

TRANSPORT IMPACT ASSESSMENT DENILIQUIN BATTERY ENERGY STORAGE SYSTEM

Prepared for

BESS ARCTIC PTY LTD C/- GRANSOLAR DEVELOPMENT AUSTRALIA

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URBIS

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1. INTRODUCTION

1.1. OVERVIEW

Urbis has been engaged by BESS Arctic Pty Ltd C/- Gransolar Development Australia to prepare a Transport Impact Assessment (TIA) for the Battery Energy Storage System (BESS) development located at 21356 Riverina Highway in Deniliquin, New South Wales (NSW). This TIA has been prepared to support the Development Application (DA) for the development of the BESS.

Urbis has assessed the proposed development, provided input to the design, and confirmed that the proposal will achieve satisfactory traffic and transport outcomes and is designed in accordance with the relevant Australian Standards and Edward River Council (Council) guidelines.

1.2. PURPOSE OF THIS REPORT

The report sets out a transport assessment aimed at addressing the transport implications associated with the proposed BESS. It includes an assessment of:

- The suitability of the proposed transport network.
- The suitability of proposed access arrangements.
- The requirements for the construction of the development.
- The transport impacts of the proposed BESS on the surrounding transport network.

1.3. REPORT STRUCTURE

This report outlines an assessment of the potential transport impacts of the proposed development, including:

- Existing transport and traffic networks serving the site.
- Outline of the proposed development.
- Construction Traffic Management Plan and construction impacts.
- The transport and traffic implications of the proposed development during operation.
- Conclusion.

1.4. RESPONSE TO AGENCY COMMENTS

Table 1 provides an indication of how the NSW Government Planning Secretary's Environmental Assessment Requirements (SEARs) have been addressed in this report (dated 29/09/2023).

Table 2 provides an indication of how Transport for NSW (TfNSW) requirements have been addressed in this report. While some of the details requested may not be available at this stage of the project, the intent of the requested item has been discussed to the extent possible.

Table 3 outlines comments provided by TfNSW during a pre-lodgement meeting on 24 July 2024 and how these comments have been addressed.

Table 4 outlines a Request for Further Information provided by TfNSW, letter dated 25 July 2025, and details the responses to these comments.

Table 5 details how the NSW Department of Planning, Housing and Infrastructure (DPHI) Request for Further Information has been addressed in this report.

Table 6 details the responses from the TfNSW response to the Request for Further Information, provided in a letter dated 13 April 2026.

Table 1 Planning Secretary's Environmental Assessment requirements

Planning Secretary's Environmental Assessment Requirements	**Reference**
An assessment of the peak and average traffic generation, including over-dimensional vehicles and construction worker transportation;	Section 2, Section 4, Section 5
An assessment of the likely transport impacts to the site access route(s), site access point(s), any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance;	Section 2.4.6, Section 4, Section 5
A cumulative impact assessment of traffic from nearby developments; and	Section 4.6.5, Section 5.3
Provide details of measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades (including resulting from heavy vehicle and over mass / over dimensional traffic haulage routes), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road authority;	Section 4, Appendix C, Appendix D, Appendix F, Appendix G

Source: Department of Planning, Housing and Infrastructure

Table 2 TfNSW requirements

TfNSW Requirements	**Reference**
Identify the timeframe for the schedule of works (commencement year and completion year) overlapping timeframe of components during construction (to capture worst case scenario) and identify the construction hours for the project.	Section 4.1
Detailed plans identifying the proposed location of any: Project-related infrastructure within and outside of the project boundary. Transmission line infrastructure, or any other project-related structures, within a road reserve. Include demarcation of local and classified road reserves. Identify the key access roads with the classified road network required for the project (including any access required from classified road network for components being constructed outside of the project area) and justification of additional access required to a classified road in accordance with section 2.119 of State Environmental Planning Policy (Transport and Infrastructure) 2021 The Scoping Report identifies that ancillary infrastructure and temporary facilities are to be provided on site including (but not limited to) laydown areas. The TIA should identify the source for input materials and quantify the traffic generation associated with the haulage of the source materials.	Section 2.4, Section 3.1, Section 3.2 Section 3.6, Section 4 Appendix C, Appendix D, Appendix F
Cumulative impacts: An assessment should be undertaken as a part of the EIS and TIA to identify the projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following:	Section 4.6.5, Section 5.4

TfNSW Requirements	Reference
▪ The cumulative impacts from traffic generated from the construction workforces in terms of the origin-destination routes, access, AM/PM peaks where there is overlap with other projects. ▪ The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects. ▪ Cumulative impacts and consideration in relation to the timing of movements of Oversized Over mass vehicles (OSOM) where other projects will be utilising the same routes as proposed for this development.	
Heavy vehicle and OSOM routes: Identify the return routes for OSOMs. National Heavy Vehicle Regulator (NHVR) approved routes identified on the Restricted Access Maps (RAV MAP) are to be utilised for the heavy vehicle routes for the proposed development. Roads that are approved for OSOM routes can be identified in the NSW Oversize Overmass Load Carrying Vehicles Network Map. Further include details on the number of OSOM movements, the intended time for OSOM movements to occur, and GPS coordinates along the proposed routes for pinch points, traffic management measures and pull-over bays / rest areas along the OSOM routes. Identifying road and rail projects occurring along the OSOM route within the anticipated schedule for the movement of the OSOM components. Inclusive of any impacts (e.g civil works or obstructions) that could impede the movement of the OSOM components due to the concurrent road and rail projects occurring along the nominated OSOM route(s).	Appendix D
Project schedule: Hours and days of work, number of shifts and start and end times, Phases and stages of the project, including construction, operation and decommissioning.	Section 4.1, Section 5
Traffic volumes including: ▪ Existing background traffic (prepared based on traffic count surveys and inclusive of growth for the year of peak of construction), ▪ Project-related traffic for each phase or stage of the project, ▪ Projected cumulative traffic at commencement of operation, and a 10-year horizon post-commencement.	Section 2.4.4, Section 4.5, Section 4.6, Section 4.7, Section 4.8, Section 5.2, Section 5.3
Traffic characteristics including: ▪ Number and ratio of heavy vehicles to light vehicles, ▪ Peak times for existing traffic, ▪ Peak times for project-related traffic including commuter periods, Note: If there is a reliance on shuttle buses/carpooling proposed to mitigate peak traffic volumes for the AM/PM peak of construction then the TIA is required to	Section 2.4.4, Section 4.5, Section 4.6, Section 4.7, Section 4.8, Section 4.9, Section 5.2, Section 5.3

TfNSW Requirements	Reference
detail how the shuttle busing/carpooling commitment will be achieved through strategies, protocols, and the like. If carpooling and shuttle bus strategies cannot be supported by detailed methods/procedures that are achievable, enforceable, and practicable, then the shuttle bus/carpooling methods would not be viable and would require the TIA to be amended to assess the worst-case scenario during peak of construction. Proposed hours for transportation and haulage, Specify the design vehicles for the project (identifying the relevant types of heavy / OSOM / specialist vehicles and shuttle buses).	
Provide a breakdown of the calculations and assumptions for light vehicles, heavy vehicles requiring escort, heavy vehicles and heavy vehicles requiring NHVR permit and that are exempt from the escort requirements. All of these vehicle types should be factored into the traffic generation during AM/PM peaks for the project. Interactions between existing, project-related traffic, cumulative background traffic inclusive of other major projects that have coinciding timeframes and inclusion of the growth rate for background traffic for the peak construction period.	Section 4, Appendix D
Traffic count surveys should be undertaken for a minimum of one day (preference seven days for improved accuracy of data). The traffic count survey is required to be collected outside of public holidays, events and school holidays. The traffic counts should be undertaken at the key intersections with the state classified road network in accordance with Part 3 of Austroads Guide to Road Design. The data obtained from the traffic count survey should be provided as an appendix to the TIA for the project and used to inform the background traffic counts within the base case (existing background) scenario. The AM/PM peaks are required to be measured based on a single trip from origin to destination as a one way vehicular movement from one point to another excluding the return journey.	Section 2.4.4, Section 4, Appendix A
Capacity analysis using SIDRA or other relevant application, to identify an acceptable Level of Service (LOS) at intersections with the classified (State) road, and where relevant, analysis of any other intersections along the proposed transport route/s.	Section 2.4.6, Section 4.6.3
The origins, destinations and routes for: ▪ Commuter (employee and contractor) light vehicles, pool vehicles and shuttle buses, ▪ Heavy (haulage) vehicles, heavy vehicles requiring NHVR permit and exempt from escort vehicle requirements and heavy vehicles requiring escort (OSOM).	Section 4.2, Section 4.6, Appendix D
Road safety assessment of key haulage route/s. Where road safety concerns are identified at a specific location along the proposed haulage routes, TfNSW suggests that the TIA be supported by a	Appendix D

TfNSW Requirements	Reference
targeted Road Safety Audit undertaken by suitably qualified persons in accordance with the Austroads Guidelines.	
Identify the necessary road network infrastructure upgrades that are required to cater for and mitigate the impact of project related traffic on both the local and classified road network for the development (for instance, road widening and/or intersection treatments). In this regard, preliminary concept drawings should be submitted with the SSD application for any identified road infrastructure upgrades. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council.	Section 3.2, Section 4.6, Section 4.7
Proposed road facilities, access and intersection treatments are to be identified and be in accordance with Austroads Guide to Road Design including provision of Safe Intersection Sight Distance (SISD).	Section 4.6.3
Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather, icy road conditions).	Section 4.9.7
The layout of the internal road network, parking facilities and infrastructure.	Section 3.1
Impact on rail corridors and level crossings detailing any proposed interface treatments. TfNSW notes that if transport of plant and equipment will originate from Victoria, the likely route would be utilising level crossings over the railway that is operated by V-Line. In this instance, V-line would need to review the route and provide its concurrence.	Appendix D
Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction.	Section 4.9.10
Consideration of any travelling stock routes.	Section 4.9.12
Consideration of any local events.	Section 4.9.11
Identification and assessment of potential environmental impacts of the project, such as blasting, lighting, visual, noise, dust and drainage on the function and integrity of all affected public roads.	Section 4.9.13
Controls for transport and use of any dangerous goods in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development, the Australian Dangerous Goods Code and AS4452 Storage and Handling of Toxic Substances.	Section 4.9.15
A draft Traffic Management Plan (TMP) that could be implemented following approval of the EIS, in consultation with relevant Councils and TfNSW.	Section 4
Propose a Driver Code of Conduct for haulage operations which could include, but not be limited to: Safety initiatives for haulage through residential areas and/or school zones. An induction process for vehicle operators and regular toolbox meetings.	Appendix E

TfNSW Requirements	Reference
A public complaint resolution and disciplinary procedure.	

Table 3 TfNSW comments

TfNSW Comments	Reference
The route assessment is required for high risk OSOM (as defined on TfNSW website) required to deliver components to the project. The concept level route analysis must include: ▪ The port or point of origin and must be for the entire route to the site access or intersections required to facilitate the high risk OSOM movements required for the project. ▪ The TIA is required to include details of all high risk OSOM loads and vehicle configurations for the project. ▪ The location of pull-over bays / rest areas along the high risk OSOM routes (including GPS coordinates) and demonstrate through swept paths that the high risk OSOMs can be physically accommodate all high risk OSOMs for the project (in terms of size, width and accessibility).	Appendix D
Expanding on the points above, the concept route assessment is required to include: Details of the road geometry and alignment along the identified transport route/s, including existing formations, crossings, bridges, intersection treatments and any identified hazards, including: ▪ Bridge Assessments for any at risk bridges on the classified road network due to dimensions and weight of OSOM vehicles. ▪ Swept path analysis demonstrating the largest design vehicle can enter and leave the development, and simultaneously pass through intersections along the proposed transport route/s. ▪ The design vehicle templates used in the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN). ▪ Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.	Appendix D
Identify and provide the following measurements parameters of OSOM components / materials to be moved: Identify types and numbers of high risk OSOM vehicles proposed to be used for the project. ▪ Overall combination type, configuration, load and vehicle configuration: ▪ Wheelbase dimensions. ▪ length, width, height and mass gcm, tare, weight to axle and payload) for components and nominated vehicles. ▪ Maximum trailer articulation angle(s).	Appendix D

TfNSW Comments	Reference
▪ Minimum overhang heights above the road surface. ▪ Vehicle configurations. ▪ Traffic mitigation measures or road works, modifications, or road upgrades to facilitate the movement of the high risk OSOM(s) associated with the project. ▪ Potential high level mitigation measures or commitments to mitigate known traffic, safety and impacts to road users along the high risk OSOM route (i.e school bus routes, mining shift changes, TSRs, harvest periods and events).	
Identify and assess implications of any road and rail projects that may be under construction during the indicative schedule for the OSOM movements. Note: NHVR permits do not cover road works or upgrades and environmental approvals required along any proposed OSOM route. Any road works or upgrades works required along the OSOM route must be included within the scope of works in the SSD to ensure the development is constructable. Note: Given the high number of renewable energy and other large-scale projects requiring haulage of OSOM components on the road network, restrictions and limitations on OSOM movements may be imposed. In this regard, it is recommended that you engage earlier with TfNSW's Development Services Renewables team to discuss the route assessment requirements. Identify the necessary road upgrades and scope to achieve compliance with Austroads and TfNSW requirements to mitigate the traffic, safety, efficiency and impacts to TfNSW assets on the state classified road network associated with the project. Any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council. Works must be appropriately designed in accordance with *Austroads Guide to Road Design.*	Section 4.9, Appendix D
Strategic concept designs will need to be accompanied by swept paths for the largest vehicle required to access the access point or intersection. The swept paths must demonstrate that the largest vehicle can turn concurrently in all turn directions without crossing into the incorrect lane, tracking off the proposed/existing pavement and within the existing intersection treatments (where applicable). Swept paths will be required for the high risk OSOM to demonstrate that the high risk OSOM can be delivered within the existing or proposed pavement and if further pavement widening is required to accommodate these movements.	Section 3.2, Section 4.6, Appendix F
The strategic concept designs must identify any acquisition required to facilitate the scope of the road upgrades and road works. The Developer will be responsible for the dedication and acquisition of land if required to accommodate the road infrastructure including, but not limited to, footways, structures, stormwater drainage, batters, maintenance access and utilities, to the satisfaction of TfNSW. *Note: The design needs to comply with TfNSW Strategic design requirements for DAs, TfNSW technical directions, supplements, corridor strategies and Austroads and any other applicable TfNSW policies/strategies.*	Section 3.2, Section 4.6, Appendix F

Table 4 Response to TfNSW Requests for Further Information (as outlined in the TFNSW letter dated 25 July 2025)

RFI Item No.	RFI Item	Section Addressed
1	**The application proposes main project access directly from the Riverina Highway. The following further detail is required for turn treatment assessments:**	
1a.	Turn warrants must consider the worst-case scenario, considering the peak of project traffic occurring at the same time as the road network peak (inclusive of cumulative project volumes) for both the AM and PM peaks. The provided warrants in Section 4.7.3 of the TIA do not consider the worst-case scenario of both AM and PM peaks.	**Section 4.6.5.1**
1b.	Section 4.7.3 states that there are no anticipated right turn movements during construction; however, the potential for right turns still exists as no mitigation measures have been advised or commitments to the prohibition of the right turn as part of the TIA assessment. The revised TIA aims to provide a commitment and enforceable traffic mitigation measures and conditions of consent that would be implemented to prohibit the right turn traffic movements into the access from Riverina Highway or review, within a revised turn warrant assessment, the required right turn movements and intersection treatments that would be needed to facilitate the right turn movement.	**Section 3.2, Section 4.9.1 and Appendix F - Strategic Concept Design**
1c.	Revised strategic designs will need to be provided considering the above. See advisory note.	**Appendix F - Strategic Concept Design**
1d.	Swept paths are required to be provided for the largest heavy vehicle and high-risk OSOM configuration (corresponding to the design and check vehicle) required to use the intersection. It must also demonstrate that the gazetted road trains for the Gwydir can safely pass through the intersection in the designated lanes. This must be prepared in accordance with Austroads Design Vehicles and Turning Path Templates. It appears that only swept paths for the OSOM are provided.	**Appendix F – Strategic Concept Design** *Note, swept paths completed for gazetted road trains on Riverina Highway based on the NSW Road Train Authorisation Notice.* *The Gwydir Highway was not considered given its location approximately 700km north of the site.*

RFI Item No.	RFI Item	Section Addressed
2	**A complete assessment of BESS pre-construction minor works is required which includes:**	
2a.	Assess traffic volumes and identify the types of vehicles that will be used during this period, including the largest design vehicle.	**Section 4.5**
2b.	Perform a swept path analysis for the largest heavy vehicle at the existing intersection, ensuring it can navigate within the current pavement. If the design vehicle cannot turn easily, implement necessary mitigation or temporary works.	**Section 4.5**
2c.	Assess existing Safe Intersection Sight Distance (SISD) and propose measures to achieve compliance,	**Section 4.5**
2d.	Identify AM/PM peak hour traffic volumes and proposed volumes during this time. The traffic volumes during the AM/PM peak hours are to be comparable to the existing land use.	**Section 4.5**
2e.	Suggest measures to minimise project-related traffic during peak periods, like carpooling or shuttle buses.	**Section 4.5**
2f.	Outline methods to monitor and enforce traffic volumes during peak hours and other proposed mitigation measures.	**Section 4.5**
2g.	Outline methods to monitor and enforce traffic volumes during peak hours and other proposed mitigation measures.	**Section 4.5**
2h.	Describe how to inform the community and stakeholders about increased traffic.	**Section 4.5**
2i.	Specify the hours for pre-construction minor works.	**Section 4.5**
2j.	Assess traffic associated with any temporary workforce accommodations during the pre-construction minor works period.	**Section 4.5**
2k.	Identify any necessary temporary widening or works for the design vehicle. Note: No oversized overmass (OSOM) vehicles are permitted unless a swept path analysis shows compliance.	**Section 4.5**
3	**The strategic concept designs prepared for the project access intersection with the Riverina Highway require the following amendments:**	
3a.	If required based on the revised turn warrant assessments requested within point 1 the strategic concept designs must be revised to identify the updated intersection treatments for the proposed project intersection with the Riverina Highway.	**Appendix F - Strategic Concept Design**
3b.	The strategic concept design is to be revised to include 1 metre shoulders and 0.5m verge as a minimum outside of the Auxiliary Left Turn treatment	**Appendix F - Strategic Concept Design**

RFI Item No.	RFI Item	Section Addressed
3c.	Batter slopes are required to be 6:1 and provide a hazard-free zone on plans and need to be demonstrated on a typical cross section (note this does not require a survey to be able to provide this level of detail).	**Appendix F - Strategic Concept Design**
3d.	The proponent is to provide details that the length of the taper in the AUL complies with Austroads Guide to Road Design Part 4A.	**Appendix F - Strategic Concept Design**
3e.	Figure 20 demonstrates the available sight distance; however, the figure shows an incorrect site location. The proposed access point is provided in the TIA actually to be further west, near the existing access. Please confirm and revise the sight distance check figure.	**Section 4.6.4**
3f.	Table 15 states the design speed is 100km/h, which is required to be the posted speed plus 10km/h. Please recalculate the required distance	**Section 4.6.4**
3g.	Table 15 demonstrates that the existing roadside and bridge safety barrier restricts sight distance.	**Section 4.6.4**
3h.	An approach sight distance check should supplement the assessment.	**Section 4.6.4**
3i.	Existing rural property accesses either side of the Riverina Highway. The proponent is to confirm whether the access on the project side will continue to veer to the right and form an access to another property or if the amended design will solely be for access to the BESS. The rural property access on the opposite side of the Riverina Highway to the project, the proponent is to confirm if this will be closed or remain open. The proponent is to consider closing this access or staggering the project intersections to prevent a dangerous situation where traffic will attempt to cross the through lanes of the highway to reach the other side. See Figure 1 In Appendix B.	**Section 4.6.4**
3j.	The proponent is to confirm that construction for the bridge will occur solely on the identified lot or if it will encroach into the road reserve.	**Section 3.2**
3k.	Confirmation of the width of the bridge over the irrigation channel. Please confirm if it is proposed to be one or two way. If one way, there must be an area for the heavy vehicles demonstrated on the strategic concept designs where they can store while waiting to cross clear of the carriageway.	**Section 3.3**
4	**Section 3.6 of the TIA discusses the transmission line crossing of the Riverina Highway. Further updates to this section would need to be included within the revised TIA to address the traffic and asset impacts, refer to points a to c below:**	

RFI Item No.	RFI Item	Section Addressed
4a.	The method for the construction of the transmission lines across the state road network, inclusive of any proposed hurdles or other temporary infrastructure within the road reserve.	**Section 4.8**
4b.	The concept designs in Appendix C need to demonstrate the location of infrastructure and impacts (excavation or fill) relative to the road reserve, including demarcation of local and state-classified road reserves. Exact measurements of all required clearances need to be shown on the plans.	Appendix F
4c.	The proponent is to clarify if a new access is required to construct and maintain the infrastructure. Access points or access tracks will need detailed traffic, turn warrant assessment and strategic concept designs (accompanied by swept path analysis of the largest heavy vehicle that can turn concurrently and an SISD assessment that demonstrates compliant SISD can be achieved. Refer to the advisory notes on point c.	**Section 4.8**
5	**This section provides overall considerations for the route from the Port of Melbourne which will need to be resolved within the revised TIA.**	**See Concept Route Assessment (Appendix D)**

In addition, comments were received by the Department of Planning, Housing and Infrastructure (DPHI) via email on 24 December 2025. Responses to each transport-related comment are provided in **Table 5**.

Table 5 Response to DPHI comments (received via email on 24 December 2025)

DPHI RFI item	Response
Section 4.12.4 of the TIA indicates pre-construction minor works includes temporary wind monitoring masts. Please remove.	Noted, **Section 4.5** updated
Section 4.12.4 of the TIA indicates pre-construction minor works also includes translocating native vegetation. What is this in reference to? Is this going to occur.	Noted, **Section 4.5** updated
Confirm proportion of light vehicle traffic coming from the west and east. The TIA notes workers will come from Deniliquin and surrounding towns. What other towns? Ensure traffic assumptions in the EIS reflect this.	**Section 4.6** updated for clarity
Confirm if there would be any heavy vehicle movements during operations.	**Section 5** updated
Confirm if there would be suitable parking on-site for all vehicles.	**Section 4.4** and **Section 5** updated
Confirm the suitability of the Transgrid site access for the proposed vehicles I.e. through swept paths.	**Section 4.7** added

DPHI RFI item	Response
Noting TfNSW's advice on the EIS, the revised TIA/ mitigations do not provide any commitments or enforceable traffic mitigation measures that would be implemented to prohibit the right turn traffic movements into the access from Riverina Highway	Addressed in **Section 3.2** and **Appendix F**
As the RTS currently stands, regarding the description of minor works - TfNSW is likely to require the TMP be prepared. If you would want pre-construction minor works to be managed separate from the standard management approach then please provide additional detail specifically outlining how those works would be managed (e.g. parking on site, number and types of vehicles).	Noted, pre-construction minor works to be managed under same TMP as the remaining works

Table 6 Response to TfNSW Advice on Request for Further Information (as outlined in the TfNSW letter dated 13 April 2026)

RFI Item No.	RFI Item	TfNSW Status of additional information required	Section Addressed
1	**The application proposes main project access directly from the Riverina Highway. The following further detail is required for turn treatment assessments:**		
1a.	Turn warrants must consider the worst-case scenario, considering the peak of project traffic occurring at the same time as the road network peak (inclusive of cumulative project volumes) for both the AM and PM peaks. The provided warrants in Section 4.7.3 of the TIA do not consider the worst-case scenario of both AM and PM peaks.	**CLOSED**	
1b.	Section 4.7.3 states that there are no anticipated right turn movements during construction; however, the potential for right turns still exists as no mitigation measures have been advised or commitments to the prohibition of the right turn as part of the TIA assessment. The revised TIA aims to provide a commitment and enforceable traffic mitigation measures and conditions of consent that would be implemented to prohibit the right turn traffic movements into the access from Riverina Highway or review, within a revised turn warrant assessment, the required right turn movements and intersection treatments	**OPEN**	**Section 4.9.1 and Appendix F - Strategic Concept Design**

RFI Item No.	RFI Item	TfNSW Status of additional information required	Section Addressed
	that would be needed to facilitate the right turn movement.		
1c.	Revised strategic designs will need to be provided considering the above. See advisory note.	**OPEN –** Strategic designs have issues raised in part 3 that require amendments. Please review and submit to TfNSW.	**Appendix F - Strategic Concept Design**
1d.	Swept paths are required to be provided for the largest heavy vehicle and high-risk OSOM configuration (corresponding to the design and check vehicle) required to use the intersection. It must also demonstrate that the gazetted road trains for the Gwydir can safely pass through the intersection in the designated lanes. This must be prepared in accordance with Austroads Design Vehicles and Turning Path Templates. It appears that only swept paths for the OSOM are provided.	**OPEN -** Swept path demonstrates that the proposed bridge will not have two way functionality with swept paths shown on top of each other. The proponent must provide further queuing analysis to demonstrate queuing on the state road network will not occur on the state road network as a result.	**Section 4.9.3 and Appendix F** *Note, swept paths completed for gazetted road trains on Riverina Highway based on the NSW Road Train Authorisation Notice.* *The Gwydir Highway was not considered given its location approximately 700km north of the site.*
2	**A complete assessment of BESS pre-construction minor works is required which includes:**		
2a.	Assess traffic volumes and identify the types of vehicles that will be used during this period, including the largest design vehicle.	**OPEN -** The previous letter requested specific and quantified detail on pre-construction minor works in points a-k. Section 4.9 provided by the proponent doesn't include the detail requested. This must be provided in the updated TIA.	**Section 4.5**
2b.	Perform a swept path analysis for the largest heavy vehicle at the existing intersection, ensuring it can navigate within the current pavement. If the design vehicle cannot turn easily,		

RFI Item No.	RFI Item	TfNSW Status of additional information required	Section Addressed
	implement necessary mitigation or temporary works.		
2c.	Assess existing Safe Intersection Sight Distance (SISD) and propose measures to achieve compliance,		
2d.	Identify AM/PM peak hour traffic volumes and proposed volumes during this time. The traffic volumes during the AM/PM peak hours are to be comparable to the existing land use.		
2e.	Suggest measures to minimise project-related traffic during peak periods, like carpooling or shuttle buses.		
2f.	Outline methods to monitor and enforce traffic volumes during peak hours and other proposed mitigation measures.		
2g.	Outline methods to monitor and enforce traffic volumes during peak hours and other proposed mitigation measures.		
2h.	Describe how to inform the community and stakeholders about increased traffic.		
2i.	Specify the hours for pre-construction minor works.		
2j.	Assess traffic associated with any temporary workforce accommodations during the pre-construction minor works period.		
2k.	Identify any necessary temporary widening or works for the design vehicle. Note: No oversized overmass (OSOM) vehicles are permitted unless a swept path analysis shows compliance.		
3	**The strategic concept designs prepared for the project access intersection with the Riverina Highway require the following amendments:**		
3a.	If required based on the revised turn warrant assessments requested within point 1 the strategic concept designs must be revised to identify the updated	**OPEN** –	**Appendix F - Strategic**

RFI Item No.	RFI Item	TfNSW Status of additional information required	Section Addressed
	intersection treatments for the proposed project intersection with the Riverina Highway.	The following amendments are still required to strategic concept designs: Site Access West – Cobb Highway i. The design proposes that the side road centre line marking is skewed and does not appear to tie into the centreline of the proposed access, nor the existing side road. Please revised in updated TIA. ii. The design proposed that the side road give way to intersection line marking (TB and TB1) is to be installed in along the shoulder of the main line. This is incorrect. The C1 line marking should extend at this offset and the TB and TB1 line marking set back behind the AUL to allow a hazard free run out area. iii. The design proposed that R2-6N no right turn signage be installed. Is this signage intended for all vehicle movements for both the development access and the existing access arrangements. Please clarify if it is intended to restrict right turn movements during construction only. iv. Full swept paths of all turning movements are required. v. The swept paths show a conforming left turn movement. Is the left turn movement able to be undertaken with a vehicle store in the through lane? Centrelink marking needs to be demonstrated.	**Concept Design** *Note the strategic concept design has been updated for the site access intersection with the Riverina Highway.* *No site access is proposed to the Cobb Highway.*
3b.	The strategic concept design is to be revised to include 1 metre shoulders and 0.5m verge as a minimum outside of the Auxiliary Left Turn treatment		
3c.	Batter slopes are required to be 6:1 and provide a hazard-free zone on plans and need to be demonstrated on a typical cross section (note this does not require a survey to be able to provide this level of detail).		
3d.	The proponent is to provide details that the length of the taper in the AUL complies with Austroads Guide to Road Design Part 4A.		

RFI Item No.	RFI Item	TfNSW Status of additional information required	Section Addressed
3e.	Figure 20 demonstrates the available sight distance; however, the figure shows an incorrect site location. The proposed access point is provided in the TIA actually to be further west, near the existing access. Please confirm and revise the sight distance check figure.	**OPEN –** SISD is be calculated from the posted speed plus 10km/h as noted on the previous letter. Posted speed is 100km/h therefore a required to be calculated at 110km/h. Please review e to h from the previous letter and provide response in the updated TIA.	**Section 4.6.4**
3f.	Table 15 states the design speed is 100km/h, which is required to be the posted speed plus 10km/h. Please recalculate the required distance		
3g.	Table 15 demonstrates that the existing roadside and bridge safety barrier restricts sight distance.		
3h.	An approach sight distance check should supplement the assessment.		
3i.	Existing rural property accesses either side of the Riverina Highway. The proponent is to confirm whether the access on the project side will continue to veer to the right and form an access to another property or if the amended design will solely be for access to the BESS. The rural property access on the opposite side of the Riverina Highway to the project, the proponent is to confirm if this will be closed or remain open. The proponent is to consider closing this access or staggering the project intersections to prevent a dangerous situation where traffic will attempt to cross the through lanes of the highway to reach the other side. See Figure 1 In Appendix B.	**OPEN –** Table 4 includes an error and does not make clear this has been addressed. Update the TIA to included clarification. Section 4.7.3.4 includes detail on the rural property accesses. Further mitigation measures are required to be detailed to reduce safety concerns.	**Section 4.6.4**
3j.	The proponent is to confirm that construction for the bridge will occur solely on the identified lot or if it will encroach into the road reserve.	**CLOSED**	
3k.	Confirmation of the width of the bridge over the irrigation channel. Please confirm if it is proposed to be one or two way. If one way, there must be an area	**OPEN –** Section 3.3 of the confirms that two way movement over the bridge is	**Section 3.3, Appendix G**

RFI Item No.	RFI Item	TfNSW Status of additional information required	Section Addressed
	for the heavy vehicles demonstrated on the strategic concept designs where they can store while waiting to cross clear of the carriageway.	possible however swept paths does not demonstrate simultaneous movement over the bridge. The proponent is to clarify and provide updated swept paths.	
4	**Section 3.6 of the TIA discusses the transmission line crossing of the Riverina Highway. Further updates to this section would need to be included within the revised TIA to address the traffic and asset impacts, refer to points a to c below:**		
4a.	The method for the construction of the transmission lines across the state road network, inclusive of any proposed hurdles or other temporary infrastructure within the road reserve.	**CLOSED**	
4b.	The concept designs in Appendix C need to demonstrate the location of infrastructure and impacts (excavation or fill) relative to the road reserve, including demarcation of local and state-classified road reserves. Exact measurements of all required clearances need to be shown on the plans.	**OPEN –** The TIA notes that this level of information is not available at the planning approval stage. TfNSW requires this information to be demonstrated on the strategic plans prior to determination.	**Appendix F**
4c.	The proponent is to clarify if a new access is required to construct and maintain the infrastructure. Access points or access tracks will need detailed traffic, turn warrant assessment and strategic concept designs (accompanied by swept path analysis of the largest heavy vehicle that can turn concurrently and an SISD assessment that demonstrates compliant SISD can be achieved. Refer to the advisory notes on point c.	**OPEN -** the proponent notes they will use the existing accesses for construction of transmission line works. Each access required for the project is to be assessed for suitability to the standard outlined in the SEARs. Please ensure this is captured in the updated TIA.	**Section 4.8**
5	**This section provides overall considerations for the route from the Port of Melbourne which will need to be resolved within the revised TIA.**		**See Concept Route Assessment (Appendix D)**

2. EXISTING CONDITIONS

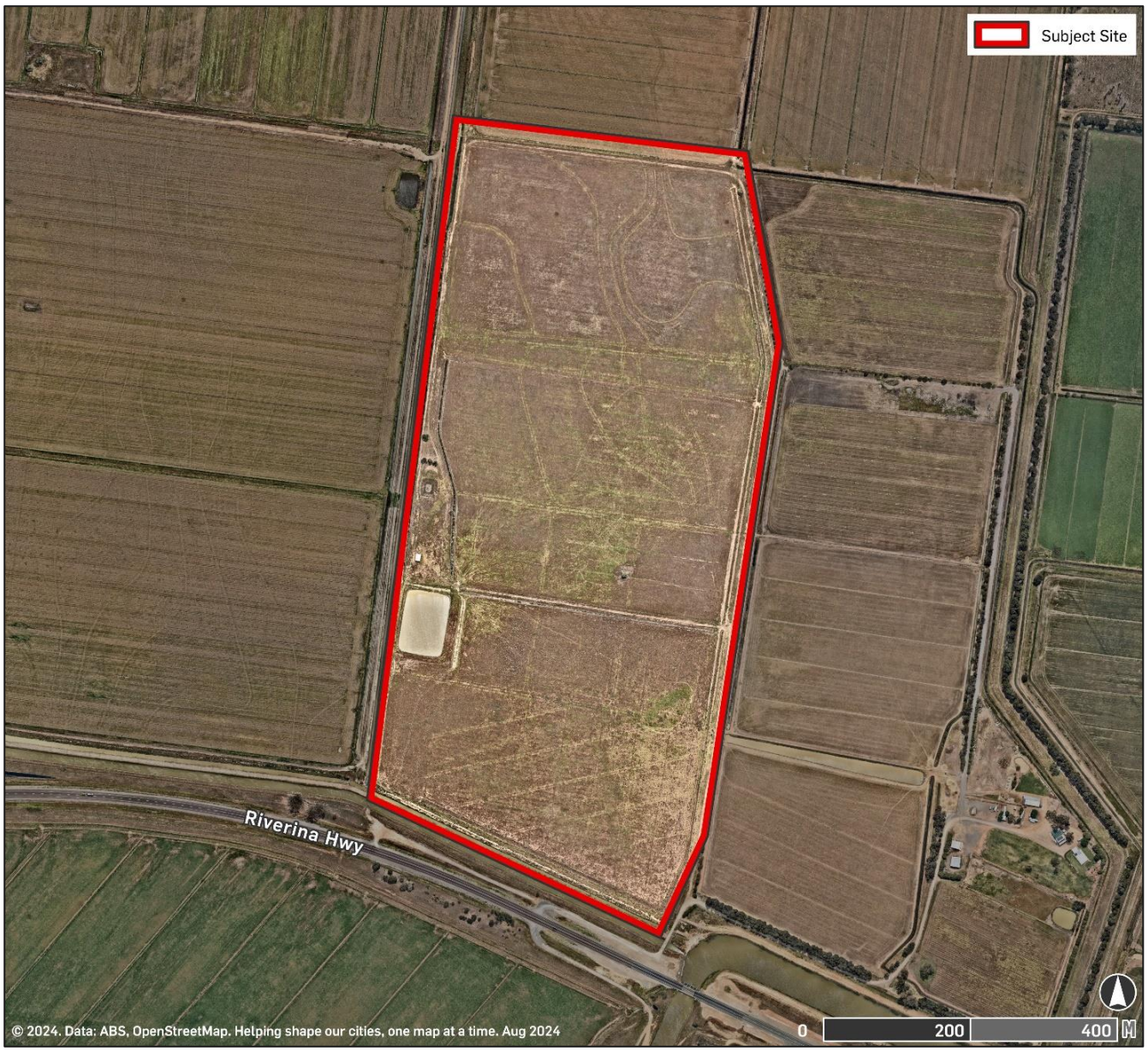
2.1. THE SITE

The Deniliquin BESS site ("the site") is located approximately 710 kilometres southwest of Sydney and is accessible via Riverina Highway in Deniliquin. The site is surrounded by other rural and agricultural land uses.

The site falls under the Edward River Council Local Government Area (LGA) and is subject to the Deniliquin Local Environmental Plan 2013. The site is bounded by Riverina Highway to the south and farmland in all other directions.

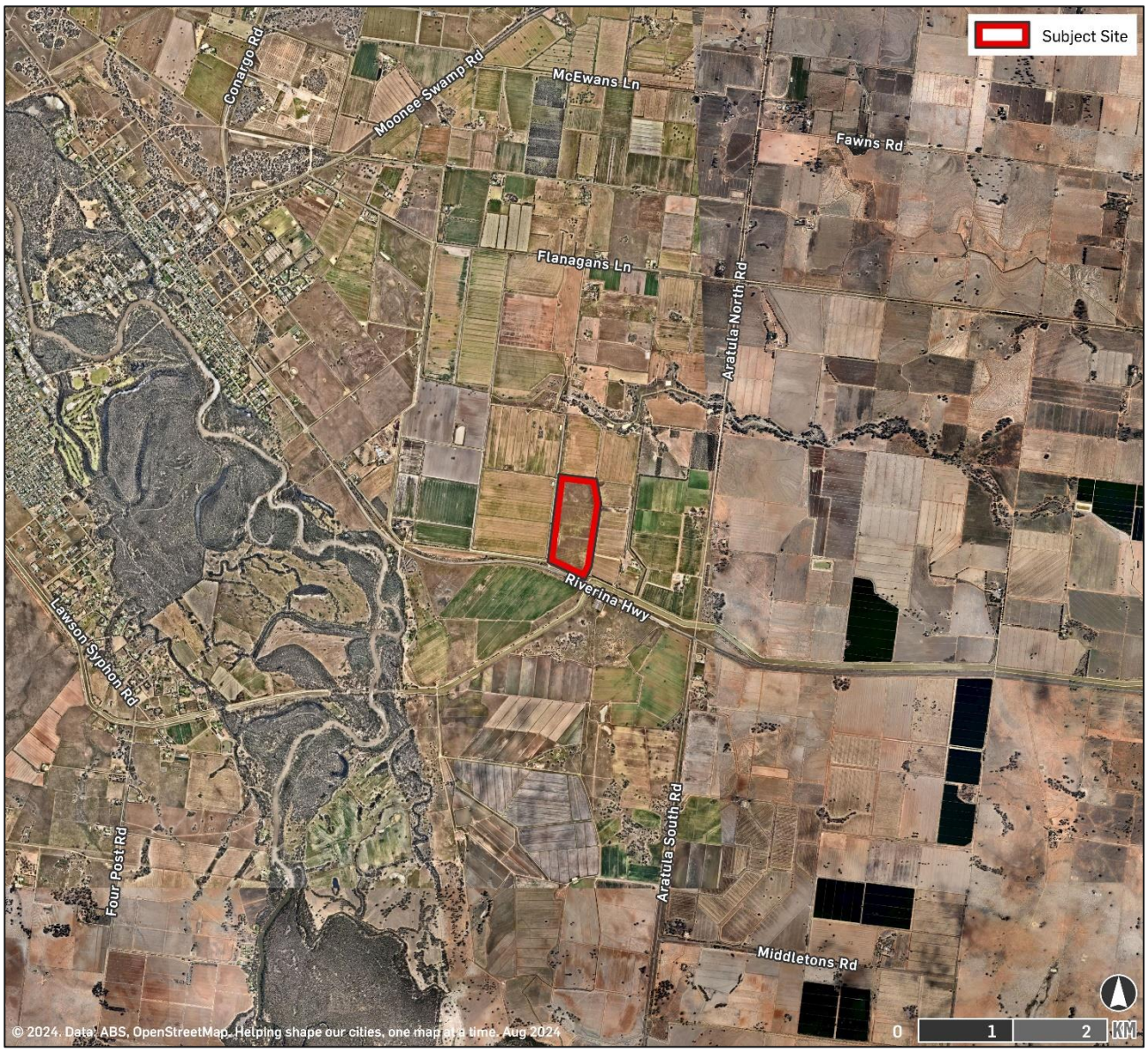
Figure 1 shows the local site context, and **Figure 2** shows the site context within the broader area.

Figure 1 Site map



Source – Nearmap modified by Urbis

Figure 2 Site context



Source - Nearmap modified by Urbis

2.2. PUBLIC TRANSPORT NETWORK

There is no public transport infrastructure or services that connect directly to the site. The closest public transport infrastructure is located in the town of Deniliquin and comprises of one local bus service (route DTS), none of which service the site.

2.3. WALKING AND CYCLING NETWORK

There is limited active transport infrastructure surrounding the site, with no footpaths on the roads immediately surrounding the site to enable walking. Cycling is permitted on the shoulder of roads; however, the nature of these roads (often being unsealed or having an unsealed shoulder) makes cycling on these roads challenging even for experienced riders. Cycling is not a significant form of transport in regional areas and is more likely used for recreational uses.

2.4. EXISTING TRANSPORT NETWORK

2.4.1. Road Hierarchy

Roads within NSW are categorised by classification (ownership) and function (use).

2.4.1.1. Road Classification

Roads are classified (as defined by the Roads Act 1993) based on their importance to the movement of people and goods within NSW (as a primary means of communication).

The classification of a road allows TfNSW to exercise authority on all or part of the road. Classified roads include Main Roads, State Highways, Tourist Roads, Secondary Roads, Tollways, Freeways and Transitways.

For management purposes, TfNSW has three administrative classes of roads. These are:

- **State Roads** – Major arterial links through NSW and within major urban areas. They are the principal traffic-carrying roads and fully controlled by TfNSW with maintenance fully funded by TfNSW. State Roads include all Tollways, Freeways and Transitways; and all or part of a Main Road, Tourist Road or State Highway.
- **Regional Roads** – Roads of secondary importance between State Roads and Local Roads which, with State Roads provide the main connections to and between smaller towns and perform a subarterial function in major urban areas. Regional roads are the responsibility of councils for maintenance funding, though TfNSW funds some maintenance based on traffic and infrastructure. Traffic management on Regional Roads is controlled under the delegations to local government from TfNSW. Regional Roads may form all or part of a Main Road, Secondary Road, Tourist Road or State Highway; or other roads as determined by TfNSW. The Regional Road category comprises two sub-categories: Regional Roads that have been classified under the Roads Act 1993, and those Regional Roads that are unclassified.
- **Local Roads** – The remainder of the council-controlled roads. Local Roads are the responsibility of councils for maintenance funding. TfNSW may fund some maintenance and improvements based on specific programs (e.g., urban bus routes, and road safety programs). Traffic management on Local Roads is controlled under the delegations to local government from TfNSW.

2.4.1.2. Functional Hierarchy

Functional road classification involves the relative balance of the mobility and access functions. TfNSW defines four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility to high accessibility and low mobility. These road classes are:

- **Arterial Roads** – generally controlled by TfNSW, typically no limit inflow and designed to carry vehicles long distances between regional centres.
- **Sub-Arterial Roads** – can be managed by either TfNSW or the local council. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a sub-region or provide connectivity from arterial road routes (regional links).
- **Collector Roads** – provide connectivity between local roads and the arterial road network and typically carry between 2,000 and 10,000 vehicles per day.

Local Roads – provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

2.4.2. Surrounding Roads

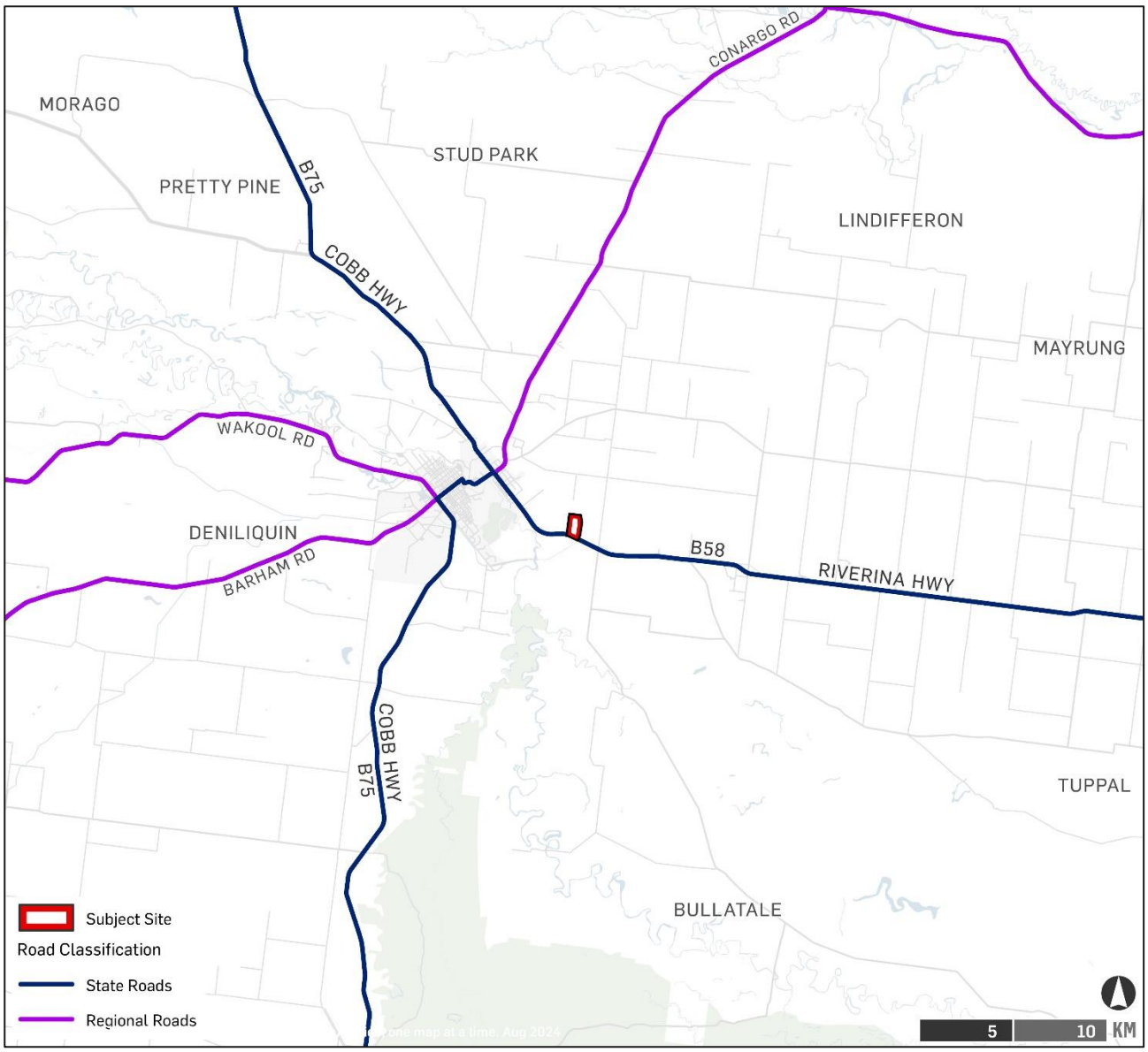
The characteristics of the surrounding road network are detailed in **Table 7**. The surrounding road network is shown in **Figure 3**.

Table 7 Characteristics of surrounding roads

Road Name	Aratula Rd	Riverina Hwy	Finley Road	Davidson Street
Classification / Function	Local	Arterial	Arterial	Arterial
Sealed (yes/no)	Yes	Yes	Yes	Yes
Movement lanes	One lane in each direction	One lane in each direction	One lane in each direction	One lane in each direction
Parking lanes	No	No	Yes	Yes
Approximate Carriageway width (m)	6	11	15	15
Signposted speed (km/h)	60	100	60	60
Line marking / divided lanes	No	Yes	Yes	Yes
Pedestrian pathways	No	No	Yes	Yes
Bus stops	No	No	Yes	Yes

Source: Nearmap, Google Street View

Figure 3 Surrounding road network



Source - Urbis

While the roads listed in **Table 4** are key roads near the site, **Figure 3** shows a wider context. Davidson Street and Finley Road form localised parts of the Cobb and Riverina Highway respectively within Deniliquin town centre.

2.4.3. Nearby Intersections

The following intersections are situated within proximity to the site

- Aratula Road / Riverina Highway.

  Priority controlled intersection.

- Finley Road / Davidson Road / Cobb Highway / Albert Street.

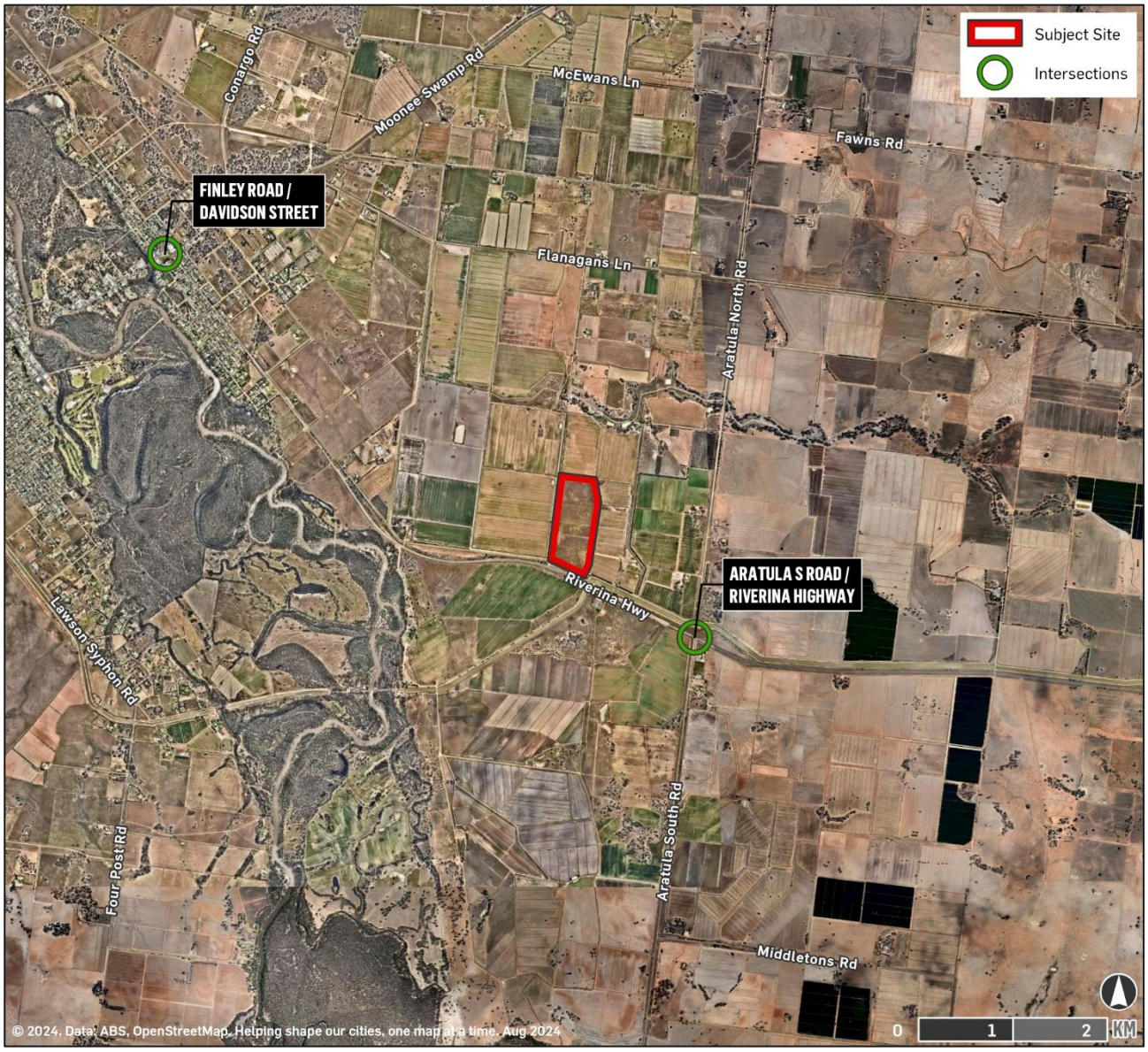
  Roundabout intersection.

- Finley Road / Wanderer Street.

  Priority controlled intersection.

Aratula Road is a minor rural road with limited traffic movements. No traffic volumes were collected from this intersection due to it minor nature and the assumed traffic generating locations associated with the site (discussed further in **Section 4**).

Figure 4 Surrounding intersections



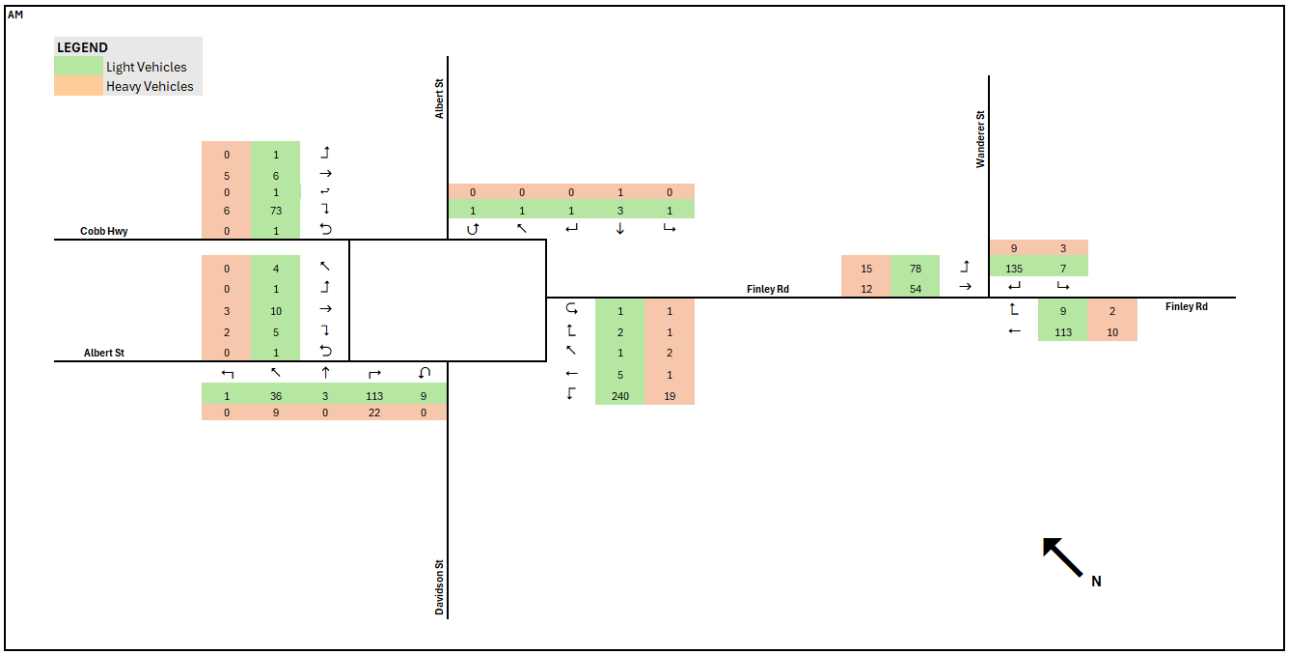
Source - Nearmap modified by Urbis

2.4.4. Existing Road Traffic Volumes

To gain an understanding of existing traffic volumes in the vicinity of the site, traffic movement surveys were commissioned on Tuesday, 27 August 2024 during the AM (6:00 AM – 10:00 AM) and PM (3:00 PM and 7:00 PM) peak periods at the Hay Road / Albert Street / Finley Road / Davidson Street roundabout intersection and Finley Street (Riverina Highway) / Wanderer Street T-intersection.

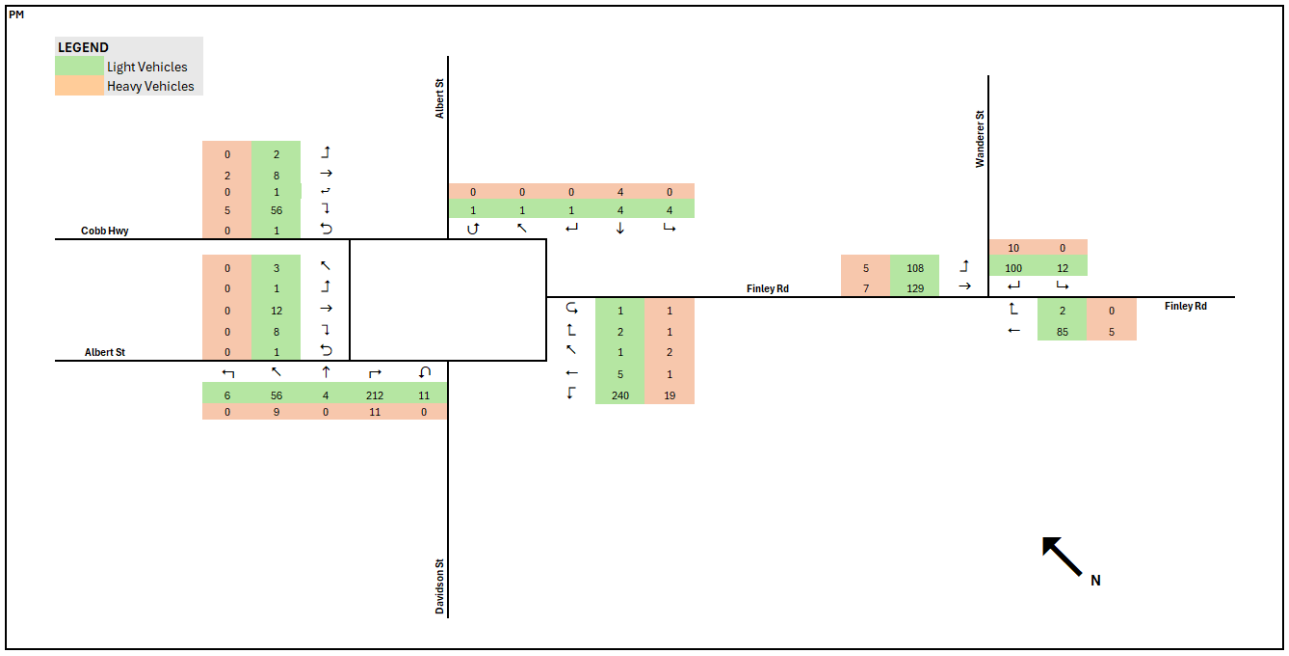
The survey data indicates that the AM peak hour is 8:00 AM – 9:00 AM and that the PM peak hour is 4:15 PM – 5:15 PM. The surveyed weekday AM and PM peak hour traffic volumes are shown in **Figure 5** and **Figure 6**. Detailed traffic survey data is found in **Appendix A.**

Figure 5 Existing AM peak hour (8:00 AM – 9:00 AM) traffic volumes



Source: Urbis, TIA

Figure 6 Existing PM peak hour (4:15 PM – 5:15 PM) traffic volumes



Source: Urbis, TIA

2.4.5. Midblock Traffic Volumes

Peak hour midblock volumes on Riverina Highway, along the site frontage, were derived from traffic survey data collected at the intersection of the Finley Road / Wanderer Street intersection given that:

- There are limited traffic generators between this intersection and the site.
- Most intersections between this intersection and the site are associated with farm access.

These derived midblock traffic volumes are shown below:

- AM Peak

  Eastbound – 134 vph.

  Westbound – 77 vph.

  Total 211 vph

- PM Peak

  Eastbound – 148 vph.

  Westbound – 92 vph.

  Total – 240 vph

2.4.6. Existing Intersection Operation

The existing operation of the key intersections Cobb Highway / Albert Street / Finley Road / Davidson Street (roundabout intersection) and Finley Road / Wanderer Street (T-intersection) have been assessed using SIDRA INTERSECTION 9.1, a computer-based modelling package which calculates intersection performance.

The key parameters used to determine the operational performance of an intersection are average delay, queue length and degree of saturation (or volume to capacity ratio).

A brief explanation of the key parameters is provided as follows:

- **Average delay** is the average time in seconds it takes a vehicle to negotiate an intersection, including the time to negotiate corners and the time stopped in queues. This parameter is the most tangible to drivers.
- **The 95th percentile queue length** represents the queue length that is exceeded only five percent of the time.
- **The degree of saturation** (DOS) is the ratio of arrival flow to capacity flow. A DOS of 1.0 represents saturated conditions, however for a priority-controlled intersection, the desirable range is between 0.8 to 0.85.
- **The overall operational performance** of an intersection is qualitatively measured and classified by Level of Service (LoS). The LoS assessed here is based on the average delay The LoS performance objectives for various intersection types are presented in **Table 8**.

Table 8 Intersection Level of Service (LoS) criteria

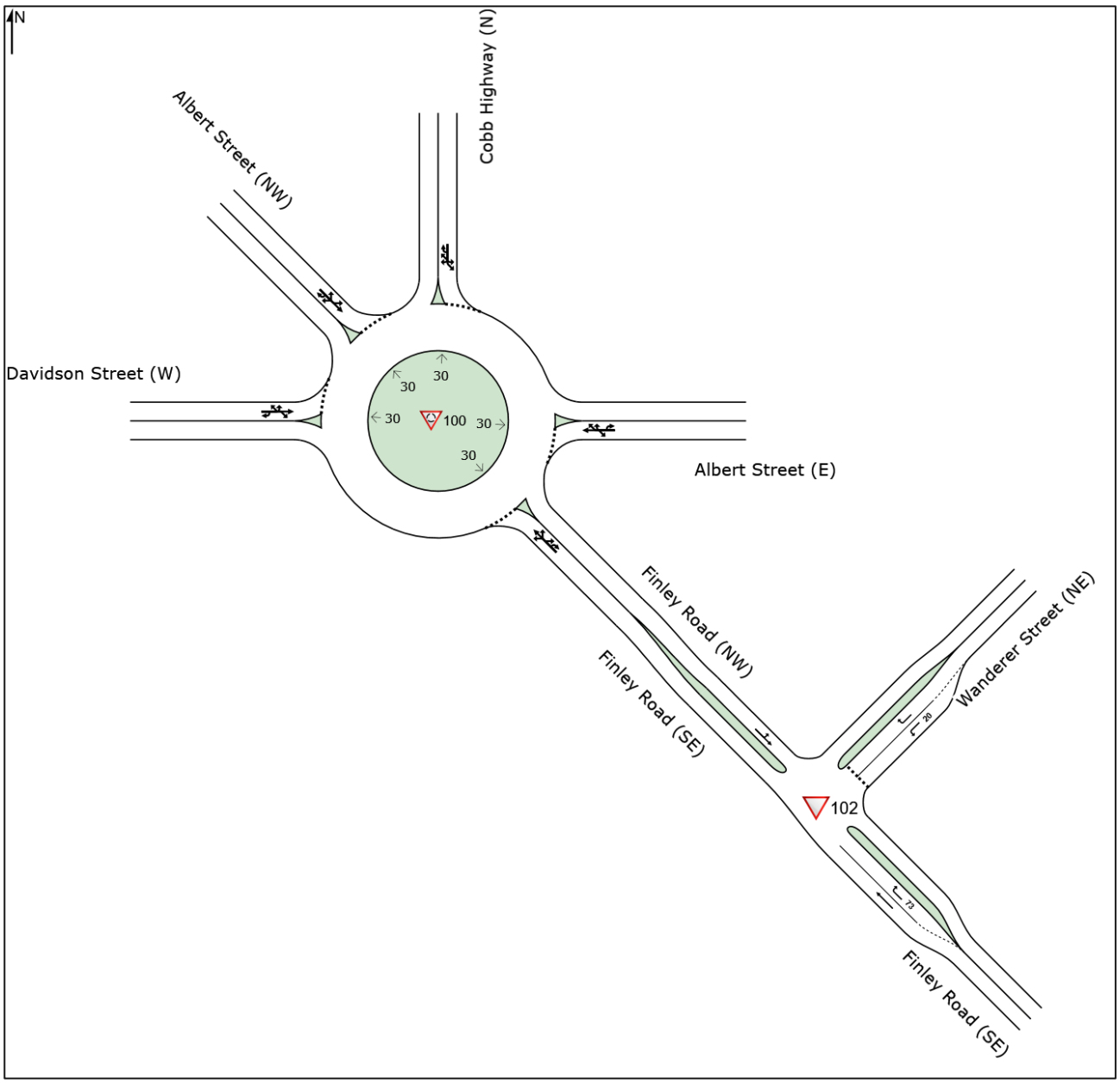
Level of service	Average Delay per Vehicle (sec/veh)	Traffic Signals or Roundabout	Give Way & Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but crash study required
D	43 to 56	Operating near capacity	Near capacity and crash study required
E	57 to 70	At capacity at signals, incidents will cause excessive delays	At capacity, requires other control mode

Level of service	Average Delay per Vehicle (sec/veh)	Traffic Signals or Roundabout	Give Way & Stop Signs
		Roundabouts require other control mode	
F	>70	Overcapacity	Overcapacity

Source: Guide to Traffic Generating Development version 2.2 (TfNSW, 2002)

Figure 7 shows the SIDRA model layout for the Cobb Highway / Albert Street / Finley Road / Davidson Street roundabout intersection and Finley Road / Wanderer Street T-intersection.

Figure 7 Existing SIDRA network layout for Cobb Highway / Albert Street / Finley Road / Davidson Street roundabout intersection and Finley Road / Wanderer Street T-intersection



Source: SIDRA modified by Urbis

Table 9 provides a summary of the existing conditions of SIDRA modelling outputs, with detailed results provided in **Appendix B.**

Table 9 SIDRA Intersection results for existing conditions

Intersection	Peak Hour	Approach	Level of Service	Degree of Saturation	Average Delay (s)	95th Percentile Queue Length (m)
Hay Road / Albert Street / Finley Road / Davidson Street	AM	Finley Road (southeast)	A	0.21	2 sec	9
		Albert Street (east)	A	0.01	5	1
		Cobb Highway (north)	A	0.08	8	3
		Alber Street (northwest)	A	0.02	4	1
		Davidson Street (west)	A	0.13	6	6
Finley Road / Wanderer Street	AM	Finley Road (southeast)	A	0.07	1	1
		Wanderer Street (northeast)	A	0.18	7	6
		Finley Road (northwest)	A	0.09	2	0
Hay Road / Albert Street / Finley Road / Davidson Street	PM	Finley Road (southeast)	A	0.15	2	6
		Albert Street (east)	A	0.01	4	1
		Cobb Highway (north)	A	0.07	8	3
		Alber Street (northwest)	A	0.02	5	1
		Davidson Street (west)	A	0.21	6	9
Finley Road / Wanderer Street	PM	Finley Road (southeast)	A	0.05	1	0

Intersection	Peak Hour	Approach	Level of Service	Degree of Saturation	Average Delay (s)	95th Percentile Queue Length (m)
		Wanderer Street (northeast)	A	0.14	7	5
		Finley Road (northwest)	A	0.14	2	0

Source: Urbis

The results presented in **Table 9** indicate that during peak periods the intersections are operating well below the capacity, with a degree of saturation below 0.25 and LoS A.

2.4.7. Crash History

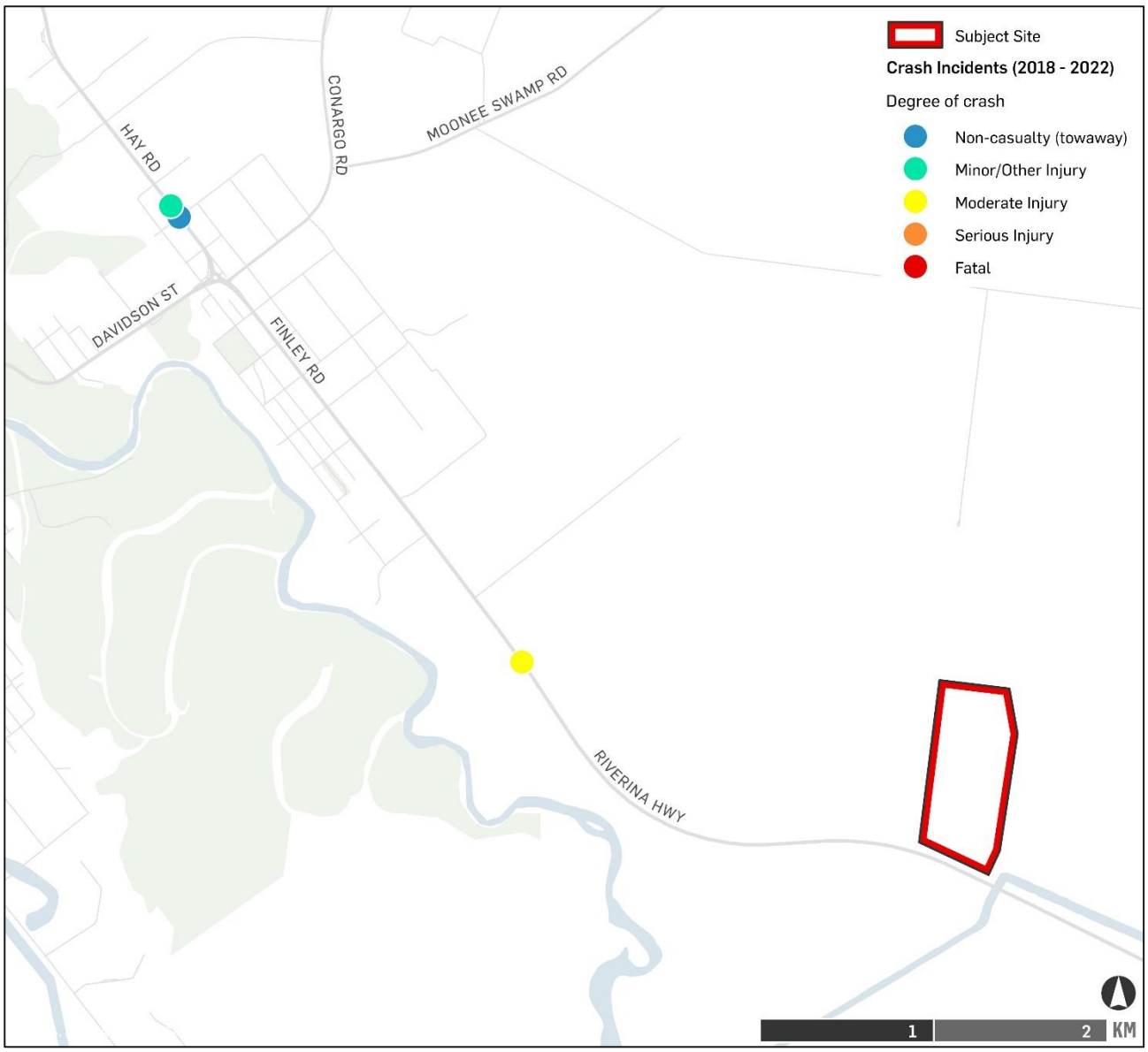
Crash data can provide valuable information about the safety performance of a given road network. Existing road safety deficiencies can be highlighted by examining crash data, which can aid in determining whether the proposed development's traffic generation will exacerbate any identified issues.

Crash statistics from the TfNSW allows users to analyse crash data based on time, location, conditions, crash type, and road user type. This data was analysed for the surrounding road network for the latest available five years period from 2018 to 2022. The statistics only consider the following:

- **Fatal injury** - A crash for which there is at least one fatality.
- **Serious injury** – A person not matched to a police report but has been identified as having an injury on a public road or injury on a traffic-public road for the hospital stay that is not an emergency department only admission (unless that ended in a transfer interstate, to a private hospital or other medical facility).
- **Moderate injury** – person identified in CrashLink (casualty or driver or rider) who is matched to an emergency department attendance record on the same day or on the day after a crash but was not killed or not subsequently admitted to hospital.
- **Minor or other injury** – A person identified as an injury in CrashLink who is not matched to a hospital admission record or emergency department attendance record.

The location of the crashes in the vicinity of the site for the last available five-year period (2018 – 2022) are shown in Figure 8**,** and a summary of the crash types is provided in Table 10.

Figure 8 Crash history in the vicinity of the site



Source – TfNSW Open Data Hub modified by Urbis

Table 10 Crash history

Location	Crash number				
	Killed	**Seriously injured**	**Moderately injured**	**Minor/other injured**	**Other / Non-casualty**
Riverina Highway – south of Mimosa Street	0	0	1	0	1
Riverina Highway – north of Browning Street	0	0	0	1	0

Source: TfNSW Centre for Road Safety

Table 10 indicates that three crashes occurred along Riverina Highway in the vicinity of the site. They were moderate injuries and minor injuries. None of these crashes involved heavy vehicles, pedestrians or cyclists. The crash history does not indicate any inherent road safety issue along Riverina Highway in the vicinity of the site.

3. DEVELOPMENT PROPOSAL

The proposed development entails establishing a BESS with a 100 MW/200MWh capacity and associated power conversion systems, switchgear and a control room. Associated infrastructure includes overhead lines and collector units, storage areas, internal access tracks, onsite parking, security fencing, temporary construction laydown area and landscaped screening.

The BESS will be connected to the nearby Deniliquin Substation (Deniliquin 132/66kV TS) via a 132kV overhead transmission line crossing the Mulwala Canal and Riverina Highway. The proposed site access is to be provided via a new six metre-wide vehicular access road, crossing the Moulamein Channel, and connecting to the Riverina Highway.

The Project Area, which includes the extent of the proposed development, the BESS compound, and associated transmission lines and road works is approximately 10.7ha in size. The Project Area and includes land within the Road Reserve of the Riverina Highway.

3.1. DEVELOPMENT OVERVIEW

Subject to detailed design, the key elements included in the development proposal are as follows:

- Containerised lithium-ion battery modules with up to 100MW/200MWh capacity.
- Power conversion units, which convert the DC power from the battery modules to 33kV AC.
- On site 33/132 kV substation, including power transformer and oil containment system.
- A 33kV switch room.
- Control room.
- Maintenance container.
- A 132 kV overhead transmission line connecting with the Deniliquin Substation.

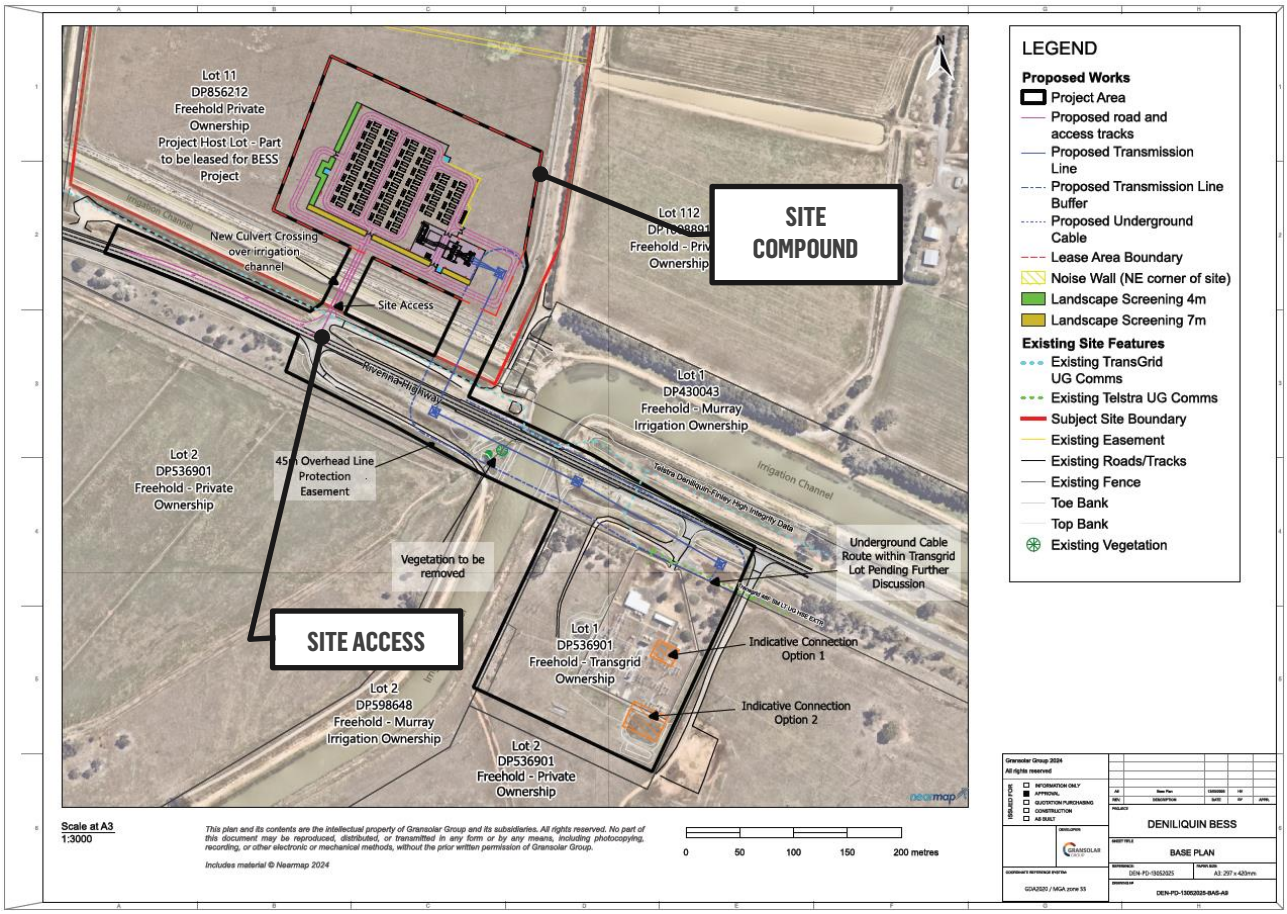
Permanent supporting infrastructure will include:

- Upgraded site vehicle access road and culvert to provide access to Riverina Highway.
- Internal access roads and car parking for maintenance vehicles.
- Three 25,000-litre water tanks.
- Security fencing and CCTV security system.
- Landscape screening.
- Lightning mast.

Temporary construction facilities will include:

- Laydown area.
- Construction materials storage.

Figure 9 Proposed development

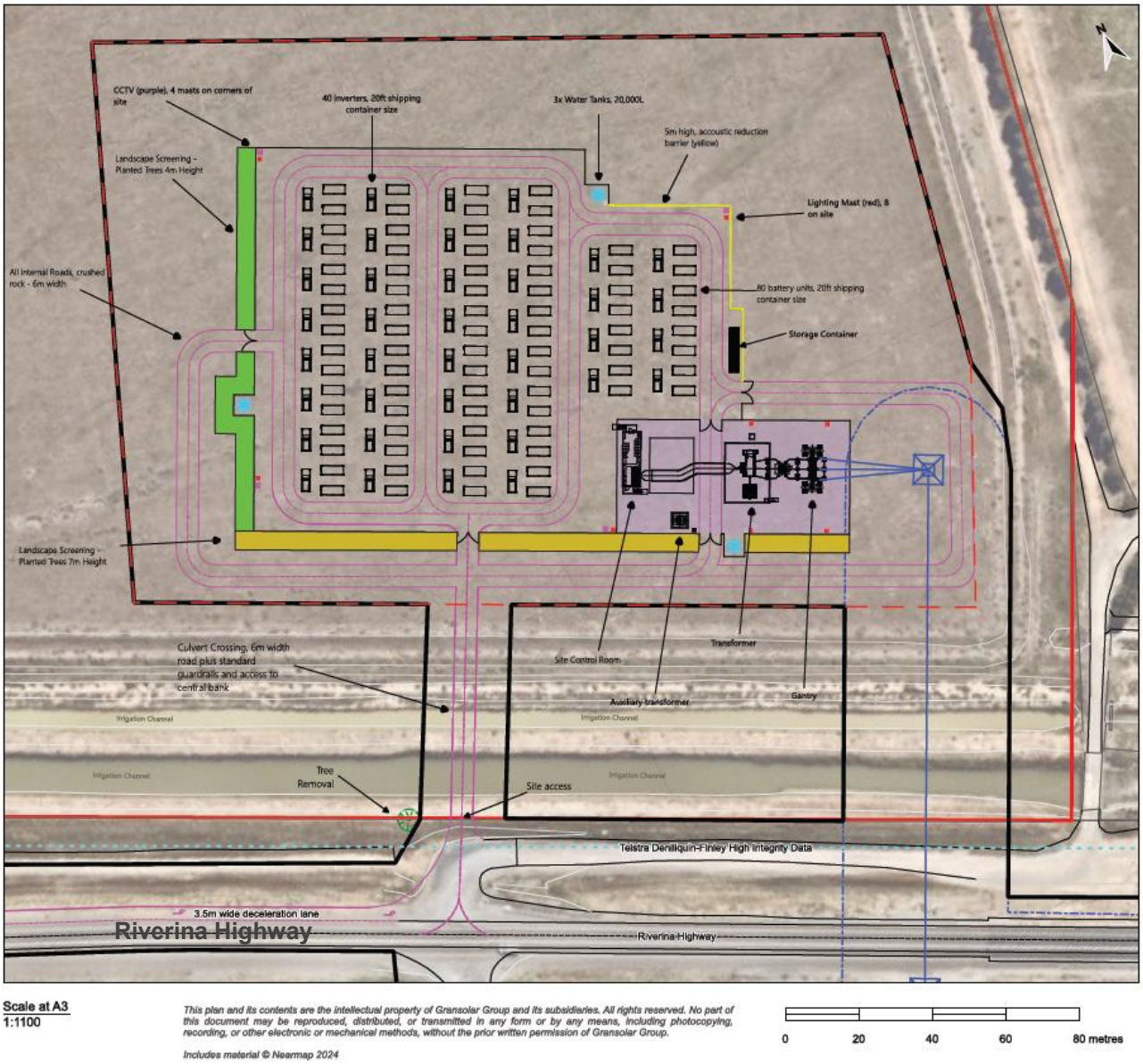


Source – BESS Arctic Pty Ltd C/- Gransolar Development Australia

3.2. VEHICLE ACCESS

Access to the site for vehicles will be facilitated through an access point off Riverina Highway. A culvert will be constructed over the Moulamein Channel to provide access for vehicles to the site. Figure 10 shows the proposed site access high-level design, which also indicates that the culvert will be constructed within the identified lot. A detailed design of the proposed culvert over the channel will be prepared and submitted to the relevant agencies for approval prior to the issue of a Construction Certificate (CC). This access will be used for both construction and operational access.

Figure 10 Vehicle access point high-level design

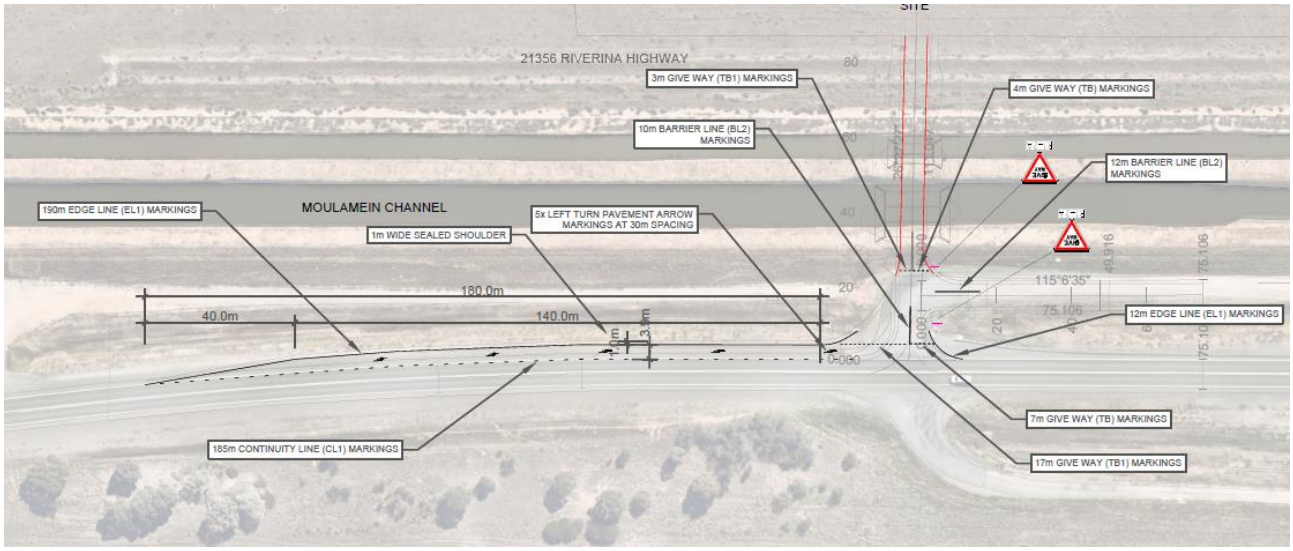


Source – Urbis

Additionally, an Auxiliary Left (AUL) Turn Lane to support access into the site from the east is proposed. This lane will be 180 metres long including 40 metres of taper. The design of this lane is shown in the Strategic Concept Plan for the site access provided in Appendix F**,** with an extract shown in Figure 11.

Further details on the deceleration lane requirements are discussed in **Section 4.6.4**.

Figure 11 Extract of proposed site access intersection design



Source – Urbis (Revision D, dated 18/05/2026)

3.3. INTERNAL ROAD NETWORK

All internal roads are designed to enable two-way movement with a minimum width of six metres in accordance with the NSW Government / NSW Rural Fire Service Planning for Bush Fire Protection Guide as outlined in **Section 5.4**. This includes the proposed culvert over the irrigation channel.

3.4. STAFFING LEVELS

During the operational phase, the site will have a staffing requirement of one to three individuals working permanently during business days in addition to the local contractors. These staff members will commute to the site using regular light vehicles. Their primary responsibilities will involve conducting maintenance inspections and performing repairs as needed.

3.5. VEHICLE PARKING ARRANGEMENTS

Staff will be parking informally throughout the site based on the activities that need to be undertaken on a day-to-day basis. No permanent on site parking is proposed.

3.6. TRANSMISSION LINE INFRASTRUCTURE

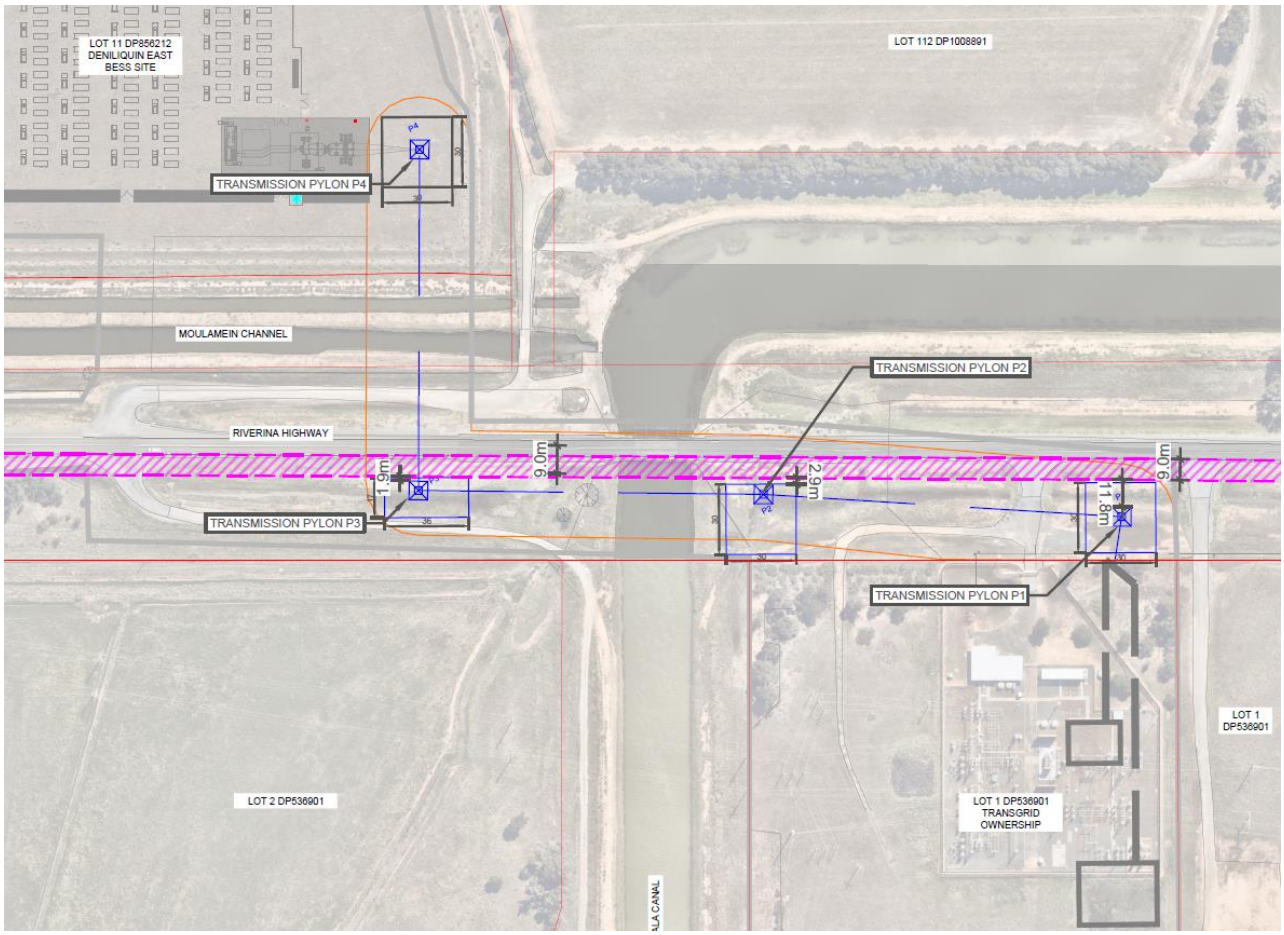
In order to connect to the adjacent Deniliquin Sub Station, a transmission line and related infrastructure over the Riverina Highway is proposed. To achieve this, three transmission line poles are proposed within the Riverina Highway road reserve to support connectivity. Where the transmission line crosses the Riverina Highway, the vertical clearance above the carriageway will be a minimum of 15.3 metres. **Appendix C** shows a cross-section of the transmission line.

Appendix F provides a strategic concept design demonstrating roadside clear zone is maintained between the Riverina Highway and proposed transmission line pylons located within the road reserve. The TfNSW *Supplement to Austroads Guide to Road Design* (December 2023) specifies the use of the clear zone principle from Austroads *Guide to Road Design Part 6: Roadside Design, Safety and Barriers Edition 2 (August 2010)* for the assessment of roadside hazards. This Austroads guide specifies that “a clear zone is the area adjacent to the traffic lane that should be kept free from features that would be potentially hazardous to errant vehicles”, and that “the clear zone should be kept free of non-frangible hazards where economically and environmentally possible”. As shown in **Appendix F**, the proposed transmission line

pylons do not encroach the clear zone requirement of 9.0 metres. In addition, the proposed construction pads used to construct the transmission pylons will not protrude from the ground. This ensures that no cut or fill will be introduced within the roadside clear zone.

An extract of this plan is shown in Figure 12.

Figure 12 Extract of strategic concept design for transmission line roadside clear zone



Source: Urbis

4. CONSTRUCTION TRANSPORT IMPACT ASSESSMENT

This section provides details regarding the traffic implications of the construction stage and assesses the associated traffic impacts. Mitigation measures are also outlined which shall form the basis of the contractor's subsequent management plans.

4.1. CONSTRUCTION DETAILS

This section provides the construction details for the proposed development, including staging, vehicle sizes and volumes, and expected workforce size.

4.1.1. Construction Phasing

The proposed development will be completed over 11 months, with a peak period of three months. The start date is yet to be determined.

There are six key phases of construction. These phases are listed and described in Table 11.

Table 11 Construction staging summary

Construction Phase	Description	Traffic Assessment Section
Pre-construction minor works	These works are preliminary in nature and will include the following activities: ▪ Artefact surveys and/or salvage ▪ Overhead line safety marking ▪ Building and road dilapidation surveys ▪ Geotechnical drilling, excavation or salvage ▪ Establishing temporary site office (in locations meeting the criteria identified in the conditions of this consent) ▪ Installation of environmental impact mitigation measures, fencing and enabling works ▪ Construction of minor access roads and minor adjustments to services/utilities	Section 4.5
Site access intersection at the Riverina Highway	These works include the construction of a deceleration lane along the Riverina Highway and implementation of signage and linemarking. While this is a stand-alone task, the intersection upgrade may occur during the pre-construction minor works phase, but needs to be completed prior to the main construction works.	Section 4.6.4
Primary BESS site works	These works constitute the primary construction activities for the BESS, including but not limited to, the carrying out of any earthworks on site and the construction of the battery storage and any ancillary infrastructure (but excludes road upgrades or maintenance works to the public road network and pre-construction minor works).	Section 4.6

Construction Phase	Description	Traffic Assessment Section
	The upgrade of the site access intersection at the Riverina Highway must be completed prior to the commencement of the primary construction works.	
Transgrid Deniliquin Substation access intersection upgrade	These works include the construction of a BAR intersection treatment on the Riverina Highway at the existing Transgrid Deniliquin Substation access. The access intersection needs to be upgraded prior to the commencement of the Transgrid Deniliquin Substation works and the transmission line infrastructure works. The access intersection upgrade is not required to be completed prior to the commencement of the primary BESS site works.	Section 4.7
Transgrid Deniliquin Substation works	These works include upgrade of the Transgrid Deniliquin Substation to facilitate connection of the Deniliquin East BESS site	Section 4.7
Transmission line infrastructure works	These works comprise the construction of transmission line pylons and stringing of the transmission line between the BESS site and the Deniliquin Substation	Section 4.8

4.1.2. Vehicle Sizes

Several construction vehicles will be required to transport the battery systems and bulkier items, including the substation components and step-up transformers. Several construction vehicles will also be required for general construction activities on site in addition to delivery vehicles.

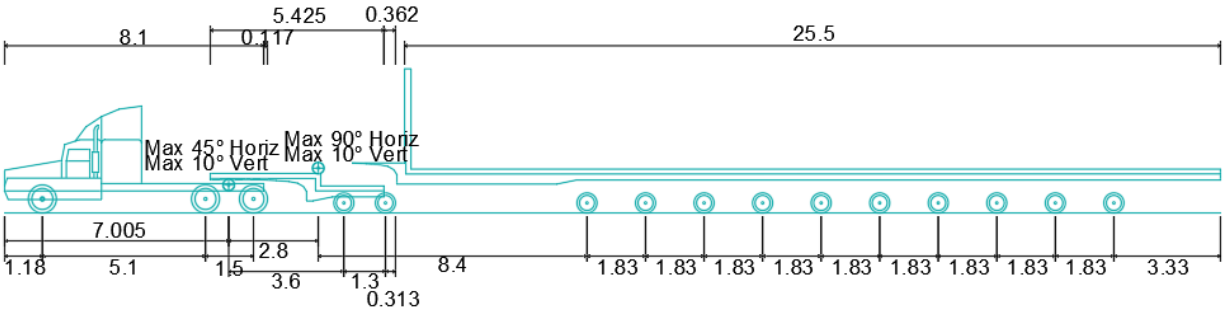
Two categories of vehicles will be used during construction as follows:

- Construction vehicles: These vehicles will be responsible for transporting batteries, inverters, substation components, step-up transformers, steel, road construction materials, concreting supplies, and water. They will be larger than personnel vehicles and include oversized vehicles. These vehicles will serve both for the delivery of materials and for general construction activities on site.
- Worker vehicles: This category includes utility vehicles and shuttle buses. These vehicles will be used for personnel movement, including construction personnel, subcontractors, and escort vehicles.

The largest vehicle to be utilised in the construction process will be a 38 m-long 10-axle platform trailer and dolly as outlined in Figure 13. This vehicle is a high-risk OSOM vehicle.

A detailed analysis of the vehicle design and the proposed haulage route of this vehicle are provided in Appendix D.

Figure 13 Largest nominated construction vehicle



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

Source – BESS Arctic Pty Ltd C/- Gransolar Development Australia, Urbis

This delivery will be a one-off vehicle movement and is not considered in the daily construction vehicle trip generation.

The required construction vehicle sizes with respect to the standard DPHI vehicle classes are summarised in Table 12.

Table 12 Proposed heavy construction vehicle types

DPHI Vehicle Class	Truck Types
Heavy Vehicles (HV)	▪ Heavy Rigid Vehicles (HRVs) up to 12.5 metres long ▪ Semi Trailer Articulated Vehicles (AVs) up to 20 metres long ▪ Low Loaders up to 26 metres long ▪ B-Doubles up to 26 metres long
Heavy Vehicles Requiring Escort (HVRE)	None
High-Risk Heavy Vehicles Requiring Escort (HR-HVRE)	▪ 38 metre long 10-axle platform trailer and dolly combination (see Figure 13)

4.1.3. Construction Workers

The construction of the proposed BESS will be completed over 11 months. The program for workers on site is shown below in Table 13. While the program timeline is identified, there is no confirmed start date yet. This information will be provided to the relevant agencies once the timeline is confirmed.

Table 13 Construction worker numbers throughout project

Month	1	2	3	4	5	6	7	8	9	10	11
Specialist – HSE / QA / Electrical / Grid	3	9	12	15	32	34	41	29	32	9	4
Civil / Mechanical	2	6	10	17	18	18	11	7	2	0	0
Total on site persons	5	15	22	32	50	52	52	38	34	9	4

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

As shown in the above table, the peak workforce will be 52 persons.

Workers will primarily be accessing the site in shuttle buses. However, some site contractors and site managers will be accessing the site in light utility vehicles. For workers accessing the site in light vehicles, carpooling will be encouraged by the developer. This is discussed further in Section 4.9.

4.1.4. Construction Vehicle Volumes

Table 14 summarises the number of daily vehicle movements associated with each of the relevant phases as identified in Section 4.1.1.

Table 14 Daily construction vehicle volumes

Vehicle type	**Daily vehicle movements (peak)**		
	Pre-construction minor works	**Primary BESS site works**	**Transgrid Deniliquin Substation works**
Heavy Vehicles (HVs)			
HRV's	4	20	50
AV's	-	-	
Low Loaders	2	10	-
B-Doubles	-	20	-
Total Heavy Vehicle Generation	**6**	**50**	**50**
High Risk Heavy Vehicles Requiring Escort (HV-HVREs)			
38m long OSOM	-	1 vehicle for entire project	-
Worker Vehicles			
Utility Vehicles	20	6	6
Shuttle Buses	-	4	4
Total Worker Vehicle Generation	**20**	**10**	**10**
Total Construction Vehicle Generation	**24**	**60**	**60**

One vehicle movement = a vehicle arriving and leaving

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

4.2. CONSTRUCTION VEHICLE ROUTE

Construction materials, including the transformer, will be sourced from the Port of Melbourne, resulting in one key origin point for all construction vehicle loads. A detailed concept route assessment for the suitability of this route to accommodate the OSOM vehicle has been completed and is included in **Appendix D**. The detailed route assessment outlines the largest vehicle, the route selection process, key constraints, and vehicle manoeuvrability of the largest vehicle at all key intersections and rest stops. An extract from this report is shown below detailing how the route was selected, as well as some critical constraints for structures. Note, that while this assessment has been completed in the context of the OSOM, all other construction vehicles will be utilising this route for haulage as Port Melbourne will be the port of origin for all materials.

The route selection has been conducted with the assistance of the NHVR Route Planner. The majority of the Victorian portion of the proposed route uses the Northern Highway between Wallan and Echuca, and the majority of the New South Wales (NSW) portion uses the Cobb Highway between Echuca and Deniliquin.

Within Victoria, the route is conditionally pre-approved from the Port of Melbourne to the Victorian / NSW border at Echuca for a Class 1 2x8 Dolly & 10x8 Platform Trailer up to 206 tonnes (Reference Vehicle 8). The conditions applicable to the pre-approved route include:

- *A bridge assessment for the West Gate Bridge (SN6225).*
- *Liaison with West Gate Tunnel Project team on the West Gate Freeway prior to travelling through the corridor due to potential overnight lane width reductions.*
- *Speed restriction to five kilometres per hour for an approximate two kilometre long section of the Northern Highway between Tooborac and Heathcote.*
- *Speed restriction to five kilometres per hour and requirement to straddle centreline of road for an approximate 1.9 kilometre long section of the Northern Highway immediately south of Echuca-Mitiamo Road.*
- *Various operational conditions on bridges along the route, specifying operating speed restriction and/or required positioning of combination on the structure, highlighted in Table 2.*

Given the proposed combination does not comply with the Multi-State Class 1 Load Carrying Vehicle Mass or Dimension Exemption Notices, the route is not pre-approved within NSW and requires assessment and subsequent permit via the NHVR.

There are no known planned upgrades along the route.

The proposed route is shown in Figure 14.

Figure 14 Vehicle haulage route from Melbourne



Source – Urbis

4.3. CONSTRUCTION VEHICLE MANOEUVRABILITY

Two types of construction vehicles have been tested for vehicle manoeuvrability, these are B-doubles (the largest standard vehicle in the construction fleet, 26 metres long) and the OSOM vehicle associated with the delivery of the transformer as outlined in Section 4.1.2.

The detailed route assessment for the OSOM vehicle (see **Appendix D**) details vehicle manoeuvrability along the extent of the haulage route. The swept path analysis is presented in **Appendix G**. The following are the key outcomes:

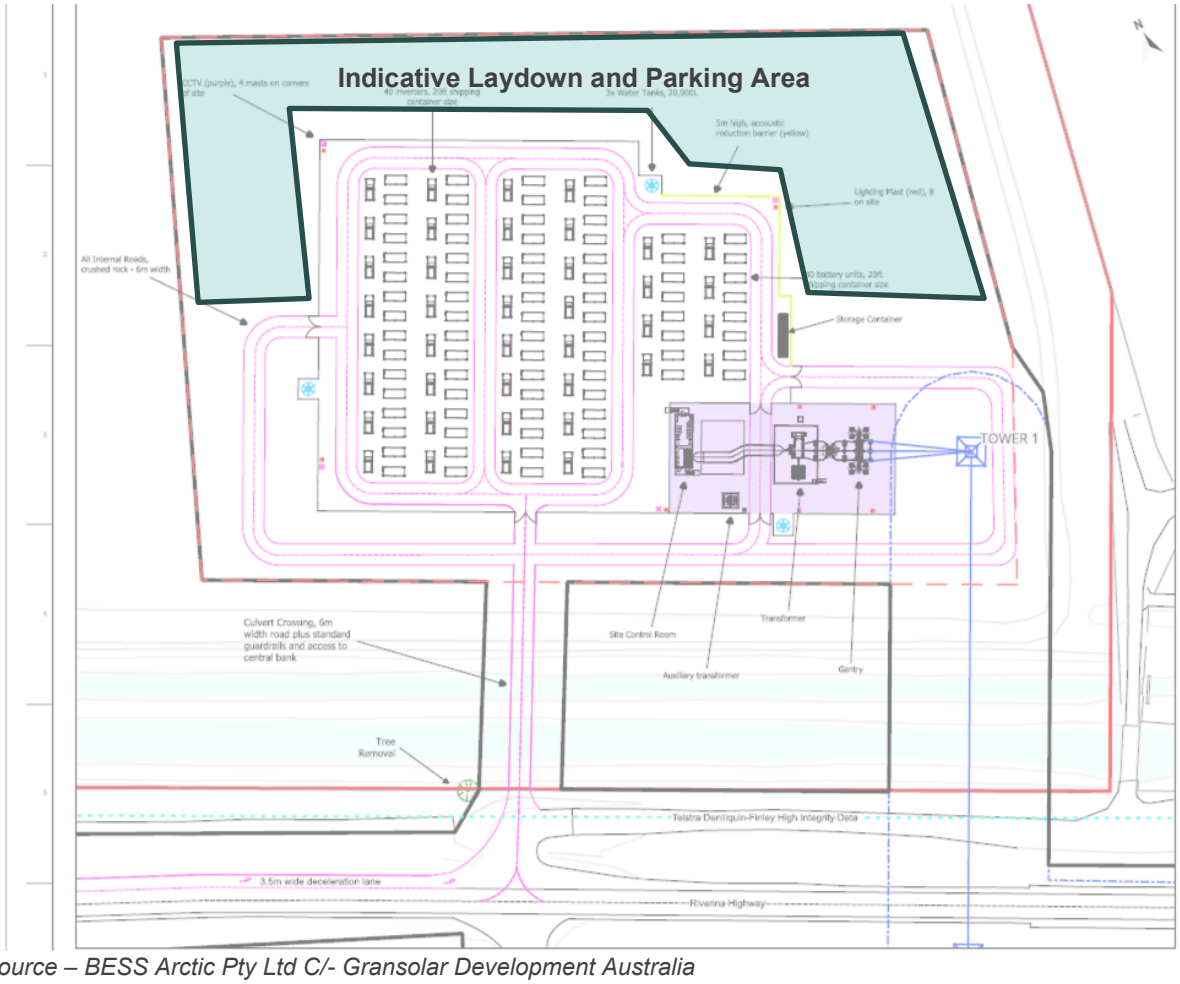
- The OSOM vehicle can access and egress the site with appropriate traffic control measures. Considering the nature of the OSOM vehicle's entry and exit manoeuvres, it is unlikely that any other vehicle trips will occur simultaneously. These manoeuvres will require appropriate traffic control measures due to the scale of the delivery vehicle. These measures will be outlined in the contractor's traffic management plans.
- A B-double vehicle can access and egress the site during the construction phase.

4.4. CONSTRUCTION LAYDOWN AREA AND PARKING

The laydown area for the BESS will be on site and will be accessed via the Riverina Highway. It is likely that during the construction phase, the location of the laydown area will shift based on when certain parts of the project are completed. An indicative laydown area is shown in Figure 15.

Similar to the laydown area, the on site car parking areas may be shifted throughout the construction period to accommodate certain construction phases. The laydown area will be sufficiently sized to store the expected two shuttle buses and six utility vehicles that may be expected to park on-site during peak construction periods.

Figure 15 Indicative construction laydown area



Source – BESS Arctic Pty Ltd C/- Gransolar Development Australia

4.5. PRE-CONSTRUCTION MINOR WORKS – TRAFFIC ASSESSMENT

4.5.1. Pre-Construction Minor Works Traffic Generation

The following section outlines trip generation for construction worker and construction vehicles (heavy vehicles) during pre-construction minor works.

As previously stated, these works are preliminary in nature and will be limited to the following activities:

- Artefact surveys and/or salvage
- Overhead line safety marking
- Building and road dilapidation surveys
- Geotechnical drilling, excavation or salvage
- Establishing temporary site office (in locations meeting the criteria identified in the conditions of this consent)
- Installation of environmental impact mitigation measures, fencing and enabling works
- Construction of minor access roads and minor adjustments to services/utilities

4.5.1.1. Construction Worker (Light Vehicles)

All workers required for pre-construction minor works will be housed in accommodation in Deniliquin and other surrounding towns[1]. These workers will arrive sporadically to undertake the ad-hoc activities that will occur during this phase. Workers will be unlikely to remain on-site for the entire day during these activities, hence temporally distributing light vehicle arrival and departure trips across the day.

Pre-construction minor works hours are proposed as below:

- Monday – Friday (7:00 AM – 6:00 PM).
- Saturday (8:00 AM – 1:00 PM).
- Sunday – No work.

The maximum traffic volumes associated with workers for pre-construction minor works are summarised in Table 15**.** These volumes are **maximums** and significantly lower worker volumes would be anticipated on the majority of days during pre-construction.

[1] It is noted that any workforce vehicle movements with an origin east of the site will be required to travel past the site and undertake a U-turn manoeuvre at the Riverina Highway/ Davidson Street roundabout in Deniliquin and travel back towards the site in order to turn left in at the Riverina Highway/ site access intersection, given that right turn movements into the site for construction related veihcles will be prohibited at this intersection. Measures to enforce this arrangement are described in **Section 4.9.1.**

Table 15 Vehicle traffic volumes for light vehicles – pre-construction minor works

Vehicle type	Number of daily movements (vpd)	AM Peak hour trips (vph)	PM Peak hour trips (vph)
Utility Vehicles	20	4	4
Total Light Vehicle Generation	20	4	4

*One vehicle movement = a vehicle arriving **and** leaving (equals two trips)*

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

4.5.1.2. Construction Vehicles (Heavy Vehicles)

Up to four heavy vehicle movements per day are anticipated to occur during pre-construction minor works.

The largest vehicle required for pre-construction minor works is a 12.5 metre long Heavy Rigid Vehicle, however may comprise of smaller rigid flatbed trucks to transport any necessary equipment to and from the site. Similarly to worker trips for pre-construction minor works, heavy vehicle inbound and outbound trips will be ad-hoc in nature.

Based on the construction haulage route, heavy vehicles for pre-construction minor works will access the site from the west and depart to the west.

The potential traffic volumes for heavy vehicles during the pre-construction minor works is detailed in Table 16**.**

Table 16 Vehicle traffic volumes for heavy vehicles – pre-construction minor works

Vehicle type	Number of daily movements (vpd)	AM Peak hour trips (vph)	PM Peak hour trips (vph)
HRV's	4	1	1
Total Heavy Vehicle Generation	**4**	**1**	**1**

*One vehicle movement = a vehicle arriving **and** leaving (equals two trips)*

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

4.5.1.3. Total Traffic Generation (Pre-Construction Minor Works)

The potential total traffic generation during pre-construction minor works is summarised in Table 17.

Table 17 Total vehicle traffic volumes during pre-construction minor works

Vehicle type	Number of daily movements (vpd)	AM Peak hour trips (vph)	PM Peak hour trips (vph)
Utility Vehicles	20	4	4
Total Light Vehicles	**20**	**4**	**4**
HRV's	4	1	1
Total Heavy Vehicles	**4**	**1**	**1**
Total Vehicle Generation	**24**	**5**	**5**

*One vehicle movement = a vehicle arriving **and** leaving (equals two trips)*

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

4.5.2. Pre-Construction Minor Works Traffic Impact

As shown in Table 17, it is expected that up to five vehicles will access or leave the site during the peak hour. Out of these trips, one will be a heavy vehicle and four will be light vehicles, including utility vehicles or utility vehicles towing trailers. These trips will likely be split between inbound and outbound vehicle trips.

The outlined vehicle volumes are expected to be the maximum number per day to occur across pre-construction minor works. Typically, hourly and daily volumes are expected to be substantially lower given the small extent and irregularity of activities constituting pre-construction minor works (as discussed in Section 4.1).

These expected volumes are considered low, as they would typically fall into a daily traffic volume fluctuation. It is considered that the pre-construction traffic should not have any adverse impact on the safety or operation of the Riverina Highway.

All inbound and outbound trips would utilise the existing rural property access and the existing culvert over the Moulamein Channel to enter and exit the site during pre-construction minor works.

The existing access point is assumed to be currently used by large waste trucks and / or other large residential or commercial delivery vehicles and emergency vehicles of up to 12.5m in length. Given the largest anticipated vehicle for the pre-construction minor works would be an HRV, it is considered that the current access arrangement is suitable for this phase of the project.

As discussed further in Section 4.6.4, extensive sight distance is available at the existing site access point to the Riverina Highway. This ensures that the negligible number of vehicles that will use the access during pre-construction minor works will be able to enter and exit the Riverina Highway in a safe manner.

No oversized overmass vehicles will be used during pre-construction minor works. All other applicable mitigation measures identified in Section 4.9 will be implemented during pre-construction minor works, including the measures to prevent construction vehicles turning right from the Riverina Highway into the site.

On this basis, the existing intersection arrangement is considered suitable to cater for the low levels of traffic associated with pre-construction minor works.

4.6. PRIMARY CONSTRUCTION PHASE – TRAFFIC ASSESSMENT

This section provides a summary of the anticipated traffic impacts of vehicles associated with the primary construction stage of the development.

All works within the primary construction phase will be undertaken after the upgrade of the site access to Riverina Highway (discussed in Section 4.6.4).

4.6.1. Primary Construction Phase Traffic Generation

The following section outlines trip generation for construction worker and construction vehicles (heavy vehicles) during the primary construction phase.

4.6.1.1. Construction Worker (Light Vehicles)

As previously stated, the construction period for the proposed development will be approximately 11 months with a peak period of three months.

All workers will be housed in accommodation in Deniliquin and other surrounding towns[2]. These workers will be shuttled to site using shuttle buses. It is acknowledged that some workers, particularly site managers and foremen will be using light vehicles such as utility vehicles to access the site. It has been assumed that during peak construction, 52 workers will be on site. Two shuttle buses will be used to shuttle most workers to the site (20 workers per bus), and each shuttle bus is expected to arrive from and return to the west during both peak hours, creating four trips during both the morning and afternoon peak hours. To allow for a conservative assessment, it has been assumed that the shuttle buses will not remain on site during the work day therefore each generating an inbound and an outbound trip at the start and end of the work day respectively.

The remaining workers (foreman / site managers) have been assumed to drive utility vehicles to the site with an average occupancy of two people per vehicle, resulting in a total of six vehicles being used, or a total of six daily movements (on the basis that the vehicles remain on site during the work day). In addition, it is assumed that all trips by utility vehicles will be arriving from the west at the start of the work day and returning west towards Deniliquin after a day of work.

Urbis has been advised that the construction hours are proposed as below:

- Monday – Friday (7:00 AM – 6:00 PM).
- Saturday (8:00 AM – 1:00 PM).
- Sunday – No work.

[2] It is noted that any workforce vehicle movements with an origin east of the site will be required to travel past the site and undertake an U-turn manoeuvre Riverina Highway/ Davidson Street roundabout in Deniliquin and travel back towards the site in order to turn left in at the Riverina Highway/ site access intersection, given that right turn movements into the site will be prohibited at this intersection for all construction related vehicles. Measures to enforce this arrangement are described in **Section 4.9.1.**

Construction worker trips during the peak construction stage are detailed in Table 18**.**

Table 18 Vehicle traffic volumes for light vehicles during peak primary construction phase

Vehicle type	**Number of daily movements (vpd)**	**AM Peak hour trips (vph)**	**PM Peak hour trips (vph)**
Shuttle Buses	4	4	4
Utility Vehicles	6	6	6
Total Light Vehicle Generation	**10**	**10**	**10**

*One vehicle movement = a vehicle arriving **and** leaving (equals two trips)*

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

The above table outlines the light vehicle (construction worker) traffic volumes during peak construction. A total of ten vehicle trips are expected during both peak hours, reflecting the arrival and departure of workers. All workers will enter and exit the site along the Riverina Highway from the west.

4.6.1.2. Construction Vehicles (Heavy Vehicles)

Urbis has been informed that there will be up to 50 heavy vehicles accessing the site during the peak construction phase per day. This will result in the following generation:

- Daily traffic – 50 heavy vehicle movements per day.
- Peak hour traffic – six heavy vehicle trips per hour.
- The following in and out splits are adopted for the AM and PM peak hours.
    - AM – 100 per cent in / 0 per cent out. (assuming entries will only occur towards the end of the AM peak after site set up, discussed further in **Section 4.6.3**).
    - PM – No construction trips anticipated during the peak hour.

Based on the construction haulage route, heavy vehicles are assumed to be accessing the site from the west in the morning.

The estimated vehicle trip generation for heavy vehicles during the peak construction phase is detailed in Table 19.

Table 19 Heavy vehicle traffic volumes during peak primary construction phase

Vehicle type	Number of daily movements (vpd)	AM Peak hour trips (vph)	PM Peak hour trips (vph)
HRV's	20	2	0
Low Loaders	10	2	0
B-Doubles	20	2	0
Total Heavy Vehicle Generation	**50**	**6**	**0**

*One vehicle movement = a vehicle arriving **and** leaving (equals two trips)*

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

4.6.1.3. Total Traffic Generation

The following Table 20 summarises the estimated total daily and peak hour traffic volumes for the site over the peak primary construction phase.

Table 20 Total vehicle traffic volumes during peak primary construction phase

Vehicle type	Number of daily movements (vpd)	AM Peak hour trips (vph)	PM Peak hour trips (vph)
Shuttle Buses	4	4	4
Utility Vehicles	6	6	6
Total Light Vehicles	**10**	**10**	**10**
HRV's	20	2	0
Low Loaders	10	2	0
B-Doubles	20	2	0
Total Heavy Vehicles	**50**	**6**	**0**
Total Peak Vehicle Generation	**60**	**16**	**10**

*One vehicle movement = a vehicle arriving **and** leaving (equals two trips)*

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

4.6.2. Construction Traffic Impact on Riverina Highway

The peak hour trips on Riverina Highway are summarised in Table 21.

The total traffic generated during the construction phase has been added to the estimated existing midblock volumes to understand the expected impact of construction vehicles on the Riverina Highway and wider road network and is summarised in One vehicle *trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

Table 22.

Table 21 Peak hour primary phase construction trips on Riverina Highway

Peak Hour Period			
Eastbound (inbound)	Total Construction LV Trips (vph)	Total Construction HV Trips (vph)	Total Construction Trips (vph)
AM	8	6	14
PM	2	0	2
Westbound (outbound)			
AM	2	0	2
PM	8	0	8

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

Table 22 Total peak hour primary phase construction traffic on Riverina Highway

	Estimated Existing Traffic Volume (vph)	**Total Construction Trips (vph)**	**Total Traffic Volume (vph)**	**Percentage Increase**
Eastbound (inbound)				
AM	134	14	148	10.4%
PM	148	2	150	1.4%
Westbound (outbound)				
AM	77	2	79	2.6%
PM	92	8	100	8.7%

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

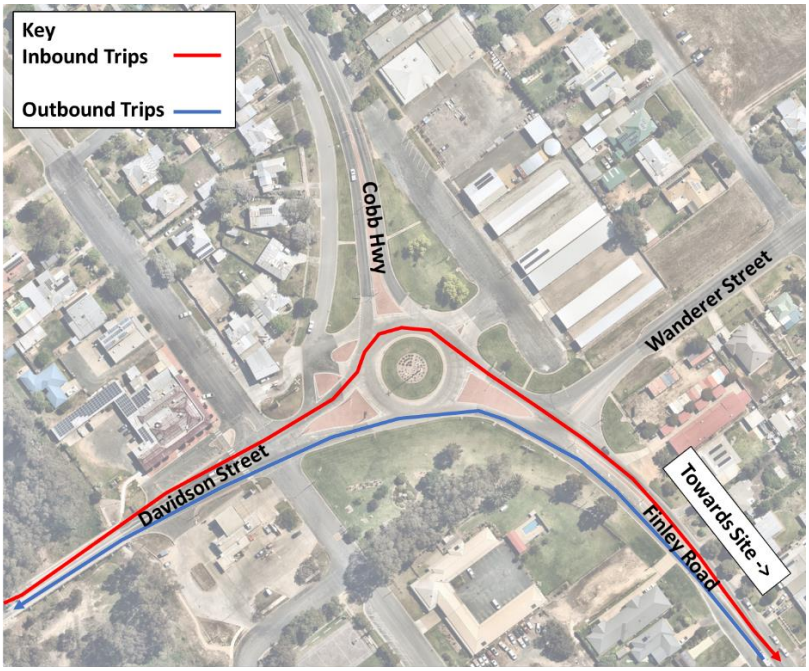
Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia, TIA, Urbis

The above table indicates increases of approximately ten per cent in the eastbound direction in the AM peak, and negligible increases of between one per cent and nine per cent in the AM westbound direction and in the PM peak. This will only be observed during the peak construction period. However, the total volume is well below the capacity of a single lane road (900 vph as referenced from *Austroads Guide to Traffic Management Part 3 Section 5.3 Multi Lane Roads*). As a result, the estimated traffic generation impact from construction traffic on the surrounding road network is anticipated to be minimal.

4.6.3. Construction Traffic Impact on Surrounding Intersections

The intersections of Cobb Highway / Albert Street / Finley Road / Davidson Street roundabout intersection and Finley Road / Wanderer Street T-intersection have been assessed using SIDRA INTERSECTION to determine the impact of construction traffic on the surrounding road network. Estimated construction traffic volumes and derived existing midblock volumes have been used, along with an assumed vehicle distribution of construction traffic as detailed in Figure 16.

Figure 16 Construction vehicle trip distribution through Davidson Street / Cobb Highway / Finley Road intersection towards the site



Source: Nearmap modified by Urbis

All construction vehicles will be heading inbound during the AM peak hour as it is not anticipated that the return trips will be completed during the peak hour given the time it will take to unload / reload vehicles. Additionally, the first construction deliveries will likely occur towards the end of the peak hour after site set up The critical peak hour will be during the AM peak period as both workers and construction materials will be arriving on site during this hour. During the AM peak hour, 16 vehicle trips are expected to be generated by the site.

During the PM peak period, it is assumed that only the worker vehicles will be passing through the intersections as workers return to their accommodation. During the PM peak hour, ten vehicle trips are expected to be generated by the site.

Based on the construction vehicle generation, 60 vehicle movements will occur across the working day. However, given the associated site shutdown period, it is unlikely that any deliveries will occur in the late afternoon.

Table 23 provides a summary of the peak construction period SIDRA modelling outputs, with detailed results provided in **Appendix B.**

Table 23 SIDRA Intersection results for peak construction period

Intersection	Peak Hour	Approach	Level of Service	Degree of Saturation	Average Delay (s)	95th Percentile Queue Length (m)
Hay Road / Albert Street / Finley Road / Davidson Street	AM	Finley Road (southeast)	A	0.21	2.2	10
		Albert Street (east)	A	0.08	4.7	1
		Cobb Highway (north)	A	0.08	8	4
		Alber Street (northwest)	A	0.03	4.2	1
		Davidson Street (west)	A	0.15	6.1	7
Finley Road / Wanderer Street	AM	Finley Road (southeast)	A	0.07	1	1
		Wanderer Street (northeast)	A	0.19	7	6
		Finley Road (northwest)	A	0.11	2	0
Hay Road / Albert Street / Finley Road / Davidson Street	PM	Finley Road (southeast)	A	0.16	2.	7
		Albert Street (east)	A	0.012	4	1
		Cobb Highway (north)	A	0.07	8	3
		Alber Street (northwest)	A	0.02	5	1
		Davidson Street (west)	A	0.21	6	9
Finley Road / Wanderer Street	PM	Finley Road (southeast)	A	0.05	1	0

Intersection	Peak Hour	Approach	Level of Service	Degree of Saturation	Average Delay (s)	95th Percentile Queue Length (m)
		Wanderer Street (northeast)	A	0.15	7	5
		Finley Road (northwest)	A	0.14	2	0

Source: Urbis

Based on the above analysis, the proposed increase in trip generation resulting from site generated construction vehicles is expected to have a minimal impact on the operation of the assessed intersections which will all continue to operate at LoS A. As a result, no upgrades to existing intersections are necessary.

4.6.4. Site Access Intersection Requirements

4.6.4.1. Safe Intersection Sight Distance Assessment

The safe intersection sight distance (SISD) is defined in Section 3.2.2 of the Austroads *Guide to Road Design, Part 4A, Unsignalised and Signalised intersections*, as the minimum standard to be provided at an intersection with a major road. A SISD assessment was undertaken at the intersection of the proposed site access with the Riverina Highway.

Figure 17 Safe intersection sight distance (SISD) formula

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

SISD = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to *AGRD Part 3* (Austroads 2016b) for a guide to values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration – refer to Table 3.3 and *AGRD Part 3* for a guide to values

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Source – Guide to Road Design Part 4A: Unsignalized and Signalised Intersections

The SISD assessment is undertaken based on the following parameters:

- An observation time of 3 seconds.
- A reaction time of 2.5 seconds.
- Deceleration coefficients for the purpose of SISD calculations are 0.46 for light vehicles and 0.24 for heavy vehicles.
- Driver eye height is 2.4 metres for trucks and 1.1 metres for cars.
- Operating speed of 100 km/h, based on the posted speed limit. TfNSW has requested that design speed be utilised instead of operating speed, hence 110 km/h has been applied for the calculation.

The results are summarised in Table 24.

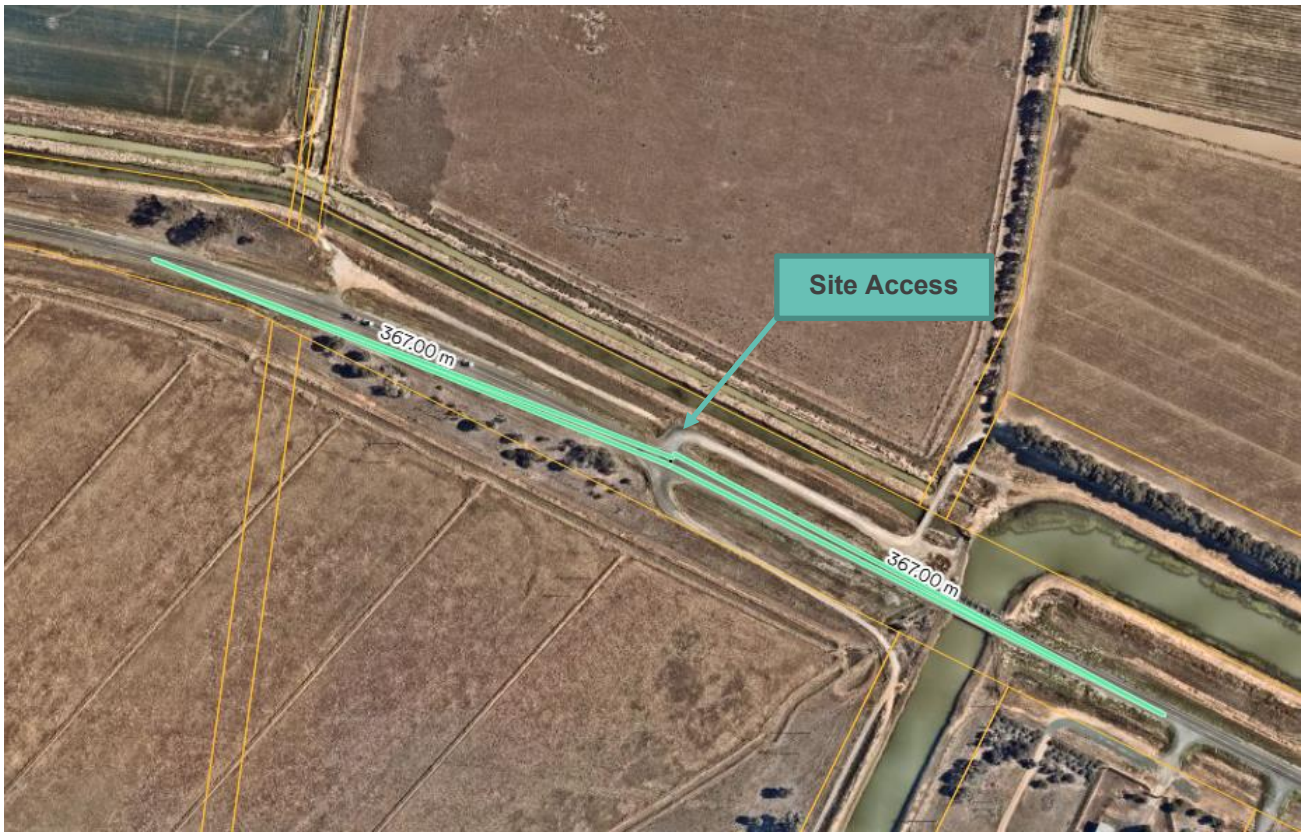
Table 24 Safe intersection sight distance requirements

Location	Vehicle Type	Operating Speed[1]	Decision time	Grade	Required SISD
Riverina Highway	Truck	110 km/h	3.0 + 2.5 s	0 %	367 m
	Car	110 km/h	3.0 + 2.5 s	0 %	285 m

[1]*TfNSW have requested that design speed of 110 km/h be adopted instead of operating speed*

Figure 18 provides a sight distance diagram for the proposed site access. This diagram confirms that at least 367 metres of sight distance is provided, thereby meeting the SISD requirement for the 5.0 metre offset stipulated in Section 3.2.2 of *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*.

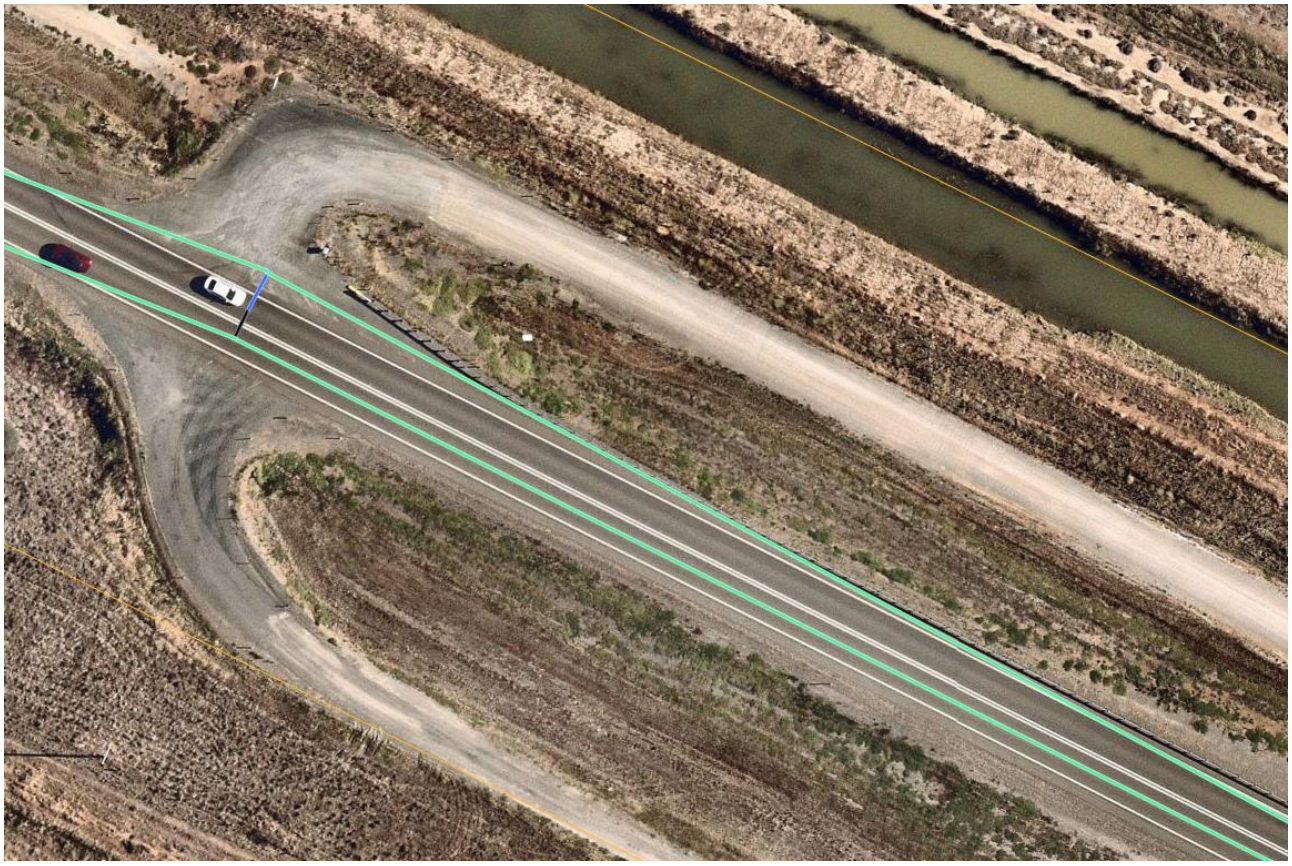
Figure 18 Safe intersection sight distance diagram



Source – Urbis

Figure 19 provides a detailed view of the interaction between the SISD diagram and existing roadside safety barrier located to the east of the site access. This confirms that the existing roadside safety barrier does not restrict SISD. Figure 19 confirms that the existing bridge safety barriers also do not restrict SISD.

Figure 19 Safe intersection sight distance diagram at existing roadside safety barrier



Source – Urbis

4.6.4.2. Approach Sight Distance Assessment

Section 3.2.1 of *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* specifies that Approach Sight Distance (ASD) is the minimum level of sight distance which must be available on the minor road approaches to an intersection to ensure that drivers are aware of the presence of an intersection. This assessment is not applicable to access points to private properties.

4.6.4.3. Deceleration Lane Requirements

Following from the sight distance assessment of the proposed new access point from the Riverina Highway, a review of access requirements using a turn warrants assessment outlined Austroads *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management* Section 3.3.6 Warrants for Basic Access (BA), Auxiliary Lanes (AU) and Channelised Lanes (CH) Turn Treatments was undertaken. This process assesses the major road volume (Q_M) against the left (Q_L) or right (Q_R). The volumes on Riverina Highway for the left and right turn are shown in Table 25**,** based on conservatively assuming that background and construction traffic AM and PM peak hours will align.

Table 25 Major road traffic volumes and proposed turn treatment types

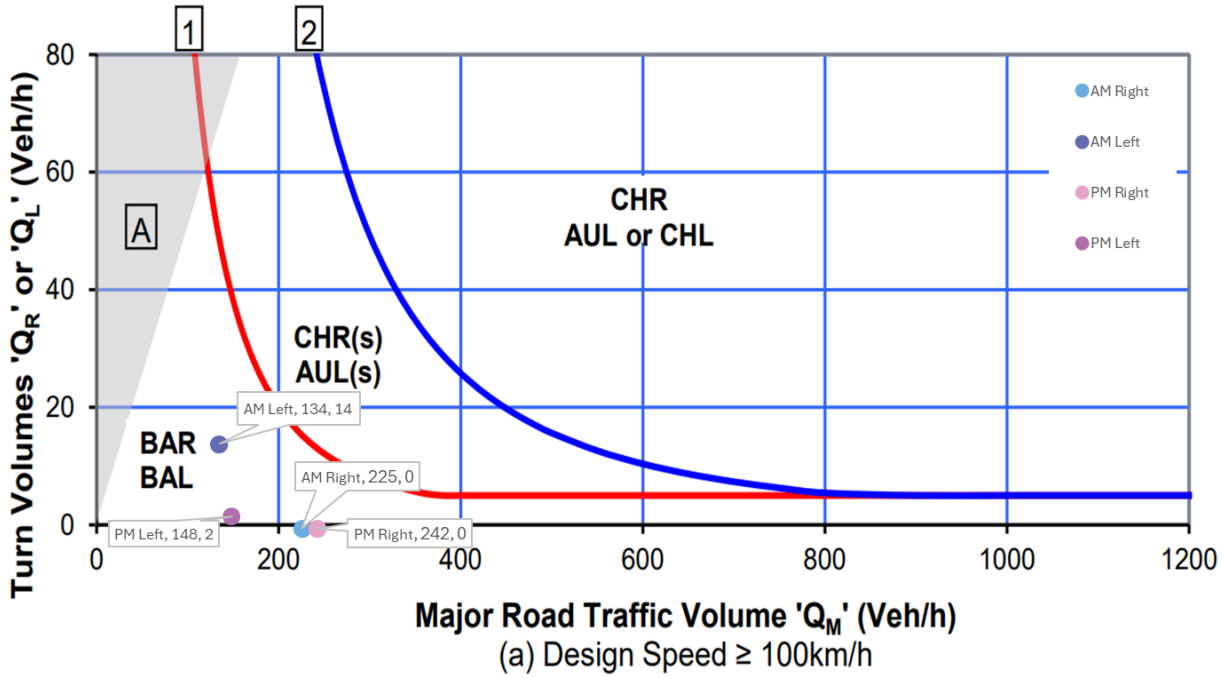
Movement	Calculation	AM Peak Hour (vph)	PM Peak Hour (vph)	Proposed Turn Treatment Type
Left turn	$Q_M = Q_{T2}$	134	148	Auxiliary left turn lane treatment (AUL)
Right turn, no splitter	$Q_M = Q_{T1}+Q_{T2}+Q_L$	225	242	No change

The calculation of major road traffic volume (Q_M) is based on the equations in Table 25, the background traffic volumes detailed in **Section 2.4.4** of this report and the anticipated construction traffic generation in **Table 20.**

Given right turns will not be permitted into the site during construction for all construction vehicles, there is no Q_R volume based on the construction trip distribution.

Figure 20 plots the Q_M and Q_R / Q_L volumes against the Austroads turn warrants assessment diagram to gain an understand of access requirements.

Figure 20 Austroads turn lane warrant assessment



Source – Austroads modified by Urbis

Based on Figure 20, a BA treatment for the left turn into the site would be sufficient. However, it is proposed to provide a full AUL to support the left turn movement into the site to better support the safe and efficient access of vehicles, particularly heavy vehicles. During construction, no vehicles are proposed to make a right turn into the site. As a result, no change to the current arrangement for right turn movements into the site is proposed. Vehicles travelling westbound on the Riverina Highway are associated with existing background traffic volumes and not associated with site trip generation.

The proposed AUL has been designed in accordance with *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*. The result of this is a 180 metre long deceleration lane including 40 metres of taper, based on the following variables:

- Design speed of 110 km/h
- Turn lane width of 3.9 metres
- Design speed of exit curve of 20 km/h, based on an exit curve radius of approximately 20 metres

The diverge length required is approximately 80 metres, and therefore the deceleration length was adopted to inform the length of the AUL in accordance with Figure 4 of *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*.

The strategic concept design of the proposed access to the site from the Riverina Highway was previously shown in Figure 11 and is provided in **Appendix F**.

4.6.4.4. Interaction with Existing Rural Property Accesses

As shown in **Figure 11**, there are two existing rural property accesses in the vicinity of the proposed site access to Riverina Highway. It is understood that these are private access points and do not serve any wider movement function with regard to the wider road network.

Existing Rural Property Access Operation

One rural property access is located on the northern side of the Riverina Highway and serves Lot 11, DP856212 principally known as 21380 Riverina Highway, Deniliquin. The proponent has engaged with the neighbour regarding their typical daily movements and use of their rural farm property access. This engagement revealed daily traffic volumes of 20 inbound trips and 20 outbound trips associated with residents and the small on-site business. These movements are spread across the day and are considered negligible from a traffic impact perspective. Notwithstanding, the mitigation measures established in the strategic concept design (**Appendix F),** include the provision of Give Way signage in accordance with Australian Standard 1742.2-2022 *Manual of uniform traffic control devices Part 2: Traffic control devices for general use*.

There is also an existing rural property access directly opposite the proposed site access intersection on the southern side of the Riverina Highway. This access appears to principally serve the Lot 1, DP563000 which appears to be developed with a single dwelling and agricultural land. This lot has a more direct access to Riverina Highway located approximately 1.8 kilometres to the west of the site access intersection. Hence, it is expected that the rural property access on the southern side of the Riverina Highway opposite the site would be rarely used. Further, it is noted that Australian Standard 2890.1:2004 does not preclude the provision of domestic accesses opposite another entering road. It is therefore considered suitable to retain the existing rural property access on the southern side of the Riverina Highway throughout the duration of works, and no mitigation is considered warranted.

Interaction of traffic across the two access points

In response to TfNSW's comment regarding interaction of traffic movements across the two access points, the following considerations are made.

The Deniliquin East BESS project is utilising the northern rural property access and hence is undertaking mitigating works to efficiently connect the site to the surrounding road network (via this existing access point).

Regarding the southern access, the project has no ability to close or stagger this private property access, as it is not under the proponent's ownership.

TfNSW have raised concern that vehicles may drive straight across the Riverina Highway between the two private rural property access points. There is no nexus for this movement to occur under existing conditions. No traffic associated with the Deniliquin East BESS will undertake this movement.

Irrespective of this, the southern rural property access intersection with the Riverina Highway has excellent sight distance, well in excess of the 267 metre SISD requirement calculated above in Table 24.

On the balance of the above considerations, no further mitigation measures are considered necessary for the southern rural property access beyond those specified in Section 4.9. These mitigation measures apply to manage construction traffic impacts external to the site, inclusive of the private property to the south.

4.6.5. Cumulative Impact of Construction Vehicles

The SEARs for Deniliquin BESS requests undertaking a cumulative assessment having regarded the other nearby developments. As such, developments within the 50 kilometres radius have been considered. The cumulative assessment for the 50 kilometres radius incorporates developments that are likely to utilise the proposed access / haulage routes in the surrounding road context.

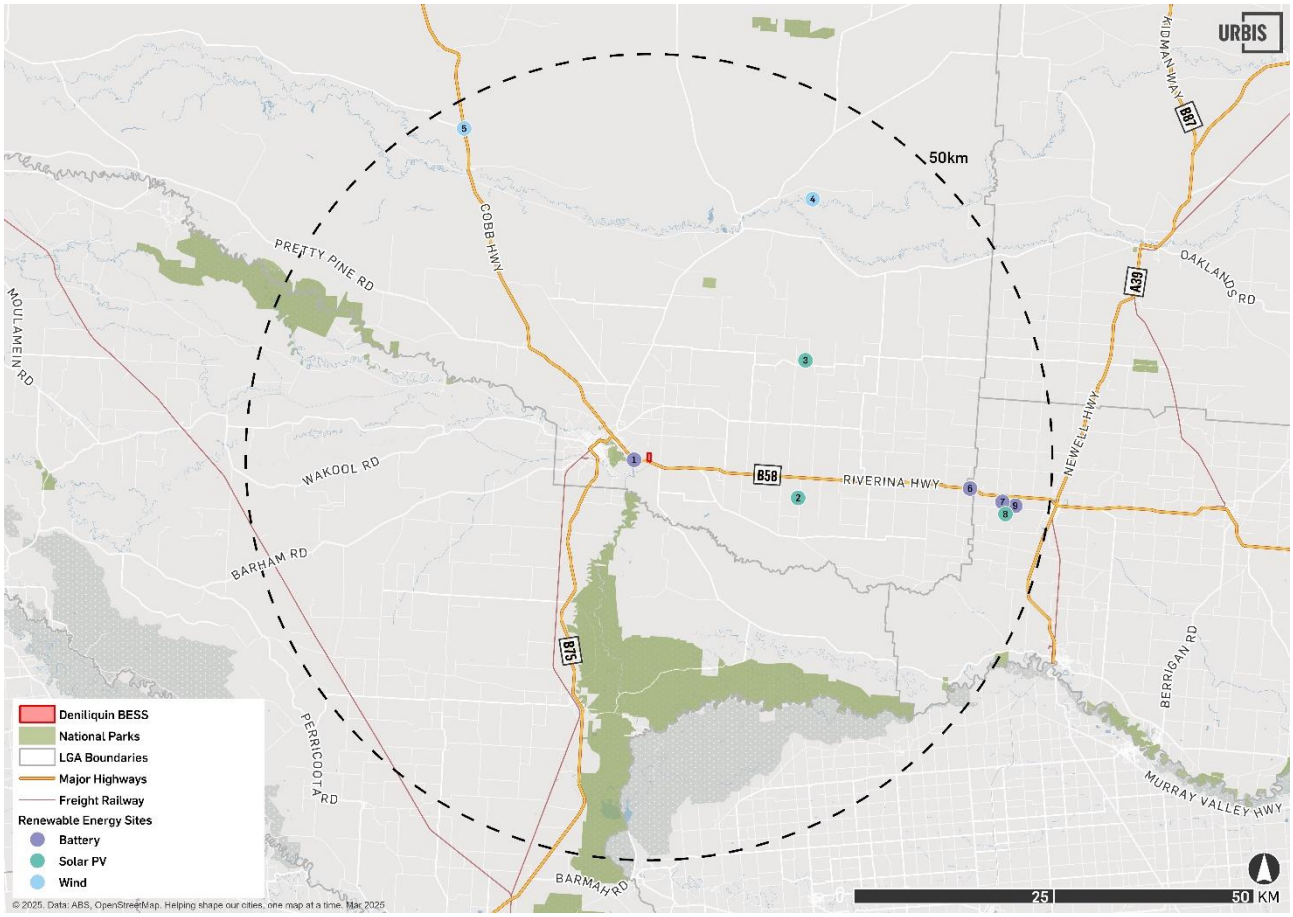
Table 26 shows the developments considered in the cumulative impacts assessment, and their likelihood to coincide with nearby developments.

Table 26 Summary of nearby developments

Development	Map ID	Address	Planning Stage	Timing	Trips Generated	Likely to Coincide with Project
Deniliquin BESS	1	21541 Riverina Highway, Deniliquin, NSW	Proposed	Mid 2027	166 vpd (estimate)	High
Transgrid Deniliquin Substation Upgrade		Lot 1, DP536901, Deniliquin, NSW	Proposed	2027	70 vpd (estimate)	High
Tarleigh Park Solar Farm	2	260 Parfreys Road, Deniliquin, NSW 2713	Approved	Unknown	285 vpd (estimate)	Low
Currawarra Solar Farm	3	1385 Mayrung Road, Deniliquin, NSW 2710	Approved	Unknown	303 vpd (estimate)	Low
Conargo Wind Farm	4	526 Yanco Road, Conargo, NSW 2710	Proposed	Unknown	Unknown	Low
Wanganella Wind Farm	5	Riverina Highway, Finley, NSW 2713	Proposed	Estimated construction 2027 and operation 2030+	Unknown	Low to medium
Finley BESS	6	16891 Riverina Highway, Finley, NSW 2713	Proposed	Unknown	Unknown	Low
Berrigan BESS	7	168 Canalla Road, Finley, NSW 2713	Proposed	Unknown	Unknown	Low
Finley Solar Farm	8	Broockmanns and Canalla Road Reserves, Finley, NSW 2713	Approved	Operational since 2019	2 vpd (estimate)	Low
South Coree BESS	9	198 Canalla Road, Finley, NSW 2713	Proposed	Unknown	Unknown	Low
				Total	**824 vpd**	**N/A**

Figure 21 shows the location of the other nearby developments considered.

Figure 21 Other nearby developments considered



Source: Urbis

Given the challenges of obtaining development information, the extent of this review has focused on the impacts along the Riverina Highway. The Riverina Highway has a capacity of 900 vehicles per hour in each direction (or 1,800 vehicles per hour for a two way, two lane road) based on *Austroads Guide to Traffic Management Part 3 Section 5.3 Multi Lane Roads*.

There is limited publicly available information on timing and associated trip generation for the surrounding developments, except for the Deniliquin BESS, Tarleigh Park Solar Farm, and Currawarra Solar Farm. It is noted that both Tarleigh Park and Currawarra Solar Farms have approved planning consents, while most other projects are still in the early development stages. Finley Solar Farm has been operational since 2019, and the trips generated during its operation is low, peaking at a maximum of two movements per day.

In assessing the worst-case scenario, all surrounding developments have been considered to evaluate the cumulative impact during construction.

Two developments to the west of Deniliquin are expected to use Riverina Highway - the Deniliquin BESS site and the proposed upgrade to the existing Transgrid Deniliquin Substation. The Deniliquin BESS site has an estimated peak construction period vehicle trip generation of 166 vehicles per day and an associated peak hour generation of 46 vehicles per hour[3]. The directional breakdown of these trips with respect to the subject site are summarised in Table 27.

[3] Source: Deniliquin BESS Traffic Impact Assessment, dated 17 July 2025, prepared by Amber Traffic and Transportation for NGH Consulting Pty Ltd

Table 27 Summary of cumulative trips from Deniliquin BESS travelling past site

Peak Hour	Peak hour trips generated from Deniliquin BESS	
	Riverina Highway eastbound (past site)	**Riverina Highway westbound (past site)**
AM Peak Hour	26 trips	1 trip
PM Peak Hour	1 trip	26 trips

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Note: Deniliquin BESS TIA (17 July 2025) indicates 19 peak hour construction trips will be to/from the east, not impacting the site

Based on preliminary discussions with Lumea, the Transgrid Deniliquin Substation upgrade has an estimated peak construction period vehicle volume of 70 vehicles per day, with 16 inbound vehicles per hour during the AM peak and 10 outbound vehicles per hour during the PM peak. It is conservatively assumed that all of these trips will be to/from the west, and therefore past the site.

Developments to the east, such as Tarleigh Park Solar Farm and Currawarra Solar Farm, are also likely to use Riverina Highway. However, preliminary investigations suggest that construction traffic will potentially access the sites from the east, indicating a minimal impact on Deniliquin.

The cumulative impact of the proposed development and the nearby Deniliquin BESS is expected to result in an additional 68 peak hour vehicles movement on Riverina Highway. This would result in the total peak hour vehicle movements on the Riverina Highway being in the order of 308 vehicles per hour (existing volume of 240 vehicles per hour plus 68 vehicles per hour due to cumulative development). The cumulative total peak hour volume of 308 vehicles per hour is well within the 1,800 vehicles per hour capacity for a two-way, two-lane road. The cumulative impact on the operation of the Riverina Highway is therefore expected to be minimal.

While the cumulative traffic impact during construction is anticipated to be minimal, to mitigate the risk of project overlaps, it is recommended that the construction contractor liaise with the surrounding approved and proposed developments to understand their construction schedule and coordinate with other nearby developments should any overlapping construction works occur.

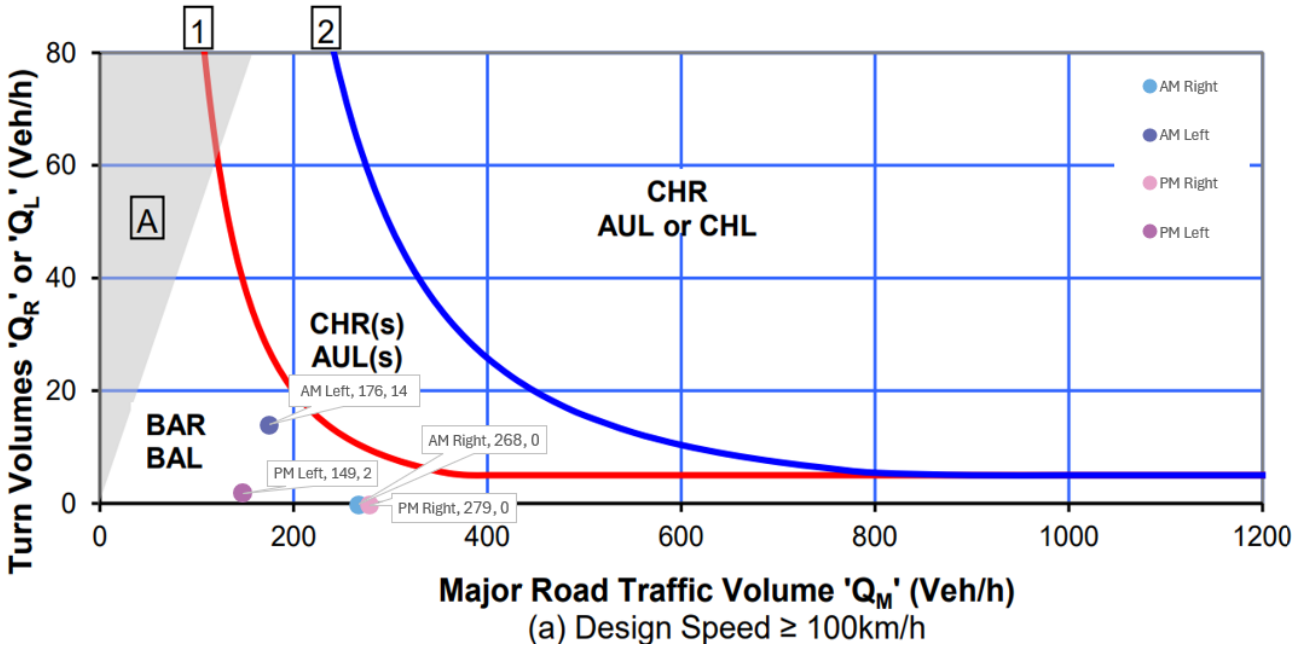
4.6.5.1. Cumulative Assessment of Deceleration Lane Requirements

A cumulative assessment was undertaken against Austroads *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management* Section 3.3.6 Warrants for Basic Access (BA), Auxiliary Lanes (AU) and Channelised Lanes (CH) Turn Treatments. The relevant volumes applicable to this assessment are summarised in Table 28.

Table 28 Major road cumulative traffic volumes and proposed turn treatment types

Movement	AM Peak Hour (vph)	PM Peak Hour (vph)	Proposed Turn Treatment Type
Left turn	Q_M = 134 + 26 + 16 = **176**	Q_M = 148 + 1 + 0 = **149**	Auxiliary left turn lane treatment (AUL)
Right turn, no splitter	Q_M = 225 + 27 + 16 = **268**	Q_M = 242 + 27 + 10 = **279**	No change

Figure 22 Austroads turn lane warrant assessment - cumulative



Again, based on Figure 22 a BA treatment for the left turn into the site would be sufficient for both the cumulative AM and cumulative PM peak hours. Nevertheless it is proposed to provide a full AUL to support the left turn movement into the site to better support the safe and efficient access of vehicles, particularly heavy vehicles. During construction, no vehicles are proposed to make a right turn into the site. As a result, no change to the current arrangement for right turn movements into the site is proposed. Vehicles travelling westbound on the Riverina Highway are associated with existing background traffic volumes and not associated with site trip generation.

Section 4.6.4.3 highlights the proposed design parameters of the AUL in accordance with *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections.*

4.7. TRANSGRID SUBSTATION WORKS – TRAFFIC ASSESSMENT

4.7.1. Transgrid Substation Works Traffic Generation

The Transgrid Substation Upgrade works are expected to generate a maximum of 60 vehicle movements per day during peak construction periods. In lieu of any further detail that Transgrid are willing to provide, Table 29 provides a breakdown of worker and construction vehicle trips and sizes for the Deniliquin Substation upgrade works associated with Deniliquin East BESS connection to the wider electrical network.

Table 29 Total vehicle traffic volumes during peak Transgrid Substation works

Vehicle type	Number of daily movements (vpd)	AM Peak hour trips (vph)	PM Peak hour trips (vph)
Shuttle Buses	4	4	4
Utility Vehicles	6	6	6
Total Light Vehicles	**20**	**10**	**10**
HRV's	50	6	0
AV's			
Total Heavy Vehicles	**50**	**6**	**0**
Total Vehicle Generation	**60**	**16**	**10**

*One vehicle movement = a vehicle arriving **and** leaving (equals two trips)*

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

4.7.2. Transgrid Substation Works Traffic Impact on Riverina Highway

All construction vehicle traffic associated with the Transgrid Substation works will follow the same haulage route as the primary construction phase of the BESS site. All workers will be accommodated under the same arrangement as the primary construction phase of the BESS site.

All vehicles associated with the construction works for the Transgrid Substation shall originate from and depart toward the west. On this basis the peak hour construction traffic generation on the Riverina Highway during Transgrid Substation works is summarised in Table 30.

Table 30 Total peak hour Transgrid Substation construction traffic on Riverina Highway

	Estimated Existing Traffic Volume (vph)	Total Construction Trips (vph)	Total Traffic Volume (vph)	Percentage Increase
Eastbound (inbound)				
AM	134	14	148	10.4%
PM	148	2	150	1.4%
Westbound (outbound)				
AM	77	2	79	2.6%
PM	92	8	100	8.7%

All volumes represent one inbound or one outbound vehicle per table sub-heading

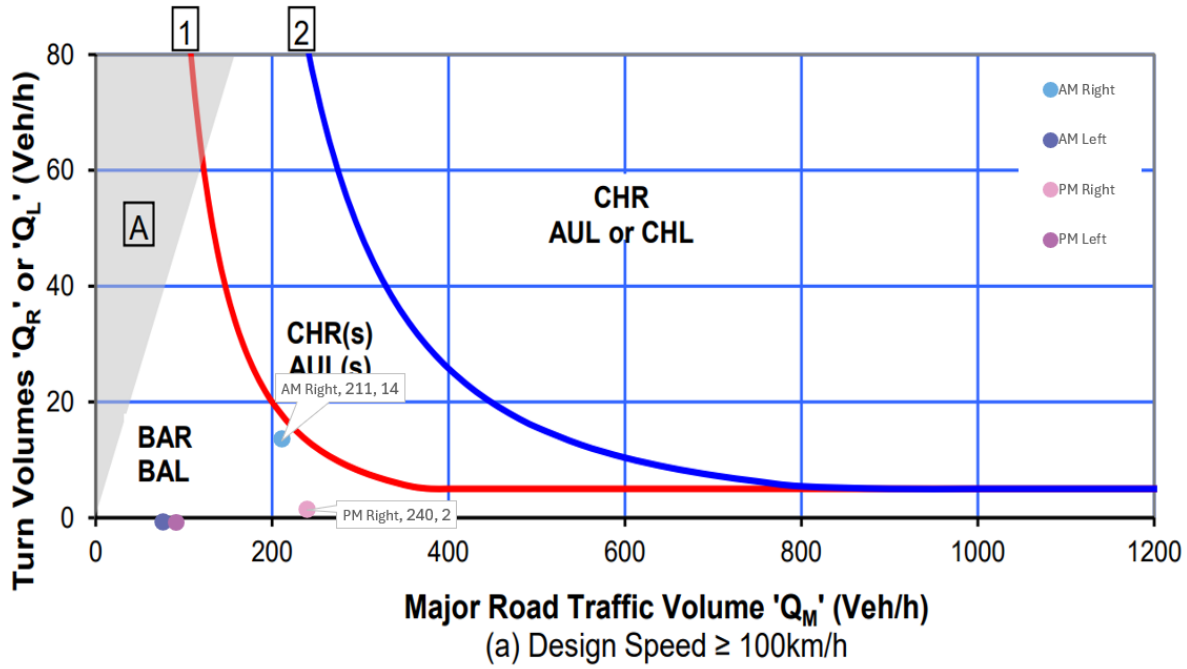
All construction traffic associated with the upgrade works will access the Transgrid Deniliquin Substation site via the existing access point.

An assessment of this access point has been undertaken against Austroads *Intersections, Interchanges and Crossings Management* Section 3.3.6 Warrants for Basic Access (BA), Auxiliary Lanes (AU) and Channelised Lanes (CH) Turn Treatments. The relevant volumes applicable to this assessment are summarised in **Table 28**.

Table 31 Major road traffic volumes and proposed turn treatment types

Movement	AM Peak Hour (vph)	PM Peak Hour (vph)	Proposed Turn Treatment Type
Left turn	$Q_M = 77$	$Q_M = 92$	No change
Right turn, no splitter	$Q_M = 134 + 77 + 0 = 211$	$Q_M = 148 + 92 + 0 = 240$	Rural Basic Right Turn Treatment (BAR)

Figure 23 Austroads turn lane warrant assessment – Transgrid Substation works



Based on the assessment in Table 31 and Figure 23, the access requires a BAR treatment on the Riverina Highway to facilitate efficient movement of construction vehicles associated with the Transgrid Deniliquin Substation upgrade works.

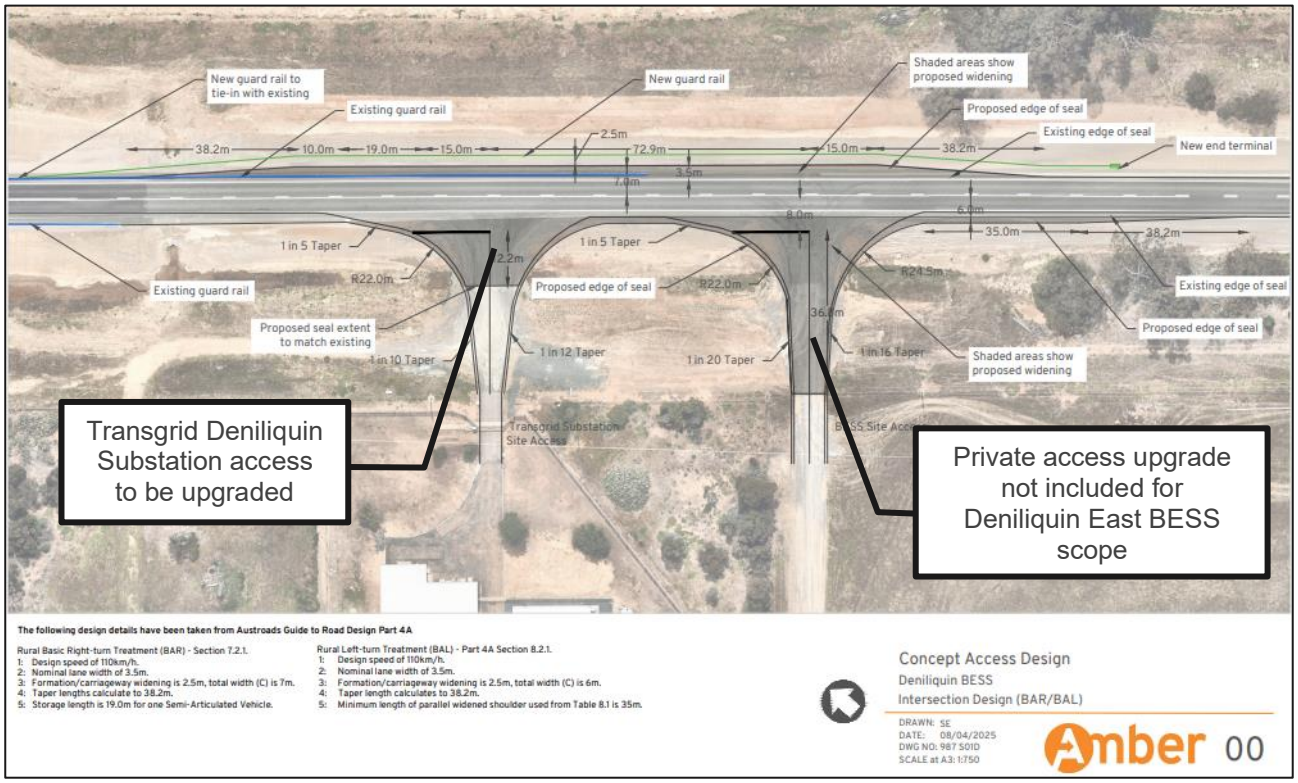
The access design for the Transgrid site access has been prepared by others as part of the application for the Deniliquin BESS site (Application no. SSD-72258210), located to the south-east of the subject site. This is because this project also triggers the requirement to upgrade the intersection. At the time of preparing this TIA, the Deniliquin BESS site is in the "Determination" phase, approved by the IPC on 15 January 2026. Figure 24 provides an extract of the strategic concept design for the site access approved for the Deniliquin BESS project.

It is unknown at this stage if the Deniliquin BESS project will provide the intersection upgrade prior to this project requiring it. For efficiency reasons, there may be potential for collaboration between the projects, though this would be determined at a later stage. However, it is acknowledged that this project relies on the intersection upgrade, and thus the following commitment is made:

The Deniliquin East BESS project has the resources and commits to delivering the BAR upgrade in the event that it is not upgraded prior to this project requiring it.

It is proposed to provide an intersection upgrade in line with that shown in Figure 24. The intersection upgrade relates to only the access to the Transgrid Substation and would not include the access upgrade to the adjoining property to the east.

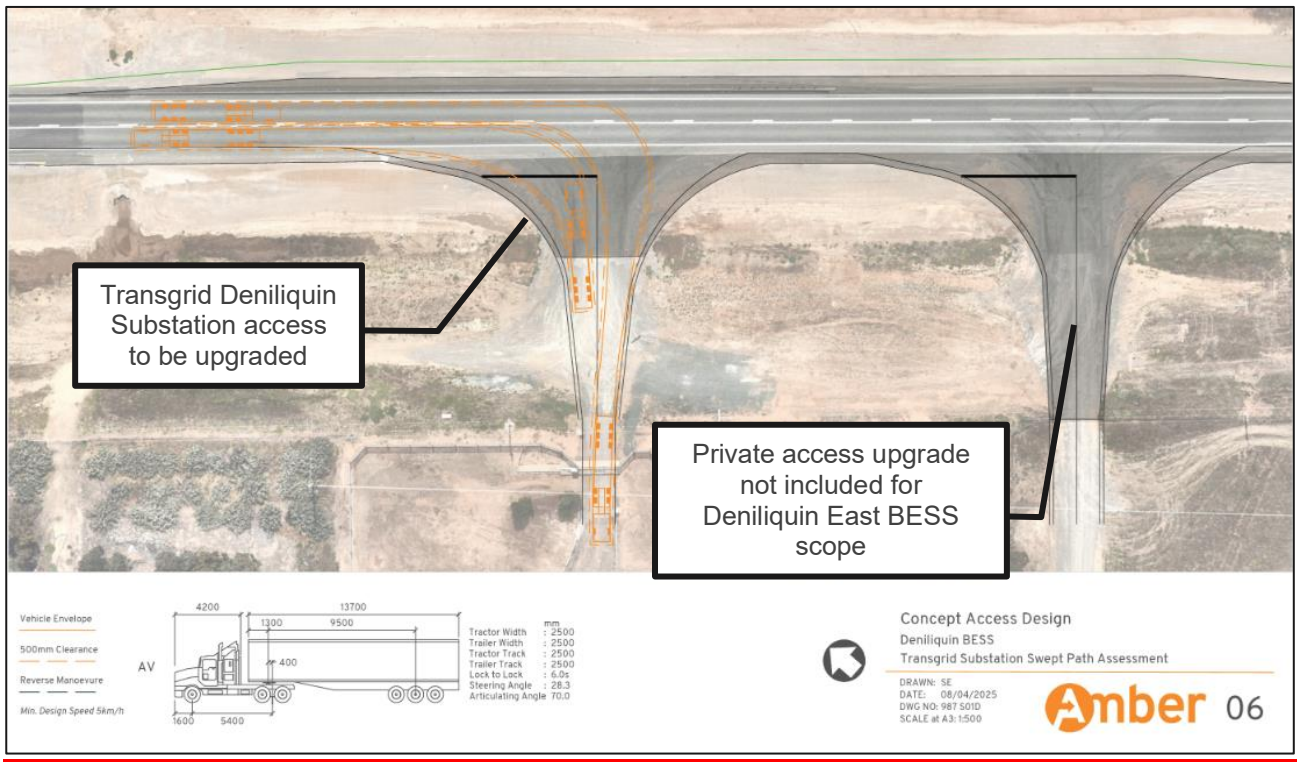
Figure 24 Extract of strategic concept design for Transgrid Deniliquin Substation access (prepared by others)



Source: Amber Organisation Pty Ltd, DWG NO: 987 SO01D, dated 08/04/2025 (from NSW SSD Portal)

The swept path assessment in Figure 25 confirms that the largest construction vehicle can suitably enter and exit the Transgrid Deniliquin Substation access.

Figure 25 Extract of Transgrid site access swept path assessment



Source: Amber Organisation Pty Ltd, DWG NO: 987 SO01D, dated 08/04/2025 (from NSW SSD Portal)

The neighbouring Deniliquin BESS project also undertook a sight distance assessment for the Transgrid Substation access point. This confirms that suitable SISD is provided at the Riverina Highway and site access intersection. For completeness this assessment is extracted and shown in Figure 26.

Figure 26 Extract of sight distance assessment for Transgrid Substation access (prepared by others)

Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided along the major road at any intersection. Table 3.1 of the guide specifies the SISD required for various design speeds. Given Riverina Highway has a speed limit of 100km/hr a design speed of 110km/hr has been adopted which requires an SISD of 300 metres based on a reaction time of 2.5 seconds.

The available sight distance at both access points exceeds the requirements of the Austroads Guide given the relatively flat and straight alignment of the road network. It is noted that some larger trees on the site boundary may need to be pruned to maintain adequate sight distance towards the east for the BESS site access. The sight distance for each direction is depicted within Figure 20 and SISD drawings provided in Appendix E.

Source: Amber Organisation Pty Ltd, Traffic Impact Assessment, dated 15/09/2025 (from NSW SSD Portal)

4.8. TRANSMISSION LINE CONNECTION WORKS – TRAFFIC ASSESSMENT

To facilitate connection between the BESS and the wider electricity network, construction of a transmission line between the site and the Transgrid Deniliquin Substation (located at Lot 1, DP526901) is required. This will include construction of a total of four transmission line pylons, of which three will be located within the road reserve on the southern side of the Riverina Highway.

Typically works of this nature would be managed via a CTMP given their short duration, whereby temporary traffic management measures such as speed limit reductions and advanced warning signage retain their effectiveness without the need to undertake extensive permanent infrastructure upgrades.

Nevertheless, TfNSW has requested a detailed traffic assessment be provided for these very short duration works.

4.8.1. Transmission Line Connection Works – Traffic Generation

Given the proximity to the main construction site, all workers will be staged from the BESS site to undertake the transmission line works.

The works will be undertaken across two stages. It is expected that construction will last approximately three months, with up to four weeks of actual construction activity comprising:

- Month 1 - Foundation construction: approximately 2 weeks
- Month 2 - Concrete curing period: no OHL construction activity on site
- Month 3 - Pole assembly, erection, and stringing: approximately 2 weeks

The traffic generation associated with the transmission line connection works is summarised in Table 32.

Table 32 Total trip generation during transmission line connection works

Vehicle type	**Stage 1 – Foundation Construction for Pylons**			**Stage 2 – Pole Erection and Transmission Line Stringing**		
	Number of daily movements (vpd)	**AM Peak hour trips (vph)**	**PM peak hour trips (vph)**	**Number of daily movements (vpd)**	**AM Peak hour trips (vph)**	**PM peak hour trips (vph)**
Light vehicles	No additional movements					
Heavy vehicles	24	4	4	20	4	4

*One vehicle movement = a vehicle arriving **and** leaving (equals two trips)*

*One vehicle trip = a vehicle arriving **or** a vehicle leaving – i.e. inbound and outbound trips counted separately*

Source: BESS Arctic Pty Ltd C/- Gransolar Development Australia

4.8.2. Transmission Line Connection Works – Traffic Impact

No additional access points to Riverina Highway are required. Construction vehicles associated with the transmission line construction would use:

- the BESS site access to the north of the Riverina Highway
- the existing rural property access to the south of Riverina Highway opposite the site access (for construction of the westernmost pylon), and
- the Transgrid Deniliquin Substation access to the east of the site access (for construction of the two pylons to the east of the Mulwala Canal).

Up to **one inbound** and **one outbound trip** are expected at each access point in any given hour. These levels of traffic generation do not warrant further assessment. The SISD available at the existing rural property access point on the southern side of the Riverina Highway is excellent and exceeds the requirement of 367 metres specified under Austroads *Guide to Road Design, Part 4A, Unsignalised and Signalised intersections*.

Nevertheless, the transmission line works will not be undertaken until the Transgrid Substation site access point is upgraded to a BAR in alignment with the assessment in Section 0. In addition the BESS site access, which will be used to construct the northernmost pylon, will be upgraded to include an AUL deceleration lane in accordance with Appendix F.

On this basis the proposed transmission line connection works will result in no operational or safety impacts on the Riverina Highway or surrounding road network.

4.9. MITIGATION MEASURES

Unless otherwise specified, these mitigation measures are applicable to all phases of construction including pre-construction minor works and the transmission infrastructure and substation upgrade works. These mitigation measures are in addition to the physical intersection upgrades discussed in the above sections.

4.9.1. Construction Vehicle Right Turn Ban Measures

In a meeting with TfNSW on Thursday 30 March 2026, it was agreed that construction vehicle access routes, and specifically the “no right turn into the site entry” for construction related vehicles, could be managed via mitigation measures such as CCTV. It was agreed that a No Right Turn sign, as previously proposed, is not appropriate given the adjacent property using the northern access point.

To enforce the no right turn, the applicant agrees to a condition of consent worded similarly to the below:

Unless the Planning Secretary agrees otherwise in writing, all project related construction vehicles are prohibited from turning right from Riverina Highway into the site access.

The Applicant must prepare a Management Plan for the development in consultation with TfNSW and Council, and to the satisfaction of the Planning Secretary. This plan must include details to prevent project related vehicles from turning right from Riverina Highway into the site access.

Details of such measures will be developed in consultation with TfNSW and Edward River Council. The project commits to continual monitoring of the site access during construction, which could include CCTV video with computer-vision detection and incident logging. Additional measures will also be implemented such as inclusion of site access requirements within induction processes and regular reminders at daily pre-start meetings.

4.9.2. Works to Facilitate High-Risk OSOM Movement

To facilitate the single high-risk OSOM movement, some works external to the site have been identified.

New South Wales

The swept paths indicate that the high-risk OSOM is required to traverse mountable traffic islands or roundabout aprons in some locations. TfNSW has indicated that this is not supported on the state road network within NSW. Subsequently, strategic concept designs for intersection works to facilitate the single high-risk OSOM movement are provided in **Appendix F**.

These designs include an interim treatment which will be implemented to facilitate the high-risk OSOM movement, and the ultimate treatment to return the state road network back to its original state. As specified in the designs, the ultimate treatment will be constructed within one (1) month of the OSOM movement.

The following intersection works are required (as shown in **Appendix F):**

- Cobb Highway / Hardinge Street, Deniliquin – removal of one mountable traffic islands at roundabout.
- Hardinge Street / Charlotte Street, Deniliquin – removal of two mountable median islands along bend.
- Charlotte Street / Davidson Street, Deniliquin – removal of two mountable median islands along bend.

These works have been required by TfNSW and are not due to the findings of the route assessment provided in **Appendix D.**

Victoria

The swept paths include notation for removal of relevant signs and highlights where a portion of the combination needs to traverse the verge or a mountable kerb or traffic island. These areas were identified as suitable for traversal based on the route drive.

A summary of the temporary alterations to road reserve infrastructure required along the Victorian portion of the route is provided below. The specific alterations are provided on the concept swept path assessment provided in **Attachment A** of the Concept Route Assessment **(Appendix D)**. Signage will be removed during the passage of the combination only and be reinstated immediately afterward.

- Remove two ‘Keep Left’ signs at Northern Highway / McIvor Highway in Heathcote.
- Remove two ‘Give Way’ signs, one bidirectional hazard marker and two directional signs at Northern Highway / Midland Highway east of Elmore.
- Remove one street name sign at Northern Highway / Midland Highway in Elmore.
- Remove five ‘Keep Left’ signs and one ‘Give Way’ sign at Northern Highway / Gillies Street in Rochester.
- Remove five directional hazard markers at Northern Highway / Murray Valley Highway in Echuca.
- Remove one ‘Give Way’ sign and one shared path give way sign at Northern Highway / Warren Street in Echuca.

As noted, the high-risk OSOM vehicle is required to traverse the verge in some locations, or mount kerbing or traffic islands that were considered suitable for traversal. No major intersection works are required to facilitate the vehicle. The operator will be responsible for remediation of removed signage and repair of any damaged infrastructure (i.e. kerbing) as a result of the drive.

4.9.3. Mitigating Queuing on the State Road Network

The proposed culvert between the Riverina Highway and the site is approx. 6 metres wide. As per the swept path assessment presented in Appendix G, the width allows only one-way movement for B-Double vehicles. The following presents an assessment of suitability of this proposal.

AM Peak Hour

As outlined in previous sections, during the primary construction phase AM peak hour, up to 14 inbound movements (from the west) and two outbound movements (toward the west) are expected to occur at the site access to Riverina Highway. Of these vehicles, all outbound movements are expected to be light vehicles (shuttle buses).

On this basis, during the AM peak hour there may be an average of one inbound movement every four to five minutes, and one outbound movement every 30 minutes. Of these inbound vehicles there would be one heavy vehicle every 10 minutes, with the remainder being light vehicles.

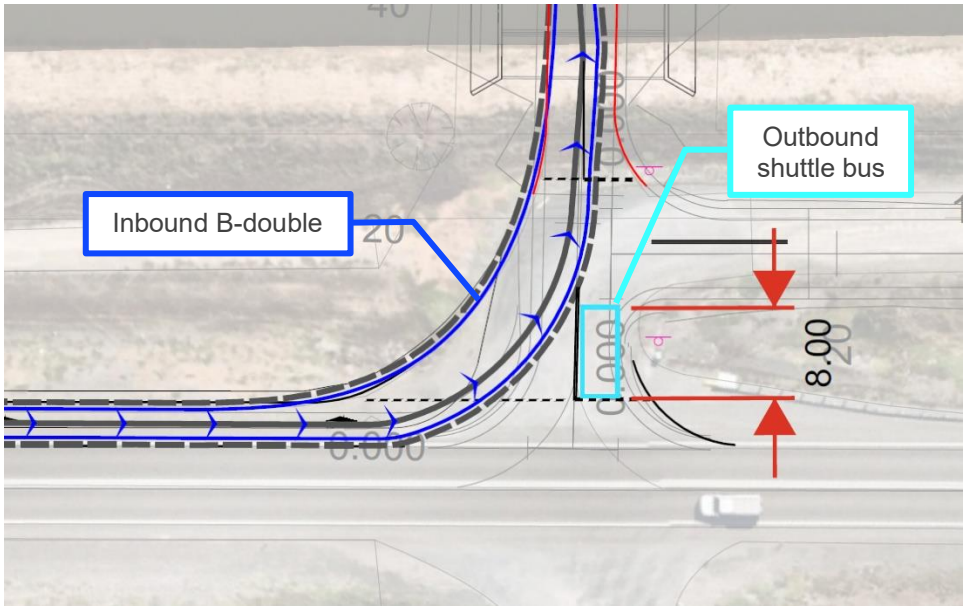
Based on that number of inbound and outbound movements, the likelihood of two vehicles meeting on the proposed culvert between the Riverina Highway and the site is considered low.

It is noted that the majority of inbound movements and all outbound movements during the AM peak hour will be limited to light vehicles only. Should inbound and outbound movements coincide, sufficient width is provided on the upgraded Riverina Highway site access intersection to facilitate simultaneous two-way movement for light vehicles, as shown in Figure 27.

In the event that an inbound and outbound movements coincide, the following will be the standard procedure. If an outbound light vehicle is preparing to depart and there is an inbound heavy vehicle approaching, the outbound vehicle will prop north of the culvert within a dedicated waiting bay to allow the inbound heavy vehicle to enter the site. This will be managed via two-way UHF radio and communicated to all vehicle drivers as part of the site induction process.

In the worst case scenario where an outbound light vehicle is waiting to turn out of the site onto the Riverina Highway as an inbound B-double arrives, Figure 27 demonstrates that the truck still has sufficient space to turn through the intersection.

Figure 27 Light vehicle (shuttle bus) propped at Riverina Highway during inbound B-double movement



PM Peak Hour

During the PM peak hour, no heavy vehicle movements are expected. Given light vehicle movements can enter and exit the site simultaneously, there is no potential for queuing onto the Riverina Highway.

Nevertheless, if an outbound vehicle is preparing to depart and there is an inbound vehicle approaching, the outbound vehicle will prop north of the culvert to allow the inbound heavy vehicle to enter the site. This will be managed via two-way UHF radio and communicated to all vehicle drivers as part of the site induction process.

Other Periods

Outside of the AM and PM peak hours during the primary construction phase, only heavy vehicle movements are expected to occur. Based on the daily construction volumes specified in Table 14, it is expected that up to five inbound and five outbound movements may occur per hour, comprising a reasonably even mix of HRVs, B-doubles and low loaders.

Based on this volume it is expected that in a typical hour during primary construction, on average:

- One truck will arrive at the site every 12 minutes
- One truck will leave the site every 12 minutes

It is therefore considered unlikely that an inbound and outbound truck movement will occur simultaneously in the area between the Riverina Highway and the site.

Nevertheless, a number of mitigation measures will be implemented to ensure queuing of inbound heavy vehicles does not impact the Riverina Highway.

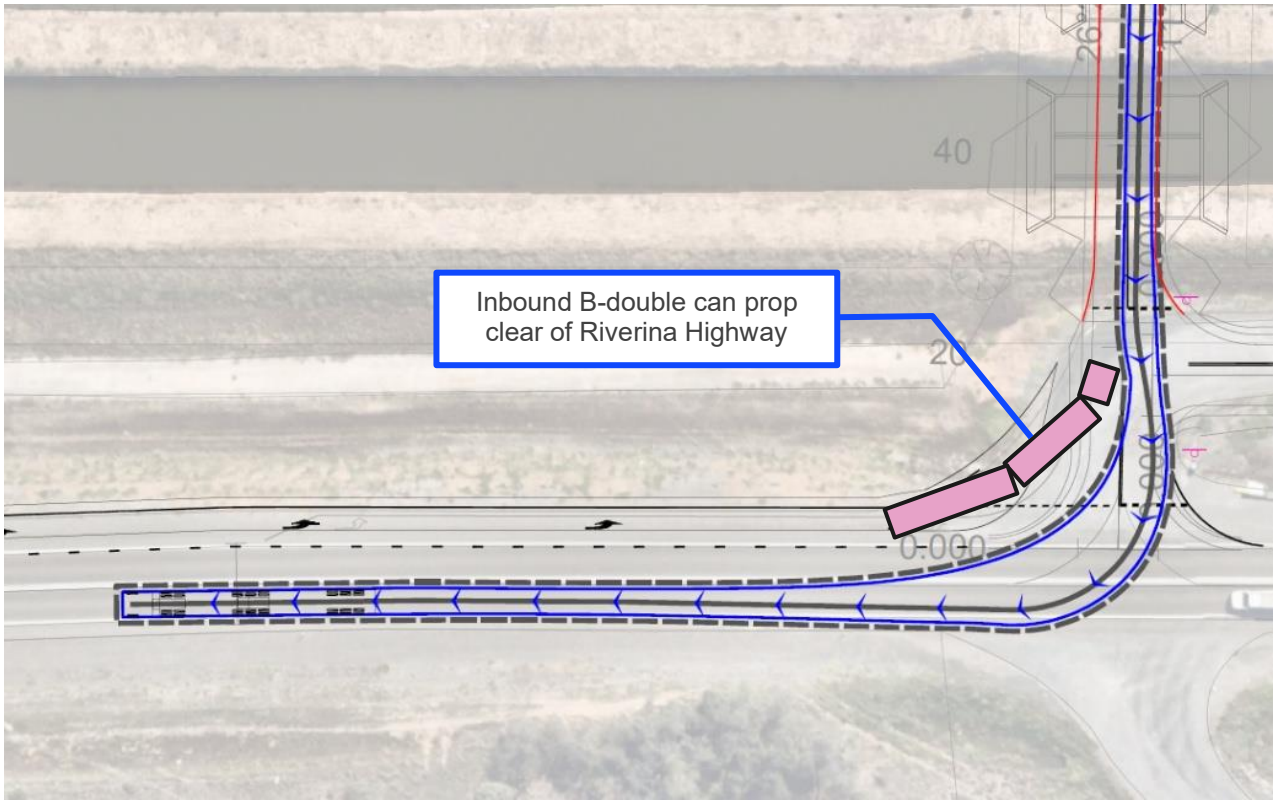
All heavy vehicle deliveries (inbound and outbound) will be managed via two-way radio to advise site personnel of arrivals and departures, and coordinate entry and exit movements so that they do not occur simultaneously. Heavy vehicle deliveries will be scheduled in a staggered manner such that multiple inbound or outbound vehicle movements will not occur in quick succession. Given the headway between successive truck movements and the coordination of inbound and outbound movements, it is expected that truck movements should not coincide.

Coordination of heavy vehicle movements will be managed via two-way UHF radio and communicated to all vehicle drivers as part of the site induction process.

In the unlikely event that inbound and outbound movements coincide, outbound movements would be directed to prop within the BESS site within a dedicated waiting bay by site personnel via two-way UHF radio. The outbound vehicle will prop clear of the culvert until the inbound movement has entered the BESS site. The outbound vehicle would then be directed to exit the site, noting that truck deliveries will be staggered and it would therefore not meet another inbound truck.

In the worst case, if the proposed mitigation measures above fail and the low probability of an inbound and outbound heavy vehicle movement coinciding does occur, Figure 28 schematically demonstrates the arrangement that would occur. This is the critical worst-case scenario which includes an inbound B-double and outbound B-double.

Figure 28 Inbound B-double meeting outbound B-double at Riverina Highway



*Note this arrangement is **not planned to occur** and would be exceedingly unlikely to occur in any instance*

As shown in Figure 28 an outbound B-double could prop at the give way line awaiting a gap on the Riverina Highway to turn right out of the site and an inbound B-double could be fully contained beyond the through traffic lanes on the Riverina Highway. Per the above analysis and mitigation measures **the above scenario is not expected to occur and is considered unlikely to occur in any instance.**

Should this worst-case scenario occur, the next inbound vehicle would be approximately 12 minutes away due to the staggering of deliveries. This would allow sufficient time to resolve any congestion at the site access to ensure the deceleration lane will not be compromised.

Based on the above analysis and proposed mitigation measures, there is not expected to be any potential for queuing to occur from the site during construction which will impact the Riverina Highway.

4.9.4. Dilapidation Survey

Before commencing construction, the contractor will conduct a dilapidation survey of the nearby roads within a two-kilometre radius of the BESS site. This survey will involve creating a written report and taking photos of any existing damage to public infrastructure. The report will cover the condition of table drains, gravel road surfaces, seals, signs, and other public infrastructure in front of the property, neighbouring properties, and along the designated haulage route.

During and immediately after construction, continued monitoring of the road conditions shall be made by the Contractor, site management team and a nominated representative. If any significant damage is caused by the Contractor or its subcontractors, the Site manager shall engage a contractor to repair the roads.

The log of photographic evidence shall be used as a reference in determining the extent of road dilapidation. Unless identified in the written report, any damage to infrastructure identified post construction will be attributed to the development.

It should be noted that the ultimate nature of the dilapidation surveys will be subject to agreement with TfNSW and Edward River Council. A copy of the road dilapidation report shall be submitted to TfNSW / Council prior to the commencement of works and once construction works are completed.

4.9.5. Construction Vehicle Movements Management

During construction, all vehicles and machinery associated with the construction of the site will be contained within the site. All vehicles associated with construction works, including the delivery and removal of materials and debris, will use the haulage route identified in **Section 4.3**. Appropriate traffic control measures will be taken to notify other road users of large vehicles entering and exiting the site. The detailed route assessment also considers support vehicles and a single escort vehicle (with three certified pilots to allow for rotation) accompanying the OSOM vehicle. An OSOM vehicle permit may need to be obtained from the NHVR. During the delivery of oversized materials, short-duration traffic control temporarily blocking access to certain sections of the Riverina Highway may be required.

The use of mobile cranes will be required during the unloading of batteries, which will take place only within the site. The contractor will further outline the nature and method of unloading the batteries.

To minimise disruptions and congestion, the project will schedule the movement of oversized vehicles outside of peak traffic periods. A detailed route assessment of the OSOM route has been completed. TfNSW raised concerns about the suitability of structures along the route. Details of the haulage route will be provided to both DTP and TfNSW assets teams for assessment and have confirmed that the route is suitable.

A culvert will be constructed over the irrigation canal to support site access. Detailed drawings of this culvert will be provided during the post-approval stage.

4.9.6. Worker Vehicle Management

As discussed in **Section 4.7,** two shuttle buses and six utility vehicles will be used to ferry staff to and from the site. The shuttle buses will be used to transport the majority of workers. The process for worker collection will be as follows:

- Workers travelling on shuttle buses will be housed in accommodation in Deniliquin or nearby towns, they will be grouped in nearby accommodation to ensure easy pick up.
- Workers will arrive a designated must point 45 minutes before the start of the work day.
- Buses will collect staff 30 minutes prior to the on site start time to allow for travel.
- In the evening, workers will be collected from site and ferried back to the muster point.
- Workers travelling in utility vehicles will be car pooling with two people per vehicle. To ensure that this is maintained, staff will be accommodated together in the same accommodation in Deniliquin or surrounding towns.

4.9.7. Weather Management

Local climate conditions are a key consideration for both the movement of vehicles and completing construction work. In the local area, two key environmental factors should be considered:

- Extreme heat – Deniliquin often has days above 30 degrees. Consideration for worker safety based on heat impacts will be completed each day during the pre-start checks. All work and deliveries will halt once the threshold for worker safety is passed.
- Flash flooding – The site is located adjacent to an irrigation canal in flat terrain. Appropriate safety measures and emergency procedures will be developed as a part of the detailed Construction Management Plan. All works and deliveries will stop if flooding and heavy rain is forecast.

4.9.8. Nature of Loads and Monitoring

Traffic monitoring during the construction phase will include daily pre-start visual inspections of vehicles to ensure that the vehicles are in good working order and follow manufacturer specifications. Noise controls (efficient silencers, low-noise mufflers, etc.) must be installed and maintained (where reasonable and practicable).

Deliveries to the site will be tracked in a register to ensure that allowable limits outlined in the conditions are maintained.

Civil works vehicles, including standard construction materials, concrete, prefabricated components, and steel reinforcement, shall cover their loads.

Street sweeping shall be undertaken following sediment tracking from the site if required. Soil is loaded onto trucks using machinery such as diggers, loaders and excavators. All trucks used to transport contaminated soil are licenced by the EPA. All trucks removing soil and material from the construction work site are covered to prevent dirt and dust from escaping. The project also aims to minimise the length of time that spoil is stockpiled on site.

No building materials, waste, machinery, or related matter shall be stored on the road. All loading and unloading of vehicles shall occur within the boundaries of the site. Truck tyres will need to be washed prior to entering the public roadway from the site.

The construction contractor is obligated to manage any debris or damage to roads in which vehicles associated with construction travel. Mitigation measures such as sediment tracking, dust suppression and wheel cleaning will be implemented to ensure debris from the site is managed. Remediation to public roads if required due to damage caused by vehicles associated with the site will be undertaken by the proponent.

A driver code of conduct for vehicles associated with the development has been prepared in draft and is shown in **Appendix E**. All drivers will be obliged to attend a pre-start briefing covering driver safety before the commencement of the project.

4.9.9. Community Consultation

The Project Manager will consult with and notify the surrounding property owners and any affected businesses of the proposed works and the proposed traffic management strategy.

A project-specific communication strategy will be developed by the contractor to determine the most effective way of notifying all affected parties. Where required, consultation will also be undertaken with the responsible road authority to determine suitable communication methods.

Possible communication methods that could be utilised are as follows:

- Mail drop to local residents.
- Email lists.
- Variable Message Signage.
- Noticeboard/Poster signage.
- Media advertisement (radio/newspaper).
- Website.

4.9.10. Impact on Public Transport Routes

The construction vehicles may overlap with the local bus route in Deniliquin, however, the low frequency of construction vehicle trip generation will result in a minimal impact on the surrounding public transport network. Major deliveries will be coordinated as not to occur during peak transit times. The only route that may be impacted it the DTS bus route.

4.9.11. Local Events

Through community engagement, local events (such as Deniliquin Ute Muster and Deni Fest) will be kept informed about the development. Additionally, construction vehicles will be coordinated to manage deliveries in a way that minimises impacts on major events.

4.9.12. Travelling Stock Routes

A review of travelling stock routes was completed and no known stock routes where identifed along the corridor.

4.9.13. Environmental Impacts

Monitoring of the project site for environmental impacts such as noise, dust and drainage will occur throughout the project. Mitigation measures for these issues will be identified in the contractor's management plans.

4.9.14. Traffic Management Plan

A traffic management plan will be prepared by the contractor, prior to the issue of a Construction Certificate. This will include details of on-road management, location of workers and other relevant traffic management associated with major deliveries.

4.9.15. Hazardous Goods

According to State Environmental Planning Policy (Resilience and Hazards) 2021 (SEPP), PHA lithium batteries are identified as a Class 9 Dangerous Goods. When transporting these goods, compliance with the *Australian Code for Transport of Dangerous Goods by Road and Rail* needs to be achieved by the contractor. As stated in the Preliminary Hazard Assessment prepared by RiskCon for this development, the batteries will comply with testing in accordance UL9540A to ensure safety during transport.

5. TRANSPORT IMPACT ASSESSMENT

The following section assesses the transport impact of the site during the operational stage of the development. **Section 4** of this report reviews the construction transport impact.

5.1. ACCESS AND SERVICING

There is a singular access driveway to the internal road via a proposed culvert across the irrigation canal from the Riverina Highway. This access point will be used for all vehicular access to the BESS for construction, maintenance and emergency purposes. Detailed design of the proposed culvert across the canal will be prepared and submitted prior to the issue of a Construction Certificate.

The sight distance and deceleration lane requirements have been assessed to accommodate vehicle movements during the construction stage. This process is outlined in **Section 4.6.4.**

During operation, up to three permanent staff will be on-site at any given time. Staff would generally park informally around the site whilst undertaking inspections or maintenance of the BESS components. There is also sufficient vacant area near the control room to allow operational staff to park.

5.2. OPERATIONAL TRIP GENERATION

The BESS site will operate with up to four permanent staff personnel and generate minimal regular traffic movements. One to three staff will be servicing the site on a daily basis, as well as occasional contractors. It is assumed that all of these staff will be driving individually to the site.

Limited heavy vehicle movements would be required to deliver replacement components to the site, or undertake general waste collection or other servicing. These truck movements would be occasional only and at a low frequency. Operational truck sizes would typically be no larger than a 20m Semi Trailer.

5.3. CUMULATIVE IMPACT OF OTHER SURROUNDING DEVELOPMENTS

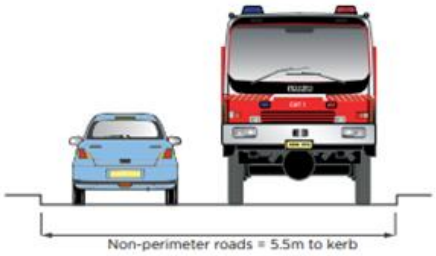
Similar to the proposed development during the operational period, the surrounding renewable projects are anticipated to generate operational / maintenance staff. The Deniliquin BESS solar farm is estimated to generate traffic volumes of up to eight vehicle movements per day during the operational phase. There is minimal information about the other solar farms developments, but similar operational phase traffic generation can be estimated. As a result, the combined traffic impact of the proposed BESS development and the surrounding solar farm developments is anticipated to be minimal.

5.4. EMERGENCY VEHICLE ACCESS

NSW Government / NSW Rural Fire Service *Planning for Bush Fire Protection Guide* outlines the standards for providing safe, efficient and effective access for fire brigade vehicles to any premises.

The document outlines the following requirements for carriageway widths. A carriageway is to be wide enough to allow easy navigation by the fire appliance and provide room around the vehicle to allow firefighters to exist and work with equipment. Along any straight carriageway section, the minimum width should be designated as 5.5m, as shown in Figure 30.

Figure 29 NSW RFS standard internal road type

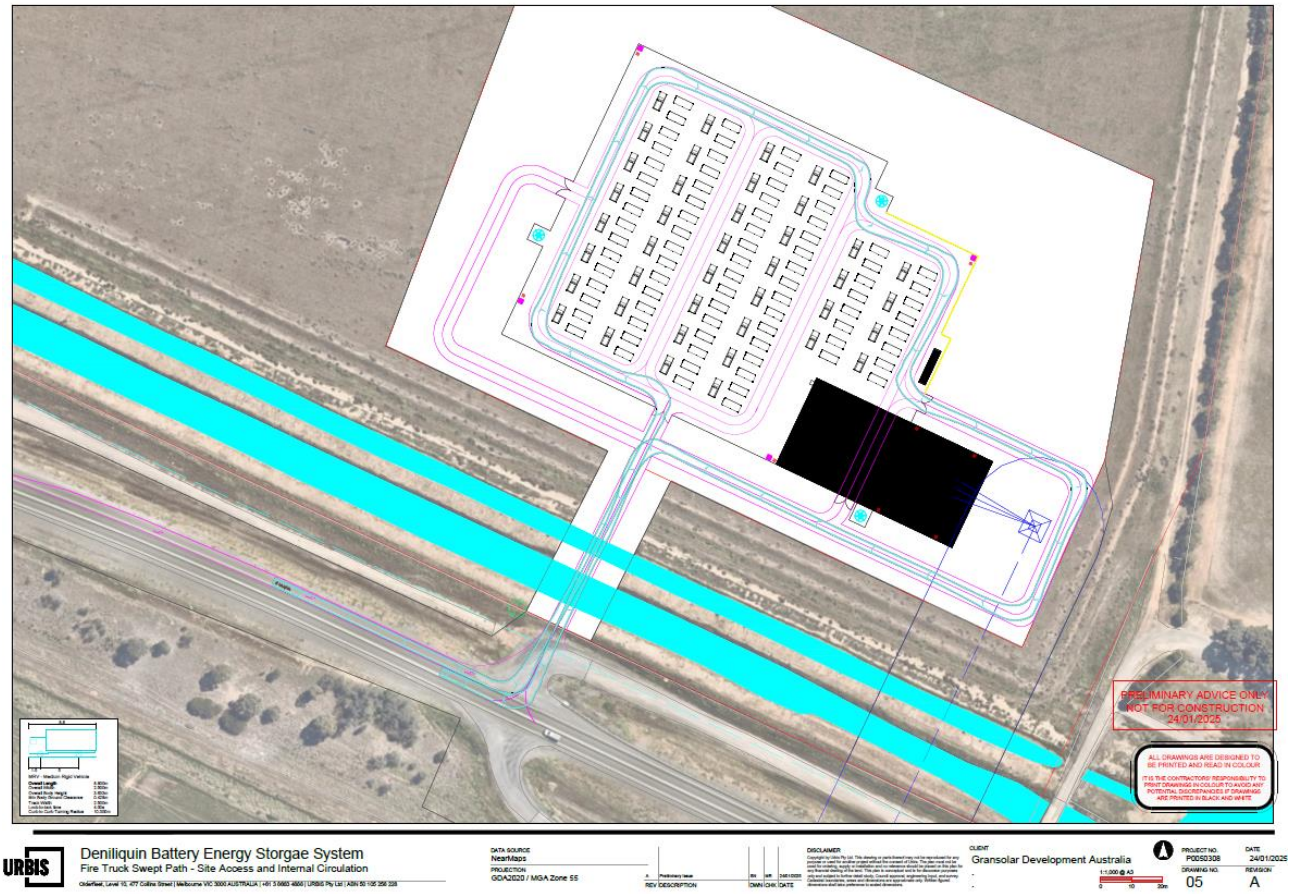


Source - NSW Government / NSW Rural Fire Service Planning for Bush Fire Protection

The road network within the site shows that all internal roads are a minimum of six metres wide and can support the safe access of emergency vehicles.

A swept path assessment of an RFS vehicle circulating around the site has been completed and demonstrates that the vehicle can safely circulate around the site. This is shown in Figure 30. A high-resolution set of swept paths is shown in **Appendix E**.

Figure 30 Swept path of RFS vehicle circulating around the site



Source – Urbis

5.5. DECOMISSIONING

After an anticipated forty years of operation, decommissioning and rehabilitation of the site would be undertaken. In this process, all above ground infrastructure would be removed with the possible exception of the 66kV substation, as this would be at the discretion of the asset's owner. Key elements of decommissioning include:

- Removal of battery containers, including concrete pads.

- Removal of all on site amenities and equipment including buildings all footings.
- Removal of all overground and underground cabling, where practical.
- Some fencing would be removed. This would be coordinated with the landowner and their preference.
- Rehabilitation of disturbed surfaces in consultation with the landowner.
- Wherever possible, materials removed from the Site would either be re-used or recycled in accordance with the Waste Management Plan.

Traffic management required for decommissioning would be similar in type but of shorter duration than that anticipated during the construction phase. Detailed trip generation and vehicle types will be prepared in a Decommissioning TMP and submitted to relevant authorities near the decommissioning time of the site.

6. CONCLUSION

Based on the assessment, the following can be concluded about the proposed BESS development.

Access to the site will be via a single crossover to Riverina Highway. The access point has been designed conservatively to include an AUL deceleration lane to support left turning into the site of construction vehicles. A newly constructed culvert will be provided over the Moulamein Channel to facilitate entry to the site. Detailed designs for the access and culvert will be submitted prior to the issuance of a Construction Certificate. The strategic concept design for the site access to Riverina Highway is provided in **Appendix F**.

During pre-construction minor works the existing rural property access to Riverina Highway will be used. The existing access arrangement is suitable to cater for the maximum of six vehicle movements during the peak hour associated with pre-construction minor works.

Deliveries to the site will be from the Port of Melbourne and will utilise a number of roads including the Riverina Highway to access the site. During the construction, one OSOM vehicle will be accessing the site. **Appendix D** highlights the vehicle dimensions and a detailed assessment of the haulage route from the Port of Melbourne through the site. The route assessment confirms that the proposed vehicle route can accommodate the OSOM vehicle, with special permits and traffic control measures required to support its delivery to the site. Some intersection upgrades are identified within Deniliquin to accommodate the single OSOM vehicle. Strategic concept designs for these works are provided in **Appendix F**.

During construction, all workers will be staying off-site (likely in Deniliquin) and a maximum of 52 workers will be accessing the site. The workers will be accessing the site via a shuttle bus or light utility vehicle. During peak construction, there will be a maximum of 60 vehicle movements per day. This number is anticipated to be accommodated within the road capacity of the Riverina Highway and is expected to have a minimal impact on key intersections in Deniliquin.

During operation, one to three staff will be servicing the site on a daily basis, as well as occasional contractors. It is assumed that all these staff will be driving individually to the site. The operational stage of the development is anticipated to generate minimal traffic impact.

The site's internal road network will be designed in accordance with the NSW Government / NSW Rural Fire Service Planning for Bush Fire Protection guide as discussed in **Section 5.4**.

Appropriate traffic control and management measures will need to be adopted for the safe manoeuvrability of construction delivery vehicles in and out of the development as outlined in **Section 4**. Swept path diagrams for construction delivery vehicles entering the site from the Riverina Highway are shown in **Appendix G**.

The cumulative impact of the site and other surrounding developments have been reviewed for both the construction phase and operational phase. Given the low traffic-generating potential of the renewable energy projects, the cumulative impact of the sites during operation is expected to be minimal. While a high-level assessment during construction has been completed, information gaps present challenges to quantify the cumulative impacts at this time and it is recommended that the contractor review new information from other surrounding developments as they come into the public forum and coordinate where necessary.

7. DISCLAIMER

This report is dated 21 May 2026 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date that may affect the validity of Urbis Ltd **(Urbis)** opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of BESS Arctic Pty Ltd C/- Gransolar Development Australia **(Instructing Party)** for the purpose of Deniliquin Battery Energy Storage System Transport Impact Assessment **(Purpose)** and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

In preparing this report, Urbis was required to make judgements that may be affected by unforeseen future events, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

In preparing this report, Urbis may rely on or refer to documents in a language other than English, which Urbis may arrange to be translated. Urbis is not responsible for the accuracy or completeness of such translations and disclaims any liability for any statement or opinion made in this report being inaccurate or incomplete arising from such translations.

Whilst Urbis has made all reasonable inquiries it believes necessary in preparing this report, it is not responsible for determining the completeness or accuracy of information provided to it. Urbis (including its officers and personnel) is not liable for any errors or omissions, including in information provided by the Instructing Party or another person or upon which Urbis relies, provided that such errors or omissions are not made by Urbis recklessly or in bad faith.

This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

APPENDIX A TRAFFIC COUNTS

Traffic Information Specialist

Location	Finley Street		Duration	6:00 -	10:00
	Wanderer Street			-	
	Riverina Highway			15:00 -	19:00
	-		Date	Thursday 21 March 2024	
Suburb	DENILIQUIN		Weather	-	

All Vehicles Time Per 15 Mins	NORTHWEST *Finley Street*										NORTHEAST *Wanderer Street*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
6:00 - 6:15	24	1	25	9	1	10				35	0	0	0				9	1	10	10	49	4	53
6:15 - 6:30	19	0	19	5	1	6				25	0	0	0				8	0	8	8	41	2	43
6:30 - 6:45	26	1	27	8	0	8				35	1	0	1				7	1	8	9	58	5	63
6:45 - 7:00	21	0	21	7	0	7				28	0	0	0				8	1	9	9	61	3	64
7:00 - 7:15	13	0	13	13	2	15				28	0	0	0				14	2	16	16	54	7	61
7:15 - 7:30	15	2	17	13	1	14				31	1	0	1				12	3	15	16	63	7	70
7:30 - 7:45	21	2	23	19	5	24				47	3	0	3				18	3	21	24	91	13	104
7:45 - 8:00	22	1	23	8	1	9				32	3	0	3				27	0	27	30	90	5	95
8:00 - 8:15	19	4	23	6	2	8				31	2	0	2				31	4	35	37	82	15	97
8:15 - 8:30	16	4	20	10	6	16				36	3	2	5				34	2	36	41	95	15	110
8:30 - 8:45	17	2	19	14	3	17				36	2	1	3				34	3	37	40	93	10	103
8:45 - 9:00	26	5	31	16	1	17				48	0	0	0				36	0	36	36	114	11	125
9:00 - 9:15	10	4	14	23	1	24				38	0	1	1				17	4	21	22	77	12	89
9:15 - 9:30	9	6	15	13	0	13				28	2	1	3				22	5	27	30	78	17	95
9:30 - 9:45	13	2	15	18	3	21				36	3	0	3				16	3	19	22	74	9	83
9:45 - 10:00	20	6	26	20	2	22				48	4	0	4				26	1	27	31	95	13	108
Period End	291	40	331	202	29	231				562	24	5	29				319	33	352	381	1215	148	1363
15:00 - 15:15	27	4	31	20	3	23				54	1	0	1				20	3	23	24	95	11	106
15:15 - 15:30	27	5	32	25	13	38				70	3	0	3				28	1	29	32	102	21	123
15:30 - 15:45	21	2	23	19	1	20				43	3	0	3				33	12	45	48	102	15	117
15:45 - 16:00	29	4	33	19	0	19				52	0	0	0				23	2	25	25	93	12	105
16:00 - 16:15	19	2	21	24	0	24				45	3	2	5				35	2	37	42	100	10	110
16:15 - 16:30	24	0	24	16	3	19				43	4	0	4				25	2	27	31	96	7	103
16:30 - 16:45	27	2	29	36	2	38				67	1	0	1				21	2	23	24	104	8	112
16:45 - 17:00	21	0	21	40	1	41				62	3	0	3				33	5	38	41	120	7	127
17:00 - 17:15	36	3	39	35	1	36				75	4	0	4				21	1	22	26	114	5	119
17:15 - 17:30	20	2	22	20	1	21				43	0	0	0				19	0	19	19	86	4	90
17:30 - 17:45	26	1	27	24	3	27				54	0	0	0				23	0	23	23	88	6	94
17:45 - 18:00	14	0	14	23	0	23				37	3	0	3				35	1	36	39	87	3	90
18:00 - 18:15	18	2	20	12	1	13				33	0	0	0				12	1	13	13	52	5	57
18:15 - 18:30	15	0	15	11	0	11				26	1	0	1				13	1	14	15	51	1	52
18:30 - 18:45	10	2	12	12	0	12				24	1	0	1				10	1	11	12	43	4	47
18:45 - 19:00	5	2	7	9	0	9				16	1	0	1				6	0	6	7	27	3	30
Period End	339	31	370	345	29	374				744	28	2	30				357	34	391	421	1360	122	1482

All Vehicles Time Per 15 Mins	SOUTHEAST *Riverina Highway*										WEST -											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
6:00 - 6:15				6	1	7	1	0	1	8											49	4	53
6:15 - 6:30				8	1	9	1	0	1	10											41	2	43
6:30 - 6:45				13	3	16	3	0	3	19											58	5	63
6:45 - 7:00				19	2	21	6	0	6	27											61	3	64
7:00 - 7:15				13	2	15	1	1	2	17											54	7	61
7:15 - 7:30				21	1	22	1	0	1	23											63	7	70
7:30 - 7:45				25	3	28	5	0	5	33											91	13	104
7:45 - 8:00				29	2	31	1	1	2	33											90	5	95
8:00 - 8:15				21	4	25	3	1	4	29											82	15	97
8:15 - 8:30				31	1	32	1	0	1	33											95	15	110
8:30 - 8:45				23	1	24	3	0	3	27											93	10	103
8:45 - 9:00				34	4	38	2	1	3	41											114	11	125
9:00 - 9:15				24	2	26	3	0	3	29											77	12	89
9:15 - 9:30				29	5	34	3	0	3	37											78	17	95
9:30 - 9:45				23	1	24	1	0	1	25											74	9	83
9:45 - 10:00				23	4	27	2	0	2	29											95	13	108
Period End				342	37	379	37	4	41	420											1215	148	1363
15:00 - 15:15				23	1	24	4	0	4	28											95	11	106
15:15 - 15:30				16	2	18	3	0	3	21											102	21	123
15:30 - 15:45				25	0	25	1	0	1	26											102	15	117
15:45 - 16:00				20	6	26	2	0	2	28											93	12	105
16:00 - 16:15				18	4	22	1	0	1	23											100	10	110
16:15 - 16:30				26	2	28	1	0	1	29											96	7	103
16:30 - 16:45				19	2	21	0	0	0	21											104	8	112
16:45 - 17:00				22	1	23	1	0	1	24											120	7	127
17:00 - 17:15				18	0	18	0	0	0	18											114	5	119
17:15 - 17:30				25	1	26	2	0	2	28											86	4	90
17:30 - 17:45				14	2	16	1	0	1	17											88	6	94
17:45 - 18:00				12	2	14	0	0	0	14											87	3	90
18:00 - 18:15				10	1	11	0	0	0	11											52	5	57
18:15 - 18:30				10	0	10	1	0	1	11											51	1	52
18:30 - 18:45				9	1	10	1	0	1	11											43	4	47
18:45 - 19:00				6	1	7	0	0	0	7											27	3	30
Period End				273	26	299	18	0	18	317											1360	122	1482

Traffic Information Specialist

Location: Finley Street / Wanderer Street / Riverina Highway / -
Duration: 6:00 - 10:00 / - / 15:00 - 19:00 / -
Date: Thursday 21 March
Suburb: DENILIQUIN
Weather: -

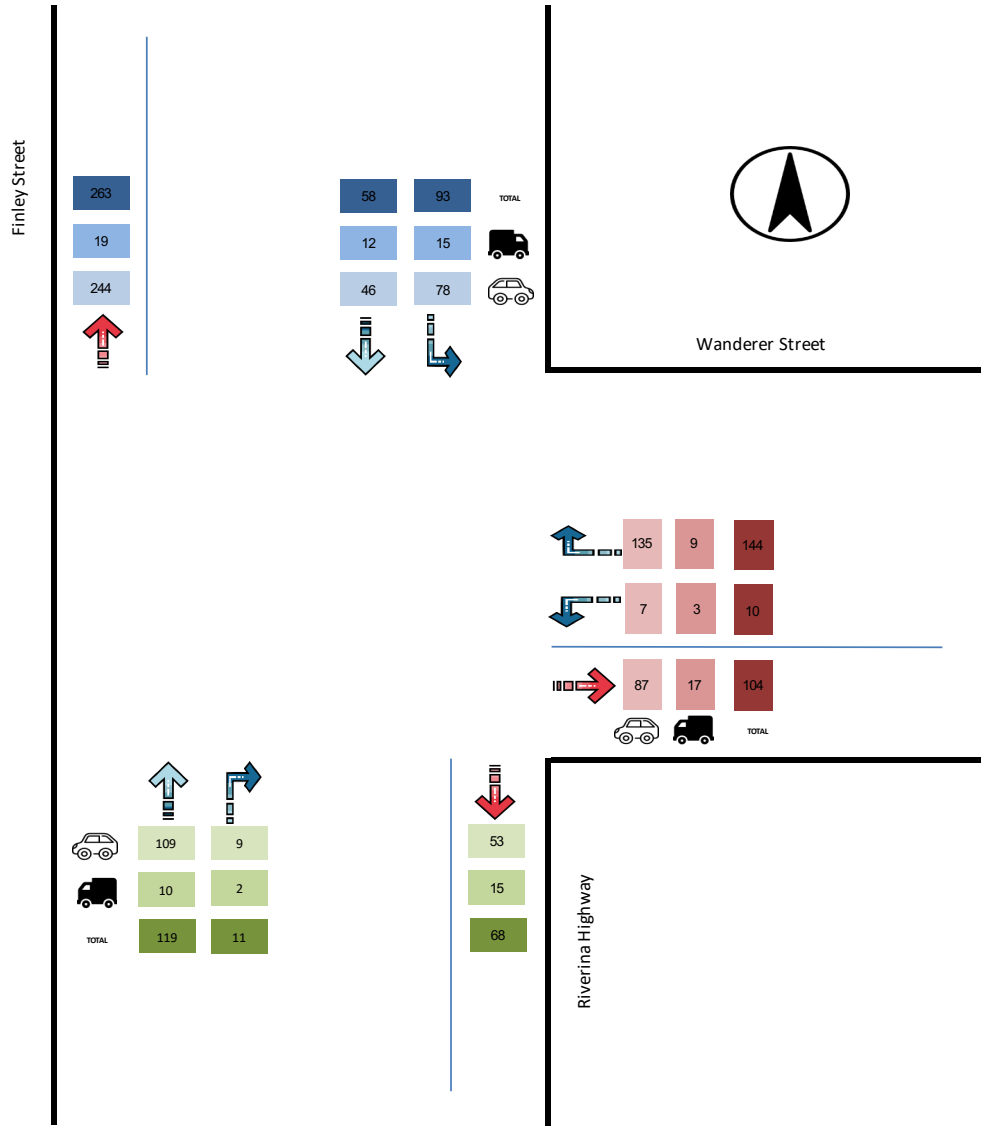
All Vehicles Time Per Hour	NORTHWEST Finley Street										NORTHEAST Wanderer Street										TOTAL		
	L			T			R				L			T			R						
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
6:00 - 7:00	90	2	92	29	2	31				123	1	0	1				32	3	35	36	209	14	223
6:15 - 7:15	79	1	80	33	3	36				116	1	0	1				37	4	41	42	214	17	231
6:30 - 7:30	75	3	78	41	3	44				122	2	0	2				41	7	48	50	236	22	258
6:45 - 7:45	70	4	74	52	8	60				134	4	0	4				52	9	61	65	269	30	299
7:00 - 8:00	71	5	76	53	9	62				138	7	0	7				71	8	79	86	298	32	330
7:15 - 8:15	77	9	86	46	9	55				141	9	0	9				88	10	98	107	326	40	366
7:30 - 8:30	78	11	89	43	14	57				146	11	2	13				110	9	119	132	358	48	406
7:45 - 8:45	74	11	85	38	12	50				135	10	3	13				126	9	135	148	360	45	405
8:00 - 9:00	78	15	93	46	12	58				151	7	3	10				135	9	144	154	384	51	435
8:15 - 9:15	69	15	84	63	11	74				158	5	4	9				121	9	130	139	379	48	427
8:30 - 9:30	62	17	79	66	5	71				150	4	3	7				109	12	121	128	362	50	412
8:45 - 9:45	58	17	75	70	5	75				150	5	2	7				91	12	103	110	343	49	392
9:00 - 10:00	52	18	70	74	6	80				150	9	2	11				81	13	94	105	324	51	375
Period End																							
15:00 - 16:00	104	15	119	83	17	100				219	7	0	7				104	18	122	129	392	59	451
15:15 - 16:15	96	13	109	87	14	101				210	9	2	11				119	17	136	147	397	58	455
15:30 - 16:30	93	8	101	78	4	82				183	10	2	12				116	18	134	146	391	44	435
15:45 - 16:45	99	8	107	95	5	100				207	8	2	10				104	8	112	122	393	37	430
16:00 - 17:00	91	4	95	116	6	122				217	11	2	13				114	11	125	138	420	32	452
16:15 - 17:15	108	5	113	127	7	134				247	12	0	12				100	10	110	122	434	27	461
16:30 - 17:30	104	7	111	131	5	136				247	8	0	8				94	8	102	110	424	24	448
16:45 - 17:45	103	6	109	119	6	125				234	7	0	7				96	6	102	109	408	22	430
17:00 - 18:00	96	6	102	102	5	107				209	7	0	7				98	2	100	107	375	18	393
17:15 - 18:15	78	5	83	79	5	84				167	3	0	3				89	2	91	94	313	18	331
17:30 - 18:30	73	3	76	70	4	74				150	4	0	4				83	3	86	90	278	15	293
17:45 - 18:45	57	4	61	58	1	59				120	5	0	5				70	4	74	79	233	13	246
18:00 - 19:00	48	6	54	44	1	45				99	3	0	3				41	3	44	47	173	13	186
Period End																							

All Vehicles Time Per Hour	SOUTHEAST Riverina Highway										WEST -										TOTAL		
	L			T			R				L			T			R						
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
6:00 - 7:00				46	7	53	11	0	11	64											209	14	223
6:15 - 7:15				53	8	61	11	1	12	73											214	17	231
6:30 - 7:30				66	8	74	11	1	12	86											236	22	258
6:45 - 7:45				78	8	86	13	1	14	100											269	30	299
7:00 - 8:00				88	8	96	8	2	10	106											298	32	330
7:15 - 8:15				96	10	106	10	2	12	118											326	40	366
7:30 - 8:30				106	10	116	10	2	12	128											358	48	406
7:45 - 8:45				104	8	112	8	2	10	122											360	45	405
8:00 - 9:00				109	10	119	9	2	11	130											384	51	435
8:15 - 9:15				112	8	120	9	1	10	130											379	48	427
8:30 - 9:30				110	12	122	11	1	12	134											362	50	412
8:45 - 9:45				110	12	122	9	1	10	132											343	49	392
9:00 - 10:00				99	12	111	9	0	9	120											324	51	375
Period End																							
15:00 - 16:00				84	9	93	10	0	10	103											392	59	451
15:15 - 16:15				79	12	91	7	0	7	98											397	58	455
15:30 - 16:30				89	12	101	5	0	5	106											391	44	435
15:45 - 16:45				83	14	97	4	0	4	101											393	37	430
16:00 - 17:00				85	9	94	3	0	3	97											420	32	452
16:15 - 17:15				85	5	90	2	0	2	92											434	27	461
16:30 - 17:30				84	4	88	3	0	3	91											424	24	448
16:45 - 17:45				79	4	83	4	0	4	87											408	22	430
17:00 - 18:00				69	5	74	3	0	3	77											375	18	393
17:15 - 18:15				61	6	67	3	0	3	70											313	18	331
17:30 - 18:30				46	5	51	2	0	2	53											278	15	293
17:45 - 18:45				41	4	45	2	0	2	47											233	13	246
18:00 - 19:00				35	3	38	2	0	2	40											173	13	186
Period End																							

Location	**Finley Street**		**Duration**	**6:00** - **10:00**	
	Wanderer Street			-	
	Riverina Highway			**15:00** - **19:00**	
	-		**Date**	**Thursday 21 March 2024**	
Suburb	**DENILIQUIN**		**Weather**	-	

DATA SELECTION	
Select Time:	PEAK

TIME RANGE		
PEAK	-	**AM**
PEAK		
8:00	-	**9:00**

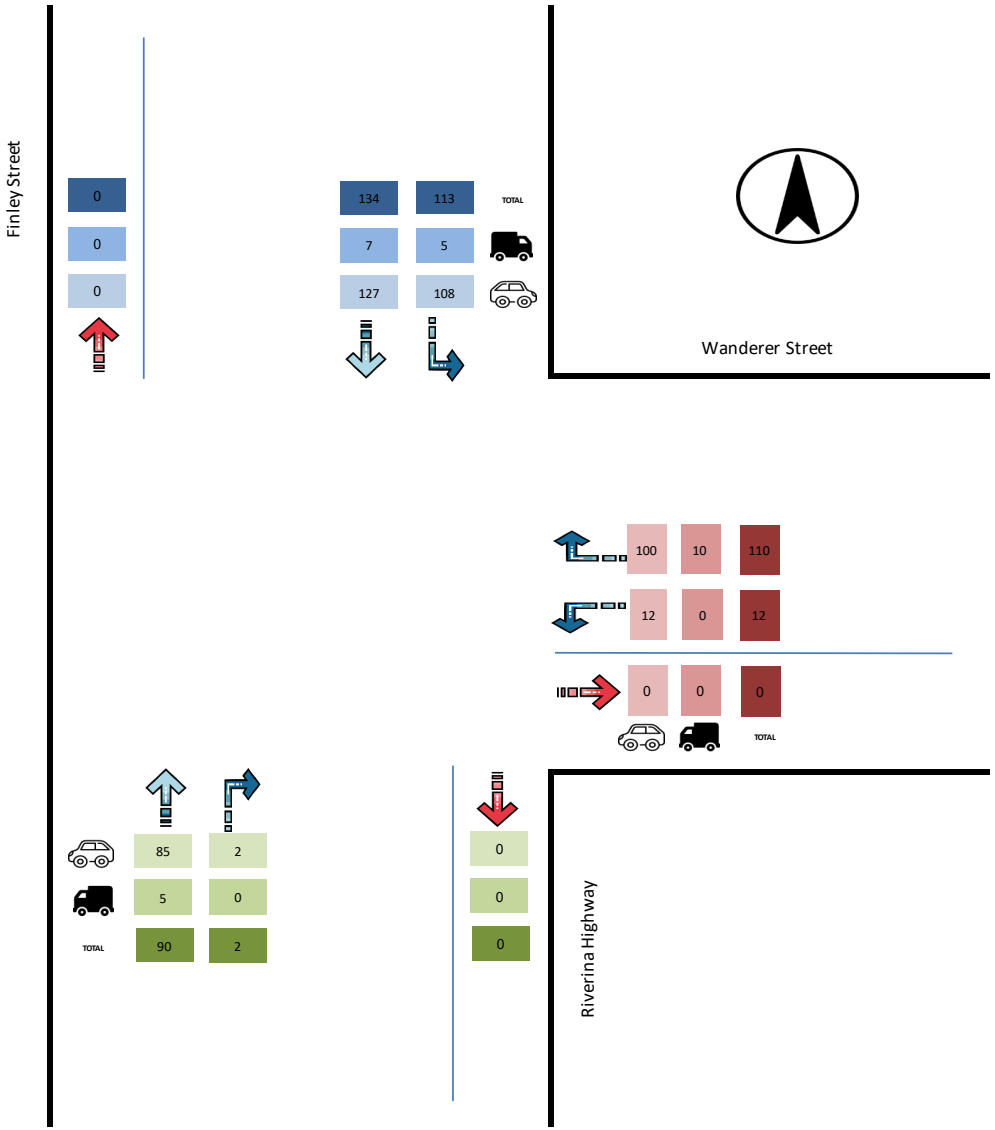


Traffic Information Specialist
ABN: 42 613 389 923
Email info@tistraffic.com.au

Location	**Finley Street**		**Duration**	**6:00**	**-**	**10:00**
	Wanderer Street				**-**	
	Riverina Highway			**15:00**	**-**	**19:00**
	-		**Date**	**Thursday 21 March 2024**		
Suburb	**DENILIQUIN**		**Weather**	**-**		

DATA SELECTION	
Select Time:	PEAK

TIME RANGE		
PEAK	**-**	**PM**
PEAK		
16:15	**-**	**17:15**



Traffic Information Specialist
ABN: 42 613 389 923
Email info@tistraffic.com.au

Traffic Information Specialist

Location	Hay Road	Duration	6:00 10:00
	Albert Street		15:00 19:00
	Finley Road		-
	Davidson Street	Day/Date	Tuesday, 27 August 2024
	Albert Street	Weather	Dry
Suburb	DENILIQUIN		

All Vehicles — Time Per 15 Mins

NORTH — *Hay Road*

	L			T			R1			R2			U			
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL
6:00 - 6:15	0	0	0	2	0	2	3	0	3	0	0	0	0	0	0	5
6:15 - 6:30	0	0	0	0	0	0	4	1	5	0	0	0	0	0	0	5
6:30 - 6:45	0	0	0	1	0	1	4	2	6	0	0	0	0	0	0	7
6:45 - 7:00	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	3
7:00 - 7:15	0	0	0	1	0	1	5	0	5	0	0	0	0	0	0	6
7:15 - 7:30	0	0	0	1	0	1	16	0	16	0	0	0	0	0	0	17
7:30 - 7:45	0	0	0	3	0	3	4	3	7	0	0	0	0	0	0	10
7:45 - 8:00	0	0	0	1	0	1	15	1	16	0	0	0	0	0	0	17
8:00 - 8:15	0	0	0	2	0	2	9	0	9	0	0	0	0	0	0	11
8:15 - 8:30	0	0	0	2	2	4	24	1	25	0	0	0	0	0	0	29
8:30 - 8:45	0	0	0	1	1	2	21	4	25	0	0	0	0	0	0	27
8:45 - 9:00	0	0	0	1	2	3	19	1	20	0	0	0	0	0	0	23
9:00 - 9:15	0	0	0	1	0	1	14	3	17	0	0	0	0	0	0	18
9:15 - 9:30	0	0	0	3	0	3	10	3	13	0	0	0	0	0	0	16
9:30 - 9:45	0	0	0	3	2	5	14	1	15	0	0	0	0	0	0	20
9:45 - 10:00	0	1	1	2	0	2	18	4	22	0	0	0	0	0	0	25
Period End	0	1	1	24	7	31	182	25	207	0	0	0	0	0	0	239
15:00 - 15:15	0	0	0	4	2	6	12	2	14	0	0	0	0	0	0	20
15:15 - 15:30	0	0	0	2	0	2	12	2	14	0	0	0	0	0	0	16
15:30 - 15:45	0	0	0	2	0	2	9	4	13	0	0	0	0	0	0	15
15:45 - 16:00	0	0	0	4	0	4	16	0	16	0	0	0	0	0	0	20
16:00 - 16:15	0	0	0	2	0	2	11	2	13	0	0	0	0	0	0	15
16:15 - 16:30	1	0	1	0	0	0	10	2	12	0	0	0	0	0	0	13
16:30 - 16:45	1	0	1	2	1	3	11	1	12	0	0	0	0	0	0	16
16:45 - 17:00	0	0	0	4	1	5	21	2	23	0	0	0	0	0	0	28
17:00 - 17:15	0	0	0	2	0	2	14	0	14	0	0	0	0	0	0	16
17:15 - 17:30	0	0	0	6	0	6	16	0	16	0	0	0	0	0	0	22
17:30 - 17:45	1	0	1	2	1	3	18	0	18	0	0	0	0	0	0	22
17:45 - 18:00	0	0	0	4	0	4	6	0	6	0	0	0	0	0	0	10
18:00 - 18:15	0	0	0	2	1	3	3	1	4	0	0	0	0	0	0	7
18:15 - 18:30	0	0	0	1	0	1	8	1	9	0	0	0	0	0	0	10
18:30 - 18:45	0	0	0	3	0	3	6	2	8	0	0	0	0	0	0	11
18:45 - 19:00	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	6
Period End	3	0	3	40	6	46	179	19	198	0	0	0	0	0	0	247

NORTHEAST — *Albert Street*

	L			T1			T2			R			U			
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL
6:00 - 6:15	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6:15 - 6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 - 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 - 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 - 7:15	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1
7:15 - 7:30	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 - 8:15	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	2
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	2
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
9:30 - 9:45	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period End	2	1	3	7	2	9	0	0	0	3	0	3	0	0	0	15
15:00 - 15:15	1	0	1	4	0	4	0	0	0	0	0	0	0	0	0	5
15:15 - 15:30	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	2
15:30 - 15:45	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	2
15:45 - 16:00	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	2
16:00 - 16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15 - 16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30 - 16:45	1	0	1	3	0	3	0	0	0	0	0	0	0	0	0	4
16:45 - 17:00	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	2
17:00 - 17:15	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1
17:15 - 17:30	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	2
17:30 - 17:45	1	0	1	2	0	2	0	0	0	0	0	0	0	0	0	2
17:45 - 18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00 - 18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15 - 18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30 - 18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45 - 19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period End	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SOUTHEAST — *Finley Road*

	L			T			R1			R2			U			TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	TOTAL
6:00 - 6:15	13	2	15	1	0	1	2	0	2	0	0	0	0	0	0	59	8	74
6:15 - 6:30	16	1	17	0	0	0	0	0	0	0	0	0	0	0	0	47	3	52
6:30 - 6:45	18	4	22	0	0	0	0	0	0	0	0	0	0	0	0	53	12	69
6:45 - 7:00	25	3	28	1	0	1	4	0	4	0	0	0	0	0	0	62	14	86
7:00 - 7:15	29	3	32	0	0	0	2	1	3	0	0	0	0	0	0	68	10	86
7:15 - 7:30	31	4	35	0	0	0	1	0	1	0	0	0	0	0	0	81	10	96
7:30 - 7:45	39	6	45	1	0	1	2	0	2	1	0	1	0	0	0	89	19	114
7:45 - 8:00	49	0	49	0	0	0	3	1	4	1	0	1	0	0	0	96	7	112
8:00 - 8:15	52	9	61	0	0	0	1	1	2	0	0	0	0	1	1	95	22	124
8:15 - 8:30	60	2	62	1	0	1	2	0	2	0	1	1	0	0	0	121	12	141
8:30 - 8:45	57	4	61	0	0	0	1	0	1	1	0	1	0	0	0	124	13	146
8:45 - 9:00	71	4	75	0	0	0	1	0	1	0	0	0	0	0	0	147	11	164
9:00 - 9:15	36	5	41	0	0	0	3	1	4	0	0	0	0	0	0	91	16	110
9:15 - 9:30	47	9	56	0	0	0	3	0	3	1	1	2	0	0	0	97	18	125
9:30 - 9:45	39	2	41	0	0	0	1	1	2	0	0	0	0	0	0	92	10	114
9:45 - 10:00	50	3	53	0	1	1	3	0	3	0	0	0	0	0	0	117	17	141
Period End	632	61	693	4	1	5	29	5	34	4	2	6	0	1	1	1439	202	1754
15:00 - 15:15	36	4	40	0	0	0	2	1	3	2	0	2	0	0	0	117	15	148
15:15 - 15:30	42	1	43	0	0	0	0	1	1	0	0	0	1	0	1	120	28	152
15:30 - 15:45	60	12	72	1	0	1	1	0	1	0	0	0	0	0	0	120	19	151
15:45 - 16:00	40	5	45	0	0	0	3	1	4	1	0	1	0	0	0	123	11	146
16:00 - 16:15	54	8	62	0	0	0	0	2	2	0	0	0	0	0	0	121	14	140
16:15 - 16:30	45	4	49	0	0	0	3	0	3	0	0	0	0	0	0	113	11	129
16:30 - 16:45	39	4	43	0	0	0	2	0	2	2	0	2	0	0	0	135	10	155
16:45 - 17:00	51	5	56	0	0	0	4	0	4	0	0	0	0	0	0	148	10	171
17:00 - 17:15	34	2	36	0	0	0	1	0	1	2	0	2	0	0	0	141	9	158
17:15 - 17:30	44	1	45	0	0	0	2	0	2	0	0	0	0	0	0	111	4	124
17:30 - 17:45	34	1	35	0	0	0	3	1	4	0	0	0	0	0	0	120	4	135
17:45 - 18:00	47	2	49	2	0	2	0	1	1	0	0	0	0	0	0	108	5	117
18:00 - 18:15	24	2	26	0	0	0	0	0	0	0	0	0	0	0	0	66	6	77
18:15 - 18:30	23	1	24	0	0	0	0	0	0	0	0	0	0	0	0	64	3	69
18:30 - 18:45	16	2	18	0	0	0	1	0	1	1	0	1	0	0	0	48	6	59
18:45 - 19:00	13	1	14	0	0	0	0	0	0	0	0	0	0	0	0	42	3	47
Period End	602	55	657	3	0	3	22	7	29	8	0	8	1	0	1	1697	158	1978

All Vehicles — Time Per 5 Mins

SOUTHWEST — *Davidson Street*

	L1			L2			T			R			U			
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL
6:00 - 6:15	0	0	0	6	3	9	1	0	1	26	3	29	2	0	2	41
6:15 - 6:30	0	0	0	1	0	1	0	0	0	25	1	26	0	0	0	27
6:30 - 6:45	1	0	1	0	5	5	0	0	0	26	1	27	0	0	0	33
6:45 - 7:00	0	0	0	1	6	7	3	0	3	27	1	28	0	1	1	39
7:00 - 7:15	0	0	0	4	3	7	1	0	1	24	3	27	0	0	0	35
7:15 - 7:30	0	0	0	9	3	12	0	0	0	24	3	27	0	0	0	39
7:30 - 7:45	1	0	1	3	2	5	0	0	0	34	7	41	2	1	3	50
7:45 - 8:00	0	0	0	3	3	6	1	0	1	23	2	25	1	0	1	33
8:00 - 8:15	0	0	0	8	5	13	0	0	0	22	6	28	2	0	2	43
8:15 - 8:30	1	0	1	4	2	6	2	0	2	25	7	32	2	0	2	43
8:30 - 8:45	0	0	0	13	1	14	1	0	1	26	4	30	2	0	2	47
8:45 - 9:00	0	0	0	11	1	12	0	0	0	40	5	45	3	0	3	60
9:00 - 9:15	0	0	0	8	2	10	0	0	0	29	5	34	0	0	0	44
9:15 - 9:30	1	0	1	10	1	11	4	0	4	20	5	25	2	0	2	43
9:30 - 9:45	0	0	0	11	3	14	3	0	3	25	2	27	1	0	1	45
9:45 - 10:00	0	0	0	6	1	7	0	0	0	35	7	42	2	0	2	51
Period End	4	0	4	98	41	139	16	0	16	431	62	493	19	2	21	673
15:00 - 15:15	1	0	1	18	2	20	4	0	4	42	6	48	3	0	3	76
15:15 - 15:30	2	0	2	14	4	18	0	0	0	45	20	65	0	0	0	85
15:30 - 15:45	1	0	1	11	1	12	0	0	0	33	2	35	2	0	2	50
15:45 - 16:00	0	0	0	17	0	17	1	0	1	39	5	44	5	0	5	67
16:00 - 16:15	1	0	1	12	0	12	1	0	1	38	2	40	2	0	2	56
16:15 - 16:30	1	0	1	12	2	14	1	0	1	38	3	41	0	0	0	57
16:30 - 16:45	2	0	2	18	1	19	1	0	1	58	4	62	2	0	2	86
16:45 - 17:00	2	0	2	12	3	15	2	0	2	52	0	52	6	0	6	77
17:00 - 17:15	1	0	1	14	3	17	0	0	0	64	4	68	3	0	3	89
17:15 - 17:30	1	0	1	9	0	9	0	0	0	34	3	37	2	0	2	49
17:30 - 17:45	1	0	1	19	0	19	0	0	0	43	2	45	0	0	0	65
17:45 - 18:00	1	0	1	14	2	16	0	0	0	34	0	34	1	0	1	52
18:00 - 18:15	0	0	0	10	1	11	0	0	0	26	2	28	1	0	1	40
18:15 - 18:30	1	0	1	7	1	8	0	0	0	23	0	23	0	0	0	32
18:30 - 18:45	0	0	0	5	1	6	0	0	0	19	1	20	1	0	1	27
18:45 - 19:00	0	0	0	9	0	9	0	0	0	13	2	15	0	0	0	24
Period End	15	0	15	201	21	222	10	0	10	601	56	657	28	0	28	932

NORTHWEST — *Albert Street*

	L1			L2			T			R			U			
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL
6:00 - 6:15	3	0	3	0	0	0	4	0	4	2	0	2	0	0	0	9
6:15 - 6:30	1	0	1	0	0	0	2	0	2	0	0	0	0	0	0	3
6:30 - 6:45	1	0	1	0	0	0	3	0	3	3	0	3	0	0	0	7
6:45 - 7:00	1	0	1	0	0	0	7	0	7	1	2	3	0	0	0	11
7:00 - 7:15	2	0	2	0	0	0	6	0	6	1	0	1	0	0	0	9
7:15 - 7:30	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	3
7:30 - 7:45	1	0	1	0	0	0	2	0	2	1	0	1	0	0	0	5
7:45 - 8:00	0	0	0	0	0	0	5	1	6	1	0	1	0	0	0	8
8:00 - 8:15	0	0	0	0	0	0	3	0	3	1	0	1	0	0	0	4
8:15 - 8:30	1	0	1	0	0	0	1	0	1	2	0	2	0	0	0	3
8:30 - 8:45	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	7
8:45 - 9:00	0	0	0	0	0	0	3	0	3	2	0	2	0	0	0	5
9:00 - 9:15	1	0	1	0	0	0	2	0	2	0	0	0	0	0	0	3
9:15 - 9:30	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
9:30 - 9:45	0	0	0	0	0	0	3	0	3	1	0	1	0	0	0	4
9:45 - 10:00	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	4
Period End	20	0	20	0	0	0	49	2	51	15	2	17	0	0	0	88
15:00 - 15:15	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	2
15:15 - 15:30	2	0	2	1	0	1	1	0	1	0	0	0	0	0	0	4
15:30 - 15:45	1	0	1	2	0	2	8	0	8	0	0	0	0	0	0	10
15:45 - 16:00	0	0	0	0	0	0	4	0	4	3	0	3	0	0	0	7
16:00 - 16:15	1	0	1	0	0	0	2	0	2	2	0	2	0	0	0	4
16:15 - 16:30	1	0	1	0	0	0	4	0	4	3	0	3	0	0	0	7
16:30 - 16:45	2	0	2	0	0	0	2	0	2	0	0	0	0	0	0	4
16:45 - 17:00	2	0	2	0	0	0	4	0	4	0	0	0	0	0	0	6
17:00 - 17:15	1	0	1	0	0	0	3	0	3	4	0	4	0	0	0	10
17:15 - 17:30	1	0	1	0	0	0	1	0	1	2	0	2	0	0	0	4
17:30 - 17:45	1	0	1	0	0	0	6	0	6	1	0	1	0	0	0	7
17:45 - 18:00	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	3
18:00 - 18:15	0	0	0	0	0	0	2	0	2	2	0	2	0	0	0	4
18:15 - 18:30	1	0	1	0	0	0	1	0	1	1	0	1	0	0	0	3
18:30 - 18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45 - 19:00	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	2
Period End	38	0	38	22	0	22	0	0	0	0	0	0	0	0	0	73

Traffic Information Specialist

Location	Hay Road	Duration	6:00 10:00
	Albert Street		15:00 19:00
	Finley Road		-
	Davidson Street	Day/Date	Tuesday, 27 August 2024
Suburb	Albert Street	Weather	Dry
Suburb	DENILIQUIN		

All Vehicles — Time Per Hour

NORTH — Hay Road

	L1			L2			T			R			U			
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL
6:00 - 7:00	0	0	0	9	0	9	53	8	61	0	0	0	0	0	0	70
6:15 - 7:15	0	0	0	14	5	19	137	17	154	0	0	0	0	0	0	173
6:30 - 7:30	0	0	0	17	5	22	143	19	162	0	0	0	0	0	0	184
6:45 - 7:45	0	0	0	19	7	26	153	18	171	0	0	0	0	0	0	197
7:00 - 8:00	0	1	1	21	7	28	169	21	190	0	0	0	0	0	0	219
7:15 - 8:15	0	2	2	44	14	58	346	46	392	0	0	0	0	0	0	452
7:30 - 8:30	3	2	5	71	18	89	460	57	517	0	0	0	0	0	0	611
7:45 - 8:45	3	2	5	72	20	92	468	56	524	0	0	0	0	0	0	621
8:00 - 9:00	3	2	5	73	20	93	465	57	522	0	0	0	0	0	0	620
8:15 - 9:15	3	2	5	73	20	93	465	61	526	0	0	0	0	0	0	624
8:30 - 9:30	3	2	5	75	18	93	457	60	517	0	0	0	0	0	0	615
8:45 - 9:45	3	2	5	76	17	93	447	58	505	0	0	0	0	0	0	603
9:00 - 10:00	4	2	6	75	15	90	438	59	497	0	0	0	0	0	0	593
Period End																
15:00 - 16:00	3	0	3	34	5	39	156	15	171	0	0	0	0	0	0	213
15:15 - 16:15	3	0	3	32	4	36	147	14	161	0	0	0	0	0	0	200
15:30 - 16:30	3	0	3	31	4	35	143	13	156	0	0	0	0	0	0	194
15:45 - 16:45	3	0	3	32	4	36	140	11	151	0	0	0	0	0	0	190
16:00 - 17:00	3	0	3	28	4	32	130	11	141	0	0	0	0	0	0	176
16:15 - 17:15	6	0	6	66	10	76	298	28	326	0	0	0	0	0	0	408
16:30 - 17:30	5	0	5	66	10	76	288	26	314	0	0	0	0	0	0	395
16:45 - 17:45	4	0	4	64	9	73	277	25	302	0	0	0	0	0	0	379
17:00 - 18:00	4	0	4	60	8	68	256	23	279	0	0	0	0	0	0	351
17:15 - 18:15	4	0	4	58	8	66	242	23	265	0	0	0	0	0	0	335
17:30 - 18:30	4	0	4	52	8	60	226	23	249	0	0	0	0	0	0	313
17:45 - 18:45	3	0	3	56	10	66	209	23	232	26	3	29	2	0	2	332
18:00 - 19:00	3	0	3	53	10	63	203	23	226	51	4	55	2	0	2	349
Period End																

NORTHEAST — Albert Street

	L1			L2			T			R			U			
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL
6:00 - 7:00	1	0	1	1	0	1	0	0	0	1	0	1	0	0	0	3
6:15 - 7:15	0	0	0	4	1	5	0	0	0	1	0	1	0	0	0	6
6:30 - 7:30	0	0	0	5	1	6	0	0	0	2	0	2	0	0	0	8
6:45 - 7:45	0	1	1	6	1	7	0	0	0	2	0	2	0	0	0	10
7:00 - 8:00	1	1	2	7	2	9	0	0	0	3	0	3	0	0	0	14
7:15 - 8:15	3	2	5	14	4	18	0	0	0	5	0	5	0	0	0	28
7:30 - 8:30	8	2	10	25	4	29	0	0	0	5	0	5	0	0	0	44
7:45 - 8:45	9	2	11	29	4	33	0	0	0	5	0	5	0	0	0	49
8:00 - 9:00	10	2	12	30	4	34	0	0	0	5	0	5	0	0	0	51
8:15 - 9:15	10	2	12	30	4	34	0	0	0	5	0	5	0	0	0	51
8:30 - 9:30	10	2	12	32	4	36	0	0	0	5	0	5	0	0	0	53
8:45 - 9:45	11	2	13	31	3	34	0	0	0	5	0	5	0	0	0	52
9:00 - 10:00	11	2	13	31	3	34	0	0	0	5	0	5	0	0	0	52
Period End																
15:00 - 16:00	7	0	7	19	0	19	0	0	0	0	0	0	0	0	0	26
15:15 - 16:15	6	0	6	15	0	15	0	0	0	0	0	0	0	0	0	21
15:30 - 16:30	5	0	5	14	0	14	0	0	0	0	0	0	0	0	0	19
15:45 - 16:45	5	0	5	13	0	13	0	0	0	0	0	0	0	0	0	18
16:00 - 17:00	5	0	5	12	0	12	0	0	0	0	0	0	0	0	0	17
16:15 - 17:15	11	0	11	33	0	33	0	0	0	0	0	0	0	0	0	44
16:30 - 17:30	11	0	11	33	0	33	0	0	0	0	0	0	0	0	0	44
16:45 - 17:45	10	0	10	30	0	30	0	0	0	0	0	0	0	0	0	40
17:00 - 18:00	10	0	10	28	0	28	0	0	0	0	0	0	0	0	0	38
17:15 - 18:15	7	0	7	27	0	27	0	0	0	0	0	0	0	0	0	34
17:30 - 18:30	7	0	7	25	0	25	0	0	0	0	0	0	0	0	0	32
17:45 - 18:45	10	0	10	23	0	23	4	0	4	2	0	2	0	0	0	39
18:00 - 19:00	11	0	11	23	0	23	6	0	6	2	0	2	0	0	0	42
Period End																

SOUTHEAST — Davidson Street

	L			T			R1			R2			U			TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	TOTAL
6:00 - 7:00	220	23	243	3	0	3	14	2	16	2	0	2	0	0	0	555	83	689
6:15 - 7:15	483	45	528	3	0	3	20	4	24	3	1	4	0	1	1	1074	149	1300
6:30 - 7:30	514	53	567	3	0	3	23	4	27	4	2	6	0	1	1	1124	164	1373
6:45 - 7:45	535	51	586	3	0	3	24	5	29	4	2	6	0	1	1	1163	162	1418
7:00 - 8:00	560	51	611	2	1	3	23	5	28	4	2	6	0	1	1	1218	165	1473
7:15 - 8:15	1163	109	1272	6	2	8	50	9	59	8	4	12	0	2	2	2589	357	3141
7:30 - 8:30	1556	138	1694	8	2	10	65	13	78	13	4	17	0	2	2	3725	432	6264
7:45 - 8:45	1553	136	1689	7	2	9	65	14	79	14	4	18	0	2	2	3753	428	6298
8:00 - 9:00	1546	137	1683	7	2	9	62	14	76	13	4	17	1	2	3	3777	449	6338
8:15 - 9:15	1554	140	1694	8	2	10	62	13	75	13	4	17	1	1	2	3802	446	6365
8:30 - 9:30	1534	143	1677	7	2	9	63	14	77	14	3	17	1	1	2	3804	445	6370
8:45 - 9:45	1531	147	1678	7	2	9	62	16	78	13	3	16	1	1	2	3801	446	6364
9:00 - 10:00	1505	147	1652	7	2	9	64	16	80	13	3	16	1	1	2	3767	446	6329
Period End																		
15:00 - 16:00	526	49	575	3	0	3	21	7	28	7	0	7	1	0	1	1477	140	1726
15:15 - 16:15	514	47	561	3	0	3	19	6	25	5	0	5	1	0	1	1426	131	1655
15:30 - 16:30	495	47	542	3	0	3	19	5	24	5	0	5	0	0	0	1370	106	1572
15:45 - 16:45	451	37	488	2	0	2	19	5	24	6	0	6	0	0	0	1298	93	1480
16:00 - 17:00	424	33	457	2	0	2	16	4	20	5	0	5	0	0	0	1217	85	1381
16:15 - 17:15	972	80	1052	5	0	5	38	9	47	13	0	13	1	0	1	2793	229	3219
16:30 - 17:30	927	76	1003	5	0	5	35	9	44	13	0	13	1	0	1	2680	218	3090
16:45 - 17:45	888	72	960	5	0	5	33	9	42	11	0	11	1	0	1	2545	208	2935
17:00 - 18:00	837	67	904	5	0	5	29	9	38	11	0	11	1	0	1	2397	198	2764
17:15 - 18:15	803	65	868	5	0	5	28	9	37	9	0	9	1	0	1	2256	189	2606
17:30 - 18:30	759	64	823	5	0	5	26	9	35	9	0	9	1	0	1	2145	185	2482
17:45 - 18:45	784	71	862	5	0	5	23	8	31	9	0	9	1	0	1	2025	181	2347
18:00 - 19:00	784	72	865	3	0	3	23	7	30	9	0	9	1	0	1	1917	176	2230
Period End																		

All Vehicles — Time Per Hour

SOUTHWEST — Finley Road

	L			T			R1			R2			U			
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL
6:00 - 7:00	2	0	2	27	25	52	6	0	6	209	21	230	5	2	7	297
6:15 - 7:15	3	0	3	65	33	98	8	0	8	325	45	370	12	2	14	493
6:30 - 7:30	4	0	4	74	34	108	12	0	12	320	49	369	14	2	16	509
6:45 - 7:45	3	0	3	85	32	117	15	0	15	319	50	369	15	2	17	521
7:00 - 8:00	3	0	3	90	27	117	12	0	12	327	56	383	17	1	18	533
7:15 - 8:15	7	0	7	184	65	249	27	0	27	734	115	849	36	3	39	1171
7:30 - 8:30	18	0	18	316	76	392	32	0	32	1152	135	1287	54	3	57	1786
7:45 - 8:45	18	0	18	331	76	407	36	0	36	1160	134	1294	55	2	57	1812
8:00 - 9:00	20	0	20	342	77	419	35	0	35	1182	152	1334	54	2	56	1864
8:15 - 9:15	21	0	21	345	73	418	35	0	35	1193	148	1341	54	2	56	1871
8:30 - 9:30	20	0	20	358	71	429	34	0	34	1207	146	1353	57	2	59	1895
8:45 - 9:45	21	0	21	357	70	427	34	0	34	1219	144	1363	57	2	59	1904
9:00 - 10:00	22	0	22	358	71	429	35	0	35	1217	142	1359	54	2	56	1901
Period End																
15:00 - 16:00	14	0	14	170	18	188	10	0	10	520	51	571	26	0	26	809
15:15 - 16:15	13	0	13	162	17	179	6	0	6	504	47	551	24	0	24	773
15:30 - 16:30	12	0	12	155	14	169	6	0	6	482	27	509	24	0	24	720
15:45 - 16:45	11	0	11	149	14	163	6	0	6	468	26	494	23	0	23	697
16:00 - 17:00	11	0	11	141	14	155	5	0	5	442	23	465	18	0	18	654
16:15 - 17:15	25	0	25	330	35	365	14	0	14	1005	77	1082	44	0	44	1530
16:30 - 17:30	24	0	24	318	33	351	13	0	13	967	74	1041	44	0	44	1473
16:45 - 17:45	22	0	22	300	32	332	12	0	12	909	70	979	42	0	42	1387
17:00 - 18:00	20	0	20	288	29	317	10	0	10	857	70	927	36	0	36	1310
17:15 - 18:15	19	0	19	274	26	300	10	0	10	793	66	859	33	0	33	1221
17:30 - 18:30	18	0	18	265	26	291	10	0	10	759	63	822	31	0	31	1172
17:45 - 18:45	17	0	17	246	26	272	10	0	10	716	61	777	31	0	31	1107
18:00 - 19:00	16	0	16	232	24	256	10	0	10	682	61	743	30	0	30	1055
Period End																

NORTHWEST — Davidson Street

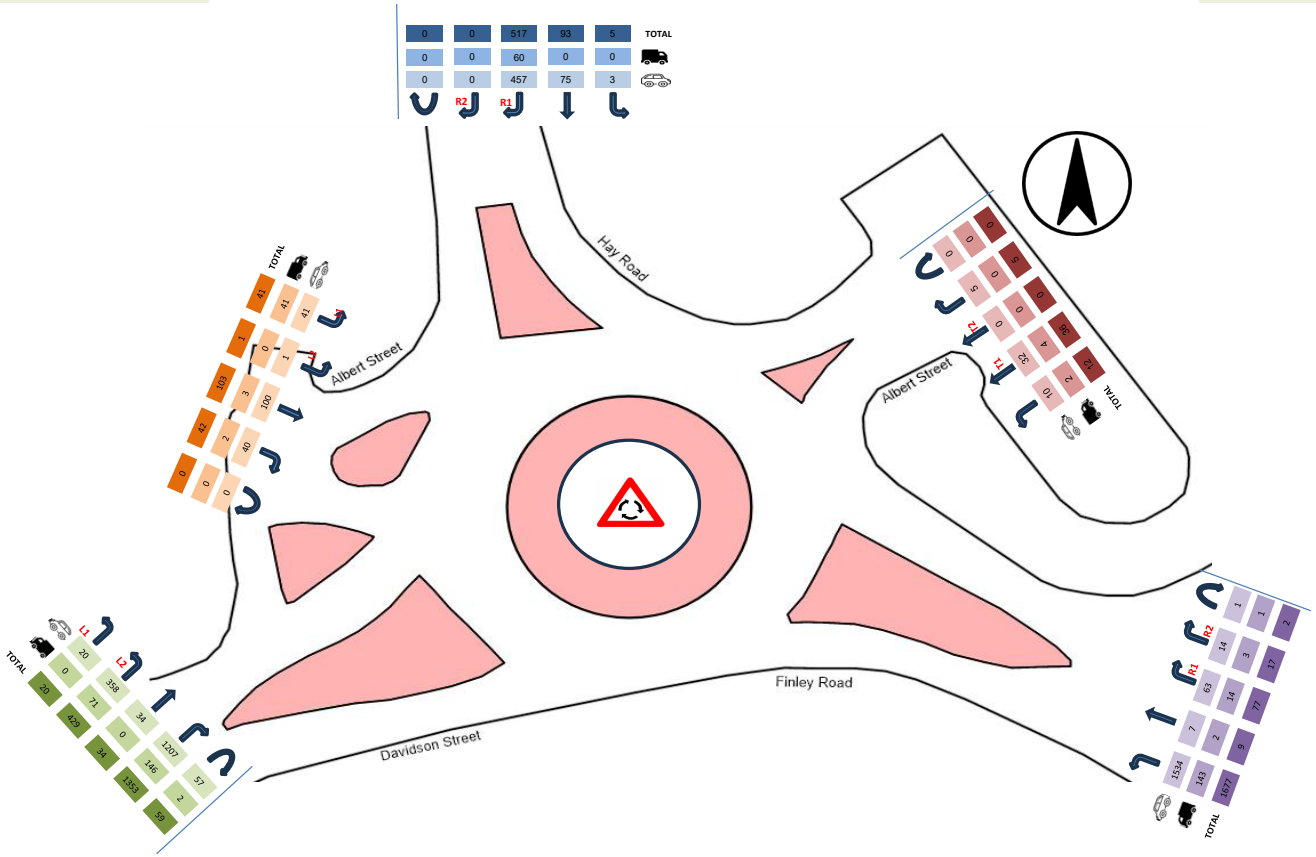
	L			T1			T2			R			U			
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL
6:00 - 7:00	11	0	11	0	0	0	32	1	33	9	2	11	0	0	0	55
6:15 - 7:15	13	0	13	0	0	0	40	1	41	12	2	14	0	0	0	68
6:30 - 7:30	15	0	15	0	0	0	38	1	39	12	2	14	0	0	0	68
6:45 - 7:45	14	0	14	0	0	0	38	1	39	10	2	12	0	0	0	65
7:00 - 8:00	14	0	14	0	0	0	33	2	35	9	0	9	0	0	0	58
7:15 - 8:15	32	0	32	0	0	0	76	4	80	23	2	25	0	0	0	137
7:30 - 8:30	39	0	39	0	0	0	98	4	102	41	2	43	0	0	0	184
7:45 - 8:45	38	0	38	0	0	0	96	4	100	41	2	43	0	0	0	181
8:00 - 9:00	39	0	39	1	0	1	92	3	95	40	2	42	0	0	0	177
8:15 - 9:15	41	0	41	1	0	1	97	3	100	39	2	41	0	0	0	183
8:30 - 9:30	41	0	41	1	0	1	100	3	103	40	2	42	0	0	0	187
8:45 - 9:45	37	0	37	1	0	1	99	3	102	42	2	44	0	0	0	184
9:00 - 10:00	37	0	37	1	0	1	100	3	103	43	2	45	0	0	0	186
Period End																
15:00 - 16:00	11	0	11	1	0	1	34	0	34	18	0	18	0	0	0	64
15:15 - 16:15	10	0	10	1	0	1	36	0	36	19	0	19	0	0	0	66
15:30 - 16:30	9	0	9	0	0	0	36	0	36	20	0	20	0	0	0	65
15:45 - 16:45	7	0	7	0	0	0	28	0	28	20	0	20	0	0	0	55
16:00 - 17:00	7	0	7	0	0	0	25	0	25	18	0	18	0	0	0	50
16:15 - 17:15	19	0	19	1	0	1	61	0	61	38	0	38	0	0	0	119
16:30 - 17:30	19	0	19	1	0	1	57	0	57	35	0	35	0	0	0	112
16:45 - 17:45	19	0	19	1	0	1	56	0	56	34	0	34	0	0	0	110
17:00 - 18:00	19	0	19	1	0	1	52	0	52	34	0	34	0	0	0	106
17:15 - 18:15	16	0	16	1	0	1	49	0	49	30	0	30	0	0	0	96
17:30 - 18:30	15	0	15	1	0	1	48	0	48	28	0	28	0	0	0	92
17:45 - 18:45	15	0	15	1	0	1	42	0	42	27	0	27	0	0	0	85
18:00 - 19:00	13	0	13	1	0	1	42	0	42	26	0	26	0	0	0	82
Period End																

Location	**Hay Road**		**Duration**	**6:00 - 10:00**	
	Albert Street			**15:00 - 19:00**	
	Finley Road				
	Davidson Street		**Day/Date**	**Tuesday, 27 August 2024**	
	Albert Street		**Weather**	**Dry**	
Suburb	**DENILIQUIN**				

DATA SELECTION

Select Time: PEAK

TIME RANGE		
PEAK	**-**	**AM**
PEAK		
8:30	**-**	**9:30**



Traffic Information Specialist

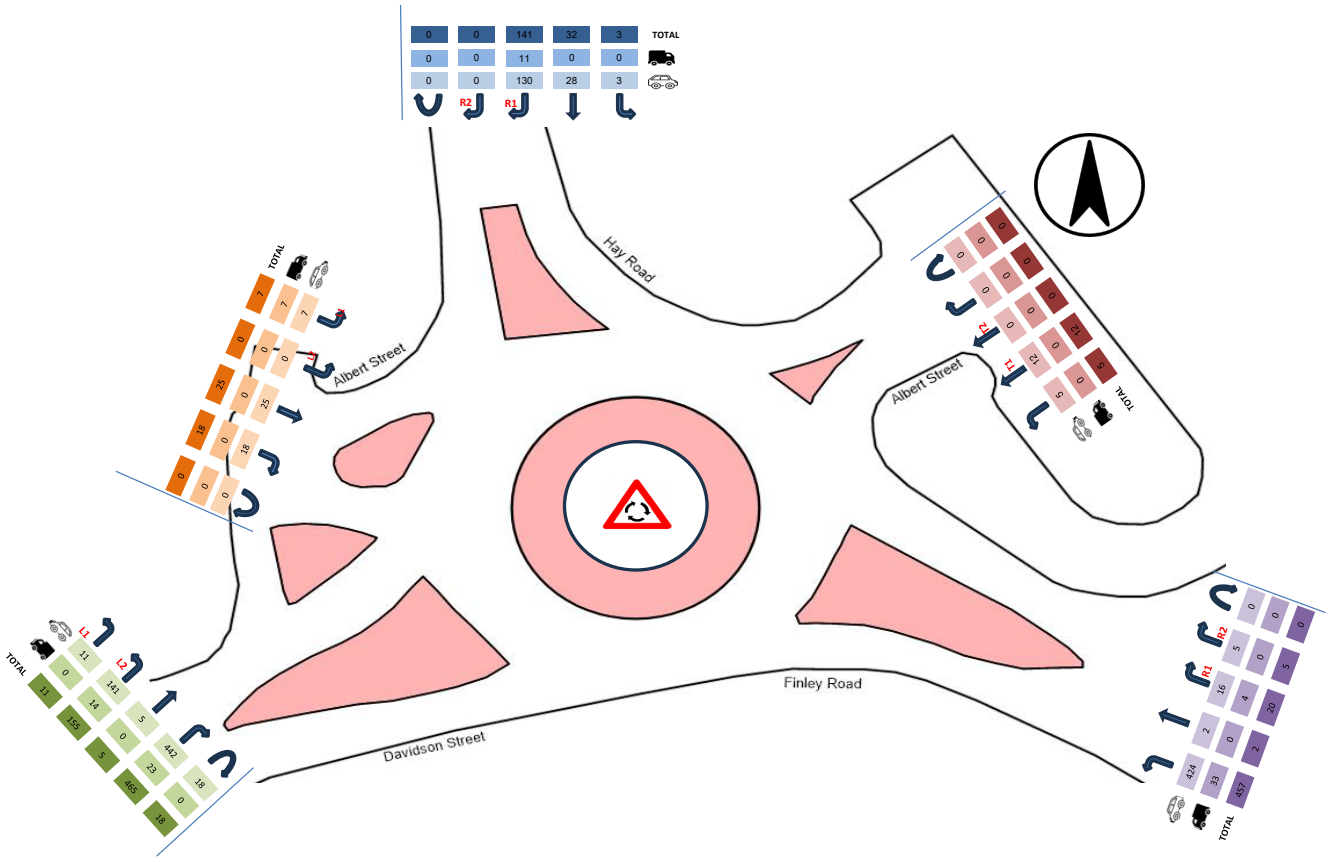
ABN: 42 613 389 923

Email info@tistraffic.com.au

Location	Hay Road		Duration	6:00 - 10:00	
	Albert Street			15:00 - 19:00	
	Finley Road				
	Davidson Street		Day/Date	Tuesday, 27 August 2024	
	Albert Street		Weather	Dry	
Suburb	DENILIQUIN				

DATA SELECTION	
Select Time:	PEAK

TIME RANGE		
PEAK	-	PM
PEAK		
16:00	-	17:00



APPENDIX B SIDRA RESULTS

MOVEMENT SUMMARY

Site: 102 [Wanderer Street - Finley Road CON PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM - Construction (Network Folder: Construction)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Finley Road (SE)															
22	T1	All MCs	99	7.4	99	7.4	0.053	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
23	R2	All MCs	2	0.0	2	0.0	0.001	5.3	LOS A	0.0	0.0	0.35	0.48	0.35	45.2
Approach			101	7.3	101	7.3	0.053	0.1	NA	0.0	0.0	0.01	0.01	0.01	49.8
NorthEast: Wanderer Street (NE)															
24	L2	All MCs	13	0.0	13	0.0	0.009	5.0	LOS A	0.0	0.2	0.23	0.50	0.23	45.4
26	R2	All MCs	116	9.1	116	9.1	0.149	7.0	LOS A	0.6	4.5	0.45	0.65	0.45	42.2
Approach			128	8.2	128	8.2	0.149	6.8	LOS A	0.6	4.5	0.43	0.63	0.43	42.7
NorthWest: Finley Road (NW)															
27	L2	All MCs	119	4.4	119	4.4	0.142	3.9	LOS A	0.0	0.0	0.00	0.24	0.00	45.8
28	T1	All MCs	143	5.1	143	5.1	0.142	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	47.9
Approach			262	4.8	262	4.8	0.142	1.8	NA	0.0	0.0	0.00	0.24	0.00	46.9
All Vehicles			492	6.2	492	6.2	0.149	2.7	NA	0.6	4.5	0.11	0.30	0.11	46.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 100 [Cobb Highway - Finley Road - Davidson Street-Albert Street AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM (Network Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Finley Road (SE)															
21a	L1	All MCs	273	7.3	273	7.3	0.213	2.0	LOS A	1.2	9.2	0.30	0.31	0.30	46.3
22	T1	All MCs	3	66.7	3	66.7	0.213	2.6	LOS A	1.2	9.2	0.30	0.31	0.30	10.2
23a	R1	All MCs	6	16.7	6	16.7	0.213	6.4	LOS A	1.2	9.2	0.30	0.31	0.30	45.1
23b	R3	All MCs	2	50.0	2	50.0	0.213	8.6	LOS A	1.2	9.2	0.30	0.31	0.30	32.7
23u	U	All MCs	2	50.0	2	50.0	0.213	10.9	LOS B	1.2	9.2	0.30	0.31	0.30	33.5
Approach			286	8.8	286	8.8	0.213	2.2	LOS A	1.2	9.2	0.30	0.31	0.30	45.9
East: Albert Street (E)															
4b	L3	All MCs	1	0.0	1	0.0	0.008	2.3	LOS A	0.0	0.3	0.40	0.47	0.40	27.2
5	T1	All MCs	4	25.0	4	25.0	0.008	2.7	LOS A	0.0	0.3	0.40	0.47	0.40	44.4
6a	R1	All MCs	1	0.0	1	0.0	0.008	6.0	LOS A	0.0	0.3	0.40	0.47	0.40	8.1
6	R2	All MCs	1	0.0	1	0.0	0.008	7.0	LOS A	0.0	0.3	0.40	0.47	0.40	43.6
6u	U	All MCs	1	0.0	1	0.0	0.008	10.3	LOS B	0.0	0.3	0.40	0.47	0.40	28.3
Approach			8	12.5	8	12.5	0.008	4.6	LOS A	0.0	0.3	0.40	0.47	0.40	37.6
North: Cobb Highway (N)															
7	L2	All MCs	1	0.0	1	0.0	0.081	3.1	LOS A	0.4	3.1	0.35	0.56	0.35	41.3
7a	L1	All MCs	12	45.5	12	45.5	0.081	3.1	LOS A	0.4	3.1	0.35	0.56	0.35	41.4
9	R2	All MCs	83	7.6	83	7.6	0.081	8.4	LOS A	0.4	3.1	0.35	0.56	0.35	44.3
9b	R3	All MCs	1	0.0	1	0.0	0.081	9.3	LOS A	0.4	3.1	0.35	0.56	0.35	27.7
9u	U	All MCs	1	0.0	1	0.0	0.081	12.3	LOS B	0.4	3.1	0.35	0.56	0.35	47.2
Approach			98	11.8	98	11.8	0.081	7.7	LOS A	0.4	3.1	0.35	0.56	0.35	43.9
NorthWest: Albert Street (NW)															
27b	L3	All MCs	4	0.0	4	0.0	0.024	1.9	LOS A	0.1	0.9	0.37	0.47	0.37	44.5
27a	L1	All MCs	1	0.0	1	0.0	0.024	1.9	LOS A	0.1	0.9	0.37	0.47	0.37	30.7
28	T1	All MCs	14	23.1	14	23.1	0.024	2.3	LOS A	0.1	0.9	0.37	0.47	0.37	27.8
29b	R3	All MCs	7	28.6	7	28.6	0.024	7.9	LOS A	0.1	0.9	0.37	0.47	0.37	43.7
29u	U	All MCs	1	0.0	1	0.0	0.024	9.9	LOS A	0.1	0.9	0.37	0.47	0.37	7.5
Approach			27	19.2	27	19.2	0.024	4.0	LOS A	0.1	0.9	0.37	0.47	0.37	38.6
West: Davidson Street (W)															
10b	L3	All MCs	1	0.0	1	0.0	0.136	2.6	LOS A	0.7	5.8	0.11	0.49	0.11	27.1
10	L2	All MCs	47	20.0	47	20.0	0.136	2.5	LOS A	0.7	5.8	0.11	0.49	0.11	46.0
11	T1	All MCs	3	0.0	3	0.0	0.136	2.1	LOS A	0.7	5.8	0.11	0.49	0.11	43.6
12a	R1	All MCs	142	16.3	142	16.3	0.136	6.7	LOS A	0.7	5.8	0.11	0.49	0.11	43.7
12u	U	All MCs	9	0.0	9	0.0	0.136	11.6	LOS B	0.7	5.8	0.11	0.49	0.11	48.8
Approach			203	16.1	203	16.1	0.136	5.8	LOS A	0.7	5.8	0.11	0.49	0.11	44.7
All Vehicles			623	12.2	623	12.2	0.213	4.4	LOS A	1.2	9.2	0.25	0.42	0.25	44.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Wanderer Street - Finley Road AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM (Network Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Finley Road (SE)															
22	T1	All MCs	129	8.1	129	8.1	0.070	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
23	R2	All MCs	12	18.2	12	18.2	0.008	5.4	LOS A	0.0	0.3	0.29	0.49	0.29	45.1
Approach			141	9.0	141	9.0	0.070	0.5	NA	0.0	0.3	0.02	0.04	0.02	49.2
NorthEast: Wanderer Street (NE)															
24	L2	All MCs	11	30.0	11	30.0	0.008	5.1	LOS A	0.0	0.3	0.17	0.49	0.17	45.2
26	R2	All MCs	152	6.3	152	6.3	0.180	6.6	LOS A	0.8	5.6	0.43	0.62	0.43	42.5
Approach			162	7.8	162	7.8	0.180	6.5	LOS A	0.8	5.6	0.41	0.62	0.41	42.8
NorthWest: Finley Road (NW)															
27	L2	All MCs	98	16.1	98	16.1	0.098	3.9	LOS A	0.0	0.0	0.00	0.31	0.00	45.0
28	T1	All MCs	68	18.5	68	18.5	0.098	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	47.3
Approach			166	17.1	166	17.1	0.098	2.3	NA	0.0	0.0	0.00	0.31	0.00	45.9
All Vehicles			469	11.4	469	11.4	0.180	3.2	NA	0.8	5.6	0.15	0.33	0.15	45.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 100 [Cobb Highway - Finley Road - Davidson Street-Albert Street PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM (Network Folder: Existing)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Finley Road (SE)															
21a	L1	All MCs	194	8.2	194	8.2	0.154	1.9	LOS A	0.9	6.3	0.26	0.31	0.26	46.3
22	T1	All MCs	1	0.0	1	0.0	0.154	2.1	LOS A	0.9	6.3	0.26	0.31	0.26	9.0
23a	R1	All MCs	11	0.0	11	0.0	0.154	6.2	LOS A	0.9	6.3	0.26	0.31	0.26	45.3
23b	R3	All MCs	4	0.0	4	0.0	0.154	8.2	LOS A	0.9	6.3	0.26	0.31	0.26	33.2
23u	U	All MCs	1	0.0	1	0.0	0.154	10.5	LOS B	0.9	6.3	0.26	0.31	0.26	33.5
Approach			211	7.5	211	7.5	0.154	2.3	LOS A	0.9	6.3	0.26	0.31	0.26	45.9
East: Albert Street (E)															
4b	L3	All MCs	4	0.0	4	0.0	0.012	2.6	LOS A	0.1	0.4	0.44	0.46	0.44	27.4
5	T1	All MCs	6	0.0	6	0.0	0.012	2.7	LOS A	0.1	0.4	0.44	0.46	0.44	45.2
6a	R1	All MCs	1	0.0	1	0.0	0.012	6.3	LOS A	0.1	0.4	0.44	0.46	0.44	7.4
6	R2	All MCs	1	0.0	1	0.0	0.012	7.3	LOS A	0.1	0.4	0.44	0.46	0.44	44.2
6u	U	All MCs	1	0.0	1	0.0	0.012	10.6	LOS B	0.1	0.4	0.44	0.46	0.44	28.7
Approach			14	0.0	14	0.0	0.012	3.9	LOS A	0.1	0.4	0.44	0.46	0.44	39.0
North: Cobb Highway (N)															
7	L2	All MCs	2	0.0	2	0.0	0.069	3.4	LOS A	0.3	2.6	0.41	0.58	0.41	41.3
7a	L1	All MCs	11	20.0	11	20.0	0.069	3.2	LOS A	0.3	2.6	0.41	0.58	0.41	41.4
9	R2	All MCs	64	8.2	64	8.2	0.069	8.8	LOS A	0.3	2.6	0.41	0.58	0.41	44.3
9b	R3	All MCs	1	0.0	1	0.0	0.069	9.6	LOS A	0.3	2.6	0.41	0.58	0.41	27.6
9u	U	All MCs	1	0.0	1	0.0	0.069	12.7	LOS B	0.3	2.6	0.41	0.58	0.41	47.2
Approach			79	9.3	79	9.3	0.069	7.9	LOS A	0.3	2.6	0.41	0.58	0.41	43.9
NorthWest: Albert Street (NW)															
27b	L3	All MCs	3	0.0	3	0.0	0.023	2.4	LOS A	0.1	0.8	0.43	0.52	0.43	43.9
27a	L1	All MCs	1	0.0	1	0.0	0.023	2.3	LOS A	0.1	0.8	0.43	0.52	0.43	29.6
28	T1	All MCs	13	0.0	13	0.0	0.023	2.6	LOS A	0.1	0.8	0.43	0.52	0.43	26.7
29b	R3	All MCs	8	0.0	8	0.0	0.023	8.1	LOS A	0.1	0.8	0.43	0.52	0.43	43.6
29u	U	All MCs	1	0.0	1	0.0	0.023	10.4	LOS B	0.1	0.8	0.43	0.52	0.43	7.8
Approach			26	0.0	26	0.0	0.023	4.6	LOS A	0.1	0.8	0.43	0.52	0.43	38.1
West: Davidson Street (W)															
10b	L3	All MCs	6	0.0	6	0.0	0.205	2.6	LOS A	1.2	8.6	0.11	0.49	0.11	27.1
10	L2	All MCs	68	13.8	68	13.8	0.205	2.4	LOS A	1.2	8.6	0.11	0.49	0.11	46.0
11	T1	All MCs	4	0.0	4	0.0	0.205	2.1	LOS A	1.2	8.6	0.11	0.49	0.11	43.5
12a	R1	All MCs	235	4.9	235	4.9	0.205	6.6	LOS A	1.2	8.6	0.11	0.49	0.11	43.5
12u	U	All MCs	12	0.0	12	0.0	0.205	11.6	LOS B	1.2	8.6	0.11	0.49	0.11	48.7
Approach			325	6.5	325	6.5	0.205	5.7	LOS A	1.2	8.6	0.11	0.49	0.11	44.1
All Vehicles			655	6.8	655	6.8	0.205	4.8	LOS A	1.2	8.6	0.22	0.45	0.22	44.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Organisation: URBIS | Licence: NETWORK / 1PC | Processed: Wednesday, 12 February 2025 5:58:24 PM
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MOVEMENT SUMMARY

Site: 102 [Wanderer Street - Finley Road PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM (Network Folder: Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Finley Road (SE)															
22	T1	All MCs	95	5.6	95	5.6	0.050	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
23	R2	All MCs	2	0.0	2	0.0	0.001	5.3	LOS A	0.0	0.0	0.35	0.48	0.35	45.2
Approach			97	5.4	97	5.4	0.050	0.1	NA	0.0	0.0	0.01	0.01	0.01	49.8
NorthEast: Wanderer Street (NE)															
24	L2	All MCs	13	0.0	13	0.0	0.009	5.0	LOS A	0.0	0.2	0.23	0.50	0.23	45.4
26	R2	All MCs	116	9.1	116	9.1	0.147	6.9	LOS A	0.6	4.5	0.44	0.64	0.44	42.2
Approach			128	8.2	128	8.2	0.147	6.7	LOS A	0.6	4.5	0.42	0.63	0.42	42.7
NorthWest: Finley Road (NW)															
27	L2	All MCs	119	4.4	119	4.4	0.142	3.9	LOS A	0.0	0.0	0.00	0.24	0.00	45.8
28	T1	All MCs	143	5.1	143	5.1	0.142	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	47.9
Approach			262	4.8	262	4.8	0.142	1.8	NA	0.0	0.0	0.00	0.24	0.00	46.9
All Vehicles			487	5.8	487	5.8	0.147	2.7	NA	0.6	4.5	0.11	0.30	0.11	46.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 100 [Cobb Highway - Finley Road - Davidson Street-Albert Street - CON AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM - Construction (Network Folder: Construction)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Finley Road (SE)															
21a	L1	All MCs	273	7.3	273	7.3	0.213	2.0	LOS A	1.2	9.3	0.30	0.31	0.30	46.3
22	T1	All MCs	3	66.7	3	66.7	0.213	2.6	LOS A	1.2	9.3	0.30	0.31	0.30	10.2
23a	R1	All MCs	6	16.7	6	16.7	0.213	6.4	LOS A	1.2	9.3	0.30	0.31	0.30	45.1
23b	R3	All MCs	2	50.0	2	50.0	0.213	8.6	LOS A	1.2	9.3	0.30	0.31	0.30	32.7
23u	U	All MCs	2	50.0	2	50.0	0.213	10.9	LOS B	1.2	9.3	0.30	0.31	0.30	33.5
Approach			286	8.8	286	8.8	0.213	2.2	LOS A	1.2	9.3	0.30	0.31	0.30	45.9
East: Albert Street (E)															
4b	L3	All MCs	1	0.0	1	0.0	0.008	2.4	LOS A	0.0	0.3	0.42	0.48	0.42	26.9
5	T1	All MCs	4	25.0	4	25.0	0.008	2.8	LOS A	0.0	0.3	0.42	0.48	0.42	44.3
6a	R1	All MCs	1	0.0	1	0.0	0.008	6.1	LOS A	0.0	0.3	0.42	0.48	0.42	8.0
6	R2	All MCs	1	0.0	1	0.0	0.008	7.1	LOS A	0.0	0.3	0.42	0.48	0.42	43.5
6u	U	All MCs	1	0.0	1	0.0	0.008	10.4	LOS B	0.0	0.3	0.42	0.48	0.42	28.1
Approach			8	12.5	8	12.5	0.008	4.7	LOS A	0.0	0.3	0.42	0.48	0.42	37.5
North: Cobb Highway (N)															
7	L2	All MCs	1	0.0	1	0.0	0.083	3.2	LOS A	0.4	3.2	0.37	0.57	0.37	41.2
7a	L1	All MCs	12	45.5	12	45.5	0.083	3.3	LOS A	0.4	3.2	0.37	0.57	0.37	41.3
9	R2	All MCs	83	7.6	83	7.6	0.083	8.5	LOS A	0.4	3.2	0.37	0.57	0.37	44.2
9b	R3	All MCs	1	0.0	1	0.0	0.083	9.4	LOS A	0.4	3.2	0.37	0.57	0.37	27.6
9u	U	All MCs	1	0.0	1	0.0	0.083	12.5	LOS B	0.4	3.2	0.37	0.57	0.37	47.2
Approach			98	11.8	98	11.8	0.083	7.9	LOS A	0.4	3.2	0.37	0.57	0.37	43.9
NorthWest: Albert Street (NW)															
27b	L3	All MCs	4	0.0	4	0.0	0.025	2.0	LOS A	0.1	1.0	0.39	0.48	0.39	44.4
27a	L1	All MCs	1	0.0	1	0.0	0.025	2.0	LOS A	0.1	1.0	0.39	0.48	0.39	30.4
28	T1	All MCs	14	23.1	14	23.1	0.025	2.5	LOS A	0.1	1.0	0.39	0.48	0.39	27.4
29b	R3	All MCs	7	28.6	7	28.6	0.025	8.1	LOS A	0.1	1.0	0.39	0.48	0.39	43.6
29u	U	All MCs	1	0.0	1	0.0	0.025	10.0	LOS A	0.1	1.0	0.39	0.48	0.39	7.5
Approach			27	19.2	27	19.2	0.025	4.2	LOS A	0.1	1.0	0.39	0.48	0.39	38.5
West: Davidson Street (W)															
10b	L3	All MCs	1	0.0	1	0.0	0.153	2.6	LOS A	0.8	6.9	0.11	0.49	0.11	27.3
10	L2	All MCs	47	20.0	47	20.0	0.153	2.5	LOS A	0.8	6.9	0.11	0.49	0.11	46.3
11	T1	All MCs	3	0.0	3	0.0	0.153	2.1	LOS A	0.8	6.9	0.11	0.49	0.11	44.1
12a	R1	All MCs	161	24.8	161	24.8	0.153	6.9	LOS A	0.8	6.9	0.11	0.49	0.11	44.1
12u	U	All MCs	9	0.0	9	0.0	0.153	11.6	LOS B	0.8	6.9	0.11	0.49	0.11	49.1
Approach			222	22.3	222	22.3	0.153	6.1	LOS A	0.8	6.9	0.11	0.49	0.11	45.0
All Vehicles			642	14.4	642	14.4	0.213	4.5	LOS A	1.2	9.3	0.25	0.42	0.25	44.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Wanderer Street - Finley Road CON AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM - Construction (Network Folder: Construction)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Finley Road (SE)															
22	T1	All MCs	129	8.1	129	8.1	0.070	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
23	R2	All MCs	12	18.2	12	18.2	0.009	5.5	LOS A	0.0	0.3	0.32	0.50	0.32	45.0
Approach			141	9.0	141	9.0	0.070	0.5	NA	0.0	0.3	0.03	0.04	0.03	49.2
NorthEast: Wanderer Street (NE)															
24	L2	All MCs	11	30.0	11	30.0	0.008	5.2	LOS A	0.0	0.3	0.20	0.49	0.20	45.1
26	R2	All MCs	152	6.3	152	6.3	0.187	6.8	LOS A	0.8	5.7	0.45	0.64	0.45	42.3
Approach			162	7.8	162	7.8	0.187	6.7	LOS A	0.8	5.7	0.43	0.63	0.43	42.6
NorthWest: Finley Road (NW)															
27	L2	All MCs	98	16.1	98	16.1	0.113	3.9	LOS A	0.0	0.0	0.00	0.28	0.00	45.0
28	T1	All MCs	87	33.7	87	33.7	0.113	0.0	LOS A	0.0	0.0	0.00	0.28	0.00	47.3
Approach			185	24.4	185	24.4	0.113	2.0	NA	0.0	0.0	0.00	0.28	0.00	46.1
All Vehicles			488	14.4	488	14.4	0.187	3.1	NA	0.8	5.7	0.15	0.33	0.15	45.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 100 [Cobb Highway - Finley Road - Davidson Street-Albert Street CON PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM - Construction (Network Folder: Construction)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

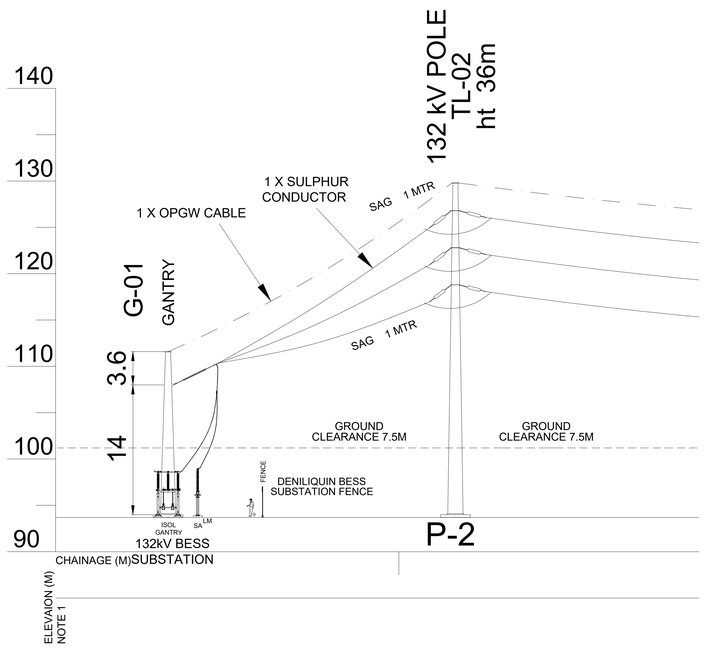
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Finley Road (SE)															
21a	L1	All MCs	198	9.0	198	9.0	0.158	1.9	LOS A	0.9	6.5	0.27	0.31	0.27	46.2
22	T1	All MCs	1	0.0	1	0.0	0.158	2.1	LOS A	0.9	6.5	0.27	0.31	0.27	9.0
23a	R1	All MCs	11	0.0	11	0.0	0.158	6.2	LOS A	0.9	6.5	0.27	0.31	0.27	45.3
23b	R3	All MCs	4	0.0	4	0.0	0.158	8.2	LOS A	0.9	6.5	0.27	0.31	0.27	33.2
23u	U	All MCs	1	0.0	1	0.0	0.158	9.2	LOS A	0.9	6.5	0.27	0.31	0.27	33.5
Approach			215	8.3	215	8.3	0.158	2.3	LOS A	0.9	6.5	0.27	0.31	0.27	45.9
East: Albert Street (E)															
4b	L3	All MCs	4	0.0	4	0.0	0.012	2.6	LOS A	0.1	0.4	0.44	0.46	0.44	27.3
5	T1	All MCs	6	0.0	6	0.0	0.012	2.7	LOS A	0.1	0.4	0.44	0.46	0.44	45.2
6a	R1	All MCs	1	0.0	1	0.0	0.012	6.3	LOS A	0.1	0.4	0.44	0.46	0.44	7.4
6	R2	All MCs	1	0.0	1	0.0	0.012	7.3	LOS A	0.1	0.4	0.44	0.46	0.44	44.2
6u	U	All MCs	1	0.0	1	0.0	0.012	9.3	LOS A	0.1	0.4	0.44	0.46	0.44	28.5
Approach			14	0.0	14	0.0	0.012	3.8	LOS A	0.1	0.4	0.44	0.46	0.44	39.0
North: Cobb Highway (N)															
7	L2	All MCs	2	0.0	2	0.0	0.069	3.4	LOS A	0.3	2.6	0.41	0.58	0.41	41.3
7a	L1	All MCs	11	20.0	11	20.0	0.069	3.2	LOS A	0.3	2.6	0.41	0.58	0.41	41.4
9	R2	All MCs	64	8.2	64	8.2	0.069	8.8	LOS A	0.3	2.6	0.41	0.58	0.41	44.3
9b	R3	All MCs	1	0.0	1	0.0	0.069	9.6	LOS A	0.3	2.6	0.41	0.58	0.41	25.3
9u	U	All MCs	1	0.0	1	0.0	0.069	10.6	LOS B	0.3	2.6	0.41	0.58	0.41	44.3
Approach			79	9.3	79	9.3	0.069	7.9	LOS A	0.3	2.6	0.41	0.58	0.41	43.7
NorthWest: Albert Street (NW)															
27b	L3	All MCs	3	0.0	3	0.0	0.023	2.4	LOS A	0.1	0.8	0.43	0.52	0.43	43.9
27a	L1	All MCs	1	0.0	1	0.0	0.023	2.3	LOS A	0.1	0.8	0.43	0.52	0.43	29.6
28	T1	All MCs	13	0.0	13	0.0	0.023	2.6	LOS A	0.1	0.8	0.43	0.52	0.43	26.7
29b	R3	All MCs	8	0.0	8	0.0	0.023	8.1	LOS A	0.1	0.8	0.43	0.52	0.43	43.6
29u	U	All MCs	1	0.0	1	0.0	0.023	9.1	LOS A	0.1	0.8	0.43	0.52	0.43	7.8
Approach			26	0.0	26	0.0	0.023	4.6	LOS A	0.1	0.8	0.43	0.52	0.43	38.1
West: Davidson Street (W)															
10b	L3	All MCs	6	0.0	6	0.0	0.205	2.6	LOS A	1.2	8.6	0.11	0.49	0.11	27.0
10	L2	All MCs	68	13.8	68	13.8	0.205	2.4	LOS A	1.2	8.6	0.11	0.49	0.11	45.9
11	T1	All MCs	4	0.0	4	0.0	0.205	2.1	LOS A	1.2	8.6	0.11	0.49	0.11	43.3
12a	R1	All MCs	235	4.9	235	4.9	0.205	6.6	LOS A	1.2	8.6	0.11	0.49	0.11	43.3
12u	U	All MCs	12	0.0	12	0.0	0.205	9.6	LOS A	1.2	8.6	0.11	0.49	0.11	45.6
Approach			325	6.5	325	6.5	0.205	5.7	LOS A	1.2	8.6	0.11	0.49	0.11	43.8
All Vehicles			659	7.0	659	7.0	0.205	4.8	LOS A	1.2	8.6	0.22	0.44	0.22	44.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.

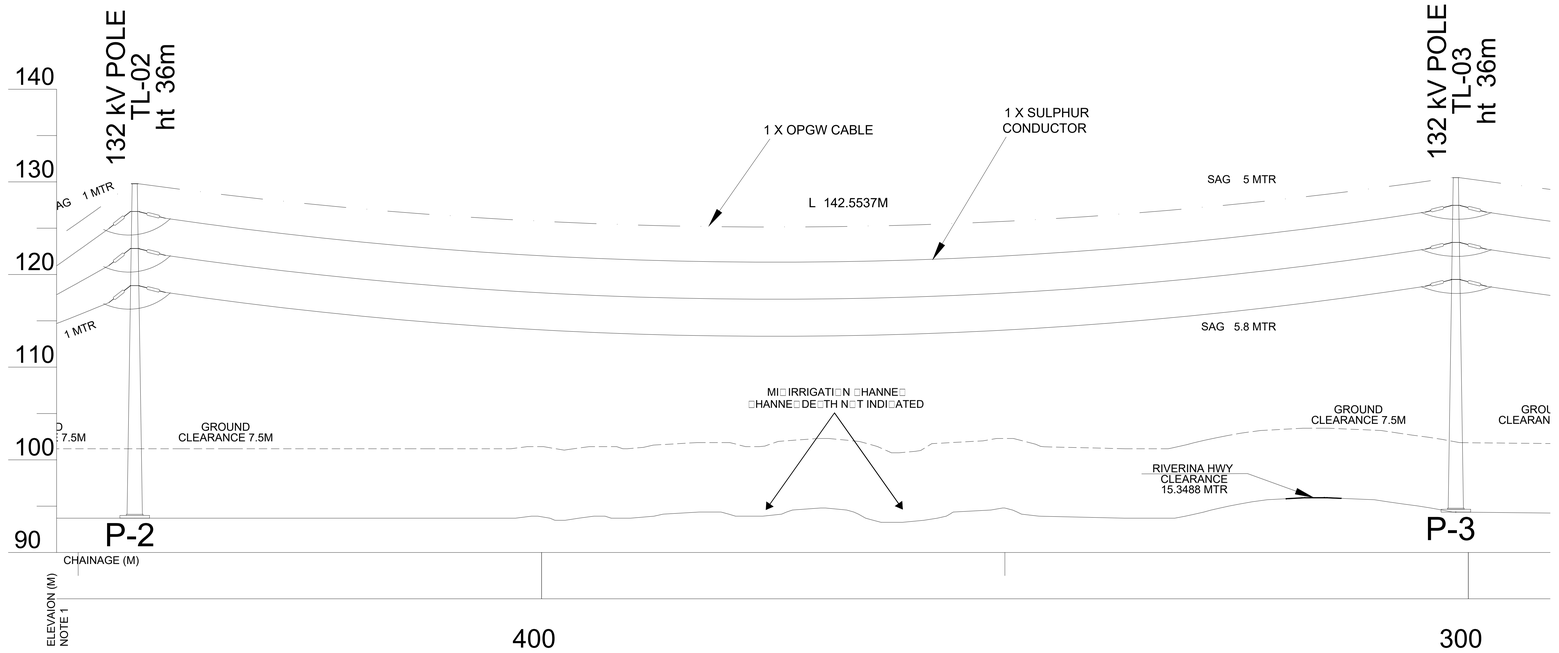
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SIDRA INTERSECTION 9.1 | Copyright © 2000-2024 Akcelik and Associates Pty Ltd | sidrasolutions.com

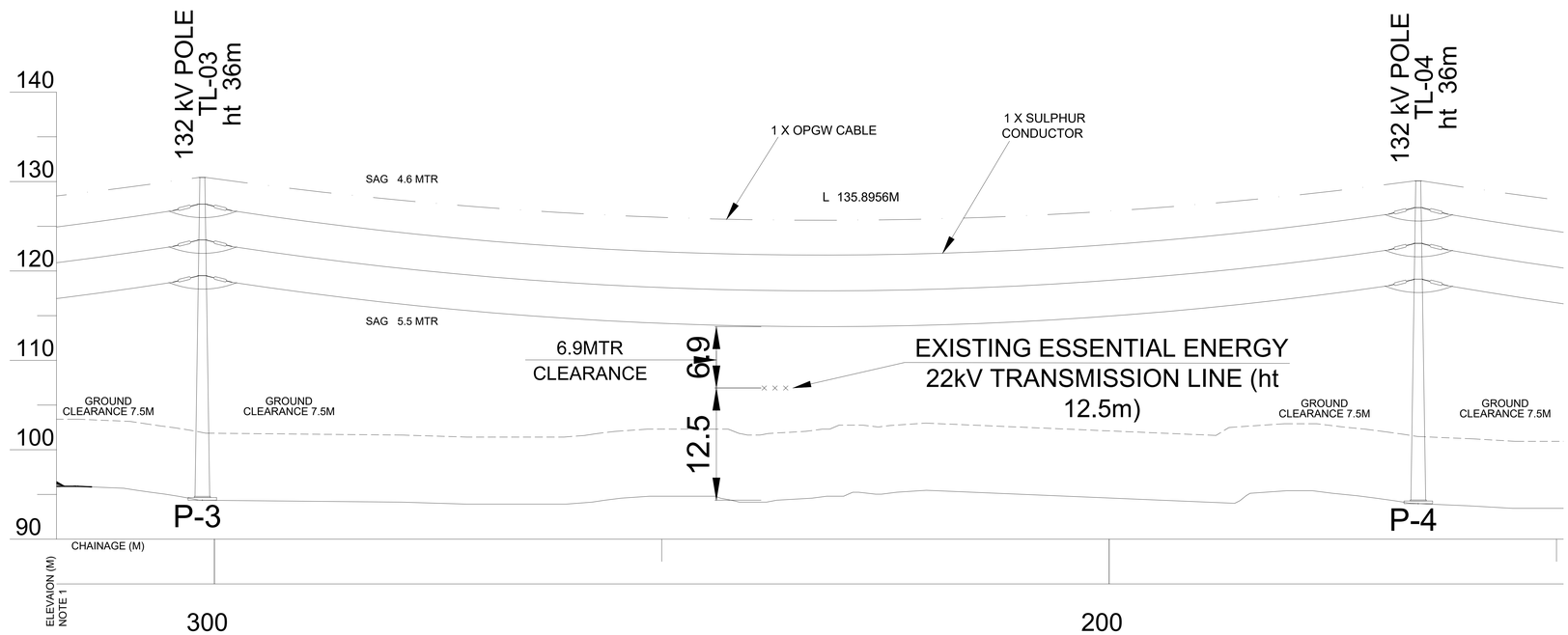
APPENDIX C OVERHEAD TRANSMISSION LINE CROSS SECTION



PROFILE VIEW SECTION B-B
SCALE 3:1



PROFILE VIEW SECTION C-C
SCALE 3:1



PROFILE VIEW SECTION D-D
SCALE 3:1

GENERAL NOTES:
1. ELEVATION HEIGHT SHOWN IS TENTATIVE AND WILL BE CONFIRMED DURING DETAIL ENGINEERING.

CONDUCTORS: SUPLHUR 61/3.75 AAAC
EARTHWIRES: 48 CORE OPGW

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AMDT	AMENDMENT DETAILS	DESIGN	CHK'D	DRAWN	CHK'D	APP'D	DATE
A4	GROUND LEVEL UPDATED AS PER NEW CONTOUR	RD	SSD	RK	RD		02/07/2024
A3	TL ROUTE UPDATED	RD	SSD	RK	RD		29/05/2024
A2	TL ROUTE UPDATED	RD	SSD	RK	RD		30/12/2023
A1	FIRST ISSUE FOR REVIEW	RD	SSD	PD	RD		03/04/2023

REFERENCE DRAWINGS:
DEN-IENG-GRS-PS-PLN-025-01 GENERAL ARRANGEMENT TL ROUTE LAYOUT

CLIENT: GRS
EPC: E22
DESIGN: iEngineering

DESIGNED	RD
CHECKED	SSD
DRAWN	RK
CHECKED	RD
APPROVED	

I ENGINEERING

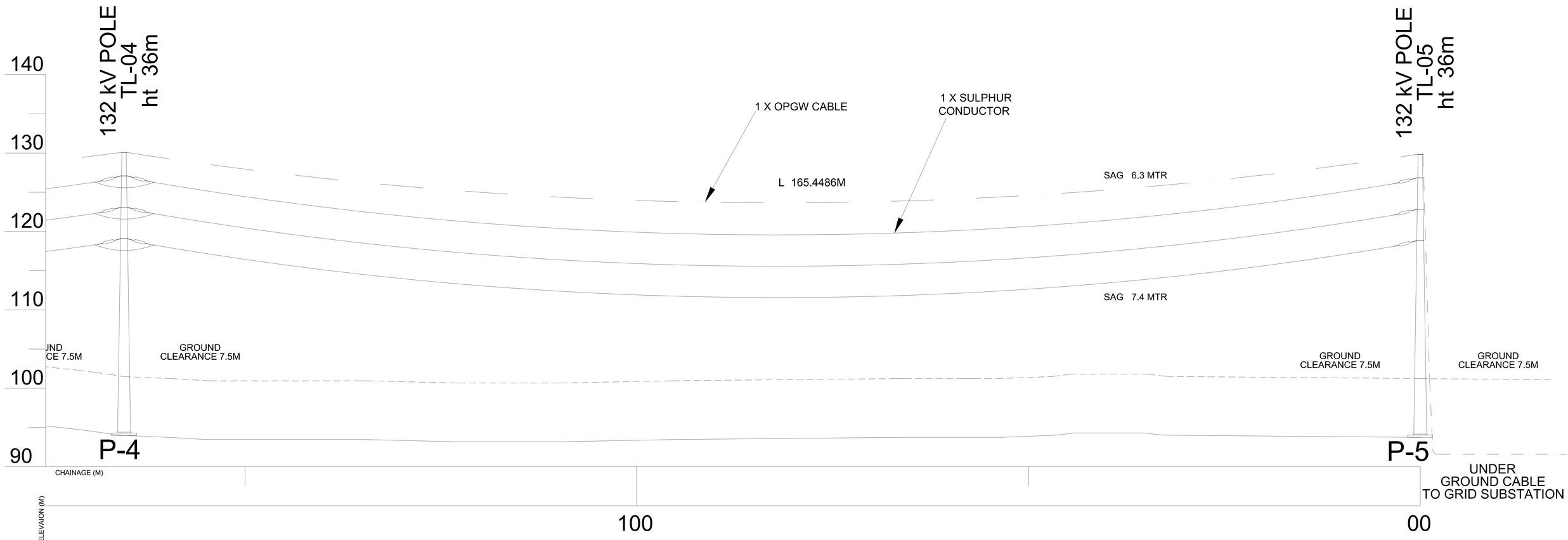
100MW DENILIQUIN BESS
TRANSMISSION LINE PROFILE
SECTION SH-01

SCALE @ A1	EPC CONTRACTOR	IENG DRAWING No.	SHEET	AMDT
A0 3:1	GRS	DEN-IENG-GRS-PS-PLN-028	01	A4

CONFIRM SCALE 100mm ON A1 ORIGINAL

GENERAL NOTES:

1. HEIGHT OF THE GANTRY SHALL BE UPDATED DURING DETAIL ENGINEERING.
2. UNDER GROUND CABLE AND DETAILS SHALL BE SHOWN DURING DETAIL ENGINEERING.



PROFILE VIEW SECTION E-E
SCALE 4:1

CONDUCTORS: SUPLHUR 61/3.75 AAAC
EARTHWIRES: 48 CORE OPGW

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AMDT	AMENDMENT DETAILS	DESIGN	CHK'D	DRAWN	CHK'D	APP'D	DATE
A4	GROUND LEVEL UPDATED AS PER NEW CONTOUR	RD	SSD	RK	RD		02/07/2024
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A2	TL ROUTE UPDATED	RD	SSD	RK	RD		30/12/2023
A1	FIRST ISSUE FOR REVIEW	RD	SSD	PD	RD		03/04/2023

REFERENCE DRAWINGS:

DEN-IENG-GRS-PS-PLN-025-01 GENERAL ARRANGEMENT TL ROUTE LAYOUT

CLIENT: GRS

EPC: E22

DESIGN: iEngineering

DESIGNED	RD
CHECKED	SSD
DRAWN	RK
CHECKED	RD
APPROVED	
A0	SCALE @ A1 4:1

I ENGINEERING

100MW DENILIQUIN BESS
TRANSMISSION LINE PROFILE
SECTION SH-01

EPC CONTRACTOR	IENG DRAWING No.	SHEET	AMDT
GRS	DEN-IENG-GRS-PS-PLN-028	01	A4

CONFIRM SCALE 100mm ON A1 ORIGINAL

APPENDIX D HAULAGE ROUTE ASSESSMENT



DENILIQUIN BESS CONCEPT ROUTE ASSESSMENT

Prepared for

BESS ARCTIC PTY LTD C/- GRANSOLAR DEVELOPMENT AUSTRALIA

19 May 2026

URBIS

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

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Project Code	P0050308
Report Number	Response to Submissions – Version 3

Urbis acknowledges the important contribution that Aboriginal and Torres Strait Islander people make in creating a strong and vibrant Australian society.

We acknowledge, in each of our offices, the Traditional Owners on whose land we stand.

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1. INTRODUCTION

Urbis has been engaged by BESS Artic Pty Ltd C/- Gransolar Development Australia to undertake a Route Assessment to address the Transport for New South Wales (TfNSW) Oversized Overmass (OSOM) Concept Level Route Analysis requirements to accompany the Transport Impact Assessment (TIA) being prepared for the proposed Battery Energy Storage System (BESS) development at 21356 Riverina Highway in Deniliquin, NSW.

In an email dated 12 August 2024, TfNSW specified that a concept level route assessment is required for high-risk OSOM vehicles that will be used to deliver components to the site.

The TfNSW requirements of this route assessment are reproduced below:

The route assessment is required for high risk OSOM (as defined on TfNSW website) required to deliver components to the project. The concept level route analysis must include:

- *The port or point of origin and must be for the entire route to the site access or intersections required to facilitate the high risk OSOM movements required for the project.*
- *The TIA is required to include details of all high risk OSOM loads and vehicle configurations for the project.*
- *The location of pull-over bays / rest areas along the high risk OSOM routes (including GPS coordinates) and demonstrate through swept paths that the high risk OSOMs can be physically accommodate all high risk OSOMs for the project (in terms of size, width and accessibility).*

Expanding on the points above, the concept route assessment is required to include:

- *Details of the road geometry and alignment along the identified transport route/s, including existing formations, crossings, bridges, intersection treatments and any identified hazards, including:*
    - *Bridge Assessments for any at risk bridges on the classified road network due to dimensions and weight of OSOM vehicles.*
    - *Swept path analysis demonstrating the largest design vehicle can enter and leave the development, and simultaneously pass through intersections along the proposed transport route/s.*
    - *The design vehicle templates used in the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).*
    - *Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.*

Identify and provide the following measurements parameters of OSOM components / materials to be moved:

- *Identify types and numbers of high risk OSOM vehicles proposed to be used for the project.*
- *Overall combination type, configuration, load and vehicle configuration:*
- *Wheelbase dimensions.*
- *length, width, height and mass (gcm, tare, weight to axle and payload) for components and nominated vehicles.*
- *Maximum trailer articulation angle(s).*
- *Minimum overhang heights above the road surface.*
- *Vehicle configurations.*
- *Traffic mitigation measures or road works, modifications, or road upgrades to facilitate the movement of the high risk OSOM(s) associated with the project.*
- *Potential high level mitigation measures or commitments to mitigate known traffic, safety and impacts to road users along the high risk OSOM route (i.e school bus routes, mining shift changes, TSRs, harvest periods and events).*
- *Identify and assess implications of any road and rail projects that may be under construction during the indicative schedule for the OSOM movements.*

Note: NHVR permits do not cover road works or upgrades and environmental approvals required along any proposed OSOM route. Any road works or upgrades works required along the OSOM route must be included within the scope of works in the SSD to ensure the development is constructable.

Note: Given the high number of renewable energy and other large-scale projects requiring haulage of OSOM components on the road network, restrictions and limitations on OSOM movements may be imposed. In this regard, it is recommended that you engage earlier with TfNSW's Development Services Renewables team to discuss the route assessment requirements.

1.1. RESPONSE TO AGENCY COMMENTS

Table 1 outlines a Request for Further Information provided by TfNSW and details the responses to these comments.

Table 1 Response to TfNSW Request for Further Information

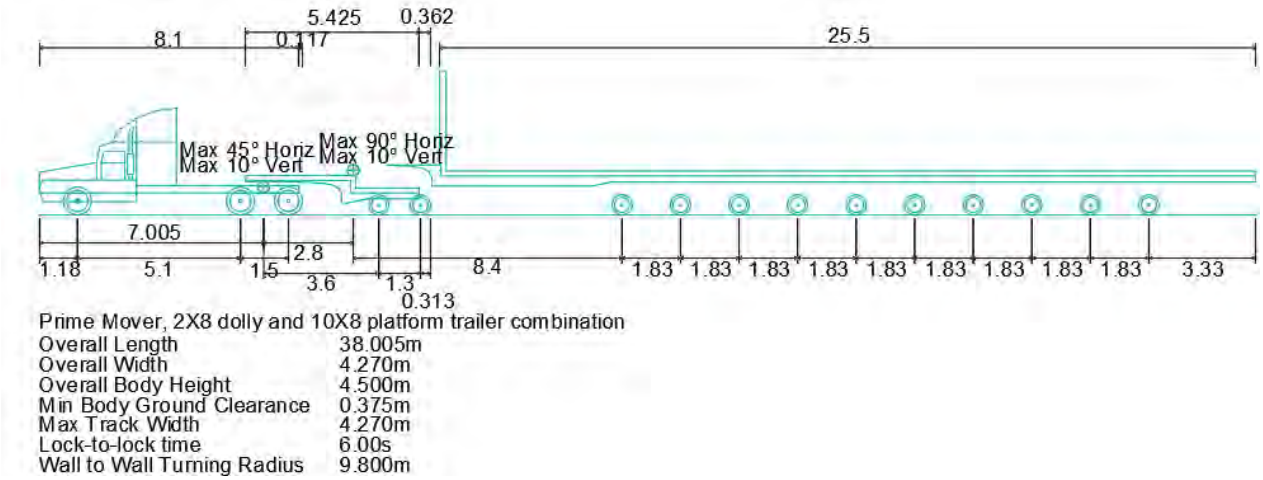
RFI Item No.	RFI Item	Section Addressed
5	**This section provides overall considerations for the route from the Port of Melbourne which will need to be resolved within the revised TIA.**	
5a.	NHVR Route ID has not been provided. This is required to ensure a complete assessment of route considerations has been provided. See advisory note.	Section 2.1
5b.	Bridge and culvert assessments are required for the route. For TfNSW assets the proponent can contact TfNSW Special Permits Unit (see advisory note 7). The route assessment is to be revised based on the outcomes of the TfNSW bridge and culvert assessments.	Section 3.2, Attachment D
5c.	The updated information will need to clarify how long traffic will be stopped (TfNSW notes traffic cannot be stopped for more than 10 minutes) at each complex pinch point that is required to be negotiated on the state road network.	Section 2.3
5d.	The route study demonstrates that TfNSW assets will be traversed by the high-risk OSOM which is not supported. This is demonstrated at the intersection of Cobb Highway / Hardinge and at the Riverina Highway roundabout. See figure 2 within Attachment B. The proponent can consider changing the vehicle configuration, changing the route or to modify / temporarily remove the infrastructure. Examples of road upgrades or modifications to this type of infrastructure include pavement strengthening, removal or partial removal of the infrastructure, or removal and replacement with a suitable alternative that complies with Austroads and TfNSW requirements.)	Section 4.1
5e.	The revised TIA to provide strategic concept designs that identify the scope of roadworks, pavement strengthening, or modifications to the state road infrastructure (at the locations mentioned in point d and any other further identified along the network) for locations where	Section 4.1

RFI Item No.	RFI Item	Section Addressed
	high-risk OSOM swept paths indicate high-risk OSOM traversing the state road infrastructure.	
5f.	Temporary changes to state road assets will need to include the length of time they will be affected, any interim treatments (e.g., line marking), and when and what will replace the asset post-completion of high-risk OSOM movement.	Section 4.1
5g.	Signs are proposed to be removed. Details on any temporary signage and the timeframe for replacing traffic signs are to be included.	Section 4.1
5h.	An extensive review of the high-risk OSOM routes regarding vertical and horizontal obstructions alignment, including existing formations, crossings, bridges, culverts, intersection roadside furniture, hazards, roundabouts, traffic signals, level crossings, existing developments, signage and powerlines.	Section 3.3
5i.	The route assessment does not include relevant TfNSW projects or other third-party projects that are currently under construction, or will be completed, on the State road network for the route. The route assessment must be updated to include mitigation measures or modifications required to navigate any identified road or rail projects along the routes (ie, Edward River Council and TfNSW are undertaking pavement remediation works on Hardinge Street, Deniliquin. The project also proposes the installation of right and left turn lanes. Proponent to liaise with ERC.)	Section 3.4
5j.	The pull-over bays and rest areas have been identified with swept paths. Please ensure the full dimensions are demonstrated on the updated plans.	Section 2.4
5k.	Rail requirements and crossing are to be considered. See advisory notes.	Section 3.2
Note, RFI items 1-4 are addressed in the Transport Impact Assessment.		

1.2. DESIGN VEHICLE

The high-risk OSOM vehicle applicable to the construction activity associated with the proposed BESS development at 21356 Riverina Highway in Deniliquin is shown in **Figure 1**. This vehicle will be used for transformer transport to the site.

Figure 1 Proposed Oversize Overmass (OSOM) Vehicle



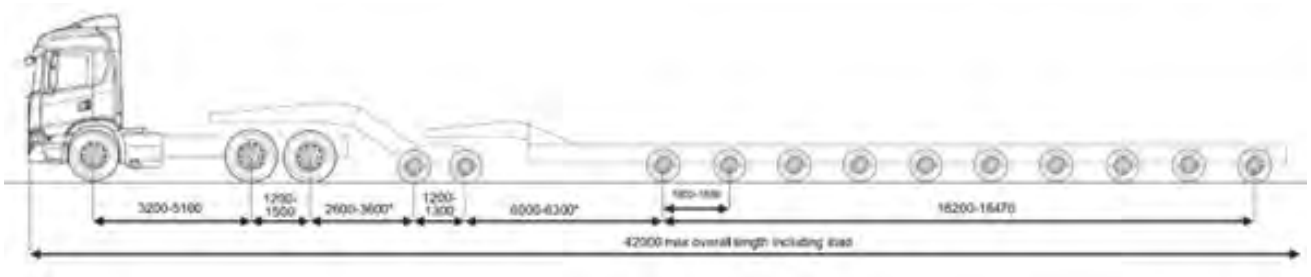
Source: Vehicle Tracking

The proposed OSOM vehicle comprises:

- a Prime Mover, 2 x 8 Dolly and 10 x 8 Platform Trailer combination,
- an overall length of 38 metres,
- a maximum width of 4.0 metres (at the platform trailer component),
- a net mass of up to 200 tonnes (including 129 tonne transformer and 71 tonne vehicle)
    - additional information regarding load placement points and detailed load drawings to be undertaken closer to the date of the movement during Class 1 permit application to the National Heavy Vehicle Regular (NHVR)
- a maximum laden height of 5.4 metres including:
    - metre trailer body height,
    - 4.0 metre transformer height,
    - 0.3 metre allowance for dunnage.

It is noted that the OSOM vehicle falls within the dimensions of Reference Vehicle 8 under the Victorian Department of Transport and Planning's (DTP) Platform Trailer Network, shown in **Figure 2**.

Figure 2 Victorian DTP Platform Trailer Network Reference Vehicle 8



Source: Transport Victoria

The proposed axle mass for the laden OSOM vehicle combination is as follows:

- **Steer Axle Mass** = 7T
- **Drive Axle Mass** = 9.25T per axle (18.5T over 2 Axles)
- **Dolly Axles Mass** = 14.5T per axle (29T over 2 Axles)
- **Trailer Axles Mass** = 16T per axle line on the Trailer (160T over 10 Axles)

2. ROUTE ANALYSIS

2.1. PROPOSED ROUTE

The route selection has been conducted with the assistance of the NHVR Route Planner. The majority of the Victorian portion of the proposed route uses the Northern Highway between Wallan and Echuca, and the majority of the New South Wales (NSW) portion uses the Cobb Highway between Echuca and Deniliquin.

The proposed route alignment is shown in **Figure 3**.

The NHVR Route ID for the selected route is 2O1Z1-6 (v1).

Additional maps are provided for metropolitan Melbourne (**Figure 4**) and the Deniliquin township (**Figure 5**), highlighting the specific route alignment in these areas.

Within Victoria, the route is conditionally pre-approved from the Port of Melbourne to the Victorian / NSW border at Echuca for a Class 1 2x8 Dolly & 10x8 Platform Trailer up to 206 tonnes (Reference Vehicle 8). The conditions applicable to the pre-approved route include:

- A bridge assessment for the West Gate Bridge (SN6225).
- Liaison with West Gate Tunnel Project team on the West Gate Freeway prior to travelling through the corridor due to potential overnight lane width reductions.
- Speed restriction to five kilometres per hour for an approximate two kilometre long section of the Northern Highway between Tooborac and Heathcote.
- Speed restriction to five kilometres per hour and requirement to straddle centreline of road for an approximate 1.9 kilometre long section of the Northern Highway immediately south of Echuca-Mitiamo Road.
- Various operational conditions on bridges along the route, specifying operating speed restriction and/or required positioning of combination on the structure, highlighted in **Table 3**.

Given the proposed combination does not comply with the Multi-State Class 1 Load Carrying Vehicle Mass or Dimension Exemption Notices, the route is not pre-approved within NSW and requires assessment and subsequent permit via the NHVR.

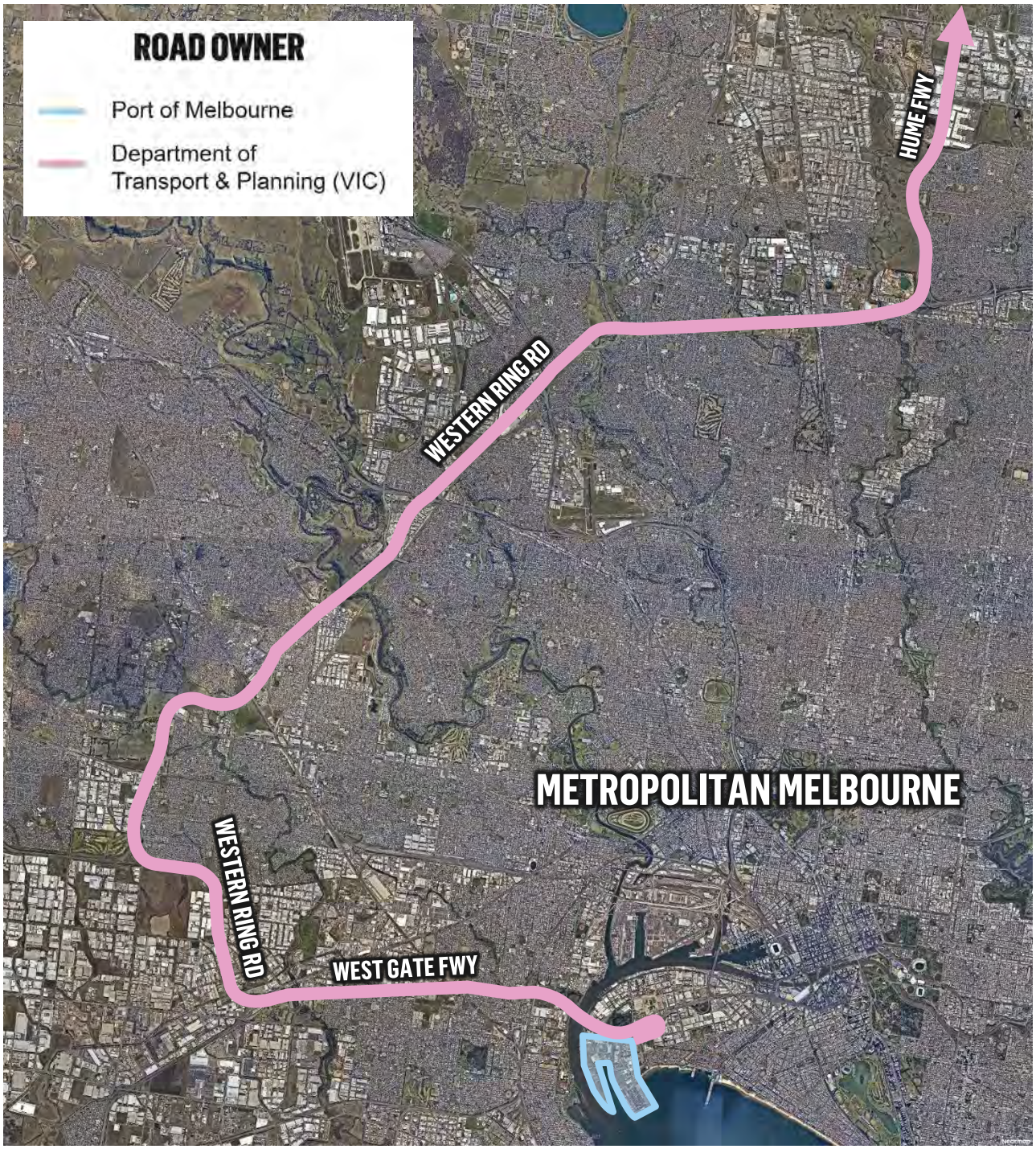
There are no known planned upgrades along the route. Further information on liaison undertaken with Edward River Council and TfNSW regarding potential planned upgrades is provided in Section 3.4.

Figure 3 Proposed Route



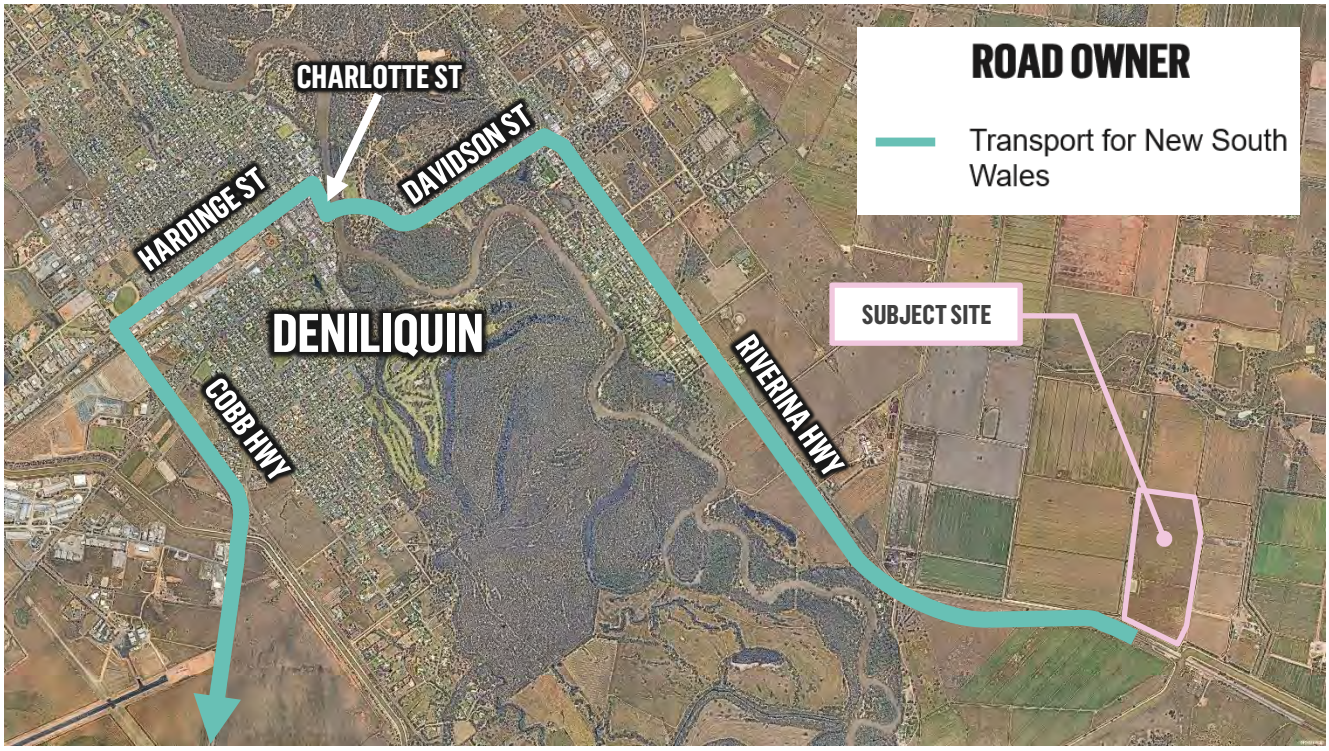
Source: Google Earth (modified by Urbis)

Figure 4 Proposed Route - Metropolitan Melbourne



Source: Nearmap (modified by Urbis)

Figure 5 Proposed Route - Deniliquin Township



Source: Nearmap (modified by Urbis)

2.2. ACCESS PERMITS

The proposed transformer combination exceeds prescribed mass and dimensional requirements and is proposed to carry a large indivisible item. As such, the vehicle is a Class 1 OSOM vehicle per the NHVR definition.

Given this OSOM status, a Class 1 permit is required for the combination to travel on NHVR roads (i.e. all roads on this route). Upon receipt of the permit application, the NHVR is responsible for consultation with respective road authorities prior to issuing the permit.

As discussed, the proposed route is conditionally pre-approved within Victoria.

2.3. TRANSPORT ESCORT

Due to the size of the proposed OSOM vehicle, it will occasionally need to use the entire carriageway widths along the route, particularly at intersections.

To minimise safety and operational impacts on the road network during transport, it is proposed to escort the combination along the length of the route.

Based on the NHVR's *Guide to pilot requirements in Victoria* (January 2018), it is proposed to utilise two certified pilots for the sections of the route located within Victoria.

Based on TfNSW's *Additional Access Conditions – Oversize and overmass heavy vehicles and loads* (October 2020), it is proposed to utilise three certified pilots for the sections of the route located within NSW. Traffic shall not be stopped for more than 10 minutes at each complex pinch point that is required to be negotiated on the NSW state road network.

It is noted that permit conditions may specify alternative pilot requirements or operating conditions, based on the NHVR assessment.

2.4. REST AREAS

The locations of pull-over bays and rest areas suitable for use by the OSOM vehicle along the proposed route are summarised in **Table 2**.

Table 2 Route Rest Areas

Location	Direction/s	GPS Co-Ordinates	Image
Hume Freeway near Donovans Lane, Beveridge, Victoria	Northbound / Southbound / Both	**-37° 29' 46", 144° 57' 31"**	
Northern Highway near Peters Gully Road, Heathcote, Victoria	Southbound	**-36° 57' 15", 144° 44' 35"**	
Northern Highway near Dowds Lane, Ladys Pass, Victoria	Southbound	**-36° 47' 7", 144° 42' 5"**	

Northern Highway near McColl Road, Ballendella, Victoria (Northbound)	Northbound	**-36° 18' 37", 144° 41' 7"**	
Northern Highway near Singer Road, Ballendella, Victoria (Southbound)	Southbound	**-36° 16' 31", 144° 42' 5"**	
Cobb Highway near Kiely Road, Moama, NSW	Both	**-36° 5' 28", 144° 45' 4"**	
Cobb Highway near Eleven Mile Road, Moama, NSW	Southbound	**-35° 59' 4", 144° 50' 44"**	

Swept path analysis demonstrating suitable OSOM vehicle access to each of these rest areas is provided in **Attachment A**. The swept path diagrams include full dimensions of these rest areas based on information gathered from the route drive.

3. POTENTIAL ROUTE CONSTRAINTS

3.1. TRAVEL RESTRICTIONS

The TfNSW requirements for a Concept Route Assessment require an assessment of impacts to traffic conditions during special events such as public holidays, harvest periods or large-scale events.

TfNSW's *Additional Access Conditions – Oversize and overmass heavy vehicles and loads* (October 2020) specifies travel restrictions for load carrying vehicles. The proposed route is not impacted by any travel restrictions listed in this document.

3.2. POTENTIAL HEIGHT AND WEIGHT CONSTRAINTS

A site and route inspection was conducted along the selected route on Monday 28 October 2024 and Tuesday 29 October 2024 to observe possible constraints for the design vehicles.

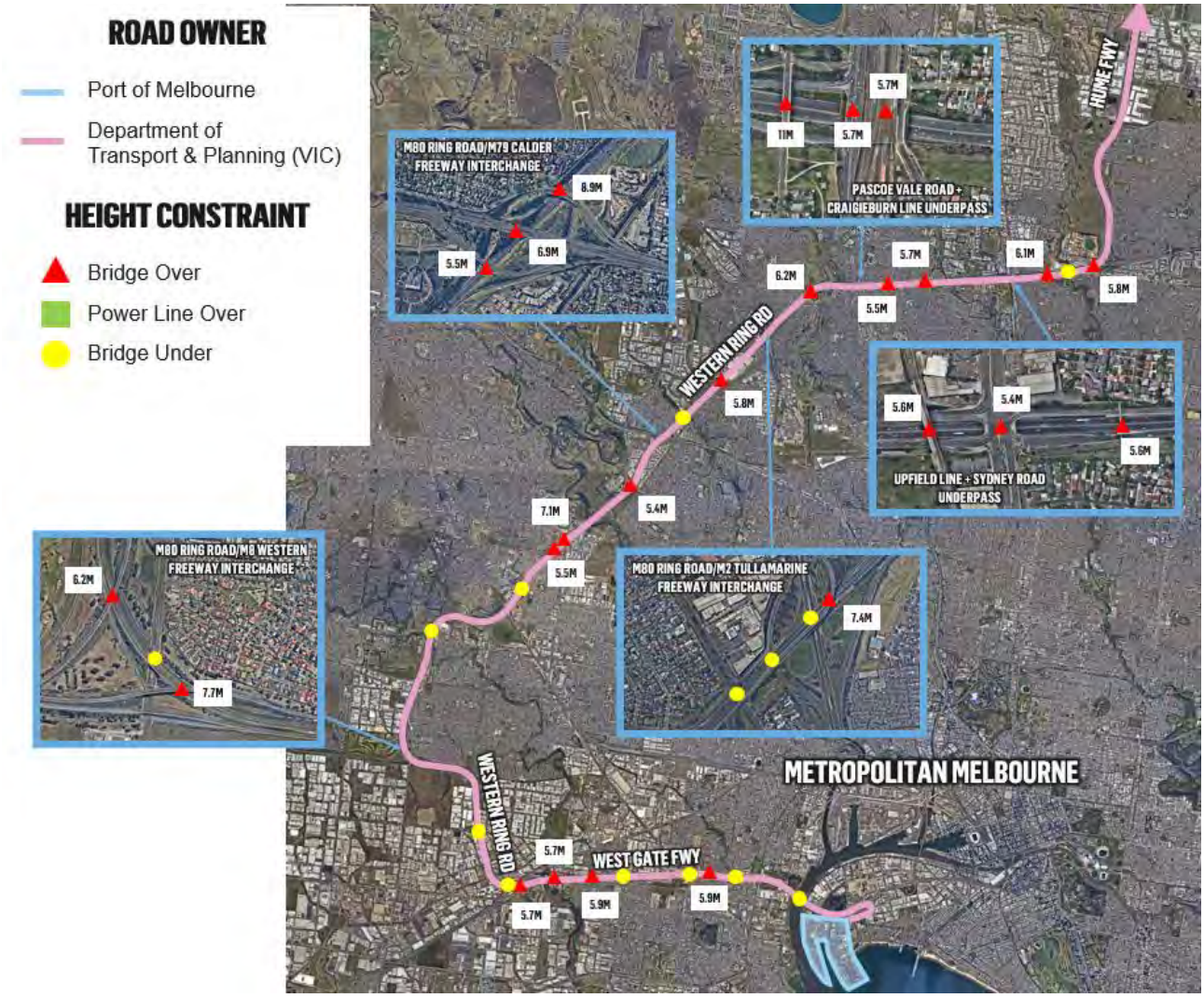
This inspection observed possible height clearance restrictions including bridge heights, power lines and electronic gantries. The route also identified bridges and other potential locations of weight constraint, such as level crossings.

Maps of these potential height and weight constraints are provided in **Figure 6** (for the West Gate Freeway and Western Ring Road sections), **Figure 7** (for the Hume Freeway section) and **Figure 8** (for the remainder of the route).

Freeway gantries are excluded from this map due to their frequency along metropolitan Melbourne freeways, however gantry height clearances obtained from the NHVR's *Height Clearance Under Overhead Structures* database have been reviewed and are considered appropriate for the maximum laden height of 5.4 metres. The overhead bridge heights from this database have been listed on the maps where provided and are less than or equal to the maximum laden height of 5.4 metres.

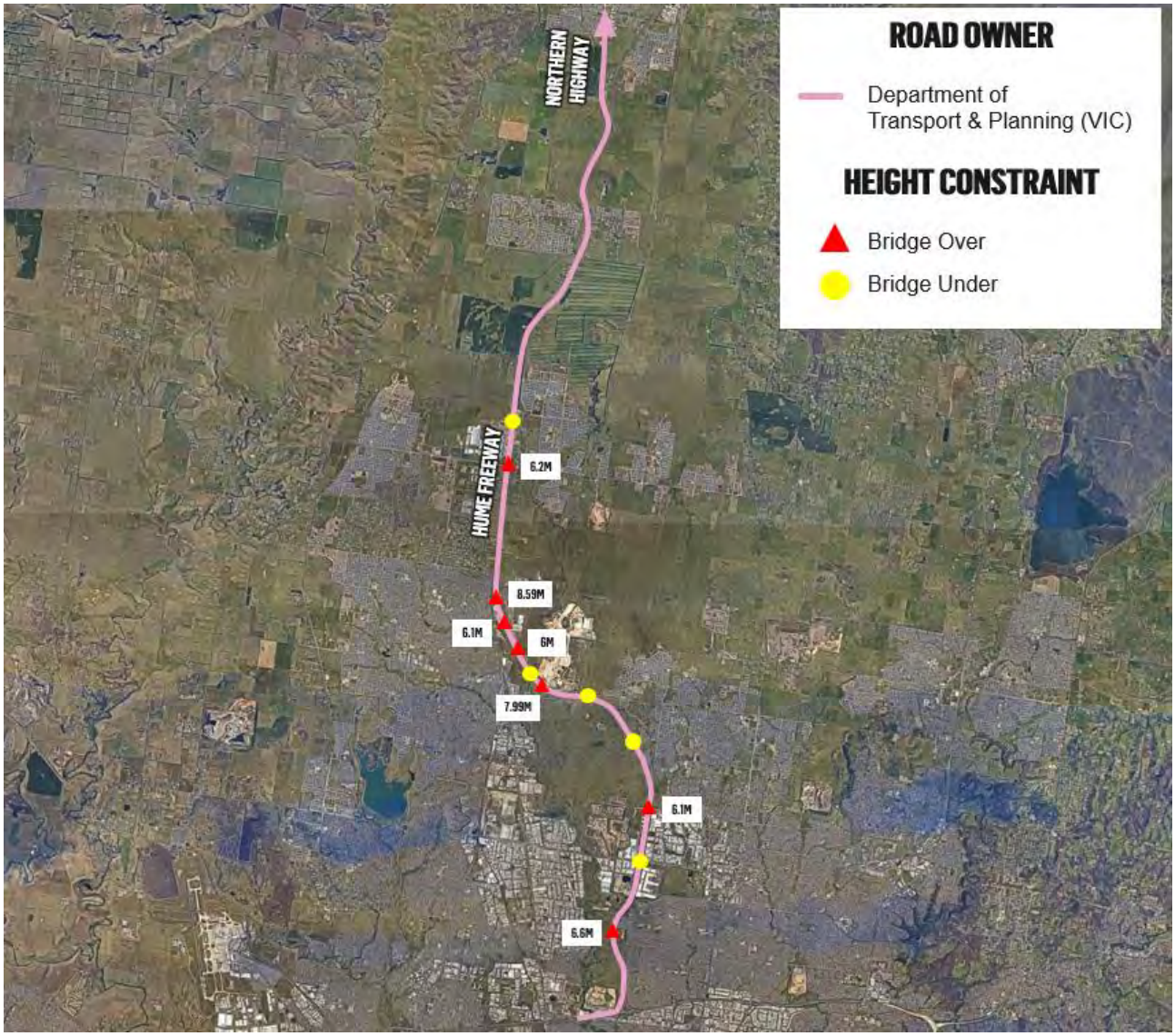
It is noted that the database does not include overhead height restrictions of power lines. Potentially constrained locations were identified on the route inspection and are highlighted as potential height constraints on the maps. It is understood that the NHVR and/or operator would liaise with relevant power authorities prior to the movement occurring to ensure safe transport.

Figure 6 Potential Route Height and Weight Constraints - West Gate Freeway & Western Ring Road



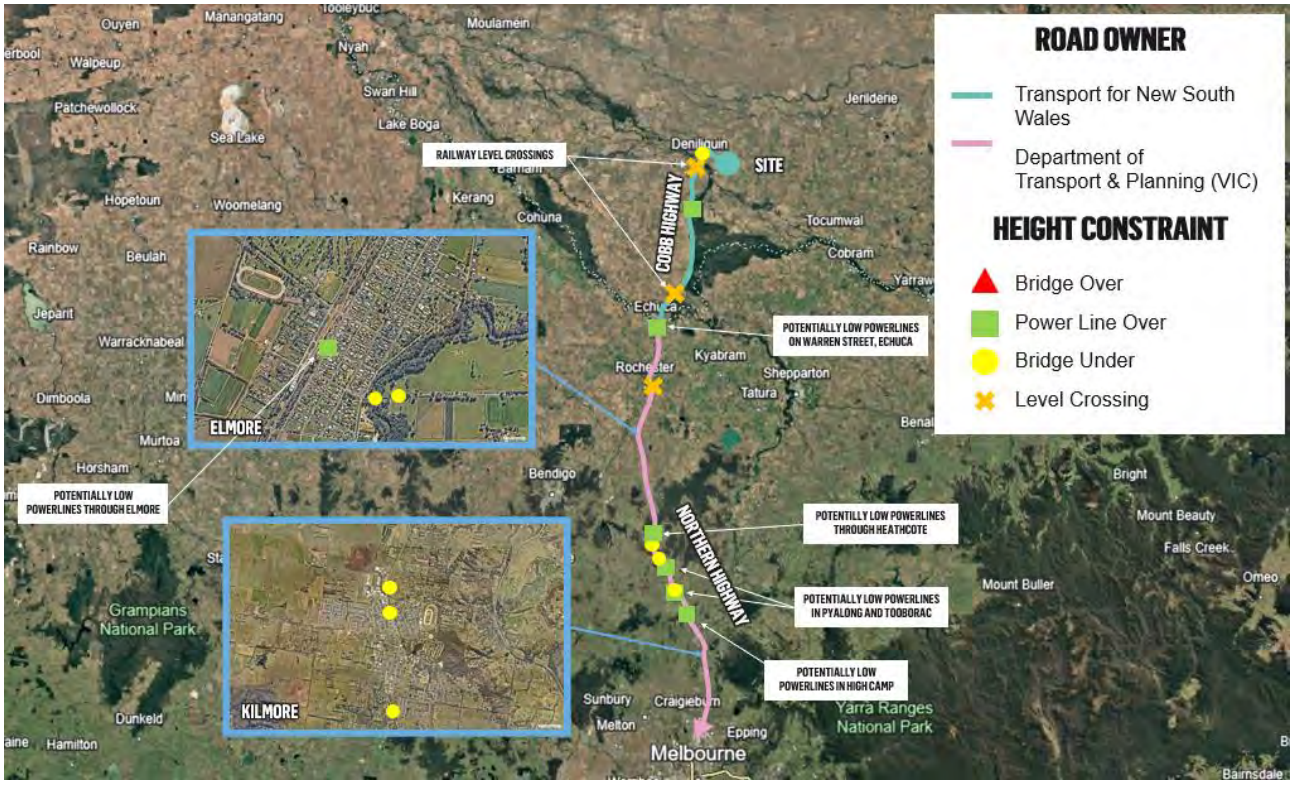
Source: Nearmap (modified by Urbis)

Figure 7 Potential Route Height and Weight Constraints - Hume Freeway



Source: Nearmap (modified by Urbis)

Figure 8 Potential Route Height and Weight Constraints - Remaining Route



Source: Nearmap (modified by Urbis)

Table 3 identifies all bridges along the proposed route and any relevant operating conditions specified on the NHVR Network Maps.

Urbis has undertaken liaison with the TfNSW Special Permits Unit department to ascertain if bridge or culvert assessments are required to accommodate the high-risk OSOM along the route. Based on the high-risk OSOM vehicle configuration and axle loads specified in **Section 1.2**, TfNSW has confirmed that no bridge or culvert assessments are required along the route within NSW. This correspondence is provided in Attachment D.

Table 3 Bridge Operating Conditions and Approval for Proposed Combination

Code	Bridge Name	Condition	Approval
SN6225	Bridge, West Gate Freeway	West Gate Bridge SN6225 is restricted to vehicle combinations up 49.5 tonnes therefore combinations in excess of 49.5 tonnes require a bridge assessment to facilitate a permit.	Approved with conditions
SN6226	Bridge, West Gate Freeway (over Williamstown Road)	Slow to five kilometres per hour and straddle centreline of bridge (westbound)	Approved with conditions

Code	Bridge Name	Condition	Approval
SN2583	Bridge, West Gate Freeway (Express) (over Newport-Sunshine rail line)	Straddle centreline of bridge (westbound)	Approved with conditions
SN2584	Bridge, West Gate Freeway (over Millers Road)	Slow to five kilometres per hour and straddle centre of two left hand side (LHS) lanes (westbound)	Approved with conditions
SN2585	Bridge, West Gate Freeway (over Kororoit Creek)	Slow to five kilometres per hour (westbound)	Approved with conditions
SN8199	Bridge, Western Ring Road Onramp	Straddle centreline of bridge (westbound)	Approved with conditions
SN9008	Bridge, Western Ring Road (over Pipe Road)	N/A	Approved
SN8634	Bridge, Western Ring Road (over Boundary Road)	Straddle centreline of bridge (northbound)	Approved with conditions
SN8893	Bridge, Western Ring Road (over Sunshine-Deer Park rail line and Tilburn Road)	N/A	Approved
SN1452	Bridge, Western Ring Road (over Ballarat Road)	Straddle centre of three LHS lanes (southbound) and straddle centre of two right hand side (RHS) lanes (northbound)	Approved with conditions
SN1454	Bridge, Western Ring Road (over Jones Creek)	N/A	Approved
SN8888	Bridge, Western Ring Road (over Sunbury rail line + St Albans Road)	N/A	Approved
SN1324	Bridge, Western Ring Road (over Furlong Road)	Travel close to RHS barrier (northbound) and travel close to LHS barrier (southbound)	Approved with conditions
SN1281	Bridge, Western Ring Road (over Steele Creek)	Straddle centre of three LHS lanes (both directions)	Approved with conditions
SN1282	Bridge, Western Ring Road (over Melrose Drive)	N/A	Approved
SN1286	Bridge, Western Ring Road (over Tullamarine	Straddle centre of lanes 2 and 3 (northeast	Approved with conditions

Code	Bridge Name	Condition	Approval
	Outbound – Western Ring Road Outbound Ramp)	bound) and travel close to RHS barrier (southwest bound)	
SN1287	Bridge, Western Ring Road (over Tullamarine Freeway)	Straddle centre of two LHS lanes (northeast bound) and travel close to RHS barrier (southwest bound)	Approved with conditions
SN8595	Bridge, Western Ring Road (over Moonee Ponds Creek)	Straddle centre of two LHS lanes close to shoulder (westbound)	Approved (eastbound) Approved with conditions (westbound)
SN1296	Bridge, Western Ring Road (over Merlynston Creek)	N/A	Approved
SN9398	Bridge, Metropolitan Ring Road (over Merri Creek)	Straddle centreline of road (eastbound)	Approved with conditions
SN1892	Bridge, Hume Freeway (over Cooper Street)	N/A	Approved
SN0062	Bridge, Hume Freeway (over Vearings Road Drain)	N/A	Approved
SN0200	Bridge, Hume Freeway (over Curly Sedge Creek)	N/A	Approved
SN0204	Bridge, Hume Freeway (over Merri Creek)	N/A	Approved
SN0512	Bridge, Hume Freeway (over Kalkallo Creek)	N/A	Approved
SN0521	Bridge, Hume Freeway (over Lithgow Street)	N/A	Approved
SN9176	Bridge, Northern Highway (North of Wallan)	N/A	Approved
SN0439	Bridge, Northern Highway (over Kilmore Creek)	Slow to five kilometres per hour and straddle centreline of road (both directions)	Approved with conditions
SN9177	Bridge, Sydney Street (Kilmore)	Slow to five kilometres per hour and straddle centreline of road (southbound) and slow to five kilometres per hour and close to centreline (northbound)	Approved with conditions

Code	Bridge Name	Condition	Approval
SN0441	Bridge, Northern Highway (over Kilmore Creek)	Slow to five kilometres per hour (both directions)	Approved with conditions
SN6948	Bridge, Northern Highway (northwest of Kilmore)	N/A	Approved
SN0442	Bridge, Northern Highway (over Kilmore Creek)	N/A	Approved
SN0443	Bridge, Northern Highway (over Kilmore Creek)	N/A	Approved
SN0444	Bridge, Northern Highway (over Percivall Creek)	N/A	Approved
SN0445	Bridge, Northern Highway (over Mollison Creek)	Straddle centreline of bridge (both directions)	Approved with conditions
SN0446	Bridge, Northern Highway (over Mcivor Creek)	Straddle centreline of bridge (both directions)	Approved with conditions
SN0450	Bridge, Northern Highway (near Spring Plains Nature Conservation Reserve)	Slow to five kilometres per hour (both directions)	Approved with conditions
SN0455	Bridge, Kilmore Road (over Possum Gully)	N/A	Approved
SN0456	Bridge, Northern Highway (over Mcivor Creek)	N/A	Approved
SN0460	Bridge, Northern Highway (over Ladys Creek)	N/A	Approved
SN0462	Bridge, Northern Highway (over Mount Pleasant Creek)	N/A	Approved
SN0465	Culvert, Northern Highway (just north of Toolleen Angle Road)	N/A	Approved
SN0467	Culvert, Northern Highway (just north of Hayes Bridge Road)	N/A	Approved
SN0472	Bridge, Northern Highway (over Mount Pleasant Creek)	N/A	Approved

Code	Bridge Name	Condition	Approval
SN0474	Bridge, Midland Highway (over Campaspe River)	Stradle centreline (both directions)	Approved with conditions
SN0476	Bridge, Midland Highway (over Campaspe River)	Slow to five kilometres per hour (both directions)	Approved with conditions
SN0479	Bridge, Northern Highway (over Waranga Western Channel)	N/A	Approved
SN0487	Culvert, Northern Highway (north of Middleton Road	N/A	Approved
SN0488	Bridge, Northern Highway (just south of Spiers Road)	N/A	Approved
SN0489	Bridge, Northern Highway (between Spiers Road and Echuca-Mitiamo Road)	Slow to five kilometres per hour and straddle centreline of road (both directions)	Approved with conditions
1707 (NSW)	Level Crossing, Cobb Highway (near Mathoura Line Road)	Contact Rail Infrastructure Manager. Rail Infrastructure Manager contact details available at: Oversize and/or overmass (OSOM) vehicles & loads Active control - primary flashing lights	Restricted
1724 (NSW)	Level Crossing, Ochertyre Street (south of Barham Road)	Contact Rail Infrastructure Manager. Rail Infrastructure Manager contact details available at: Oversize and/or overmass (OSOM) vehicles & loads Active control - primary flashing lights	Restricted

It is understood that the NHVR will liaise (or advise the client to liaise) with relevant road and rail authorities upon application for the Class 1 permit.

3.3. EXTENSIVE ROUTE REVIEW

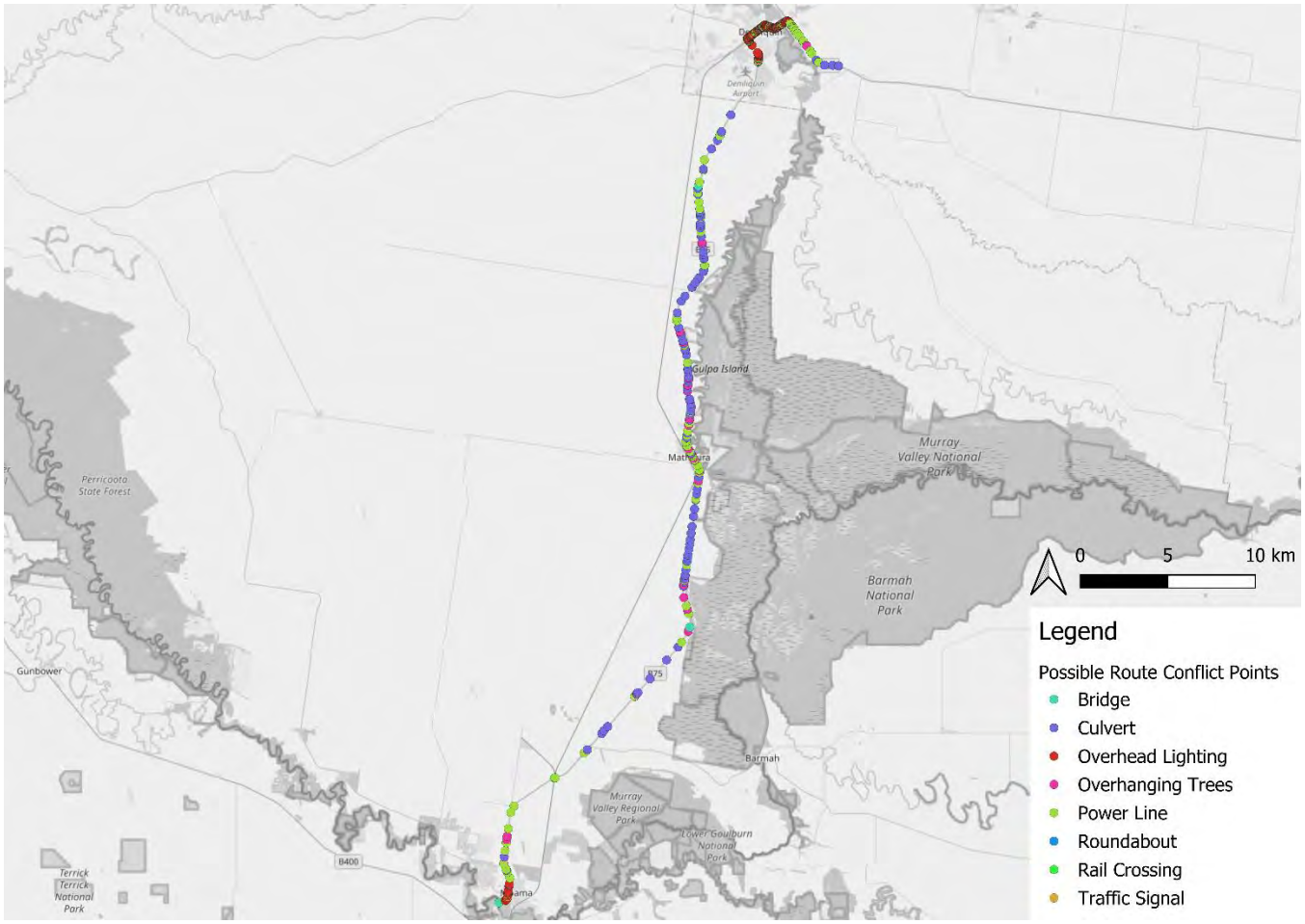
Item 5h of TfNSW's Response to Submission for Deniliquin BESS requests an "extensive review" of the high-risk OSOM route regarding "vertical and horizontal obstructions alignment".

As previously specified the route is conditionally pre-approved from the Port of Melbourne to the Victorian / NSW border at Echuca for a *Class 1 2x8 Dolly & 10x8 Platform Trailer up to 206 tonnes* (Reference Vehicle 8), which aligns with the design vehicle. On this basis, an extensive review has only been undertaken for the NSW portion of the route. A total of 419 possible constraints were identified, including:

- 147 Power Lines.
- 126 Overhead Light Poles.
- 102 Culverts.
- 30 Overhanging Trees.
- 7 Bridges.
- 3 Roundabouts.
- 2 Intersections with Traffic Signals.
- 2 Rail Level Crossings

A summary map showing the location of these constraints is provided in **Figure 9.**

Figure 9 Location of Potential Route Constraints



Attachment B provides additional detail on each point, including the type, location and GPS coordinates as well as aerial imagery and a screen capture from dashcam footage recorded during a physical inspection of the path.

None of the possible constraints identified in the route review are considered likely to impede the safe passage of the OSOM delivery vehicle. As a result, the detailed review confirms the suitability of the proposed route.

3.4. THIRD PARTY PROJECTS

Urbis requested information on any road projects on the state road network along the proposed high-risk OSOM route from both Edward River Council and TfNSW on 29 September 2025. As of 11 November 2025 no road projects have been raised by Council or TfNSW. Urbis must therefore assume that no relevant road projects are planned along the high-risk OSOM route that may impact the combination's movement.

Emails demonstrating this liaison activity are provided in **Attachment C**.

4. SWEPT PATHS

4.1. ROUTE

A vehicle swept path assessment has been undertaken for constrained intersections and rest areas along the route, where potential conflicts between the vehicle and roadside infrastructure were identified during the route inspection.

The swept paths have been undertaken for the selected design vehicle (**Section 1.1**) and are provided in **Attachment A**. The proceeding sections summarise any intersection works required to facilitate the high-risk OSOM movement within NSW and Victoria respectively.

Note that at all complex pinch points, traffic shall not be stopped for more than 10 minutes.

New South Wales

The swept paths indicate that the high-risk OSOM is required to traverse mountable traffic islands or roundabout aprons in some locations. TfNSW has indicated that this is not supported on the state road network within NSW. Subsequently, strategic concept designs for intersection works to facilitate the single high-risk OSOM movement are provided in **Appendix F** of the Transport Impact Assessment report.

These designs include an interim treatment which will be implemented to facilitate the high-risk OSOM movement, and the ultimate treatment to return the state road network back to its original state. As specified in the designs, the ultimate treatment will be constructed within one (1) month of the OSOM movement.

The following intersection works are required (as shown in **Appendix F** of the Transport Impact Assessment report):

- Cobb Highway / Hardinge Street, Deniliquin – removal of one mountable traffic islands at roundabout.
- Hardinge Street / Charlotte Street, Deniliquin – removal of two mountable median islands along bend.
- Charlotte Street / Davidson Street, Deniliquin – removal of two mountable median islands along bend.

These works have been required by TfNSW and are not due to the findings of this route assessment.

Victoria

The swept paths include notation for removal of relevant signs and highlights where a portion of the combination needs to traverse the verge or a mountable kerb or traffic island. These areas were identified as suitable for traversal based on the route drive.

A summary of the temporary alterations to road reserve infrastructure required along the Victorian portion of the route is provided below. The specific alterations are provided on the concept swept path assessment provided in **Attachment A**. Signage will be removed during the passage of the combination only and be reinstated immediately afterward.

- Remove two ‘Keep Left’ signs at Northern Highway / McIvor Highway in Heathcote.
- Remove two ‘Give Way’ signs, one bidirectional hazard marker and two directional signs at Northern Highway / Midland Highway east of Elmore.
- Remove one street name sign at Northern Highway / Midland Highway in Elmore.
- Remove five ‘Keep Left’ signs and one ‘Give Way’ sign at Northern Highway / Gillies Street in Rochester.
- Remove five directional hazard markers at Northern Highway / Murray Valley Highway in Echuca.
- Remove one ‘Give Way’ sign and one shared path give way sign at Northern Highway / Warren Street in Echuca.

As noted, the design vehicle is required to traverse the verge in some locations, or mount kerbing or traffic islands that were considered suitable for traversal. No major intersection works are required to facilitate the vehicle. The operator will be responsible for remediation of removed signage and repair of any damaged infrastructure (i.e. kerbing) as a result of the drive.

4.2. SITE ACCESS

The proposed site access will be designed to accommodate the design OSOM vehicle.

5. SUMMARY

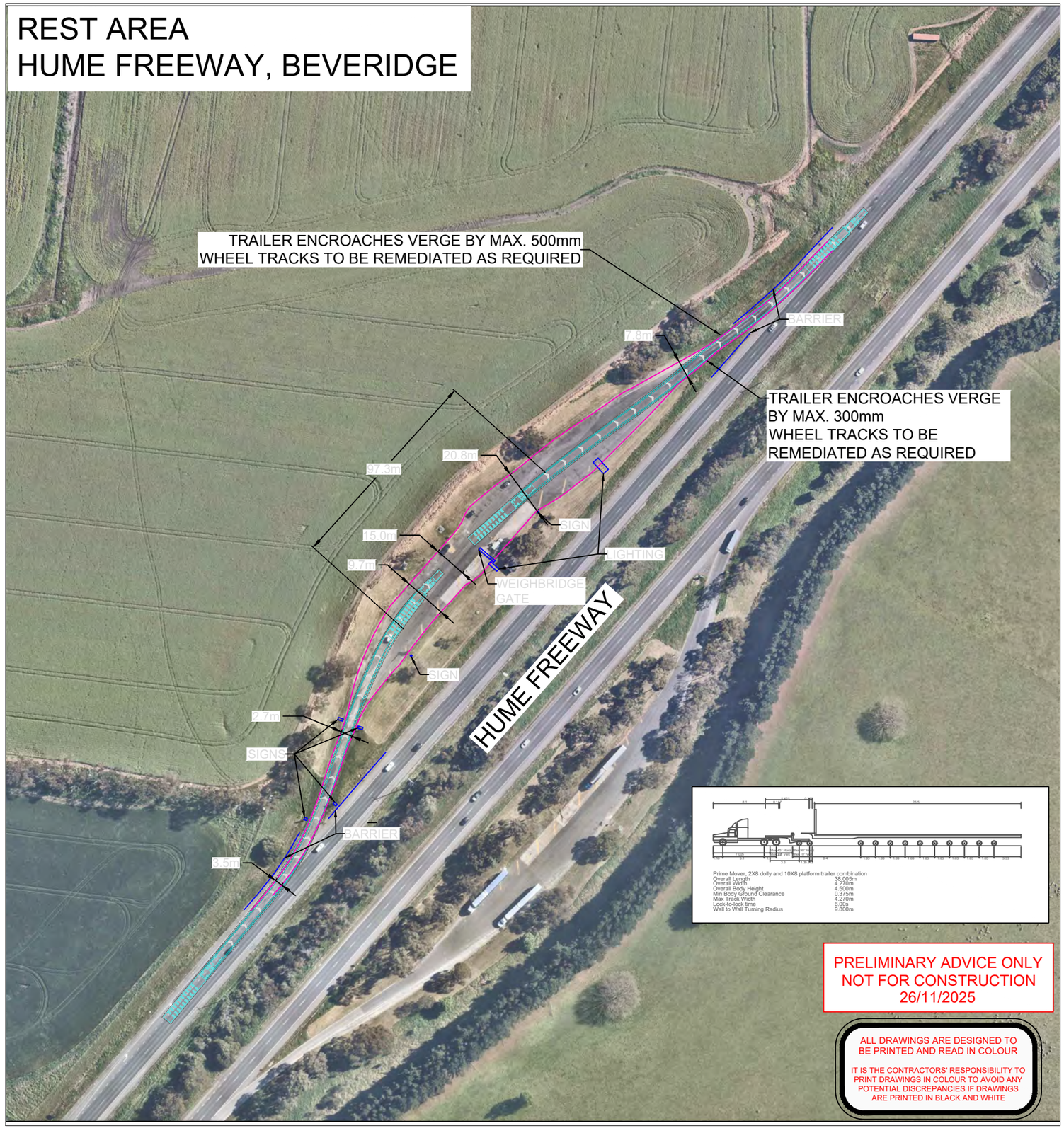
Urbis has completed a Concept Route Assessment in accordance with TfNSW requirements for the proposed high-risk OSOM vehicle transporting between the Port of Melbourne (Victoria) and the site in Deniliquin (NSW). The proposed route is shown in **Figure 3**. The following has been concluded from this assessment:

- The OSOM vehicle is conditionally approved to operate on the proposed Victorian roads along the route, noting the operating constraints listed in **Table 3**.
- The proposed OSOM vehicle does not comply with the Multi-State Class 1 Load Carrying Vehicle Mass or Dimension Exemption Notices, and therefore is not pre-approved along the NSW portion of the route.
- A number of rest areas have been identified along the route, which are suitable to accommodate the OSOM vehicle as shown in **Attachment A**. The locations of these rest areas have been identified in **Table 2**.
- **Attachment B** provides a comprehensive review of roadside infrastructure along the NSW section of the high-risk OSOM route. This review does not identify any potential constraints that may impact the high-risk OSOM route.
- Based on an overall laden height of 4.4 metres, no major height restrictions are expected along the route due to bridges or gantries. It is recommended that the NHVR and/or operator liaise with relevant electricity providers to ensure that power lines are not impacted by the transport.
- Based on an overall laden mass of 200 tonnes, no major weight restrictions are expected along the route. Within Victoria, all bridges are either approved or conditionally approved for traversal by the OSOM vehicle, as shown in **Table 3**. Liaison with the TfNSW Special Permits Unit has confirmed that bridge and culvert assessments are not required for the proposed high-risk OSOM along the NSW portion of the route.
- Vehicle swept paths have been prepared for intersections along the route, provided in **Attachment A**. The proposed OSOM vehicle can adequately manoeuvre all intersections. TfNSW have indicated that they are not supportive of the high-risk OSOM traversing mountable traffic islands within the New South Wales portion of the route. Subsequently, strategic concept designs have been prepared demonstrating intersection upgrade works required along the OSOM route. These are provided in **Appendix F** of the Transport Impact Assessment report. No intersection works are required along the Victorian section of the route beyond the temporary removal of signage.

ATTACHMENT A ROUTE AND REST AREA SWEPT PATHS



REST AREA
HUME FREEWAY, BEVERIDGE



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OSOM Concept Route Assessment

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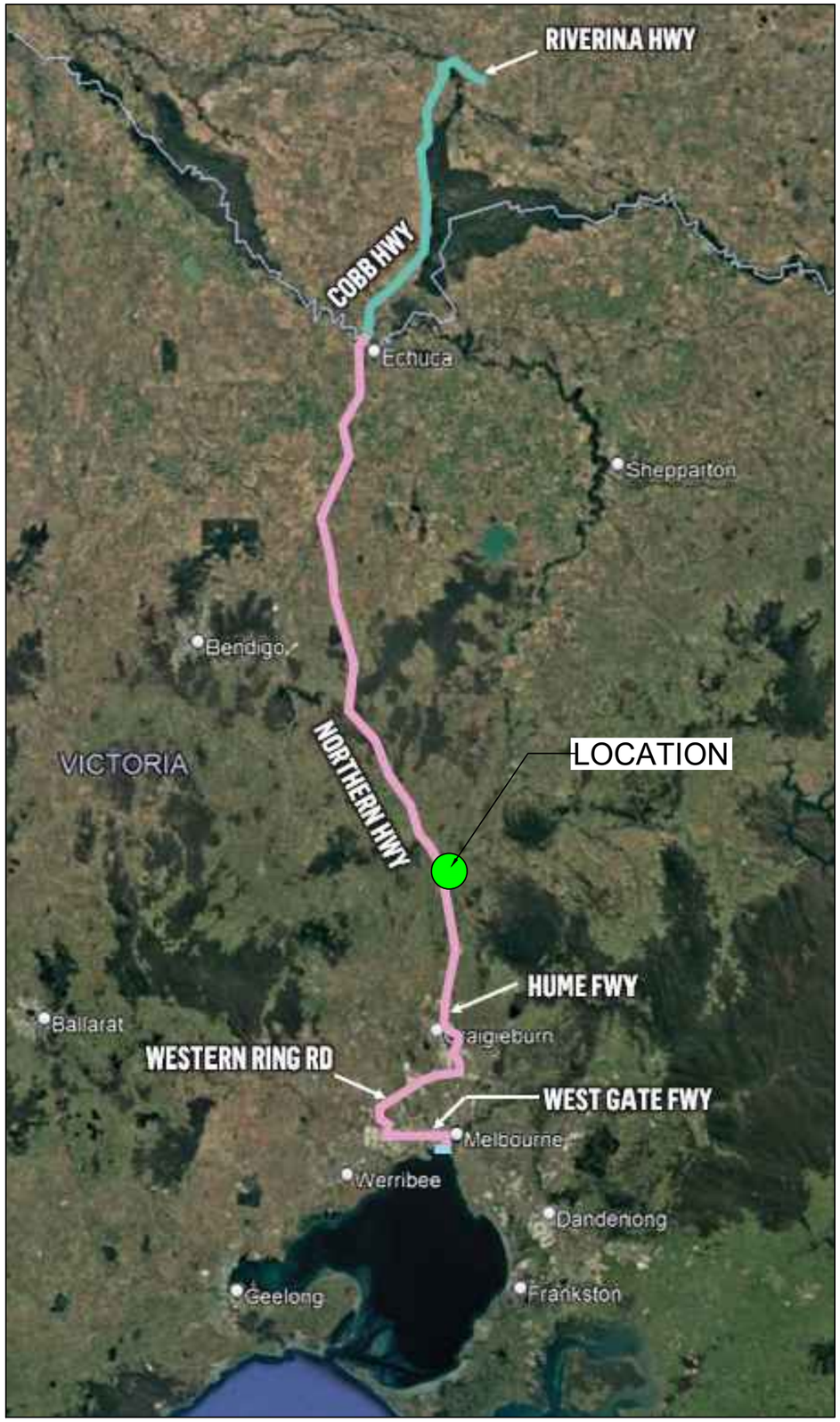
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A	Preliminary Issue	JR	MR	22.11.2024

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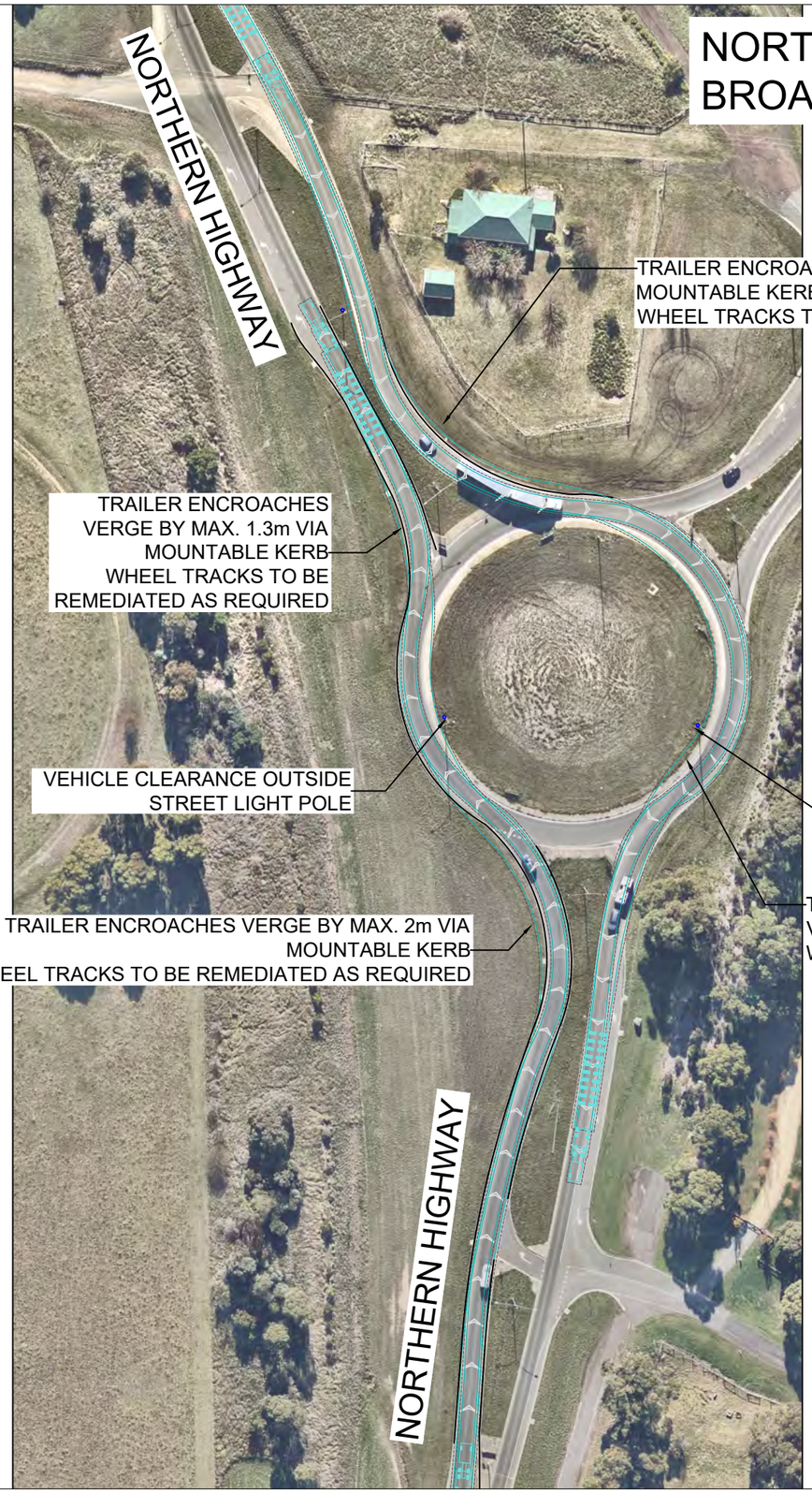
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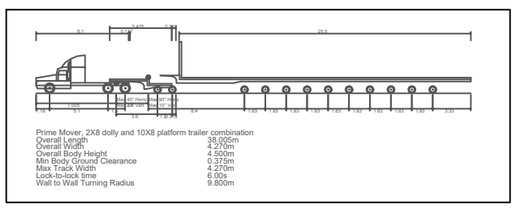
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NORTHERN HIGHWAY / BROADFORD-KILMORE ROAD





Prime Mover, 2X8 dolly and 10X8 platform trailer combination	
Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

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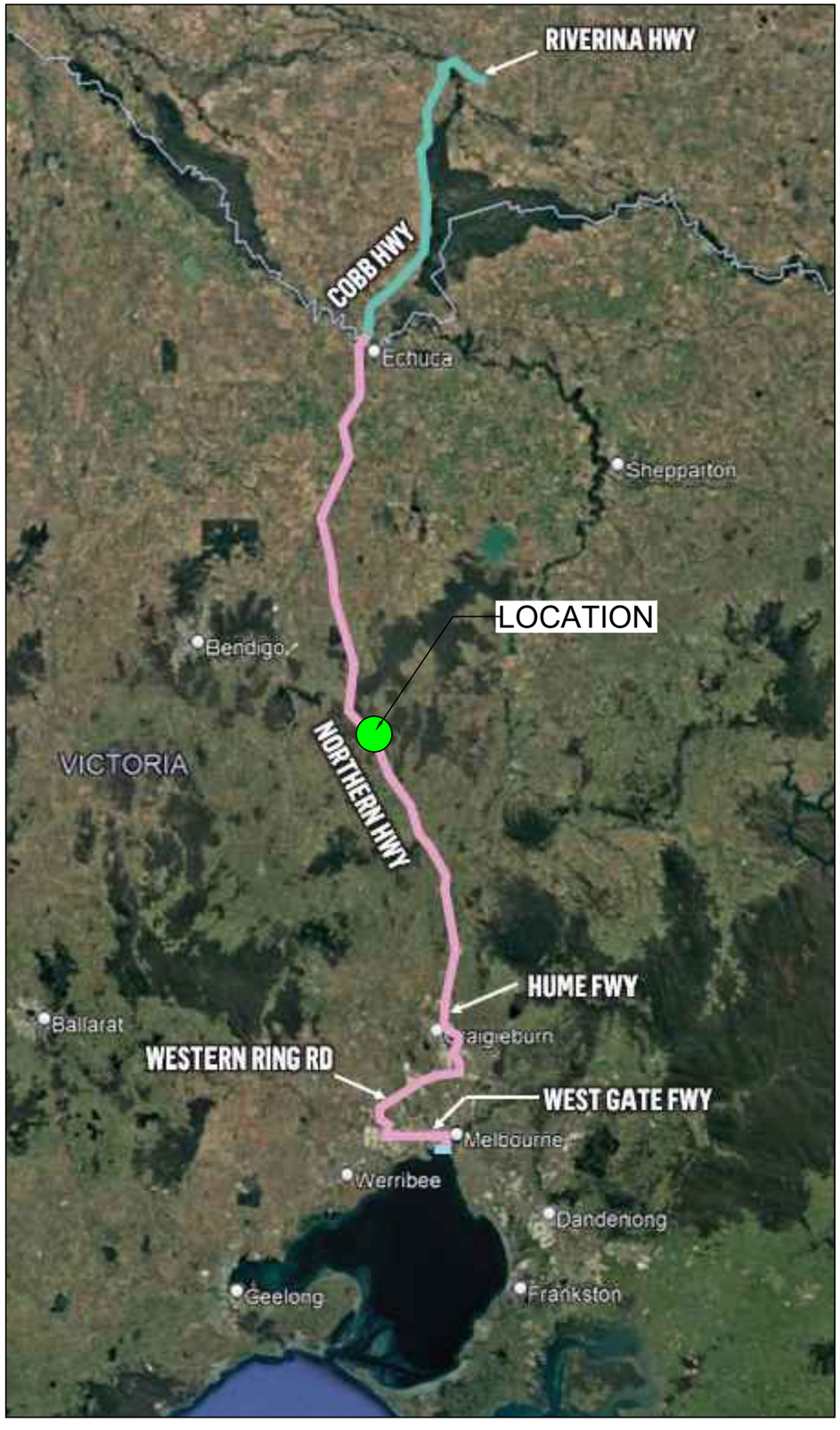
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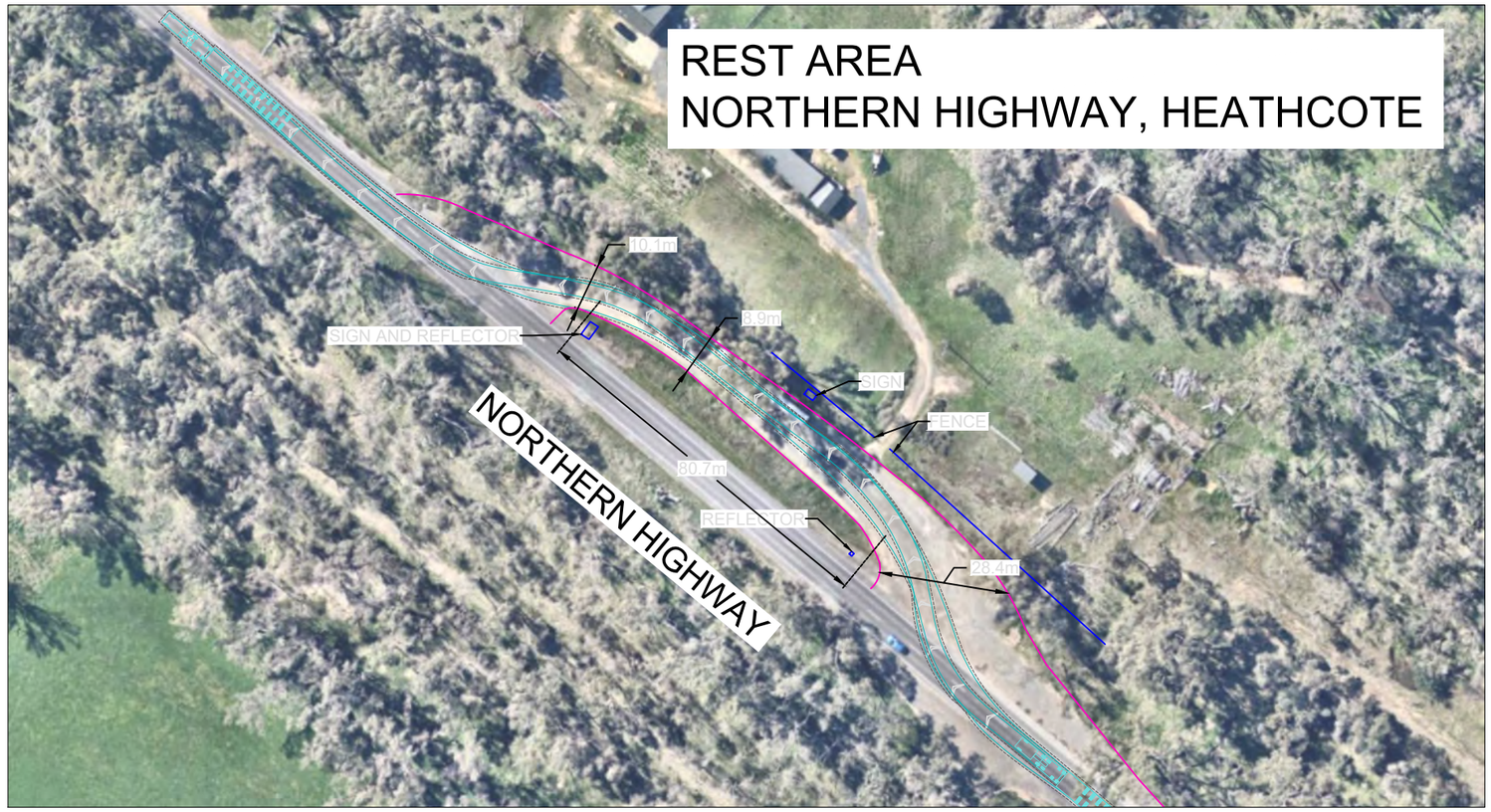
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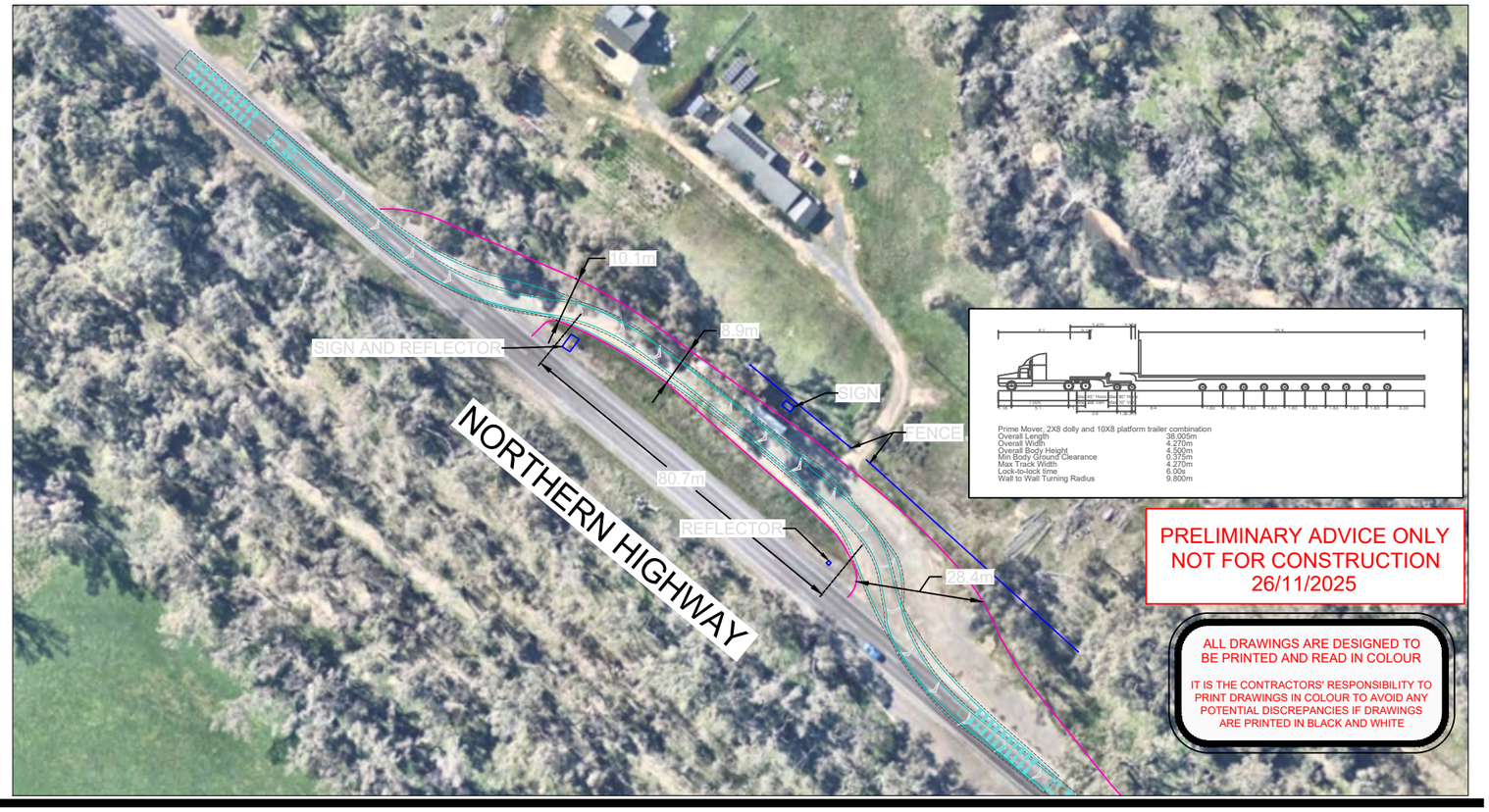
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REST AREA
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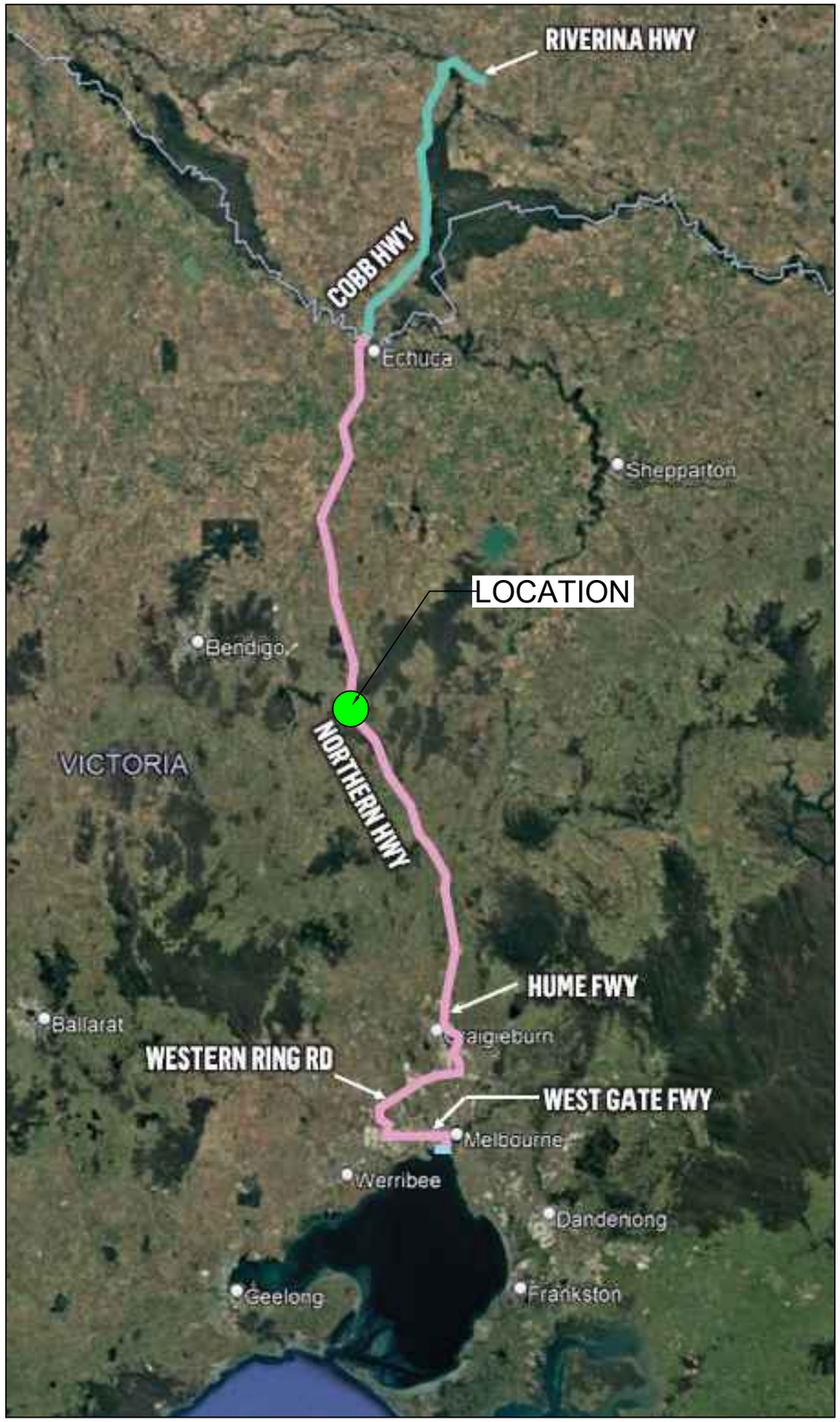
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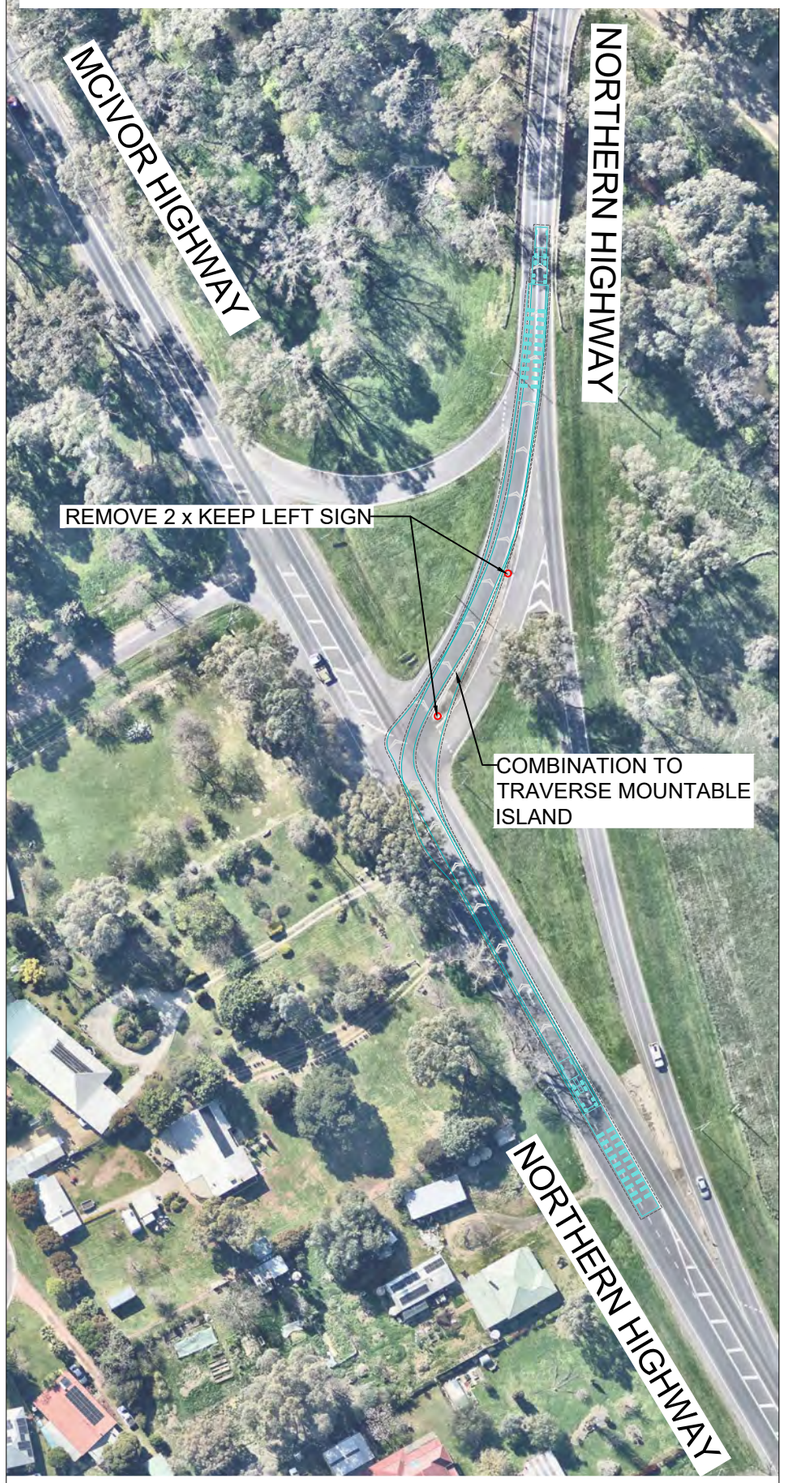
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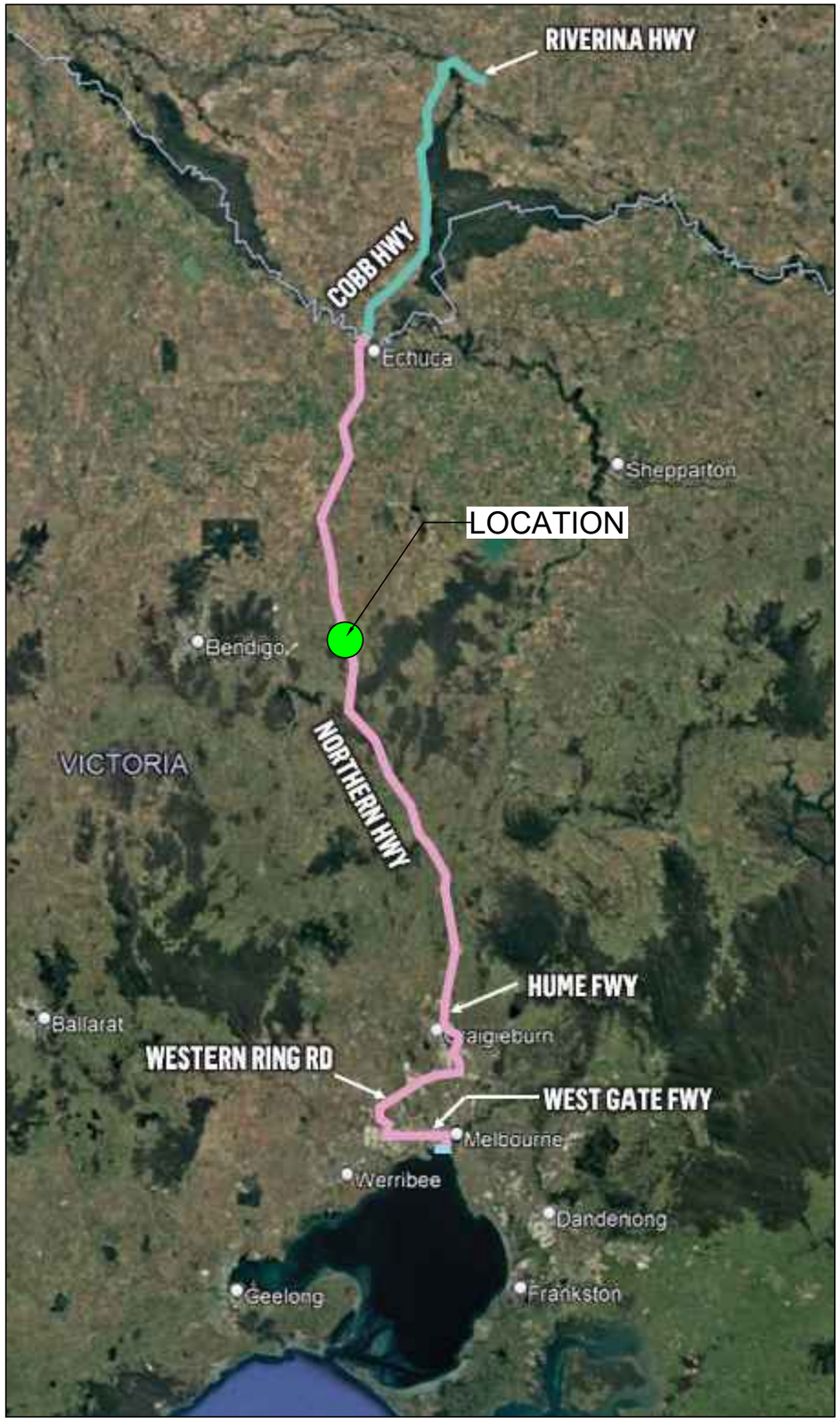
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REST AREA
NORTHERN HIGHWAY, LADYS PASS



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

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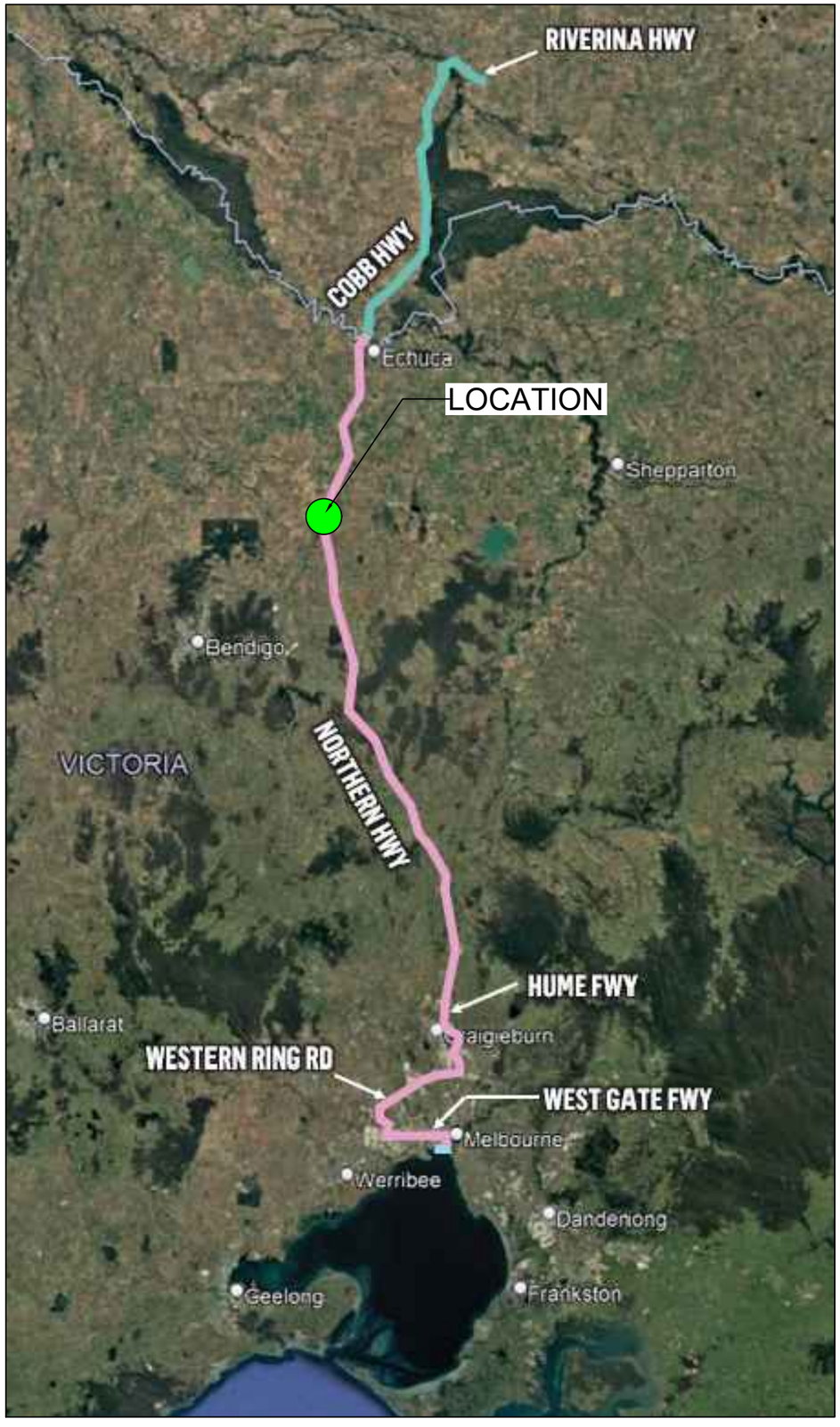
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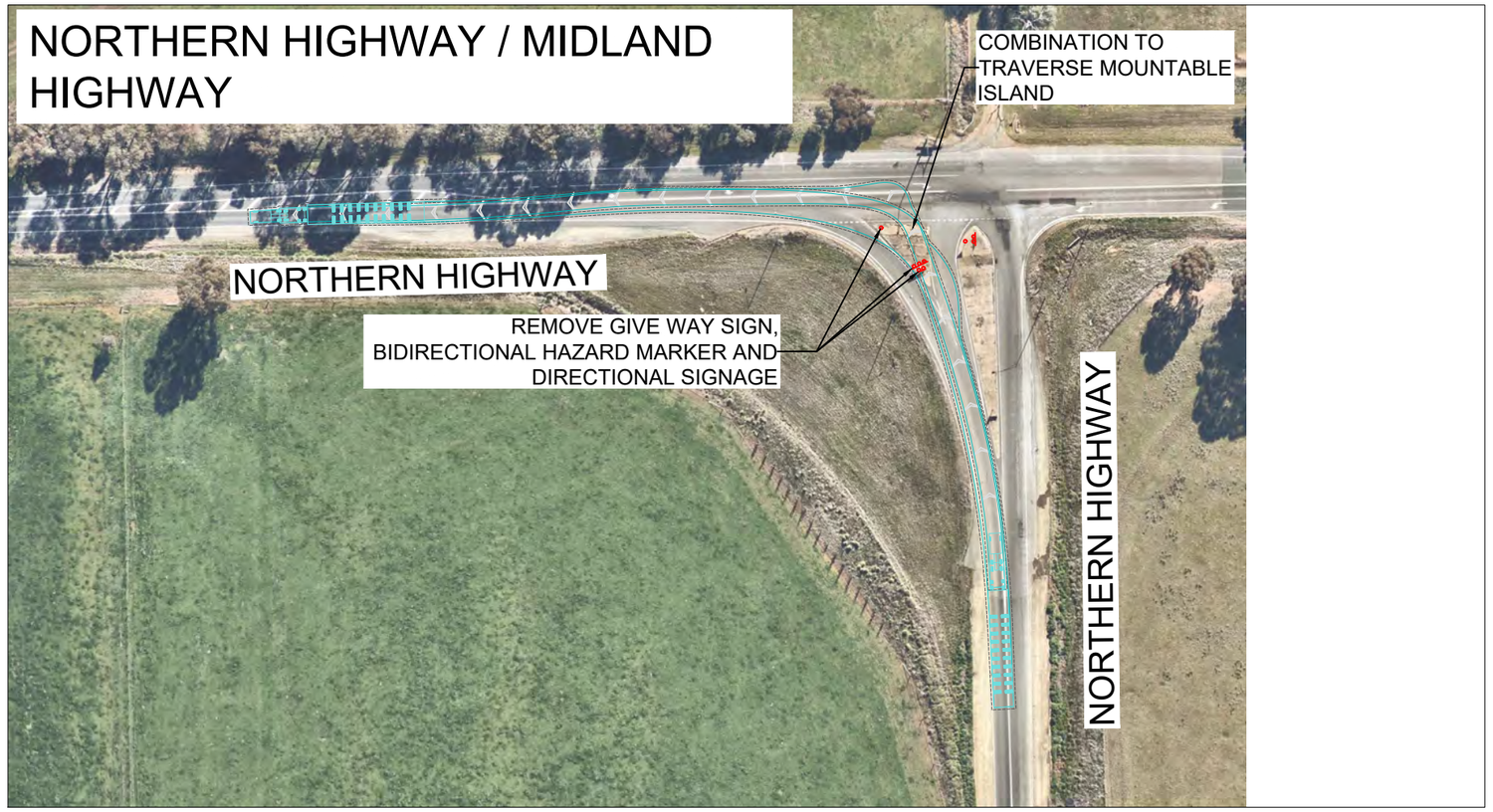
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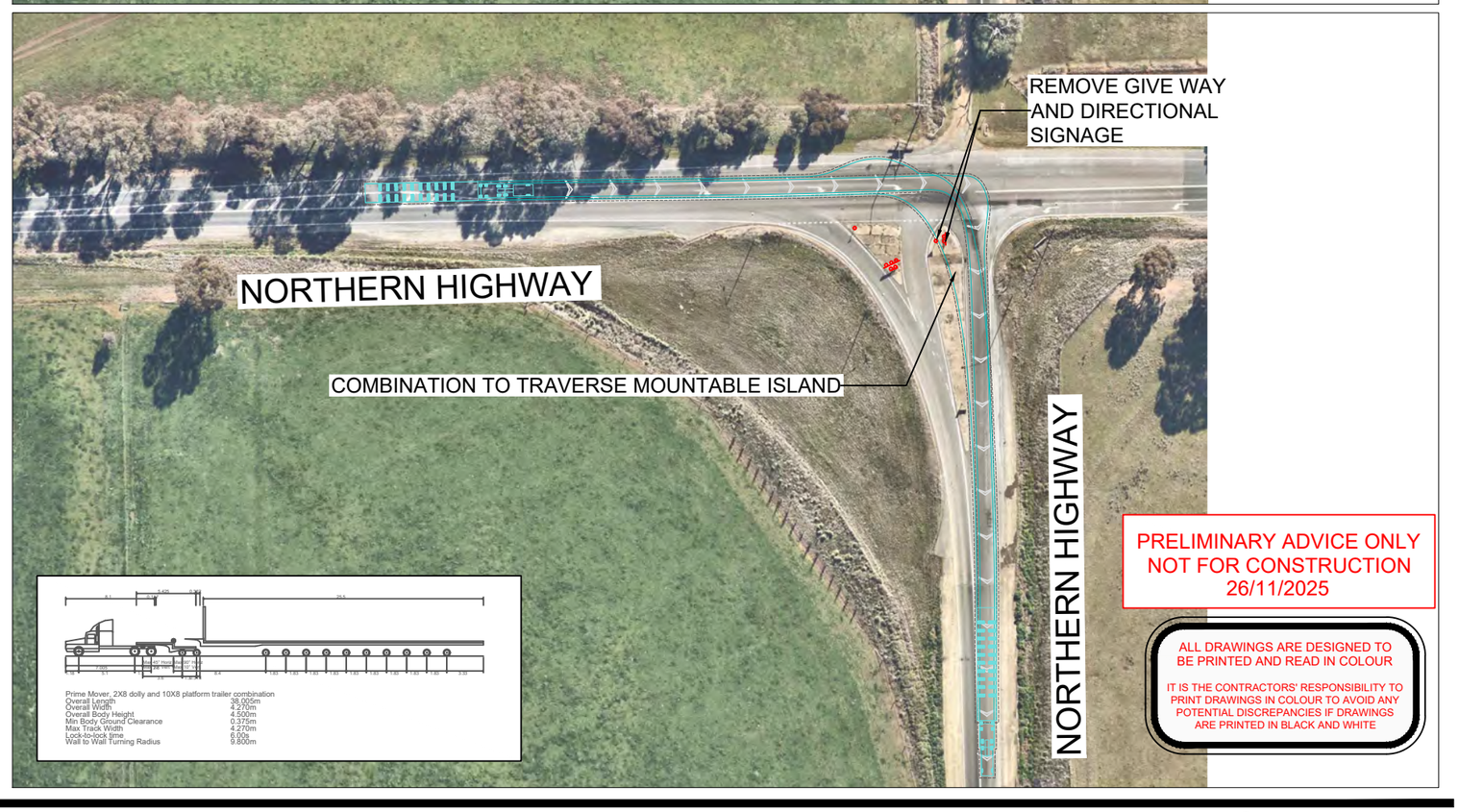
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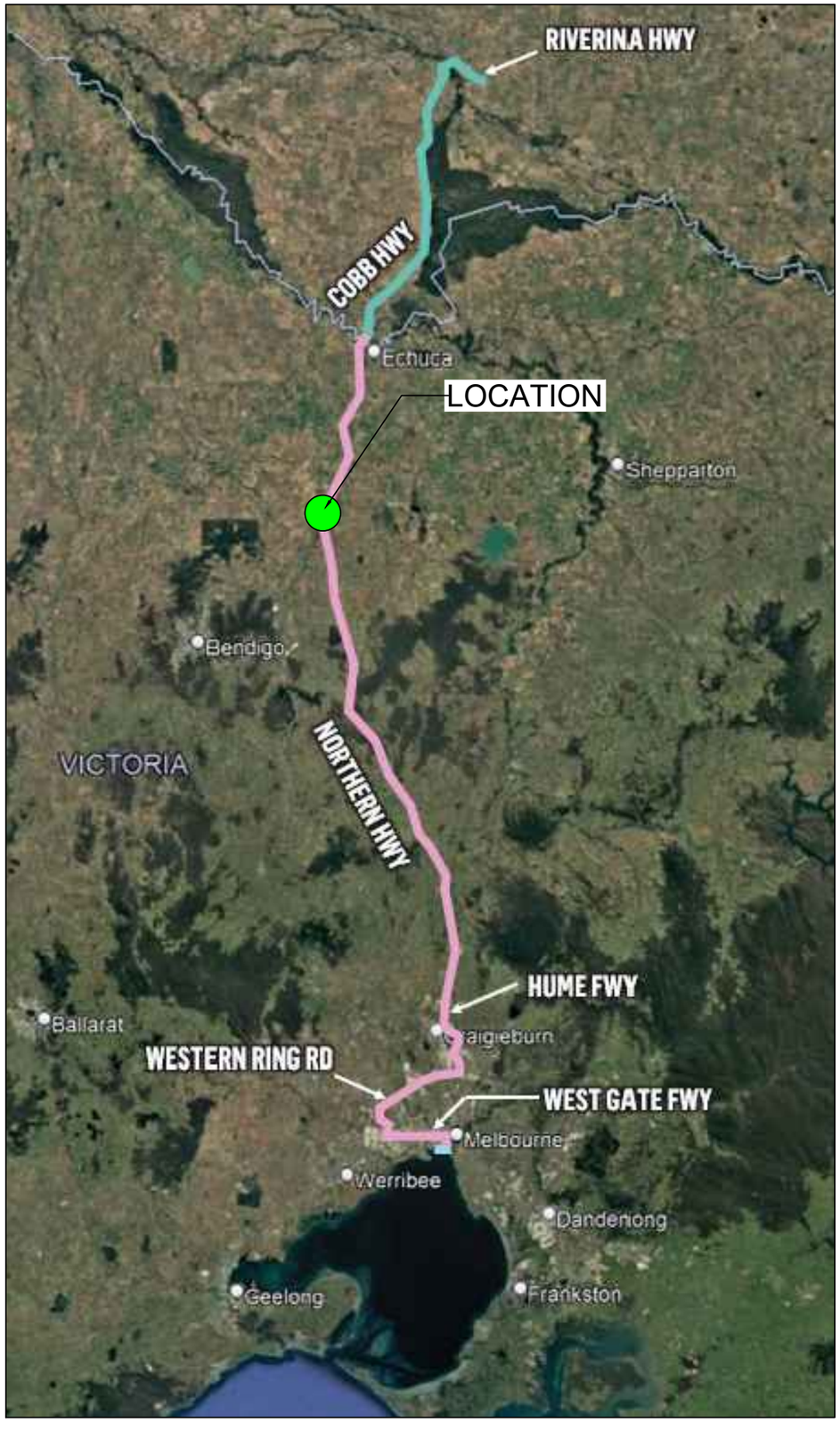
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B	RTS Issue	JR	MR	26.11.2025
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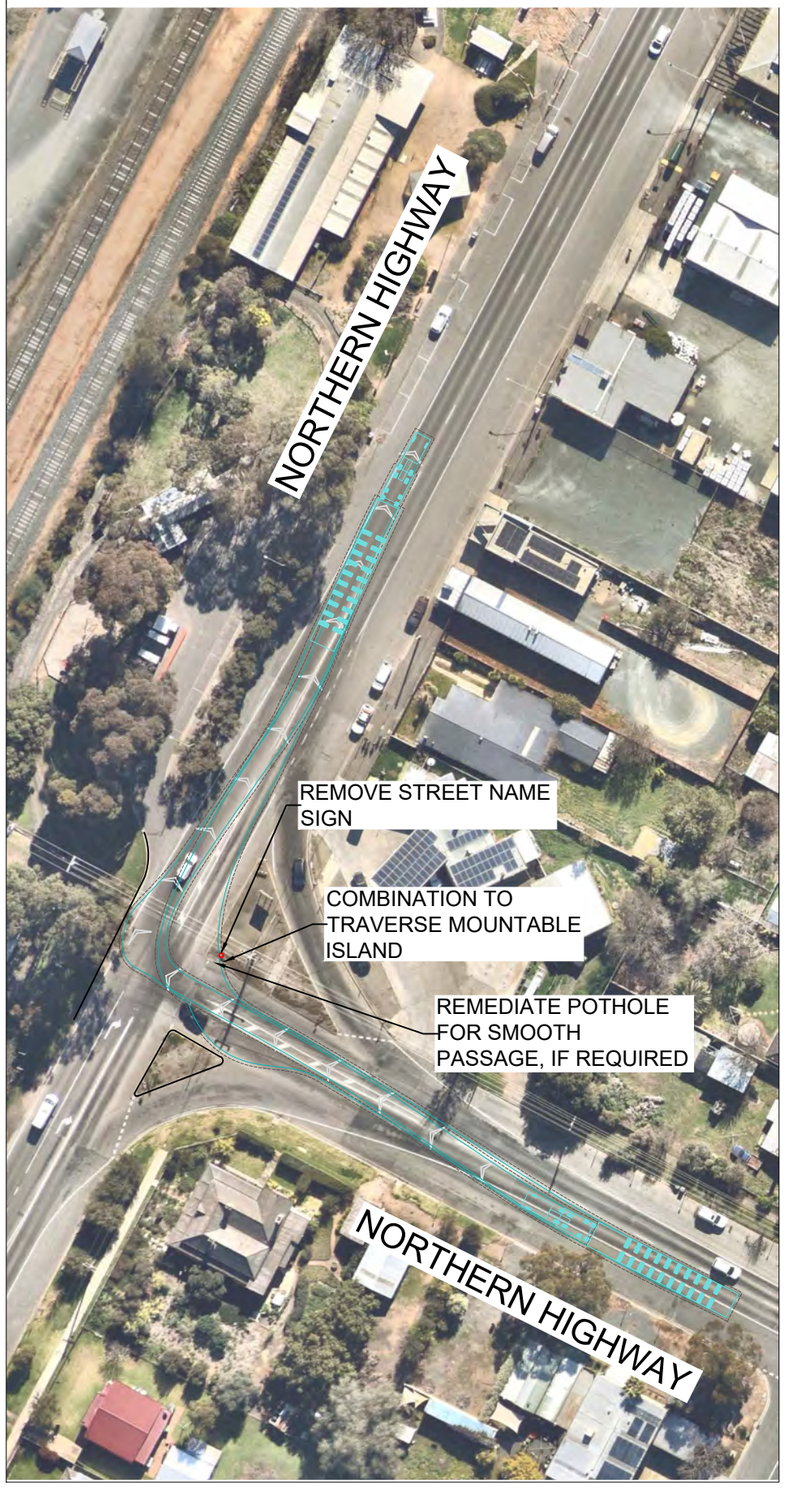
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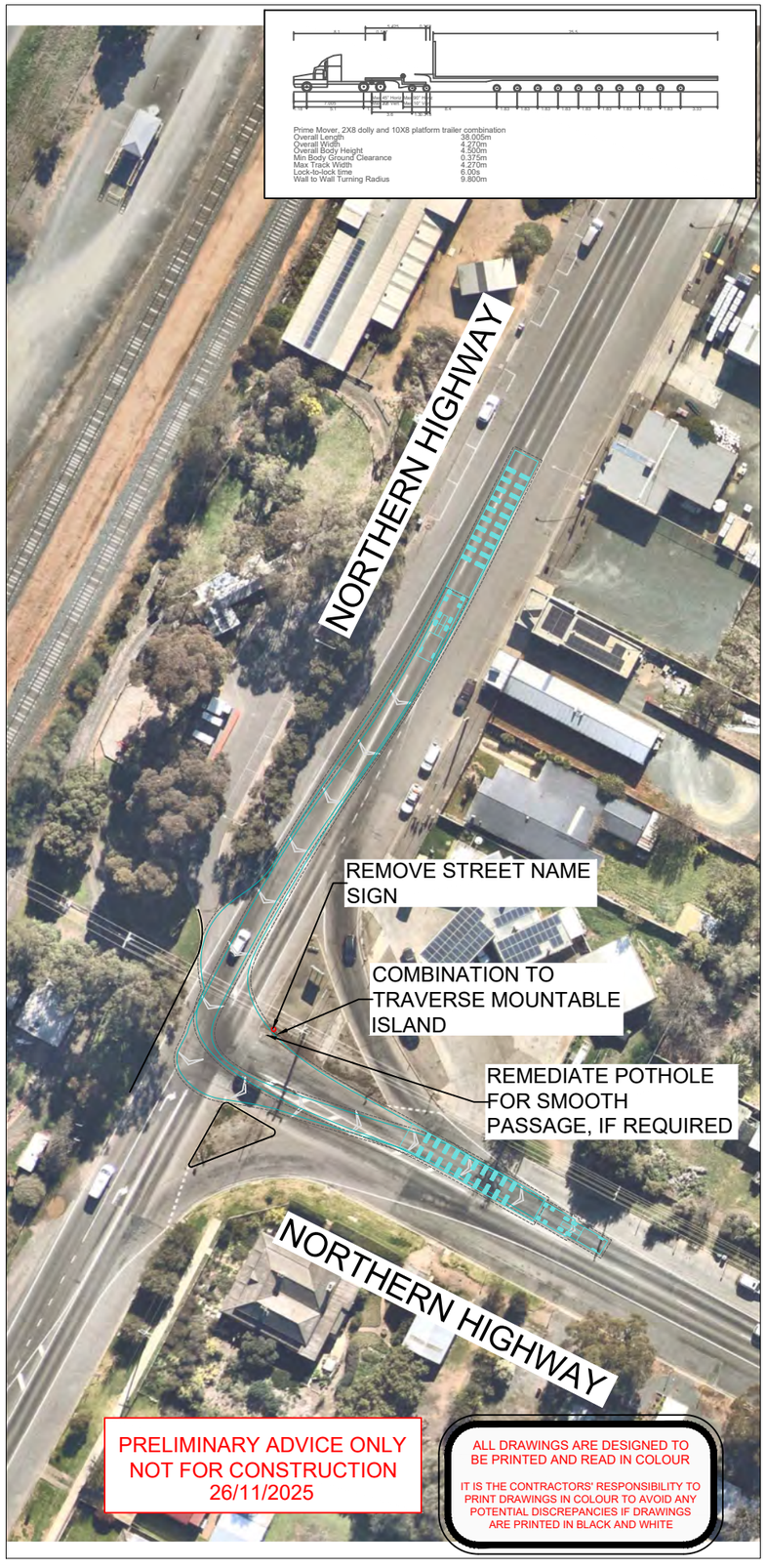
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NORTHERN HIGHWAY / MIDLAND HIGHWAY





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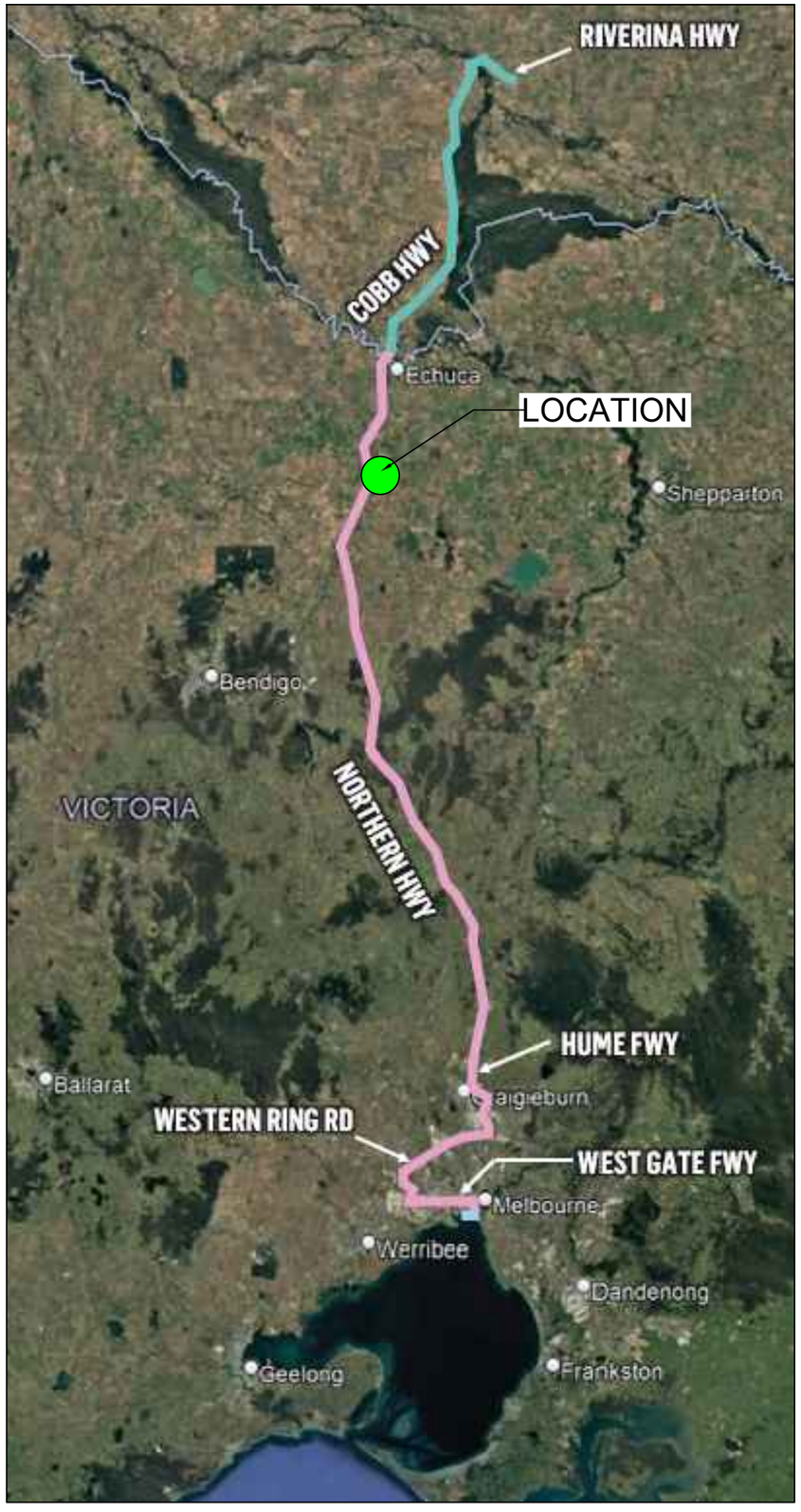
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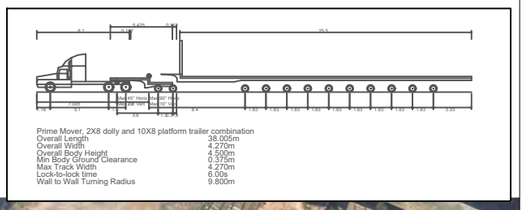
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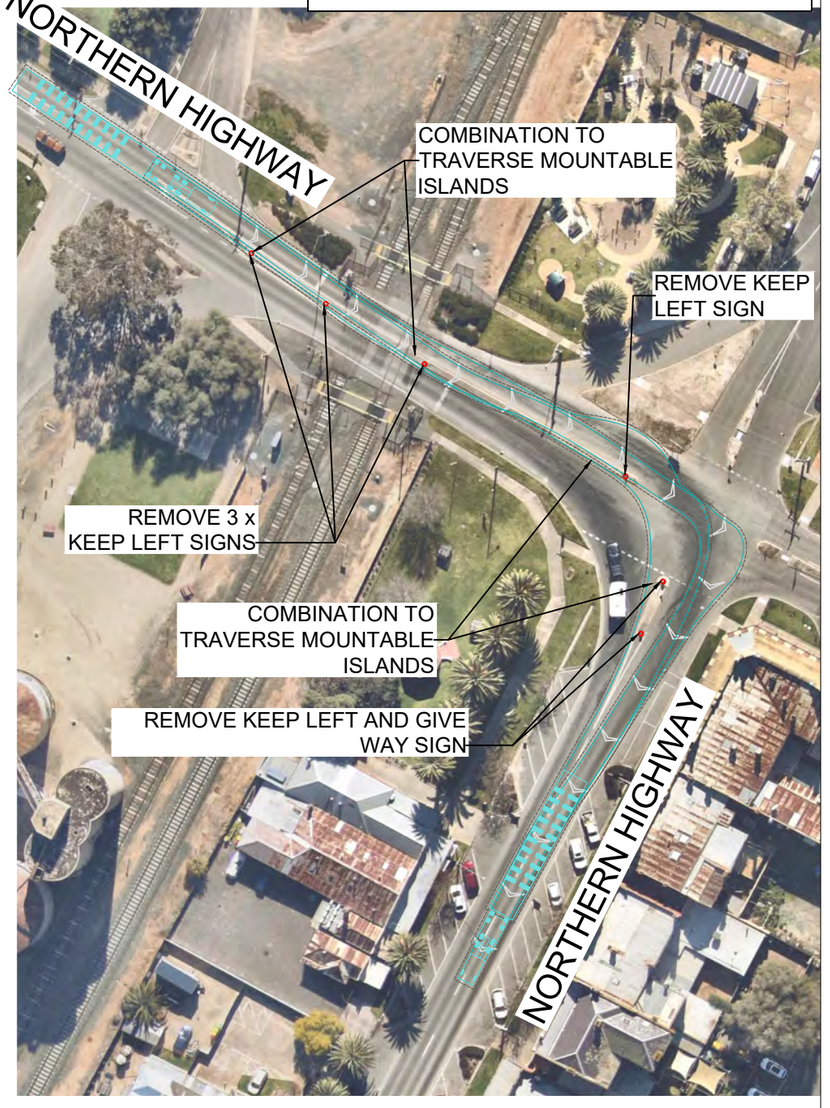
NORTHERN HIGHWAY / GILLIES STREET





Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m



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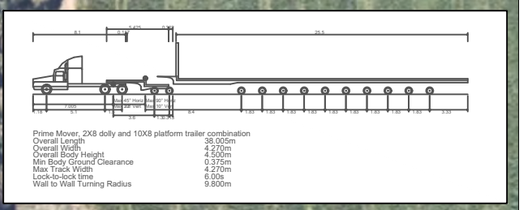


REST AREA
NORTHERN HIGHWAY, BALLENDELLA

SIGN
3.3m
REFLECTOR
POWER POLE
67.1m
NORTHERN HIGHWAY
REFLECTOR
3.5m

OPERATOR TO ENSURE GRAVEL CONDITION IS SUITABLE FOR COMBINATION

TRAILER ENCROACHES VERGE BY MAX. 500mm
WHEEL TRACKS TO BE REMEDIATED AS REQUIRED



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

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REST AREA
NORTHERN HIGHWAY, BALLENDELLA

EXISTING CULVERT (NOT IMPACTED)

6.8m

SEATING AREA

NORTHERN HIGHWAY

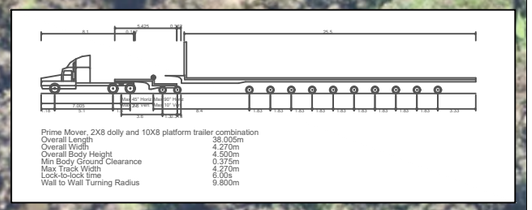
73.8m

10.6m

OPERATOR TO ENSURE GRAVEL CONDITION IS SUITABLE FOR COMBINATION

EXISTING CULVERT (NOT IMPACTED)

5.6m



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

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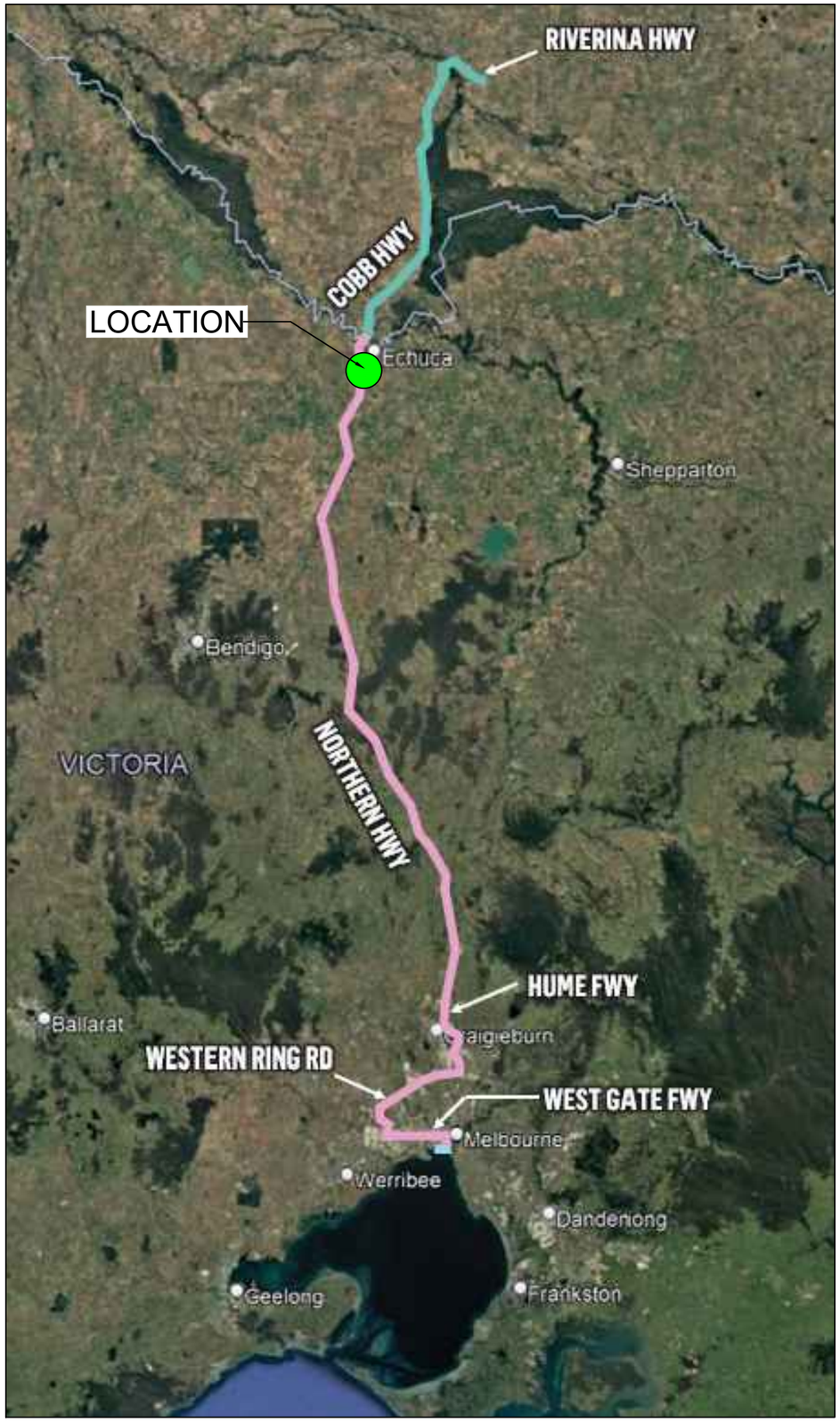
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NORTHERN HIGHWAY / MURRAY VALLEY HIGHWAY

OPERATOR TO REVIEW AVAILABLE HEADROOM CLEARANCE UNDER TREE PRIOR TO TRANSPORT AND REQUEST COUNCIL TO TRIM TREE IF REQUIRED

REMOVE 3 x DIRECTIONAL HAZARD MARKERS

VEHICLE CLEARANCE OUTSIDE STREET LIGHT POLE

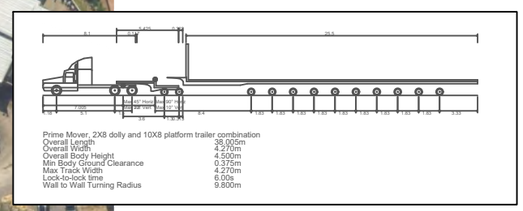
MURRAY VALLEY HIGHWAY

VEHICLE CLEARANCE OUTSIDE STREET LIGHT POLE

REMOVE 2 x DIRECTIONAL HAZARD MARKERS

COMBINATION TO TRAVERSE MOUNTABLE ISLAND

NORTHERN HIGHWAY



Prime Mover, 2X8 dolly and 10X8 platform trailer combination	
Overall Length	36.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

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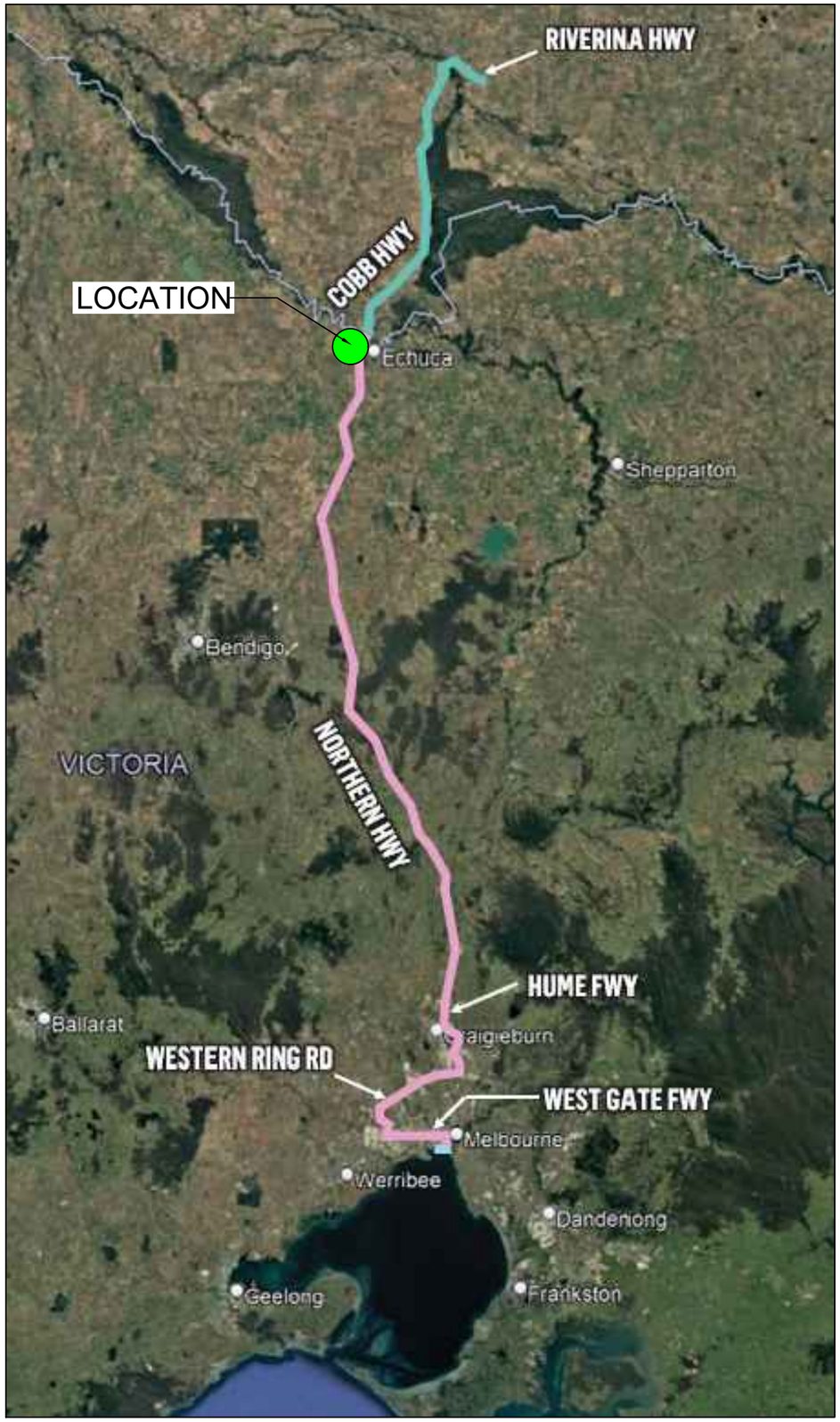
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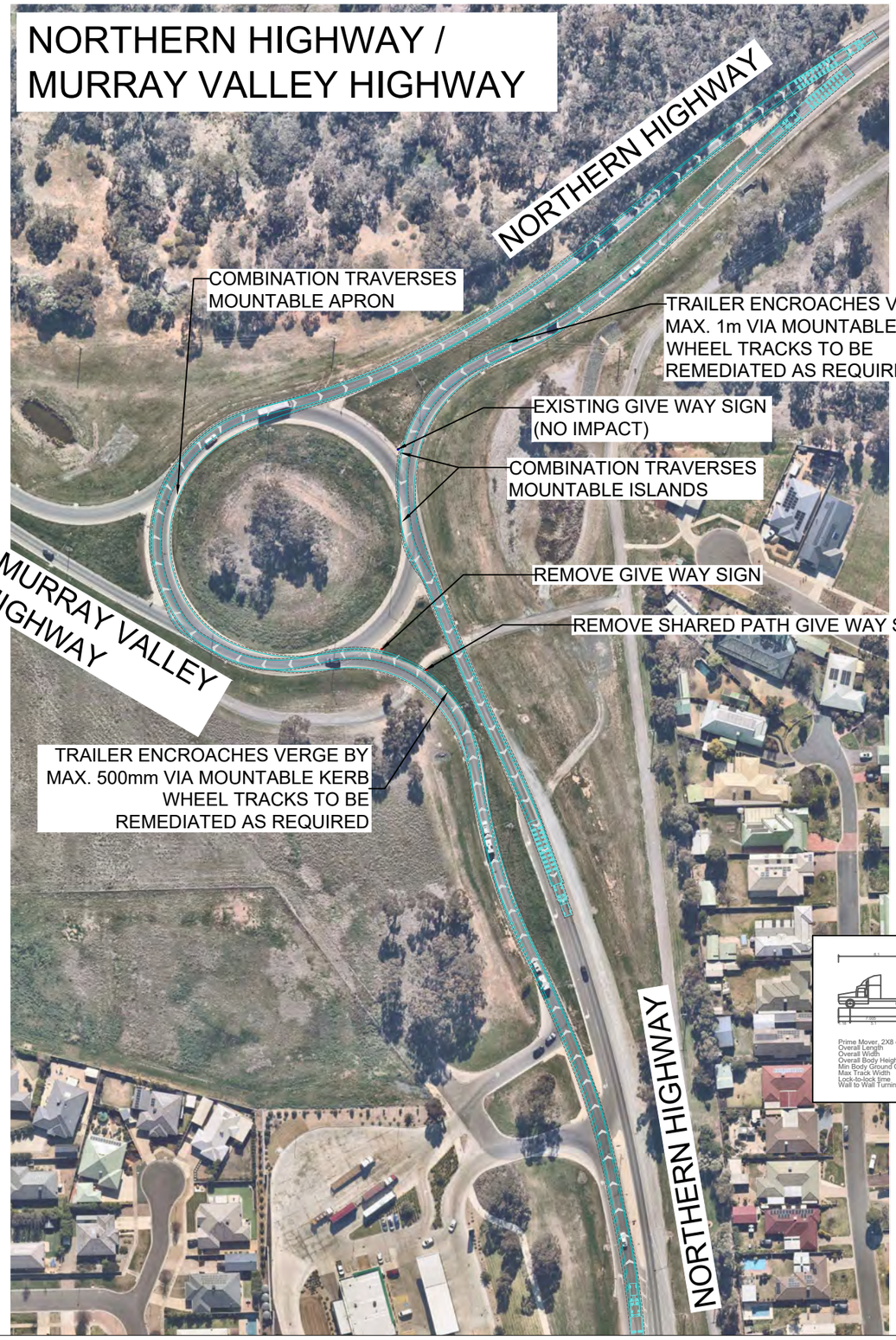
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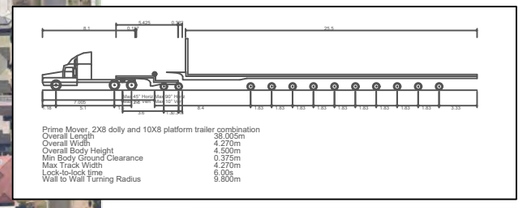
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NORTHERN HIGHWAY / MURRAY VALLEY HIGHWAY





Prime Mover, 2X8 dolly and 10X8 platform trailer combination	
Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

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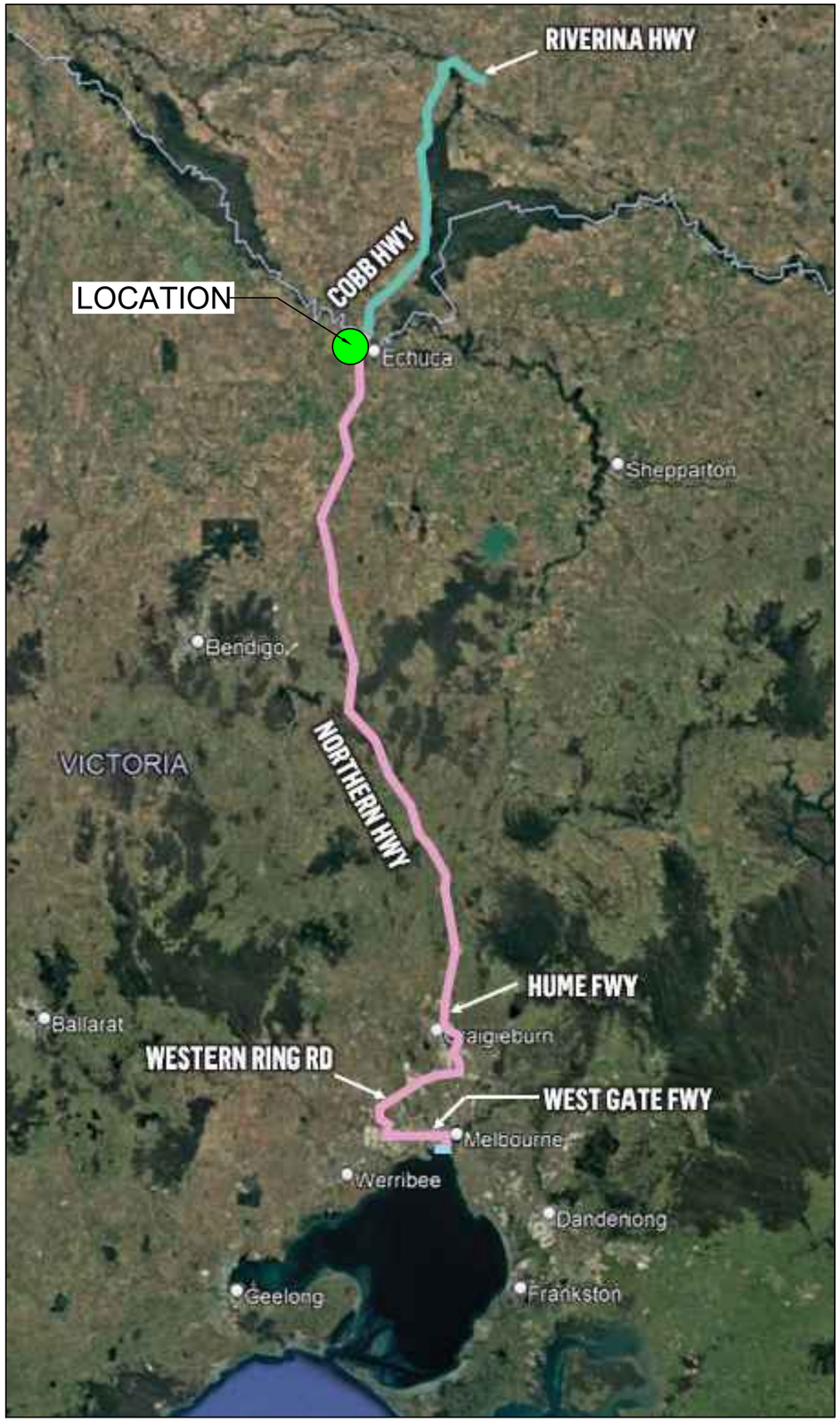
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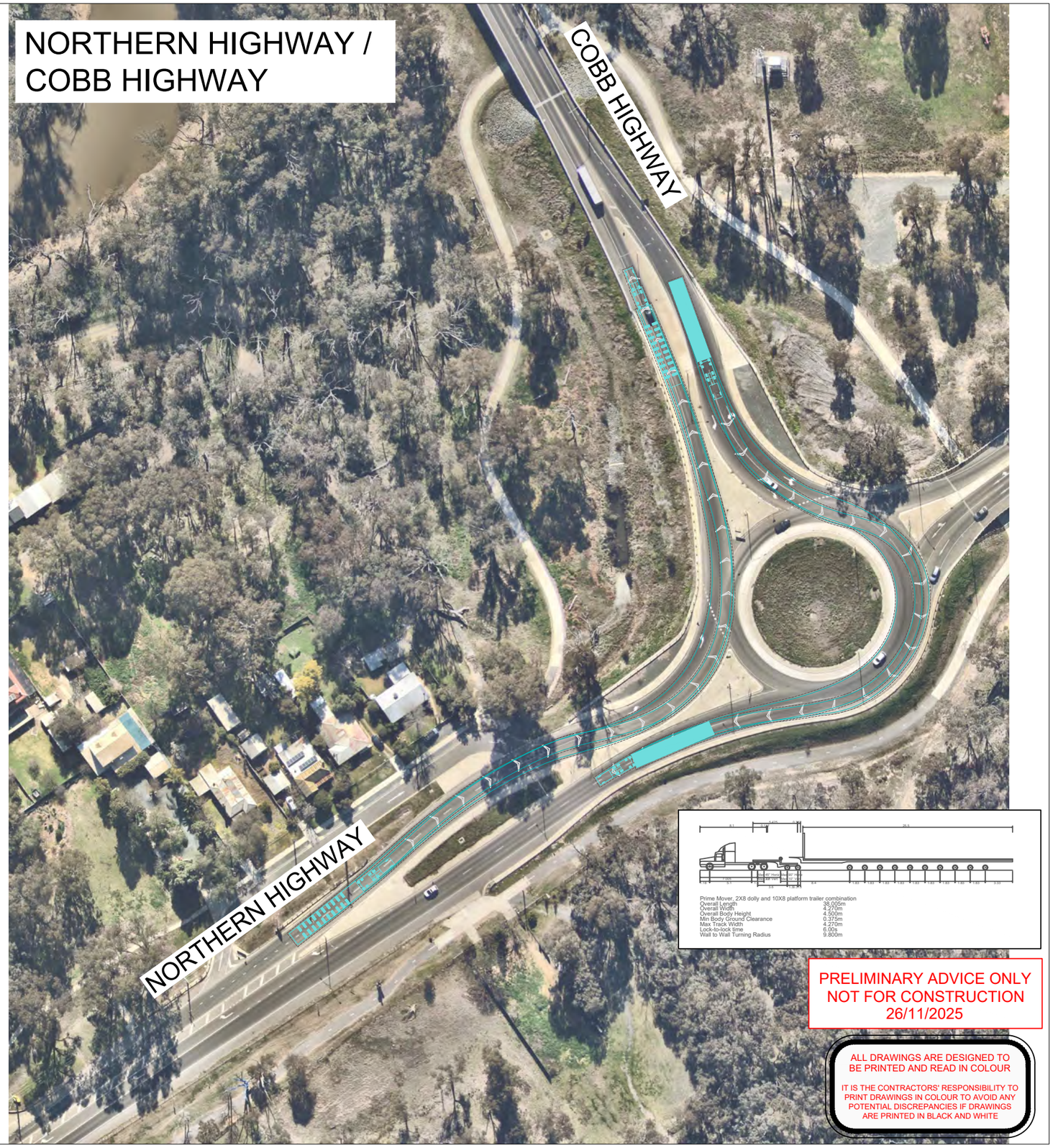
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REST AREA
COBB HIGHWAY, MOAMA



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

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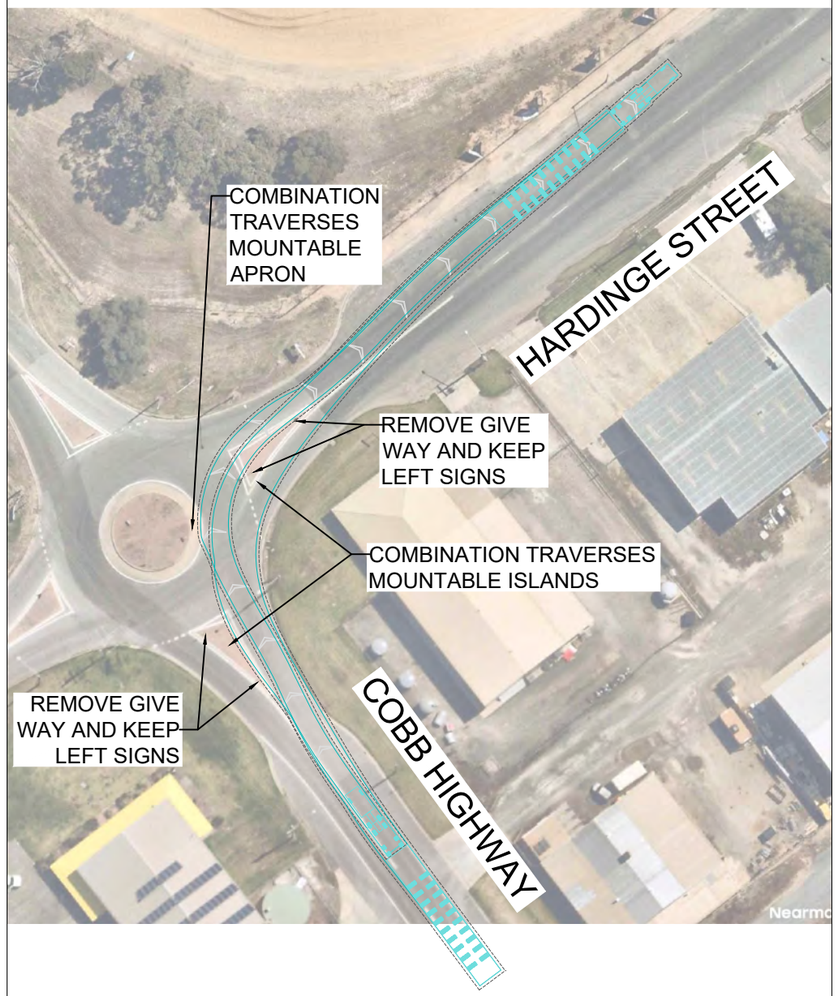
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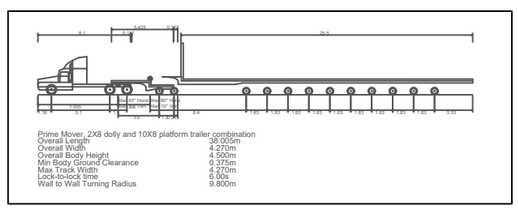
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COBB HIGHWAY / HARDINGE STREET







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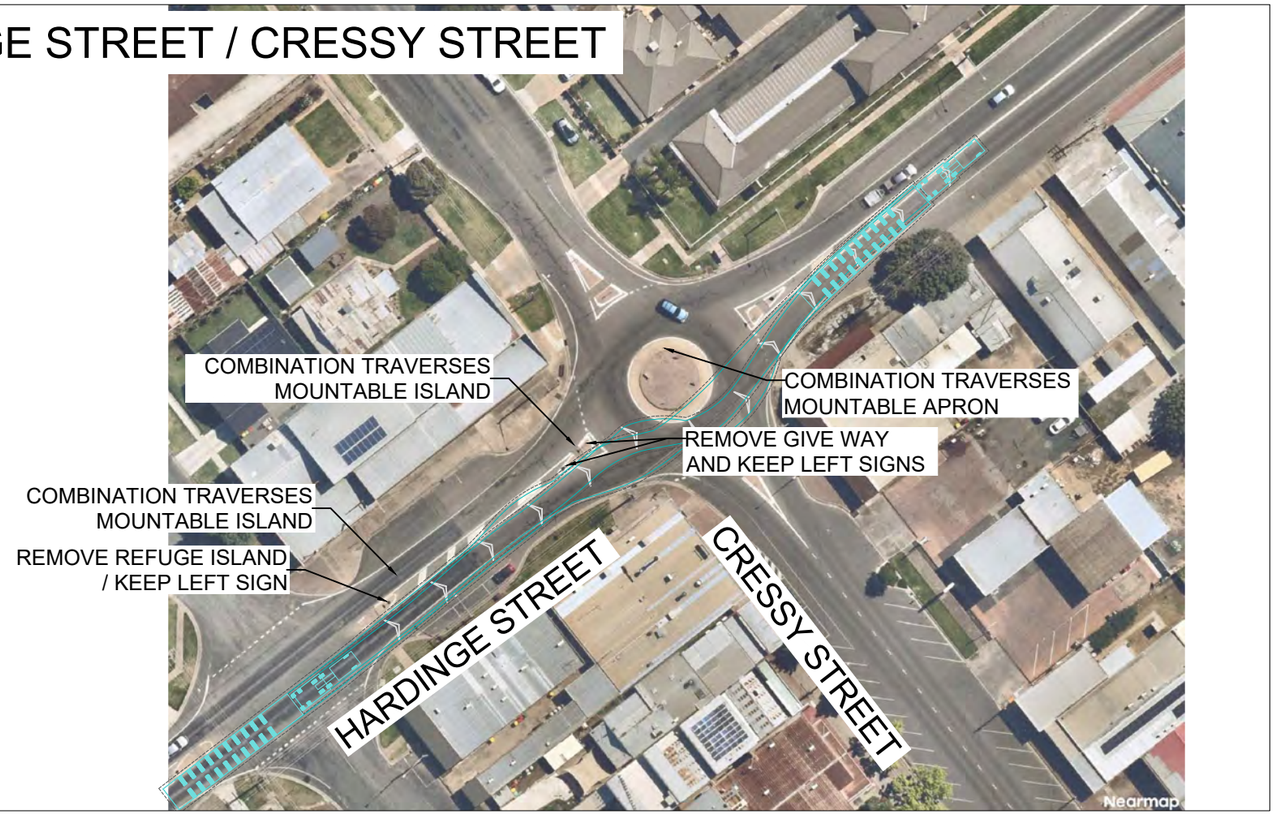
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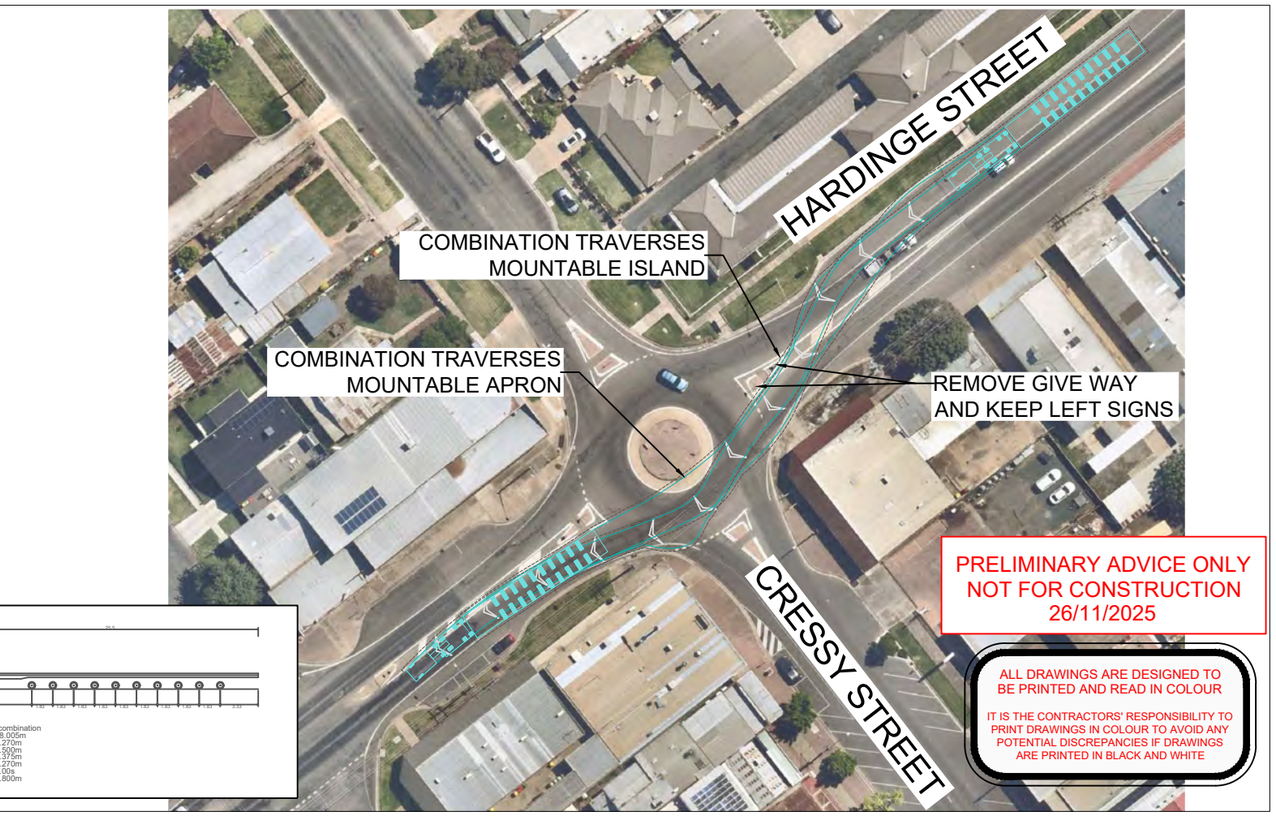
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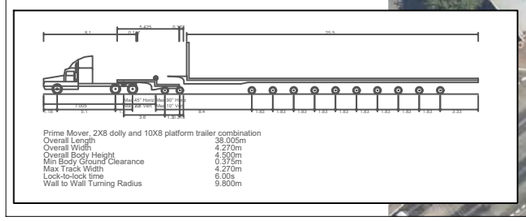
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HARDINGE STREET / CRESSY STREET







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Deniliquin Battery Energy Storage System

OSOM Concept Route Assessment

Olderfleet, Level 10, 477 Collins Street | Melbourne VIC 3000 AUSTRALIA | +61 3 8663 4888 | URBIS Pty Ltd | ABN 50 105 256 228

DATA SOURCE
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PROJECTION
GDA2020 / MGA zone 55

REV	DESCRIPTION	DWN	CHK	DATE
B	RTS Issue	JR	MR	26.11.2025
A	Preliminary Issue	JR	MR	22.11.2024

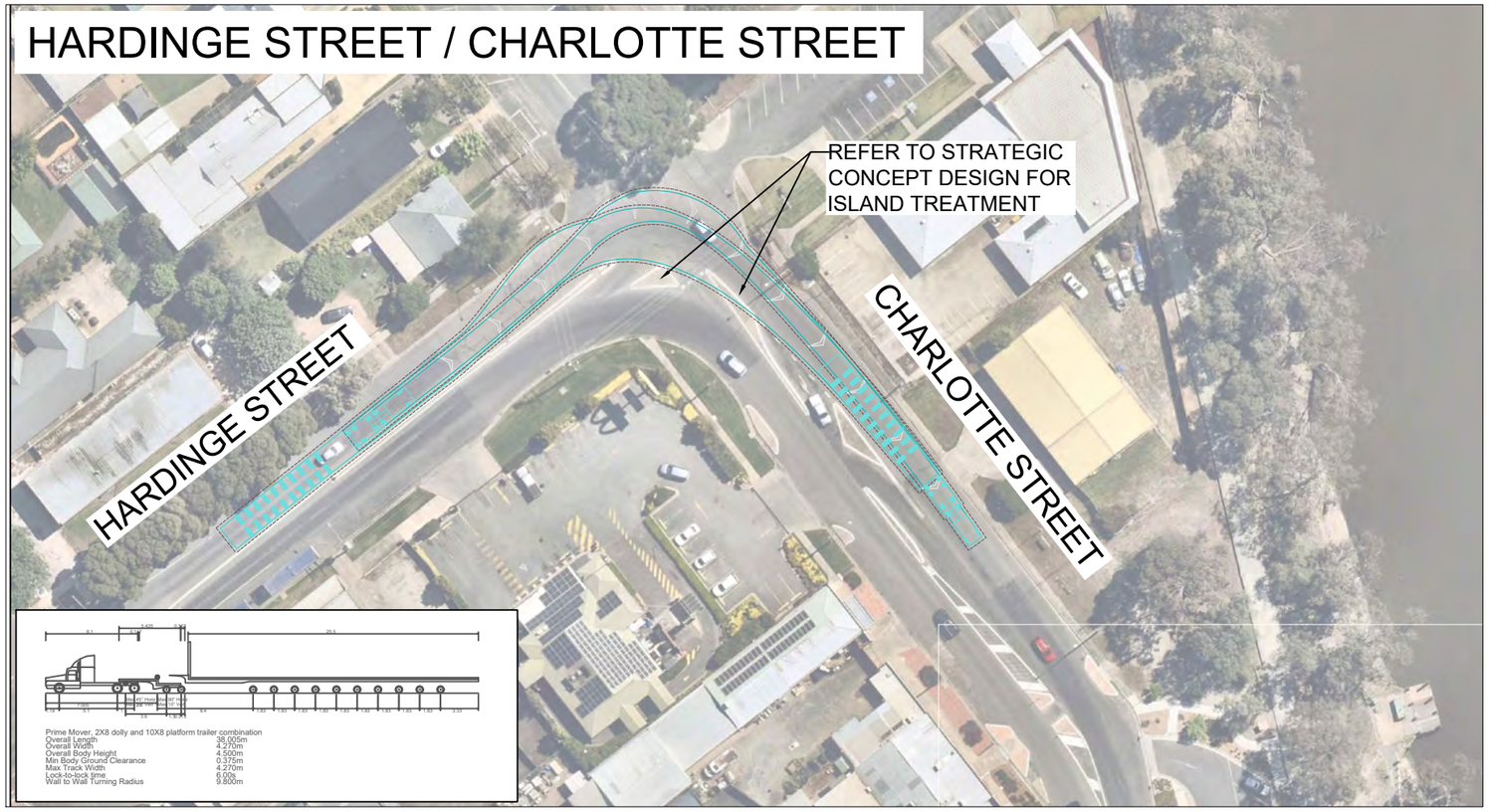
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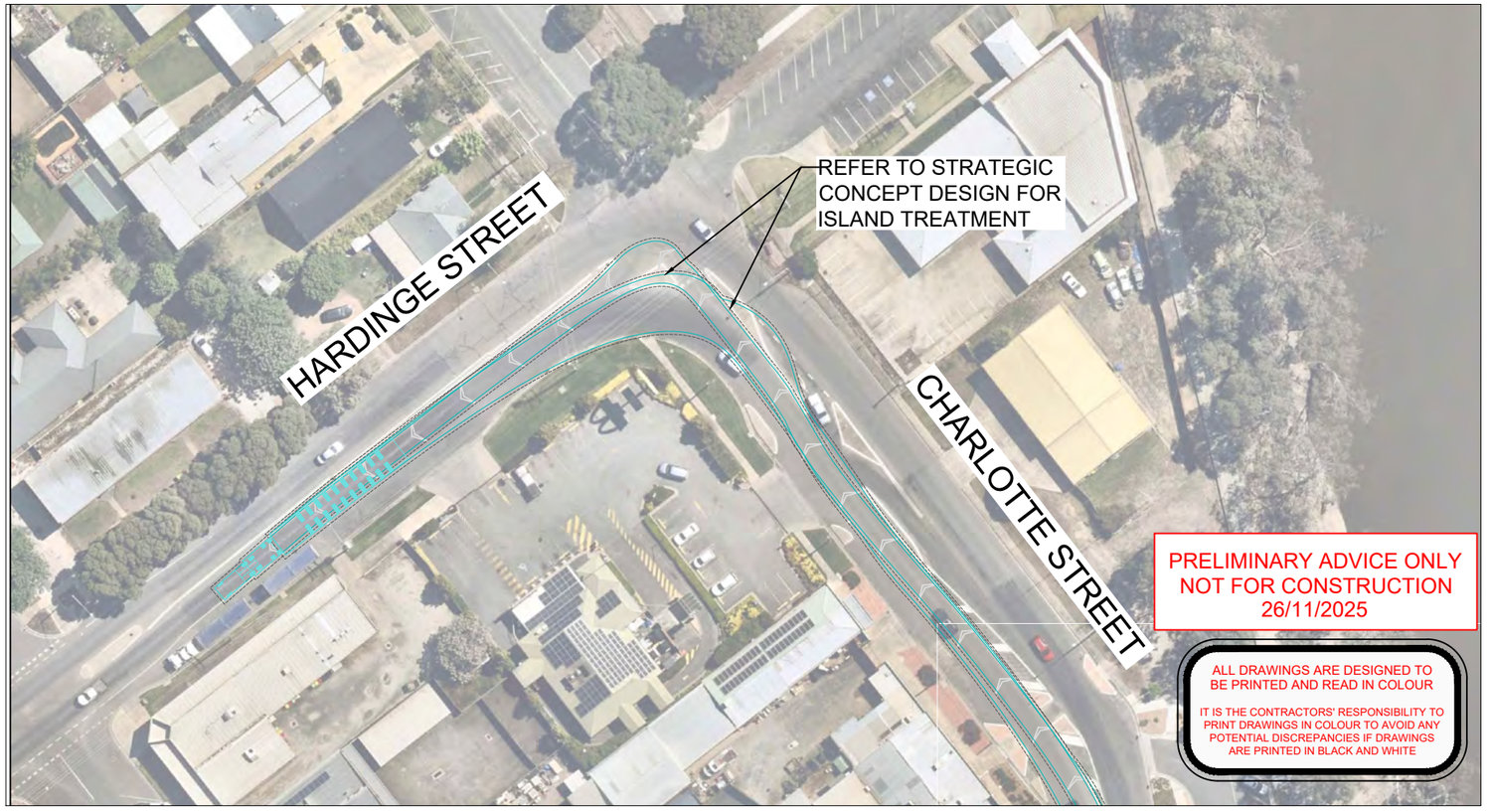
CLIENT
Gransolar Development Australia

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PROJECT NO. P0050308
DRAWING NO. 01
DATE 26/11/2025
REVISION A







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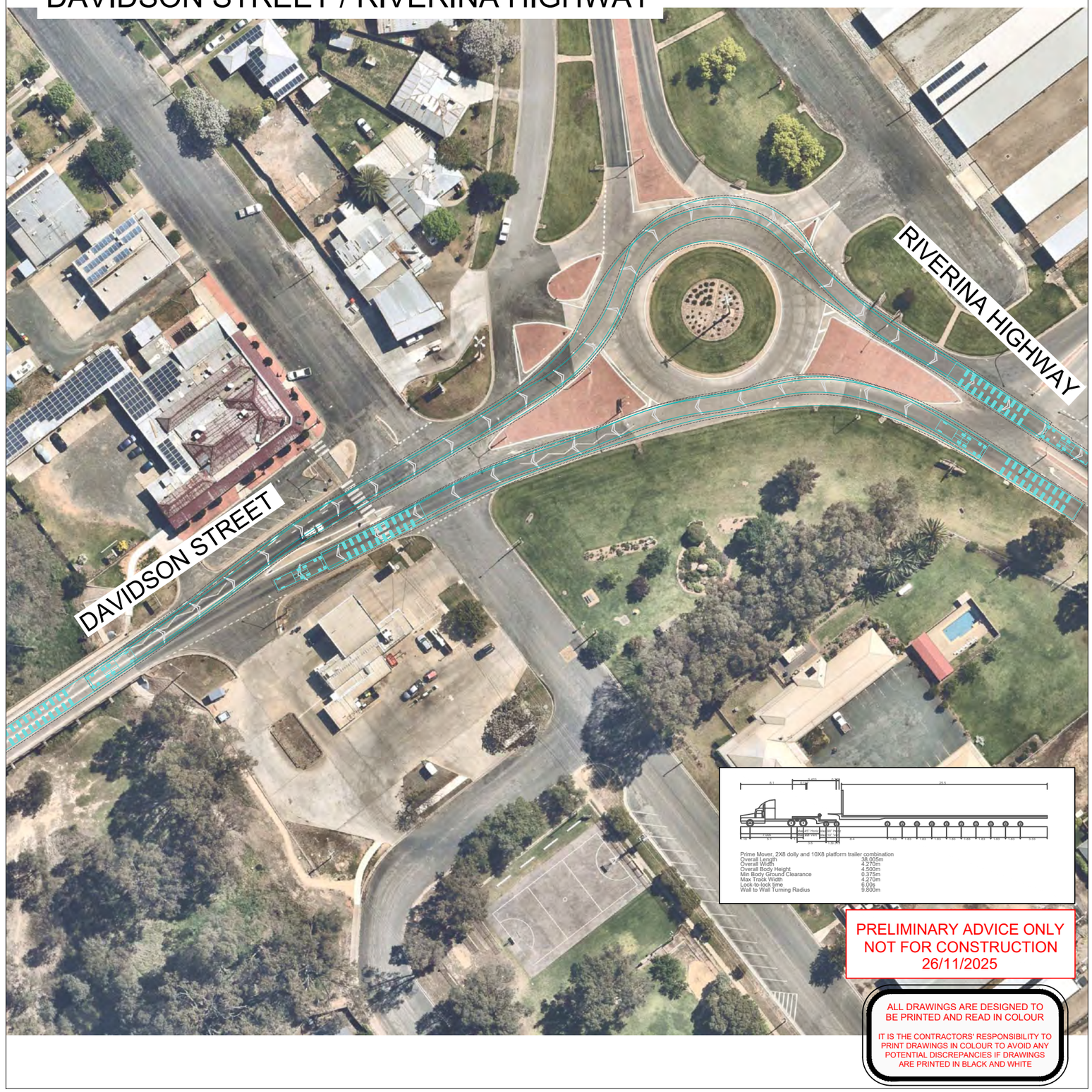
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P0050308 | 01 | 26/11/2025 | A



DAVIDSON STREET / RIVERINA HIGHWAY



PRELIMINARY ADVICE ONLY
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ALL DRAWINGS ARE DESIGNED TO BE PRINTED AND READ IN COLOUR

IT IS THE CONTRACTORS' RESPONSIBILITY TO PRINT DRAWINGS IN COLOUR TO AVOID ANY POTENTIAL DISCREPANCIES IF DRAWINGS ARE PRINTED IN BLACK AND WHITE

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P0050308

26/11/2025

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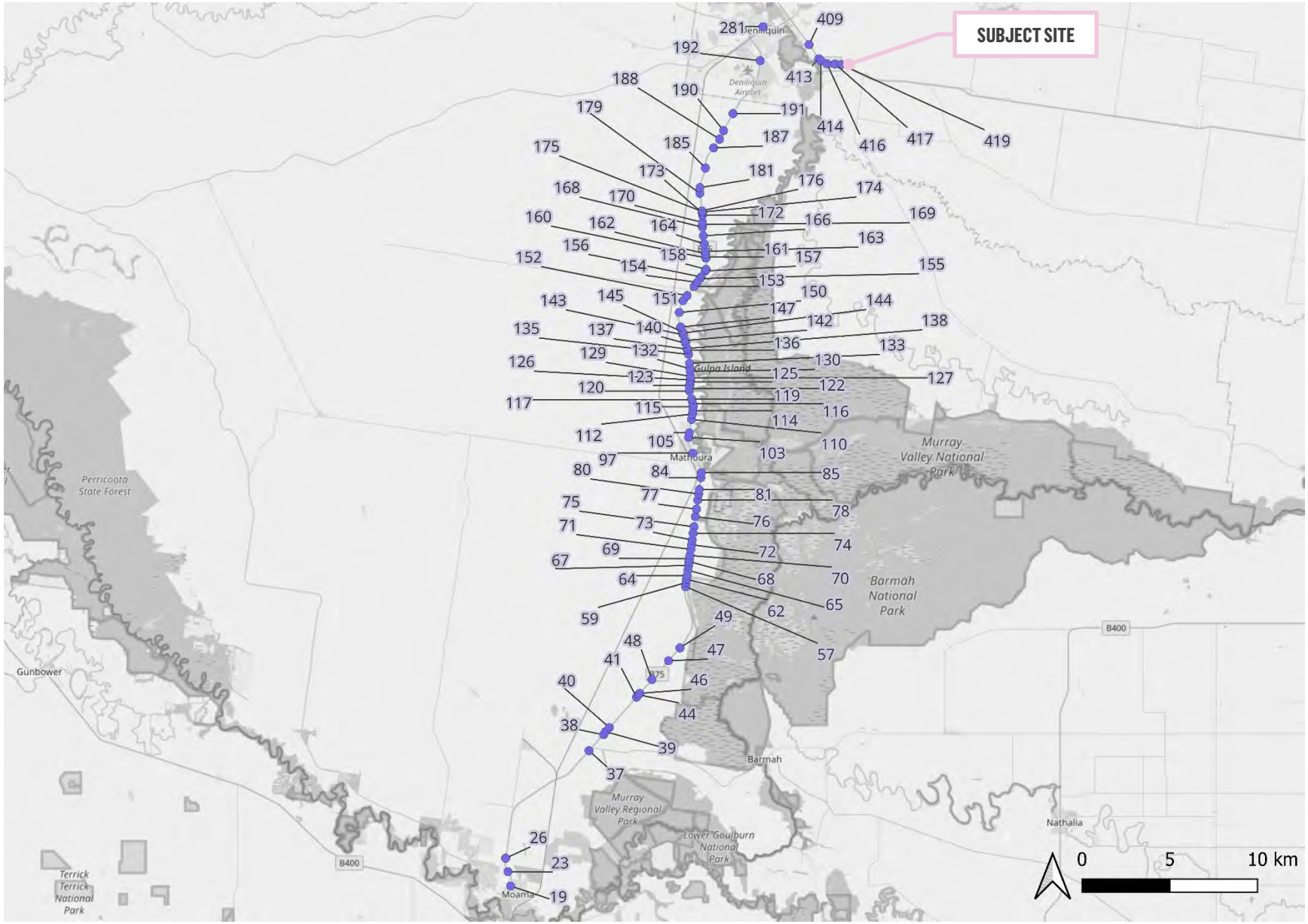
ATTACHMENT B COMPREHENSIVE ROUTE REVIEW

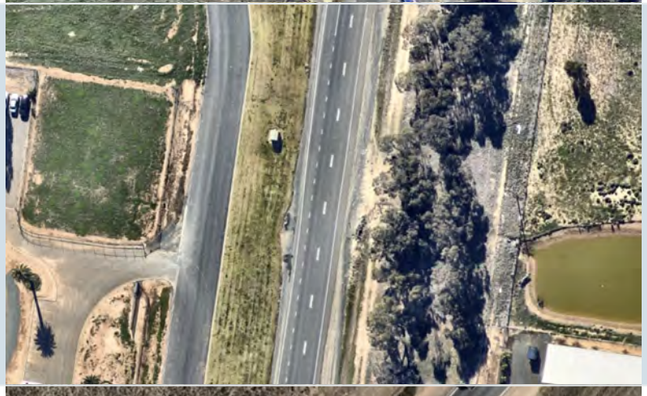
This attachment provides additional details for each possible constraint point identified as part of the comprehensive review of the proposed route between the New South Wales border and the Site. Within the attachment, constraint points have been separated into the following five categories:

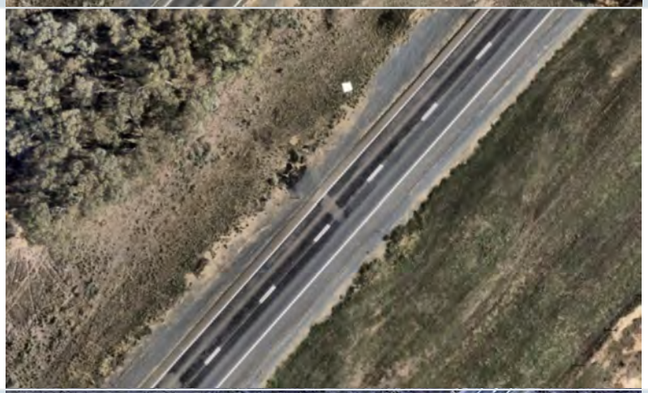
- Culverts.
- Power Lines.
- Overhead Light Poles.
- Overhanging Trees.
- Other Infrastructure (containing bridges, roundabouts, traffic signals and rail level crossings).

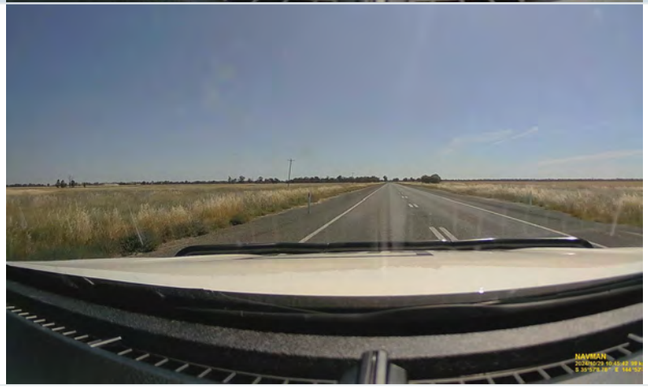
A map is provided for each category, with each point labelled with an ID number. Corresponding tables provide additional information for each point, including aerial imagery, captures from dash camera footage, location and GPS coordinates.

Figure 10 Map of All Culverts on Route

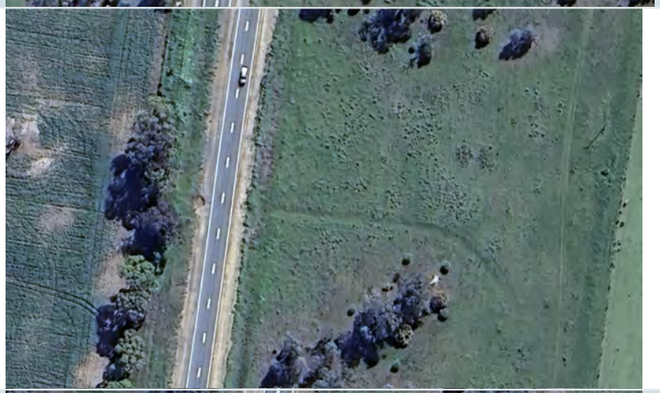


ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
19	Cobb Highway, Moama	Culvert	-36°05'59.9", 144°45'10.5"			
23	Cobb Highway (Moama - Mathoura)	Culvert	-36°05'26.5", 144°45'3.9"			
26	Cobb Highway (Moama - Mathoura)	Culvert	-36°04'54.1", 144°44'55.7"			
37	Cobb Highway (Moama - Mathoura)	Culvert	-36°00'48.7", 144°48'47.7"			

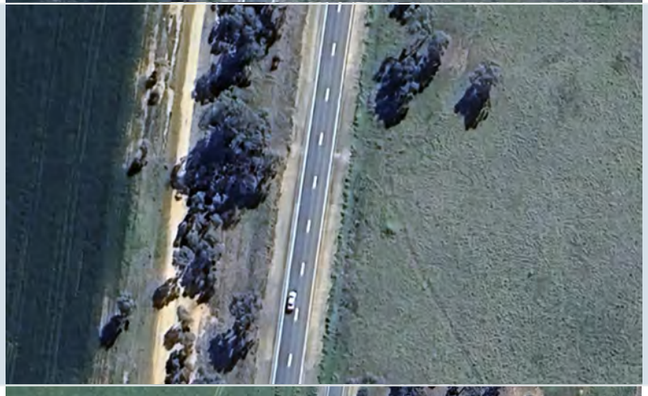
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
38	Cobb Highway (Moama - Mathoura)	Culvert	-35°59'55.2", 144°49'46.5"			
39	Cobb Highway (Moama - Mathoura)	Culvert	-35°59'53.2", 144°49'48.7"			
40	Cobb Highway (Moama - Mathoura)	Culvert	-35°59'39.8", 144°50'3.4"			
41	Cobb Highway (Moama - Mathoura)	Culvert	-35°58'28.4", 144°51'21.7"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
44	Cobb Highway (Moama - Mathoura)	Culvert	-35°58'22.5", 144°51'25.8"			
46	Cobb Highway (Moama - Mathoura)	Culvert	-35°58'16.9", 144°51'35.4"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
47	Cobb Highway (Moama - Mathoura)	Culvert	-35°57'51.1", 144°52'2.6"			
48	Cobb Highway (Moama - Mathoura)	Culvert	-35°57'8.8", 144°52'49.0"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 

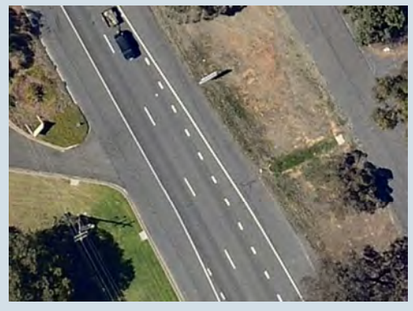
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
49	Cobb Highway (Moama - Mathoura)	Culvert	-35°57'8.8", 144°52'49.0"			
57	Cobb Highway (Moama - Mathoura)	Culvert	-35°54'2.1", 144°53'47.5"			
59	Cobb Highway (Moama - Mathoura)	Culvert	-35°53'54.1", 144°53'48.9"			
62	Cobb Highway (Moama - Mathoura)	Culvert	-35°53'46.9", 144°53'50.1"			

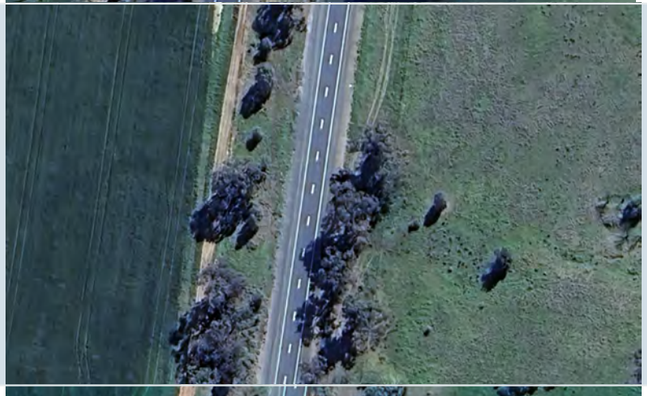
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
64	Cobb Highway (Moama - Mathoura)	Culvert	-35°53'39.9", 144°53'51.3"			
65	Cobb Highway (Moama - Mathoura)	Culvert	-35°53'31.0", 144°53'52.8"			
67	Cobb Highway (Moama - Mathoura)	Culvert	-35°53'21.2", 144°53'54.5"			
68	Cobb Highway (Moama - Mathoura)	Culvert	-35°53'10.6", 144°53'56.4"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
69	Cobb Highway (Moama - Mathoura)	Culvert	-35°53'0.7", 144°53'58.1"			
70	Cobb Highway (Moama - Mathoura)	Culvert	-35°52'46.5", 144°54'0.6"			
71	Cobb Highway (Moama - Mathoura)	Culvert	-35°52'28.7", 144°54'3.7"			
72	Cobb Highway (Moama - Mathoura)	Culvert	-35°52'21.6", 144°54'4.9"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
73	Cobb Highway (Moama - Mathoura)	Culvert	-35°52'14.5", 144°54'6.1"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
74	Cobb Highway (Moama - Mathoura)	Culvert	-35°52'3.0", 144°54'8.2"			
75	Cobb Highway (Moama - Mathoura)	Culvert	-35°51'46.0", 144°54'11.1"			
76	Cobb Highway (Moama - Mathoura)	Culvert	-35°51'17.6", 144°54'16.1"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
77	Cobb Highway (Moama - Mathoura)	Culvert	-35°51'0.6", 144°54'19.0"			
78	Cobb Highway (Moama - Mathoura)	Culvert	-35°50'37.5", 144°54'23.0"			
80	Cobb Highway (Moama - Mathoura)	Culvert	-35°50'25.1", 144°54'25.2"			
81	Cobb Highway (Moama - Mathoura)	Culvert	-35°50'10.9", 144°54'27.6"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
84	Cobb Highway (Moama - Mathoura)	Culvert	-35°49'50.4", 144°54'31.0"			
85	Cobb Highway (Mathoura)	Culvert	-35°49'31.3", 144°54'34.0"			
97	Cobb Highway (Mathoura)	Culvert	-35°48'45.2", 144°54'9.4"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
103	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°48'8.1", 144°53'55.7"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
105	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°47'54.9", 144°53'58.4"			
110	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°47'26.5", 144°54'4.0"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
112	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°47'11.4", 144°54'6.7"			
114	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°47'3.4", 144°54'8.2"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
115	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°46'51.8", 144°54'10.0"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
116	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°46'41.3", 144°54'7.3"			
117	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°46'32.6", 144°54'4.6"			
119	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°46'29.1", 144°54'3.5"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
120	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°46'18.7", 144°54'0.1"			Also see Streetview 
122	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°46'9.8", 144°53'58.3"			
123	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°46'4.4", 144°53'59"			
125	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°45'55.5", 144°54'0.6"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
126	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°45'49.3", 144°54'1.6"			
127	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°45'44.9", 144°54'2.1"			
129	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°45'38.6", 144°54'1.7"			
130	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°45'26.9", 144°54'0.6"			visible on dashcam

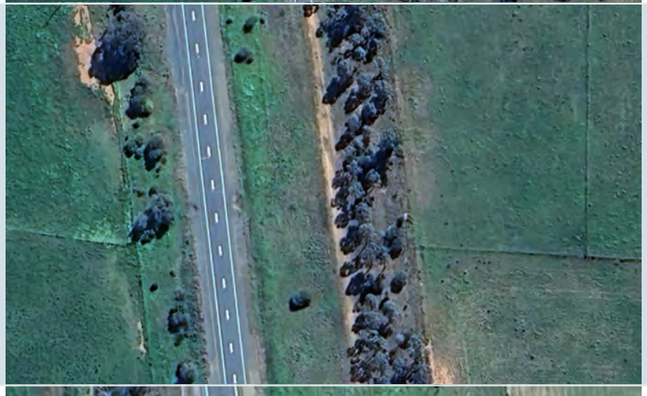
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
132	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°45'26.9", 144°54'0.6"			
133	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°45'7.2", 144°53'58.7"			Also see Streetview 
135	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°44'46.7", 144°53'56.0"			
136	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°44'38.8", 144°53'53.6"			

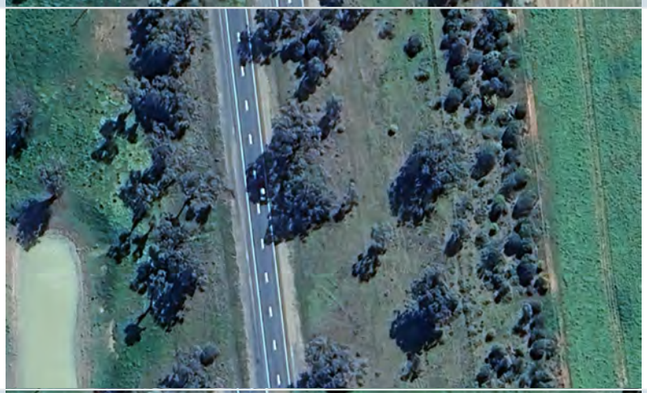
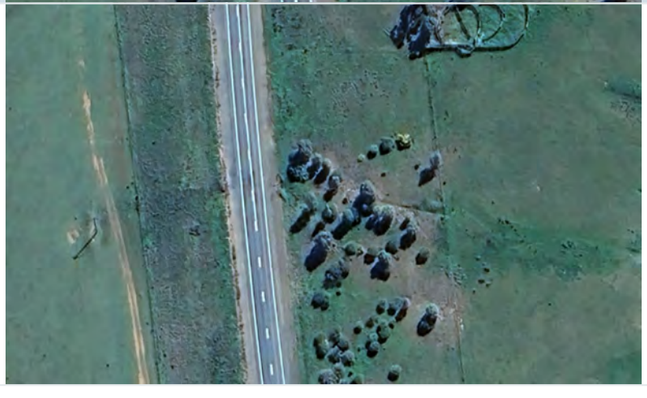
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
137	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°44'37.1", 144°53'52.9"			
138	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°44'33.6", 144°53'51.8"			
140	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°44'25.8", 144°53'49.0"			Also see Streetview 
142	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°44'17.2", 144°53'45.9"			

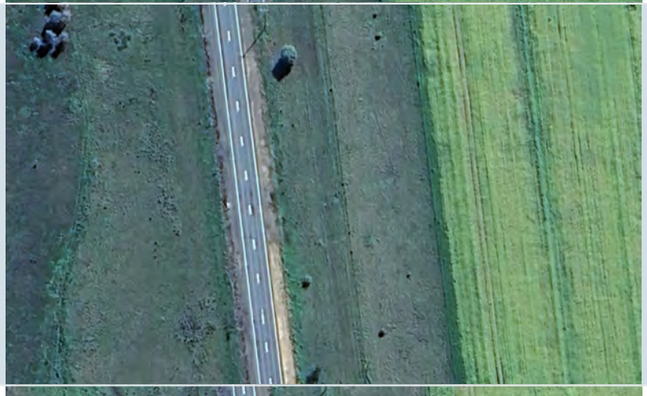
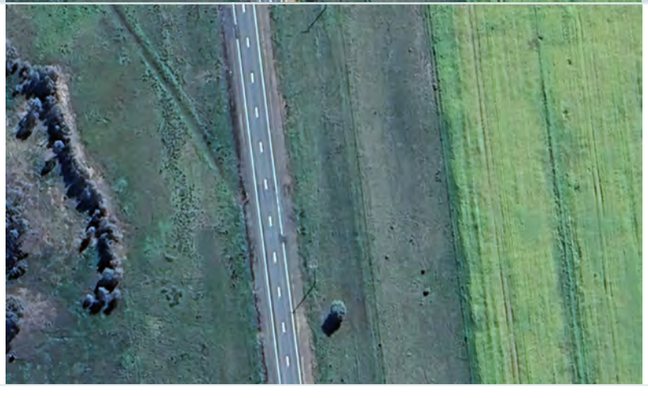
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
143	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°43'55.8", 144°53'38.0"			
144	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°43'51.4", 144°53'36.3"			
145	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°43'47.2", 144°53'34.8"			
147	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°43'35.2", 144°53'30.3"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
150	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°43'7.7", 144°53'28.6"			More visible on aerial
151	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°42'31.9", 144°53'46.2"			
152	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°42'24.1", 144°53'53.6"			
153	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°42'9.1", 144°54'7.7"			

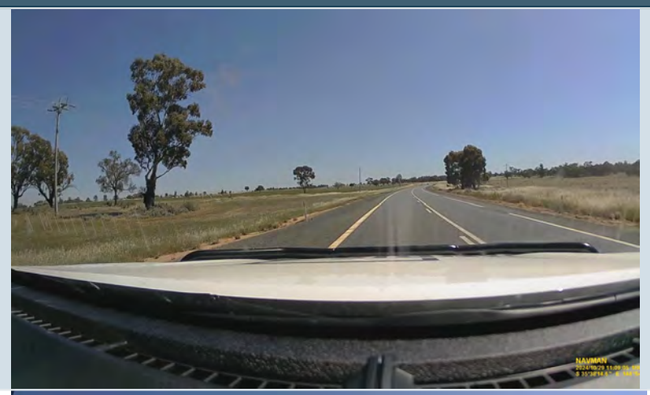
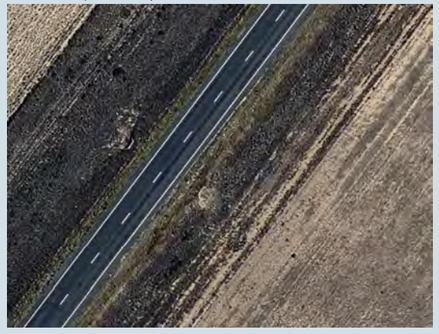
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
154	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°41'49.8", 144°54'25.7"			
155	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°41'45.5", 144°54'29.8"			
156	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°41'43.3", 144°54'31.8"			
157	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°41'28.0", 144°54'45.3"			

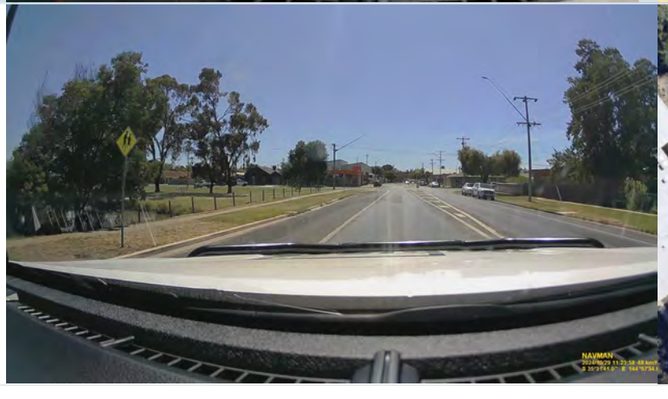
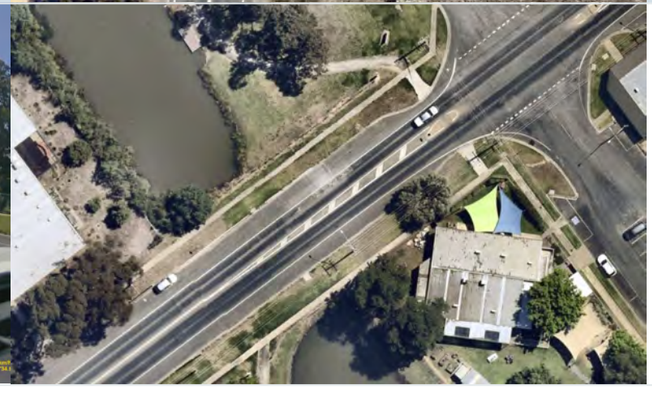
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
158	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°41'25.6", 144°54'46.7"			
160	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°40'57.3", 144°54'47.5"			
161	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°40'54.6", 144°54'47.2"			
162	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°40'43.9", 144°54'45.6"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
163	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°40'40.3", 144°54'45.1"			
164	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°40'21.6", 144°54'42.4"			
166	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°40'1.9", 144°54'39.6"			
168	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°39'44.9", 144°54'37.2"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
169	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°39'34.2", 144°54'36.8"			
170	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°39'31.5", 144°54'37.0"			
172	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°39'10.8", 144°54'37.0"			
173	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°39'8.1", 144°54'36.6"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
174	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°39'4.6", 144°54'36.0"			173-176 are all associated with the same dam (below) 
175	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°39'2.8", 144°54'35.8"			
176	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°39'1.0", 144°54'35.4"			
179	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°38'20.0", 144°54'29.3"			

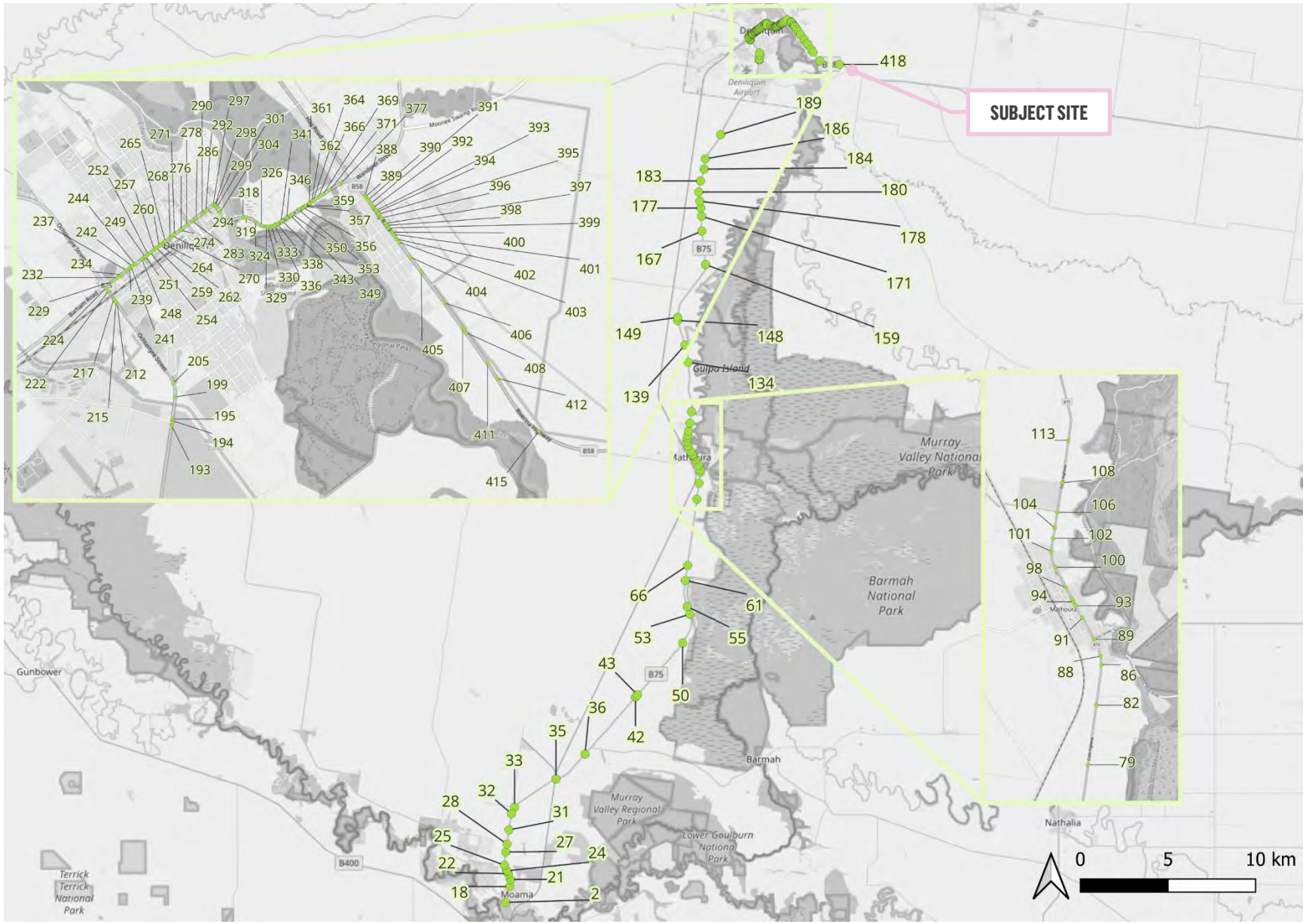
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
181	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°38'14.6", 144°54'29.0"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
185	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°37'21.7", 144°54'45.4"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
187	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°36'27.8", 144°55'13.2"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
188	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°36'14.5", 144°55'25.5"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 

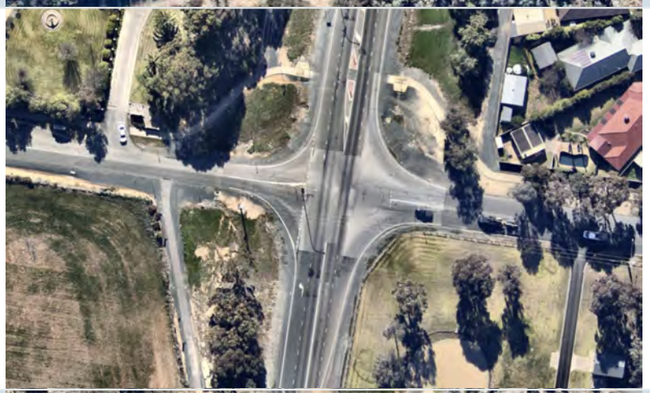
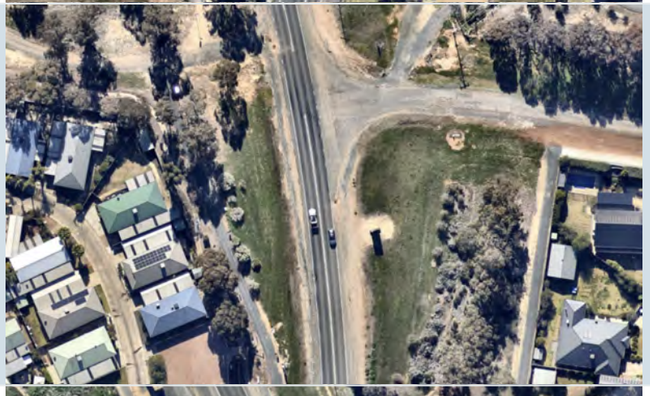
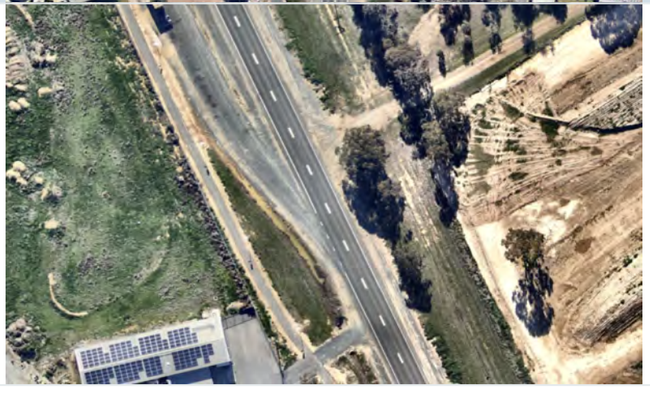
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
190	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°35'52.9", 144°55'38.0"			
191	Cobb Highway (Mathoura - Deniliquin)	Culvert	-35°35'6.7", 144°56'8.0"			
192	Deniliquin	Culvert	-35°33'4.1", 144°57'27.2"			
281	Deniliquin	Culvert	-35°31'41.0", 144°57'34.9"			Exact drainage situation unclear; assumed some sort of culvert/pipe connecting waterways across road

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
409	Riverine Highway (Deniliquin - Site)	Culvert	-35°32'21.7", 144°59'50.3"			
413	Riverine Highway (Deniliquin - Site)	Culvert	-35°32'54.8", 145°00'17.6"			
414	Riverine Highway (Deniliquin - Site)	Culvert	-35°33'1.9", 145°00'26.0"			
416	Riverine Highway (Deniliquin - Site)	Culvert	-35°33'8.6", 145°00'41.4"			

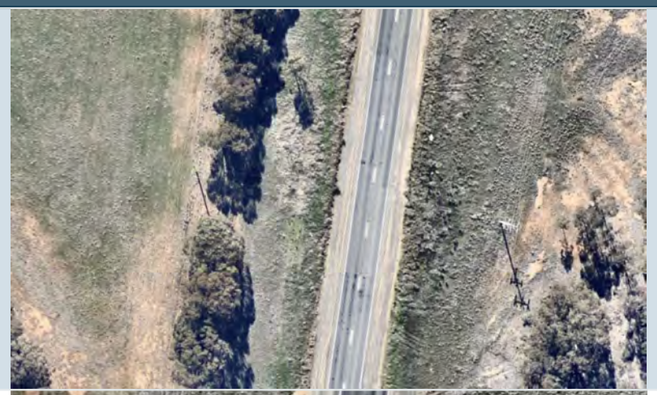
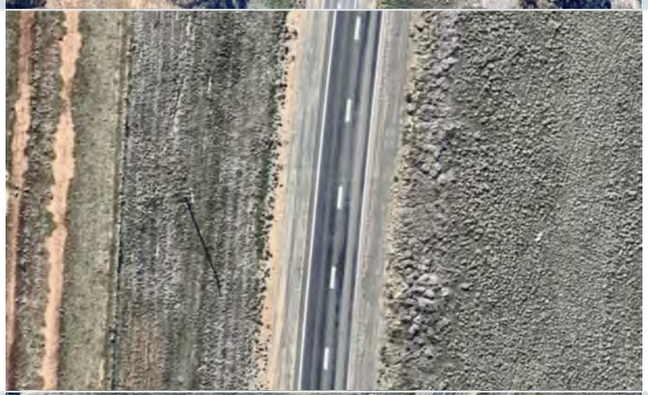
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
417	Riverine Highway (Deniliquin - Site)	Culvert	-35°33'10.2", 145°01'5.3"			
419	Riverine Highway (Deniliquin - Site)	Culvert	-35°33'11.0", 145°01'24.0"			

Figure 11 Map of All Potential Power Lines on Route



ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
2	Cobb Highway, Moama	Power Line	-36°06'38.7", 144°44'56.6"			
18	Cobb Highway, Moama	Power Line	-36°06'1.2", 144°45'10.3"			
21	Cobb Highway (Moama - Mathoura)	Power Line	-36°05'46.0", 144°45'12.7"			
22	Cobb Highway (Moama - Mathoura)	Power Line	-36°05'30.8", 144°45'6.5"			

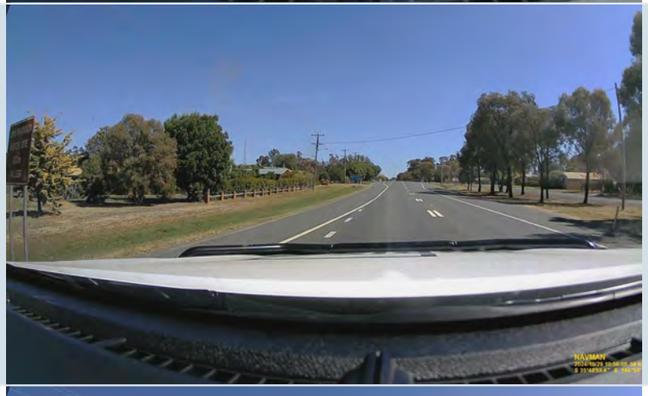
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
24	Cobb Highway (Moama - Mathoura)	Power Line	-36°05'23.9", 144°45'2.4"			
25	Cobb Highway (Moama - Mathoura)	Power Line	-36°05'10.3", 144°44'54.9"			
27	Cobb Highway (Moama - Mathoura)	Power Line	-36°04'42.6", 144°44'55.7"			
28	Cobb Highway (Moama - Mathoura)	Power Line	-36°04'24.8", 144°45'0.9"			

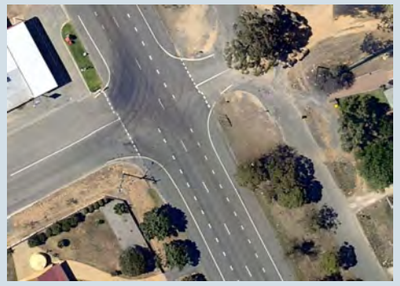
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
31	Cobb Highway (Moama - Mathoura)	Power Line	-36°03'42.0", 144°45'8.5"			
32	Cobb Highway (Moama - Mathoura)	Power Line	-36°03'13.3", 144°45'13.6"			
33	Cobb Highway (Moama - Mathoura)	Power Line	-36°02'54.8", 144°45'21.8"			
35	Cobb Highway (Moama - Mathoura)	Power Line	-36°01'44.7", 144°47'23.6"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
36	Cobb Highway (Moama - Mathoura)	Power Line	-36°00'58.7", 144°48'36.7"			
42	Cobb Highway (Moama - Mathoura)	Power Line	-35°58'28.4", 144°51'21.7"			
43	Cobb Highway (Moama - Mathoura)	Power Line	-35°58'22.5", 144°51'25.8"			
50	Cobb Highway (Moama - Mathoura)	Power Line	-35°56'24.7", 144°53'36.1"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
53	Cobb Highway (Moama - Mathoura)	Power Line	-35°55'11.8", 144°54'3.3"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
55	Cobb Highway (Moama - Mathoura)	Power Line	-35°55'2.3", 144°53'59.7"			
61	Cobb Highway (Moama - Mathoura)	Power Line	-35°53'49.6", 144°53'49.7"			
66	Cobb Highway (Moama - Mathoura)	Power Line	-35°53'21.2", 144°53'54.5"			

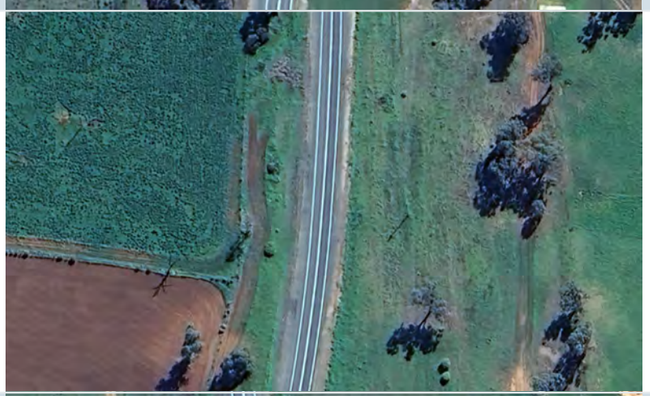
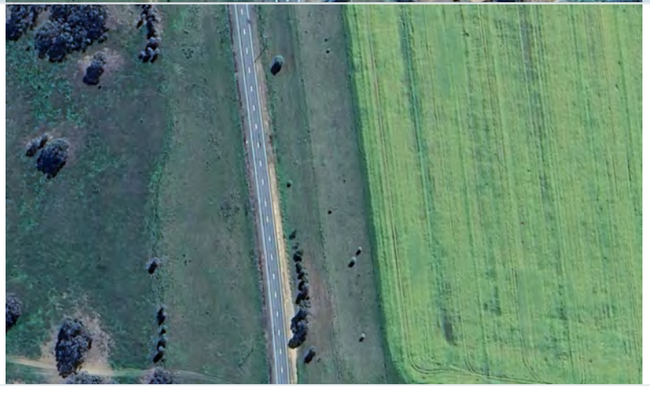
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
79	Cobb Highway (Moama - Mathoura)	Power Line	-35°50'36.6", 144°54'23.2"			
82	Cobb Highway (Moama - Mathoura)	Power Line	-35°49'54.8", 144°54'30.2"			
86	Cobb Highway (Mathoura)	Power Line	-35°49'31.3", 144°54'34.0"			
88	Cobb Highway (Mathoura)	Power Line	-35°49'23.4", 144°54'33.3"			

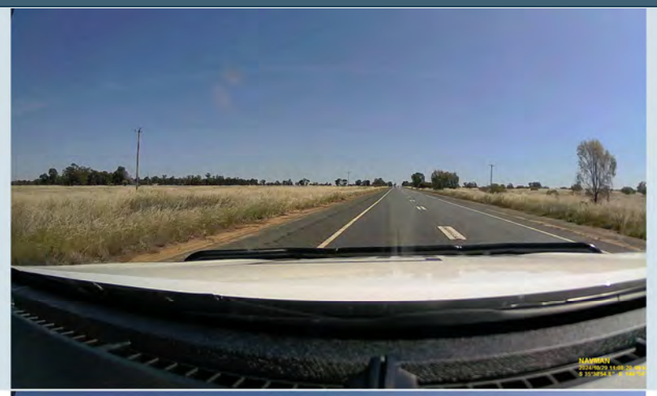
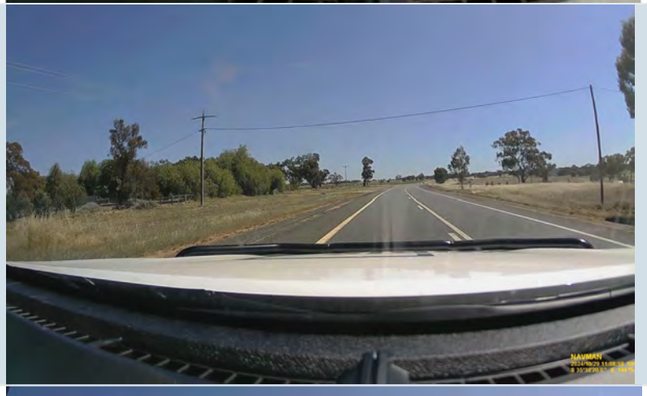
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
89	Cobb Highway (Mathoura)	Power Line	-35°49'15.1", 144°54'29.4"			
91	Cobb Highway (Mathoura)	Power Line	-35°49'1.0", 144°54'20.0"			
93	Cobb Highway (Mathoura)	Power Line	-35°48'52.9", 144°54'14.4"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
94	Cobb Highway (Mathoura)	Power Line	-35°48'52.9", 144°54'14.4"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 

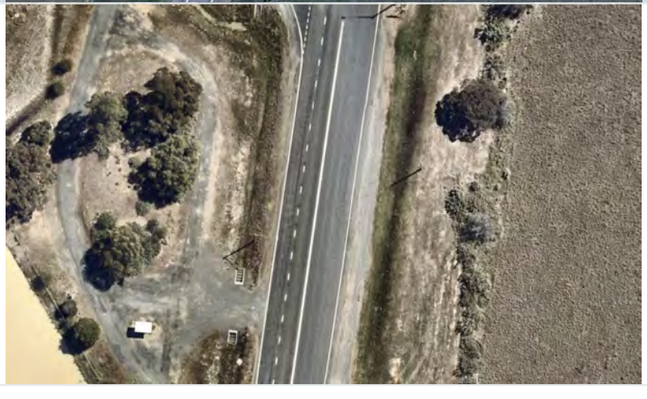
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
95	Cobb Highway (Mathoura)	Power Line	-35°48'48.4", 144°54'11.5"			not visible from dashcam but clearly visible on aerial (also see nearmap, below) 
98	Cobb Highway (Mathoura)	Power Line	-35°48'41.6", 144°54'7.0"			
100	Cobb Highway (Mathoura)	Power Line	-35°48'28.0", 144°53'58.1"			
101	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°48'17.8", 144°53'54.3"			

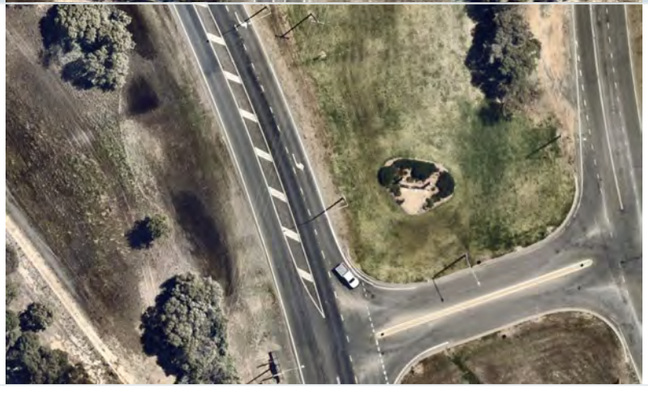
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
102	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°48'9.7", 144°53'55.4"			
104	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°48'4.6", 144°53'56.5"			
106	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°47'53.1", 144°53'58.7"			
108	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°47'32.7", 144°54'2.9"			

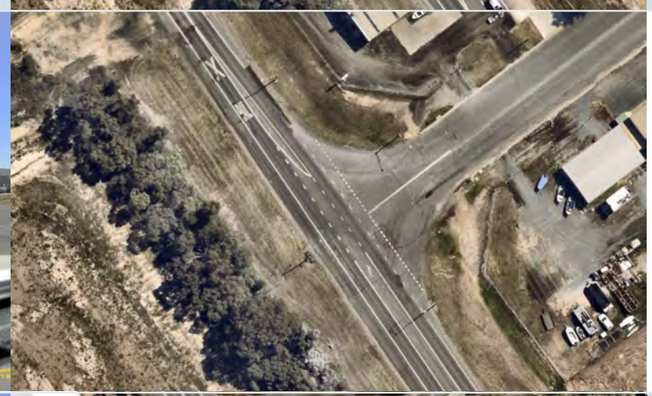
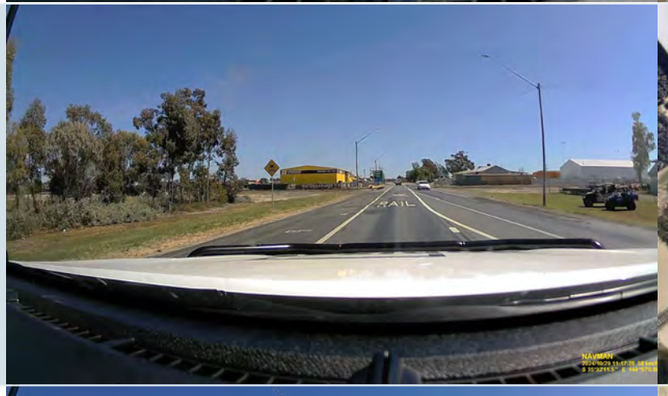
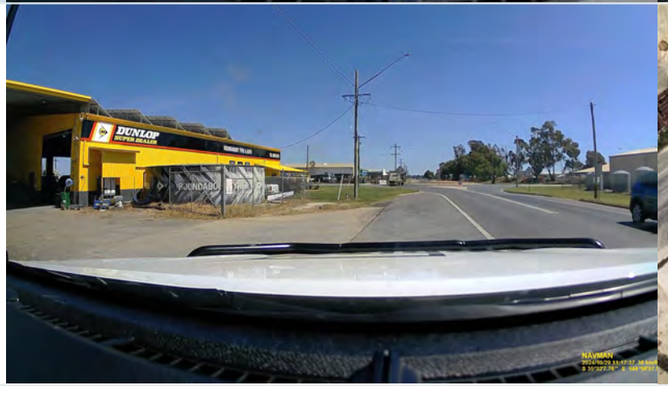
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
113	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°47'7.0", 144°54'7.6"			
134	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°45'7.2", 144°53'58.7"			also see streetview 
139	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°44'29.3", 144°53'50.3"			
148	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°43'26.5", 144°53'27.2"			

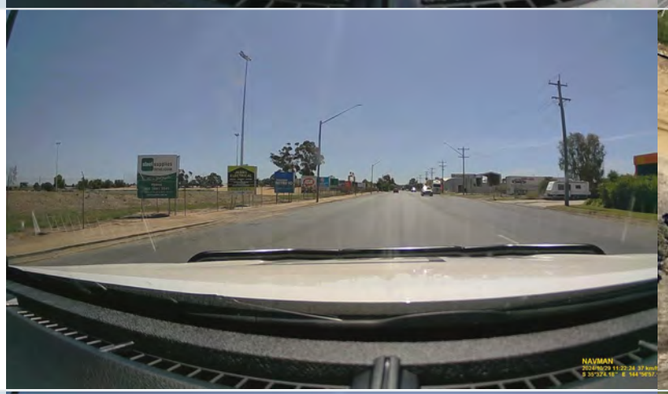
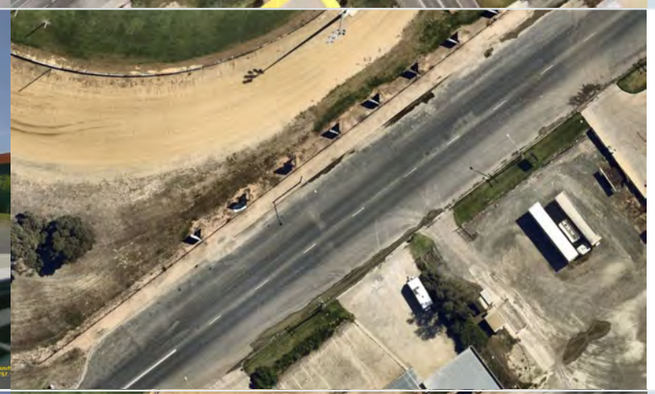
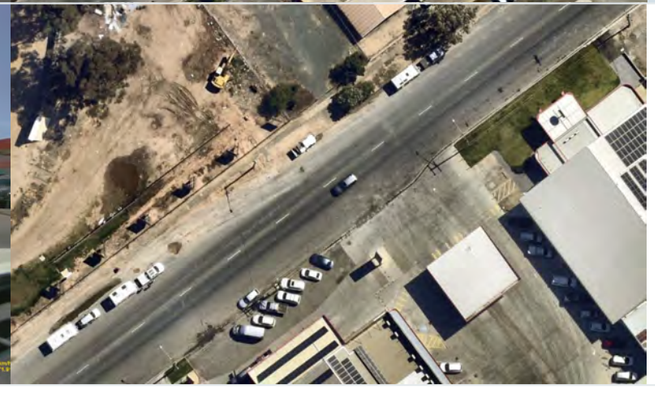
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
149	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°43'19.3", 144°53'26.6"			
159	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°41'18.7", 144°54'49.1"			
167	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°39'50.3", 144°54'38.0"			
171	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°39'16.2", 144°54'37.6"			

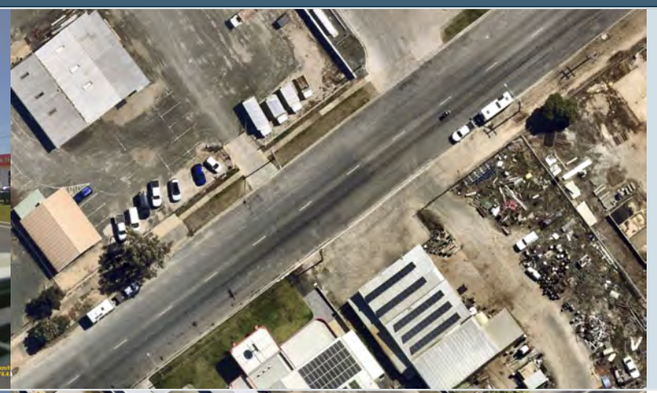
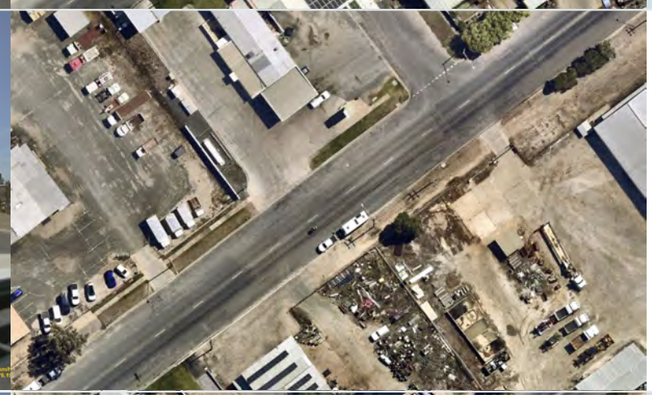
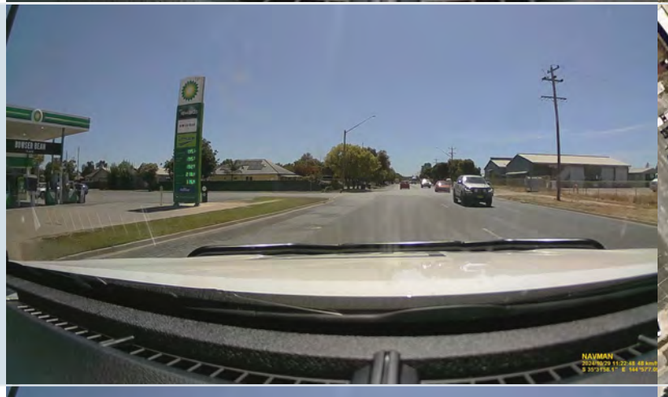
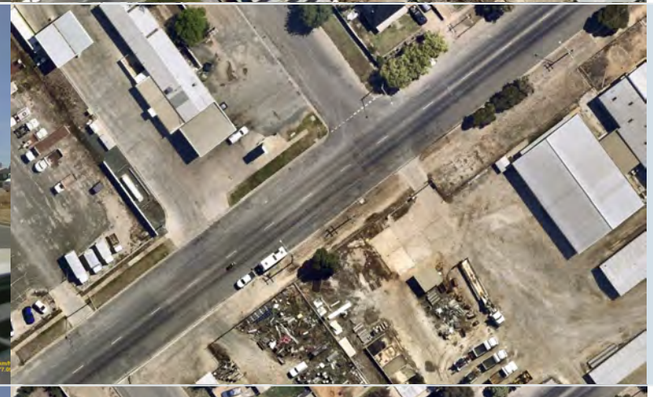
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
177	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°38'53.9", 144°54'34.4"			
178	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°38'41.4", 144°54'32.6"			
180	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°38'20.0", 144°54'29.3"			
183	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°37'53.4", 144°54'33.4"			

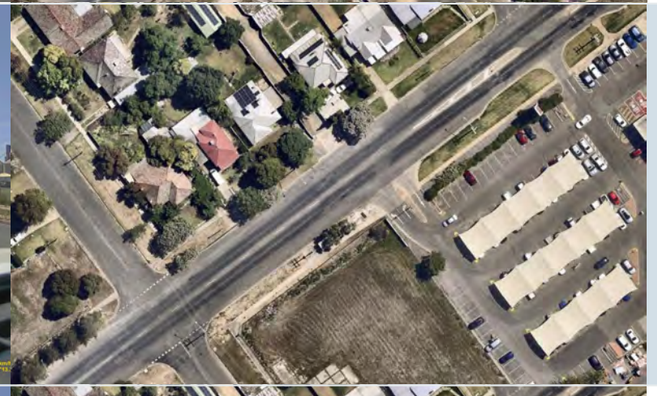
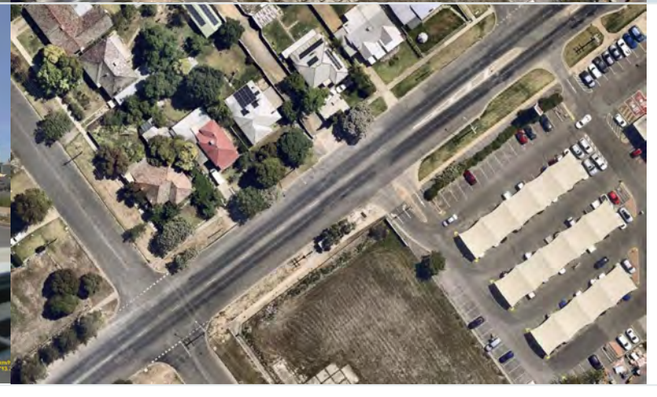
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
184	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°37'25.2", 144°54'44.5"			
186	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°36'58.5", 144°54'48.6"			
189	Cobb Highway (Mathoura - Deniliquin)	Power Line	-35°36'1.2", 144°55'33.6"			
193	Deniliquin	Power Line	-35°33'2.1", 144°57'27.5"			

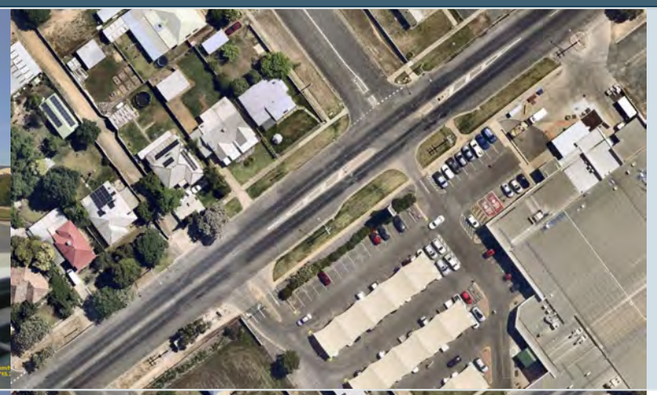
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
194	Deniliquin	Power Line	-35°33'0.9", 144°57'27.7"			
195	Deniliquin	Power Line	-35°32'59.6", 144°57'27.9"			
199	Deniliquin	Power Line	-35°32'50.8", 144°57'29.5"			
205	Deniliquin	Power Line	-35°32'45.2", 144°57'29.3"			

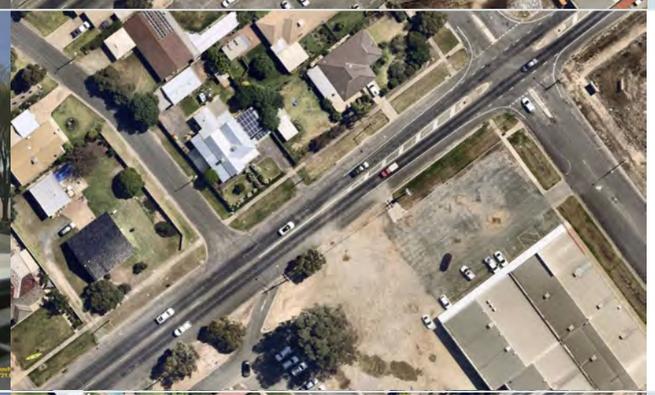
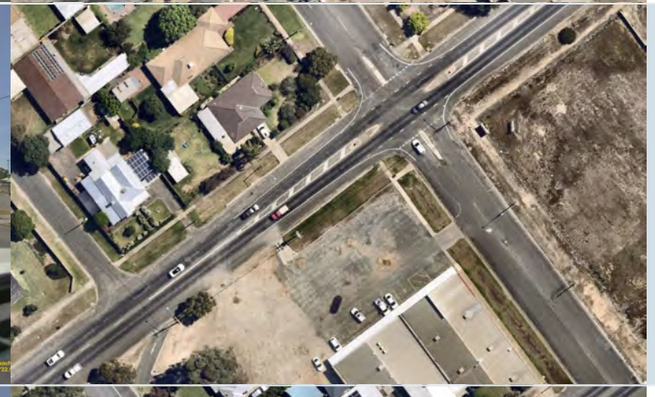
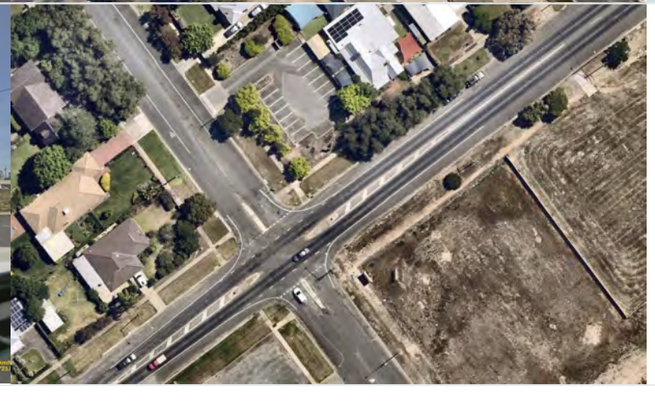
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
212	Deniliquin	Power Line	-35°32'14.5", 144°57'3.3"			
215	Deniliquin	Power Line	-35°32'12.8", 144°57'1.9"			
217	Deniliquin	Power Line	-35°32'11.5", 144°57'0.8"			
222	Deniliquin	Power Line	-35°32'7.8", 144°56'57.5"			

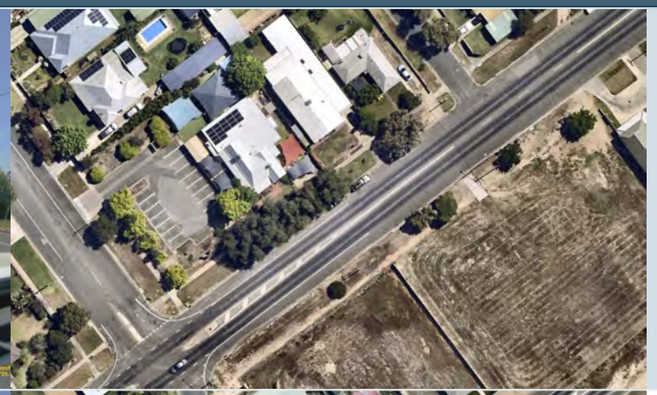
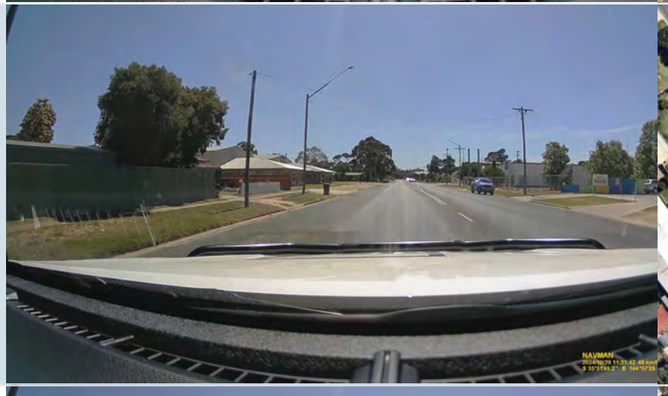
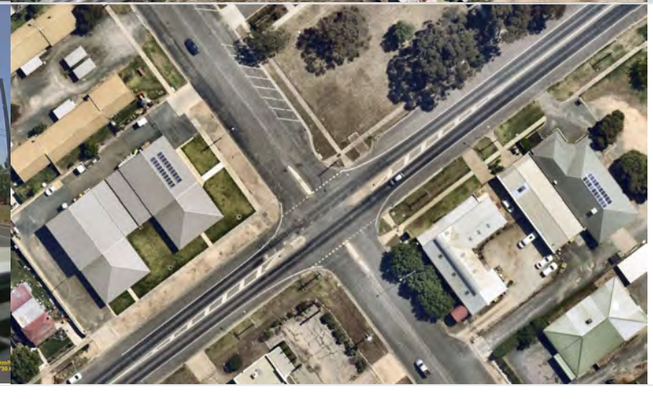
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
224	Deniliquin	Power Line	-35°32'6.7", 144°56'56.4"			
229	Deniliquin	Power Line	-35°32'4.4", 144°56'56.8"			
232	Deniliquin	Power Line	-35°32'2.5", 144°56'59.8"			
234	Deniliquin	Power Line	-35°32'1.5", 144°57'1.5"			

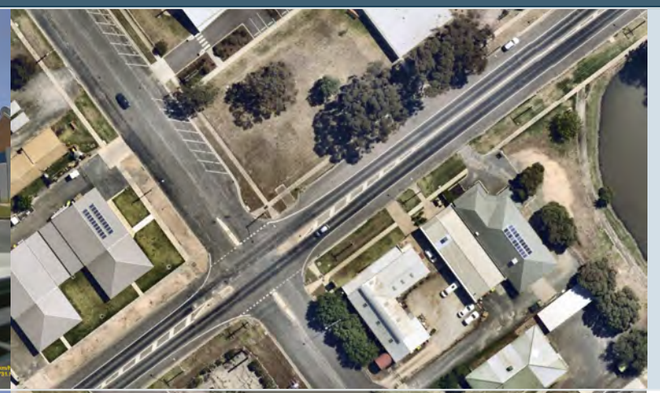
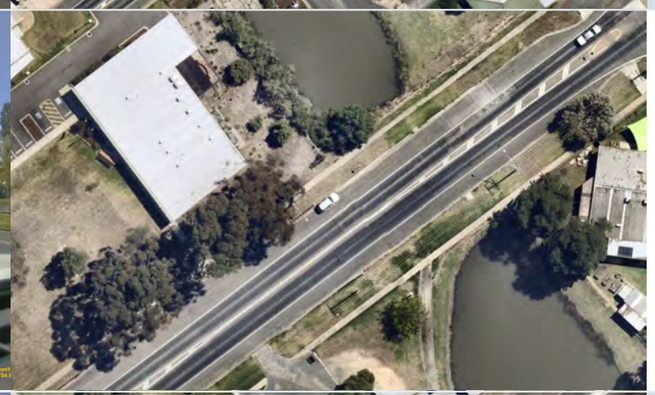
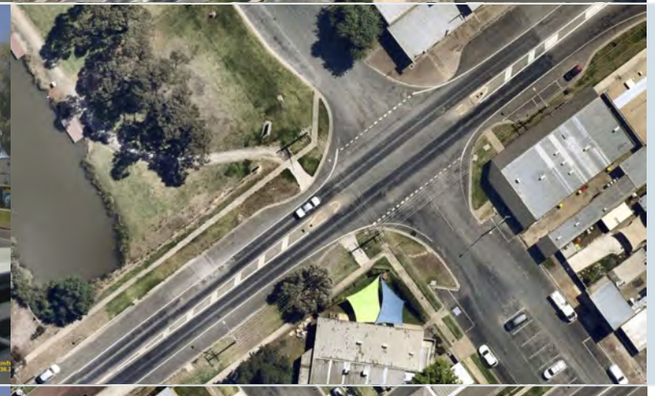
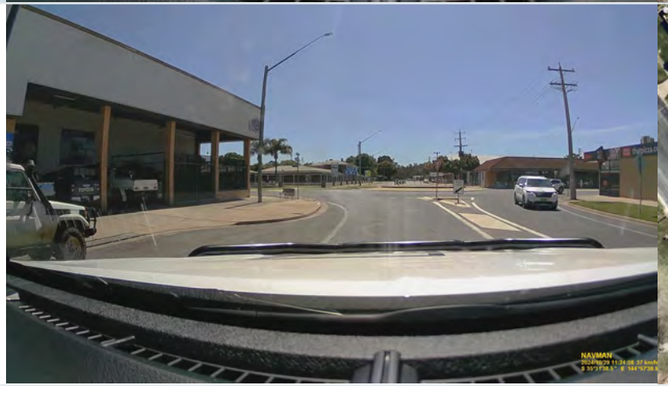
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
237	Deniliquin	Power Line	-35°31'59.7", 144°57'4.5"			
239	Deniliquin	Power Line	-35°31'58.9", 144°57'5.8"			
241	Deniliquin	Power Line	-35°31'58.1", 144°57'7.1"			
242	Deniliquin	Power Line	-35°31'58.1", 144°57'7.1"			

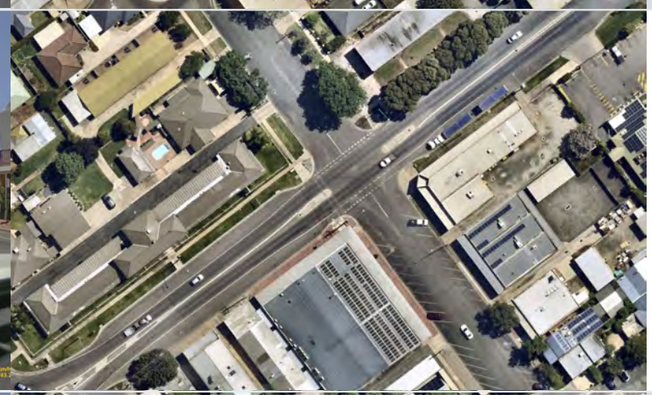
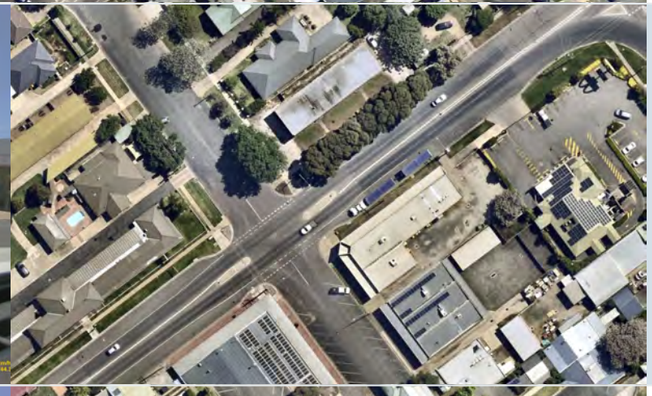
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
244	Deniliquin	Power Line	-35°31'57.0", 144°57'8.7"			
248	Deniliquin	Power Line	-35°31'55.0", 144°57'12.1"			
249	Deniliquin	Power Line	-35°31'54.5", 144°57'12.8"			
251	Deniliquin	Power Line	-35°31'54.0", 144°57'13.7"			

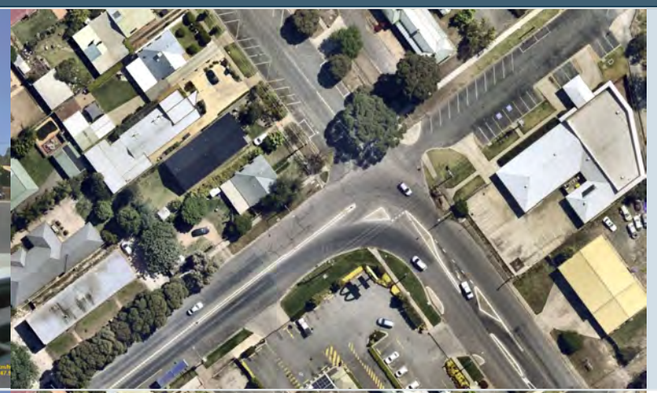
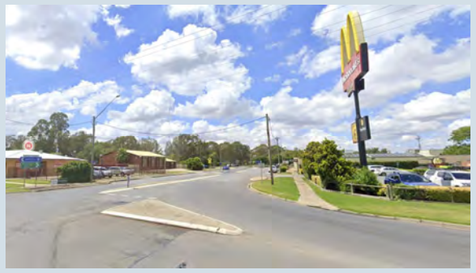
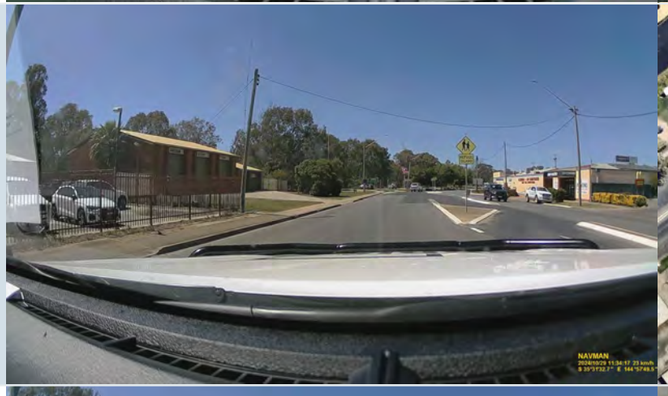
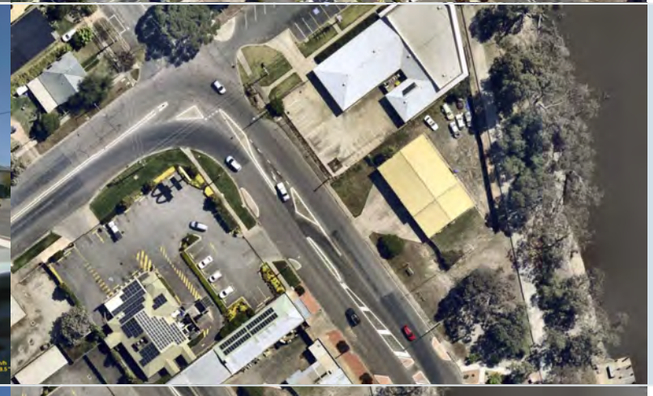
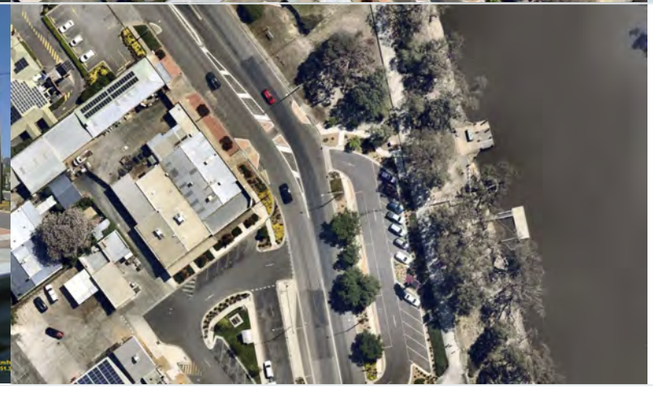
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
252	Deniliquin	Power Line	-35°31'53.1", 144°57'15.2"			
254	Deniliquin	Power Line	-35°31'52.2", 144°57'16.5"			
257	Deniliquin	Power Line	-35°31'51.3", 144°57'18.0"			
259	Deniliquin	Power Line	-35°31'50.6", 144°57'19.2"			

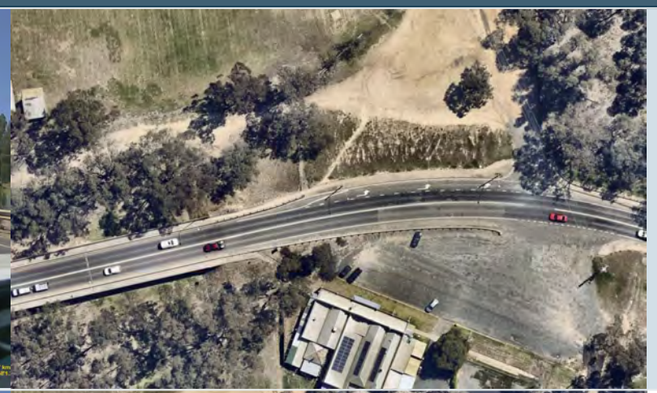
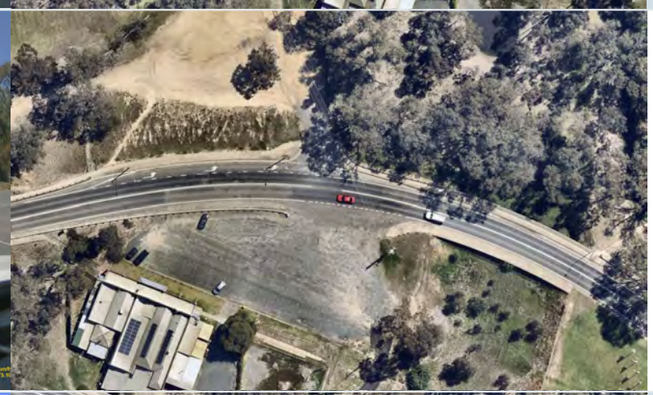
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
260	Deniliquin	Power Line	-35°31'49.6", 144°57'20.8"			
262	Deniliquin	Power Line	-35°31'49.4", 144°57'21.2"			
264	Deniliquin	Power Line	-35°31'48.8", 144°57'22.1"			
265	Deniliquin	Power Line	-35°31'47.8", 144°57'23.8"			

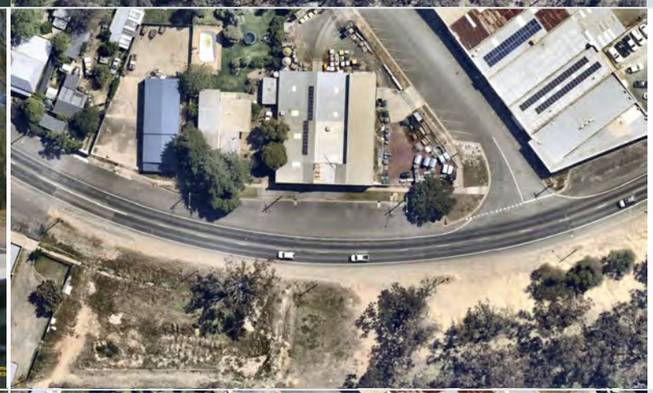
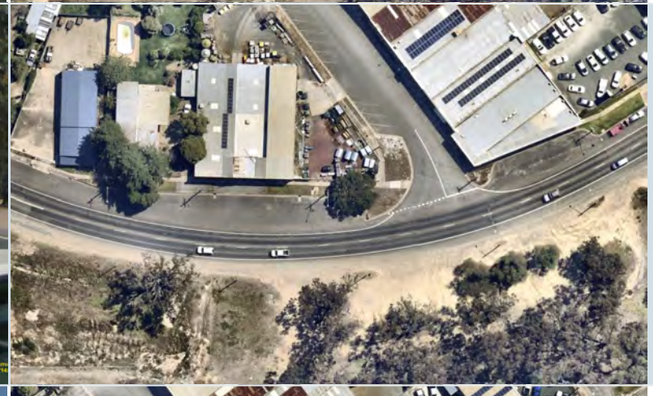
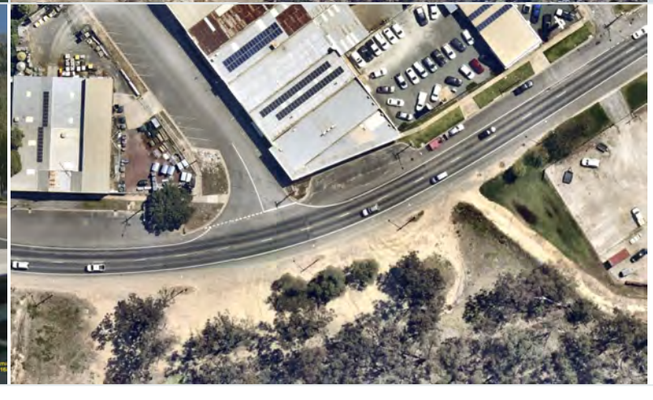
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
268	Deniliquin	Power Line	-35°31'46.7", 144°57'25.5"			
270	Deniliquin	Power Line	-35°31'46.0", 144°57'26.7"			
271	Deniliquin	Power Line	-35°31'45.2", 144°57'28.1"			
274	Deniliquin	Power Line	-35°31'43.9", 144°57'30.2"			

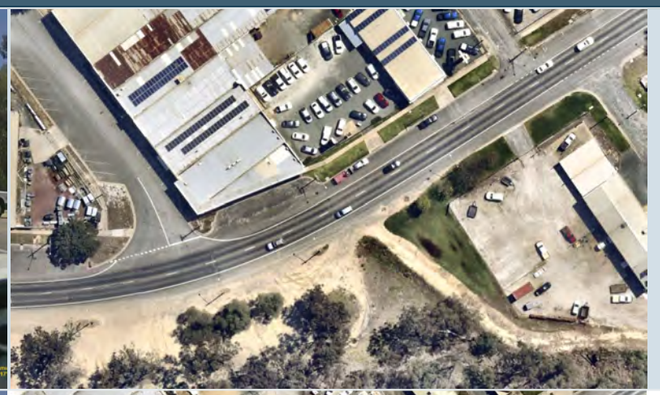
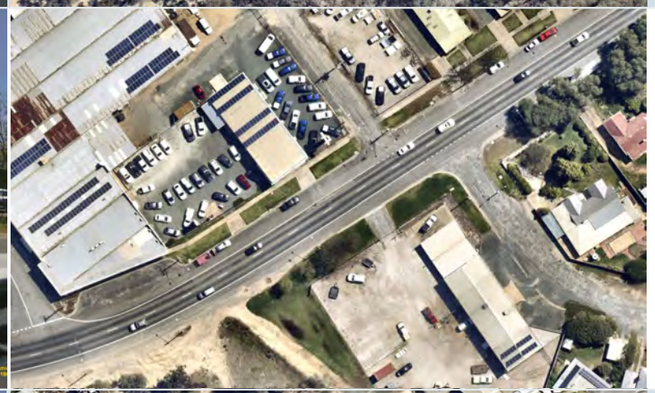
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
276	Deniliquin	Power Line	-35°31'43.1", 144°57'31.5"			
278	Deniliquin	Power Line	-35°31'41.5", 144°57'34.0"			
283	Deniliquin	Power Line	-35°31'40.2", 144°57'36.2"			
286	Deniliquin	Power Line	-35°31'38.5", 144°57'38.8"			

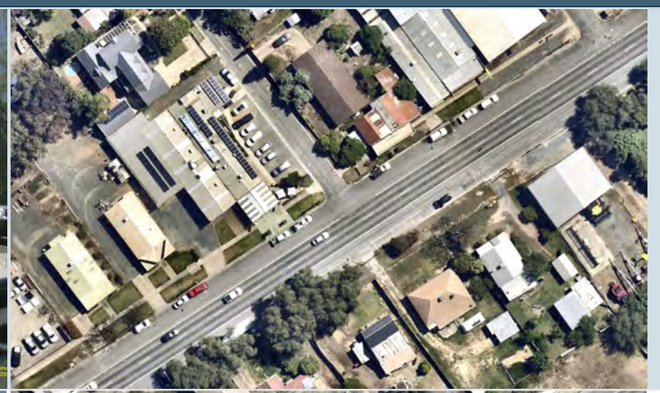
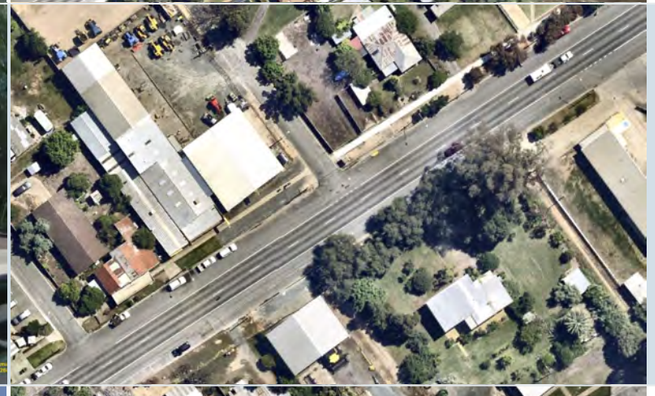
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
290	Deniliquin	Power Line	-35°31'36.4", 144°57'42.0"			
292	Deniliquin	Power Line	-35°31'35.8", 144°57'43.2"			
294	Deniliquin	Power Line	-35°31'35.1", 144°57'44.3"			
297	Deniliquin	Power Line	-35°31'33.6", 144°57'46.7"			

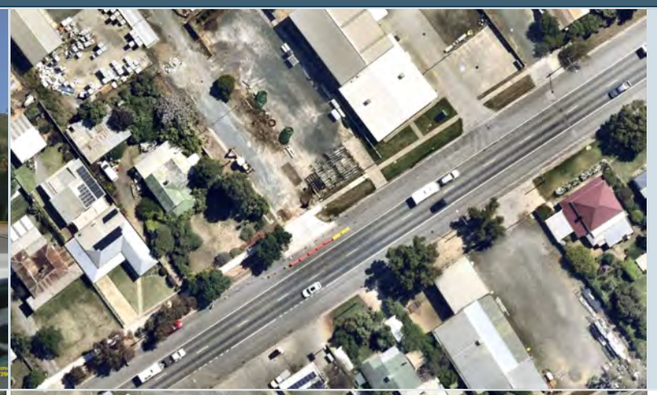
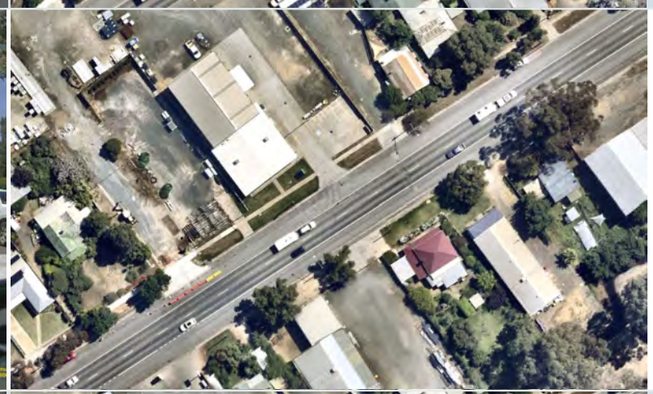
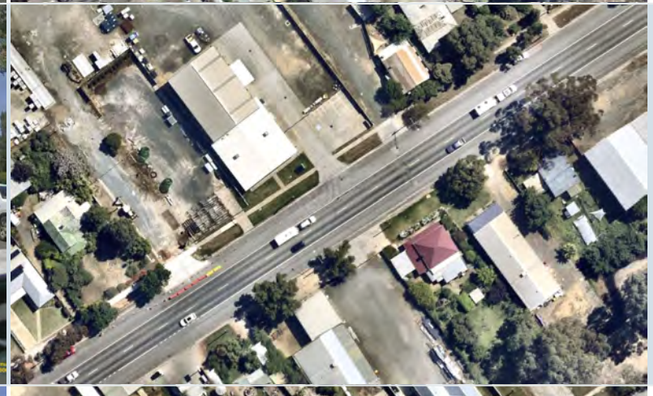
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
298	Deniliquin	Power Line	-35°31'32.4", 144°57'48.9"			298 - 300 are difficult to see on dashcam; refer streetview (below) 
299	Deniliquin	Power Line	-35°31'32.4", 144°57'48.9"			
301	Deniliquin	Power Line	-35°31'32.7", 144°57'49.5"			
304	Deniliquin	Power Line	-35°31'34.6", 144°57'51.3"			

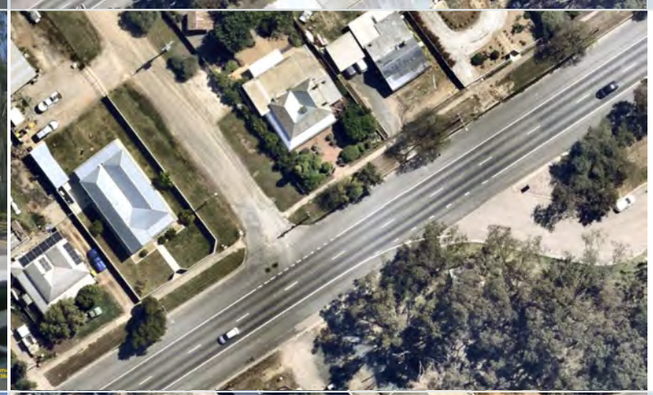
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
318	Deniliquin	Power Line	-35°31'37.9", 144°58'0.6"			
319	Deniliquin	Power Line	-35°31'37.6", 144°58'2.4"			
324	Deniliquin	Power Line	-35°31'38.4", 144°58'7.6"			
326	Deniliquin	Power Line	-35°31'39.9", 144°58'10.0"			

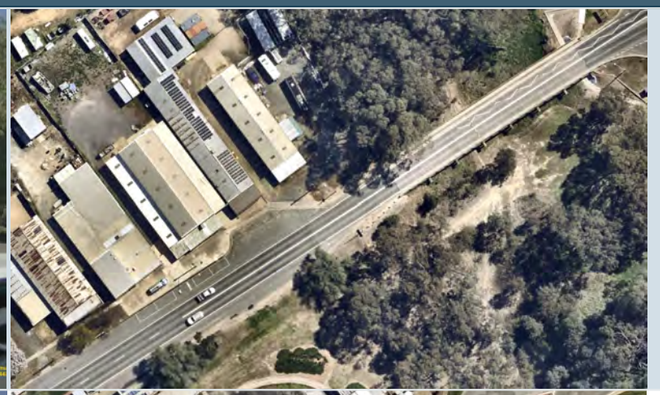
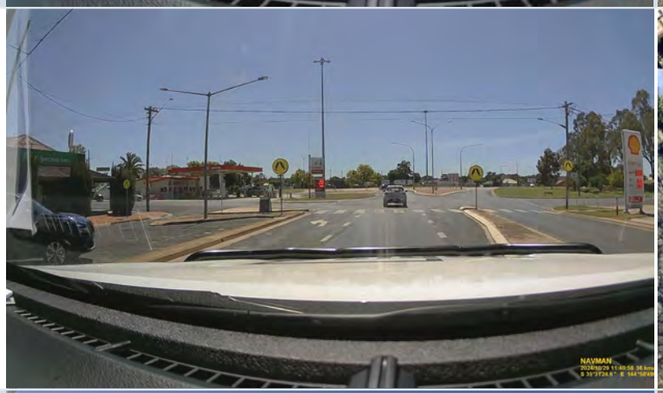
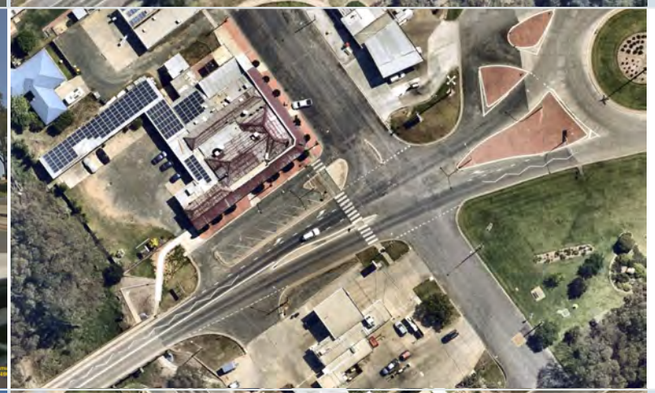
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
329	Deniliquin	Power Line	-35°31'40.5", 144°58'11.3"			
330	Deniliquin	Power Line	-35°31'41.0", 144°58'12.6"			
333	Deniliquin	Power Line	-35°31'41.2", 144°58'14.1"			
334	Deniliquin	Power Line	-35°31'41.3", 144°58'15.7"			

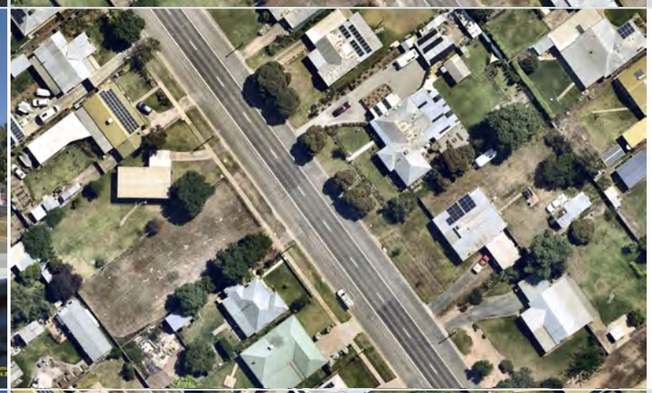
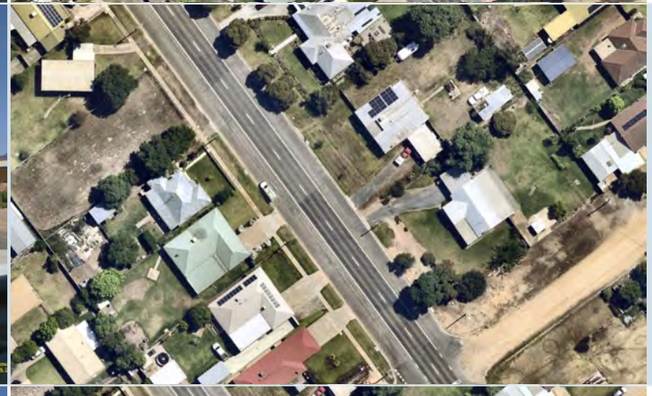
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
336	Deniliquin	Power Line	-35°31'41.1", 144°58'17.2"			
338	Deniliquin	Power Line	-35°31'40.6", 144°58'18.5"			
341	Deniliquin	Power Line	-35°31'40.1", 144°58'19.8"			
343	Deniliquin	Power Line	-35°31'39.4", 144°58'21.0"			

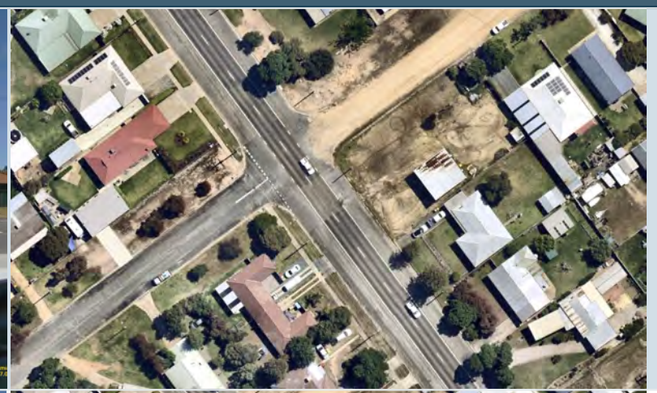
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
346	Deniliquin	Power Line	-35°31'38.3", 144°58'23.2"			
349	Deniliquin	Power Line	-35°31'37.6", 144°58'24.6"			
350	Deniliquin	Power Line	-35°31'36.8", 144°58'26.0"			
353	Deniliquin	Power Line	-35°31'35.7", 144°58'28.2"			

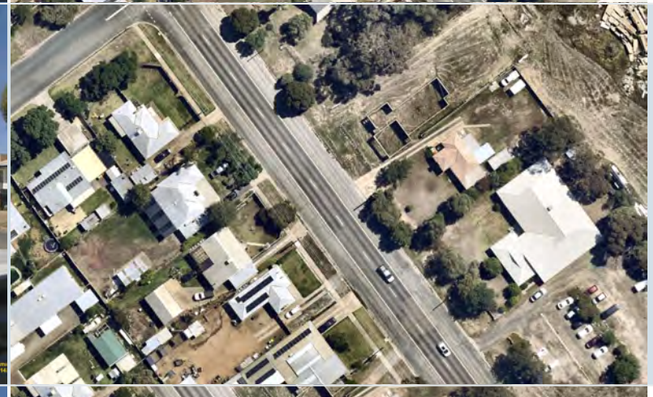
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
356	Deniliquin	Power Line	-35°31'34.9", 144°58'29.7"			
357	Deniliquin	Power Line	-35°31'34.2", 144°58'30.9"			
359	Deniliquin	Power Line	-35°31'34.2", 144°58'30.9"			
361	Deniliquin	Power Line	-35°31'32.9", 144°58'33.4"			

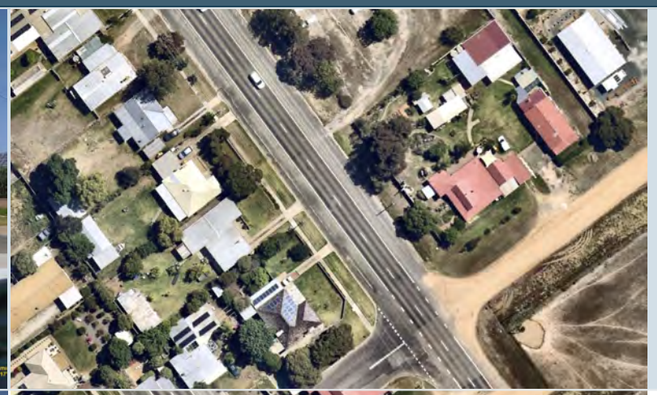
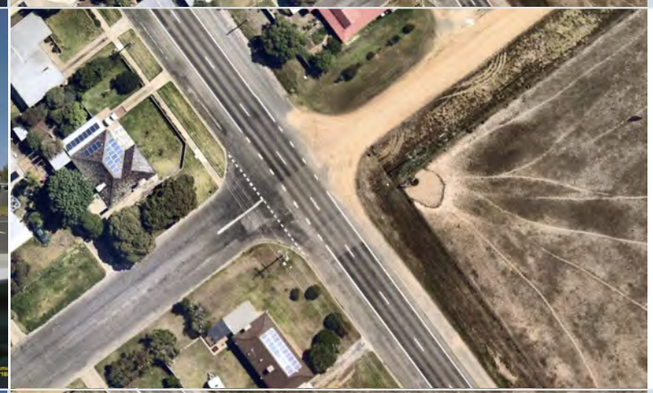
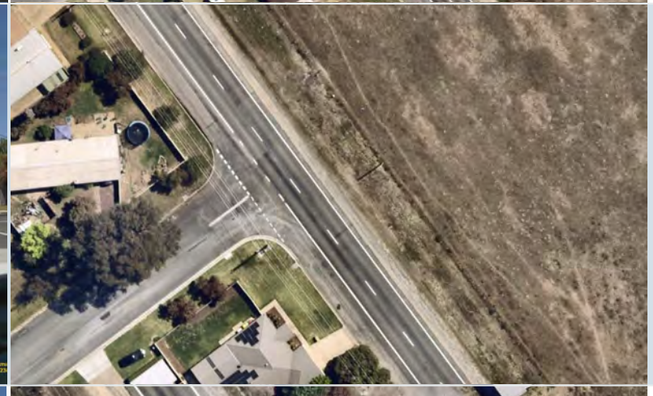
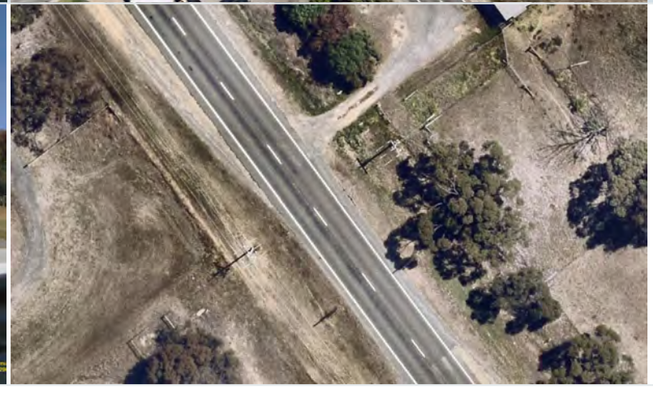
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
362	Deniliquin	Power Line	-35°31'32.2", 144°58'34.8"			
364	Deniliquin	Power Line	-35°31'31.5", 144°58'36.1"			
366	Deniliquin	Power Line	-35°31'30.3", 144°58'38.3"			
369	Deniliquin	Power Line	-35°31'28.8", 144°58'41.2"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
371	Deniliquin	Power Line	-35°31'27.1", 144°58'44.4"			
377	Deniliquin	Power Line	-35°31'24.6", 144°58'49.2"			
388	Deniliquin	Power Line	-35°31'28.2", 144°59'1.7"			
389	Deniliquin	Power Line	-35°31'28.5", 144°59'2.0"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
390	Deniliquin	Power Line	-35°31'30.2", 144°59'3.6"			
391	Deniliquin	Power Line	-35°31'31.6", 144°59'4.8"			
392	Deniliquin	Power Line	-35°31'32.6", 144°59'5.8"			
393	Deniliquin	Power Line	-35°31'33.7", 144°59'6.7"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
394	Deniliquin	Power Line	-35°31'34.0", 144°59'7.0"			
395	Deniliquin	Power Line	-35°31'35.4", 144°59'8.3"			
396	Deniliquin	Power Line	-35°31'36.8", 144°59'9.6"			
397	Deniliquin	Power Line	-35°31'38.9", 144°59'11.4"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
398	Deniliquin	Power Line	-35°31'39.6", 144°59'12.1"			
399	Deniliquin	Power Line	-35°31'40.6", 144°59'13.0"			
400	Deniliquin	Power Line	-35°31'42.0", 144°59'14.3"			
401	Deniliquin	Power Line	-35°31'43.1", 144°59'15.3"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
402	Deniliquin	Power Line	-35°31'45.1", 144°59'17.2"			
403	Deniliquin	Power Line	-35°31'46.2", 144°59'18.1"			
404	Deniliquin	Power Line	-35°31'52.0", 144°59'23.5"			
405	Riverine Highway (Deniliquin - Site)	Power Line	-35°31'58.5", 144°59'29.3"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
406	Riverine Highway (Deniliquin - Site)	Power Line	-35°32'9.9", 144°59'39.8"			
407	Riverine Highway (Deniliquin - Site)	Power Line	-35°32'17.6", 144°59'46.7"			
408	Riverine Highway (Deniliquin - Site)	Power Line	-35°32'21.7", 144°59'50.3"			
411	Riverine Highway (Deniliquin - Site)	Power Line	-35°32'34.4", 145°00'1.4"			

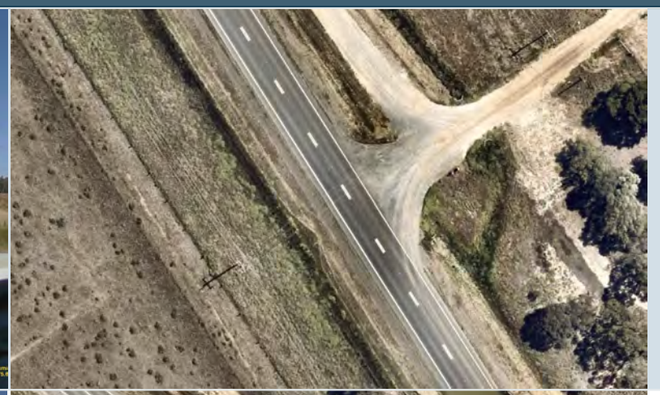
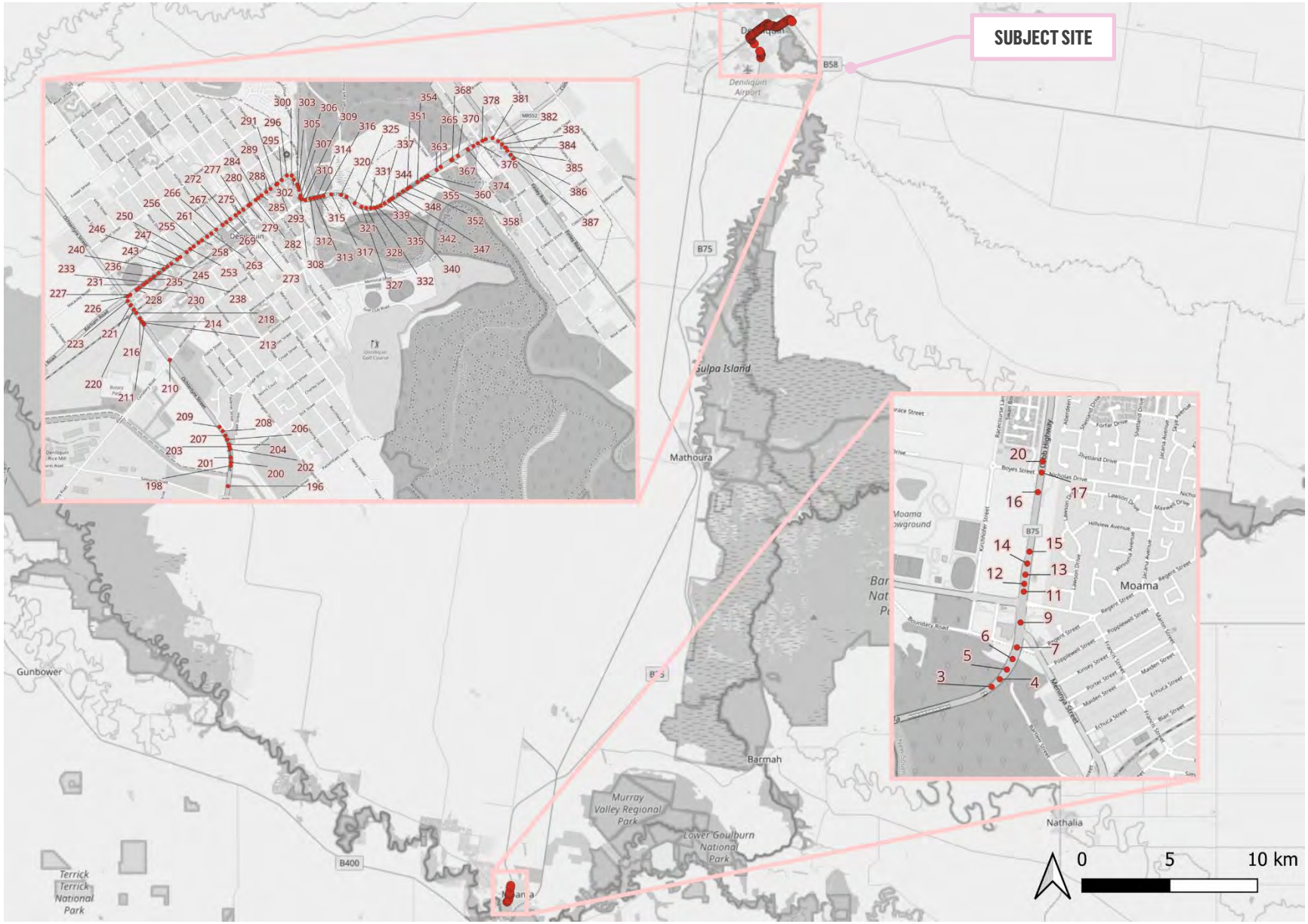
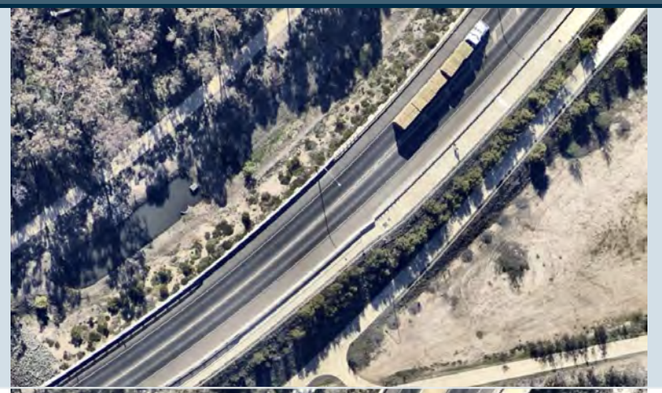
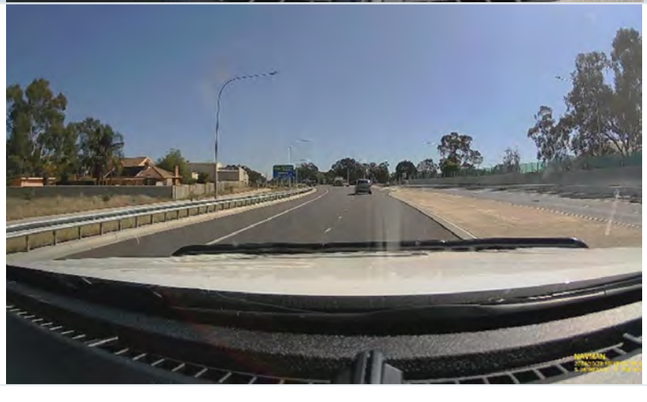
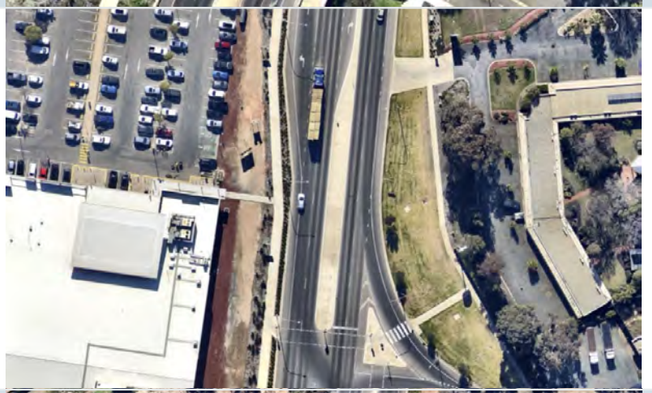
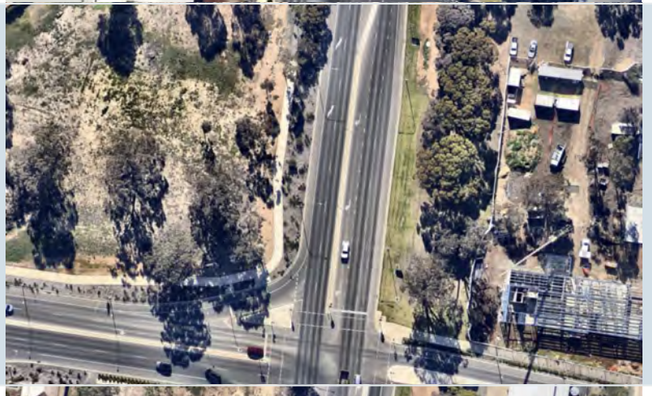
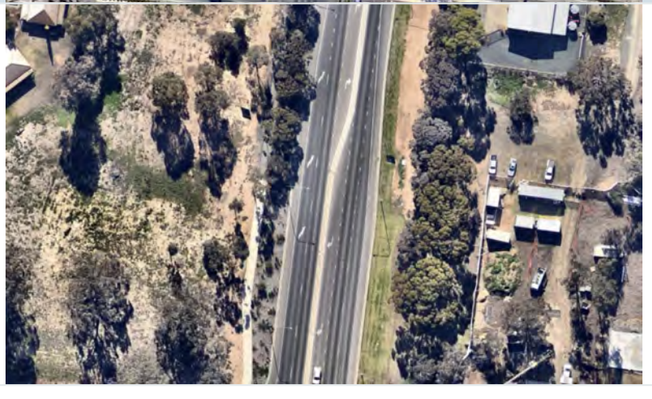
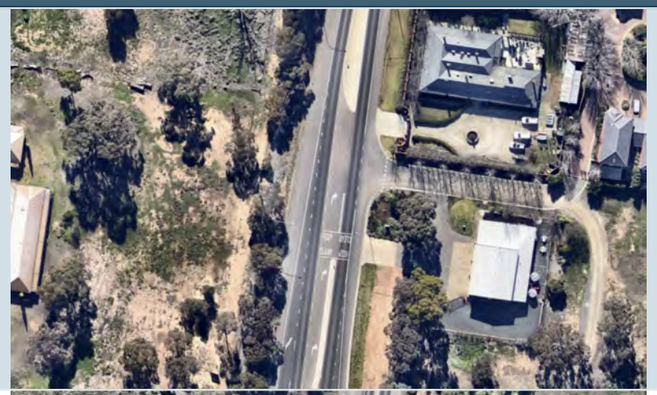
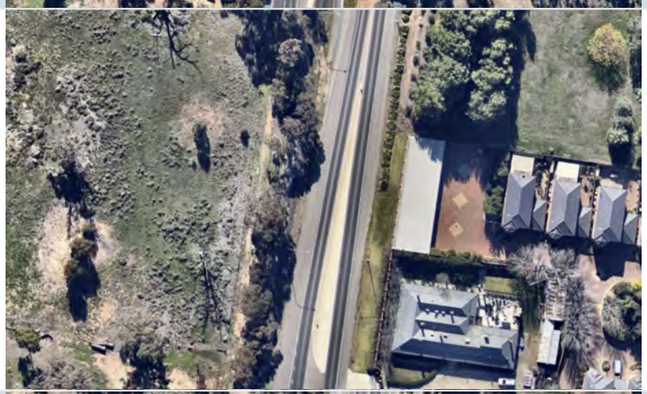
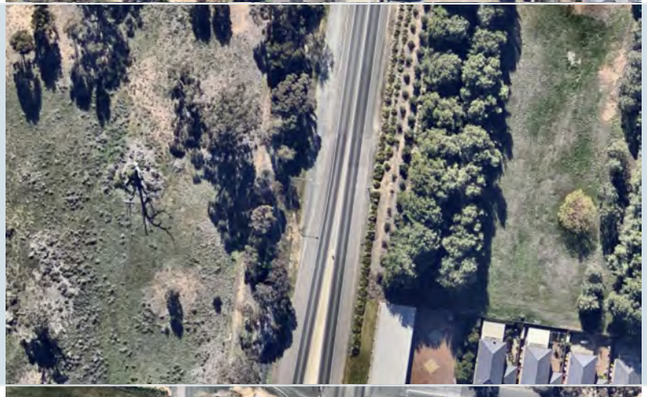
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
412	Riverine Highway (Deniliquin - Site)	Power Line	-35°32'40.5", 145°00'6.2"			
415	Riverine Highway (Deniliquin - Site)	Power Line	-35°33'1.9", 145°00'26.0"			
418	Riverine Highway (Deniliquin - Site)	Power Line	-35°33'10.8", 145°01'22.9"			

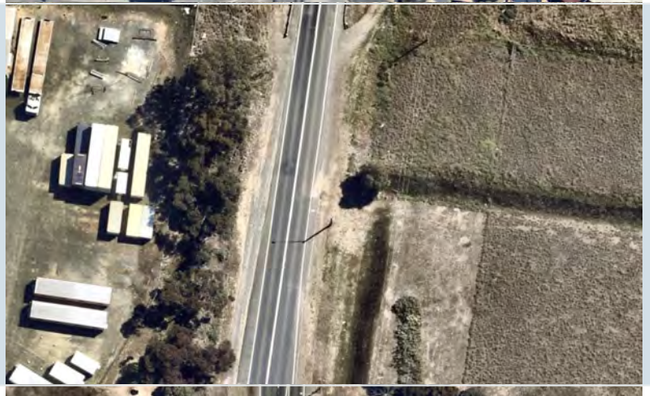
Figure 12 All Overhead Lights on Route



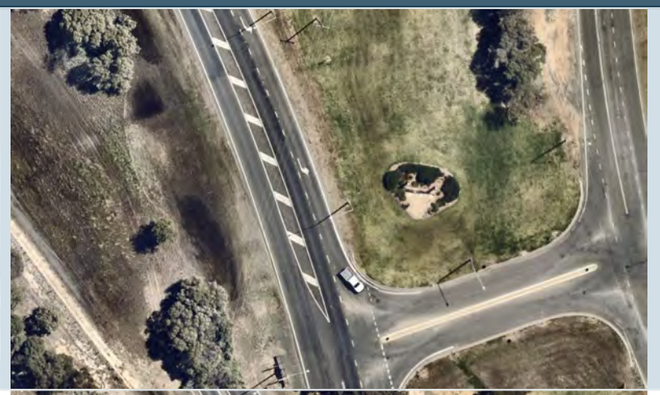
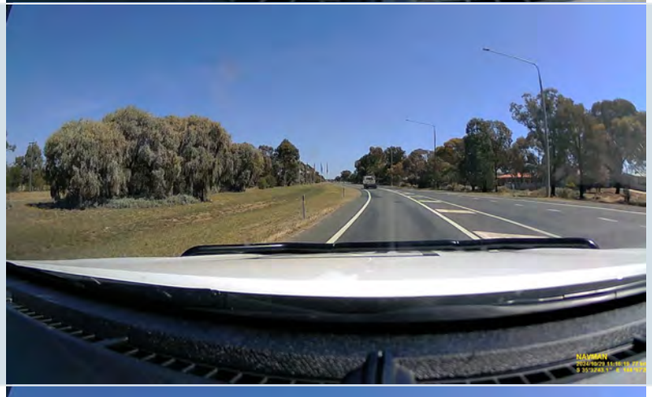
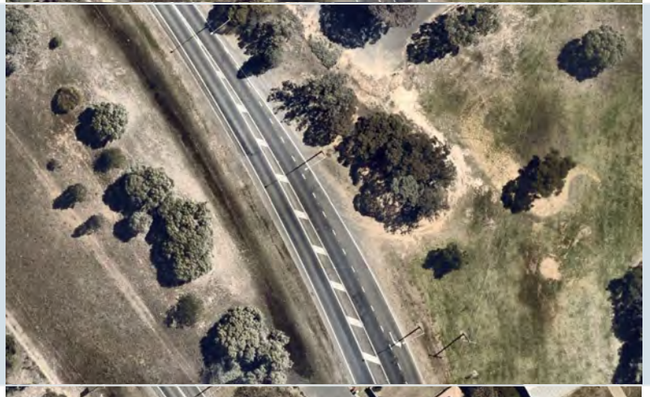
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
3	Cobb Highway, Moama	Overhead Lighting	-36°06'37.2", 144°44'59.8"			
4	Cobb Highway, Moama	Overhead Lighting	-36°06'36.0", 144°45'1.37"			
5	Cobb Highway, Moama	Overhead Lighting	-36°06'34.7", 144°45'2			
6	Cobb Highway, Moama	Overhead Lighting	-36°06'33.3", 144°45'3.76"			

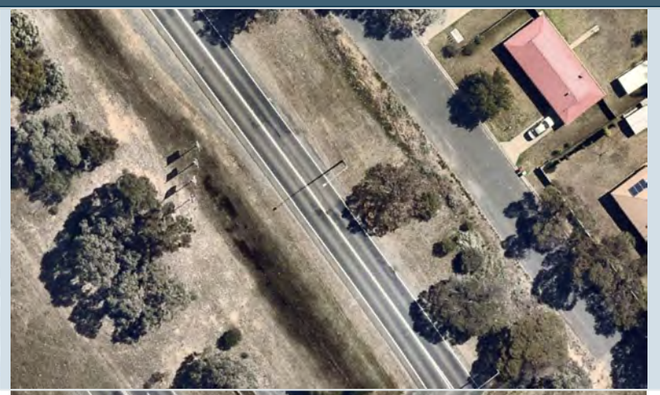
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
7	Cobb Highway, Moama	Overhead Lighting	-36°06'31.7", 144°45'4.7"			
9	Cobb Highway, Moama	Overhead Lighting	-36°06'27.1", 144°45'5.9"			
11	Cobb Highway, Moama	Overhead Lighting	-36°06'22.4", 144°45'6.5"			
12	Cobb Highway, Moama	Overhead Lighting	-36°06'20.6", 144°45'6.8"			

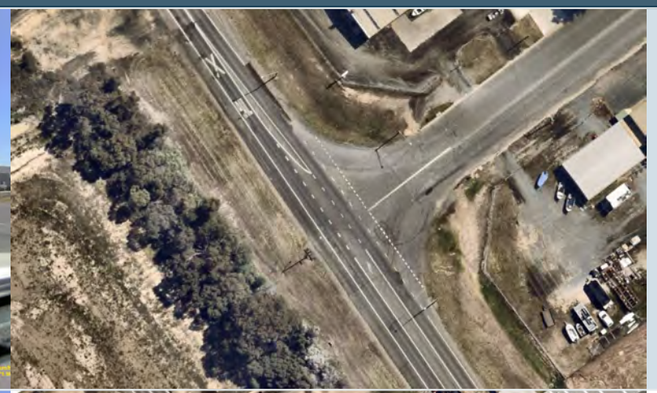
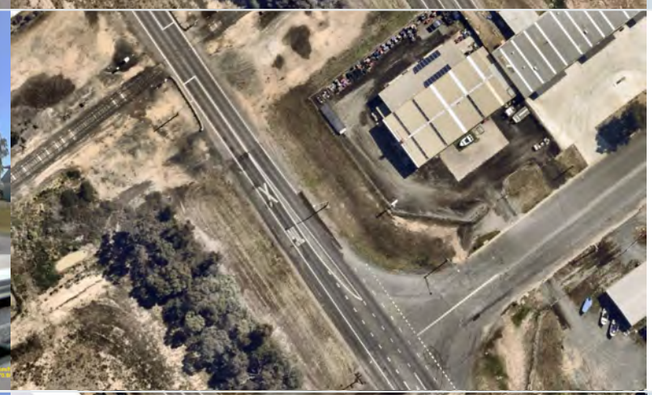
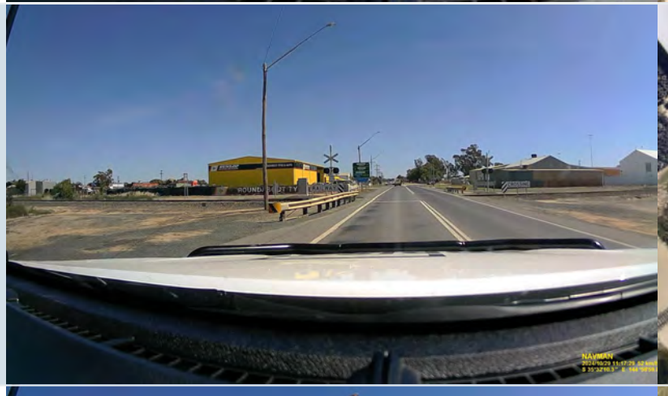
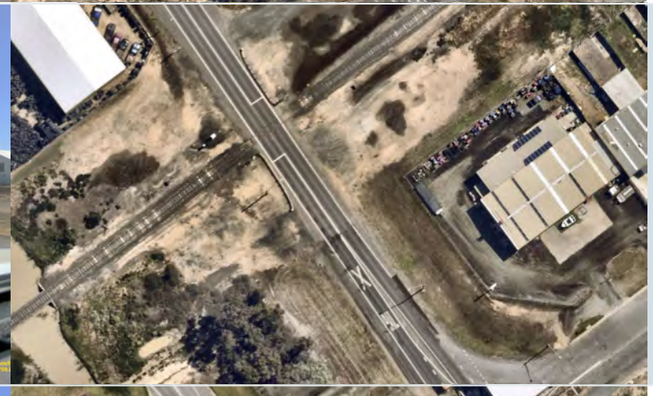
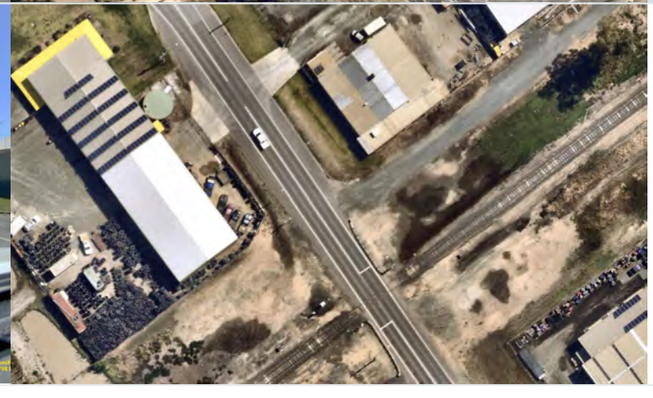
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
13	Cobb Highway, Moama	Overhead Lighting	-36°06'18.9", 144°45'7.0"			
14	Cobb Highway, Moama	Overhead Lighting	-36°06'17.0", 144°45'7.3"			
15	Cobb Highway, Moama	overhead Lighting	-36°06'14.5", 144°45'7.8"			
16	Cobb Highway, Moama	Overhead Lighting	-36°06'3.1", 144°45'9.9"			

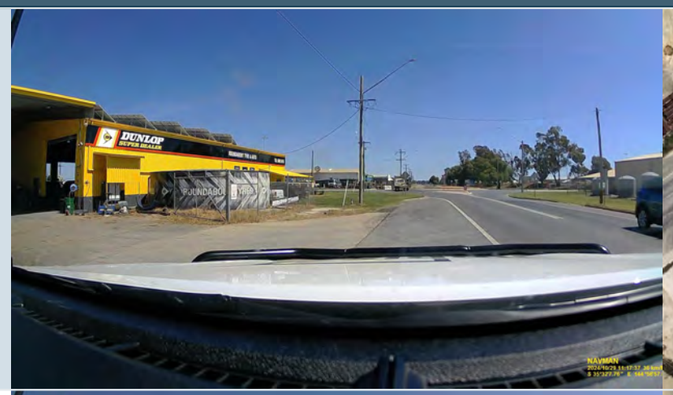
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
17	Cobb Highway, Moama	Overhead Lighting	-36°06'1.2", 144°45'10.3"			
20	Cobb Highway, Moama	Overhead Lighting	-36°05'59", 144°45'10.7"			
196	Deniliquin	Overhead Lighting	-35°32'56.3", 144°57'28.6"			
198	Deniliquin	Overhead Lighting	-35°32'51.5", 144°57'29.4"			

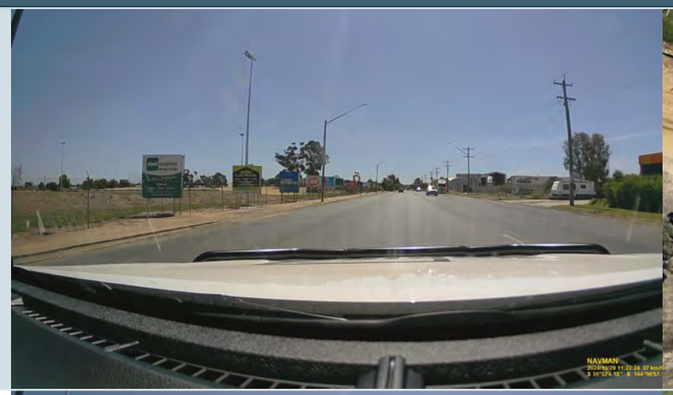
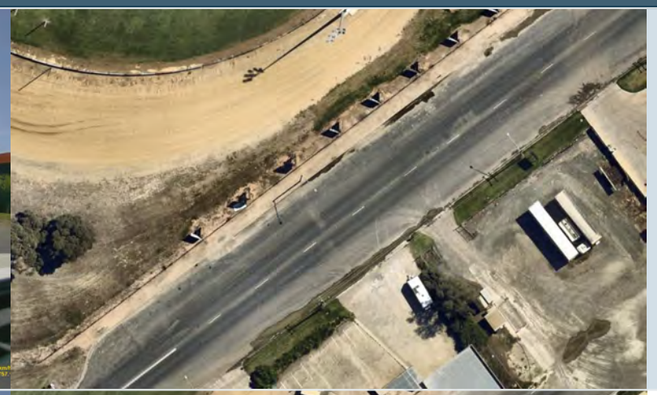
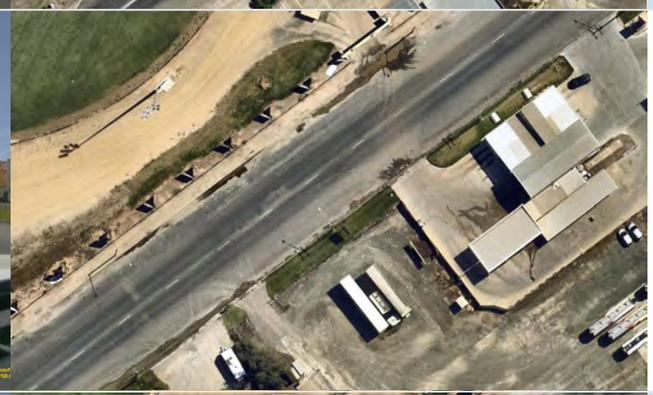
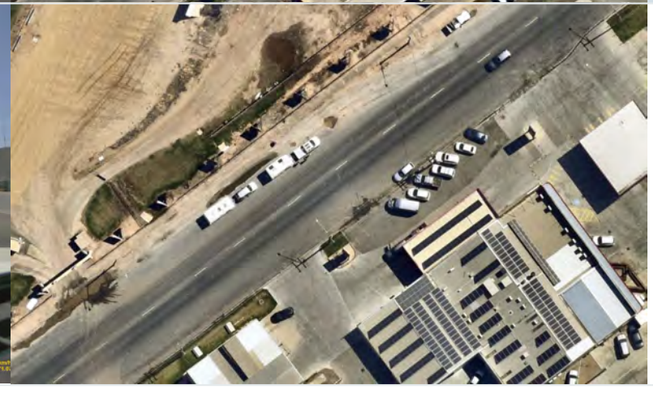
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
200	Deniliquin	Overhead Lighting	-35°32'50.8", 144°57'29.5"			
201	Deniliquin	Overhead Lighting	-35°32'48.7", 144°57'29.7"			
202	Deniliquin	Overhead Lighting	-35°32'47.3", 144°57'29.7"			
203	Deniliquin	Overhead Lighting	-35°32'45.8", 144°57'29.5"			

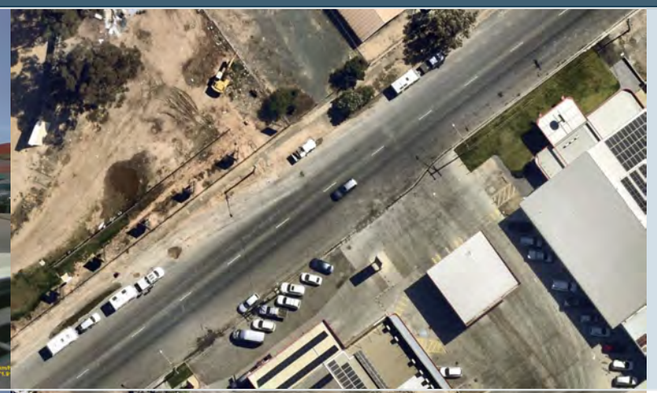
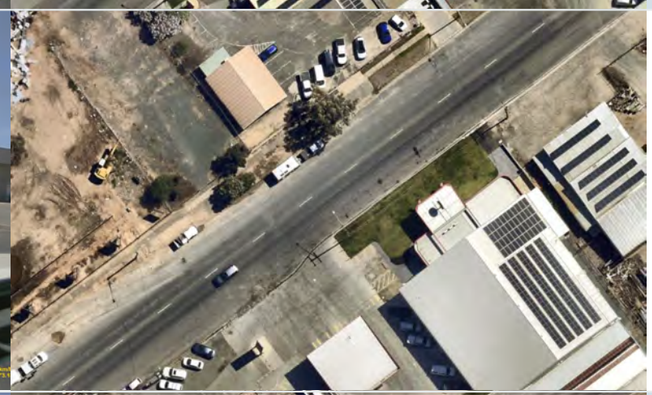
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
204	Deniliquin	Overhead Lighting	-35°32'45.2", 144°57'29.3"			
206	Deniliquin	Overhead Lighting	-35°32'43.8", 144°57'28.9"			
207	Deniliquin	Overhead Lighting	-35°32'42.5", 144°57'28.2"			
208	Deniliquin	Overhead Lighting	-35°32'41.5", 144°57'27.9"			

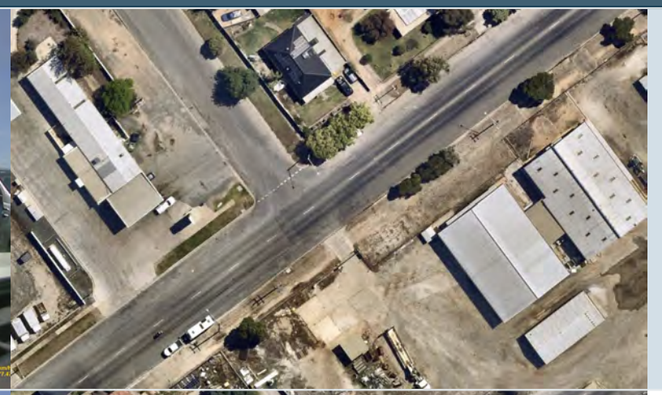
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
209	Deniliquin	Overhead Lighting	-35°32'40.7", 144°57'27.1"			
210	Deniliquin	Overhead Lighting	-35°32'23.0", 144°57'11.0"			
211	Deniliquin	Overhead Lighting	-35°32'14.5", 144°57'3.3"			
213	Deniliquin	Overhead Lighting	-35°32'13.2", 144°57'2.2"			

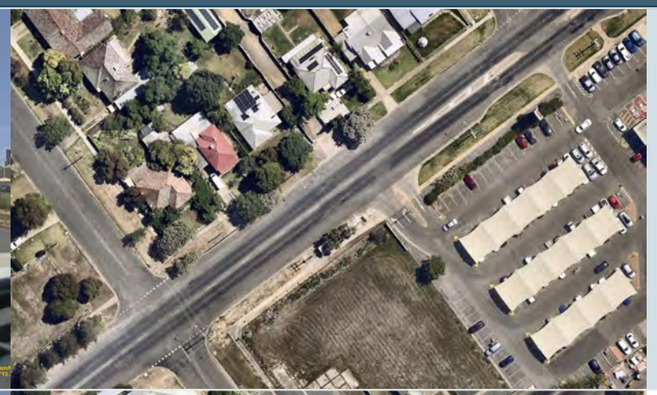
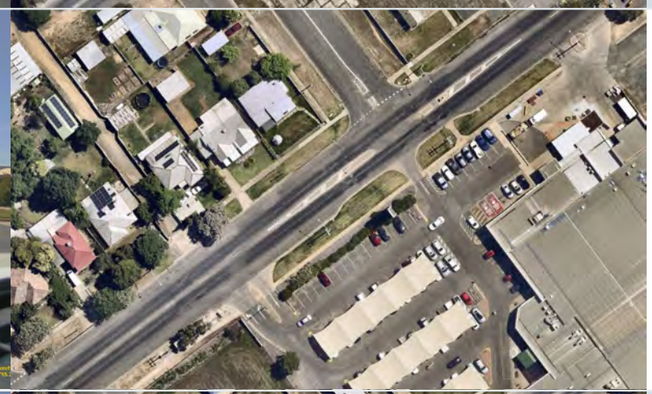
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
214	Deniliquin	Overhead Lighting	-35°32'12.8", 144°57'1.9"			
216	Deniliquin	Overhead Lighting	-35°32'11.5", 144°57'0.8"			
218	Deniliquin	Overhead Lighting	-35°32'10.3", 144°56'59.8"			
220	Deniliquin	Overhead Lighting	-35°32'8.9", 144°56'58.6"			

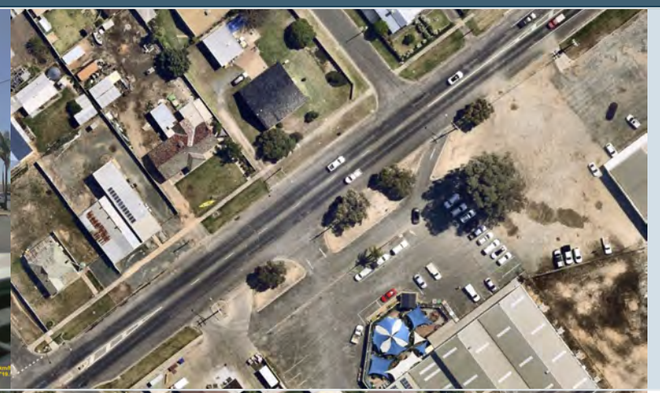
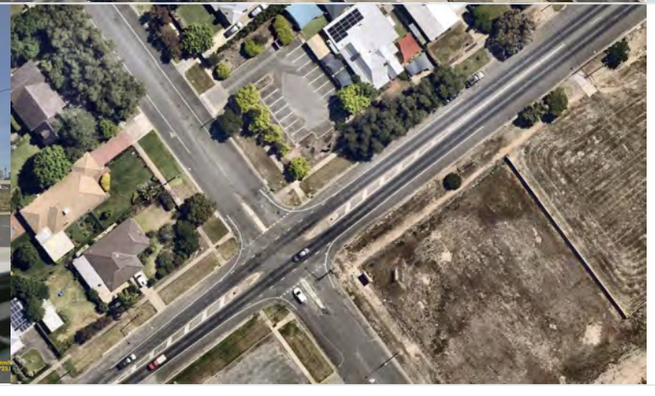
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
221	Deniliquin	Overhead Lighting	-35°32'7.8", 144°56'57.5"			
223	Deniliquin	Overhead Lighting	-35°32'6.7", 144°56'56.4"			
226	Deniliquin	Overhead Lighting	-35°32'4.5", 144°56'55.0"			
227	Deniliquin	Overhead Lighting	-35°32'4.8", 144°56'55.8"			

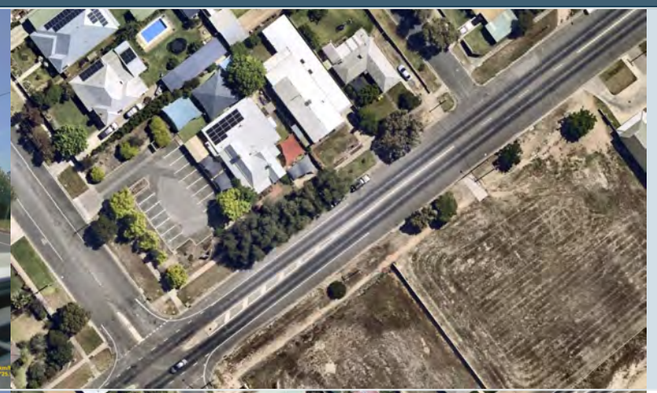
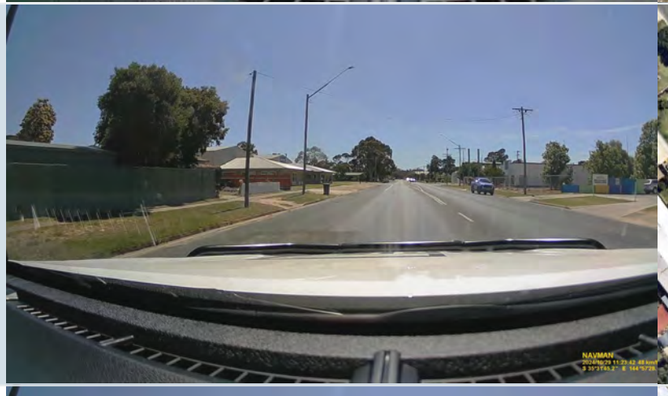
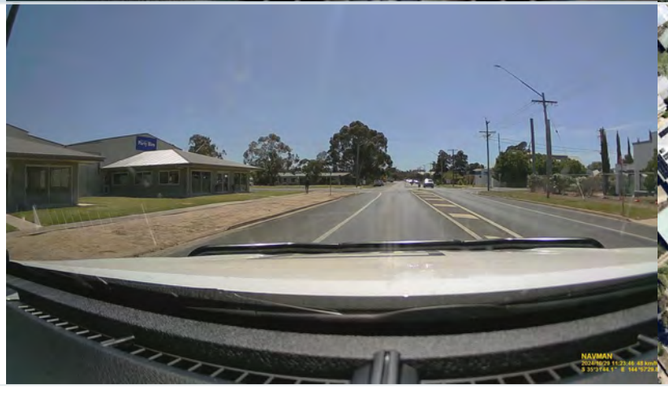
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
228	Deniliquin	Overhead Lighting	-35°32'4.4", 144°56'56.8"			
230	Deniliquin	Overhead Lighting	-35°32'3.3", 144°56'58.6"			
231	Deniliquin	Overhead Lighting	-35°32'2.5", 144°56'59.8"			
233	Deniliquin	Overhead Lighting	-35°32'2.0", 144°57'0.6"			

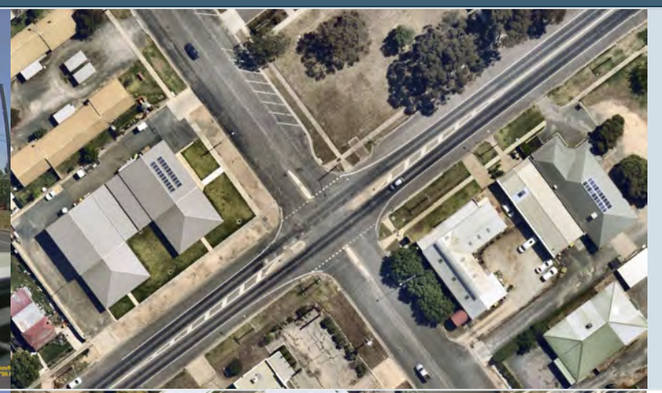
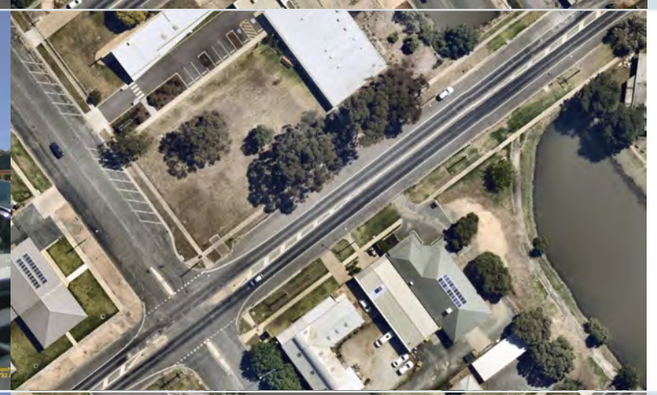
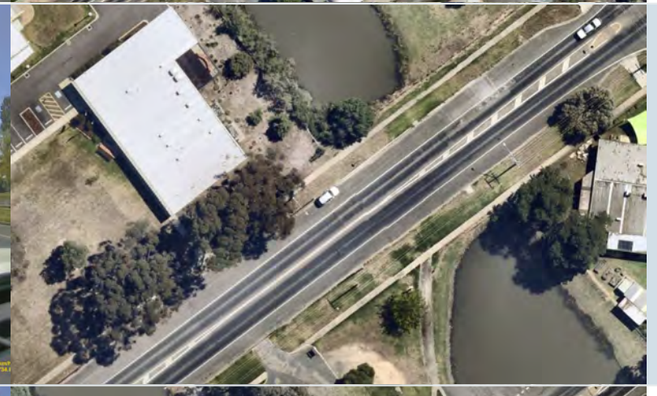
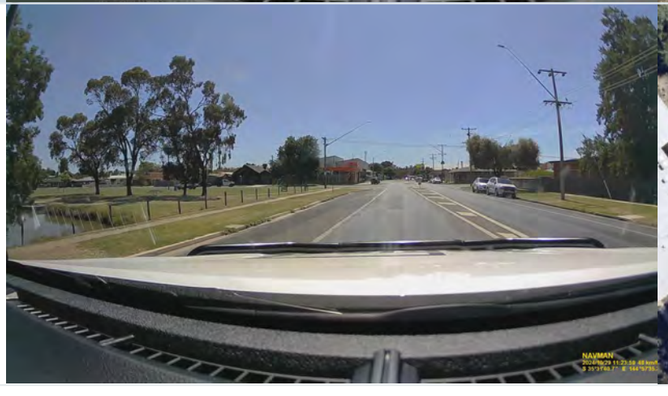
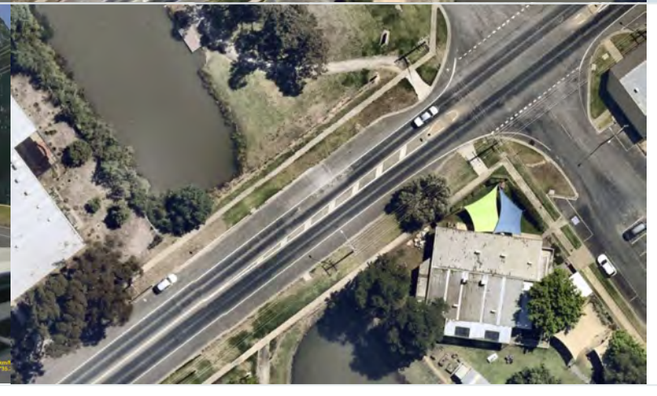
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
235	Deniliquin	Overhead Lighting	-35°32'1.5", 144°57'1.5"			
236	Deniliquin	Overhead Lighting	-35°32'0.4", 144°57'3.2"			
238	Deniliquin	Overhead Lighting	-35°31'59.7", 144°57'4.5"			
240	Deniliquin	Overhead Lighting	-35°31'58.9", 144°57'5.8"			

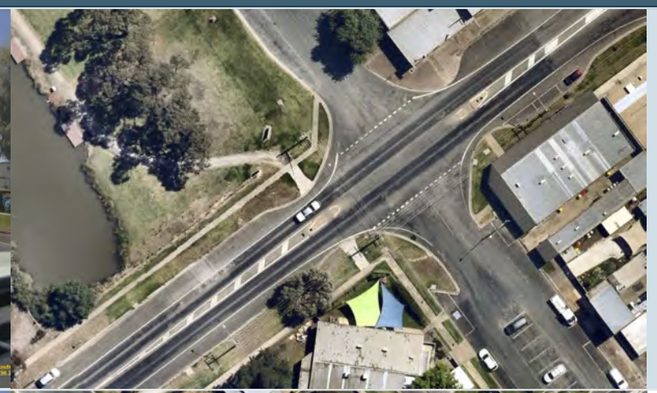
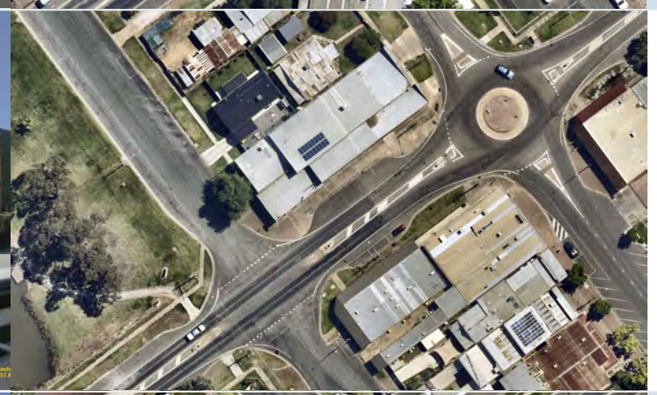
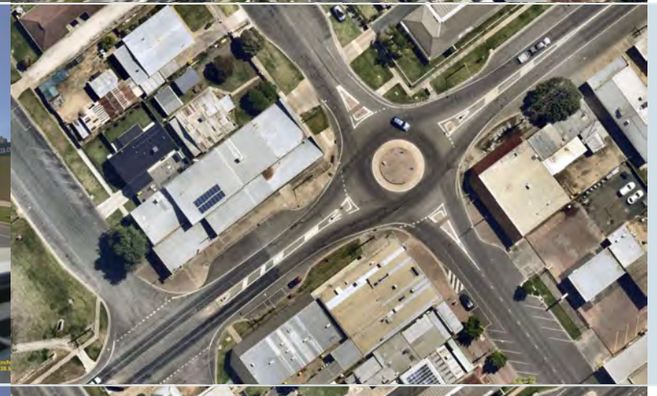
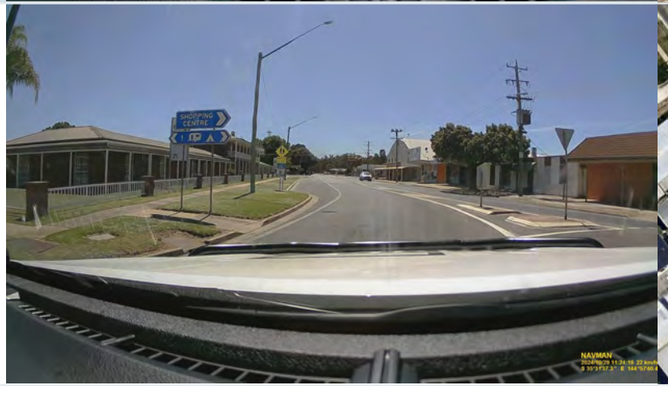
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
243	Deniliquin	Overhead Lighting	-35°31'58.1", 144°57'7.1"			
245	Deniliquin	Overhead Lighting	-35°31'57.0", 144°57'8.7"			
246	Deniliquin	Overhead Lighting	-35°31'56.0", 144°57'10.4"			
247	Deniliquin	Overhead Lighting	-35°31'55.0", 144°57'12.1"			

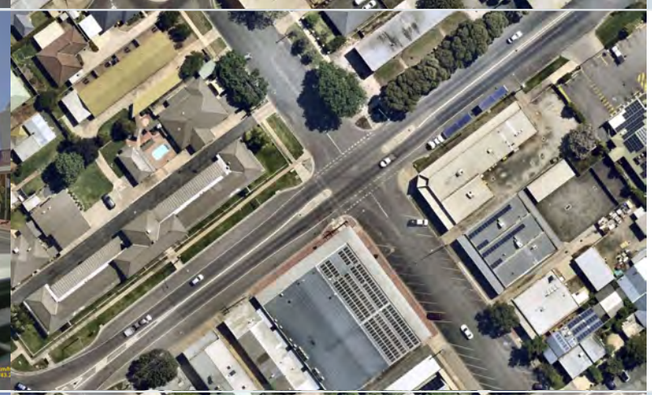
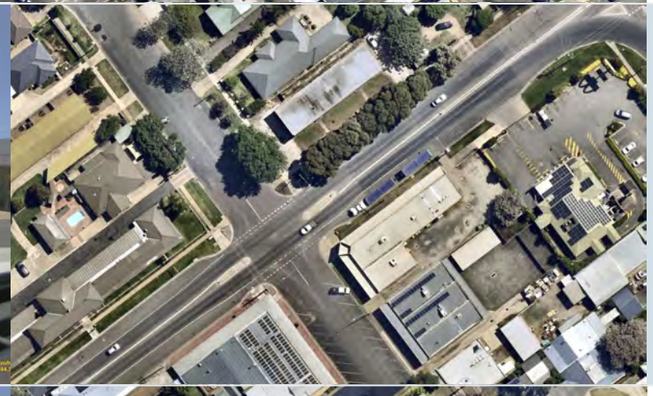
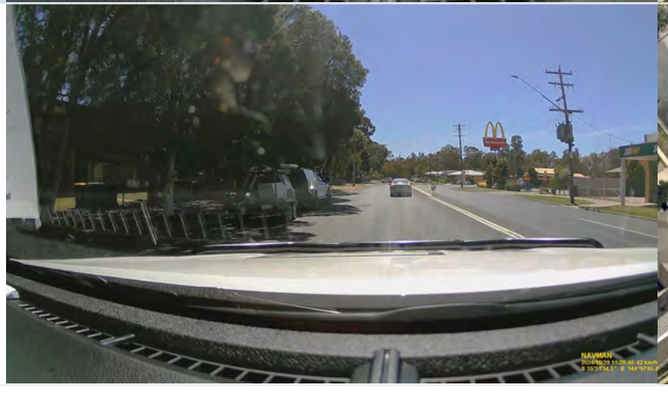
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
250	Deniliquin	Overhead Lighting	-35°31'54.5", 144°57'12.8"			
253	Deniliquin	Overhead Lighting	-35°31'53.1", 144°57'15.2"			
255	Deniliquin	Overhead Lighting	-35°31'52.2", 144°57'16.5"			
256	Deniliquin	Overhead Lighting	-35°31'51.3", 144°57'18.0"			

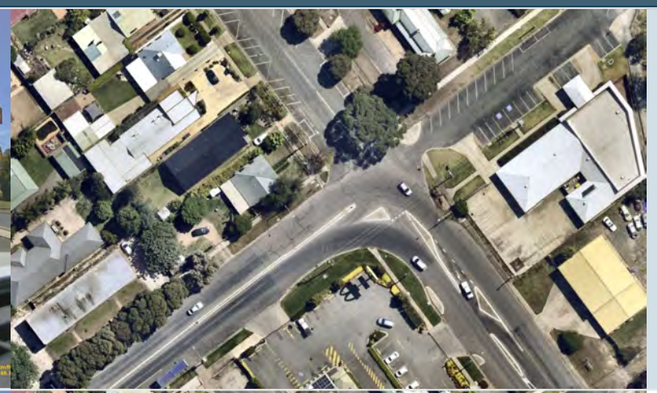
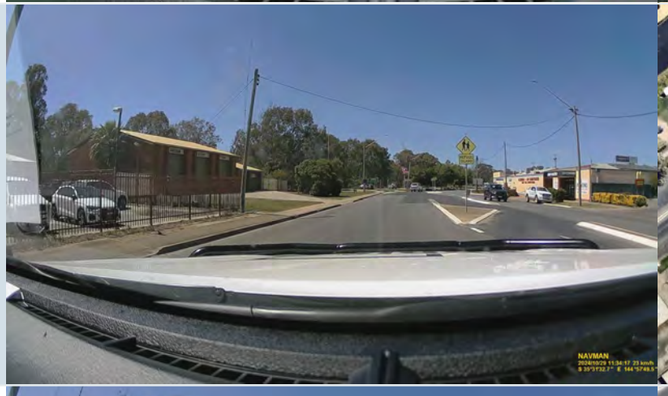
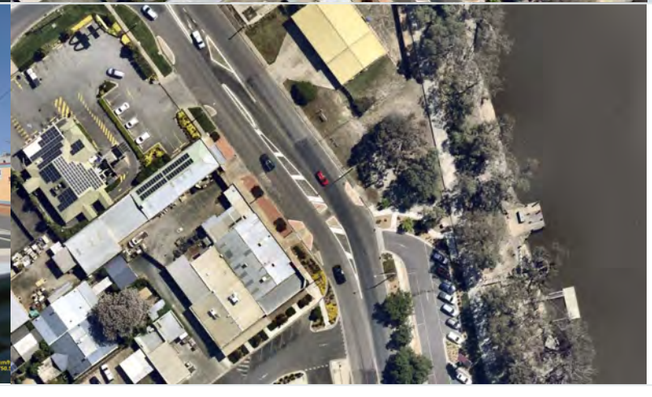
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
258	Deniliquin	Overhead Lighting	-35°31'50.6", 144°57'19.2"			
261	Deniliquin	Overhead Lighting	-35°31'49.6", 144°57'20.8"			
263	Deniliquin	Overhead Lighting	-35°31'48.8", 144°57'22.1"			
266	Deniliquin	Overhead Lighting	-35°31'47.8", 144°57'23.8"			

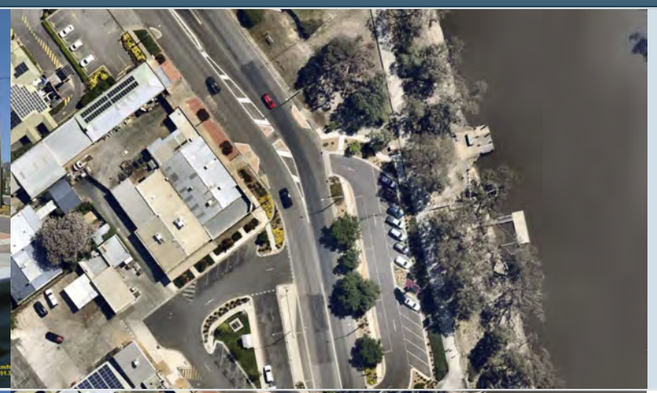
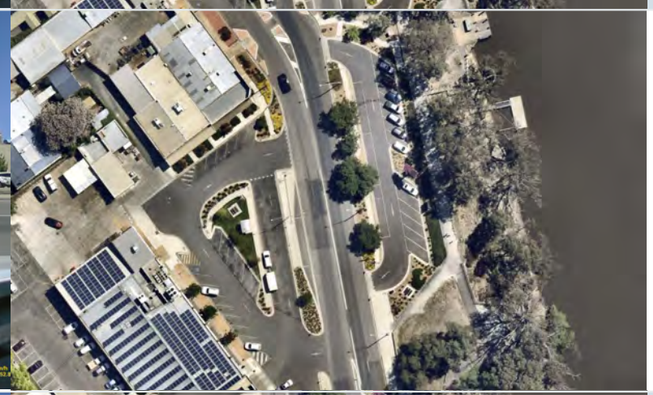
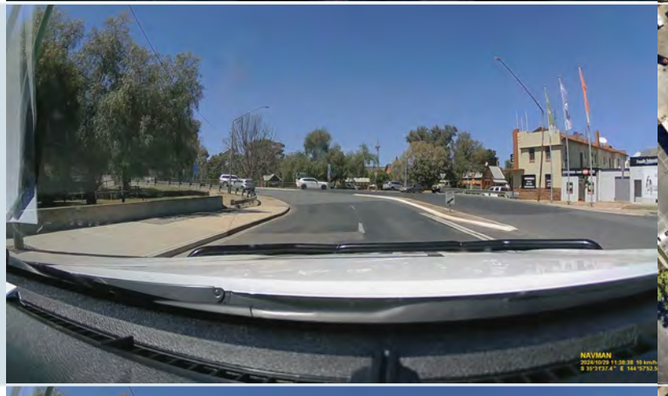
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
267	Deniliquin	Overhead Lighting	-35°31'46.7", 144°57'25.5"			
269	Deniliquin	Overhead Lighting	-35°31'46.0", 144°57'26.7"			
272	Deniliquin	Overhead Lighting	-35°31'45.2", 144°57'28.1"			
273	Deniliquin	Overhead Lighting	-35°31'44.1", 144°57'29.8"			

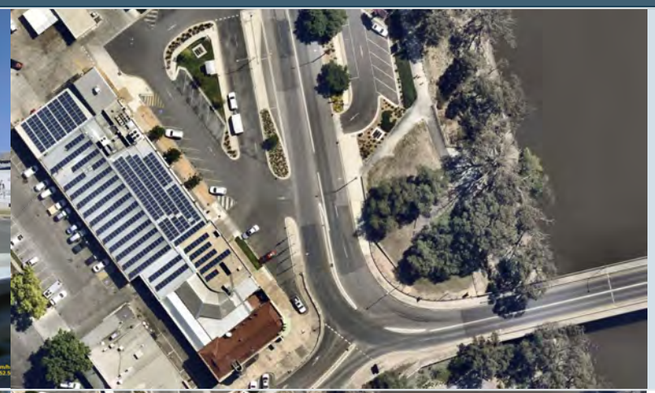
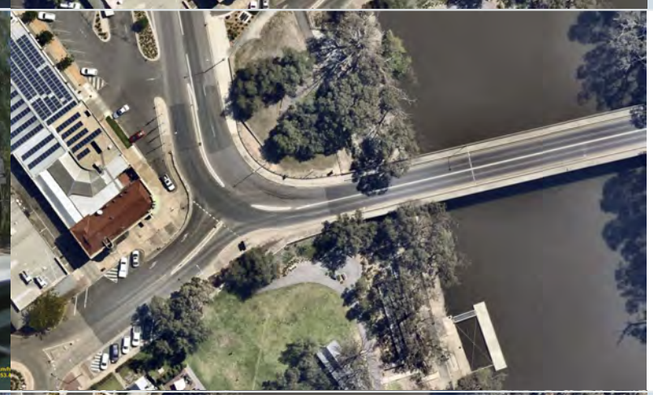
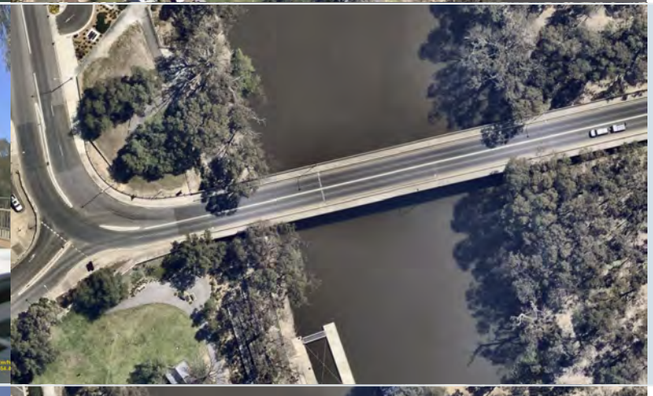
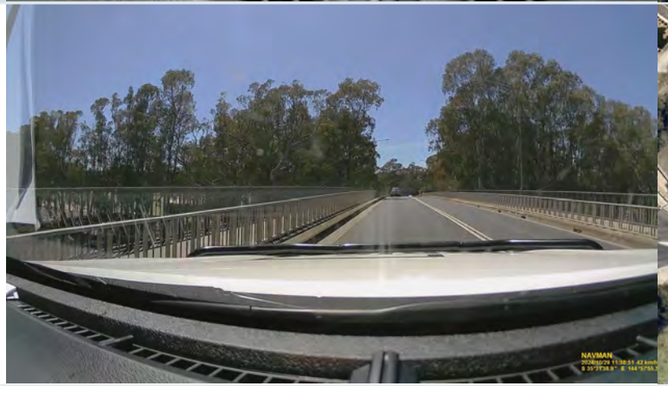
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
275	Deniliquin	Overhead Lighting	-35°31'43.9", 144°57'30.2"			
277	Deniliquin	Overhead Lighting	-35°31'42.5", 144°57'32.3"			
279	Deniliquin	Overhead Lighting	-35°31'41.5", 144°57'34.0"			
280	Deniliquin	Overhead Lighting	-35°31'41.0", 144°57'34.9"			

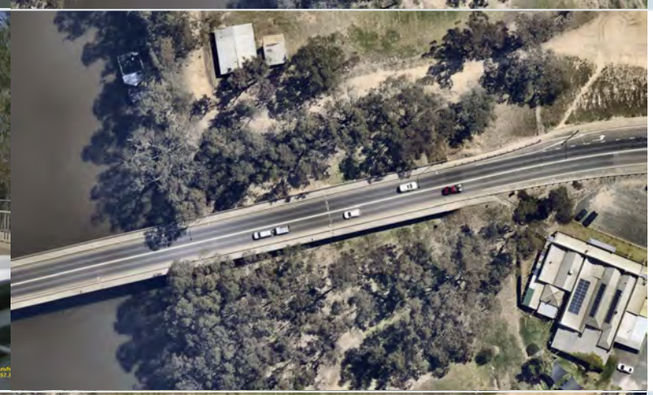
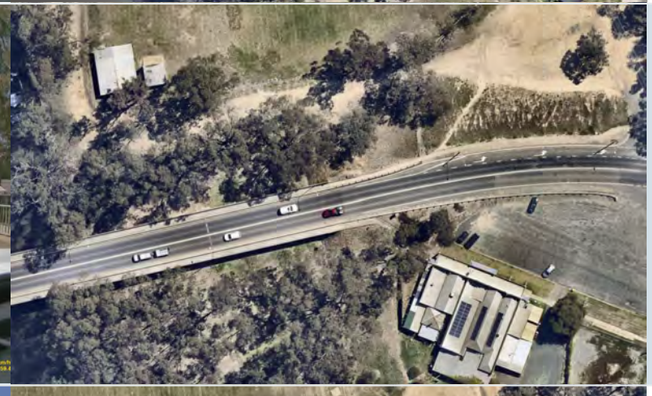
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
282	Deniliquin	Overhead Lighting	-35°31'40.2", 144°57'36.2"			
284	Deniliquin	Overhead Lighting	-35°31'39.2", 144°57'37.8"			
285	Deniliquin	Overhead Lighting	-35°31'38.5", 144°57'38.8"			
288	Deniliquin	Overhead Lighting	-35°31'37.3", 144°57'40.4"			

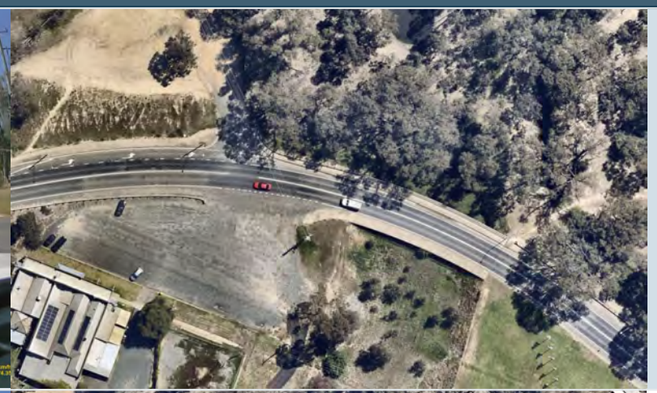
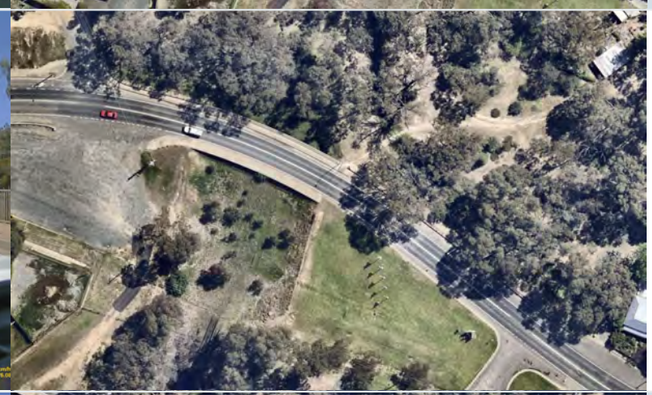
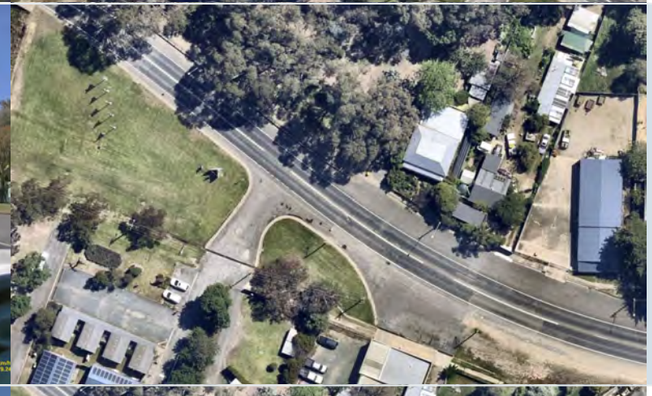
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
289	Deniliquin	Overhead Lighting	-35°31'36.4", 144°57'42.0"			
291	Deniliquin	Overhead Lighting	-35°31'35.8", 144°57'43.2"			
293	Deniliquin	Overhead Lighting	-35°31'35.1", 144°57'44.3"			
295	Deniliquin	Overhead Lighting	-35°31'34.5", 144°57'45.4"			

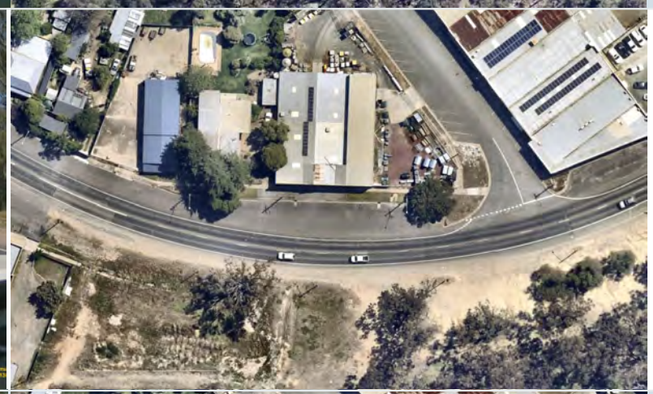
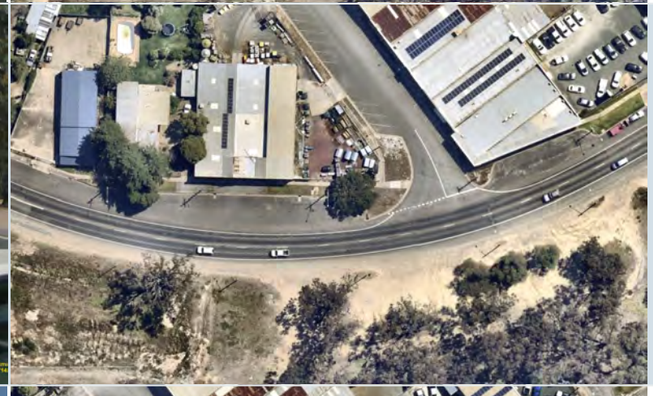
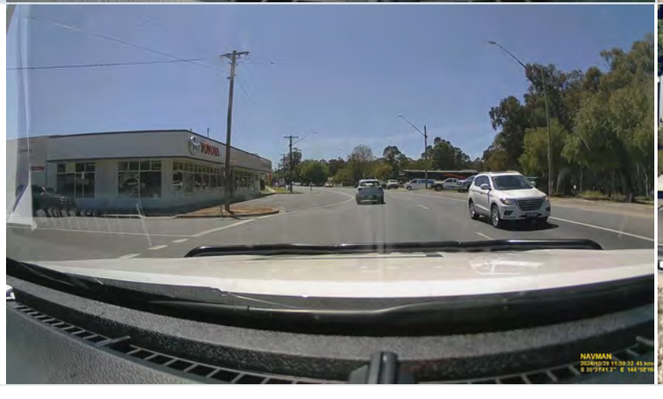
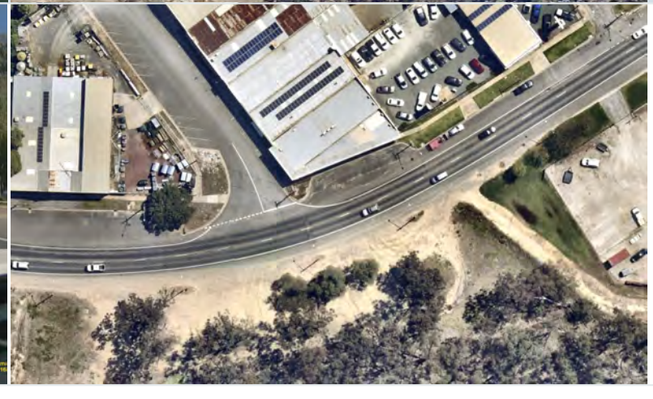
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
296	Deniliquin	Overhead Lighting	-35°31'33.6", 144°57'46.7"			
300	Deniliquin	Overhead Lighting	-35°31'32.4", 144°57'48.9"			
302	Deniliquin	Overhead Lighting	-35°31'32.7", 144°57'49.5"			
303	Deniliquin	Overhead Lighting	-35°31'33.8", 144°57'50.5"			

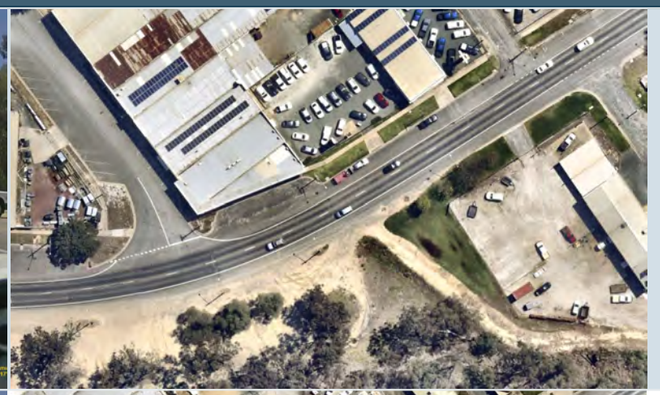
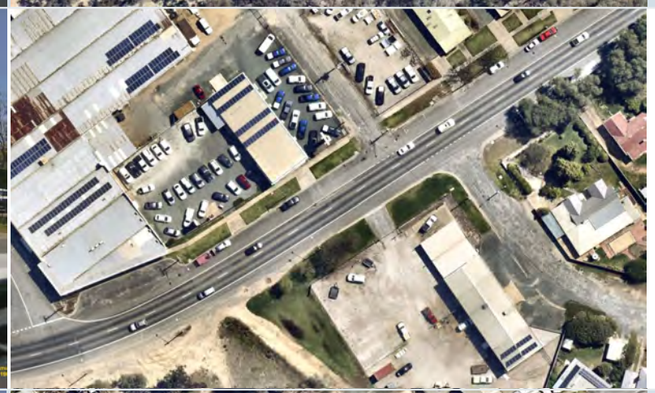
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
305	Deniliquin	Overhead Lighting	-35°31'34.6", 144°57'51.3"			
306	Deniliquin	Overhead Lighting	-35°31'37.0", 144°57'52.8"			difficult to see on dashcam; refer streetview (below) 
307	Deniliquin	Overhead Lighting	-35°31'37.4", 144°57'52.4"			
308	Deniliquin	Overhead Lighting	-35°31'37.8", 144°57'52.5"			

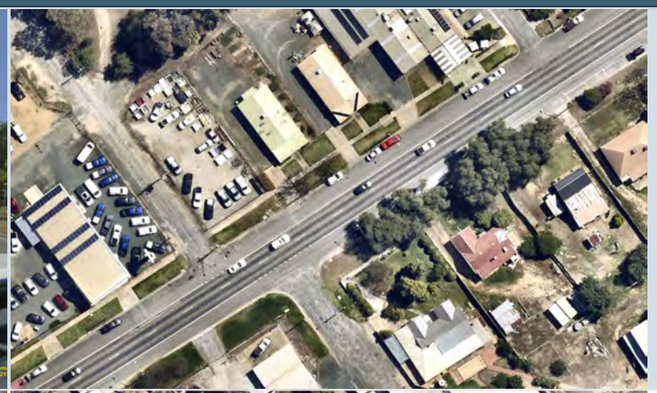
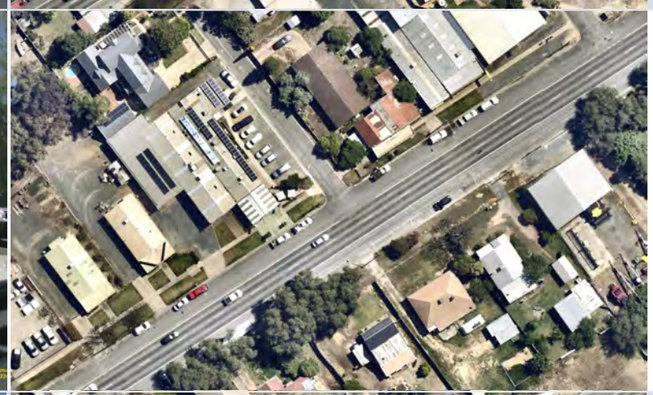
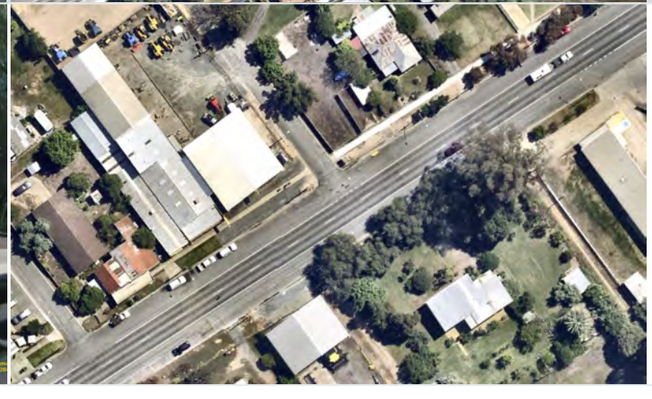
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
309	Deniliquin	Overhead Lighting	-35°31'38.2", 144°57'52.6"			
310	Deniliquin	Overhead Lighting	-35°31'38.9", 144°57'53.1"			
312	Deniliquin	Overhead Lighting	-35°31'39.1", 144°57'54.0"			
313	Deniliquin	Overhead Lighting	-35°31'38.9", 144°57'55.3"			

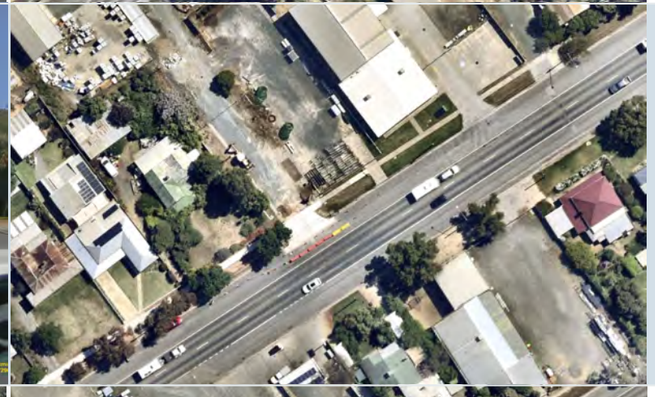
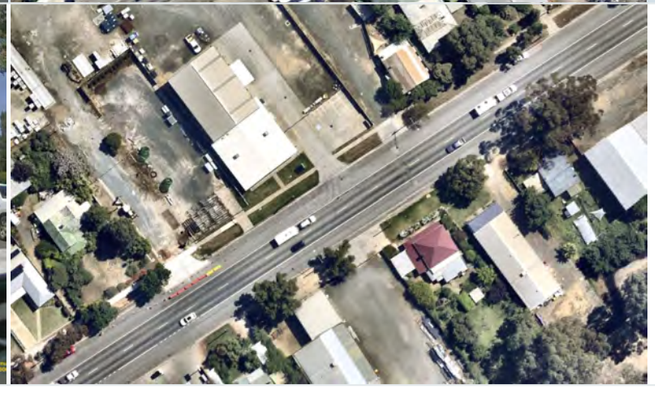
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
314	Deniliquin	Overhead Lighting	-35°31'38.7", 144°57'56.2"			
315	Deniliquin	Overhead Lighting	-35°31'38.4", 144°57'57.7"			
316	Deniliquin	Overhead Lighting	-35°31'38.2", 144°57'58.8"			
317	Deniliquin	Overhead Lighting	-35°31'37.9", 144°58'0.6"			

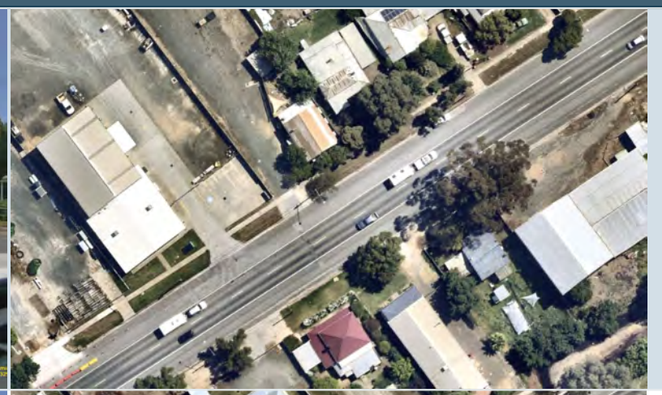
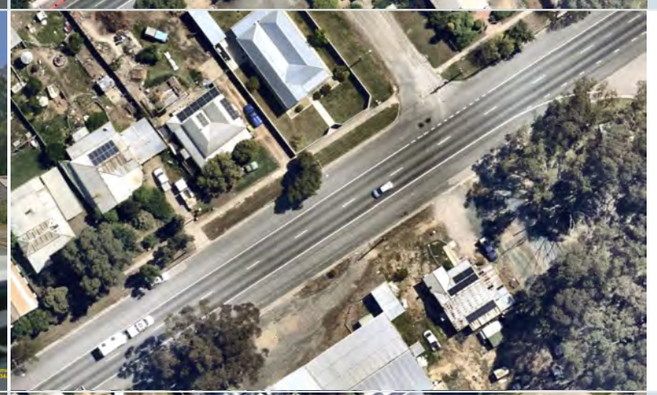
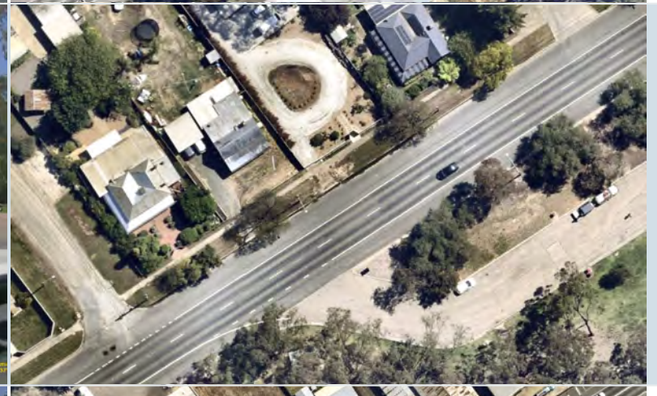
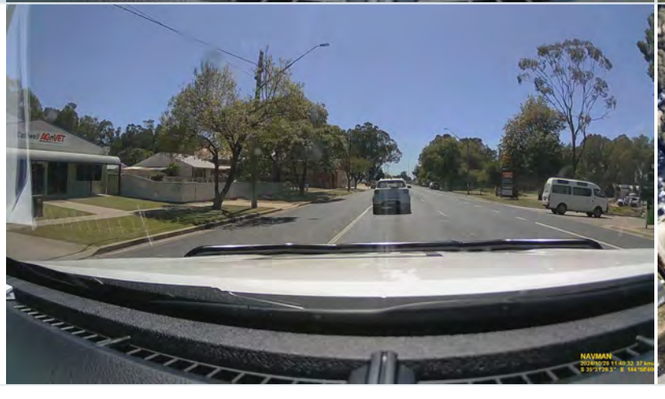
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
320	Deniliquin	Overhead Lighting	-35°31'37.5", 144°58'3.7"			
321	Deniliquin	Overhead Lighting	-35°31'37.7", 144°58'5.5"			
325	Deniliquin	Overhead Lighting	-35°31'39.1", 144°58'8.8"			
327	Deniliquin	Overhead Lighting	-35°31'39.9", 144°58'10.0"			

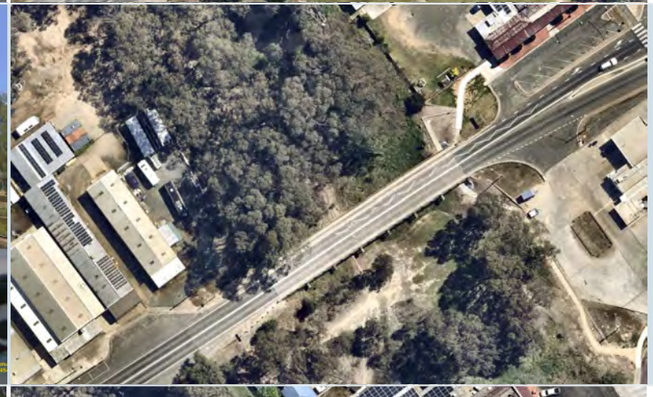
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
328	Deniliquin	Overhead Lighting	-35°31'40.5", 144°58'11.3"			
331	Deniliquin	Overhead Lighting	-35°31'41.0", 144°58'12.6"			
332	Deniliquin	Overhead Lighting	-35°31'41.2", 144°58'14.1"			
335	Deniliquin	Overhead Lighting	-35°31'41.3", 144°58'15.7"			

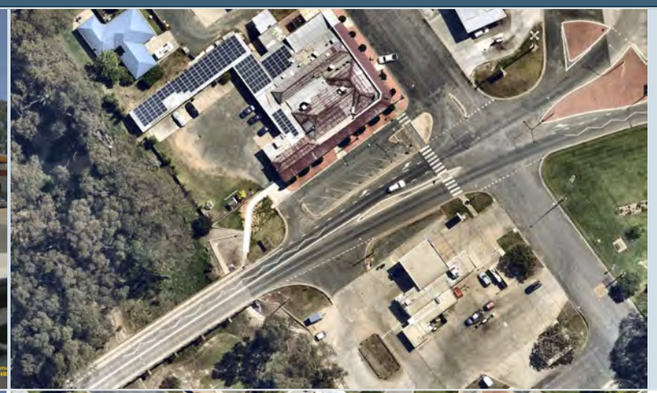
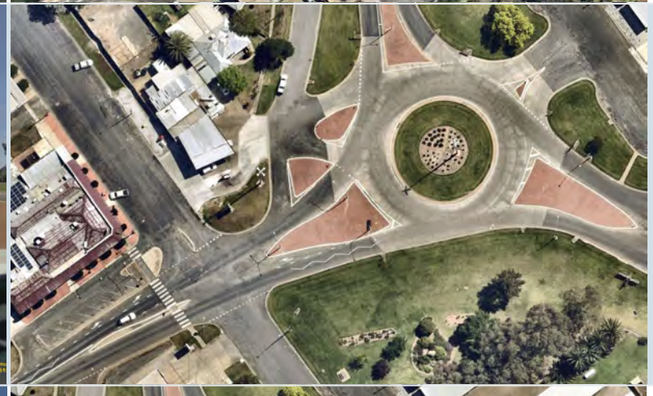
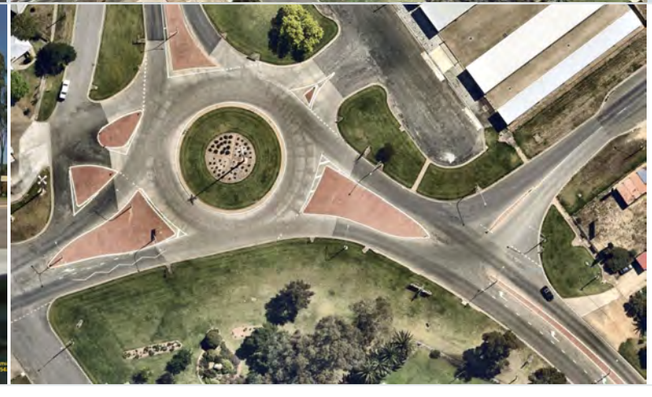
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
337	Deniliquin	Overhead Lighting	-35°31'41.1", 144°58'17.2"			
339	Deniliquin	Overhead Lighting	-35°31'40.6", 144°58'18.5"			
340	Deniliquin	Overhead Lighting	-35°31'40.1", 144°58'19.8"			
342	Deniliquin	Overhead Lighting	-35°31'39.4", 144°58'21.0"			

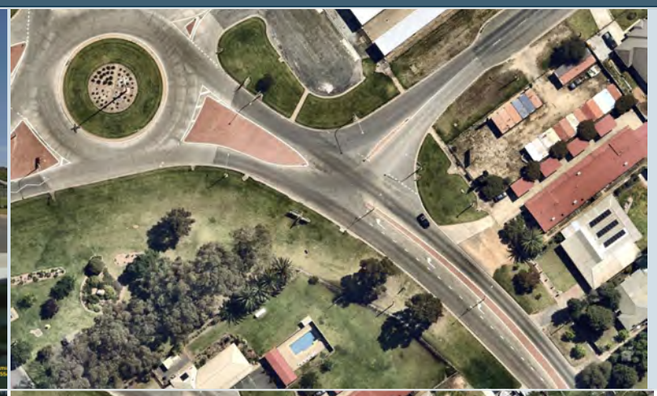
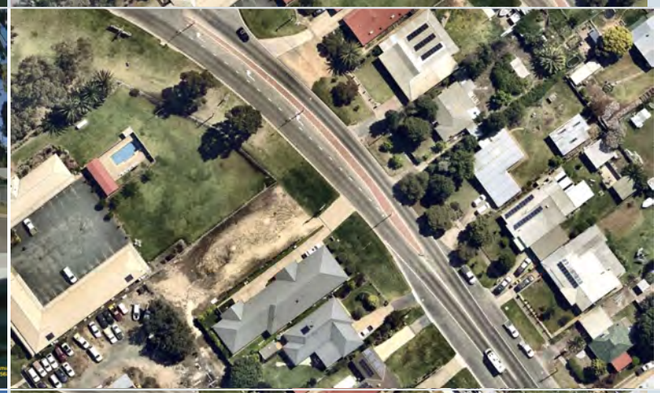
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
344	Deniliquin	Overhead Lighting	-35°31'39.4", 144°58'21.0"			
347	Deniliquin	Overhead Lighting	-35°31'38.3", 144°58'23.2"			
348	Deniliquin	Overhead Lighting	-35°31'37.6", 144°58'24.6"			
351	Deniliquin	Overhead Lighting	-35°31'36.8", 144°58'26.0"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
352	Deniliquin	Overhead Lighting	-35°31'36.2", 144°58'27.1"			
354	Deniliquin	Overhead Lighting	-35°31'35.7", 144°58'28.2"			
355	Deniliquin	Overhead Lighting	-35°31'34.9", 144°58'29.7"			
358	Deniliquin	Overhead Lighting	-35°31'34.2", 144°58'30.9"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
360	Deniliquin	Overhead Lighting	-35°31'33.6", 144°58'32.2"			
363	Deniliquin	Overhead Lighting	-35°31'32.2", 144°58'34.8"			
365	Deniliquin	Overhead Lighting	-35°31'31.0", 144°58'36.9"			
367	Deniliquin	Overhead Lighting	-35°31'29.3", 144°58'40.2"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
368	Deniliquin	Overhead Lighting	-35°31'28.8", 144°58'41.2"			
370	Deniliquin	Overhead Lighting	-35°31'27.9", 144°58'43.0"			
374	Deniliquin	Overhead Lighting	-35°31'26.4", 144°58'45.8"			
375	Deniliquin	Overhead Lighting	-35°31'25.7", 144°58'47.2"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
376	Deniliquin	Overhead Lighting	-35°31'25.1", 144°58'48.3"			
378	Deniliquin	Overhead Lighting	-35°31'24.0", 144°58'50.3"			
379	Deniliquin	Overhead Lighting	-35°31'23.6", 144°58'51.3"			Note; also lighting on opposite site of carriageway
381	Deniliquin	Overhead Lighting	-35°31'22.0", 144°58'54.1"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
382	Deniliquin	Overhead Lighting	-35°31'22.8", 144°58'55.6"			
383	Deniliquin	Overhead Lighting	-35°31'23.5", 144°58'56.8"			
384	Deniliquin	Overhead Lighting	-35°31'24.1", 144°58'57.7"			
385	Deniliquin	Overhead Lighting	-35°31'25.0", 144°58'58.9"			opposite side of carriageway to dashcam

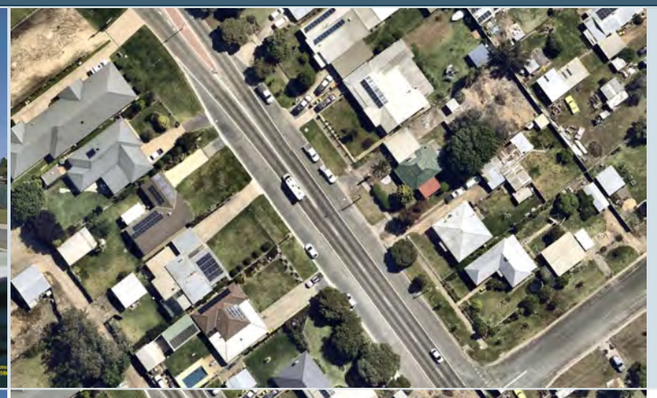
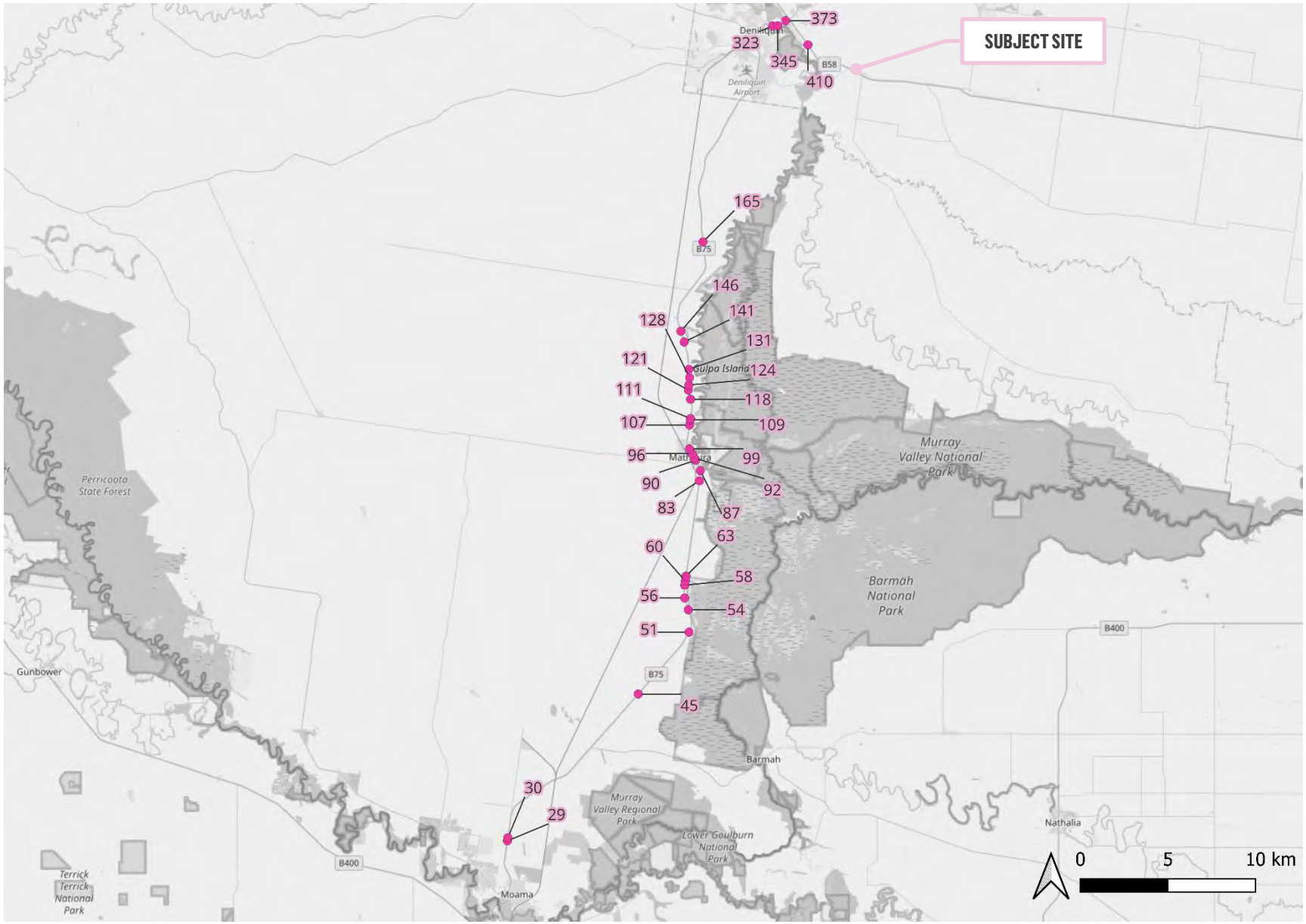
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
386	Deniliquin	Overhead Lighting	-35°31'26.1", 144°58'59.8"			
387	Deniliquin	Overhead Lighting	-35°31'27.1", 144°59'0.8"			opposite side of carriageway to dashcam

Figure 13 All Potential Overhanging Trees on Route



ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
29	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-36°04'16.0", 144°45'2.5"			Opposite side of road to dashcam
30	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-36°04'2.9", 144°45'4.8"			
45	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-35°58'18.7", 144°51'32.4"			
51	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-35°55'48.6", 144°54'2.9"			

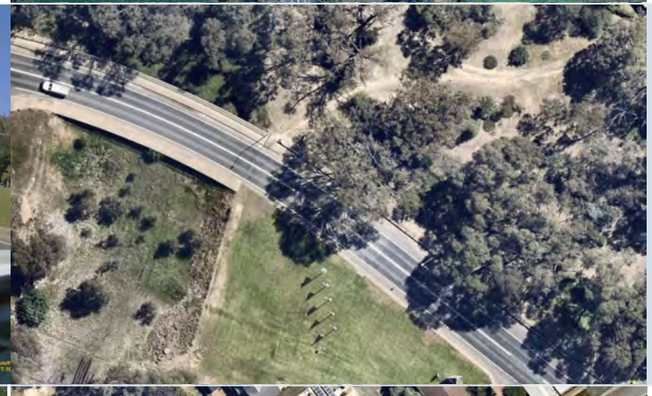
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
54	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-35°55'9.2", 144°54'2.3"			Opposite side of road to dashcam
56	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-35°54'38.3", 144°53'50.5"			
58	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-35°53'59.4", 144°53'47.9"			
60	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-35°53'52.3", 144°53'49.2"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
63	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-35°53'40.8", 144°53'51.2"			
83	Cobb Highway (Moama - Mathoura)	Overhanging Trees	-35°49'50.4", 144°54'31.0"			
87	Cobb Highway (Mathoura)	Overhanging Trees	-35°49'25.0", 144°54'33.7"			
90	Cobb Highway (Mathoura)	Overhanging Trees	-35°49'1.9", 144°54'20.6"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
92	Cobb Highway (Mathoura)	Overhanging Trees	-35°48'57.0", 144°54'17.2"			
96	Cobb Highway (Mathoura)	Overhanging Trees	-35°48'47.1", 144°54'10.6"			
99	Cobb Highway (Mathoura)	Overhanging Trees	-35°48'34.3", 144°54'2.2"			Opposite side of road to dashcam
107	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°47'38.1", 144°54'1.8"			

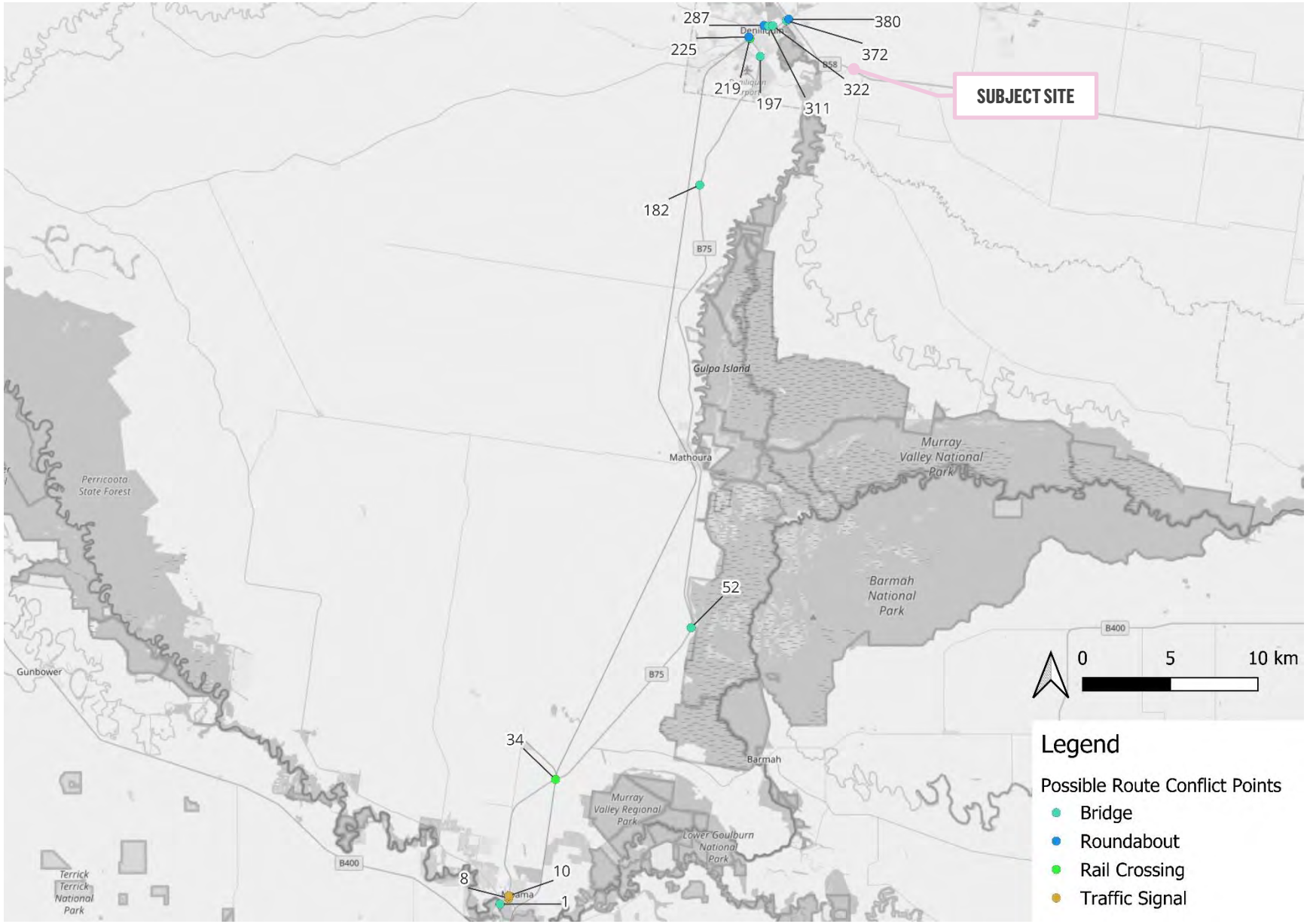
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
109	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°47'29.2", 144°54'3.5"			
111	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°47'22.9", 144°54'4.7"			
118	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°46'32.6", 144°54'4.6"			
121	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°46'16.9", 144°53'59.6"			

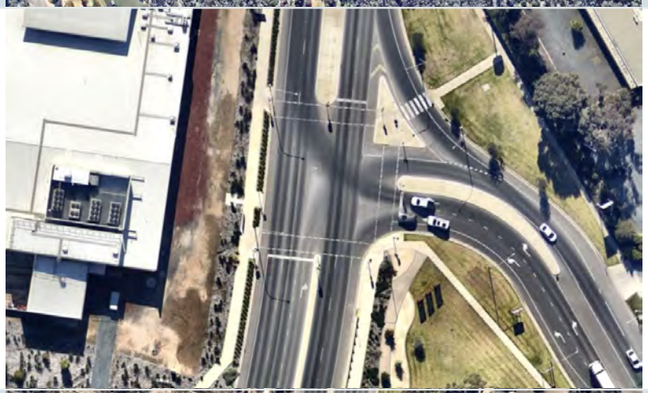
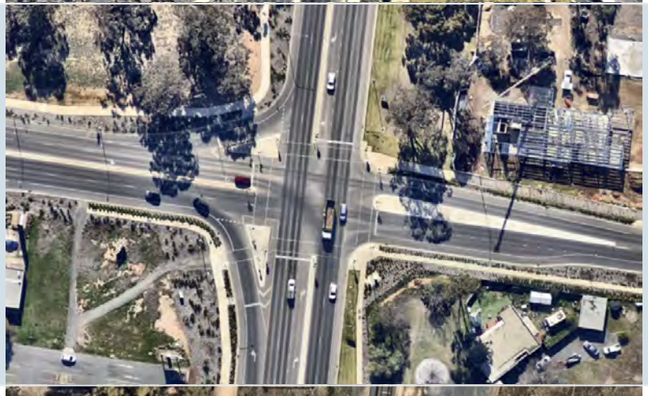
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
124	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°46'4.4", 144°53'59"			
128	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°45'44.9", 144°54'2.1"			
131	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°45'24.2", 144°54'0.3"			
141	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°44'20.7", 144°53'47.1			

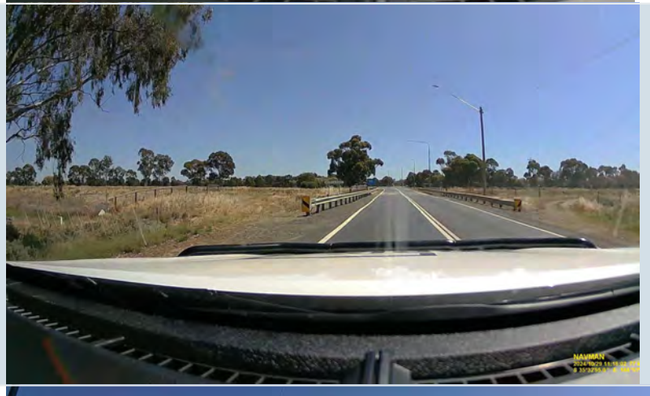
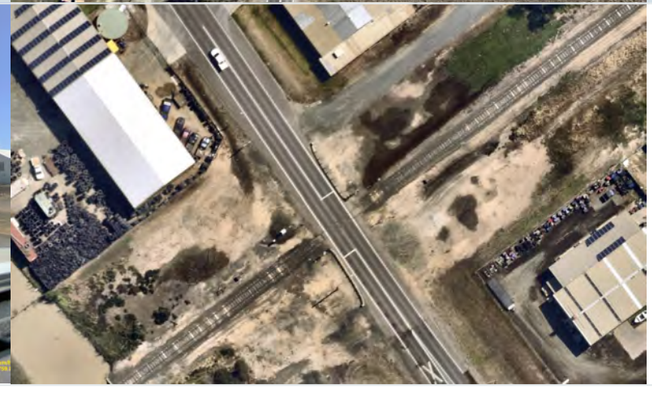
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
146	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°43'47.2", 144°53'34.8"			
165	Cobb Highway (Mathoura - Deniliquin)	Overhanging Trees	-35°40'18.0", 144°54'41.9"			opposite side of carriageway to dashcam
323	Deniliquin	Overhanging Trees	-35°31'38.0", 144°58'6.6"			
345	Deniliquin	Overhanging Trees	-35°31'38.9", 144°58'22.1"			

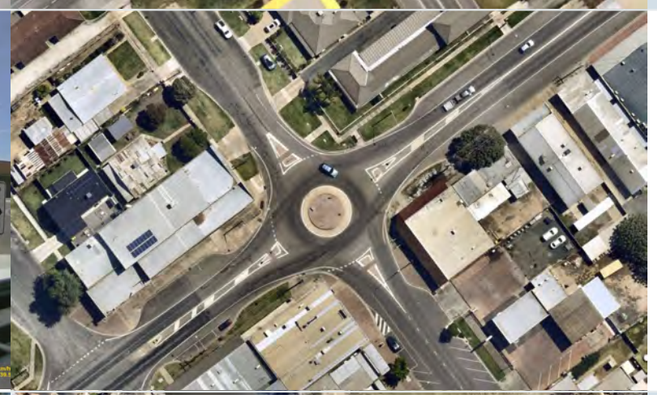
ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
373	Deniliquin	Overhanging Trees	-35°31'27.1", 144°58'44.4"			
410	Riverine Highway (Deniliquin - Site)	Overhanging Trees	-35°32'21.7", 144°59'50.3"			

Figure 14 Map of All Other Potential Infrastructure Constraints on Route



ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
1	Cobb Highway, Moama	Bridge	-36°06'42.5", 144°44'40.3			
8	Cobb Highway, Moama	Traffic Signal	-36°06'29.3", 144°45'5.5"			
10	Cobb Highway, Moama	Traffic Signal	-36°06'23.9", 144°45'6.3"			
34	Cobb Highway (Moama - Mathoura)	Rail Crossing	-36°01'45.0", 144°47'22.8"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
52	Cobb Highway (Moama - Mathoura)	Bridge	-35°55'43.5", 144°54'5.1"			
182	Cobb Highway (Mathoura - Deniliquin)	Bridge	-35°38'3.8", 144°54'30.1"			
197	Deniliquin	Bridge	-35°32'55.0", 144°57'28.8"			
219	Deniliquin	Rail Crossing	-35°32'10.3", 144°56'59.8"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
225	Deniliquin	Roundabout	-35°32'6.7", 144°56'56.4"			
287	Deniliquin	Roundabout	-35°31'38.1", 144°57'39.5"			
311	Deniliquin	Bridge	-35°31'38.9", 144°57'53.1"			
322	Deniliquin	Bridge	-35°31'37.7", 144°58'5.5"			

ID	Location	Type	GPS Co-Ords	Dash Cam	Aerial	Notes
372	Deniliquin	Bridge	-35°31'27.1", 144°58'44.4"			
380	Deniliquin	Roundabout	-35°31'23.6", 144°58'51.3"			

ATTACHMENT C THIRD PARTY PROJECTS LIAISON

From: James Ramm
To: "Glen Hanchard"
Cc: Manesha Ravji
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS
Date: Tuesday, 21 October 2025 2:41:00 PM
Attachments: image002.png
image005.png
image006.png
image007.png
image008.png
image010.png
image014.png
image015.png
image016.png
image017.png
image018.png

Hi Glen,

Thank you for your response and forwarding this on. Are you able to please provide an anticipated timeframe for:

- Confirmation of TfNSW's support of the single OSOM movement traversing mountable roundabout aprons.
- Confirmation of any relevant TfNSW projects that are currently under construction, or will be completed along the OSOM route prior to Q3 2027. The NHVR Route ID is 2O1Z1-6.

We want to confirm the above so that we can undertake our further assessment for the high-risk OSOM route with reference to TfNSW's considerations.

Please reach out if you would like to discuss.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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Nominated architects: Kate Paterson – NSW reg 8582, QLD reg 6148, TAS reg 1929,Vic reg VIC00200, and Caroline Stokes – WA reg 1520

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and permanently delete the email. Any confidentiality or copyright is not waived or
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From: Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Sent: Tuesday, 21 October 2025 10:02 AM
To: James Ramm <jramm@urbis.com.au>
Cc: Manesha Ravji <mravji@urbis.com.au>
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

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Hi James,

Thankyou for your email to TfNSW.

TfNSW Area Maintenance Manager has been consulted and is looking into your enquiries. Hoping to have an answer for you soon.

Thankyou for your patience.

Kindest Regards,

Glen Hanchard
Development Services Case Officer - Renewables
Transport Planning – Planning, Integration and Passenger
Transport for NSW

E development.renewables@transport.nsw.gov.au

transport.nsw.gov.au

Transport for NSW

I acknowledge the Aboriginal people of the country on which I work, their traditions, culture and a shared history and identity. I also pay my respects to Elders past and present and recognise the continued connection to country.

Please consider the environment before printing this email.

From: James Ramm <jramm@urbis.com.au>
Sent: Monday, 13 October 2025 4:09 PM
To: Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Cc: Manesha Ravji <mravji@urbis.com.au>
Subject: FW: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

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Good afternoon Glen,

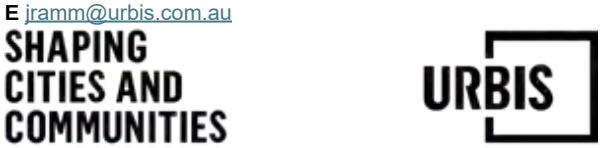
I hope you are well – just following up on my below queries. We would appreciate a response on both matters so that we can commence our further assessment for the high-risk OSOM route.

Please reach out if you would like to discuss.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

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E jramm@urbis.com.au





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Nominated architects: Kate Paterson – NSW reg 8582, QLD reg 6148, TAS reg 1929,Vic reg VIC00200, and Caroline Stokes – WA reg 1520

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From: James Ramm
Sent: Monday, 29 September 2025 2:20 PM
To: 'Glen Hanchard' <Glen.Hanchard@transport.nsw.gov.au>
Cc: Manesha Ravji <mravji@urbis.com.au>; Kasia Balsam <kbalsam@urbis.com.au>
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

Good afternoon Glen,

I hope you are well.

Just reaching out regarding the other item from our meeting on 4th September. Could you please confirm that TfNSW would be supportive of the high-risk OSOM traversing mountable roundabout aprons (such as at the Cobb Highway / Hardinge Street intersection in the below image)?

In addition, could you please advise of any relevant TfNSW projects that are currently under construction, or will be completed along the OSOM route (or advise of the relevant location to send this request)? The NHVR Route ID is 2O1Z1-6.

Please note that we are currently liaising with Edward River Council regarding the Hardinge Street upgrade mentioned in the RFI. If you could please advise of any further projects on the state road network that are of relevance, that would be greatly appreciated.



Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

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Nominated architects: Kate Paterson – NSW reg 8582, QLD reg 6148, TAS reg 1929,Vic reg VIC00200, and Caroline Stokes – WA reg 1520

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From: Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Sent: Thursday, 4 September 2025 2:10 PM
To: Manesha Ravji <mravji@urbis.com.au>; James Ramm <jramm@urbis.com.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Joel Cook <jcook@gransolar.com>
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

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Hi Manesha,

Thankyou for meeting with TfNSW this afternoon.

Pre-construction minor works for the purposes of temporary works may be permitted under certain circumstances. The DPHI definition of Pre-Construction Minor works include the below activities:

Pre-construction minor works	Includes the following activities: • surveys; • overhead line safety marking; • building and road dilapidation surveys; • investigative drilling, excavation or salvage and geotechnical investigation works; • minor clearing or translocation of native vegetation; • establishing temporary site office (in locations meeting the criteria identified in the conditions of this consent) • installation of environmental impact mitigation measures, fencing, enabling works; • temporary wind monitoring masts; and • construction of minor access roads and minor adjustments to services/utilities, etc.

I'll get back to you on the other item.

Kindest Regards,

Glen Hanchard
Development Services Case Officer - Renewables
Transport Planning – Planning, Integration and Passenger
Transport for NSW

E development.renewables@transport.nsw.gov.au

transport.nsw.gov.au

Transport for NSW



I acknowledge the Aboriginal people of the country on which I work, their traditions, culture and a shared history and identity. I also pay my respects to Elders past and present and recognise the continued connection to country.

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OFFICIAL

From: Manesha Ravji <mravji@urbis.com.au>
Sent: Thursday, 4 September 2025 1:31 PM
To: James Ramm <jramm@urbis.com.au>; Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Joel Cook <jcook@gransolar.com>
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

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Hi Glen,

Thanks for meeting with us today, much appreciated, as discussed could you please provide us with the following:

1. TfNSW's definition of preconstruction works.
2. Feedback on potentially mounting the roundabout at the Cobb Highway/Hardinge Street.

Thanks in advance.

Manesha

MANESHA RAVJI
DIRECTOR

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M +61 0405 640 875
E mravji@urbis.com.au
Kindly note, I only work until 2:00pm on Tuesdays and Thursdays

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Nominated architects: Kate Paterson - NSW Reg 8582, QLD registration 6148, Caroline Stokes WA registration 1520

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From: James Ramm <jramm@urbis.com.au>
Sent: Monday, 1 September 2025 4:50 PM
To: Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Manesha Ravji <mravji@urbis.com.au>
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

Hi Glen,

I hope you had a nice weekend.

The below table provides three key questions that we wish to raise during the meeting, and our proposed preliminary approach. We would appreciate it if you could provide your insights during the meeting, particularly in regard to our approach.

I also just wanted to confirm that you were intending to issue the calendar invite?

Urbis Question	Urbis Preliminary Approach
Could you please elaborate on the reasoning behind the gazetted road train swept path request under RFI Item 1 (d)?	The strategic concept design for the site access indicates that no changes to the width or alignment of through traffic lanes are required. Urbis therefore recommends that the TIA be amended to specify that the proposed site access design will not impact to the gazetted road train network on Riverina Highway.
Is a further construction traffic impact assessment required for the pre-construction stage (Item 2), noting that we have provided an assessment of the impact of overall project construction (which is proposed to be completed in a single stage)?	If construction vehicle movements are lower during pre-construction than during construction, Urbis would recommend that the TIA be amended to specify these volumes and specify that traffic impacts will be lower during pre-construction than during construction.

What is the nexus/trigger for requiring full road upgrades and strategic concept designs along the OSOM route (under Item 5), noting that we are only expecting a small number of OSOM movements?	Urbis is of the view that undertaking permanent road upgrades in advance of the singular OSOM movement is not reasonable given that the OSOM traverses road infrastructure that is designed to be mountable. Instead, it is recommended that Gransolar enters into an agreement with TfNSW to restore any damaged assets or road infrastructure along the haulage route to their original condition following completion of the OSOM movement. A detailed Traffic Management Plan would be developed and be implemented throughout the OSOM movement to manage traffic conditions.

Kind regards,

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Nominated architects: Kate Paterson - NSW Reg 8582, QLD registration 6148, Caroline Stokes WA registration 1520

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From: James Ramm <jramm@urbis.com.au>
Sent: Wednesday, 27 August 2025 2:41 PM
To: Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Manesha Ravji <mravji@urbis.com.au>
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

Hi Glen,

Thank you for your reply, we appreciate you making the time to meet with us. Could we please book in

the meeting for 1pm on Thursday 4th September?

I will reach out with our specific questions later this week.

In addition, please note that an additional representative from the applicant will also attend – Seth Argar. I'll forward the meeting invite on to him and Joel Cook once issued.

Looking forward to meeting you next week.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

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E jramm@urbis.com.au

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Nominated architects: Kate Paterson - NSW Reg 8582, QLD registration 6148, Caroline Stokes WA registration 1520

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From: Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Sent: Wednesday, 27 August 2025 10:08 AM
To: James Ramm <jramm@urbis.com.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Manesha Ravji <mravji@urbis.com.au>
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

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Hi James,

Thankyou for following up – happy to book in the meeting for you.

Would next week Thursday the 4th at 11am work for your team, or anytime after 11 and before 3pm.

If you could please let me know any specific questions you need detail on and I can ensure we have the answer for you at the meeting.

Kindest Regards,

OFFICIAL

From: James Ramm <jramm@urbis.com.au>
Sent: Monday, 25 August 2025 10:55 AM
To: Development Renewables <development.renewables@transport.nsw.gov.au>; Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Manesha Ravji <mravji@urbis.com.au>
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

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Hi Glen,

Just following up on arranging this meeting. Please reach out if you require any further information.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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Nominated architects: Kate Paterson - NSW Reg 8582, QLD registration 6148, Caroline Stokes WA registration 1520

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From: Development Renewables <development.renewables@transport.nsw.gov.au>
Sent: Wednesday, 20 August 2025 3:02 PM
To: James Ramm <jramm@urbis.com.au>; Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Manesha Ravji <mravji@urbis.com.au>
Subject: RE: REN25/00128/002 - Deniliquin East BESS - TfNSW Response to EIS

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Hi James,

I can confirm the Development Services Renewables team has received your email.

This has been registered and the matter has been assigned to case officer – @Glen Hanchard. Glen will be in touch to arrange the meeting.

TfNSW reference – REN25/00128/002

Please ensure all future correspondence is sent to – development.renewables@transport.nsw.gov.au

Kind Regards,

Rosa Gillogly
Development Assessment Support Officer
Development Services West
Transport Planning – Planning, Integration and Passenger
Transport for NSW

E rosa.gillogly@transport.nsw.gov.au

transport.nsw.gov.au

Level 1 51-55 Currajong Street
Parkes NSW 2870

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NSW GOVERNMENT
Transport for NSW

I recognise and acknowledge that modern New South Wales is an overlay on Aboriginal land and that many of the transport routes of today follow songlines Aboriginal people have followed for tens of thousands of years. I pay my respects to the Aboriginal people of NSW and Elders past and present.

Please consider the environment before printing this email.

OFFICIAL

From: James Ramm <jramm@urbis.com.au>
Sent: Wednesday, 20 August 2025 1:39 PM
To: Development Renewables <development.renewables@transport.nsw.gov.au>; Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Manesha Ravji <mravji@urbis.com.au>
Subject: RE: REN25/00128/001 - Deniliquin East BESS - TfNSW Response to EIS

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Hi Rosa,

I've attached the completed meeting request form.

Please let me know if you need any additional information to set up the meeting.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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Nominated architects: Kate Paterson - NSW Reg 8582, QLD registration 6148, Caroline Stokes WA registration 1520

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From: Development Renewables <development.renewables@transport.nsw.gov.au>
Sent: Wednesday, 20 August 2025 9:05 AM
To: James Ramm <jramm@urbis.com.au>; Glen Hanchard <Glen.Hanchard@transport.nsw.gov.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Manesha Ravji <mravji@urbis.com.au>
Subject: RE: REN25/00128/001 - Deniliquin East BESS - TfNSW Response to EIS

You don't often get email from development.renewables@transport.nsw.gov.au. Learn why this is important

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Hi James,

Could you please fill out the attached meeting request form and return this?

I will then work to get this registered in our system and passed onto Glen.

Kind Regards,

Rosa Gillogly
Development Assessment Support Officer
Development Services West
Transport Planning – Planning, Integration and Passenger
Transport for NSW

E rosa.gillogly@transport.nsw.gov.au

transport.nsw.gov.au

Level 1 51-55 Currajong Street
Parkes NSW 2870

I work flexibly. Unless it suits you, I don't expect you to read or respond to my emails outside of your normal work hours.



Transport for NSW

I recognise and acknowledge that modern New South Wales is an overlay on Aboriginal land and that many of the transport routes of today follow songlines Aboriginal people have followed for tens of thousands of years. I pay my respects to the Aboriginal people of NSW and Elders past and present.

Please consider the environment before printing this email.

From: James Ramm <jramm@urbis.com.au>
Sent: Wednesday, 20 August 2025 8:23 AM
To: Development Renewables <development.renewables@transport.nsw.gov.au>
Cc: Richard Barry <rbarry@urbis.com.au>; Clare Brown <cbrown@urbis.com.au>; Manesha Ravji <mravji@urbis.com.au>
Subject: REN25/00128/001 - Deniliquin East BESS - TfNSW Response to EIS

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Hi Glen,

I'm emailing from the Urbis Transport Advisory team, on behalf of the Applicant, in relation to the TfNSW Response to Environmental Impact Statement for the Deniliquin East Battery Energy Storage System (BESS).

TfNSW reference **REN25/00128/001**.

Prior to updating our lodgement documentation to address the TfNSW additional information request, we are hoping to arrange a preliminary meeting to discuss each of the items. This will assist us in aligning our response with your requests and hopefully allow you to assess the application more easily.

If possible, we are hoping to meet during the week of 1st August or 8th August to keep the application moving forward.

Please let us know your preferred days and times, and feel free to contact us if you wish to discuss further.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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Nominated architects: Kate Paterson - NSW Reg 8582, QLD registration 6148, Caroline Stokes WA registration 1520

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From: James Ramm
To: "Jacinta Goodear"; Mark Dalzell
Cc: Manesha Ravji; "Simone Hughes"
Subject: RE: Deniliquin East BESS - Road Projects for Consideration in High-risk OSOM Route
Date: Tuesday, 28 October 2025 1:53:00 PM
Attachments: image011.png
image012.png
image013.png
image014.png
image015.png
image016.png
image018.png
image019.png
image020.png

Good afternoon all,

Is it possible to receive an update on this request this week?

Please let me know if you require any further information or would like to discuss.

Kind regards,

James Ramm he/him/his
Senior Consultant

d. +61 3 8639 9736
e. jramm@urbis.com.au



Olderfleet, Level 10, 477 Collins Street
Melbourne VIC 3000 Australia (Wurundjeri Country)
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Nominated architects: Kate Paterson – NSW reg 8582, QLD reg 6148, TAS reg 1929,Vic reg VIC00200, and Caroline Stokes – WA reg 1520

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From: James Ramm
Sent: Tuesday, 21 October 2025 10:08 AM
To: 'Jacinta Goodear' <Jacinta.Goodear@edwardriver.nsw.gov.au>
Cc: Manesha Ravji <mravji@urbis.com.au>; Simone Hughes <Simone.Hughes@edwardriver.nsw.gov.au>
Subject: RE: Deniliquin East BESS - Road Projects for Consideration in High-risk OSOM Route

Good morning Jacinta,

I hope you're well. Just following up on the below request, given it has now been 21 days?

Any update you could provide would be greatly appreciated.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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From: Jacinta Goodear <Jacinta.Goodear@edwardriver.nsw.gov.au>
Sent: Monday, 29 September 2025 2:29 PM
To: James Ramm <jramm@urbis.com.au>
Cc: Manesha Ravji <mravji@urbis.com.au>; Kasia Balsam <kbalsam@urbis.com.au>; Simone Hughes <Simone.Hughes@edwardriver.nsw.gov.au>
Subject: Re: Deniliquin East BESS - Road Projects for Consideration in High-risk OSOM Route

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Hi James,

Thank you, for your email.

I will forward your message onto the Transport Team and ask them for a reply. Please note that this may take up to 21 days for them to reply back to you. During this time, they will be checking over all Council's upcoming Capital Works & Operational Plans over the next few years to see whether it falls into the date range you have provided.

Should you have any questions please don't hesitate to contact us.

Jacinta Goodear

Executive Assistant Infrastructure

_____

180 Cressy Street, Deniliquin NSW 2710
P: 03 5898 3000

E: Jacinta.Goodear@edwardriver.nsw.gov.au
W: www.edwardriver.nsw.gov.au

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From: James Ramm <jramm@urbis.com.au>
Sent: Monday, 29 September 2025 2:01 PM
To: Jacinta Goodear <Jacinta.Goodear@edwardriver.nsw.gov.au>
Cc: Manesha Ravji <mravji@urbis.com.au>; Kasia Balsam <kbalsam@urbis.com.au>
Subject: FW: Deniliquin East BESS - Road Projects for Consideration in High-risk OSOM Route

Hi Jacinta,

Just passing on the below email given Mark is on leave for the next few weeks.

If you are able to assist in his absence, that would be greatly appreciated.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au



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Nominated architects: Kate Paterson – NSW reg 8582, QLD reg 6148, TAS reg 1929,Vic reg VIC00200, and Caroline Stokes – WA reg 1520

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From: James Ramm
Sent: Monday, 29 September 2025 1:50 PM
To: 'Mark.dalzell@edwardriver.nsw.gov.au' <Mark.dalzell@edwardriver.nsw.gov.au>
Cc: 'marie.sutton@edwardriver.nsw.gov.au' <marie.sutton@edwardriver.nsw.gov.au>; 'Simone.Hughes@edwardriver.nsw.gov.au' <Simone.Hughes@edwardriver.nsw.gov.au>; Manesha Ravji <mravji@urbis.com.au>; Kasia Balsam <kbalsam@urbis.com.au>
Subject: Deniliquin East BESS - Road Projects for Consideration in High-risk OSOM Route

Hi Mark,

I'm reaching out from the Urbis Transport team. We are working on the Deniliquin East BESS development application, located at 21356 Riverina Highway, Deniliquin.

Richard Barry from our office passed on your contact information.

On 25 July 2025, TfNSW issued a response to the exhibition of the Environmental Impact Statement for the DA. Amongst other things, this requested liaison with Edward River Council in relation to the proposed high-risk OSOM route. Specifically:

The route assessment must be updated to include mitigation measures or modifications required to navigate any identified road or rail projects along the routes (ie, Edward River Council and TfNSW are undertaking pavement remediation works on Hardinge Street, Deniliquin. The project also proposes the installation of right and left turn lanes. Proponent to liaise with ERC.).

To sufficiently address this TfNSW request, we were hoping you could provide detail of any road projects which will be completed before, or underway during Q2 or Q3 of 2027 on the following roads near/within Deniliquin:

- Cobb Highway south-east of Hardinge Street
- Hardinge Street between Cobb Highway and Charlotte Street
- Charlotte Street between Hardinge Street and Davidson Street
- Davidson Street between Charlotte Street and Riverina Highway
- Riverina Highway between Davidson Street and 21356 Riverina Highway, Deniliquin.

I understand that TfNSW is probably the better authority to query regarding the above, however any input that you could provide would be greatly appreciated to ensure we are addressing Item 5i of TfNSW's response.

For your information, I have attached the following:

- TfNSW response to the exhibition of the Environmental Impact Statement
- The lodged Concept Route Analysis which provides the specific route for the high-risk OSOM.

Please reach out if you would like to discuss the above or require any further information.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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ATTACHMENT D TFNSW SPECIAL PERMITS UNIT LIAISON

James Ramm

From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Sent: Wednesday, 5 November 2025 12:15 PM
To: James Ramm
Cc: Michelle Shannon; Alexandra Power; Manesha Ravji; Stefan Fazzino
Subject: RE: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

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Hi James,

Based on the below the combinations details a bridge assessment is not required and is covered by our internal HLP map.

Kind Regards

Tobias Shannon
A/ Manager Road Access
Freight Branch
Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 **E** tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

Cnr Grey & Ferguson St
Glen Innes NSW 2370

Transport for NSW

I acknowledge the Aboriginal people of the country on which I work, their traditions, culture and a shared history and identity. I also pay my respects to Elders past and present and recognise the continued connection to country.

Please consider the environment before printing this email.

From: James Ramm <jramm@urbis.com.au>
Sent: Thursday, 23 October 2025 11:43 AM
To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Alexandra Power <Alexandra.Power@transport.nsw.gov.au>; Manesha Ravji <mravji@urbis.com.au>; Stefan Fazzino <sfazzino@urbis.com.au>
Subject: RE: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

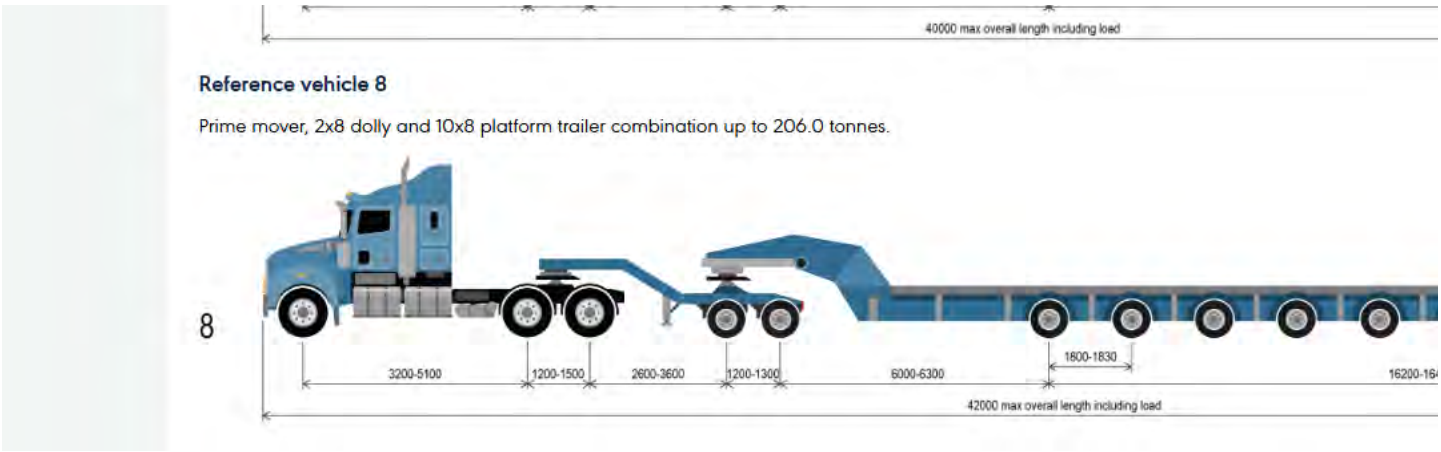
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Good morning Tobias,

Please see below for axle mass information for the 10x8 platform trailer and dolly, provided by the proponent.

Maximum Road Weight; Steer Axle Weight = 7T
Maximum Road Weight; Drive Axle Weight = 9.25T per axle (18.5T over 2 Axles)
Maximum Road Weight; Dolly Axles Weight = 14.5T per axle (29T over 2 Axles)
Maximum Road Weight; Trailer = 16T per axle line on the Trailer (160T over 10 Axles)



Let me know if you require anything further or would like to discuss.

Kind regards,

James Ramm
Senior Consultant
d. +61 3 8639 9736
e. jramm@urbis.com.au

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Nominated architects: Kate Paterson – NSW reg 8582, QLD reg 6148, TAS reg 1929,Vic reg VIC00200, and Caroline Stokes – WA reg 1520

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From: James Ramm
Sent: Monday, 20 October 2025 4:06 PM
To: 'Tobias Shannon' <Tobias.SHANNON@transport.nsw.gov.au>
Cc: 'Michelle Shannon' <Michelle.Shannon@transport.nsw.gov.au>; 'Alexandra Power' <Alexandra.Power@transport.nsw.gov.au>; Manesha Ravji <mravji@urbis.com.au>; Stefan Fazzino <sfazzino@urbis.com.au>
Subject: RE: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

Good afternoon Tobias,

I hope you're well.

Unfortunately the client is still confirming axle mass for the high-risk OSOM, so we can't provide you an update on that front.

However, have you had the chance to review the axle mass that would trigger bridge assessment/s for the selected route?

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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Nominated architects: Kate Paterson – NSW reg 8582, QLD reg 6148, TAS reg 1929,Vic reg VIC00200, and Caroline Stokes – WA reg 1520

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From: James Ramm <jramm@urbis.com.au>
Sent: Thursday, 9 October 2025 5:23 PM
To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Alexandra Power <Alexandra.Power@transport.nsw.gov.au>; Manesha Ravji <mravji@urbis.com.au>; Kasia Balsam <kbalsam@urbis.com.au>; Stefan Fazzino <sfazzino@urbis.com.au>
Subject: RE: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

Hi Tobias,

Thanks for your email and I hope you had a nice long weekend.

We have requested the axle mass from the client and will advise you once received.

In the meantime, could you please confirm the axle mass that would trigger a bridge/culvert assessment requirement on our selected route for the 10x8 platform and dolly?

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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Nominated architects: Kate Paterson – NSW reg 8582, QLD reg 6148, TAS reg 1929,Vic reg VIC00200, and Caroline Stokes – WA reg 1520

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From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Sent: Wednesday, 1 October 2025 2:53 PM
To: James Ramm <jramm@urbis.com.au>
Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Alexandra Power <Alexandra.Power@transport.nsw.gov.au>; Manesha Ravji <mravji@urbis.com.au>; Kasia Balsam <kbalsam@urbis.com.au>; Stefan Fazzino <sfazzino@urbis.com.au>
Subject: RE: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

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Hi James,

I am reviewing this now and need to know what your proposed axle mass is on the 10x8 platform and dolly.

Once I have this I can provide an update.

Kind Regards

Tobias Shannon
A/ Manager Road Access
Freight Branch
Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 **E** tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

Cnr Grey & Ferguson St
Glen Innes NSW 2370

NSW GOVERNMENT
Transport for NSW



I acknowledge the Aboriginal people of the country on which I work, their traditions, culture and a shared history and identity. I also pay my respects to Elders past and present and recognise the continued connection to country.

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OFFICIAL

From: James Ramm <jramm@urbis.com.au>
Sent: Tuesday, 30 September 2025 9:50 AM
To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Alexandra Power <Alexandra.Power@transport.nsw.gov.au>; Manesha Ravji <mravji@urbis.com.au>; Kasia Balsam <kbalsam@urbis.com.au>; Stefan Fazzino <sfazzino@urbis.com.au>
Subject: RE: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

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Good morning Tobias,

I hope you are well.

Just following up to see if there is any update on the below?

If you could provide us an indicative timeframe to confirm if a bridge assessment is required, that would be greatly appreciated so that we can advise the proponent and wider project team.

Please reach out if you require any further information or if I can assist at all.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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Nominated architects: Kate Paterson – NSW reg 8582, QLD reg 6148, TAS reg 1929,Vic reg VIC00200, and Caroline Stokes – WA reg 1520

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From: James Ramm
Sent: Tuesday, 23 September 2025 11:22 AM
To: 'Tobias Shannon' <Tobias.SHANNON@transport.nsw.gov.au>
Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Alexandra Power <Alexandra.Power@transport.nsw.gov.au>; Manesha Ravji <mravji@urbis.com.au>; Kasia Balsam <kbalsam@urbis.com.au>; Stefan Fazzino <sfazzino@urbis.com.au>
Subject: RE: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

Hi Tobias,

Thank you for your email.

- The NHVR Route ID for the entire route (from Port of Melbourne to the site) is **2O1Z1-6**
- The NHVR Route ID for NSW section of the route is **2O298-3**

Please reach out if you require anything further.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Sent: Tuesday, 23 September 2025 10:48 AM
To: James Ramm <jramm@urbis.com.au>
Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Alexandra Power <Alexandra.Power@transport.nsw.gov.au>
Subject: RE: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

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Good Morning James,

Thanks for your email.

Could you please provide your proposed route through as an NHVR Route ID.

https://www.service.nhvr.gov.au/#page=informationHub/routePlannerTool

Once we have this ID I will check if the below vehicle requires a bridge assessment and advise.

1.1. DESIGN VEHICLE

The high-risk OSOM vehicle applicable to the construction activity associated with the proposed BESS development at 21356 Riverina Highway in Deniliquin is shown in **Figure 1**. This vehicle will be used for transformer transport to the site.

Figure 1 Proposed Oversize Overmass (OSOM) Vehicle



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

Source: Vehicle Tracking

The proposed OSOM vehicle comprises:

- a Prime Mover, 2 x 8 Dolly and 10 x 8 Platform Trailer combination,
- an overall length of 38 metres,
- a maximum width of 4.0 metres (at the platform trailer component),
- a net mass of up to 200 tonnes (including 129 tonne transformer and 71 tonne vehicle)
    - additional information regarding load placement points and detailed load drawings to be undertaken closer to the date of the movement during Class 1 permit application to the National Heavy Vehicle Regular (NHVR)
- a maximum laden height of 5.4 metres including:
    - metre trailer body height,
    - 4.0 metre transformer height,
    - 0.3 metre allowance for dunnage.

It is noted that the OSOM vehicle falls within the dimensions of Reference Vehicle 8 under the Victorian Department of Transport and Planning's (DTP) Platform Trailer Network, shown in **Figure 2**.

Kind Regards

Tobias Shannon
A/ Manager Road Access
Freight Branch
Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 **E** tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

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From: special_permits_unit@rms.nsw.gov.au <spu@transport.nsw.gov.au>
Sent: Tuesday, 23 September 2025 10:02 AM
To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Subject: FW: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

For you?

OFFICIAL

From: James Ramm <jramm@urbis.com.au>
Sent: Tuesday, 23 September 2025 9:56 AM
To: special_permits_unit@rms.nsw.gov.au <spu@transport.nsw.gov.au>
Cc: Manesha Ravji <mravji@urbis.com.au>; Kasia Balsam <kbalsam@urbis.com.au>; Stefan Fazzino <sfazzino@urbis.com.au>
Subject: Deniliquin East BESS - Bridge and Culvert Assessments for High-risk OSOM Route (TfNSW reference REN25/00128/001)

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Good morning,

The Urbis Transport Advisory team has been engaged by the proponent for the Deniliquin East BESS development application, located at 21356 Riverina Highway, Deniliquin.

We have undertaken a Transport Impact Assessment Report (TIAR) in accordance with SEARs requirements, and various TfNSW requirements. We have also completed a concept route assessment for the proposed high-risk OSOM movement.

On 25 July 2025, TfNSW issued a response to the exhibition of the Environmental Impact Statement for the development application (TfNSW reference REN25/00128/001), which requested further detail on the high-risk OSOM route.

I have attached the TfNSW response for your reference. We have been requested to liaise with your team under Item 5 b, specifically:

Bridge and culvert assessments are required for the route. For TfNSW assets the proponent can contact TfNSW Special Permits Unit (see advisory note 7). The route assessment is to be revised based on the outcomes of the TfNSW bridge and culvert assessments.

The proposed route is detailed in the Concept Route Assessment provided in Appendix D of our attached TIAR. The NHVR Route ID for the selected route is 2O1Z1-6 (v1).

Could you please assist us in providing the necessary information to address this RFI item? If you could also provide an anticipated timeframe for providing this information, that would be greatly appreciated.

Please contact me on 03 8639 9736 if you would like to discuss the above.

Kind regards,

JAMES RAMM he/him/his
SENIOR CONSULTANT

D +61 3 8639 9736
E jramm@urbis.com.au

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APPENDIX E DRIVER CODE OF CONDUCT
DRIVER CODE OF CONDUCT

MINIMISE IMPACTS ON THE ROAD NETWORK

All vehicles must be fully roadworthy and maintained

All drivers must obey all signs, directions and instructions and strictly comply with all traffic regulations

All drivers must comply with all maximum gazetted speed limits on all roads or a lesser speed as dictated by the site-specific signage

All loads shall be covered with tarps and be secured

MINIMISE CONFLICTS WITH OTHER ROAD USERS

Drivers are to remain calm and courteous when in contact with other road users, members of the public, and landowners.

Drivers are not to use obscene language on radio or intercom communication.

All drivers must yield "right of way" whenever appropriate to ensure the safe passage of other road users.

All drivers are to at all times leave adequate distance between vehicles to allow safe passing by other road users, as required.

Drivers should exit the site in a forward motion and check their left and right twice while exiting to ensure the safety of pedestrians, cyclists and other vehicles is maintained.

Upon exiting, drivers must wait for a suitable gap in traffic. The Roads Act does not give any special treatment to trucks exiting a construction-site, but the vehicles on the road have the right-of-way.

Truck engines should be turned off during deliveries.

MINIMISE ROAD TRAFFIC NOISE

Drivers are to decrease vehicle speeds to minimise dust and noise around private dwellings, road works and stationary vehicles.

Drivers are to not use engine braking where noise is likely to adversely impact residents.

Drivers should limit any excessive or unnecessary use of horns, in particular outside of working hours.

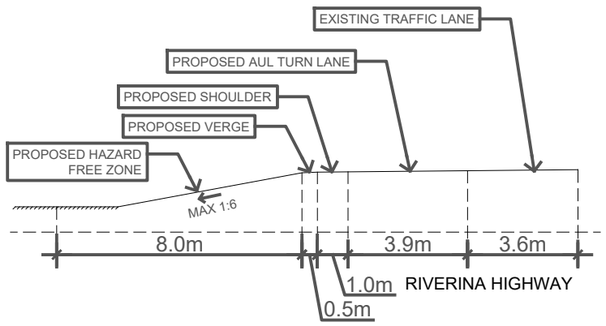
MINIMISE OTHER IMPACTS

Drivers are to maintain vehicles in a clean and tidy condition.

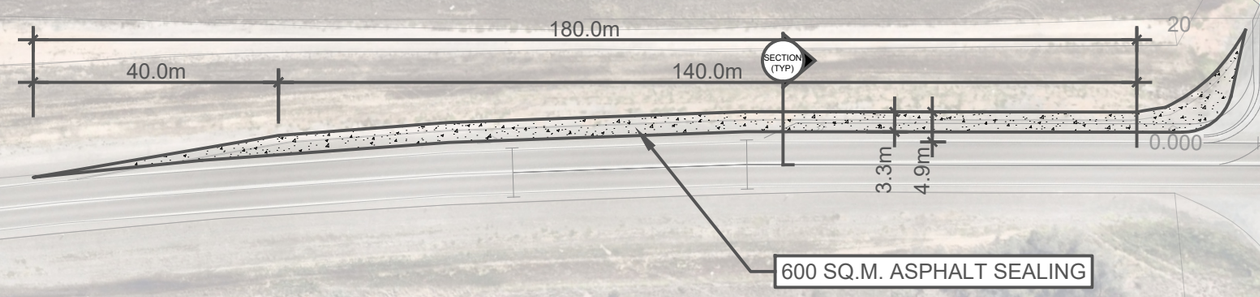
Drivers are to ensure that there is no littering.

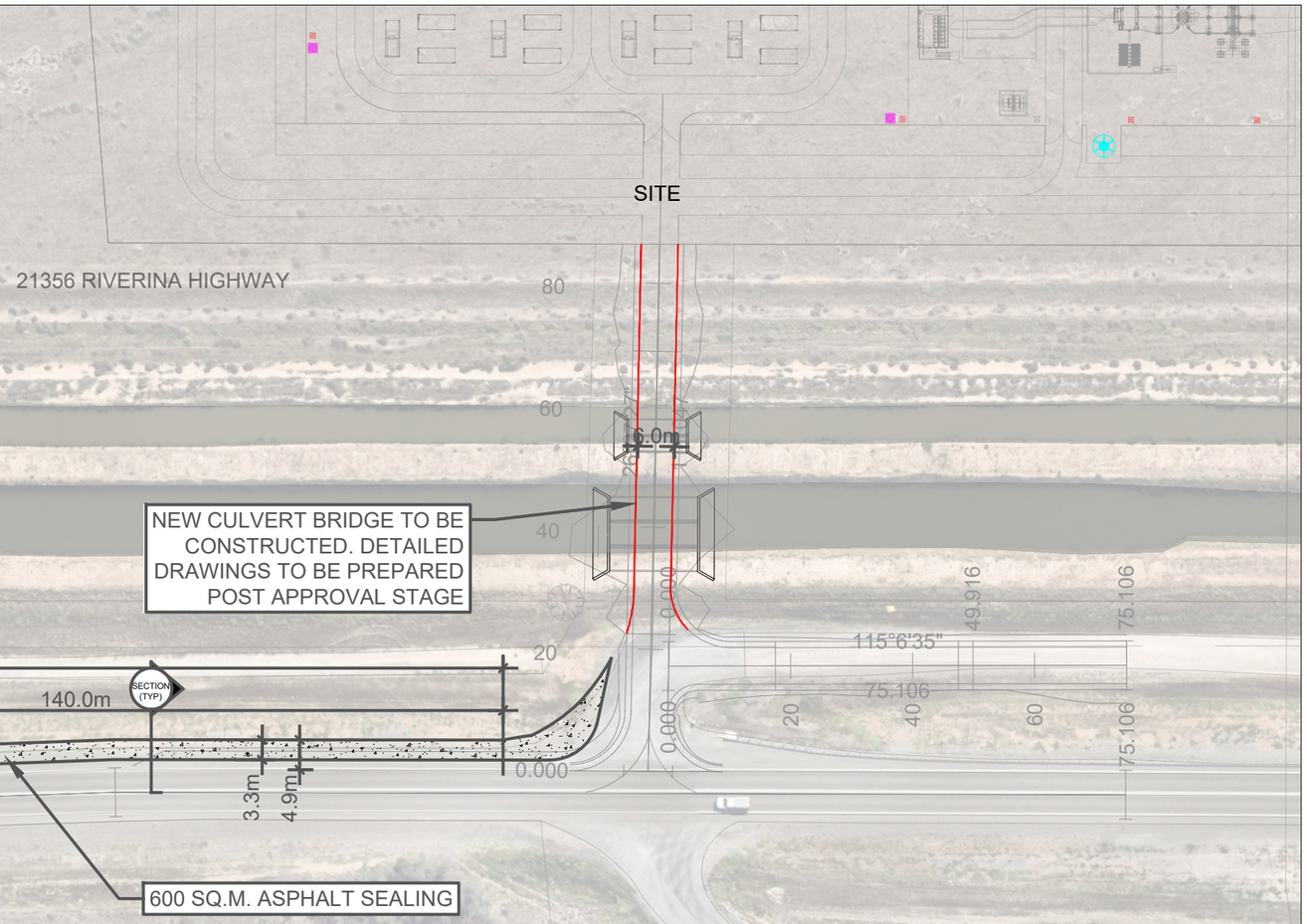
Drivers should avoid other noise-emitting activities, such as raised voices, shouting, yelling or loud radio volumes.

APPENDIX F STRATEGIC CONCEPT DESIGN PACKAGE



TYPICAL CROSS SECTION @ 1:200





LEGEND

ASPHALT SEAL

NOTES:

1. ALL MEASUREMENTS ARE IN METRES

SEALING PLAN

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STRATEGIC DESIGN
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DATE: 2025/05/02

NEARMAP IMAGE
DATE: 2024/10/20

REV	DESCRIPTION	DWN	CHK	DATE
D	RESPONSE TO RFIS	SA	KB	18/05/26
C	UPDATED FOR TINSW COMMENTS	JR	KB	20/11/25
B	MINOR UPDATES	SA	KM	20/05/25
A	DRAFT	SA	KM	15/05/25

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GRANSOLAR DEVELOPMENT AUSTRALIA

1:1,000 @ A3
0 10 20m

PROJECT NO. P0050308
DATE 18/05/26
SHEET NO. 01 OF 06
REVISION D

SITE

21356 RIVERINA HIGHWAY

MOULAMEIN CHANNEL

RIVERINA HIGHWAY

3m GIVE WAY (TB1) MARKINGS

4m GIVE WAY (TB) MARKINGS

10m BARRIER LINE (BL2) MARKINGS

12m BARRIER LINE (BL2) MARKINGS

190m EDGE LINE (EL1) MARKINGS

5x LEFT TURN PAVEMENT ARROW MARKINGS AT 30m SPACING

1m WIDE SEALED SHOULDER

12m EDGE LINE (EL1) MARKINGS

7m GIVE WAY (TB) MARKINGS

17m GIVE WAY (TB1) MARKINGS

185m CONTINUITY LINE (CL1) MARKINGS

180.0m

140.0m

40.0m

1.0m

3.9m

115°6'35"

49.916

75.106

75.106

LEGEND

Line type	Use	Dimensions (m)	Colour
CL1	Defines edge of through carriageway	1 3 1 3 1 3 1 / 0.15	White

TB	Give Way Line (Used with signs)	0.60 0.60 0.60 0.60 0.60 / 0.60 0.60 0.60 0.60 / 0.30	White
TB1	Give Way Line (Used on right side of road)	0.60 0.60 0.60 0.60 0.60 / 0.60 0.60 0.60 0.60 / 0.15	White

EL1	Left and right edges of roads, divided carriageways and expressways	0.15	White
BL2	Replaces dividing line if there is restricted sight distance for both directions, at approaches to a median island or at approaches to a pedestrian crossing.	0.1 / 0.1 / 0.1	White

NOTES:

1. ALL MEASUREMENTS ARE IN METRES

SIGNAGE AND LINEMARKING PLAN

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DATE: 2025/05/02

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DATE: 2024/10/20

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C	UPDATED FOR TINSW COMMENTS	JR	KB	20/11/25
B	MINOR UPDATES	SA	KM	20/05/25
A	DRAFT	SA	KM	15/05/25

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0 10 20m

PROJECT NO. P0050308
DATE 18/05/26
SHEET NO. 02 OF 06
REVISION D

INGRESS

21356 RIVERINA HIGHWAY

MOULAMEIN CHANNEL

RIVERINA HIGHWAY

EGRESS

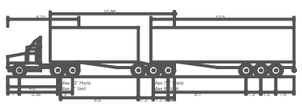
21356 RIVERINA HIGHWAY

MOULAMEIN CHANNEL

RIVERINA HIGHWAY

LEGEND

- 600 mm BODY CLEARANCE
- VEHICLE BODY (FORWARD)
- CENTRE LINE



B-Double (25.0m)	
Overall Length	25.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

SPEED = 20 km/h

SWEPT PATH - 25.0m B-DOUBLE

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1:1,000 @ A3
0 10 20m

PROJECT NO. P0050308
DATE 18/05/26
SHEET NO. 03 OF 06
REVISION D

INGRESS

21356 RIVERINA HIGHWAY

MOULAMEIN CHANNEL

180.0m

40.0m

140.0m

115°6'35"

49.916

75.106

75.106

75.106

RIVERINA HIGHWAY

EGRESS

21356 RIVERINA HIGHWAY

MOULAMEIN CHANNEL

180.0m

40.0m

140.0m

115°6'35"

49.916

75.106

75.106

75.106

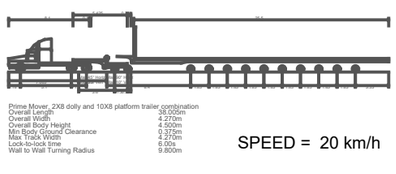
RIVERINA HIGHWAY

LEGEND

600 mm BODY CLEARANCE

VEHICLE BODY (FORWARD)

CENTRE LINE



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.500m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

SPEED = 20 km/h

SWEPT PATH - 38.0m OSOM

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1:1,000 @ A3
0 10 20m

PROJECT NO. P0050308
DATE 18/05/26
SHEET NO. 04 OF 06
REVISION D

EASTBOUND

21356 RIVERINA HIGHWAY

MOULAMEIN CHANNEL

180.0m

40.0m

140.0m

115°6'35"

49.916

75.106

RIVERINA HIGHWAY

WESTBOUND

21356 RIVERINA HIGHWAY

MOULAMEIN CHANNEL

180.0m

40.0m

140.0m

115°6'35"

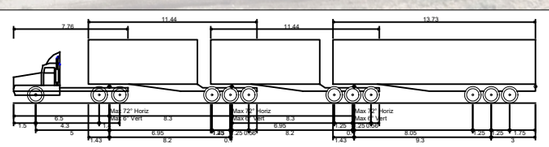
49.916

75.106

RIVERINA HIGHWAY

LEGEND

- 600 mm BODY CLEARANCE
- VEHICLE BODY (FORWARD)
- CENTRE LINE



B-Triple (35.4 m)	
Overall Length	35.400m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

SWEPT PATH - 35.4m B-TRIPLE ROAD TRAIN

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URBIS

DENILIQUIN BESS
STRATEGIC DESIGN

Olderfleet, Level 10, 477 Collins Street | Melbourne VIC 3000 AUSTRALIA | +61 3 8663 4888 | URBIS Pty Ltd | ABN 50 105 256 228

ARCHITECTURAL DRAWING REF
DWG NAME: DEN-PD-02052025-SIT-A9
DATE: 2025/05/02

NEARMAP IMAGE
DATE: 2024/10/20

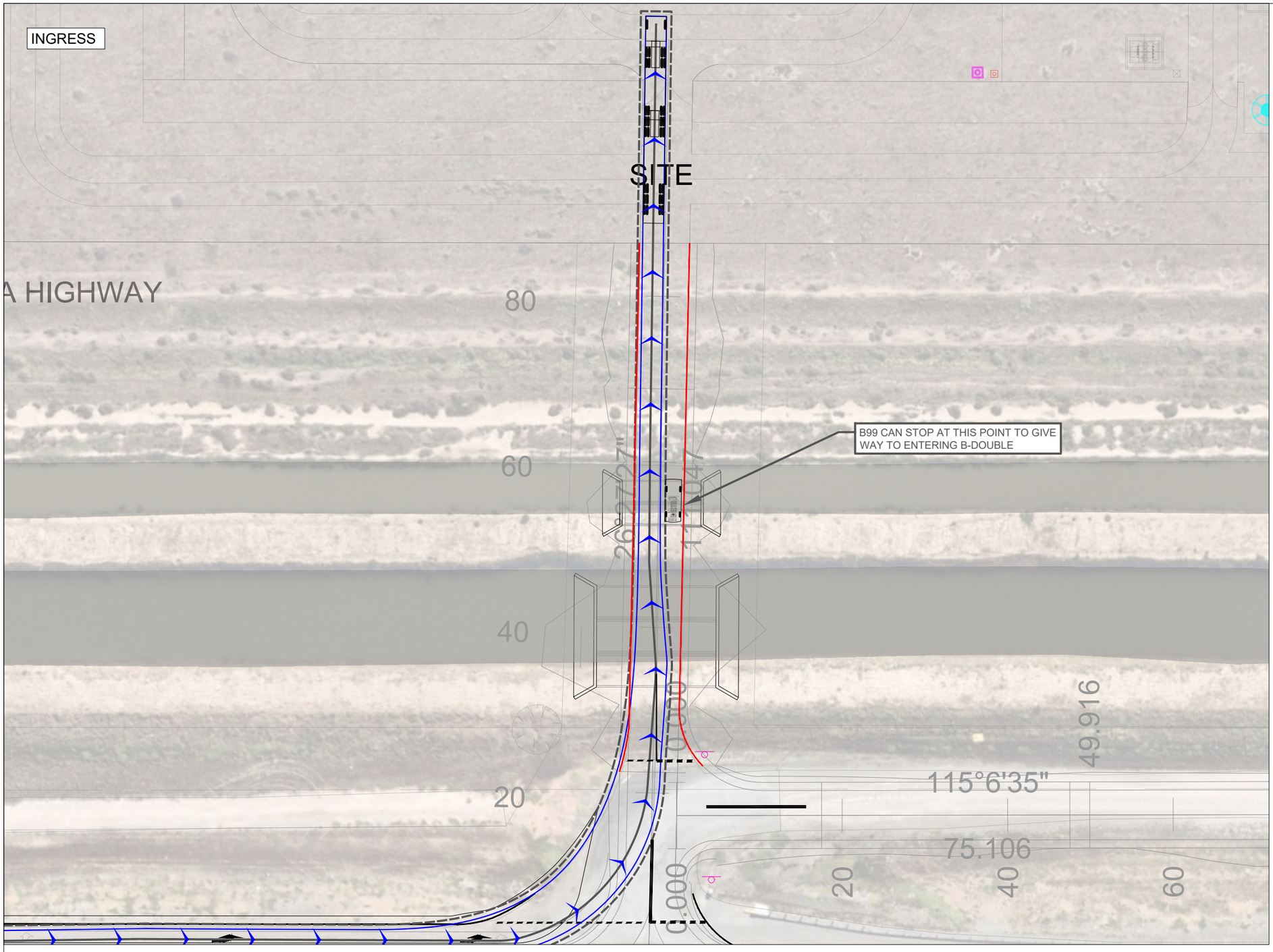
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D	RESPONSE TO RFIS	SA	KB	18/05/26
C	UPDATED FOR TINSW COMMENTS	JR	KB	20/11/25
B	MINOR UPDATES	SA	KM	20/05/25
A	DRAFT	SA	KM	15/05/25

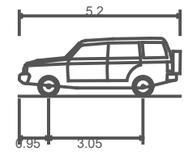
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CLIENT
GRANSOLAR DEVELOPMENT AUSTRALIA

1:1,000 @ A3
0 10 20m

PROJECT NO. P0050308
DATE 18/05/26
SHEET NO. 05 OF 06
REVISION D





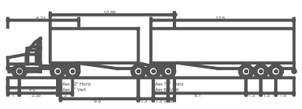


B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

LEGEND

- 600 mm BODY CLEARANCE
- VEHICLE BODY (FORWARD)
- CENTRE LINE



B-Double (25.0m)

Overall Length	25.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

SPEED = 20 km/h

SWEPT PATH - 25.0m B-DOUBLE

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ARCHITECTURAL DRAWING REF
DWG NAME: DEN-PD-02052025-SIT-A9
DATE: 2025/05/02

NEARMAP IMAGE
DATE: 2024/10/20

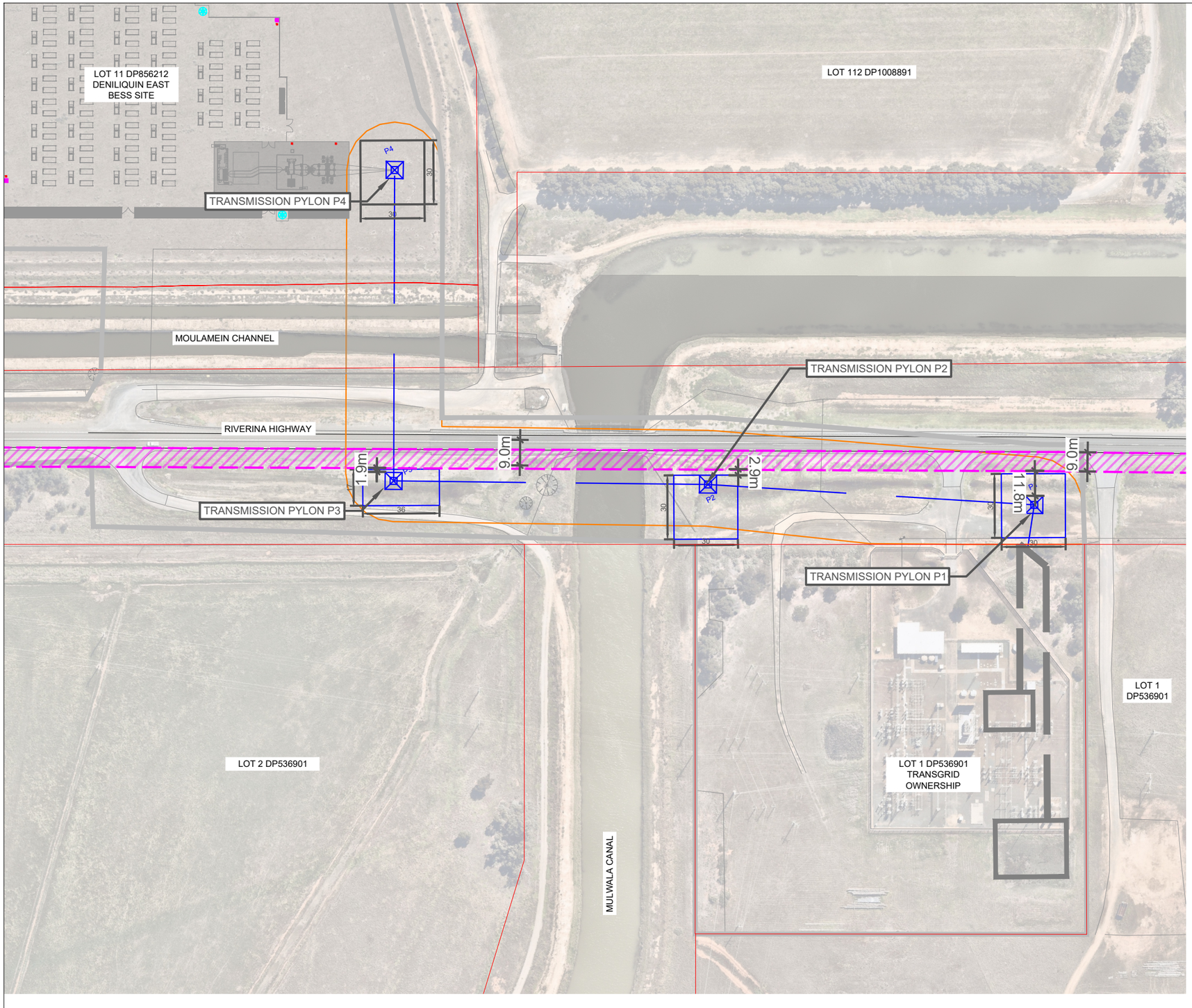
REV	DESCRIPTION	DWN	CHK	DATE
D	RESPONSE TO RFIS	SA	KB	18/05/26
C	UPDATED FOR TINSW COMMENTS	JR	KB	20/11/25
B	MINOR UPDATES	SA	KM	20/05/25
A	DRAFT	SA	KM	15/05/25

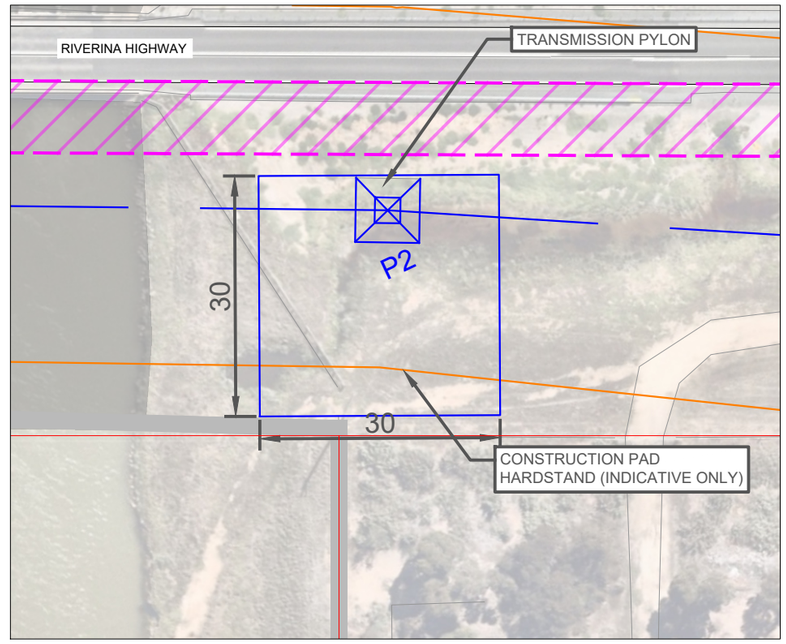
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1:500 @ A3
0 5 10m

PROJECT NO. P0050308
DATE 18/05/26
SHEET NO. 06 OF 06
REVISION D





TRANSMISSION PYLON (TYPICAL)

TRANSMISSION LINE ROADSIDE CLEAR ZONE STRATEGIC CONCEPT DESIGN

NOTES:

1. ALL MEASUREMENTS ARE IN METRES
2. CLEAR ZONE OF 9m MAINTAINED FROM EDGE OF TRAVELLED LANE. CLEAR ZONE AREA IS FREE FROM ALL PERMANENT NON-FRANGIBLE HAZARDS PER TfNSW SUPPLEMENT TO AUSTROADS GUIDE TO ROAD DESIGN
3. NO CUT OR FILL FOR TRANSMISSION LINE INFRASTRUCTURE IS PROPOSED WITHIN ROADSIDE CLEAR ZONE
4. PAD DIMENSIONS INDICATIVE ONLY, TO BE CONFIRMED POST-APPROVAL. PADS TO NOT ENCROACH ADJACENT LOTS.
5. EACH POLE LIKELY TO REQUIRE APPROXIMATELY 10 - 15 m^3 OF CUT FOR THE POLE FOUNDATION. THE EXCAVATED MATERIAL WOULD TYPICALLY BE SPREAD ACROSS THE CONSTRUCTION PAD ON EITHER SIDE OF THE POLE, SO EXPORT OF CUT IS NOT EXPECTED TO BE REQUIRED
6. EACH CONSTRUCTION PAD MAY ALSO REQUIRE UP TO 200 mm OF IMPORTED FILL, OR APPROXIMATELY 180 m^3 PER PYLON, IF THE NATURAL SOIL DOES NOT HAVE SUFFICIENT LOAD-BEARING CAPACITY (TO BE CONFIRMED FOLLOWING ON-SITE GEOTECHNICAL INVESTIGATION)
7. CONSTRUCTION PADS ARE TYPICALLY GRADED AND SLIGHTLY RAISED ABOVE NATURAL GROUND LEVEL
8. THE ABOVE FIGURES RELATING TO CUT AND FILL SHOULD BE TREATED AS THE MAXIMUM INDICATIVE AMOUNTS PER PYLON

LEGEND:

- ROADSIDE CLEAR ZONE
- PROPERTY BOUNDARY (INDICATIVE)
- TRANSMISSION BUFFER
- INDICATIVE CONNECTION OPTIONS
- EXTENT OF WORKS

TRANSMISSION PYLONS AND CONSTRUCTION PADS DESIGNED AND LOCATED BY OTHERS

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URBIS

DENILIQUIN EAST BESS
STRATEGIC DESIGN - TRANSMISSION LINE

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ARCHITECTURAL DRAWING REF
DWG NAME: DEN_BESS_CAD_GDA2020_A9_v3

NEARMAP IMAGE
DATE: 2024/10/20

REV	DESCRIPTION	DWN	CHK	DATE
B	UPDATED NOTATION FOR TfNSW	JR	KB	18/05/26
A	PRELIMINARY ISSUE	JR	KB	24/11/25

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CLIENT
GRANSOLAR DEVELOPMENT AUSTRALIA

1:2,000 @ A3
0 10 20 30 40 50m

PROJECT NO. P0050308
DATE 18/05/2026
SHEET NO. 01 OF 01
REVISION B



NOTES:

1. Demolition to occur prior to high-risk OSOM movement
2. Interim treatment (Sheet 02) to be installed immediately following demolition
3. Existing sign mountings to be removed or made flush with carriageway surface to enable OSOM traversal
4. Traffic Management Plan to be prepared and implemented during demolition

LEGEND

- TRAFFIC ISLAND FOR DEMOLITION
- TRAFFIC SIGN MOUNT FOR DEMOLITION
- TRAFFIC SIGN TO BE REMOVED (R1-3)

DEMOLITION PLAN

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DENILIQUIN BESS - HIGH-RISK OSOM ROUTE

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NEARMAP IMAGE
DATE: 20/10/2024

REV	DESCRIPTION	DWN	CHK	DATE
A	PRELIMINARY ISSUE	JR	KB	20/11/25

DISCLAIMER

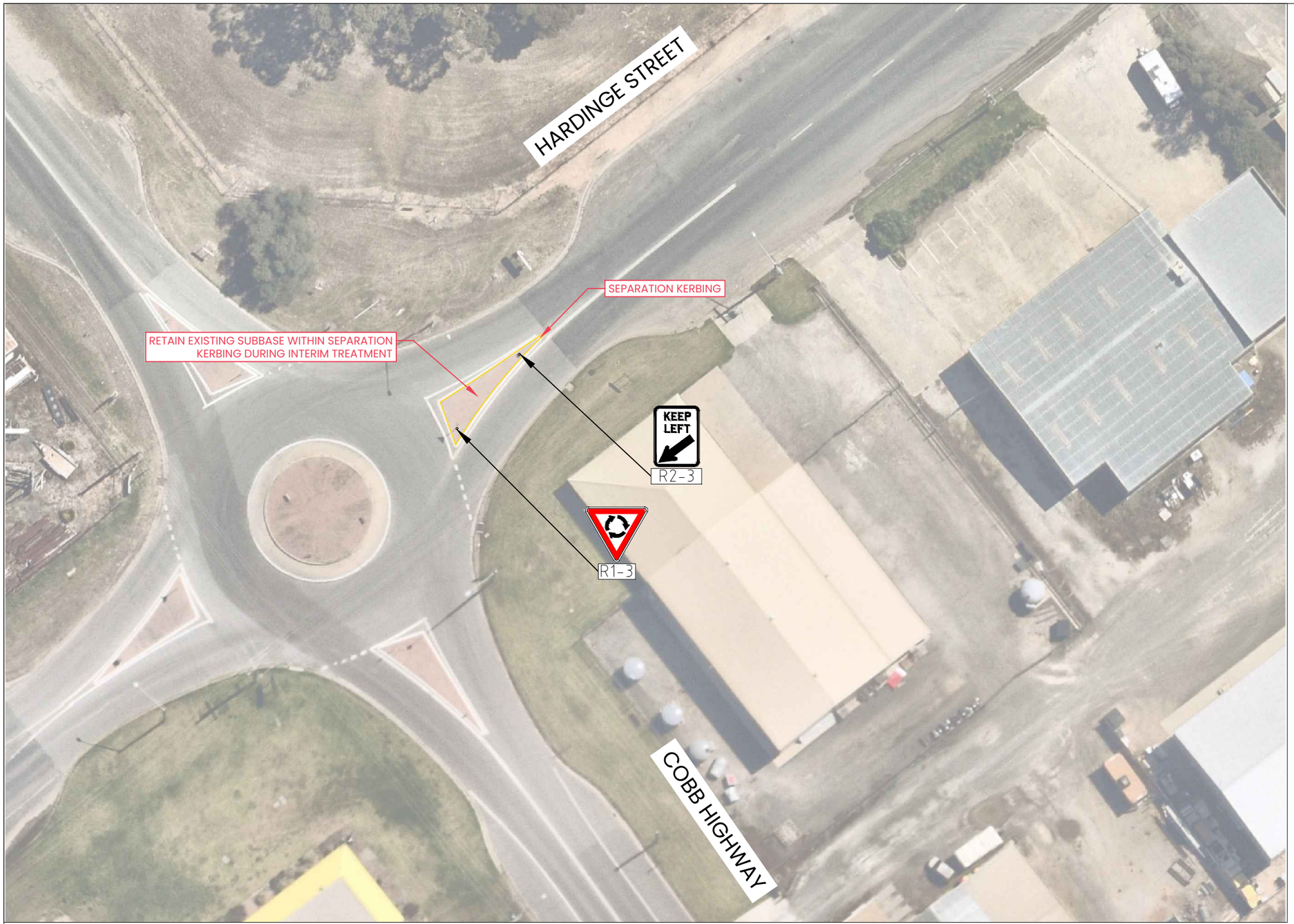
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BESS ARCTIC PTY LTD C/-
GRANSOLAR DEVELOPMENT AUSTRALIA

1:500 @ A3
0 5 10m

PROJECT NO.	DATE
P0050308	20/11/25
SHEET NO.	REVISION
01 OF 04	A



NOTES:

1. Interim treatment to be installed prior to high-risk OSOM movement.
2. Interim treatment to be installed immediately following demolition.
3. Interim treatment sign mount fixtures to be flush with subbase. Signage posts and mount fixtures to be designed in accordance with AS1742.2-2022

LEGEND

TEMPORARY HIGH-IMPACT MODULAR SEPARATION KERB

TRAFFIC SIGN MOUNT TO BE INSTALLED

TRAFFIC SIGN TO BE INSTALLED

R1-3

EXAMPLE KERB TREATMENT



INTERIM TREATMENT

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Strategic Concept Design - Cobb Highway / Hardinge Street, Deniliquin

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NEARMAP IMAGE
DATE: 20/10/2024

REV	DESCRIPTION	DWN	CHK	DATE
A	PRELIMINARY ISSUE	JR	KB	20/11/25

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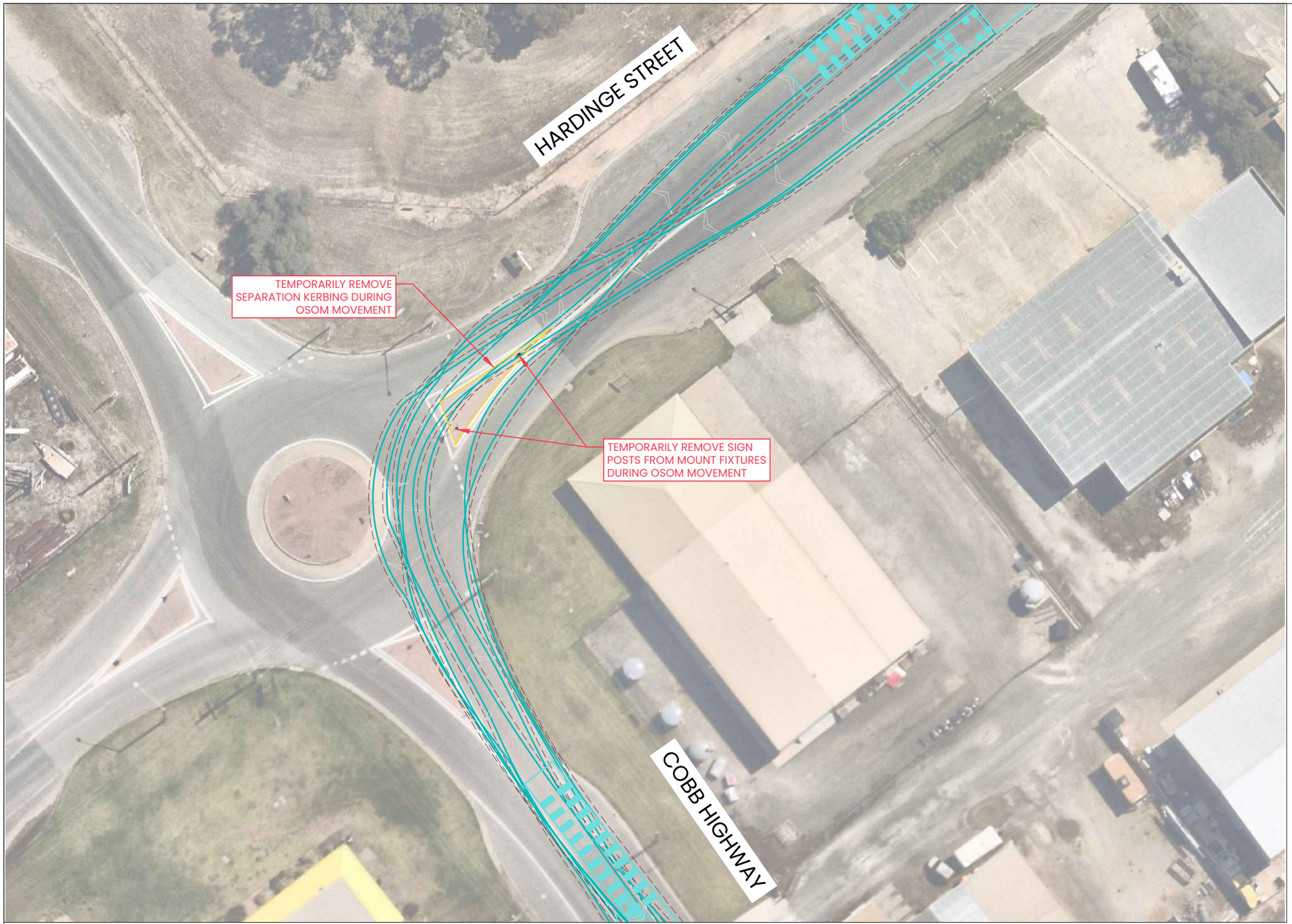
CLIENT

BESS ARCTIC PTY LTD C/-
GRANSOLAR DEVELOPMENT AUSTRALIA

1:500 @ A3

0 5 10m

PROJECT NO.	DATE
P0050308	20/11/25
SHEET NO.	REVISION
02 OF 04	A

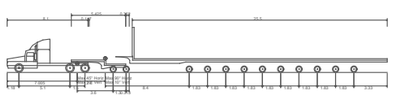


NOTES:

1. Signage and temporary separation kerbing to be removed by traffic management personnel during OSOM movement and re-installed immediately after the movement.
2. OSOM to traverse subbase area. Traffic management personnel to sweep any subbase material from road carriageway immediately after the movement.
3. Traffic management personnel to re-install interim treatment immediately after OSOM movement.

LEGEND

- TEMPORARY HIGH-IMPACT SEPARATION KERBING
- TRAFFIC SIGN MOUNT TO BE INSTALLED
- 500 mm BODY CLEARANCE
- VEHICLE BODY (FORWARD)
- CENTRE LINE



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.300m
Min Body Ground Clearance	0.375m
Track Width	6.000m
Lock-to-Lock Time	6.00s
Wall to Wall Turning Radius	9.800m

INTERIM TREATMENT SWEPT PATHS - 38.0m OSOM

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DENILIQUIN BESS - HIGH-RISK OSOM ROUTE

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NEARMAP IMAGE
DATE: 20/10/2024

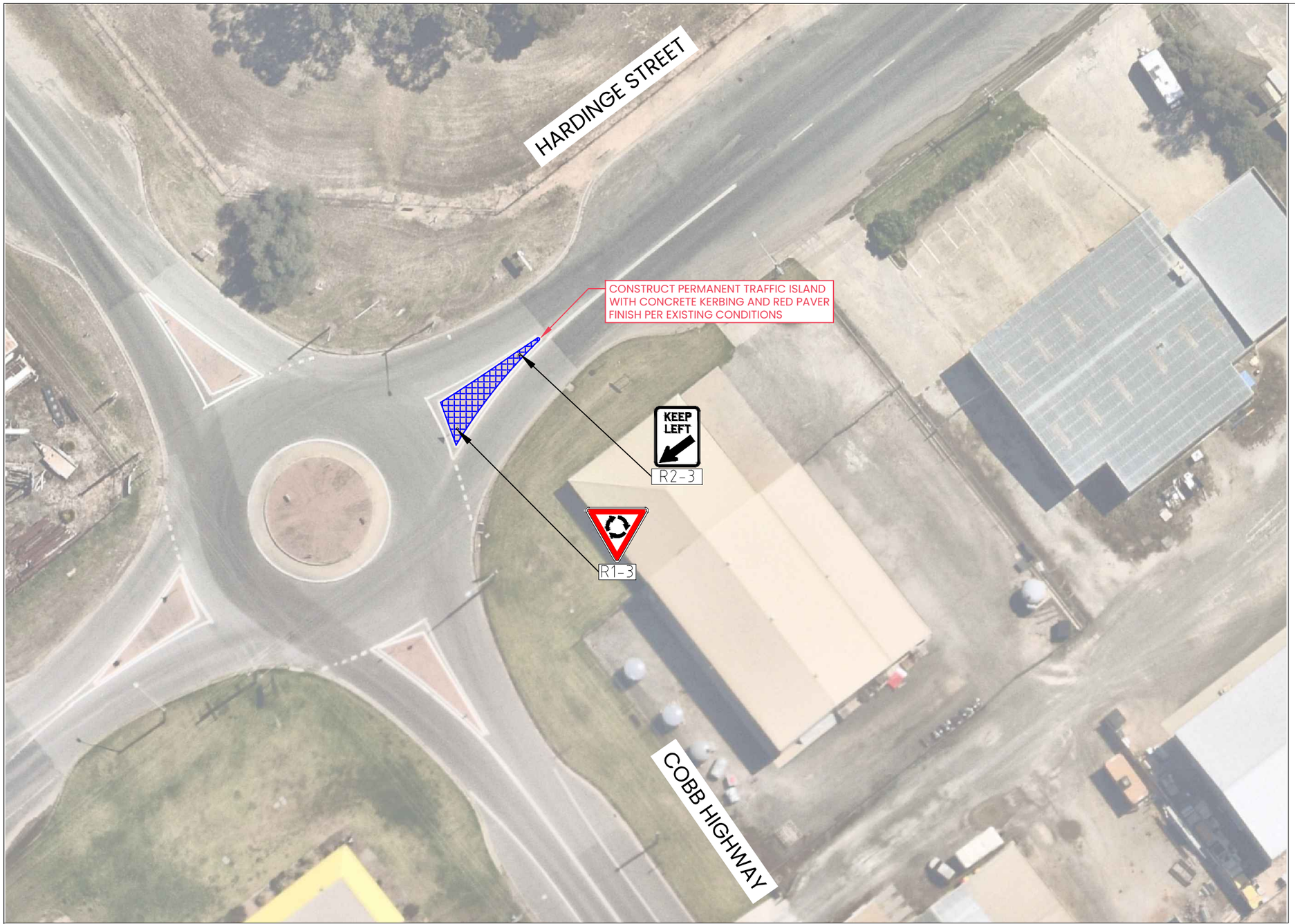
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A	PRELIMINARY ISSUE	JR	KB	20/11/25

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CLIENT
BESS ARCTIC PTY LTD C/-
GRANSOLAR DEVELOPMENT AUSTRALIA

1:500 @ A3
0 5 10m

PROJECT NO. P0050308
DATE 20/11/25
SHEET NO. 03 OF 04
REVISION A



NOTES:

1. Ultimate treatment to be constructed within one (1) month of OSOM movement
2. Traffic island to be constructed in accordance with relevant TfNSW Standards
3. Subbase repair to be undertaken during traffic island construction if required
4. Linemarking to be repaired / repainted if required in accordance with relevant TfNSW Standards

LEGEND

- PERMANENT TRAFFIC ISLAND
- TRAFFIC SIGN MOUNT
- TRAFFIC SIGN TO BE INSTALLED (R1-3)

ULTIMATE TREATMENT

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NEARMAP IMAGE
DATE: 20/10/2024

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A	PRELIMINARY ISSUE	JR	KB	20/11/25

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GRANSOLAR DEVELOPMENT AUSTRALIA

1:500 @ A3
0 5 10m

PROJECT NO. P0050308
DATE 20/11/25
SHEET NO. 04 OF 04
REVISION A



NOTES:

1. Demolition to occur prior to high-risk OSOM movement
2. Interim treatment (Sheet 02) to be installed immediately following demolition
3. Existing sign mounting to be removed or made flush with carriageway surface to enable OSOM traversal
4. Traffic Management Plan to be prepared and implemented during demolition

LEGEND

- TRAFFIC ISLAND FOR DEMOLITION
- TRAFFIC SIGN MOUNT FOR DEMOLITION
- TRAFFIC SIGN TO BE REMOVED

GIVE WAY
R1-2

DEMOLITION PLAN

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DATE: 20/10/2024

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GRANSOLAR DEVELOPMENT AUSTRALIA

1:500 @ A3
0 5 10m

PROJECT NO. P0050308
DATE 20/11/25
SHEET NO. 01 OF 04
REVISION A



NOTES:

1. Interim treatment to be installed prior to high-risk OSOM movement.
2. Interim treatment to be installed immediately following demolition.
3. Interim treatment sign mount fixture to be flush with subbase. Signage post and mount fixture to be designed in accordance with AS1742.2-2022

LEGEND

TEMPORARY HIGH-IMPACT MODULAR SEPARATION KERB

TRAFFIC SIGN MOUNT TO BE INSTALLED



TRAFFIC SIGN TO BE INSTALLED

EXAMPLE KERB TREATMENT



INTERIM TREATMENT

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NEARMAP IMAGE
DATE: 20/10/2024

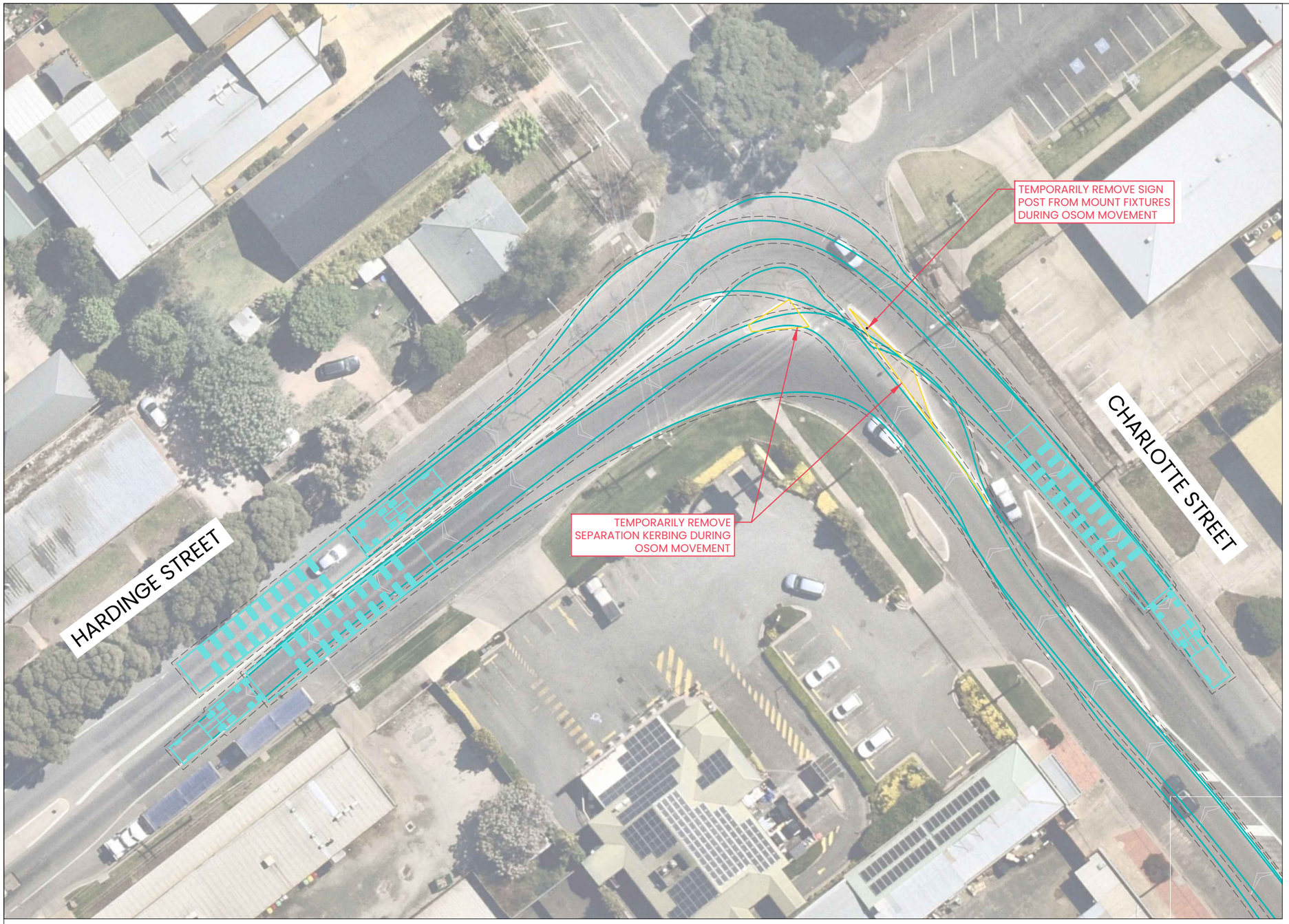
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A	PRELIMINARY ISSUE	JR	KB	20/11/25

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CLIENT
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GRANSOLAR DEVELOPMENT AUSTRALIA

1:500 @ A3
0 5 10m

PROJECT NO. P0050308
DATE 20/11/25
SHEET NO. 02 OF 04
REVISION A

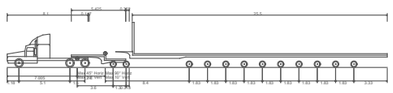


NOTES:

1. Signage and temporary separation kerbing to be removed by traffic management personnel during OSOM movement and re-installed immediately after the movement.
2. OSOM to traverse subbase area. Traffic management personnel to sweep any subbase material from road carriageway immediately after the movement.
3. Traffic management personnel to re-install interim treatment immediately after OSOM movement.

LEGEND

- TEMPORARY HIGH-IMPACT SEPARATION KERBING
- TRAFFIC SIGN MOUNT TO BE INSTALLED
- 500 mm BODY CLEARANCE
- VEHICLE BODY (FORWARD)
- CENTRE LINE



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Width	4.270m
Overall Body Height	4.300m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

INTERIM TREATMENT SWEPT PATHS - 38.0m OSOM

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NEARMAP IMAGE
DATE: 20/10/2024

REV	DESCRIPTION	DWN	CHK	DATE
A	PRELIMINARY ISSUE	JR	KB	20/11/25

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CLIENT
BESS ARCTIC PTY LTD C/-
GRANSOLAR DEVELOPMENT AUSTRALIA

1:500 @ A3
0 5 10m

PROJECT NO. P0050308
DATE 20/11/25
SHEET NO. 03 OF 04
REVISION A



NOTES:

1. Ultimate treatment to be constructed within one (1) month of OSOM movement
2. Traffic island to be constructed in accordance with relevant TfNSW Standards
3. Subbase repair to be undertaken during traffic island construction if required
4. Linemarking to be repaired / repainted if required in accordance with relevant TfNSW Standards

LEGEND

- PERMANENT TRAFFIC ISLAND
- TRAFFIC SIGN MOUNT
- TRAFFIC SIGN TO BE INSTALLED (R1-3)

ULTIMATE TREATMENT

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DENILIQUIN BESS - HIGH-RISK OSOM ROUTE

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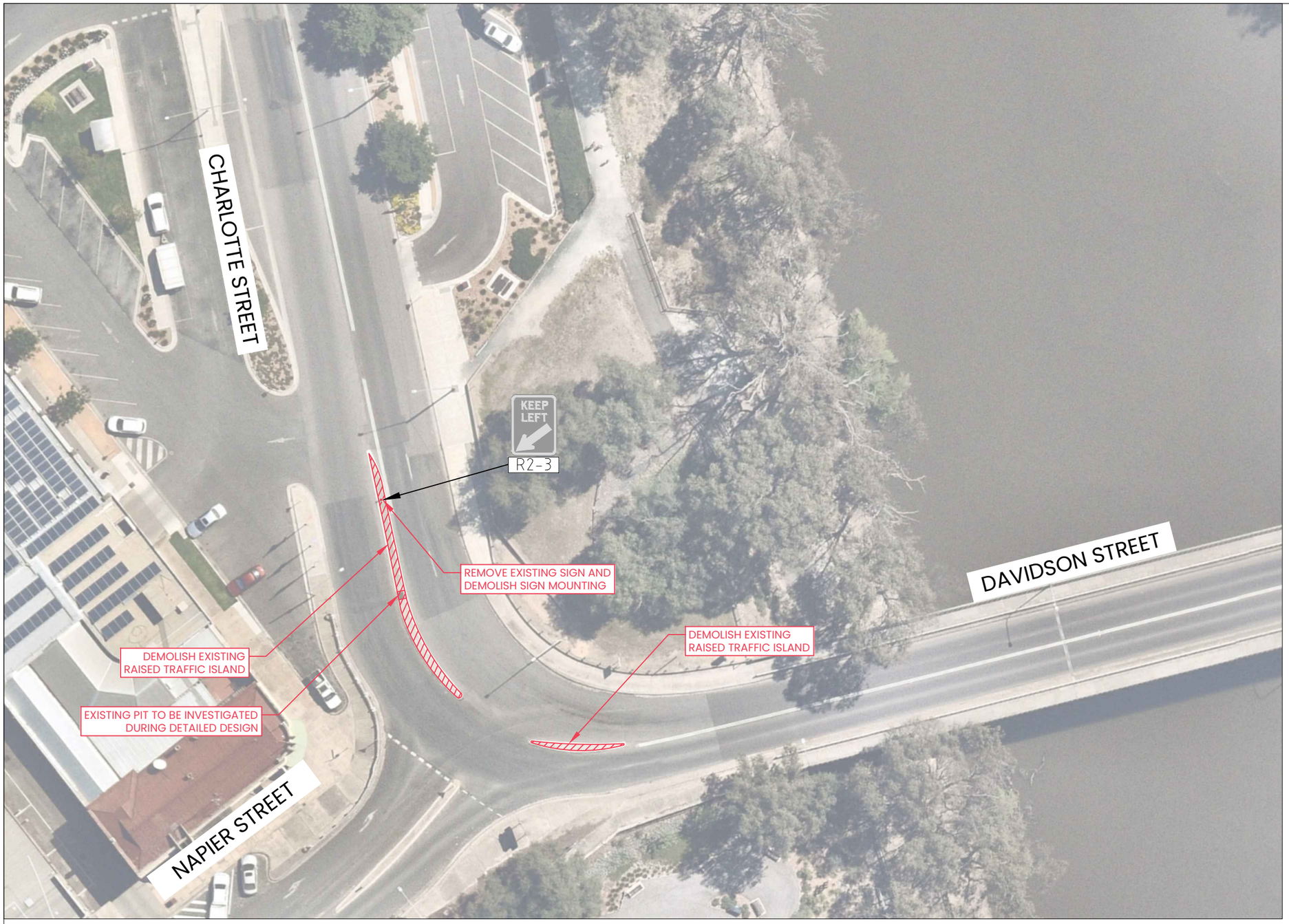
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0 5 10m

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DATE 20/11/25
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REVISION A



NOTES:

1. Demolition to occur prior to high-risk OSOM movement
2. Interim treatment (Sheet 02) to be installed immediately following demolition
3. Existing sign mounting to be removed or made flush with carriageway surface to enable OSOM traversal
4. Traffic Management Plan to be prepared and implemented during demolition

LEGEND

- TRAFFIC ISLAND FOR DEMOLITION
- TRAFFIC SIGN MOUNT FOR DEMOLITION
- GIVE WAY R1-2 — TRAFFIC SIGN TO BE REMOVED

DEMOLITION PLAN

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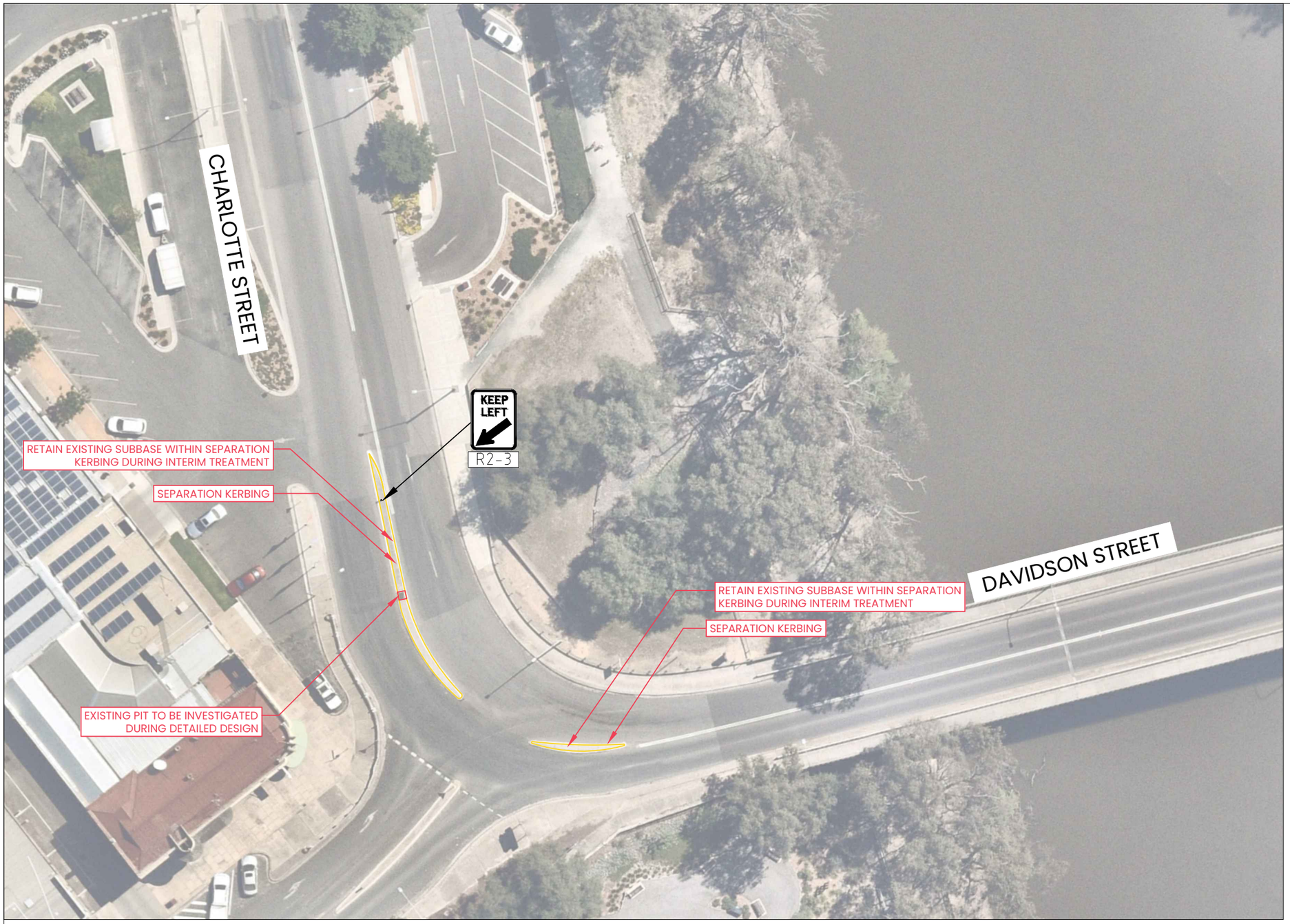
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0 5 10m

PROJECT NO. P0050308
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SHEET NO. 01 OF 04
REVISION A



NOTES:

1. Interim treatment to be installed prior to high-risk OSOM movement.
2. Interim treatment to be installed immediately following demolition.
3. Interim treatment sign mount fixture to be flush with subbase. Signage post and mount fixture to be designed in accordance with AS1742.2-2022

LEGEND

TEMPORARY HIGH-IMPACT MODULAR SEPARATION KERB

TRAFFIC SIGN MOUNT TO BE INSTALLED

TRAFFIC SIGN TO BE INSTALLED

R1-3

EXAMPLE KERB TREATMENT



INTERIM TREATMENT

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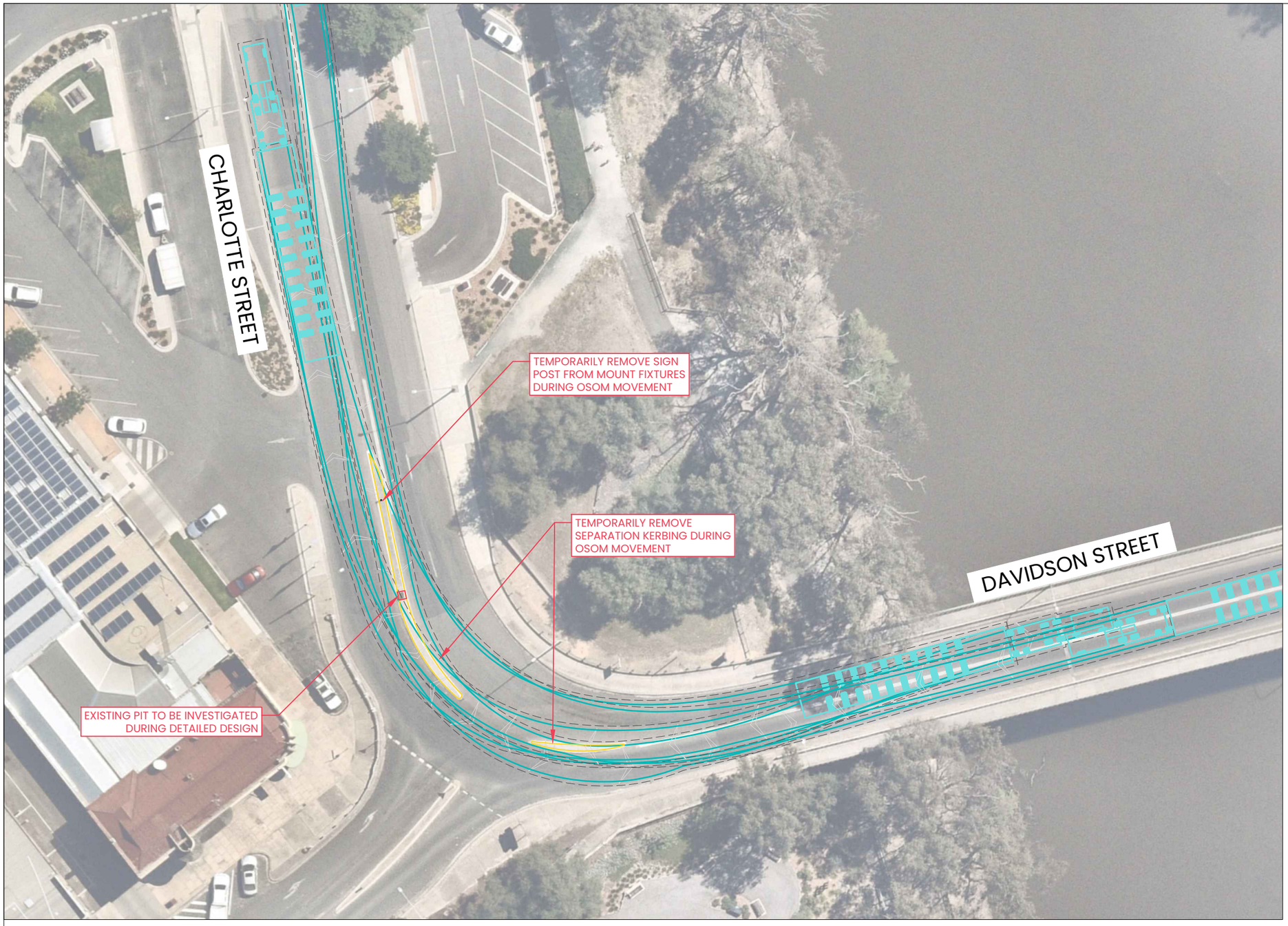
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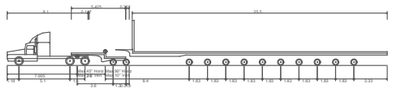


NOTES:

1. Signage and temporary separation kerbing to be removed by traffic management personnel during OSOM movement and re-installed immediately after the movement.
2. OSOM to traverse subbase area. Traffic management personnel to sweep any subbase material from road carriageway immediately after the movement.
3. Traffic management personnel to re-install interim treatment immediately after OSOM movement.

LEGEND

- TEMPORARY HIGH-IMPACT SEPARATION KERBING
- TRAFFIC SIGN MOUNT TO BE INSTALLED
- 500 mm BODY CLEARANCE
- VEHICLE BODY (FORWARD)
- CENTRE LINE



Prime Mover, 2X8 dolly and 10X8 platform trailer combination

Overall Length	38.005m
Overall Body	4.270m
Overall Body Height	4.600m
Min Body Ground Clearance	0.375m
Max Track Width	4.270m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	9.800m

INTERIM TREATMENT SWEPT PATHS - 38.0m OSOM

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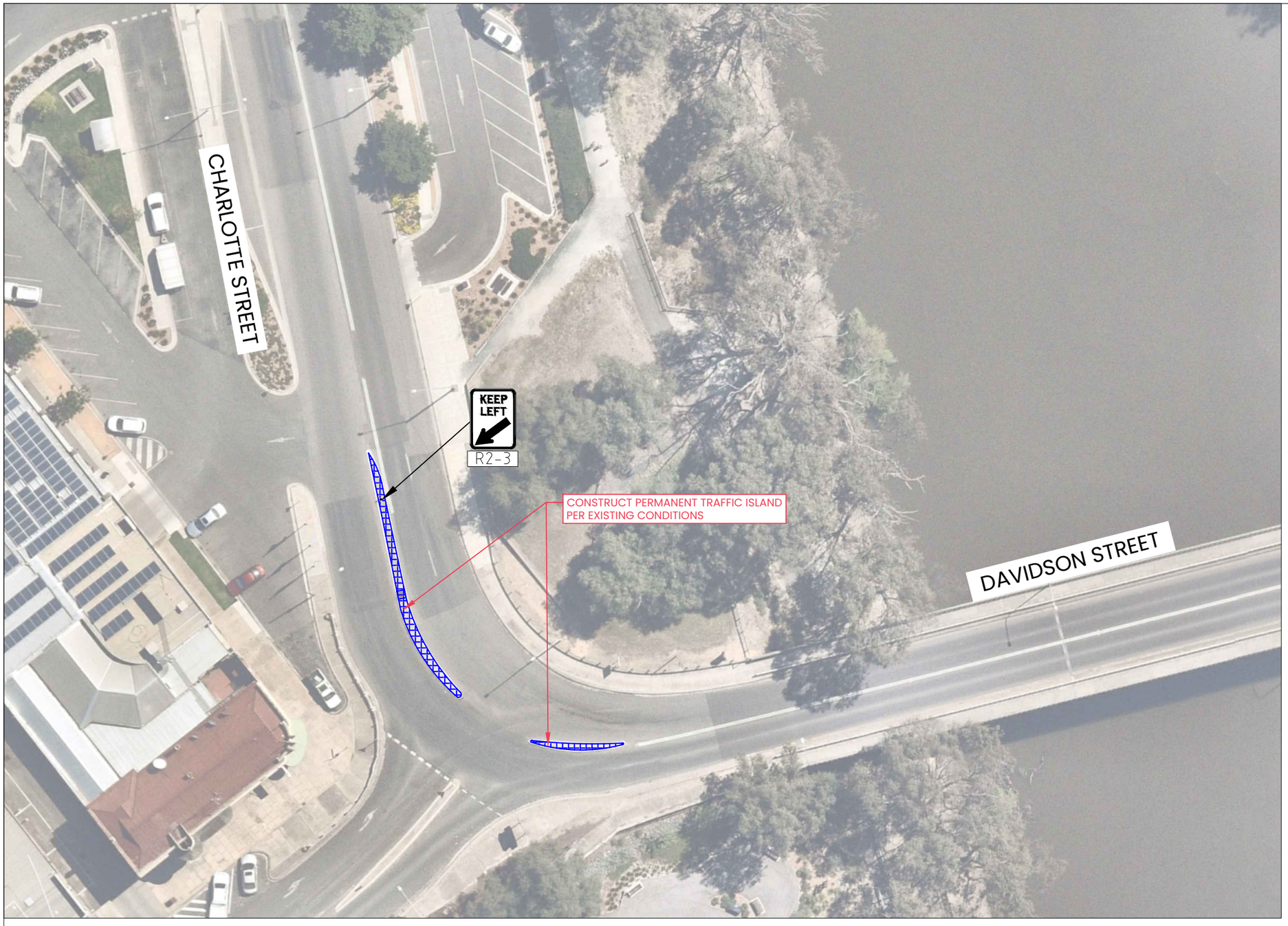
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0 5 10m

PROJECT NO. P0050308
DATE 20/11/25
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REVISION A



NOTES:

1. Ultimate treatment to be constructed within one (1) month of OSOM movement
2. Traffic island to be constructed in accordance with relevant TfNSW Standards
3. Subbase repair to be undertaken during traffic island construction if required
4. Linemarking to be repaired / repainted if required in accordance with relevant TfNSW Standards

LEGEND

- PERMANENT TRAFFIC ISLAND
- TRAFFIC SIGN MOUNT
- R1-3 TRAFFIC SIGN TO BE INSTALLED

ULTIMATE TREATMENT

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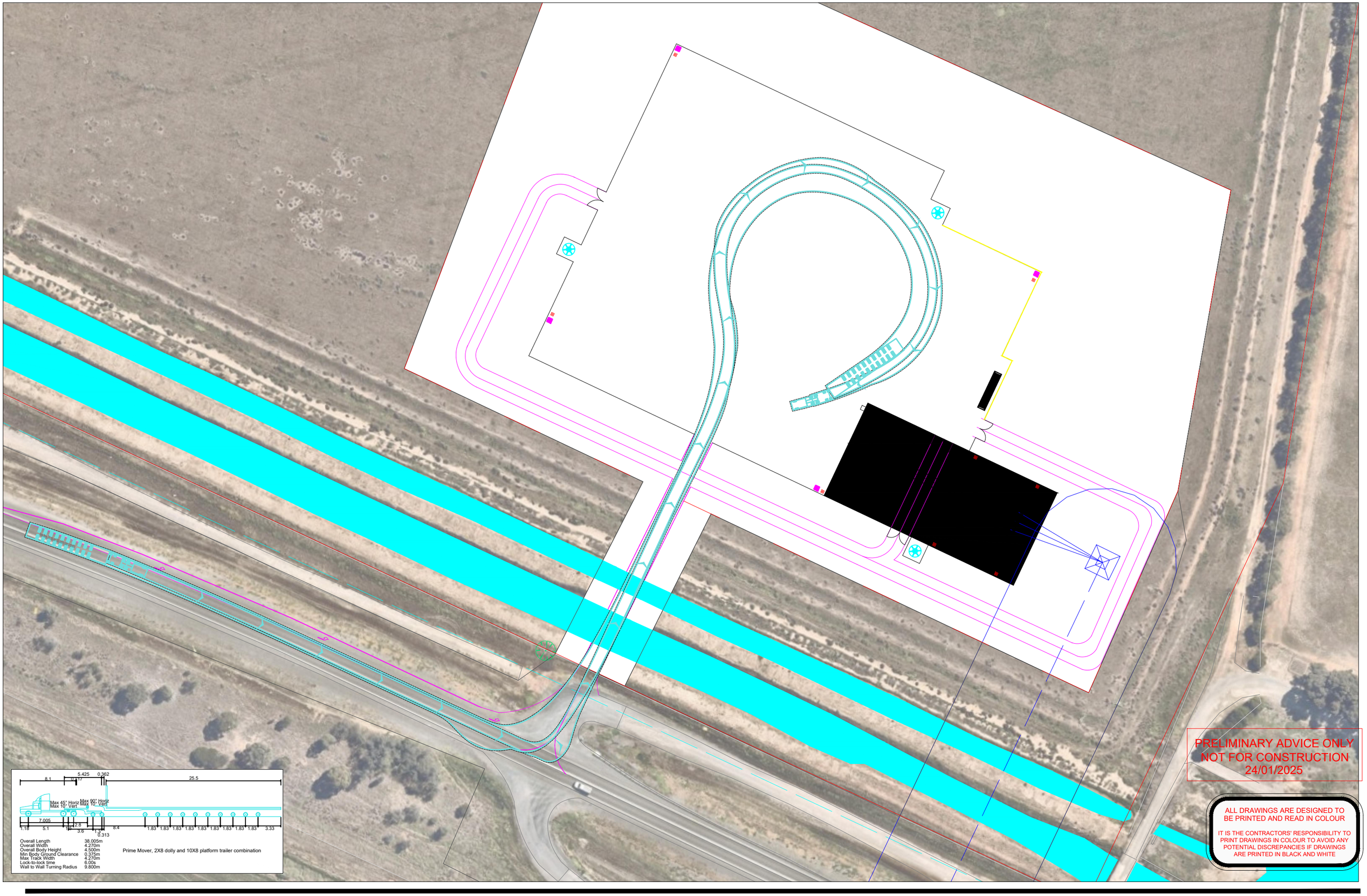
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APPENDIX G SITE SWEPT PATH ANALYSIS



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Deniliquin Battery Energy Storgae System

Construction Vehicle Swept Path - Site Access

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DATA SOURCE
NearMaps

PROJECTION
GDA2020 / MGA Zone 55

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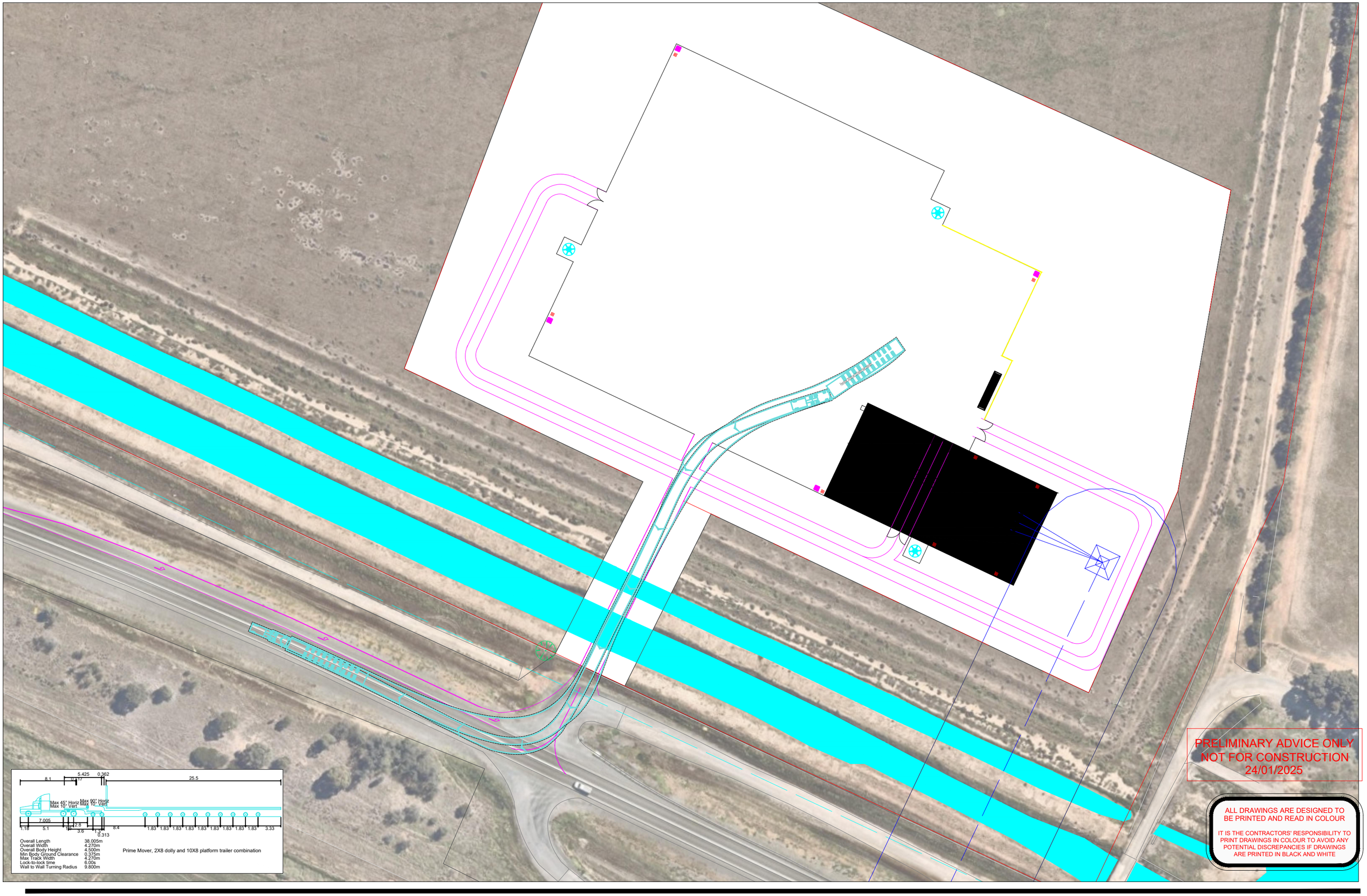
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Deniliquin Battery Energy Storgae System

Construction Vehicle Swept Path - Site Access

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DATA SOURCE
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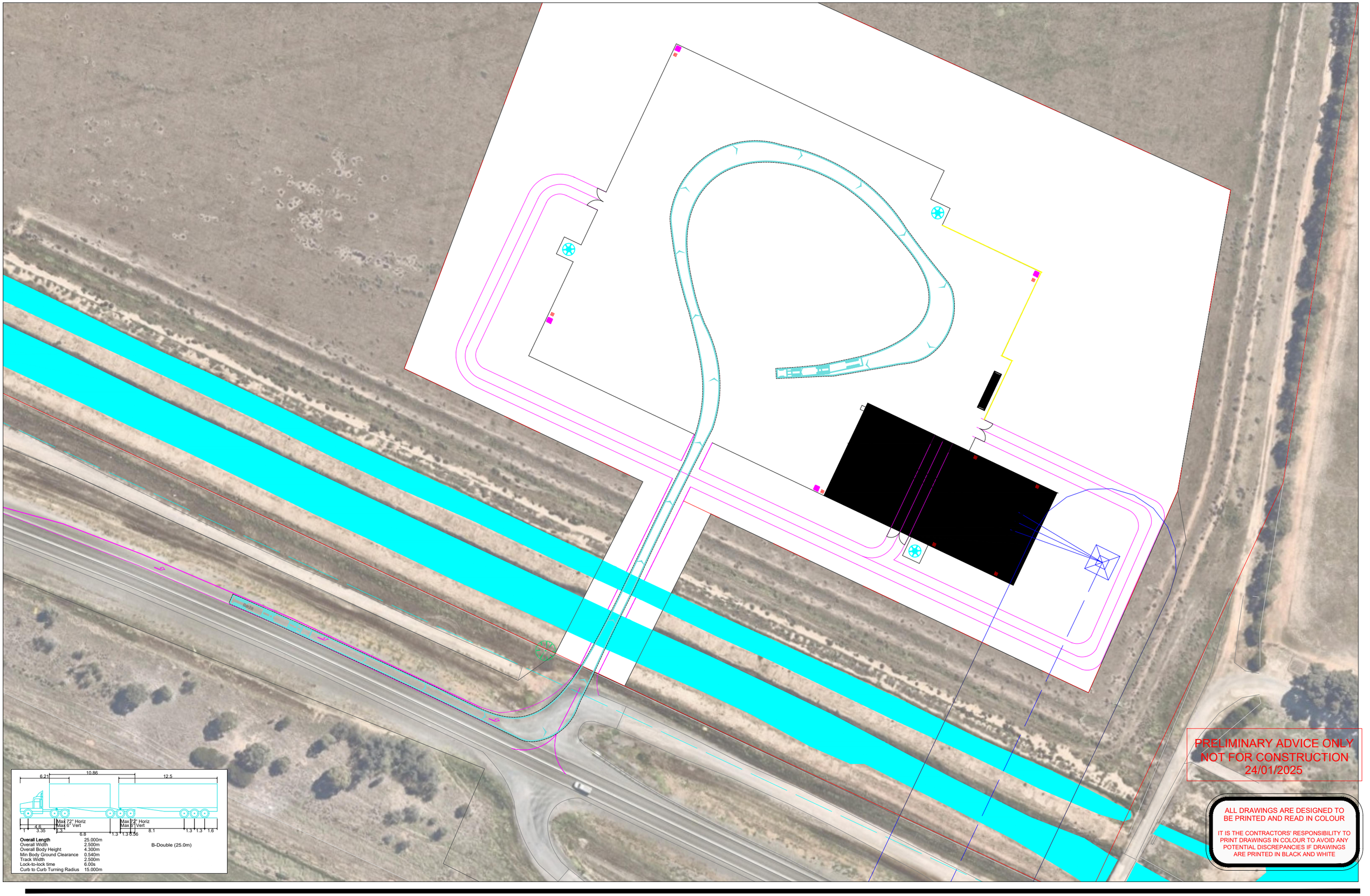
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URBIS

Deniliquin Battery Energy Storgae System

Construction Vehicle Swept Path - Site Access

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PROJECTION
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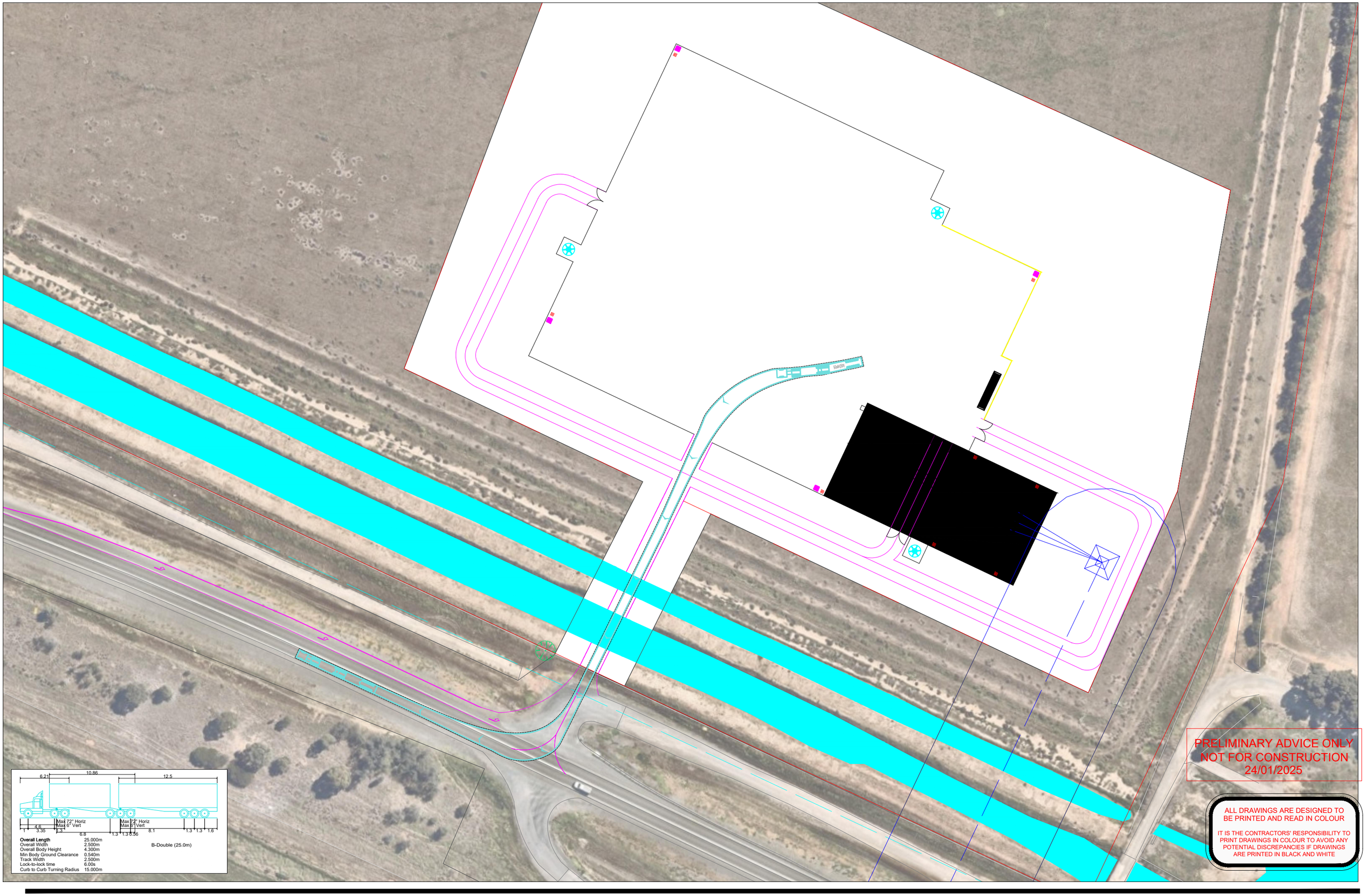
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Deniliquin Battery Energy Storgae System

Construction Vehicle Swept Path - Site Access

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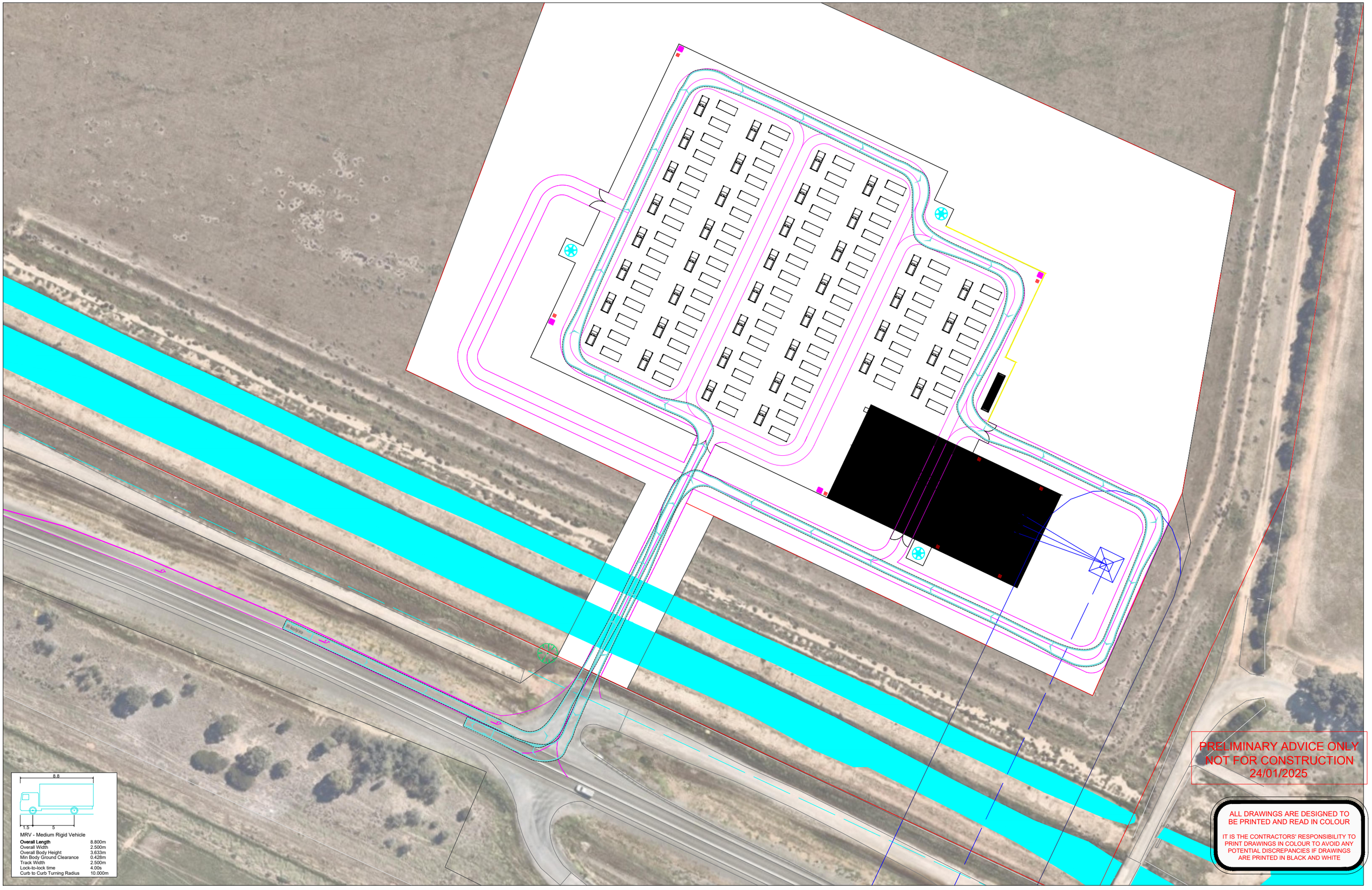
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Deniliquin Battery Energy Storgae System

Fire Truck Swept Path - Site Access and Internal Circulation

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