

EIS Volume 2 Appendix M

Traffic Impact Assessment



Project EnergyConnect

Traffic Impact Assessment

JBS&G Australia Pty Ltd

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Ref: 20190233



Building exceptional
outcomes together



Document History and Status

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Executive Summary

Tonkin Consulting Pty Ltd (Tonkin) has been commissioned by JBS&G Australia Pty Ltd (JBS&G) to provide a Traffic Impact Assessment (TIA) for the proposed interconnector between Robertstown, South Australia and Wagga Wagga, New South Wales (NSW), known as Project EnergyConnect, with this report only relating to the South Australian portion of the Project (Robertstown to SA/NSW border) (the Project). The Project involves the construction of a 330kV transmission line between Robertstown and the SA-NSW border as well as construction of a new substation approximately 14km north-east of Robertstown. This impact assessment forms parts of the development application for the Project and details the impacts of the transport related activities associated with the life cycle of the Project development through construction and operation.

The SA portion of the proposed Project EnergyConnect extends from approximately 10km northeast of Robertstown to the SA/NSW border. The proposed line length is 200km between the proposed new substation and the SA/NSW border. The transmission line will cross land that is currently used for grazing and cropping by private land owners. The surrounding arterial road network is primarily state-managed, high speed rural arterial roads including Thiele Highway, Sturt Highway, Goyder Highway and Worlds End Highway with the exception of state roads in Renmark and the Wentworth-Renmark Road, which is mostly unsealed. Local roads in the area are primarily unsealed roads, except some local roads within Renmark.

Throughout the life of the Project, access will be required primarily by general access vehicles, with some restricted access movements anticipated with the new substation. It is expected that the highest volume of traffic will be experienced during the construction phase, where tower components and construction materials will need to be transported to the site. It has been assumed that most of the construction materials and employees will access the site using general access vehicles, and therefore can use all roads on the surrounding network.

Some components of the substation will require vehicles to move either over dimensional or over mass (or both) loads so an approved access route is to be established. The preferred route for these components is likely to be from the Port of Adelaide and therefore would require transportation through the metropolitan region to the site via the arterial road network. The preferred access route is Port of Adelaide, via Port River Expressway, Port Wakefield Road, Northern Expressway, Sturt Highway, Truro Road, Thiele Highway, World's End Highway and Powerline Road to the substation access point. The Port of Melbourne has also been nominated as an alternative port of delivery for freight but has not been specifically assessed as part of this project.

The construction phase of the Project is expected to create the greatest traffic generated by the development over an assumed 18-24 month period. Overall it is estimated that there would be approximately 62,000 one-way vehicle movements comprised of:

- 17,270 heavy vehicle trips (including some over-dimensional vehicles)
- 13,650 light vehicle trips

This relates to approximate daily volume of 63 additional trips on the road network and approximately five additional trips in the peak hour.

The traffic impact results in less than 10% increase in heavy vehicle traffic volumes on most arterial roads within the study area as they already have a relatively high vehicle traffic volume. The exception to this is the World's End Highway and the Wentworth-Renmark Road, which have very low existing traffic volumes. The impact on local unsealed roads is expected to be moderate, as many of these currently provide access to adjacent properties.

All planned construction and operational phase traffic impacts are comfortably within the capacity of the existing road network. There is ample spare capacity at all affected intersections during the construction



of the Project. Project generated traffic volumes would need to be much higher and concentrated in order to have any significant impact on capacity thresholds.

An additional access track/road will be required to access the Project corridor via the Goyder Highway near Overland Corner. This is to reduce the concentration of construction traffic utilising the access track along the corridor.

The Project will generate construction traffic onto some roads with existing crash rates that are above average. Traffic management strategies should be considered for those segments of road with high crash rates (Morgan to Taylorville Road on the Goyder Highway and Renmark Paringa Council boundary to SA/NSW border on the Wentworth Renmark Road).

The Project will generate construction traffic onto some local roads with geometry deficiencies. Traffic management strategies should be considered for those segments of road (Powerline Road and Wentworth Renmark Road).

The Project will generate construction traffic through some intersections with sub-standard geometry and sight distance deficiencies. Traffic management strategies should be considered for these intersections (some intersections along Powerline Road, Goyder Highway and Woods and Forest Road, Goyder Highway and Lunn Road, Ral Ral Avenue from Wentworth Renmark Road).

Overall, the traffic generated by this development will have an impact on the daily traffic usage of the surrounding road network because of projected construction movements, operations and maintenance work. Allowing for the implementation of mitigation measures including traffic management plans and compliance with permit conditions, the impacts from traffic and related activities are considered acceptable for the area in which the Project is proposed.



1 Introduction

Tonkin has prepared an assessment of the road transport implications of the proposed interconnector between Robertstown, South Australia and Wagga Wagga, New South Wales (NSW), known as Project EnergyConnect, with this report only relating to the South Australian portion of the Project (Robertstown to SA/NSW border) (the Project). The Project involves the construction of a 330kV transmission line between Robertstown and the SA-NSW border as well as construction of a new substation approximately 14km north-east of Robertstown.

1.1 Purpose of this Report

The study has been undertaken with reference to the traffic and transport components of the Project. The scope of the report is to identify the following:

- Scale and location of transport activities required to and from the Project corridor during construction and operational phases of the Project;
- Impacts on public roads and infrastructure within the study area (Riverland and Mid North) from transport activities resulting from the Project; and
- Any public infrastructure works, upgrades or measures required to accommodate transport impacts resulting from the Project.

This report is intended to satisfy the requirements of a traffic impact assessment as part of the wider Project EnergyConnect Environmental Impact Statement.

Traffic impacts from the Project would arise from:

- Increased traffic during the construction to and from key project activity areas – proposed substation and proposed transmission line corridor, for movement of workers, plant, equipment and building materials.

1.2 Relevant Legislation and Polices/Standards

The following relevant legislation, applicable polices and standards have been identified and have formed the basis for the assessment, including:

- Murray and Mallee Region Plan
- Mid North Region Plan
- AUSTROADS Guide to Road Design
- AUSTROADS Guide to Traffic Management
- Highway Capacity Manual (HCM) volume 2



2 Project Description

2.1 Site Location

The SA portion of the proposed Project EnergyConnect extends from approximately 10km northeast of Robertstown to the SA/NSW border (Figure 1). The proposed line length is approximately 200km between the proposed new sub-station and the SA/NSW border.

2.2 Project Summary

The Project consists of the following elements:

1. Construction of a new substation 10km northeast of Robertstown (Figure 2)
2. Construction of a new 330kV electrical transmission line 200km long between the new substation near Robertstown and the SA/NSW border to form the 'Interconnector' with NSW.

The new infrastructure will allow additional transfer capacity to allow for the sharing of electricity reserves between South Australia, Victoria and New South Wales once all stages are complete.

The design life of the transmission line is expected to be 40-50 years.

The activities associated with the development of the Project are summarised below.

2.3 Project details

The activities associated with the development of the substation and transmission lines components the Project are summarised below:

- Construction of a new electricity substation at Robertstown, with a footprint of approximately 1000m x 1000m. The substation would include the following plant equipment:
 - Gantries
 - Switch gear
 - 275/330kV transformers
 - Control building, and
 - Lighting and flood lighting masts with the tallest structure being 25-30m high.The substation will be surrounded by a palisade perimeter fence to approximately 3m high.
- Construction of 200km of 330kV electrical transmission line, consisting of the following components:
 - Lattice and/or guyed towers typically 40-50m high spaced at 450-600m
 - Footings for towers at 8-14m deep, constructed using excavators or bores utilising locally sourced concrete
 - Partial fabrication of towers off site, transported directly to the tower locations, on a semi-trailer or via helicopter, in sections for final assembly and erection
 - Conductors and insulators to consist of double circuit lines, with six conductor wires and two earth wires. Conductors may be installed using drum and winch or helicopter stringing techniques
 - Utilisation of existing access roads, tracks and other existing disturbed areas to minimise vegetation clearing. Where required, 5-6m wide tracks will be created
 - Creation of an easement varying in width of 60-100m
 - Laydown areas for materials in preparation for construction, contained within the easement at each tower location.
 - Up to 3 areas to house construction camps, including additional laydown area. Camp sites may be near Morgan (Northwest Bend Substation), Hawks Nest Station and Remark. Contractors may also utilize hotels in local towns (Robertstown, Morgan, Remark) and reduce the need for remote camps. This will all be determined during the detailed design phase.
 - Rehabilitation of the sites following construction
 - Operation and maintenance of the interconnector line to consist typically of two visual inspections per year, annual helicopter-based inspections, vehicle-based inspection every four years with Insulators replaced every 25 years, and
 - Other associated minor infrastructure, plant, equipment and activities.

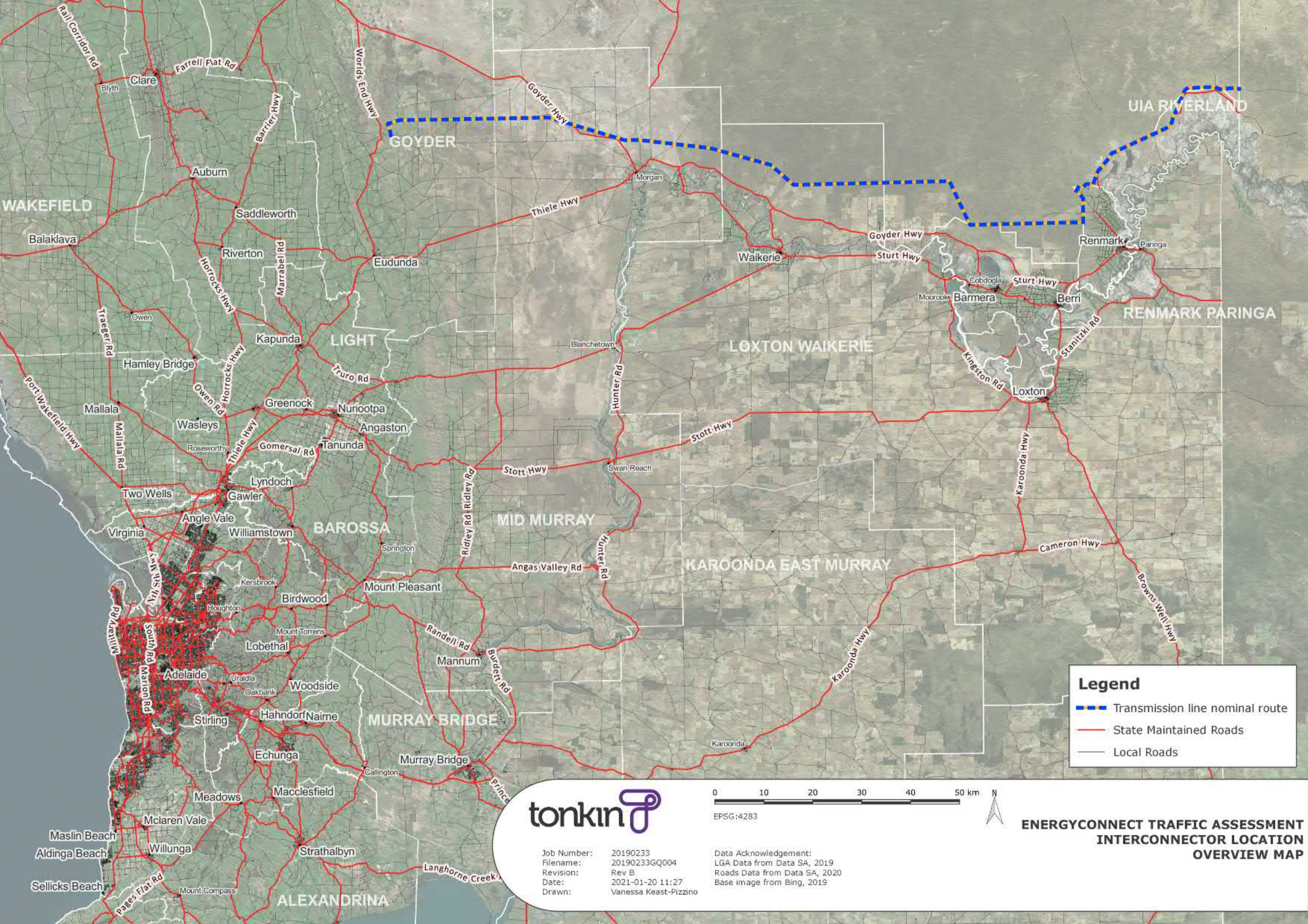


2.4 Project Construction and Other Development Activities

The construction (or establishment) period (18-24 months) of the Project would occur in a linear manner along the length of the easement, likely to proceed on a number of concurrent fronts.

2.4.1 Construction Workforce

It is expected that approximately up to 160 people would be required during the peak stages of construction. It is anticipated that some workers will be accommodated in local towns, where possible. Some workers may utilise the proposed construction camps to be constructed in the vicinity of site works.

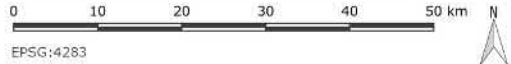


Legend

- - - Transmission line nominal route
- State Maintained Roads
- Local Roads

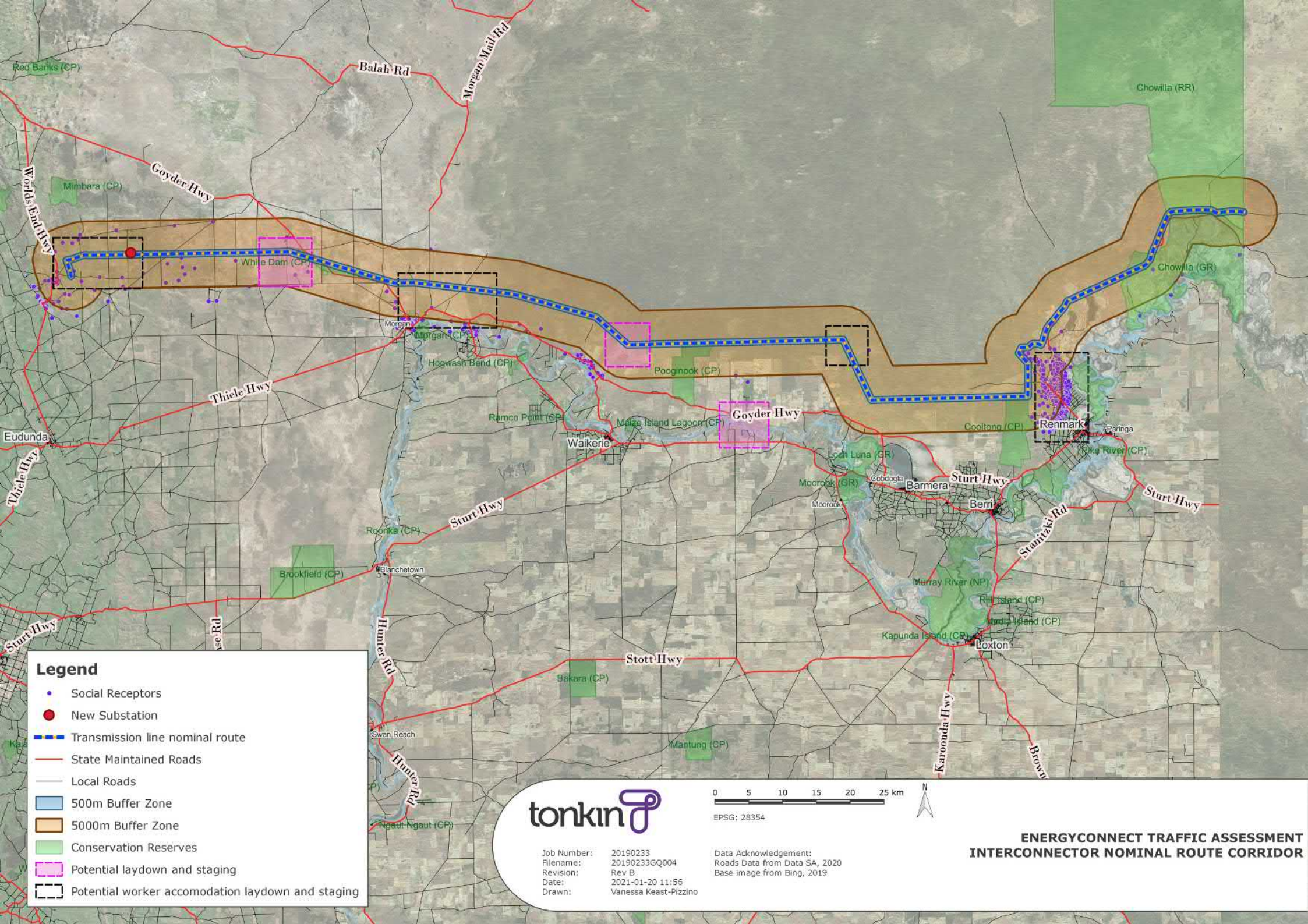
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**ENERGYCONNECT TRAFFIC ASSESSMENT
 INTERCONNECTOR LOCATION
 OVERVIEW MAP**

Data Acknowledgement:
 LGA Data from Data SA, 2019
 Roads Data from Data SA, 2020
 Base Image from Bing, 2019



- Legend**
- Social Receptors
 - New Substation
 - Transmission line nominal route
 - State Maintained Roads
 - Local Roads
 - 500m Buffer Zone
 - 5000m Buffer Zone
 - Conservation Reserves
 - Potential laydown and staging
 - Potential worker accomodation laydown and staging

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 EPSG: 28354

Data Acknowledgement:
 Roads Data from Data SA, 2020
 Base image from Bing, 2019

**ENERGYCONNECT TRAFFIC ASSESSMENT
 INTERCONNECTOR NOMINAL ROUTE CORRIDOR**



3 Traffic Assessment Method

Traffic and transport impacts due to the construction and operation of the Project were assessed through both desktop analysis and a site inspection by Tonkin (see Section 6.1). The assessment was undertaken following consultation with JBS&G to confirm where materials will be delivered from (i.e. ports), infrastructure corridor and intended haul routes. A site inspection was undertaken by the Tonkin transport team on 28-29 March 2019 to assess these elements.

To compare construction and operation impacts to existing conditions, baseline traffic and transport conditions for the study area were determined as follows:

- Existing roadway level of service was calculated using the Highway Capacity Manual (HCM) volume 2, chapter 15 methods for analysis of two lane highways (TRB, 2010).
- Existing road safety was assessed by calculation of crash rates from historical crash records and site inspection.
- Existing roadway asset road conditions and transport accessibility was assessed by site inspection and information available via Location SA.

Construction stage activities impacting the road network were quantified as follows:

- Number of material delivery loads were calculated based on the number of towers required along the alignment. Incidental material deliveries were estimated based on an assumed number per day as provided by the Project Detail Specialists (PDS).

Operations stage activities impacting the road network are considered negligible based on the operations and maintenance requirements of the Project.

Having determined both the baseline and project case conditions, the severity of impacts to the study area road network due to the proposed development were assessed as follows:

- Level of service degradation due to project traffic generation was calculated according to the US Highway Capacity Manual (HCM) methodology for two lane highways (as referenced in Austroads Guide to Traffic Management).
- Any potential road safety and accessibility concerns were identified by assessing likely traffic generation volumes of different vehicle types against the observed existing road geometry and condition data (sight distances, pavement condition, road widths).

Where required, to reduce the severity of impacts to an acceptable level, control measures were developed.

3.1 Study Area

Figure 1 and 2 shows the extent of the transport area within SA. Materials are expected to be transported from Port Adelaide or Port Melbourne through the construction phase. The westernmost extent of the project site is Bright, 10km northeast of Robertstown, whereas the easternmost project extent is the border between New South Wales and South Australia. The project corridor is 1km wide, and access to the full corridor has been assessed. All materials transported from Port Melbourne have been assumed to arrive via arterial road, with only roads in SA having been assessed.

3.2 Data inputs

Data inputs from numerous sources were required to be able to carry out the traffic assessment. A list of the different types of information required and their sources are shown in the tables below.

Existing condition data was collected to form a base case of the existing transport network. Existing condition data included traffic volumes, crash history, gazetted heavy vehicle routes and existing road conditions. The existing condition data sources are summarised in Table 3.1.



Table 3.1 Existing Data Sources

Input	Source
Traffic Volume	Annual Average Daily Traffic Estimates – 24 hours two-way flows – (Location SA) – data up to 2019 used.
Crash history	Crash history available via Location SA for the period 2015 to end of 2019 for the project area and the wider study area (inclusive of Haul routes)
Gazetted heavy vehicle routes	DPTI RAVNet Service
Existing road condition	Site inspection; verification of details (e.g. sign locations) via Google Maps

Construction data was collected to quantify vehicle loads and movements in and around the study area. This included information about the proposed transmission line infrastructure, proposed corridor design, construction program and construction logistics. The project construction data sources are summarised in Table 3.2.

Table 3.2 Project Construction Data Sources

Input	Source
Transmission line design	Project Detail Specialists (PDS) – refer Appendix A
Proposed corridor design	Alignment provided by Electranet/TransGrid
Construction Program	PDS
Construction Logistics	PDS

Operational data was collected to quantify vehicle loads, movements and impacts on Murraylands and Riverland roads. Operational data included information about operational consumables, operational workforce and proposed long term employment statistics. The operational data sources are summarised in Table 3.3.

Table 3.3 Project Operational Data Sources

Input	Source
Operational consumables	PDS
Operational workforce	PDS
Proposed long term employment statistics	PDS
Construction Logistics	PDS



4 Existing Conditions

4.1 Subject Site

The existing transport network on the Murraylands and Riverland is shown in Appendix B. People movements around the Study Area are generally limited to road or air. No passenger rail services operate in the Study Area, however there are passenger bus services connecting from Adelaide to Renmark and from Loxton to Adelaide. The bulk of rural movements in the Murraylands and Riverland are for freight transport and commuter travel. The Murraylands and Riverland has a low population density and, as such, traffic volumes, even on some rural highways in the study area, are low, and well below road capacity thresholds. The exception to this is the Sturt Highway, with some sections approaching 12,000 vehicles per day in Renmark, however still below road capacity thresholds.

The below subsections provide information on the State road network, local road network and bus transport within the study area.

4.2 Study Area Road network

4.2.1 State Road Network

The characteristics of State maintained roads which form major accesses to the proposed project site, including for construction haul routes are detailed in Table 4.1. Note, only roads within SA have been assessed.

Table 4.1 State road access network summary

Road Name	Sealed	Overtaking Lanes	Austrroads Road Class	Lanes	Carriageway width	Pavement Type
Horrocks Highway (B82)	Y	N	3	2	7-8m	Spray Seal
Sturt Highway (A20)	Y	Y	1	2	10m	Spray Seal/Asphalt
Northern Expressway (M2)	Y	N	1	4	11m each	Asphalt
North South Motorway (M2)	Y	N	1	6	15m each	Concrete
Goyder Highway (B64)	Y	N	3	2	6.8-7.5m	Spray Seal
Thiele Highway (B81)	Y	N	3	2	6.5-8.5m	Spray Seal
Browns Well Highway	Y	N	3	2	6.0-6.5m	Spray Seal
Mallee Highway	Y	N	3	2	8.6m	Spray Seal
Paruna Road (Loxton)	Y	N	3	2	7m	Spray Seal
Tobruk Terrace (Loxton)	Y	N	3	2	7m each	Spray Seal/Asphalt



Road Name	Sealed	Overtaking Lanes	Austrroads Road Class	Lanes	Carriageway width	Pavement Type
Bookpurnong Terrace (Loxton)	Y	N	3	4	12-13m each	Spray Seal/Asphalt
Bookpurnong Road	Y	Y	3	2	8.6-15m (varies)	Spray Seal/Asphalt
Crawford Terrace (Berri)	Y	N	3	2	10-11m	Spray Seal/Asphalt
Worman Street (Berri)	Y	N	3	2	9-12m	Spray Seal/Asphalt
Old Sturt Highway (Berri)	Y	N	3	2	8.6m	Spray Seal/Asphalt
World's End Highway	Y	N	3	2	6.5m	Spray Seal
Renmark Avenue (Renmark)	Y	N	3	4	8.6m	Spray seal
Ral Ral Avenue (Renmark)	Y	N	3	2	9.2m	Spray seal
Eighteenth Street (Renmark)	Y	N	1	2	12m	Spray Seal/Asphalt
Wentworth – Renmark Road	N	N	3	-	10m	Unsealed, sheeted and formed

4.2.2 Study Area State Road Network

There are seven state-maintained roads across the Study Area that may be travelled on by either personnel commuting to and from work or materials being delivered to site. They are:

- Goyder Highway
- Sturt Highway
- Renmark Avenue
- Ral Ral Avenue
- Wentworth-Renmark Road
- World's End Highway
- Thiele Highway



The above list does not include state-maintained highways/roads that would be used directly from the various Ports leading to the study area.

The Goyder Highway crosses through the Study area running from Morgan in a north-west direction and continues to run in an east-west direction south of the study area between Morgan and Renmark. The Sturt Highway, located south of the Study Area, runs east-west and would most likely be utilised between Renmark and the SA-NSW Border. The Sturt Highway also runs similarly to the Goyder Highway south of the River Murray. Renmark Avenue forms the link between the Sturt Highway and Ral Ral Avenue in the town centre of Renmark. Ral Ral Avenue runs north-west between the study area and






the Sturt Highway in the Renmark area. The Wentworth-Renmark Road runs east between Renmark and the SA-NSW border. The World's End Highway runs north-west between Robertstown and the western end of the Study Area. The Thiele Highway links from the Horrocks Highway near Gawler to a number of regional towns, terminating at Morgan. Details of each of these seven roads are provided in Table 4.2.



Table 4.2 Study area State maintained roads

Road Name	Class	Description	Photo
Goyder Highway	B64	The Goyder Highway provides east-west connectivity from Crystal Brook through the Mid-North region right through to the Riverland. It consists of a sealed single carriageway with one lane in each direction.	
Sturt Highway	A20	The Sturt Highway forms part of the Australian National Highway Network, linking Adelaide to Sydney. Nearest the study area, it provides connectivity between a number of towns, including Barmera, Waikerie and Renmark. It consists of a sealed single carriageway with one lane in each direction. A number of overtaking lanes are provided at regular intervals.	



Road Name	Class	Description	Photo
Renmark Avenue	-	Renmark Avenue provides a link between the Sturt Highway and Ral Ral Avenue in the town centre of Renmark. It provides access to a number of commercial businesses fronting the road. It consists of a sealed, dual carriageway separated by a wide landscaped median with two lanes in each direction. Angled parking is provided on both carriageways.	
Ral Ral Avenue	-	Ral Ral Avenue provides a link between the town centre of Renmark and the north-eastern portion of the study area. It predominantly consists of a sealed single carriageway with one lane in each direction. A short section within the town centre of Renmark consists of sealed, dual carriageway separated by a wide landscaped median with two lanes in each direction.	
Wentworth Renmark Road	-	The State Maintained section of the Wentworth-Renmark Road provides a link between the northern outskirts of Renmark and the SA/NSW border. It runs along the centre of the alignment for the far eastern portion of the study area. It also provides access to several stations and conservation/reserve areas. It consists of an unsealed formed and sheeted, two-way single	



Road Name	Class	Description	Photo
		carriageway, generally 10m wide.	
World's End Highway	-	World's End Highway provides north-south connectivity between the town of Eudunda and intersection of Goyder Highway. It consists of a sealed single carriageway with one lane in each direction.	
Thiele Highway	B81	Thiele Highway provides a link between the Horrocks Highway and a number of regional towns including Freeling, Kapunda, Eudunda, terminating at Morgan. It consists of a sealed single carriageway with one lane in each direction.	

4.2.3 Local Road Network

The characteristics of local roads which form major and minor accesses to the proposed project site, including for construction haul routes are detailed in Table 4.3.

Table 4.3 Local access road network

Road Name	Sealed	Overtaking Lanes	Austrroads Road Class	Lanes	Carriageway width	Asset Owner
Powerline Road	N	N	4	-	6-8m	Regional Council of Goyder/Mid Murray Council
Lower Bright Road	N	N	4	-	6-8m	Regional Council of Goyder
Schomburgk Road	N	N	4	-	5-6m	Mid Murray Council
Old Redcliffe Road	N	N	4	-	6m	Mid Murray Council



Road Name	Sealed	Overtaking Lanes	Austrroads Road Class	Lanes	Carriageway width	Asset Owner
Lindley Cemetery Road	N	N	4	-	6m	Mid Murray Council
Samsons Well Road	N	N	4	-	8-10m	Mid Murray Council
Controversial Road	N	N	4	-	6-8m	Mid Murray Council
Go-Kart Road	N	N	4	-	6m	Mid Murray Council
Bungunna Road	N	N	4	-	10m	Mid Murray Council
Woods and Forest Road	N	N	4	-	10m	Mid Murray Council
Lunn Road	N	N	4	-	6-8m	District Council of Loxton Waikerie
Loffler Road	N	N	4	-	4-6m	District Council of Loxton Waikerie
Cooltong Avenue	Y	N	4	2	6.2m	Renmark Paringa Council
Old Cooltong Road	Y	N	4	1	6.2m	Renmark Paringa Council
Cooltong Boundary Track	N	N	4	1	3-4m (assumed)	-
Stoney Pinch Road	N	N	4	1	4-5m	Renmark Paringa Council
Ral Ral Avenue	Y and N	N	4	2	4-7m	Renmark Paringa Council
Wentworth-Renmark Road	Y	N	3	2	6.5-7.2m	Renmark Paringa Council
Lovers Lane	N	N	4	2	11m	District Council of Southern Mallee

4.2.4 Study Area Local Road Network

There are 17 local maintained roads across the Study Area that may be travelled on by either personnel commuting to and from work or materials being delivered to site. They are:

- Powerline Road
- Lower Bright Road
- Schomburgk Road
- Old Redcliffe Road




- Lindley Cemetery Road
- Samsons Well Road
- Controversial Road
- Go-Kart Road
- Bungunnia Road
- Woods and Forest Road
- Lunn Road
- Loffler Road
- Cooltong Avenue
- Old Cooltong Road
- Cooltong Boundary Track
- Stoney Pinch Road
- Ral Ral Avenue
- Wentworth-Renmark Road

The above list does not include local roads that would be used directly from the various Ports leading to the study area (e.g. Lovers Lane in Pinnaroo).

The proposed interconnector alignment will largely be accessed directly from these local roads as the final leg of the journey. Once the alignment is accessed, an access track 5-6m wide will be constructed along the alignment to facilitate access by construction vehicles.

Details of each of these 17 roads are provided in Table 4.4. These are also shown in Appendix B.




Table 4.4 Study area local access roads

Road Name	Description	Photo
Powerline Road	<p>Powerline Road forms an east-west link between the Worlds End Highway and Goyder Highway. It generally follows the alignment of the western portion of the study area for approximately 35km. It extends through two Council districts, with the western portion maintained by Goyder Regional Council and the eastern portion by Mid Murray Council. It consists of an unsealed, formed and sheeted, two-way single carriageway, generally 6-8m wide.</p> <p>The road was generally in good condition, with some isolated sections of minor corrugations.</p>	






Road Name	Description	Photo
Lower Bright Road	<p>Lower Bright Road is a local access road off Powerline Road. It provides access to the existing substation at the western most section of the study area. It is maintained by Goyder Regional Council. It consists of an unsealed, formed and sheeted, two-way single carriageway, generally 6-8m wide.</p> <p>The road was generally in good condition.</p>	
Schomburgk Road	<p>Schomburgk Road is a local access road running perpendicular to Powerline Road. It will primarily provide access from Powerline Road to part of the alignment within the study area. It is maintained by Mid-Murray Council. It consists of an unsealed, formed and sheeted, two-way single carriageway, generally 5-6m wide.</p> <p>The road was generally in good condition.</p>	
Old Redcliffe Road	<p>Old Redcliffe Road is a local access road off Goyder Highway. It will primarily provide access from Goyder Highway to part of the alignment within the study area. It is maintained by Mid-Murray Council. It consists of an unsealed, formed and sheeted, two-way single carriageway, generally 6m wide.</p> <p>The road was generally in good condition.</p>	




Road Name	Description	Photo
Lindley Cemetery Road	<p>Lindley Cemetery Road is a local access road off Goyder Highway. It will primarily provide access from Goyder Highway to part of the alignment within the study area. It is maintained by Mid-Murray Council. It consists of an unsealed, formed and sheeted, two-way single carriageway, generally 6m wide.</p> <p>The road was generally in good condition.</p>	
Samsons Well Road	<p>Samsons Well Road is a local access road off Goyder Highway. It will primarily provide access from Goyder Highway to part of the alignment within the study area. It is maintained by Mid-Murray Council. It consists of an unsealed, formed and sheeted, two-way single carriageway, generally 8-10m wide.</p> <p>The road was generally in good condition.</p>	
Controversial Road	<p>Controversial Road is a local access road off Goyder Highway. It links Goyder highway to Bungunnia Road. It will primarily provide access from Goyder Highway to part of the alignment within the study area. It is maintained by Mid Murray Council. It consists of an unsealed, formed and sheeted, two-way single carriageway, generally 6-8m wide.</p> <p>The road was generally in good condition.</p>	





Road Name	Description	Photo
Go-Kart Road	<p>Go-Kart Road is a local access road off Controversial Road. It will primarily provide access from Controversial Road to part of the alignment within the study area. It is maintained by Mid Murray Council. It consists of an unsealed, unformed two-way single carriageway, generally 6m wide.</p> <p>The road was generally in okay condition.</p>	
Bungunnia Road	<p>Bungunnia Road provides a north-south link from the Goyder Highway to several pastoral stations in the north. It will primarily provide access from Goyder Highway to part of the alignment within the study area. It is maintained by Mid Murray Council. It consists of an unsealed, formed and sheeted, two-way single carriageway, generally 10m wide.</p> <p>The road was generally in good condition.</p>	
Woods and Forest Road	<p>Woods and Forest Road provides a link from Goyder Highway to an existing sub-station and pastoral properties to the north. It will primarily provide access from Goyder Highway to part of the alignment within the study area. It is maintained by Mid Murray Council. It consists of an unsealed, formed and sheeted single carriageway, generally 10m wide.</p> <p>The road was generally in good condition with some minor corrugations.</p>	





Road Name	Description	Photo
Lunn Road	<p>Lunn Road is a local access road from Goyder Highway. It primarily provides access to a number of adjoining properties. It will primarily provide access from Goyder Highway to part of the alignment within the study area where it intersects the alignment. It is maintained by the District Council of Loxton Waikerie. It consists of an unsealed, formed and sheeted single carriageway, generally 6-8m wide although a portion of it is unformed and unsheeted.</p> <p>Lunn Road condition varied from good to poor.</p>	
Loffler Road	<p>Loffler Road is a local access road from Goyder Highway. It primarily provides access to several adjoining properties. It potentially could provide access from Goyder Highway to part of the alignment within the study area however does not quite intersect it. It is maintained by the District Council of Loxton Waikerie. It consists of an unsealed, formed and sheeted two-way single carriageway, generally 4-6m wide, although a portion of it is unformed and unsheeted.</p> <p>Loffler Road condition varied from good to poor.</p>	
Cooltong Avenue	<p>Cooltong Avenue is a local road providing access to several irrigated properties. It can be accessed via Ral Ral Avenue to the north-west. It potentially could provide access from Ral Ral avenue to part of the alignment within the study area. It is maintained by Renmark Paringa Council. It consists of a 6.2m wide sealed, single carriageway with one lane in each direction.</p> <p>Cooltong Avenue was considered to be in good condition.</p>	



Road Name	Description	Photo
Old Cooltong Road	Old Cooltong Avenue is a local road providing access to several irrigated properties. It can be accessed via Ral Ral Avenue to the north and Government Road to the south. It may be used to access part of the alignment within the study area. It is maintained by Renmark Paringa Council. It consists of a sealed, single carriageway which is currently not line marked.	 Google Street view – looking north
Cooltong Boundary Track	Cooltong Boundary Track is an access track for the Cooltong Conservation Park. It can be accessed via a number of different locations in the Renmark area. It is unclear who the maintenance responsibility lies with. It is likely only a 3m wide unsealed track which is unlikely to be all weather access. This would need to be widened to 5-6m should it form a major access.	No photo available
Stoney Pinch Road	Stoney Pinch Road is a local road providing access to several irrigated properties. It can be only be accessed via Old Cooltong Road. It may be used to directly access part of the alignment within the study area. It is maintained by Renmark Paringa Council. It consists of an unsealed, single carriageway, likely to be narrow in width.	 Google Street view – looking west



Road Name	Description	Photo
Ral Ral Avenue	<p>Ral Ral Avenue is a local road providing access to several irrigated properties. This section of Ral Ral Avenue is the continuation of the State Maintained section of Ral Ral Avenue. It may be used to directly access part of the alignment within the study area. It is maintained by Renmark Paringa Council.</p> <p>A small section of Ral Ral Avenue consists of a sealed, single carriageway with one lane in each direction. The remaining section is narrow and unsealed.</p>	 <p>Google Street view – looking north-west</p>
Wentworth-Renmark Road	<p>Wentworth-Renmark Road provides a link between Ral Ral Avenue and the State Maintained section of Wentworth-Renmark Road. It will primarily provide access to the north-eastern part of the study corridor. It is maintained by Renmark Paringa Council. It consists of a 6.5-7.2m wide sealed, single carriageway with one lane in each direction.</p> <p>The sealed section of Wentworth-Renmark Road was considered to be in good condition.</p>	

4.2.5 Existing intersection form




A total of 14 intersections have been identified within the realms of the study area that will primarily be used by construction traffic as listed below:

- Thiele Highway/Worlds End Highway
- Worlds End Highway/Commercial Street
- Worlds End Highway/Powerline Road
- High Street/Fourth Street (Morgan)
- Goyder Highway/Morgan Terrace (Morgan)
- Goyder Highway/Woods and Forest Road
- Goyder Highway / Lunn Road
- Sturt Highway/Old Sturt Highway (west)
- Sturt Highway/Goyder Highway
- Sturt Highway/Old Sturt Highway (east)
- Sturt Highway/Renmark Avenue






- Renmark Avenue/Ral Ral Avenue
- Ral Ral Avenue/Wentworth Renmark Road
- Ral Ral Avenue/Cooltong Avenue

Table 4.5 Intersections within the study area

Intersection	Description	Photo
Thiele Highway / Worlds End Highway	Located in Eudunda. Currently forms a T-junction with Thiele Highway being the priority road. Worlds End Highway approach is controlled via a Give Way sign. Located within a 50km/h zone.	
Worlds End Highway / Commercial Street	Located in the township of Robertstown. Currently forms a four-way intersection, with the east/west movements being controlled by a stop sign. Commercial Street (east approach) forms the continuation of Worlds End Highway. Lanes on all approaches are generous. Located within a 50km/h zone.	
Worlds End Highway / Powerline Road	Located approximately 5km north of Robertstown. Forms a staggered four-way intersection with Powerline Road and Rettke Road operating under the T-junction rule. T-junction warning signs are provided on the approach of Powerline Road. Sight distance is slightly restricted at the Powerline Road approach due to the existing road geometry of Worlds End Highway. Located within a 110km/hr section of the highway.	



Intersection	Description	Photo
High Street / Fourth Street (Morgan)	<p>Located in Morgan. Currently forms a four-way intersection with High Street having the priority. The Fourth Street approaches operate under give-way sign control.</p> <p>Widened lanes and seal is provided on High Street to facilitate passing of vehicles waiting to turn right at the junction within a 50km/hr zone.</p>	
Goyder Highway/Morgan Terrace (Morgan)	<p>Located just north of the township of Morgan. Currently forms a T-junction with the approach from the west operating under the T-junction rule and the north-south road having priority. Wide aprons on are provided to facilitate the movement of heavy vehicles. A widened unsealed shoulder is provided at the junction to allow passing of vehicles waiting to turn right on Goyder Highway.</p>	
Goyder Highway / Woods and Forest Road	<p>Located 4.3km north-east of Morgan. Woods and Forest Road forms a T-junction with Goyder Highway with Woods and Forest Road operating under the T-junction control. The Woods and Forest Road approach is currently unsealed, with a gate located approximately 80m off Goyder Highway. Goyder Highway is 110km/hr, with Woods and Forest Road subject to the default 100km/hr rural speed limit. Sight distance is restricted to the west due to the existing geometry of Goyder Highway.</p>	



Intersection	Description	Photo
Goyder Highway / Lunn Road	<p>Located approximately half-way in between Morgan and Overland Corner. Lunn Road forms a T-junction with Goyder Highway with Lunn Road controlled via give way control. The Lunn Road approach is currently unsealed. Goyder Highway is sign posted at 110km/hr, with Lunn Road subject to the default 100km/hr rural speed limit.</p>	
<p>Google Street view – looking west</p>		
Sturt Highway / Old Sturt Highway (west)	<p>Located just east of Barmera. Forms a T-junction, with the east-west road having the priority. The north approach (Sturt Highway) has dedicated left and right turn lanes. The east approach (Old Sturt Highway) has a right turn lane onto Sturt Highway north. The west approach (Sturt Highway) has a dedicated left turn slip lane with acceleration lane onto the north. The right turn from the north to the west becomes the priority lane leaving the junction. Both roads are sign posted at 90km/hr.</p>	
Sturt Highway / Goyder Highway	<p>Located 3km west of Monash. Forms a T-junction with Sturt Highway having the priority (east-west). Goyder Highway approach is controlled by Give Way sign control and includes left turn lane on the approach to Sturt Highway. Sturt Highway has a right turn into Goyder Highway and short left turn lane into Goyder Highway from the west. Both roads are sign posted 110km/hr.</p>	



Intersection	Description	Photo
<p>Sturt Highway / Old Sturt Highway (east)</p>	<p>Located 6km west of Monash. Forms a T-junction, with the north-south road having priority. The east approach has separated left and right turn lanes, with the left turn lane including an acceleration lane merging onto the Sturt Highway north. The north approach has a right turn lane to turn right to continue on the Sturt Highway. All approaches are sign posted at 110km/hr.</p>	
<p>Sturt Highway/ Renmark Avenue</p>	<p>Located in Renmark. Currently forms a roundabout with two lanes on the Sturt Highway west and Renmark Avenue approaches. There are different turn treatments for each approach, including a median separated left turn lane from the Sturt Highway south approach to continue on Sturt Highway west. Sturt Highway approaches are sign posted at 60km/hr with Renmark Avenue and Eighteenth Street subject to 50km/hr/.</p>	
<p>Renmark Avenue/ Ral Ral Avenue</p>	<p>Located in Renmark. As Renmark Avenue has a wide centre median, it effectively operates as two separate T-junctions. The Renmark Avenue approach has separated left and right turn lanes. A median on Ral Ral Avenue controls right turn movements from Renmark Avenue and Ral Ral Avenue. All approaches are subject to a 50km/hr speed limit.</p>	



Intersection	Description	Photo
Ral Ral Avenue/ Wentworth Renmark Road	Located 9km north of Renmark town centre. Forms a Y-Junction with Ral Ral Avenue the priority road. Wentworth-Renmark Road approach intersects Ral Ral Avenue at an acute angle and is controlled via give way control. Both roads are sign posted at 100km/hr.	
Ral Ral Avenue/ Cooltong Avenue	Located 700m further north-west of Ral Ral Avenue/Wentworth Renmark Road junction. Forms a Y-Junction with Ral Ral Avenue (south-east approach)-Cooltong Road being the priority movement. Ral Ral Avenue north approach intersects Ral Ral Avenue at an acute angle and is controlled via the T-junction rule. Both roads are subject to the default rural speed limit of 100km/hr.	

Other intersections that could be utilised incidentally during the construction phase within the study area include:

- Powerline Road/Lower Bright Road
- Schomburgk Road/Powerline Road
- Powerline Road/Goyder Highway
- Goyder Highway/Old Redcliffe Road
- Goyder Highway/Lindley Cemetery Road
- Goyder Highway/Samsons Well Road/Controversial Road
- Goyder Highway/Bungunnia Road
- Controversial Road/Go Kart Road
- Bungunnia Road/Controversial Road
- Cooltong Avenue/Stoney Pinch Road
- Ral Ral Avenue/Old Cooltong Road

The above intersections are not considered to provide primary access to the Project corridor.



4.2.6 Seasonal considerations for the local road network

As most of these roads exist within agriculture, horticulture and livestock areas, there is likely to be some seasonal variation in traffic volumes along the local road networks. Within the Riverland and Murraylands, there is likely to be higher volumes of heavy vehicles associated with vintage during late summer/early autumn. There is also increased heavy vehicle activity associated with harvest associated with agriculture land use, which is heavier within some areas of the Riverland and nearest the western portion of the study area. The increase in traffic volumes is not expected to impact construction traffic along the proposed access routes to the Project corridor.

4.2.7 Existing utilities & other infrastructure along possible routes

Along the Project corridor between Robertstown to Stuart, there are existing high voltage power lines and associated infrastructure including existing sub-stations at either end. The proposed alignment of the Project will be adjacent to the existing high voltage power for approximately 60km. The alignment of the Project corridor will need to consider the impacts of being adjacent existing high voltage power lines. No other major infrastructure or existing utilities are thought to be impacted by the transport aspect of the project however this will need to be confirmed during design and construction.

4.3 Existing Road Traffic Volumes

The Annual Average Daily Traffic (AADT) of each of the highways varies over the segments between towns and intersections. Table 4.5 details the varying AADT and percentage of heavy vehicles by road segment. Maps detailing these AADTs and percentage of heavy vehicles (HV) are located in Appendix B. Table 4.6 also contains the projected future traffic volumes anticipated during the construction period to 2020. Refer to section 4.5 for discussion on projected future traffic volumes. Traffic volume data available for 2020 was not used due to the effects of COVID-19.

Traffic volumes of local roads expected to be used as part of the haulage routes are not readily available due to the fact they are owned and maintained by the LGAs. However, as they only provide access to a finite number of properties, volumes are certainly expected to be between 100 to 300 vehicles per day or less.



Table 4.6 Existing AADT and percentage of heavy vehicles, (Location.sa.gov.au,2019)

Road Name	Segment	AADT	%HV	Project AADT (2020)
Goyder Highway	Worlds End Highway to Morgan	440	20.5%	450
	Morgan to Cadell Valley Road	600	23.5%	630
	Cadell Valley Road to Taylorville Road	490	32.5%	510
	Taylorville Road to Morgan Road	500	20.0%	510
	Morgan Road to Sturt Highway	380	22.5%	390
Sturt Highway	Truro to Murraylands Road	3700	32.5%	3810
	Murraylands Road to Hunter Road	3900	23.0%	4100
	Hunter Road to Old Blanchetown Road	3400	29.5%	3430
	Old Blanchetown Road to Ian Oliver Drive	3000	31.5%	3150
	Ian Oliver Drive to Kingston Road	3500	24.5%	3570
	Kingston Road to Drogemuller Road	4300	20.0%	4390
	Drogemuller Road to Morgan Road	5000	20.0%	5100
	Morgan Road to Nookamka Terrace	5400	18.5%	5510
	Nookamka Terrace to Fowles Street	5300	18.0%	5410
	Fowles Street to Old Sturt Highway	6500	18.5%	6630
	Old Sturt Highway (west) to Goyder Highway	3000	26.5%	3060
	Goyder Highway to Old Sturt Highway (east)	3700	21.5%	3770
	Old Sturt Highway to Twenty Third Street	9000	16.5%	9180
Twenty Third Street to Twenty First Street	9700	10.0%	9990	
Twenty First Street to Hakea Street	10700	8.0%	11020	
Hakea Street to Twentieth Street	11800	14.5%	12040	



Road Name	Segment	AADT	%HV	Project AADT (2020)
	Twentieth Street to Nineteenth Street	11000	7.5%	11330
	Nineteenth Street to Eighteenth Street	12200	6.5%	12570
Renmark Avenue	Sturt Highway to Ral Ral Avenue	9600	2.5%	9890
Ral Ral Avenue	Renmark Avenue to Gowra Street	8400	3.0%	8650
	Gowra Street to Paringa Street	3900	8.5%	3980
	Paringa Street to Goolwa Street	2700	8.5%	2750
	Goolwa Street to Chowilla Street	2000	8.5%	2040
	Chowilla Street to Wentworth Renmark Road	1200	5.5%	1220
Wentworth-Renmark Road	Ral-Ral Avenue to Story Avenue	260	7.5%	270
	Story Avenue to SA/NSW Border	60	8.5%	60
Worlds End Highway	Powerline Road to RRD 28.99	170	20.5%	180
	RRD 28.99 to Railway Parade	490	12.0%	520
	Railway Parade to Railway Terrace, Point Pass	340	12.0%	360
	Railway Terrace to Australia Plains Road	500	9.5%	530
	Australia Plains Road to Barwell Street	600	9.0%	640
	Barwell Street to Kapunda Street	800	9.0%	860
	Kapunda Street to Thiele Highway	1200	9.0%	1290
Thiele Highway	Worlds End Highway to Eudunda Road	600	13.5%	640
	Eudunda Road to Bower Boundary Road	390	13.0%	410
	Bower Boundary Road to Murraylands Road	350	13.0%	370
	Murraylands Road to Fourth Street	650	15.5%	680



Road Name	Segment	AADT	%HV	Project AADT (2020)
Fourth Street	Thiele Highway to Goyder Highway	700	13.5%	740

4.4 Existing Restricted Access Vehicle Network

The main highways, as well as many other roads across the study area are gazetted for a variety of restricted access vehicles. The gazetted vehicles for each of the Highways in the study area are detailed in Table 4.7, with network maps included in Appendix C. Of all local roads that will possibly be used as Haul routes, none are gazetted anything above general access (19m Semi Trailer).

Table 4.7 Existing Restricted Access Vehicle Network, Maps.sa.gov.au/ravnet, 2019

	Gazetted vehicle type	Sturt Highway	Goyder Highway	Ral Ral Avenue / Renmark Avenue	Wentworth-Renmark Road	Worlds End Highway	Thiele Highway
GML Routes	23m B-Double (GML)	Y	Y*	Y		Y	Y
	26m B-Double (GML)	Y	Y*	Y		Y	Y
	30m Road Train (GML)	Y	Y*				
	36.5m Road Train (GML)	Y	Y*				
	53.5m Road Train (GML)						
	Road Train Converter Dolly (GML)	Y	Y*				Y*
	23m Vehicle Carrier (GML)	Y	Y				Y*
	25m Vehicle Carrier (GML)	Y	Y				
	Rigid Truck and Dog (23m) (GML)	Y	Y				
HML Routes	23m B-Double (GML)	Y	Y*	Y		Y	Y
	26m B-Double (GML)	Y	Y*	Y		Y	Y
	30m Road Train (GML)	Y	Y*				
	36.5m Road Train (GML)	Y	Y*				
	53.5m Road Train (GML)						
	Road Train Converter Dolly (GML)	Y	Y*				Y*



	Gazetted vehicle type	Sturt Highway	Goyder Highway	Ral Ral Avenue / Renmark Avenue	Wentworth-Renmark Road	Worlds End Highway	Thiele Highway
	23m Vehicle Carrier (GML)	Y	Y				Y*
	25m Vehicle Carrier (GML)	Y	Y				
	19m Network (HML)	Y	Y	Y		Y	Y
OSM Routes	23m 42.5t Low Loader 24 Hr	Y	Y	Y		Y*	Y*
	23m 42.5t Low Loader Day Only	Y	Y	Y		Y*	Y*
	25m 49.5t Low Loader	Y	Y				Y*
	25m 59.5t Low Loader	Y	Y				Y*
	4.0m Wide up to 93.5t Low Loader	Y	Y				Y*
	4.5m Wide up to 93.5t Low Loader	Y*	Y				
	Controlled Access Bus up to 14.5m	Y	Y			Y	Y*
	3 Axle Crane Network	Y	Y				Y
	4 Axle Crane Network	Y	Y				Y*
	5 Axle Crane Network – Level One	Y*	Y				Y*
	5 Axle Crane - Level Two	Y*					
	6 Axle Crane - Day Travel	Y*	Y*				Y*
	40t Special Purpose Vehicle	Y*	Y			Y	Y*
PBS Routes	Level 1A	Y	Y	Y		Y	Y
	Level 2A	Y	Y	Y		Y	Y
	Level 2B	Y*	Y*				Y*
	Level 3A	Y*	Y*				
	Level 3B						
	Level 4A						



	Gazetted vehicle type	Sturt Highway	Goyder Highway	Ral Ral Avenue / Renmark Avenue	Wentworth-Renmark Road	Worlds End Highway	Thiele Highway
Commodity Routes – B Double	Grain (B Double GML)	Y	Y	Y		Y	Y
	Fertilizer (B Double GML)	Y	Y	Y		Y	Y
	Hay & Bulk Stock Feed (B Double GML)	Y	Y	Y		Y	Y
	Dairy Milk (B Double GML)	Y	Y	Y		Y	Y
	Livestock (B Double GML)	Y	Y	Y		Y	Y
	Logging & Timber (B Double GML)	Y	Y	Y		Y	Y
	Wine (B Double GML)	Y	Y	Y		Y	Y
	Wool (B Double GML)	Y	Y	Y		Y	Y
	Fruit & Veg (B Double GML)	Y	Y	Y		Y	Y
Commodity Routes – Road Train	Grain (Road Train GML)	Y*	Y*				
	Fertilizer (Road Train GML)	Y*	Y*				
	Hay & Bulk Stock Feed Road Train GML)	Y*	Y*				
	Dairy Milk (Road Train GML)	Y*	Y*				
	Livestock (Road Train GML)	Y*	Y*				
	Logging & Timber (Road Train GML)	Y*	Y*				
	Wine (Road Train GML)	Y*	Y*				
	Wool (Road Train GML)	Y*	Y*				
	Fruit & Veg (Road Train GML)	Y*	Y*				

*Restrictions to part of the Highway/Road apply.



4.5 Predicted traffic growth without project

Population growth, employment and consequently traffic growth across the study area is highly variable across the regions. Census data indicates that in regional areas, population growth is low indicating that traffic growth is expected to be low or even zero. From assessment of AADT to date for the major highways within the study area, traffic volumes have remained relatively constant in recent years, with some roads noting a decrease in AADT. The population of the Renmark-Paringa, Loxton Waikerie, Berri-Barmera and Mid-Murray Local Government Authorities (LGAs) all had minor increases in population between the 2011 and 2016 ABS Census (average growth rate per annum between 0.1-1.3%). Goyder was the exception with a 0% net average change per annum. Based on this, it is assumed that base (no project) traffic volumes on the roads within the study area, a conservative growth rate of 1% per annum be applied to determine the projected traffic volumes during construction.

4.6 Existing Road Asset Condition

Existing road asset conditions for the state-maintained roads were observed to be in reasonable condition relative to the traffic volumes, with the exception being the Renmark-Wentworth Road (currently unsealed) which had large areas of failed pavement contributing to a high roughness.

Local road asset conditions varied significantly. All sealed local roads were observed to be in reasonable condition. Most unsealed roads had variable conditions due to their nature, with some isolated areas of roughness noted during the inspection (e.g. corrugations). The general condition of the local roads is reported in Table 4.4.

4.7 Existing Road Safety

Crash data obtained from Location SA, for the five year period ending 2019 (inclusive) was mapped and compared with traffic volumes to determine the number of crashes per vehicle kilometre travelled. Data on the following roads was plotted:

- Goyder Highway
 - World's End Highway to Morgan
 - Morgan to Taylorville Road
 - Taylorville Road to Sturt Highway
- Sturt Highway
 - Truro to Blanchetown
 - Blanchetown to Waikerie
 - Waikerie to Thurk
 - Thurk to Goyder Highway
 - Goyder Highway to Ral Ral Avenue
- Ral Ral Avenue/Wentworth Renmark Road
 - Renmark Avenue to end of seal
- Wentworth-Renmark Road
 - End of seal to SA/NSW border
- World's End Highway
 - Eudunda to Robertstown
- Thiele Highway
 - Kapunda to Eudunda
 - Eudunda to Morgan
- Truro Road
 - Thiele Highway to Sturt Highway



Mapped Crash data is included in Appendix D, and includes the number of crashes per segment, and the resulting crash rate per 100 million kilometres travelled.

Only minimal crash data was available for the local roads impacted by the study area and given the very low traffic volumes on the roads concerned, it is considered that any statistically significant pattern in road crashes is unlikely to be detected.

Roads with a crash rate under 50 crashes per 100 million vehicle kilometres travelled are considered to have an average or better crash history. The roads with the highest crash rates per 100 million vehicle kilometres travelled occurred on and in-between:

- Goyder Highway
 - Morgan to Taylorville Road
- Wentworth-Renmark Road
 - End of seal to SA/NSW border

Crash data is notoriously variable, and this can distort analysis of crash rates on low volume roads. The higher crash rates per vehicle kilometre on the above sections of road can be attributed to the low traffic volumes. The Wentworth-Renmark Road is currently unsealed from the Renmark Paringa Council boundary all the way to the SA/NSW boundary with traffic volumes in the order of 60 vehicles per day. Any amount of crashes will affect the crash rate significantly due to the low order of traffic.

Roads considered to have a higher than average crash rate that will be used by significant volumes of project traffic are the Goyder Highway between Morgan to Taylorville Road and the Wentworth-Renmark Road between the Renmark Paringa Council boundary to the SA/NSW boundary. Goyder Highway between Morgan and Taylorville Road is approximately 32km long and traverses through undulating terrain. It is assumed this section of Goyder Highway will be used by heavy and light vehicles accessing part of the transmission line corridor, either from Morgan or beyond or from the east, depending on where materials are coming from. The Wentworth-Renmark Road between the Renmark-Paringa Council boundary to the SA/NSW border is approximately 40km long and traverses through undulating and winding terrain. It will provide the main access to the eastern portion of the transmission line and therefore its use by construction traffic is unavoidable.

Table 4.8 shows the sections of road within the study area which have higher crash rates and will have Project generated traffic travelling along them. A traffic management strategy will be required for the Morgan to Taylorville Road section of the Goyder Highway and the unsealed section of the Renmark-Wentworth Road during construction phases only. Operations phases are expected to generate negligible traffic therefore implantation of a traffic management strategy during this phase is not considered necessary.

Table 4.8 Sections of State Road with higher crash rates within study area

Road Segment	Crash rate >50 per 100 million vehicle kilometres travelled	Project generated traffic
Goyder Highway - Morgan to Taylorville Road	Yes	Yes (construction phase, negligible during operation phases)
Wentworth-Renmark Road - End of seal to SA/NSW border	Yes	Yes (construction phase, negligible during operation phases)

Crash types were also assessed for the various roads within the study area. The most commonly reported types of crashes that occur within the study area are:



- Hit Fixed Object
- Right angle
- Roll over
- Hit Animal

Given that the study area is located within a regional area with predominately high speed rural roads, this is considered consistent with the type of crashes expected. A high proportion of the right-angle crashes occurred in within the built-up areas of the Sturt Highway near Barmera and Renmark. A high proportion of the hit animal crashes occurred at night, therefore restricting travel to daytime would reduce the risk of these types of crashes occurring, statistically speaking.

4.8 Public Transport

Public transport within the study area is limited. Stateliner runs regular bus services between Adelaide and regional centres (Stateliner, 2019) including:

- A service between Adelaide and Loxton with six buses each way a week; buses leave Adelaide and Loxton Sunday to Friday.
- A service between Adelaide and Renmark with 13 buses each way a week; buses leave Adelaide and Renmark seven days a week with two services a day (each way) Sunday to Friday, and one service a day (each way) on Saturdays.

School buses are operated by the schools within the study area, including several schools in Renmark, Barmera, Waikerie, Morgan and other surrounding areas. Generally, school bus routes are not publicly available due to privacy concerns. It is also noted that school bus routes are generally revised annually depending on the requirements of the school population.

4.9 Vulnerable road users

It is noted that some of the proposed routes will negotiate town centres. Some of these roads exist where there is higher pedestrian activity. This occurs when the route forms part of the main street through the town. Travel through these town centres is often unavoidable, as the route forms part of approved and gazetted roads for heavy vehicle movements. Within the study area town centres where this will apply includes Renmark (on Sturt Highway/Renmark Avenue and Ral Ral Avenue, and to a lesser extent, Morgan, Eudunda and Robertstown.



5 Development Proposal

5.1 Overview

It is proposed that Stage 1 of Project EnergyConnect will comprise a new electricity substation, located approximately 10km north-east of Robertstown, South Australia and 200km of 330kV transmission line between Robertstown and Buronga, New South Wales. The transmission line will be supported by 40-50m high lattice towers and/or guyed towers, located 450-600m apart. The overall width of easement for the transmission line will be in the order of 60-100m.

It is proposed that tower steelwork would be shipped on 40ft containers which may be delivered directly to tower site locations for assembly and erection; lifted into place by mobile cranes. The alternative is that towers may be constructed offsite and flown into place fully assembled by helicopters. This will still require personnel on the ground but would reduce the number of ground-based vehicles significantly. For the purposes of the assessment, it has been assumed that all towers will be delivered via ground transport.

Approximately 200 personnel would be required on site (along the route) during the peak stages of construction. The timeframe for construction is expected to be 24 months. Upon commission, the operating substation and transmission line will require approximately 2 visual inspections per year, annual helicopter-based inspections and vehicle-based inspection every four years. Insulators will require replacement every 25 years.

5.2 Construction Phase

Additional traffic generated during the construction period would include a core range of vehicle types, dependent on the type of load being carried. This includes delivery of construction materials, workers transportation and, heavy machinery transport to the site. The traffic generation from the construction phase of the project has been estimated based on information provided by Electranet including total number of loads (defined as semi-trailers) per component for the Project, size of workforce and vehicle occupancy for workers. These traffic generation types are each analysed separately.

The trip generation estimates only account for external movements (i.e. vehicles travelling on public roads to and from site), and do not include the internal movements within the project corridor. For example, a vehicle that moves from one construction site within the infrastructure corridor to another site via the access track only, would be excluded as they would not be moving outside of the project corridor and onto public roads.

5.2.1 Access Requirements

Transformers, towers and cabling would be shipped to Port Adelaide/Port Melbourne and then transported to site via road. Wherever possible, existing roads, tracks and other existing disturbed areas will be used to minimise further vegetation disruption or clearing.

The following roads will be used to travel from the port to the substation detailed in Table 5.1. It is noted that the tables that follow below for the traffic generation and distribution consider all port delivered freight will arrive from Adelaide. The Port of Melbourne has also been raised as a potential port of delivery for freight however has not been considered in the below assessments.



Table 5.1 Haul route from Port to new Substation

Port	Roads
Port Adelaide	<ul style="list-style-type: none"> Port River Expressway, Salisbury Highway, Port Wakefield Road, Northern Expressway, Sturt Highway, Thiele Highway, World's End Highway, Powerline Road
Port of Melbourne	<ul style="list-style-type: none"> Calder Freeway, Midland Highway, Calder Highway, Calder Alternative Highway, Millewa Road, Werrimull North Road, Sturt Highway, Mallee Highway, Browns Well Highway, Old Sturt Highway

Generally, access to the Project corridor will be via local roads which run adjacent the corridor or intercept the alignment of the corridor as identified in Section 4.2.4. Along the Project alignment of the corridor, it is proposed to utilise as many existing tracks as possible, to limit vegetation clearing or disruption. Where no existing track exists, a 5-6m wide track will be created to enable the movement of equipment and personnel. This width is considered sufficient to enable passing of vehicles if required.

The main entry and exit to and from the access track is proposed to be provided via the following roads as detailed in Table 5.2. Other local roads which intersect the alignment between Lindley and Cadell (e.g. Old Redcliffe Road, Lindley Cemetery Road, Samsons Well Road, Controversial Road etc) are likely to be used to access small sections of the alignment however are not likely to form core access to the proposed access track.

Table 5.2 Proposed entry and exit points to the access track

Road link to Access Track	Location	Description of Road link
Powerline Road	Between Worlds End Highway and Goyder Highway.	6-8m wide unsealed formed and sheeted road. Provides direct access to approximately 42km of the Project corridor and the new proposed substation (Western most portion).
Lower Bright Road	500m from Worlds End Highway	6m wide unsealed formed and sheeted road. Provides direct access to start of alignment at western end and existing substation.
Woods and Forest Road	Approximately 4km from Morgan	10m wide unsealed formed and sheeted road. Provides access to existing substation off Goyder Highway. Junction with Goyder Highway sub-standard as sight distance is an issue to the west.
Lunn Road and existing farm access tracks to intercept alignment.	Approximately 30km from Morgan, 60km from	6-8m formed and sheeted road, narrowing to a 3-4m track on private



Road link to Access Track	Location	Description of Road link
	Sturt Highway/Goyder Highway intersection.	property which will require widening to allow construction traffic to access.
Utilise existing access tracks/roads through farm property near Overland corner to access Project corridor between Pooginook Conservation Park and Calperum Station.	Approximately 22km from Barmera.	To be confirmed. Will require a 5-6m wide access track.
Cooltong Avenue/Ral Ral Avenue	Starts at Ral Ral Avenue (State maintained section) in Renmark. Located approximately 10 km from Renmark town centre.	Short section of Ral Ral Avenue is sealed. Cooltong Avenue is sealed. Unsealed section of Ral Ral Avenue is a formed and sheeted road. Would require widening to facilitate construction vehicle access.
Wentworth Renmark Road. Existing access tracks at southern portion of road to be used to access part of the alignment.	Starts at Ral Ral Avenue in Renmark. Furthest point (SA/NSW border) approximately 45km from Ral Ral Avenue.	10m formed and sheeted road.

5.2.2 Vehicle Types

Load deliveries to the site for large volumes are assumed to occur in the most economic vehicle type legally permitted to undertake the journey on the relevant road. For most deliveries this will be on 19m semi-trailers. Where the quantity to be transported is much smaller than the load capacity of a semi-trailer, smaller rigid trucks or light commercial vehicles (LCV) will be used. It is also expected there will be oversize loads required for the delivery of materials for the substation primary plant and control buildings.

Road restrictions are currently in place on roads in the Murraylands and Riverland for certain vehicles, restricting total length of vehicle and width of vehicles on certain routes, however for most material deliveries, this will not be an issue.

The following vehicles are expected to be utilised during construction of the substation, towers and transmission line installation detailed in Table 5.3. This is limited to land vehicles only. It is understood that helicopters may be used to assist with the installation of towers and transmission lines, but this is not covered within the scope of this assessment.

Table 5.3 Vehicle type and use during construction

Vehicle type	Use during Construction Phase
Semi-trailer	<ul style="list-style-type: none"> • Tower transport • Transport of conductors, insulators and hardware • Transport of substation plant • Transport of materials and equipment for substation civil works



Vehicle type	Use during Construction Phase
Crane	<ul style="list-style-type: none"> General construction activities for both substation works and installation of towers and transmission lines
Concrete Truck	<ul style="list-style-type: none"> Supply of materials for substation and tower footings
General rigid trucks	<ul style="list-style-type: none"> General construction activities, including water supply, transfer of borrow pit materials and/or movement of camp supplies
Dozers	<ul style="list-style-type: none"> Substation civil works
Graders	<ul style="list-style-type: none"> Substation civil works
Excavators	<ul style="list-style-type: none"> Substation civil works
Light vehicles	<ul style="list-style-type: none"> Trade vehicles, general inspection activity

These are all considered general access vehicles and therefore have no restrictions regarding where they can travel across the road network.

5.2.3 Traffic Generation

The above vehicles are expected to generate the following traffic movements as detailed in Table 5.4.

Table 5.4 Estimated traffic to be generated during construction

Vehicle type	Total number of loads during construction phase (18-month duration assumed)	Expected number of movements per day on the road network (Note: 1 trip = 2 movements)
Semi-trailer	<ul style="list-style-type: none"> 990 + several per day 	<ul style="list-style-type: none"> Up to 20 (i.e. 10 trips/day)
Crane	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none"> Minimal – cranes will largely move about within the construction areas and along the access track between tower sites
Concrete Truck	<ul style="list-style-type: none"> 2780 (based on a total of 450 towers, 6 trucks per tower and 80 trucks for the sub-station) 	<ul style="list-style-type: none"> 16 (assuming all footings are constructed within the first 12 months, which equals 8 deliveries per day)
General rigid trucks	<ul style="list-style-type: none"> Approximately 10 vehicles per day 	<ul style="list-style-type: none"> 20
Dozers, Graders, Excavators	<ul style="list-style-type: none"> Movements occur within the site only; these vehicles to be transferred to and from site via semi-trailer 	<ul style="list-style-type: none"> Nil



Light vehicles

• 20-40 per day

• 40-80

5.2.4 Traffic Distribution

For the different vehicle trip types discussed in Section 5.2, each of the material components were designated origins and destinations to determine the distribution of vehicle trips. The origin of each material to be delivered to site was based on the location of the closest group of towers, or substation. The estimated total two-way traffic generated movements in the construction period are summarised in Table 5.3.

For the purposes of the traffic distribution, the Project corridor has been split into the following five separate areas of which construction traffic will be generated:

- Robertstown to Lindley – 42km of towers + substation
- Lindley to Cadell – 33km of towers
- Cadell to Pooginook Conservation Park – 28km of towers
- Pooginook Conservation Park to Calperum Station Boundary – 38km of towers
- Calperum Station Boundary to SA/NSW border – 54 km of towers

Based on the above five distinct areas, the estimated total two-way traffic generated movements in the construction period are summarised in Table 5.5. It is noted that the number of sections may be broken down into smaller sections during the Early Contractor Involvement (ECI) phase but for the purposes of the assessment this is considered conservative.

Table 5.5 Total two-way traffic movements generated over two year construction period

Destination / Origin	Robertstown to Lindley	Lindley to Cadell	Stuart/Cadell to Pooginook - access via Lunn Rd	Pooginook to Calperum Station Boundary - access via new/existing access track near overland corner	Calperum Station to SA/NSW border - access via Wentworth-Renmark Road
Port Adelaide	7410	1650	1410	1870	2640
Adelaide	810	420	360	480	670
Morgan	5700	2800	1460	480	0
Berri/Barmera	0	420	1650	4600	3550
Renmark	0	0	1680	1750	7160
Eudunda	9740	2800	360	0	0

5.2.5 Traffic Timing and route assignment

Construction of the substation, towers and transmission lines is expected to occur within an 18-24 month timeframe. As a worst-case scenario, it has been assumed that construction will occur over an 18 month timeframe, this representing the greatest concentration of traffic on the road network.



Construction is expected to occur in a linear fashion along the length of the alignment, with work occurring concurrently on several fronts.

It has been assumed that construction of all concrete footings will occur during the first 12 months of construction and that all concrete trucks will come from the nearest major town (e.g. Eudunda, Morgan, Barmera/Berri and Renmark). All other deliveries made by rigid trucks for delivery of local materials is also assumed to arrive from the nearest major town.

Deliveries of towers to site depots from Port Adelaide (or Port Melbourne) will typically involve 30-40 semi-trailer loads over several days for each shipment. It has been assumed that 'several' days represents an average of five business days. Deliveries of towers is assumed to commence approximately two months after the commencement of tower footing construction.

Delivery of substation plant and equipment is assumed to commence one month after the commencement of substation footing construction.

As construction workers are expected to be accommodated in nearby towns, it is assumed that the majority of light vehicles will arrive from the nearest major town. The location of accommodation for workers will be confirmed during the ECI phase of the project.

Based on the above assumptions, the peak traffic generation for the Project will occur within the 3 to 12 month stage of the construction phase.

The assigned traffic volumes per road segment for the assumed peak period were further divided into heavy vehicles and light vehicles. These vehicles numbers were then added to the existing AADT values to determine whether there would be a significant increase in the number and proportion of heavy vehicles travelling on the impacted State roads. For the purposes of the assessment, a worst case where the average peak total of all daily vehicles on each route has been assumed. A summary of the average number of heavy vehicles per hour on impacted State roads during the construction period is shown in Table 5.6.

Table 5.6 Heavy vehicles per hour on impacted State roads at peak of construction period

Road Name	Segment	Current - %HV	Current- HV per hour	Peak Construction - HV per hour	Peak Construction - %HV	% difference
Goyder Highway	Worlds End Highway to Morgan	20.5%	9	15	29%	9%
	Morgan to Cadell Valley Road	23.5%	15	20	30%	6%
	Cadell Valley Road to Taylorville Road	32.5%	17	22	39%	7%
	Taylorville Road to Morgan Road	20.0%	10	16	28%	8%
	Morgan Road to Sturt Highway	22.5%	9	14	32%	10%
Sturt Highway	Truro to Murraylands Road	32.5%	122	127	33%	1%
	Murraylands Road to Hunter Road	23.0%	94	100	24%	1%
	Hunter Road to Old Blanchetown Road	29.5%	101	107	31%	1%



Road Name	Segment	Current - %HV	Current- HV per hour	Peak Construction - HV per hour	Peak Construction - %HV	% difference
	Old Blanchetown Road to Ian Oliver Drive	31.5%	99	105	33%	1%
	Ian Oliver Drive to Kingston Road	24.5%	87	93	26%	1%
	Kingston Road to Drogemuller Road	20.0%	88	93	21%	1%
	Drogemuller Road to Morgan Road	20.0%	102	108	21%	1%
	Morgan Road to Nookamka Terrace	18.5%	102	108	19%	1%
	Nookamka Terrace to Fowles Street	18.0%	97	103	19%	1%
	Fowles Street to Old Sturt Highway	18.5%	123	128	19%	1%
	Old Sturt Highway to Goyder Highway	26.5%	81	87	28%	1%
	Goyder Highway to Old Sturt Highway	21.5%	81	87	23%	1%
	Old Sturt Highway to Twenty Third Street	16.5%	151	157	17%	1%
	Twenty Third Street to Twenty First Street	10.0%	100	106	11%	1%
	Twenty First Street to Hakea Street	8.0%	88	94	8%	0%
	Hakea Street to Twentieth Street	14.5%	175	180	15%	0%
	Twentieth Street to Nineteenth Street	7.5%	85	91	8%	0%
	Nineteenth Street to Eighteenth Street	6.5%	82	87	7%	0%
Renmark Avenue	Sturt Highway to Ral Ral Avenue	2.5%	25	30	3%	1%
Ral Ral Avenue	Renmark Avenue to Gowra Street	3.0%	26	32	4%	1%
	Gowra Street to Paringa Street	8.5%	34	39	10%	1%
	Paringa Street to Goolwa Street	8.5%	23	29	10%	2%
	Goolwa Street to Chowilla Street	8.5%	17	23	11%	2%
	Chowilla Street to Wentworth Renmark Road	5.5%	7	12	10%	4%



Road Name	Segment	Current - %HV	Current- HV per hour	Peak Construction - HV per hour	Peak Construction - %HV	% difference
Wentworth- Renmark Road	Ral-Ral Avenue to Story Avenue	7.5%	2	8	23%	16%
	Story Avenue to SA/NSW Border	8.5%	1	6	53%	44%
Worlds End Highway	Powerline Road to RRD 28.99	20.5%	4	9	39%	19%
	RRD 28.99 to Railway Parade	12.0%	6	12	21%	9%
	Railway Parade to Railway Terrace, Point Pass	12.0%	4	10	24%	12%
	Railway Terrace to Australia Plains Road	9.5%	5	11	18%	9%
	Australia Plains Road to Barwell Street	9.0%	6	11	16%	7%
	Barwell Street to Kapunda Street	9.0%	8	13	15%	6%
	Kapunda Street to Thiele Highway	9.0%	12	17	13%	4%
Thiele Highway	Worlds End Highway to Eudunda Road	13.5%	9	14	20%	7%
	Eudunda Road to Bower Boundary Road	13.0%	5	11	23%	10%
	Bower Boundary Road to Murraylands Road	13.0%	5	10	24%	11%
	Murraylands Road to Fourth Street	15.5%	11	16	22%	6%
Fourth Street	Thiele Highway to Goyder Highway	13.5%	10	16	20%	6%

As can be seen from Table 5.6 there is a significant increase in the percentage of heavy vehicles travelling on the Wentworth Renmark Road and sections of the World's End Highway. This can be attributed to the already low traffic volumes of these roads. There is also expected to be construction traffic added to the various local roads identified in the study area. No existing traffic volumes are available for these roads. Similar to the State-maintained roads, the highest average number of trips generated per day during the peak of construction would be 126 movements per day (two-way), which based on assumed existing traffic volumes, is a sizable increase; albeit over a short time frame (less than 1 year).

5.2.6 Oversize material deliveries

As part of the construction of the new sub-station north-east of Robertstown, it is expected that some elements of the sub-station will need to be delivered by non-conventional vehicles. Numbers and dimensions of these loads is yet to be confirmed however the preferred route for these deliveries is detailed in Table 5.7.



Table 5.7 Preferred Oversize Routes

Port	Roads
Port Adelaide	<ul style="list-style-type: none">• Port River Expressway, Salisbury Highway, Port Wakefield Road, Northern Expressway, Sturt Highway, Truro Road, Thiele Highway• By Permit - World's End Highway, Powerline Road
Port Melbourne	<ul style="list-style-type: none">• To be confirmed

It is noted that permits will be required on routes which are currently not designated as oversize approved routes. The dimensions of the oversize vehicles will need to be confirmed prior to confirming the exact routes, which will also need to be discussed and agreed with DIT and the relevant Council prior to construction. Piloting requirements for oversize vehicles are specified in the Escorting Guidelines for Oversize and Overmass Vehicles and Loads in South Australia (2019).

The ECI phase of the project has indicated that materials may be delivered to a Melbourne based port. This has not been considered in the above assessment. Consideration to whether the NSW portion of the interconnector would be constructed at the same time with materials delivered from a Melbourne based port would also need to be made.

5.3 Operations Phase

5.3.1 Site Access

Access to the substation during operations will occur via World's End Highway, Powerline and Bright Road.

Access to the towers and transmission line alignment will occur via the road links described in Table 5.2

5.3.2 Traffic Generation

Once commissioned, it is expected that visual inspections will be undertaken twice annually. Helicopter inspections will also be undertaken annually, and vehicle-based inspections will be conducted every four years.

Insulators will require replacement every 25 years.

In total, the likely traffic generation upon commission and operation of the site will be 1-2 visits per year by car. This may increase if maintenance works are required, however the overall traffic generation upon commencement of the Project operations is considered to be minimal.

The design life of a transmission line is approximately 40-50 years, at which time additional traffic generation will occur. This will comprise semi-trailer activity for the delivery of new and removal of expired transmission line cabling and associated equipment, cranes, light trucks and cars.

5.3.3 Parking

It is noted that there will be no fulltime personnel at the sub-station, therefore a nominal 3-5 parking spaces will be provided at the site to accommodate for personnel when required. Parking at each of the tower sites will occur along the access track; the almost negligible traffic volumes required during operations making this a suitable and practical option.



6 Impact Assessment

Impacts on the road network have been assessed in the construction phase and in the operational phase for the Project.

6.1 Construction Phase

The main traffic and transport impacts anticipated during the construction stage of the Project have been assessed based on road safety for the transport network in the immediate Project area, and the level of service of the wider network within the Study area.

6.1.1 Oversize Route Safety

Desktop and site investigations have been undertaken to assess the proposed oversize route to the substation site of any potential safety and environmental factors. The safety assessment considered site constraints along the length of the route. It is noted that only the route from Port Adelaide has been assessed outside of already approved oversize routes. It is also noted that the dimensions and mass of the oversize routes will affect the assessment and will need to be confirmed.

Table 6.1 Lengths of road segment on Oversize Haul Route where permit is required *assumes arriving from Port Adelaide

Road Name	Travel Direction	Length (km)
World's End Highway	N	27.4
Powerline Road	E	12.3
Total		39.7

Along this section of the route, there are several overhead power lines crossing the road in the townships of Eudunda, Point Pass and Robertstown. Example photos of power lines crossing the haul route are shown in Figure 3.



Figure 3 Existing overhead power lines on Worlds End Highway

The median in the main street of Eudunda may need to be temporary removed if loads are anticipated to be greater than 5.0m wide.

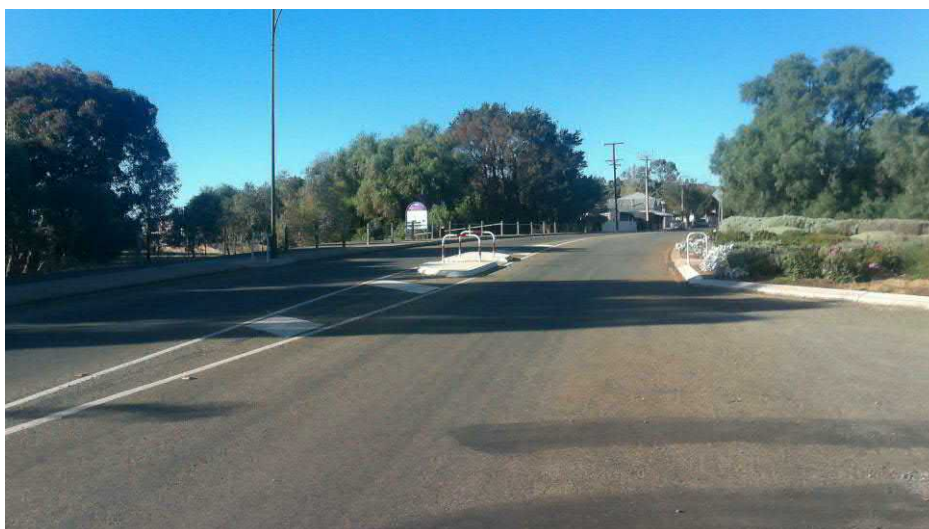


Figure 4 Existing median refuge in main street of Eudunda

6.1.2 Haul Routes Safety

A similar process to the oversize route assessment has been undertaken to assess the proposed haul routes to the substation and site of any potential safety and environmental factors. The safety assessment considered site constraints along the length of the route.

Powerline Road was considered to have some areas of poor delineation along a portion of the alignment (refer Figure 5). It was also noted some intersections along the length of the alignment did not have any intersection control in place and were either poorly signed or not signed at all.



Figure 5 Section of Powerline Road with poor delineation, particularly around curves (left) and an unsigned crest (right)

The intersection of Woods and Forest Road with the Goyder was observed to have poor sight distance available to the west (Figure 6).

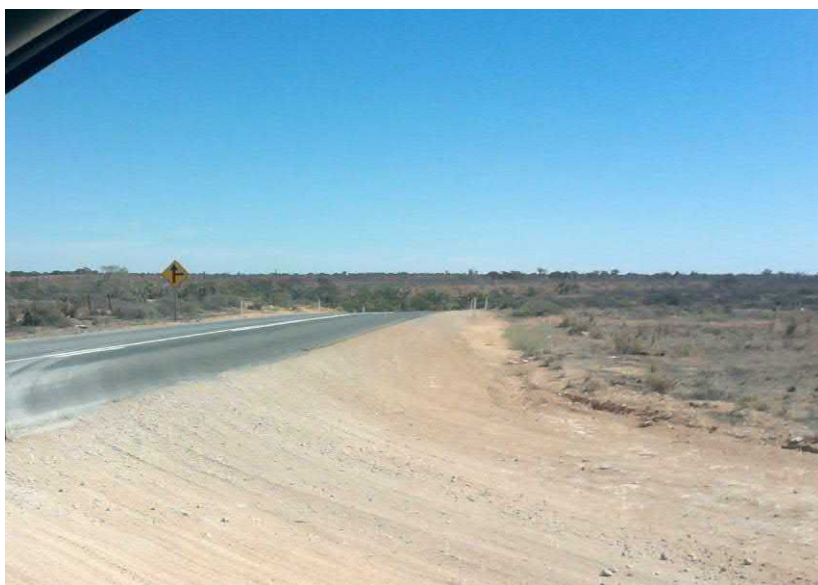


Figure 6 Poor sight distance to the west due to crest at the intersection of Goyder Highway and Woods and Forest Road

Similar issues were observed at Lunn Road intersection with Goyder Highway as shown in Figure 7 where sight distance to the east was restricted due to a crest.

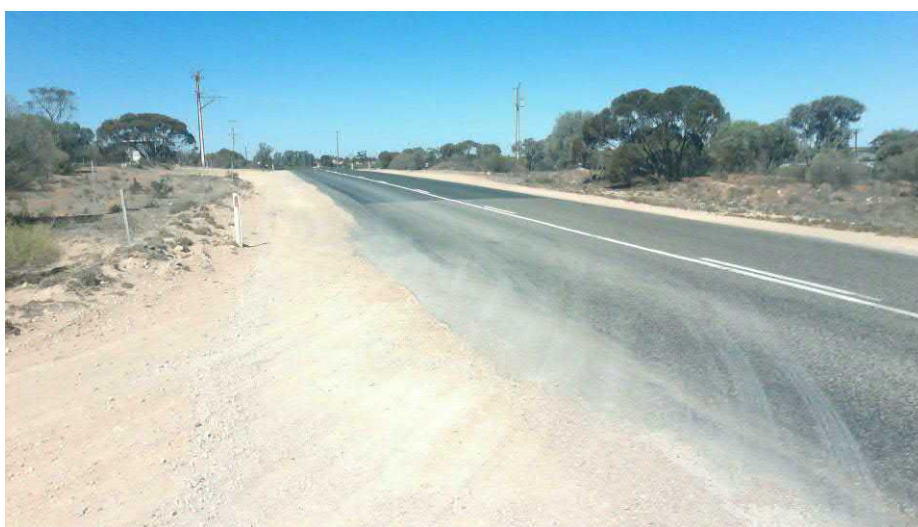


Figure 7 Poor sight distance to the east due to crest at the intersection of Goyder Highway and Lunn Road

Wentworth Renmark Road currently forms a Y Junction with Ral Ral Avenue, with Ral Ral Avenue the priority road as shown in Figure 8. Both roads are subject to the default speed limit of 100km/hr. This combination of low entry angle and high speed is undesirable.



Figure 8 Low angle of entry onto Ral Ral Avenue from Wentworth Renmark Road

The Wentworth Renmark Road from the Renmark Paringa Council boundary to the SA-NSW border is currently unsealed. During the inspection, it was observed to have areas of high roughness due to localised pavement failures (Figure 9).



Figure 9 Example of failed pavement along Wentworth Renmark Road

6.1.3 Use or transport of machinery near towers, guy wires and powerlines

During construction, it is expected there will be several movements of machinery near either existing or new towers, guy wires and powerlines. There is risk of machinery coming into contact with these elements, which will need to be properly managed. A safety management plan should be prepared to ensure the risk of encountering these structures and elements is minimised or removed.

6.1.4 Impacts on Road Capacity during Construction Period

Traffic capacity can be measured using level of service (LOS) which is represented by a letter ranging from A (uncongested and free flowing) to F (failed). The analysis in Table 6.2 demonstrates that with the Project construction traffic added, most roads in the study area remain operating at Level of Service (LOS) A for single lane roads. The exception is some sections of the Sturt Highway which already have high volumes of traffic (e.g. up to 9,000 vehicles a day on two lane sections and up to 12,200 vehicles a day on the four lane sections).



Table 6.2 Level of service thresholds (Single lane Roads)

Road Category	Level of Service (LOS)	Capacity Limit for LOS (veh/day)	Current Traffic (veh/day)	Project Impact (veh/day)	Spare Capacity to next LOS
Local/Low Volume	A	4900	60 to 1200	Up to 126	+3570 veh/day
State Highway/Medium Volume	B	7800	3700 to 6500	Up to 126	+1170 veh/day
State Highway/High Volume	C	11900	6500 to 9000	Up to 126	+2770 veh/day

The Austroads Guide to Traffic management Part 3 (Traffic Studies) provides a level of service estimate for uninterrupted multi-lane roads (non freeway) as indicated in Table 4.4 of the guide. The upper limits for LOS indicated in Table 4.4 are indicated below:

LOS B – 9,900 vehicles per day

LOS C – 14,350 vehicles per day

On this basis the existing four lane section of the Sturt Highway operates between LOS B and C.

However, the increase in daily traffic on these sections represents an increase of only 1-2% of existing traffic volumes and is unlikely to change the existing Level of Service.

Over-dimensional loads may impact on road capacity during construction. These loads however are expected to be minimal and will need to be managed via permit. Management of the movement of these loads will need to ensure opportunity is provided for traffic to pass at suitable intervals and locations along the haul route.

6.1.5 Pavement condition and wear

Pavement impacts are determined by the number of equivalent standard axles (ESAs) applied to a road. The estimated number of ESAs generated by the Project was calculated as an indication of the likely wear and tear on the road network from construction traffic. This has been developed based on all freight being transported from Port Adelaide to site, however the Port of Melbourne is also being considered. This has not been considered in the below assessment.

The total number of ESAs to be generated on the road network has been calculated in Table 6.3.



Table 6.3 Equivalent Standard Axles generated by the Project in the construction period

Origin/Destination	Robertstown to Lindley	Lindley to Cadell	Stuart/Cadell to Pooginook	Pooginook to Calperum Station Boundary	Calperum Station to SA/NSW border
Port Adelaide / Port Pirie / Whyalla	16306	3630	3098	4114	5808
Morgan	8976	2475	845	0	0
Berri/Barmera	0	0	1267	2805	6336
Renmark	0	0	2112	2805	3960
Eudunda	8976	2475	0	0	0

The extent by which the Project will increase average daily traffic during the construction period varies from negligible to a 120% increase. However, these increases are from a very small base traffic volume and the quantum of daily traffic increase would not be more than 126 vehicles per day. The estimated increase in daily axle loadings (ESAs) from heavy commercial vehicles on the haul route pavements varies from negligible (0%) to considerable (980%, however from a very small base) over the same period. The impact of this additional loading on pavement condition is unknown and will depend on the existing condition and remaining life of the pavement. The Project will undertake dilapidation surveys before and after the construction period on unsealed and local roads to determine whether any remedial pavement rehabilitation treatment is required as a result of the Project construction. The impact to existing State Highway pavements is expected to be minimal (e.g. Sturt Highway, Goyder Highway, Thiele Highway).

6.1.6 Impacts on Intersection Capacity during Construction Period

Intersections across the Study Area which material delivery and construction staff would pass through were analysed to see how many additional vehicles per hour would pass through the intersections. This was determined by working out the peak hourly traffic expected to be generated by the Project and applying it the hourly traffic at the intersections. The intersections analysed were:

- Thiele Highway/Worlds End Highway
- Worlds End Highway/Powerline Road
- High Street/Fourth Street (Morgan)
- Goyder Highway/Morgan Terrace (Morgan)
- Sturt Highway/Goyder Highway
- Sturt Highway/Old Sturt Highway
- Sturt Highway/Renmark Avenue
- Renmark Avenue/Ral Ral Avenue
- Ral Ral Avenue/Wentworth Renmark Road
- Ral Ral Avenue/Cooltong Avenue

To determine the hourly number of construction vehicles passing through intersections in both directions, the peak total daily traffic expected to be generated during construction was divided by 12, assuming that vehicles would only be delivering items in a twelve-hour period each day (daytime). The assessment found that the maximum number of construction vehicles per hour passing through an



intersection was 12 during the peak construction time, and less during other times. This includes two-way movements. Based on this assessment, the impact on intersection capacity created by the extra turning movements generated in the construction phase is considered negligible and no additional intersection upgrades are deemed necessary to facilitate construction of the project.

6.1.7 Turn warrant analysis

The Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings (2019) describes the warrants for turn treatments on major roads at unsignalised intersections. Based on Figure 2.25 of the guide, curves define the limits between different levels of turn treatments required. A combination of the turn volume and the major road traffic volume (defined in vehicles per hour) is used to determine the required turn treatment. In the assessment in Section 6.1.6, it is estimated an additional nine vehicles per hour would travel through any intersection (two-way) within the study area.

The guide states that the minimum required treatment for any intersection on the major road is in the form of a basic rural right (BAR) or a basic rural left (BAL) road widening. However, it also notes that many existing intersections, particularly those on low-volume lower-order roads are of lower standard and may not have any existing shoulder and/or lane widening.

For most of existing intersections on the major highways (e.g. Sturt Highway) where construction traffic will travel through, existing turn treatments already exist and the minor increase in the hourly traffic due to construction of this project not affect operation of the intersections.

For remote, low traffic intersections deemed to form major access to the Project corridor such as:

- Worlds End Highway/Powerline Road
- Goyder Highway/Woods and Forest Road
- Goyder Highway/Lunn Road

A turn warrant analysis has been undertaken to assess the requirement for additional upgrades below.

6.1.7.1 Worlds End Highway/Powerline Road

Based on a future volume of 180 vehicles a day operating on Worlds End Highway (converted to a peak hourly two-way volume of 30 vehicles, and an assumed turning volume of five vehicles an hour (right into Powerline Road) this results in no requirement for additional turning lanes.

6.1.7.2 Goyder Highway/Woods and Forest Road

Based on a future volume of 510 vehicles a day operating on Goyder Highway (converted to a peak hourly one-way volume of 40 vehicles, and an assumed turning volume of five vehicles an hour (left into Woods and Forest Road) this results in no requirement for additional turning lanes.

6.1.7.3 Goyder Highway/Lunn Road

Based on a future volume of 510 vehicles a day operating on Goyder Highway (converted to a peak hourly one-way volume of 40 vehicles, and an assumed turning volume of five vehicles an hour (left into Lunn Road) this results in no requirement for additional turning lanes.

6.2 Operation Phase

Due to the very low traffic volumes likely to be generated during the operations phase of the Project, the traffic impact on the existing road network is considered to be negligible.



7 Impact Management

The transport impact assessment in Section 6 has demonstrated that the construction and operational phase impacts of the Project on road capacity and safety are considered acceptable. However, the Project will implement a traffic management strategy and road maintenance plan for public roads used by the Project to ensure that:

- Transport operations are consistent with the assumptions made in this report and hence traffic impacts in practice are as predicted and adequate; and
- Maintenance impacts during the construction phase are managed so that there is no project-related deterioration in the condition of the public roads used.

The Project will involve placing a workforce, most of whom could be unfamiliar with the terrain, in a semi-remote area. There is also an important human element to safe operations.

7.1 Construction Phase Traffic Management

In order to minimise the impact on the transport network during construction, Project EnergyConnect will develop a traffic management strategy in consultation with DIT, LGAs and communities. The management approaches in Table 7.1 will be incorporated into the Construction Environmental Management Plan.

Table 7.1 Construction Traffic Management Measures

Impact	Management
Oversize deliveries could potentially conflict with peak traffic periods and harvest seasons for the relevant industries within the area	Schedule oversize deliveries to arrive outside peak hours and potential conflict times with harvest seasons.
Delivery of materials during peak hours may cause slight delay to existing traffic travelling on roads (although level of service expected to remain the same)	Avoid peak traffic periods to minimise traffic delay to the public if required.
Traffic generated by the Project may delay school bus routes	Liaise with local schools to discuss any impacts to bus routes due to traffic movements. Where possible, construction traffic to be timed to avoid school bus services.
Deterioration of pavement due to vehicle movements generated by the Project	Develop a pavement monitoring and management plan with inspections when and where pavement damage is most likely to occur (e.g. at major access points to access track). The plan will include identification of any rutting, corrugations, potholing and significant cracking.
Increased risk of vehicle accidents due to high crash rates on	Traffic management strategies such as the use of temporary speed restrictions will be required for the segments of road high crash rates (Goyder Highway – Morgan to Taylorville Road,



Impact	Management
segments of road which Project generated traffic would travel on	Wentworth Renmark Road – Renmark Paringa Council boundary to SA/NSW border.
Increased risk of vehicle accidents due to poor sight distance at existing intersections	Traffic management strategies such as the use of temporary speed restrictions at intersections onto highways with sub-standard sight distance for the current speed environment. This includes Woods and Forest Road and Lunn Road intersections with Goyder Highway.
Increased risk of vehicle accidents due to sub-standard road geometry and delineation	Traffic management strategies such as the installation of warning signs and improved delineation along sub-standard sections of road for the road environment. This includes sections of Powerline Road, Controversial Road, Woods and Forest Road, Lunn Road and Wentworth Renmark Road.

7.2 Construction Phase Pavement Management

The heavy vehicles proposed for use during the construction phase may result in incidental damage to the road pavement and/or road furniture, in particular on unsealed roads. The Project will develop a construction phase pavement management plan to manage these impacts. This will involve undertaking a condition survey (also known as a dilapidation survey) of the affected local roads intended to be used by construction traffic prior to construction. This would document and identify the different types of road and pavement damage. A strategy for inspection frequencies, intervention levels and required treatments will also be developed. At completion of the project, a post construction condition survey will be undertaken to determine the level of impact to existing local road pavements has occurred and any required remediation to restore to pre-construction condition.

7.3 Operational Phase Traffic and Pavement Management

During the operational phase passenger and truck movements to the site will be negligible therefore no additional traffic or pavement management measures are expected to be required.



8 Conclusion and Recommendation

Following investigation of the increased traffic generated from Project EnergyConnect and its relative impact, the following conclusions are reached:

- All planned construction and operational phase traffic impacts are comfortably within the capacity of the existing road network. There is ample spare capacity at all affected intersections during the construction of the Project. Project generated traffic volumes would need to be much higher and concentrated in order to have any significant impact on capacity thresholds.
- Delays induced from Project construction traffic will be negligible. Delays from oversize loads delivered to site will be small and infrequent.
- The Project will generate construction traffic onto some roads with existing crash rates that are above average. Traffic management strategies should be considered for those segments of road with high crash rates (Morgan to Taylorville Road on the Goyder Highway and Renmark Paringa Council boundary to SA/NSW border on the Wentworth Renmark Road).
- The Project will generate construction traffic onto some local roads with geometry deficiencies. Traffic management strategies should be considered as part of the construction traffic management plan for those segments of road (Powerline Road and Wentworth Renmark Road).
- The Project will generate construction traffic through some intersections with sub-standard geometry and sight distance deficiencies. Traffic management strategies should be considered as part of the construction traffic management plan for these intersections (some intersections along Powerline Road, Goyder Highway and Woods and Forest Road, Goyder Highway and Lunn Road, Ral Ral Avenue from Wentworth Renmark Road).



9 References

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- Guide to Traffic Management Part 6 Intersections Interchanges and Crossings (2019). 3rd ed. Sydney: Austroads.
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Appendix A – Project Detail Specialists (PDS)

Table 1: Summary of Project Components

Project component	Detail																
Substation	Located ~10 km north-east of Robertstown Construct a new electricity substation with a footprint of 1000 m X 1000 m. The substation would include plant such as gantries, switch gear, 275/330kV transformers, control building, and lightning and flood lighting masts with the tallest structure being 25-30m high. The substation will surrounded by palisade perimeter fence to approximately 20 m high.																
Line length	190 km																
Tower type	Lattice towers and/or guyed towers– 330kV																
Tower height	Typically 40-50 m high																
Tower spacing	450-600 m.																
Footings	8-14 m deep footings (900 mm diameter)																
Clearance required (worst case)	<table border="0"> <tr> <td>Clearance at tower bases</td> <td>144 m²</td> </tr> <tr> <td>Clearance for new access track</td> <td>5-6 m wide</td> </tr> <tr> <td>Allowance for a stringing easement</td> <td>Will use existing tracks and access tracks where possible</td> </tr> <tr> <td></td> <td>Brake and winch method requires brake sites (180m²) and winch sites (15-20 m²), 3-5km apart</td> </tr> <tr> <td>Laydown yards</td> <td>10x1 ha TBC</td> </tr> <tr> <td>Clearance at Strain Towers</td> <td>Two 50 x 50 m at strain poles/towers during stringing</td> </tr> <tr> <td>Substation</td> <td>1000 m x 1000 m</td> </tr> <tr> <td colspan="2">Total Clearance to be confirmed at a later date.</td> </tr> </table>	Clearance at tower bases	144 m ²	Clearance for new access track	5-6 m wide	Allowance for a stringing easement	Will use existing tracks and access tracks where possible		Brake and winch method requires brake sites (180m ²) and winch sites (15-20 m ²), 3-5km apart	Laydown yards	10x1 ha TBC	Clearance at Strain Towers	Two 50 x 50 m at strain poles/towers during stringing	Substation	1000 m x 1000 m	Total Clearance to be confirmed at a later date.	
Clearance at tower bases	144 m ²																
Clearance for new access track	5-6 m wide																
Allowance for a stringing easement	Will use existing tracks and access tracks where possible																
	Brake and winch method requires brake sites (180m ²) and winch sites (15-20 m ²), 3-5km apart																
Laydown yards	10x1 ha TBC																
Clearance at Strain Towers	Two 50 x 50 m at strain poles/towers during stringing																
Substation	1000 m x 1000 m																
Total Clearance to be confirmed at a later date.																	
Tower Assembly and Installation:	Partially fabricated off site and transported directly to the tower locations in sections for final assembly and erection. Mobile cranes used to lift into place.																
Conductors and Insulators	double circuit lines, with six conductor wires and two earth wires.																
Access tracks	Wherever possible, existing roads, tracks and other existing disturbed areas will be used to minimise vegetation clearing Where required – bulldozers and graders used. Tracks 5-6 m wide																
Easement	Easement width – 60-100 m																
Construction	Will be linear along the easement, likely to proceed on several concurrent fronts.																
Foundations:	Excavators or bores used. Blasting or pile driving not expected to be required. Spoil spread at the tower site if suitable, or may be used off site (e.g. for capping or used by the landholder). It is expected that in SA, concrete can be supplied by local concrete batchers (2 have been identified in nearby towns), mobile concrete batching plants may not be required																
Cable Stringing:	Conductors may be installed using drum and winch or helicopter stringing techniques																
Clean-up and Rehabilitation:	Areas of temporary disturbance such as laydowns would be cleaned up and rehabilitated.																
Laydown Areas:	Ten x 1 ha. 2-3 larger areas may be required that will house Construction camps etc																
Water supply:	TBC																
Construction Workforce and Accommodation:	Approx. 200 people would be required during the peak stages of construction. It is anticipated that workers will be accommodated in local towns [may require construction camp- need to speak to councils]																
Construction timeframe	18-24 months																
Operation / Maintenance:	Typically two visual inspections per year, annual helicopter-based inspections, vehicle-based inspection every four years. Insulators replaced every 25 years.																

Decommissioning	The design life of a transmission line is approximately 40-50 years.
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Table Error! No text of specified style in document..2 Traffic movement estimates for Project construction

Item	Vehicle type	Total number of loads	Comments
Towers	Semi-trailer	440 ¹	1 load per tower
Conductors, insulators and hardware	Semi-trailer	500	3 cable/OPGW drums per load
Concrete	Concrete truck	1760	4 deliveries per tower – 1 load per leg footing
Construction equipment	Cranes, dozers, graders, excavators etc	10-20	Generally remain on alignment
Substation Plant	Semi-trailer	50	Generally remain on alignment
Substation Civil Works	Semitrailer, Concrete truck, Cranes, dozers, graders, excavators etc	Several per day	Generally remain on alignment
Light vehicles	4x4 vehicles, light trucks	20-30 per day	Various during different stages of construction
Other (including water, borrow material, camp supplies)	Truck (various)	Several per day	

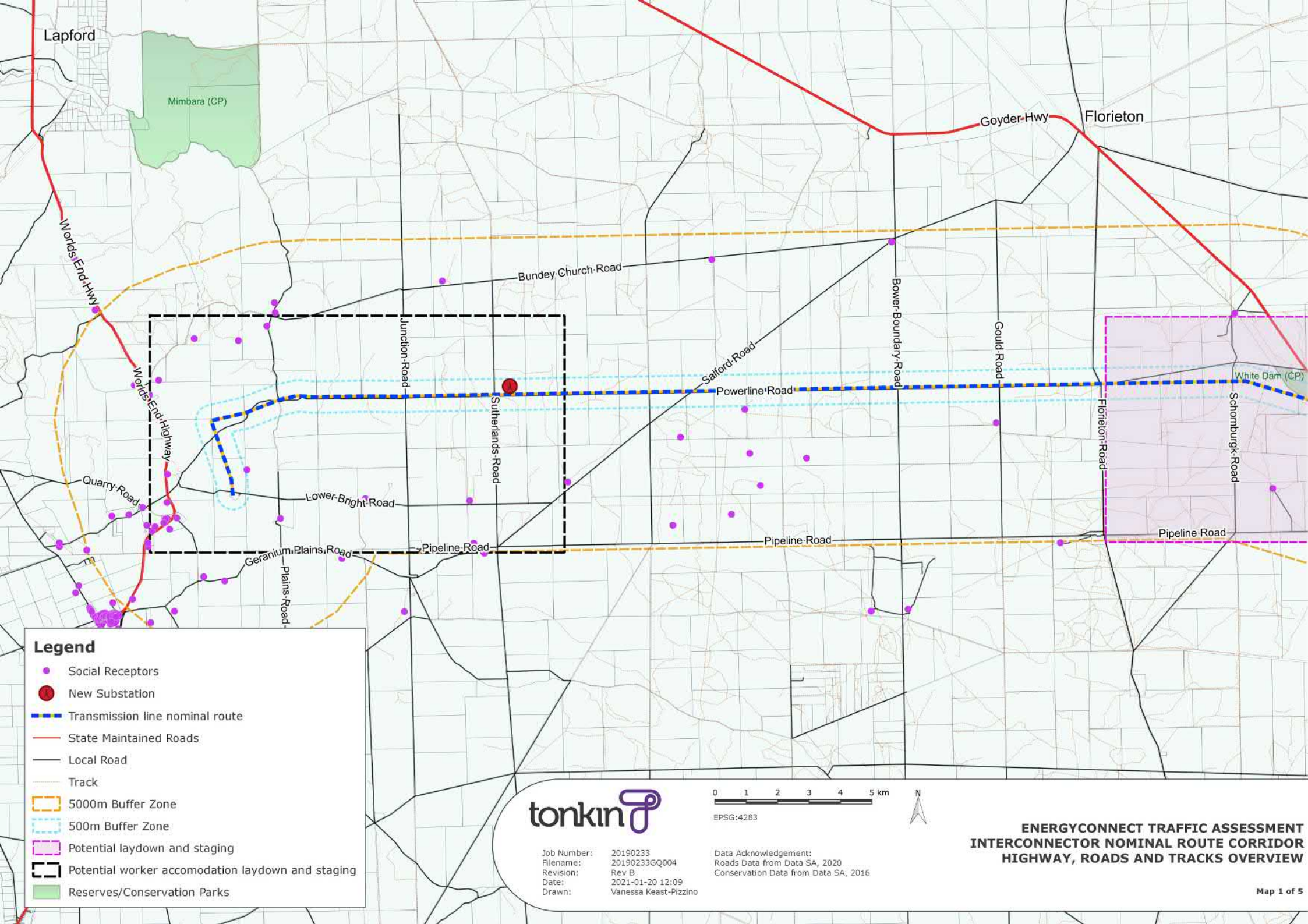
1. Deliveries of towers to site depots from Port Adelaide would typically involve 30-40 semi-trailer loads over several days for each shipment.

Terminology for use in EIS

Term	
Project EnergyConnect	The overarching project between Robertstown SA and Wagga Wagga, NSW
Stage 1 of Project EnergyConnect	Current stage – Robertstown to Buronga via connection to Red Cliffs
The Project	For the purposes of the SA EIS, “the Project” relates to the SA portion of Project EnergyConnect (Robertstown to border, including substation near Robertstown).
Project Area = transmission line corridor	The transmission line corridor is a 500 m buffer on the nominal centreline, comprising a 1 km corridor referred to as the Project Area
Study Area (may be different for different studies) e.g. “Air Quality Study Area” may use a 10km corridor to assess impacts etc.	The Study Area may be referred to in relation to technical studies where the area examined is different to the Project Area. Will need to be defined for each relevant technical area.
River Murray	Use “River Murray” for SA and “Murray River” for other states



Appendix B – Road Network and Traffic Volume Maps



Lapford

Mimbara (CP)

Goyder-Hwy

Florieton

World's End Hwy

World's End Highway

Bundey Church Road

Junction Road

Salford Road

Bower Boundary Road

Gould Road

White Dam (CP)

Schomburgk Road

Sutherland's Road

Powerline Road

Florieton Road

Pipeline Road

Quarry Road

Lower Bright Road

Geranium Plains Road

Pipeline Road

Pipeline Road

Plains Road

Legend

- Social Receptors
- New Substation
- Transmission line nominal route
- State Maintained Roads
- Local Road
- Track
- 5000m Buffer Zone
- 500m Buffer Zone
- Potential laydown and staging
- Potential worker accomodation laydown and staging
- Reserves/Conservation Parks



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Job Number: 20190233
 Filename: 20190233GQ004
 Revision: Rev B
 Date: 2021-01-20 12:09
 Drawn: Vanessa Keast-Pizzino

Data Acknowledgement:
 Roads Data from Data SA, 2020
 Conservation Data from Data SA, 2016

**ENERGYCONNECT TRAFFIC ASSESSMENT
 INTERCONNECTOR NOMINAL ROUTE CORRIDOR
 HIGHWAY, ROADS AND TRACKS OVERVIEW**



Legend

- Social Receptors
- New Substation
- Transmission line nominal route
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- Local Road
- Track
- 5000m Buffer Zone
- 500m Buffer Zone
- Potential laydown and staging
- Potential worker accomodation laydown and staging
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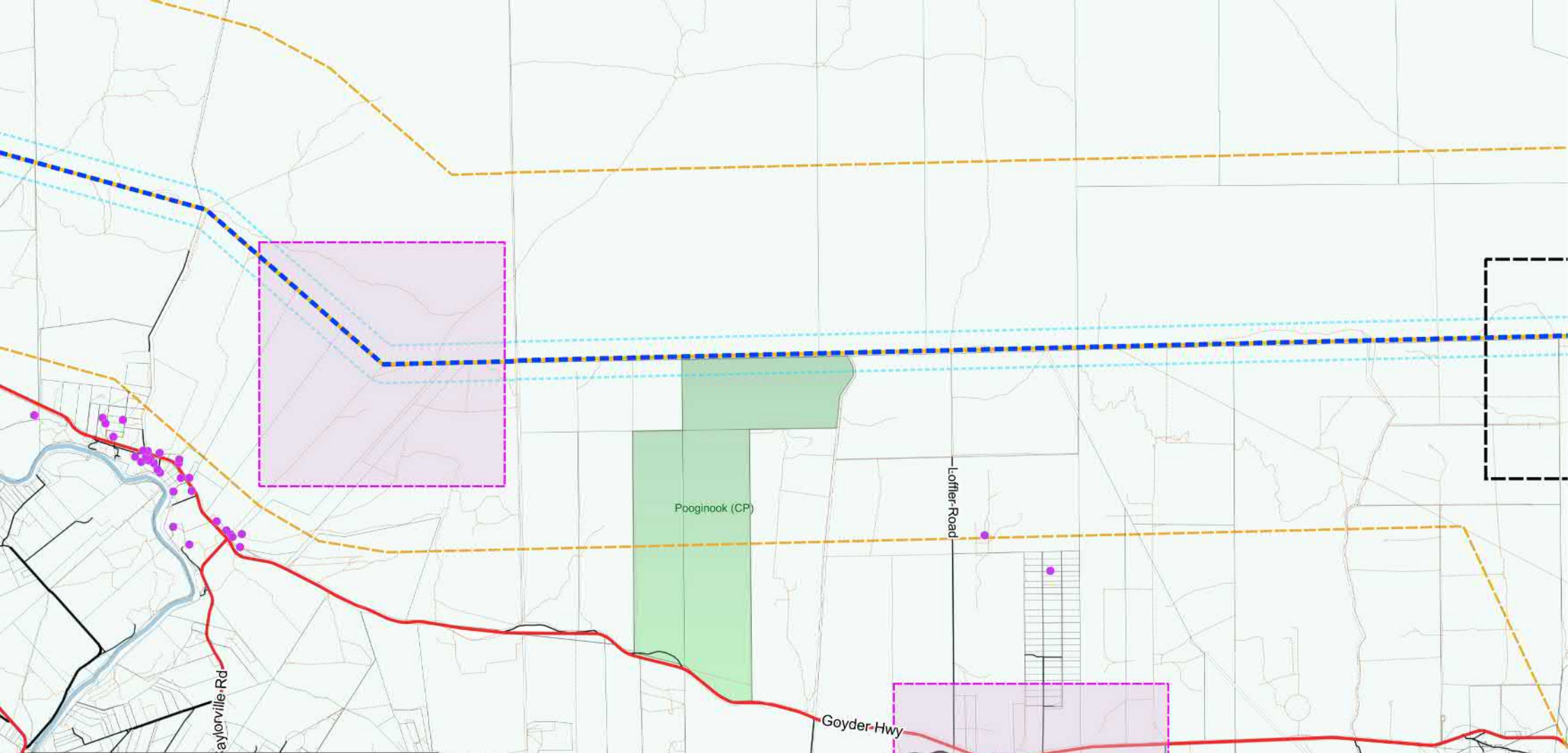
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**ENERGYCONNECT TRAFFIC ASSESSMENT
 INTERCONNECTOR NOMINAL ROUTE CORRIDOR
 HIGHWAY, ROADS AND TRACKS OVERVIEW**



Legend

- Social Receptors
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- Track
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- Potential laydown and staging
- Potential worker accomodation laydown and staging
- Reserves/Conservation Parks



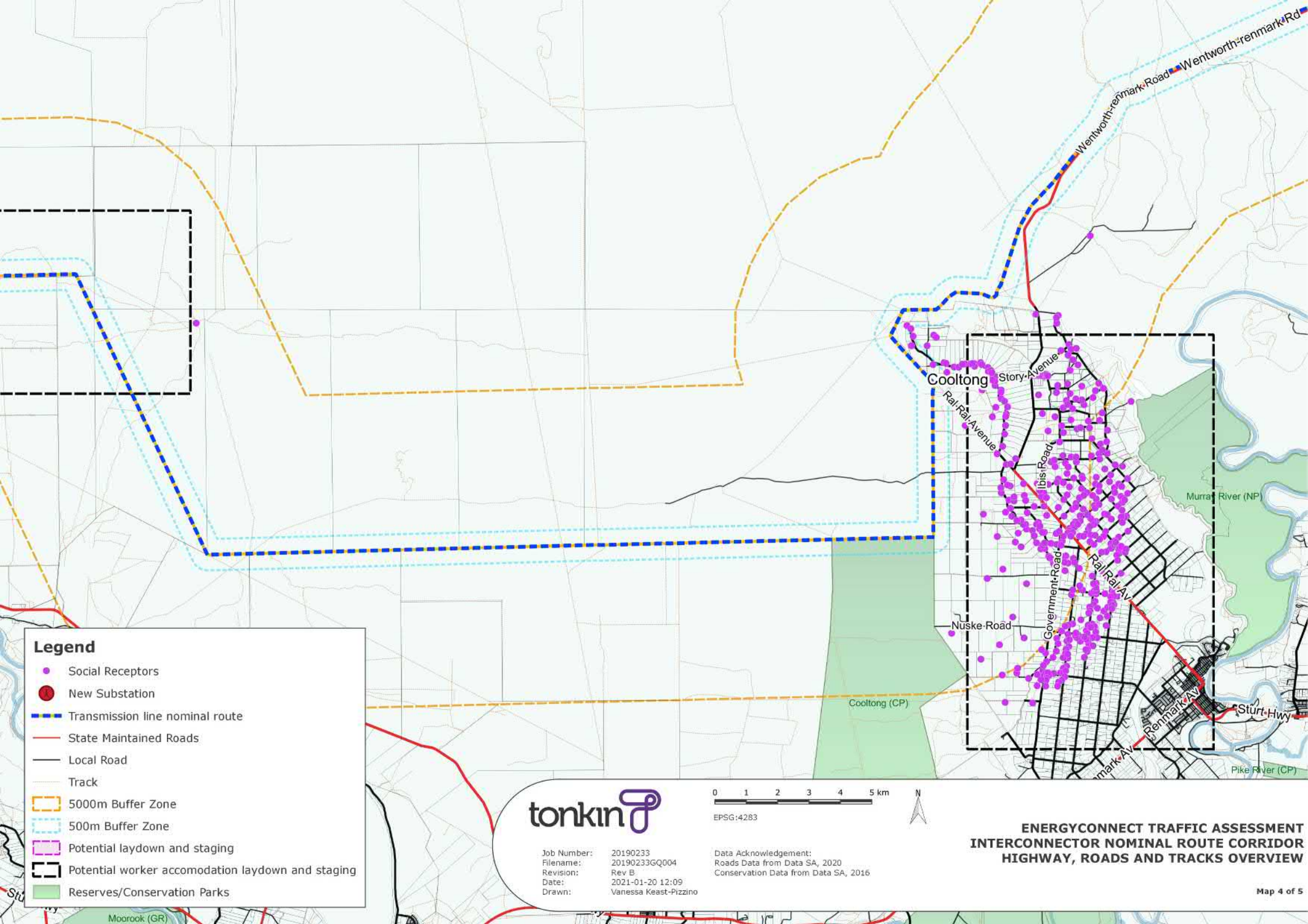
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 Date: 2021-01-20 12:09
 Drawn: Vanessa Keast-Pizzino

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**ENERGYCONNECT TRAFFIC ASSESSMENT
 INTERCONNECTOR NOMINAL ROUTE CORRIDOR
 HIGHWAY, ROADS AND TRACKS OVERVIEW**



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- Local Road
- Track
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- 500m Buffer Zone
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- Potential worker accomodation laydown and staging
- Reserves/Conservation Parks



0 1 2 3 4 5 km

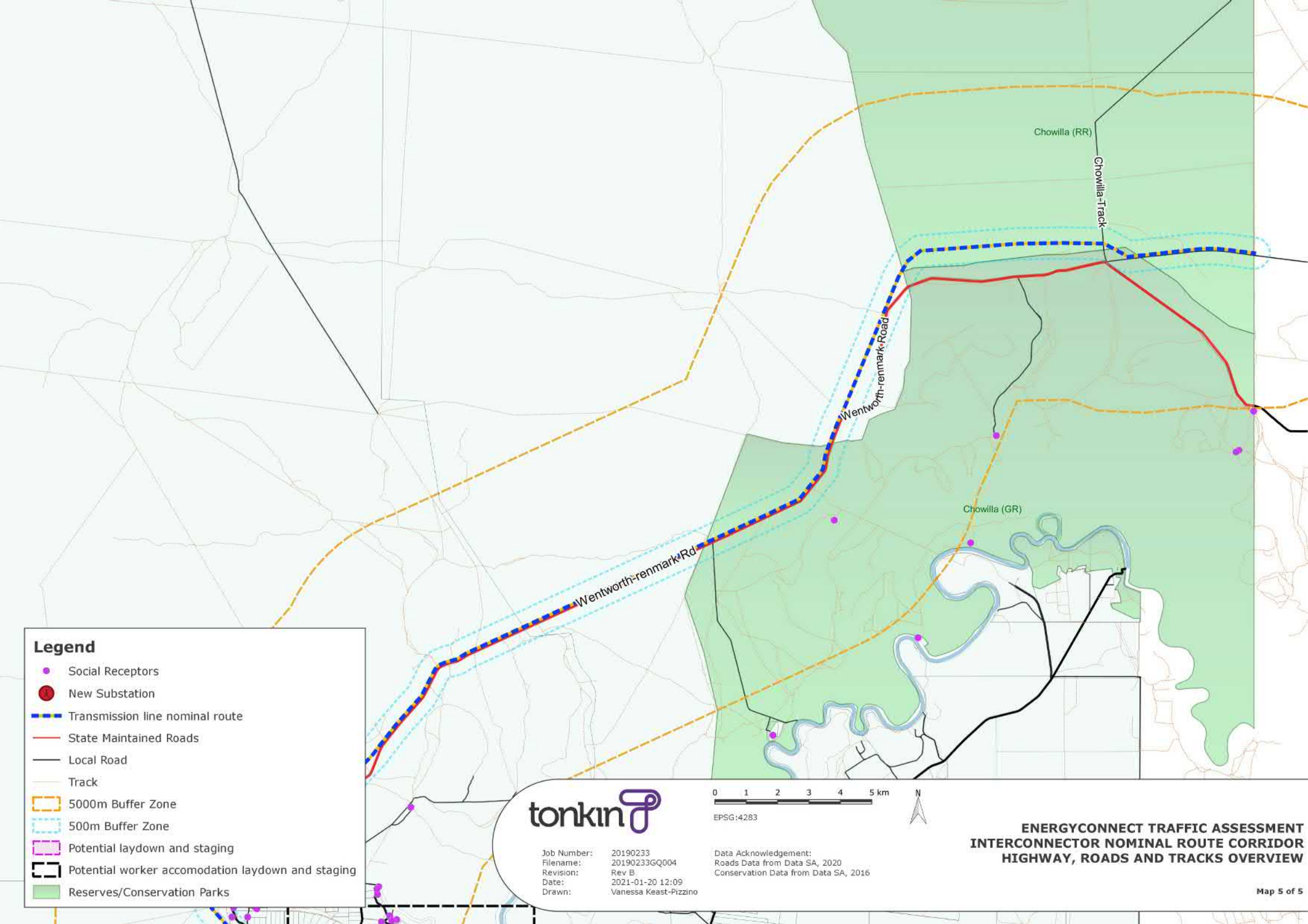
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**ENERGYCONNECT TRAFFIC ASSESSMENT
 INTERCONNECTOR NOMINAL ROUTE CORRIDOR
 HIGHWAY, ROADS AND TRACKS OVERVIEW**



Legend

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- Potential worker accomodation laydown and staging
- Reserves/Conservation Parks



0 1 2 3 4 5 km

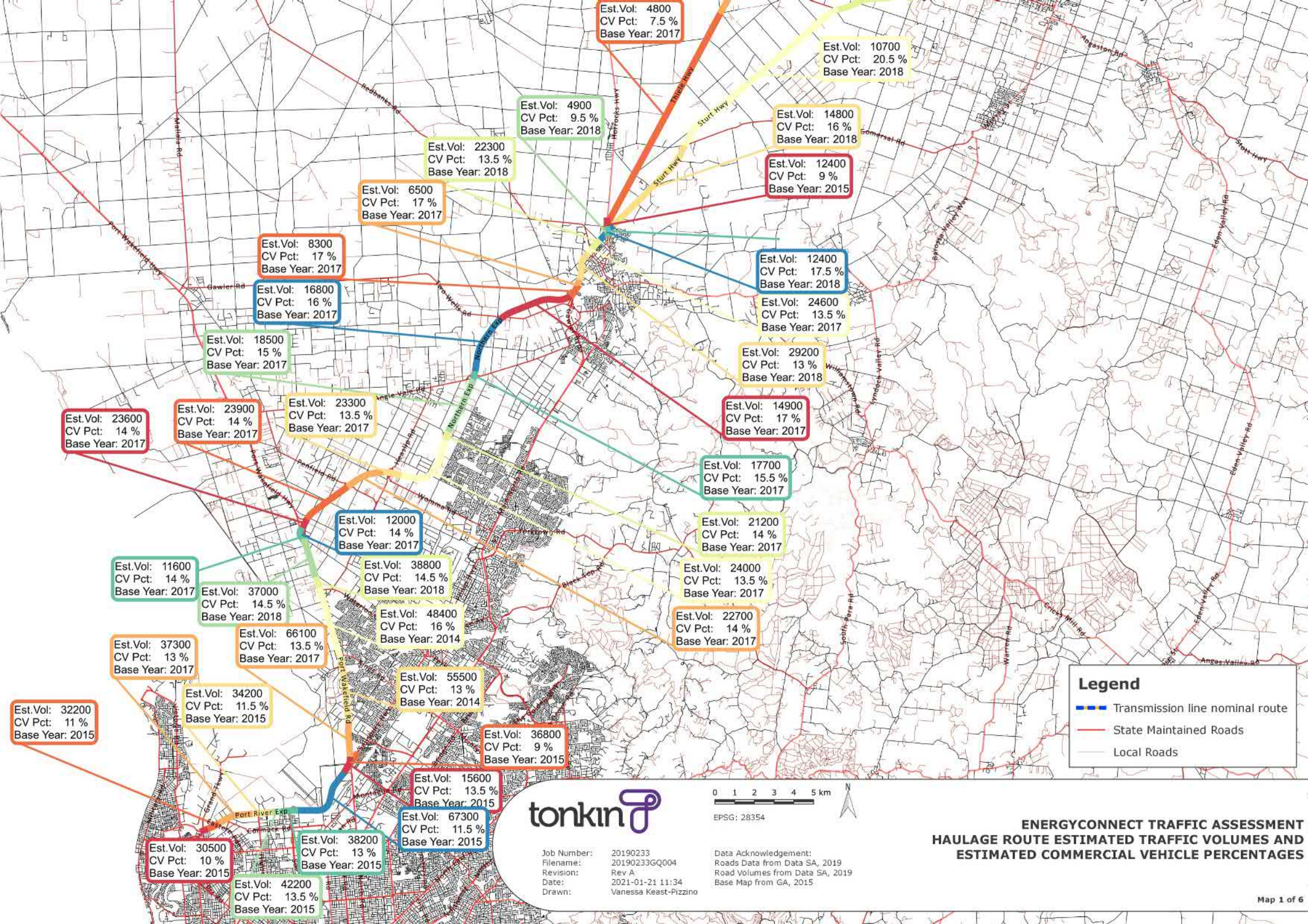
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 Drawn: Vanessa Keast-Pizzino

Data Acknowledgement:
 Roads Data from Data SA, 2020
 Conservation Data from Data SA, 2016

**ENERGYCONNECT TRAFFIC ASSESSMENT
 INTERCONNECTOR NOMINAL ROUTE CORRIDOR
 HIGHWAY, ROADS AND TRACKS OVERVIEW**



Est. Vol: 23600
CV Pct: 14 %
Base Year: 2017

Est. Vol: 23900
CV Pct: 14 %
Base Year: 2017

Est. Vol: 23300
CV Pct: 13.5 %
Base Year: 2017

Est. Vol: 18500
CV Pct: 15 %
Base Year: 2017

Est. Vol: 16800
CV Pct: 16 %
Base Year: 2017

Est. Vol: 8300
CV Pct: 17 %
Base Year: 2017

Est. Vol: 6500
CV Pct: 17 %
Base Year: 2017

Est. Vol: 22300
CV Pct: 13.5 %
Base Year: 2018

Est. Vol: 4900
CV Pct: 9.5 %
Base Year: 2018

Est. Vol: 4800
CV Pct: 7.5 %
Base Year: 2017

Est. Vol: 10700
CV Pct: 20.5 %
Base Year: 2018

Est. Vol: 14800
CV Pct: 16 %
Base Year: 2018

Est. Vol: 12400
CV Pct: 9 %
Base Year: 2015

Est. Vol: 12400
CV Pct: 17.5 %
Base Year: 2018

Est. Vol: 24600
CV Pct: 13.5 %
Base Year: 2017

Est. Vol: 29200
CV Pct: 13 %
Base Year: 2018

Est. Vol: 14900
CV Pct: 17 %
Base Year: 2017

Est. Vol: 17700
CV Pct: 15.5 %
Base Year: 2017

Est. Vol: 21200
CV Pct: 14 %
Base Year: 2017

Est. Vol: 24000
CV Pct: 13.5 %
Base Year: 2017

Est. Vol: 22700
CV Pct: 14 %
Base Year: 2017

Est. Vol: 12000
CV Pct: 14 %
Base Year: 2017

Est. Vol: 38800
CV Pct: 14.5 %
Base Year: 2018

Est. Vol: 48400
CV Pct: 16 %
Base Year: 2014

Est. Vol: 66100
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Est. Vol: 37000
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Est. Vol: 37300
CV Pct: 13 %
Base Year: 2017

Est. Vol: 34200
CV Pct: 11.5 %
Base Year: 2015

Est. Vol: 55500
CV Pct: 13 %
Base Year: 2014

Est. Vol: 36800
CV Pct: 9 %
Base Year: 2015

Est. Vol: 15600
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Est. Vol: 67300
CV Pct: 11.5 %
Base Year: 2015

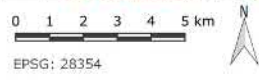
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Est. Vol: 38200
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Base Year: 2015

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CV Pct: 13.5 %
Base Year: 2015

Legend

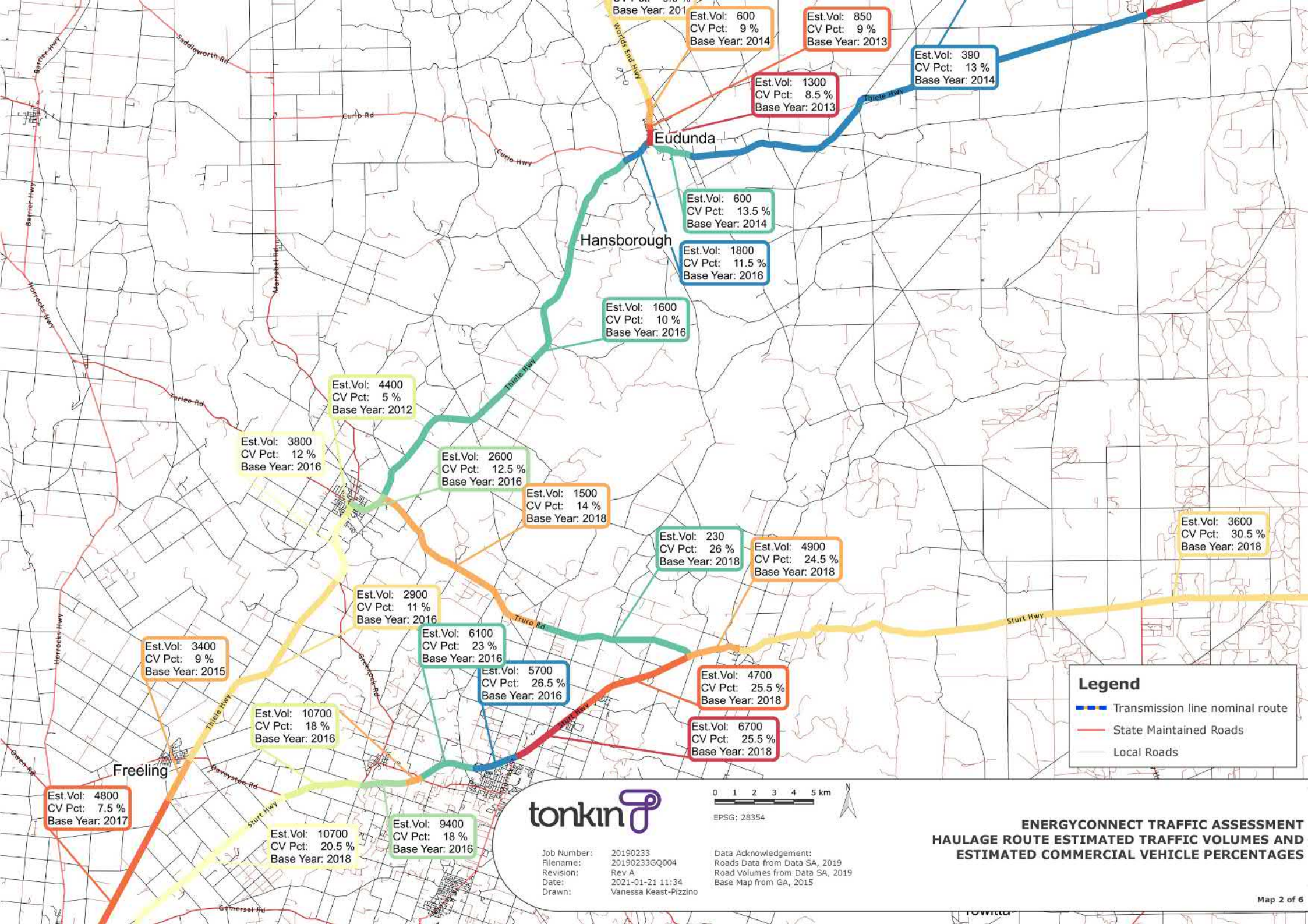
- Transmission line nominal route
- State Maintained Roads
- Local Roads



Job Number: 20190233
Filename: 20190233GQ004
Revision: Rev A
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Data Acknowledgement:
Roads Data from Data SA, 2019
Road Volumes from Data SA, 2019
Base Map from GA, 2015

**ENERGYCONNECT TRAFFIC ASSESSMENT
HAULAGE ROUTE ESTIMATED TRAFFIC VOLUMES AND
ESTIMATED COMMERCIAL VEHICLE PERCENTAGES**



Base Year: 2011
 Est. Vol: 600
 CV Pct: 9 %
 Base Year: 2014

Est. Vol: 850
 CV Pct: 9 %
 Base Year: 2013

Est. Vol: 390
 CV Pct: 13 %
 Base Year: 2014

Est. Vol: 1300
 CV Pct: 8.5 %
 Base Year: 2013

Est. Vol: 600
 CV Pct: 13.5 %
 Base Year: 2014

Est. Vol: 1800
 CV Pct: 11.5 %
 Base Year: 2016

Est. Vol: 1600
 CV Pct: 10 %
 Base Year: 2016

Est. Vol: 4400
 CV Pct: 5 %
 Base Year: 2012

Est. Vol: 3800
 CV Pct: 12 %
 Base Year: 2016

Est. Vol: 2600
 CV Pct: 12.5 %
 Base Year: 2016

Est. Vol: 1500
 CV Pct: 14 %
 Base Year: 2018

Est. Vol: 230
 CV Pct: 26 %
 Base Year: 2018

Est. Vol: 4900
 CV Pct: 24.5 %
 Base Year: 2018

Est. Vol: 3600
 CV Pct: 30.5 %
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Est. Vol: 2900
 CV Pct: 11 %
 Base Year: 2016

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 CV Pct: 9 %
 Base Year: 2015

Est. Vol: 6100
 CV Pct: 23 %
 Base Year: 2016

Est. Vol: 5700
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 Base Year: 2016

Est. Vol: 4700
 CV Pct: 25.5 %
 Base Year: 2018

Est. Vol: 6700
 CV Pct: 25.5 %
 Base Year: 2018

Est. Vol: 10700
 CV Pct: 18 %
 Base Year: 2016

Est. Vol: 4800
 CV Pct: 7.5 %
 Base Year: 2017

Est. Vol: 10700
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 Base Year: 2018

Est. Vol: 9400
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 Base Year: 2016

Legend

- Transmission line nominal route
- State Maintained Roads
- Local Roads

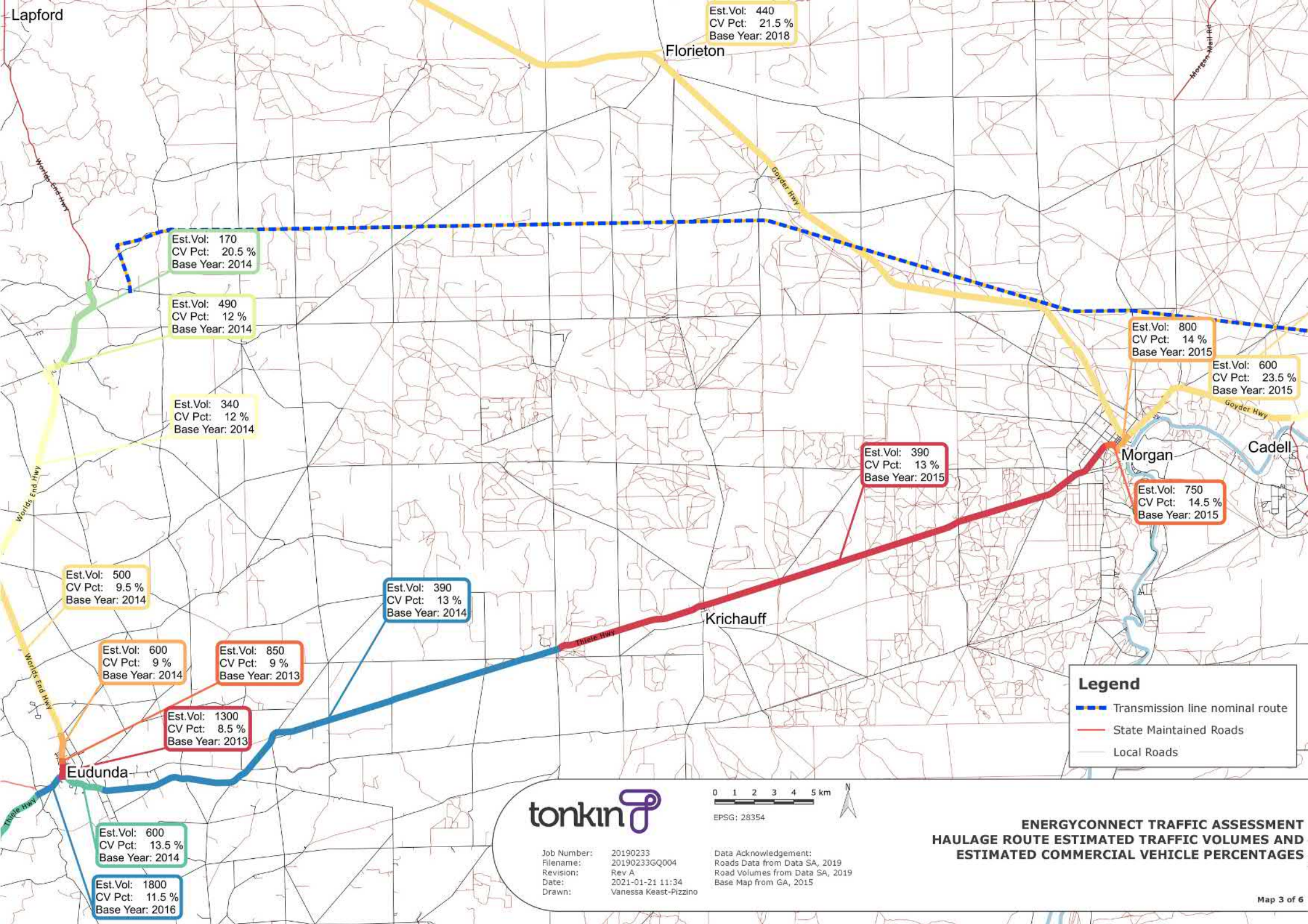
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 Drawn: Vanessa Keast-Pizzino

Data Acknowledgement:
 Roads Data from Data SA, 2019
 Road Volumes from Data SA, 2019
 Base Map from GA, 2015

**ENERGYCONNECT TRAFFIC ASSESSMENT
 HAULAGE ROUTE ESTIMATED TRAFFIC VOLUMES AND
 ESTIMATED COMMERCIAL VEHICLE PERCENTAGES**



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Base Year: 2018

Est. Vol: 170
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Est. Vol: 490
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Est. Vol: 340
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Base Year: 2015

Est. Vol: 390
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Base Year: 2015

Est. Vol: 750
CV Pct: 14.5 %
Base Year: 2015

Est. Vol: 500
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Base Year: 2014

Est. Vol: 390
CV Pct: 13 %
Base Year: 2014

Est. Vol: 600
CV Pct: 9 %
Base Year: 2014

Est. Vol: 850
CV Pct: 9 %
Base Year: 2013

Est. Vol: 1300
CV Pct: 8.5 %
Base Year: 2013

Est. Vol: 600
CV Pct: 13.5 %
Base Year: 2014

Est. Vol: 1800
CV Pct: 11.5 %
Base Year: 2016

Legend

- Transmission line nominal route
- State Maintained Roads
- Local Roads

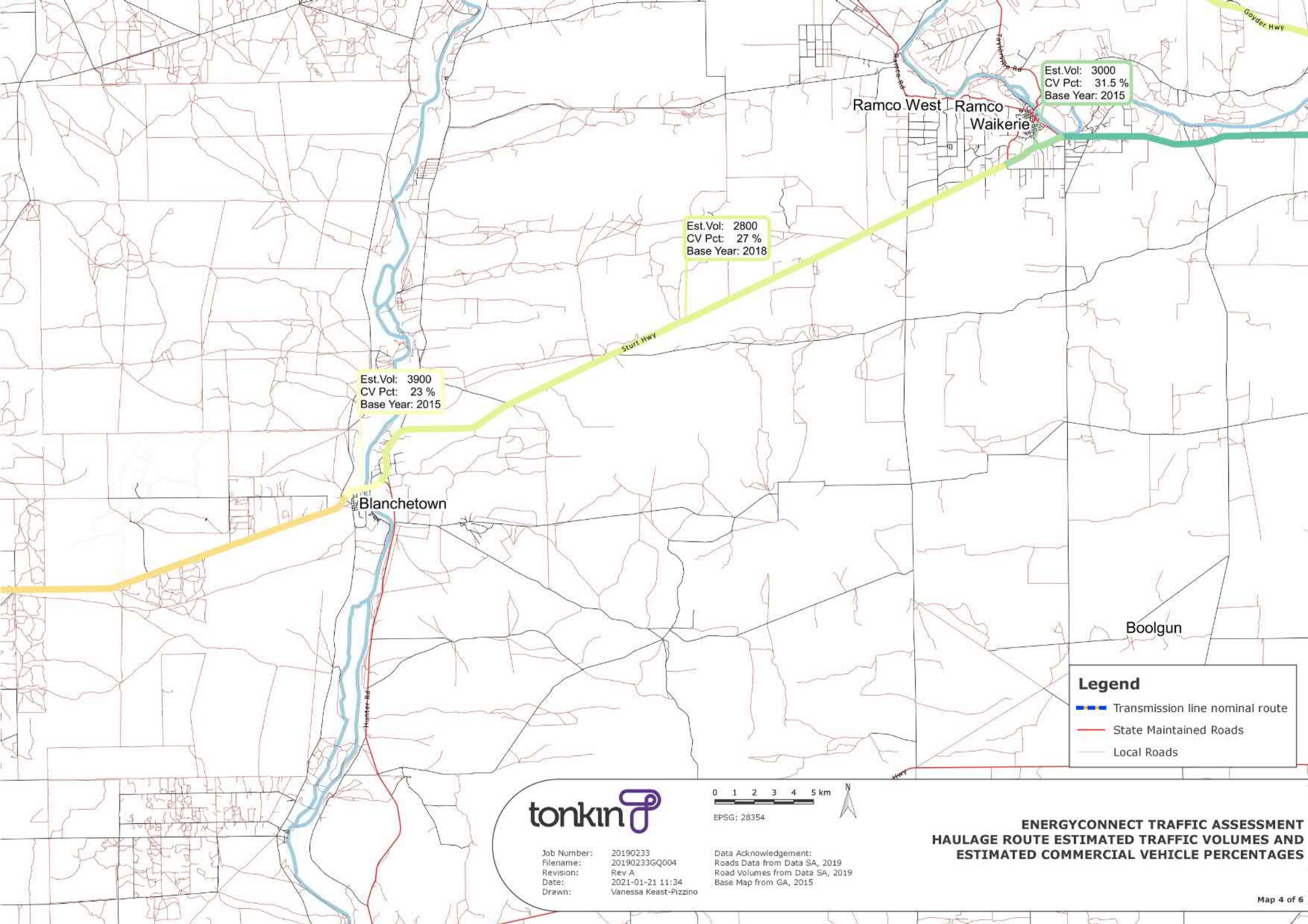
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Revision: Rev A
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Drawn: Vanessa Keast-Pizzino

Scale: 0 1 2 3 4 5 km
EPSG: 28354

Data Acknowledgement:
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Road Volumes from Data SA, 2019
Base Map from GA, 2015

**ENERGYCONNECT TRAFFIC ASSESSMENT
HAULAGE ROUTE ESTIMATED TRAFFIC VOLUMES AND
ESTIMATED COMMERCIAL VEHICLE PERCENTAGES**



Est. Vol: 3000
 CV Pct: 31.5 %
 Base Year: 2015

Est. Vol: 2800
 CV Pct: 27 %
 Base Year: 2018

Est. Vol: 3900
 CV Pct: 23 %
 Base Year: 2015

Legend

- Transmission line nominal route
- State Maintained Roads
- Local Roads

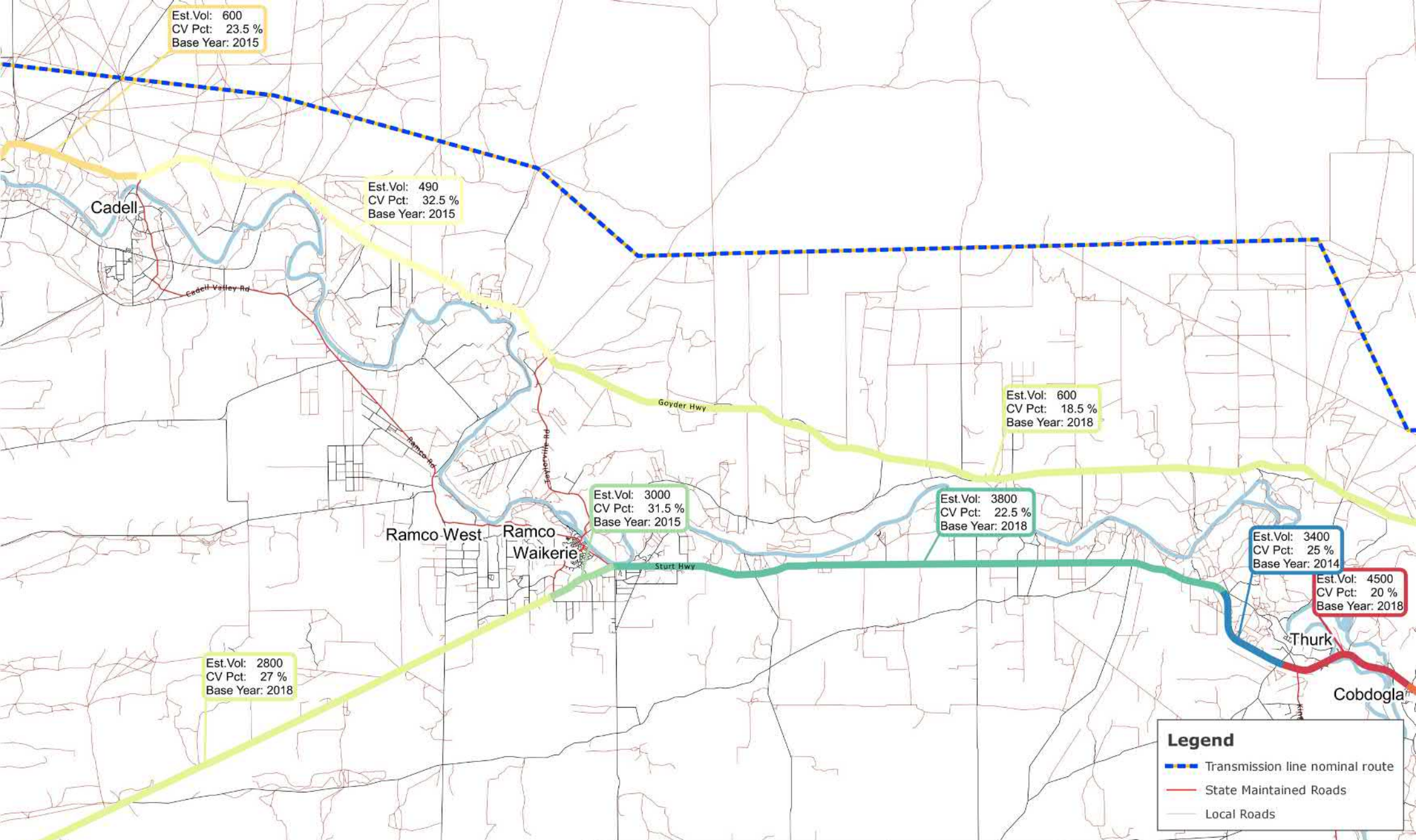
tonkin

Job Number: 20190233
 Filename: 20190233GQ004
 Revision: Rev A
 Date: 2021-01-21 11:34
 Drawn: Vanessa Keast-Pizzino

0 1 2 3 4 5 km
 EPSG: 28354

Data Acknowledgement:
 Roads Data from Data SA, 2019
 Road Volumes from Data SA, 2019
 Base Map from GA, 2015

**ENERGYCONNECT TRAFFIC ASSESSMENT
 HAULAGE ROUTE ESTIMATED TRAFFIC VOLUMES AND
 ESTIMATED COMMERCIAL VEHICLE PERCENTAGES**



Legend

- Transmission line nominal route
- State Maintained Roads
- Local Roads

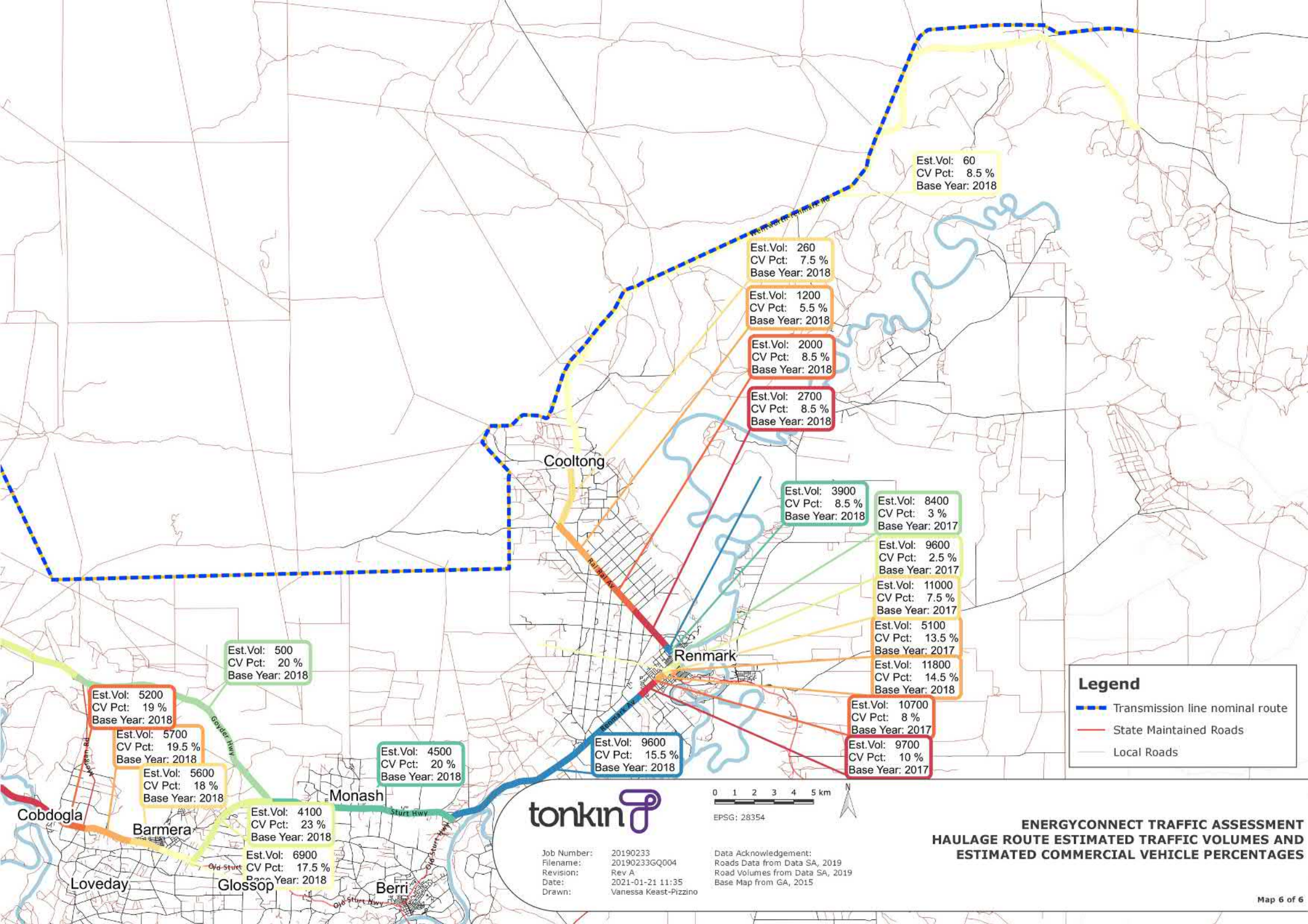
tonkin

0 1 2 3 4 5 km
 EPSG: 28354

Job Number: 20190233
 Filename: 20190233GQ004
 Revision: Rev A
 Date: 2021-01-21 11:35
 Drawn: Vanessa Keast-Pizzino

Data Acknowledgement:
 Roads Data from Data SA, 2019
 Road Volumes from Data SA, 2019
 Base Map from GA, 2015

**ENERGYCONNECT TRAFFIC ASSESSMENT
 HAULAGE ROUTE ESTIMATED TRAFFIC VOLUMES AND
 ESTIMATED COMMERCIAL VEHICLE PERCENTAGES**



Est. Vol: 60
CV Pct: 8.5 %
Base Year: 2018

Est. Vol: 260
CV Pct: 7.5 %
Base Year: 2018

Est. Vol: 1200
CV Pct: 5.5 %
Base Year: 2018

Est. Vol: 2000
CV Pct: 8.5 %
Base Year: 2018

Est. Vol: 2700
CV Pct: 8.5 %
Base Year: 2018

Est. Vol: 3900
CV Pct: 8.5 %
Base Year: 2018

Est. Vol: 8400
CV Pct: 3 %
Base Year: 2017

Est. Vol: 9600
CV Pct: 2.5 %
Base Year: 2017

Est. Vol: 11000
CV Pct: 7.5 %
Base Year: 2017

Est. Vol: 5100
CV Pct: 13.5 %
Base Year: 2017

Est. Vol: 11800
CV Pct: 14.5 %
Base Year: 2018

Est. Vol: 10700
CV Pct: 8 %
Base Year: 2017

Est. Vol: 9700
CV Pct: 10 %
Base Year: 2017

Est. Vol: 500
CV Pct: 20 %
Base Year: 2018

Est. Vol: 5200
CV Pct: 19 %
Base Year: 2018

Est. Vol: 5700
CV Pct: 19.5 %
Base Year: 2018

Est. Vol: 5600
CV Pct: 18 %
Base Year: 2018

Est. Vol: 4100
CV Pct: 23 %
Base Year: 2018

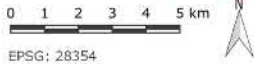
Est. Vol: 6900
CV Pct: 17.5 %
Base Year: 2018

Est. Vol: 4500
CV Pct: 20 %
Base Year: 2018

Est. Vol: 9600
CV Pct: 15.5 %
Base Year: 2018

Legend

- - - Transmission line nominal route
- State Maintained Roads
- Local Roads



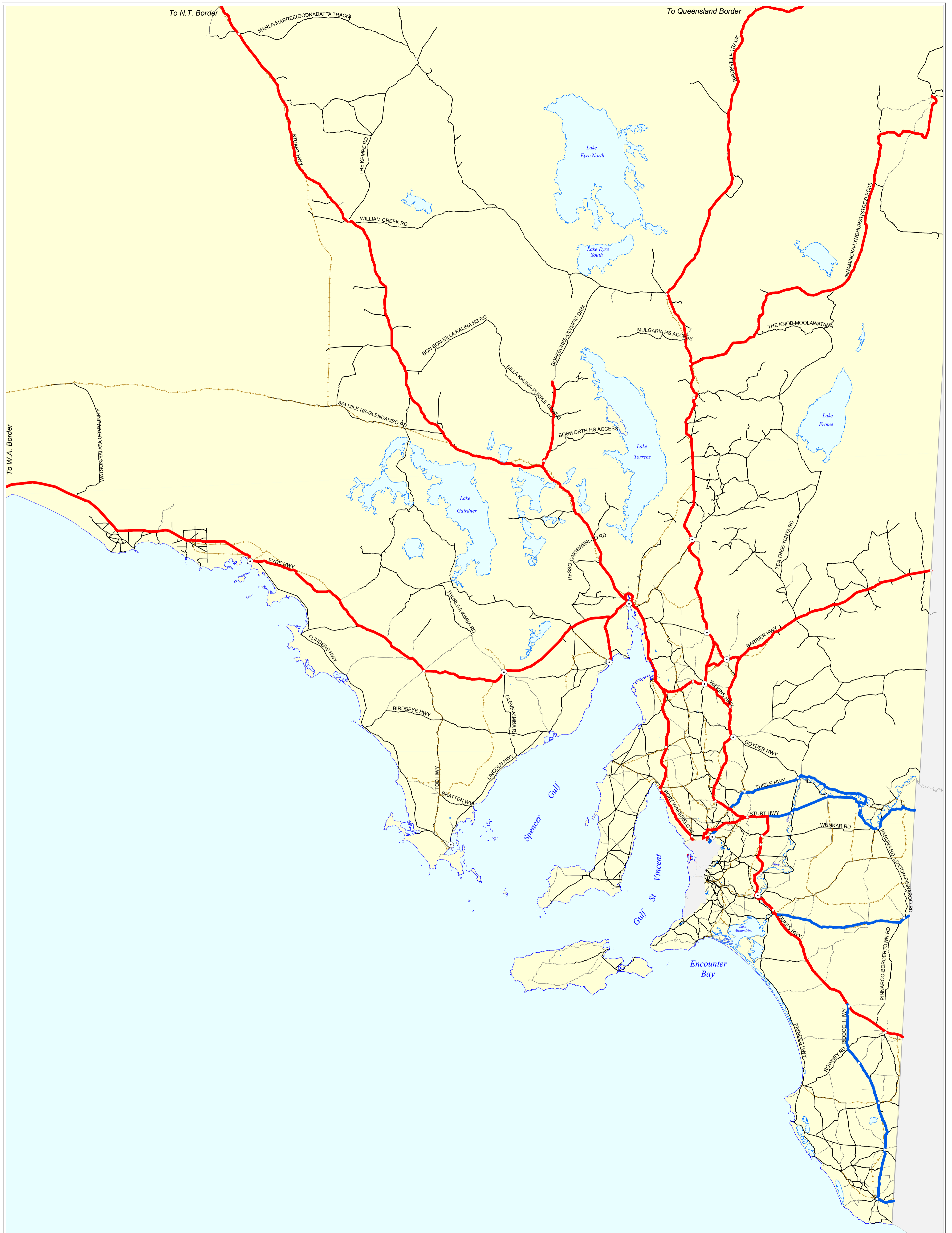
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Revision: Rev A
Date: 2021-01-21 11:35
Drawn: Vanessa Keast-Pizzino

Data Acknowledgement:
Roads Data from Data SA, 2019
Road Volumes from Data SA, 2019
Base Map from GA, 2015

**ENERGYCONNECT TRAFFIC ASSESSMENT
HAULAGE ROUTE ESTIMATED TRAFFIC VOLUMES AND
ESTIMATED COMMERCIAL VEHICLE PERCENTAGES**



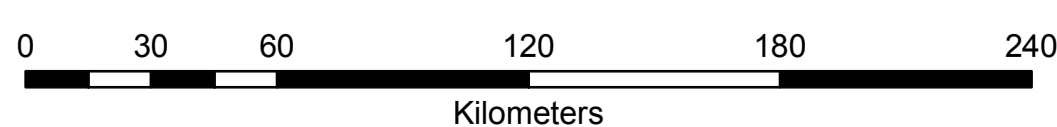
Appendix C – Restricted Access Vehicle Network



For Oversize Load Routes within the Metropolitan Area see Adelaide maps.

- Key Oversize/Overmass Routes (9.0m wide, 7.2m high/500t)
- General Oversize/Overmass Routes (9.0m wide, 6.5m high/250t)

Note: Network clearance must be provided for the nominated vehicle specifications.



Produced by: Spatial Intelligence and Road Assets, Transport Services - November, 2008

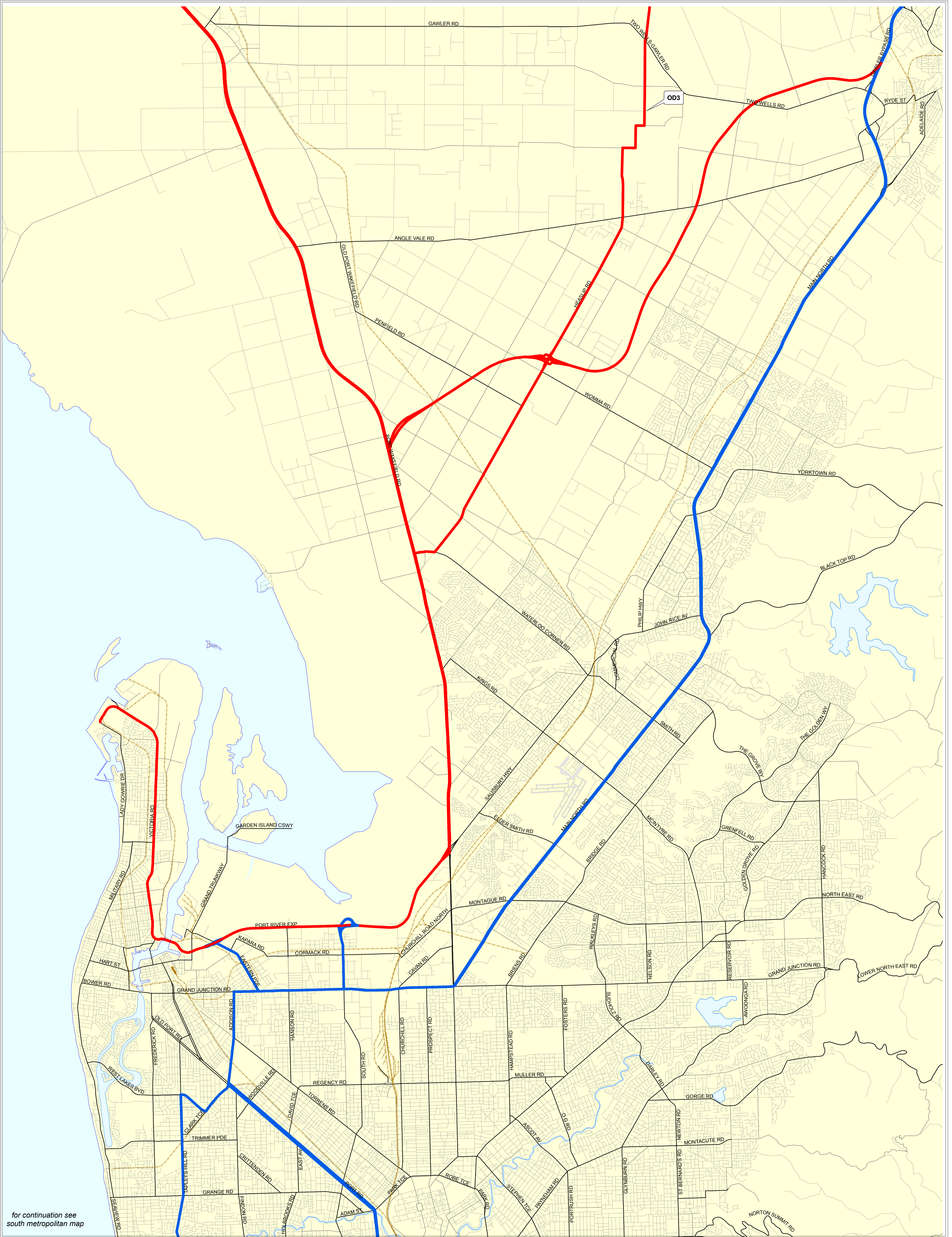
ROUTE NETWORK FOR OVERSIZE/OVERMASS LOADS

For details of Designated Routes at Towns indicated by see separate towns map

The information has been collected for internal use by the Department for Transport, Energy and Infrastructure, and is provided herein as an information resource only. It is not a substitute for independent professional advice and users should exercise their own skill, care and judgement with respect to the use of this material. Whilst all reasonable care has been taken in its preparation, the State of South Australia does not guarantee, and accepts no legal liability arising from or connected to, the accuracy, reliability, currency, suitability or completeness of the material.

This map forms part of the HVAF to assist with the strategic development and planning of freight networks in SA, and does not necessarily represent the legal Gazetted routes that apply to the operation of the various Restricted Access Vehicle categories.





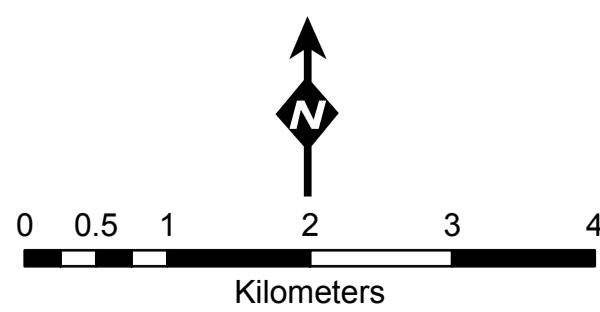
for continuation see south metropolitan map

- Key Oversize/Overmass Routes (9.0m wide, 7.2m high/500t)
- General Oversize/Overmass Routes (9.0m wide, 6.5m high/250t)

Note: Network clearance must be provided for the nominated vehicle specifications.

Produced by: Spatial Intelligence and Road Assets, Transport Services - November, 2008

ROUTE NETWORK FOR OVERSIZE/OVERMASS LOADS North Metropolitan Adelaide Area

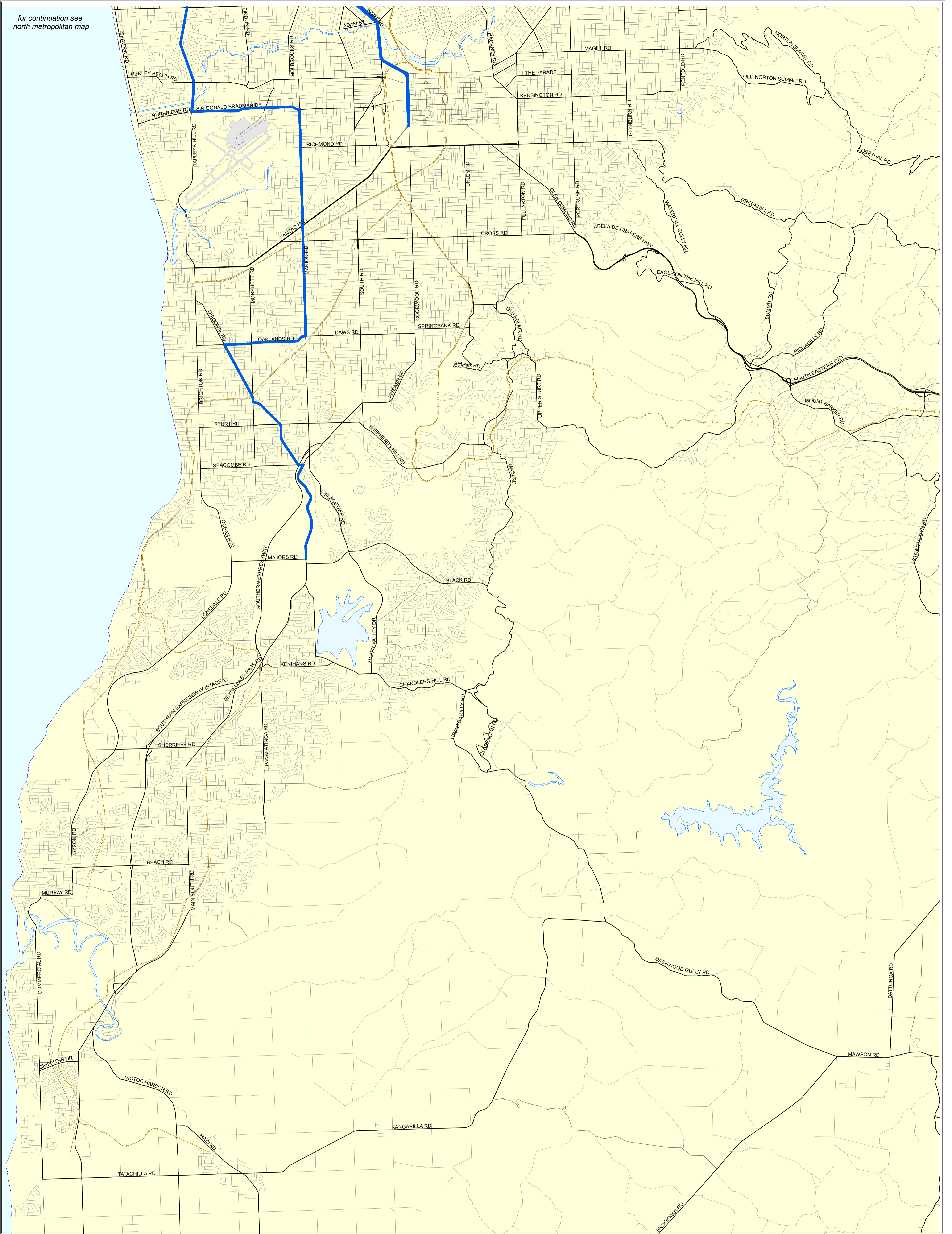


This map forms part of the HVAF to assist with the strategic development and planning of freight networks in SA, and does not necessarily represent the legal Gazetted routes that apply to the operation of the various Restricted Access Vehicle categories.

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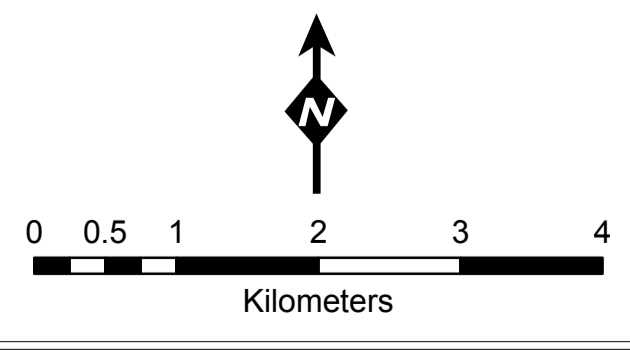


for continuation see
north metropolitan map



- Key Oversize/Overmass Routes (9.0m wide, 7.2m high/500t)
- General Oversize/Overmass Routes (9.0m wide, 6.5m high/250t)

Note: Network clearance must be provided for the nominated vehicle specifications.



Produced by: Spatial Intelligence and Road Assets, Transport Services - November, 2008

ROUTE NETWORK FOR OVERSIZE/OVERMASS LOADS South Metropolitan Adelaide Area

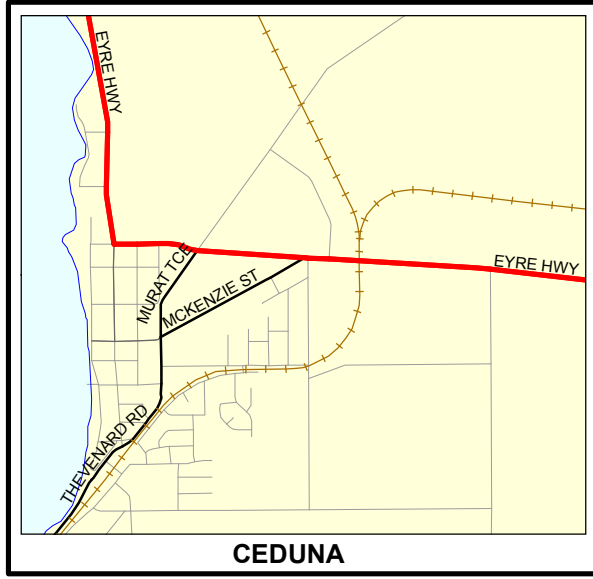
The information has been collected for internal use by the Department for Transport, Energy and Infrastructure, and is provided herein as an information resource only. It is not a substitute for independent professional advice and users should exercise their own skill, care and judgement with respect to the use of this material. Whilst all reasonable care has been taken in its preparation, the State of South Australia does not guarantee, and accepts no legal liability arising from or connected to, the accuracy, reliability, currency, suitability or completeness of the material.

This map forms part of the HVAF to assist with the strategic development and planning of freight networks in SA, and does not necessarily represent the legal Gazetted routes that apply to the operation of the various Restricted Access Vehicle categories.

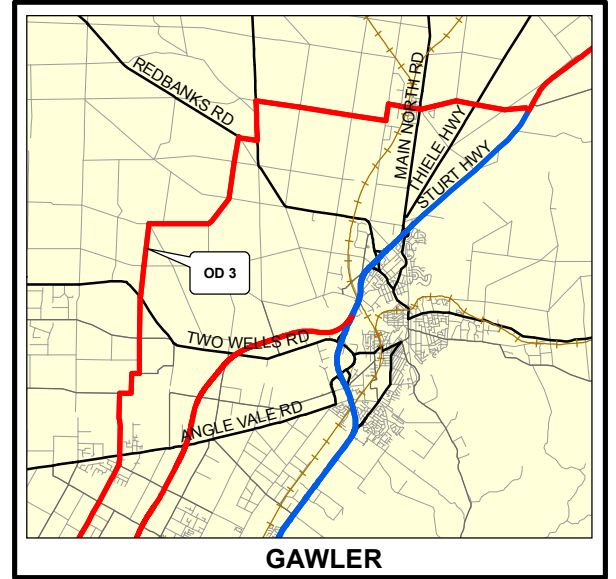




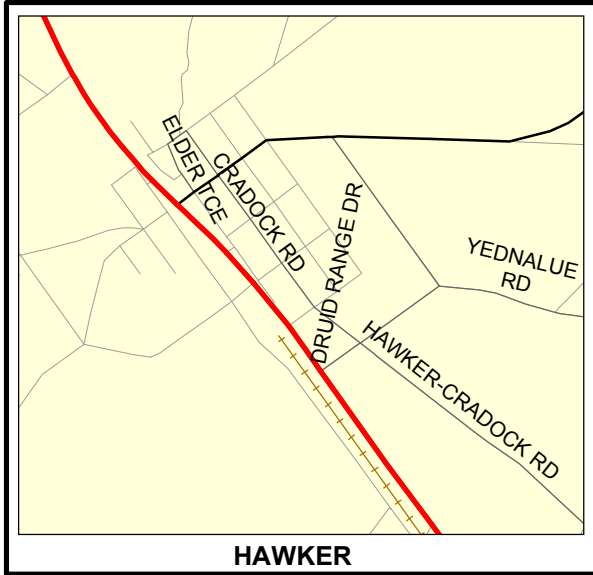
BURRA



CEDUNA



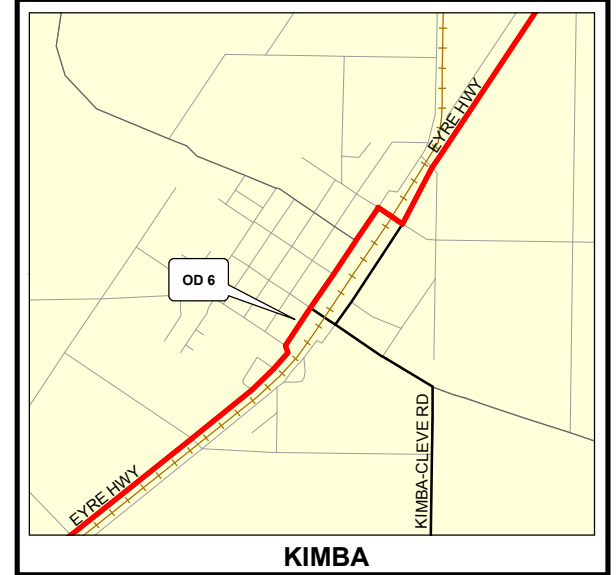
GAWLER



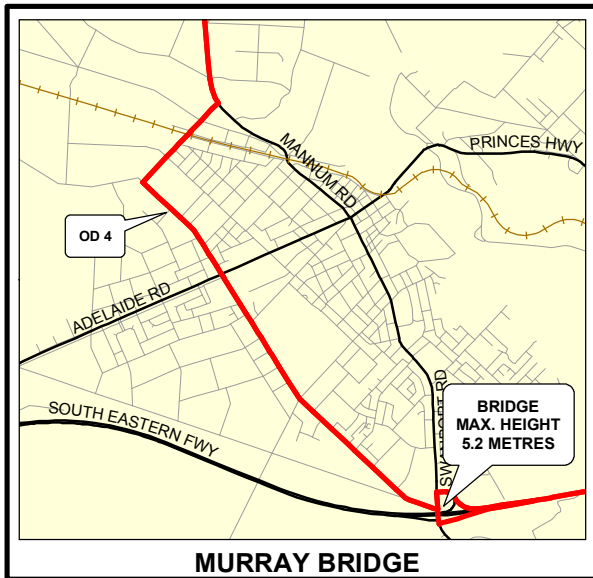
HAWKER



JAMESTOWN



KIMBA



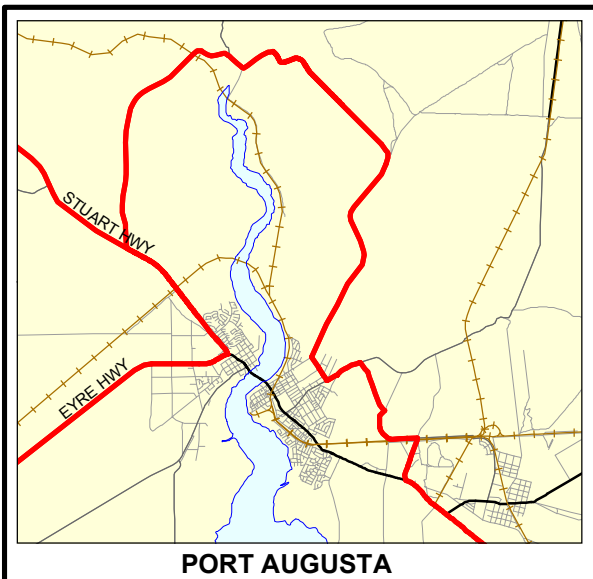
MURRAY BRIDGE



ORROO



PETERBOROUGH



PORT AUGUSTA

This map forms part of the HVAF to assist with the strategic development and planning of freight networks in SA, and does not necessarily represent the legal Gazetted routes that apply to the operation of the various Restricted Access Vehicle categories.

Note: Network clearance must be provided for the nominated vehicle specifications.



WHYALLA

Produced by: Spatial Intelligence and Road Assets, Transport Services - November, 2008

- Key Oversize/Overmass Routes (9.0m wide, 7.2m high/500t)
- General Oversize/Overmass Routes (9.0m wide, 6.5m high/250t)



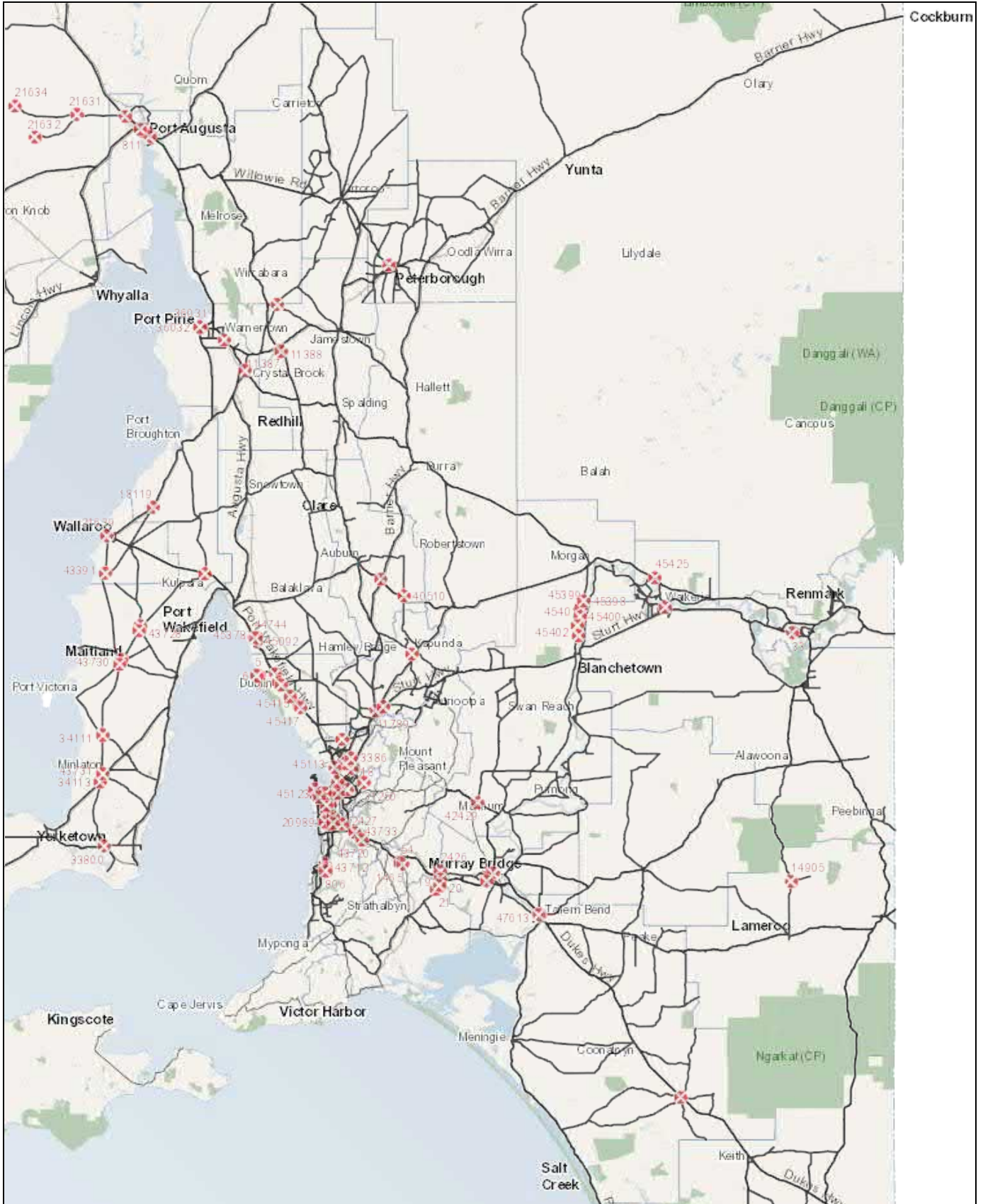
ROUTE NETWORK FOR OVERSIZE/OVERMASS LOADS within Towns

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Government
of South Australia
Department for Transport,
Energy and Infrastructure

RAVNet Map for 26m B Double (GML)



Legend

-  26m B Double (GML)
-  State Maintained Roads
-  Restriction
-  Star Restriction
-  LGA with Restrictions
-  DPTI Safe T Cam Site

N



25km

Scale- 1:2,311,162 (at A4 print size)



Government of South Australia

Department of Planning,
Transport and Infrastructure

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Restrictions

Ref	Restriction Information
6266	No right turn from Upper Yorke Rd onto Ardrossan Rd and no left turn from Ardrossan Rd onto Upper Yorke Rd allowed
6268	No left turn from Moonta Rd onto Robert St allowed
6265	No right turn from Upper Yorke Rd onto Arthurton Rd and no left turn from Arthurton Rd onto Upper Yorke Rd allowed
6267	No left turn from Centenary Ave onto Clinton Rd and no right turn from Clinton Rd onto Centenary Ave allowed
11386	Left turn only onto First St
11387	Right turn only onto Gladstone St
11388	Right turn only onto Main North Rd
15866	No left turn onto Two Wells Rd
15865	No left turn from Penaluna Dr onto Ian Oliver Dr
14905	General Freight - Maximum speed limit of 80kph for Moreland Rd
2427	No left turn from Greenhill Rd onto Glen Osmond Rd
2426	No left turn onto Old Princes Highway, No right turn from Old Princes Highway
5306	No left turn from Chamberlain St into Wingfield Rd or right turn from Wingfield Rd into Chamberlain St
36030	40kph speed limit along Wandearah Rd
36029	40kph speed limit along Esmond Rd
36031	40kph speed limit along Grey Tce
36032	40kph speed limit along Sampson St
37631	Access over this crossing (RLX825) by permit only, issued by Australian Rail Track Corporation (ARTC)
34110	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
34111	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
34113	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
33800	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
18114	Access by all vehicles on Flinders Tce is restricted to between 7am and 7pm every day
21636	Right turn only from Bedford St onto Gray Tce
21637	South bound travel only from Bedford St
21631	Myall Creek Rd from Carriererloo Rd maximum speed 40kph
21638	Left turn only from site into Bedford St
21634	Carriererloo Rd maximum speed 60kph
21639	No left turn from Chatfield Tce into Abraham Rydberg Dr. No right turn from Abraham Rydberg Dr into Chatfield Tce
21632	Myall Creek Rd maximum speed 40kph
21630	Carriererloo Rd maximum speed 60kph
40510	No left turn out from Saddleworth Rd onto Main Rd 45 at Marrabel
42429	No Left turn from Randell Rd onto Milendella Rd. No Right turn from Milendella Rd onto Randell Rd
41149	Pine Creek Bridge has a revised Gross Vehicle Mass, including load, of 30 tonnes access by vehicles with a greater mass is not permitted.
41789	No turns onto or out of Argent Rd
41471	No left turn from Goyder Hwy to Hughes Gap Rd.
43726	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43727	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43729	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43730	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43731	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43712	No left turn from Panalatinga Rd onto Reynella By-Pass. No right turn from Reynella By-Pass onto Panalatinga Rd
43733	No travel on Mount Barker Rd exit if the vehicle exceeds 2.50m in width or 4.60m in height.
43719	No right turn from Port Wakefield Rd onto Old Port Wakefield Rd allowed

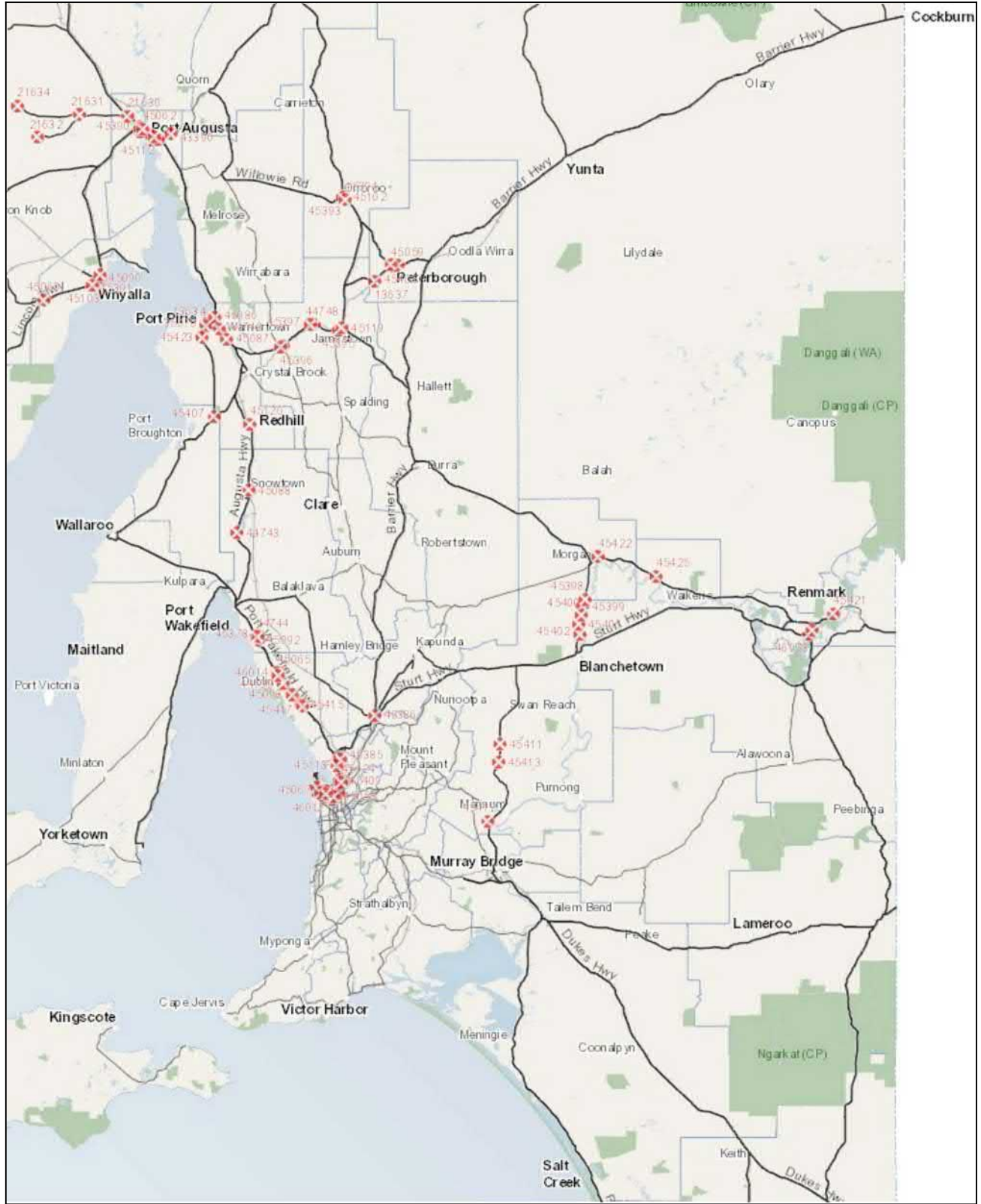
Restrictions

Ref	Restriction Information
43720	Very Long Steep Descent 7km. Trucks and buses must use low gear. Australian Road Rule 108 applies.
44094	Left turn only from Perry Rd into Adelaide Rd. Right turn only from Adelaide Rd onto Perry Rd. No Left turn Hancock Rd into Main St.
43391	No left turn from Spencer Highway onto Mines Rd
43728	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
40509	No left turn from Belvidere Rd onto Burra Rd (Barrier Hwy) at Saddleworth.
42	No access into Cormack Rd from Plymouth Rd
59	No right turn to Lagoon Rd. No Left turn to Mannum Rd
33	Left turn in and right turn out only
21	Left turn only onto Jaensch Rd.
34	Right turn from Dublin Rd is Prohibited
1462	Left turn in, right turn out of Railway Tce only
24	Right turn only from Hogarth to Trimmer
18	No right or left turn onto Oldham Rd. Left turn onto Philip Highway only
44	When travelling west entry shall be via the Port Rd median access to Aroona Rd South. Exit shall be left turn to Port Rd only
807	No right turn exit from BRL Hardy, Left turn only onto Panalatinga Rd
1463	Right turn in, left turn out of High St only
54	Vehicles must obey all signage and proceed over the crossing (RLX59) with extreme caution and only if no trains are in sight.
811	Access by all vehicles on Flinders Tce is restricted to between 7am and 7pm every day
22	Right turn only onto Callington Rd
19	Left turn onto North Bremer Rd only.
7	Hours of operation; 6am-10pm, 7 days
18118	No right turn from Kaurna Ave onto Edinburgh Rd allowed
18119	No right turn from Spencer Hwy onto Pt Broughton Rd
18120	Right turn onto Grove Av, Right turn out onto Richmond Rd only
30951	Left turn onto and out of Francis Rd west of Hanson Rd is prohibited
28669	Right turn only onto Phillips St. Left turns prohibited
28670	Left turn only from Smith St onto Port Rd. Left turn onto Smith St prohibited
18109	Right turn in, left turn out of Jervois St only
20990	Southbound travel only on Chegwiddden Ave
20991	All Westbound on Comley St must turn Right to Lum St. All Eastbound on Comley must turn Left to Lum St
20992	Northbound travel only on Lum St
29309	Right turn from Sir Donald Bradman Dr onto James Congdon Dr prohibited
20989	All Eastbound on Hamra Dr must turn left to Corbett Ct. No Right turn from Lum St.
31250	No left turn from Golden Grove Rd in to The Grove Way
20	70kph speed limited on unsealed section of North Bremer Rd
1785	Travel in Southerly direction only along Walsh St
12	Right turn onto Research Rd and right turn out of Research Rd only. All left turns prohibited.
46	Entry to and from Manchester St via Railway Tce only
15	No left turn from Athol St onto Hanson Rd
806	No Access to Pimpala Rd
26	No northbound left turn from Days Rd onto Regency Rd. No eastbound right turn from Regency Rd onto Days Rd
23	Left turn onto Taylors Rd Right turn onto Angle Vale Rd only
6	Exhaust brakes not to be used in the township of Parham
1465	Right turn in, right turn out only
3	No right turn from Old Swanport Rd onto Adelaide Rd. No left turn from Adelaide Rd onto Old Swanport Rd
5	20kph speed limit on The Esplanade
45	Right turn only from Diagonal Rd, when travelling east from Port Wakefield Rd onto Goldsborough Rd
3386	Right turn onto Bellchambers Rd only
16	No right turn from Hanson Rd onto Torrens Rd
44744	Right turn from Primes Rd onto Port Wakefield Rd prohibited
44739	Access for Northbound traffic only. Left in, Southern Access. Left out, Northern Access. No right turn from either access
45098	Left turn in and Right turn out access from Port Wakefield Rd only







Restrictions

Ref	Restriction Information
45092	Right turn onto crossover point heading South. Right turn out of crossover point heading North only permitted
45378	Primes Rd to Waste Management Facility Only
45374	Keep left on PREXY bridge where possible
45399	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45400	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45401	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45402	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45409	No left turn from Port Wakefield Rd onto Martins Rd. No right turn from Martins Rd onto Port Wakefield Rd.
45388	Westbound access only permitted on Willochra St from Elder Rd to Mildred Tce for all RAV other than 19m network (HML).
45398	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45113	No right turns into and out of Burton Rd Left Turn Only
45114	Access to Wingfield Waste Management Centre permitted
45123	No Entry. Right turn onto Bedford St only
45373	No left turn onto Zerna Rd from the Augusta Highway or right turn out onto the Augusta Highway
45059	40kph speed limit along Olive Grove Rd
45062	No left turn onto Caroon Rd Allowed
46978	Left turn only onto Princes Highway; no access to Mallee Street
46979	Left turn only onto Princes Highway; no access to Service Road
47613	Left Turn only onto Service Road; no exit to Princes Highway
45415	No Right turn permitted in from or out to Port Wakefield Rd (Port Wakefield Highway)
45417	No Right turn permitted in from or out to Port Wakefield Rd (Port Wakefield Highway)
45425	Left turn only into and out of Lunn Rd.
46020	No right turn to Roseworthy Rd allowed when travelling on Gomersal Rd then Sturt Hwy

RAVNet Map for 36.5m Road Train (GML)



Legend

-  36.5m Road Train (GML)
-  State Maintained Roads
-  Restriction
-  Star Restriction
-  LGA with Restrictions
-  DPTI Safe T Cam Site

N



25km

Scale- 1:2,311,162 (at A4 print size)



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Department of Planning,
Transport and Infrastructure

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Restrictions

Ref	Restriction Information
13634	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Port Pirie
13637	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Yongala
1463	Right turn in, left turn out of High St only
21631	Myall Creek Rd from Carrierloo Rd maximum speed 40kph
21632	Myall Creek Rd maximum speed 40kph
21630	Carrierloo Rd maximum speed 60kph
21634	Carrierloo Rd maximum speed 60kph
42749	Access to Range View Road / Quorn Rd is not permitted for combinations longer than 32m in length.
43389	Access to Range View Road / Quorn Rd is not permitted for combinatinos longer than 32m in length
43390	Access to Range View Road / Quorn Rd is not permitted for combinatinos longer than 32m in length
35070	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Port Pirie
44743	Lochiel Marshalling Yard, entry in only, from the right turn lane on National Hwy 1 to the northern access and from the left turn lane on National Hwy 1 into the southern access. Exit only, left turn via the northern access using the acceleration lane. Right turn from either access is not permitted.
44744	Right turn from Primes Rd onto Port Wakefield Rd prohibited
44748	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Caltowie
45056	No left turn from Orion Rd onto Pilatus Dr
45057	No right turn from Caribou Dr onto Orion Rd
45068	202-212 Eastern Pde, right turn in and left turn out only
45085	No right turn movement from West Tce (from Orroroo) onto Telford Av. No left turn movement from Telford Av onto West Tce (towards Orroroo).
45088	Mobil Snowtown Service Station. Northbound access only, left turn in and out
45087	Mobil Country Gardens Service Station. Southbound access only, left turn in and out
45095	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Port Augusta
45089	Vehicles turning from Pt Wakefield Rd onto Salisbury Hwy will use the eastern most right turn lane (ie the left most lane)
44739	Access for Northbound traffic only. Left in, Southern Access. Left out, Northern Access. No right turn from either access
45090	Whyalla One Steel Access
45097	No travel between Waterloo Cnr Rd Direk and Penfield Rd Penfield on Heaslip Rd in a Northerly direction. All movements shall be south bound on Heaslip Rd from Penfield Rd Penfield.
45098	Left turn in and Right turn out access from Port Wakefield Rd only
45091	No left turn from Bedford St South onto Eastern Pde
45092	Right turn onto crossover point heading South. Right turn out of crossover point heading North only permitted
45100	Max length vehicle of 30m ONLY permitted along Carroona Rd
45101	Left turn onto Service Rd and left turn onto Grand Junction Rd allowed only
45102	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Orroroo
45103	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Whyalla
45105	Left turn out from Footner Rd to the Augusta Highway only
45107	Craig Arthur Transport Depot, left turn into depot, right turn out of depot
45108	Pivot - via Ocean Steamers Rd left turn into depot at Gate 17, right turn out only
45109	BP Roadhouse Left turn into Ritma Rd and then into the roadhouse. Left turn exit onto Ritma Rd and then left turn into National Highway 1. Vehicles are permitted to drop both trailers at a roadhouse if the facilities on the opposite side of the road are to be used, i.e., travel bobtail.
45375	TNT Automotive Logistics, right turn into depot. Exit, left turn onto Cormack Rd
45377	Australian Wool Handlers Depot - via Eastern Pde to Grand Trunkway right turn into depot. Exit depot, left turn to Grand Trunkway
45373	No left turn onto Zerna Rd from the Augusta Highway or right turn out onto the Augusta Highway
45376	Harris Refrigerated Depot - via Pt Wakefield Rd, right turn to Duncan Rd, left turn to Acorn Rd, straight into depot. Exit straight out of depot, Acorn Rd, right turn to Duncan Rd, left turn to Cavan rd, left turn to Pt Wakefield Rd
45379	Adelaide Car Express Depot, right turn into depot. Exit, right turn out
45374	Keep left on PREXY bridge where possible
45378	Primes Rd to Waste Management Facility Only
45380	Langes Transport - via Cavan Rd, left turn to Old Cavan Rd, left turn to depot. Exit right turn to Old Cavan Rd, left turn to Cavan Rd, left turn to Pt Wakefield Rd
45382	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Gladstone
45384	Vehicles must exit Superway using Down Ramp to Grand Junction Rd

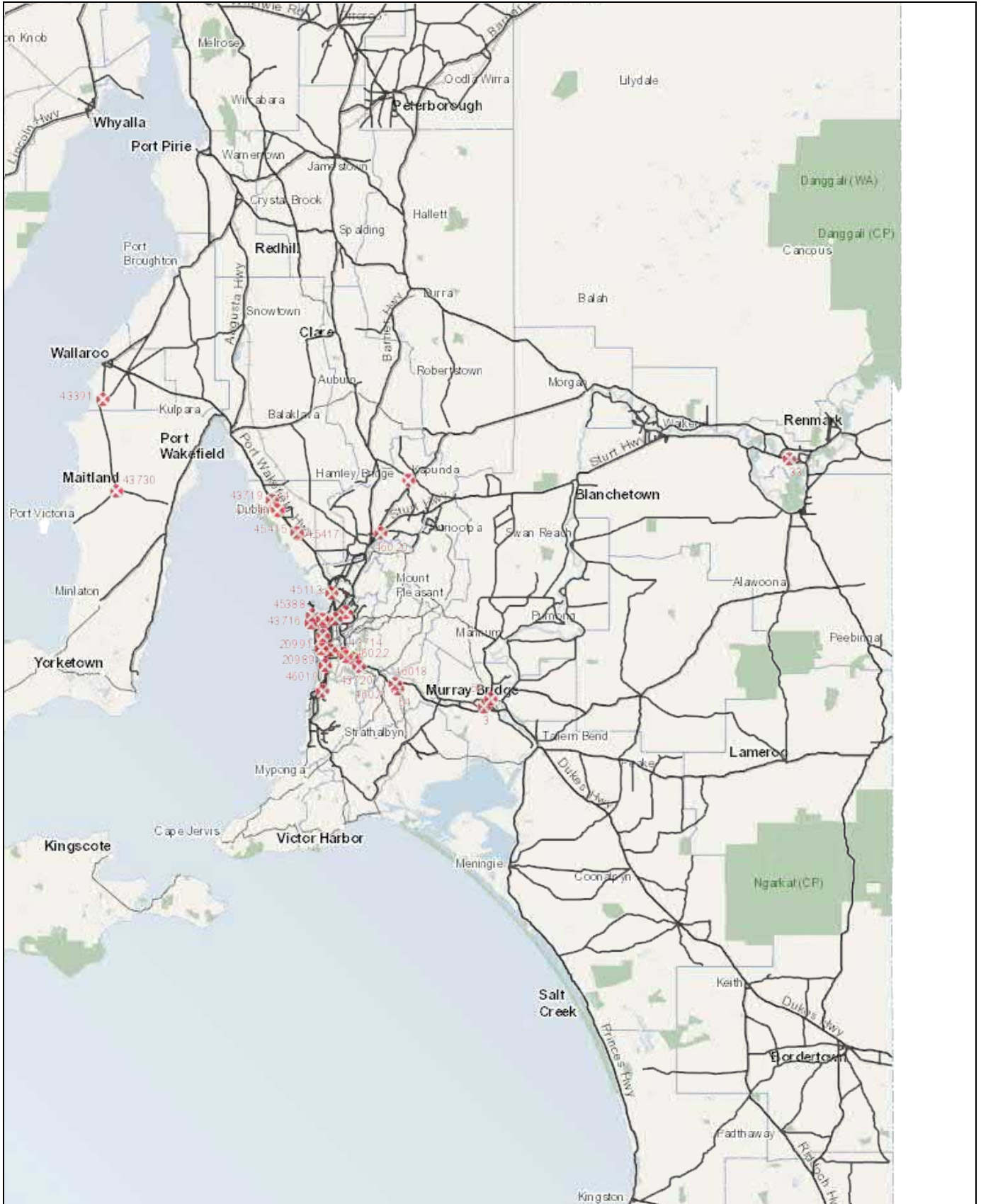
Restrictions

Ref	Restriction Information
45399	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45404	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Peterborough
45402	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45401	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45400	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45407	No left turn from Spencer Highway to Clements Rd
45403	Right turn from South Rd (north) onto Grand Junction Rd shall use the eastern right turn lane (ie the left most lane). Right turn from Grand Junction Rd onto South Rd must use the left most turn lane.
45405	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Peterborough
45411	Speed over Marne River is restricted to 80kph
45386	Right turn onto Thiele Highway and Left turn from Thiele Highway only.
45385	Left turn out of Pilatus Dr onto Heaslip Rd and left turn onto Pilatus Dr from Heaslip Rd only
45388	Westbound access only permitted on Willochra St from Elder Rd to Mildred Tce for all RAV other than 19m network (HML).
45389	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Port Augusta
45390	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Port Augusta
45391	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Whyalla
45392	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Peterborough
45393	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Orroroo
45394	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Orroroo
45395	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Jamestown
45396	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Gladstone
45397	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Caltowie
45398	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45116	Whiteline Transport - Left turn into Lot 1. Right turn out.
45117	No left turn to Eastern Pde from Grand Junction Rd No right turn to Grand Junction Rd from Eastern Pde
45110	Vehicles must use South Rd service road to access Regency Park
45119	Road Train speed limit of 40kph applies in all 50 or 60kph limit zones within Jamestown
45120	Redhill Food and Gas Stop. Southbound access only, left turn in and out.
45111	No left turn from Caribou Dr onto Mirage Rd
45112	Right turn onto Footner Rd from the Augusta Highway only
45113	No right turns into and out of Burton Rd Left Turn Only
45114	Access to Wingfield Waste Management Centre permitted
45115	Kangaroo Island Freight Service, Eastern Pde. Left in only via the centre entrance and right turn out only via the eastern most gate.
45123	No Entry. Right turn onto Bedford St only
45086	Georges Corner Mobil Service Station. Southbound access only, left turn in and out
45065	Access for North bound traffic only. Left turn in, Left turn out. No right turns allowed
45066	Access to the Regency Park Zone shall be left into Wirriga St or Camira St, and exit via Gallipoli Dr. Vehicles may enter or exit depots within the Regency Park Zone including the DTEI inspection station.
45067	NTFS Depot - via Eastern Pde, left turn to Francis St, right turn into depot.
45062	No left turn onto Caroon Rd Allowed
45058	Right turn onto Service Rd and right turn onto Old Grand Junction Rd allowed only
45059	40kph speed limit along Olive Grove Rd
45060	No right turn from Kimba-Whyalla Rd onto Lincoln Highway and no left turn from Lincoln Highway onto Kimba-Whyalla Rd allowed
44742	BP Bungama Service Station. Southbound access only, left turn in and out.
46973	No access on Old Sturt Hwy / Worman St, Berri between Crawford Tce and Shiell Rd
46974	No access on Old Sturt Hwy / Worman St, Berri between Crawford Tce and Shiell Rd
45412	Speed over Reedy Creek is restricted to 80kph
45409	No left turn from Port Wakefield Rd onto Martins Rd. No right turn from Martins Rd onto Port Wakefield Rd.
45410	Left turn only from Salisbury Hwy to Greenfields Dr
45413	Speed over Saunder Creek is restricted to 80kph
45415	No Right turn permitted in from or out to Port Wakefield Rd (Port Wakefield Highway)







Restrictions

Ref	Restriction Information
45421	Left turn only Sturt Hwy onto Airport Rd. Right turn only Airport Rd onto Sturt Hwy
45422	80 kph speed restriction on Burra Creek Bridge, PN1496
45423	No left turn from Abattoirs Rd onto Spencer Hwy, No right turn from Spencer Hwy onto Abattoirs Rd for Road Trains greater than 30m length
45425	Left turn only into and out of Lunn Rd.
45424	No right turn from Salisbury Highway onto Elder Smith Rd.
45417	No Right turn permitted in from or out to Port Wakefield Rd (Port Wakefield Highway)
46014	No right turn onto Port Wakefield Rd
46017	No access over rail crossing (RLX 946) for vehicles greater than 26m in length

RAVNet Map for 23m 42.5t Low Loader 24hr



Legend

-  23m 42.5t Low Loader 24hr
-  State Maintained Roads
-  Restriction
-  Star Restriction
-  LGA with Restrictions
-  DPTI Safe T Cam Site

N



25km

Scale- 1:2,311,162 (at A4 print size)



Government of South Australia

Department of Planning,
Transport and Infrastructure

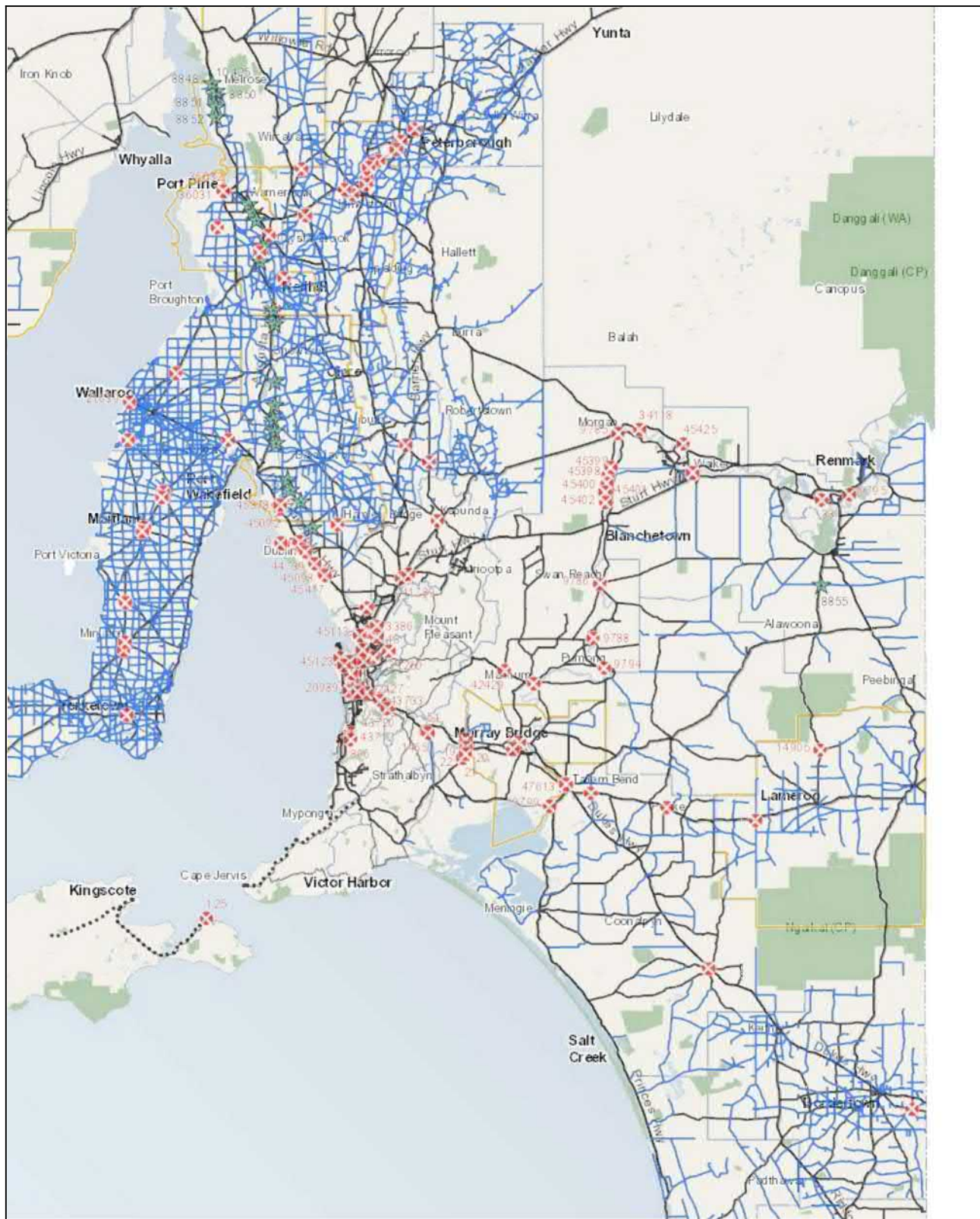
DISCLAIMER

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Restrictions

Ref	Restriction Information
54	Vehicles must obey all signage and proceed over the crossing (RLX59) with extreme caution and only if no trains are in sight.
43730	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43733	No travel on Mount Barker Rd exit if the vehicle exceeds 2.50m in width or 4.60m in height.
43712	No left turn from Panalatinga Rd onto Reynella By-Pass. No right turn from Reynella By-Pass onto Panalatinga Rd
43714	Maximum vehicle length along Glen Osmond Rd limited to 23m
43715	Maximum vehicle height along Bridge Rd limited to 4.7m
43716	Maximum vehicle height on Causeway Rd limited to 4.6m
43719	No right turn from Port Wakefield Rd onto Old Port Wakefield Rd allowed
43720	Very Long Steep Descent 7km. Trucks and buses must use low gear. Australian Road Rule 108 applies.
44094	Left turn only from Perry Rd into Adelaide Rd. Right turn only from Adelaide Rd onto Perry Rd. No Left turn Hancock Rd into Main St.
43391	No left turn from Spencer Highway onto Mines Rd
42	No access into Cormack Rd from Plymouth Rd
3	No right turn from Old Swanport Rd onto Adelaide Rd. No left turn from Adelaide Rd onto Old Swanport Rd
33	Left turn in and right turn out only
34	Right turn from Dublin Rd is Prohibited
46	Entry to and from Manchester St via Railway Tce only
45	Right turn only from Diagonal Rd, when travelling east from Port Wakefield Rd onto Goldsborough Rd
59	No right turn to Lagoon Rd. No Left turn to Mannum Rd
20992	Northbound travel only on Lum St
20990	Southbound travel only on Chegwiddden Ave
20991	All Westbound on Comley St must turn Right to Lum St. All Eastbound on Comley must turn Left to Lum St
20989	All Eastbound on Hamra Dr must turn left to Corbett Ct. No Right turn from Lum St.
44	When travelling west entry shall be via the Port Rd median access to Aroona Rd South. Exit shall be left turn to Port Rd only
44739	Access for Northbound traffic only. Left in, Southern Access. Left out, Northern Access. No right turn from either access
45388	Westbound access only permitted on Willochra St from Elder Rd to Mildred Tce for all RAV other than 19m network (HML).
45113	No right turns into and out of Burton Rd Left Turn Only
45114	Access to Wingfield Waste Management Centre permitted
45417	No Right turn permitted in from or out to Port Wakefield Rd (Port Wakefield Highway)
45415	No Right turn permitted in from or out to Port Wakefield Rd (Port Wakefield Highway)
46021	Maximum height limited to 4.9m on the South Eastern Fwy between Mount Barker interchange and the Cross Rd / Portrush Rd intersection
46022	Maximum height limited to 4.9m on the South Eastern Fwy between the Cross Rd / Portrush Rd intersection and the Mount Barker interchange
46018	Maximum height limited to 4.9m on the South Eastern Fwy between Mount Barker interchange and the Cross Rd / Portrush Rd intersection
46019	Maximum height limited to 4.9m under rail bridge
46020	No right turn to Roseworthy Rd allowed when travelling on Gomersal Rd then Sturt Hwy

RAVNet Map for Livestock (B Double GML)



Legend

-  Livestock (B Double GML)
-  State Maintained Roads
-  Restriction
-  Star Restriction
-  LGA with Restrictions
-  DPTI Safe T Cam Site



Government of South Australia
 Department of Planning,
 Transport and Infrastructure

N



25km

Scale- 1:2,311,162 (at A4 print size)

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Restrictions

Ref	Restriction Information
8850	Vehicles must obey all signage and proceed over the crossing (RLX598) with extreme caution and only if no trains are in sight.
8851	Vehicles must obey all signage and proceed over the crossing (RLX594) with extreme caution and only if no trains are in sight.
8852	Vehicles must obey all signage and proceed over the crossing (RLX590) with extreme caution and only if no trains are in sight.
8854	Vehicles must obey all signage and proceed over the crossing (RLX747) with extreme caution and only if no trains are in sight.
8855	Vehicles must obey all signage and proceed over the crossing (RLX452) with extreme caution and only if no trains are in sight.
9788	Travel not permitted on the ferry crossing the River Murray
9786	Travel not permitted on the ferry crossing the River Murray
9785	Travel not permitted on the ferry crossing the River Murray
7546	Access over this crossing (RLX473) is strictly prohibited
7548	Access over this crossing (RLX485) is strictly prohibited
6266	No right turn from Upper Yorke Rd onto Ardrossan Rd and no left turn from Ardrossan Rd onto Upper Yorke Rd allowed
6268	No left turn from Moonta Rd onto Robert St allowed
6265	No right turn from Upper Yorke Rd onto Arthurton Rd and no left turn from Arthurton Rd onto Upper Yorke Rd allowed
6267	No left turn from Centenary Ave onto Clinton Rd and no right turn from Clinton Rd onto Centenary Ave allowed
8513	Access over this crossing (RLX888) is strictly prohibited
9789	Travel not permitted on the ferry crossing the River Murray
9790	Travel not permitted on the ferry crossing the River Murray
9794	Travel not permitted on the ferry crossing the River Murray
9795	Travel not permitted on the ferry crossing the River Murray
10425	Vehicles must obey all signage and proceed over the crossing (RLX600) with extreme caution and only if no trains are in sight.
11386	Left turn only onto First St
11387	Right turn only onto Gladstone St
11388	Right turn only onto Main North Rd
15866	No left turn onto Two Wells Rd
15865	No left turn from Penaluna Dr onto Ian Oliver Dr
14905	General Freight - Maximum speed limit of 80kph for Moreland Rd
9471	Vehicles must obey all signage and proceed over the crossing (RLX776) with extreme caution and only if no trains are in sight.
9474	Vehicles must obey all signage and proceed over the crossing (RLX773) with extreme caution and only if no trains are in sight.
9477	Vehicles must obey all signage and proceed over the crossing (RLX770) with extreme caution and only if no trains are in sight.
9479	Vehicles must obey all signage and proceed over the crossing (RLX765) with extreme caution and only if no trains are in sight.
8841	Access over this crossing (RLX876) is strictly prohibited
8842	Access over this crossing (RLX874) is strictly prohibited
8843	Access over this crossing (RLX873) is strictly prohibited
8844	Access over this crossing (RLX870) is strictly prohibited
2427	No left turn from Greenhill Rd onto Glen Osmond Rd
2426	No left turn onto Old Princes Highway, No right turn from Old Princes Highway
5306	No left turn from Chamberlain St into Wingfield Rd or right turn from Wingfield Rd into Chamberlain St
8845	Access over this crossing (RLX868) is strictly prohibited
8846	Access over this crossing (RLX859) is strictly prohibited
8847	Access over this crossing (RLX856) is strictly prohibited
8848	Vehicles must obey all signage and proceed over the crossing (RLX606) with extreme caution and only if no trains are in sight.
35709	Access across Ridgway Rd rail crossing at Wolseley not permitted for combinations longer than 25m length
36030	40kph speed limit along Wandearah Rd
36029	40kph speed limit along Esmond Rd
36031	40kph speed limit along Grey Tce

Restrictions

Ref	Restriction Information
36032	40kph speed limit along Sampson St
37631	Access over this crossing (RLX825) by permit only, issued by Australian Rail Track Corporation (ARTC)
37636	No right turn from Hydon Rd onto Collinsfield Rd. No left turn from Collinsfield Rd onto Hydon Rd
34110	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
34111	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
34113	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
33800	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
34118	Travel not permitted on the ferry crossing the River Murray
21636	Right turn only from Bedford St onto Gray Tce
21637	South bound travel only from Bedford St
21638	Left turn only from site into Bedford St
21639	No left turn from Chatfield Tce into Abraham Rydberg Dr. No right turn from Abraham Rydberg Dr into Chatfield Tce
40510	No left turn out from Saddleworth Rd onto Main Rd 45 at Marrabel
42429	No Left turn from Randell Rd onto Milendella Rd. No Right turn from Milendella Rd onto Randell Rd
41149	Pine Creek Bridge has a revised Gross Vehicle Mass, including load, of 30 tonnes access by vehicles with a greater mass is not permitted.
41789	No turns onto or out of Argent Rd
42430	10t mass limit on Butlers Bridge
41471	No left turn from Goyder Hwy to Hughes Gap Rd.
43726	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43727	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43729	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43730	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43731	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
43712	No left turn from Panalatinga Rd onto Reynella By-Pass. No right turn from Reynella By-Pass onto Panalatinga Rd
43733	No travel on Mount Barker Rd exit if the vehicle exceeds 2.50m in width or 4.60m in height.
43719	No right turn from Port Wakefield Rd onto Old Port Wakefield Rd allowed
43720	Very Long Steep Descent 7km. Trucks and buses must use low gear. Australian Road Rule 108 applies.
44094	Left turn only from Perry Rd into Adelaide Rd. Right turn only from Adelaide Rd onto Perry Rd. No Left turn Hancock Rd into Main St.
43391	No left turn from Spencer Highway onto Mines Rd
43728	Restricted Access Vehicles are limited to a maximum speed of 80kph, unless a lower speed is posted for the road.
37629	Access over this crossing (RLX69) by permit only, issued by Australian Rail Track Corporation (ARTC)
37632	Access over this crossing (RLX828) by permit only, issued by Australian Rail Track Corporation (ARTC)
37634	No turn movements permitted from Klaus Rd onto Lithgows Rd. No turn movements permitted from Lithgows Rd onto Klaus Rd
40509	No left turn from Belvidere Rd onto Burra Rd (Barrier Hwy) at Saddleworth.
42	No access into Cormack Rd from Plymouth Rd
59	No right turn to Lagoon Rd. No Left turn to Mannum Rd
33	Left turn in and right turn out only
21	Left turn only onto Jaensch Rd.
34	Right turn from Dublin Rd is Prohibited
1462	Left turn in, right turn out of Railway Tce only
125	Travel in westerly direction from Ferry Terminal Only
24	Right turn only from Hogarth to Trimmer
18	No right or left turn onto Oldham Rd. Left turn onto Philip Highway only
44	When travelling west entry shall be via the Port Rd median access to Aroona Rd South. Exit shall be left turn to Port Rd only
807	No right turn exit from BRL Hardy, Left turn only onto Panalatinga Rd

Restrictions

Ref	Restriction Information
1463	Right turn in, left turn out of High St only
54	Vehicles must obey all signage and proceed over the crossing (RLX59) with extreme caution and only if no trains are in sight.
22	Right turn only onto Callington Rd
19	Left turn onto North Bremer Rd only.
7	Hours of operation; 6am-10pm, 7 days
9149	Travel not permitted on the ferry crossing the River Murray
9802	Vehicles must obey all signage and proceed over the crossing (RLX757) with extreme caution and only if no trains are in sight.
9799	Travel not permitted on the ferry crossing the River Murray
9803	Vehicles must obey all signage and proceed over the crossing (RLX756) with extreme caution and only if no trains are in sight.
8839	Access over this crossing (RLX501) is strictly prohibited
8840	Vehicles must obey all signage and proceed over the crossing (RLX796) with extreme caution and only if no trains are in sight.
9465	Vehicles must obey all signage and proceed over the crossing (RLX795) with extreme caution and only if no trains are in sight.
9469	Vehicles must obey all signage and proceed over the crossing (RLX784) with extreme caution and only if no trains are in sight.
18118	No right turn from Kaurna Ave onto Edinburgh Rd allowed
18119	No right turn from Spencer Hwy onto Pt Broughton Rd
18120	Right turn onto Grove Av, Right turn out onto Richmond Rd only
30951	Left turn onto and out of Francis Rd west of Hanson Rd is prohibited
28669	Right turn only onto Phillips St. Left turns prohibited
28670	Left turn only from Smith St onto Port Rd. Left turn onto Smith St prohibited
18109	Right turn in, left turn out of Jervois St only
20990	Southbound travel only on Chegwiddden Ave
20991	All Westbound on Comley St must turn Right to Lum St. All Eastbound on Comley must turn Left to Lum St
20992	Northbound travel only on Lum St
27069	No left turn from Fidge Road onto Traeger Rd
29309	Right turn from Sir Donald Bradman Dr onto James Congdon Dr prohibited
20989	All Eastbound on Hamra Dr must turn left to Corbett Ct. No Right turn from Lum St.
31250	No left turn from Golden Grove Rd in to The Grove Way
31254	Travel not permitted on the ferry crossing the River Murray
20	70kph speed limited on unsealed section of North Bremer Rd
1785	Travel in Southerly direction only along Walsh St
12	Right turn onto Research Rd and right turn out of Research Rd only. All left turns prohibited.
46	Entry to and from Manchester St via Railway Tce only
15	No left turn from Athol St onto Hanson Rd
806	No Access to Pimpala Rd
26	No northbound left turn from Days Rd onto Regency Rd. No eastbound right turn from Regency Rd onto Days Rd
23	Left turn onto Taylors Rd Right turn onto Angle Vale Rd only
6	Exhaust brakes not to be used in the township of Parham
1465	Right turn in, right turn out only
3	No right turn from Old Swanport Rd onto Adelaide Rd. No left turn from Adelaide Rd onto Old Swanport Rd
5	20kph speed limit on The Esplanade
45	Right turn only from Diagonal Rd, when travelling east from Port Wakefield Rd onto Goldsborough Rd
3386	Right turn onto Bellchambers Rd only
16	No right turn from Hanson Rd onto Torrens Rd
8515	Access over this crossing (RLX884) is strictly prohibited
9804	Vehicles must obey all signage and proceed over the crossing (RLX753) with extreme caution and only if no trains are in sight.
9808	Vehicles must obey all signage and proceed over the crossing (RLX827) with extreme caution and only if no trains are in sight.
9809	Vehicles must obey all signage and proceed over the crossing (RLX828) with extreme caution and only if no trains are in sight.
9811	Vehicles must obey all signage and proceed over the crossing (RLX816) with extreme caution and only if no trains are in sight.

Restrictions

Ref	Restriction Information
9814	Vehicles must obey all signage and proceed over the crossing (RLX799) with extreme caution and only if no trains are in sight.
10106	Access over this crossing (RLX813) is strictly prohibited
44744	Right turn from Primes Rd onto Port Wakefield Rd prohibited
44739	Access for Northbound traffic only. Left in, Southern Access. Left out, Northern Access. No right turn from either access
45098	Left turn in and Right turn out access from Port Wakefield Rd only
45092	Right turn onto crossover point heading South. Right turn out of crossover point heading North only permitted
45378	Primes Rd to Waste Management Facility Only
45374	Keep left on PREXY bridge where possible
45399	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45400	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45401	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45402	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45409	No left turn from Port Wakefield Rd onto Martins Rd. No right turn from Martins Rd onto Port Wakefield Rd.
45388	Westbound access only permitted on Willochra St from Elder Rd to Mildred Tce for all RAV other than 19m network (HML).
45398	Reduce speed to 60km/hr when crossing signposted cattle grids on the unsealed section of Murraylands Rd, between Morgan and Blanchetown.
45113	No right turns into and out of Burton Rd Left Turn Only
45114	Access to Wingfield Waste Management Centre permitted
45123	No Entry. Right turn onto Bedford St only
45059	40kph speed limit along Olive Grove Rd
46978	Left turn only onto Princes Highway; no access to Mallee Street
46979	Left turn only onto Princes Highway; no access to Service Road
47613	Left Turn only onto Service Road; no exit to Princes Highway
45415	No Right turn permitted in from or out to Port Wakefield Rd (Port Wakefield Highway)
45417	No Right turn permitted in from or out to Port Wakefield Rd (Port Wakefield Highway)
45425	Left turn only into and out of Lunn Rd.
46020	No right turn to Roseworthy Rd allowed when travelling on Gomersal Rd then Sturt Hwy

Local Government Restrictions

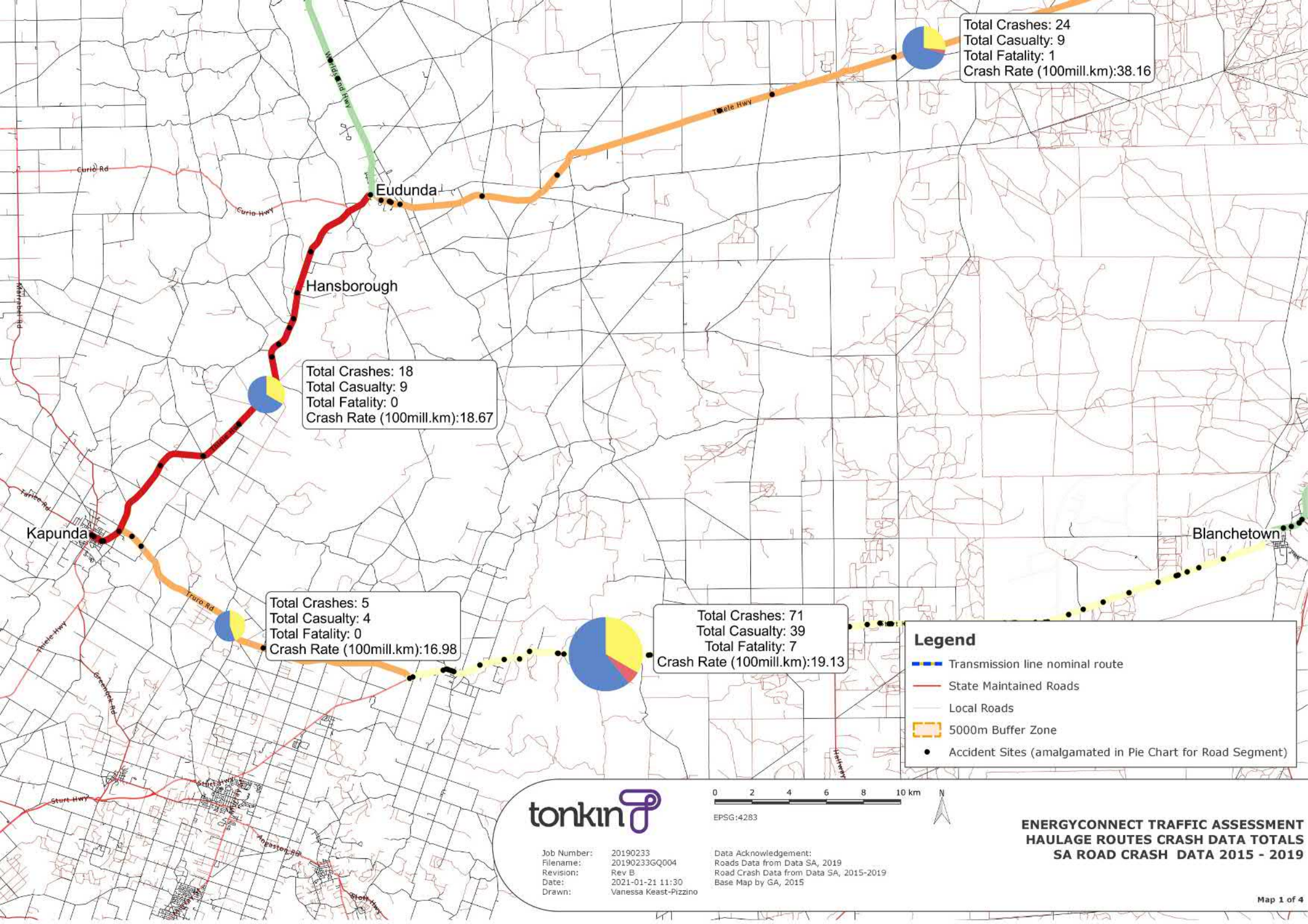
LGA	Restriction Information
THE DC OF FRANKLIN HARBOUR (574)	<ol style="list-style-type: none"> 1. Restricted speed loaded or unloaded to 80kph on sealed Council roads outside town limits. 2. Restricted speed loaded or unloaded to 70kph on unsealed Council roads outside town limits. 3. Restricted speed loaded or unloaded to 40kph within town limits. 4. RAV operators are required to inspect all unsealed routes which have received greater than 15mm of rain in the preceding 24 hours to ensure that the pavement will not be damaged by the RAV operation
THE DC OF MOUNT REMARKABLE (694)	<ol style="list-style-type: none"> 1. Maximum permitted speed of 60km/hr on all unsealed roads. 2. Maximum permitted speed of 25km/hr if the unsealed road is signposted for floodways or narrowing. 3. On unsealed roads, travel is suspended during periods of prolonged rain and up to 1 day for every 5mm of rain within the 24 hours period after the rainfall event. 4. Access maybe further restricted or deferred in the event of a significant rainfall event. Contact must be made with the relevant traffic management information sources on such an occasion.
NORTHERN AREAS COUNCIL (685)	<ol style="list-style-type: none"> 1. All council maintained commodity routes have a 60kph speed restriction
SOUTHERN MALLEE DC (873)	<ol style="list-style-type: none"> 1. All unsealed council maintained commodity routes have a 80kph speed restriction
PORT PIRIE REGIONAL COUNCIL (681)	<ol style="list-style-type: none"> 1. All unsealed council maintained commodity routes have a 80kph speed restriction
THE RURAL CITY OF MURRAY	<ol style="list-style-type: none"> 1. Restricted speed loaded or unloaded to 60kph on council roads.

Local Government Restrictions

LGA	Restriction Information
BRIDGE (876)	
WAKEFIELD REGIONAL COUNCIL (772)	1. All unsealed council maintained commodity routes have a 70kph speed restriction



Appendix D – Crash Data Maps



Total Crashes: 24
 Total Casualty: 9
 Total Fatality: 1
 Crash Rate (100mill.km):38.16

Total Crashes: 18
 Total Casualty: 9
 Total Fatality: 0
 Crash Rate (100mill.km):18.67

Total Crashes: 5
 Total Casualty: 4
 Total Fatality: 0
 Crash Rate (100mill.km):16.98

Total Crashes: 71
 Total Casualty: 39
 Total Fatality: 7
 Crash Rate (100mill.km):19.13

Legend

- Transmission line nominal route
- State Maintained Roads
- Local Roads
- 5000m Buffer Zone
- Accident Sites (amalgamated in Pie Chart for Road Segment)

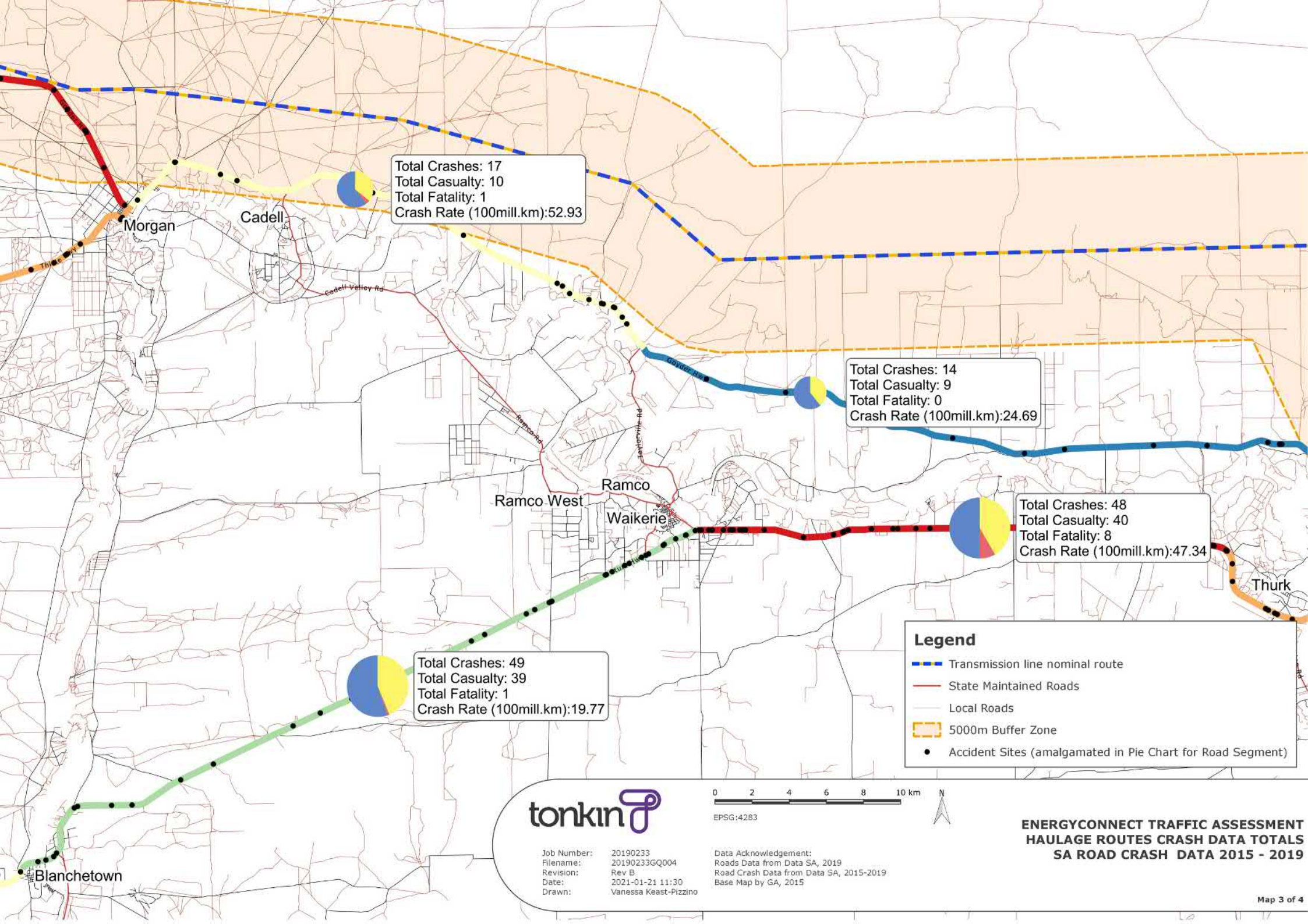
tonkin

Job Number: 20190233
 Filename: 20190233GQ004
 Revision: Rev B
 Date: 2021-01-21 11:30
 Drawn: Vanessa Keast-Pizzino

Data Acknowledgement:
 Roads Data from Data SA, 2019
 Road Crash Data from Data SA, 2015-2019
 Base Map by GA, 2015

0 2 4 6 8 10 km
 EPSG:4283

**ENERGYCONNECT TRAFFIC ASSESSMENT
 HAULAGE ROUTES CRASH DATA TOTALS
 SA ROAD CRASH DATA 2015 - 2019**



Total Crashes: 17
 Total Casualty: 10
 Total Fatality: 1
 Crash Rate (100mill.km):52.93

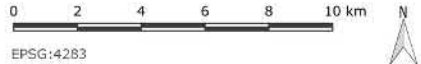
Total Crashes: 14
 Total Casualty: 9
 Total Fatality: 0
 Crash Rate (100mill.km):24.69

Total Crashes: 48
 Total Casualty: 40
 Total Fatality: 8
 Crash Rate (100mill.km):47.34

Total Crashes: 49
 Total Casualty: 39
 Total Fatality: 1
 Crash Rate (100mill.km):19.77

Legend

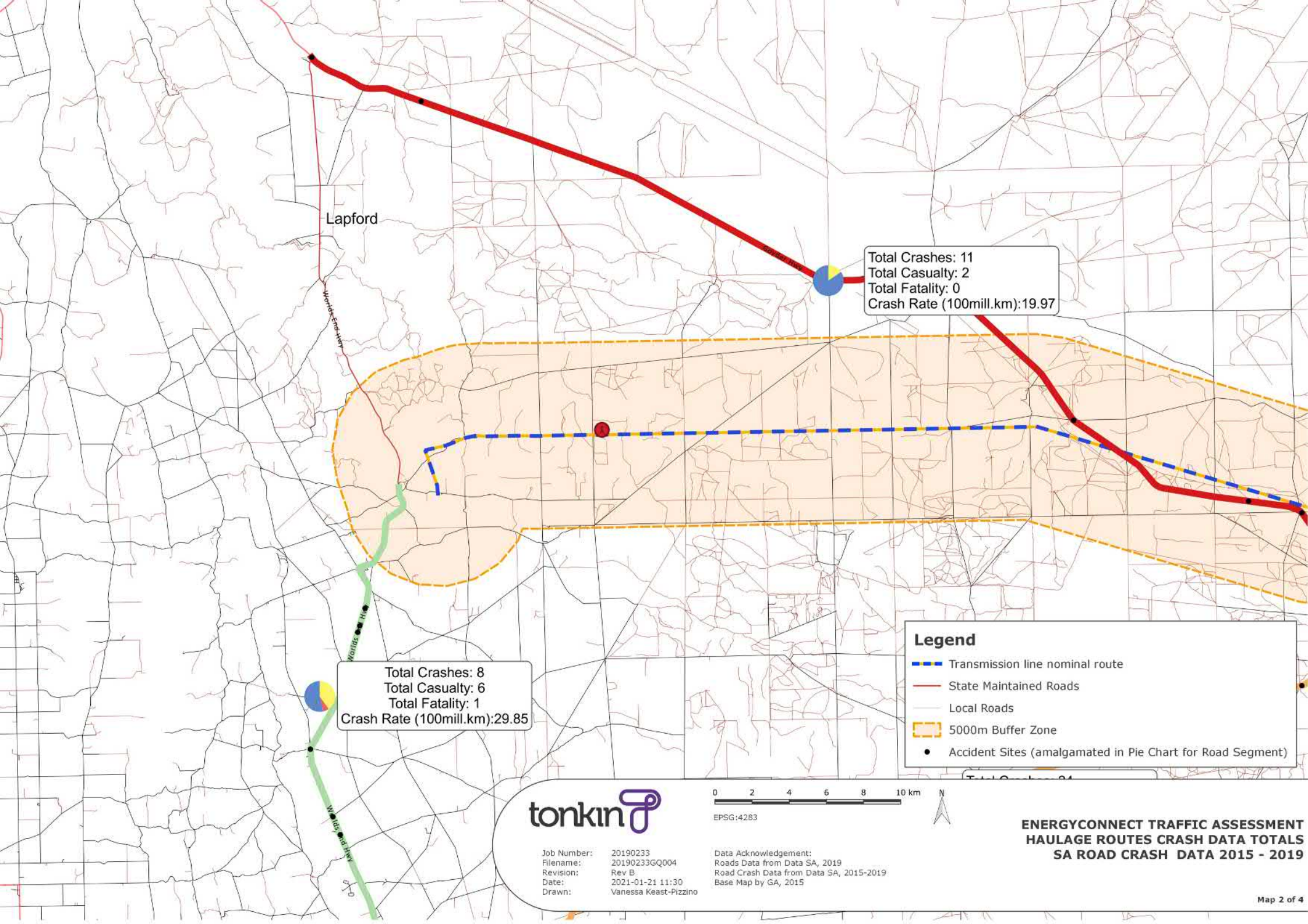
- Transmission line nominal route
- State Maintained Roads
- Local Roads
- 5000m Buffer Zone
- Accident Sites (amalgamated in Pie Chart for Road Segment)



Job Number: 20190233
 Filename: 20190233GQ004
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Data Acknowledgement:
 Roads Data from Data SA, 2019
 Road Crash Data from Data SA, 2015-2019
 Base Map by GA, 2015

**ENERGYCONNECT TRAFFIC ASSESSMENT
 HAULAGE ROUTES CRASH DATA TOTALS
 SA ROAD CRASH DATA 2015 - 2019**



Lapford

Worcestershire Parkway

Total Crashes: 8
 Total Casualty: 6
 Total Fatality: 1
 Crash Rate (100mill.km):29.85

Total Crashes: 11
 Total Casualty: 2
 Total Fatality: 0
 Crash Rate (100mill.km):19.97

Legend

- — — Transmission line nominal route
- — — State Maintained Roads
- — — Local Roads
- 5000m Buffer Zone
- Accident Sites (amalgamated in Pie Chart for Road Segment)

tonkin

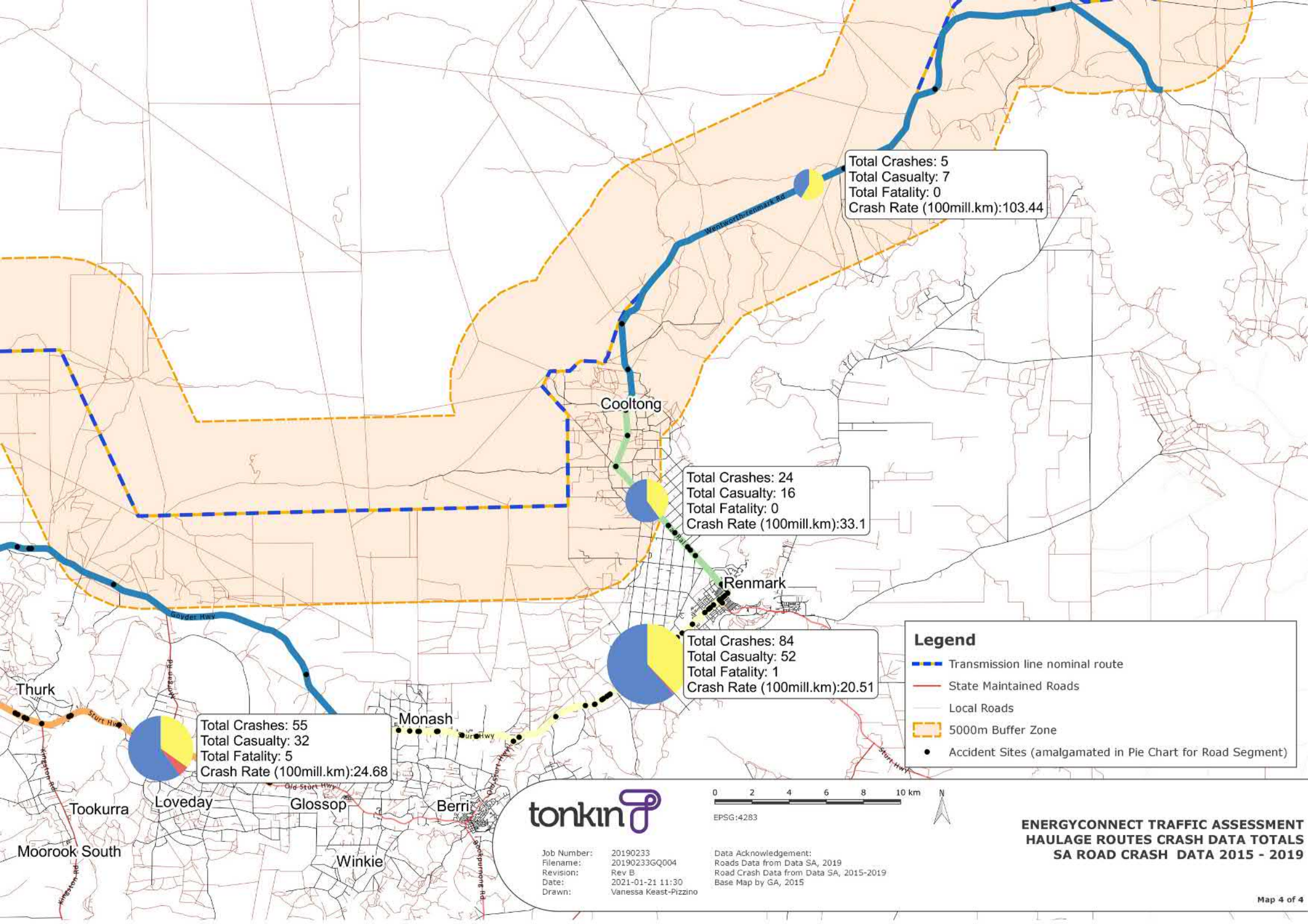
0 2 4 6 8 10 km N

EPSG:4283

Job Number: 20190233
 Filename: 20190233GQ004
 Revision: Rev B
 Date: 2021-01-21 11:30
 Drawn: Vanessa Keast-Pizzino

Data Acknowledgement:
 Roads Data from Data SA, 2019
 Road Crash Data from Data SA, 2015-2019
 Base Map by GA, 2015

**ENERGYCONNECT TRAFFIC ASSESSMENT
 HAULAGE ROUTES CRASH DATA TOTALS
 SA ROAD CRASH DATA 2015 - 2019**



Total Crashes: 5
 Total Casualty: 7
 Total Fatality: 0
 Crash Rate (100mill.km):103.44

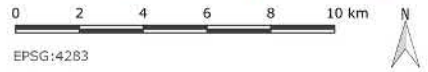
Total Crashes: 24
 Total Casualty: 16
 Total Fatality: 0
 Crash Rate (100mill.km):33.1

Total Crashes: 84
 Total Casualty: 52
 Total Fatality: 1
 Crash Rate (100mill.km):20.51

Total Crashes: 55
 Total Casualty: 32
 Total Fatality: 5
 Crash Rate (100mill.km):24.68

Legend

- Transmission line nominal route
- State Maintained Roads
- Local Roads
- 5000m Buffer Zone
- Accident Sites (amalgamated in Pie Chart for Road Segment)



EPSG:4283

tonkin

Job Number: 20190233
 Filename: 20190233GQ004
 Revision: Rev B
 Date: 2021-01-21 11:30
 Drawn: Vanessa Keast-Pizzino

Data Acknowledgement:
 Roads Data from Data SA, 2019
 Road Crash Data from Data SA, 2015-2019
 Base Map by GA, 2015

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 SA ROAD CRASH DATA 2015 - 2019**