Appendix G

Traffic impact assessment


APA East Coast Grid Expansion, Moomba to Wilton Pipeline - Modification Report 1

Traffic Impact Assessment

Prepared for APA Group
July 2021



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APA East Coast Grid Expansion, Moomba to Wilton Pipeline - Modification Report 1

Traffic Impact Assessment

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Prepared by	**Approved by**
	
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5 July 2021	5 July 2021

Executive Summary

The Traffic Impact Assessment (TIA) has been commissioned by APA Group (APA) to address potential traffic impacts associated with the East Coast Grid Expansion project which involves construction and operation of five proposed gas compressor stations proposed along the existing Moomba to Wilton Pipeline (MWP).

This report has been prepared to address the traffic impacts for Stage 1 and 2 and to support Modification Report 1. As such, only the traffic impacts at sites MW433 and MW880 have been assessed in this report. A separate report will be prepared to support Stage 3 in Modification Report 2.

The new gas compressor stations for Stages 1 and 2 are proposed at the following locations:

- Stage 1
    - MW880 – Milne approximately 35 km south-west of Condobolin.
- Stage 2
    - MW433 – Round Hill approximately 103 km north of Wilcannia;

The TIA predominantly includes a high-level assessment of the proposed construction traffic access, a desktop traffic assessment based on publicly available information and identification of traffic-related issues and constraints which need to be considered in the TIA.

The major road for site MW880 (accessed via Condobolin) is the Gipps Way which has an estimated existing daily traffic volume of up to 400 daily vehicle movements. The major road for site MW433 (accessed via Wilcannia) is the Barrier Highway which has an estimated existing daily traffic volume of up to 600 daily vehicle movements.

Peak daily construction traffic generation for site MW880 is expected to be a combination of 31 light and heavy vehicles. Peak hourly construction traffic generation is expected to be a combination of 18 light and heavy vehicles.

Peak daily construction traffic generation for site MW433 is expected to be a combination of 19 light and heavy vehicles. Peak hourly construction traffic generation is expected to be a combination of 5 light and heavy vehicles.

The sites are designed to operate as unmanned facilities with peak operational traffic to be 1 to 2 light vehicles.

The current road networks are generally compliant with Austroads rural design standards, and will not be significantly impacted by the proposed project construction traffic. The sight distance visibility requirements at all site entry points are also within acceptable limits.

Based on the findings of this TIA report, it is concluded that construction and operation traffic generated by the project will not have significant traffic impacts on the nearby road network. There are no mitigation works or road infrastructure upgrades required as part of the project.

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1 Introduction

1.1 Background

East Australian Pipeline Pty Ltd, part of the APA Group (APA) currently operates an underground high pressure natural gas transmission pipeline, extending from Moomba (South Australia) to Wilton (New South Wales), a distance of approximately 1,299 kilometres (km). The Moomba to Wilton Pipeline (MWP) is the mainline part of the Moomba Sydney Pipeline (MSP) and was constructed in 1976.

Initially, the pipeline was owned and operated by the Pipeline Authority, a Commonwealth agency, and generally regulated under the *Pipeline Authority Act 1973*. The MWP is now owned and operated by APA; it was gazetted as State Significant Infrastructure (SSI) on 11 December 2020 and is authorised by Pipeline Licence No. 16 (PL16).

The MWP currently operates at a forward haul capacity of approximately 489 terajoules per day (TJ/day) (AEMC 2021).

1.2 Project overview and context

NSW imports the majority of its natural gas from other states, and a gas shortfall on Australia's east coast is predicted by Winter 2023, with demand for gas forecast to outstrip supply.

APA is proposing an expansion of gas transportation capacity on its East Coast Grid that links Queensland to southern markets ahead of projected potential 2023 supply risks. Expansion would be through the construction of additional compressions stations and associated works on both the South West Queensland Pipeline (SWQP) and MWP in NSW.

The expansion will be delivered in a number of stages. The first stage of expansion works includes the construction of a single site of compression on each of the SWQP and MWP and will increase Wallumbilla to Wilton capacity by 12%. The first stage is targeted for commissioning in the first quarter of 2023 ahead of forecast southern state winter supply risks identified in the 2021 Australian Energy Market Operator (AEMO) Gas Statement of Opportunities (AEMO 2021).

The second stage of expansion works (an additional site on the SWQP and on the MWP) will add a further 13% capacity and will be staged to meet customer demand.

APA is undertaking engineering and design works on a potential third stage (three additional compressor locations on the MWP) of the East Coast Grid to add a further 25% transportation capacity. All up, these proposed capacity expansions would mean that the entirety of NSW peak demand could be met by gas flowing from northern sources.

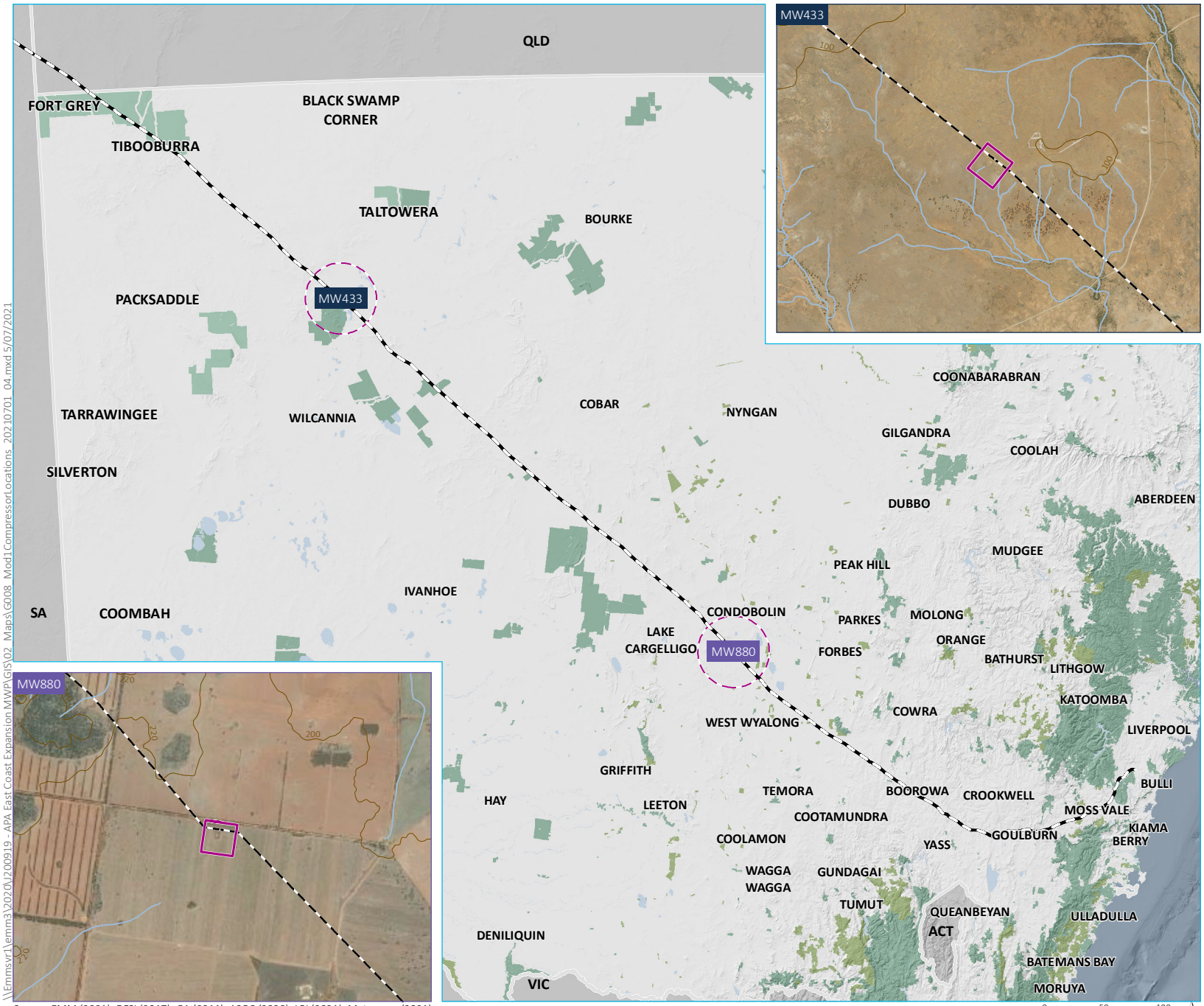
The proposed East Coast Grid Expansion (the project) presents an optimal opportunity to maximise gas supply via existing infrastructure with minimal impact.

The five compressor stations for the East Coast Grid Expansion will be constructed at the following locations on the MWP:

- Modification 1:
  - Stage 1:
    - MW880 – Milne approximately 35 km south-west of Condobolin.
  - Stage 2:
    - MW433 – Round Hill approximately 103 km north of Wilcannia.
- Modification 2:
  - Stage 3:
    - MW162 – Binerah Downs approximately 68 km north-west of Tibooburra.
    - MW300 – Mecoola Creek approximately 70 km south-east of Tibooburra.
    - MW733 – Gilgunnia approximately 63 km south-west of Nymagee.

This report has been prepared to address the traffic impacts for Stage 1 and 2 and to support Modification Report 1. As such, only the traffic impacts at MW433 and MW880 have been assessed in this report. A separate report will be prepared to support Stage 3 in Modification Report 2.

The proposed locations of compressor stations on the MWP are shown in Figure 1.1.



\\Emmsvr1\emm3\2020\J200919 - APA East Coast Expansion MWP\GIS\02 Maps\G008 Mod1CompressorLocations 20210701 04.mxd 5/07/2021

Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006); LPI (2021); Metromap (2021)

Proposed location of compressor stations on the MWP

APA - East Coast Grid Expansion
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Figure 1.1

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1.3 Report purpose and methodology

EMM Consulting Pty Limited (EMM) has been commissioned to prepare a traffic impact assessment (TIA) for the construction and operation of the project.

This TIA has been undertaken to determine any traffic related impacts and constraints, including access, capacity and safety.

The assessment includes:

- a review of relevant statutory and policy controls that apply to the sites and existing land use;
- a high-level assessment of the proposed construction traffic access;
- a desktop traffic assessment based on publicly available information;
- identification of traffic-related issues and constraints which need to be considered in the TIA; and
- a review of relevant Council and regulator development listing websites to determine if any other planned developments in the vicinity of each site could trigger requirements for cumulative traffic impact assessment.

This TIA report has been prepared using available information via satellite imagery, photographs taken at each site location and information provided by the client. Due to the remote location of the sites and minimal construction traffic generated, traffic surveys have not been performed. Traffic data from Transport for New South Wales (TfNSW) Traffic Volume Viewer website has been used where available (site MW433).

The report focuses on general descriptions of the existing road and intersection geometry at each site location, a description of the construction activities and related construction traffic volumes, and any likely traffic impacts and potential road safety risks. There is minimal operational traffic anticipated as a result of this project, therefore this TIA only considers construction traffic.

2 Project description

2.1 Compressor station details

The East Coast Grid Expansion in NSW will be facilitated by the construction of five compressor stations along the length of the MWP. This modification report addresses the construction and operation of two compressor stations: Stage 1 (MW880) and Stage 2 (MW433).

Each compressor station will include:

- an enclosed gas turbine driven compressor unit;
- microturbine;
- compressor inlet / scrubber;
- a control equipment building;
- two fuel gas skids;
- air compressors and receivers;
- associated piping, electrical equipment, instrumentation, and controls;
- a station vent; and
- small accommodation and maintenance buildings for operations.

All facilities will be installed on driven piles or supported on structural steel skids over gravel sheeting, with the exception of the accommodation and maintenance buildings which will be constructed on concrete slab.

Both of the proposed sites for the compressor stations are on land owned by APA, with MW433 being approximately 380 m x 400 m with an area of 15.5 hectares (ha), and MW880 being approximately 400 m x 400 m with an area of 16 ha. The compressor station will have a final footprint of approximately 1.5 ha.

2.1.1 Construction

Each compressor station will require a construction footprint of approximately 3.5 ha, which will be reduced to approximately 1.5 ha for operations.

At MW433, the temporary construction workforce required to build the compressor station will be accommodated in a temporary accommodation camp, with mobilisation and demobilisation of the workforce to and from Broken Hill airport for each roster. The temporary accommodation camp will measure approximately 100 m x 100 m, with an additional 100 m x 100 m for waste water treatment. A smaller accommodation unit for operations will be included within the operational footprint on the compressor station.

At MW880, there are two options for the accommodation of the construction workforce. The preferred option is to house the workforce in short-term accommodation in Condobolin (42 km by road from the site), with potential overflow accommodation in West Wyalong (85 km by road from the site), if required. Workers will be driven to and from site each day, with between one and four buses and between five and eight cars required per day, depending on workforce numbers. The alternative option is to use a temporary accommodation camp on site (as per MW433), where mobilisation and demobilisation of the workforce will be to and from Dubbo airport for each roster.

Waste water from the construction camp (if used) will be treated and disposed of via spray irrigation on site.

Construction materials and supplies (including food and services for the temporary accommodation camps) will be sourced from relevant suppliers and transported to site. APA will use local suppliers where practicable.

At MW880, water will likely be purchased under a commercial arrangement from Lachlan Shire Council, or another local provider and transported to site by 25 kilolitre (kL) water truck. At MW433, there are two options for water supply – accessing groundwater on site, and/or purchasing water under a commercial arrangement from a local water provider and transporting it to site by 25 kL water truck. APA is investigating options to access groundwater under the relevant water sharing plans and regulations. If accessing groundwater at MW433 is feasible, then all regulatory requirements for water licences will be met, and any further assessments and approvals will be undertaken and applied for prior to water abstraction. If accessing groundwater is not feasible for all or part of the project, then the commercial purchase and transport will become the default water supply option.

The majority of construction activities will take place between 7:00 am and 6:00 pm, seven days per week. During the commissioning phase, activities will also take place between 7:00 am and 6:00 pm, seven days per week, however for the final two weeks, commissioning activities will be 24-hours per day.

i Construction activities

Construction of the compressor stations will include the following activities:

- mobilisation of construction equipment;
- establishment of access (where required);
- establishment of construction camp accommodation and associated facilities;
- establishment of access to water supply;
- site bulk earthworks including build up to match existing levels;
- installation of steel piles;
- installation of all equipment items, skids and buildings;
- installation of associated steel structures, prefabricated piping, electrical equipment, instrumentation and controls;
- supply and install communication and controls infrastructure;
- demobilisation of construction equipment;
- rehabilitation of temporary disturbance areas; and
- pre-commissioning and commissioning of compressor station.

ii Workforce

The construction of the compressor stations will require an average workforce of 40 with a peak of 80 personnel over the 12-month period. All roles are likely to be drive-in-drive-out (DIDO) or fly-in-fly-out (FIFO) and based at the construction camp when on site. The anticipated roster is three weeks on followed by one week off on a rotational basis.

There are expected to be five contracts put out to tender for the construction and commissioning of the compressor stations:

- earthworks and civil works;
- establishment of the construction camp and associated waste water treatment system;
- piling;
- structural, mechanical, piping, electrical and instrumentation construction (SMPEI); and
- compressor station pre-commissioning and commissioning.

In addition to the contractor workforce, APA will have a project team on site to manage the works.

The anticipated workforce associated with each contract is outlined in Table 2.1 below.

Table 2.1 Construction and commissioning workforce

Entity	Average workforce	Peak workforce
APA Project Team	4	10
Earthworks	10	15
Piling	6	6
SMPEI Construction	30	50
Construction Camp	8	16
Pre-commissioning and Commissioning	10	14

The anticipated workforce distribution over the 12-month construction and commissioning program is presented in Table 2.2.

Table 2.2 Monthly construction and commissioning workforce distribution

1	2	3	4	5	6	7	8	9	10	11	12
20	28	28	37	47	65	68	59	49	39	18	18

2.1.2 Operation

i Activities

The compressor stations are designed to operate remotely without onsite staff for most of their working life. They will be operated remotely from APA's control centre in Brisbane, and can operate up to 24 hours per day, seven days per week.

Typical operations activities will involve minor maintenance, calibrations, inspections, equipment performance checks, or equipment repair if needed. Operation activities will be typically carried out during daylight hours, unless an emergency requires urgent works at night. Site personnel will carry out inspections ranging from daily inspections to more rigorous inspections that may vary from one month to 4 years apart, dependent on the works. Detailed maintenance plans will be prepared for all sites.

Regulatory compliance checks will be carried out on different equipment as prescribed in applicable standards but will typically vary from one to four-year intervals subject to the equipment types. Compliance checks may include emissions testing, hazardous area compliance assessments, pressure vessel inspections, and electrical safety checks.

Major services and engine overhauls will be carried out at five-to-ten-year intervals subject to equipment condition, manufacturer's recommendations and run hours.

Once complete, the compressor stations will have an average design life of approximately 25 years. APA will continue to monitor the condition of equipment up to and beyond the end of life to ensure equipment is sound and fit for further service. Continued operation beyond the nominal design life will be subject to specific equipment condition and plant fitness assessments. The compressor station will be decommissioned when there is no further economic potential to continued use.

ii Workforce

The compressor stations are designed to operate as unmanned facilities. The typical site workforce for operation activities is expected to be one to two people.

Larger groups of up to five people associated with major services or overhauls will be required to minimise the time the compressor station is offline.

The operations workforce will comprise existing APA employees, who are unlikely to be resident locally. Additional specialist servicing will be carried out by a mix of local contractors and interstate/international based depending on the complexity of the task.

2.2 Construction vehicles

A variety of vehicles will be required for construction of the compressor stations. Construction vehicles will typically include:

- semi-trailers;
- side tippers;
- prime mover and floats;
- loaders;
- bulldozers;
- excavators;
- a pile driving rig;
- a water cart (nominally a 25 kilo-litre (kL));
- 3 tonne (t) and 8 t Hiab trucks; and
- a 25 t Franna crane.

The largest construction vehicle will either be a semi-trailer or a prime mover and float and will not exceed 26 m in length. The relevant permits from the National Heavy Vehicle Regulator (NHVR) will be acquired for any oversized vehicles for the project prior to mobilisation.

2.3 Traffic generation

Traffic associated with the construction of compressor stations will involve daily movements of a range of light vehicles and heavy vehicles to and from the site.

2.3.1 Daily traffic generation for peak construction period for site MW880

Daily traffic movements will vary from day-to-day dependent on construction activities, however the daily traffic movements for the peak construction period for site MW880 are presented in Table 2.3.

Table 2.3 MW880 peak daily traffic generation

Construction stage	Daily light vehicle trips	Daily heavy vehicle trips
Mobilisation	13	6
Earthworks	13	11
Structural, Mechanical, Piping, Electrical and Instrumentation (SMPEI)	20	11
Commissioning	11	2
Demobilisation	13	5

Daily traffic generation for the peak construction period is expected to be a combination of 31 light and heavy vehicle trips, which will represent a daily total of up to 62 daily vehicle movements.

A 'trip' is defined as a vehicle entering the site once (1 movement) and a vehicle exiting the site once (1 movement).

2.3.2 Daily traffic generation for peak construction period for site MW433

Daily traffic movements will vary from day-to-day dependent on construction activities, however the daily traffic movements for the peak construction period for site MW433 are presented in Table 2.4.

Table 2.4 MW433 peak daily traffic generation

Construction stage	Daily light vehicle trips	Daily heavy vehicle trips
Mobilisation	8	4
Earthworks	6	8
Structural, Mechanical, Piping, Electrical and Instrumentation (SMPEI)	12	7
Commissioning	4	0
Demobilisation	8	4

Daily traffic generation for the peak construction period is expected to be a combination of 19 light and heavy vehicle trips, which will represent a daily total of up to 38 daily vehicle movements.

2.3.3 Peak hour traffic generation for site MW880

The peak hourly traffic generation for the relevant construction stages are presented in Table 2.5.

Table 2.5 MW880 peak hourly traffic generation

Construction stage	Peak hourly light vehicle trips	Peak hourly heavy vehicle trips
Mobilisation	6	3
Earthworks	9	4
SMPEI	11	7
Commissioning	8	2
Demobilization	6	2

Based on Table 2.6 the peak hourly traffic generation is expected to be a maximum of 18 vehicle trips (11 light and 7 heavy vehicles).

2.3.4 Peak hour traffic generation for site MW433

The peak hourly traffic generation for the relevant construction stages are presented in Table 2.6.

Table 2.6 MW433 peak hourly traffic generation

Construction stage	Peak hourly light vehicle trips	Peak hourly heavy vehicle trips
Mobilisation	1	1
Earthworks	2	1
SMPEI	3	2
Commissioning	1	0
Demobilization	1	1

Based on Table 2.6 the peak hourly traffic generation is expected to be a maximum of five vehicle trips (three light and two heavy vehicles).

2.4 Operation

Typical operations activities will involve minor maintenance and checks on equipment performance or for repair of any equipment breakdowns.

Regulatory compliance checks are carried out on different equipment as prescribed in applicable standards, but typically vary from one to eight year intervals subject to the equipment types.

Major services and engine overhauls will be carried out on five to ten year intervals subject to frequency of operations.

The sites are designed to operate as unmanned facilities. Typical site workforce for when attended is expected to be 1 to 2 people on site for most activities.

3 Traffic impact assessment

3.1 Traffic volumes

Due to the remote location of most sites and the relatively low daily and peak hourly construction traffic generated at each work site, as shown in Table 2.4 and Table 2.6, baseline traffic surveys have not been performed. Traffic volume data for several roads used in the assessment are "upper limit" estimates for the relevant roads and are based on our knowledge and understanding of previous historic traffic usage for these roads prior to 2005 and the likely traffic usage for these roads currently. Traffic data from the TfNSW Traffic Volume Viewer[1] website has been used where available.

Daily traffic volumes for roads in the remote north western areas of NSW, either west of Bourke, or north of the Barrier Highway, between Cobar and Broken Hill, are estimated to be typically less than 100-200 daily vehicle movements.

The Gipps Way, which provides access to MW880 (accessed via Condobolin), has estimated existing daily traffic volumes of up to 400 daily vehicle movements.

The Barrier Highway, which provides access to MW433 (accessed via Broken Hill and Wilcannia), has estimated existing daily traffic volumes of up to 600 daily vehicle movements.

3.1.1 Road design standards

Road width design standards for low volume (generally rural) roads are defined by the Austroads *Guide to Road Design Part 3: Geometric Design* (Austroads, 2016) and are based on daily traffic volumes as shown in Table 3.1.

Table 3.1 Austroads road design for rural road

Threshold band (daily traffic volumes)	Design standard
1–150	8.7 m wide total carriage (if unsealed); or Minimum 3.7 m wide seal
150–500	Minimum 7.2 m wide seal
500–1,000	Minimum 7.2 m – 8 m wide seal
1,000–3,000	Minimum 9 m wide seal
> 3,000	Minimum 10 m wide seal

3.2 Intersection performance

Due to the remote location of the sites, it is assumed that roads in the vicinity will have low traffic volumes. Furthermore, the sites are expected to generate very low hourly construction vehicle volumes as shown in Section 2.3.4. Based on these assumptions, traffic impacts on intersection performance will be minimal and hence Signalized Intersection Design and Research Aid (SIDRA) modelling is not warranted.

[1] https://roads-waterways.transport.nsw.gov.au/about/corporate-publications/statistics/traffic-volumes/aadt-map/index.html#/?z=6

3.2.1 Requirements for basic, auxiliary and channelised turn movements

Intersection operations are assessed from a combination of the peak hourly through and turning traffic movements that occur at each intersection. This determines the need for additional intersection turning lanes (eg basic, auxiliary lane and channelised) in accordance with the current intersection design standards (Austroads, 2017) (Figure A 10 Figure 6.2), where:

- Curve 1 (red line) represents the boundary between a basic right turn (BAR) and a channelised short right turn (CHR(S)) turn treatment and between a basic left turn (BAL) and an auxiliary short left turn (AUL(S)) turn treatment; and

- Curve 2 (blue line) represents the boundary between a CHR(S) and a full length CHR treatment and between an AUL(S) and a full length AUL or CHL treatment. The choice of CHL over an AUL will depend on factors such as the need to change the give way rule in favour of other manoeuvres at the intersection and the need to define more appropriately the driving path by reducing the area of bitumen surfacing.

Figure 3.1 below shows the design chart for the selection of turn treatments on roads with a design speed greater than 100 kilometres per hour (km/hr). Austroads recommends intersections should be designed for a travel speed 10 km/hr greater than the posted speed. As rural roads in NSW have default speed limit of 100 km/hr, the intersections should be designed for 110 km/hr.

As per Figure 3.1, for any intersection turn treatment to be warranted, the major road has a minimum traffic volume threshold of approximately 100 vehicles per hour (which corresponds to approximately 1,000 vehicles per day). It is assumed that the likely daily and corresponding hourly volumes for the relevant roads at most intersections in the assessed project route area will be lower than these thresholds, hence there will be no requirement for additional turning lanes at any of the affected intersections.

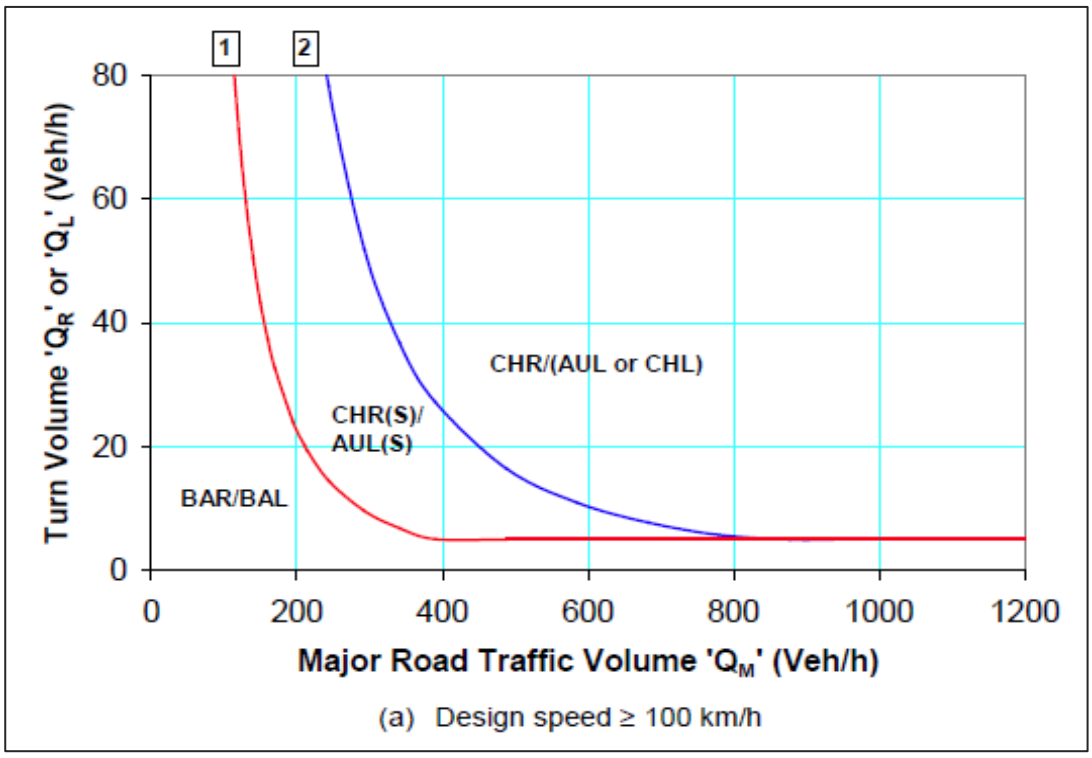


Figure 3.1 Austroads warrant design charts for rural intersection turning lanes

4 MW433 – Round Hill

4.1 Existing conditions

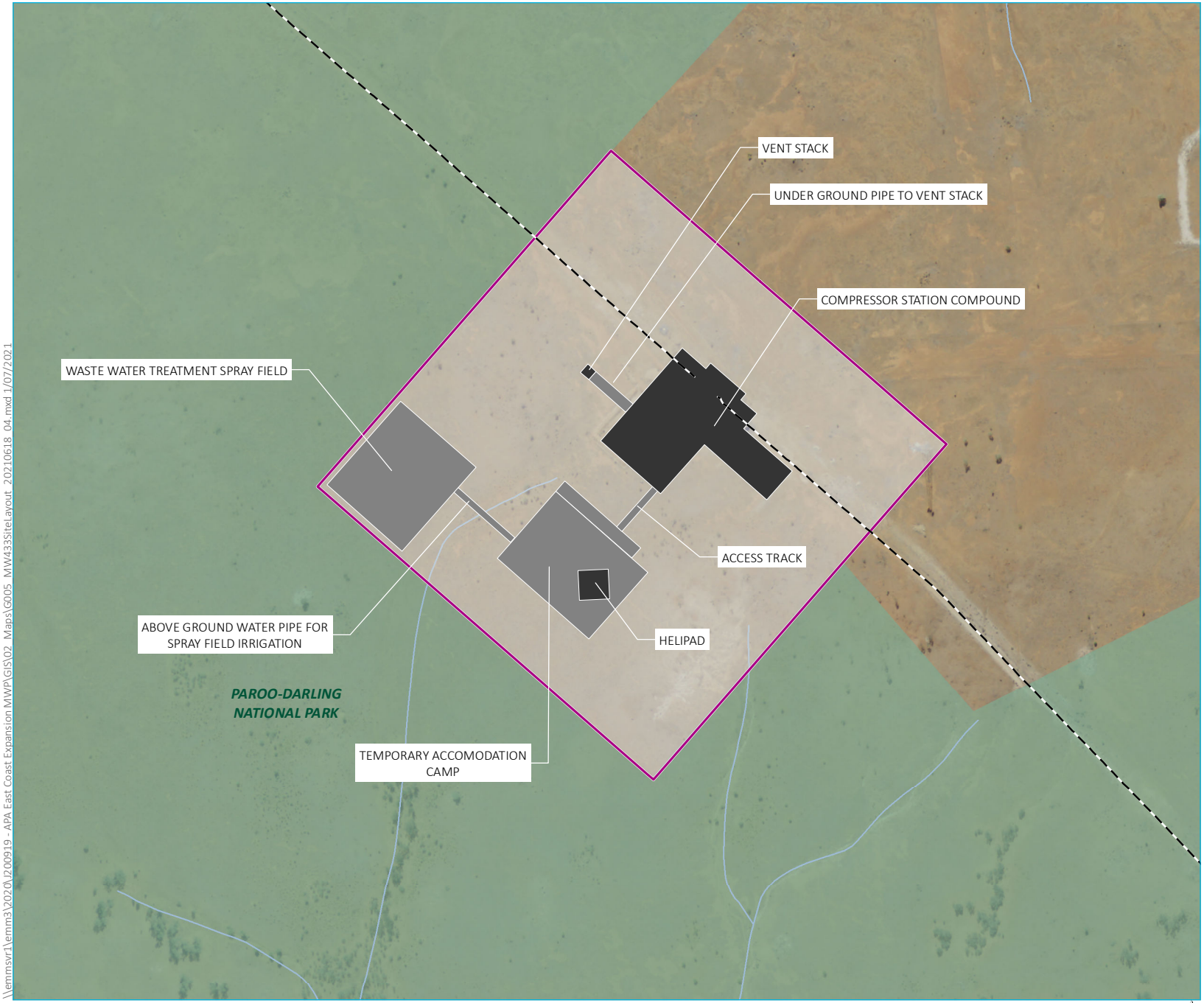
4.1.1 Site layout and access

MW433 – Round Hill is located in the Central Darling Shire LGA of NSW approximately 100 km north-east of Wilcannia and 120 km south-west of Wanaaring. The site is bordered on all sides by the Paroo-Darling National Park. The site layout is shown in Figure 4.1.

Access to the site will be via the pipeline easement from Wilcannia-Wanaaring Road to the south-east. The aerial view of the site is shown in Photograph 4.1.

Source: APA

Photograph 4.1 Aerial view site MW433



KEY

- Compressor site
- Site boundary/construction envelope
- Moomba to Wilton pipeline

Proposed site layout

- Permanent
- Temporary
- Watercourse/drainage line
- NPWS reserve

INSET KEY

- State forest

\\emmsvr1\emm3\2020\J200919 - APA East Coast Expansion MWP\GIS\02 Maps\G005 MW433SiteLayout 20210618 04.mxd 1/07/2021

Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006); LPI (2021)

0 100 200 m

GDA 1994 MGA Zone 54

N

Site layout MW433 – Round Hill

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Figure 4.1

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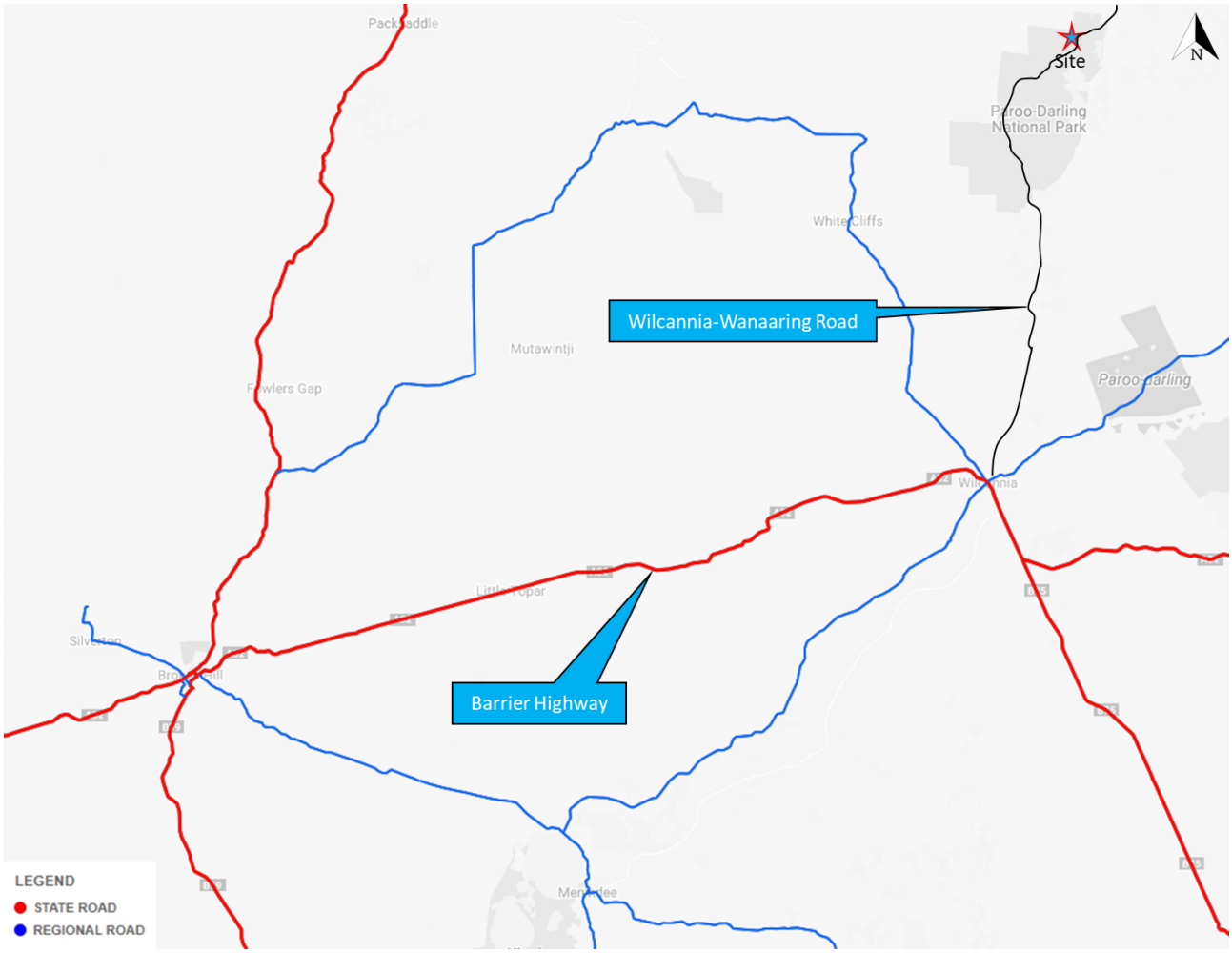
4.1.2 Road network

An overview of each of the key roads is provided in Figure 4.2.



Source: Carto

Figure 4.2 Road hierarchy near MW433

Table 4.1 Barrier Highway

Aspect	Description
Road classification and connectivity	State road between Horrocks Highway SA (east) and Nyngan NSW (west)
Alignment	East-west
Number of lanes	One lane each way
Carriageway type	Sealed road
Carriageway width	Approximately 7.5 m total width with 3.5 m width travel lane each way
Posted speed limit	110 km/hr
Heavy vehicle access	Yes

Table 4.1 Barrier Highway

Aspect	Description
Traffic function	Carries regional and interstate traffic
Additional comments	The major state highway connecting areas in the far west of NSW

Source: Google Maps

Plate 4.1 Barrier Highway (looking west)

Table 4.2 Wilcannia-Wanaaring Road

Aspect	Description
Road classification and connectivity	Local road between Wilcannia (south-west) and Bourke-Milparinka Road (north-east)
Alignment	North-south
Number of lanes	One lane each way
Carriageway type	Unsealed
Carriageway width	Varied, but approximately 12 m total width with 3 m wide travel lane each way
Posted speed limit	100 km/hr
Heavy vehicle access	Approved for heavy vehicles up to 19m and under 50 tonnes

Table 4.2 Wilcannia-Wanaaring Road

Aspect	Description
Traffic function	Carries local and regional traffic
Additional comments	The road has variable width and condition on urban and rural sections

Source: APA

Plate 4.2 Wilcannia-Wanaaring Road (looking south)

4.1.3 Key intersection

The key intersection reviewed for project related traffic impacts is presented in Figure 4.3.

Source: Google Maps

Figure 4.3 Key intersections for MW433

Table 4.3 Barrier Highway (Myers Street)/Woore Street

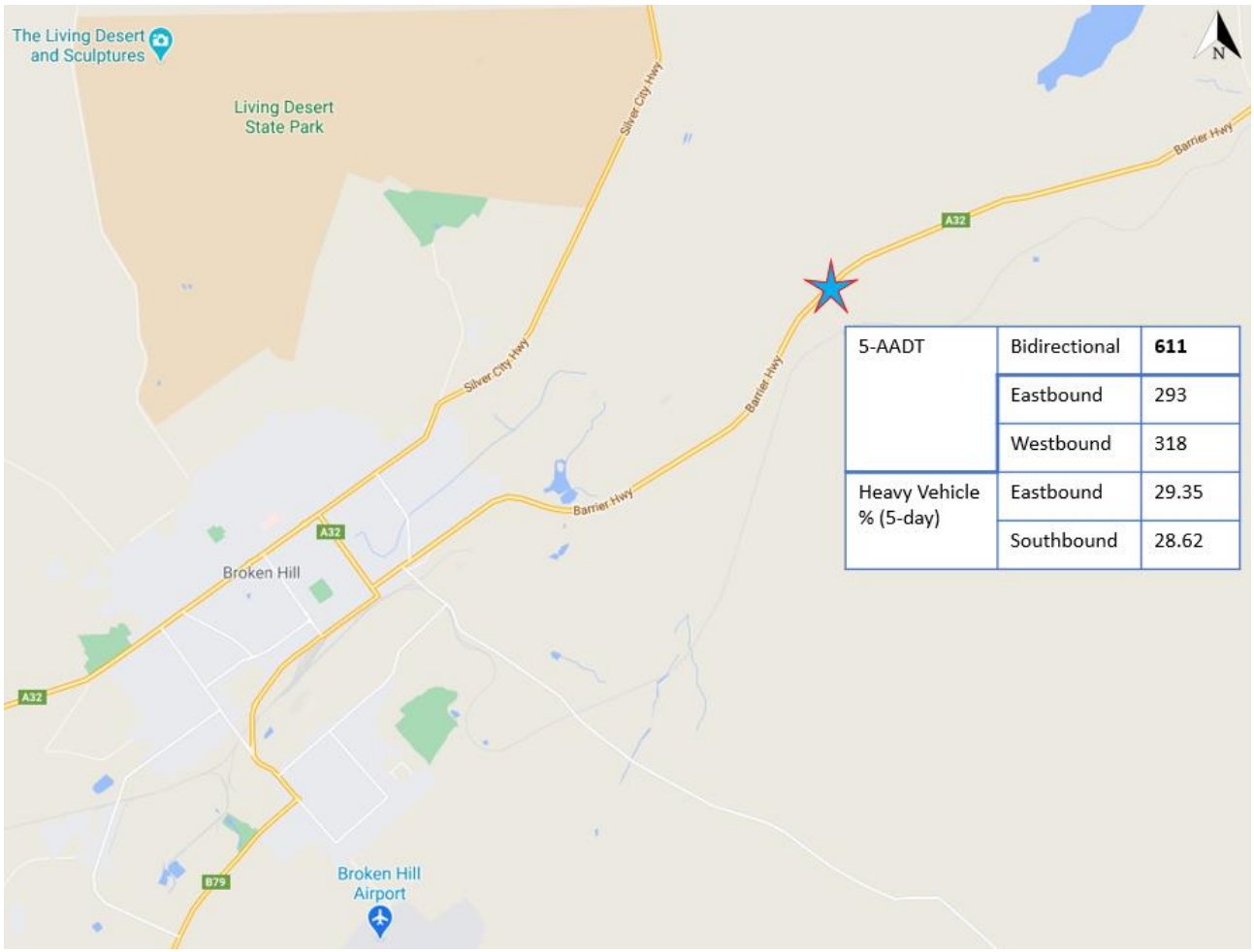
Aspect	Description
Location from the site	100 km south-west of the site
Intersection control	Priority controlled
Major road	Barrier Highway (Myers Street)
All approaches	One lane on approach and one lane on departure.
Pedestrian connectivity	Pedestrian connectivity is not provided on any approach
Traffic function	Predominantly carries regional and local traffic
Speed limit	50 km/hr in all approaches

Plate 4.3 Intersection of Barrier Highway and Woore Street

4.1.4 Traffic volumes

The annual average daily traffic data (AADT) for Barrier Highway was obtained from TfNSW traffic volume viewer[2] website for the year 2020. The AADT data was retrieved from the permanent classifier station approximately 3 km east of Broken Hill on the Barrier Highway. The AADT traffic data along with heavy vehicle percentages is presented in Figure 4.4.

[2] https://www.rms.nsw.gov.au/about/corporate-publications/statistics/traffic-volumes/aadt-map/index.html#/?z=6



Source: Google Maps

Figure 4.4 Summary of AADT volume

4.1.5 Crash analysis

Crash data from TfNSW Centre for Road Safety interactive history database for five years between 2015 and 2019 has been studied in the vicinity of the site.

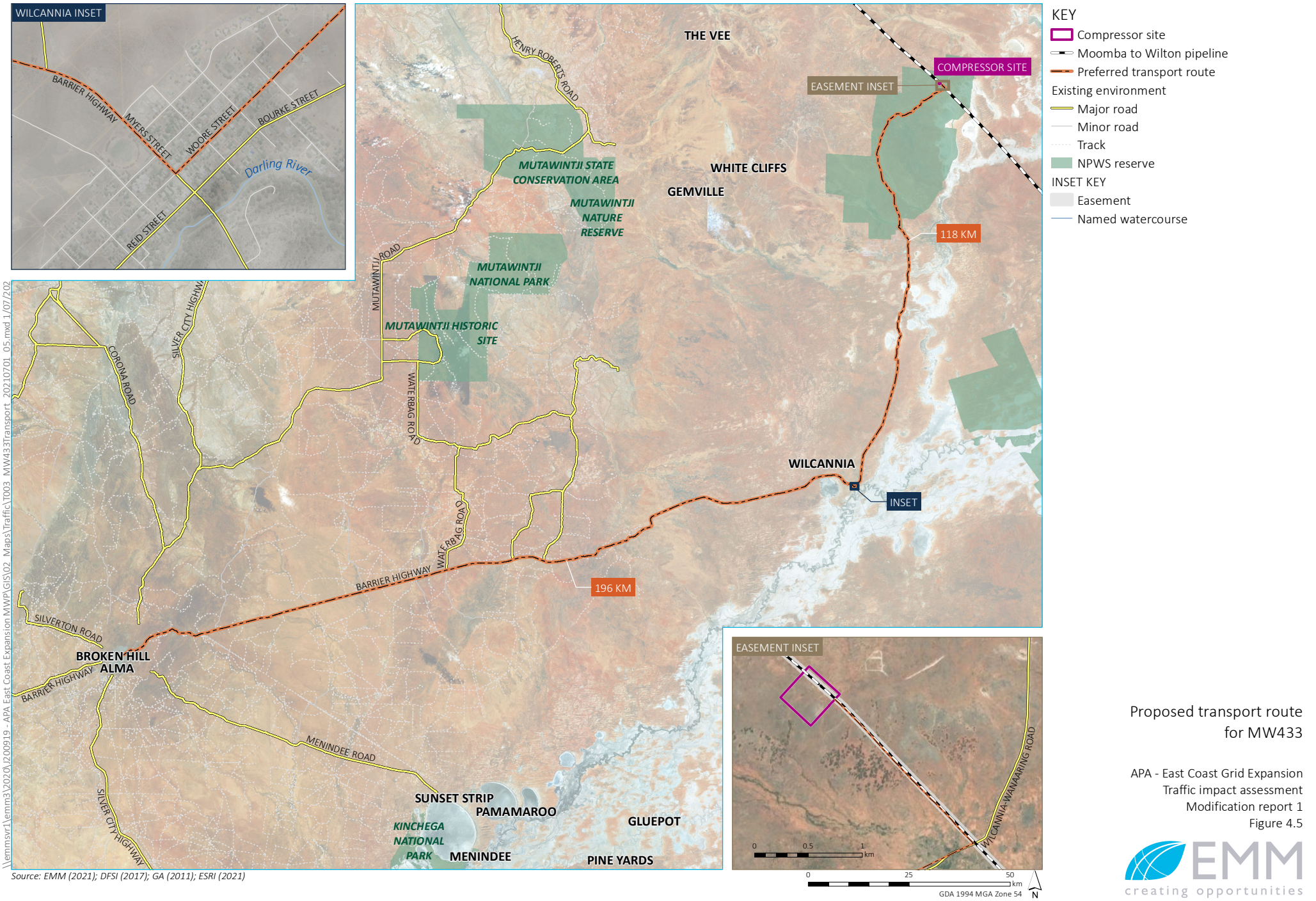
Overall, there were seven crashes recorded, with all the crashes occurring on the Barrier Highway. The crashes involved the following severity:

- two serious injury;
- three moderate injury; and
- two non-casualty (towaway).

There were no fatal incidents. Two of the crashes were due to the vehicles colliding with animals. Another two crashes involved vehicles veering off the road to left and right. The crashes do not indicate any trend where the existing road infrastructure may need for upgrades. This overall crash rate is considered low, which indicates that the roads and intersections to be used for the project construction access are within expected safety limits.

4.2 Proposed transport route

The proposed transport route for MW433 will be to and from the town of Broken Hill. The route to site involves travelling east from Broken Hill via Barrier Highway to Wilcannia, turning left onto Woore Street which becomes the Wilcannia-Wanaaring Road, then continue travelling on Wilcannia-Wanaaring Road for approximately 100 km, before turning left on the pipeline easement to reach the site. The proposed route is shown in Figure 4.5.



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Source: EMM (2021); DFSI (2017); GA (2011); ESRI (2021)

Proposed transport route for MW433

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Figure 4.5

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4.3 Road design standards

Road width design standards for low volume roads are defined by the Austroads *Guide to Road Design Part 3: Geometric Design* (Austroads, 2016) and are based on daily traffic volumes as shown in Table 3.1. The existing road width measurements, traffic volumes and compliance for each proposed access route are shown in Table 4.4.

Table 4.4 MW433 Approximate daily existing traffic volumes and design standards compliance

Road	Description of road	Approximate daily existing traffic volume	Existing road width (approximate)	Austroads Guide to Road Design standard in accordance with daily traffic volume	Currently meets Austroads design standard?
Barrier Highway	State road between Horrocks Highway SA (east) and Nyngan NSW (west)	611 vehicles	7.5 m sealed	Minimum 7.2 −8 m wide seal	Yes
Woore Street	Local road between Wilcannia (south-west) and Bourke-Milparinka Road (north-east)	Less than 100 vehicles	14 m sealed	8.7 m wide total carriage (if unsealed); or Minimum 3.7 m wide seal	Yes
Wilcannia-Wanaaring Road	Local road between Wilcannia (south-west) and Bourke-Milparinka Road (north-east)	Less than 100 vehicles	Sealed section 5.5 m, unsealed section approximately 12 m	8.7 m wide total carriage (if unsealed); or Minimum 3.7 m wide seal	Yes

Table 4.5 shows the existing road width measurements and the approximate future daily traffic volumes including traffic generated from the construction of the development. The compliance for each proposed access route is also summarised as part of the table.

Table 4.5 MW433 Approximate daily future traffic volumes and design standards compliance

Road	Description of road	Approximate daily future traffic volume	Existing road width (approximate)	Austroads Guide to Road Design standard in accordance with daily traffic volume	Will meet Austroads design standard?
Barrier Highway	State road between Horrocks Highway SA (east) and Nyngan NSW (west)	651 vehicles	7.5 m sealed	Minimum 7.2−8 m wide seal	Yes
Woore Street	Local road between Wilcannia (south-west) and Bourke-Milparinka Road (north-east)	Less than 140 vehicles	14 m sealed	8.7 m wide total carriage (if unsealed); or Minimum 3.7 m wide seal	Yes
Wilcannia-Wanaaring Road	Local road between Wilcannia (south-west) and Bourke-Milparinka Road (north-east)	Less than 140 vehicles	Initial sealed section 5.5 m, unsealed section approximately 12 m	8.7 m wide total carriage (if unsealed); or Minimum 3.7 m wide seal	Yes

As presented in Table 4.5, the proposed access routes for this project meet the minimum compliance criteria of Austroads guidelines for the existing traffic volumes. Construction traffic volumes are expected to have a minimal impact on the proposed access route for the project.

4.4 Road safety assessment at the project site entrance

The access to the site via the pipeline easement is located at a straight section (Photograph 4.2, hence there are no sight distance related traffic safety issues for traffic entering or exiting to/from the site at the site entrance.

Source: APA

Photograph 4.2 Sight distance at MW433 site entrance

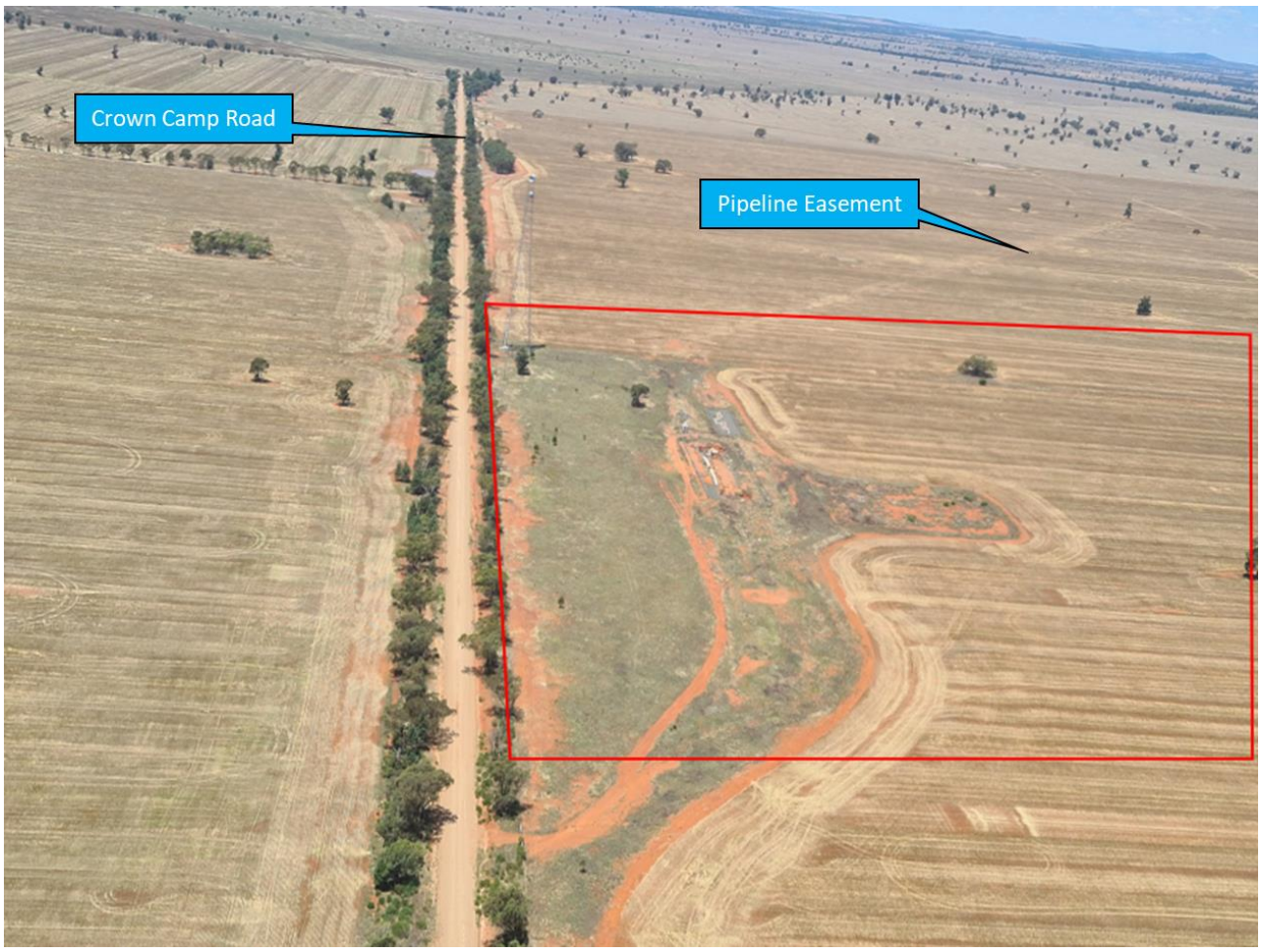
5 MW880 – Milne

5.1 Existing conditions

5.1.1 Site layout and access

MW880 – Milne is located in Lachlan Shire LGA in NSW approximately 35 km south of Condobolin and 60 km north-west of West Wyalong. The site layout is shown in Figure 5.1.

Access to the site will be via Crown Camp Road to the north. The aerial view of the site is shown in Photograph 5.1.



Source: APA

Photograph 5.1 Aerial view site MW880

KEY

- Compressor site
- Site boundary/construction envelope
- Moomba to Wilton pipeline

Proposed site infrastructure

- Permanent
- Temporary

Existing environment

- Major road
- Waterbody

INSET KEY

- NPWS reserve
- State forest

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Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006); LPI(2021)

0 100 200 m

GDA 1994 MGA Zone 55

N

Site layout MW880 – Milne

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5.1.2 Road network

An overview of each of the key roads is provided in Figure 5.2.

Source: Carto

Figure 5.2 Road hierarchy near MW880 site

Table 5.1 Lachlan Valley Way

Aspect	Description
Road classification and connectivity	Regional road between Newel Highway (east) and Gipps Way (west)
Alignment	East-west
Number of lanes	One lane each way
Carriageway type	Sealed road
Carriageway width	Approximately 7 m overall width with 3.5 m wide travel lane each way
Posted speed limit	100 km/hr
Heavy vehicle access	Yes
Traffic function	Carries regional traffic and some local traffic
Additional comments	The road terrain is generally flat and level

Source: Google Maps

Plate 5.1 Lachlan Valley Way (looking east)

Table 5.2 The Gipps Way

Aspect	Description
Road classification and connectivity	Regional road between Condobolin (north) and W Wyalong Condobolin Road (south)
Alignment	North-south
Number of lanes	One lane each way
Carriageway type	Sealed road
Carriageway width	Approximately 8 m overall width with 4 m wide travel lane each way
Posted speed limit	100 km/hr
Heavy vehicle access	Approved for heavy vehicles up to 19m and under 50 tonnes
Traffic function	Carries regional traffic and some local traffic
Additional comments	The road terrain is generally flat and level

Source: EMM

Plate 5.2 The Gipps Way

Table 5.3 Crown Camp Road

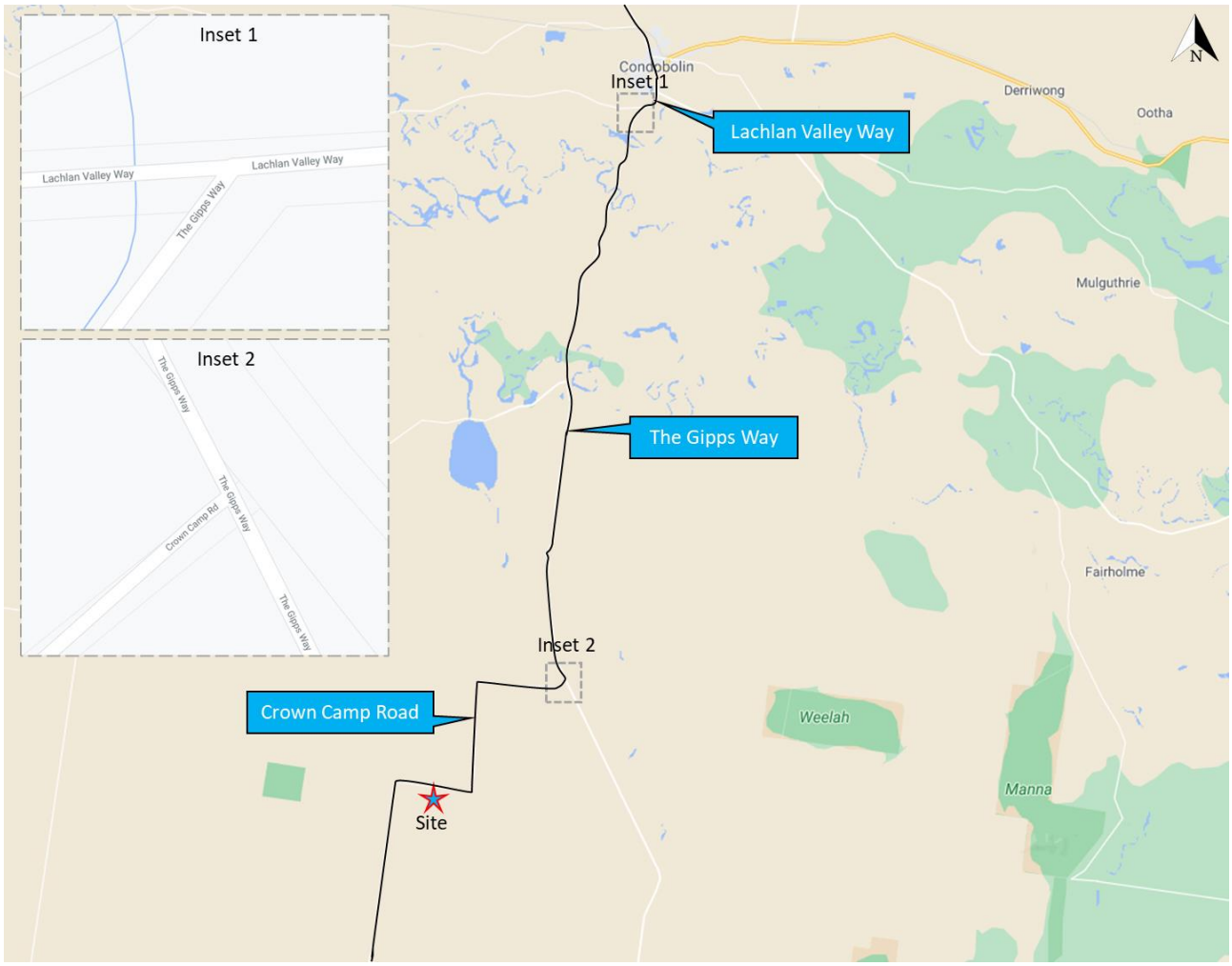
Aspect	Description
Road classification and connectivity	Local road between The Gipps Way (east) and Ungarie (south)
Alignment	Varies
Number of lanes	No lane markings
Carriageway type	A mix of sealed and unsealed sections of road
Carriageway width	Approximately 9 m sealed, 15 m unsealed
Posted speed limit	100 km/hr
Heavy vehicle access	Approved for heavy vehicles up to 19m and under 50 tonnes
Traffic function	Carries local traffic
Additional comments	The route alignment has a combination of straight sections linked by some sharp bends

Source: EMM

Plate 5.3 Crown Camp Road

5.1.3 Key intersections

The key intersections which have been assessed for potential project related traffic impacts are identified in Figure 5.3.



Source: Google Maps

Figure 5.3 Key intersections for MW880

Table 5.4 Lachlan Valley Way/The Gipps Way

Aspect	Description
Location from the site	33 km north-east of the site
Intersection control	Priority controlled
Major road	The Gipps Way
All approaches	One lane on approach and one lane on departure.
Pedestrian connectivity	Pedestrian connectivity is not provided on any approach
Traffic function	Predominantly carries regional and local traffic
Speed limit	100 km/hr in all approaches

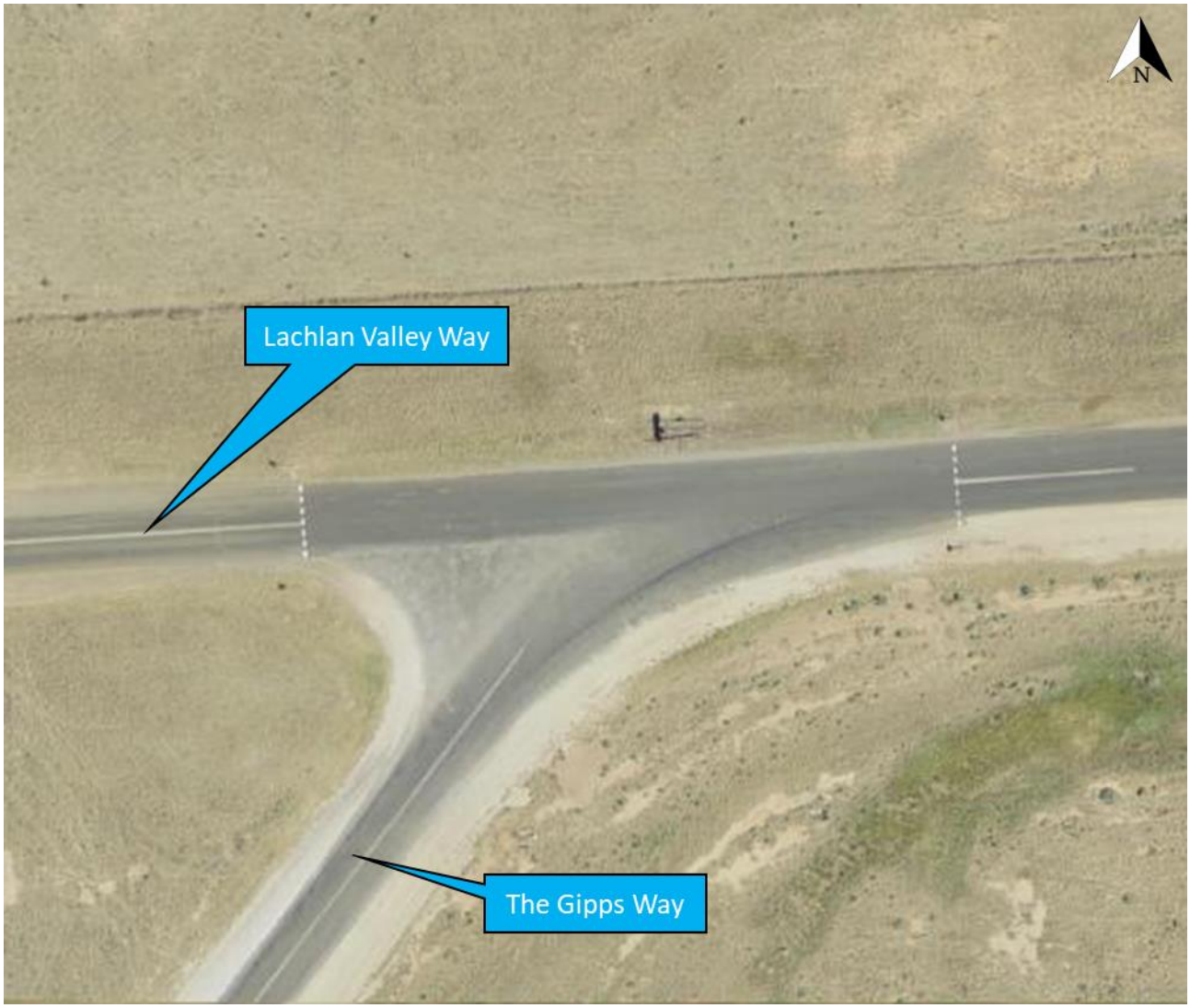


Plate 5.4 Intersection of Lachlan Valley Way and The Gipps Way

Table 5.5 The Gipps Way/Crown Camp Road

Aspect	Description
Location from the site	8 km north-east of the site
Intersection control	Priority controlled
Major road	The Gipps Way
North approach	One lane on approach and one lane on departure.
South approach	One lane on approach and one lane on departure.
West approach	No lane markings
Pedestrian connectivity	Pedestrian connectivity is not provided on any approach
Traffic function	Predominantly carries regional and local traffic
Speed limit	100 km/hr in all approaches

Plate 5.5 Intersection of The Gipps Way and Crown Camp Road

5.1.4 Traffic volumes

TfNSW Traffic Volume Viewer does not provide any traffic volume data for any roads in the vicinity of this site. Traffic surveys have not been conducted due to the remote location of the site. Due to the rural location, traffic volumes are assumed to be low.

5.1.5 Crash analysis

Crash data from TfNSW Centre for Road Safety interactive history database for five years between 2015 and 2019 has been studied for the proposed construction access route south of Condobolin.

There were three crashes recorded, with all the crashes being on The Gipps Way. The crashes involved the following severity:

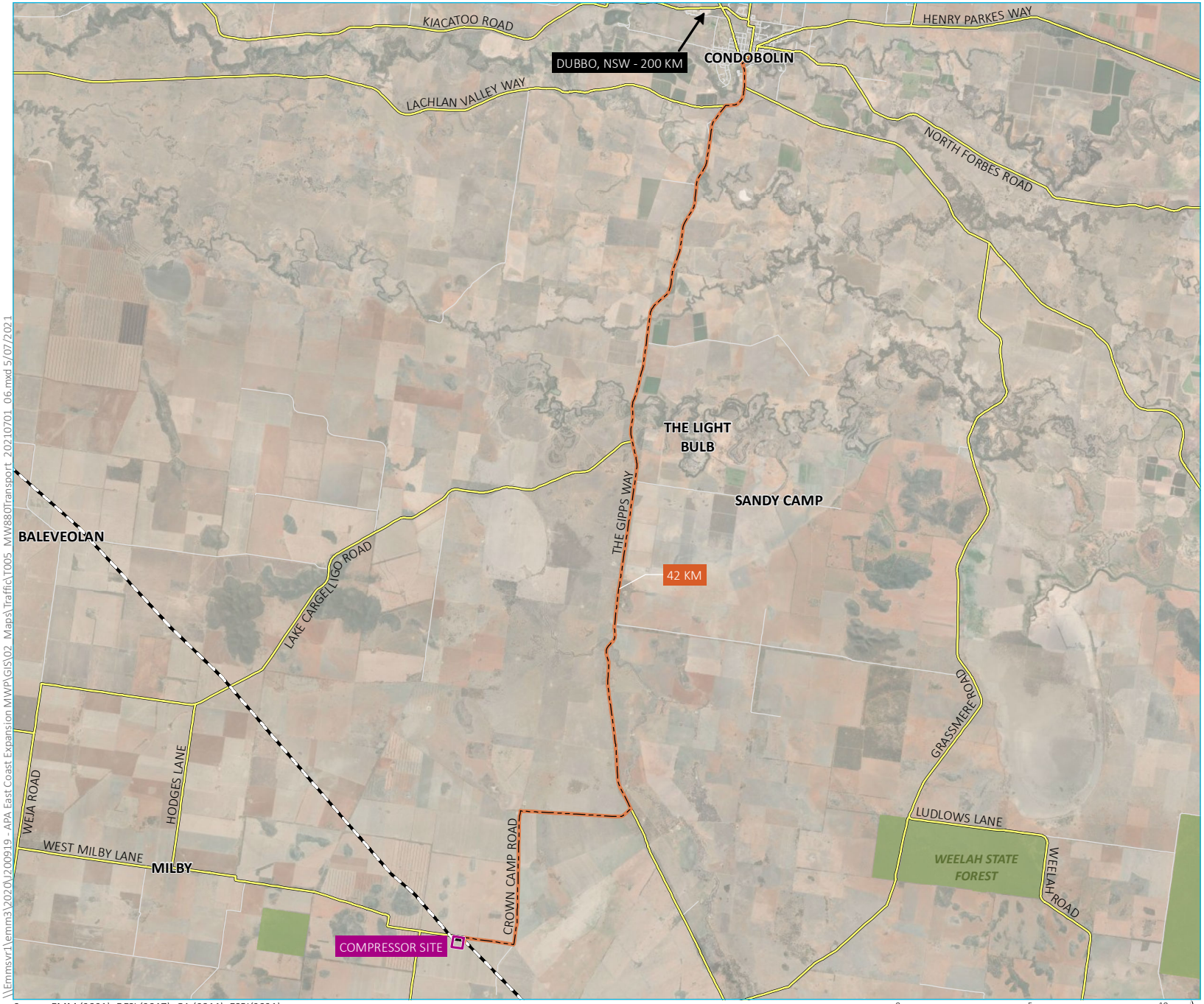
- one fatal;
- one moderate injury; and
- one minor/other injury.

The fatal crash took place in 2017 on The Gipps Way and was a head-on collision in daylight with two killed and two injured. The other crashes involved out of control overtaking vehicle and a vehicle going off the bend. The crashes do not present any trend which might warrant a review of the existing road infrastructure facilities or need for upgrades. This overall crash rate is considered low, which indicates that the roads and intersections to be used for the project construction access are within expected safety limits.

5.2 Proposed transport route

The proposed transport route for MW880 will be to and from the town of Condobolin, with Dubbo being the connecting regional transport hub.

The route involves travelling south from Condobolin via The Gipps Way which for a short section merges into Lachlan Valley Way. The route continues south along the Gipps Way, turning right on to Camp Corner Road, continuing Camp Corner Road and turning left on to the site. The proposed route is shown in Figure 5.4.



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Source: EMM (2021); DFSI (2017); GA (2011); ESRI(2021)

Proposed transport route for MW880

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Figure 5.4

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5.3 Road design standards

Road width design standards for low volume roads are defined by the Austroads *Guide to Road Design Part 3: Geometric Design* (Austroads, 2016) and are based on daily traffic volumes as shown in Table 3.1. The existing road width measurements, traffic volumes and compliance for each proposed access route are shown in Table 5.6.

Table 5.6 MW880 Approximate daily existing traffic volumes and design standards compliance

Road	Description of road	Approximate daily existing traffic volume	Existing road width (approximate)	Austroads Guide to Road Design standard in accordance with daily traffic volume	Currently meets Austroads design standard?
Lachlan Valley Way	Regional road between Newel Highway (east) and Gipps Way (west)	Less than 900 vehicles	7 m sealed	Minimum 7.2−8 m wide seal	No
The Gipps Way	Regional road between Condobolin (north) and W Wyalong Condobolin Road (south)	Less than 400 vehicles	8 m sealed	Minimum 7.2 m wide seal	Yes
Crown Camp Road	Local road between The Gipps Way (east) and Ungarie (south)	Less than 100 vehicles	9 m sealed, 15 m unsealed	8.7 m wide total carriage (if unsealed); or Minimum 3.7 m wide seal	Yes

Table 5.7 shows the existing road width measurements and the approximate future daily traffic volumes including traffic generated from the construction of the development. The compliance for each proposed access route is also summarised as part of the table.

Table 5.7 MW880 Approximate daily future traffic volumes and design standards compliance

Road	Description of road	Approximate daily future traffic volume	Existing road width (approximate)	Austroads Guide to Road Design standard in accordance with daily traffic volume	Will meet Austroads design standard?
Lachlan Valley Way	Regional road between Newel Highway (east) and The Gipps Way (west)	Less than 965 vehicles	7 m sealed	Minimum 7.2−8 m wide seal	No
The Gipps Way	Regional road between Condobolin (north) and W Wyalong Condobolin Road (south)	Less than 465 vehicles	8 m sealed	Minimum 7.2 m wide seal	Yes
Crown Camp Road	Local road between The Gipps Way (east) and Ungarie (south)	Less than 165 vehicles	Initial 9 m sealed section, 15 m unsealed	Minimum 7.2 m wide seal	No

The proposed access roads for the project meet the minimum road width compliance criteria of Austroads Guidelines for The Gipps Way, but not for Crown Camp Road and Lachlan Valley Way.

For Crown Camp Road there is a minor volume exceedance and for Lachlan Valley Way the sealed road width should be 0.2 m wider.

While Crown Camp Road and Lachlan Valley Way will not meet Austroads Design Guidelines during the peak proposed construction stage, the future project generated construction traffic volumes will only exceed the guidelines by a minor volume and will be short term. The peak project construction traffic volumes are not expected to have a significant impact on the proposed access route for the project duration and should be acceptable.

5.4 Road safety assessment at the project site entrance

The access to the site via the pipeline easement is located at a straight section, hence there are no sight distance related traffic safety issues for traffic entering or exiting to/from the site at the site entrance.

Source: APA

Photograph 5.2 Sight distance at MW880 sight entrance

6 Summary of commitments

Although specific mitigation measures are not required as a result of the TIA, the following commitments will minimise traffic impacts, and enhance safety associated with the project:

Table 6.1 Summary of commitments – traffic

Stage	Commitment ID	Commitment
Construction	TT-01	A Traffic Management Plan (TMP) will be prepared for the project, and will incorporate all traffic related requirements from the CEMP.
Construction	TT-02	Transport routes will be clearly marked or communicated, and speed limits enforced.
Construction	TT-03	After arrival at the project site all vehicles, plant and equipment will remain within the construction footprint and on approved roads and tracks.
Construction Operation	TT-04	Any oversized or over weight loads will be transported in accordance with the requirementsof the relevant road authority.

7 Summary and conclusion

A summary of the nearby major towns and roads along the transport route for each site is presented in Table 7.1.

Table 7.1 Nearby towns and roads along transport route

Compressor station site	Closest service town or major town	State/Regional road on transport route	Other roads on transport route
MW433	Broken Hill/Wilcannia	Barrier Highway	Myers Street, Woore Street, Wilcannia-Wanaaring Road
MW880	Condobolin/Dubbo	The Gipps Way, Lachlan Valley Way	Crown Camp Road

Project related construction will take approximately 12 months at each site (including commissioning). The primary project related traffic movements will be the construction traffic. The largest construction vehicle expected would either be a semi-trailer or a prime mover and float and is not likely to exceed 26 m in length.

The relevant permits from the National Heavy Vehicle Regulator (NHVR) will be acquired for any oversized vehicles for the project, prior to mobilisation.

A peak workforce of 80 workers will stay in Condobolin/West Wyalong for site MW880 and on site in accommodation camps for site MW433. The workers will travel via buses from the nearest town and airport for mobilisation and demobilisation.

Peak daily construction traffic generation for site MW880 is expected to be a combination of 31 light and heavy vehicles. Peak hourly construction traffic generation is expected to be a combination of 18 light and heavy vehicles.

Peak daily construction traffic generation for site MW433 is expected to be a combination of 19 light and heavy vehicles. Peak hourly construction traffic generation is expected to be a combination of 5 light and heavy vehicles.

Due to low construction traffic volumes, there will be minimal impacts on intersection performance and no requirements for intersection treatment or additional lanes.

The current road networks are generally compliant with Austroads rural design standards, which will not be significantly impacted by project construction traffic. The sight distance visibility requirements at all site entry points are also within acceptable limits.

Based on the findings of this TIA report, it is concluded that construction and operation traffic generated by the project will not have significant traffic impacts on the nearby road network. There are no mitigation works or road infrastructure upgrades required as part of the project.

References

AEMC 2021, Gas Statement of Opportunities for eastern and south-eastern Australia, Australian Energy Market Operator, March 2021.

Austroads. (2016). *Guide to Road Design Part 3: Geometric Design.*

Austroads. (2017). *Guide to Road Design Part 4: Intersections and Crossings General.*


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