



Panorama Battery Energy Storage System (BESS)

State Significant Development

SSD – 50587460

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

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Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
v4.6	19 January 2026	Charlie Seventekin	Charlie Seventekin	Jeffrey Baczynski

Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Panorama BESS SubCo Pty Ltd (the Applicant). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Applicant. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Applicant and others in respect of any matters outside the agreed scope of the work.



Executive Summary

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Panorama BESS SubCo Pty Ltd (Panorama BESS SubCo or the Applicant) to prepare a Traffic Impact Assessment (TIA) for a Battery Energy Storage System (BESS) development.

The application proposes a 100 megawatt (MW)/ 200 megawatt hours (MWh) BESS to be constructed on Lot 2 of DP 864272 at 800 Mid-Western Highway, Evans Plains, New South Wales (NSW). The site is located approximately 5.8 kilometres (km) southwest of Bathurst and 2.5 km west of Robin Hill.

The proposed development will comprise SolBank BESS equipment, consisting of battery enclosures, inverters and a transformer. The development also requires the expansion of an existing Transgrid substation (in Lot 521 of DP 603541) located north east of the BESS infrastructure, as well as the installation of approximately 260m of 132kV underground cable to connect the BESS infrastructure to the substation.

Access to the site would be via the existing site crossover on Mid-Western Highway that readily services the aforementioned Transgrid substation via the upgrading of this access. A short Auxiliary Left Turn Lane (AUL-s) treatment will be provided at this location. The internal access road is planned to be formalised to accommodate heavy vehicles associated with the construction of the BESS. An additional connection road will be constructed from the existing internal road to the BESS.

The development also involves the construction of ancillary facilities, including an operation and maintenance building, stormwater management infrastructure, lighting, fencing and temporary construction laydown areas. In addition, the access driveway will be formalised to accommodate heavy vehicle traffic, and the existing internal access road will be extended to provide direct access to the BESS infrastructure.

A Secretary's Environmental Approval Requirements (SEARs) request was made on 16 November 2022, and this TIA will form a part of the environmental assessments for the project.

Based on the analysis and discussion documented in this report, the following is concluded:

- Sight distances available at the access driveway crossover satisfy the Safe Intersection Sight Distance (SISD) requirements of the Austroads Guidelines.
- The proposed development will generate approximately 22 return trips a day (light and heavy vehicles combined).
- It was identified that the construction traffic volume would be sufficiently low (22 return trips a day) and that there would be no capacity constraints at the access crossover.
- It is recommended that the construction workforce be briefed on the recommended route with a Driver's Code of Conduct prepared by the applicant.
- The access location should be designed with an AUL(s) treatment per Austroads Guidelines for a rural site under the Extended Design Domain. No upgrades are considered necessary for the right-turn movement because all heavy and light vehicles will be limited to Left-In and Left-Out (LILO) operation.
- The use of Evans Plains Road by heavy vehicles is consistent with Austroads Guidelines.
- It is also recommended that a construction traffic management plan (CTMP) be prepared and dilapidation surveys on Evans Plains Road be undertaken following the approval of this SSD application.



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1.0 Introduction

1.1 Context

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Panorama BESS SubCo (the Applicant) to prepare a Traffic Impact Assessment (TIA) for a SolBank Battery Energy Storage System (BESS) in Evans Plains, New South Wales.

The application proposes a 100 megawatt (MW)/ 200 megawatt-hour (MWh) SolBank BESS to be constructed on Lot 2 of DP 864272 at 800 Mid-Western Highway in Evans Plains, NSW, which is located approximately 5.8km south-west of Bathurst and 2.5km west of Robin Hill.

The site is directly adjacent to an established Transgrid substation located within Lot 521 of DP 603541 at 749 Mid-Western Highway. The SolBank BESS will be connected to the existing Transgrid substation via approximately 260m of 132kV underground cable.

The proposed SolBank BESS development will include the installation and operation of a SolBank BESS, including battery enclosures, inverters, a transformer, and ancillary infrastructure, including:

- A 132kV underground cable connecting a 33kV/132kV switch-building to a new switch bay within the existing substation.
- Formalisation of existing access from the Mid Western Highway and existing access track within Lot 2 of DP 864272 to accommodate heavy vehicles.
- Proposed access track from the BESS to connect to the existing access road within Lot 2 of DP 864272.
- Operations and maintenance (O&M) building.
- Stormwater management infrastructure, lighting, and security fencing.
- Temporary construction laydown areas.

The development plans, prepared by the Applicant, are provided in **Appendix A**.

1.2 Application

This TIA has been prepared to inform a request from the Department of Planning and Environment (DPE) for Secretaries' Environmental Assessment Requirements (SEARs), which will ultimately inform a State Significant Development (SSD) application.

This report has been prepared based on the requirements provided by DPHI in their SEARs. It is also worth noting that several references were made to Transport for New South Wales (TfNSW) standards, Austroads Guidelines and relevant Australian Standards.

1.3 Assessment Scope

This TIA report assesses the consistency of the development with Council and State planning and evaluates the impacts of the proposed SolBank BESS development on the surrounding transport network. This TIA identifies the transport infrastructure required to support the development, and provides an assessment of the traffic- and transport-specific aspects of the development against the requirements of the following relevant authorities:

- Bathurst Regional Council.
- TfNSW.



1.4 Report Structure

The structure of this TIA report is shown in **Table 1**.

Table 1 TIA Report Structure

Section	Title	Description
1	Introduction	Identifies the context of the project.
2	Project Description	Describes the project, including location, site design and access arrangements.
3	Existing Conditions Appraisal	Describes the existing transport network, including traffic volumes, crash history and bus services.
4	Project Traffic Demands	Details the project-generated traffic demands and assessed traffic volumes.
5	Traffic Engineering Considerations	Outlines the technical analysis undertaken to confirm the appropriateness of the proposed development from a traffic engineering perspective.
6	Strategic Design of the Development Access	Details the “basis of design – BOD” for the strategic-level design developed for the site access.
7	Operational Assessment	Outlines the technical analysis to assess the capacity of the site access intersection.
8	Construction Traffic Management Strategies	Outlines the possible strategies for the future construction traffic management plan and provides high-level advice.
9	Recommendations	Outlines the recommended actions for the applicant following the lodgement of the SSD application.
10	Conclusion	Summarises the findings of the assessment and recommends approval conditions.

1.5 DPHI Requirements (SEARs)

Table 2 replicates DPHI’s specific requirements, which are also provided in **Appendix B**.

Table 2 DPHI Requirements (SEARs)

Requirement	Addressed / Response
An assessment of the peak and average traffic generation, including: - Over-dimensional vehicles, construction worker transportation and - Transport of materials by rail.	This report details the construction phase of the proposed BESS. Operational and decommissioning impacts of BESS are sufficiently small that, if construction impacts are satisfied, infrastructure provided for construction phase can readily accommodate the operational and decommissioning phase traffic demands. Please refer to Section 4.0 for operational and decommissioning works.
An assessment of the likely transport impacts to the site access route, site access point(s), any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance.	Section 3.0 – Existing Conditions Appraisal. Section 4.0 – Project Traffic Demands. Section 5.0 – Traffic engineering considerations. Section 6.0 – Operational Assessment.
A cumulative impact assessment of traffic from nearby developments.	Section 3.0 – Existing Conditions. Section 3.4 – Cumulative traffic impacts.
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.	Throughout the report. Note: <i>that there are no OSOM vehicles required other than the one-off transformer transportation, as detailed in Section 4.1.1 Construction Phase Traffic Assumptions.</i>

Detailed comments provided by TfNSW are also provided in **Appendix C**.



2.0 Project Description

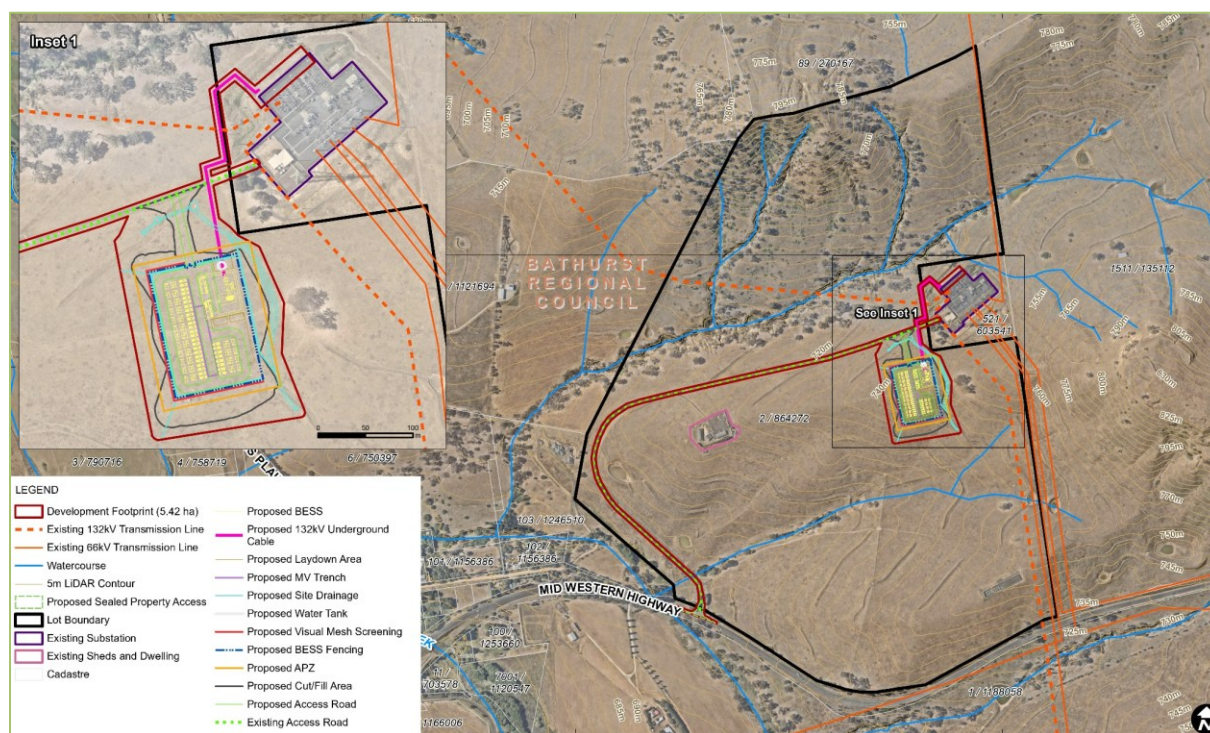
2.1 Overview

The development proposes the construction of a SolBank BESS with a capacity of 100 megawatts (MW)/ 200 megawatt-hours (MWh) adjacent to the existing 132kV substation operated by Transgrid.

The development site is located within the jurisdiction of Bathurst Regional Council LGA and is zoned as *RU1 – Primary Production*, under the *Bathurst Regional Local Environmental Plan 2014* (LEP). The central-western portion lot (Lot 2 of DP 864272) currently contains a small collection of sheds and will contain a residential dwelling in the future. The project site is located at the eastern extent of the lot, directly south of the existing Transgrid substation (situated on Lot 521 of DP 603541). The adjacent and surrounding land is zoned as “*RU1: Primary Production*” and “*R5: Large Lot Residential*”.

Figure 1 provides an overview of the site location in the regional context.

Figure 1 Site Location and Development Footprint



Source: SLR/ Panorama BESS SubCo

The BESS will consist of SolBank BESS containers (or enclosures) in a ‘back-to-back’ formation in two north-south aligned rows. Each SolBank container has dimensions of 6,058 millimetres (mm) by 2,438mm by 2,896mm with an approximate weight of 43 tonnes. The SolBank BESS will be supported by inverters that will convert electricity from the BESS and connect to the existing Transgrid substation via approximately 260m of 132kV underground cable.

The existing 132kV Transgrid substation is serviced by an internal road with a single, two-way driveway crossover to the Mid-Western Highway. The SolBank containers, electrical network and associated infrastructure will utilise the existing access location and internal road network. To provide direct access to the subject site, an additional access road will be constructed off the existing internal road.



2.2 Description of Amendments (April 2025)

In April 2025, the Applicant determined to make specific changes to the Project as exhibited in the EIS (SLR 2024). The proposed amendments to the Project involve a change in the technology of the battery energy storage from the SolBank 2.0 system to the SolBank 3.0 system, and an increase in the Development Footprint to address the following issues:

- Improvements in battery energy storage technology since the submission of the EIS mean that the SolBank 3.0 system offers an increased capacity and enhanced energy density per battery container while reducing the BESS layout footprint by approximately 20% or 0.35 ha.
- An increase in the Development Footprint to facilitate civil battering and realignment to improve safety and stability of the Project while reducing civil costs.

The amendments to the Development Footprint of the BESS have been informed through discussions with the Applicant's civil engineering consultant during the detailed design process. **Table 3** below is included for a comparison of amendments to the BESS layout.

Table 3 Comparison of amendments to the Project in terms of key parameters

Element	Approved EIS Project	Amended Project	Moderate Viewpoint Sensitivity
Change in technology of the BESS	SolBank 2.0 system	SolBank 3.0 system	Change in technology from the SolBank 2.0 to SolBank 3.0 BESS. Reduction in BESS layout footprint by 0.35 ha
Development footprint	3.47ha	5.18ha	+1.71ha
Total change in Development Footprint			+1.71ha

In addition to the amendment of the BESS layout, Transgrid identified that the existing substation needs to be expanded to allow for connection of the proposed BESS. To accommodate the substation expansion, the proposed development footprint for the Project will need to increase to facilitate the necessary construction activities. The expansion will see the footprint of the substation expand to the north and west, including an additional substation bay to accommodate the capacity of the proposed BESS.

2.3 Project Program

2.3.1 Construction Phase

Panorama BESS SubCo has advised that the development will be constructed over a 14 to 15-month period, anticipated to commence in 2026. A linear traffic generation estimate has been applied for construction movements associated with material, equipment, and workforce mobilisation and decommissioning, with consideration also given to peak traffic generation estimates.

2.3.2 Operation and Decommissioning Phase

The development is expected to operate for approximately 20 years, providing short-, medium—and long-term local employment opportunities. The proponent is anticipated to be obliged to decommission and rehabilitate the site at the end of its operational life (EOL). Decommissioning of the BESS EOL would include disassembling and removing associated infrastructure from the site, enabling the land to be returned to its original use.

The operation and decommissioning processes will have much less traffic impact than the construction period, based on the fact that BESS systems are low-maintenance investments that can be monitored remotely and as such, during operation, it is anticipated to be one full-time equivalent (FTE) staff on site, with potentially additional ad hoc contractors.



It is important to note that the construction phase of any BESS site would have the greatest traffic impacts, compared to the impacts during the operation and demobilisation phases. Based on this, no detailed assessments are undertaken for the operational and demobilisation phases, provided that sufficient infrastructure is developed for the construction phase.

2.4 Site Access

The access driveway will be formalised to accommodate heavy vehicle traffic. The existing internal access track will be widened to improve direct access to the BESS infrastructure. It is proposed that access to/from the development will be provided via the site's existing two-way crossover. It is important to note that this crossover will operate in the Left-In and Left-Out (LILO) format for heavy vehicles during the development's construction. This crossover already services the existing 132kV Transgrid substation, providing access via the Mid Western Highway. To provide direct access to the BESS and ancillary facilities, an additional connection road will be constructed off the existing internal road. These arrangements are illustrated in **Figure 1** and **Appendix A**.

2.5 Access Route

With reference to TfNSW's review of a previous version of this TIA (v2.2) and their subsequent comments, the following vehicle route (**Section 2.5.1**) is considered the least-trafficked and shortest option.

2.5.1 All Heavy Vehicles and Light Vehicles

The BESS, along with the other materials, the construction fleet and workforce, will be transported to the site via Bathurst. Other than the one-off transformer transportation, there will be no oversize and over mass (OSOM) vehicles required during the construction period because the largest vehicle that will be utilised will be limited to the size of a standard 20m long articulated vehicle (AV) or a 19m long B-Double (short B-Double).

The construction fleet, as outlined in **Section 4.1** later in this report, will comprise 20m long AVs, 20m long low loaders, 19m long B-Doubles (short), 17m long truck & dog combinations and light vehicles, in addition to the Oversize and Over Mass (OSOM) vehicle required for the transportation of the transformer. All vehicles, other than the one transporting the transformer, will take the routes to/ from the development as depicted in **Figure 2**.

During their inbound journey, all vehicles will travel along Mitchell Highway and turn left onto Evans Plains Road using the dedicated left turn bay depicted in **Figure 3**. All vehicles will then turn left off Evans Plains Road onto the Mid-Western Highway and continue east to the site access, where they will make a left in movement. On their return trip, all vehicles will turn left out of the site onto the Mid Western Highway and continue east through Bathurst. These roads are all approved for AVs and 50-ton Gross Combination Mass (GCM) B-Doubles under the National Heavy Vehicles Regulator (NVHR).



Figure 2 Proposed Heavy Vehicle Access Route



Source: www.nearmap.com.au

Figure 3 Left Turn Off Mitchell Highway



Source: www.nearmap.com.au

The inbound trips will use the Mitchell Highway and Evans Plains Road route, preventing all vehicles from making a right turn into the site. The site access aligns with the beginning of an overtaking lane in the eastbound direction of the Mid-Western Highway, as depicted in **Figure 4**. If vehicles were to make a right turn into the site at this location, they would have to cross over the eastbound lane in close proximity to the overtaking lane. This could pose a safety risk.



Therefore, although not strictly required given that it is permitted to cross a double barrier line to enter/ exit a property by the shortest route, it is recommended that all vehicles use Mitchell Highway and Evans Plains Road.

Figure 4 Overtaking Lane on Mitchell Highway

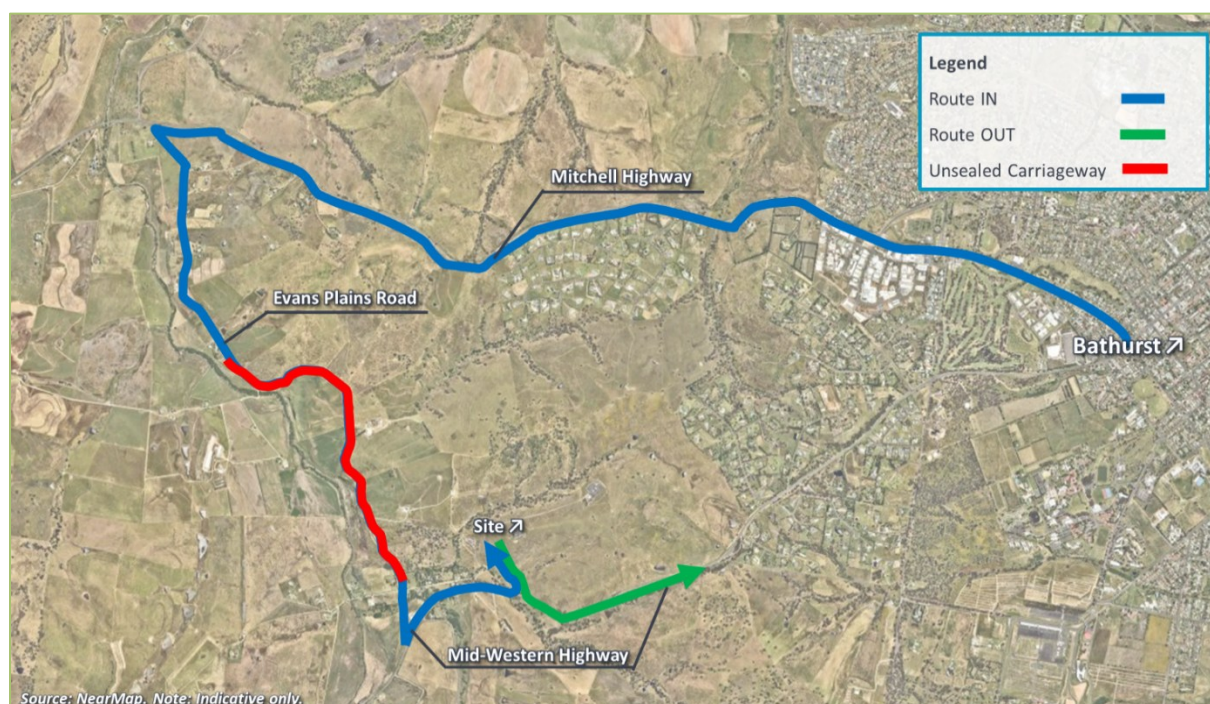


Source: www.nearmap.com.au

It is important to note that a portion of Evans Plains Road is unsealed. The access intersections off Mitchell Highway and onto the Mid Western Highway are formalised and sealed. The portion of Evans Plains Road that is unsealed is depicted in **Figure 5**.



Figure 5 Unsealed Portion of Evans Plains Road



Source: www.nearmap.com.au

SLR recognise that it is not common to direct vehicles to an unsealed carriageway. However, several factors make this route safe and viable, as follows:

- **Low construction traffic volumes:** The development will generate 401 inbound heavy vehicle movements throughout the 14-month construction period, which is in the order of 1.2 heavy vehicle inbound movements per day.
- **Low existing traffic volumes:** As part of the Automated Tube Count (ATC) surveys, it was identified that the peak hour volumes on Evans Plains Road are under 10 vehicles per hour in each direction.
- **Low-speed environment:** Evans Plains Road is a low-speed road providing access to a few rural farming estates with low existing traffic volumes.
- **Allows vehicles to make a left turn into the site:** As discussed above, a right turn into the site in proximity to an overtaking lane could present higher safety risks. Travelling along Evans Plains Road requires all vehicles to turn left into the site.

A review of *Austroads Guidelines: Australian Guide to Pavement Technology (AGPT), Part 6 – Unsealed Roads, Table 2.1, 'Unsealed Road classification,'* revealed that the construction traffic associated with the development falls within the classification of a Class-U5 road, having less than ten vehicles per day. According to Austroads Guidelines, these roads require uniform pavement comprising only the subgrade.

For the purposes of construction traffic, SLR deemed it more conservative to treat Evans Plains Road as a Class-U3 road, which has a daily traffic of 20-100 vehicles and requires natural gravel as the pavement. This is consistent with the requirements of *AGPT Part 6, Table 2.2, 'Indicative pavement type selection'* (reproduced in **Table 4** below), which indicates that one typical application of a Class-U3 road is “links between smaller communities”, which is aligned with the current use of Evans Plains Road.



Table 4 Austroads Guidelines AGPT Part 6 – Indicative Pavement Type Selection

Pavement Type	Traffic Spectrum	Attributes	Typical Applications
U1	>200 vpd ¹ and/or >20% heavy vehicles	Up to 100 km/h two lanes plus shoulder	- Main unsealed roads carrying significant freight or livestock. - Links to major resource developments, e.g., mines, gas fields etc.
U2	100-200 vpd and/or >10% heavy vehicles	Up to 100 km/h two lanes plus shoulder	Main links between communities, national parks, recreational areas, and haul roads.
U3	20-100 vpd and/or <10% heavy vehicles	Up to 80 km/h two lanes	Links between smaller communities, national parks, recreational and remote areas, and haul roads within quarries/mines.
U4	<20 vpd	Up to 80 km/h single lane	Main access to remote areas, difficult terrains and fire protection, national park access.
U5	<10 vpd	Up to 60 km/h single lane	Minor access (four-wheel drive or heavy-duty vehicles) to remote locations, fire protection.

Source: Austroads Guidelines: Guide to Pavement Technology Part 6: Unsealed Pavements, Table 2.2.

Evans Plains Road, in its unsealed form, meets the requirements of a Class-U3 Road and is therefore suitable for heavy-vehicle movements. **Figure 6** overleaf compares the AGPT depiction of a Class-U3 Road and the unsealed portion of Evans Plains Road.

Figure 6 AGPT U3-Road and Evans Plains Road (31/10/2024)



It is also worth noting that a review of the high-resolution NearMap aerial imagery and a site inspection undertaken on 31/10/2024 indicated that the narrowest section of Evans Plain Road is not less than 6.5m wide, excluding shoulders.

2.5.2 Railway Corridors and Level Crossings

As part of TfNSW's advice on the SEARs (**Appendix C**), TfNSW requested an assessment of the *“Impact on rail corridors and level crossings along the transport route/s detailing any proposed interface treatments, where applicable.”* SLR reviewed the NSW Public Level Crossing finder² and identified no rail crossings or corridors that would be impacted along the route to/from the site.

¹ vpd: vehicles per day.

² <https://applan.transport.nsw.gov.au/mapservices/proxy/levelCrossings/map.html>



Figure 7 below provides an overview of the area surrounding the site and shows the location of the existing rail line and crossing.

Figure 7 Nearby Railway Corridors or Level Crossings



Source: <https://appln.transport.nsw.gov.au/mapservices/proxy/levelCrossings/map.html>

2.5.3 One-Off Transportation of the Transformer

With reference to TfNSW's review of a previous version of this TIA (v2.2) and their subsequent comments, the Applicant commissioned ARES Group, a heavy material transportation specialist (trucking firm), to undertake an OSOM material transportation route study.

As part of the proposed development, the only OSOM material that is required is a 110-tonne transformer, which is most likely to be imported to Port Kembla from overseas manufacturers and transported to the site on-road.

ARES Group proposes the following route for the transformer transportation:

- https://www.google.com/maps/d/edit?mid=1vocVTwxIEFhiydMxrJ8aCSOoaB1_BFI&usp=sharing

It is proposed that the transformer will be transported on the Hume Highway, Lachlan Valley Way and Mid Western Highway. Based on SLR's review of ARES Group's OSOM material transportation route study, the following is noted:

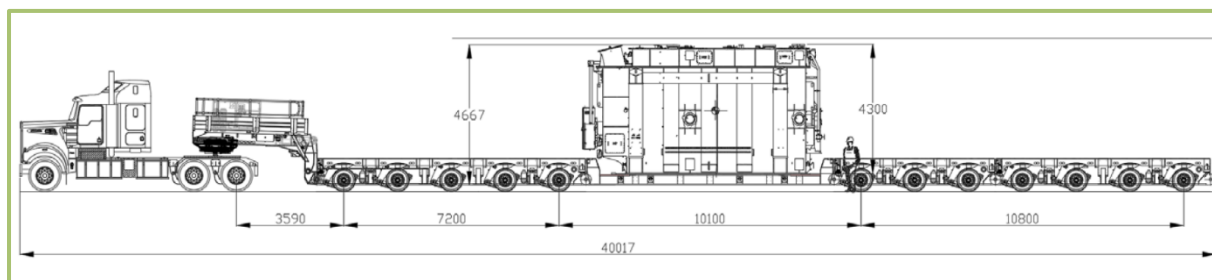
- Port Kembla has excellent bulk cargo offloading capacity. The available berths have a large, concreted storage area where cargo can be stored and staged for deliveries to the site, with additional options for off-site storage should they be required.
- Port Kembla has good access to the Hume Highway, which is the main OSOM material transportation route into central New South Wales.
- ARES Group has previously transported a similar transformer from Port Kembla to the vicinity of the development site for a different project with no issues.
- The anticipated transformer will generally require 4.9m vertical clearance; however, where required, this can be reduced to approximately 4.7m. The route study identified no issues with the transformer's vertical clearance along the entire route.



- The transformer transportation will be accompanied by NSW Police and pilot vehicles. NSW Police will carry out all required traffic management and control at pinch points. Pilot vehicles will provide advanced warning (front and rear) of the OSOM load's approach and assist the police escorts as directed.
- If any street furniture, such as signs, needs to be removed for the load to pass, the pilots will perform this task and replace the items once the load is through.
- It is proposed that the transformer will be transported with up to two prime movers and two custom platform trailers with a drop frame. The vehicle combination will be approximately 40m long, 4.2m wide and 4.7m to 4.9m high.

The geometric details of the proposed check vehicle are shown overleaf in **Figure 8**.

Figure 8 Proposed Design Vehicle for Transformer Transportation



Source: ARES Group, OSOM Material Transportation Route Study

ARES Group's detailed OSOM material transportation route study and SLR's swept path assessments for the site access are provided in **Appendix D**.

2.6 Construction Phase

2.6.1 Activities

For the purposes of forecasting peak development traffic demands associated with the construction stage, the following construction activities are anticipated to generate traffic on the external road network:

- Site clearance and establishment.
- Construction machinery deliveries.
- Equipment and material deliveries.
- Workforce transportation.

2.6.2 Workforce

There are anticipated to be 20 persons maximum on-site travelling to the site via light vehicles. This represents the highest volume of personnel potentially on-site at a given time. On a typical day, there will likely be fewer workers on site. However, for a conservative assessment, it has been assumed that there will be 20 workers accessing the site throughout the duration of the construction phase.

2.7 Operation Phase

2.7.1 Activities

Once the proposed development is operational, there will be no activities that require a large workforce on site. It is understood that for the majority of the development's life, operations will involve a range of preventative, corrective and condition-based maintenance activities,



which would entail various maintenance, inspection and servicing for the BESS, the associated electrical network and internal road infrastructure. The external movements associated with these tasks will generally be performed by B99 design vehicles (5.2m long VANS), 6.4m long small rigid vehicles (SRVs) and 8.8m long medium rigid vehicles (MRVs).

2.7.2 Workforce

There is anticipated to be one full-time equivalent (FTE) staff member on site, with potentially additional ad hoc contractors.



3.0 Existing Conditions Appraisal

3.1 Road Network

The characteristics of the road network surrounding the site are summarised in **Table 5**.

Table 5 Surrounding Road Network

Road Name	Jurisdiction	Average Daily Weekday Traffic	Average Daily Weekend Traffic	Average Daily Traffic	Posted Speed Limit	Road Classification
Mid Western Highway	Bathurst Regional Council	3,758 ^[1]	3,192 ^[1]	3,475 ^[1]	100 km/h	State Road (Road Number #6)

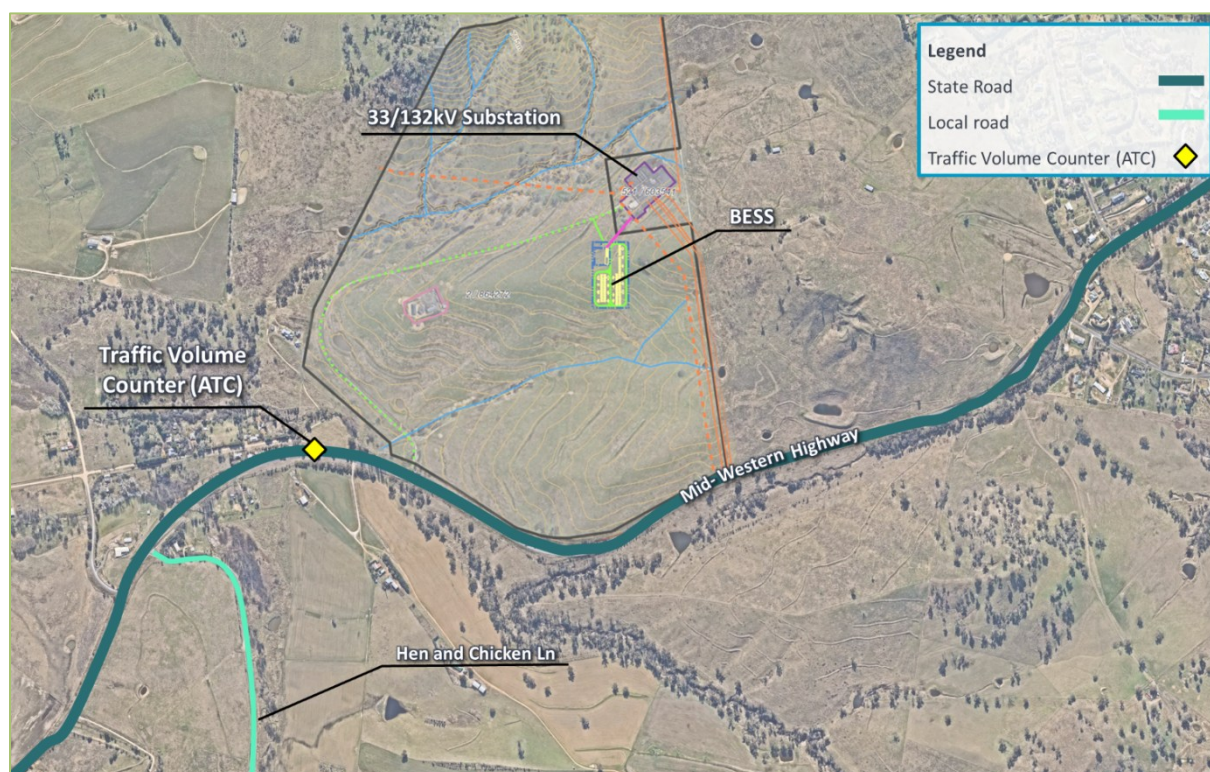
[1] Average Daily traffic was sourced through the traffic survey data collected between 10 October 2022 and 17 October 2022 (See **Appendix E**).

3.2 Traffic Surveys

To ascertain the existing traffic demands of the road network surrounding the site, SLR commissioned Trans Traffic Surveys (TTS) to undertake ATC surveys from Monday, 10 October 2022 to Monday, 17 October 2022 (**Appendix E**).

To be specific, one tube was installed approximately 80m west of the existing driveway of the site, as illustrated in **Figure 9**.

Figure 9 Traffic Volume Counter (ATC) Locations³



Source: www.nearmap.com.au

³ Figure 9 includes a previous version of the BESS layout, however this is considered irrelevant to the information presented in this section of the TIA.



A review of the survey data indicated that the peak hours were as follows:

- Weekday AM peak: 7:00am – 8:00am.
- Weekday PM peak: 3:00pm – 4:00pm.
- Saturday peak: 11:00am – 12:00pm.

3.2.1 Supplementary Assessment

As part of TfNSW's review of a previous version of this TIA (v2.2) and their subsequent comments, additional automated tube count (ATC) surveys were undertaken by Trans Traffic Survey (TTS) in October 2024 and November 2024 for one full week on Mitchell Highway and Evans Plains Road.

A review of the survey data indicated that the peak hours were as follows:

- Weekday AM peak: 8:00am – 9:00am.
- Weekday PM peak: 4:00pm – 5:00pm.
- Saturday peak: 12:00pm – 1:00pm.

Based on the review of ATC data, it was identified that weekday AM, weekday PM and Saturday midday peak hour volumes on the Mitchell Highway are very similar and in the order of 350 vehicles per hour in each direction.

Weekday AM, Weekday PM and Saturday midday peak hour traffic volumes on Evans Plains Road were also very similar and in the order of 10 vehicles per hour in each direction. Based on this, it is concluded that traffic volumes on Evans Plains Road are very low.

Detailed breakdown of weekday AM peak, weekday PM peak and Saturday midday peak hour vehicle distributions, as well as the ratio of light vehicles to heavy vehicles, is also provided in **Appendix E**.

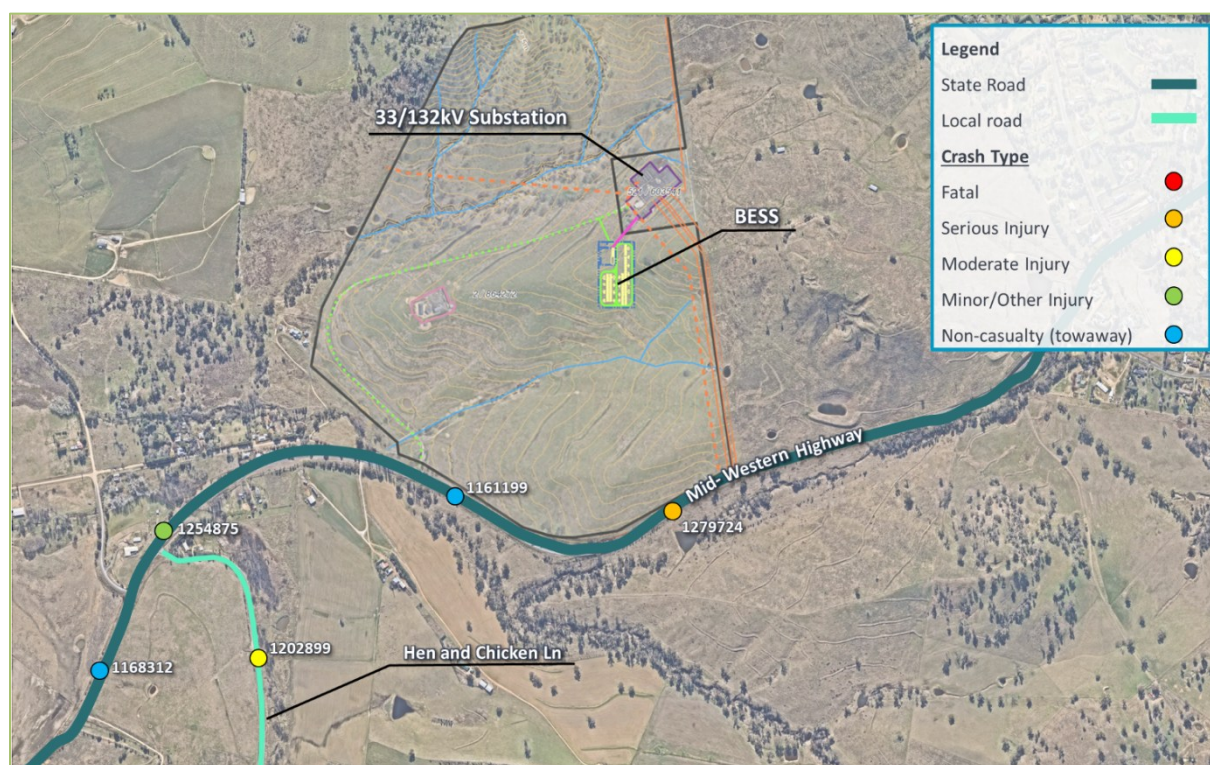
3.3 Crash History

To highlight any safety deficiencies in the surrounding road network in proximity to the subject site, crash data has been extracted from the TfNSW Centre for Road Safety website. Crashes are reported for a five-year period.

The locations of the reported crashes are illustrated in **Figure 10**, with details and Road User Movement (RUM) codes also provided in **Table 6**.



Figure 10 Study Road Network Crash Data⁴



Source: www.nearmap.com.au

Table 6 Crash Locations (2017-2021)

Crash Ref.	Year	Location	Crash Severity	RUM Code	RUM description
1168312	2018	Mid-Western Highway	Non-Casualty (towaway)	67	Struck Animal
1254875	2020		Minor/Other Injury	88	Out of control on a bend
1161199	2018		Non-Casualty (towaway)	80	Off left/right bend
1279724	2021		Serious Injury	81	Off-road (left) hit object
1202899	2019	Hen and Chicken Ln	Moderate Injury	71	Off-road (left) hit object

As shown in **Table 6**, there were a total of five crashes in the vicinity of the proposed development. Of these crashes, no reported crashes resulted in fatal injuries.

As part of the RtS stage of the project, the original TIA (2023) was revised in April 2025, and the crash data source was revisited. The review of information from the period between 2022 and 2024 confirmed that there were no new crashes in the vicinity of the development site.

A review of the RUM codes of these crashes indicates that the majority of the crashes occurred due to loss of vehicle control (particularly at bends) and not at the existing (and proposed) access driveway to the site.

It is, however, recommended that a driver's code of conduct be prepared by the applicant. The driver's code of conduct should also dictate the recommended vehicle access route. It is also recommended that this be conditioned as part of the development consent.

⁴ Figure 10 includes a previous version of the BESS layout, however this is considered irrelevant to the information presented in this section of the TIA.



3.4 Cumulative Traffic Impacts

With reference to TfNSW's review of a previous version of this TIA (v2.2) and their subsequent comments, in order to determine the location and nature of any planned upgrades of the surrounding road network, a review of the publicly available material was conducted. SLR's review included the Major Projects website⁵, Infrastructure NSW website⁶ and Bathurst Regional Council DA tracker. The review indicated that no major developer projects or transport infrastructure upgrades planned by the state or local Council in the surrounds of the study area could result in increased cumulative traffic.

⁵ <https://www.planningportal.nsw.gov.au/major-projects>

⁶ <https://www.infrastructure.nsw.gov.au/projects-nsw/>



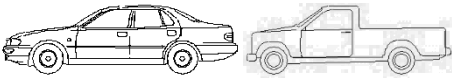
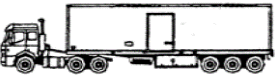
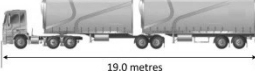
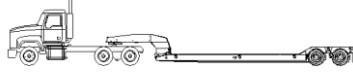
4.0 Project Traffic Demands

4.1 Traffic Generation

4.1.1 Construction Phase Traffic Assumptions (Typical/ Average)

The vehicle fleet anticipated to be associated with the development is shown in **Table 7**.

Table 7 Vehicle Fleet

Vehicle	Typical Vehicle Profile	Haulage Material
Private vehicle		Miscellaneous workforce travel
Concrete truck (Agitator)		Concrete
20m long six-axle Articulated Vehicle (AV)		Quarry products Miscellaneous materials Miscellaneous equipment Fuel delivery Contractor supplies
19m long seven axle B-Double (short)		Quarry products Miscellaneous materials Miscellaneous equipment Fuel delivery Contractor supplies
17m long 32t truck & dog combination		Aggregate
20m low loader (Float)		Miscellaneous machinery and equipment Construction mobilisation Construction de-mobilisation
Two platform trailers with two prime movers (approx. 40m).		One-off transformer transportation

Traffic that will be generated during the construction of the proposed development will largely be associated with the transportation of the workforce and materials/ equipment. To simplify the construction traffic, SLR has broken down the traffic-generating elements of the proposed works into two classes, as follows:

- Construction workforce.
- Construction heavy vehicle traffic.

Table 8 overleaf provides an overview of the workforce assumptions that were partly supplied by the applicant and partly based on SLR's knowledge of similar projects.



Table 8 Anticipated Traffic Generated by Construction Workforce

Element	Assumption	Source of Assumption
Workforce	20 persons maximum on-site	Panorama BESS SubCo
Roster	Six days on/ one day off	Panorama BESS SubCo
Construction hours	Weekdays: 7am – 6pm Saturday: 8am – 1pm	Panorama BESS SubCo
Construction Duration	14 Months	Panorama BESS SubCo
Construction Deliveries	Linear progress across 14 months	SLR
Travel Arrangements	Workforce via private vehicle due to small workforce	SLR
Light vehicle occupancy	Conservatively assumed one driver and no passenger per vehicle	SLR
Total Staff Movements	6,720 light vehicle return trips in total (over 14 months)	Panorama BESS SubCo
Staff Movements per day	20 light vehicle return trips per day	SLR
Workforce Distribution	100% to/from Bathurst (East)	SLR

As summarised in **Table 8** above, it is anticipated that 6,720 light vehicle return trips associated with the workforce will occur during the construction of the proposed development (across 14 months, 60 weeks, and 336 business days).

Table 9 provides an overview of the anticipated traffic associated with the material and fleet delivery demands for the construction of the BESS and associated ancillary facilities.

Table 9 Heavy Vehicle Traffic

Element	Trip Origin	Assumption	Vehicle Type	Source
BESS Containers	Bathurst	165 inbound trips 165 outbound trips	B-Double (19m long)	Panorama BESS SubCo
Ancillary equipment (cable, substation equipment, etc.)	Bathurst	25 inbound trips 25 outbound trips	AV (20m long)	Panorama BESS SubCo
Ancillary equipment (switch room and O&M Building)	Bathurst	10 inbound trips 10 outbound trips	Low Loader (approx. 20m)	Panorama BESS SubCo
Aggregates/Concrete/Fuel	Bathurst	200 inbound trips 200 outbound trips	Truck and Dog (up to 20m)	Panorama BESS SubCo
Transformer	Port Kembla	1 inbound trip 1 outbound trip	10-axle Platform Trailer with one prime mover (approx. 31m).	ARES OSOM Material Route Study
Total		401 inbound trips 401 outbound trips (across 14 months)		

As summarised in **Table 9** above, it is anticipated that a maximum of 401 heavy vehicle return trips will occur during the construction of the proposed development (across 14 months, 60 weeks, and 336 business days).

Based on the information and assumptions provided in **Table 8** to **Table 9**, it is anticipated that the total traffic generated by the construction of the proposed development will be in the order of 7,121 return trips across a construction duration of 336 business days.



Accordingly, it is anticipated that typical/ average daily traffic generation will be in the order of 22 return trips a day, with the following breakdown:

- 20 light vehicles inbound (all AM peak) and 20 light vehicles outbound (all PM peak).
- 1.2 heavy vehicles inbound (across a day) and 1.2 heavy vehicles outbound (across a day).

4.1.2 Construction Phase Traffic Assumptions (Peak Period)

4.1.2.1 BESS Component

The proposed development is considered relatively small in capacity (200MWh) and development footprint compared with other BESS projects in NSW, such as Orana BESS (1,600MWh).

Construction traffic is expected to peak in Months 6 and 7. During this two-month peak period, heavy-vehicle movements could reach as high as 8 inbound and 8 outbound vehicles per day. As stated earlier in this report, the workforce (worker numbers) is not expected to exceed 20 at any point during the construction period, in either the AM or PM peak periods.

Based on the above, **Table 10** below is a summary of anticipated typical/ average and peak traffic movements that will be generated during the construction period.

Table 10 Average and Peak Traffic Generation During Construction (One-Way)

Vehicle Type	Average Vehicle Movements (rounded)		Peak Vehicle Movements (rounded)	
	Daily (vpd) ⁷	Peak Hour (vph) ⁸	Daily (vpd)	Peak Hour (vph)
Light Vehicles	40	20	40	20
Heavy Vehicle	2.4	2.4	16	5
Total	43	23	56	25

Based on SLR's experience with similar BESS developments and a review of recent TIAs prepared by others for similar BESS developments, SLR is of the view that the analysis provided above is sufficiently conservative.

4.1.2.2 Transgrid Component

Based on discussions undertaken with Transgrid in July 2025, the applicant was informed that works would have to be undertaken by Transgrid at the existing substation to enable the proposed development's grid connection. This would include the expansion of the substation with a new switch bay and retaining wall as well as formalisation of internal access roads.

On this basis, Transgrid provided the anticipated traffic generation of these works, which are as follows:

- 20 light vehicles per day.
- Non-high risk OSOM: 1 in total.
- 20m AV: 0.1 vehicles per day.
- 17m Truck and Dog combination: 10 per day.
- 12.5m HRV: 0.2 vehicles per day.

⁷ vpd: vehicles per day.

⁸ vph: vehicles per hour.



- Concrete Truck: 0.5 vehicles per day.

Although the Transgrid activities would occur over a brief period and are unlikely to overlap with the peak construction period of the proposed development, traffic engineering assessments in this TIA conservatively assumed all works would overlap for the entire construction period.

4.1.3 Operational Phase Traffic Generation

The operational traffic demands associated with the development are expected to be minimal and limited to maintenance crews' movements. Therefore, the operational traffic of this development is not considered a critical element within this traffic assessment. Nonetheless, the operational workforce assumptions were provided by the applicant and are summarised below in **Table 11** for completeness.

Table 11 Operational Workforce

Element	Assumption	Source of Assumption
Workforce	5 persons maximum on-site	Panorama BESS SubCo
Roster	6 days on / 1 day off	Panorama BESS SubCo
Permanent Workforce	1 person(s)	Panorama BESS SubCo
Contractor Workforce	4 persons (conservative maximum)	Panorama BESS SubCo
Anticipated Fleet	Light vehicles, disposal trucks (Small & Medium Rigid)	SLR
Distribution	100% to/from Bathurst (East)	SLR

Note: Maximum operational workforce calculated by adopting a 'worst-case' scenario with all permanent and sub-contracted personnel being on-site at a given time.

4.1.4 Decommissioning Phase Traffic Generation

It is anticipated that the BESS will be operational for 20 years. After this, the project is proposed to be decommissioned and the infrastructure removed following the end of life of the BESS. Works will be undertaken to return the site as close as possible to its original state and use.

The standard construction hours and heavy vehicles, plant, and equipment required for the construction of the project would also apply to the decommissioning phase.

4.2 Traffic Volumes

The peak hour development traffic volumes were calculated using the traffic volumes outlined in **Section 4.1**. The construction traffic generation was considered in terms of light and heavy vehicle movements.

The traffic generated by the workforce was determined by considering a maximum of 20 workers on site, all travelling privately in light vehicles. It is also assumed that all staff will travel via Bathurst.

The background traffic was determined by conducting tube surveys along the Mid-Western Highway in the vicinity of the site. Peak hour traffic was determined from these surveys as discussed in **Section 3.2** earlier in this report.

The peak hour movements generated by the construction traffic, the anticipated workforce and the determined background traffic were collated and summed up in a desktop model, which is provided in **Appendix F**.



5.0 Traffic Engineering Considerations

5.1 Sight Distance Assessment

With reference to TfNSW's review of a previous version of this TIA (v2.2) and their subsequent comments, a sight distance assessment was undertaken at the access location in accordance with the following:

- *Part 4A: Unsignalised and Signalised Intersection of the Austroads Guide to Road Design.*
- *Part 3: Guide to Road Design: Geometric Design of the Austroads Guide to Road Design.*

Safe Intersection Sight Distance (SISD) is the minimum sight distance which should be provided on the major road at any intersection, providing sufficient distance for a driver of a vehicle on the major road to observe a vehicle on the minor road moving into a collision situation (e.g., in the worst case, stalling across the traffic lanes), and to decelerate to a stop before reaching the collision point.

The required SISD was calculated for the access location as per the *Austroads Guide to Road Design, Part 4A, Section 3.2.2 (Safe Intersection Sight Distance (SISD))*. The formula applied is illustrated in **Equation 1**.

Equation 1 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)

5.1.1 Safe Intersection Site Distance Calculations (SISD)

Table 12 summarises the determined SISD requirements for the access location utilising **Equation 1**.

Table 12 Access Location SISD and Parameters

Approach	D_T (s)	V (km/h)	d	a (%)	SISD (m)
West	5.5	101	0.29	1.8	284.69 (Round to 285m)
East	5.5	101	0.29	-6.3	331.24 (Round to 332m)

Table 13 below provides a justification for the applied parameters in the SISD calculations adopted in **Table 12**.



Table 13 SISD Parameter Justification

Parameter	Justification
D_T (s)	A decision time of 5 seconds was adopted, which consists of: 3 seconds of observation time. 2.5 seconds of reaction time.
V (km/h)	The 85 th percentile operating speed at the survey location was determined using the data obtained from the tube surveys that were commissioned on Monday, 10 October 2022, to Monday, 17 October 2022. The data identified that the average 85 th percentile operating speeds were: - Weekends: 100.6 km/h. - Weekdays: 100.0 km/h. Based on this data, an 85 th percentile speed of 101 km/h was adopted as design speed.
d	<i>Austrroads Guide to Road Design, Part 3: Guide to Road Design, Section 5.2.3 (Longitudinal Deceleration)</i> specifies that a coefficient of deceleration of 0.29 is the "Maximum value for calculating truck stopping sight distance for most urban and rural road types, and level crossings". Therefore, a deceleration coefficient rate of 0.29 was adopted for the purposes of the SISD calculations.
a (%)	The following average longitudinal grades were adopted from NearMap topographical data: - West Approach: 1.8%. - East Approach: -6.3%.

5.1.2 SISD Methodology

In response to TfNSW comments issued to the Applicant in August 2024, a site inspection was undertaken on Thursday, 31 October 2024 by SLR. During this inspection, laser-guided range finders were used to obtain accurate readings. In addition, high-resolution NearMap imagery was used to obtain the topographical data (a = longitudinal grade %).

The results were then compared with the calculated sight distance determined in **Table 14**.

5.1.3 SISD Results

The east approach is located on a straight with no substantial horizontal bends or vertical curves that limit sight distance. The west approach is situated on a minor horizontal bend; however, no substantial crests, dips, vegetation or traffic signage limit sight distance.

Table 14 below outlines the location of the sight points and their associated sight distances for the site access.

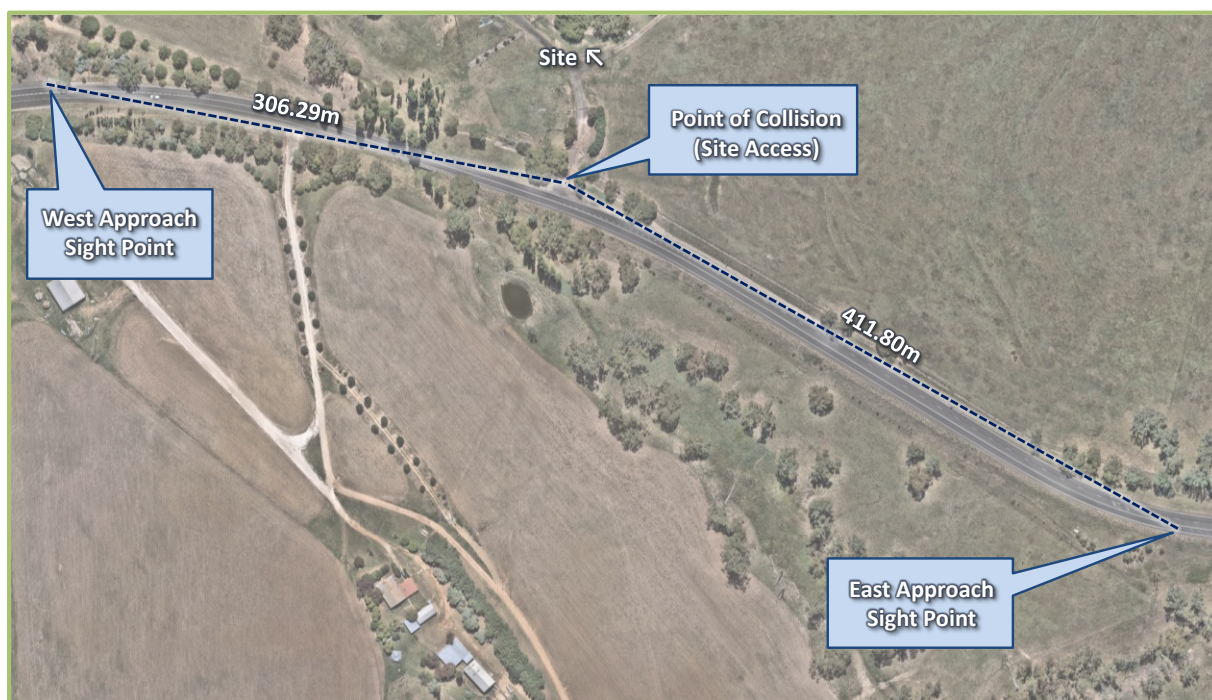
Table 14 Sight Points and Sight Distance

West Approach			East Approach		
Sight point		Distance	Sight point		Distance
Latitude	Longitude	(m)	Latitude	Longitude	(m)
-33° 26' 12"	149° 30' 42"	306.29	-33° 26' 20"	149° 31' 7"	411.80

Figure 11 overleaf provides an overview of the access location and the sight distances to the point of conflict from each approach.



Figure 11 Access Location and Relevant Sight Distances



Source: www.nearmap.com.au

Figure 12 below provides an overview of the available sight distances captured for the west and east approach during the site inspection.

Figure 12 Available Sight Distances (Thursday 31 October 2024)



SLR's site inspection, **Figure 11** and **Figure 12** illustrate that both west and east approaches have sufficient sight distances without obstructions caused by crests, dips, vegetation or traffic signage.

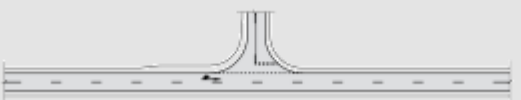
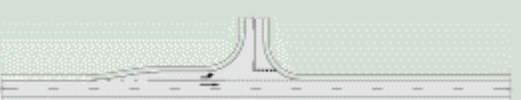
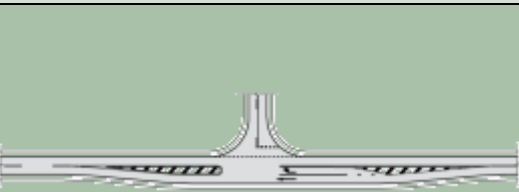
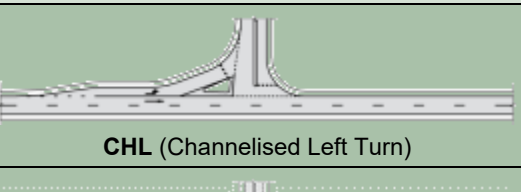
5.2 Turn Lane Warrant Assessments

The assessment includes a variety of industry-recognised analysis methods that determine the appropriate design requirements for each intersection location based on the anticipated future traffic demands as well as geometric considerations. A turn lane warrant assessment has been undertaken to establish the desirable form of the assessed intersections in accordance with the industry research summarised within the *Austroads Guide to Road Design Part 4A*. The warrants provide guidance on where turning lanes should be provided



based on the design traffic volumes. To aid the reader's interpretation of the assessment, **Table 15** provides a pictorial description of the various turn treatments considered.

Table 15 Turn Treatment Types

Acronym	Right Turn Treatment	Left Turn Treatment
BAL or BAR	 BAR (Basic Right Turn)	 BAL (Basic Left Turn)
AUL(S) or CHR(S)	 CHR(S) (Channelised Right Turn (Short))	 AUL(S) (Auxiliary Left Turn (Short))
(AUL or CHL) or CHR	 CHR (Channelised Right Turn)	 CHL (Channelised Left Turn)
		 AUL (Auxiliary Left Turn)

Source: Austroads Guide to Road Design Part 4A (Austroads)

As background, it is identified that the warrants were produced by establishing the conflicting traffic volumes at which the benefits of providing a higher level of treatment (i.e., the reduction in estimated crash costs) are equal to the additional construction costs associated with providing the higher treatment. The benefits and costs of a higher-level treatment were compared to the base case (minimum turn treatments).

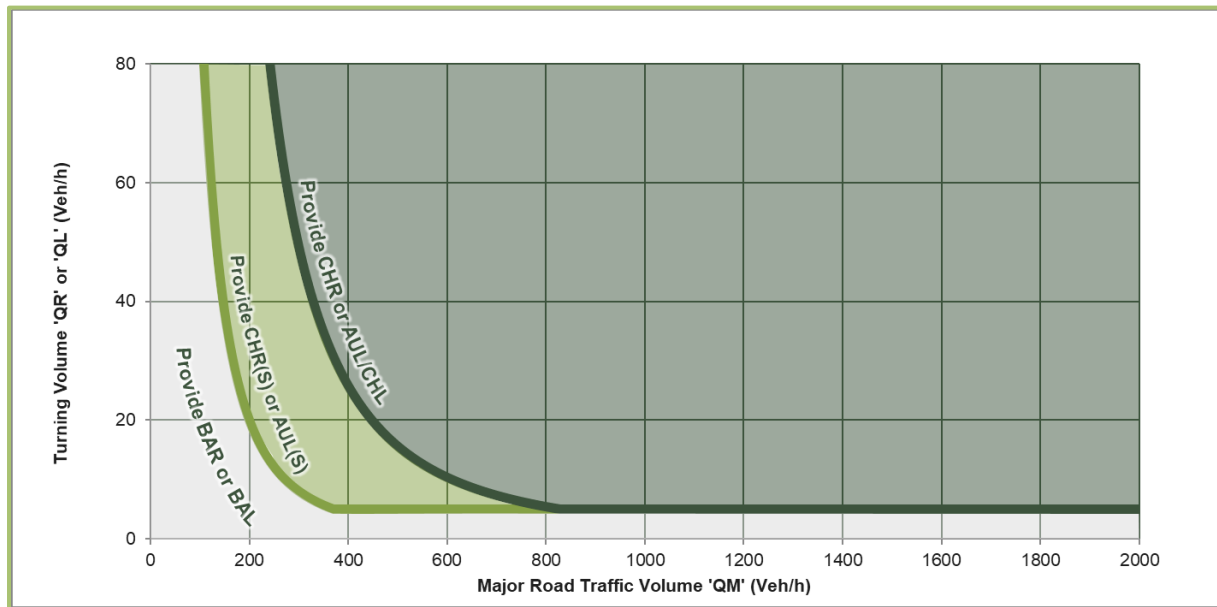
Relevant to the assessment presented herein, the research assumed the following:

- The warrants are strictly applicable to the construction of intersections on new roads (i.e., greenfield sites). Applying the warrants as adopted herein is a conservative assessment for existing roads, as it tends to overestimate the benefit ratio of providing higher-order treatments.
- The warrants are intended to be utilised to determine appropriate turn treatments at the intersection of public roads. They are not strictly intended to be utilised for private access locations (such as driveways). Therefore, their application to private access locations, as adopted herein, is conservative as it ensures that private accesses are afforded the same standard of safety for public road intersections.

The turn warrants for a greenfield site, with a design speed of greater than 100 km/h and a benefit duration of 10 years, are shown in **Figure 13**.



Figure 13 Turn Warrants – Major Road Turn Treatments (Design Speed $\geq 100\text{km/h}$)



Source: Austroads

5.3 Safety Assessment

Figure 14 and **Figure 15** overleaf illustrate the recommended intersection treatments for the existing (also the proposed) access driveway crossover under the AM peak and PM peak traffic conditions, respectively.

It should be noted that SLR's turn warrant assessments are undertaken for the typical 10-year design horizon, significantly longer than the anticipated duration of construction works (14 months) for a conservative assessment.

Based on the fact that the proposed development will generate regular traffic only for the duration of construction works (less than two years), SLR's turn warrant assessments significantly overestimate the risk involved. On this basis, the proposed AUL(s) treatment proposed at the site access is above and beyond the actual needs of the development (more on this in **Section 6.0**).



Figure 14 Turn Warrant Assessment – AM (Mid-Western Highway/ Site Access)

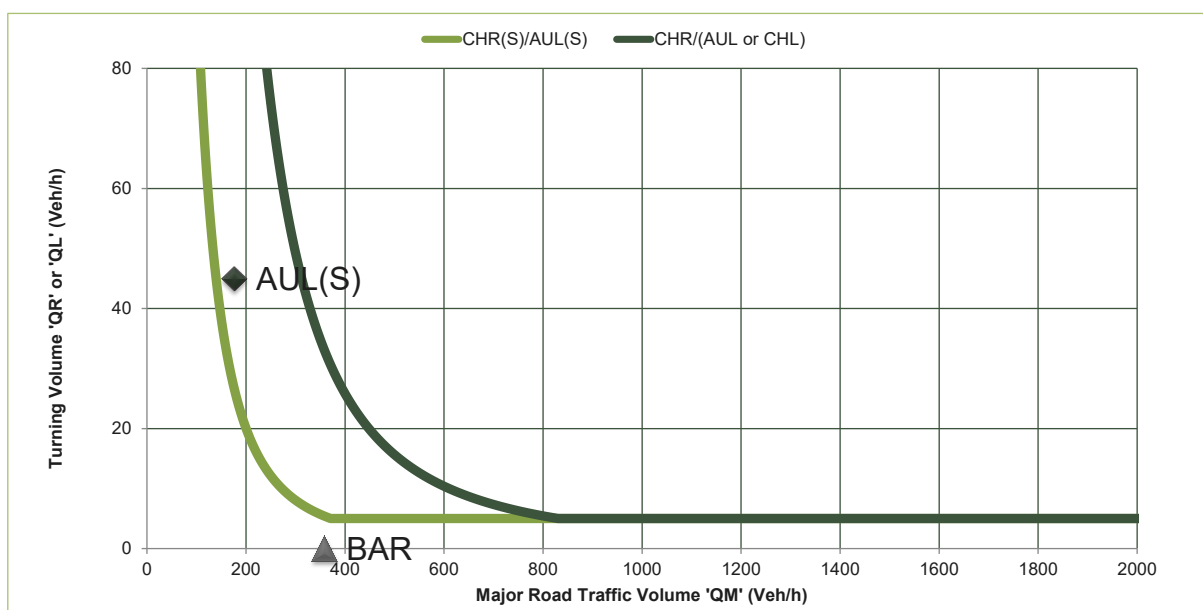


Figure 15 Turn Warrant Assessment – PM (Mid-Western Highway/ Site Access)

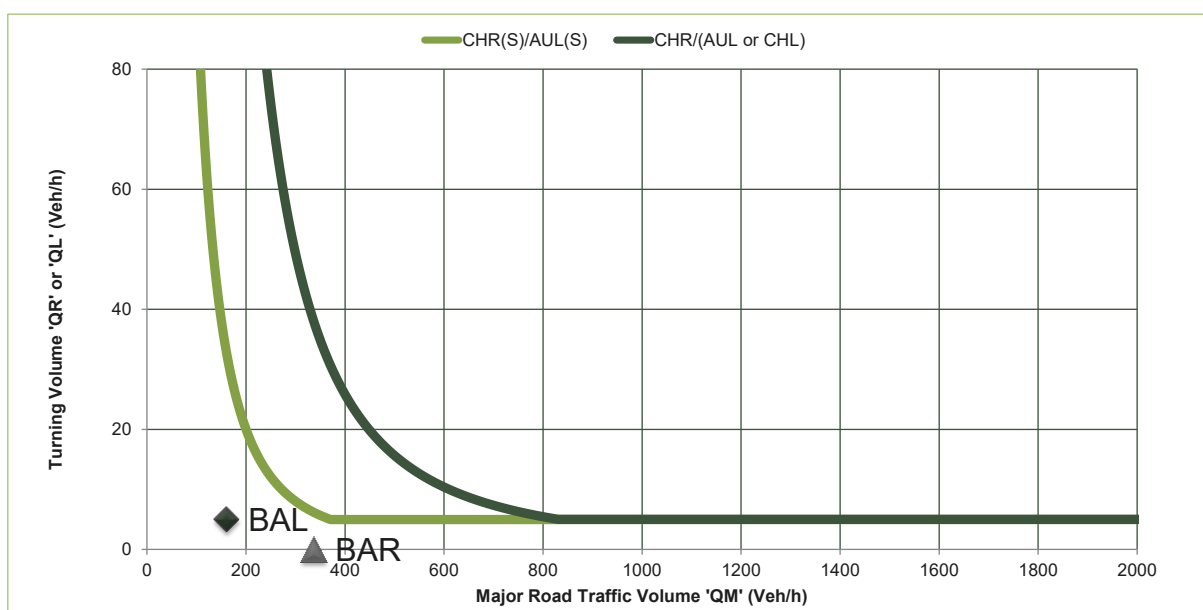


Figure 14 and **Figure 15** illustrate that, for a 10-year benefit period, AUL(s) treatment would be required, although the works will be limited to 14 months. Based on discussions undertaken with TfNSW, the applicant has committed to providing an AUL(s) treatment under the Extended Design Domain (EDD).

Detailed outputs of the turn warrant assessments for the site access driveway are included in **Appendix G**.

Strategic designs and swept path assessments are also provided in **Appendix H** to demonstrate that the proposed access arrangements can accommodate the nominated vehicle fleet that will be utilised during the construction period, which is as follows:

- Design Vehicle: up to 20m AV (regular movement).
- Check Vehicle: 40m OSOM combination (one-off movement).



5.3.1 Supplementary Assessment (Mitchell Highway/ Evans Plains Road)

As part of TfNSW's review of a previous version of this TIA (v2.2) and their subsequent comments, additional turn warrant assessments were undertaken for the intersection of Mitchell Highway and Evans Plains Road to ensure all vehicles approaching the development site can operate safely. ATC surveys were undertaken by TTS in October 2024 and November 2024 for one full week. The results of the turn warrant assessments for the intersection of Mitchell Highway and Evans Plains Road are provided below in **Figure 16** and **Figure 17**.

Figure 16 Turn Warrant Assessment – AM (Mitchell Highway/ Evans Plains Road)

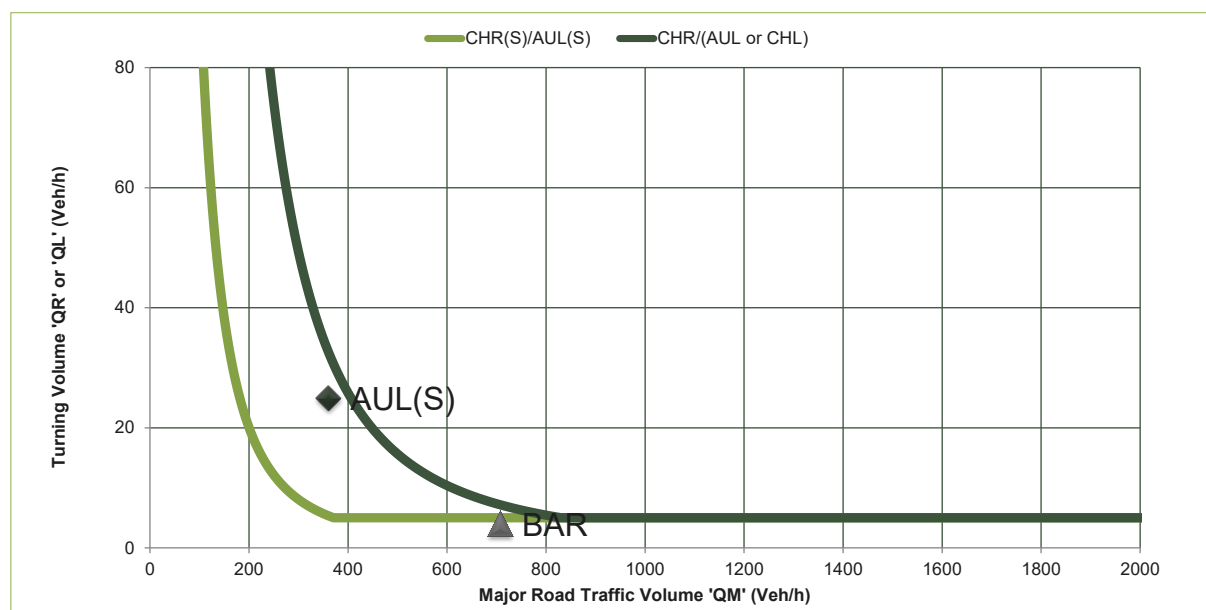


Figure 17 Turn Warrant Assessment – PM (Mitchell Highway/ Evans Plains Road)

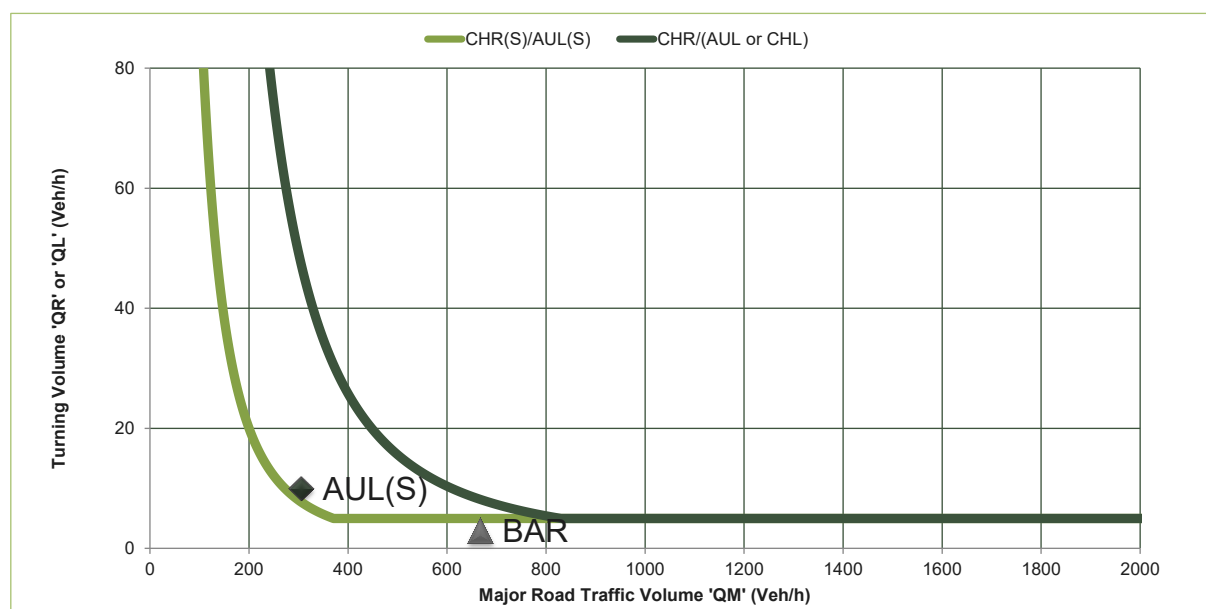


Figure 16 and **Figure 17** illustrate that AUL(s) and BAR treatments would be necessary at this intersection to satisfy the turn warrants for a 10-year design horizon. On this basis, the existing AUL(s) and CHR(s) treatments at this intersection exceed the requirements of the anticipated development-related traffic and no additional upgrades are warranted or proposed. Detailed outputs of the turn warrants assessment for the Mitchell Highway/ Evans Plains Road intersection are included in **Appendix G**.



6.0 Strategic Design of the Development Access

The strategic design for the proposed site has been developed in extensive consultations with TfNSW. The “Basis of Design” for the proposed AUL(s) treatment at the site access is further detailed in **Table 16**.

Table 16 AUL(s) Treatment – Basis of Design

ID	Design Aspect	Criteria	SLR Comment / Reference
1	General		
1.1	Location	Intersection upgrade to existing access at 800 Mid-Western Hwy, Evans Plains NSW 2795.	
1.2	Intersection Type	Intersection to be designed based on EDD for a rural AUL(s) treatment with a short left-turn lane due to short-term need (construction period of 14-months)	No other EDD parameter was used other than the deceleration lane length consistent with AGRD Part 4A Table A.17).
1.3	Road Design	TfNSW Guidelines & Supplements to Austroads Guide to Road Design Manual (AGRD).	
1.3	Road Typical Cross-Sections	In accordance with Austroads Guidelines.	Austroads Road Class: Class 1. Austroads Route Classification: M
2	Design Criteria – Speed		
2.1	Posted Speed	100 km/h.	
2.2	Design Speed	101 km/h, based on the 85th percentile speeds	Through ATC surveys.
3	Design Criteria – AUL(s)		
3.1	Length of Deceleration / Diverge including Taper	55m before the 20% reduction due to over 6% upgrade.	AGRD Part 4A – A.5.6 Minimum EDD for Auxiliary Left-turn Treatment
3.2	Taper Length (m)	20m	AGRD Part 4A – A.5.6 Minimum EDD for Auxiliary Left-turn Treatment
4	Design Criteria – Typical Cross-Section		
4.1	Cross-fall	2.5% to 3% (indicative only).	AGRD Part 3 Table 4.2.
4.2	Lane Width – Through Lane	3.5m	AGRD Part 4A road requirements and AGRD Part 3 pavement specifications. As per Austroads design manual Part 3, section 4.3.3. (Trucks).
4.3	Lane Width – Turn Lane	3.5m	AGRD Part 4A road requirements and AGRD Part 3 pavement specifications. As per Austroads design manual Part 3, section 4.3.3. (Trucks).
4.4	Road Shoulder	3m shoulder (3m sealed)	TS 02642_1.00 Supplement to Austroads Guide to Road Design (2) and Austroads Design Manual Part 3, section 4.3.3. (Trucks)
4.5	Road Verge	1.5m verge (unsealed)	AGRD Part 3 – Table 4.9 Verge Width
5	Design Criteria – Earthworks Batters		
5.1	Fill Batters	4H:1V	Austroads Part 3, Section 4.5, Table 4.11
5.2	Cut Batters	2H:1V	Austroads Part 3, Section 4.5, Table 4.11.



ID	Design Aspect	Criteria	SLR Comment / Reference
6	Design Criteria – Barriers		
6.1	Barrier Type	W-beam	Containment level to be assessed in the Detailed Design Phase.
6.2	Barrier Offset from Edge line	3m throughout turn lane	TS 02642_1.00_Supplement to Austroads Guide to Road Design. Point of Need assessment completed. Extension of existing barrier required due to impacts of AUL(s).
7	Design Criteria – Design & Check Vehicles		
7.1	Design Vehicle	20m AV.	Austroads Design Vehicles and Turning Path Template Guide
7.2	Check Vehicle	40m OSOM combination.	Austroads Design Vehicles and Turning Path Template Guide
8	Design Criteria – Other Design Considerations		
8.1	Maximum Road Grade	6-8% - road geometry to match existing.	AGRD Part 3 Section 8.5.3.
8.2	Line Marking	In accordance with AGRD and TfNSW requirements.	
8.3	Pavement Seal and Design	Existing seal to remain in place. Existing line marking to be removed as per TfNSW standards and replaced with new line marking to suit the design. Seal widening as required to suit the new intersection form.	Pavement seal in accordance with TfNSW design requirements in the future Detailed Design.
8.4	Signage	Advanced warning signage has been provided in the plans.	“W5-55-1 Concealed Driveway” and “W5-25n Turning Traffic”. TS 00012_1.00_Signalling Signage
8.5	Gate Location	There is sufficient queuing space between the Highway and the gate to accommodate the bi-directional design vehicle movements (20m AVs).	
8.6	Drainage network	Existing table drains, culverts and drainage paths to remain in place.	Tied into the existing embankment. The existing swale is unaffected at this stage of strategic design. Detailed Design Phase to confirm.
9	Exclusions & Limitations		
9.1	Vertical Geometry	TfNSW – August 2024: Strategic Design requirements for DAs (2D)	3D to be considered in the future concept and detailed design.
9.2	Lighting Design	TfNSW – August 2024: Strategic Design requirements for DAs (2D)	Lighting design to be considered in the future concept and detailed design.

The strategic design plan for the proposed AUL(s) arrangement is provided in **Appendix H**.



7.0 Operational Assessment

7.1 Assessment Scenarios

For the purposes of the traffic assessment, it was assumed that the subject development would be completed and fully occupied by 2026. The following traffic assessment scenarios have therefore been adopted:

- **2022 ‘Survey’:** To establish operational conditions and baseline results at the time of the traffic surveys.
- **2026 ‘Background’:** To establish the year of opening baseline operating conditions in the absence of the subject development at all intersections assessed.
- **2026 ‘With Construction’:** To quantify the incremental impact of construction traffic conditions.

The operational performance of the study intersections has been analysed for each of these assessment scenarios during both the weekday AM and weekday PM periods.

Peak traffic demands are illustrated graphically in the desktop models, which are provided in **Appendix F**.

7.2 Performance Criteria

SIDRA Intersection 9.0 (SIDRA), is a computer-based modelling software that determines the operational performance of intersections based on input parameters, including carriageway geometry and traffic volumes. Amongst other parameters, SIDRA provides an estimate of the intersection’s Degree of Saturation (DOS), queues and delays. The desirable maximum DOS threshold considered to be appropriate is 0.80 for an unsignalised priority intersection, 0.85 for a roundabout and 0.90 for a signalised intersection.

TfNSW (formerly RMS and RTA) defines intersection performance based on vehicle delay. SIDRA can calculate the average delay encountered by all vehicles that travel through individual lanes, approaches as well as at the intersection level. The level of service can then be determined based on the reported delay. It should also be noted that for roundabouts and priority control intersections, the critical movement for level of service assessment should be that with the worst movement delay; however, for signalised intersections, level of service should be reported based on the average delay.

The level of service is based on the Guide to Traffic Generating Developments⁹ by TfNSW (2002), as shown in **Table 17** below.

Table 17 TFNSW SIDRA Level of Service Criteria

Level of Service (LOS)	Average Delay per Vehicle (seconds / vehicle)	Signalised Intersections and Roundabouts	Give Way & Stop Sign
A	0 to 14.5	Good operation	Good operation
B	14.5 to 28.5	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	28.5 to 42.5	Satisfactory	Satisfactory, but accident study required

⁹ TfNSW (formerly RMS) Guide to Traffic Generating Developments, Version 2.2 Dated October 2002
<https://www.rms.nsw.gov.au/business-industry/partners-suppliers/documents/guides-manuals/guide-to-generating-traffic-developments.pdf>



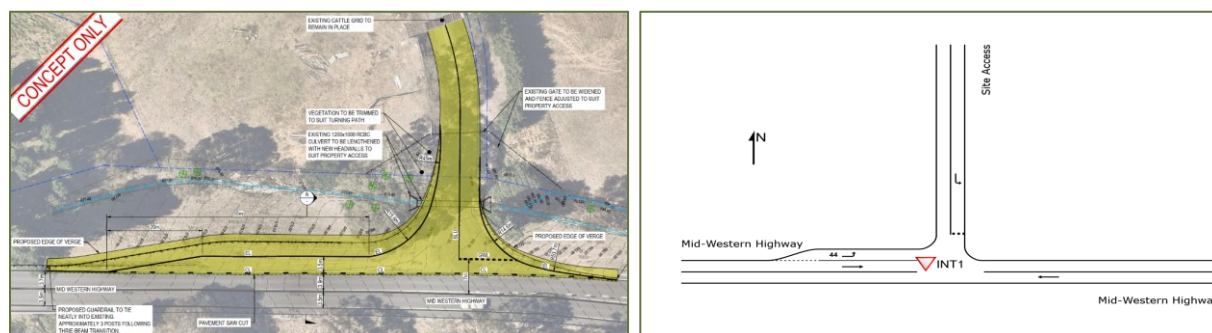
Level of Service (LOS)	Average Delay per Vehicle (seconds / vehicle)	Signalised Intersections and Roundabouts	Give Way & Stop Sign
D	42.5 to 56.5	Operating near capacity	Near capacity, accident study required
E	56.5 to 70	At capacity; at signals, incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Where the Level of Service (LOS) value exceeds LOS E, this indicates that an intersection is at its practical capacity and upgrade works or other interventions may be required. At LOS F, road users are likely to experience significant delays and excessive queueing.

7.3 Assessment Findings

The Site Access/ Mid-Western Highway intersection is currently configured as a T-intersection, as shown in **Figure 18** below.

Figure 18 Site Access / Mid-Western Highway – Proposed Intersection Form



SIDRA analysis outputs for this intersection are summarised in **Table 18** and detailed outputs are included in **Appendix I**.

Table 18 Site Access / Mid-Western Highway – SIDRA Analysis Outputs

Scenario	AM Peak				PM Peak			
	DOS	Worst Delay (s)	95 th ile Queue (m)	LoS	DOS	Worst Delay (s)	95 th ile Queue (m)	LoS
Survey								
2022	0.099	6.0	0.0	A	0.094	6.0	0.1	A
Background								
2026	0.107	6.1	0.0	A	0.099	6.0	0.0	A
With Construction								
2026	0.102	8.1	0.3	A	0.102	6.7	0.0	A

Table 18 indicates that the site access on Mid-Western Highway performs at LOS A for all scenarios, with the maximum 95th percentile queue being 0.3m. Therefore, it is anticipated that the construction traffic will not have any significant impact on the movement of vehicles at the site access/ Mid-Western Highway intersection, nor on the wider road network.



8.0 Construction Traffic Management Strategies

As part of TfNSW's review of a previous version of this TIA (v2.2) and their subsequent comments, these preliminary comments have been prepared to provide strategic advice for the future construction traffic management plan (CTMP), which will only be prepared following the approval of the DA and when more information is available about the proposed construction strategy. This information includes workforce accommodation, the construction program, and the vehicle fleet that will be used, which will be subject to the availability of hotels, staging of the project, and availability of construction vehicles.

Notwithstanding, at a high level, it is recommended that the following be considered or prepared as part of the CTMP:

8.1 Driver's Code of Conduct

It is important to note that all drivers are responsible for following NSW road rules and the Driver's Code of Conduct. SLR has prepared a conceptual Driver's Code of Conduct, which is provided in **Appendix J**.

8.2 Traffic Guidance Schemes (TGSs)

It is important to note that the majority of works will be carried out within the property boundary of the acquired land, other than the proposed AUL(s) upgrade at the site access driveway on the Mid Western Highway.

It is anticipated that the works in private property and the public road network will be commissioned separately; therefore, construction activities for each of the following will occur at different times:

- Construction of the AUL(s) treatment at the site access driveway on the Mid-Western Highway.
- Construction of the proposed BESS and substation.

It is anticipated that each CTMP will have their own TGSs. In the absence of information on construction methodologies and programs, it is not possible for this TIA to discuss the respective traffic management strategies in detail.

Notwithstanding, the CTMP for the works listed above must be prepared to satisfy the Bathurst Regional Council and TfNSW.

8.3 Site Management

The following procedures are to be observed by all vehicle drivers accessing the subject sites:

- Drivers are to obey all site signage and the directions of the site personnel.
- All vehicles are to park and load/ unload within the site using the designated parking and loading areas where possible. Vehicles are not to park or load/ unload within the public road reserve.
- All drivers are required to operate vehicles in a safe and courteous manner, both within and external to the subject site.

8.4 Heavy Vehicle Management

8.4.1 General Requirements

Heavy vehicles accessing the site must abide by their respective company operating procedures and standard NSW road rules when operating.



The following rules must also be followed:

- All vehicles to enter the site from the Mid Western Highway with a left turn movement.
- Heavy vehicles using Evans Plains Road must not exceed 60 km/h.
- Consistent with the OSOM material transportation requirements, pilot vehicles and escorts must be utilised for non-standard loads.
- Temporary signage must be positioned at critical intersections to inform construction vehicle drivers and to warn the general public about the construction activities in the vicinity.

It is also worth noting that there are no school zones or dense urban areas that construction vehicles will have to travel through. Also, obtaining approvals to access private property will not be required. The entirety of the proposed road upgrades will be undertaken in the local road reserves.

8.4.2 Noise Management

To limit heavy vehicle noise associated with construction activities, drivers are to abide by the following requirements:

- Posted speed limits on the external road network are to be observed.
- Vehicles are to be turned off when not in use.

8.4.3 Dust Management

The contractor should identify appropriate mitigation measures, and strategies should be listed in the CTMP for dust management.

8.5 Mitigation Measures

The impacts of construction traffic and the mitigating measures to be implemented are outlined in **Table 19**.

Table 19 Construction Traffic Mitigation Measures

Mitigation Measures	Responsibility	Timing
Construction Traffic on Mid-Western Highway: Construction traffic will use the new accesses to enter/ exit the site. To ensure the impacts to motorists within the area are kept to a minimum, construction traffic will remain low.	Site Manager	Daily
Management of Deliveries: The site manager will manage deliveries to ensure that construction vehicle movements will remain low.	Site Manager	As Required
Safety During Construction: The safety of motorists and the public throughout the area will be maintained during construction through the preparation and execution of TGSs. TGS plans will be implemented, managing the access and the general public's movement around construction activities. They should identify all reasonably foreseeable hazards, assess them, and manage them as best possible by eliminating or minimising the risks. The TGSs shall be monitored and updated accordingly throughout the project.	Site Manager and Traffic Control Supervisor	Daily
Reporting: Reporting and monitoring of construction vehicle movements are to be undertaken to ensure that drivers are adhering to restricted times.	Site Manager	Weekly



8.6 Risk Assessment

A risk assessment is intended to identify hazards and risks associated with construction activities. The purpose is to determine the controls required for the protection of road workers and road users. A Risk Assessment associated with the construction works of this site should be prepared and provided in the CTMP.

8.7 TMP Monitoring/ Review & Improvement Process

8.7.1 Implementation

The proposed works should be carried out in accordance with the following requirements:

- The approved Issued for Construction drawings, Traffic Management Plan (TMP) and Traffic Guidance Schemes (TGS).
- All associated Federal and State statutory requirements, e.g., environment, cultural heritage, etc., as required.

8.7.2 Monitoring and Review

The approved CTMP should be monitored and reviewed regularly. If issues arise, the CTMP should be revised to mitigate the issues. Regarding the implemented TGS plans, these should be monitored and reviewed on a daily basis to ensure signs and devices are installed correctly and convey the correct and intended messages.

8.7.3 Work Site Inspections, Recording and Reporting

At the commencement of works, the TGS setup shall be inspected to confirm accuracy with the intended TGS, as well as to ensure locations of signage and devices are safe and do not cause hazards to traffic. This inspection shall be documented within a site register and repeated at the commencement of each week of the construction program.

8.7.3.1 Incident Management

For the purposes of this CTMP, an 'incident' is an occurrence or set of circumstances that causes or threatens to cause material harm, which may or may not cause non-compliance. Furthermore, 'non-compliance' is an occurrence, a set of circumstances or a development that breaches the consent. In the event of an incident relating to traffic, the Contractor's Site Manager must notify the Construction Project Manager immediately, following any need to alert emergency services. Such incidents may include, but are not limited to:

- Vehicle crash or injury resulting from construction traffic related to the project.
- Spill of any dangerous goods or hazardous substance to the ground or water.
- Substantiated complaints from community members or regulatory authorities relating to traffic management.
- Land-based off-site sediment loss to the environment, including sediment tracking onto the roadway.

8.8 Contingency Plan

The Contractor shall establish a contingency plan per Recurrent Energy's requirements.

8.9 Communications Strategy

The Contractor shall establish a communications strategy per Recurrent Energy's requirements.



9.0 Recommendations

9.1 Road Upgrades

Based on the discussions undertaken with TfNSW, the applicant has committed to providing an AUL(s) intersection treatment at the site access on Mid Western Highway.

Consistent with **Section 6.0** and **Appendix H** in this TIA, it is recommended that this intersection be upgraded to accommodate 20m AVs (design vehicle) and 40m OSOM combination (check vehicle).

9.2 Dilapidation Surveys

It is recommended that dilapidation surveys be undertaken to assess the condition of Evans Plains Road and identify changes (if any) prior to and subsequent to the completion of the proposed construction works.

9.3 Construction Traffic Management Plan

It is recommended that a Construction Traffic Management Plan (CTMP) or equivalent document be prepared following approval but prior to the substantial commencement of construction activities. It would be appropriate for this document to be prepared in accordance with the requirements set out in the SEARs.

The purpose of the CTMP would be to identify any changes to development planning that occur subsequent to the preparation of this assessment and the impact of these changes on the conclusions of this assessment. In addition, the document would typically detail impact mitigation strategies, including soft strategies such as busing the workforce, unlike what is assumed herein for a conservative assessment and hard strategies such as the road works near access locations identified herein.

The CTMP should also provide operational information such as contact details of the maintenance contractor and etc. However, it is not considered necessary to investigate the operational impacts in detail, given that BESS require very low maintenance effort.

SLR also recommends that the CTMP include a driver's code of conduct. This driver's code of conduct should include, but not be limited to, the proposed approach/ departure routes to/ from the subject development, the nearby acceleration lane and the possibility of black ice on the roads during the winter months.

Based on a desktop review of the subject land and development plans, SLR is of the view that there are plenty of parking opportunities on the site to enable efficient construction.



10.0 Conclusion

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Panorama BESS SubCo Pty Ltd (Panorama BESS SubCo or the Applicant) to prepare a Traffic Impact Assessment (TIA) for a Battery Energy Storage System (BESS) development.

The application proposes a 100 megawatt (MW)/ 200 megawatt hours (MWh) BESS to be constructed on Lot 2 of DP 864272 at 800 Mid-Western Highway, Evans Plains, New South Wales (NSW). The site is located approximately 5.8 kilometres (km) southwest of Bathurst and 2.5 km west of Robin Hill.

The proposed development will comprise SolBank BESS equipment, consisting of battery enclosures, inverters and a transformer. The development also requires the expansion of an existing Transgrid substation (in Lot 521 of DP 603541) located north east of the BESS infrastructure, as well as the installation of approximately 260m of 132kV underground cable to connect the BESS infrastructure to the substation.

Access to the site would be via the existing site crossover on Mid-Western Highway that readily services the aforementioned Transgrid substation via the upgrading of this access. A short Auxiliary Left Turn Lane (AUL-s) treatment will be provided at this location. The internal access road is planned to be formalised to accommodate heavy vehicles associated with the construction of the BESS. An additional connection road will be constructed from the existing internal road to the BESS.

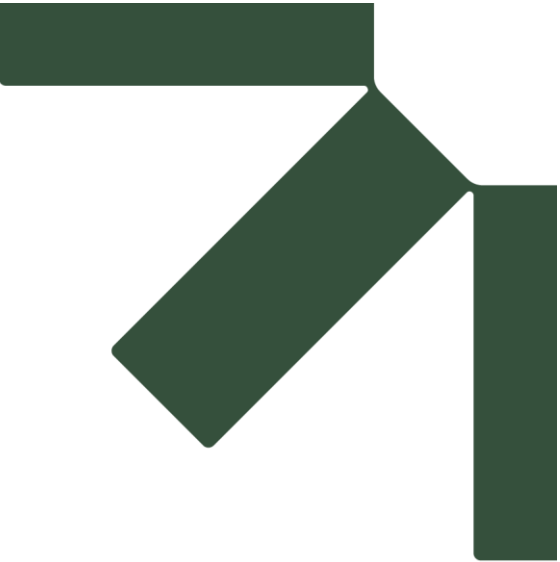
The development also involves the construction of ancillary facilities, including an operation and maintenance building, stormwater management infrastructure, lighting, fencing and temporary construction laydown areas. In addition, the access driveway will be formalised to accommodate heavy vehicle traffic, and the existing internal access road will be extended to provide direct access to the BESS infrastructure.

A Secretary's Environmental Approval Requirements (SEARs) request was made on 16 November 2022, and this TIA will form a part of the environmental assessments for the project.

Based on the analysis and discussion documented in this report, the following is concluded:

- Sight distances available at the access driveway crossover satisfy the Safe Intersection Sight Distance (SISD) requirements of the Austroads Guidelines.
- The proposed development will generate approximately 22 return trips a day (light and heavy vehicles combined).
- It was identified that the construction traffic volume would be sufficiently low (22 return trips a day) and that there would be no capacity constraints at the access crossover.
- It is recommended that the construction workforce be briefed on the recommended route with a Driver's Code of Conduct prepared by the applicant.
- The access location should be designed with an AUL(s) treatment per Austroads Guidelines for a rural site under the Extended Design Domain. No upgrades are considered necessary for the right-turn movement because all heavy and light vehicles will be limited to Left-In and Left-Out (LILO) operation.
- The use of Evans Plains Road by heavy vehicles is consistent with Austroads Guidelines.
- It is also recommended that a construction traffic management plan (CTMP) be prepared and dilapidation surveys on Evans Plains Road be undertaken following the approval of this SSD application.





Appendix A Development Plans

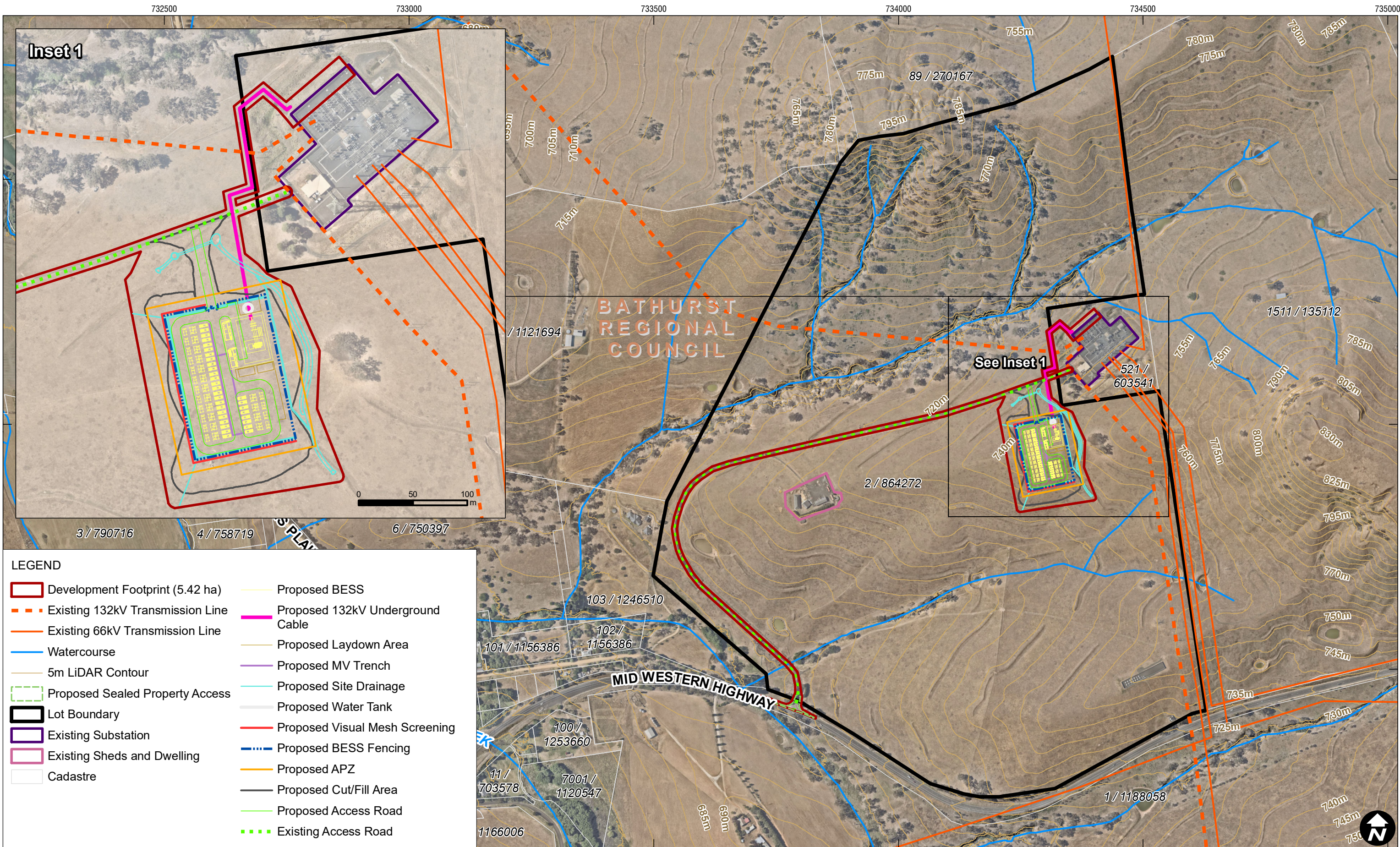
Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

SLR Project No.: 660.v30234.00014

19 January 2026



LEGEND

- Development Footprint (5.42 ha)
- Existing 132kV Transmission Line
- Existing 66kV Transmission Line
- Watercourse
- 5m LiDAR Contour
- Proposed Sealed Property Access
- Lot Boundary
- Existing Substation
- Existing Sheds and Dwelling
- Cadastre
- Proposed BESS
- Proposed 132kV Underground Cable
- Proposed Laydown Area
- Proposed MV Trench
- Proposed Site Drainage
- Proposed Water Tank
- Proposed Visual Mesh Screening
- Proposed BESS Fencing
- Proposed APZ
- Proposed Cut/Fill Area
- Proposed Access Road
- Existing Access Road

0 200 400 m

Scale: 1:10,000 at A4
Coordinate System: GDA 1994 MGA Zone 55

Date Drawn: 18-Dec-2025
Project Number: 660.30234.00000

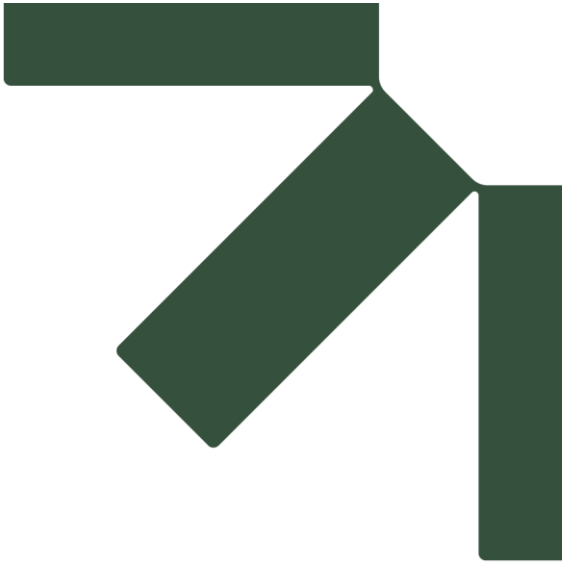


Data Source: Basedata NSW SS, December 2021
Aerial imagery supplied by Nearmap (December, 2025)
Elevation data supplied by DCS Spatial Services (July, 2019)

Proposed Infrastructure from REV N (Panorama-BESS-100MW-2hr_RevN)

PROJECT SITE PLAN
REV N

APPENDIX A



Appendix B SEARs Cover Letter

Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

SLR Project No.: 660.v30234.00014

19 January 2026

Our ref: Panorama Battery Energy Storage System (SSD-50587460)

Ms Chelsea Milles
Project Development Manager
PANORAMA BESS SUBCO PTY LTD
By email

09/12/2022

Subject: Panorama Battery Energy Storage System

Planning Secretary's Environmental Assessment Requirements

Dear Ms Milles

Please find attached a copy of the Planning Secretary's environmental assessment requirements (SEARs) for the Panorama Battery Energy Storage System (see Attachment 1).

The SEARs have been prepared in consultation with relevant public authorities, based on the information you have provided. A copy of the advice from the public authorities is attached for your information. Note that advice from Transport for NSW and the Rural Fire Service will be provided separately once received.

Where relevant, the Planning Secretary may modify the SEARs to ensure the environmental assessment of the project covers all relevant matters and is consistent with contemporary assessment practice.

Your SEARs will expire two years from the date of issue (or the date they were last modified) unless the Planning Secretary has granted an extension. If you would like to seek an extension, you should contact the department at least three months prior to the expiry date.

If your application is not submitted within two years (or by the agreed extension date), you will need to make a new application for SEARs to progress your project.

Preparing your EIS

Your environmental impact statement (EIS) must be prepared having regard to the department's *State Significant Development Guidelines* – including the *Preparing an Environmental Impact Statement Guideline*. All relevant guides for State significant projects that are referenced in the SEARs are available at www.planning.nsw.gov.au/Policy-and-Legislation/Planning-reforms/Rapid-Assessment-Framework.

During the preparation of your EIS, you are required to consult with various parties, including the department and relevant agencies, in accordance with *the Undertaking Engagement Guidelines for State Significant Projects*. For more information, please visit the [Prepare EIS page](#) on the NSW planning portal.

Agency contact details can be found at <https://www.planningportal.nsw.gov.au/major-projects/assessment/guide-agency-directory>.

You will need a Registered Environmental Assessment Practitioner (REAP) to declare that your EIS meets certain standards in relation to its completeness, accuracy, quality and clarity before it is submitted to the department, as per Division 5 of Part 8 of the Environmental Planning and Assessment Regulation 2021. A pro forma declaration can be found in [Appendix B of the Preparing an Environmental Impact Statement Guideline](#).

The Department would like to meet with you during the preparation of your EIS. Please contact the Department to arrange these meetings.

Lodging your development application (DA)

Once you submit your EIS, we will check it for completeness to confirm it addresses the requirements in Part 8 of the Environmental Planning and Assessment Regulation 2021. We will also notify you of the DA fee for your project. Please note that **your DA is not taken to be lodged until the DA fee has been paid**.

To minimise delays, **please contact the department at least two weeks before you submit your EIS** to confirm fee determination information and payment arrangements. This will give us sufficient time to ensure your application fee can be determined quickly.

Information needed to determine the DA fee

Your application will need to be accompanied by a Quantity Surveyor's Report supporting the estimated cost of works for your project. You must ensure that the information in the report is consistent with the information provided in your DA form.

Public exhibition requirements

When you contact us regarding the applicable DA fee, we will also advise whether hard and/or electronic copies of the EIS will be required for public exhibition.

Matters of National Environmental Significance

Any development likely to have a significant impact on matters of National Environmental Significance will require approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This approval is in addition to approvals required under NSW legislation.

It is your responsibility to contact the Commonwealth Department of Agriculture, Water and the Environment to determine if you need approval under the EPBC Act (<http://www.environment.gov.au> or 6274 1111).

Department of Planning and Environment

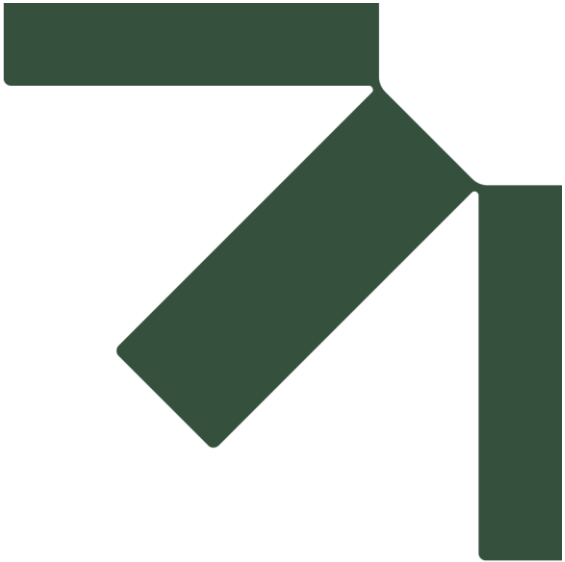


If you have any questions, please contact Nestor Tsambos on 9274 6348 or via email at nestor.tsambos@dpie.nsw.gov.au.

Yours sincerely,

A handwritten signature in blue ink, appearing to be "Nicole Brewer", with a horizontal line extending to the right.

Nicole Brewer
Director
Energy Assessments
as delegate for the Planning Secretary



Appendix C TfNSW Advice

Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

SLR Project No.: 660.v30234.00014

19 January 2026

24 June 2025

TfNSW reference: REN25/00091/002|SF2025/063368

DPHI reference: SSD-50587460

Department of Planning, Housing & Infrastructure
Locked Bag 5022
PARRAMATTA NSW 2124

Attention: Samantha Oyston

SSD-50587460 – Panorama BESS, TfNSW advice on Response to Submissions and Amendment Report

Transport for NSW (TfNSW) is responding to the Response to Submissions (RtS) and amendment report referred via the Major Projects Portal. TfNSW has reviewed the additional information prepared by the proponent, including the updated Traffic Impact Assessment prepared by NGH, revision 3.2, dated 17 April 2025, as key documents for preparing this response.

The application has not addressed all items from TfNSW previous request for information from the response to the Environmental Impact Statement (EIS) dated 21 August 2024. TfNSW have provided further advice to clarify the remaining outstanding additional information previously requested within TfNSW response to the EIS (refer to Attachment 1).

TfNSW key rationale for requesting the information is to demonstrate that the designs comply with Austroads, establish the scope of works and mitigate the impacts of the project on the state road network from a safety, efficiency and asset management perspective.

TfNSW can meet with DPHI and the applicant to discuss the information in Attachment 1. If you have any questions, please contact Glen Hanchard, Development Services Case Officer, at 1300 019 680 or email development.renewables@transport.nsw.gov.au.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Alexandra Power".

Alexandra Power

Development Services Team Leader- Renewables
Transport Planning
Planning, Integration and Passenger

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Attachment 1

SSD-50587460 – Panorama BESS, TfNSW Advice on Amendment Report, Bathurst Local Government Area

This attachment relates to TfNSW's response dated 18 June 2025 reference REN25/00091/002.

Additional required information | TfNSW comments

TfNSW requests the additional information, as detailed below, to be included in a revised TIA and EIS (where applicable) and submitted for review. It must be clear where changes have been made in the revised TIA, which can be a document with tracked changes or a table provided in the updated TIA detailing where and what changes have been made.

Refer to the advisory notes at the end of this response for information to assist with the revisions to the TIA.

TfNSW Advisory Notes

1. Strategic concept designs are required for works along the state road network route. Please review the factsheet below and ensure designs comply with the factsheet below:
[Strategic-Design-requirements-for-DA-Factsheet.pdf](#)
2. The updated route study must include reference to a Route ID utilising the [NHVR](#) portal website.
3. The Australian Guide to Road Design Part 4A is available for review to assist with the intersection design at the below link.
<https://austroads.gov.au/publications/road-design/agrd04a>
4. The proponent will need a Road Occupancy License, and a Section 138 applied for through the council with concurrence from TfNSW, as core log samples with a maximum diameter of 100mm will be required. The supporting documentation will need to detail within a report the pavement layers and type.
5. Regarding considerations for left in, left out intersection restrictions please review Austroads Part 6 Guide to Traffic Management left in left out section and Figure 3.9.

Outstanding additional information previously requested by TfNSW in response to EIS and TfNSW response in relation the RTS and Amednment Report

No.	TfNSW comments from EIS requiring RFI	TfNSW response in relation to RTS and request for information for revised TIA
1	Attachment 1 Traffic Characteristics The Safe Sight Intersection Distance (SISD) assessment for the proposed site access within the TIA identifies the sight	OPEN – the updated SISD assessment identifies that SISD is compliant. However, based on TfNSW review of the SISD it appears vegetation will limit safe sight of the intersection. The proponent should consider tree

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	distance achieved is 270 metres to the west, 30 metres short of the required 300 metres (100km+10km/hr for a 2.5 sec reaction time). The SISD assessment is to be revised to identify measures to achieve compliant SISD for the design speed.	removal/trimming to ensure that there is a clear sight to the intersection. The vegetation removal and trimming is to be identified on the strategic concept designs as a mitigation measure to achieve compliant SISD. The location of the intersection will also need to be considered in conjunction with issues raised in section 8 of this letter.
2	A turn warrant assessment has not been provided for the intersection of Mitchell Highway and Evans Plains Road and the turn volumes provided for the proposed site access warrant a BAL/BAR yet only a BAL is proposed at this access intersection. Further, the figures provided in the turn warrant assessment in Appendix F warrant a higher turning treatment of a BAL/CHR(s). Noting light vehicles movements into the site (right turn only) trigger the higher turning treatment (CHR(s)), the development will need to either provide for the higher turn treatment or demonstrate that traffic volumes can be within the lower order treatment. A revised turn warrant assessment is required for the site access and intersection of Mitchell Highway and Evans Plains Road. The turn warrant assessments are to be prepared in accordance with Part 6 Austroads Guide to Traffic Management (AGTM) and must be assessed on the conservative traffic scenario, defined below:	OPEN – Midwestern Highway / Project Access The proponent has proposed to prohibit the turning movements for the Mid-western Highway/Project access to a left in and left out turning movement for project traffic. The design submission however does not address how the right turn movements from the Mid-western Highway will be prohibited (refer to advisory notes for the left in left out section of Austroads) The provided left in and left out sign will not provide adequate control to prevent the right turns from Mid-western Highway into the property access. The strategic concept designs and TIA are to be revisited to identify mitigation measures that would control the left in left out and prohibit the right turn movements from the Mitchell Highway into the site. The current warrants have concluded a BAL and BAR would be required however the proponent has only provided a BAL. Sufficient justification hasn't been provided as to why only a BAL is to be included when the updated turn warrants in the latest TIA conclude that a BAL / BAR should be provided.

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• Peak project traffic volumes applied to background traffic during network peak hours. • Growth rates applied linearly to peak construction and background traffic volumes. • Cumulative traffic volumes applied to background and turning volumes (where applicable) of other Major Projects at EIS or approved stage that will be present in the background and turning volumes during pre-construction and construction background peak hours.	Further, the BAL treatment is considered unsafe given the location of the proposed intersection access located at the start of an existing east bound overtaking lane diverge and considering the increase in traffic competing with the needs of turning and through traffic of the highway. The proponent must consider moving the intersection or consider a suitable auxiliary left turn lane treatment into the new access to reduce the relative speed differential between turning and through traffic. As raised above, a channelised right must also be considered. <i>Mitchell Highway / Evans Plains Road</i> This intersection already contains a CHR and AUL however there is a nexus to this intersection for the project traffic and still requires a full assessment that considers all items raised in point 2 of the previous letter. The intersection of <i>Evans Plains Road / Midwestern Highway</i> will also require full assessment to be provided in the updated TIA. Temporary nature of the works is not a sufficient reason for not including appropriate works to mitigate impacts. A construction timeframe of two years is a serious impact to road users and is required to be mitigated to maintain the safety and efficiency of the road network. On this point, the assessment of the use of accesses, intersections and routes is to cover the entirety of the life of the project (i.e construction, operation, upgrades and decommissioning). The proponent must ensure the updated turn warrants have considered the worst case scenario by applying the peak project traffic volumes to the background traffic (with growth
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		rate applied). Proponent has also not clearly distinguished the pre-construction minor works from the main works as requested by the previous letter. Please ensure specific delineation of what pre-construction minor works may be required and the traffic volumes and impacts of these.
3	Updated traffic volumes are required that breakdown AM/PM peak vehicle distribution as well as ratio of light to heavy vehicles for both the site access and the intersection of Mitchell Highway and Evans Plains Road.	CLOSED - The proponent has completed an updated traffic survey for one full week on Mitchell Highway and Evans Plains Road. The peak hours identified were: Weekday Peaks - 8-9AM, 4-5PM Saturday Peaks - 12-1PM Table 10 provides a breakdown of light to heavy vehicles.
4	The development proposes a left in and left out for heavy vehicles and a right in and left out for light vehicles. Details of the measures to be employed to ensure compliance with these arrangements and safety on the public road network during construction, operation and decommissioning of the project is required. This includes enforcement to managing traffic volumes, driver behaviour and access paths to the site. Note: This excludes use of temporary traffic mitigation measures as identified in Austroads and TfNSW requirements. Temporary traffic mitigation measures are only permitted for activities occurring in the road reserve.	OPEN – Current proposal retains BAL treatment left in, left out that TfNSW raised issues with in the previous letter. The Issue of safe right turn access has not been considered from a safe systems approach to road design. As per point 2 above, and issues raised in this document regarding the strategic concept design below. Further detail is needed on the intersection upgrades and as a result further detail will also be needed on the eventual mitigation measures also.

5	The Environmental Impact Statement (EIS) mentions projects which may have overlapping schedules with the proposal, however, this information has not been included in the TIA. An assessment should be undertaken in the TIA to identify projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following: • Cumulative impacts from traffic generated from construction workforces in terms of the origin - destination routes, access and AM/PM peaks that overlap with other projects. • Cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes that overlap with other projects.	CLOSED – Proponent has searched for other cumulative projects in the vicinity.
	• Cumulative impacts and considerations in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development.	CLOSED – The proponent will need include a schedule of movements within the TMP that considers cumulative timing of other projects from Port Kembla to the project site.
	• Further consideration identifying accommodation (and transport) needs and facilities available within the local region to service the proposed project's staff, in addition to understanding cumulative impacts of concurrent accommodation (and transport) needs of staff from other projects.	OPEN – Section 7.0 notes that information regarding workforce accommodation is provided in the TIA that will inform the post consent CTMP however on review of Section 7 workforce accommodation does not appear to be specifically discussed. Please ensure all this detail is included in the turn warrant assessments.

6	Oversize and Overmass (OSOM) vehicles OSOM vehicle for the transformer is classified as high risk OSOM (as defined on TfNSW website in this link) due to its proposed height exceeding 5.20m. A Concept Level Route Analysis is required with the following information: • The route from port or point of origin to site access and intersections required to facilitate high risk OSOM movements required for the project.	CLOSED – Route from Port Kembla has been provided.
	• Details of all high risk OSOM loads and vehicle configurations for the project.	CLOSED – Proponent has identified the transformer is the only high risk OSOM component and will utilize a platform trailer with drop frame with: Length – 40 m Width – 4.2 m Height – 4.9m Combination Mass - 208 tonnes
	• Location of pull-over bays / rest areas along the high risk OSOM routes (including GPS coordinates) and demonstration swept paths of high risk OSOMs can be physically accommodated (in terms of size, width and accessibility).	OPEN – Proponent has provided swept paths for pull over locations identified. The route includes a long section between Mundoonan and Cowra where a pull over location is not identified. Proponent is to provide clarity that the amount of pullover locations complies with NHVR fatigue requirements particularly along the long stretch along the Lachlan Valley Way.
	• Road geometry details and alignment along identified transport route(s), including existing formations, crossings, bridges, intersection treatments and any identified hazards, including: - o Bridge Assessments for any at risk bridges on the classified road network due to dimensions and weight of OSOM vehicles. - o Swept path analysis demonstrating the largest design vehicle can enter and exit	OPEN – The proponent has not identified all road geometry considers along the route. In particular: Bridge assessments have not been provided. This combination will require bridge assessments for TfNSW and third part assets. See advisory note. Outcome of bridge assessments must be provided in the updated TIA. The swept path diagrams for the intersection are provided. The intersection strategic concept

the site and simultaneously pass through intersections along the proposed transport route(s). - o Design vehicle templates used in the swept path analysis software in order for TfNSW to review performance (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN). - o Highlighting each at-risk road structures that haulage route(s) cross including bridges, traffic signals, signage, major culverts and minor culverts that may not meet desirable cover to cater for proposed axle loads.	designs do not comply with the strategic design factsheet, in particular as dimensions are missing. Please review the advisory note to ensure this is provided. Whilst the template hasn't been provided, the design vehicle has been identified as a 19m B Double. Some at risk road structures have been identified along the haulage route however the proponent has not provided full mitigation measures or works required for these structures.
• Identify and provide the following measurement parameters of OSOM components / materials to be moved: - o Types and numbers of high risk OSOM vehicles. - o Overall combination type, configuration, load and vehicle configuration. - o Wheelbase dimensions. - o Length, width, height and mass (GCM, tare, weight to axle and payload) for components and nominated vehicles. - o Maximum trailer articulation angle(s). - o Minimum overhang heights above the road surface. - o Vehicle configurations. - o Traffic mitigation measures or road works, modifications or road upgrades to facilitate the movement of high risk OSOM(s). - o Potential high level mitigation measures or commitments to mitigate known traffic, safety and impacts to road users along the high risk OSOM route(s) (i.e school bus routes, mining shift changes, TSRs, harvest periods and events).	OPEN – Proponent has identified the transformer is the only high risk OSOM component and will utilize a platform trailer with drop frame with dimensions provided. A diagram is provided on page 10 of the OSOM Route study completed by ARES. The maximum trailer articulation angles are still required to be identified. The full extent of Impacts and works to state road assets have not been completely identified. The proponent is to investigate the structural integrity of the medians that will be traversed by the high-risk OSOM vehicle configuration (which will involve core log testing). TfNSW will need to review the outcome of this investigation. This includes: -The turn from the M1 motorway onto Picton Road demonstrates the OSOM swept path tracking over the concrete median. Further investigations are to be completed at this location.

		-Roundabout on Lachlan Valley Way is shown to be impacted by the vehicle swept path as well as the medians either side of the roundabout at the locations of the sign removal. -The corner of Mid Western Highway and Lachlan Valley requires further investigation. If the existing pavement is not suitable, the proponent will need to provide strategic designs of the median that identify the scope of work required to strengthen the pavement of the median(s). Strategic concept designs are required for any identified works, see advisory notes. <i>Note: core log samples will need to be taken as part of this investigation, which will require a s138 Roads Act approval and ROL.</i>
	• 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 for proposed OSOM route(s). Any road works or upgrades works required along the OSOM route must be included within scope of works in the SSD to ensure constructability. Note: Given 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 you engage early with	CLOSED – proponent has identified the Mt Ousley upgrade project. Proponent is to make contact with the team prior to movements occurring to ensure. This should be done prior to determination of the consent to ensure the proponent has considered all impacts. Regarding rail, The OSOM Route Study identifies two railway level crossings on CRN rail corridors along the proposed OSOM route: • Mid Western Hwy, Cowra (Blayney to Cowra non-operational CRN corridor) • Adelaide St (Mid Western Hwy), Blayney (Taranga to Orange Junction Operational CRN corridor) The proponent must note, if required to traverse UGLRL-managed assets or infrastructure, including level crossings for OSOM/heavy

	TfNSW's Development Services Renewables team to discuss the requirements of the route assessment	vehicles, the applicant must lodge a request for a permit via the National Heavy Vehicle portal or send the request directly to UGLRL via "heavyvehicle@uglregionallinx.com.au". The applicant must submit the request at least two (2) months before passage and include the specifications of their OSOM and heavy vehicles (axial loading and axial spacing as well as dimensions of the heavy vehicles) with the lodgment of the request.
7.	A description of all non-high risk OSOM vehicles and materials to be transported is required. The shortest and least trafficked route is to be given priority for movement of materials and machinery to minimise risk and impact to other motorists, so far as is reasonably practicable.	CLOSED - The transformer is provided as the only OSOM load required in the ARES route study and also in Section 2.5.1. The proponent notes in Section 2.3.2 that no other OSOM are required and the largest vehicle used will be a standard 20m long articulated vehicle or 19m B Double.
8.	Strategic Designs TfNSW is not able to assess the suitability of the proposed site access due to lack of suitable information. Any road upgrades along state classified roads are to be accompanied by Strategic Designs, prepared in accordance with TfNSW Strategic Design Requirements for DAs Strategic design requirements for DAs - February 2022 (nsw.gov.au) In addition to these requirements the Strategic Designs will need to be accompanied by revised swept paths for the design vehicle and OSOM vehicle entering the site and accessing the intersection of Mitchell Highway and Evans Plains Road. The swept paths must demonstrate the design vehicle can turn concurrently in all directions without crossing into the incorrect lane,	OPEN – The provided strategic designs are still deficient. The designs do not achieve the minimum requirements as per TfNSW strategic design fact sheet. Please ensure all plans are dimensioned. Further issues with strategic designs are detailed in the points following.

9.	Information is required to verify existing road drainage system (including longitudinal drainage) will accommodate post-development discharge. TfNSW requires post-development flows be managed using interface drainage and/or subsurface drainage to convey 1% Annual Exceedance Probability. The strategic concept designs are to be revised to address this point.	PARTIALLY CLOSED - The proponent has identified some drainage detail at the intersection including culvert locations through photographs. The proponent is required to provide typical cross section diagrams that demonstrate drainage detail including identification of batter slopes (these should not exceed 6:1 in steepness). Typical cross section drainage diagrams are required by TfNSW Strategic Concept Design factsheet. See advisory note.
10.	Updated plans are required to show subsurface utilities located to QL-B (AS5488-2022) or better.	CLOSED – Proponent is to ensure this is completed for detailed design.
11.	Updated plans are required to clearly show site boundary and road reserve based on a survey.	OPEN – The proponent has identified the property boundary of the Strategic Concept Designs. Works for the intersection are shown to be located within the road reserve and the subject property of the application however it is not clear this is based on a survey as required by point 11 of the previous letter. The strategic concept designs are to be updated to identify the cadastral boundaries of the road reserve and subject property.
12.	There are concerns over current location of the site access due to the following constraints: • The curve in the road restricts SISD compliance, particularly towards the west. • The site access is located at the bottom of a vertical grade, where speed is likely to be higher, potentially causing issues for heavy vehicles trying to slow down to access the site. • The short distance between the site access and an existing bridge west of the site (approximately 40m). If the above issues cannot be addressed	OPEN – The proponent has included further information regarding SISD, please see section discussing this component. The other items however are not wholly addressed. The TIA also does not address the site access location at the bottom of the vertical grade. The updated TIA includes a heading for a section 8.1.2 titled Bridge to the West of the Driveway however the section is empty. Proponent is to address the bridge as per item 12 of the previous letter.

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	an alternative location to the site will be required.	The proponent is to consider another access if the limitations above are not addressed appropriately.
	General comments • The use of Evans Plains Road will require consultation with the relevant Council due to being a local road. Please note the TIA states Evans Plains Road is a low-speed road, however as a rural road with no sign posted speed limits the default rural 100km/h speed limit applies.	CLOSED – to be addressed with Council.
13.	It must be clear where changes have been made in the revised TIA, this can be in the form of a document with tracked changes or an excel sheet detailing where changes have been made.	Track changes or table not provided.

21 August 2024

TfNSW reference: WST24/00204/002 | SF2024/098885)

Your reference: SSD-50587460 (PAE-73616208)

Department of Planning, Housing and Infrastructure
Locked Bag 5022
PARRAMATTA NSW 2124

Attention: Samantha Oyston

TfNSW response to EIS - SSD-50587460 – Panorama Battery Energy Storage System - 800 Mid-Western Highway (HW6), Evans Plains

Dear Samantha,

Transport for NSW (TfNSW) is responding to the EIS exhibition of SSD-50587460 - Panorama Battery Energy Storage System (BESS) referred on 19 July 2024.

TfNSW has reviewed the information submitted in the Environmental Impact Statement (EIS) and Traffic Impact Assessment (TIA) prepared by SLR Consulting. TfNSW requires additional information to assess the impacts on the State road network associated with this project. Details of **additional required information** are set out in **Attachment 1**.

On request, TfNSW can participate in a meeting with DPHI and the Applicant to further discuss the information in **Attachment 1**.

If you have any questions, please contact Ruvimbo Timba, Development Services Case Officer, on 1300 019 680 or email development.renewables@transport.nsw.gov.au.

Yours faithfully

A handwritten signature in black ink, appearing to read "Alexandra Power".

Alexandra Power

Team Leader Development Services - Renewables
Community & Place
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Attachment 1

TfNSW response to EIS - SSD-50587460 – Panorama Battery Energy Storage System - 800 Mid-Western Highway (HW6), Evans Plains

This attachment relates to TfNSW's response dated 21 August 2024 reference WST24/00204/002.

TfNSW Additional information required

TfNSW requires revision of the Traffic Impact Assessment (TIA) prepared by SLR Consulting to address the following:

Traffic Characteristics

1. The Safe Sight Intersection Distance (SSID) assessment for the proposed site access within the TIA identifies the sight distance achieved is 270 metres to the west, 30 metres short of the required 300 metres (100km+10km/hr for a 2.5 sec reaction time). The SSID assessment is to be revised to identify measures to achieve compliant SSID for the design speed.
2. A turn warrant assessment has not been provided for the intersection of Mitchell Highway and Evans Plains Road and the turn volumes provided for the proposed site access warrant a BAL/BAR yet only a BAL is proposed at this access intersection. Further, the figures provided in the turn warrant assessment in Appendix F warrant a higher turning treatment of a BAL/CHR(s). Noting light vehicles movements into the site (right turn only) trigger the higher turning treatment (CHR(s)), the development will need to either provide for the higher turn treatment or demonstrate that traffic volumes can be within the lower order treatment.

A revised turn warrant assessment is required for the site access and intersection of Mitchell Highway and Evans Plains Road. The turn warrant assessments are to be prepared in accordance with Part 6 *Austroads Guide to Traffic Management* (AGTM) and must be assessed on the conservative traffic scenario, defined below:

- Peak project traffic volumes applied to background traffic during network peak hours.
 - Growth rates applied linearly to peak construction and background traffic volumes.
 - Cumulative traffic volumes applied to background and turning volumes (where applicable) of other Major Projects at EIS or approved stage that will be present in the background and turning volumes during pre-construction and construction background peak hours.
3. Updated traffic volumes are required that breakdown AM/PM peak vehicle distribution as well as ratio of light to heavy vehicles for both the site access and the intersection of Mitchell Highway and Evans Plains Road.

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4. The development proposes a left in and left out for heavy vehicles and a right in and left out for light vehicles. Details of the measures to be employed to ensure compliance with these arrangements and safety on the public road network during construction, operation and decommissioning of the project is required. This includes enforcement to managing traffic volumes, driver behaviour and access paths to the site.

Note: This excludes use of temporary traffic mitigation measures as identified in Austroads and TfNSW requirements. Temporary traffic mitigation measures are only permitted for activities occurring in the road reserve.

5. The Environmental Impact Statement (EIS) mentions projects which may have overlapping schedules with the proposal, however, this information has not been included in the TIA. An assessment should be undertaken in the TIA to identify projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following:
 - Cumulative impacts from traffic generated from construction workforces in terms of the origin - destination routes, access and AM/PM peaks that overlap with other projects.
 - Cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes that overlap with other projects.
 - Cumulative impacts and considerations in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development.
 - Further consideration identifying accommodation (and transport) needs and facilities available within the local region to service the proposed project's staff, in addition to understanding cumulative impacts of concurrent accommodation (and transport) needs of staff from other projects.

Oversize and Overmass (OSOM) vehicles

6. OSOM vehicle for the transformer is classified as [high risk OSOM \(as defined on TfNSW website in this link\)](#) due to its proposed height exceeding 5.20m. A Concept Level Route Analysis is required with the following information:
 - The route from port or point of origin to site access and intersections required to facilitate high risk OSOM movements required for the project.
 - Details of all high risk OSOM loads and vehicle configurations for the project.
 - Location of pull-over bays / rest areas along the high risk OSOM routes (including GPS coordinates) and demonstration swept paths of high risk OSOMs can be physically accommodated (in terms of size, width and accessibility).
 - Road geometry details and alignment along 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 exit the site and simultaneously pass through intersections along the proposed transport route(s).
 - Design vehicle templates used in the swept path analysis software in order for TfNSW to review performance (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).

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- Highlighting each at-risk road structures that haulage route(s) cross including bridges, traffic signals, signage, major culverts and minor culverts that may not meet desirable cover to cater for proposed axle loads.
- Identify and provide the following measurement parameters of OSOM components / materials to be moved:
 - Types and numbers of high risk OSOM vehicles.
 - 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 high risk OSOM(s).
 - Potential high level mitigation measures or commitments to mitigate known traffic, safety and impacts to road users along the high risk OSOM route(s) (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 for proposed OSOM route(s). Any road works or upgrades works required along the OSOM route must be included within scope of works in the SSD to ensure constructability.

Note: Given 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 you engage early with TfNSW's Development Services Renewables team to discuss the requirements of the route assessment.

7. A description of all non-high risk OSOM vehicles and materials to be transported is required. The shortest and least trafficked route is to be given priority for movement of materials and machinery to minimise risk and impact to other motorists, so far as is reasonably practicable.

Strategic Designs

8. TfNSW is not able to assess the suitability of the proposed site access due to lack of suitable information. Any road upgrades along state classified roads are to be accompanied by Strategic Designs, prepared in accordance with TfNSW Strategic Design Requirements for DAs [Strategic design requirements for DAs - February 2022 \(nsw.gov.au\)](https://www.nsw.gov.au/transport/strategic-design/strategic-design-requirements-for-das)

In addition to these requirements the Strategic Designs will need to be accompanied by revised swept paths for the design vehicle and OSOM vehicle entering the site and accessing the intersection of Mitchell Highway and Evans Plains Road. The swept paths must demonstrate the design vehicle can turn concurrently in all directions without crossing into the incorrect lane,

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tracking off the proposed/existing pavement and within the proposed/existing intersection treatment. Swept paths for OSOMs will need to demonstrate manoeuvrability within the existing or proposed pavement or, detail further pavement widening to accommodate movements.

Note: Swept Path Analyses for the design vehicle are to be prepared in accordance with the Austroads Design Vehicles and Turning Path Templates Guide.

9. Information is required to verify existing road drainage system (including longitudinal drainage) will accommodate post-development discharge. TfNSW requires post-development flows be managed using interface drainage and/or subsurface drainage to convey 1% Annual Exceedance Probability. The strategic concept designs are to be revised to address this point.
10. Updated plans are required to show subsurface utilities located to QL-B (AS5488-2022) or better.
11. Updated plans are required to clearly show site boundary and road reserve based on a survey.
12. There are concerns over current location of the site access due to the following constraints:
 - The curve in the road restricts SISD compliance, particularly towards the west.
 - The site access is located at the bottom of a vertical grade, where speed is likely to be higher, potentially causing issues for heavy vehicles trying to slow down to access the site.
 - The short distance between the site access and an existing bridge west of the site (approximately 40m).

If the above issues cannot be addressed an alternative location to the site will be required.

General comments

- The use of Evans Plains Road will require consultation with the relevant Council due to being a local road. Please note the TIA states Evans Plains Road is a low-speed road, however as a rural road with no sign posted speed limits the default rural 100km/h speed limit applies.
13. It must be clear where changes have been made in the revised TIA, this can be in the form of a document with tracked changes or an excel sheet detailing where changes have been made.

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28 December 2022

TfNSW reference: WST22/00172/02

The Director
Department of Planning & Environment
NSW Major Projects Portal

SSD-50587460: 800 & 749 Mid-Western Highway Evans Plains – Battery Energy Storage System (Panorama)

I refer to the request by the Department of Planning and Environment (DPE) dated 16 November 2022 seeking input from Transport for NSW (TfNSW) to the Secretary's Environmental Assessment Requirements (SEARs) for the abovementioned development proposal.

TfNSW key interests are the safety and efficiency of the transport network, the needs of our customers and the integration of land use and transport in accordance with the *Future Transport Strategy 2056*.

TfNSW requests that a Traffic Impact Assessment (TIA) be prepared by suitably qualified person/s in accordance with the Austroads Guide to Traffic Management Part 12, the complementary TfNSW Supplement and RTA Guide to Traffic Generating Developments. The TIA should include, but not necessarily be limited to, an assessment of the considerations outlined in **Attachment A**.

TfNSW highlights that in determining the application under the *Environmental Planning and Assessment Act 1979*, it is the Consent Authority's responsibility to consider the environmental impacts of any roadworks which are ancillary to the development. This includes any works which form part of the proposal and/or any works which are deemed necessary to include as requirements in the conditions of project approval.

TfNSW encourages early discussions with proponents regarding the traffic and network matters associated with State Significant Development. If you have any questions, please contact Masa Kimura, on 0407 707 999 or email development.west@transport.nsw.gov.au.

Yours faithfully

A handwritten signature in black ink, appearing to read "Damien Pfeiffer".

Damien Pfeiffer
Director Development Services
Community & Place
Regional & Outer Metropolitan

SSD-50587460: 800 & 749 Mid-Western Highway Evans Plains – Battery Energy Storage System

The purpose of the TIA is to address the impact of traffic generation on the public road network and measures employed to ensure traffic efficiency and road safety during construction, operation and decommissioning of the project.

The requested TIA needs to be tailored to the scope of the proposed development and include, but not be limited to, the following:

- 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.
 - Permanent or temporary connection/access to classified roads.
 - The Scoping Report does not identify specific details of the development's ancillary infrastructure and whether any temporary facilities are to be provided on-site including (but not limited to) concrete batching facilities. The EIS and TIA must identify the source for input materials and quantify the traffic generation associated with the haulage of the source materials. Where the location of source materials is not yet known, worst case scenarios for traffic distribution of those materials to and from the development site are to be addressed.
- Traffic volumes including:
 - Existing background traffic,
 - 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.
- 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,
 - Proposed hours for transportation and haulage,
 - Interactions between existing and project-related traffic.
- Capacity analysis using SIDRA or other relevant application, to identify an acceptable Level of Service (LOS) at intersections with the classified (State) road/s, and where relevant, analysis of any other intersections along the proposed transport route/s.
- Heavy vehicle and OSOM routes:
 - Identify the return routes for OSOM movements.
 - The TIA is required to include details on the number of OSOM movements, the intended time for OSOM movements to occur and identify the location of pull-over bays / rest areas along the OSOM routes.

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- Undertake a logistics route analysis which includes:
 - Details of the road geometry and alignment along the identified transport route/s, including existing formations, crossings, intersection treatments and any identified hazards. This should include;
 - Available sight distances at the site access and nearby intersections and any constraint to achieving the required sight distance for the posted speed limit.
 - An assessment of turn treatment warrants in accordance with the *Austroads Guide to Traffic Management Part 6* and *Austroads Guide to Road Design Part 4A* for intersections along the identified transport route/s, identifying the existence of the minimum basic turn treatments and addressing the need for any warranted higher order treatments.
 - Swept path analysis demonstrating the largest design vehicle entering and leaving the development, and moving in each direction through intersections along the proposed transport route/s.

The design vehicle templates used with 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.
 - 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.
- Identify and provide the following measurements parameters of the OSOM components / materials to be moved:
 - Identify all the types of OSOM vehicles proposed to be used for the project.
 - Overall combination load length, width, height and mass
 - Maximum component length, widths and heights
 - Wheelbase dimensions,
 - Maximum trailer articulation angle(s),
 - Minimum overhang heights above the road surface,
 - Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to *Austroads Guide to Pavement Technology*).
- Cumulative impacts:
 - Identify and assess the implications of any road and rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes.
 - 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:
 - 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 OSOMs where other projects will be utilising the same routes as proposed for this development.
- Further consideration should be given to identifying the accommodation (and transport) needs and facilities available within the local region, to service the proposed project's staff, in addition to understanding the cumulative impacts of concurrent accommodation (and transport) needs of staff from other projects.
- Road safety assessment of 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 targeted Road Safety Audit undertaken by suitably qualified persons in accordance with the *Austroads Guidelines*.
- A review of crash data along the identified transport route/s for the most recent 5 year reporting period and an assessment of road safety along the proposed transport route/s considering the safe systems principles adopted under Future Transport 2056.
- Project schedule:
 - Hours and days of work, number of shifts and start and end times,
 - Identify the approximate project's targeted construction commencement date/s.
 - Identify the phases and stages of the project, including construction, operation and decommissioning.
- The origins, destinations and routes for:
 - Commuter (employee and contractor) light vehicles and pool vehicles (including. shuttle buses),
 - Heavy (haulage) vehicles,
 - OSOM vehicles.
- 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, a strategic design drawing/s should be submitted with the SSD application for any identified road infrastructure and access upgrades. It should be noted that 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* for the existing posted speed limit, including provision of Safe Intersection Sight Distance (SISD).

Note: The design needs to comply with *TfNSW Strategic design requirements for DAs*. To assist you in preparing the designs, please refer to link below:

<https://roads-waterways.transport.nsw.gov.au/business-industry/partners-suppliers/documents/planning-principles/strategic-design-fact-sheet-02-2022.pdf>
- The layout of the internal road network, parking facilities and infrastructure.
- Impact on rail corridors and level crossings along the transport route/s detailing any proposed interface treatments, where applicable.
- Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction.
- 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).

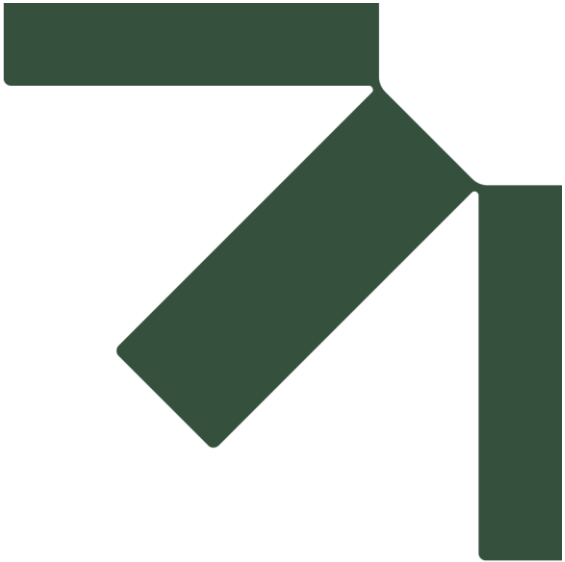
OFFICIAL

- 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.
- 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*.
- A draft Traffic Management Plan (TMP) that could be implemented following approval of the EIS, in consultation with relevant Councils and TfNSW. The TMP is to address the construction, operation and decommission phases of the proposed development and be prepared and implemented in accordance with *Australian Standard 1742.3* and the *Work Health and Safety Regulation 2017*.

The TMP would need to identify strategies to manage the impacts of project related traffic, and propose a Driver Code of Conduct for haulage operations which could include, but not be limited to:

- A map of the primary transport route/s highlighting critical locations.
- Identification of local bus operations, including maps of routes/bus stops, and consultation with local bus operators.
- Safety initiatives for haulage through residential areas and/or school zones.
- An induction process for vehicle operators and regular toolbox meetings.
- A public complaint resolution and disciplinary procedure.
- A complaint resolution and disciplinary procedure.
- Any proposed temporary measures such a Traffic Guidance Scheme (TGS)
- Community consultation measures for peak haulage periods

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Appendix D OSOM Material Route Study

Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

SLR Project No.: 660.v30234.00014

19 January 2026



PANORAMA BESS

OSOM Route Study

Date: December 2024
Client: Christopher Smith
Recurrent Energy
Type: Desktop Survey
Rev: 0

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Revision History

Revision	Date	Details	Prepared	Checked	Approved
0	12/12/2024	First issue	ICW	SK	JJM

Disclaimer

This report has been prepared for advisory purposes only. Information provided within the report is based on data provided by the Client as well as publicly available information and, to the best of ARES Project Services Pty Ltd's knowledge and experience, is accurate at the time of publication. All proposed routes, methodologies and schedules described in this report are subject to approval and issue of permits from the relevant stakeholders. Transport equipment is based on ARES Project Services Pty Ltd vehicles and trailers, and swept path analysis results may differ if using equipment by third parties.

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Introduction

Panorama BESS (or Battery Energy Storage System) is a renewable energy development located near Bathurst in New South Wales. The facility has a proposed capacity of 100MW and storage of 200MWh and is currently in the planning and approvals stage.

The project is located approximately 5km west of Bathurst, in the region of NSW. It is ideally situated next to the Panorama substation servicing the Bathurst area.

ARES have been tasked by our customer Recurrent Energy to undertake a Route Survey from the Port of Port Kembla to site. The purpose of the study is to determine the pinch points along the route and give best estimates of modifications and works required to enable oversize overmass (OSOM) cargo to be brought to site.

The study is designed for those involved in the project that have a limited knowledge of transportation, including a comprehensive outline of the routes and actions required to achieve delivery.





01

Overview

Project Overview

The Panorama BESS is a renewable energy development near Bathurst in New South Wales currently in the planning and approvals stage.

Scope of Survey

Panorama BESS is located just off the Mid Western Highway, approximately 5km west of the town of Bathurst in NSW.

ARES has been tasked with surveying the route from the proposed Port of Import (Port of **Port Kembla**) to the project site. The survey will include everything up to the site entrance. The turn into the site entry point will be assessed for swept path requirements for input into civil design.

This is a desktop survey, relying on existing aerial imagery from sources such as Google and Nearmaps. ARES has also previously driven the transport route as part of other assessments and has included data gathered from those trips in this assessment.

We recommend that a physical survey of the entire route is completed at a later stage, once the route is confirmed and final OSOM component dimensions are known, to verify the results of this desktop survey.

Port of Import

The proposed Port of Import (POI) for the Project is Port Kembla. Situated close to Wollongong, the port has seen numerous large infrastructure projects over the last five years. ARES has worked out of Port Kembla on multiple projects, including several wind farms with hundreds of oversize components requiring transport.

Port Kembla has excellent break bulk cargo offloading capacity through the AAT berths. AAT also has a large concreted storage area where cargo can be stored and staged for deliveries to site, with additional options for off-site storage should they be required.

From Port Kembla, there is good access to the Hume Highway, which is the main overdimensional route into central New South Wales. There are height restrictions due to overpasses on the route out of Wollongong which will need to be taken into consideration, especially for transformers which tend to be quite tall.

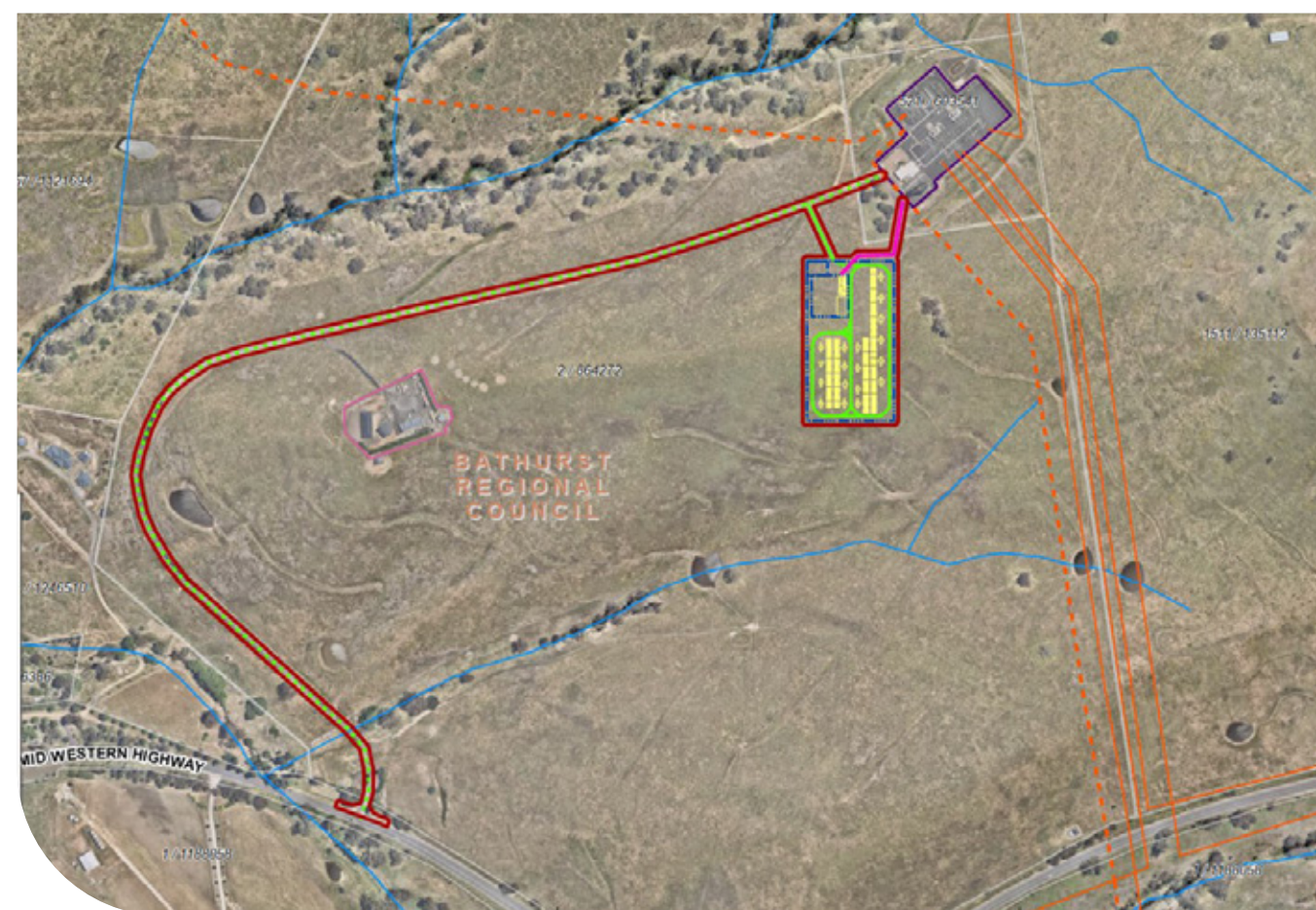
Site

The project site is accessed via the existing access track to the Transgrid Panorama substation off Mid Western Highway west of Bathurst. Refer to the opposite page for an overview of the project.

ARES have assessed the turn into the site access track for swept path as part of our scope of works.



Above: Aerial view of Port Kembla, showing AAT terminal and storage areas on right. **Below:** Site overview of the Panorama BESS facility.



Transport Methodology

Specialized cargo requires specialized transport solutions.

Cargo Dimensions

The majority of deliveries to the project will be in gauge and able to be delivered under gazette. The largest oversize, overmass (OSOM) component of the project is the delivery of the one-off main transformer. The exact weights and dimensions of this load is yet to be finalised but the following has been assumed for the purposes of this route assessment:

- Length: 7.3m
- Width: 3.7m
- Height: 4.3m
- Weight: 110 tons

Equipment

Due to the height of the load, it will need to be

transported on a custom platform trailer with drop frame. The drop frame ensures the transformer sits as low as possible to clear overhead obstructions along the route.

Refer to the equipment schematic shown below for a mock-up of the proposed transport arrangement. Overall dimensions are:

- Length: 40m (excluding rear block truck)
- Width: 4.2m
- Height: 4.9m
- Gross Combination Mass: 208 tons
- Mass per Axle: 15.5 tons

This combination will be able to pass under all height restrictions on the proposed route, with the trailer able to hydraulically lower further by approximately 200mm for additional height clearance if required.

The transformer is classified as a 'High Risk' OSOM Load" by Transport for NSW due to its weight. An OSOM Transport Management Plan (TMP) will be required and approved by TfNSW prior to transport.

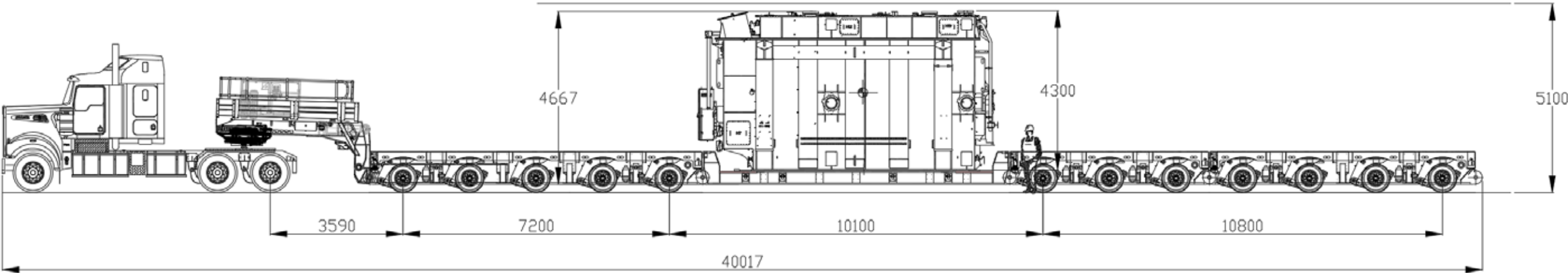
Pilots & Escorts

The load will be accompanied by both NSW police escort vehicles and oversize pilot vehicles. NSW police will carry out all required traffic management and control at pinch points, whilst the pilot vehicles will provide advanced warning (front and rear) of the OSOM load's approach and assist the police escorts as directed.

If any street furniture such as signs need to be removed for the load to pass, the pilots will perform this task and replace the items once the load is through.



Above: ARES transporting a 170-ton transformer on a custom drop frame trailer. Below: Schematic of proposed trailer for Panorama BESS.

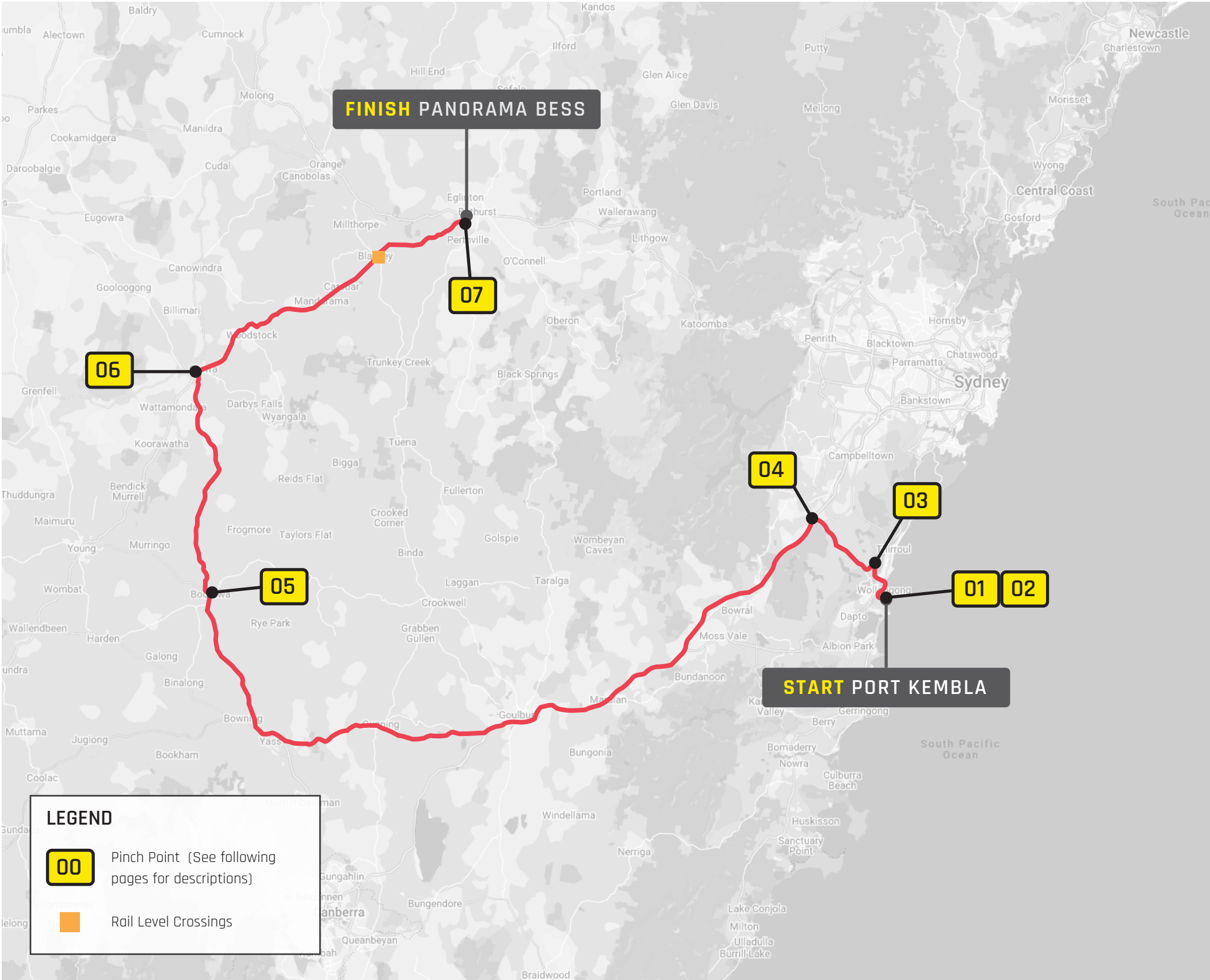




02

Route Assessment

Route Overview



ROUTE

	START - Port Kembla
0.0 KM	Tom Thumb Rd
0.8 KM	Springhill Rd
1.8 KM	Masters Rd
2.7 KM	M2 Princes Mwy
14.1 KM	Picton Rd
40.8 KM	M31 Hume Mwy
244.6 KM	Lachlan Valley Way (Yass)
291.1 KM	Lachlan Vly Way (Boorowa)
363.9 KM	Mid Western Hwy
463.3 KM	FINISH - Panorama BESS

The return journey is expected to be the reverse of the above.

[INTERACTIVE MAP LINK](#)

General Route Notes

Port Kembla to Panorama BESS

Road Quality

The transport route will be primarily along the NSW state highway and motorway network, which is generally designed to a higher specification and able to handle heavier and higher volumes of traffic. The route is fully paved up to the site access road.

The route follows roads on the approved NSW OSOM Load Carrying Vehicle Network.

Overhead Structures

The oversize overmass route out of Port Kembla involves taking the M1 Princes Motorway and Picton Rd to the Hume Hwy. There are a number of low bridges over the motorway when departing Port Kembla. The lowest of these is the University Avenue Bridge, which has a clearance of **5.2m** in the left hand lane. There are also several other bridges with between 5.3-5.4m clearance. These are all non-bypassable.

The ARES transport solution allows the 4.3m high transformer to be transported at a height of 5.0m, allowing the load to pass under all bridges with no issues.

Overhead Power Lines

In general, a travel height below around 5.5m is not an

issue with respect to power lines. Loads above 4.6m travel height will require a high load permit from the power authorities prior to travel.

We recommend that an overhead power line survey is conducted closer to the date of transport to confirm that no lines need to be lifted or modified to accommodate the OSOM loads for this project.

The route traverses through the Endeavour Energy and Essential Energy distribution networks.

Bridges and Culverts

Structures on state highways and roads are generally not a concern as they will be designed to handle heavy vehicle loads. Bridge assessments will still be required from the state road authority (Transport for NSW) to confirm that bridges along the route can be crossed.

Rail Crossings

There are two rail level crossings along the route.

Mid Western Hwy, Cowra (DISUSED)
GPS: <https://maps.app.goo.gl/1kfD3NrDSGa9TGkT8>
Asset Owner: UGL Regional Linx

Adelaide St (Mid Western Hwy), Blayney
GPS: <https://maps.app.goo.gl/1bjW321d3MkxNT766>
Asset Owner: UGL Regional Linx

Permissions will be required from rail authorities to travel through these crossings. Approvals may also be required when travelling over railway lines on bridges.

Road Works

There are planned roadworks and road upgrade projects along the route which will need to be considered when planning for transport of OSOM components to the Project. These include:

- Mount Ousley interchange project - there will be a new overpass of the M1 Princes Motorway as part of



Above: Artist's impression of Mt Ousley Interchange (Source: TfNSW)

these works which may cause disruptions for OSOM traffic on the route.

Close co-ordination with Transport for NSW will be required once dates firm up for the project to ascertain which road upgrade projects are active at the time of transport, and whether there are special conditions or access restrictions for OSOM loads (e.g. detours, speed restrictions, width restrictions etc).

Approvals

Transport permits will need to be obtained from the National Heavy Vehicle Regulator (NHVR) prior to travel. The permit process includes getting feedback from state transport authorities as well as any local councils along the route.

Third party approvals include electricity authorities, rail authorities, toll road and tunnel operators.



Above: University Avenue overpass of M1 Motorway - 5.2m clearance in left hand lane

Below: Princes Hwy overpass of M1 Motorway - 5.3m clearance in right hand lane

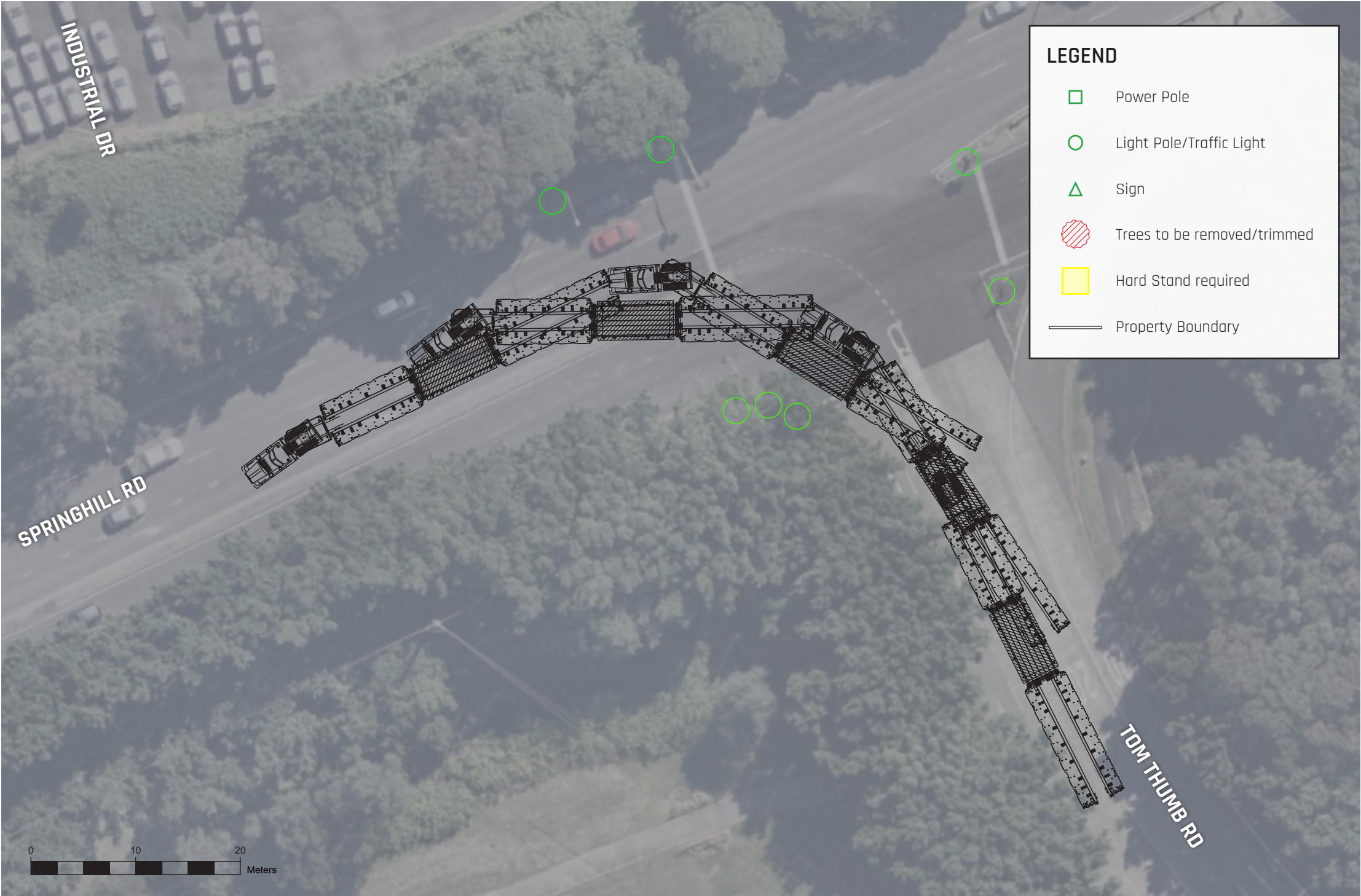


Pinch Point

01

LEFT TURN
Tom Thumb Rd
& Springhill Rd

The OSOM load will exit the Port of Port Kembla via Tom Thumb Rd then turn onto Springhill Rd. The turn is wide and can be done with no modifications, although the length and width of the combination means that the load will need to use the opposing lanes to make the turn. Police escorts will need to control and manage traffic whilst the turn is being taken.



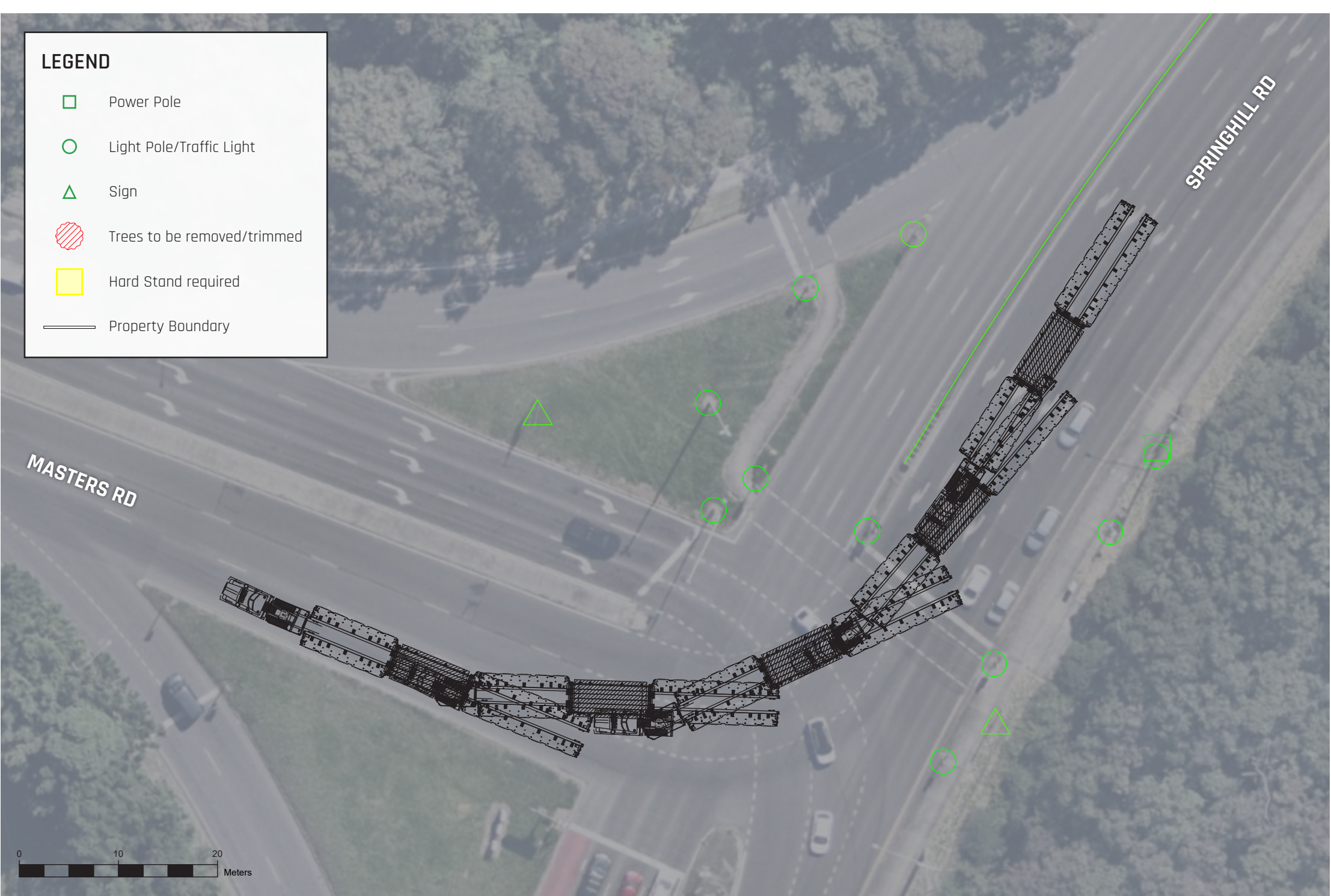
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Pinch Point

02

RIGHT TURN
Springhill Rd
& Masters Rd

The right turn onto Masters Rd is very wide with multiple turning lanes. The transformer combination will have no issues making this turn with no modifications.



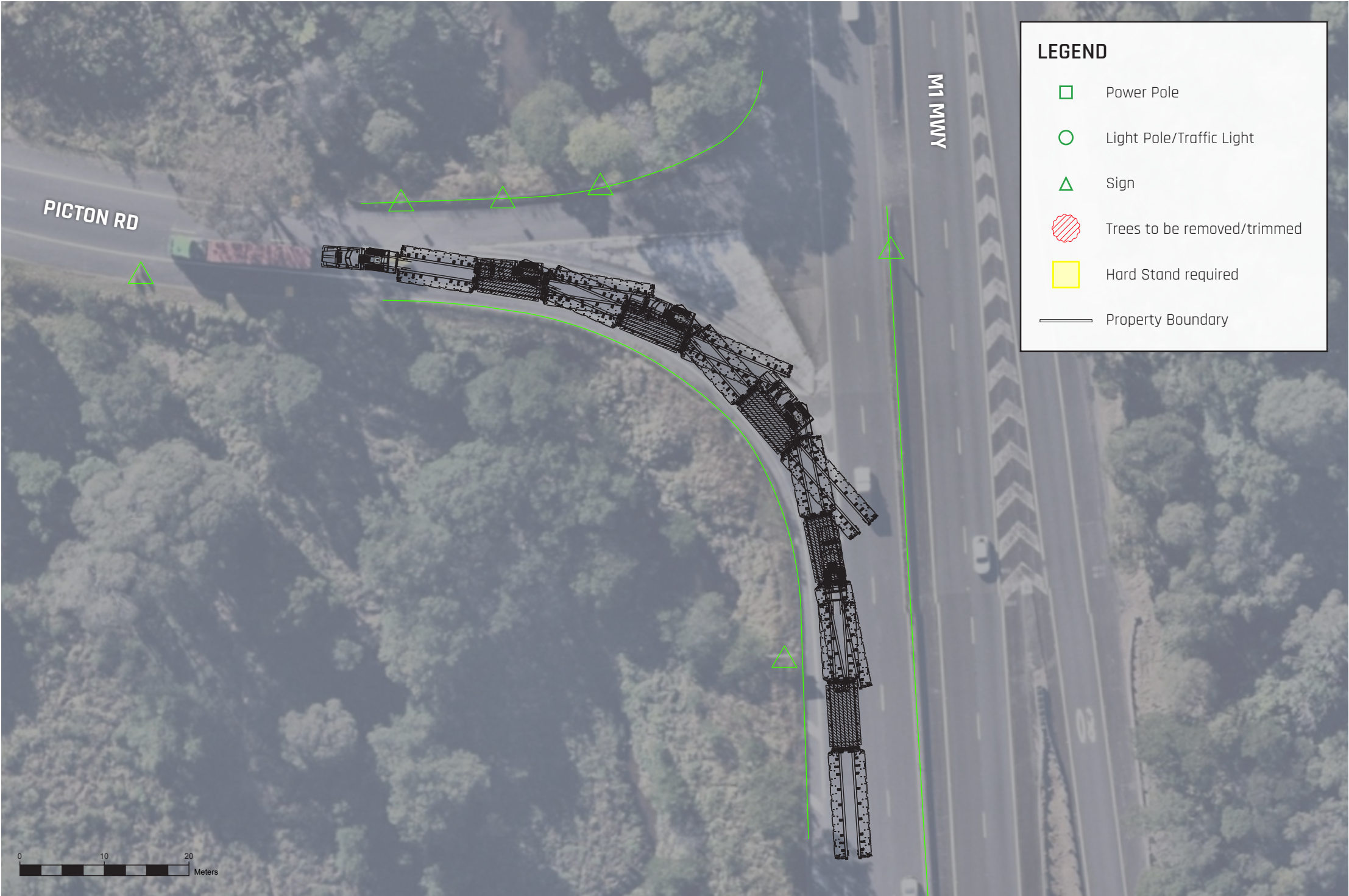
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Pinch Point

03

LEFT TURN
M1 Motorway
& Picton Rd

The transformer load will be able to take the slip lane onto Picton Rd with no issue.



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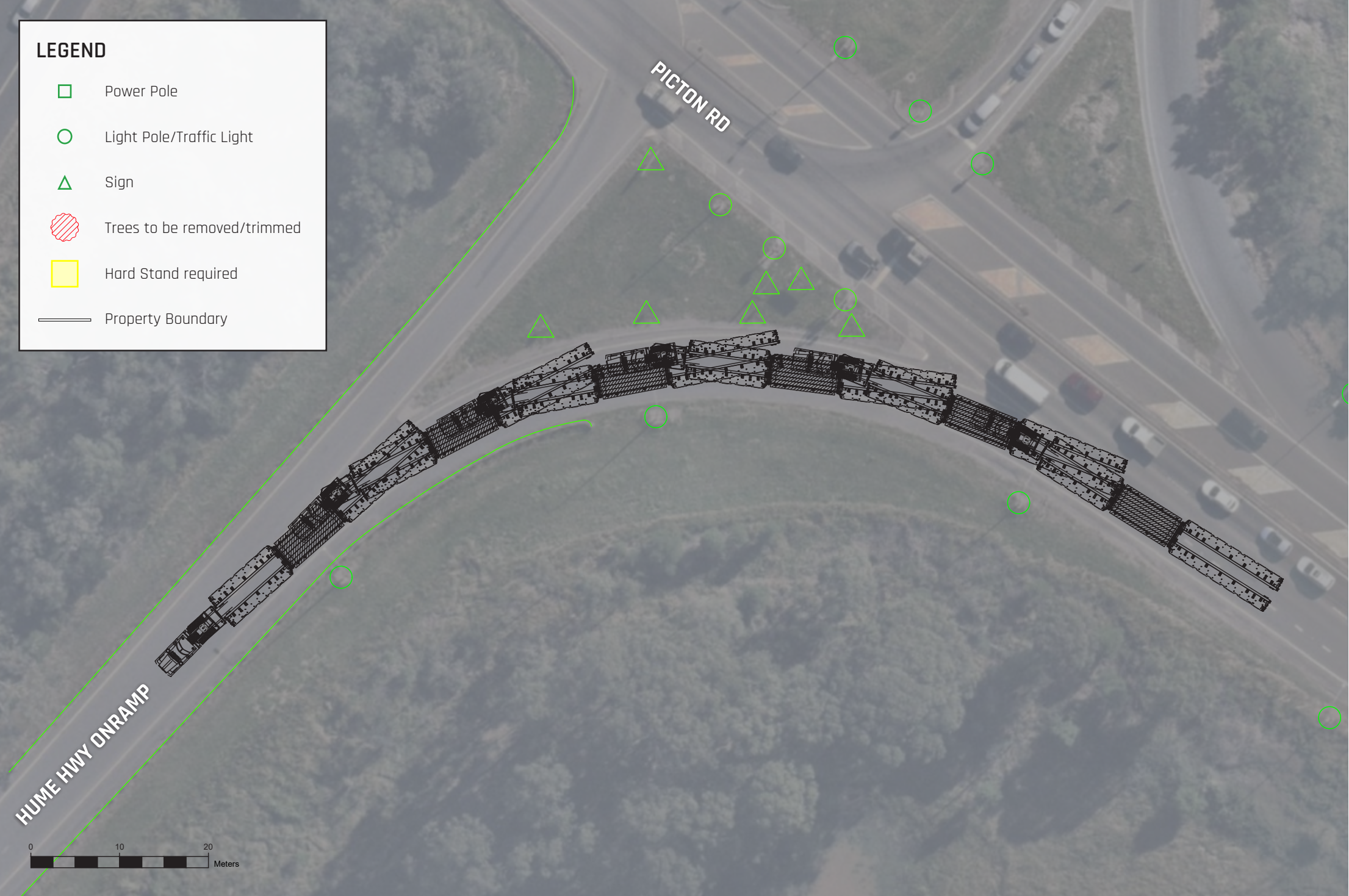
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Pinch Point

04

LEFT TURN
Picton Rd &
Hume Hwy

Likewise, there is a generous slip lane to get onto the Hume Hwy from Picton Rd and the transformer combination will have no issues making this turn.



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Pinch Point

05

ROUNDAABOUT
Lachlan Valley Way,
Boorowa

Lachlan Valley Way passes through the centre of the town of Boorowa, with a decorated roundabout at the intersection with Pudman St. The trailer will need to be steered carefully through this intersection to avoid the traffic islands and roundabout. Two 'Keep Left' signs will need to be removed but no other modifications are required.



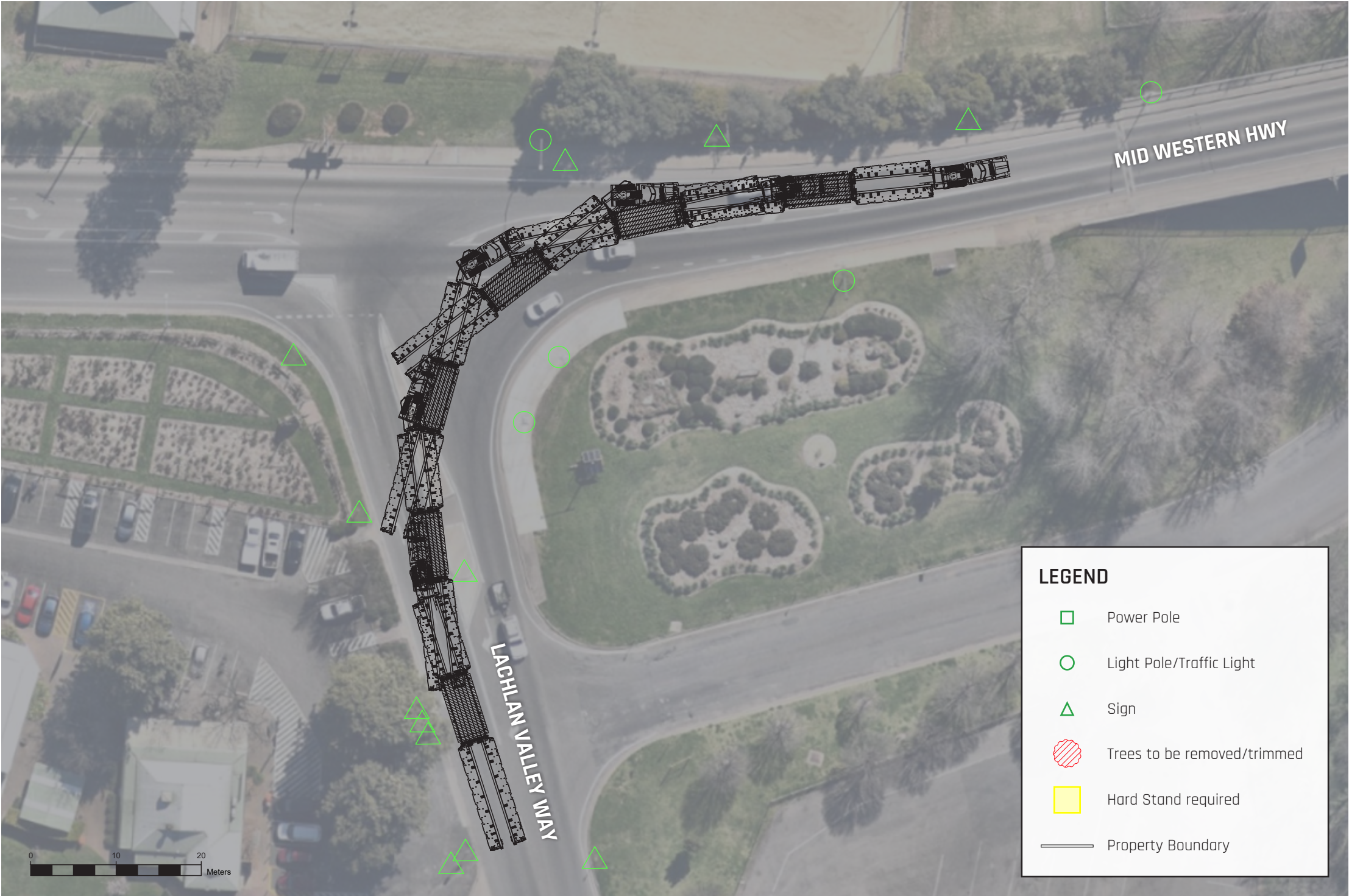
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Pinch Point

06

RIGHT TURN
Lachlan Valley Way &
Mid Western Hwy

On the outskirts of the town of Cowra, the load will need to make a right turn onto Mid Western Hwy towards the town centre. The intersection is wide and no modifications are required.



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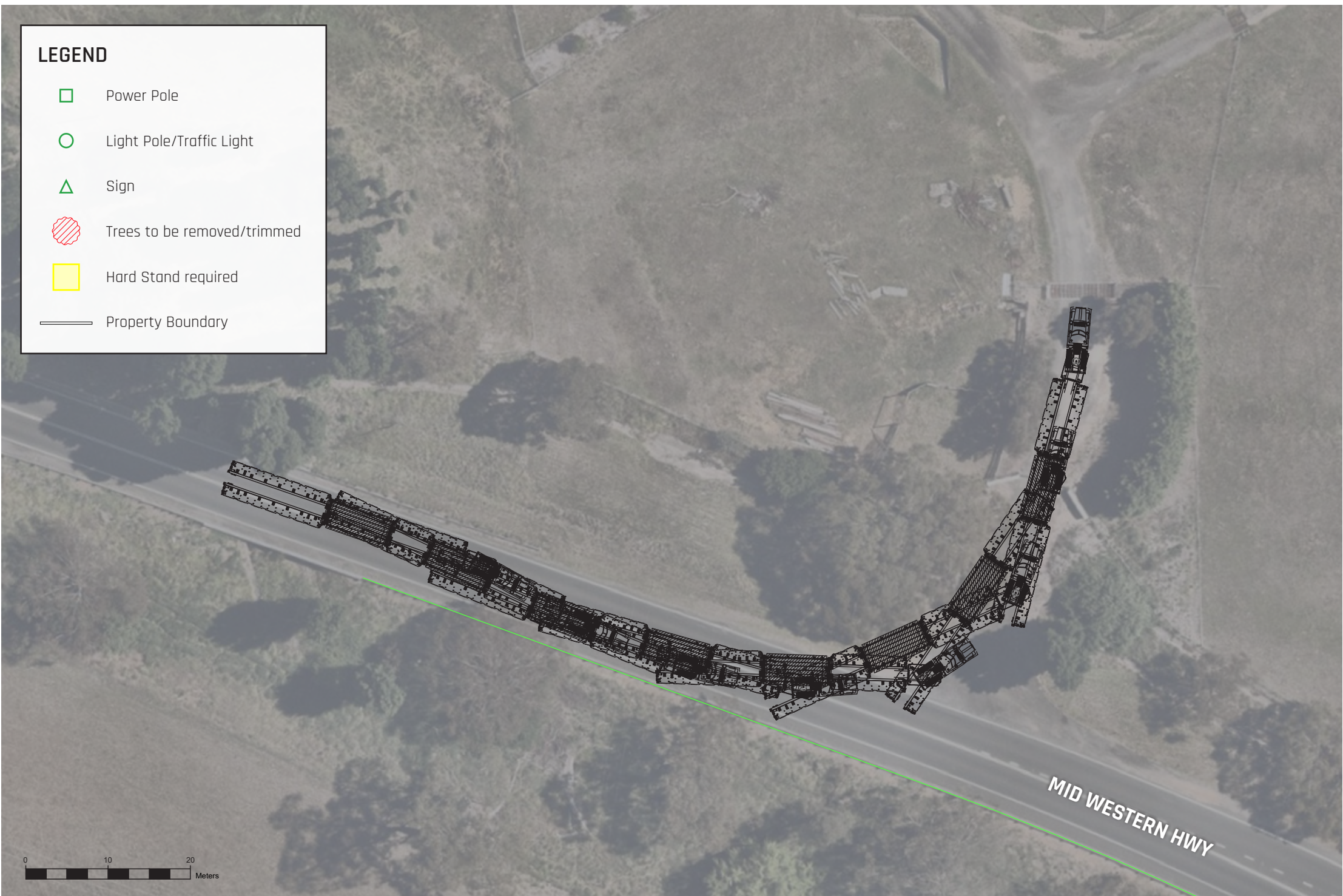
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Pinch Point

07

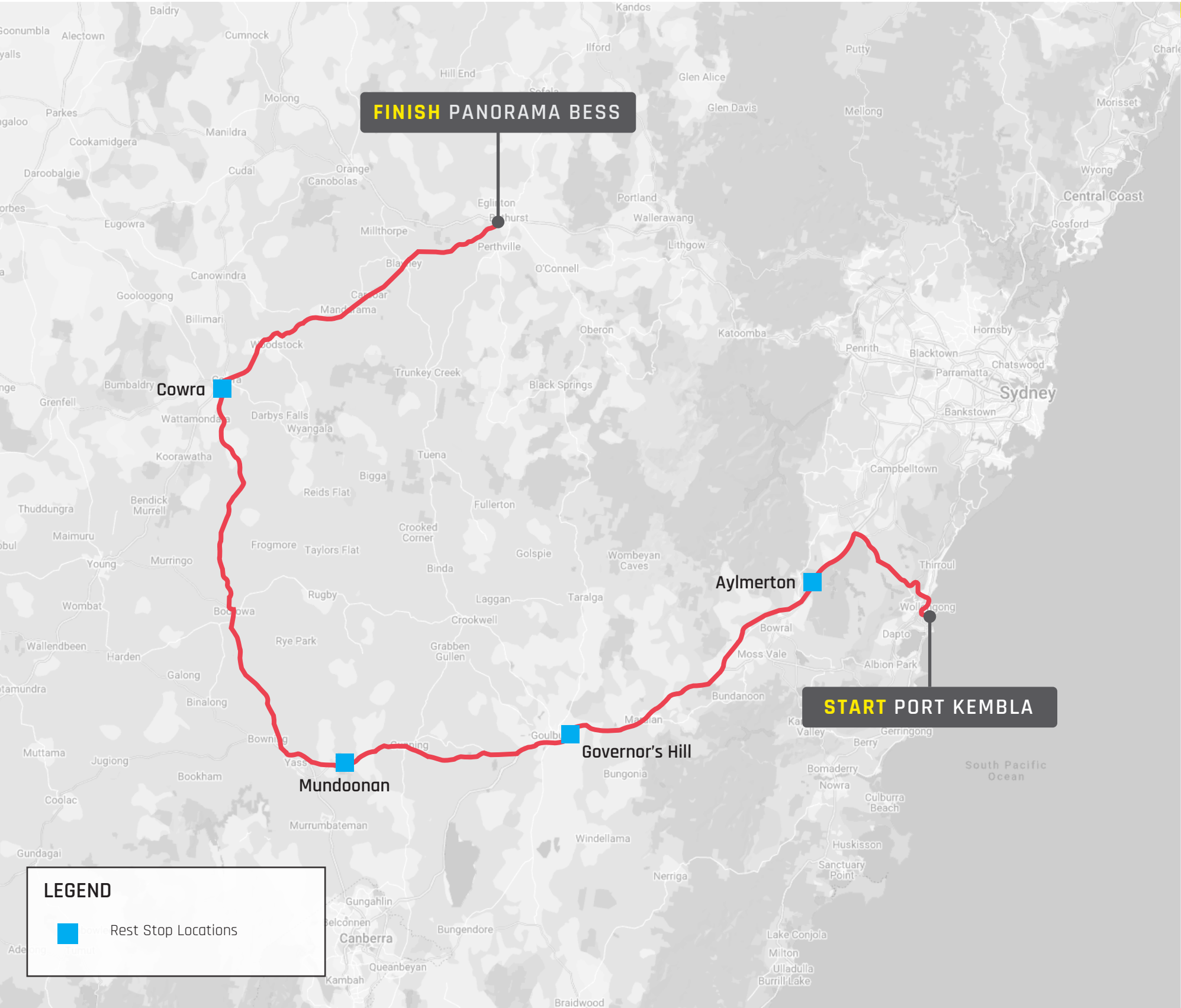
LEFT TURN
Mid Western Hwy
& Site Access Track

The site is situated off an existing access track for the Transgrid Panorama substation. To turn onto the access track, the transformer combination will need to make use of the full width of the highway, requiring police escorts to oncoming westbound control traffic. The existing driveway can be used and no modifications are required.



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		DRAWN BY:	DRAWING NAME:	Route Survey	REV
		DRAWN DATE:			
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Rest Stops



ARES expects the load to travel at an average speed of 50-60 kilometres per hour, including allowances for bridge slowdowns and manoeuvring at pinch points. With a trip distance of 460km, this means the journey should take around 8-9 hours of driving time.

We have assessed required rest stops based on fatigue management requirements and have proposed four stops to be used for this load per below. Please note that this is not meant to be an exhaustive list and there are other rest stops and pullover areas along the route which may be used for emergencies or breakdowns.

No.	KP	Rest Stop Name	GPS Link
01	67	Aylmerton Rest Area	GPS
02	153	Governor's Hill Rest Area	GPS
03	218	Mundoonan Rest Area	GPS
04	364	Cowra Pullover Area	GPS

The following pages show swept path analysis of each rest stop including ingress/egress, space requirements and any modifications required.

01 Aylmerton Rest Area



02 Governor's Hill Rest Area



03 Mundoonan Rest Area



04 Cowra Pullover Area





03

Conclusion

Conclusion

A brief outline of the report's major findings and any recommendations for actions.

“

...transport
of OSOM
components to
Panorama BESS
is feasible.

Summary

Following our desktop survey and analysis, ARES believe that transport of the oversize overmass (OSOM) components for the Panorama BESS project from the **Port of Port Kembla** is feasible along the proposed transport route, with only minor modifications required to make the route suitable for the OSOM load for the project, which is a one-off 110-ton transformer.

There are no issues with using the AAT berth at Port Kembla to receive the cargo. This facility has been used for many major infrastructure projects and has plenty of storage space available adjacent to the berth should short- or long-term storage be required.

The route uses roads on the approved NSW Oversize Overmass Load Carrying Vehicles Network map. ARES recently transported close to 500 OSOM loads along much of this route for the Flyers Creek Wind Farm project, and there should not be any major issues taking a one-off transformer this way. The only modifications required are two signs which have to be temporarily removed in Boorowa.

The main challenge for transport is the height of the transformer. At 4.3m high, the only way to take this load out of Port Kembla is to use a specialised drop frame solution or a beam set, which would add a lot of mass and complexity to the transport job. We have proposed

the use of the drop frame to keep risk and complexity to a minimum.

The project site has a single proposed access point off Mid Western Hwy west of Bathurst. The turn into this access point was assessed for swept path and found to be suitable with no further modifications required.

Next Steps

Based on the findings in this route survey, we recommend the following actions:

- Initiate dialogue with TfNSW regarding timing of major upgrade projects and any impacts, especially the Mount Ousley Interchange project
- Confirm final weights and dimensions of selected transformer
- Conduct a physical survey of the route to validate the results of this desktop survey closer to transport date



Level Crossing Removal Project

A 125-ton, 25m-long precast concrete U-trough is unloaded at its destination after travelling through the heart of metropolitan Melbourne.



Ares Project Services PTY LTD

L105, 480 StKilda Rd
Melbourne VIC, 3004

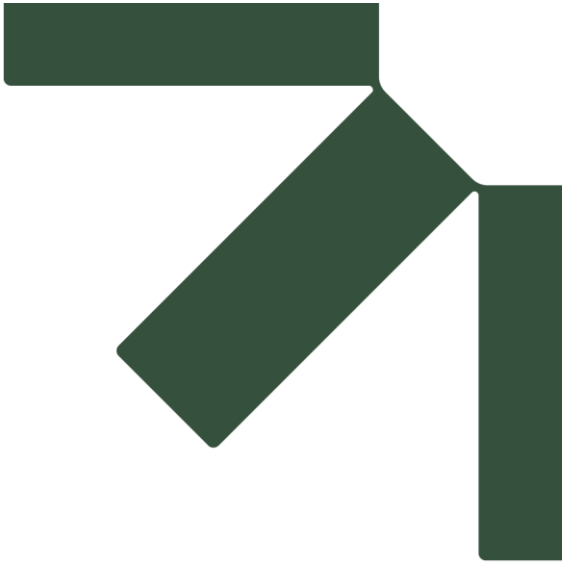
P: 1300 243 289

F: +61 3 8560 7020

E: enquiries@aresgroup.com.au

W: www.aresgroup.com.au





Appendix E Raw Traffic Survey Data

Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

SLR Project No.: 660.v30234.00014

19 January 2026

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

AUTOMATIC COUNT SUMMARY

Street Name :	Mid Western Hwy	Location :	Approx. 60m west of Property 600 Driveway
Suburb :	Evans Plains	Start Date :	00:00 Mon 10-October-2022
Machine ID:	DV99BSR0	Finish Date :	00:00 Mon 17-October-2022
Site ID:	2189	Speed Zone :	100 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information Lat 33° 26' 12.85 South Long 149° 30' 49.80 East			Direction of Travel		
			Both directions	Westbound	Eastbound
Traffic Volume : (Vehicles/Day)		Weekdays Average	3,758	1,925	1,833
		7 Day Average	3,475	1,763	1,712
Weekday	AM	07:00	295	133	162
Peak hour start	PM	15:00	309	159	150
Speeds : (Km/Hr)		85th Percentile	100.2	100.2	100.2
		Average	93.0	93.1	93.0
Classification %:		Light Vehicles up to 5.5m	78.2%	78.0%	78.6%

Location

GPS Information [Load Google Map \(internet required\)](#)
(Latitude, Longitude) -33.436904, 149.513834



[Speed Data](#) [Speed Graph](#) [Speed Bin](#)
[Volume Data](#) [Volume Graph](#) [Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

Status of movement – Covid 19

"Traffic behaviour is not the same as pre-pandemic (traditional morning/afternoon peak is much less pronounced and school start/finish times are much more pronounced), the current patterns are close enough to what probably is going to be a 'COVID normal' situation for at least the next year or two. Workplaces are currently not all yet open. These results should be used for indicative assessment only."

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Mitchell Hwy

Direction Eastbound ▼

[Back to Site Summary Page](#)

Day Date	Monday 28-10-2024	Tuesday 29-10-2024	Wednesday 30-10-2024	Thursday 31-10-2024	Friday 01-11-2024	Saturday 02-11-2024	Sunday 03-11-2024	7 days		Weekday		Weekend	
								Total	Average	Total	Average	Total	Average
AM Peak	08:00	08:00	08:00	09:00	10:00	11:00	11:00	N/A	11:00	N/A	08:00	N/A	11:00
PM Peak	16:00	16:00	16:00	16:00	16:00	12:00	12:00	N/A	16:00	N/A	16:00	N/A	12:00
00:00	5	9	14	16	15	17	8	84	12	59	12	25	13
01:00	9	17	20	10	19	8	10	93	13	75	15	18	9
02:00	13	9	13	13	11	10	6	75	11	59	12	16	8
03:00	16	27	23	25	15	16	2	124	18	106	21	18	9
04:00	33	33	38	39	38	19	11	211	30	181	36	30	15
05:00	61	53	59	78	60	58	37	406	58	311	62	95	48
06:00	146	145	164	149	166	110	60	940	134	770	154	170	85
07:00	237	224	215	234	247	206	115	1478	211	1157	231	321	161
08:00	320	313	353	298	325	222	143	1974	282	1609	322	365	183
09:00	289	239	260	315	309	252	284	1948	278	1412	282	536	268
10:00	286	248	236	279	343	261	320	1973	282	1392	278	581	291
11:00	294	230	263	259	323	294	367	2030	290	1369	274	661	331
12:00	255	222	251	268	352	282	375	2005	286	1348	270	657	329
13:00	234	256	285	262	279	251	313	1880	269	1316	263	564	282
14:00	230	238	282	280	339	207	314	1890	270	1369	274	521	261
15:00	265	251	308	319	375	251	296	2065	295	1518	304	547	274
16:00	312	369	355	333	398	179	250	2196	314	1767	353	429	215
17:00	294	322	336	328	362	161	201	2004	286	1642	328	362	181
18:00	179	205	190	211	243	154	141	1323	189	1028	206	295	148
19:00	97	102	104	118	127	101	87	736	105	548	110	188	94
20:00	55	58	78	72	113	50	59	485	69	376	75	109	55
21:00	45	46	51	53	53	38	27	313	45	248	50	65	33
22:00	29	27	31	25	23	35	28	198	28	135	27	63	32
23:00	17	17	25	17	19	25	13	133	19	95	19	38	19
Total	3721	3660	3954	4001	4554	3207	3467	26564	3795	19890	3978	6674	3337
% Heavy	16.12%	17.13%	15.96%	14.95%	13.00%	6.14%	5.25%	12.90%		15.32%		5.68%	

AM PEAK
SAT PEAK
PM PEAK

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Mitchell Hwy

Direction Westbound ▼

[Back to Site Summary Page](#)

Day Date	Monday 28-10-2024	Tuesday 29-10-2024	Wednesday 30-10-2024	Thursday 31-10-2024	Friday 01-11-2024	Saturday 02-11-2024	Sunday 03-11-2024	7 days		Weekday		Weekend	
								Total	Average	Total	Average	Total	Average
AM Peak	07:00	07:00	07:00	07:00	07:00	11:00	11:00	N/A	07:00	N/A	07:00	N/A	11:00
PM Peak	14:00	15:00	16:00	17:00	14:00	13:00	14:00	N/A	14:00	N/A	16:00	N/A	14:00
00:00	18	15	24	24	23	29	17	150	21	104	21	46	23
01:00	23	24	23	42	29	20	14	175	25	141	28	34	17
02:00	24	25	42	33	42	19	12	197	28	166	33	31	16
03:00	30	32	43	34	39	25	12	215	31	178	36	37	19
04:00	47	62	64	56	53	18	9	309	44	282	56	27	14
05:00	170	155	144	137	115	56	31	808	115	721	144	87	44
06:00	216	226	255	215	197	84	53	1246	178	1109	222	137	69
07:00	369	391	362	358	318	132	73	2003	286	1798	360	205	103
08:00	268	260	302	274	292	252	139	1787	255	1396	279	391	196
09:00	259	286	289	221	225	225	161	1666	238	1280	256	386	193
10:00	248	199	217	211	224	267	195	1561	223	1099	220	462	231
11:00	237	191	230	199	260	293	206	1616	231	1117	223	499	250
12:00	214	198	220	247	275	249	261	1664	238	1154	231	510	255
13:00	242	245	244	275	286	304	272	1868	267	1292	258	576	288
14:00	305	255	288	250	366	269	358	2091	299	1464	293	627	314
15:00	270	289	278	265	356	211	341	2010	287	1458	292	552	276
16:00	285	271	336	272	357	186	325	2032	290	1521	304	511	256
17:00	257	259	261	277	289	166	255	1764	252	1343	269	421	211
18:00	164	143	152	148	188	148	197	1140	163	795	159	345	173
19:00	95	101	95	120	202	99	147	859	123	613	123	246	123
20:00	58	74	87	83	179	82	94	657	94	481	96	176	88
21:00	47	57	56	76	105	72	58	471	67	341	68	130	65
22:00	35	45	45	35	62	42	40	304	43	222	44	82	41
23:00	31	28	26	22	42	18	22	189	27	149	30	40	20
Total	3912	3831	4083	3874	4524	3266	3292	26782	3826	20224	4045	6558	3279
% Heavy	15.87%	15.56%	14.77%	14.71%	12.38%	5.60%	4.98%	12.31%		14.59%		5.29%	

AM PEAK

SAT PEAK

PM PEAK

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Evans Plains Rd

Direction Southbound

[Back to Site Summary Page](#)

Day Date	Monday 28-10-2024	Tuesday 29-10-2024	Wednesday 30-10-2024	Thursday 31-10-2024	Friday 01-11-2024	Saturday 02-11-2024	Sunday 03-11-2024	7 days		Weekday		Weekend	
								Total	Average	Total	Average	Total	Average
AM Peak	08:00	08:00	07:00	07:00	10:00	11:00	11:00	N/A	08:00	N/A	08:00	N/A	11:00
PM Peak	16:00	16:00	14:00	16:00	14:00	12:00	16:00	N/A	16:00	N/A	16:00	N/A	12:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	1	2	1	2	1	1	1	9	1	7	1	2	1
06:00	2	6	3	5	5	1	1	23	3	21	4	2	1
07:00	7	3	8	6	4	2	1	31	4	28	6	3	2
08:00	12	10	7	6	5	2	1	43	6	40	8	3	2
09:00	0	1	3	3	4	2	5	18	3	11	2	7	4
10:00	4	6	4	2	12	3	4	35	5	28	6	7	4
11:00	3	2	3	6	0	4	7	25	4	14	3	11	6
12:00	4	5	5	3	4	6	5	32	5	21	4	11	6
13:00	2	2	1	6	1	2	3	17	2	12	2	5	3
14:00	3	4	6	8	6	4	5	36	5	27	5	9	5
15:00	3	6	2	2	6	6	4	29	4	19	4	10	5
16:00	6	7	2	9	6	5	6	41	6	30	6	11	6
17:00	3	6	5	7	5	3	5	34	5	26	5	8	4
18:00	1	0	1	4	4	3	4	17	2	10	2	7	4
19:00	0	4	2	0	3	1	1	11	2	9	2	2	1
20:00	1	1	2	2	0	0	1	7	1	6	1	1	1
21:00	2	0	2	0	3	1	1	9	1	7	1	2	1
22:00	1	0	0	0	0	0	0	1	0	1	0	0	0
23:00	0	0	0	0	1	0	0	1	0	1	0	0	0
Total	55	65	57	71	70	46	55	419	60	318	64	101	51
% Heavy	10.91%	15.38%	7.02%	5.63%	15.71%	8.70%	1.82%	9.55%		11.01%		4.95%	

AM PEAK

SAT PEAK

PM PEAK

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Evans Plains Rd

Direction Northbound ▼

[Back to Site Summary Page](#)

Day Date	Monday 28-10-2024	Tuesday 29-10-2024	Wednesday 30-10-2024	Thursday 31-10-2024	Friday 01-11-2024	Saturday 02-11-2024	Sunday 03-11-2024	7 days		Weekday		Weekend	
								Total	Average	Total	Average	Total	Average
AM Peak	08:00	07:00	08:00	07:00	08:00	10:00	08:00	N/A	08:00	N/A	07:00	N/A	10:00
PM Peak	18:00	17:00	15:00	18:00	16:00	16:00	14:00	N/A	16:00	N/A	17:00	N/A	16:00
00:00	0	0	1	0	0	0	0	1	0	1	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	1	0	1	0	0	0	1	1
03:00	0	0	1	0	0	0	0	1	0	1	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	2	1	1	0	0	0	0	4	1	4	1	0	0
06:00	1	3	1	3	2	1	0	11	2	10	2	1	1
07:00	4	6	4	6	3	1	0	24	3	23	5	1	1
08:00	5	4	8	5	5	2	4	33	5	27	5	6	3
09:00	3	3	4	4	2	3	1	20	3	16	3	4	2
10:00	2	3	4	6	3	4	4	26	4	18	4	8	4
11:00	5	2	5	2	2	4	3	23	3	16	3	7	4
12:00	3	5	1	4	7	4	4	28	4	20	4	8	4
13:00	5	0	2	5	4	5	2	23	3	16	3	7	4
14:00	6	5	6	5	5	2	6	35	5	27	5	8	4
15:00	3	6	7	5	5	7	2	35	5	26	5	9	5
16:00	5	3	4	5	9	9	5	40	6	26	5	14	7
17:00	4	10	6	7	8	2	3	40	6	35	7	5	3
18:00	8	3	3	8	4	2	4	32	5	26	5	6	3
19:00	3	3	1	5	2	3	5	22	3	14	3	8	4
20:00	1	0	0	1	3	0	3	8	1	5	1	3	2
21:00	0	0	2	3	3	1	1	10	1	8	2	2	1
22:00	0	1	0	0	1	0	0	2	0	2	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	60	58	61	74	68	51	47	419	60	321	64	98	49
% Heavy	20.00%	13.79%	9.84%	8.11%	5.88%	7.84%	8.51%	10.50%		11.21%		8.16%	

AM PEAK

SAT PEAK
PM PEAK

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Mitchell Hwy

Direction Eastbound ▼

Day 7 Days ▼

[Back to Site Summary Page](#)

Hour Start	Vehicles Classifications												
	SV	SVT	TB2	TB3	T4	ART3	ART4	ART5	ART6	BD	DRT	TRT	UC
	1	2	3	4	5	6	7	8	9	10	11	12	13
12:00 AM	9	0	1	0	0	0	1	1	0	0	0	0	0
01:00 AM	7	1	3	0	0	0	1	1	1	0	0	0	0
02:00 AM	6	0	0	0	0	0	1	2	0	0	0	0	0
03:00 AM	8	2	2	0	0	0	1	3	1	0	0	0	0
04:00 AM	17	1	4	1	0	1	2	2	1	0	0	0	0
05:00 AM	42	2	4	0	0	1	2	4	1	1	0	0	0
06:00 AM	105	5	10	1	0	1	2	6	2	1	1	0	0
07:00 AM	177	7	14	1	1	2	2	3	2	1	1	1	0
08:00 AM	241	8	18	1	0	2	2	5	2	1	1	0	0
09:00 AM	234	14	14	1	1	2	1	7	2	2	1	1	0
10:00 AM	232	12	16	2	1	2	2	5	4	2	2	1	0
11:00 AM	236	14	17	2	1	3	2	7	3	2	1	1	0
12:00 PM	237	14	14	1	1	3	2	6	2	3	2	1	0
01:00 PM	222	12	16	1	0	2	2	6	2	2	1	1	0
02:00 PM	228	10	15	1	0	3	1	4	3	1	1	1	0
03:00 PM	252	13	14	1	0	2	1	5	3	1	1	1	0
04:00 PM	271	10	14	1	0	3	2	6	3	1	1	1	0
05:00 PM	254	10	14	0	0	1	1	4	2	0	0	1	0
06:00 PM	161	5	12	0	0	1	1	5	2	1	1	0	0
07:00 PM	88	4	4	0	0	1	2	3	2	0	0	0	0
08:00 PM	57	3	2	0	0	0	1	3	1	1	0	0	0
09:00 PM	34	2	3	0	0	1	1	1	1	0	0	0	0
10:00 PM	21	1	3	0	0	0	1	1	1	0	0	0	0
11:00 PM	14	1	0	0	0	0	1	1	1	0	0	0	0
Summary	3153	151	214	14	5	31	35	91	42	20	14	10	0

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Mitchell Hwy

Direction Westbound ▼

Day 7 Days ▼

[Back to Site Summary Page](#)

Hour Start	Vehicles Classifications												
	SV	SVT	TB2	TB3	T4	ART3	ART4	ART5	ART6	BD	DRT	TRT	UC
	1	2	3	4	5	6	7	8	9	10	11	12	13
12:00 AM	14	2	2	0	0	0	2	1	1	0	0	0	0
01:00 AM	16	3	2	0	0	0	2	1	0	0	0	0	0
02:00 AM	13	3	2	0	0	1	6	1	1	0	0	0	0
03:00 AM	17	2	5	0	0	1	3	2	1	0	0	0	0
04:00 AM	30	3	5	0	0	1	4	1	0	0	0	0	0
05:00 AM	87	4	13	1	0	2	7	1	2	0	0	0	0
06:00 AM	135	9	19	1	0	2	8	2	2	0	0	0	0
07:00 AM	232	11	26	1	0	3	7	3	2	0	0	1	0
08:00 AM	213	8	20	0	0	2	7	2	2	0	0	1	0
09:00 AM	197	10	16	1	0	3	6	2	2	0	0	1	0
10:00 AM	186	9	16	1	0	3	2	3	2	0	0	1	0
11:00 AM	194	11	15	0	0	2	2	3	2	0	0	1	0
12:00 PM	201	11	15	0	0	2	3	3	2	0	0	1	0
01:00 PM	228	10	17	0	0	3	2	4	1	0	0	1	0
02:00 PM	257	12	17	0	0	3	3	5	1	0	0	1	0
03:00 PM	249	12	14	0	0	2	3	2	3	0	0	1	0
04:00 PM	259	9	15	0	0	1	2	1	2	0	0	0	0
05:00 PM	223	10	10	0	0	2	3	2	2	0	0	0	0
06:00 PM	145	3	8	0	0	1	3	1	1	0	0	0	0
07:00 PM	105	5	8	0	0	1	2	1	1	0	0	0	0
08:00 PM	82	3	4	0	0	0	3	0	0	0	0	0	0
09:00 PM	59	3	2	0	0	0	2	0	1	0	0	0	0
10:00 PM	35	3	2	0	0	1	2	0	0	0	0	0	0
11:00 PM	21	1	2	0	0	1	1	1	0	0	0	0	0
Summary	3198	157	255	5	0	37	85	42	31	0	0	9	0

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Evans Plains Rd

Direction Northbound ▼

Day 7 Days ▼

[Back to Site Summary Page](#)

Hour Start	Vehicles Classifications												
	SV	SVT	TB2	TB3	T4	ART3	ART4	ART5	ART6	BD	DRT	TRT	UC
	1	2	3	4	5	6	7	8	9	10	11	12	13
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	5	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	3	1	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	3	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	4	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	4	1	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	5	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	6	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	3	0	1	0	0	0	0	0	0	0	0	0	0
07:00 PM	3	0	0	0	0	0	0	0	0	0	0	0	0
08:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0
09:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary	48	2	1	0	0	0	0	0	0	0	0	0	0

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



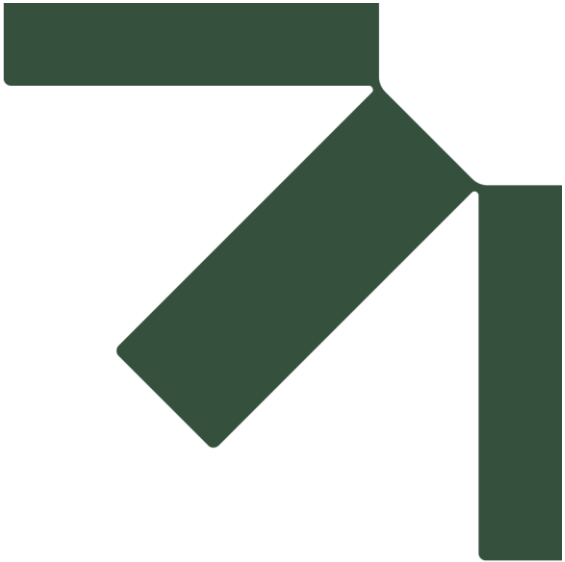
Site Evans Plains Rd

Direction Southbound ▼

Day 7 Days ▼

[Back to Site Summary Page](#)

Hour Start	Vehicles Classifications												
	SV	SVT	TB2	TB3	T4	ART3	ART4	ART5	ART6	BD	DRT	TRT	UC
	1	2	3	4	5	6	7	8	9	10	11	12	13
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0
06:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	3	1	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	6	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	4	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	4	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	4	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	4	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	5	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	5	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0
08:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0
09:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Summary	51	1	0	0	0	0	0	0	0	0	0	0	0



Appendix F Desktop Models (Traffic Flow Diagrams)

Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

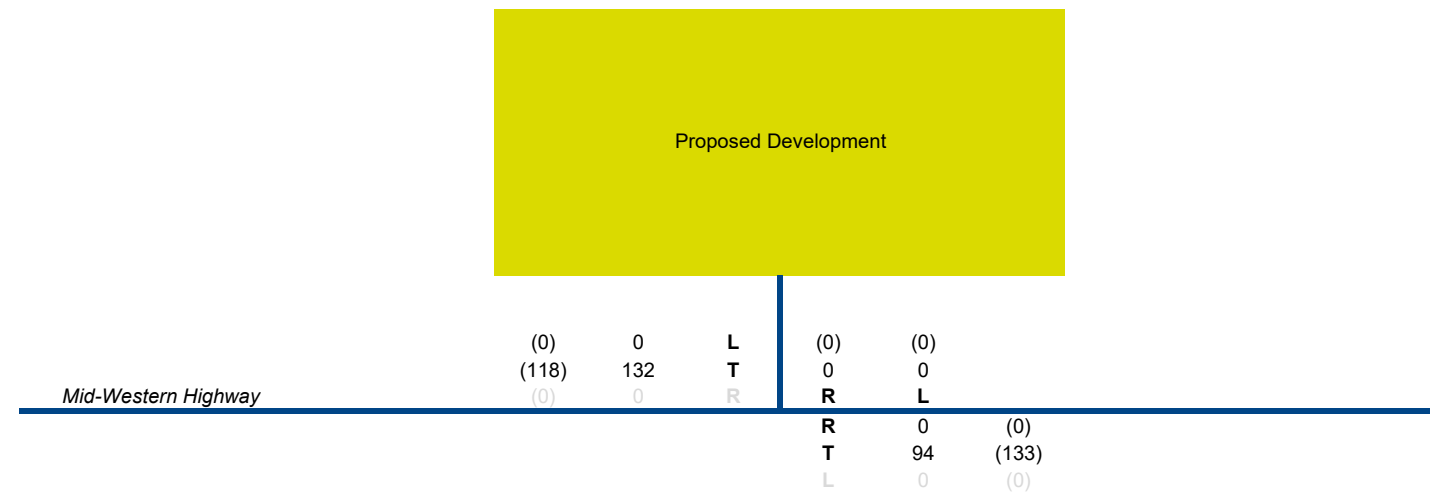
SLR Project No.: 660.v30234.00014

19 January 2026

Project Bathurst BESS SSD
Project number 660.v30234.00014
Prepared by CS
Reviewed by CS

TITLE BLOCK REGISTER

Tab name	Figure	Sheet Title
2022 Survey LV	A1	LV Survey Traffic Volumes (2022)
2022 Survey HV	A2	HV Survey Traffic Volumes (2022)
2026 BG LV	A3	LV Background Traffic Volumes: 2026 Year of Construction
2026 BG HV	A4	HV Background Traffic Volumes: 2026 Year of Construction
BESS CONS TRIPS LV	A5	LV Traffic Generation: BESS Construction Trips
BESS CONS TRIPS HV	A6	HV Traffic Generation: BESS Construction Trips
TG CONS TRIPS LV	A7	LV Traffic Generation: TransGrid Construction Trips
TG CONS TRIPS HV	A8	HV Traffic Generation: TransGrid Construction Trips
2026 BG+DEV LV	A9	LV Traffic Generation: 2026 Background and Construction Trips
2026 BG+DEV HV	A10	HV Traffic Generation: 2026 Background and Construction Trips



Legend

L Left Turn

T Through

R Right turn

00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

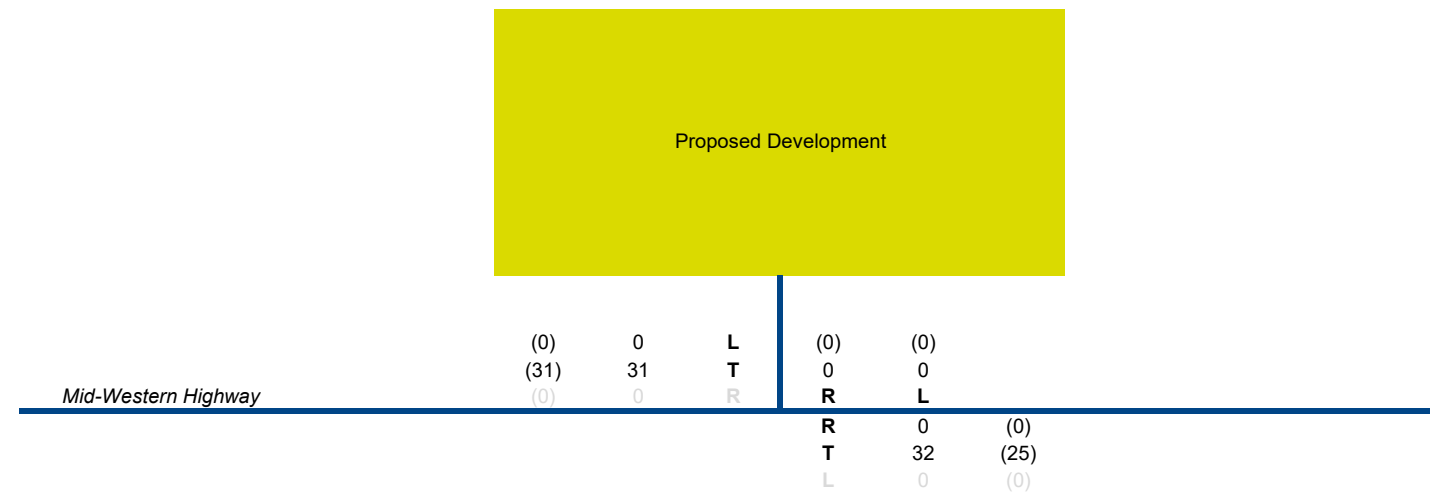
Figure: A1
LV Survey Traffic Volumes (2022)

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Legend

L Left Turn
T Through
R Right turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

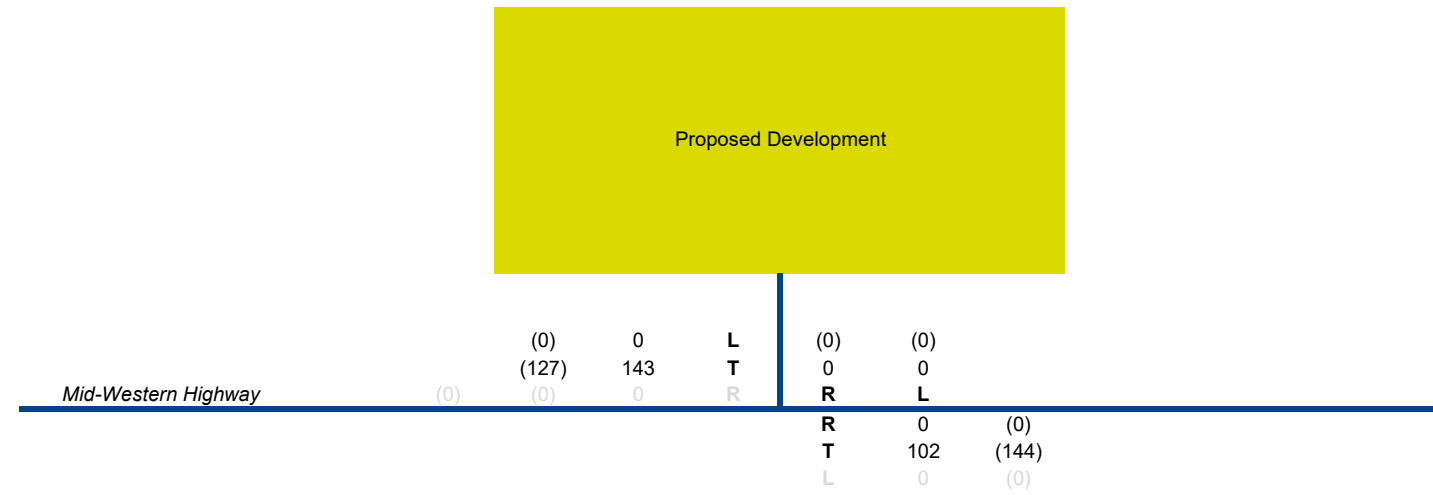
Figure: A2
HV Survey Traffic Volumes (2022)

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Legend

L Left Turn
T Through
R Right turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

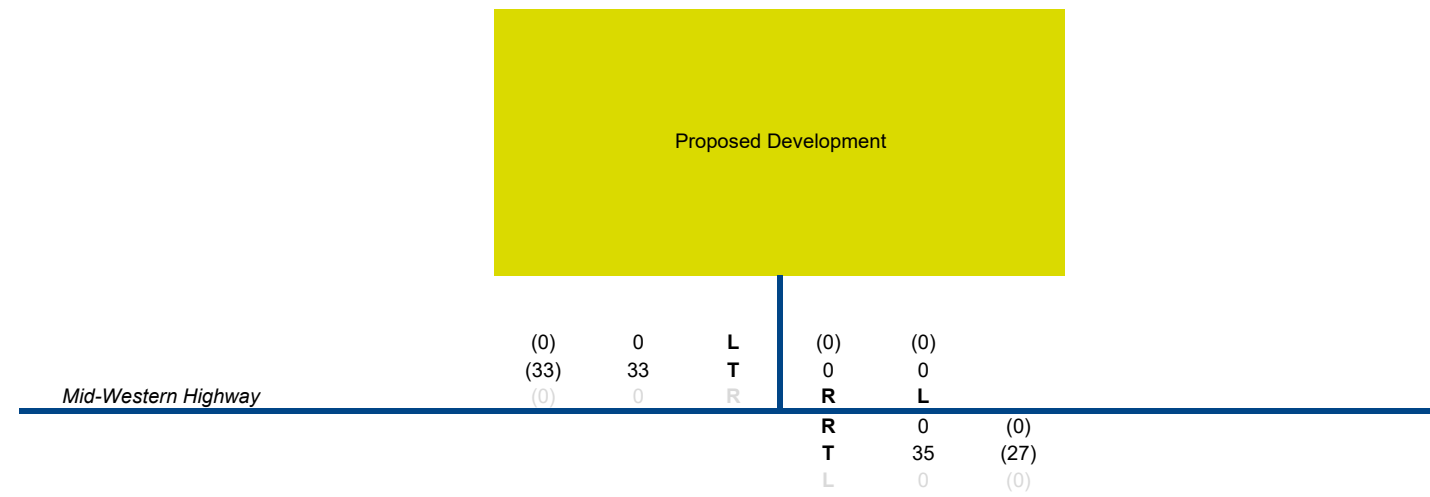
Figure: A3
LV Background Traffic Volumes: 2026 Year of Construction

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Legend

L Left Turn
T Through
R Right turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

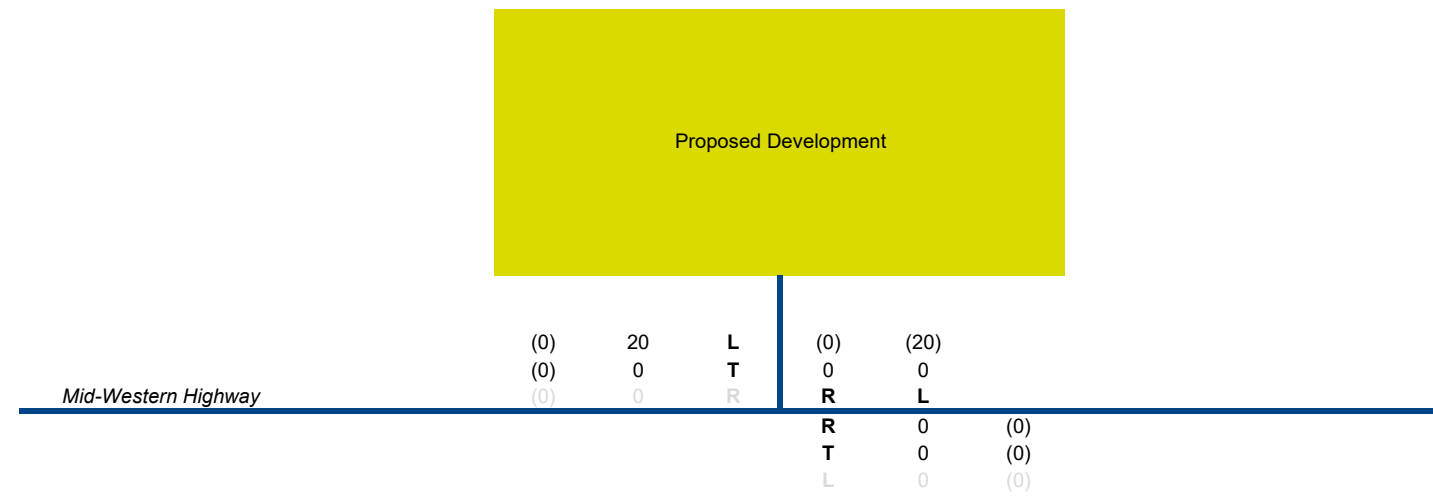
Figure: A4
HV Background Traffic Volumes: 2026 Year of Construction

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Legend

L Left Turn
T Through
R Right turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

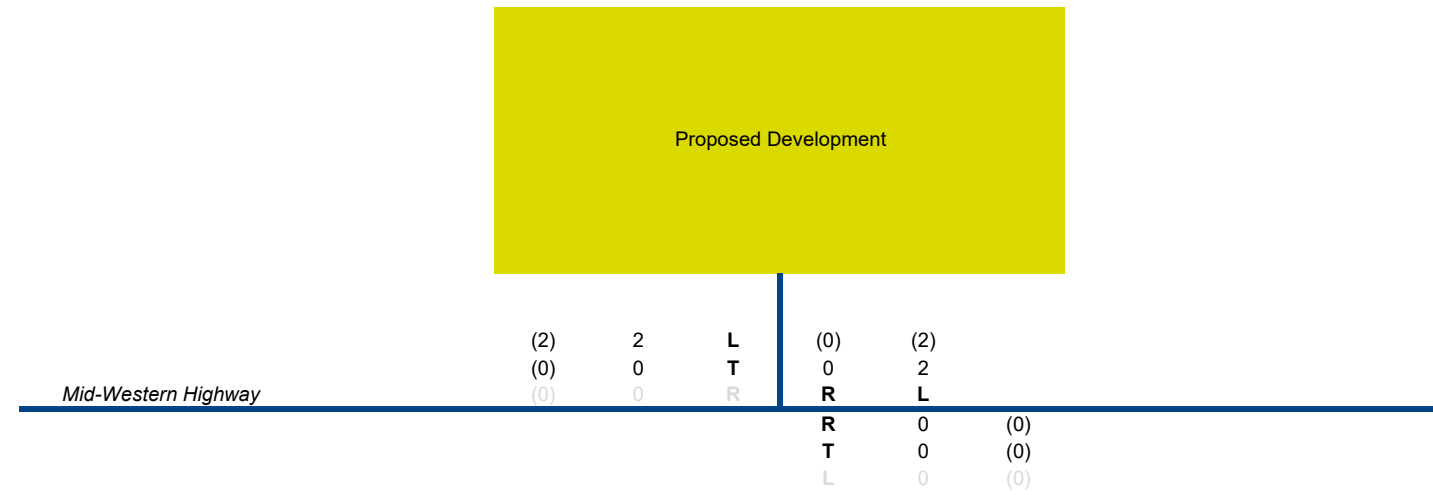
Figure: A5
LV Traffic Generation: BESS Construction Trips

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Legend

L Left Turn

T Through

R Right turn

00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

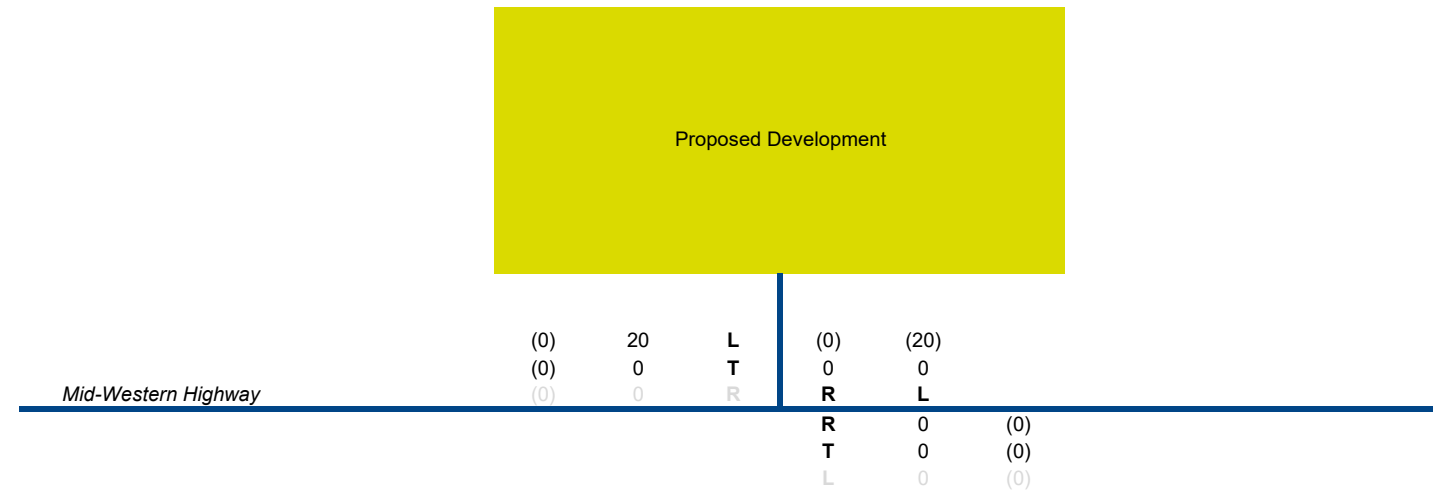
Figure: A6
HV Traffic Generation: BESS Construction Trips

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Legend

L Left Turn
T Through
R Right turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

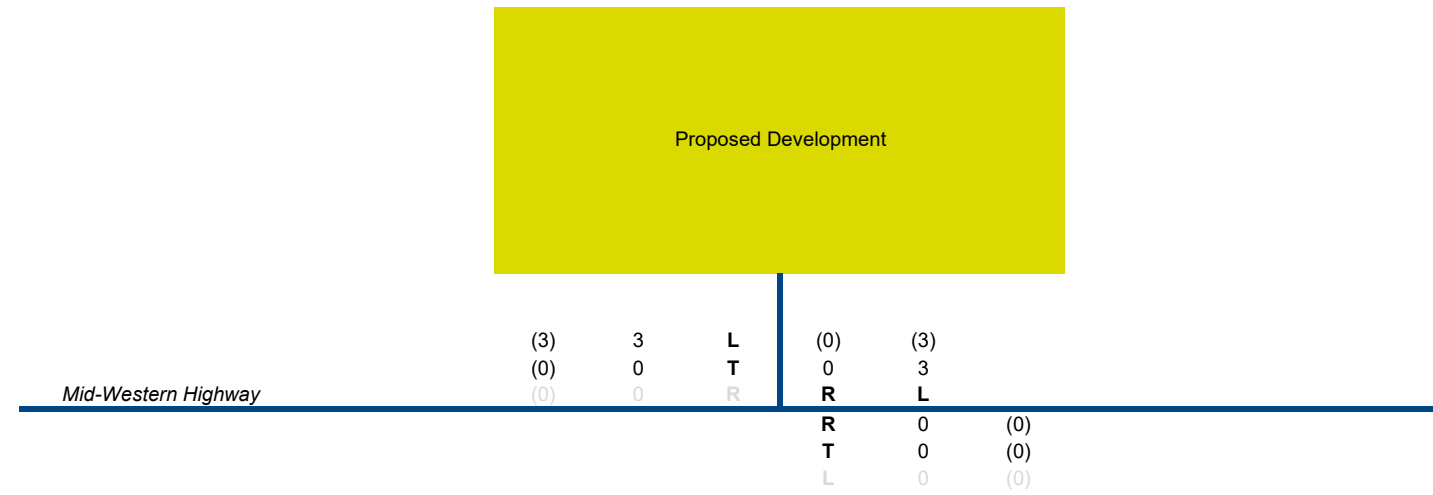
Figure: A7
LV Traffic Generation: TransGrid Construction Trips

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Legend

- L Left Turn
- T Through
- R Right turn

- 00 Weekday AM Peak Hour Volumes
- (00) Weekday PM Peak Hour Volumes

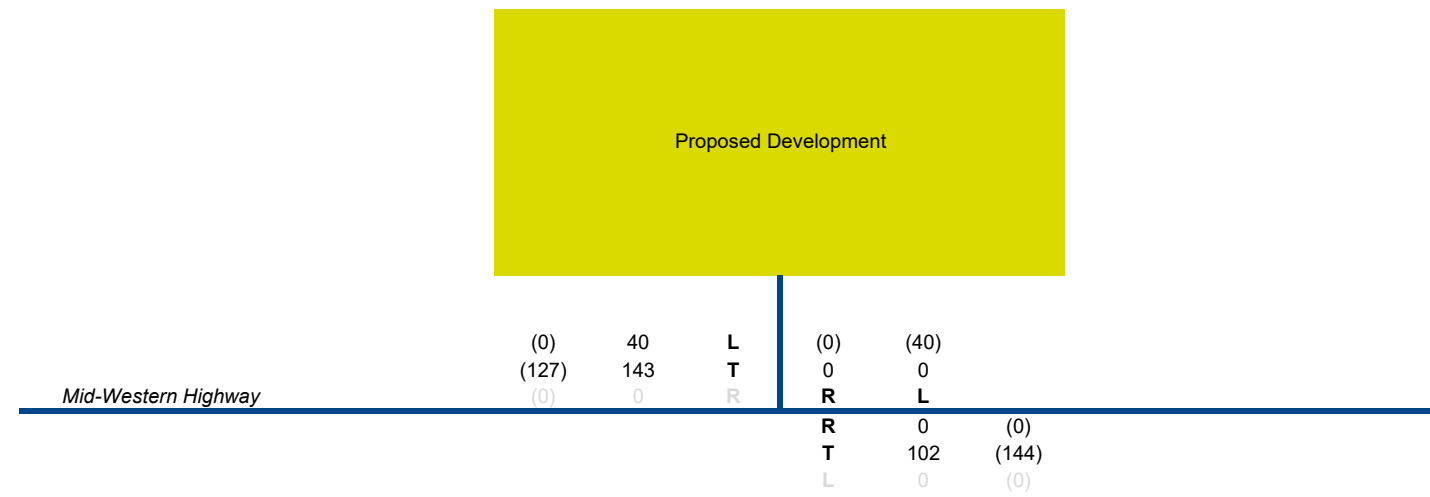
Figure: A8
HV Traffic Generation: TransGrid Construction Trips

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Legend

L Left Turn
T Through
R Right turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

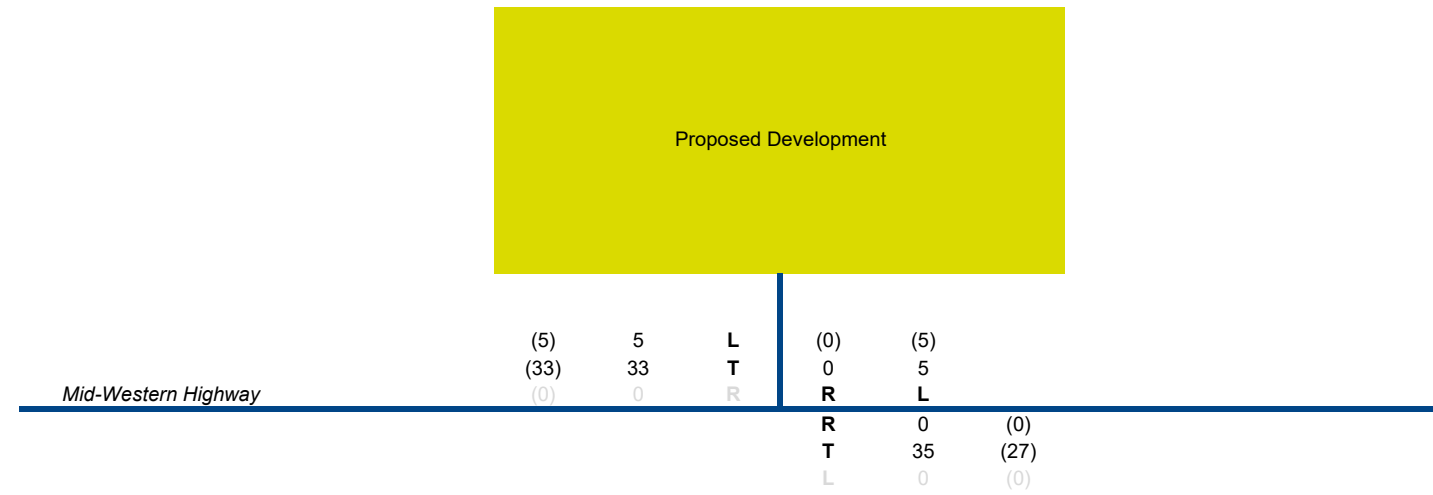
Figure: A9
LV Traffic Generation: 2026 Background and Construction Trips

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Legend

L Left Turn
T Through
R Right turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

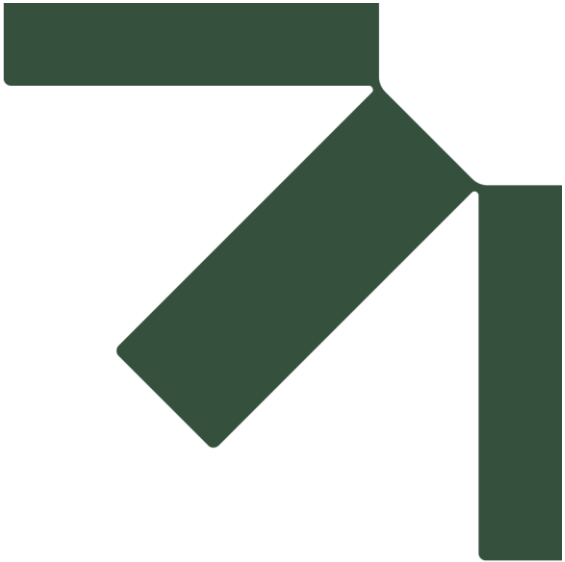
Figure: A10
HV Traffic Generation: 2026 Background and Construction Trips

660.v30234.00014

Bathurst BESS SSD

9/01/2026





Appendix G Turn Warrant Assessments

Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

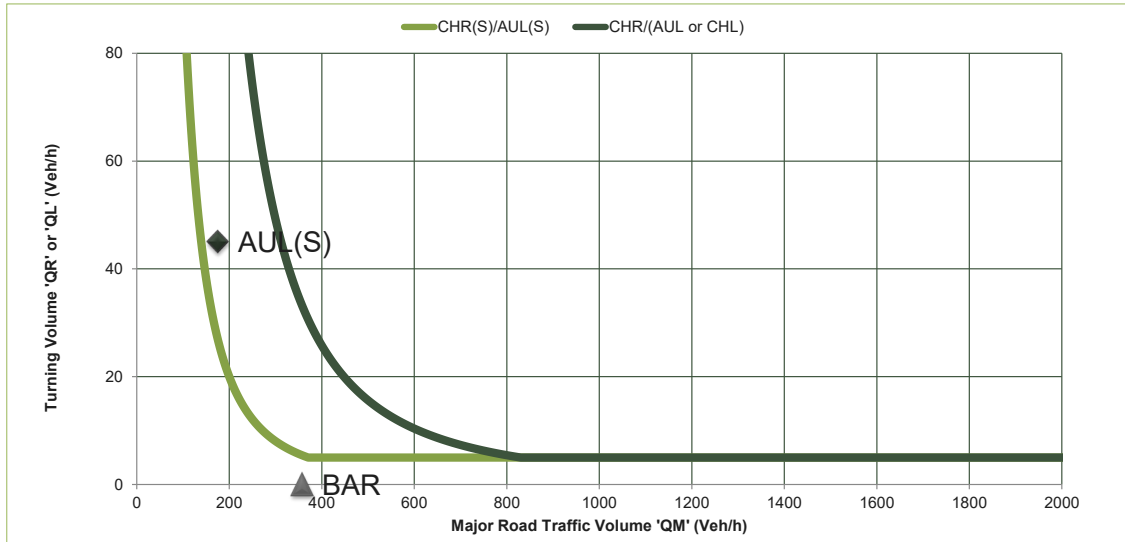
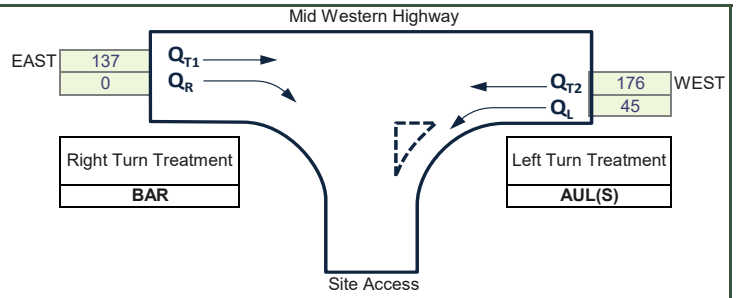
SLR Project No.: 660.v30234.00014

19 January 2026

Assessment Year	2026
Peak Period	AM
Scenario	Construction Traffic

Design Domain	Normal Design Domain
Design Year	10
Lane Count	2L2W
Design Speed	>= 100km/h
Splitter Island?	No

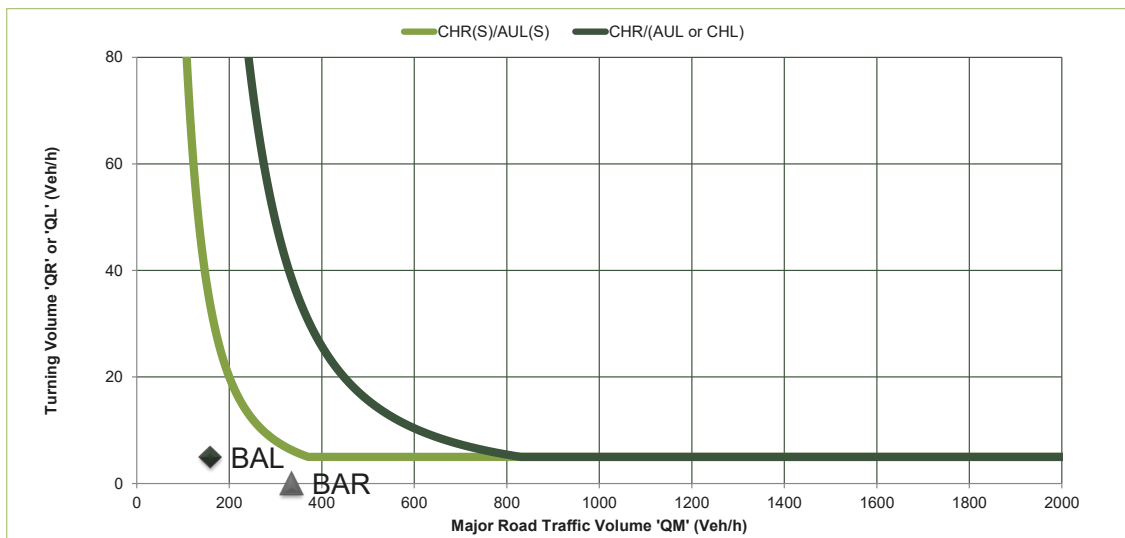
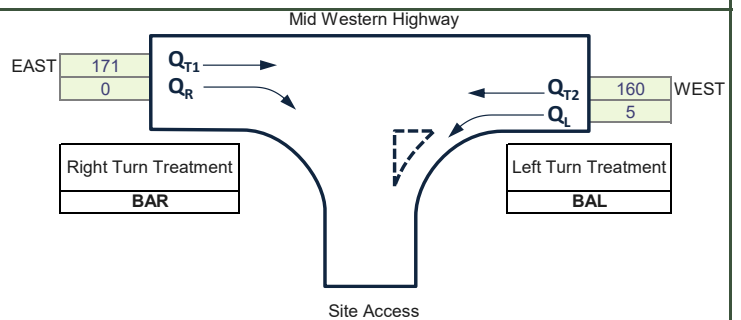
Q_M	Q_R/Q_L	
358	0	Right
176	45	Left



Assessment Year	2026
Peak Period	PM
Scenario	Construction Traffic

Design Domain	Normal Design Domain
Design Year	10
Lane Count	2L2W
Design Speed	>= 100km/h
Splitter Island?	No

Q_M	Q_R/Q_L	
336	0	Right
160	5	Left



Reflects changes made in RPDM (Ed2: Vol3) Supplement to Austroads Part 4A (DTMR - August, 2014)

Turn Warrant Assessment

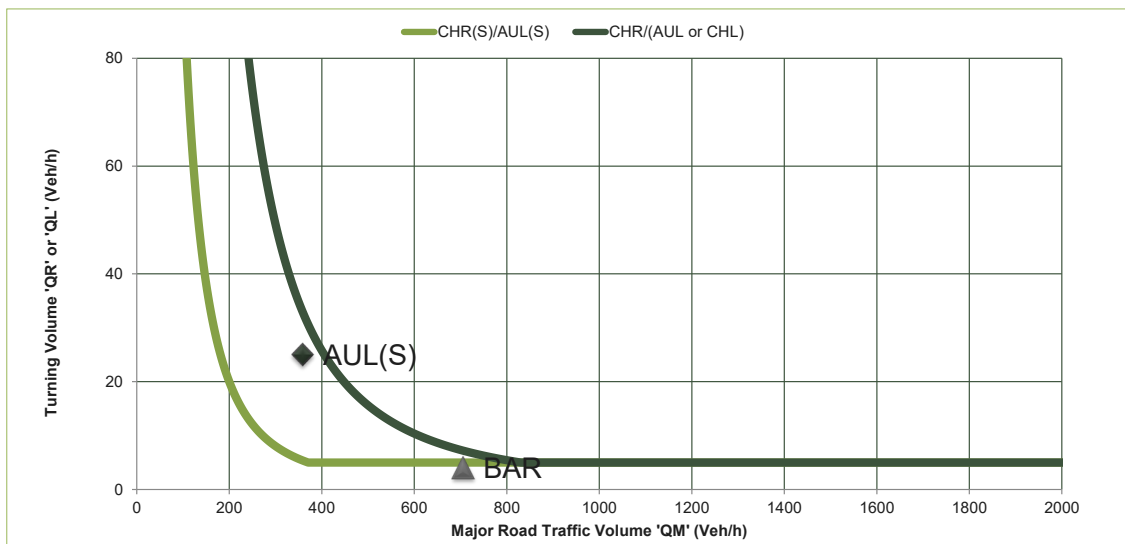
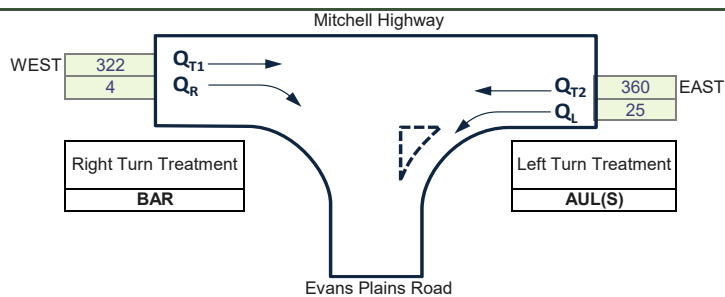
Mid Western Highway / Site Access
660.v30234.00014
09 01 2026



Assessment Year	2026
Peak Period	AM
Scenario	Construction Traffic

Design Domain	Normal Design Domain
Design Year	10
Lane Count	2L2W
Design Speed	>= 100km/h
Splitter Island?	No

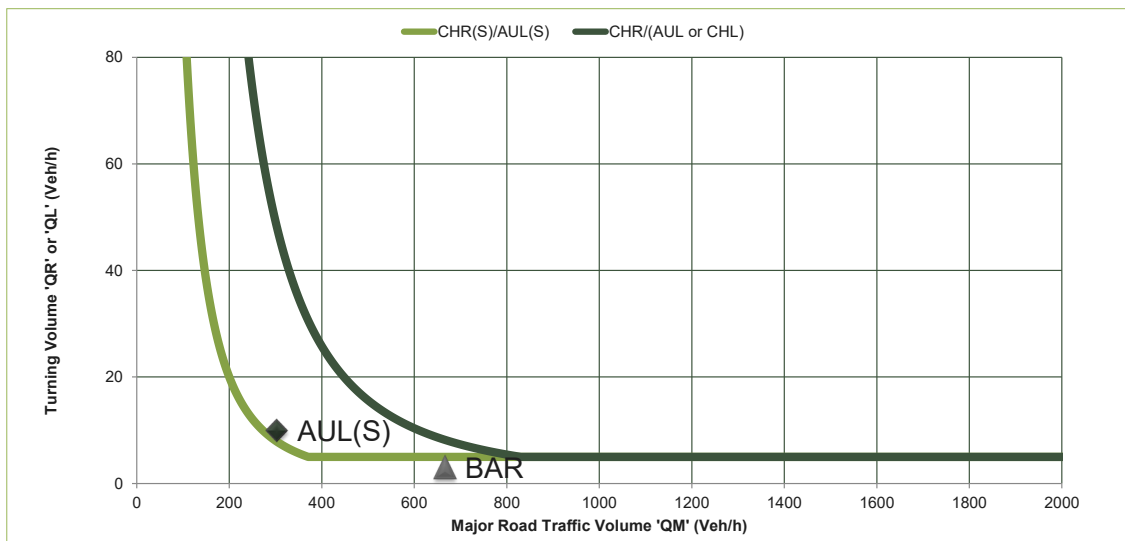
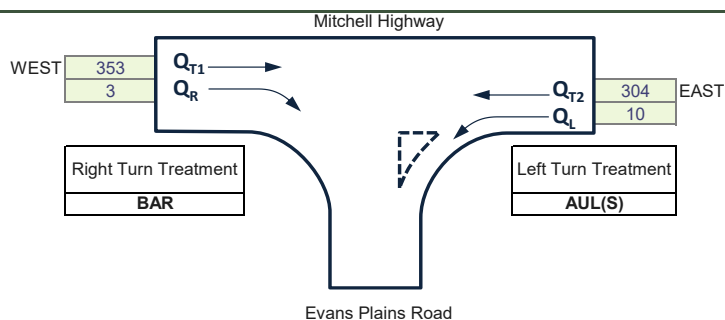
Q_M	Q_R/Q_L	
707	4	Right
360	25	Left



Assessment Year	2026
Peak Period	PM
Scenario	Construction Traffic

Design Domain	Normal Design Domain
Design Year	10
Lane Count	2L2W
Design Speed	>= 100km/h
Splitter Island?	No

Q_M	Q_R/Q_L	
667	3	Right
304	10	Left

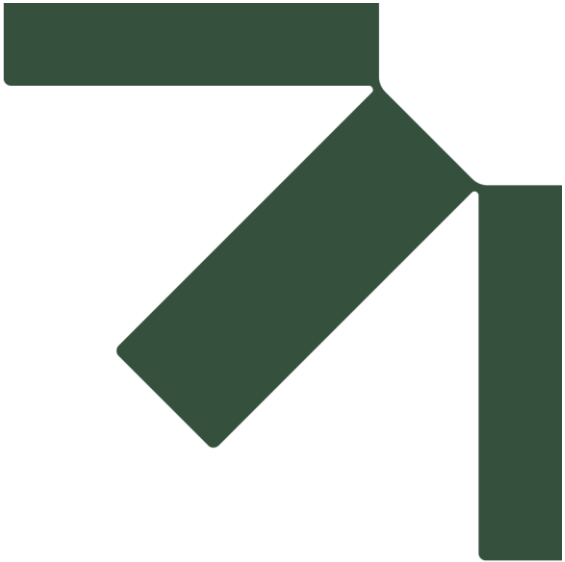


Reflects changes made in RPDM (Ed2: Vol3) Supplement to Austroads Part 4A (DTMR - August, 2014)

Turn Warrant Assessment

Mid Western Highway / Site Access
660.v30234.00014
09 01 2026





Appendix H Strategic Design Drawings and Swept Path Assessments

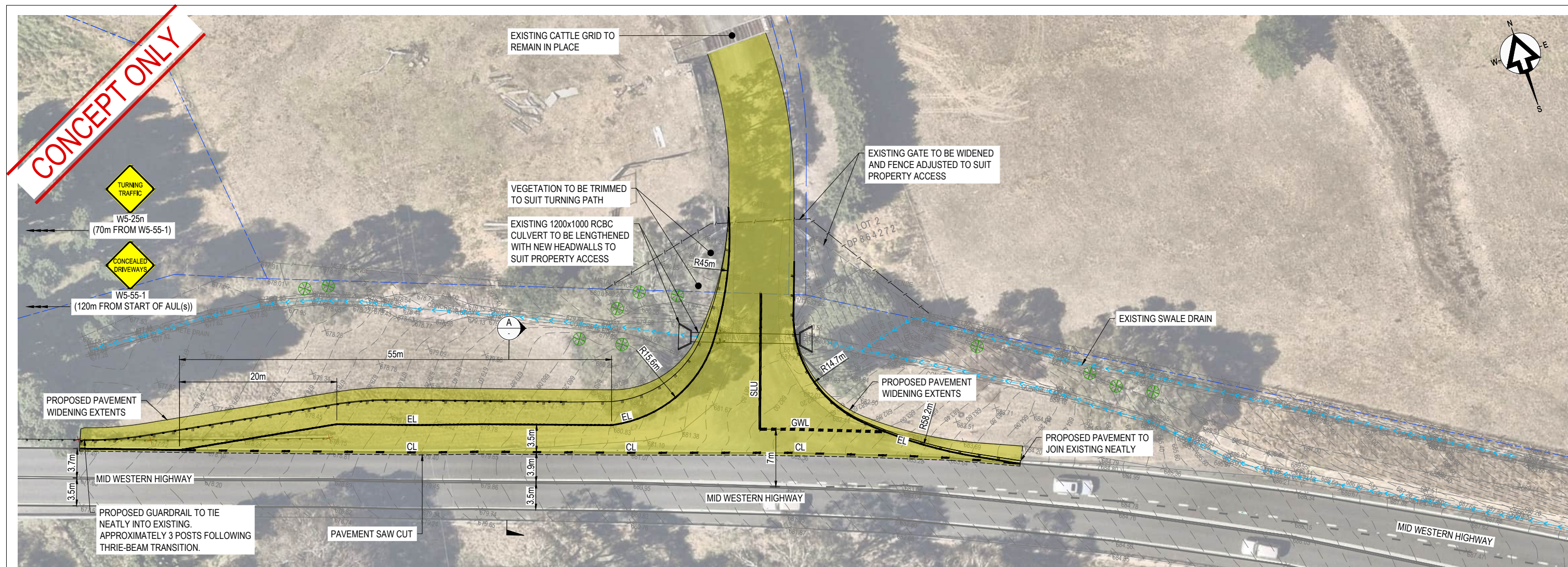
Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

SLR Project No.: 660.v30234.00014

19 January 2026

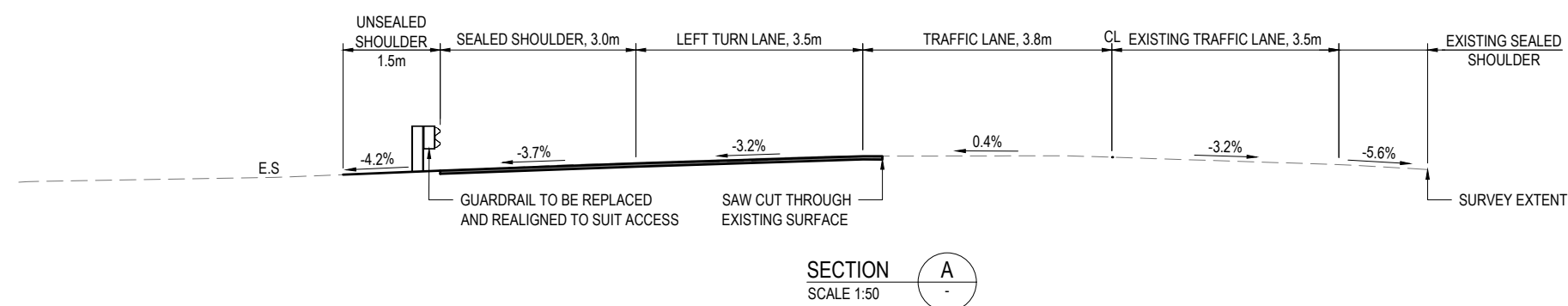


GENERAL ARRANGEMENT LAYOUT PLAN

SCALE 1: 250

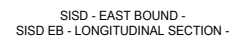
LEGEND

EXISTING GROUND CONTOURS	--- 689.00 --- --- 688.80 ---
EXISTING LINEMARKING	---
EXISTING ROAD SHOULDER EDGE	---
EXISTING SURFACE SPOT LEVEL	+137.54
EXISTING TREES	⊗
EXISTING PROPERTY BOUNDARY	---
EXISTING SWALE DRAINS	--->--->--->---
EXISTING EDGE OF SEAL	---
EXISTING FENCE LINE	---
EXISTING GUARDRAIL	---
PROPOSED GUARDRAIL	---
PROPOSED FENCE LINE	---
PROPOSED EDGE OF SEAL	---
PAVEMENT SAW-CUT	---
PROPOSED PAVEMENT WIDENING	EL
PROPOSED EDGE LINE	EL
PROPOSED CONTINUITY LINE	CL
PROPOSED SEPARATION LINE UNBROKEN	SLU
PROPOSED GIVE WAY LINE	---



CONCEPT ONLY

N
W E
S

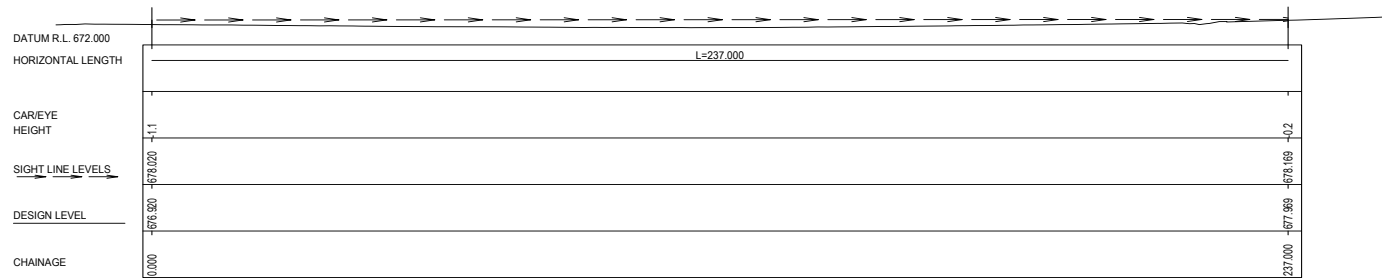


BESS SubCo Pty Ltd
PANORAMA BESS
INTERSECTION UPGRADE

SAFE INTERSECTION SIGHT DISTANCE CHECK
EASTBOUND

FIGURE 101





SSD - EAST BOUND -
SSD EB - LONGITUDINAL SECTION -

NOTE:
1. MINIMUM SSD REQUIREMENT OF 208m (AT 101km/h DESIGN SPEED) ACHIEVED AS SHOWN.



LEVEL 1, THE CENTRAL BUILDING
UOW INNOVATION CAMPUS
NORTH WOLLONGONG
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Project No:	660.30234
Date:	14/01/2026
Drawn by:	RC
Scale:	1:750
Sheet Size:	A1
Projection:	GDA2020 Z55



Transport
for NSW



SCALE 1:750

BESS SubCo Pty Ltd

PANORAMA BESS
INTERSECTION UPGRADE

STOPPING SIGHT DISTANCE CHECK
EASTBOUND

FIGURE 103

CONCEPT ONLY



SWEPT PATH ANALYSIS - AV ENTERING/EXITING PROPERTY ACCESS
SCALE 1:250



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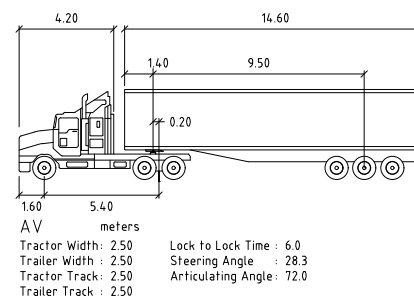
Project No: 660.30234
Date: 14/01/2026
Drawn by: RMC
Scale: 1:250
Sheet Size: A1
Projection: GDA2020 Z55



Transport
for NSW

SWEPT PATH LEGEND

VEHICLE PATH ———→
VEHICLE BODY ————
BODY CLEARANCE - - - - -
FRONT WHEELS ————



BESS SubCo Pty Ltd
PANORAMA BESS
INTERSECTION UPGRADE

SWEPT PATH ANALYSIS - AV
ENTERING/EXITING PROPERTY ACCESS

FIGURE 104

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SCALE 1: 250



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CONCEPT ONLY



SWEPT PATH ANALYSIS - 100T TRANSFORMER EXITING PROPERTY ACCESS
SCALE 1:250



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UOW INNOVATION CAMPUS
NORTH WOLLONGONG
NEW SOUTH WALES, 2500
AUSTRALIA
T: +61 (0)2 4249 1000
www.slrconsulting.com

Project No: 660.30234

Date: 14/01/2026

Drawn by: RMC

Scale: 1:250

Sheet Size: A1

Projection: GDA2020 Z55

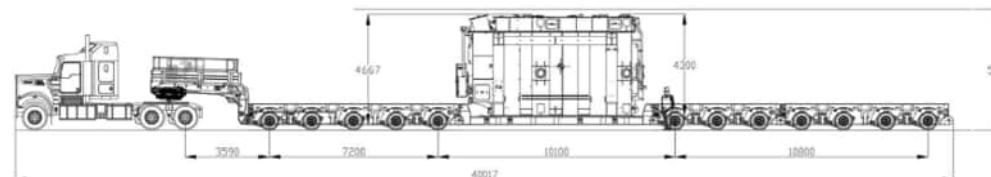


Transport
for NSW

0 2.5 5 7.5 10
METRES
SCALE 1:250

SWEPT PATH LEGEND

- VEHICLE PATH
- VEHICLE BODY
- BODY CLEARANCE
- FRONT WHEELS



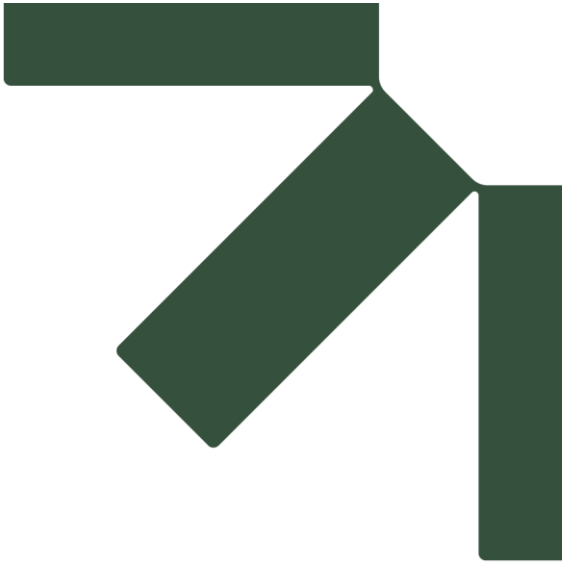
BESS SubCo Pty Ltd

PANORAMA BESS
INTERSECTION UPGRADE

SWEPT PATH ANALYSIS - TRANSFORMER
EXITING PROPERTY ACCESS

FIGURE 106

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Appendix I SIDRA Results

Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

SLR Project No.: 660.v30234.00014

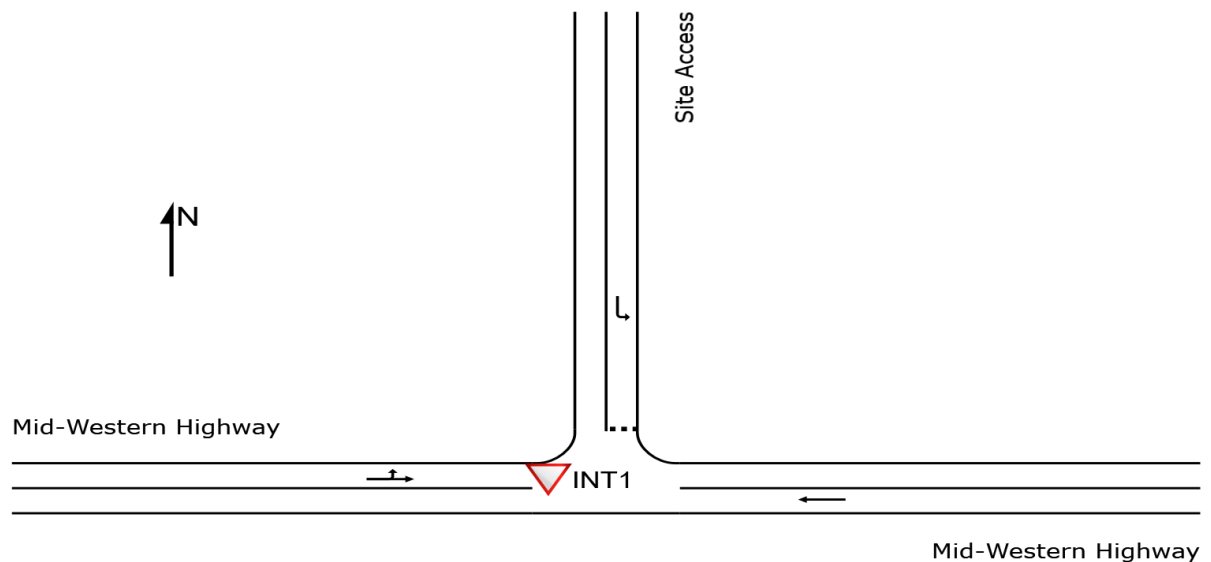
19 January 2026

SITE LAYOUT

▽ Site: INT1 [2022 Survey - AM (Site Folder: General)]

Bathurst BESS
660.30234
Mid-Western Highway / Site Access
Site Category: Existing Design
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: H:\Projects-SLR\660-SrvWOL\660-WOL\660.30234.00000 Bathurst BESS SSD Approvals\08 Transport Advisory\02 Analysis\02 SIDRA
660.v30234 v1.0 Bathurst BESS - 20260109.sip9

MOVEMENT SUMMARY

▼ Site: INT1 [2022 Survey - AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Bathurst BESS
660.30234
Mid-Western Highway / Site Access
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
East: Mid-Western Highway															
5	T1	All MCs	133	25.4	133	25.4	0.079	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			133	25.4	133	25.4	0.079	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
North: Site Access															
7	L2	All MCs	1	0.0	1	0.0	0.001	6.0	LOS A	0.0	0.0	0.27	0.51	0.27	52.1
Approach			1	0.0	1	0.0	0.001	6.0	LOS A	0.0	0.0	0.27	0.51	0.27	52.1
West: Mid-Western Highway															
10	L2	All MCs	1	0.0	1	0.0	0.099	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.4
11	T1	All MCs	172	19.0	172	19.0	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			173	18.9	173	18.9	0.099	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			306	21.6	306	21.6	0.099	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

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Project: H:\Projects-SLR\660-Srv\WOL\660-WOL\660.30234.00000 Bathurst BESS SSD Approvals\08 Transport Advisory\02 Analysis\02 SIDRA \660.v30234 v1.0 Bathurst BESS - 20260109.sip9

MOVEMENT SUMMARY

▼ Site: INT1 [2022 Survey - PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Bathurst BESS
660.30234
Mid-Western Highway / Site Access
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Mid-Western Highway															
5	T1	All MCs	166	15.8	166	15.8	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			166	15.8	166	15.8	0.094	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
North: Site Access															
7	L2	All MCs	1	0.0	1	0.0	0.001	6.0	LOS A	0.0	0.0	0.25	0.51	0.25	52.1
Approach			1	0.0	1	0.0	0.001	6.0	LOS A	0.0	0.0	0.25	0.51	0.25	52.1
West: Mid-Western Highway															
10	L2	All MCs	1	0.0	1	0.0	0.092	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.4
11	T1	All MCs	157	20.8	157	20.8	0.092	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			158	20.7	158	20.7	0.092	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			325	18.1	325	18.1	0.094	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

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MOVEMENT SUMMARY

▼ Site: INT1 [2026 BG - AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Bathurst BESS
660.30234
Mid-Western Highway / Site Access
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Mid-Western Highway															
5	T1	All MCs	144	25.5	144	25.5	0.086	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			144	25.5	144	25.5	0.086	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
North: Site Access															
7	L2	All MCs	1	0.0	1	0.0	0.001	6.1	LOS A	0.0	0.0	0.28	0.51	0.28	52.0
Approach			1	0.0	1	0.0	0.001	6.1	LOS A	0.0	0.0	0.28	0.51	0.28	52.0
West: Mid-Western Highway															
10	L2	All MCs	1	0.0	1	0.0	0.107	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.4
11	T1	All MCs	185	18.8	185	18.8	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			186	18.6	186	18.6	0.107	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			332	21.6	332	21.6	0.107	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

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MOVEMENT SUMMARY

▼ Site: INT1 [2026 BG - PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Bathurst BESS
660.30234
Mid-Western Highway / Site Access
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Mid-Western Highway															
5	T1	All MCs	180	15.8	180	15.8	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			180	15.8	180	15.8	0.102	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Site Access															
7	L2	All MCs	1	0.0	1	0.0	0.001	6.0	LOS A	0.0	0.0	0.26	0.51	0.26	52.1
Approach			1	0.0	1	0.0	0.001	6.0	LOS A	0.0	0.0	0.26	0.51	0.26	52.1
West: Mid-Western Highway															
10	L2	All MCs	1	0.0	1	0.0	0.099	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.4
11	T1	All MCs	168	20.6	168	20.6	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			169	20.5	169	20.5	0.099	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			351	18.0	351	18.0	0.102	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

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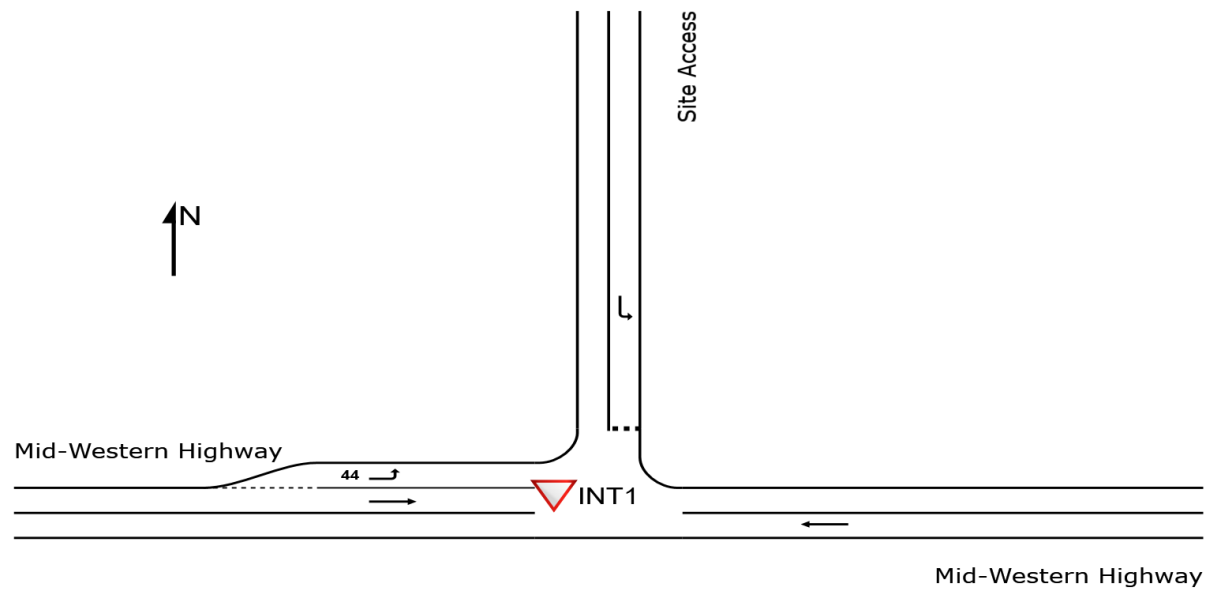
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SITE LAYOUT

▽ Site: INT1 [2026 BG+DEV - AM (Site Folder: General)]

Bathurst BESS
660.30234
Mid-Western Highway / Site Access
Site Category: Proposed Design 1
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: INT1 [2026 BG+DEV - AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Bathurst BESS
660.30234
Mid-Western Highway / Site Access
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Mid-Western Highway															
5	T1	All MCs	144	25.5	144	25.5	0.086	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			144	25.5	144	25.5	0.086	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
North: Site Access															
7	L2	All MCs	5	100.0	5	100.0	0.006	8.1	LOS A	0.0	0.3	0.35	0.54	0.35	47.1
Approach			5	100.0	5	100.0	0.006	8.1	LOS A	0.0	0.3	0.35	0.54	0.35	47.1
West: Mid-Western Highway															
10	L2	All MCs	47	11.1	47	11.1	0.028	5.7	LOS A	0.0	0.0	0.00	0.57	0.00	52.4
11	T1	All MCs	185	18.8	185	18.8	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			233	17.2	233	17.2	0.107	1.2	NA	0.0	0.0	0.00	0.12	0.00	58.2
All Vehicles			382	21.5	382	21.5	0.107	0.8	NA	0.0	0.3	0.00	0.08	0.00	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

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MOVEMENT SUMMARY

▼ Site: INT1 [2026 BG+DEV - PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Bathurst BESS
660.30234
Mid-Western Highway / Site Access
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	Dist]				km/h
East: Mid-Western Highway															
5	T1	All MCs	180	15.8	180	15.8	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			180	15.8	180	15.8	0.102	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Site Access															
7	L2	All MCs	47	11.1	47	11.1	0.036	6.3	LOS A	0.1	1.1	0.28	0.56	0.28	51.6
Approach			47	11.1	47	11.1	0.036	6.3	LOS A	0.1	1.1	0.28	0.56	0.28	51.6
West: Mid-Western Highway															
10	L2	All MCs	5	100.0	5	100.0	0.005	6.7	LOS A	0.0	0.0	0.00	0.56	0.00	48.3
11	T1	All MCs	168	20.6	168	20.6	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			174	23.0	174	23.0	0.098	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
All Vehicles			401	18.4	401	18.4	0.102	0.9	NA	0.1	1.1	0.03	0.07	0.03	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

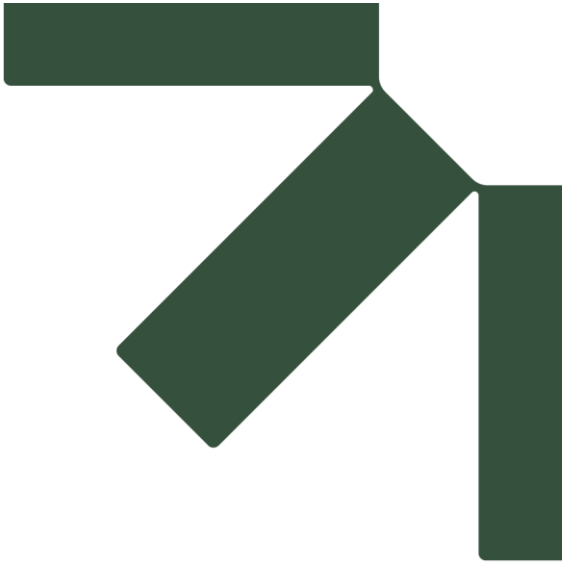
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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.



Appendix J Drivers' Code of Conduct

Panorama Battery Energy Storage System (BESS)

Traffic Impact Assessment

Panorama BESS SubCo Pty Ltd

SLR Project No.: 660.v30234.00014

19 January 2026

DRIVERS' CODE OF CONDUCT

Safe Driving Policy for Panorama Battery Energy Storage System (BESS), Mid Western Highway, NSW.

1. Objectives

- To minimise the impact of earthworks and construction on the local and state road network:
 - Minimise conflict with other road users.
 - Minimise road traffic noise.
 - Ensure truck drivers use specified routes.

2. Code of Conduct

All vehicle operators accessing the site must:

- Take reasonable care for his or her own personal health and safety.
- Not adversely, by way of actions or otherwise, impact on the health and safety of other persons.
- Notify their employer if they are not fit for duty prior to commencing their shift.
- Obey all applicable road rules and laws at all times.
- In the event an emergency vehicle is behind your vehicle, pull over and allow the emergency vehicle to pass immediately.
- Obey the applicable driving hours per legislation and take all reasonable steps to manage your fatigue and not drive with high drowsiness.
- Obey all on-site signposted speed limits and comply with directions of traffic control supervisors in relation to movements in and around temporary or fixed work areas.
- Ensure all loads are safely restrained, as necessary.
- If available and required, drive over cattle grids that are located at the site's access to vibrate off any loose material attached to construction vehicles.
- Operate your vehicles in a safe and professional manner, with consideration for all other road users.
- Hold a current Australian State or Territory issued driver's licence.
- Notify your employer or operator immediately should the status or conditions of their driver's licence change in any way.
- Comply with other applicable workplace policies, including a zero tolerance of driving while under the influence of alcohol and/or illicit drugs.
- Not use mobile phones when driving a vehicle or operating equipment. If the use of a mobile device is required, the driver shall pull over in a safe and legal location before using any mobile device.
- Advise management of any situations in which you know or think may present a threat to workplace health and safety.

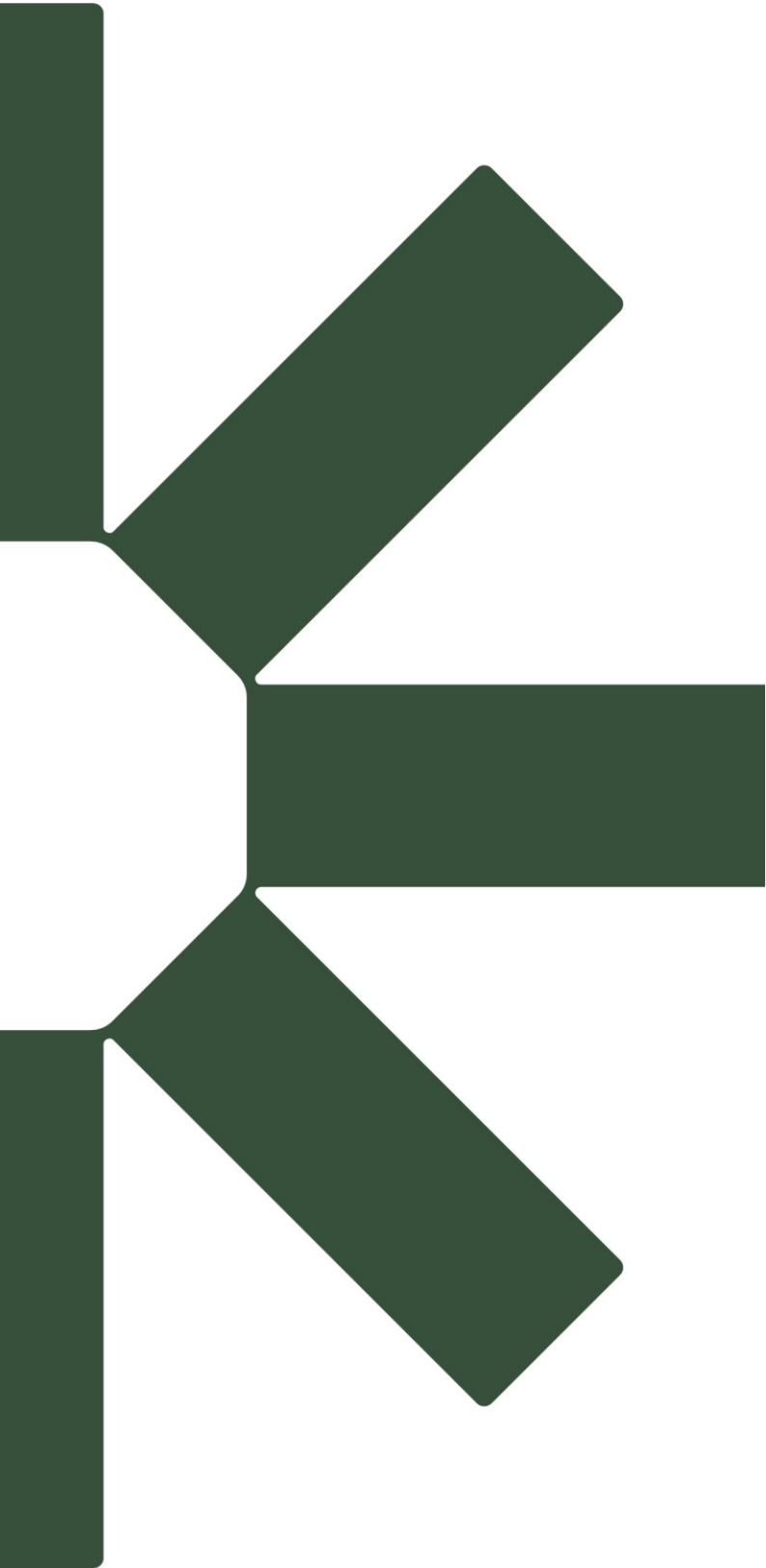


- Drive according to prevailing conditions (such as during inclement weather) and reduce speed, if necessary.
- Have necessary identification documentation at hand and ready to present to security staff on entry and departure from the site, as necessary, to avoid unnecessary delays to other vehicles.

3. Crash or Incident Procedure

- Stop your vehicle as close to it as possible to the scene, making sure you are not hindering traffic.
- Ensure your safety first, then help injured people and seek assistance immediately if required.
 - Ensure the following information is noted:
 - Details of the other vehicles and registration numbers.
 - Names and addresses of the other vehicle drivers.
 - Names and addresses of witnesses.
 - Insurers details.
- Give the following information to the involved parties:
 - Name, address, and company details.
- If the damaged vehicle is not occupied, provide a note with your contact details for the owner to
- contact the company.
- Ensure that the Police are contacted should the following circumstances occur:
 - If there is a disagreement over the cause of the crash.
 - If there are injuries.
 - If you damage property other than your own.
- As soon as reasonably practical, report all details gathered to your manager.





Making Sustainability Happen