with an average of 92 daily vehicle movements over the entire operation period. Once operation of the mine has ceased and rehabilitation of the mine site is taking place, the daily traffic movements are expected to drop to 22 or below.
- Additional traffic generated by the project will not cause the future daily traffic volumes on the Silver City Highway, Wentworth Road, Patton Street, Comstock Street, Eyre Street and Holten Drive to increase above the design levels that would trigger road widening. Lane widening is recommended along Eyre Street and Holten Drive to be in accordance with requirements outlined in Austroads and the NHVR PBS Guidelines. It is noted that there is potential for this to be a line marking exercise as existing seal widths are more than sufficient, however would require the removal of a bike lane. Road widening will be required at a number of intersections along the haul route to allow for the movements of the Type 2 Road Trains proposed for hauling material from the mine site to the Rail Facility in Broken Hill.
- Localised road widening is required for new accesses off the Site Access Road to the Mine Camp and Mine Office and Workshop Area (see Section 7.3).
- A short section of Nulla Road is proposed to be closed during approximately years 11, 12 and 13 of the Project to permit mining operations through the road reserve. This section is proposed to be realigned following the closure of the existing alignment.
- A Construction Traffic Management Plan and an Operational Traffic Management Plan will be prepared in consultation with TfNSW. A Transport Management Plan will be required for any oversize and/or overmass deliveries to and from the site.
- A pavement assessment indicates the project will generate an estimated total of between 439,132 and 467,055 ESAs onto the road network. This is expected to bring forward some road maintenance.

Further discussion with Wentworth Shire Council should be undertaken to confirm the contribution requirements for road maintenance.

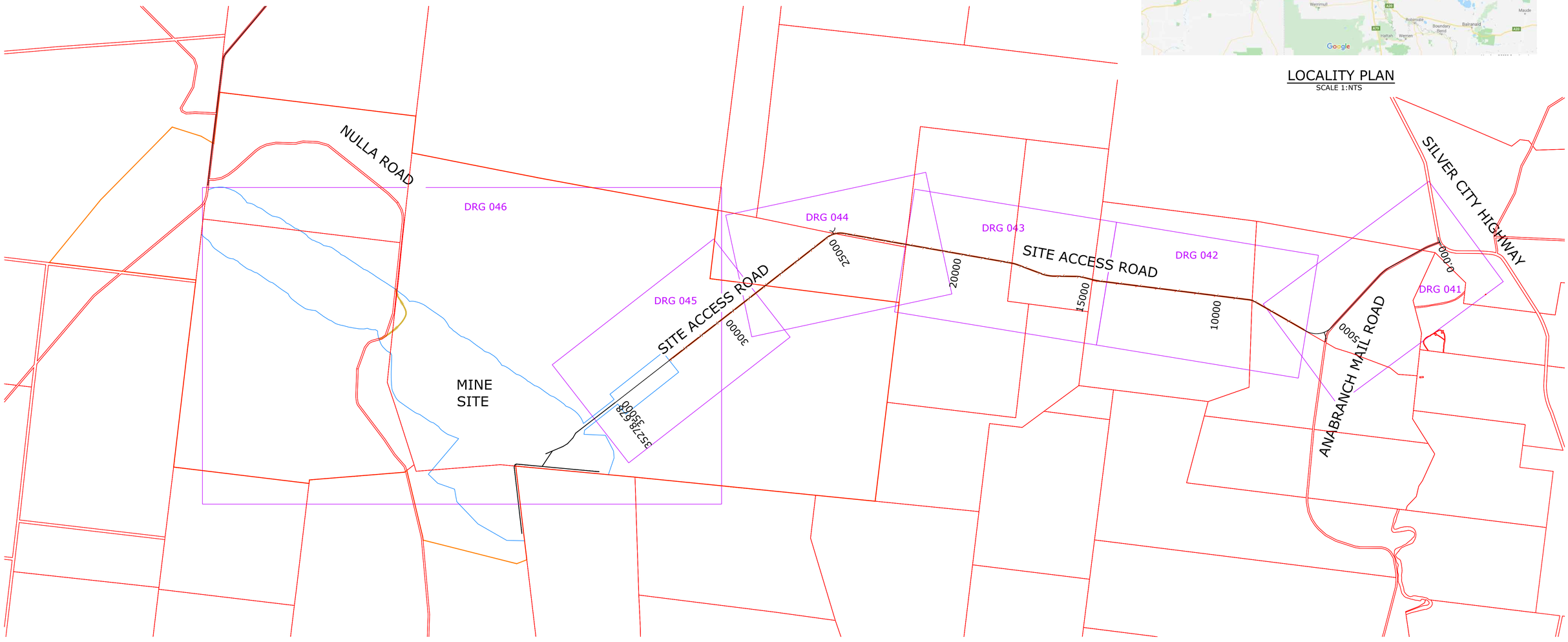
- A Fatigue Management Plan will be prepared to address how fatigue will be managed due to the number of light vehicle trips expected to be generated as a result of the Project.

Appendix A – Access Road Traffic Assessment Concept Plans

RW CORKERY & CO PTY LTD
COPI MINERAL SANDS MINE
ACCESS ROAD TRAFFIC ASSESSMENT

Sheet List Table	
Sheet Number	Sheet Title
101	LOCALITY & INDEX PLAN
102	TYPICAL ROAD SECTIONS
103	SITE ACCESS ROAD
104	SITE ACCESS ROAD
105	SITE ACCESS ROAD
106	SITE ACCESS ROAD
107	SITE ACCESS ROAD
108	MINE SITE
109	ANABRANCH MAIL ROAD & SITE ACCESS ROAD
110	ANABRANCH MAIL ROAD & SILVER CITY HIGHWAY
111	TURNPATHS AT ANABRANCH MAIL RD & SITE ACCESS ROAD
112	TURNPATHS AT ANABRANCH MAIL RD & SILVER CITY HIGHWAY
113	TURNPATHS AT ANABRANCH MAIL RD & SILVER CITY HIGHWAY
114	TURNPATHS AT RAIL SITE BROKEN HILL

LOCALITY PLAN
SCALE 1:NTS



PLAN
SCALE 1:75000

LEGEND

- CADASTRAL BOUNDARY
- MINE SITE BOUNDARY
- LIMIT OF DISTURBANCE

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

0 750 1,500 3,000 4,500
1 : 75,000m (A1) - 1 : 150,000m (A3)
100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:75000
SURVEYED: AERIAL
SURVEY DATE: ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

PUBLIC UTILITIES:
THE SERVICES SHOWN ARE DERIVED FROM PLANS OBTAINED FROM THE RELEVANT SERVICE AUTHORITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE WITH THE RELEVANT SERVICE AUTHORITIES FOR CONFIRMATION OF SERVICES AND THEIR LOCATION BEFORE EXCAVATION WORK COMMENCES.

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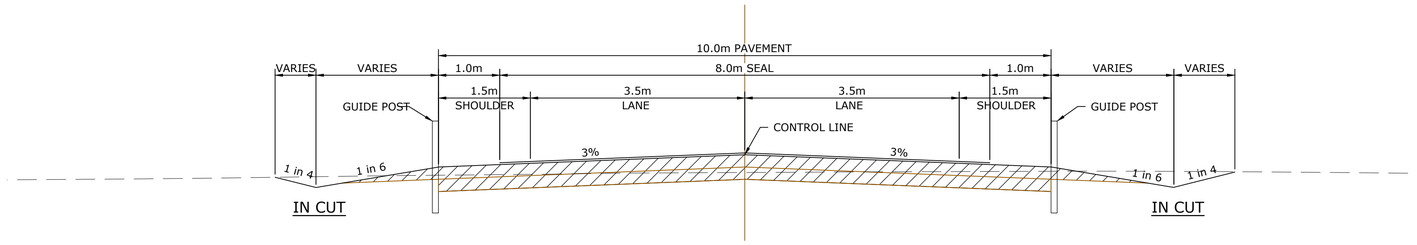
NOT FOR CONSTRUCTION

RW CORKERY & CO PTY LTD

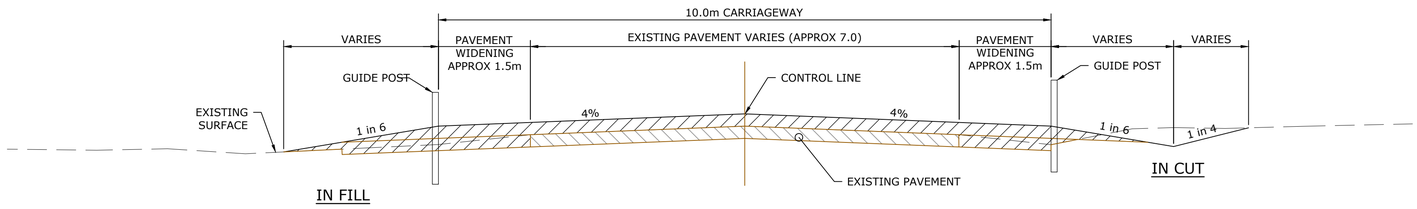
COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
ACCESS ROAD TRAFFIC ASSESSMENT
LOCALITY & INDEX PLAN

FILENAME: 20180871 ROAD 2024.DWG
PROJECT NUMBER: 20180871
DRAWING NUMBER: 101
REVISION: A

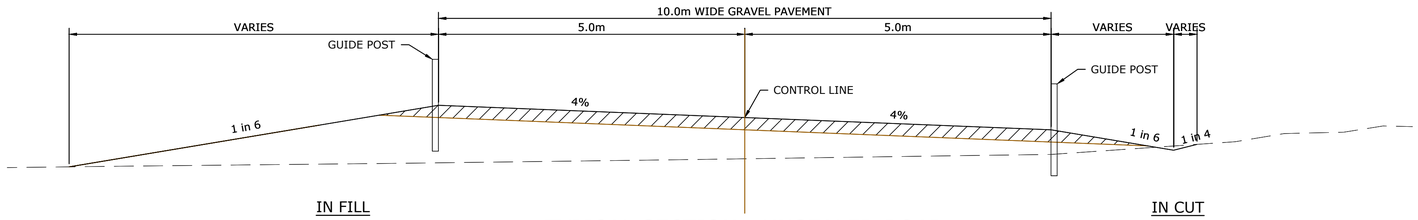
T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 ROAD 2024.DWG -C101- (19-03-24 8:48:09AM)



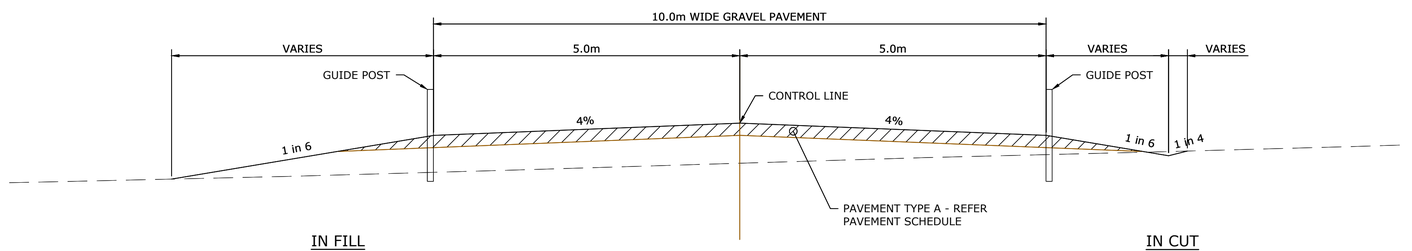
TYPICAL SECTION - SEALED
ANABRANCH MAIL ROAD & SITE ACCESS ROAD



TYPICAL SECTION - UNSEALED
ANABRANCH MAIL ROAD & SITE ACCESS ROAD



TYPICAL SECTION - UNSEALED ROAD
REALIGNED ROADS IN CURVES



TYPICAL SECTION - UNSEALED ROAD
REALIGNED ROADS EXCLUDING CURVES

NOTES:

1. TYPICAL SECTIONS ARE INDICATIVE ONLY. ACTUAL CROSS SECTIONS WILL VARY & ARE SUBJECT TO DETAILED DESIGN.
2. ROAD DESIGN TO BE UNDERTAKEN IN ACCORDANCE WITH AUSTROADS GUIDE TO ROAD DESIGN GUIDELINES & TO WENTWORTH SHIRE COUNCIL REQUIREMENTS.
3. DESIGN SPEED & DRAINAGE STANDARD OF ROAD TO BE CONFIRMED DURING DETAILED DESIGN & IN CONSULTATION WITH WENTWORTH SHIRE COUNCIL.
4. TRAFFIC CONTROL DEVICES TO BE DESIGNED IN ACCORDANCE WITH AS1742 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES & WENTWORTH SHIRE COUNCIL REQUIREMENTS.
5. DESIGN VEHICLES - TYPE 1 & TYPE 2 ROAD TRAINS (PBS LEVEL3 & 4)

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

SHEET SIZE
A1

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:50
SURVEYED: AERIAL
SURVEY DATE: ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

PUBLIC UTILITIES:
THE SERVICES SHOWN ARE DERIVED FROM PLANS OBTAINED FROM THE RELEVANT SERVICE AUTHORITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE WITH THE RELEVANT SERVICE AUTHORITIES FOR CONFIRMATION OF SERVICES AND THEIR LOCATION BEFORE EXCAVATION WORK COMMENCES.

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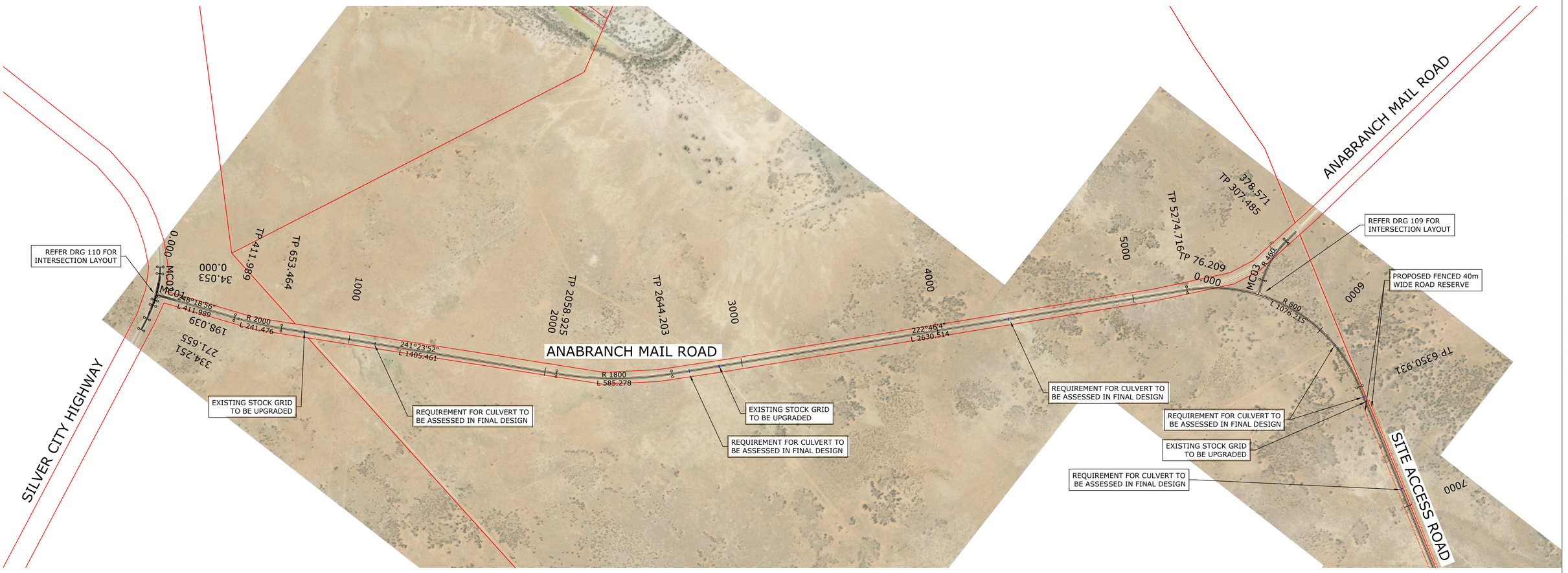
NOT FOR CONSTRUCTION

RW CORKERY & CO PTY LTD

COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
ACCESS ROAD TRAFFIC ASSESSMENT
TYPICAL ROAD SECTIONS

FILENAME:	PROJECT NUMBER	DRAWING NUMBER	REVISION
20180871 ROAD 2024.DWG	20180871	102	A

T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 ROAD 2024.DWG -C102- (19-03-24 8:48:11AM)



LEGEND

CADASTRAL BOUNDARY

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

PLAN
SCALE 1:10000

0 100 200 400 600
1:10000 (A1); 1:20000 (A3)
100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:10000
SURVEYED: AERIAL
SURVEY DATE: ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

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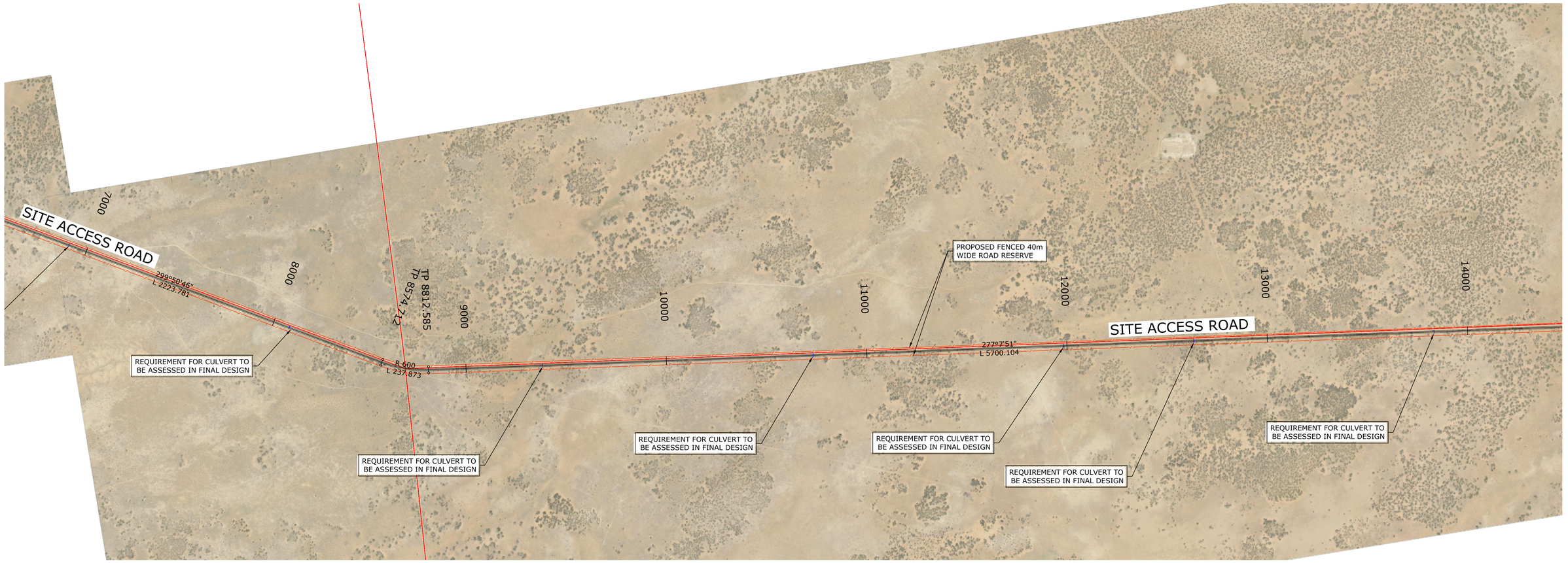
COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
ACCESS ROAD TRAFFIC ASSESSMENT
SITE ACCESS ROAD

FILENAME: 20180871 ROAD 2024.DWG
PROJECT NUMBER 20180871
DRAWING NUMBER 103
REVISION A

T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 ROAD 2024.DWG -C103- (19-03-24 8:48:18AM)

FOR CONTINUATION REFER DRAWING 103

FOR CONTINUATION REFER DRAWING 105



LEGEND

CADASTRAL BOUNDARY

PLAN

SCALE 1:10000

0 100 200 400 600

1:10000 (A1); 1:20000 (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE

A1

COORDS: GDA2020 MGA ZONE 54

DATUM: ALL LEVELS TO A.H.D.

SCALE: 1:10000

SURVEYED:AERIAL

SURVEY DATE:ACCESSED AUGUST 22

APPROVED / PROJECT LEADER

N.FIRTH

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

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COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
ACCESS ROAD TRAFFIC ASSESSMENT
SITE ACCESS ROAD

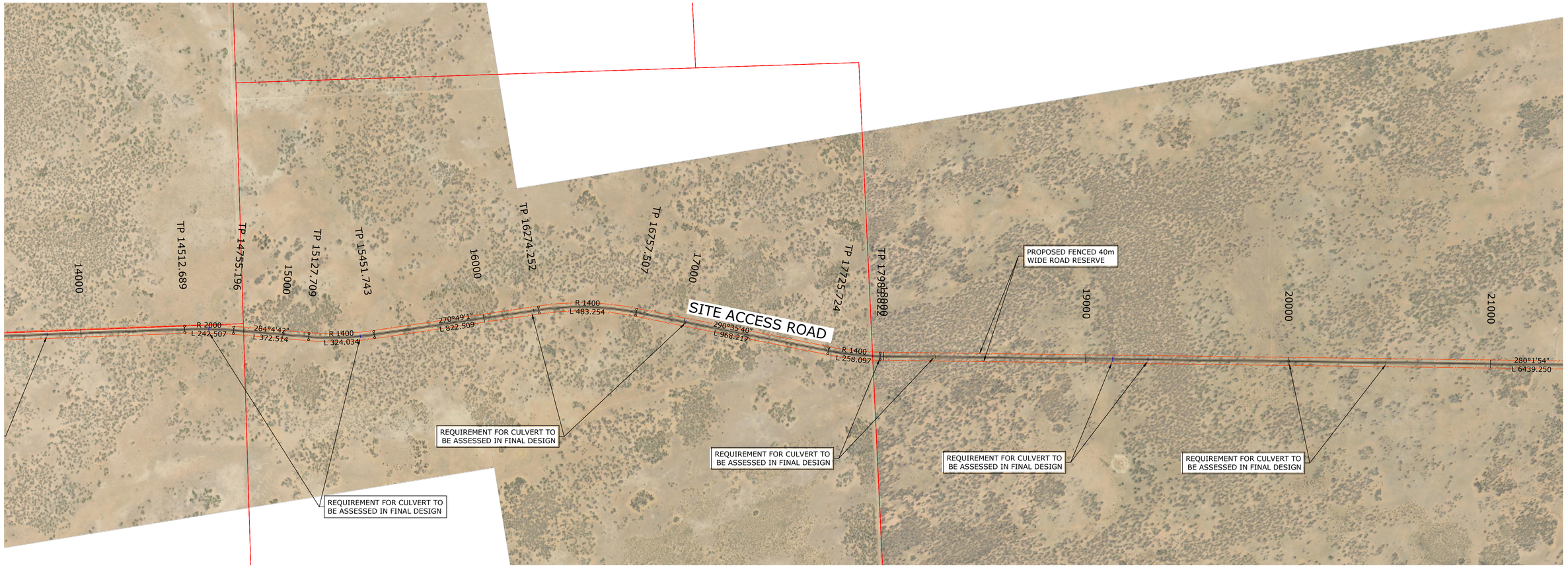
FILENAME: 20180871 ROAD 2024.DWG

PROJECT NUMBER: 20180871

DRAWING NUMBER: 104

REVISION: A

FOR CONTINUATION REFER DRAWING 104



FOR CONTINUATION REFER DRAWING 106

LEGEND

CADASTRAL BOUNDARY

PLAN

SCALE 1:10000

0 100 200 400 600

1:10000 (A1); 1:20000 (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:10000
SURVEYED:AERIAL
SURVEY DATE:ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

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COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
ACCESS ROAD TRAFFIC ASSESSMENT
SITE ACCESS ROAD

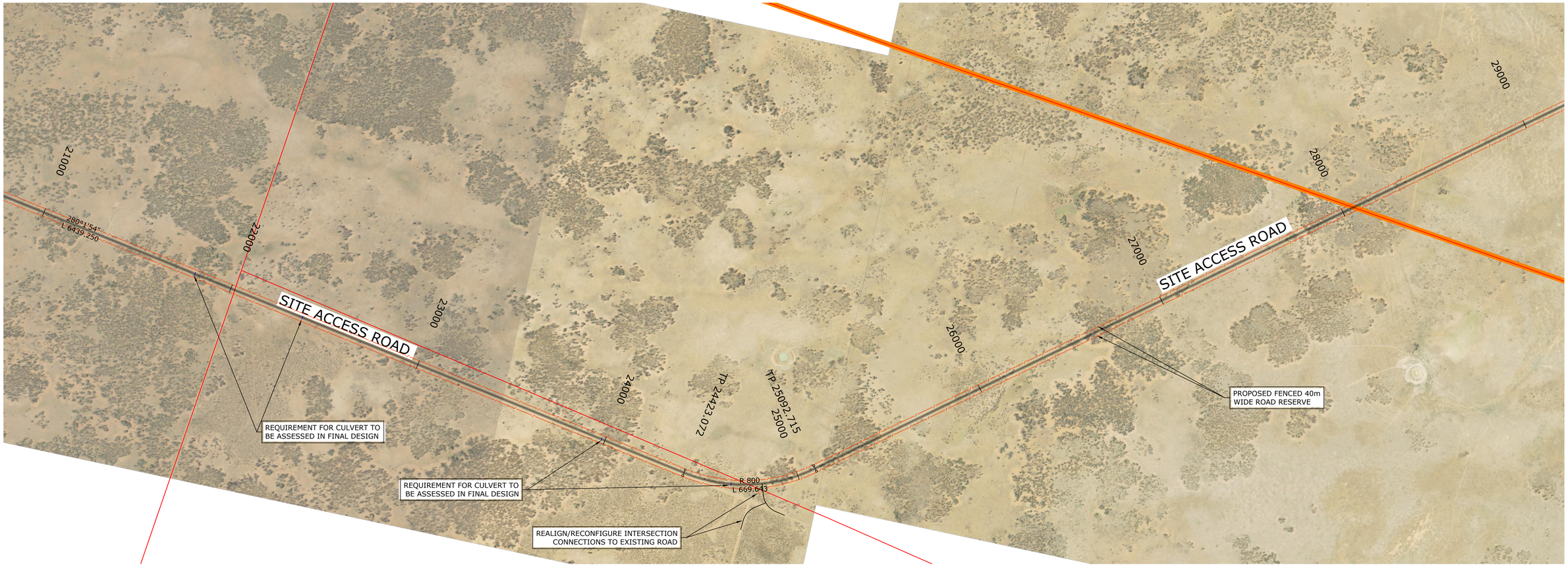
FILENAME: 20180871 ROAD 2024.DWG

PROJECT NUMBER	DRAWING NUMBER	REVISION
20180871	105	A

T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 ROAD 2024.DWG -C105- (19-03-24 8:48:32AM)

FOR CONTINUATION REFER DRAWING 105

FOR CONTINUATION REFER DRAWING 107



LEGEND

CADASTRAL BOUNDARY

PLAN

SCALE 1:10000

0 100 200 400 600

1:10000 (A1); 1:20000 (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE A1

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:10000
SURVEYED:AERIAL
SURVEY DATE:ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

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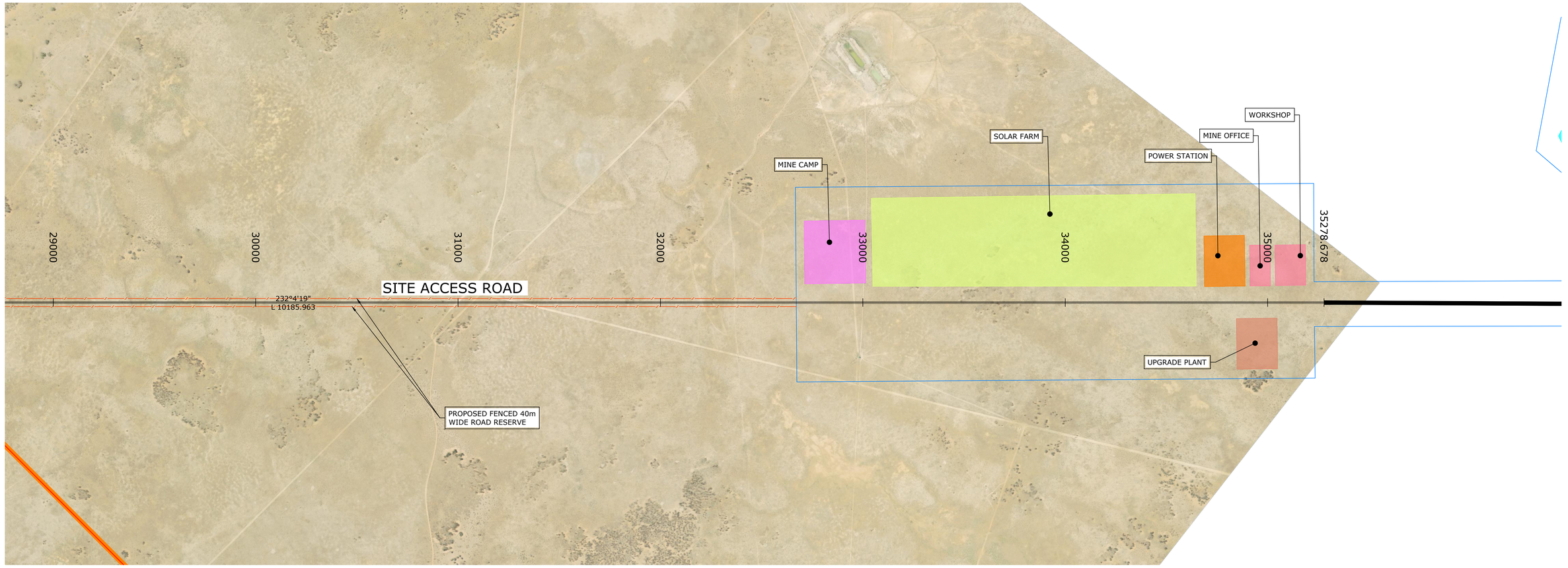
COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
ACCESS ROAD TRAFFIC ASSESSMENT
SITE ACCESS ROAD

FILENAME:	PROJECT NUMBER	DRAWING NUMBER	REVISION
20180871 ROAD 2024.DWG	20180871	106	A

T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 ROAD 2024.DWG -C106- (19-03-24 8:48:35AM)



LEGEND

- CADASTRAL BOUNDARY
- MINE SITE BOUNDARY
- LIMIT OF DISTURBANCE

PLAN
SCALE 1:10000

0 100 200 400 600
1:10000 (A1); 1:20000 (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:10000
SURVEYED:AERIAL
SURVEY DATE:ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

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COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
ACCESS ROAD TRAFFIC ASSESSMENT
SITE ACCESS ROAD

FILENAME: 20180871 ROAD 2024.DWG
PROJECT NUMBER 20180871
DRAWING NUMBER 107
REVISION A

T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 ROAD 2024.DWG -C107- (19-03-24 8:48:39AM)

PINECAMP ROAD

NULLA ROAD

REALIGNED NULLA ROAD
(POST YEAR 13)

LIMIT OF DISTURBANCE BOUNDARY

MINE PATH

NULLA ROAD CLOSURE
(YEARS 11, 12 & 13)

UPGRADE PLANT

BUFFER ZONE

STOCKPILE AREA

SITE ACCESS ROAD

MINE CAMP

SOLAR FARM

POWER STATION

MINE OFFICE

WORKSHOP

WATER STORAGE DAM

STARTER POND

TAILINGS STORAGE

FOR CONTINUATION REFER DRAWING 107

LEGEND

- CADASTRAL BOUNDARY
- MINE SITE BOUNDARY
- LIMIT OF DISTURBANCE
- EXTRACTION AREA

PLAN
SCALE 1:25000

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

0 250 500 1000 1500
1:25000 (A1); 1:50000 (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:25000
SURVEYED:AERIAL
SURVEY DATE:ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

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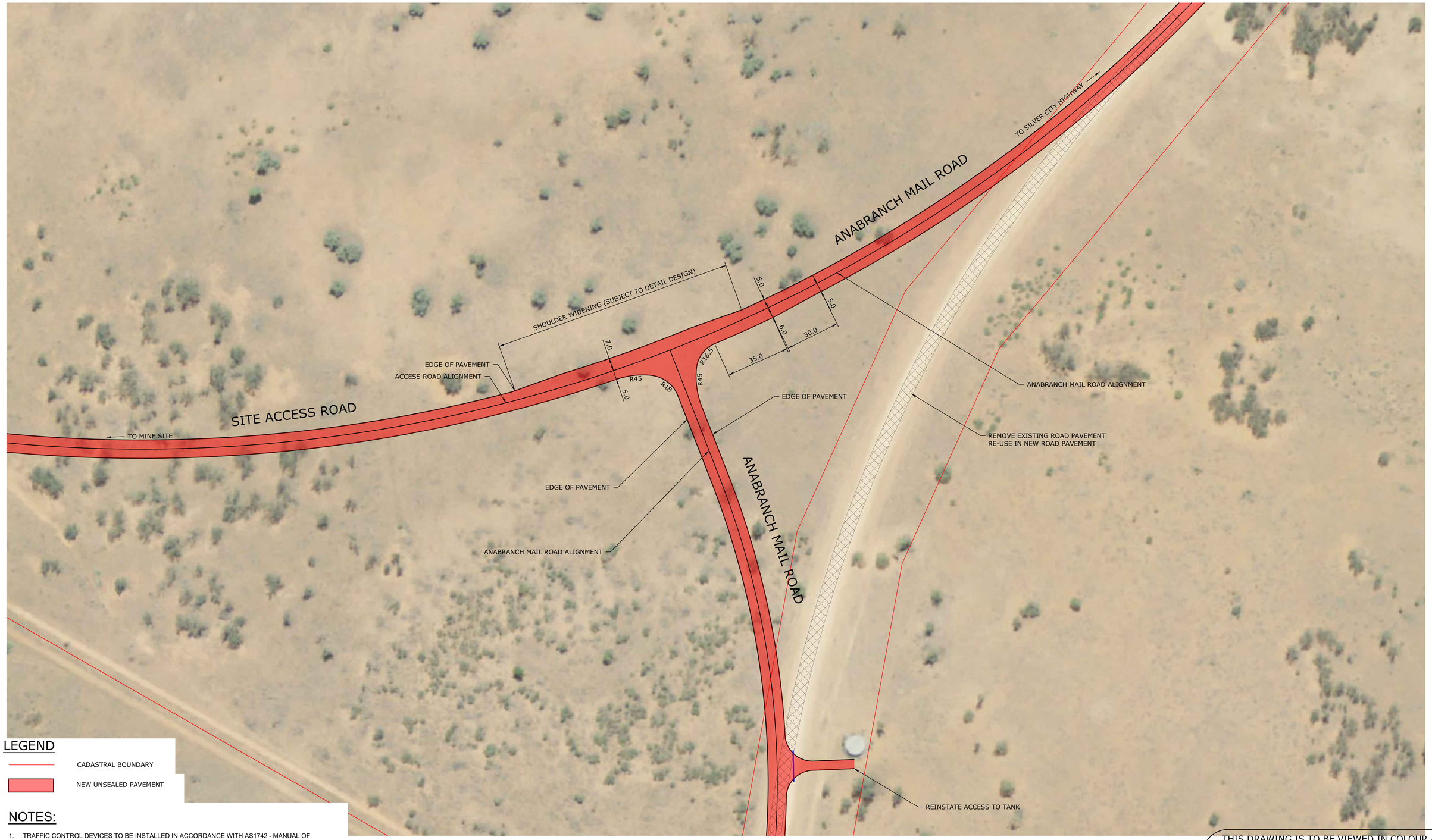
RW CORKERY & CO PTY LTD

COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
ACCESS ROAD TRAFFIC ASSESSMENT
MINE SITE

FILENAME: 20180871 ROAD 2024.DWG

PROJECT NUMBER	DRAWING NUMBER	REVISION
20180871	108	A

T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 ROAD 2024.DWG -C108- (19-03-24 8:48:42AM)



LEGEND

- CADASTRAL BOUNDARY
- NEW UNSEALED PAVEMENT

NOTES:

1. TRAFFIC CONTROL DEVICES TO BE INSTALLED IN ACCORDANCE WITH AS1742 - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, & CURRENT AUSTROAD STANDARDS.
2. DESIGN VEHICLE : AB TRIPLE (TYPE 1 ROAD TRAIN)
3. INTERSECTION LAYOUT BASED ON AUSTROADS BASIC LEFT & RIGHT TURN TREATMENTS.
4. SIGNAGE PLAN TO BE FINALISED IN DETAILED DESIGN.

PLAN
SCALE 1:1000

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

0 5 10 20 30
1:500 (A1); 1:1000 (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:500
SURVEYED:AERIAL
SURVEY DATE:ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

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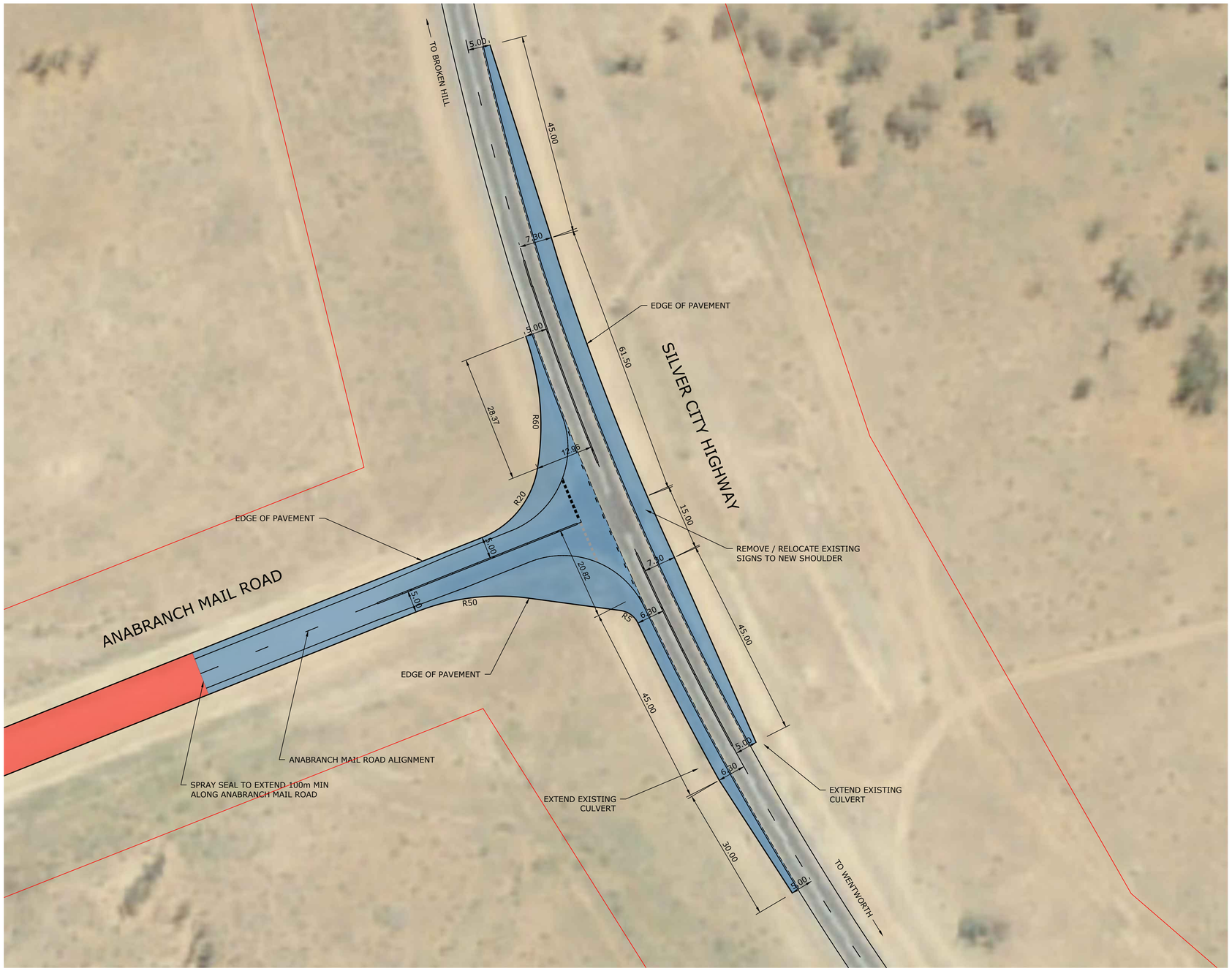
COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
INTERSECTION TRAFFIC ASSESSMENT
ANABRANCH MAIL ROAD & SITE ACCESS ROAD

FILENAME:	PROJECT NUMBER	DRAWING NUMBER	REVISION
20180871 INTERS 2024.DWG	20180871	109	A

T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 INTERS 2024.DWG -C109- (19-03-24 8:48:45AM)



LEGEND

- CADASTRAL BOUNDARY
- NEW SEALED PAVEMENT
- NEW UNSEALED PAVEMENT

NOTES:

1. TRAFFIC CONTROL DEVICES TO BE INSTALLED IN ACCORDANCE WITH AS1742 - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, & CURRENT AUSTROAD STANDARDS.
2. DESIGN VEHICLE : A TRIPLE (TYPE 2 ROAD TRAIN) FOR RIGHT IN AND LEFT OUT TURNS
   AB TRIPLE (TYPE 1 ROAD TRAIN) FOR ALL OTHER TURNS
3. INTERSECTION LAYOUT BASED ON AUSTROADS BASIC LEFT & RIGHT TURN TREATMENTS.
4. SIGNAGE PLAN TO BE FINALISED IN DETAILED DESIGN.

PLAN
SCALE 1:500

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

0 5 10 20 30
1:500 (A1); 1:1000 (A3)
100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:500
SURVEYED: AERIAL
SURVEY DATE: ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

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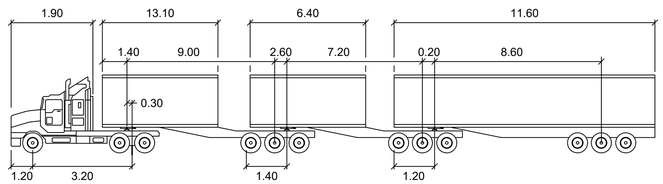
RW CORKERY & CO PTY LTD

COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
INTERSECTION TRAFFIC ASSESSMENT
ANABRANCH MAIL ROAD & SILVER CITY HIGHWAY

FILENAME:	PROJECT NUMBER	DRAWING NUMBER	REVISION
20180871 INTERS 2024.DWG	20180871	110	A

PLAN
SCALE 1:500



AB Triple 36.5m

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 13.4
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

NOTES:

1. TRAFFIC CONTROL DEVICES TO BE INSTALLED IN ACCORDANCE WITH AS1742 - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, & CURRENT AUSTROAD STANDARDS.
2. DESIGN VEHICLE - AB TRIPLE (TYPE 1 ROAD TRAIN)
3. INTERSECTION LAYOUT BASED ON AUSTROADS BASIC LEFT & RIGHT TURN TREATMENTS.
4. SIGNAGE PLAN TO BE FINALISED IN DETAILED DESIGN.

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0 5 10 20 30
1:500 (A1); 1:1000 (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:500
SURVEYED: AERIAL
SURVEY DATE: ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMENT	30.01.24	TONKIN	TG

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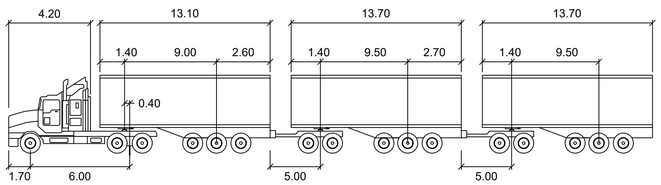
COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
INTERSECTION TRAFFIC ASSESSMENT
TURNPATHS AT ANABRANCH MAIL ROAD & SITE ACCESS ROAD
TYPE 1 ROAD TRAIN (AB-TRIPLE)

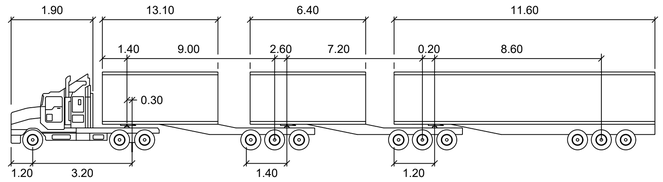
FILENAME: 20180871 INTERS 2024.DWG
PROJECT NUMBER: 20180871
DRAWING NUMBER: 111
REVISION: A

PLAN
SCALE 1:500



A-TRIPLE

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 25.6
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		



AB Triple 36.5m

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 13.4
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

NOTES:

1. TRAFFIC CONTROL DEVICES TO BE INSTALLED IN ACCORDANCE WITH AS1742 - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, & CURRENT AUSTROAD STANDARDS.
2. DESIGN VEHICLE : A TRIPLE (TYPE 2 ROAD TRAIN) FOR RIGHT IN AND LEFT OUT TURNS
   AB TRIPLE (TYPE 1 ROAD TRAIN) FOR ALL OTHER TURNS
3. INTERSECTION LAYOUT BASED ON AUSTROADS BASIC LEFT & RIGHT TURN TREATMENTS.
4. SIGNAGE PLAN TO BE FINALISED IN DETAILED DESIGN.

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

0 5 10 20 30
1:500 (A1); 1:1000 (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:500
SURVEYED:AERIAL
SURVEY DATE:ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

PUBLIC UTILITIES:
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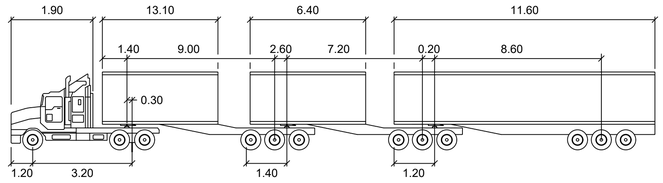
RW CORKERY & CO PTY LTD

COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
INTERSECTION TRAFFIC ASSESSMENT
TURNPATHS AT ANABRANCH MAIL ROAD & SILVER CITY HIGHWAY
TYPE 1, TYPE 2 ROAD TRAINS (AB-TRIPLE, A-TRIPLE)

FILENAME: 20180871 INTERS 2024.DWG
PROJECT NUMBER: 20180871
DRAWING NUMBER: 112
REVISION: A

T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 INTERS 2024.DWG -C112- (19-03-24 8:48:55AM)

PLAN
SCALE 1:500



AB Triple 36.5m

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 13.4
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

NOTES:

1. TRAFFIC CONTROL DEVICES TO BE INSTALLED IN ACCORDANCE WITH AS1742 - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, & CURRENT AUSTROAD STANDARDS.
2. DESIGN VEHICLE : A TRIPLE (TYPE 2 ROAD TRAIN) FOR RIGHT IN AND LEFT OUT TURNS
   AB TRIPLE (TYPE 1 ROAD TRAIN) FOR ALL OTHER TURNS
3. INTERSECTION LAYOUT BASED ON AUSTROADS BASIC LEFT & RIGHT TURN TREATMENTS.
4. SIGNAGE PLAN TO BE FINALISED IN DETAILED DESIGN.

0 5 10 20 30
1:500 (A1); 1:1000 (A3)
100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:500
SURVEYED: AERIAL
SURVEY DATE: ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

PUBLIC UTILITIES:
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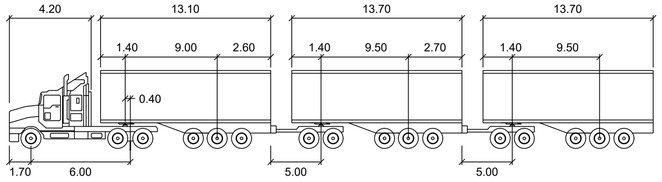
RW CORKERY & CO PTY LTD

COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
INTERSECTION TRAFFIC ASSESSMENT
TURNPATHS AT ANABRANCH MAIL ROAD & SILVER CITY HIGHWAY
TYPE 1 ROAD TRAIN (AB-TRIPLE)

FILENAME: 20180871 INTERS 2024.DWG
PROJECT NUMBER: 20180871
DRAWING NUMBER: 113
REVISION: A

T:\2018\20180871 COPI MINERAL SANDS MINE - TRAFFIC ASSESSMENT - RW CORKERY & CO PTY LTD\3_DEVELOPMENT\1 ACAD\OPTION 2024\20180871 INTERS 2024.DWG -C113- (19-03-24 8:48:59AM)



A-TRIPLE

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 25.6
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

PLAN
SCALE 1:750

LEGEND

NEW PAVEMENT

NOTES:

1. TRAFFIC CONTROL DEVICES TO BE INSTALLED IN ACCORDANCE WITH AS1742 - MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, & CURRENT AUSTROAD STANDARDS.
2. DESIGN VEHICLE : A TRIPLE (TYPE 1 ROAD TRAIN)
3. INTERSECTION LAYOUT BASED ON AUSTROADS BASIC LEFT & RIGHT TURN TREATMENTS.
4. SIGNAGE PLAN TO BE FINALISED IN DETAILED DESIGN.

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

0 7.5 15 30 45
1:750 (A1); 1:1500 (A3)
100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:750
SURVEYED: AERIAL
SURVEY DATE: ACCESSED AUGUST 22
APPROVED / PROJECT LEADER
N.FIRTH

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	TRAFFIC ASSESSMMENT	30.01.24	TONKIN	TG

PUBLIC UTILITIES:
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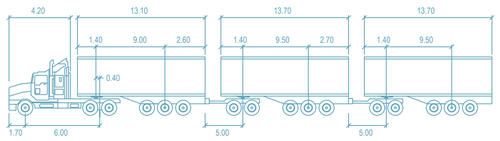
RW CORKERY & CO PTY LTD

COPI MINERAL SANDS MINE TRAFFIC ASSESSMENT
RAIL SITE TRAFFIC ASSESSMENT
TURNPATHS AT RAIL SITE BROKEN HILL
TYPE 2 ROAD TRAIN (A-TRIPLE)

FILENAME: 20180871 RAIL 2024.DWG
PROJECT NUMBER: 20180871
DRAWING NUMBER: 114
REVISION: A

Appendix B – Broken Hill Intersections Locality and Drawing Index Plan



TYPE 2 ROAD TRAIN (A-TRIPLE)

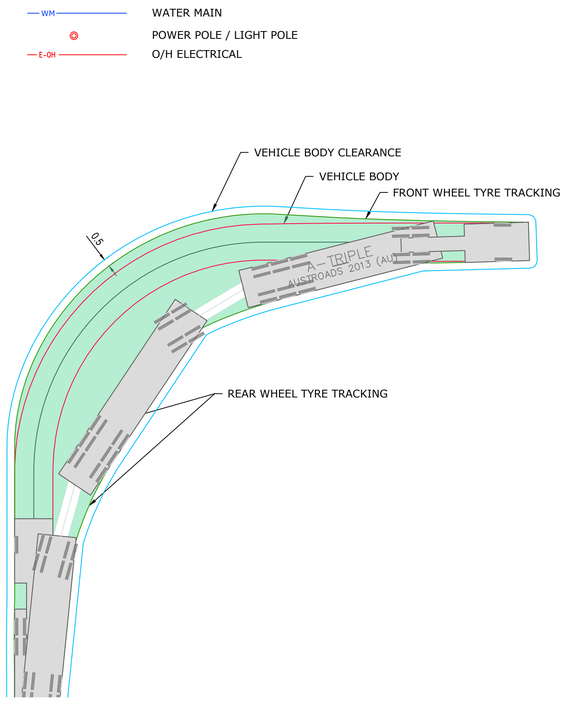
	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 25.6
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

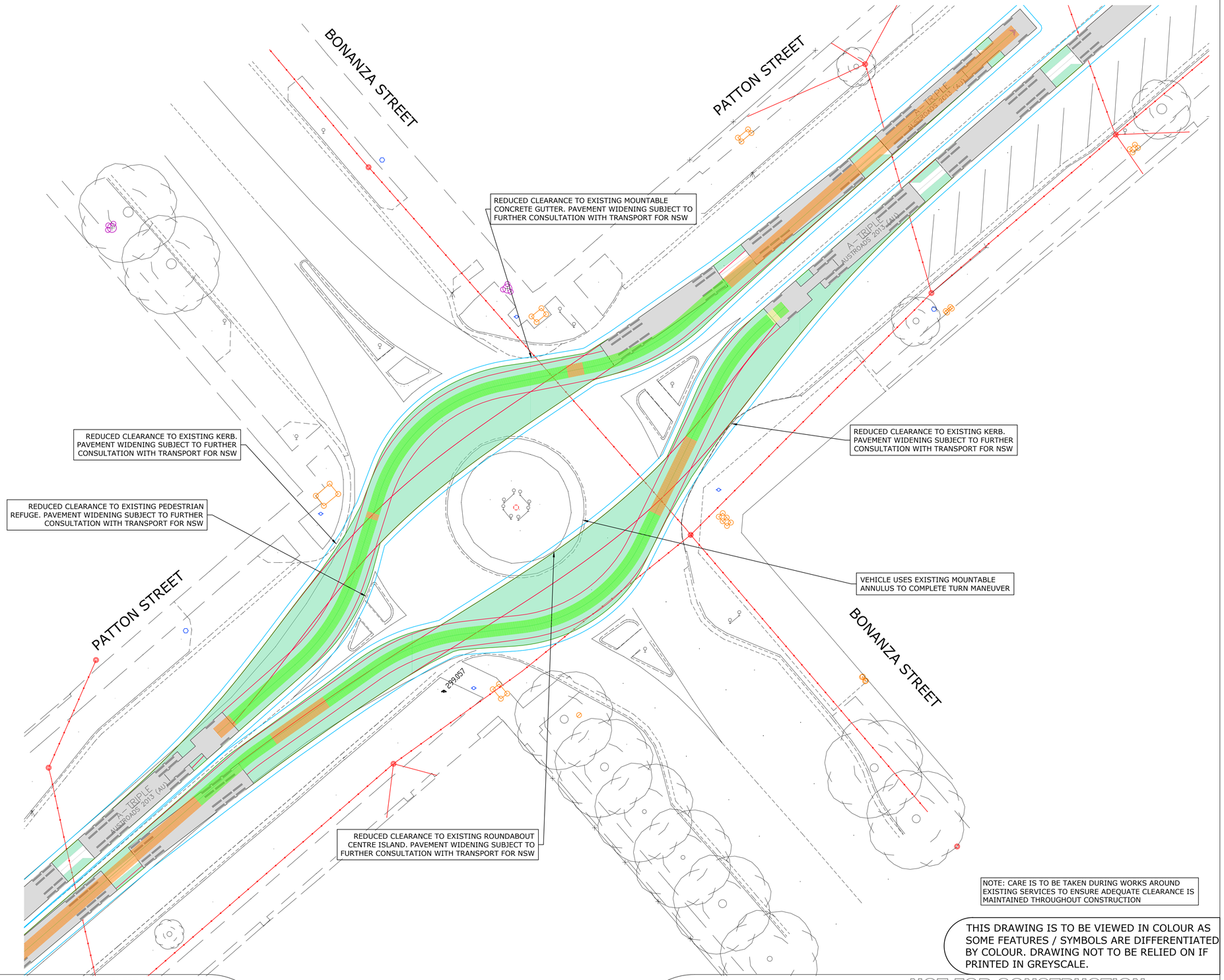
SPEED LEGEND

- 1-15km/h
- 15-25km/h
- >25km/h

LEGEND

- CADASTRAL BOUNDARY
- EXISTING COMMUNICATIONS PIT
- N — NBN CONDUIT
- T — TELSTRA CONDUIT
- WATER HYDRANT
- WM — WATER MAIN
- POWER POLE / LIGHT POLE
- E-OH — O/H ELECTRICAL





NOTE: CARE IS TO BE TAKEN DURING WORKS AROUND EXISTING SERVICES TO ENSURE ADEQUATE CLEARANCE IS MAINTAINED THROUGHOUT CONSTRUCTION

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0 2 4 8 12
1 : 200m (A1) - 1 : 400m (A3)
100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	CONCEPT DESIGN	28.06.23	TONKIN	TONKIN

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:200
SURVEYED: P MAW
SURVEY DATE: MAY 23
APPROVED / PROJECT LEADER
N.FIRTH

NOT FOR CONSTRUCTION

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RZ RESOURCES LIMITED

COPI MINERAL SANDS MINE CONCEPT DESIGN
PATTON & BONANZA STREET ROUNDABOUT
A-TRIPLE EXISTING ROUNDABOUT

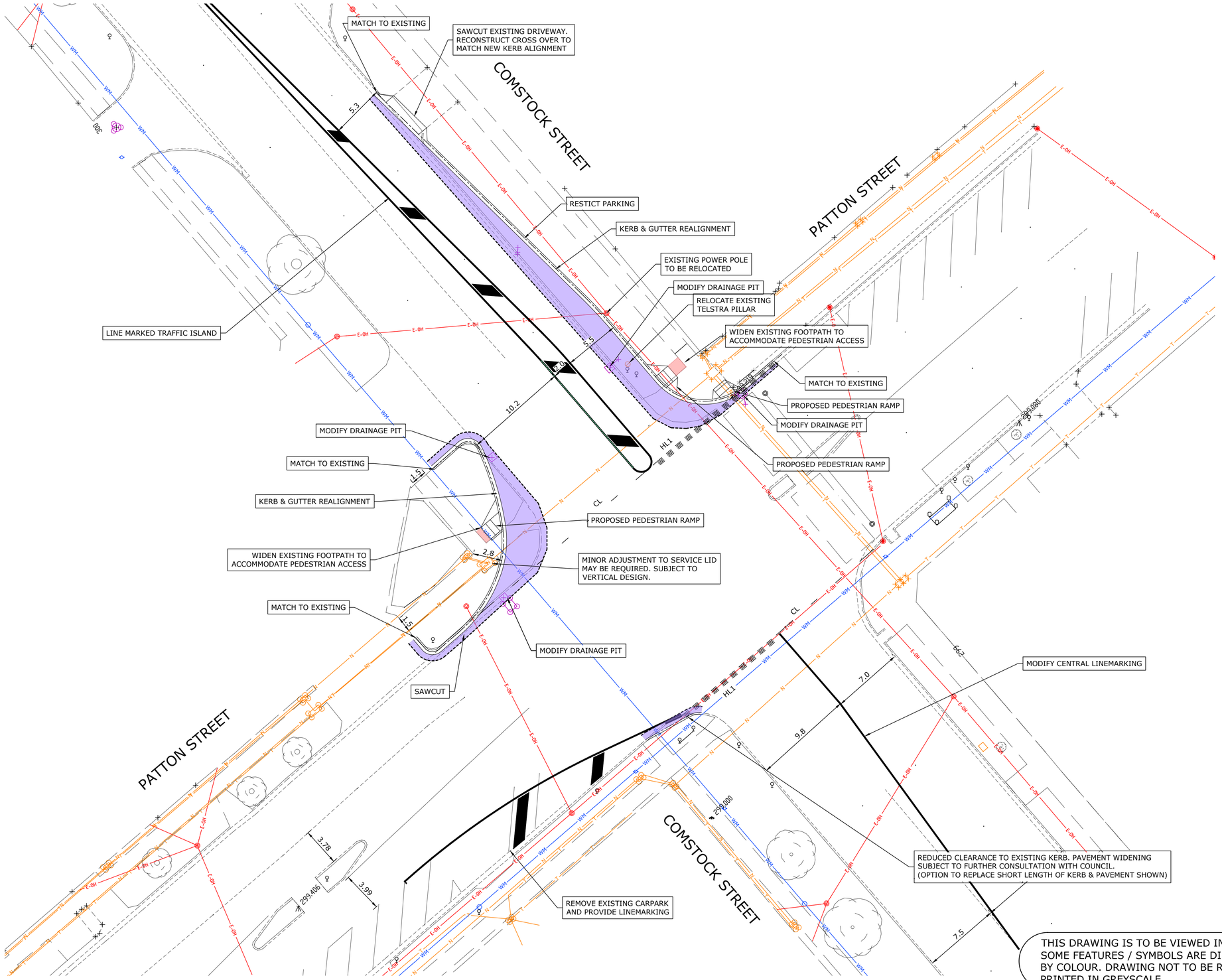
FILENAME: 222205 CONCEPT DESIGN.DWG
PROJECT NUMBER: 222205
DRAWING NUMBER: 100
REVISION: A

C:\USERS\TONYGE~1\APPDATA\LOCAL\TEMP\ACPUBLISH_3180\222205 CONCEPT DESIGN.DWG -SK100- (28-06-23 3:47:21PM)

LEGEND

- CADASTRAL BOUNDARY
- NEW KERB & GUTTER
- NEW SEALED PAVEMENT (TYPE 1)
- NEW FOOTPATH PAVEMENT
- NEW SEALED PAVEMENT (TYPE 2)
- NEW CONCRETE PAVEMENT
- SAWCUT
- EXISTING COMMUNICATIONS PIT
- N — NBN CONDUIT
- T — TELSTRA CONDUIT
- WATER HYDRANT
- WM — WATER MAIN
- POWER POLE / LIGHT POLE
- E-OH — O/H ELECTRICAL
- 450mm WIDE HOLDING LINE
- 100mm WIDE CONTINUITY LINE

NOTE: CARE IS TO BE TAKEN DURING WORKS AROUND EXISTING SERVICES TO ENSURE ADEQUATE CLEARANCE IS MAINTAINED THROUGHOUT CONSTRUCTION



PUBLIC UTILITIES:

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0 2 4 8 12

1 : 200m (A1) - 1 : 400m (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	CONCEPT DESIGN	28.06.23	TONKIN	TONKIN

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.

SCALE: 1:200

SURVEYED: P MAW
SURVEY DATE: MAY 23

APPROVED / PROJECT LEADER
N.FIRTH

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RZ RESOURCES LIMITED

COPI MINERAL SANDS MINE CONCEPT DESIGN
PATTON & COMSTOCK STREET INTERSECTION CONCEPT DESIGN

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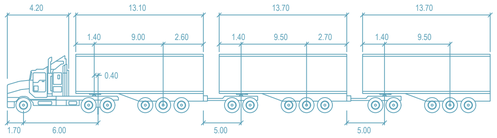
FILENAME:	PROJECT NUMBER	DRAWING NUMBER	REVISION
222205 CONCEPT DESIGN.DWG	222205	200	A

C:\USERS\TONYGE~1\APPDATA\LOCAL\TEMP\ACPUBLISH_3180\222205 CONCEPT DESIGN.DWG -SK200- (28-06-23 3:47:23PM)

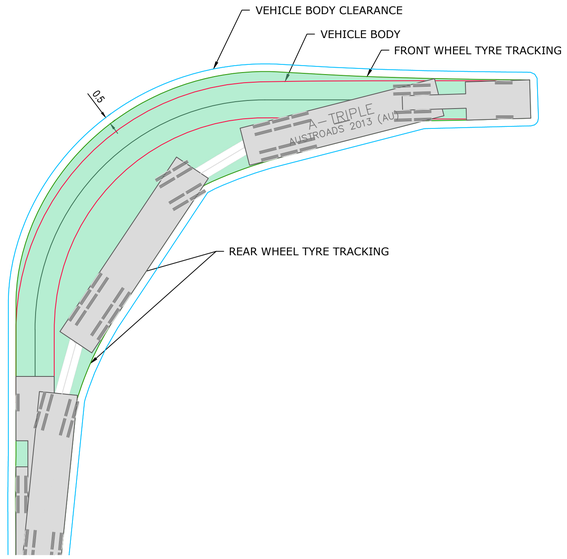


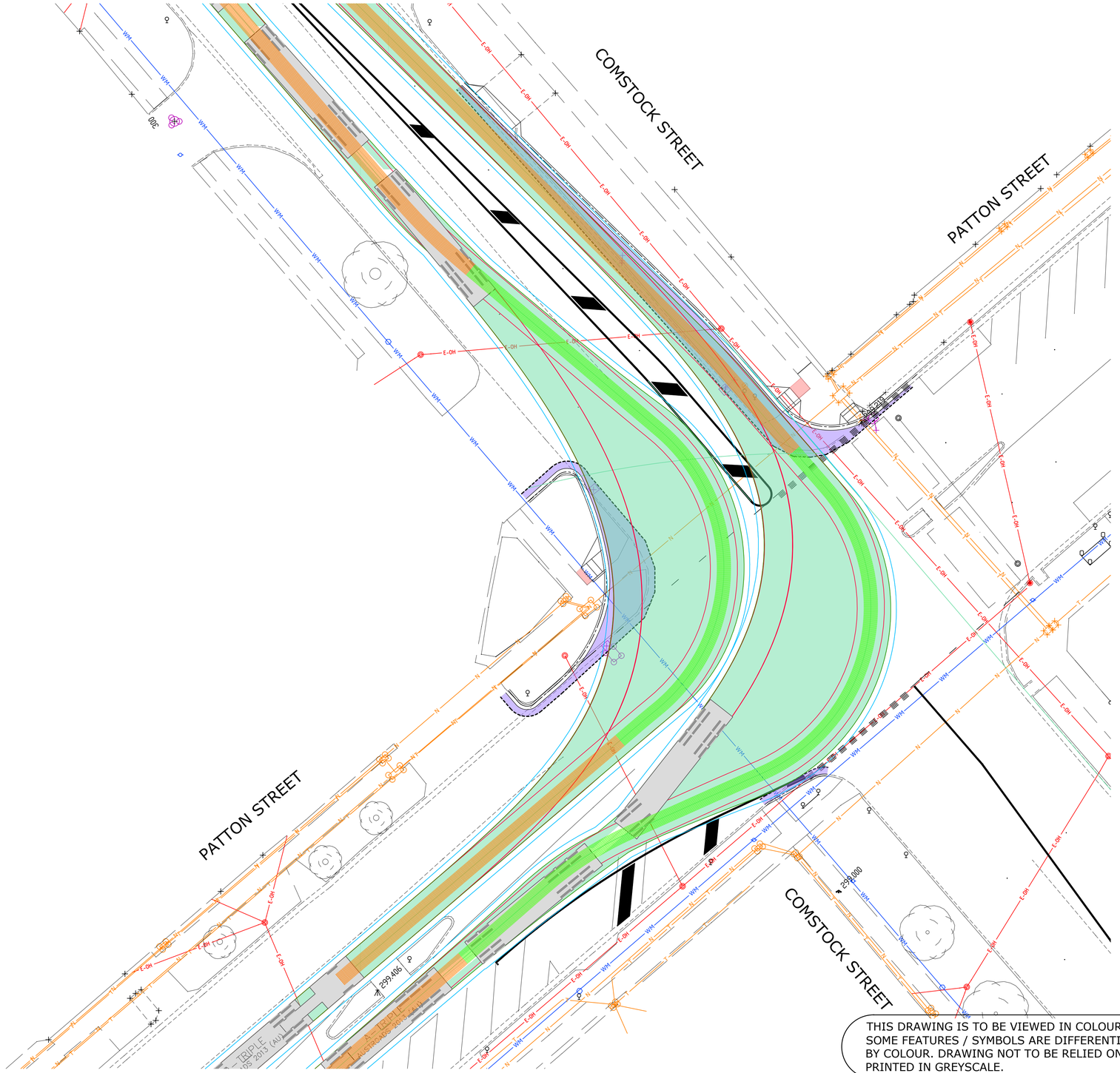
TYPE 2 ROAD TRAIN (A-TRIPLE)

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 25.6
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

SPEED LEGEND

- 1-15km/h
- 15-25km/h
- >25km/h





PUBLIC UTILITIES:

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0 2 4 8 12

1 : 200m (A1) - 1 : 400m (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	CONCEPT DESIGN	28.06.23	TONKIN	TONKIN

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:200
SURVEYED: P MAW
SURVEY DATE: MAY 23
APPROVED / PROJECT LEADER
N.FIRTH

NOT FOR CONSTRUCTION

RZ RESOURCES LIMITED

COPI MINERAL SANDS MINE CONCEPT DESIGN
PATTON & COMSTOCK STREET INTERSECTION
A-TRIPLE TURNPATHS

tonkin.com.au

FILENAME: 222205 CONCEPT DESIGN.DWG

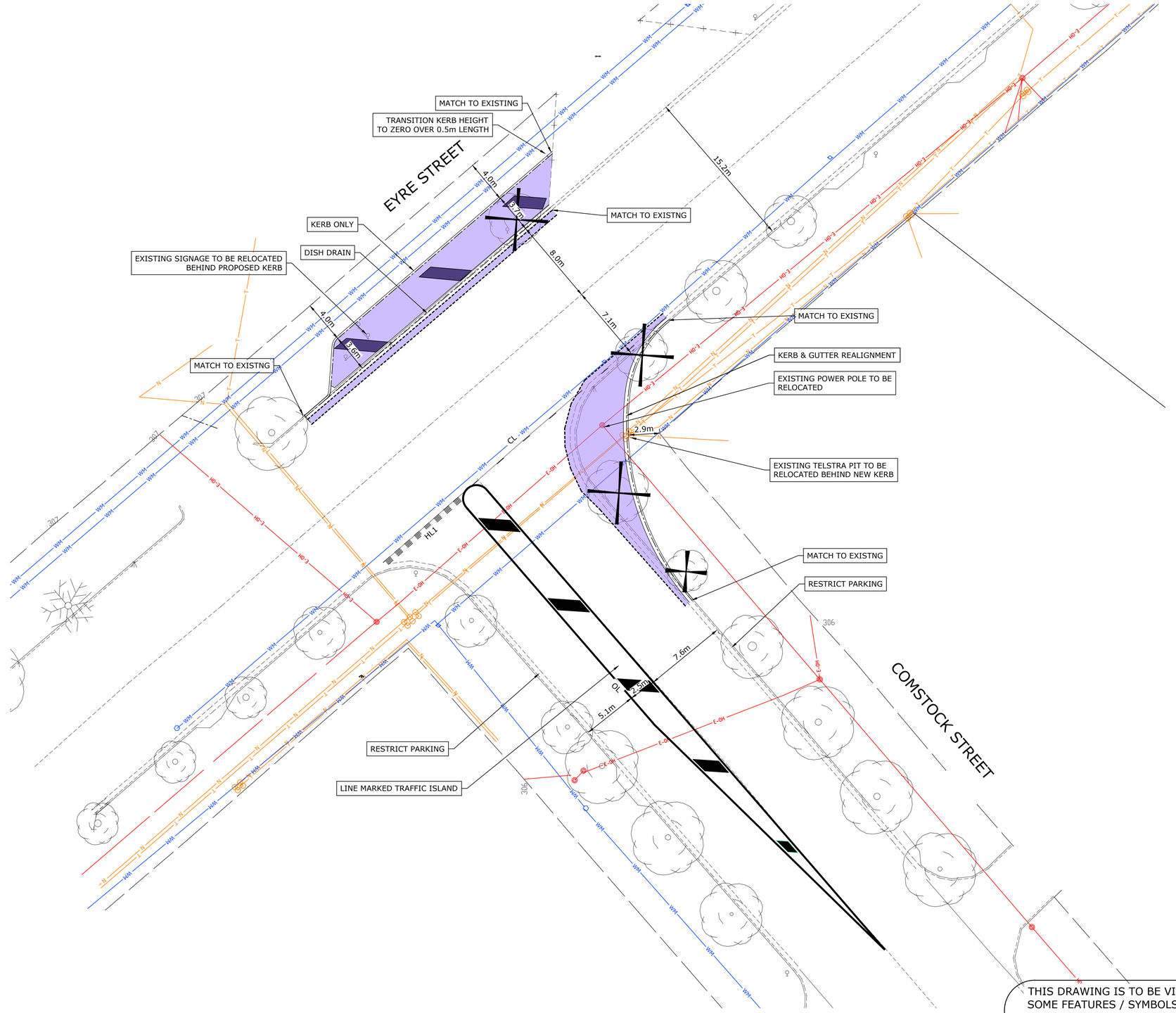
PROJECT NUMBER	DRAWING NUMBER	REVISION
222205	201	A

C:\USERS\TONYGE~1\APPDATA\LOCAL\TEMP\ACPUBLISH_3180\222205 CONCEPT DESIGN.DWG -SK201- (28-06-23 3:47:27PM)

LEGEND

- CADASTRAL BOUNDARY
- NEW KERB & GUTTER
- NEW SEALED PAVEMENT (TYPE 1)
- NEW FOOTPATH PAVEMENT
- NEW SEALED PAVEMENT (TYPE 2)
- NEW CONCRETE PAVEMENT
- SAWCUT
- EXISTING COMMUNICATIONS PIT
- NBN CONDUIT
- TELSTRA CONDUIT
- WATER HYDRANT
- WATER MAIN
- POWER POLE / LIGHT POLE
- O/H ELECTRICAL
- 450mm WIDE HOLDING LINE
- 100mm WIDE CONTINUITY LINE

NOTE: CARE IS TO BE TAKEN DURING WORKS AROUND EXISTING SERVICES TO ENSURE ADEQUATE CLEARANCE IS MAINTAINED THROUGHOUT CONSTRUCTION



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0 2 4 8 12

1 : 200m (A1) - 1 : 400m (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	CONCEPT DESIGN	28.06.23	TONKIN	TONKIN

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:200
SURVEYED:P MAW
SURVEY DATE:MAY 23
APPROVED / PROJECT LEADER
N.FIRTH

NOT FOR CONSTRUCTION

RZ RESOURCES LIMITED

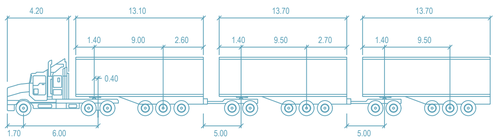
COPI MINERAL SANDS MINE CONCEPT DESIGN
COMSTOCK & EYRE STREET INTERSECTION CONCEPT DESIGN

tonkin.com.au

FILENAME: 222205 CONCEPT DESIGN.DWG

PROJECT NUMBER	DRAWING NUMBER	REVISION
222205	300	A

C:\USERS\TONYGE~1\APPDATA\LOCAL\TEMP\ACPUBLISH_3180\222205 CONCEPT DESIGN.DWG -SK300- (28-06-23 3:47:28PM)

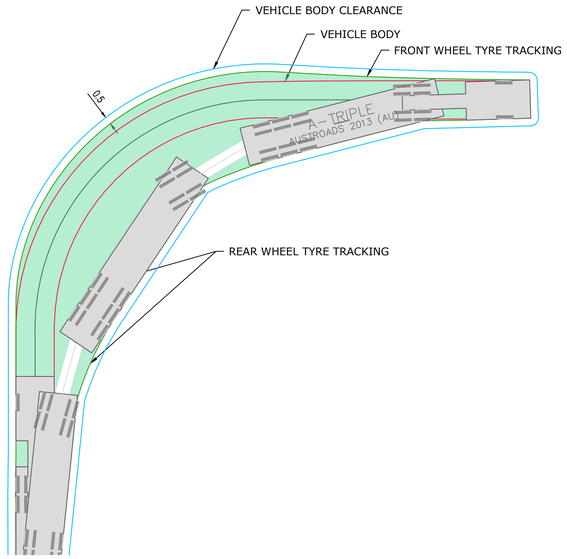


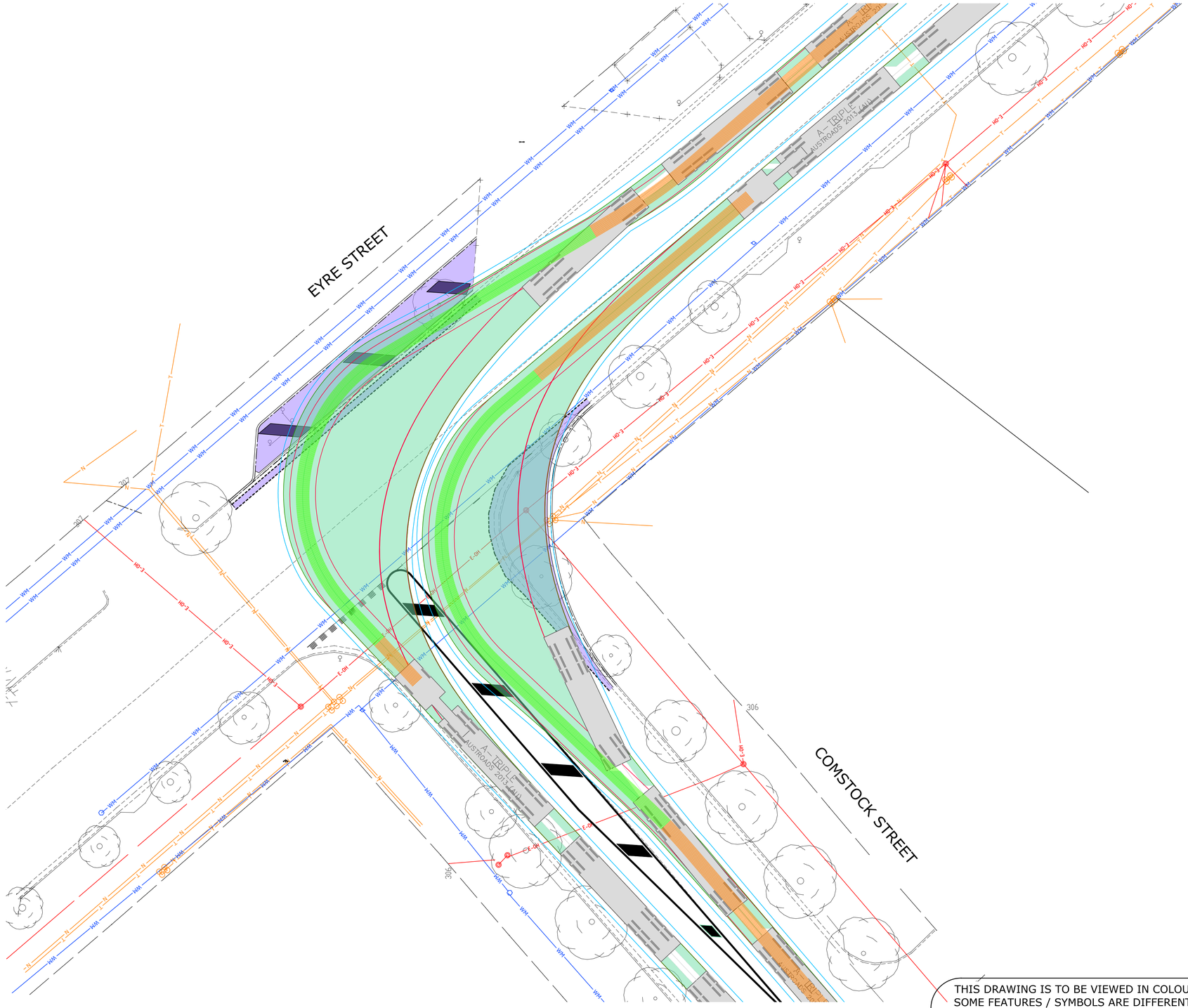
TYPE 2 ROAD TRAIN (A-TRIPLE)

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 25.6
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

SPEED LEGEND

- 1-15km/h
- 15-25km/h
- >25km/h





PUBLIC UTILITIES:

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0 2 4 8 12
1 : 200m (A1) - 1 : 400m (A3)
100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	CONCEPT DESIGN	28.06.23	TONKIN	TONKIN

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:200
SURVEYED:P MAW
SURVEY DATE:MAY 23
APPROVED / PROJECT LEADER
N.FIRTH

NOT FOR CONSTRUCTION

RZ RESOURCES LIMITED

COPI MINERAL SANDS MINE CONCEPT DESIGN
COMSTOCK & EYRE STREET INTERSECTION
A-TRIPLE TURNPATHS

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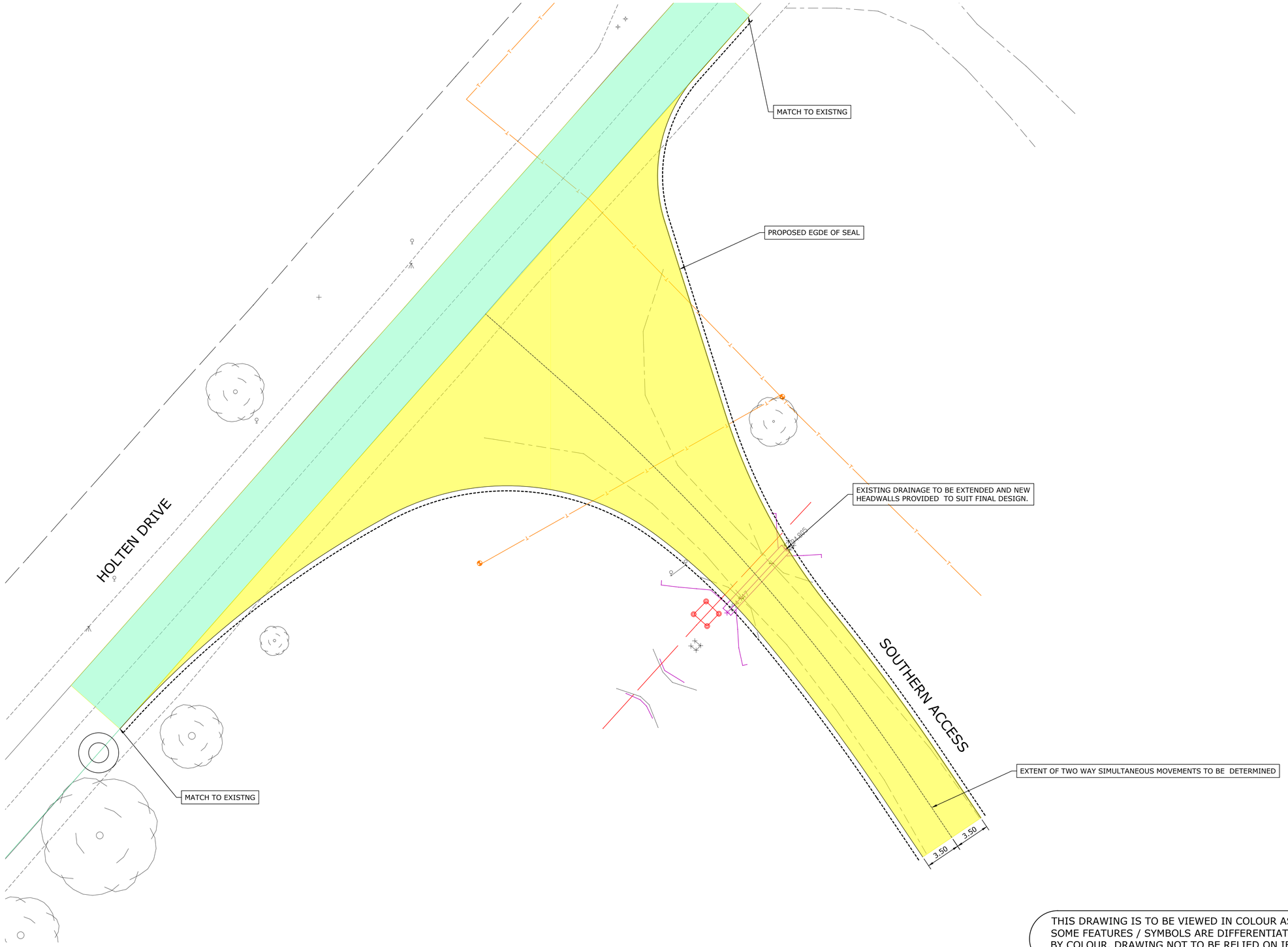
FILENAME:	PROJECT NUMBER	DRAWING NUMBER	REVISION
222205 CONCEPT DESIGN.DWG	222205	301	A

C:\USERS\TONYGE~1\APPDATA\LOCAL\TEMP\ACPUBLISH_3180\222205 CONCEPT DESIGN.DWG -SK301- (28-06-23 3:47:31PM)

LEGEND

- CADASTRAL BOUNDARY
- NEW KERB & GUTTER
- NEW SEALED PAVEMENT (TYPE 1)
- NEW FOOTPATH PAVEMENT
- NEW SEALED PAVEMENT (TYPE 2)
- NEW CONCRETE PAVEMENT
- SAWCUT
- EXISTING COMMUNICATIONS PIT
- N — NBN CONDUIT
- T — TELSTRA CONDUIT
- WATER HYDRANT
- WM — WATER MAIN
- POWER POLE / LIGHT POLE
- E-OH — O/H ELECTRICAL
- 450mm WIDE HOLDING LINE
- 100mm WIDE CONTINUITY LINE

NOTE: CARE IS TO BE TAKEN DURING WORKS AROUND EXISTING SERVICES TO ENSURE ADEQUATE CLEARANCE IS MAINTAINED THROUGHOUT CONSTRUCTION



PUBLIC UTILITIES:

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0 2 4 8 12
1 : 200m (A1) - 1 : 400m (A3)

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	CONCEPT DESIGN	28.06.23	TONKIN	TONKIN

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:200
SURVEYED:P MAW
SURVEY DATE:MAY 23
APPROVED / PROJECT LEADER
N.FIRTH

NOT FOR CONSTRUCTION

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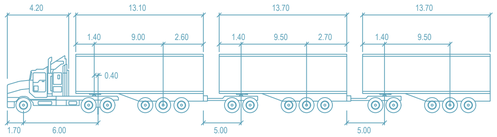
RZ RESOURCES LIMITED

COPI MINERAL SANDS MINE CONCEPT DESIGN
HOLTEN DRIVE & PROPERTY ACCESS
CONCEPT DESIGN

FILENAME:	PROJECT NUMBER	DRAWING NUMBER	REVISION
222205 CONCEPT DESIGN.DWG	222205	400	A

C:\USERS\TONYGE~1\APPDATA\LOCAL\TEMP\ACPUBLISH_3180\222205 CONCEPT DESIGN.DWG -SK400- (28-06-23 3:47:34PM)

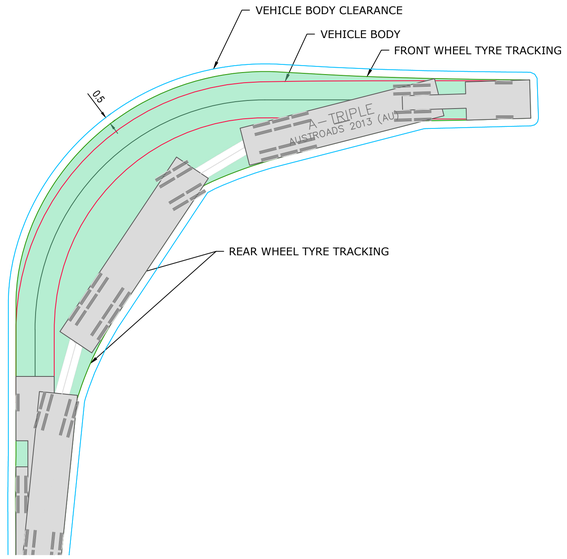


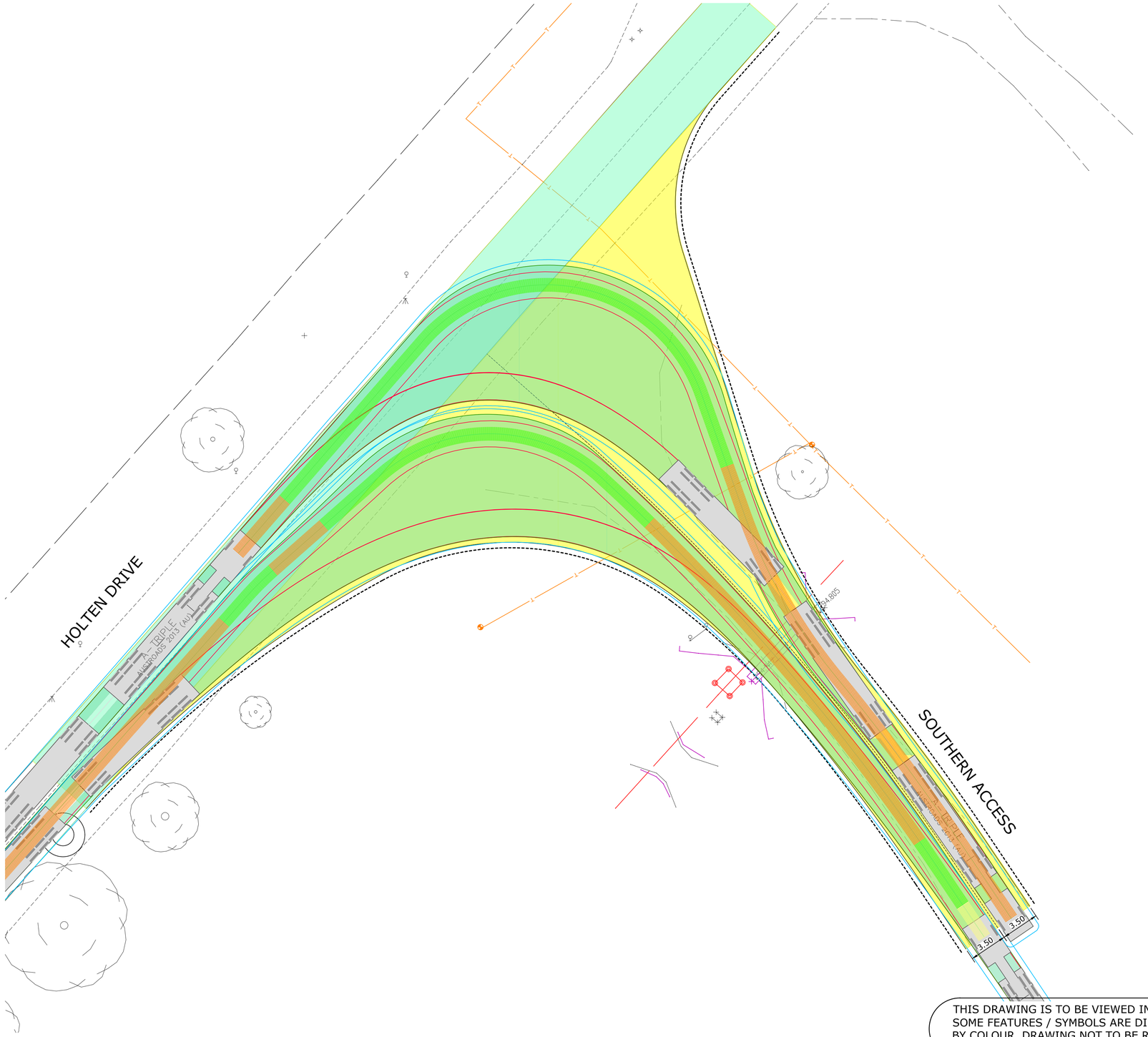
TYPE 2 ROAD TRAIN (A-TRIPLE)

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 25.6
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

SPEED LEGEND

- 1-15km/h
- 15-25km/h
- >25km/h





PUBLIC UTILITIES:

THE SERVICES SHOWN ARE DERIVED FROM PLANS OBTAINED FROM THE RELEVANT SERVICE AUTHORITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE WITH THE RELEVANT SERVICE AUTHORITIES FOR CONFIRMATION OF SERVICES AND THEIR LOCATION BEFORE EXCAVATION WORK COMMENCES.

THIS DRAWING IS TO BE VIEWED IN COLOUR AS SOME FEATURES / SYMBOLS ARE DIFFERENTIATED BY COLOUR. DRAWING NOT TO BE RELIED ON IF PRINTED IN GREYSCALE.

0 2 4 8 12
1 : 200m (A1) - 1 : 400m (A3)
100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

SHEET SIZE
A1

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.
A	CONCEPT DESIGN	28.06.23	TONKIN	TONKIN

COORDS: GDA2020 MGA ZONE 54
DATUM: ALL LEVELS TO A.H.D.
SCALE: 1:200
SURVEYED:P MAW
SURVEY DATE:MAY 23
APPROVED / PROJECT LEADER
N.FIRTH

NOT FOR CONSTRUCTION

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RZ RESOURCES LIMITED

COPI MINERAL SANDS MINE CONCEPT DESIGN
HOLTEN DRIVE & PROPERTY ACCESS
A-TRIPLE TURNPATHS

FILENAME:	PROJECT NUMBER	DRAWING NUMBER	REVISION
222205 CONCEPT DESIGN.DWG	222205	401	A

C:\USERS\TONYGE~1\APPDATA\LOCAL\TEMP\ACPUBLISH_3180\222205 CONCEPT DESIGN.DWG -SK401- (28-06-23 3:47:39PM)