



APPENDIX M TRAFFIC IMPACT ASSESSMENT



Traffic & Transportation Direction



Canyonleigh BESS

962 Canyonleigh Road,
Brayton, NSW

Traffic Impact Assessment

December 2025

Reference: 1057 rep 251216 final

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Traffic Impact Assessment

Prepared for: Environmental Resource Management

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Executive Summary

Amber Organisation Pty Ltd has been engaged by Environmental Resource Management Australia Pty Ltd (ERM) to prepare a Traffic Impact Assessment for the proposed Canyonleigh Battery Energy Storage System (the Project) for X-Elio Aus2 Pty Ltd (The Applicant).

This report supports a State Significant Development (SSD) Development Consent application under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (SSD- 78247462), as an appendix to the Environmental Impact Statement (EIS) for the Project.

The Project includes the construction, operation and decommissioning of a Battery Energy Storage System (BESS) and associated infrastructure with a targeted electricity storage capacity of up to 300MW / 1,200MWh (4 hours).

The Project is located at 962 Canyonleigh Road, Brayton approximately 12km northeast of Marulan. The Project is located entirely within the Goulburn Mulwaree Local Government Area (LGA) and has a maximum development footprint of 21.60 ha which is located entirely within the Project Area.

Traffic generated by the Project can be separated into three distinct stages: construction, operation and decommissioning. The peak traffic generating potential is during construction which generates trips associated with the workforce accessing the Project Area and the delivery of raw materials and plant. During operation the Project is expected to generate a minimal amount of traffic with only a small number of maintenance staff accessing the Project Area periodically. Decommissioning is anticipated to generate a similar level of traffic to the construction stage.

The construction period is expected to commence in 2026 and take approximately 18 months, with the peak construction period expected to take 6 months. A construction workforce of up to 100 personnel would be on-site during the peak construction phase and would primarily be drawn from Goulburn, Yass and Canberra.

It is anticipated that during peak construction the Project could generate up to 100 light vehicle trips, 8 shuttle bus trips, and 66 heavy vehicle trips per day (two-way total). The Project is expected to generate approximately 60 vehicle trips during the morning and evening peak hours during the peak construction period, which would reduce to 45 vehicle trips over the average construction periods.

In order to determine the traffic impact generated during the construction of the Project, an analysis of the Brayton Road/Canyonleigh Road intersection has been completed using SIDRA modelling software. The assessment included cumulative traffic impacts at the intersection generated by other major projects in the surrounding area. Overall, the intersection is expected to continue to operate within acceptable limits and it is concluded that the road network is able to accommodate the traffic generated by the development during the construction period.

Amber has undertaken an assessment of the expected access route for construction traffic to the Project Area. The assessment identified that road upgrades are recommended to the intersection of Brayton Road/Canyonleigh Road to improve the safety and operation of the intersection, including inclusion of a Basic Right (BAR) turn treatment to access Canyonleigh Road. This is consistent with the recommendations for construction of the Wattle Creek Solar Farm and BESS also located on Canyonleigh Road, noting that Council has indicated preliminary support of this upgrade, subject to detailed design. A sight distance assessment has also been completed for this intersection, with recommendations of areas of vegetational removal/trimming to improve sightlines detailed at Appendix H.

Port Botany has been identified as the port where the BESS plant would be imported. The access route generally utilises roads that are designated for B-Double vehicles as outlined within the National Heavy Vehicle Regulator (NHVR) Restricted Access Vehicle Map. The designated routes would ensure that all heavy vehicles travel to the Project Area via the south using the Hume Highway, Brayton Road and Canyonleigh Road.

Port Botany has also been identified as the port for the oversize/overmass vehicle transporting the largest BESS components. The Route Assessment has identified some minor road works such as temporary hardstand, temporary removal of traffic signs, and on-street parking management would be required to allow the vehicles to access the Project Area. The Route Assessment is attached at Appendix A of this document.

In order to mitigate the impacts of the Project during construction, a Traffic Management Plan would be prepared which outlines a range of traffic management measures in order to ensure the construction traffic would have a minimal impact to the capacity and safety of the surrounding road network. The Traffic Management Plan would be prepared post-approval and prior to the construction of the Project.

Based on the assessment, it is concluded that the road network is able to accommodate the expected vehicle types and traffic volumes during the construction, operation, and decommissioning phases of the Project subject to the proposed road upgrades and traffic management measures outlined within this report. Further, the access locations have been suitably designed to allow vehicles to safely enter and exit the Project Area.

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Appendix H

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Appendix I

TfNSW Bridge and Culvert Assessment Correspondence

Appendix J

Shuttle Bus Correspondence – Urban Legends Tour Co

Appendix K

Shuttle Bus Correspondence – Yass Valley Council & Goulburn Mulwaree Council

Definitions

Term	Definition
Project	A Battery Energy Storage System (BESS) as described within the EIS to which this Application applies.
Project Area	Red boundary shown on Figure 1 to which the Application applies (unless otherwise stipulated).
Applicant	X-Elio Aus2 Pty Ltd (X-Elio)
Application	Application for Development Consent under Part 4.7 of the EP&A Act; and Determination under Part 9 of the EPBC Act.

1. Introduction

1.1 Background

Amber Organisation has been engaged by Environmental Resource Management Australia Pty Ltd (ERM) to prepare a Traffic Impact Assessment (TIA) for the Canyonleigh Battery Energy Storage System (the Project) on behalf of X-Elio Aus2 Pty Ltd (the Applicant).

This report supports a State Significant Development (SSD) application under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (SSD- 78247462), as an appendix to the Environmental Impact Statement (EIS) for the Project.

The Project includes the construction, operation and decommissioning of a Battery Energy Storage System (BESS) and associated infrastructure with a targeted storage capacity of up to 300MW / 1,200MWh (4 hours). The Project is proposed to connect to the existing substation on the north side of Canyonleigh Road via 330 kV underground transmission lines.

The Project is located at 962 Canyonleigh Road, Brayton approximately 12km northeast of Marulan. The Project is located entirely within the Goulburn Mulwaree Local Government Area (LGA) and has a maximum development footprint of 21.60 ha which is located entirely within the Project Area.

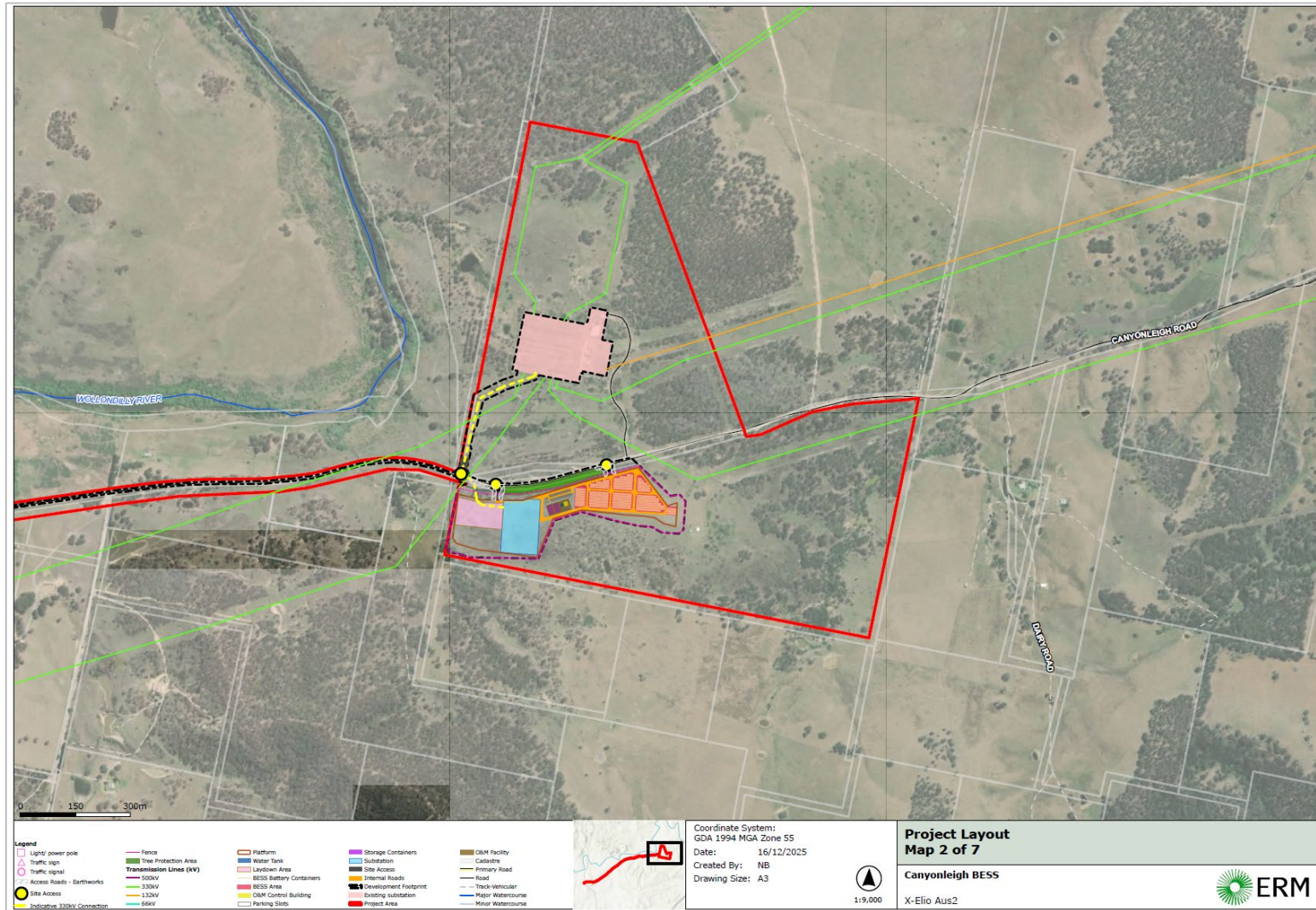
Access to the Project is proposed via three crossovers to Canyonleigh Road which connect with Brayton Road to the west. Figure 1 shows the proposed layout of the Project in relation to the road network, access locations, and existing infrastructure.

The construction period is expected to commence in 2026 and take approximately 18 months, with the peak construction period expected to take 6 months. A construction workforce of approximately 100 personnel would be on-site during the peak construction phase and would primarily be drawn from Goulburn, Yass and Canberra.

All specialist plant is expected to be delivered from Port Botany and/or the Sydney metropolitan area. Materials and equipment would generally be sourced from the surrounding area where practicable.

The impacts and proposed mitigation for traffic generated by the proposed construction, operation and decommissioning phases of the Project are addressed in this report in accordance with relevant regulatory requirements and guidelines.

Figure 1: Project Layout



1.2 Environmental Assessment Requirements

This report has been prepared to support a State Significant Development (SSD) application for development consent under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (EP&A Act). This report is an appendix of the Environmental Impact Assessment (EIS) prepared for the Project.

NSW Department of Planning, Housing and Infrastructure have issued Secretary's Environmental Assessment Requirements (SEARs) for the Project, with the traffic and transport matters listed within Table 1 along with the relevant response to each matter.

Table 1: Traffic and Transport SEARs and Responses

SEARs	Response
An assessment of the peak and average traffic generation, including light vehicles, shuttle buses, heavy vehicles and high risk heavy vehicles requiring escort and construction worker transportation.	The assessment presented within Section 4 indicates the road network is expected to continue to operate with acceptable conditions during peak and average construction periods. The highest level of traffic is expected to be generated during the peak construction period when staff arrive and depart Project Area at the start and end of the day. In order to determine the traffic impact generated during the construction of the Project, an analysis of the Brayton Road/Canyonleigh Road intersection has been completed using SIDRA modelling software. Overall, the intersection is expected to continue to operate within acceptable limits and it is concluded that the road network is able to accommodate the traffic generated by the development during the construction period. During the middle of the day the traffic movements are expected to be predominantly associated with heavy vehicles, with approximately five vehicles per hour. This increase in traffic can be readily accommodated on the road network given the existing low traffic volumes and the road network. It is anticipated that one high-risk oversize/overmass vehicle would access the Project Area during construction. The vehicle would travel outside of the peak periods and would be able to be accommodated on the road network with minimal impacts subject to the proposed road upgrades and maintenance identified within Section 5.2 and Section 10. Suitable road management strategies would also be adopted as part of specific permits that would be applied for prior to construction.

SEARs	Response
An assessment of the likely transport impacts to the site access route(s) including the above listed vehicles, site access point(s), any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance.	The Applicant has advised that Port Botany is to be utilised as the origin point for OSOM vehicles including the transformer transport vehicle. In order to determine whether any civil works are required to accommodate the OSOM vehicles on the road network a Route Assessment has been undertaken and is provided in Appendix A. The assessment identified that the vehicles are able to access the Project Area subject to minor areas of hardstand, temporary sign relocations, and traffic management measures. OSOM vehicle movements would be subject to suitable traffic management measures which would be confirmed through specific permits to be obtained prior to construction. Further information on OSOM vehicles is provided in Section 6. The access arrangements to the Project Area are assessed within Section 8. The access locations have been designed for heavy vehicle movement and provides suitable sight distance in accordance with the Austroads Guide. The haulage route for heavy vehicles arriving from Port Botany is assessed within Section 5. The access route utilises roads that are generally designated for B-Double vehicles as outlined within the NHVR Restricted Access Vehicle Map. A review of the existing road safety data and casualty crash history is provided within Section 2.6, which indicates that the road network is operating in a relatively safe manner.
A cumulative impact assessment of traffic from nearby developments (including mining operations).	The assessment presented within Section 4.1.5 provides a review of the cumulative impacts of the Project along with other major projects within the surrounding area. The assessment identifies some projects are expected to generate additional vehicle movements on the Hume Highway, Brayton Road, and Canyonleigh Road. The review indicates that three nearby projects may have a cumulative traffic impact on the Project based on the information available at the time of assessment.
Provide details of measures to mitigate and / or manage potential impacts (developed in consultation with the relevant road authorities) including: - A schedule of all required road upgrades (including resulting from heavy vehicle and over mass / over dimensional traffic haulage routes), - Clear figures of proposed road upgrades (including the site access point); and - Road maintenance contributions, and any other traffic control measures.	In order to mitigate the impacts of the Project during construction a TMP should be prepared to outline traffic management measures in order to ensure the construction traffic would have a minimal impact to the capacity and safety of the surrounding road network. The TMP should be finalised post-approval and prior to the construction of the Project. The adoption of the mitigation measures outlined within the TMP would ensure construction traffic has a minimal impact on the capacity and safety of the surrounding road network. In addition to the traffic management measures, it is proposed to provide road upgrades as part of the Project which are to be constructed prior to construction commencing. A schedule of the road upgrades is provided in Section 10.1.

This Traffic Impact Assessment has also been prepared in response to the Agency Advice provided by Transport for New South Wales (TfNSW). Responses to each of the comments provided within the Agency Advice are outlined within Appendix B.

1.3 Road/Rail Authority Consultation

This Traffic Impact Assessment has been undertaken in consultation with TfNSW and Goulburn Mulwaree Council, with a summary provided in Table 2.

Table 2: Road Authority Consultation

Road Authority	Method	Correspondence
Transport for NSW	Email sent 25/03/2025 Reply received 14/04/2025	Email sent to TfNSW providing an overview of the Project, access points, potential access routes for construction traffic, and expectations of road upgrades. A response was received from TfNSW which is summarised below: - A yearly traffic growth rate of 2.0% is to be applied to background traffic. - To contact TfNSW regarding planned road upgrades closer to lodgement. - Refer to the TfNSW crash database to review road safety issues. - Ensure assessments for vertical and horizontal clearances (including bridge heights), and bridge assessments (including mass) are undertaken for OSOM vehicles. - Refer to TfNSW Agency Advice on SEARs.
	Meeting 23/07/2025	A summary of the application was provided to TfNSW and the proposed OSOM haulage route. No further items were raised by TfNSW in addition to the Agency Advice and previous email correspondence.

Road Authority	Method	Correspondence
Goulburn Mulwaree Council	Email sent 25/03/2025 Reply received 14/04/2025	Email sent to Council providing an overview of the Project, access points, potential access routes for construction traffic, and expectations of road upgrades. A response was received from Council which is summarised below: - Brayton Road and Ambrose Road are utilised by Gunlake Quarry (705 Brayton Road) as a haulage route to the Hume Highway. Gunlake Quarry has lodged a Quarry Continuation Project (SSD-12469087) – Modification Report (MOD2) for an increase in truck movements along their nominated haulage routes. In particular note the access route for return vehicles from the Hume Highway via Ambrose Road, rather than via Brayton Road in Marulan and the limited use of the southern haul route along Brayton Road. The TIA clearly needs to provide a breakdown of vehicles in the construction and operation phases, both for workers and equipment, and provide assessment of these traffic volumes on the existing road network. OSSM movements need to be identified and include details of impacts on bridges and culverts and provide swept path analysis at intersections (including at the site access) - A dilapidation report will be required on all roads utilised. Council's requirements would normally form part of Council's submission to the EIS exhibition but can be discussed further once details of proposed traffic types and volumes are obtained and a likely construction start date is known. - Gunlake Quarry has a requirement to upgrade culverts along Brayton Road and Ambrose Road. These are detailed in their MOD2 report. - No major events are planned along the transport route to the Hume Highway at this point in time. - The Scoping Report identifies a number of SSDs in the area and Cumulative Impacts. Cleary Bros Marulan Quarry (SSD 77991709) is located on Carrick Road and is in the Prepare EIS stage. - The Gunlake Quarry haul route is a constant road safety matter due to the truck haulage along a route that has a number of horizontal and/or vertical curves that limit sight distance. Brayton Road west of the Gunlake Quarry entrance may require widening. Canyonleigh Road is a local unsealed road, and the TIA should provide detail on measures to reduce dust, and noise impacts and provide an assessment of traffic safety. There is a culvert at 3.24 km along Canyonleigh Road that appears to be in good condition, but its load limit is undetermined. - Information regarding school bus routes operating in the area were provided.

1.4 Purpose of Document

This Traffic Impact Assessment has been prepared to assess the construction, operational and decommissioning traffic impacts, and the access arrangements of the Project. The assessment responds to the SEARs and details how road impacts of the Project traffic, particularly from heavy vehicle use and oversize and overmass vehicles, would be avoided or managed using road-use management strategies.

More specifically, the report addresses the following key matters:

- Details of both light and heavy vehicle traffic volumes and proposed transport routes.
- An assessment of the potential traffic impacts of the Project on road network function and safety.
- An assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the Project.
- Details of measures to mitigate and/or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control dust generated by traffic volumes.
- Details of access roads and how these connect to the existing road network and ongoing operational maintenance.

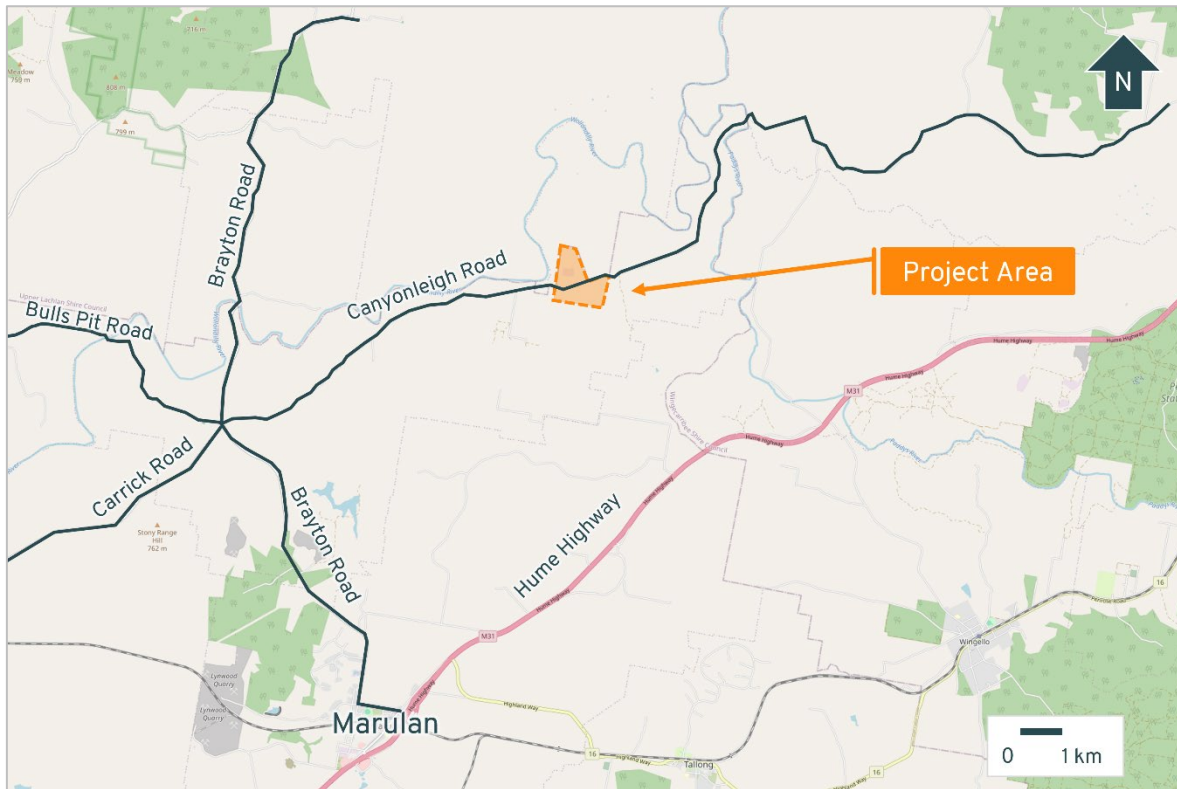
The traffic assessment has been undertaken in accordance with the *TfNSW Guide to Transport Impact Assessment* and relevant Austroads Guidelines.

2. Existing Conditions

2.1 Project Location

The Project is located at 962 Canyonleigh Road, Brayton, across Lot 2341 DP662834 and Lot 12 DP727493 on both the north and south side of Canyonleigh Road approximately 12km northeast of the township of Marulan. Figure 2 shows the location of the Project in relation to the surrounding transport network.

Figure 2: Site Location



Source: Open Street Map

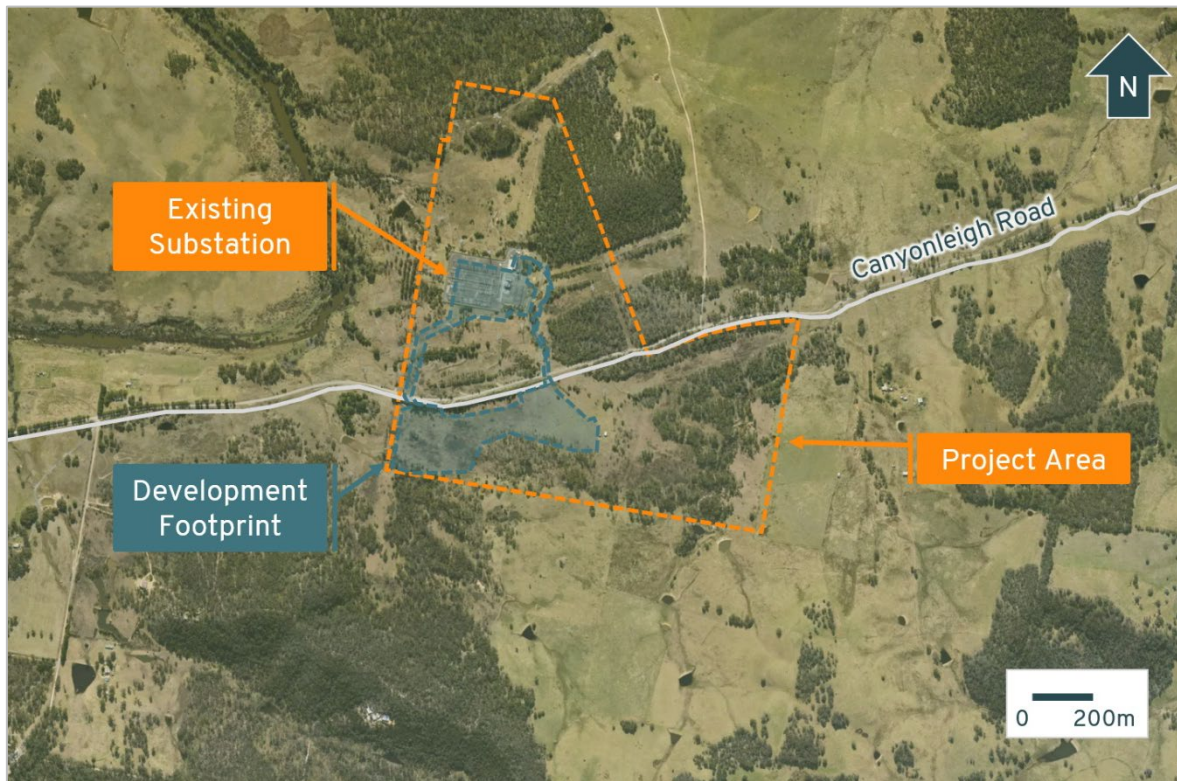
Figure 2 shows the Project Area is well connected with the surrounding State Road network via the Hume Highway, which can be accessed via Canyonleigh Road and Brayton Road. The Project is located entirely within the Goulburn Mulwaree LGA.

The Project Area and surrounding land are zoned *RU2 – Rural Landscape* and are primarily occupied by agricultural or vegetated land. There is an existing substation within the Project Area located on the north side of Canyonleigh Road.

The Project has a development footprint of approximately 21.60 ha. There is existing vehicle access to the substation on the north side of Canyonleigh Road.

Figure 3 provides an aerial photograph of the Project Area. Figure 3 shows that the Project Area and surrounding area are occupied by agricultural land use.

Figure 3: Aerial Photograph



Source: MetroMap

2.2 Road Network

Canyonleigh Road is a Council road that runs in a general northeast-southwest alignment for approximately 30 kilometres between Brayton Road in the west and the Hume Highway in the east. Canyonleigh Road is sealed for approximately 600 metres from the intersection with Brayton Road in its western section, and between the Hume Highway and the township of Canyonleigh in its eastern section. The remaining sections of Canyonleigh Road are unsealed. The speed limit along Canyonleigh Road varies between 60-80km/hr.

Between Brayton Road and the Project Area, the carriageway is generally unsealed with a width of 6.0-7.0 metres, which allows for simultaneous two-way vehicle movement. There is a gate on Canyonleigh Road located towards the eastern boundary of the site which is closed to control livestock.

Brayton Road is a Council road that runs in a general north-south alignment between Hawthorn Road in the north and the Hume Highway in the south. It has a typical carriageway width of approximately 6.0 metres which allows for one lane of traffic in each direction. A speed limit of 80km/hr applies, which reduces to 50km/hr within the township of Marulan.

The intersection of Brayton Road/Canyonleigh Road is complex with three roads accessed from Brayton Road within 50 metres. The side roads, including Canyonleigh Road, are controlled by Give Way signage and linemarking with priority given to vehicles travelling on Brayton Road.

Hume Highway is a State Road under the care and management of TfNSW. It runs in a general northeast-southwest alignment for approximately 840 kilometres between Sydney and Melbourne (including sections known as Hume Freeway and Hume Motorway). It typically has a speed limit of 110km/hr and a divided carriageway which accommodates two lanes of traffic with sealed shoulders on both sides.

2.3 Traffic Volumes

Amber commissioned traffic surveys of the local road network surrounding the Project to establish the existing traffic conditions. The surveys included a turning movement count the intersection of Brayton Road/Canyonleigh Road and a 7-day tube count of Canyonleigh Road adjacent to the Project. The survey locations can be seen in Figure 4.

Figure 4: Traffic Survey Locations

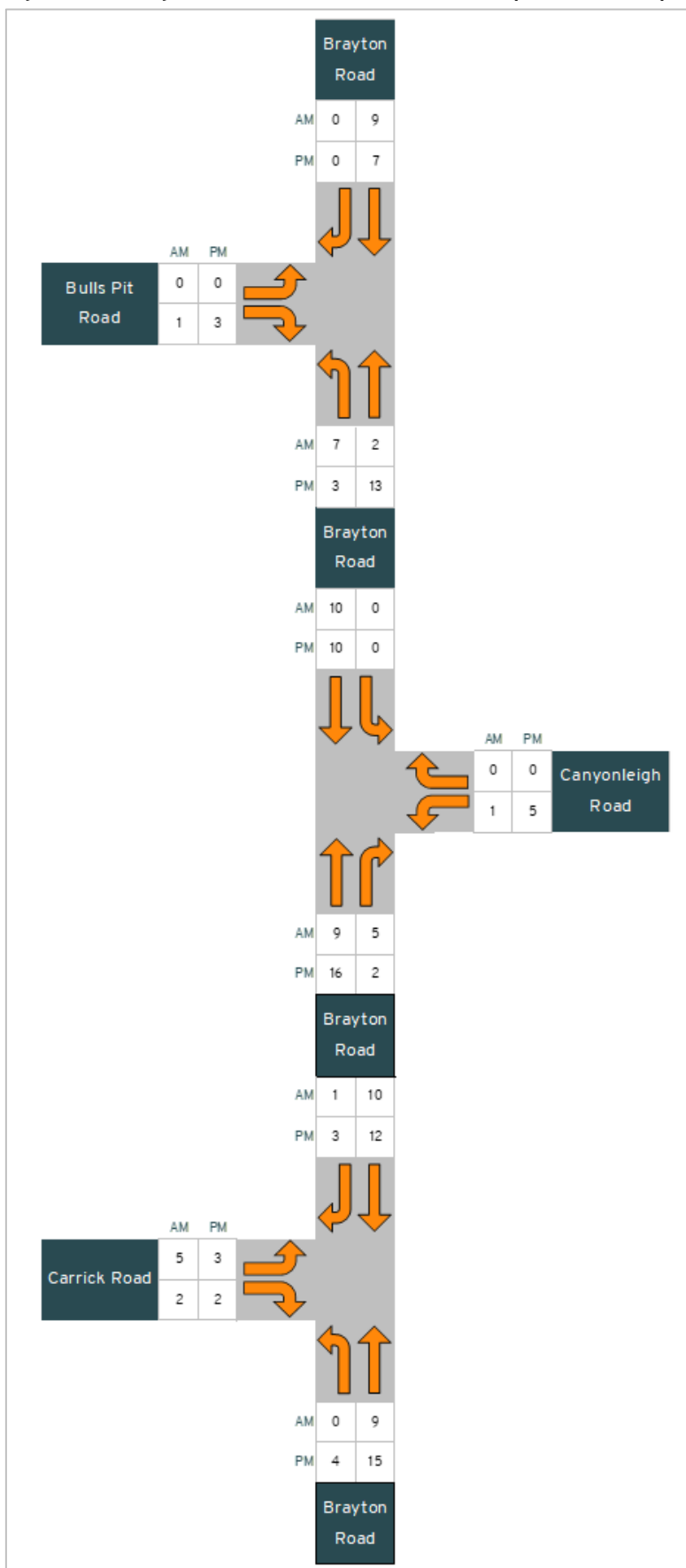


Source: Open Street Map

2.3.1 Turning Movement Count

A turning movement count survey was completed at intersection of Brayton Road/Canyonleigh Road on Thursday 20 March 2025 between 6:00am-10:00am and 2:30pm-7:00pm. A summary of the survey results are presented in Figure 5 with the full data provided at Appendix C.

Figure 5: Turning Movement Count Peak Hour Survey Results – Brayton Road/Canyonleigh Road



The survey results indicate the intersection currently carries a low level of traffic in the order of 55 and 64 vehicles in the morning and evening peak hours, respectively¹. The morning peak hour was recorded from 7:45am to 8:45am and the evening peak hour was recorded from 3:45pm to 4:45pm.

The majority of vehicle trips during the morning and evening peak periods are through movements on Brayton Road. A total of six (6) and seven (7) vehicles were recorded on Canyonleigh Road in the morning and evening peak hours, respectively. Overall, the results indicate that Canyonleigh Road carries a very low level of traffic in the peak periods under existing conditions.

2.3.2 Mid-block Volumes

A tube count survey was completed for Canyonleigh Road over a 7-day period between Thursday 20 March to Thursday 27 March 2025 and provides data of the existing traffic volumes and speeds over a typical week. The survey results are summarised in Table 3, with the full data provided at Appendix D.

Table 3: Canyonleigh Road Traffic Volumes – 9.3km east of Brayton Road

	Weekday Traffic (vpd)	Weekday AM Peak - 09:00 (vph)	Weekday PM Peak - 12:00 (vph)	85 th Percentile Speed	Heavy Vehicle Percentage
Eastbound	11	2	1	72.4 km/hr	7.1%
Westbound	8	1	1	60.3 km/hr	7.7%
Both Directions	19	3	2	65.3 km/hr	7.4%

The survey data indicates the 85th percentile speed of vehicles is lower than the speed limit of 80km/hr and the road accommodates a low proportion of heavy vehicles. Overall, the survey results indicate Canyonleigh Road currently accommodates a very low level of traffic.

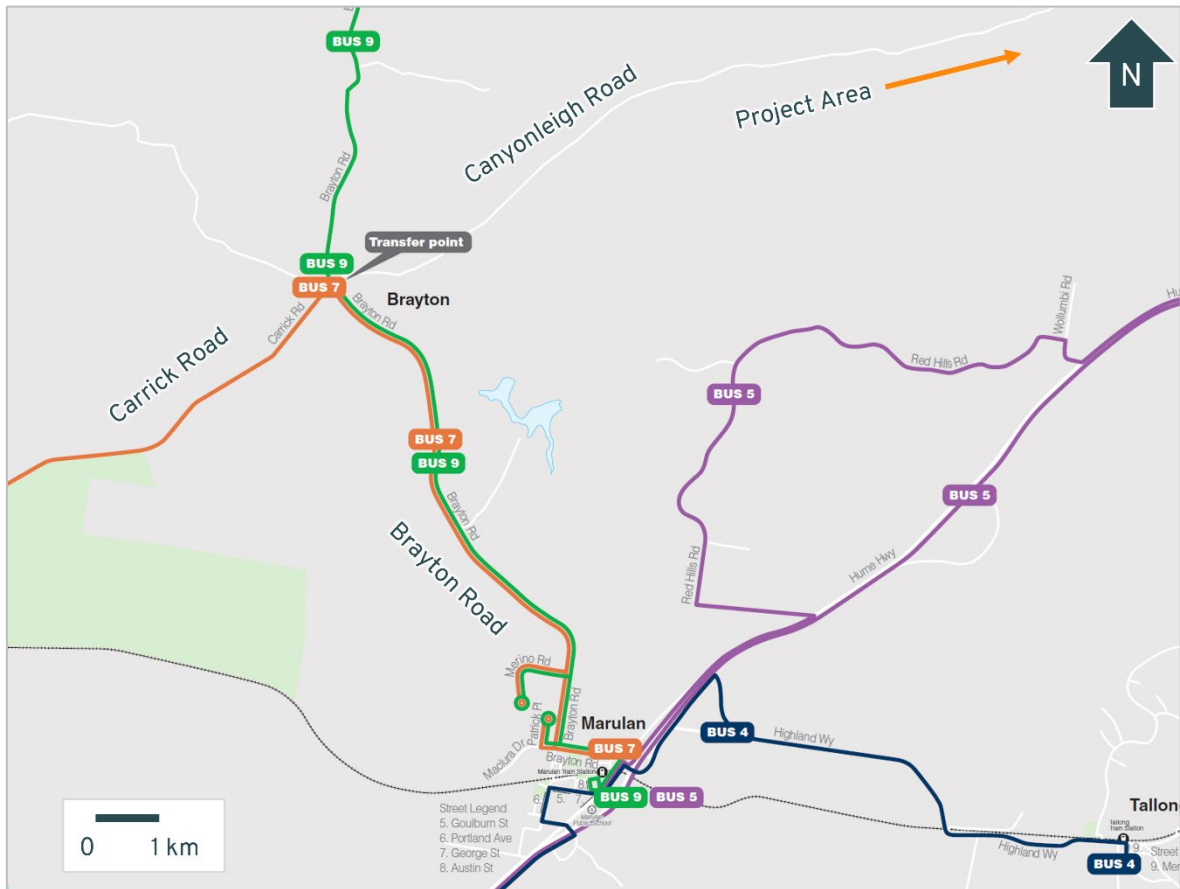
2.4 Public Transport Services

No public transport services have been identified as operating along Canyonleigh Road or Brayton Road in the vicinity of the Project Area. Marulan Train Station is located approximately 11km southwest of the Project and provides services on the Southern Highlands Line (SHL) which operates between Goulburn and Sydney.

PBC Goulburn operate school bus services in the area as shown in Figure 6. The services run in the morning and afternoon and travel along Brayton Road between Canyonleigh Road and Marulan between approximately 7:30am-9:00am and 3:00pm-4:30pm.

¹ It is noted that U-turn movements have been removed from Figure 5 as these movements were low/negligible.

Figure 6: School Bus Routes



Source: PCB Goulburn Bus Service

The details of the school bus services operating in the area are outlined in Table 4.

Table 4: School Bus Services

Route No.	Route Name	Services	Schedule / Project overlap
Bus 4	Marulan –Tallong	School days only	Operates between 7:35am and 8:51am in the mornings and between 3:15pm and 4:50pm in the afternoons. Potential overlap with Project traffic along Hume Highway and in Marulan.
Bus 5	Marulan South – Goulburn Schools	School days only	Operates between 7:17am and 8:54am in the mornings and between 3:15pm and 4:55pm in the afternoons. Potential overlap with Project traffic along Hume Highway and in Marulan.
Bus 7	Carrick Feeder Service	School days only	Operates between 7:40am and 9:00am in the mornings and between 3:05pm and 4:35pm in the afternoons. Potential overlap with Project traffic along Brayton Road and in Marulan.
Bus 9	Big Hill Feeder Service	School days only	Operates between 7:12am and 8:50am in the mornings and between 3:25pm and 4:50pm in the afternoons. Potential overlap with Project traffic along Brayton Road and in Marulan.

2.5 Restricted Vehicle Access

2.5.1 B-Doubles

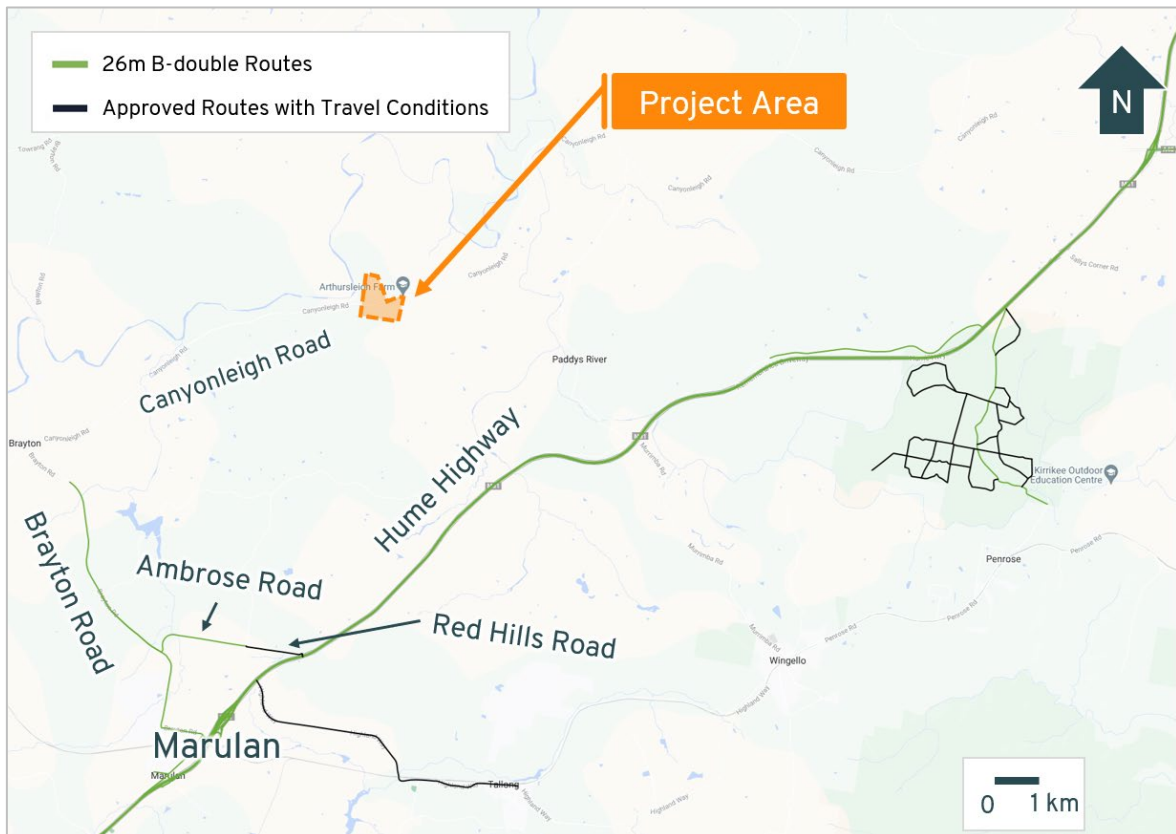
The National Heavy Vehicle Regulator (NHVR) Restricted Access Vehicle Map for the surrounding area is provided within Figure 7. The green lines indicate approved B-Double routes while the black lines represent approved routes with travel conditions.

The following condition applies to Red Hills Road, noting that Project traffic is not proposed to travel on this road:

No right turn in from Hume Highway or right turn out onto Hume Highway

Figure 7 shows that Hume Highway and a section of Brayton Road are approved routes for 25/26 metre B-Double vehicles. However, the northern section of Brayton Road and Canyonleigh Road are unrated and would require approval from Goulburn Mulwaree Council for use by B-Doubles.

Figure 7: NHVR 25/26m B-Double Network Approved Roads



Source: NHVR Restricted Access Vehicle Map

2.5.2 Class 1 OSOM Vehicles

The NHVR Oversize Overmass Load Carrying Vehicles Network map for the surrounding area is provided within Figure 8. The map shows approved routes for eligible vehicles operating under the Multi-State Class 1 Load Carrying Vehicles Mass and Mass Exemption Notices. A summary of the allowances under each exemption within New South Wales notice is provided below:

- Dimension: up to 5.0m wide, 5.0m high, 30.0m long and 7.5m rear overhang on approved (state owned) routes in NSW.
- Mass: up to 115.0 tonnes for rows of 8 tyres low loaders and up to 77.5 tonnes for rows of 4 tyres low loader combinations.

Vehicles operating in the daytime and not exceeding 3.5m wide or 26m long generally do not require a pilot vehicle.

The green lines indicate approved Class 1 OSOM Vehicle routes. Accordingly, the Project Area has access to the Class 1 OSOM approved road network via Hume Highway with Brayton Road and Canyonleigh Road unrated and requiring approval from Goulburn Mulwaree Council.

Figure 8: NHVR Class 1 Oversize Overmass Load Carrying Vehicles Network Approved Roads



Source: NHVR Oversize Overmass Load Carrying Vehicles Network Map

2.5.3 Special Purpose Vehicles (SPVs)

Vehicles built for a purpose other than carrying goods such as a mobile crane, a concrete pump or drill rig are defined as Special Purpose Vehicles (SPVs).

The NSW Special Purpose Vehicle Network map provides details of the approved roads as well as conditions of access and travel restrictions for eligible SPVs operating under the:

- National Class 1 Special Purpose Vehicle Notice;
- NSW Class 1 4-Axle & 5-Axle All Terrain Mobile Crane Mass and Dimension Exemption Notice; or
- NSW Class 1 All Terrain Mobile Crane and Dolly Combination Mass and Dimension Exemption Notice.

Roads that are not approved on the map require an access permit from the National Heavy Vehicle Regulator or the relevant road manager. There are six SPV access networks for cranes travelling on approved State Roads in NSW:

- SPV Level 1: Cranes and SPVs up to 40 tonnes that comply with the Bridge Formula.
- SPV Level 2: Crane and dolly combinations up to 70 tonnes that comply with the Bridge Formula.
- SPV Level 3: 3-axle All Terrain Cranes up to 36 tonnes and 4-axle All Terrain Cranes up to 43 tonnes.
- SPV Level 4: 4-axle All Terrain Cranes up to 45.8 tonnes and 5-axle All Terrain Cranes up to 50 tonnes.
- SPV Level 4 / 12t per axle: 4-axle All Terrain Cranes up to 48 tonnes and 5-axle All Terrain Cranes up to 50 tonnes.
- SPV Level 6: 5-axle All Terrain Cranes up to 60 tonnes.

The approved routes for SPV Level 6 vehicles travelling within the surrounding area are identified within Figure 9. The network map indicates that Hume Highway near the Project and sections of Brayton Road and Ambrose Road are approved for SPV Level 6 vehicles. Red Hills Road is approved subject to the following condition, noting that Project traffic is not proposed to travel on this road:

No right turn in from Hume Highway or right turn out onto Hume Highway

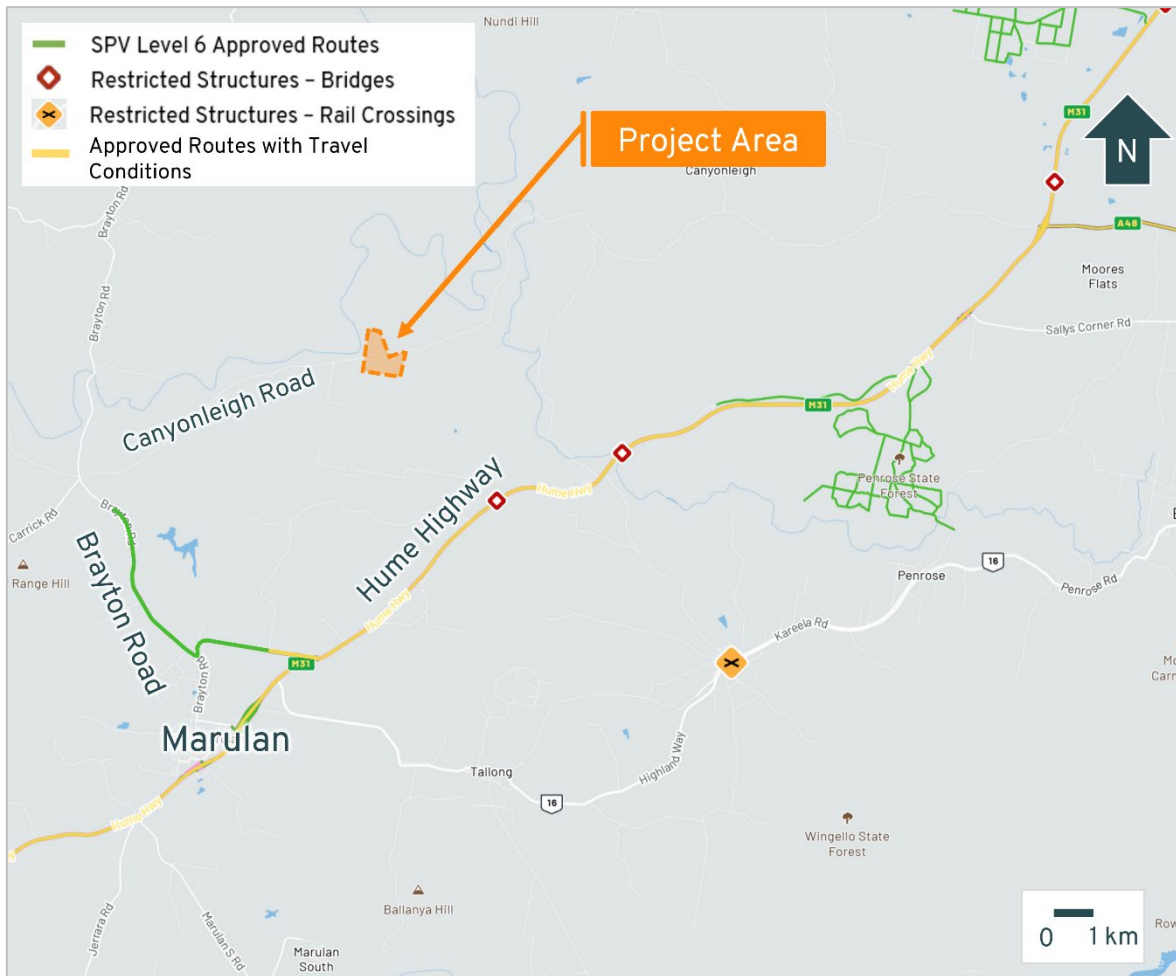
The northern section of Brayton Road and Canyonleigh Road are unrated and require approval from Goulburn Mulwaree Council.

Some approved routes for SPV classified vehicles are limited due to restricted structures (bridges) and rail level crossings on the network in the surrounding area, including:

- Bridge on Hume Highway over Black Bob's Creek at Sutton Forest, approximately 21 kilometres northeast of the Project Area restricted for SPV Level 6.
- Bridge on Hume Highway over Paddy's River, approximately 9 kilometres southeast of the Project Area restricted for SPV Level 6.
- Bridge on Hume Highway over Uringalla Creek, approximately 7 kilometres southeast of the Project Area restricted for SPV Level 4 and above.
- Bridge on Hume Highway over Narambullia Creek at Marulan, approximately 18 kilometres southwest of the Project Area restricted for SPV Level 6.

- Bridge on Hume Highway over Boxers Creek at Boxers Creek, approximately 26 kilometres southwest of the Project Area restricted for SPV Level 6.

Figure 9: NHVR SPV Level 6 Network Approved Roads



Source: NHVR Special Purpose Vehicle Access Map

2.6 Crash History

Amber has conducted a review of the TfNSW Centre for Road Safety Crash and Casualty Statistics database for all injury crashes within the surrounding area of the Project. The crash database provides the location and severity of all injury and fatal crashes for the five-year period from 2019 to 2023. The search area included the following roads:

- Canyonleigh Road between Brayton Road and 2km east of the Project Area,
- Brayton Road between Canyonleigh Road and George Street in Marulan, and
- All respective intersections.

The results of the crash search are summarised in Table 5.

Table 5: Casualty Crash Summary

Road	Location	Severity	Crash Type	Date and Time	Light and Weather Conditions
Brayton Road	150m East of Ambrose Rd	Fatal	Off road to the right on left bend	January 2022 (18:00 - 19:59)	Daylight (Fine)
	200m East of Ambrose Rd	Moderate Injury	Other curve crash	November 2021 (18:00 - 19:59)	Dusk (Fine)
	2km South of Bulls Pit Rd	Minor/Other Injury	Rear end (vehicles in same lane)	October 2021 (12:00 - 13:59)	Daylight (Fine)
	100m North of Canyonleigh Rd	Serious Injury	Off road to the left, hitting object	June 2021 (18:00 - 19:59)	Darkness (Fine)
Carrick Road	4km South of Carrick Rd	Moderate Injury	Struck animal	October 2020 (08:00 - 09:59)	Daylight (Fine)
	20m South of Brayton Rd	Moderate Injury	Off road to the right, hitting object	August 2021 (10:00 - 11:59)	Daylight (Fine)

The search revealed a total of six crashes within the review area including one fatality. The crashes were typically at different locations, with two crashes occurring at the intersection of Brayton Road/Canyonleigh Road.

Of the crashes recorded, four were 'off road' type crashes. Accordingly, there is a crash type trend for vehicles leaving the road (67% of crashes). The fatality is considered to be an isolated event and not an inherent safety issue with the road network.

Given the large search area, the associated traffic volumes on the roads, the road classifications, and the rural high-speed nature of the area, it is concluded that the road network is currently operating in a relatively safe manner.

3. Project Description

3.1 Proposed Works

The Project involves the construction, operation, maintenance and decommissioning of a BESS and associated infrastructure, including:

- Large-scale BESS with a storage capacity of up to 300 MW / 1,200 MWh.
- Electrical reticulation infrastructure, including an on-site substation, switching station, and internal transmission and feeder lines.
- Permanent associated and ancillary infrastructure.
- Temporary construction facilities.

The Project proposes to connect to the national grid via the existing Transgrid Marulan Substation, which sits at the junction of several 300 kV and 132 kV transmission lines. Table 6 and Figure 10 to Figure 17 summarises the key indicative Project components and specifications.

Table 6: Project Summary - Components and Specifications

Component	Specification
BESS	One BESS with 300 MW / 1,200 MWh storage capacity. Located on Lot 2341 DP 622834 and Lot 12 DP 727493.
Electrical Reticulation Network	The Project will connect to the existing Transgrid 330 kV Marulan Substation located on Lot 2341 DP 622834. New proposed step-up substation will connect from 33 kV to 330 kV underground feeder/connection line, which leads to existing Marulan substation.
Access	The Project will be accessed via three site access points, located on Canyonleigh Road.
On-site Supporting Infrastructure	Temporary construction and laydown area Permanent Operations & Maintenance (O&M) facility including: • A control room • Storage facilities • Supervisory Control and Data Acquisition (SCADA) facilities • Car parking • Basic office and associated amenities • Utilities and waste facilities New and/or upgraded internal access roads New and/or upgraded drainage system Security fencing and lighting

Component	Specification
Off-site Supporting Infrastructure	Waste and wastewater disposal facilities
	Existing communications network
	Existing transport network and minor roadworks, including: - Canyonleigh Road between the intersection with Brayton Road and the site access will be resurfaced where required and in consultation with Goulburn Mulwaree Council - Brayton Road / Canyonleigh Road intersection will require a Basic Right Turn treatment to access Canyonleigh Road from Brayton Road, including a temporary hardstand and temporary signage relocation - Installation of sealed hardstand and mountable kerb at the intersection of Botany Road / Bunnerong Road (Matrville, NSW)
	Quarries for construction material (as required)

3.2 Construction Information

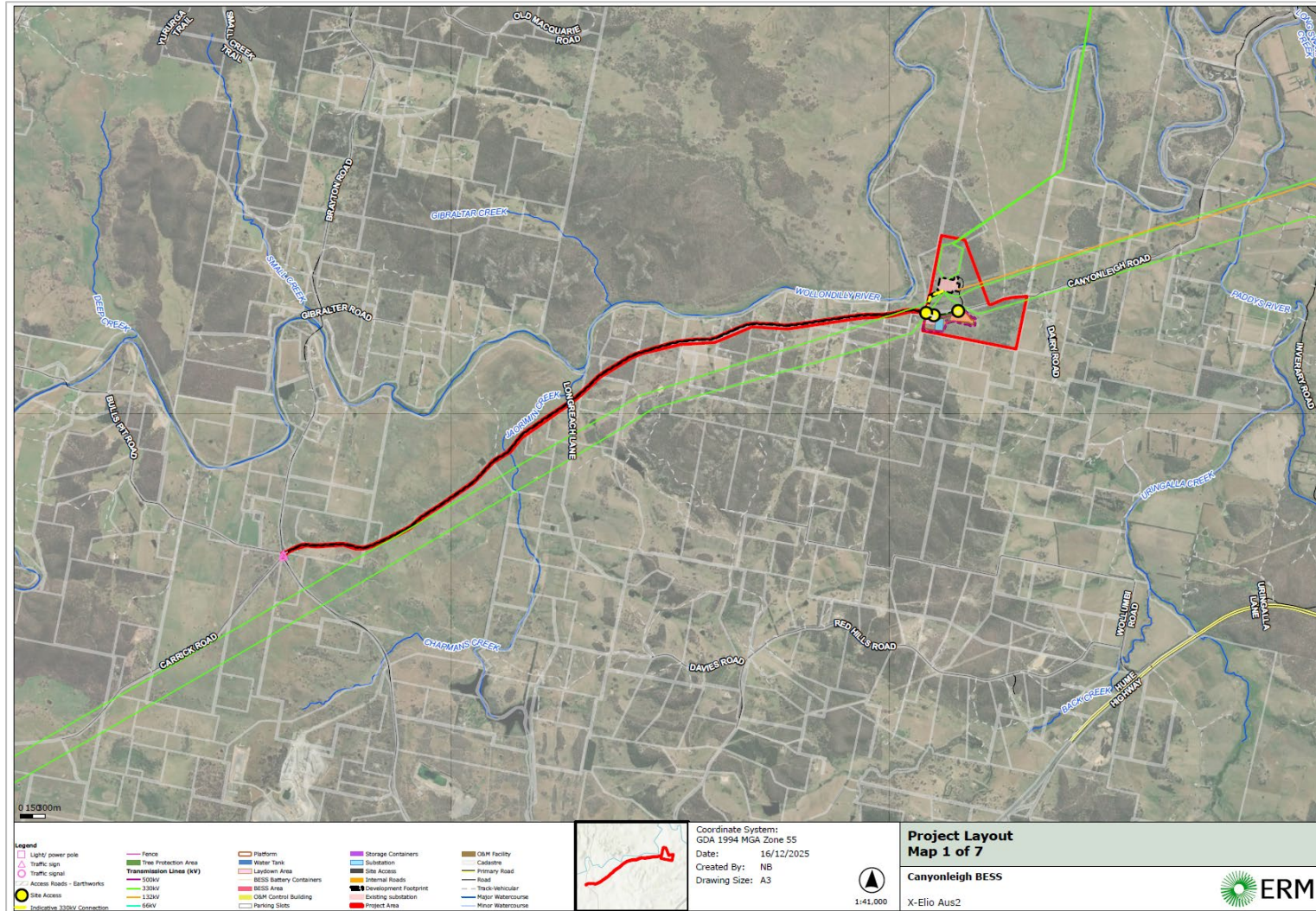
The physical construction of the Project is expected to commence in 2026 and take approximately 18 months, with the peak construction period expected to take 6 months. Construction activities would be undertaken during standard daytime construction hours, as follows:

- Monday to Friday: 7am – 6pm
- Saturday: 7am – 1pm
- No work on Sundays or public holidays.

Any construction outside of these normal working hours would only be undertaken with prior approval from relevant authorities and consultation with impacted road users. A construction workforce of up to 100 personnel would be on-site during the peak construction phase and would primarily be drawn from Goulburn, Yass and Canberra.

A Traffic Management Plan (TMP) would be prepared prior to construction commencing as outlined in Section 9.

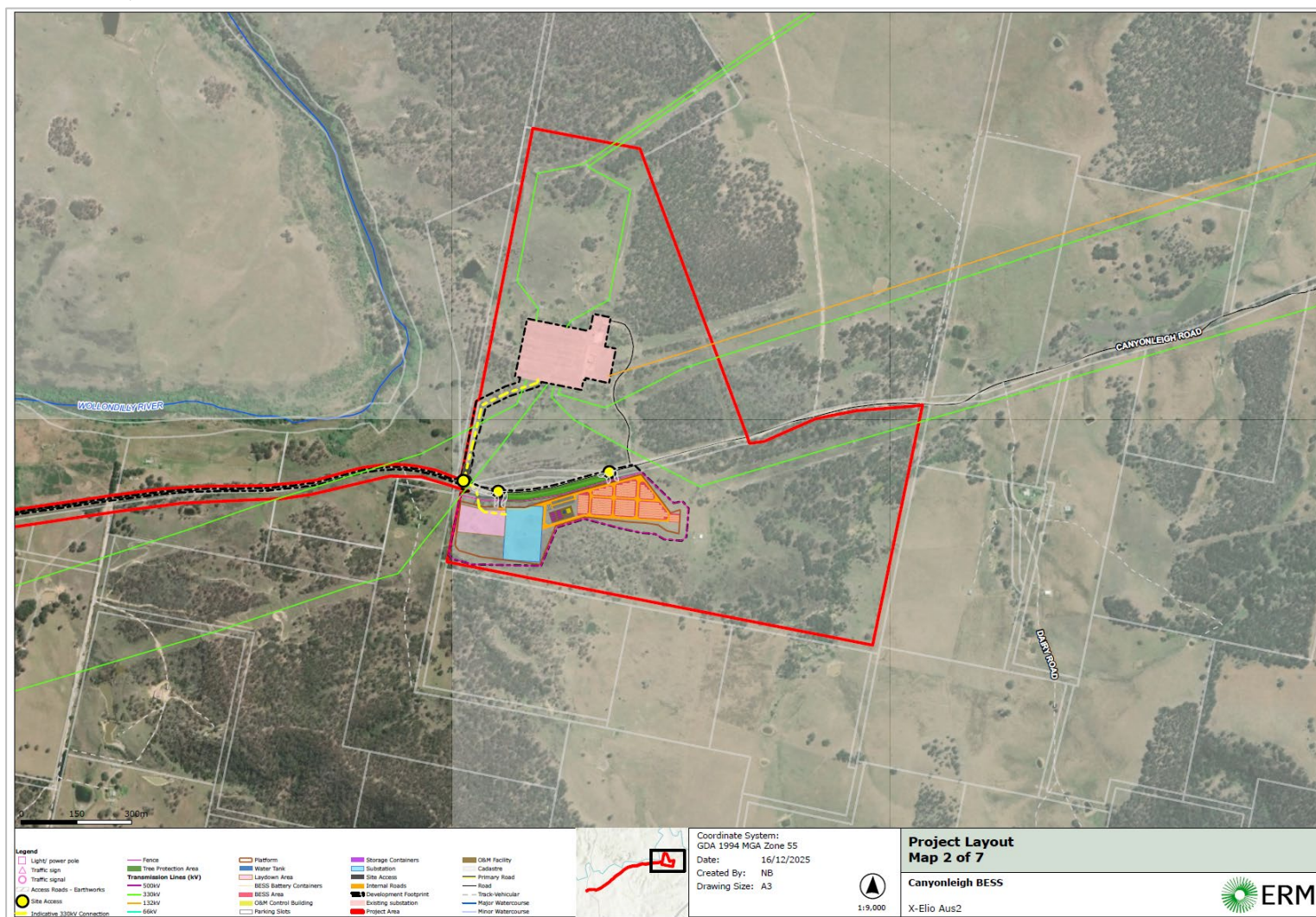
Figure 10: Project Layout - Map 1 of 7



Source: ERM



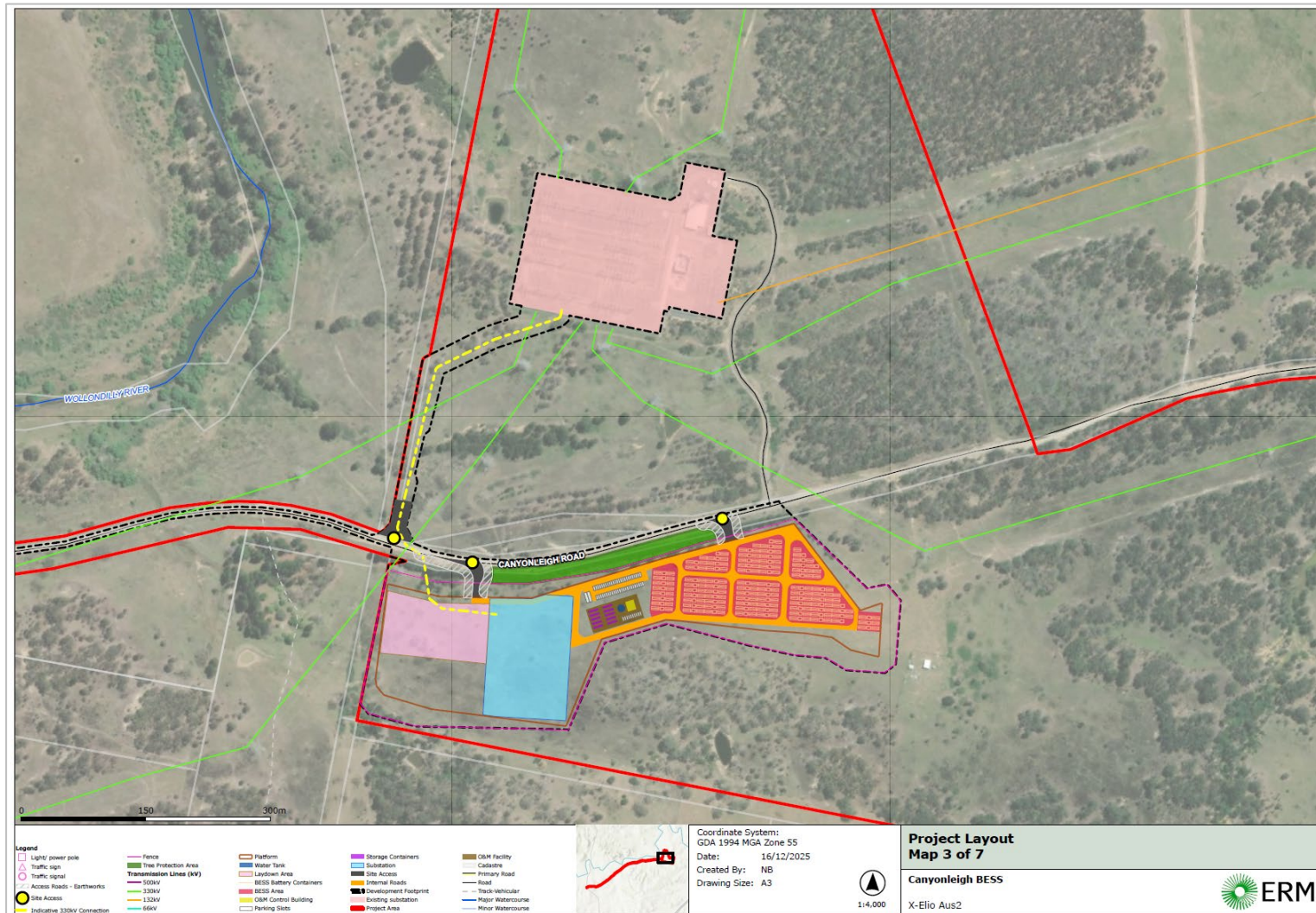
Figure 11: Project Layout - Map 2 of 7



Source: ERM



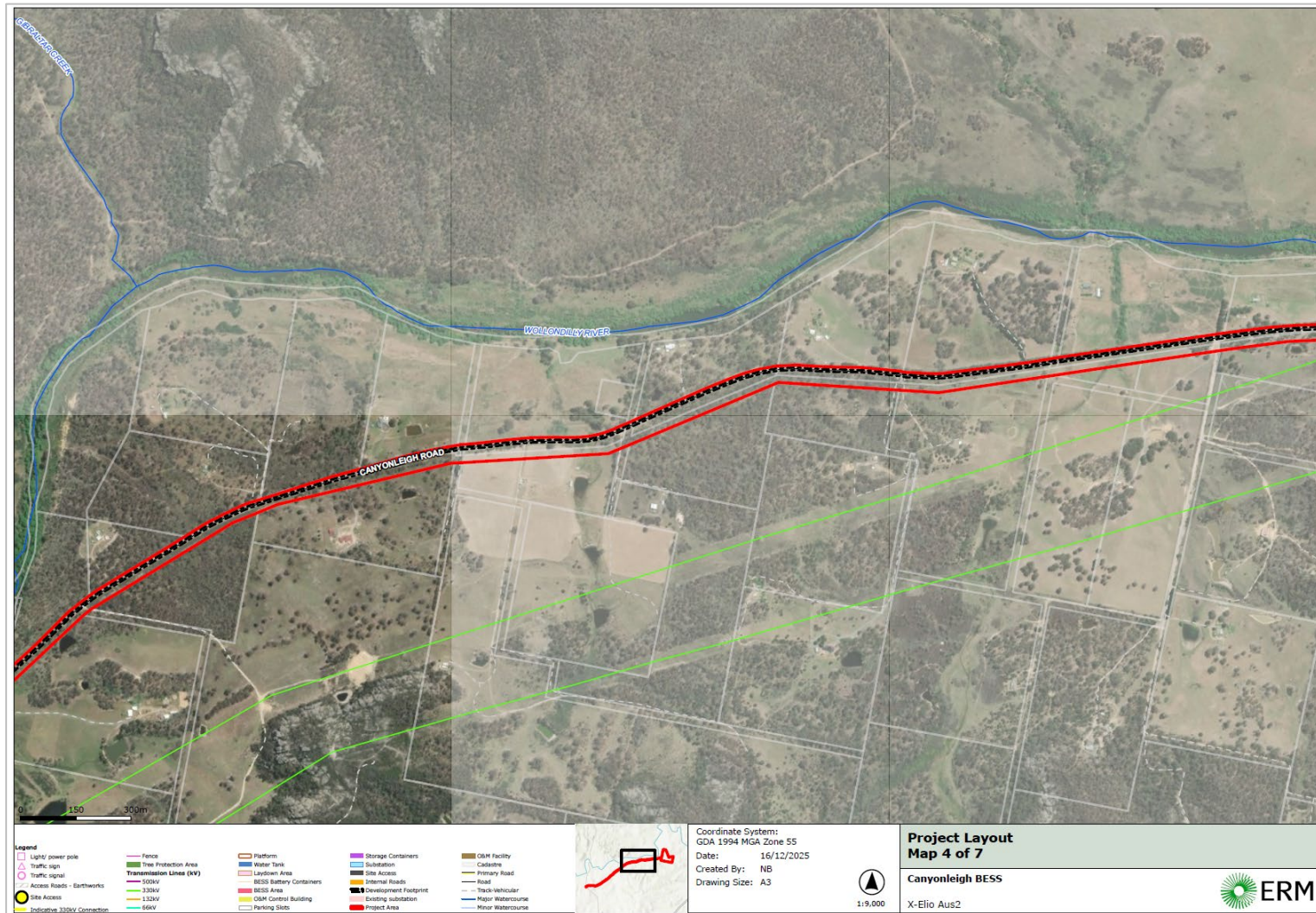
Figure 12: Project Layout - Map 3 of 7



Source: ERM



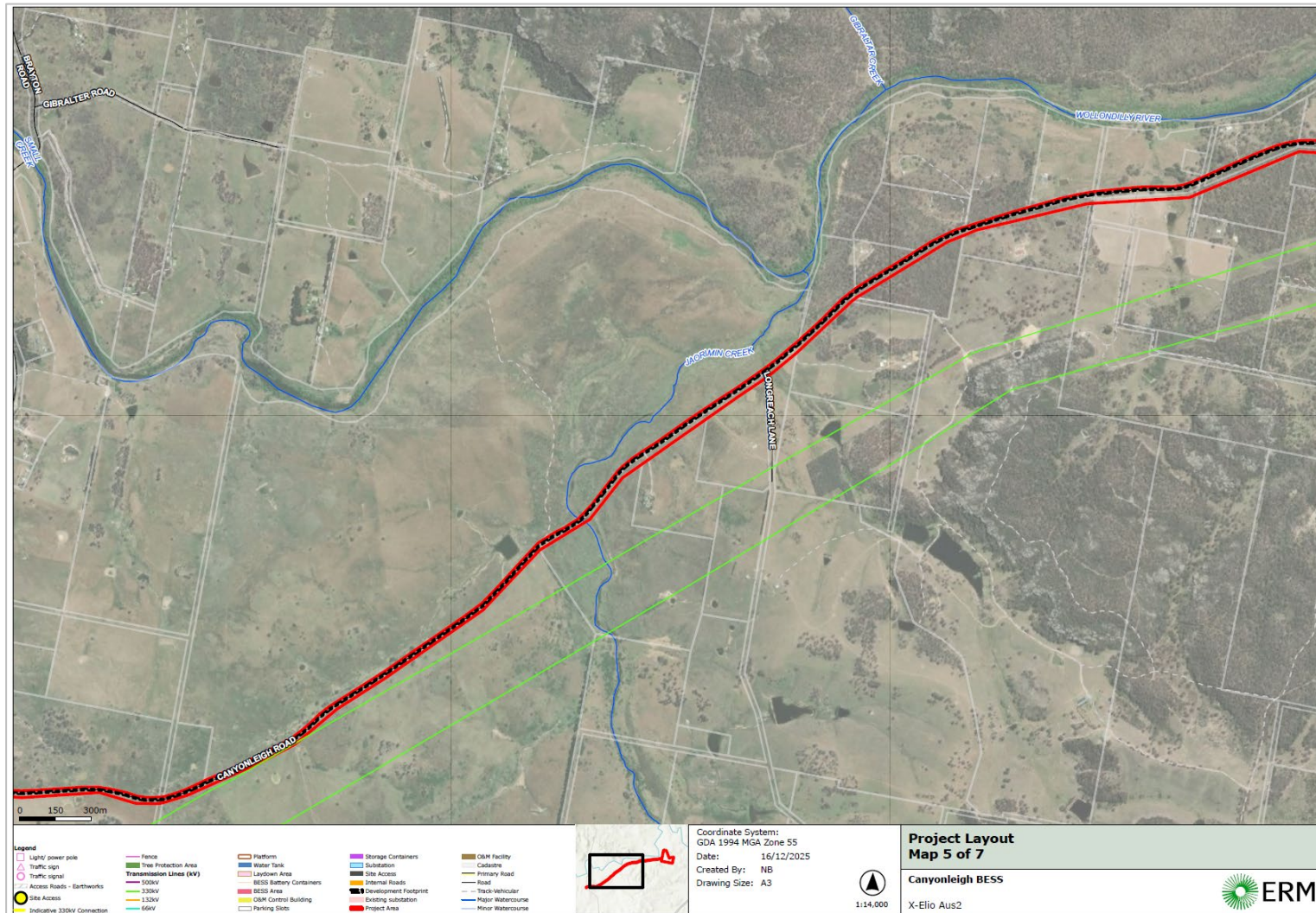
Figure 13: Project Layout - Map 4 of 7



Source: ERM



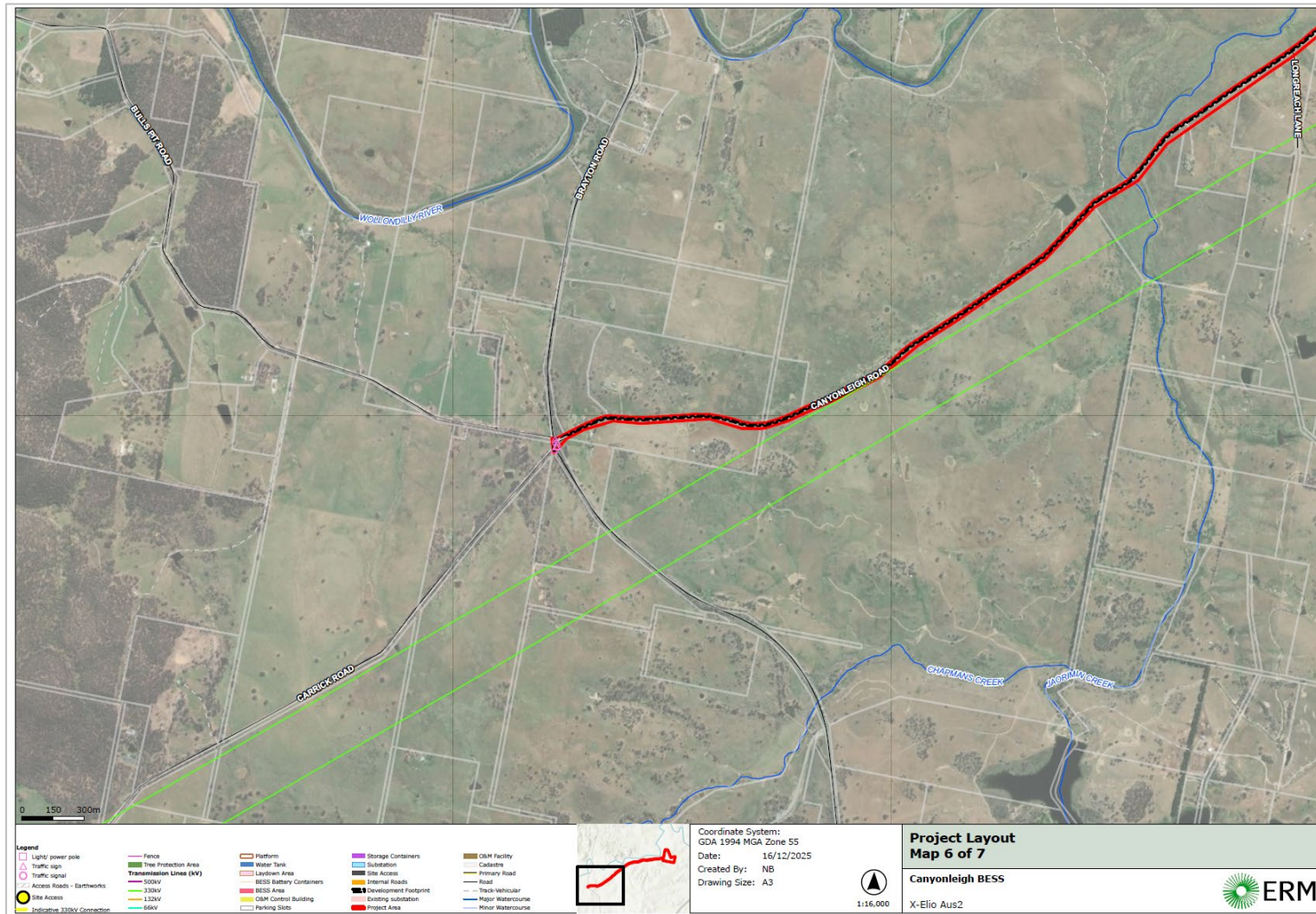
Figure 14: Project Layout - Map 5 of 7



Source: ERM



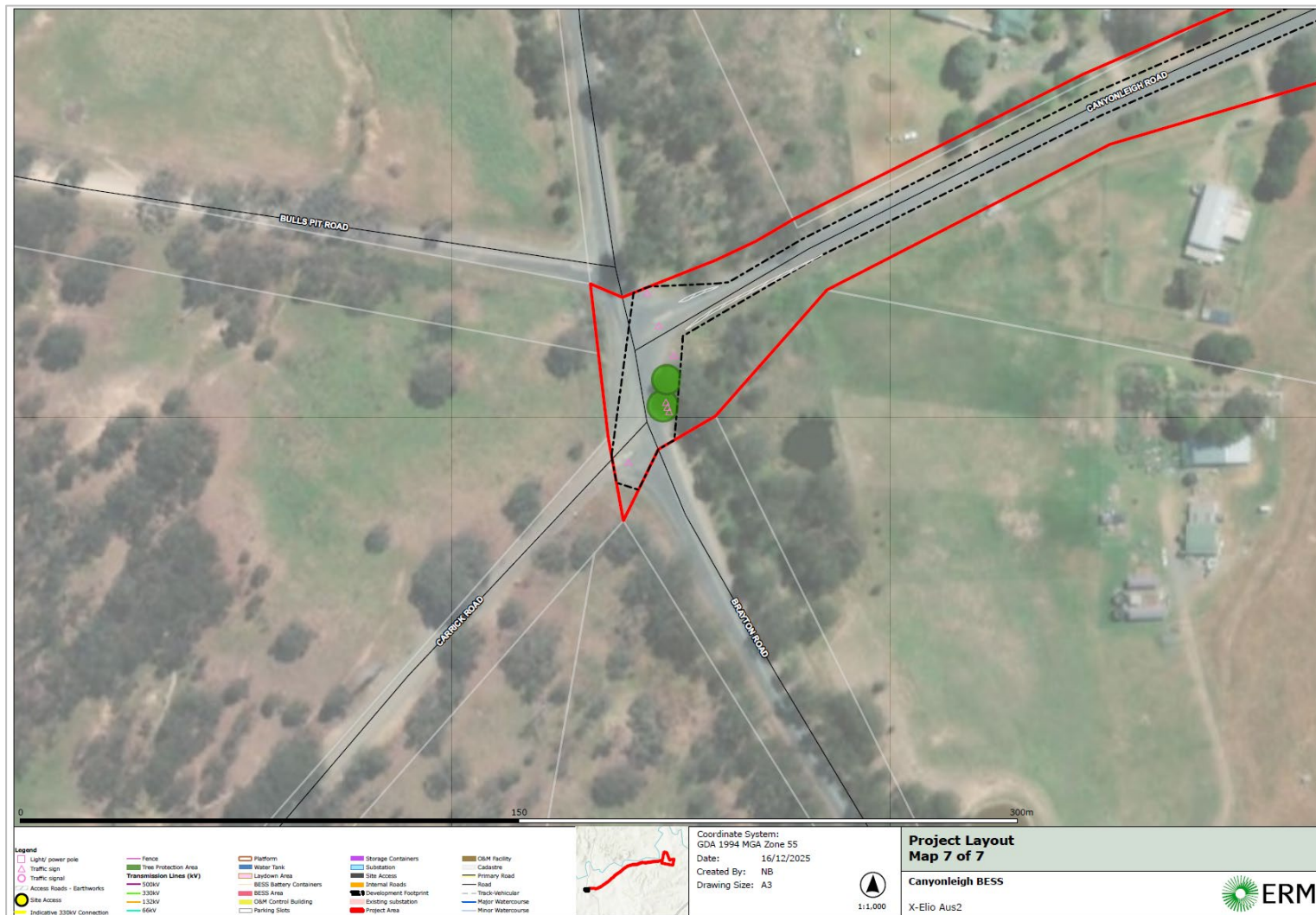
Figure 15: Project Layout - Map 6 of 7



Source: ERM



Figure 16: Project Layout - Map 7 of 7



Source: ERM



Figure 17: Road Upgrades – Botany Road and Bunnerong Road Intersection



Source: ERM



4. Traffic Assessment

Traffic generated by the Project can be separated into three distinct stages: construction, operation and decommissioning. The peak traffic generating potential is during construction which generates vehicles associated with workers accessing the Project Area and the delivery of raw materials and plant. During operation the Project is expected to generate a lower amount of traffic associated with 3-5 full time maintenance personnel accessing the Project Area on an ad hoc basis (this assessment has considered a worst-case assessment of daily visits). Decommissioning of the Project is anticipated to generate a similar volume of traffic to the construction stage.

The following provides an assessment of the potential traffic impacts of the Project on the road network function for each of the three stages.

4.1 Construction Phase

4.1.1 Standard Construction Traffic Generation

Construction traffic generated by the Project on a day-to-day basis can be broadly separated into the following categories as outlined in Table 7.

Table 7: Construction Traffic

Vehicle	Definition
Light Vehicles	Light vehicles will be associated with transporting the workforce to/from the Project Area. A conservative vehicle occupancy of 1 occupant per car has been adopted to calculate the light vehicle traffic generation noting the workforce would be encouraged to carpool.
Shuttle Buses	The Applicant has advised that shuttle buses will be utilised to transport a portion of the workforce to/from Goulburn and Yass. At total of 50 personnel are expected to use the shuttle buses on a day-to-day basis and each shuttle bus is expected to transport approximately 25 personnel.
Heavy Vehicles (up to 26m long)	
Rigid Trucks	Rigid trucks will be used to deliver raw materials and smaller plant and have a typical length between 8 and 13 metres.
Truck and Dog	Truck and Dog vehicles consist of a rigid truck towing either a dog trailer or a pig trailer and are up to 19 metres in length. A dog trailer is a trailer with axles at either end of the trailer, while a pig trailer has the axles centred on the trailer. These vehicles will be utilised to transport the majority of quarry materials to/from the Project Area.
Semi-trailers	Semi-trailers will be used to transport larger equipment and materials. These vehicles consist of a truck and a single trailer with a total length of 19 metres.
B-doubles	B-doubles will also be used to transport larger plant. B-doubles consist of a truck with two trailers and have a maximum length of 26 metres.

Vehicle	Definition
OSOM not requiring pilot/escort	OSOM vehicles not exceeding 3.5m wide (day time travel) / 3.2m wide (night time travel) or 26m long generally do not require pilot or escort vehicles. This may include various load carrying vehicle combinations and/or Special Purpose Vehicles (including mobile cranes). Eligible vehicles operating under the Multi-State Class 1 Load Carrying Vehicles Mass and Mass Exemption Notices are able to utilise the NHVR Oversize Overmass Load Carrying Vehicles Network outlined in Section 2.5.2.
Heavy Vehicles Requiring Pilot/Escort	
OSOM requiring pilot/escort (excluding High Risk)	OSOM vehicles exceeding 3.5m wide (day time travel) / 3.2m wide (night time travel) or 26m long require at least one pilot or escort vehicle. This may include various load carrying vehicle combinations and/or Special Purpose Vehicles (including mobile cranes). Eligible vehicles operating under the Multi-State Class 1 Load Carrying Vehicles Mass and Mass Exemption Notices are able to utilise the NHVR Oversize Overmass Load Carrying Vehicles Network outlined in Section 2.5.2.
High Risk OSOM requiring pilot/escort	A Transport Management Plan is required in NSW for all OSOM movements that are classified as 'High Risk' due to the vehicle/load dimensions and/or weight, travel on a 'High Risk' route and/or involve the transport of a 'Critical/Sensitive' load. This would include the transport of the main transformer.

The peak hour for construction traffic would occur at the start and end of the day when workers are transported to/from the Project Area. Most workers would typically arrive on-site between 6:00am and 7:00am and depart between 5:00pm and 7:00pm. Workers generally have staggered finish times which results in the evening peak hour being less pronounced, however for the purposes of this assessment it is conservatively assumed that the evening peak hour Project traffic is the same as the morning peak, and the evening peak hour occurs between 5:00pm to 6:00pm.

The construction traffic volumes for the Project have been estimated by the Applicant with a summary provided in Table 8. It is anticipated that during peak construction the Project would generate up to 100 light vehicle trips, 8 shuttle bus trips, and 66 heavy vehicle trips per day (two-way total).

Table 8: Traffic Generation During Construction Period

Vehicle Type		Construction Period Average		Peak Construction Period	
		Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)	Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)
Light Vehicles		70	35	100	50
Shuttle Buses		8	2	8	2
Heavy Vehicles (up to 26m long)		38	6	66	8
Heavy Vehicles Requiring Pilot/Escort	Non High Risk OSOM	6	2	0	0
	High Risk OSOM	0	0	0	0
HV Subtotal		44	8	66	8
Total		122	45	174	60

Overall, the Project is expected to generate up to 60 vehicles per hour in the morning and evening peak hours during the peak construction period, which would reduce to 45 vehicle per hour during the average construction periods.

4.1.2 Non High Risk OSOM Vehicles

A mix of non-high risk OSOM vehicles are required for the construction of the Project which would include vehicles and plant such as:

- Pile Driving Rig
- crane
- drum Roller
- padfoot Roller
- wheeled loader
- dump truck
- excavator
- bulldozer
- scraper
- grader
- chain trencher
- water truck
- telehandler
- forklift
- tub grinder/ mulcher 40-50 hp

It is anticipated that most vehicles would comply with the Class 1 exemption notices and would be able to operate on the approved network. The vehicles would access the Project Area via Brayton Road and Canyonleigh Road which are currently unrated for these vehicles and would require Council/NHVR approval. All other OSOM vehicle combinations would be able to operate within the design envelope of the transformer transport vehicle (i.e. the largest OSOM vehicle), which is outlined within Section 6 of this document with a Route Assessment provided in Appendix A.

Many of the vehicles listed above would not create daily trips in and out of the Project Area. It is expected that there will be influxes of arrivals and departures from the site depending on the phase of the construction. Once arrived, they would remain until not required, before being removed from the site. The trips would be generated outside of peak access hours. Vehicle types would be confirmed and any necessary permits obtained (where required) once the construction methodology is finalised.

4.1.3 High Risk OSOM Vehicles

In addition to the traffic volumes outlined in Table 8, one High Risk OSOM vehicle will also be required for the delivery of the main transformer. This vehicle would exceed the Class 1 mass and/or dimension requirements and is subject to separate permit applications and regulations, typically including use of a pilot vehicle escort.

High risk OSOM vehicles would contribute the smallest percentage of vehicles accessing the Project Area during the construction period and are subject to the development of Transport Management Plans to manage each vehicle trip in a safe manner. The movement and impact of these vehicles, and the subsequent mitigation measures required, are discussed within Section 6.

4.1.4 Traffic Distribution

The following assessment focuses on the impacts of regular light and heavy vehicles outlined in Table 8 which excludes high risk OSOM vehicles. These movements generate the bulk of the traffic and represent the typical traffic impact of the Project on a day-to-day basis.

Canyonleigh Road east of the Project Area has a challenging alignment, with some hairpin turns, private gates, and areas of reduced carriageway width. Accordingly, all vehicles accessing the Project Area would be limited to using the western section of Canyonleigh Road via Brayton Road, despite travel times being quicker via the east for some vehicles. This would be controlled within the TMP for the Project.

The workforce for the construction of the Project is expected to be located in Goulburn, Yass and Canberra. Materials and equipment will generally be sourced from the surrounding area where practicable, with BESS components expected to be delivered from Port Botany or the Sydney metropolitan area.

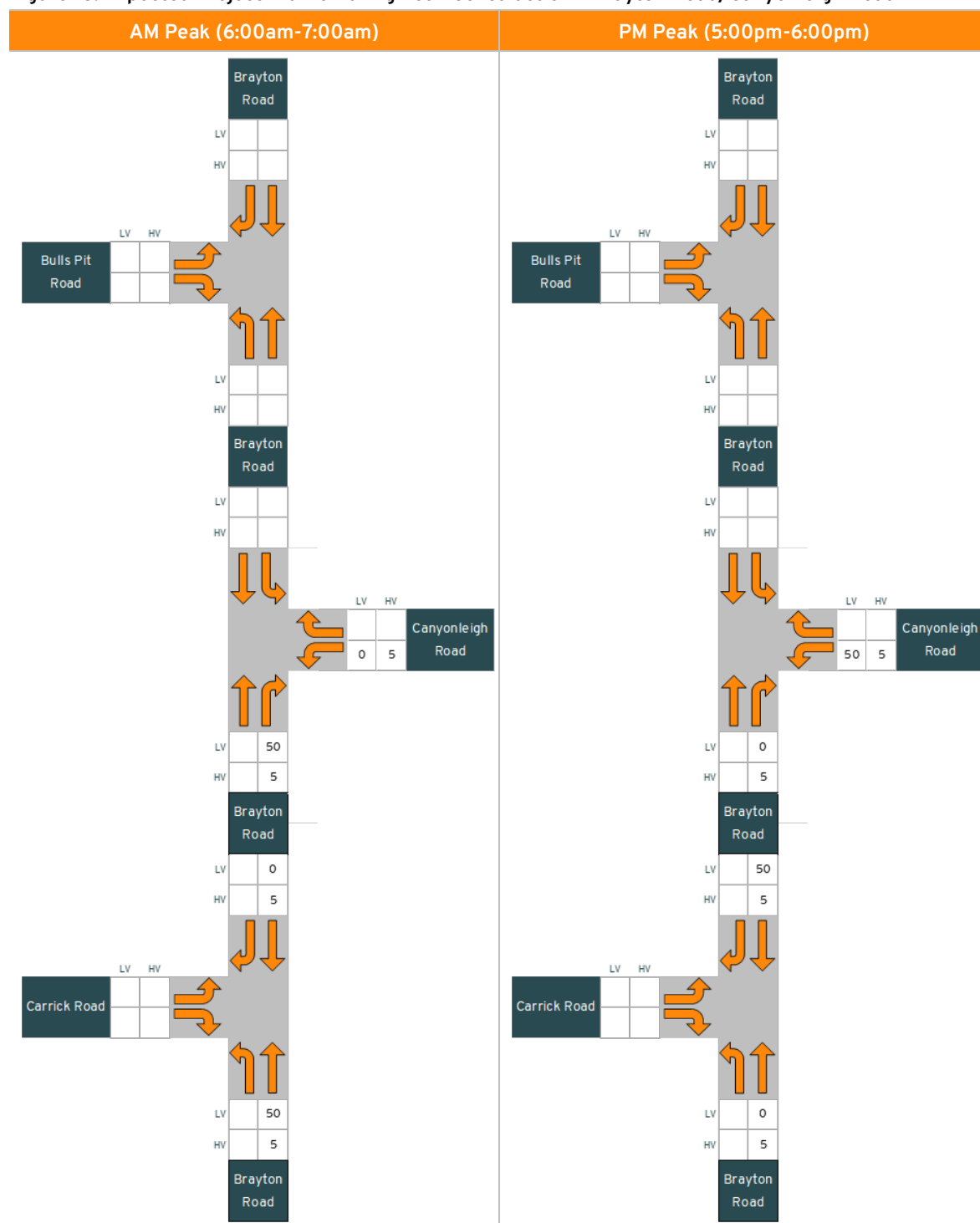
The following provides a breakdown of the distributions for each of the vehicle classifications outlined within Table 8:

- **Shuttle Buses:** Shuttle buses would transport a portion of the workforce from Goulburn and Yass. One service is proposed for Goulburn and another for Yass resulting in a total of two inbound trips during the morning peak period. These vehicles would travel via the Hume Highway, Brayton Road and Canyonleigh Road to access the Project Area. For the purposes of the assessment, it is conservatively assumed that each bus would transport approximately 25 personnel which aligns with available bus fleets and seating capacities. Further details regarding the use of shuttle buses are provided in Section 9.5.
- **Light Vehicles:** Light vehicles would be associated with workers travelling to/from the site, excluding those utilising shuttle bus services. The Applicant has advised that it is anticipated that 50% of the workforce would be located in Goulburn, 35% in Yass and 15% in Canberra. These vehicles would travel via the Hume Highway, Brayton Road and Canyonleigh Road to access the Project Area.
- **Rigid Trucks and Truck and Dog:** These vehicles would predominantly be water trucks and vehicles transporting materials such as quarry material, concrete and fencing supplies which would generally be sourced within the surrounding area. Based on nearby quarry locations and other local suppliers, these vehicles would travel via Brayton Road and Canyonleigh Road to/from the south.
- **Semi-trailers, B-Doubles and Non High Risk OSOM:** Specialist plant and BESS equipment would be transported from Port Botany or the Sydney metropolitan area to the site via Hume Highway, with all vehicles expected to reach the Project Area via Brayton Road and Canyonleigh Road to/from the south.

During the morning peak all vehicles would travel towards the Project Area and in the evening peak all vehicles would travel away from the Project Area. Heavy vehicles would be distributed throughout the day and the number of inbound and outbound vehicles would be split evenly.

The resulting peak hour volumes generated by the Project at the intersection of Brayton Road/Canyonleigh Road are outlined in Figure 18.

Figure 18: Expected Project Traffic During Peak Construction – Brayton Road/Canyonleigh Road



4.1.5 Cumulative Traffic Impacts

The primary traffic impact of the Project is generated during construction which is anticipated to start in 2026 and take approximately 18 months. A summary of the major projects that are proposed in the surrounding area are identified in Table 9. The projects which are highlighted in the table have the potential to generate additional traffic along Brayton Road and/or Canyonleigh Road in the vicinity of the Project Area during the construction period.

Table 9: Assessment of Cumulative Impacts of Nearby Developments

Project	Description	Potential Vehicle Conflict
Marulan Solar Farm (Approved)	Development of a 100MW solar farm with energy storage and associated infrastructure. It is located approximately 16km southwest of the Project Area.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact along the Hume Highway near the town of Marulan.
Marulan Quarry (Assessment)	Proposal for a new hard rock quarry in Marulan to extract up to 500,000 tonnes per annum of hard rock aggregate products. The quarry is planned to operate for 18 years. It is located approximately 20km southwest of the Project Area.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact along the Hume Highway near the town of Marulan.
Gunlake Quarry Continuation Project (Approved)	The project proposes increases in truck movements to maximum of 750 vehicles movements per day (facilitated through increased workforce and expanded quarry plant and equipment) and continued production for 30 years from the date of determination. It is located approximately 9km southwest of the Project Area.	Operation of the quarry is underway and as such traffic associated with the project is already captured within the background traffic volumes surveyed in the area.
Wattle Creek Solar Farm (Response to Submissions)	Development of a 265 MW solar farm with energy storage and associated infrastructure. It is located opposite the Project on the north side of Canyonleigh Road.	There is potential for construction of both projects to overlap. Access to the project is approximately 500 metres east of the Project Area on the north side of Canyonleigh Road. Traffic generated from both projects may interact on Brayton Road and Canyonleigh Road, with the solar farm expected to generate up to 300 vehicles per day on these roads during peak construction.
Wattle Creek BESS (Response to Submissions)	Development of a 350MW/1400MWh battery energy storage facility with associated infrastructure. It is located opposite the Project on the north side of Canyonleigh Road.	There is potential for construction of both projects to overlap. Access to the project is approximately 500 metres east of the Project Area on the north side of Canyonleigh Road. Traffic generated from both projects may interact on Brayton Road and Canyonleigh Road, with the BESS expected to generate up to 232 vehicles per day on these roads during peak construction.

Project	Description	Potential Vehicle Conflict
Marulan Gas Fired Power Station (Approved)	To develop either a peaking 250-350 MW open cycle gas-fired power station (Stage 1) or a intermediate/base load 400-450 MW combined cycle gas-fired power station (Stage 2) or develop the Stage 1 plant with later conversion to the Stage 2 plant. It is located opposite the Project on the north side of Canyonleigh Road.	There is potential for construction of both projects to overlap. Access to the project is approximately 500 metres east of the Project Area on the north side of Canyonleigh Road. Traffic generated from both projects may interact on Brayton Road and Canyonleigh Road, with the project expected to generate up to 480 vehicles per day on these roads during peak construction.
Marulan South Limestone Mine Continued Operations Project (Approved)	Continuation and expansion of open cut limestone mining operations. It is located approximately 15km south of the Project Area.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact along the Hume Highway near the town of Marulan.

The above assessment indicates that a number of projects are expected to generate additional vehicle movements on the Hume Highway. These vehicle movements would be distributed on the surrounding road network and are expected to have a minimal cumulative impact on the operation of Hume Highway. It should be noted that all approved projects listed above currently do not provide any information on construction timelines and as such come with a low risk of conflicting peak construction periods.

The following projects, which are highlighted in Table 9, have the potential to generate additional vehicle movements along Brayton Road and/or Canyonleigh Road during the construction period:

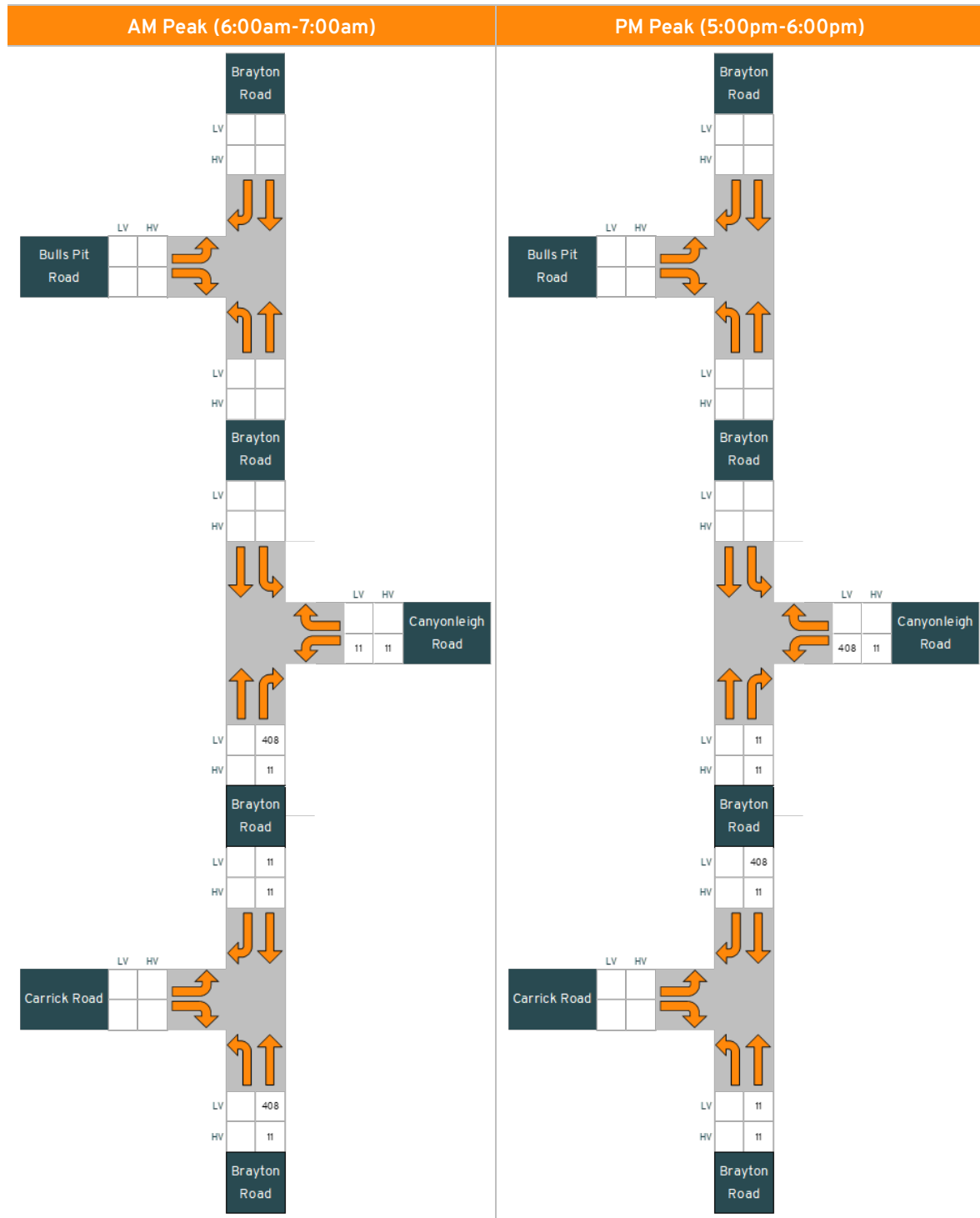
- Wattle Creek Solar Farm;
- Wattle Creek BESS; and
- Marulan Gas Fired Power Station.

All of the above projects propose vehicle access directly to Canyonleigh Road in the vicinity of the Project Area. While it is unlikely that the peak construction impacts of these projects would overlap, the following traffic assessment has conservatively been completed on this basis.

It is noted that the EIS for the Wattle Creek Solar Farm and BESS took a similar approach when analysing the Brayton Road/Canyonleigh intersection. The EIS for these projects has recently received submissions from TfNSW and Goulburn Mulwaree Council who did not raise concern with this approach to assessing this intersection.

The expected construction traffic volumes for the above projects have been sourced from available public documents and are outlined in Figure 19.

Figure 19: Cumulative Traffic Impacts – Brayton Road/Canyonleigh Road



4.1.6 Traffic Assessment

All traffic accessing the Project Area would travel via the intersection of Brayton Road/Canyonleigh Road. In order to determine the ability of the road network to accommodate the traffic expected to be generated during the peak construction period, a traffic modelling exercise has been undertaken using SIDRA intersection modelling software of this intersection.

Level of Service (LOS) is a qualitative measure used to describe the operating conditions of a section of road or an intersection. Levels of Service are designated from A (free flow conditions) to F (forced flow with stop start operation, long queues and delays) and represent the perception of the road conditions by motorists including speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety. The assessment of the level of service for sign-controlled intersections is based on the average delay (seconds/vehicle) of the critical movement.

The traffic modelling exercise has been undertaken for the morning peak hour (6:00am-7:00am) and evening peak hour (5:00pm-6:00pm) during the peak construction period. The traffic volumes utilised for the assessment is the total of the following:

- Existing surveyed traffic volumes presented within Appendix C adjusted by a 2.0% compounded annual growth rate over 3 years to reflect the end of the construction period in 2028.
- The peak construction traffic volumes of the Project as presented at Figure 18.
- The cumulative traffic volumes that may overlap with peak construction of the Project as outlined in Figure 19.

The resulting traffic volumes used for the assessment of the Brayton Road/Canyonleigh Road intersection are presented in Figure 20. Given the layout of the intersection it has been modelled as a network in SIDRA. The results of the SIDRA analysis are summarised in Table 10, with the full results provided at Appendix E.

Figure 20: Peak Construction Traffic Volumes – Brayton Road/Canyonleigh Road

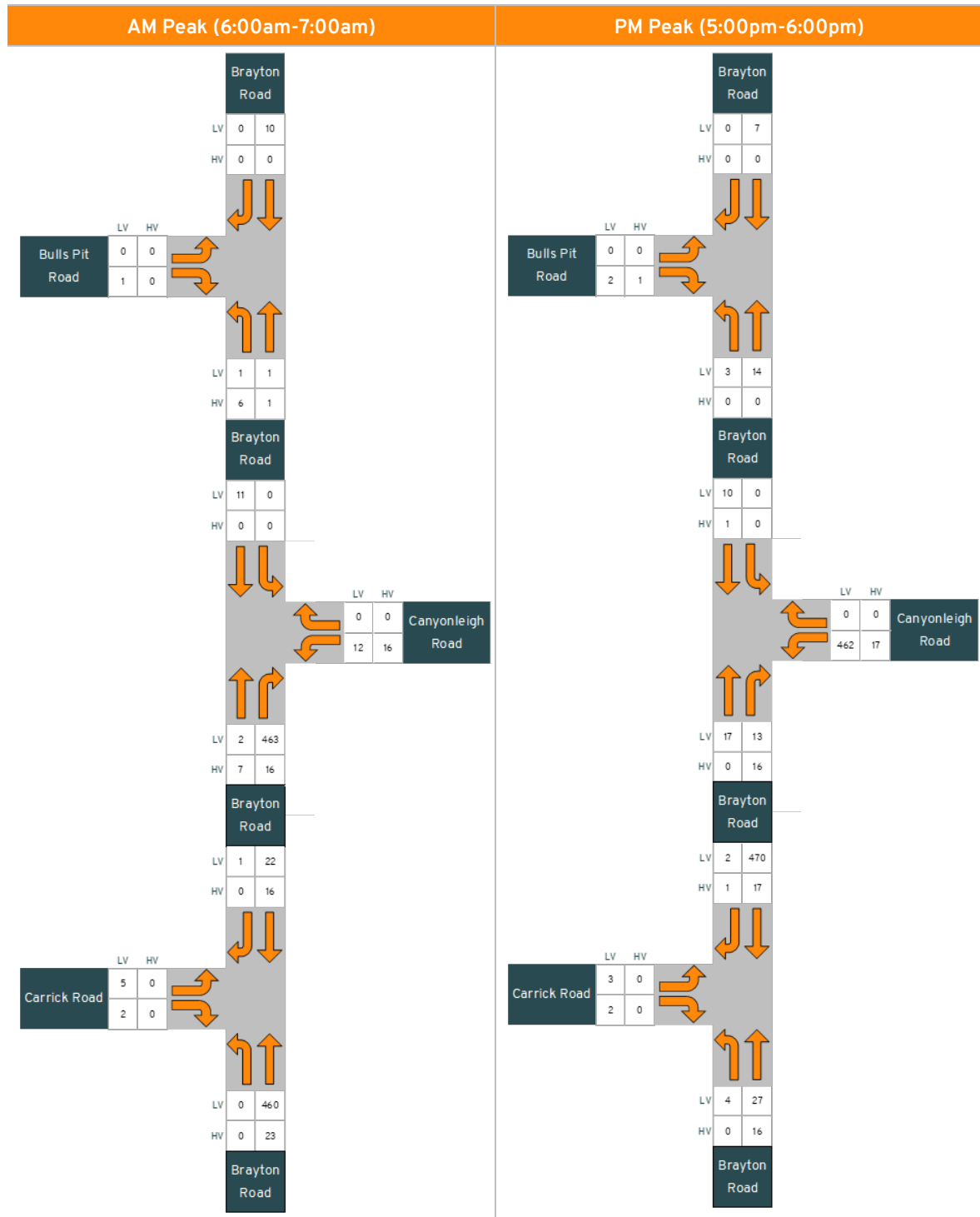


Table 10: SIDRA Analysis Results Summary – Brayton Road/Canyonleigh Road Intersection

Morning Peak Hour				Evening Peak Hour			
Degree of Saturation	Average Delay (sec)	95% Queue (m)	Level of Service	Degree of Saturation	Average Delay (sec)	95% Queue (m)	Level of Service
0.293	3.1	12.7	A	0.318	6.4	12.4	A

The SIDRA analysis indicates the following:

- Morning peak hour:
 - A maximum degree of saturation of 0.293 for the intersection.
 - A 95th percentile queue length of 12.7 metres (two vehicles) on the southern approach on Brayton Road. This queue length does not extend to Carrick Road, which is approximately 35 metres south of Canyonleigh Road.
 - An average delay of 3.1 seconds for all vehicles through the intersection. Vehicles turning right from Brayton Road to Canyonleigh Road have an average delay of 2.9 seconds.
 - The intersection is expected to operate with a good level of service (LOS A) during the morning peak hour.
- Evening peak hour:
 - A maximum degree of saturation of 0.318 for the intersection.
 - A 95th percentile queue length of 12.4 metres (two vehicles) on the east approach on Canyonleigh Road.
 - An average delay of 6.4 seconds for all vehicles through the intersection. Vehicles turning left from Canyonleigh Road to Brayton Road have an average delay of 7.0 seconds.
 - The intersection is expected to operate with a good level of service (LOS A) during the evening peak hour.

Accordingly, the intersection is expected to continue to operate with a good level of service during the construction peak hours with minimal delays.

4.2 Operational Phase

During operation the BESS is expected to generate a minimal level of traffic associated with maintenance and operation services. The BESS is expected to be operated by 3-5 full time maintenance personnel accessing the Project Area as required, which would result in a negligible change to the traffic environment. There would also be occasional light commercial vehicles delivering parts to the Project Area but only as required for maintenance.

4.3 Decommissioning Phase

At the end of the operational life of the Project all above ground infrastructure would be dismantled and removed from the Project Area. Internal roads, if not required for ongoing farming purposes or fire access, would be removed and the Project Area reinstated as close as possible to its original state and in accordance with the conditions of consent.

Traffic generation during decommissioning would be similar to traffic generation during the average construction period. A comprehensive Traffic Management Plan would be prepared prior to the decommissioning phase in conjunction with the relevant road authorities. This would aim to ensure adequate road safety and road network operations are maintained.

4.4 Summary

The Project is expected to generate the highest level of traffic during the peak construction period. The assessment also included a review of the cumulative traffic generated by other major projects within the surrounding area, noting that the peak construction impacts of nearby projects are unlikely to overlap. The assessment presented above indicates that the road network is able to accommodate the Project traffic during the peak construction period. The nearby intersections are expected to operate with a good level of service and minimal delays.

During construction the traffic volumes through the middle of the day are expected to be predominantly associated with heavy vehicles with approximately five vehicles per hour. This increase in traffic can be readily accommodated on the road network given the existing low traffic volumes and the road network would be operating with less vehicles than during the peak hour.

One high risk OSOM vehicle would be required to access the Project during the construction period. The vehicle would be unloaded and kept to its smallest practicable dimensions when departing the Project Area. The vehicle would travel outside of the peak periods and would be able to be accommodated on the road network subject to the mitigation measures discussed in Section 10 which would be confirmed as part of specific permits that would be applied for prior to construction.

During operation the periodic increase in traffic of 3-5 full time maintenance personnel accessing the Project Area each day would result in a negligible change to the traffic environment.

Accordingly, the road network is able to readily accommodate the traffic generated by the Project during the construction and operational periods.

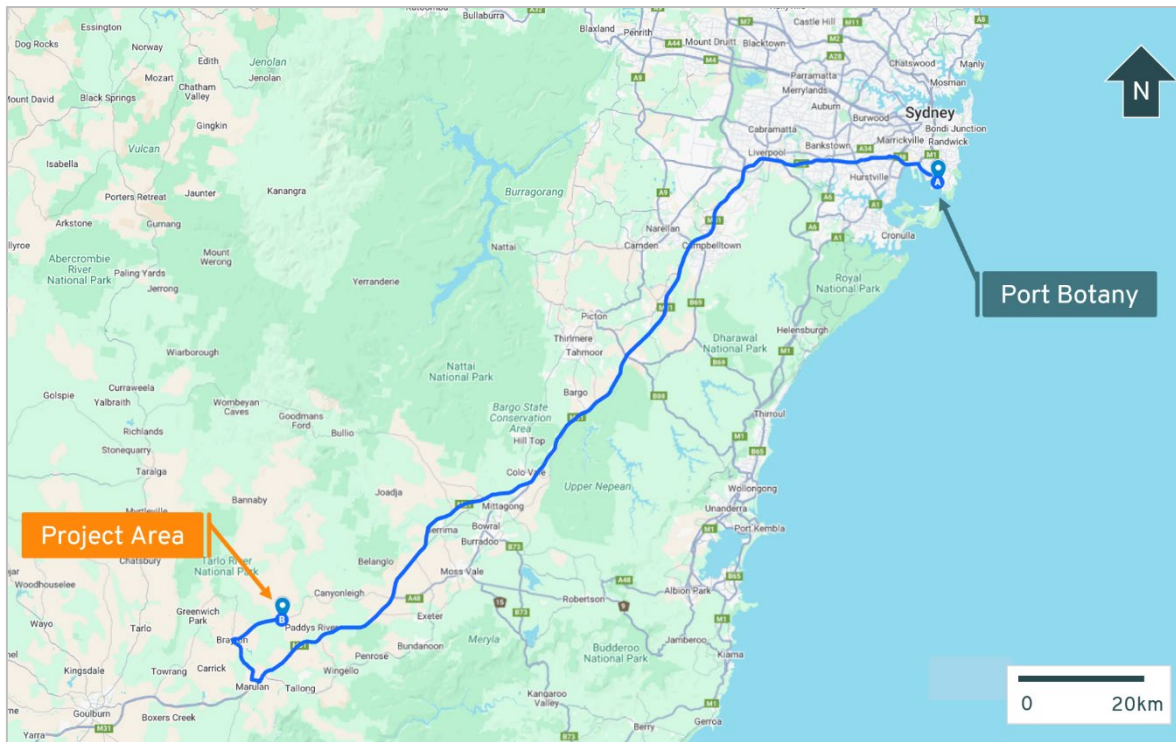
5. Heavy Vehicle Route Assessment

All specialist plant and BESS components are expected to be delivered from Port Botany and the Sydney metropolitan area. The following provides a review of the proposed access routes for heavy vehicles (excluding High Risk OSOM vehicles) travelling from Port Botany.

5.1 Heavy Vehicle Access Route

The proposed access route from Port Botany to the Project Area for vehicles up to 26 metre B-Doubles measures approximately 179 kilometres and is shown in Figure 21.

Figure 21: Heavy Vehicle Route from Port Botany



Source: Google Maps – Link

The majority of roads are approved for 26 metre B-Double access as outlined in the NHVR Restricted Access Vehicle Map, with some roads approved subject to conditions. A summary of the relevant roads is provided in Table 11.

Table 11: Heavy Vehicle Route - Access Roads from Port Botany

Road Name	State	Jurisdiction	B-Double Approved
Friendship Road	New South Wales	City of Randwick	Approved
Bumborah Point Road		TfNSW	
Botany Road			
Foreshore Road			
General Holmes Drive			Approved with Conditions - 4.4m height restriction on the tunnel on General Holmes Drive. - Dangerous goods are not permitted in the airport tunnel.
M5 Motorway			Approved with Conditions - No dangerous goods are permitted in the M5 east tunnel.
M5 East Tunnel			Approved
M5 Motorway			
Hume Motorway/Highway			
Brayton Road		Goulburn Mulwaree Council	Approved between Home Highway and 1.5km south of Canyonleigh Road. Unrated in other sections.
Canyonleigh Road			Unrated

It is noted that a section of Brayton Road and Canyonleigh Road are unrated for B-Double access, and any use of these vehicles would require approval from Goulburn Mulwaree Council.

5.2 Local Road Maintenance

The proposed access route for general construction traffic utilises the local roads Brayton Road and Canyonleigh Road. As outlined in Section 2.2, Canyonleigh Road is typically unsealed with a width between 6.0-7.0 metres and currently experiences a very low daily volume of traffic (19 vehicles per day).

The *Austrorads Guide to Road Design Part 3: Geometric Design* states the following in relation to rural road widths:

‘The desirable lane width on rural roads is 3.5 m. This width allows large vehicles to pass or overtake without either vehicle having to move sideways towards the outer edge of the lane. The lane width and the road surface condition have a substantial influence on the safety and comfort of users of the roadway.’

During the morning and afternoon peak hours the Project traffic would be either approaching or departing the Project Area. During the middle of the day, an average of five vehicles per hour is expected during the peak construction period split between inbound and outbound movements.

Based on the cumulative traffic assessment outlined at Section 4.1.5, Canyonleigh Road could carry up to 1,200 vehicles per day should the peak construction impacts of other projects on Canyonleigh Road overlap, noting that the likelihood of this occurring is low and could be coordinated and managed between the relevant parties and Council.

Canyonleigh Road is an undulating road with curves and roadside vegetation that limits sight distance in some sections. The road has historically been constructed and maintained with a minimum carriageway width of 7.0 metres to ensure safe and efficient vehicle movement, however, over time, this width has been compromised in several sections due to natural encroachment from vegetation and erosion along the carriageway edges. These reductions in width pose potential safety risks and may not allow for two heavy vehicles to pass.

To address this it is recommended that Canyonleigh Road be returned to a minimum width of 7.0 metres between Brayton Road and the Project Area to accommodate the expected Project traffic and allow two heavy vehicles to safely pass one another. This would be classified as maintenance works and not a road upgrade as it involves reinstating the road to its previously established standard rather than altering its design. The maintenance works would be completed prior to construction of the Project and would be undertaken in consultation with Council as the road authority for Canyonleigh Road.

Given the increase in traffic on Canyonleigh Road is temporary only during construction of the Project (noting the peak construction period would be 6 months), it is considered appropriate for Canyonleigh Road to remain unsealed, subject to the maintenance works discussed above and the mitigation measures outlined at Section 10.

5.3 Mitigation Measures

A TMP is to be developed which is recommended to include a range of measures to minimise the impact of construction traffic as outlined in Section 9.

Prior to construction, a pre-condition survey of Canyonleigh Road should be undertaken in consultation with Council. During construction the section of the road utilised by the Project would be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the Project to be rectified. At the end of construction, a post-condition survey would be undertaken to ensure the road is left in a condition equivalent to that at the start of construction.

Therefore, it is concluded that the road network is suitable to accommodate the future light and heavy vehicle traffic volumes generated by the Project.

6. High-Risk OSOM Vehicles

The Applicant has advised that one High Risk OSOM vehicle would be required to access the site during the construction period for the transport of transformers from Port Botany. The vehicle is expected to exceed the Class 1 mass and/or dimension requirements and would therefore be classified as a High Risk OSOM vehicle. These vehicles are subject to Transport Management Plans which provide a comprehensive planning and execution focus to ensure that vehicle movements are carried out in a safe and responsible manner with reduced impact on other road users and road infrastructure. High Risk OSOM vehicles also typically require pilot and escort vehicles.

The High Risk OSOM vehicle will travel outside of the peak periods and would be subject to the and mitigation measures discussed throughout this section which would be confirmed as part of specific permits that would be applied for prior to construction. The vehicle would be unloaded and kept to the smallest practicable dimensions when departing the site to avoid classification as OSOM where possible. The following provides a review of the largest transformer transport vehicle configuration and proposed access route.

6.1 Load and Vehicle Configuration

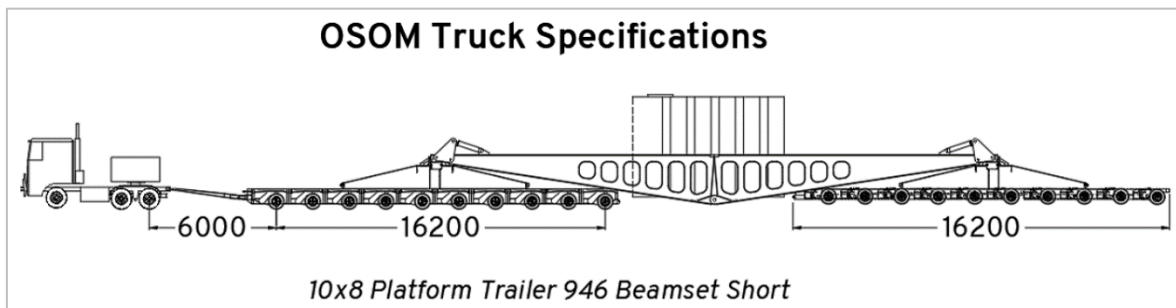
The largest component to be delivered to the Project Area is expected to be the transformer. The Applicant has provided information regarding the expected specifications of the transformer which are outlined in Table 12.

Table 12: Estimated Transformer Specifications

Length (mm)	Width (mm)	Height (mm)	Mass (t)	Trailer Specs
7250	2500	4450	101	10x8 + 10x8 Platform Trailer Beam Set

An OSOM vehicle configuration has been identified for the expected transformer model. The vehicle used for the assessment is shown within Figure 22 and is based on feedback from a transport company which confirmed that the vehicle specification would be suitable for the weight and size of the transformer. The total combination length is expected to be approximately 56.6m with the laden vehicle specifications provided in Appendix A.

Figure 22: Largest OSOM Vehicle – Transformer



The Applicant has advised that Port Botany is to be utilised as the origin point for the delivery of the transformer. In order to determine whether any civil works are required to accommodate the OSOM vehicle on the road network a route assessment has been undertaken. The OSOM vehicle would be provided with escort and pilot vehicles in accordance with relevant authority requirements.

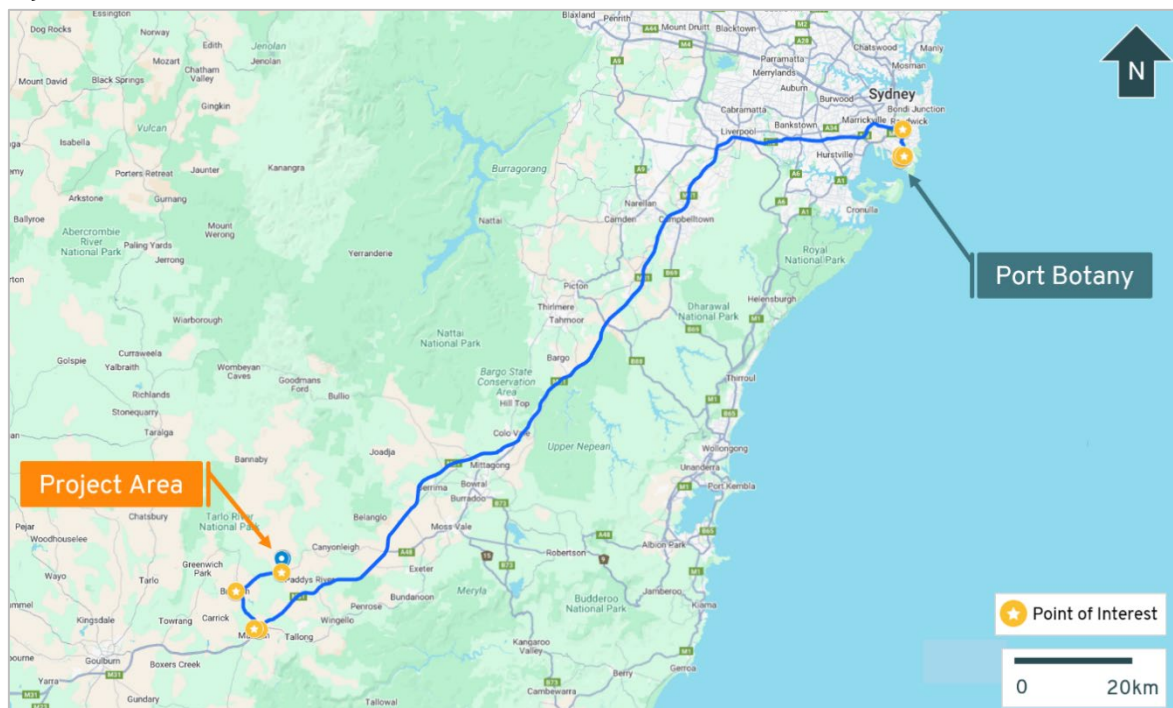
The proposed OSOM route varies from the heavy vehicle access route (Section 5) between Port Botany and Western Sydney due to the height restrictions of the M5 Motorway tunnels. The route would utilise the following roads to access the Project Area as outlined in Table 13.

Table 13: OSOM Route – Access Roads

Road Name	Jurisdiction
Friendship Road	TfNSW
Bumborah Point Road	
Botany Road	
Bunnerong Road	
Gardeners Road	
M8 Motorway	
M5 Motorway	
South Western Motorway (M5)	
Hume Motorway (M31)	
Hume Highway	Goulburn Mulwaree Council
Brayton Road	
Canyonleigh Road	

The access route, which is approximately 185 kilometres, is shown in Figure 23. A total of eight (8) points of interest for further assessment were identified as part of the assessment of the access route. The points of interest have been assessed in further detail, including the western access to the Project Area, with the full assessment provided within Appendix A.

Figure 23: OSOM Route



Source: Google Maps - Link

The assessment of the access route identified that the vehicle is able to access the Project Area with minor civil works such as temporary hardstand, temporary removal of traffic signs, and on-street parking management. A review of the key constraints along the route is provided below with an overview of the proposed treatments and/or management measures at each point of interest.

6.2 Bridge and Rail Infrastructure

A desktop assessment of bridge and rail infrastructure has been undertaken to determine interfacing locations with the proposed OSOM route.

6.2.1 Bridges and Overpasses

A structural assessment of the bridges and culverts along the State-managed road network was requested from TfNSW on 17 July 2025 for the nearby Willavale BESS Project, which has the same Proponent as Canyonleigh BESS. Willavale BESS adopts the same OSOM vehicle, transformer, and route up until the Marulan as the Project. For Canyonleigh BESS the OSOM vehicle would exit the Hume Highway via Brayton Road and continue to the site as shown in Figure 23.

The advice received for Willavale BESS indicates the route is suitable for the OSOM vehicle, with a copy of the correspondence attached in Appendix I. TfNSW indicated that a separate bridge a culvert assessment is not required for Canyonleigh BESS and that there are no issues using the additional roads of Brayton Road and Canyonleigh Road to reach the site, as per the correspondence attached in Appendix I.

6.2.2 Underpasses

An assessment of the height clearances along the route was undertaken to confirm the suitability of the proposed route for a total proposed load height of approximately 4.7 metres. The overpass with the lowest clearance along the route is on the South-Western Motorway (M5) at Heathcote Road. The clearance at this location is 4.93 metres. It is also noted that some overhead electrical cables along the route may require lifting which would be confirmed prior to construction.

Accordingly, the available height clearance along the proposed route is appropriate to accommodate the OSOM vehicles.

6.2.3 Railway Level Crossings

No railway level crossings have been identified along the OSOM route. In the event there are level crossings identified on the final transport route, written approval would be sought from the relevant rail authorities for all level crossings as part of the TMP.

6.3 Summary

The route assessment prepared for the high risk OSOM vehicle (Appendix A) identifies a number of road upgrades required in order to allow the vehicle to successfully access the Project Area from Port Botany, with a summary provided in Table 14. Areas where road upgrades are required have been highlighted in the table. Escorts and spotters would be required at all locations to control traffic and ensure the vehicle and load are clear of infrastructure.

Table 14: Road Upgrade Schedule – High Risk OSOM Vehicle

Pinch Point	Location	Required Road Upgrades
Sydney Metropolitan Area		
01	Bumborah Point Road / Friendship Road (Port Botany, NSW)	No road upgrades required.
02	Botany Road / Bumborah Point Road (Port Botany, NSW)	No road upgrades required.
03	Botany Road / Bunnerong Road (Matraville, NSW)	Temporary hardstand and mountable kerb to be provided.
04	Gardeners Road / Bunnerong Road (Daceyville, NSW)	No road upgrades required.
Regional NSW		
05	Brayton Road / George Street (Marulan, NSW)	No road upgrades required.
06	Brayton Road (Marulan, NSW)	Temporary signage relocation.
07	Brayton Road / Canyonleigh Road (Brayton, NSW)	Temporary hardstand to be provided. Temporary signage relocation.
08	West Site Access / Canyonleigh Road (Brayton, NSW)	Access to be designed to accommodate the high risk OSOM vehicle.

Accordingly, it is concluded that the proposed route is suitable for use by OSOM vehicles associated with the Project with permits to be applied for as part of the TMP. It is recommended that any OSOM movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

7. Intersection Assessment

The nearest State Road intersection utilised by Project traffic is the Hume Highway interchange with Brayton Road. Given this a significant highway interchange with on and off-ramps, an assessment of this intersection has not been completed as the proposed Project traffic volumes would be within the daily variation of traffic at this interchange.

The following intersection assessment focuses on the nearest intersection to the Project Area utilised by Project traffic, being the intersection of Brayton Road/Canyonleigh Road.

7.1 Turn Treatments

The requirement to provide turn facilities at intersections is primarily generated during the morning peak hour when the workforce access the Project Area, which occurs between 6:00am to 7:00am. Given that all Project traffic would arrive via the south on Brayton Road, a right turn treatment has been considered only.

The Traffic Impact Assessment (TIA) reports for the Wattle Creek Solar Farm and BESS projects propose to upgrade the intersection to provide a Basic Right (BAR) turn treatment on the southern approach on Brayton Road, noting that the turn volumes at this intersection outlined in the TIA reports for these projects are similar to those outlined at Figure 20. The BAR would be provided generally in accordance with the Austroads Guide, noting that the existing pavement width of Brayton Road effectively provides a BAR, subject to amendments to linemarking and potentially relocating an existing school bus stop on the western side of the road.

The design of the BAR would be addressed at the detailed design stage for the Wattle Creek Solar Farm and BESS projects. The submission from Goulburn Mulwaree Council for these projects proposed that the design of the BAR be conditioned, with works to comply with the Austroads Guide, Australian Standards and Council's Standard Drawings, unless otherwise agreed. It is understood that a speed reduction and other mitigation measures may be required at the intersection, which would be addressed as part of the detailed design, future TMPs, and in consultation with Council.

Given that Council have conditioned that a BAR be provided at the Brayton Road/Canyonleigh Road intersection for the Wattle Creek Solar Farm and BESS projects, which assessed the intersection carrying similar turn volumes to this analysis presented at Section 4.1.6, it is concluded that the proposed BAR turn treatment would be appropriate to accommodate the Project traffic while improving the safety of road users at the intersection.

7.2 Sight Distance

Given the Brayton Road/Canyonleigh Road intersection is existing it is not strictly necessary to assess the sight distance at the intersection. Notwithstanding, an assessment against the Austroads Guide has been undertaken.

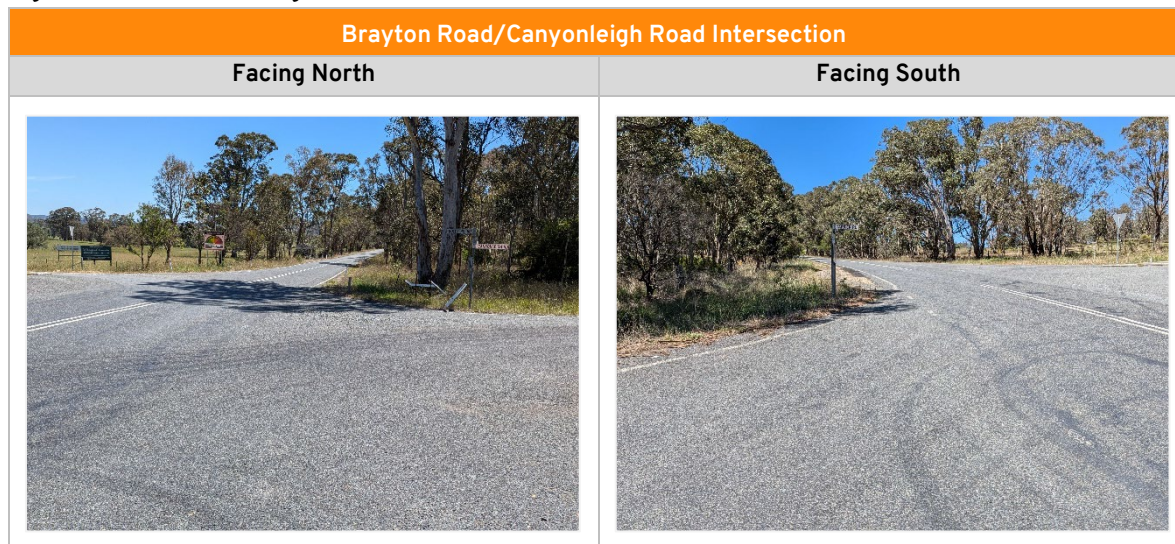
Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided along the major road at any intersection. Table 3.1 of the guide specifies the SISD required for various design speeds. Given Brayton Road has a speed limit of 80km/hr, a design speed of 90km/hr has been adopted which requires an SISD of 226 metres based on a reaction time of 2.5 seconds.

The available sight distance at the intersection is approximately 120 metres to the south and 180 metres to the north, which falls short of the requirements of the Austroads Guide. Photographs of the sight distance available in each direction can be seen at Figure 24.

It appears that compliant sightlines could be achieved at the intersection subject to removal of roadside vegetation, or alternatively, temporarily lowering the speed limit on this section of Brayton Road during construction. The assessment attached at Appendix H identifies the areas of vegetation that would be required to be removed to comply with the Austroads Guide.

Based on the above assessment, it is recommended that compliant sightlines be provided at the intersection to allow vehicles to safely access the Project Area. This could be through removal of vegetation as shown at Appendix H, or by lowering the speed limit of Brayton Road to reduce the SISD requirement. This would require ongoing consultation with Council as the manager of both Brayton Road and Canyonleigh Road.

Figure 24: Intersection Sight Distance Assessment



8. Site Access

8.1 Design

The layout of the Project Area and the proposed access locations are shown within Figure 1. A swept path assessment has been undertaken for each access to the Project Area from Canyonleigh Road which are attached at Appendix F.

The design of the accesses on the southern side of Canyonleigh Road have been based on a 26 metre B-Double as the design vehicle, while the access on the northern side of Canyonleigh Road is based on a 19 metre semitrailer as the design vehicle. The western access on the south side has also been designed to accommodate the OSOM vehicle to transport the transformer.

It is noted that vehicles exiting to Canyonleigh Road may be required to wait for an entering vehicle to pass, which is acceptable for the following reasons:

- During the morning peak all vehicle trips would be inbound and in the evening peak all vehicle trips would be outbound.
- During construction the vehicle trips throughout the middle of the day are expected to be predominantly associated with heavy vehicles with approximately five vehicles per hour split evenly between inbound and outbound movements.
- The proposed arrangement is expected to improve road safety by preventing potential sight distance issues associated with general traffic which may be following or overtaking an entering vehicle.

Accordingly, it is concluded that each access has been suitably designed and is able to accommodate the largest vehicles expected to access the Project Area.

8.2 Sight Distance Assessment

A sight distance assessment has been completed for each access to Canyonleigh Road against the Austroads Guide for SISD. The traffic surveys of Canyonleigh Road presented at Section 2.3.2 indicate that vehicles on Canyonleigh Road travel at an 85th percentile speed of 61km/hr (westbound) and 73km/hr (eastbound). Based on the surveys, a design speed of 75km/hr has been conservatively adopted in each direction.

Canyonleigh Road is unsealed adjacent to the Project Area and has an average grade of 6%. The Austroads Guide outlines coefficients of deceleration based on the road surface and use of the road. Based on the unsealed surface and nature of Canyonleigh Road, a coefficient of deceleration of 0.26 has been adopted to account for slower stopping speeds.

A summary of the sight distance at each access is detailed Table 15.

Table 15: Sight Distance Assessment – Canyonleigh Road

Access	Road Surface	Design Speed (km/h)	Approach	Gradient	Required Sisd (m)	Available Sisd (m)
Accesses on South Side of Canyonleigh Road						
West	Unsealed	75	East	-6%	215	245
			West	+6%	174	270+
East	Unsealed	75	East	-6%	215	220
			West	+6%	174	250+
Access on North Side of Canyonleigh Road						
West	Unsealed	75	East	-6%	215	160 ²
			West	+6%	174	200

The available sight distance at each access exceeds the requirements of the Austroads Guide, with exception to the sight distance to the east for the access on the north side of Canyonleigh Road.

To achieve sight distance compliant with the Austroads Guide for the northwest access, it is recommended that a temporary speed reduction to 60km/hr be implemented on Canyonleigh Road in the vicinity of the Project to lower the sight distance requirement to 155 metres to the east. This would be in place during construction of the Project only when vehicle access is required to the access on the northern side. This is anticipated to be for a short period of the construction program and would be detailed in the TMP, which would be prepared in consultation with Goulburn Mulwaree Council.

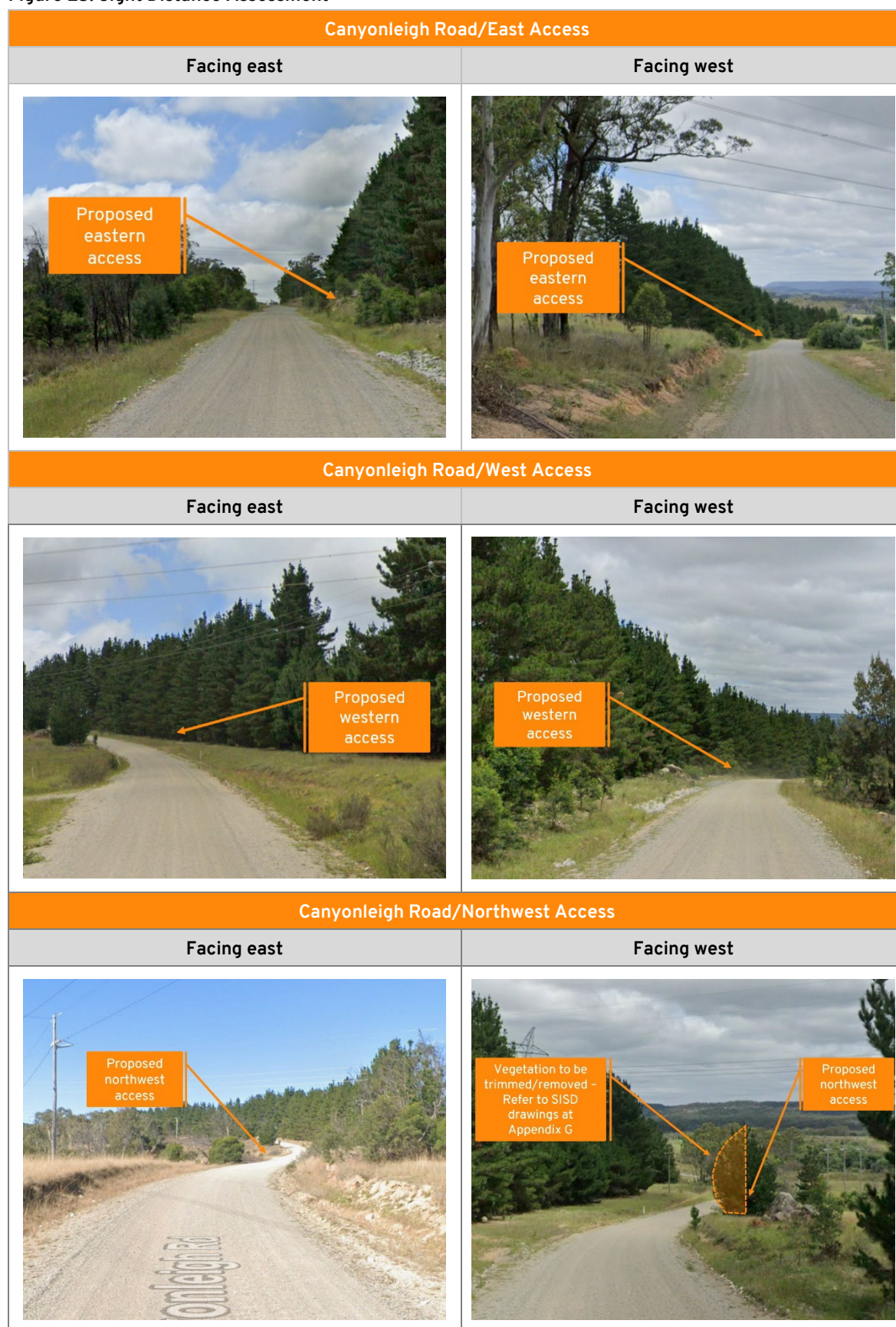
Following construction, the access on the north side would not require ongoing vehicle access for operation of the BESS. The available sight distance of 160 metres to the east would be appropriate for occasional access by maintenance vehicles. This accords with Council's Design Specifications for a rural access, which states that rural accesses should have a sight distance of 150 metres.

The sight distances for the accesses in each direction on Canyonleigh Road are shown in Figure 25, with diagrams provided at Appendix G.

Accordingly, vehicles are expected to be able to safely enter and leave the road network from the proposed accesses to Canyonleigh Road, subject to temporarily lowering the speed limit of Canyonleigh Road 60km/hr in the vicinity of the Project, noting that this would only apply when vehicles are required to use the access on the north side of the road for construction.

² Subject to vegetation trimming/removal within the road reserve on the north side of Canyonleigh Road.

Figure 25: Sight Distance Assessment



9. Traffic Management Plan

A TMP would be prepared prior to commencement of construction of the development. The TMP should be prepared and implemented in accordance with Australian Standard 1742.3 and the Work Health and Safety Regulation 2017. The TMP would provide additional information regarding the traffic volumes and distribution of construction vehicles that is not available at this time including:

- Road transport volumes, distribution and vehicle types broken down into:
 - Hours and days of construction.
 - Schedules for phasing/staging of the Project.
- The origin, destination and routes for:
 - Employee and contractor light vehicles.
 - Heavy vehicle traffic.
 - Oversize/overmass vehicles.
- A map of the primary haulage routes highlighting critical locations.
- An induction process for vehicle operators and regular toolbox meetings.
- A complaint resolution and disciplinary procedure.
- Local climatic conditions that may impact road safety of employees throughout all project phases (e.g. fog, wet and significant dry, dusty weather).

The following provides recommended measures that should be adopted within the TMP to minimise the impact of construction traffic along the road network.

9.1 Information and Communication

The implementation of a community information and awareness program would assist in managing the traffic impacts. Prior to construction commencing and during the construction period, a program of consultation shall be initiated to ensure local residents are aware of construction traffic accessing the Project. This program may include elements of the following as appropriate to the phase of works:

- Press releases in local newspapers.
- Specific emails, newsletters and individual letter drops to neighbouring residents along the access route to the Project.
- Provision of a website providing details of the status of works and contact details for complaints or enquiries.
- Provide key contact personnel and contact details, including out of hours contact information to residents, schools, public activities and business operating alongside the local route.
- Neighbours of the BESS would be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.

9.2 Cumulative Impacts

Inclusion of measures to minimise the cumulative impacts with other State significant projects in the area, including Wattle Creek Solar Farm and BESS and Marulan Gas Fired Power Station. If required, measures to ensure that traffic volumes at the Brayton Road/Canyonleigh Road intersection remain compliant with relevant Austroads Guidelines are to be implemented, such as modified staff shift times and delivery schedules.

9.3 Signage

If deemed necessary, specific warning signs advising of the changed traffic operations and heavy vehicles are to be appropriately located on approaches to and from the transport routes on Council roads. These should warn existing road users of changed traffic conditions. The use of day warning notices where signs are activated on a specific day to warn local road users of construction activities may also be applied.

9.4 Temporary Speed Reductions

It is recommended that a temporary speed reduction to 60km/hr be implemented on Canyonleigh Road in the vicinity of the Project to achieve compliant sight distance for the access on the north side of the road. This would be in place during construction of the Project only when vehicle access is required to this access. Following completion of construction, ongoing vehicle access would not be required to this access for operation of the BESS, and the available sight distance of 160 metres to the east would be appropriate for occasional access by maintenance vehicles.

9.5 Shuttle Buses

Shuttle buses would be used to transport a portion of the workforce from Goulburn and Yass, with one service proposed from each city/town.

The Applicant has consulted with *Urban Legends Tour Co* to confirm the availability and capacity of shuttle buses for the Project construction period. A copy of the correspondence is provided in Appendix J which confirms that the bus operator has a range of buses available in their fleet ranging from 14-seater minibuses to 57-seater coaches. The precise model and associated seating capacity would be confirmed prior to construction, noting that different size buses could be used throughout different phases of the construction period to align with fluctuations in the workforce.

The Applicant has also consulted with Goulburn Mulwaree Council and Yass Valley Council in relation to potential shuttle bus pick-up and drop-off locations within Goulburn and Yass, with a copy of the correspondence provided in Appendix K. Several potential locations have been identified to provide a convenient and attractive travel option for a large portion of the workforce while minimising any potential impacts to the broader community:

- **Yass**
 - Laidlaw Street near Victoria Park.
 - Laidlaw Street public car park adjacent to Yass Skate Park.
 - Comur Street / Browne Street near Coronation Park.

- **Goulburn**
 - Goulburn Railway Station
 - Clinton Street near Quest Goulburn Hotel.

The final pick-up and drop-off locations would be confirmed with Council prior to the commencement of the construction phase of the Project.

The buses would use the internal road network to access the parking area for drop-off and pick-up of personnel. The buses are smaller than many of the various heavy vehicle combinations that would access the site and accordingly are expected to be able to suitably manoeuvre throughout the site. On-site reversing manoeuvres would be minimised or avoided as far as is practicable to maintain a safe environment.

Measures to ensure the shuttle bus program can be practically achieved and monitored will be included within the Construction Environmental Management Plan and/or TMP. Recommended measures include:

- Limiting car parking for light vehicles on-site.
- Regular toolbox meeting sessions identifying method of travel to work and strongly encouraging use of the shuttle buses.
- Identifying the bus drop off/pick up location and clearly communicating these locations with the workforce.
- Allocating a team member to be responsible for enforcement and management of the shuttle buses.
- Identifying mechanisms to be put in place if shuttle bus passenger numbers are not achieved.

Final details of the employee shuttle bus service including confirmed pick up and drop off points and bus schedules will be outlined within the TMP.

9.6 On-Site Mitigation Measures

On-site mitigation measures targeted at safety and reducing the impact of on-site transport would include:

- On-site speed restrictions.
- Appropriate dust suppression measures.
- Maintenance program for on-site access tracks to ensure safe access.
- Loading and unloading is proposed to occur within the work area. No street or roads would be used for material storage at any time.
- Sufficient car parking is to be provided on-site to ensure vehicles do not park on the surrounding road network.
- All car parking and loading areas to be designed in accordance with the relevant Australian Standard (2890 series) and Council requirements.

9.7 Driver Protocols

Management of vehicular access to and from the Project Area is essential in order to maintain the safety of the general public as well as the workforce. A Driver Code of Conduct is to be implemented as a measure to maintain safety within and around the Project:

- All vehicles would enter and exit the Project Area in a forward direction.
- Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users.
- Safety initiatives for impacts to residential areas and/or school bus zones.
- Utilisation of only the designated transport routes.
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities.
- All permits for working within the road reserve must be received from the relevant authority prior to works commencing.

The above recommendations would ensure the construction traffic would have a minimal impact to the capacity and safety of the surrounding road network. The TMP would be prepared in conjunction with consultation with TfNSW and Council.

10. Mitigation Measure Summary

The assessment has identified a number of traffic management measures that are to be implemented during construction and recommended to be included in the TMP. The key measures are summarised below:

- Prior to construction, Canyonleigh Road be returned to a minimum width of 7.0 metres between Brayton Road and the Project Area to accommodate the expected Project traffic and allow two heavy vehicles to safely pass one another. This would be classified as maintenance works and not a road upgrade as it involves reinstating the road to its previously established standard rather than altering its design. The maintenance works would be undertaken in consultation of Council.
- Prior to construction, a pre-condition survey of Canyonleigh Road on the project access route should be undertaken in consultation with Council. During construction the sections of the road network utilised by the Project are to be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the BESS would be rectified. At the end of construction, a post-condition survey would be undertaken to ensure the road network is left in a condition equivalent to that at the start of construction.
- Neighbours of the BESS are to be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
- Heavy vehicles should avoid travel during peak bus operating times to limit the interaction of larger vehicles and vulnerable road users. School buses operate along Brayton Road and within Marulan as outlined in Section 2.4.
- It is recommended that any OSOM vehicle trips be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

10.1 Schedule of Road Upgrades

In addition to the above traffic management measures, it is proposed to provide road upgrades as part of the Project which are to be constructed prior to construction commencing. A schedule of the road upgrades is provided below:

- Minor road works, comprising roadside hardstands, temporary road sign and bollard relocations, are proposed to accommodate the largest OSOM vehicle combination as outlined in Section 6.
- Provision of a BAR turn treatment at the Brayton Road/Canyonleigh Road intersection. The responsibility of delivering these upgrades would be considered in consultation with Council and other relevant parties.
- Dilapidation surveys and necessary road maintenance of Canyonleigh Road on the proposed access route, should road maintenance be required.

The surface and carriageway of the roads, with the inclusion of the proposed upgrades, are suitable to accommodate the future traffic volumes generated by general construction vehicles.

11. Conclusion

Amber Organisation has assessed the traffic impacts of the proposed Canyonleigh BESS for X-Elio Aus2 Pty Ltd. The BESS is proposed to have a storage capacity of up to 300MW/1,200MWh (4 hours). The Project Area is located on the south side of Canyonleigh Road in Brayton, approximately 12km northeast of Marulan. Access is proposed via three connections to Canyonleigh Road.

On-site construction activities are expected to commence in 2026 and take approximately 18 months, with the peak construction period expected to take 6 months. A construction workforce of approximately 100 personnel would be on-site during the peak construction phase and would be drawn from Goulburn, Yass and Canberra. The majority of plant is expected to be delivered to Port Botany.

The above assessment determined the following:

- The Project is expected to generate up to 174 vehicle trips per day during peak construction times, including 66 heavy vehicle trips, 8 shuttle bus trips, and 100 light vehicle trips.
- The road network is able to accommodate the traffic generated by the development during the construction, operation and decommissioning stages. A SIDRA analysis of the Brayton Road/Canyonleigh Road intersection has shown that it will continue to operate with a satisfactory level of service.
- The proposed access route is able to accommodate the loads and type of vehicle movements to be generated during construction of the Project.
- It is noted that some OSOM vehicles would be required to deliver larger plant and equipment to the Project Area such as the substation transformer and earthmoving equipment. The preferred access route for OSOM vehicles including the transformer transport vehicle have been identified within a Route Assessment (Appendix A). Minor road upgrades such as additional hardstand areas and temporary removal of traffic signs are required in order to allow the vehicles to successfully access the Project Area. All OSOM vehicles would travel outside peak hours and are subject to specific road permits that would be applied for by the contractor during the construction period.
- A BAR turn treatment is proposed at the intersection of Brayton Road/Canyonleigh Road, which would improve operation of the intersection during construction.
- It is recommended that Canyonleigh Road be returned to a minimum width of 7.0 metres between Brayton Road and the Project Area to accommodate the expected Project traffic and allow two heavy vehicles to safely pass one another. This would be classified as maintenance works and not a road upgrade as it involves reinstating the road to its previously established standard rather than altering its design.
- The accesses to Canyonleigh Road are designed to accommodate two-way heavy vehicle movements with a 'prop and pass' arrangement, which is acceptable based on the traffic volumes of the road and sightlines available.
- The accesses have adequate sight distance to allow vehicles to safely enter and exit the road network, noting that it is recommended that a temporary speed reduction to 60km/hr be implemented on Canyonleigh Road in the vicinity of the Project when vehicles are required to use the access on the north side of the road.
- In order to mitigate the impacts of the development during construction a TMP would be prepared which should include the recommendations provided within this document.

Accordingly, based on the assessment above, it is concluded that the proposed access arrangements are suitable to accommodate the expected construction vehicle types and traffic volumes during the construction and operational phases of the Project.

Appendix A

OSOM Route Assessment



Appendix B

Response to TfNSW Agency Advice



TfNSW Comment	Response
Hours, days and periods of construction.	The proposed construction hours and Project timeframe are provided within Section 3.2.
Schedule for phasing/staging of the project (including pre-construction, accommodation and ancillary infrastructure works) and identify the traffic volumes for each stage	The traffic assessment in Section 4 details the known works associated with the peak construction period.
Traffic volumes: • Surveyed existing background traffic at key intersections per Part 3 Austroads Guide to Traffic Management with survey raw data included. • Project-related traffic volumes (measured as vehicle trips per hour and per day) for each stage, including pre-construction, construction, operation and decommissioning and identifying the peak period for traffic volumes. • Traffic volumes are to include a description of: ○ Ratio of light vehicles to heavy vehicles ○ Differentiation of Over Size/Over Mass (OSOM) that do or do not require an NHVR permit and proposed times of operation on the State road network. ○ Project-related traffic interaction with existing and projected background traffic with annual growth applied linearly. ○ Peak times for existing traffic and project-related traffic. ○ Transportation hours. • The origin, destination and routes for: ○ Employee and contractor light traffic. ○ Heavy vehicle traffic. ○ OSOM vehicle traffic. ○ OSOM high risk loads.	Existing traffic is captured in surveys as outlined in Section 2.3 with the data provided in Appendix C and Appendix D. Project traffic is presented in Section 4.1.1. Section 4 shows different vehicle classifications using the road network, different impacts at differing peak times of day, factoring up of background traffic to the proposed end of construction year, and traffic distribution. The distribution of Project traffic on the road network is presented at Section 4.1.4.
A description of all non-high risk OSOM vehicles and materials to be transported. 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.	Description of non-high risk OSOM vehicles presented at Section 4.1.2. The heavy vehicle routes are discussed at Section 5.
The impact of generated traffic and measures employed to ensure efficiency and safety on the public road network during the project's construction, operation and decommissioning. This includes enforcement to managing traffic volumes, driver behaviour and access paths to the site.	The traffic generation is shown in Section 4 and mitigation measures to ensure road efficiency and safety in Section 5.3 for heavy vehicles, Section 9 for measures to include in a future TMP and Section 10 for general mitigation measures.
A turn warrant assessment for the worst-case scenario (i.e. peak project traffic volumes applied to the identified background traffic at the construction and background peak hour) in accordance with Part 6 of Austroads Guide to Traffic Management is to be undertaken at identified key intersections on project routes, project site access and site access points to access ancillary infrastructure.	Turn treatment warrants are discussed at Section 7.1.

TfNSW Comment	Response
The TIA is required to detail improvements to the road network, such as road widening and intersection treatments, to cater for and mitigate the impact of project-related traffic (including accommodation and ancillary infrastructure components) at key intersections with the State Road network. Proposed road facilities, access and intersection treatments are to be identified and conform with Austroads Guide to Road Design and TfNSW Supplements, including safe intersection sight distance. Strategic designs are to include swept path analysis for largest vehicle passing through the intersection(s). To assist the proponent in preparing strategic designs, the below link is provided: Strategic-Design-requirements-for-DA-Factsheet.pdf (nsw.gov.au)	An overview of the required road upgrades is provided in Section 10.1. The turn treatments and available sight distance are discussed at Section 7. Swept path analysis for largest OSOM vehicle utilising intersections and pinch points provided in Appendix A.
Details of traffic routes for operation, construction, and decommissioning on/through the nearby level crossings, under bridges, and overbridges on Country Regional Network (CRN) rail corridors managed by UGLRL.	The OSOM Route Assessment is discussed at Section 6 and attached at Appendix A.
Local climate conditions that may affect road safety for vehicles used during construction, operation and decommissioning of the project (e.g. fog, wet weather, etc)	Recommendations have been provided for inclusion within the TMP which address the proposed operation measures during local climate events explained in Section 9.
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).	Refer to Section 2.6.
Measures to be employed to ensure a high level of road safety for daily staff commutes between accommodation and the construction site, specifically addressing the impacts of unsafe driver behaviour and driver fatigue for all project stages and how measures employed will be enforced.	Recommendations would be made within the TMP. Driver Protocols explained in Section 9.7.
Details of emergency access/egress, including details of: • The location of the emergency accesses. • How the access will be managed (e.g., gates) to prevent non-emergency-related vehicle movements from using it. • Sufficient storage at the throat of the access to allow emergency vehicle(s) to store within the access and not within the through lane or road shoulder.	Measures to manage other risks (medical, fire etc) would be identified and part of future management plans. No impacts would be expected to State Roads as the Project Area does not propose direct access to the State Road network.

TfNSW Comment	Response
In relation to the EIS, TfNSW requires the identification of ancillary infrastructure, such as Electricity Transmission Lines that are crossing or near the state-classified road network or rail infrastructure within TfNSW remit. With respect to this matter the following information is required: • The heights or depths (under boring) and the vertical and horizontal clearances (overhead) in accordance with Austroads. • The method for construction of the transmission lines. • location of infrastructure and impacts (excavation or fill) relative to the road reserve, including demarcation of local and state-classified road reserves. • Access required to construct and maintain the infrastructure. Access points or access tracks required for ETLs or other infrastructure will require the same level of assessment as the primary project access point. ○ Strategic concept designs must be provided for each transmission line crossing the state-classified road network.	No connection works are proposed that cross State Roads.
If workforce accommodation is proposed, then the TIA is required to assess the pre-construction, construction schedule, staging, parallel construction activities and traffic generation until the workforce is fully accommodated at the camp. The traffic assessment requirements identified in this letter will apply to the workforce accommodation.	No workforce accommodation camps are proposed.
The route assessment is required for high risk OSOM (as defined on TfNSW website) required to deliver components to the project. The concept-level route analysis must include: • The port or point of origin and must be for the entire route to the site access or intersections required to facilitate the high risk OSOM movements required for the project. • Overall combination type, configuration, load and vehicle configuration. • The laden dimensions and weight of the vehicle configuration and loads. • The TIA is required to include details of all high risk OSOM loads and vehicle configurations for the project. • The location of pull-over bays / rest areas along the high risk OSOM routes (including GPS coordinates) and demonstrate through swept paths that the high risk OSOMs can be physically accommodate all high risk OSOMs for the project (in terms of size, width and accessibility).	The route assessment of high risk OSOM vehicles and list of OSOM loads and vehicle configurations is within Section 6 and Appendix A.

TfNSW Comment	Response
• Bridge Assessments for any at risk bridges on the classified road network due to dimensions and weight of OSOM vehicles. • The design vehicle templates used in the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN). • Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads. • Traffic mitigation measures or road works, modifications, or road upgrades to facilitate the movement of the high risk OSOM(s) associated with the project. • Potential high level mitigation measures or commitments to mitigate known traffic, safety and impacts to road users along the high risk OSOM route (i.e. school bus routes, mining shift changes, TSRs, harvest periods and events). • Identify and assess implications of any road and rail projects under construction during the indicative schedule for project related OSOM movements.	High level route assessment of one OSOM route for the largest BESS component has been completed and provided in Section 6. The bridge and culvert assessment is discussed at Section 6.2.1 with TfNSW correspondence attached at Appendix I. Swept path analysis undertaken using AutoTrack software and is provided in Appendix A. Temporary measures are required such as signage relocation and hardstands, as indicated at each pinch point along the assessed route.

Appendix C

Turning Movement Count Data



A:	Brayton Rd
B:	Canyonleigh Rd
C:	Brayton Rd
D:	Carrick Rd
E:	Bulls Pit Rd

Survey	AM: 6:00 AM-10:00
PM: 2:30 PM-7:00 P	
Peak	AM: 7:45 AM-8:45 A
PM: 3:45 PM-4:45 P	

All Vehicles

Time		A - Brayton Rd					B - Canyonleigh Rd					C - Brayton Rd					D - Carrick Rd					E - Bulls Pit Rd					Hourly Total	Peak		
Period Start	Period End	U	B	C	D	E	U	A	C	D	E	U	A	B	D	E	U	A	B	C	E	U	A	B	C	D	Hour	Peak		
6:00	6:15	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27			
6:15	6:30	0	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	2	2	0	0	0	0	0	0	0	27			
6:30	6:45	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	27		
6:45	7:00	0	0	1	0	0	0	0	0	0	0	0	1	0	0	4	0	0	3	0	0	0	0	0	0	0	0	33		
7:00	7:15	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	35		
7:15	7:30	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	5	0	41		
7:30	7:45	0	0	5	0	1	0	0	0	0	1	0	0	1	1	0	2	0	1	0	0	1	0	0	0	0	0	51		
7:45	8:00	1	0	3	0	0	0	0	0	0	1	0	1	0	0	2	1	0	0	0	0	1	0	0	0	0	1	55	Peak	
8:00	8:15	0	0	1	1	0	0	1	1	0	0	0	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0	55	Peak	
8:15	8:30	0	0	7	4	0	0	0	2	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	2	0	53		
8:30	8:45	0	0	7	1	0	0	0	1	0	0	0	2	1	0	3	0	0	0	0	0	0	1	0	1	0	1	46		
8:45	9:00	0	0	1	1	0	0	0	2	0	0	0	0	0	0	3	0	0	1	1	0	0	0	0	0	0	2	40		
9:00	9:15	0	0	0	1	0	0	0	0	0	0	1	0	4	0	0	0	0	1	0	0	0	0	0	0	0	0	33		
9:15	9:30	0	0	3	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	3	0			
9:30	9:45	0	0	1	0	0	0	0	0	2	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	4	0			
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0			
14:30	14:45	0	0	3	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	4	0	49		
14:45	15:00	0	0	1	0	0	0	0	1	1	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	3	0	52		
15:00	15:15	0	0	0	1	0	0	0	0	1	1	0	0	1	2	1	5	0	0	0	0	0	0	0	0	0	0	51		
15:15	15:30	0	0	2	0	0	0	0	0	0	1	0	0	4	2	0	1	0	1	1	0	1	0	0	0	3	0	60		
15:30	15:45	0	0	0	1	0	0	0	1	3	0	0	0	3	1	1	0	0	0	1	2	0	0	0	0	0	0	60		
15:45	16:00	0	0	0	0	0	0	0	2	0	0	0	0	4	1	1	1	0	0	0	0	0	0	0	0	1	0	64	Peak	
16:00	16:15	0	0	1	0	0	0	0	1	0	0	0	0	4	0	11	0	0	1	1	0	0	0	0	0	0	2	0	63	
16:15	16:30	1	0	2	0	0	1	0	0	0	1	0	0	1	2	1	2	0	1	0	2	0	1	0	0	1	0	51		
16:30	16:45	0	0	2	1	0	0	0	0	1	1	1	0	4	0	0	2	0	1	2	1	0	0	0	0	0	1	0	51	
16:45	17:00	0	0	1	0	0	0	0	0	0	0	0	0	3	1	1	2	0	1	0	0	0	0	0	0	0	0	41		
17:00	17:15	0	0	0	0	0	0	0	0	0	1	0	0	3	1	1	0	0	0	0	2	0	0	0	0	0	1	0	39	
17:15	17:30	0	0	5	0	0	0	0	0	1	2	0	0	0	3	0	0	1	0	1	0	0	1	0	0	0	2	0	39	
17:30	17:45	0	0	1	0	0	0	0	0	1	0	0	0	3	0	1	1	0	0	0	0	0	0	0	0	0	0	30		
17:45	18:00	0	0	1	0	0	0	0	0	0	0	0	0	2	1	2	0	0	1	0	0	0	0	0	0	0	0	28		
18:00	18:15	0	0	2	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	23	
18:15	18:30	0	0	0	0	0	0	0	1	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0			
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	1	1	0	0	0	0	0	0			
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0			

Peak Time		A - Brayton Rd					B - Canyonleigh Rd					C - Brayton Rd					D - Carrick Rd					E - Bulls Pit Rd					Peak total
Period Start	Period End	U	B	C	D	E	U	A	C	D	E	U	A	B	D	E	U	A	B	C	E	U	A	B	C	D	
7:45	8:45	1	0	18	6	0	0	1	4	1	0	1	4	4	2	6	0	0	1	0	0	1	1	0	3	1	49
15:45	16:45	1	0	5	1	0	1	0	4	2	1	0	13	3	13	5	0	3	3	3	0	1	0	0	5	0	58



Light Vehicles

Time		A - Brayton Rd					B - Canyonleigh Rd					C - Brayton Rd					D - Carrick Rd					E - Bulls Pit Rd				
Period Start	Period End	U	B	C	D	E	U	A	C	D	E	U	A	B	D	E	U	A	B	C	E	U	A	B	C	D
6:00	6:15	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15	6:30	0	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0
6:30	6:45	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
6:45	7:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0
7:00	7:15	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0
7:30	7:45	0	0	5	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0
7:45	8:00	0	0	3	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1
8:00	8:15	0	0	1	1	0	0	1	1	0	0	0	1	3	0	1	0	0	0	0	0	0	0	0	0	0
8:15	8:30	0	0	7	3	0	0	0	2	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	2	0
8:30	8:45	0	0	6	1	0	0	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0	1	0	0	0
8:45	9:00	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0
9:00	9:15	0	0	0	1	0	0	0	0	0	1	0	4	0	0	0	0	1	0	0	0	0	0	0	0	0
9:15	9:30	0	0	3	0	0	0	0	0	0	0	0	4	0	0	0	0	0	1	0	0	0	0	0	1	0
9:30	9:45	0	0	1	0	0	0	0	2	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	1	0
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
14:30	14:45	0	0	3	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0
14:45	15:00	0	0	1	0	0	0	1	1	1	0	0	3	0	0	0	0	0	0	1	0	0	0	0	1	0
15:00	15:15	0	0	0	1	0	0	0	1	1	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0
15:15	15:30	0	0	2	0	0	0	0	0	1	0	0	3	2	0	1	0	1	1	0	1	0	0	0	1	0
15:30	15:45	0	0	0	1	0	0	1	3	0	0	0	3	1	1	0	0	0	1	2	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	2	0	0	0	4	1	1	0	0	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	1	0	0	0	0	1	0	0	0	4	0	11	0	0	1	1	0	0	0	0	0	1	0
16:15	16:30	0	0	2	0	0	1	0	0	1	0	0	1	2	1	1	0	1	0	1	0	1	0	0	0	0
16:30	16:45	0	0	1	1	0	0	0	1	1	1	0	4	0	0	0	0	1	1	1	0	0	0	0	1	0
16:45	17:00	0	0	1	0	0	0	0	0	0	0	0	3	1	1	2	0	1	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	1	0	0	3	1	1	0	0	0	0	2	0	0	0	0	1	0
17:15	17:30	0	0	5	0	0	0	0	1	1	0	0	3	0	0	1	0	1	0	0	1	0	0	0	1	0
17:30	17:45	0	0	1	0	0	0	0	1	0	0	0	3	0	1	1	0	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	1	0	0	0	0	0	0	0	0	2	1	2	0	0	1	0	0	0	0	0	0	0	0
18:00	18:15	0	0	2	0	0	0	0	0	3	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0
18:15	18:30	0	0	0	0	0	0	0	1	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	1	1	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0

Peak Time		A - Brayton Rd					B - Canyonleigh Rd					C - Brayton Rd					D - Carrick Rd					E - Bulls Pit Rd					Peak total
Period Start	Period End	U	B	C	D	E	U	A	C	D	E	U	A	B	D	E	U	A	B	C	E	U	A	B	C	D	
7:45	8:45	0	0	17	5	0	0	1	4	1	0	0	4	4	1	2	0	0	1	0	0	1	1	0	2	1	40
15:45	16:45	0	0	4	1	0	1	0	4	2	1	0	13	3	13	1	0	3	2	2	0	1	0	0	2	0	50

Heavy Vehicle

Time		A - Brayton Rd					B - Canyonleigh Rd					C - Brayton Rd					D - Carrick Rd					E - Bulls Pit Rd				
Period Start	Period End	U	B	C	D	E	U	A	C	D	E	U	A	B	D	E	U	A	B	C	E	U	A	B	C	D
6:00	6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15	6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30	6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
6:45	7:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0
7:00	7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	7:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
7:30	7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0
7:45	8:00	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8:00	8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	8:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	8:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0
8:45	9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
14:30	14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
14:45	15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
15:00	15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
15:30	15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
16:00	16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:15	16:30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0
16:30	16:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:30	17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Time		A - Brayton Rd					B - Canyonleigh Rd					C - Brayton Rd					D - Carrick Rd					E - Bulls Pit Rd					Peak	
Period Start	Period End	U		R	SB	L	U		R	WB	L	U		R	NB	L	U		R	EB	L	U		R	EB	L	total	
7:45	8:45	1	0	1	1	0	0	0	0	0	0	1	0	0	1	4	0	0	0	0	0	0	0	0	0	1	0	9
15:45	16:45	1	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	1	1	0	0	0	0	0	3	0	8

Appendix D

Tube Count Data



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

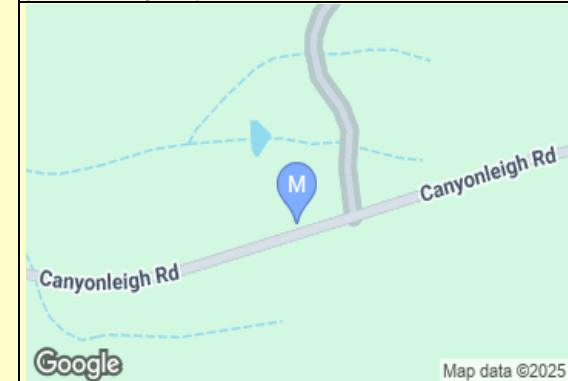
Street Name :	Canyonleigh Rd	Location :	Near Property 962
Suburb :	Brayton	Start Date :	00:00 Thu 20/March/2025
Machine ID:	A20P5ZNX	Finish Date :	00:00 Thu 27/March/2025
Site ID:	3776	Speed Zone :	70 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information		Lat	34° 37' 5.15 South	Direction of Travel		
				Both directions	Westbound	Eastbound
		Long	150° 3' 14.51 East			
Traffic Volume : (Vehicles/Day)		Weekdays Average		19	8	11
		7 Day Average		27	13	14
Weekday	AM	09:00		3	1	2
Peak hour start	PM	12:00		2	0	1
Speeds : (Km/Hr)		85th Percentile		65.3	60.3	72.4
		Average		61.9	56.9	69.3
Classification % :		Light Vehicles up to 5.5m		92.6%	92.3%	92.9%

Location

GPS Information [Load Google Map \(internet required\)](#)

(Latitude, Longitude) -34.618096, 150.054031



[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



Site Canyonleigh Rd

Direction Both directions ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	24/03/2025	25/03/2025	26/03/2025	20/03/2025	21/03/2025	22/03/2025	23/03/2025	Total	Average	Total	Average	Total	Average
AM Peak	07:00	09:00	09:00	09:00	11:00	11:00	09:00	N/A	11:00	N/A	09:00	N/A	11:00
PM Peak	15:00	12:00	13:00	13:00	16:00	14:00	12:00	N/A	12:00	N/A	12:00	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	1	0	0	1	0	1	0	0	0
02:00	1	0	0	0	0	0	0	1	0	1	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	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	2	1	0	0	1	0	0	4	1	4	1	0	0
07:00	8	0	0	1	0	1	0	10	1	9	2	1	1
08:00	0	1	2	0	1	4	0	8	1	4	1	4	2
09:00	1	2	5	3	2	5	4	22	3	13	3	9	5
10:00	2	0	0	0	1	2	2	7	1	3	1	4	2
11:00	3	1	3	1	7	7	4	26	4	15	3	11	6
12:00	2	4	0	1	1	1	11	20	3	8	2	12	6
13:00	1	1	3	4	0	1	3	13	2	9	2	4	2
14:00	0	2	0	2	1	4	2	11	2	5	1	6	3
15:00	4	0	1	1	2	2	6	16	2	8	2	8	4
16:00	3	2	1	0	4	1	8	19	3	10	2	9	5
17:00	2	0	0	0	0	2	3	7	1	2	0	5	3
18:00	3	0	2	0	3	2	2	12	2	8	2	4	2
19:00	2	0	0	0	0	1	2	5	1	2	0	3	2
20:00	0	0	0	0	1	0	0	1	0	1	0	0	0
21:00	0	0	0	0	1	0	9	10	1	1	0	9	5
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	34	14	17	13	26	33	56	193	28	104	21	89	45
% Heavy	14.71%	21.43%	11.76%	23.08%	11.54%	3.03%	5.36%	10.36%		15.38%		4.49%	



Site Canyonleigh Rd

Direction ▼[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	24/03/2025	25/03/2025	26/03/2025	20/03/2025	21/03/2025	22/03/2025	23/03/2025	Total	Average	Total	Average	Total	Average
AM Peak	10:00	09:00	11:00	07:00	11:00	11:00	11:00	N/A	11:00	N/A	11:00	N/A	11:00
PM Peak	15:00	12:00	13:00	13:00	15:00	14:00	12:00	N/A	12:00	N/A	13:00	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	1	0	0	1	0	1	0	0	0
02:00	1	0	0	0	0	0	0	1	0	1	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	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	1	0	0	0	0	0	0	1	0	1	0	0	0
07:00	1	0	0	1	0	0	0	2	0	2	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	2	1	1	1	3	1	9	1	5	1	4	2
10:00	2	0	0	0	1	2	0	5	1	3	1	2	1
11:00	2	0	2	1	5	7	2	19	3	10	2	9	5
12:00	0	2	0	0	0	1	9	12	2	2	0	10	5
13:00	1	0	2	3	0	0	1	7	1	6	1	1	1
14:00	0	1	0	1	1	3	0	6	1	3	1	3	2
15:00	3	0	0	0	2	0	0	5	1	5	1	0	0
16:00	1	1	0	0	0	0	4	6	1	2	0	4	2
17:00	2	0	0	0	0	1	0	3	0	2	0	1	1
18:00	3	0	2	0	1	2	0	8	1	6	1	2	1
19:00	1	0	0	0	0	1	0	2	0	1	0	1	1
20:00	0	0	0	0	1	0	0	1	0	1	0	0	0
21:00	0	0	0	0	0	0	9	9	1	0	0	9	5
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	18	6	7	7	13	20	26	97	14	51	10	46	23
% Heavy	16.67%	16.67%	28.57%	28.57%	7.69%	5.00%	3.85%	11.34%		17.65%		4.35%	



Site Canyonleigh Rd

Direction ▼[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	24/03/2025	25/03/2025	26/03/2025	20/03/2025	21/03/2025	22/03/2025	23/03/2025	Total	Average	Total	Average	Total	Average
AM Peak	07:00	06:00	09:00	09:00	11:00	08:00	09:00	N/A	09:00	N/A	09:00	N/A	09:00
PM Peak	12:00	12:00	13:00	12:00	16:00	15:00	15:00	N/A	15:00	N/A	16:00	N/A	15:00
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	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	1	1	0	0	1	0	0	3	0	3	1	0	0
07:00	7	0	0	0	0	1	0	8	1	7	1	1	1
08:00	0	1	2	0	1	4	0	8	1	4	1	4	2
09:00	1	0	4	2	1	2	3	13	2	8	2	5	3
10:00	0	0	0	0	0	0	2	2	0	0	0	2	1
11:00	1	1	1	0	2	0	2	7	1	5	1	2	1
12:00	2	2	0	1	1	0	2	8	1	6	1	2	1
13:00	0	1	1	1	0	1	2	6	1	3	1	3	2
14:00	0	1	0	1	0	1	2	5	1	2	0	3	2
15:00	1	0	1	1	0	2	6	11	2	3	1	8	4
16:00	2	1	1	0	4	1	4	13	2	8	2	5	3
17:00	0	0	0	0	0	1	3	4	1	0	0	4	2
18:00	0	0	0	0	2	0	2	4	1	2	0	2	1
19:00	1	0	0	0	0	0	2	3	0	1	0	2	1
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	1	0	0	1	0	1	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	16	8	10	6	13	13	30	96	14	53	11	43	22
% Heavy	12.50%	25.00%	0.00%	16.67%	15.38%	0.00%	6.67%	9.38%		13.21%		4.65%	

Appendix E

SIDRA Results – Brayton Road/Canyonleigh Road Intersection

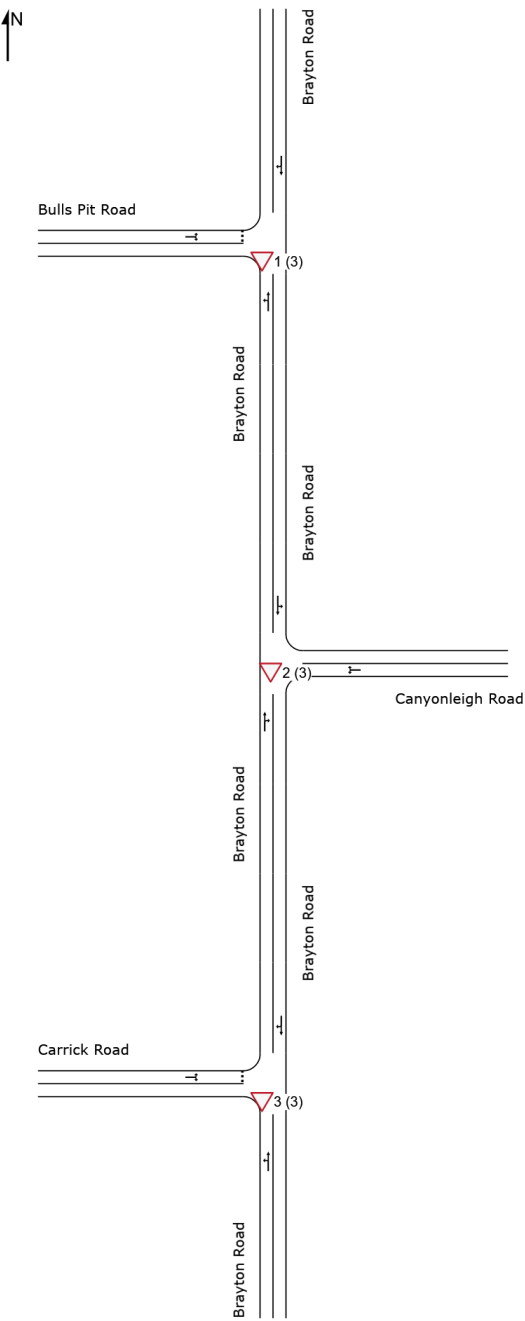


NETWORK LAYOUT

 **Network: [3] Peak Construction - AM Peak** (Peak Construcion
w Growth + Cumulative)

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes

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



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽1 (3)	NA	Brayton Road/Bulls Pit Road - Peak Construction - AM Peak
▽2 (3)	NA	Brayton Road/Canyonleigh Road - Peak Construction - AM Peak
▽3 (3)	NA	Brayton Road/Carrick Road - Peak Construction - AM Peak

MOVEMENT SUMMARY

▼ Site: [1 (3)] Brayton Road/Bulls Pit Road - Peak Construction
- AM Peak (Peak Construction w Growth + Cumulative)
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles	Aver. Speed
			[Total HV]	[Total HV]											
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	[Dist] m		Rate to Depart		km/h
South: Brayton Road															
1	L2	All MCs	7	85.7	7	85.7	0.008	2.7	LOS A	0.0	0.0	0.00	0.39	0.00	35.1
2	T1	All MCs	2	50.0	2	50.0	0.008	0.0	LOS A	0.0	0.0	0.00	0.39	0.00	75.7
Approach			9	77.8	9	77.8	0.008	2.1	NA	0.0	0.0	0.00	0.39	0.00	39.9
North: Brayton Road															
8	T1	All MCs	11	0.0	11	0.0	0.006	0.0	LOS A	0.0	0.0	0.01	0.06	0.01	77.8
9	R2	All MCs	1	0.0	1	0.0	0.006	6.6	LOS A	0.0	0.0	0.01	0.06	0.01	72.3
Approach			12	0.0	12	0.0	0.006	0.6	NA	0.0	0.0	0.01	0.06	0.01	76.9
West: Bulls Pit Road															
10	L2	All MCs	1	0.0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.03	0.62	0.03	64.5
12	R2	All MCs	1	0.0	1	0.0	0.001	6.6	LOS A	0.0	0.0	0.03	0.62	0.03	58.2
Approach			2	0.0	2	0.0	0.001	6.8	LOS A	0.0	0.0	0.03	0.62	0.03	62.2
All Vehicles			23	31.8	23	31.8	0.008	1.8	NA	0.0	0.0	0.01	0.25	0.01	55.7

Site Level of Service (LOS) Method: Delay (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.

MOVEMENT SUMMARY

Site: [2 (3)] Brayton Road/Canyonleigh Road - Peak Construction - AM Peak (Peak Construction w Growth + Cumulative)

Output produced by SIDRA INTERSECTION Version: 10.0.3.210

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh]	[Dist m]		Rate to Depart		km/h
South: Brayton Road															
2	T1	All MCs	9	77.8	9	77.8	0.293	0.0	LOS A	1.7	12.7	0.08	0.52	0.08	38.3
3	R2	All MCs	504	3.3	504	3.3	0.293	2.9	LOS A	1.7	12.7	0.08	0.52	0.08	59.7
Approach			514	4.7	514	4.7	0.293	2.8	NA	1.7	12.7	0.08	0.52	0.08	59.6
East: Canyonleigh Road															
4	L2	All MCs	29	57.1	29	57.1	0.025	8.0	LOS A	0.1	1.0	0.06	0.60	0.06	54.6
6	R2	All MCs	1	0.0	1	0.0	0.025	8.2	LOS A	0.1	1.0	0.06	0.60	0.06	56.1
Approach			31	55.2	31	55.2	0.025	8.0	LOS A	0.1	1.0	0.06	0.60	0.06	54.6
North: Brayton Road															
7	L2	All MCs	1	0.0	1	0.0	0.007	2.7	LOS A	0.0	0.0	0.00	0.05	0.00	68.0
8	T1	All MCs	12	0.0	12	0.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	74.2
Approach			13	0.0	13	0.0	0.007	0.2	NA	0.0	0.0	0.00	0.05	0.00	71.5
All Vehicles			557	7.4	557	7.4	0.293	3.1	NA	1.7	12.7	0.07	0.52	0.07	59.3

Site Level of Service (LOS) Method: Delay (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 (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▽ Site: [3 (3)] Brayton Road/Carrick Road - Peak Construction - AM Peak (Peak Construction w Growth + Cumulative)
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				
			veh/h	%	veh/h	%									
South: Brayton Road															
1	L2	All MCs	1	0.0	1	0.0	0.269	7.0	LOS A	0.0	0.0	0.00	0.00	0.00	73.4
2	T1	All MCs	508	4.8	508	4.8	0.269	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach			509	4.8	509	4.8	0.269	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.7
North: Brayton Road															
8	T1	All MCs	40	42.1	40	42.1	0.027	0.1	LOS A	0.0	0.1	0.03	0.04	0.03	67.9
9	R2	All MCs	1	0.0	1	0.0	0.027	4.9	LOS A	0.0	0.1	0.03	0.04	0.03	59.4
Approach			41	41.0	41	41.0	0.027	0.2	NA	0.0	0.1	0.03	0.04	0.03	67.6
West: Carrick Road															
10	L2	All MCs	5	0.0	5	0.0	0.008	8.9	LOS A	0.0	0.2	0.47	0.66	0.47	36.9
12	R2	All MCs	2	0.0	2	0.0	0.008	9.1	LOS A	0.0	0.2	0.47	0.66	0.47	59.8
Approach			7	0.0	7	0.0	0.008	8.9	LOS A	0.0	0.2	0.47	0.66	0.47	44.1
All Vehicles			558	7.4	558	7.4	0.269	0.2	NA	0.0	0.2	0.01	0.01	0.01	77.7

Site Level of Service (LOS) Method: Delay (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 (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: [1 (4)] Brayton Road/Bulls Pit Road - Peak Construction
- PM Peak (Peak Construction w Growth + Cumulative)
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand		Arrival		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			Flows		Flows					[Veh. Dist]					
			[Total HV] veh/h	%	[Total HV] veh/h	%				veh	m				
South: Brayton Road															
1	L2	All MCs	3	0.0	3	0.0	0.009	2.7	LOS A	0.0	0.0	0.00	0.10	0.00	67.4
2	T1	All MCs	15	0.0	15	0.0	0.009	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	78.4
Approach			18	0.0	18	0.0	0.009	0.5	NA	0.0	0.0	0.00	0.10	0.00	76.2
North: Brayton Road															
8	T1	All MCs	7	0.0	7	0.0	0.004	0.0	LOS A	0.0	0.0	0.02	0.08	0.02	76.9
9	R2	All MCs	1	0.0	1	0.0	0.004	6.6	LOS A	0.0	0.0	0.02	0.08	0.02	71.9
Approach			8	0.0	8	0.0	0.004	0.8	NA	0.0	0.0	0.02	0.08	0.02	75.8
West: Bulls Pit Road															
10	L2	All MCs	1	0.0	1	0.0	0.004	7.0	LOS A	0.0	0.1	0.07	0.61	0.07	63.5
12	R2	All MCs	3	33.3	3	33.3	0.004	7.4	LOS A	0.0	0.1	0.07	0.61	0.07	56.3
Approach			4	25.0	4	25.0	0.004	7.3	LOS A	0.0	0.1	0.07	0.61	0.07	58.9
All Vehicles			31	3.4	31	3.4	0.009	1.5	NA	0.0	0.1	0.02	0.17	0.02	72.7

Site Level of Service (LOS) Method: Delay (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.

MOVEMENT SUMMARY

▼ Site: [2 (4)] Brayton Road/Canyonleigh Road - Peak Construction - PM Peak (Peak Construction w Growth + Cumulative)

Output produced by SIDRA INTERSECTION Version: 10.0.3.210

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	Dist]				km/h
			veh/h		veh/h					veh	m				
South: Brayton Road															
2	T1	All MCs	18	0.0	18	0.0	0.034	0.0	LOS A	0.2	1.4	0.07	0.34	0.07	49.5
3	R2	All MCs	31	55.2	31	55.2	0.034	2.9	LOS A	0.2	1.4	0.07	0.34	0.07	41.4
Approach			48	34.8	48	34.8	0.034	1.8	NA	0.2	1.4	0.07	0.34	0.07	41.8
East: Canyonleigh Road															
4	L2	All MCs	504	3.5	504	3.5	0.318	7.0	LOS A	1.7	12.4	0.07	0.60	0.07	57.3
6	R2	All MCs	1	0.0	1	0.0	0.318	6.8	LOS A	1.7	12.4	0.07	0.60	0.07	57.8
Approach			505	3.5	505	3.5	0.318	7.0	LOS A	1.7	12.4	0.07	0.60	0.07	57.3
North: Brayton Road															
7	L2	All MCs	1	0.0	1	0.0	0.007	2.7	LOS A	0.0	0.0	0.00	0.05	0.00	68.0
8	T1	All MCs	12	9.1	12	9.1	0.007	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	73.7
Approach			13	8.3	13	8.3	0.007	0.2	NA	0.0	0.0	0.00	0.05	0.00	71.2
All Vehicles			566	6.3	566	6.3	0.318	6.4	NA	1.7	12.4	0.07	0.56	0.07	56.1

Site Level of Service (LOS) Method: Delay (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.

MOVEMENT SUMMARY

▽ Site: [3 (4)] Brayton Road/Carrick Road - Peak Construction - PM Peak (Peak Construction w Growth + Cumulative)
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
South: Brayton Road															
1	L2	All MCs	4	0.0	4	0.0	0.031	7.0	LOS A	0.0	0.0	0.00	0.06	0.00	72.3
2	T1	All MCs	45	37.2	45	37.2	0.031	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	77.2
Approach			49	34.0	49	34.0	0.031	0.6	NA	0.0	0.0	0.00	0.06	0.00	76.4
North: Brayton Road															
8	T1	All MCs	513	3.5	513	3.5	0.271	0.0	LOS A	0.0	0.2	0.00	0.00	0.00	79.8
9	R2	All MCs	3	33.3	3	33.3	0.271	2.9	LOS A	0.0	0.2	0.00	0.00	0.00	50.3
Approach			516	3.7	516	3.7	0.271	0.0	NA	0.0	0.2	0.00	0.00	0.00	79.5
West: Carrick Road															
10	L2	All MCs	3	0.0	3	0.0	0.005	7.1	LOS A	0.0	0.1	0.20	0.57	0.20	36.1
12	R2	All MCs	2	0.0	2	0.0	0.005	9.2	LOS A	0.0	0.1	0.20	0.57	0.20	58.6
Approach			5	0.0	5	0.0	0.005	7.9	LOS A	0.0	0.1	0.20	0.57	0.20	45.8
All Vehicles			571	6.3	571	6.3	0.271	0.1	NA	0.0	0.2	0.00	0.01	0.00	78.5

Site Level of Service (LOS) Method: Delay (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 F

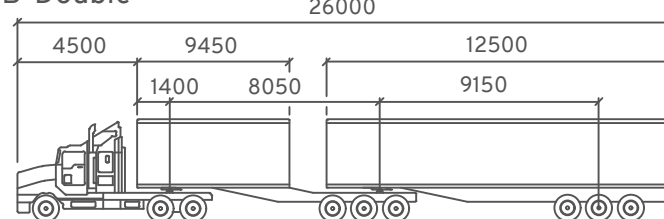
Site Access Design and Swept Path Assessment





Vehicle Envelope
 500mm Clearance
 Reverse Manoeuvre
 Min. Design Speed 5km/h

26.0m B-Double



Tractor Width : 2500 mm
 Trailer Width : 2500
 Tractor Track : 2500
 Trailer Track : 2500
 Lock to Lock : 6.0s
 Steering Angle : 22.2
 Articulating Angle 70.0



Canyonleigh BESS
 Canyonleigh Road, Brayton
 Site Access 1 - Swept Path Assessment

DRAWN: KB
 DATE: 16/06/2025
 DWG NO: 1057 S01A
 SCALE at A3: 1:500m

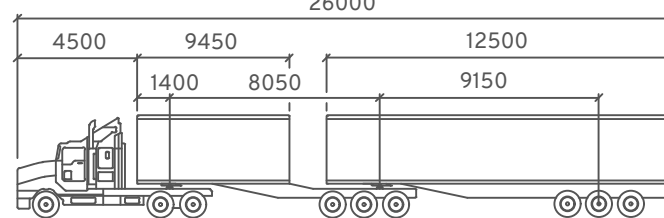
Amber S1-00



Entry Manoeuvre

Vehicle Envelope
 500mm Clearance
 Reverse Manoeuvre
 Min. Design Speed 5km/h

26.0m B-Double



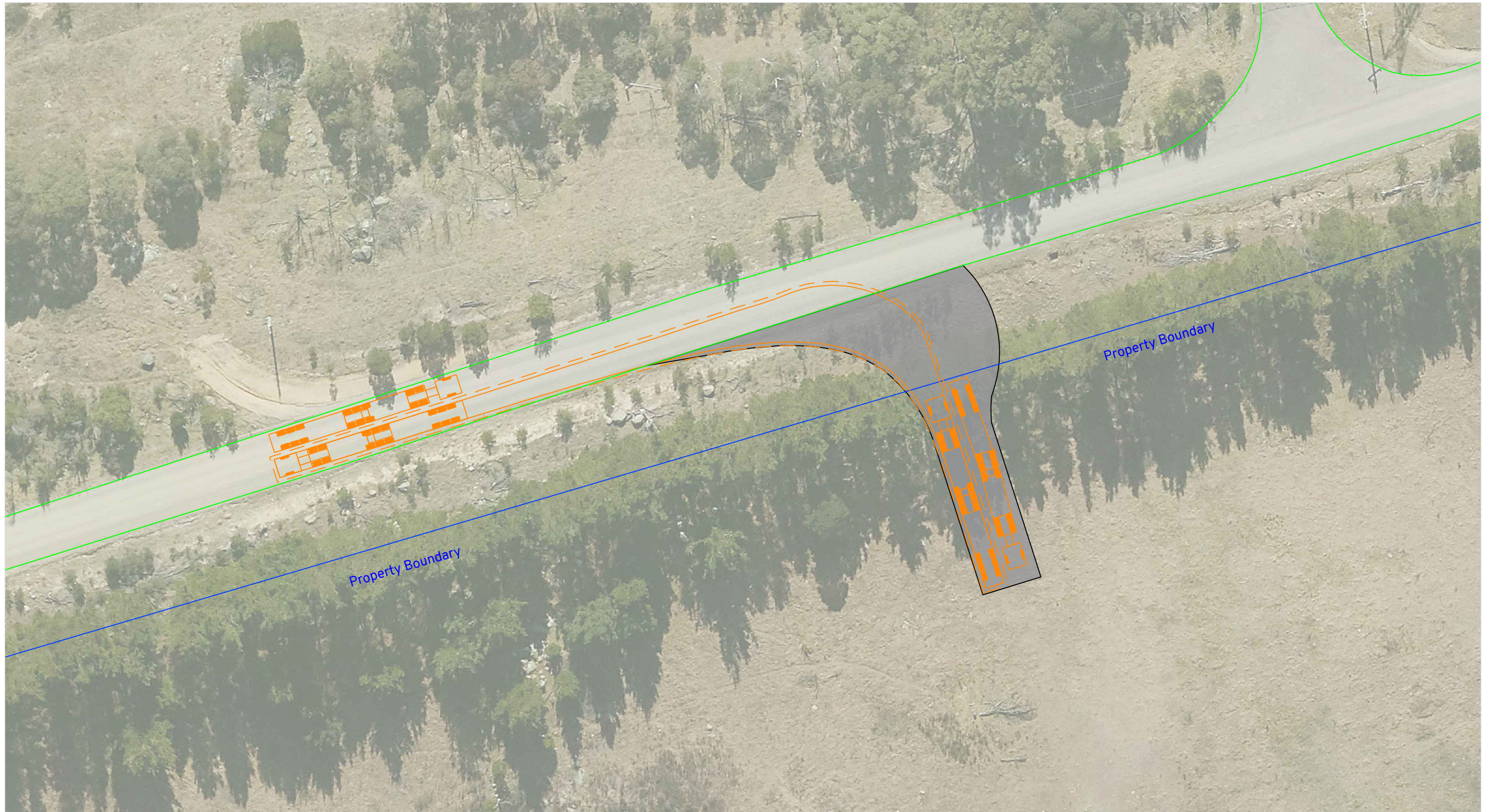
Tractor Width : 2500
 Trailer Width : 2500
 Tractor Track : 2500
 Trailer Track : 2500
 Lock to Lock : 6.0s
 Steering Angle : 22.2
 Articulating Angle : 70.0



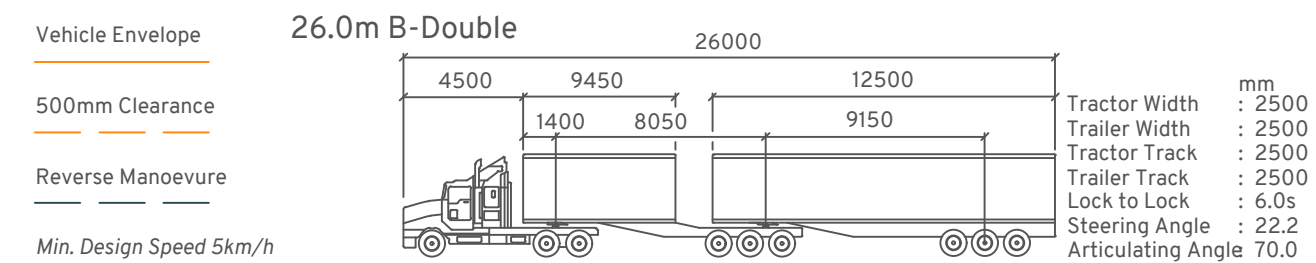
Canyonleigh BESS
 Canyonleigh Road, Brayton
 Site Access 1 - Swept Path Assessment

DRAWN: KB
 DATE: 16/06/2025
 DWG NO: 1057 S01A
 SCALE at A3: 1:500m

Amber S1-01



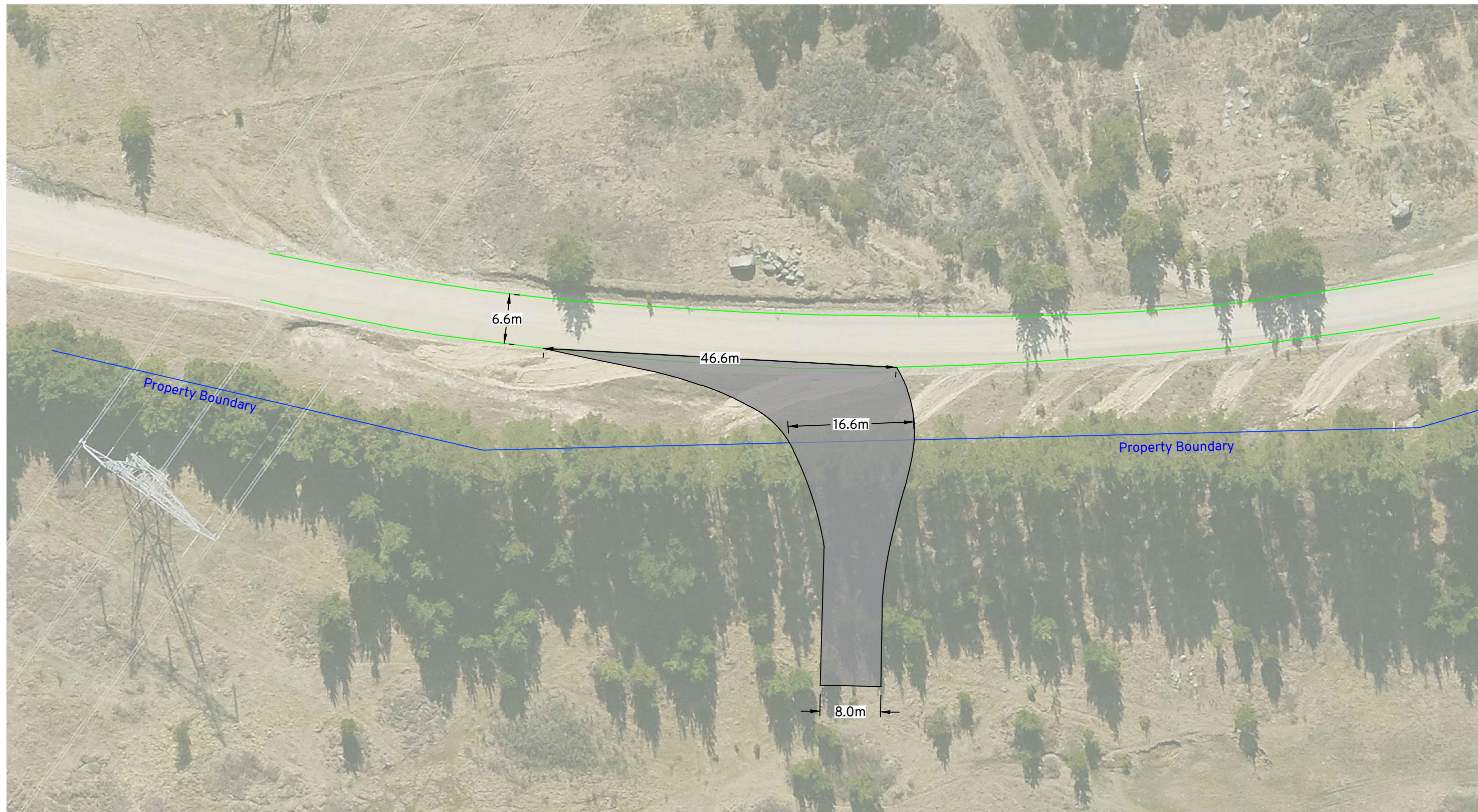
Exit Manoeuvre



Canyonleigh BESS
Canyonleigh Road, Brayton
Site Access 1 - Swept Path Assessment

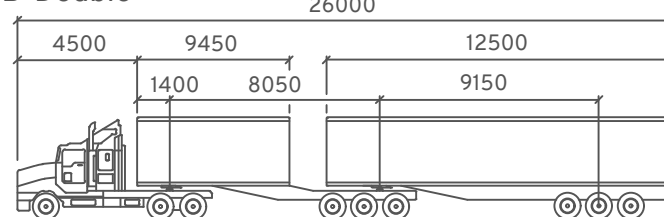
DRAWN: KB
DATE: 16/06/2025
DWG NO: 1057 S01A
SCALE at A3: 1:500m

Amber S1-02



Vehicle Envelope
500mm Clearance
Reverse Manoeuvre
Min. Design Speed 5km/h

26.0m B-Double



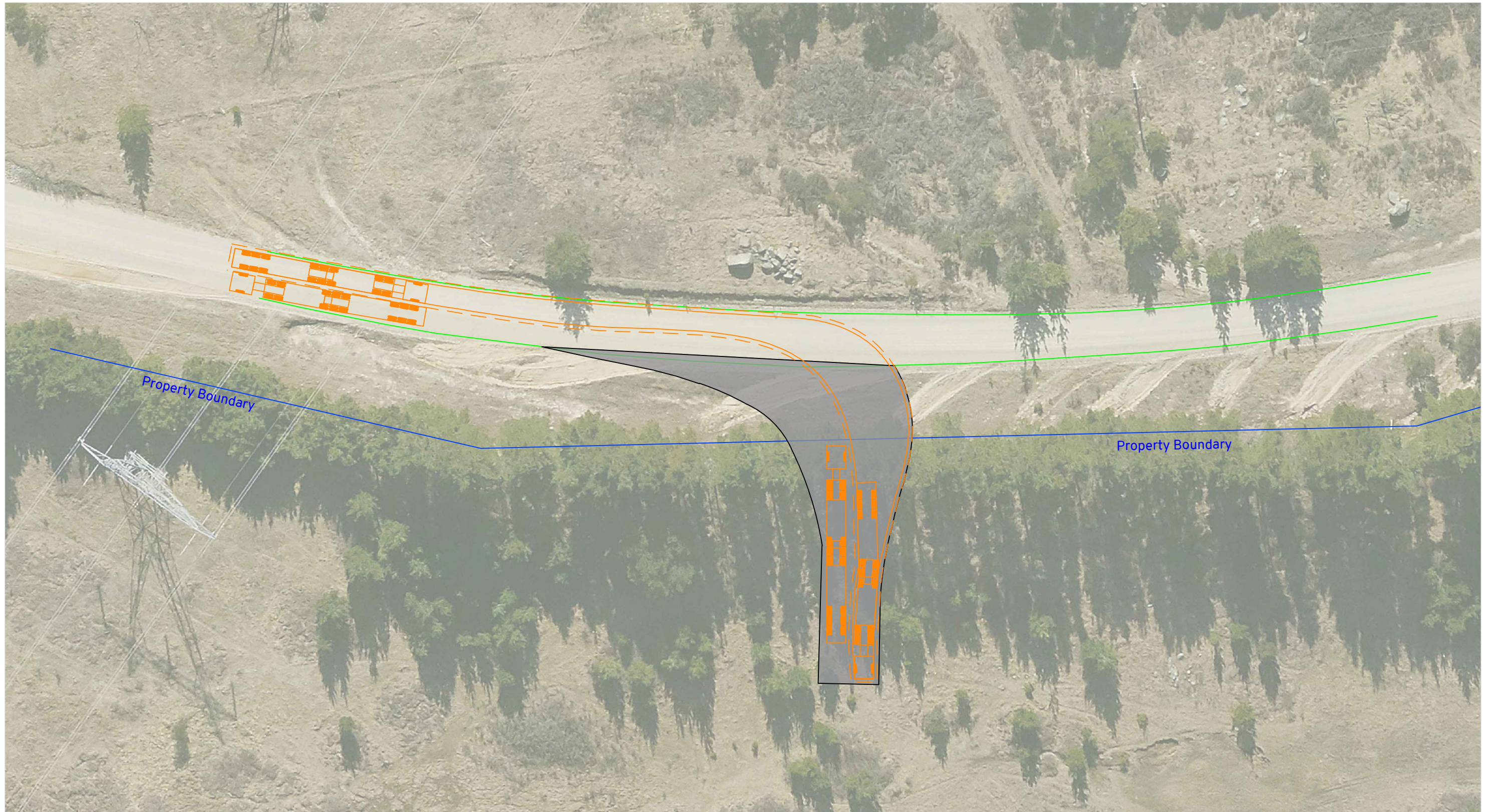
Tractor Width : 2500
Trailer Width : 2500
Tractor Track : 2500
Trailer Track : 2500
Lock to Lock : 6.0s
Steering Angle : 22.2
Articulating Angle : 70.0



Canyonleigh BESS
Canyonleigh Road, Brayton
Site Access 2 - Swept Path Assessment

DRAWN: KB
DATE: 16/06/2025
DWG NO: 1057 S01A
SCALE at A3: 1:500m

Amber S2-00



Entry Manoeuvre

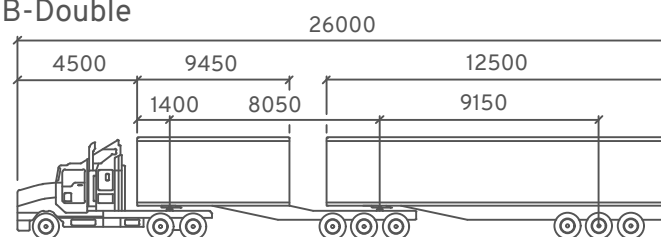
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 5km/h

26.0m B-Double



Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 22.2
Articulating Angle	: 70.0



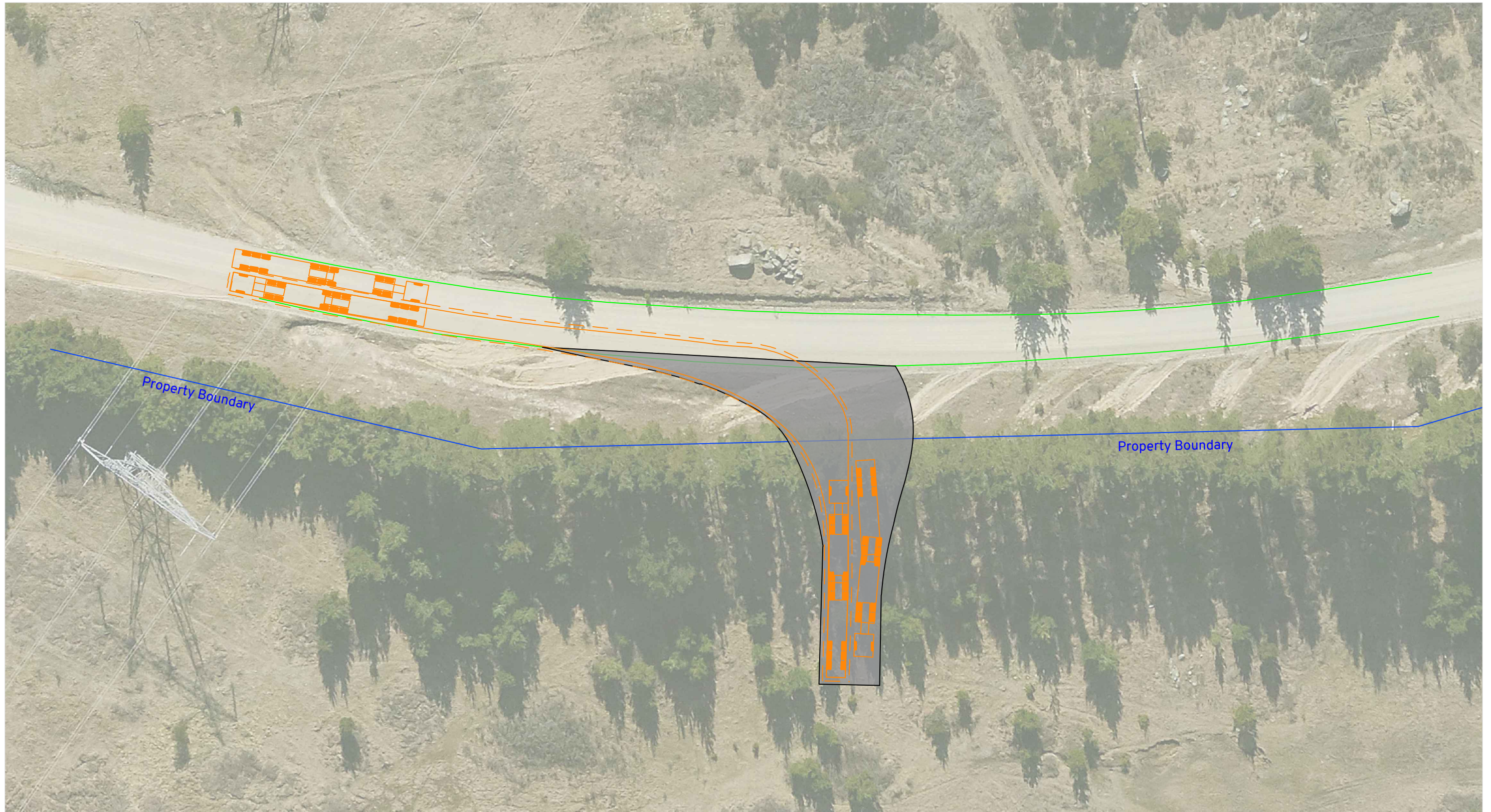
Canyonleigh BESS

Canyonleigh Road, Brayton

Site Access 2 - Swept Path Assessment

DRAWN: KB
DATE: 16/06/2025
DWG NO: 1057 S01A
SCALE at A3: 1:500m

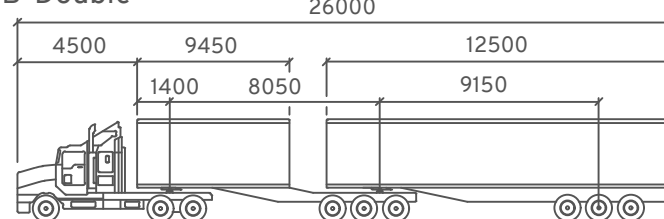
Amber S2-01



Exit Manoeuvre

Vehicle Envelope
 500mm Clearance
 Reverse Manoeuvre
 Min. Design Speed 5km/h

26.0m B-Double



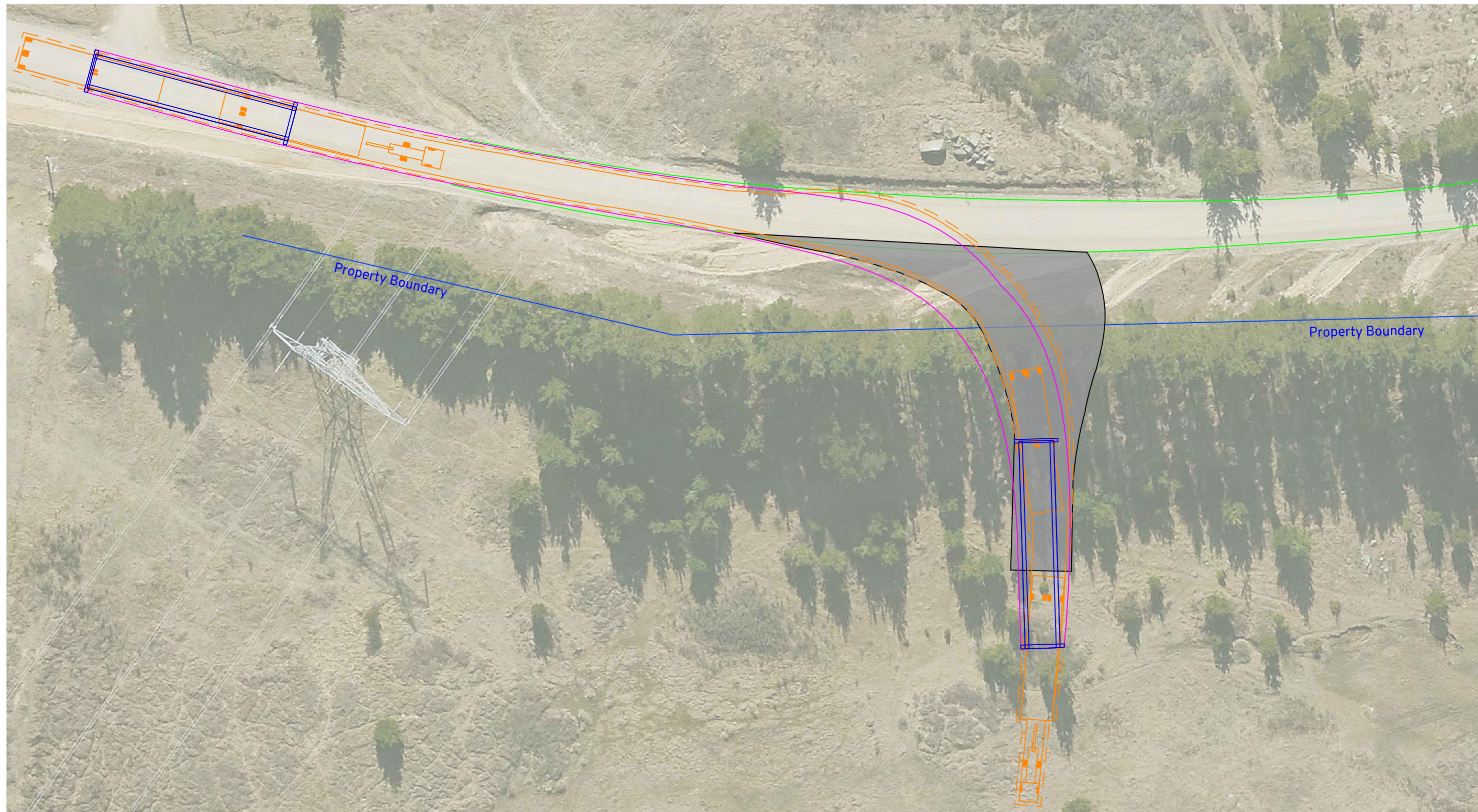
Tractor Width : 2500
 Trailer Width : 2500
 Tractor Track : 2500
 Trailer Track : 2500
 Lock to Lock : 6.0s
 Steering Angle : 22.2
 Articulating Angle : 70.0



Canyonleigh BESS
 Canyonleigh Road, Brayton
 Site Access 2 - Swept Path Assessment

DRAWN: KB
 DATE: 16/06/2025
 DWG NO: 1057 S01A
 SCALE at A3: 1:500m

Amber S2-02



Entry Manoeuvre - Transformer Vehicle

Vehicle Envelope

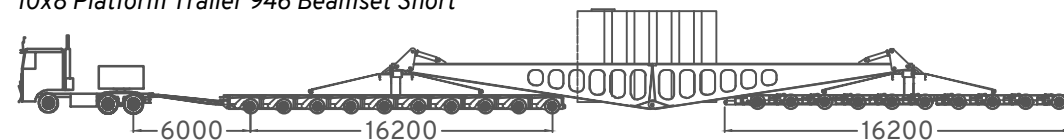
500mm Clearance

Reverse Manoeuvre

Min. Design Speed 5km/h

OSOM Truck Specifications

10x8 Platform Trailer 946 Beamset Short



OSOM Configuration calibrated against similar OSOM configurations and is based on information available at the time of assessment

Overall Length 56.633m
Track width 4.200m
Beamset width 5.740m
Load Height 4.450m
Axle spacing 1.800m



Canyonleigh BESS

Canyonleigh Road, Brayton

Site Access 2 - Swept Path Assessment

DRAWN: KB
DATE: 16/06/2025
DWG NO: 1057 S01A
SCALE at A3: 1:500m

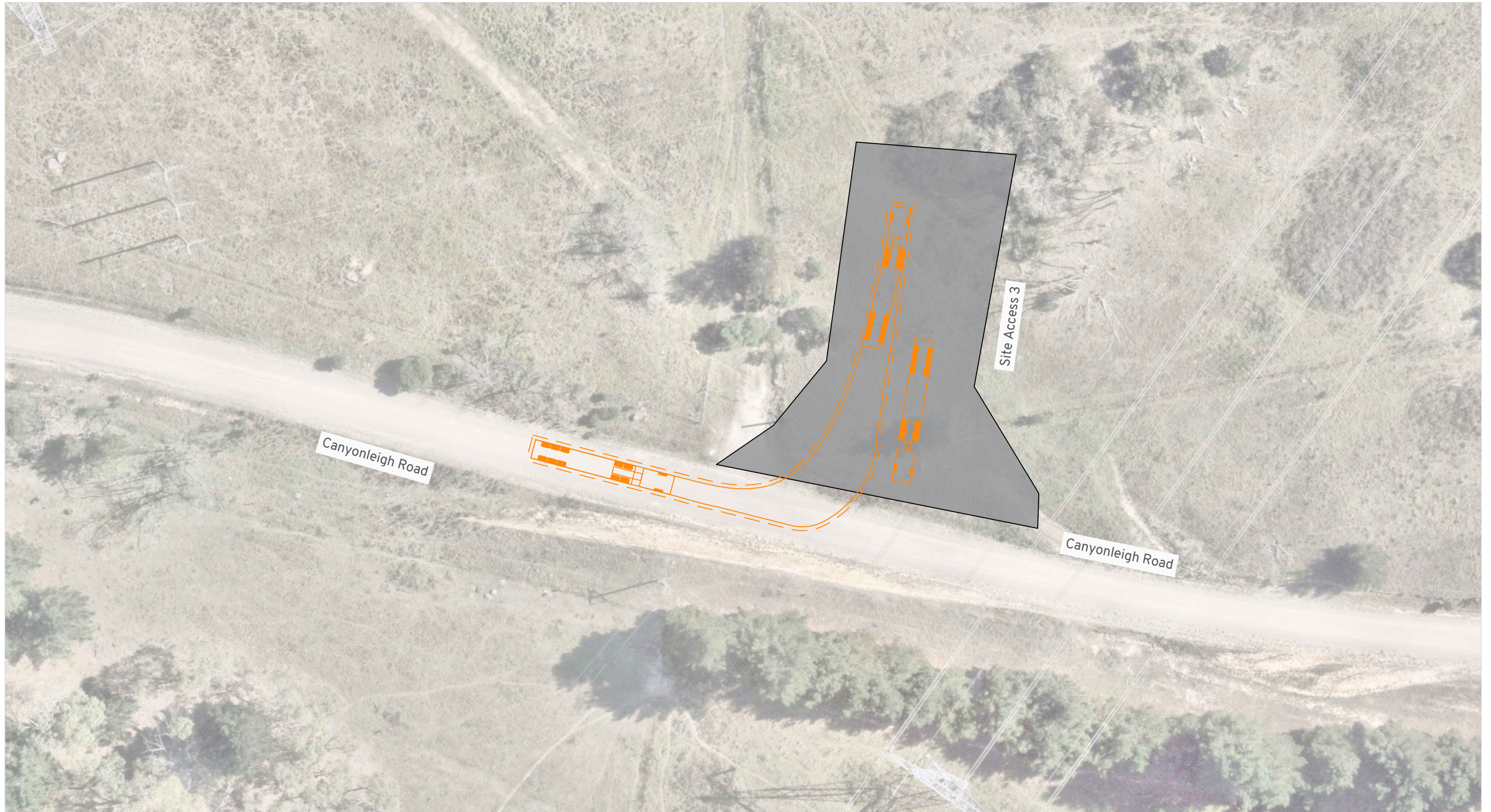
Amber S2-03



Canyonleigh BESS
Canyonleigh Road, Brayton
Site Access 3 - Swept Path Assessment

DRAWN: WC
DATE: 31/10/2025
DWG NO: 1057 S01D
SCALE at A3: 1:500m

Amber S3-00



Entry Manoeuvre

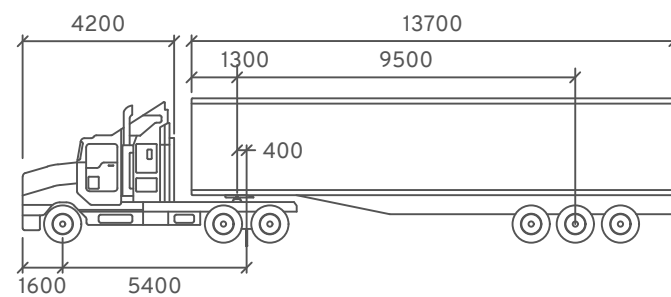
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 5km/h

AV



Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0



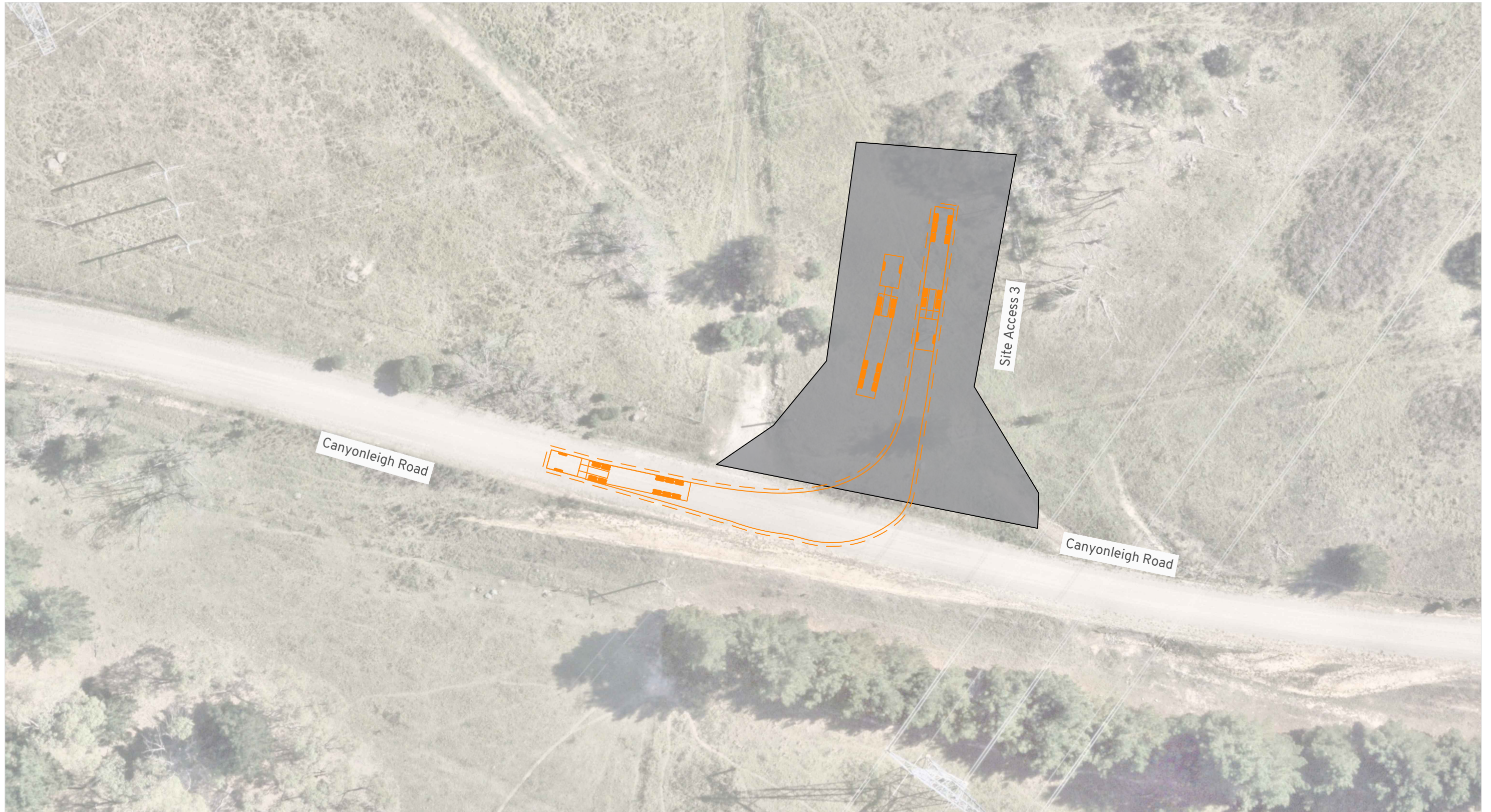
Canyonleigh BESS

Canyonleigh Road, Brayton

Site Access 3 - Swept Path Assessment

DRAWN: WC
DATE: 31/10/2025
DWG NO: 1057 S01D
SCALE at A3: 1:500m

Amber S3-01



Exit Manoeuvre

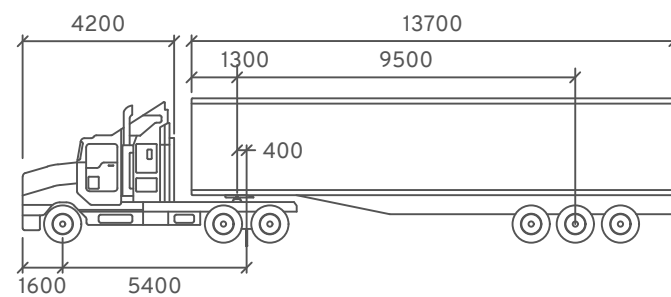
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 5km/h

AV



Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0



Canyonleigh BESS
Canyonleigh Road, Brayton
Site Access 3 - Swept Path Assessment

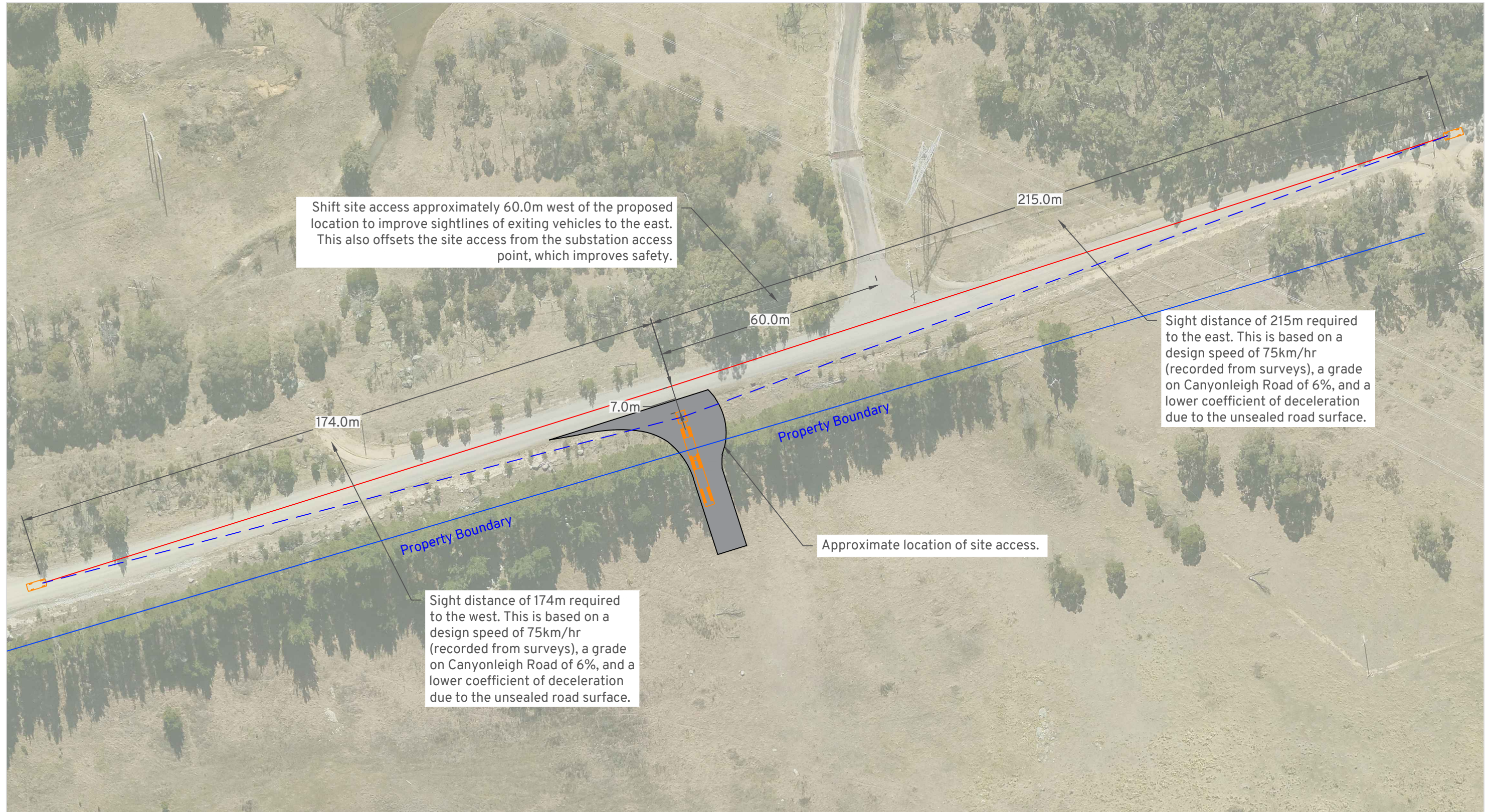
DRAWN: WC
DATE: 31/10/2025
DWG NO: 1057 S01D
SCALE at A3: 1:500m

Amber S3-02

Appendix G

Sight Distance Assessment – Site Accesses





Sight Distance

Sight Line



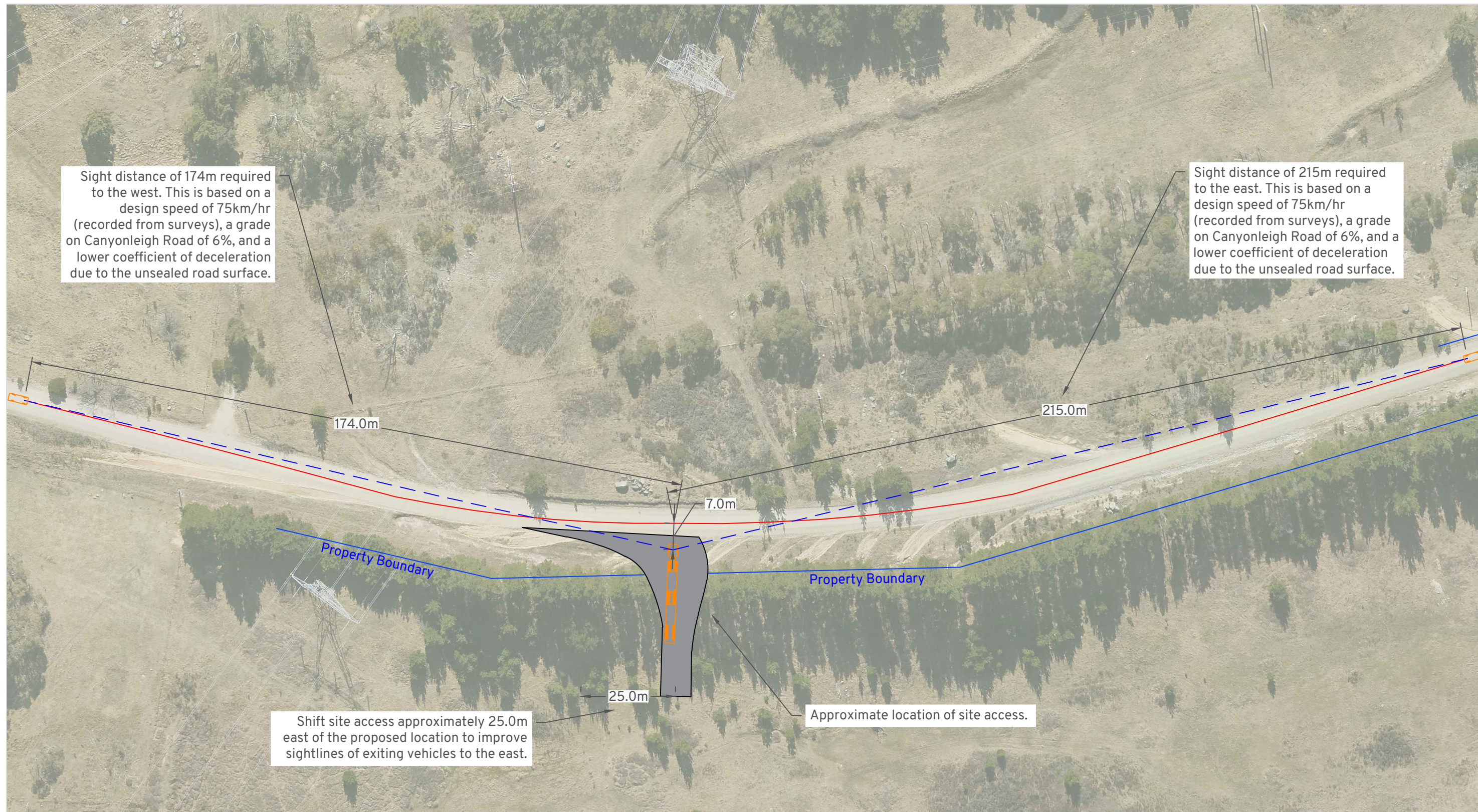
Canyonleigh BESS

Canyonleigh Road, Brayton

Sight Distance Assessment

DRAWN: KB
DATE: 16/06/2025
DWG NO: 1057 S01A
SCALE at A3: 1:1000m





Sight Distance

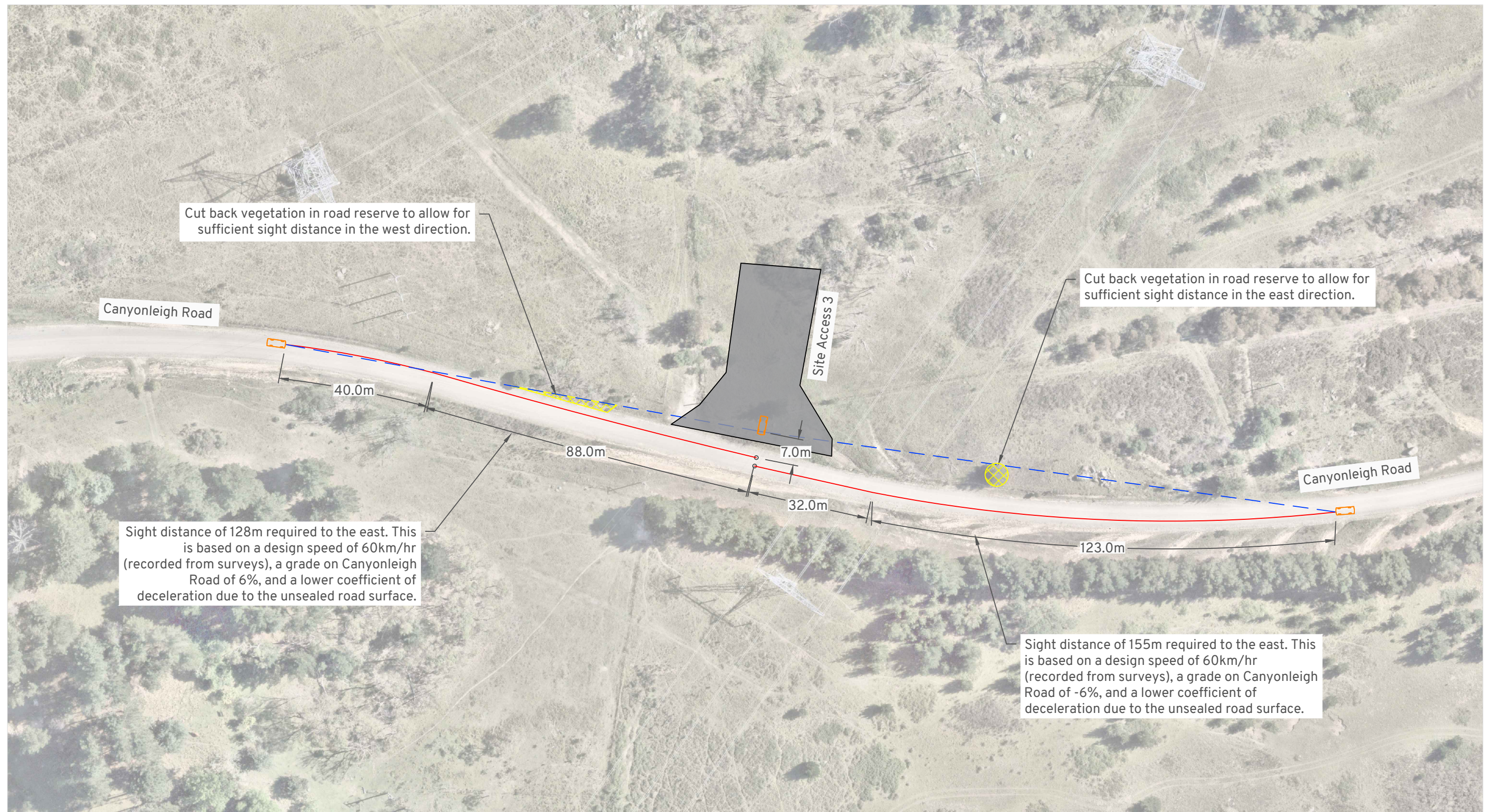
Sight Line



Canyonleigh BESS Canyonleigh Road, Brayton Sight Distance Assessment

DRAWN: KB
DATE: 16/06/2025
DWG NO: 1057 S01A
SCALE at A3: 1:1000m

Amber SD 2



Sight Distance

Sight Line



Canyonleigh BESS

Canyonleigh Road, Brayton
Sight Distance Assessment

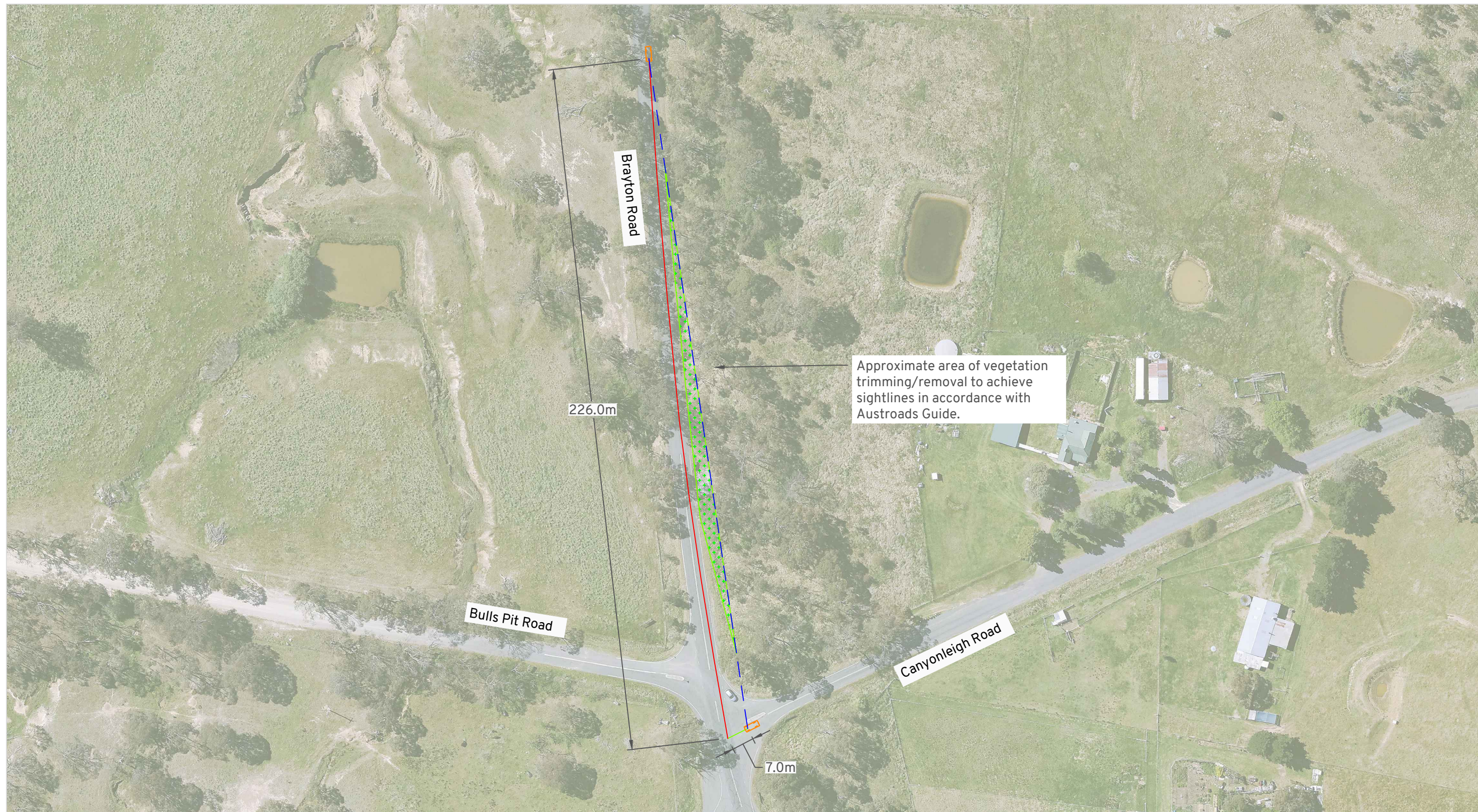
DRAWN: WC
DATE: 31/10/2025
DWG NO: 1057 S01D
SCALE at A3: 1:1000m

Amber SD 3

Appendix H

Sight Distance Assessment – Brayton Road/Canyonleigh Road Intersection





Brayton Road/Canyonleigh Road Intersection - Sight Distance to North

Sight Distance

Sight Line



Canyonleigh BESS
Canyonleigh Road, Brayton
Sight Distance Assessment

DRAWN: KB
DATE: 19/06/2025
DWG NO: 1057 S01A
SCALE at A3: 1:1250m

Amber SD 3A



Brayton Road/Canyonleigh Road Intersection - Sight Distance to South

Sight Distance

Sight Line



Canyonleigh BESS
Canyonleigh Road, Brayton
Sight Distance Assessment

DRAWN: KB
DATE: 19/06/2025
DWG NO: 1057 S01A
SCALE at A3: 1:1250m

Amber SD 3B

Appendix I

TfNSW Bridge and Culvert Assessment Correspondence



Oliver Mihaila

From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Sent: Wednesday, 30 July 2025 11:26 AM
To: Rico Kobelt
Cc: Michelle Shannon
Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

Hi Rico,

Please be advised that Class 1 vehicles are not permitted to travel through tunnels unless written advice is received from the tunnel owner.

Road Access can advise that the route from the Hume Hwy to site is suitable for the listed combination as per our HLP map.

Kind Regards

Tobias Shannon
A/ Manager Road Access
Freight Branch
Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 E tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

Cnr Grey & Ferguson St
Glen Innes NSW 2370



Transport
for NSW



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

Please consider the environment before printing this email.

From: Rico Kobelt <rkobelt@amberorg.com.au>

Sent: Friday, 25 July 2025 11:10 AM

To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>

Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Oliver Mihaila <omihaila@amberorg.com.au>

Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

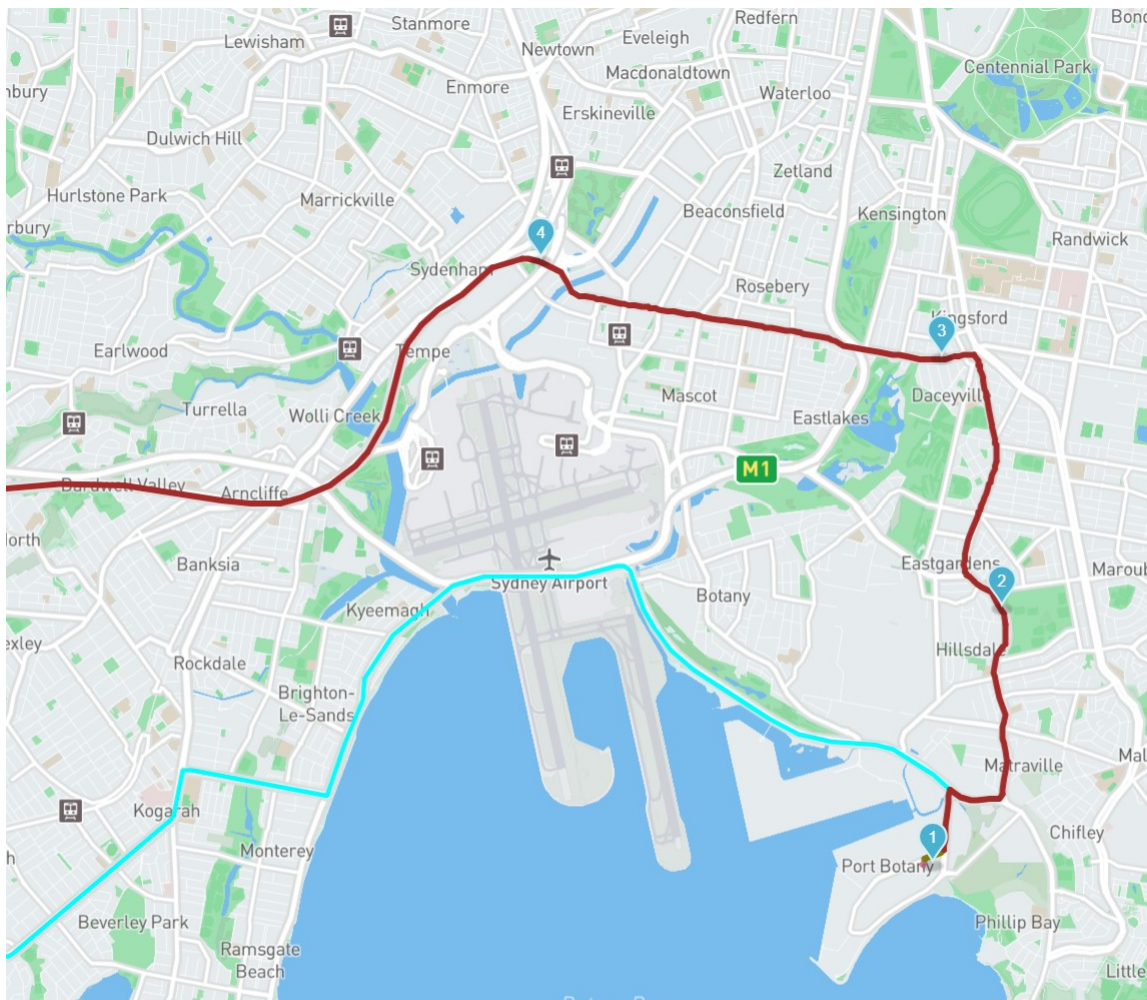
CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi Tobias,

Strange – it appears the route has been altered. The originally created route was to use Bumborah, Botany, Bunnerong and Gardeners Road before entering the M8 tunnel, M5 and M31 (Hume) all the way to Wollongorang Road.

This has now been updated on the same Route ID: **2N8VQ-5 v2**.

Should look like the screenshot below, following the brown route and numbers. Please ignore the light blue route, not sure why that comes up.



Kind regards,

Rico Kobelt
BE (Hons) BSc
Traffic Engineer

Ph: +61 431 099 588



From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>

Sent: Friday, 25 July 2025 9:44 AM

To: Rico Kobelt <rkobelt@amberorg.com.au>

Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Oliver Mihaila <omihaila@amberorg.com.au>

Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

Hi Rico,

Could you please confirm your route

GET ROUTE FROM JP/RP ID

Route Id

2N8VQ-5 v1

W

2581

OPTIONS RECALCULATE

SAVE/GET ROUTE ID

ble, please ensure you check
rate route before proceeding

Are you proposing to go around the airport and via King Georges Rd or using the blue line?

Kind Regards

Tobias Shannon

A/ Manager Road Access

Freight Branch

Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 E tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

Cnr Grey & Ferguson St
Glen Innes NSW 2370



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OFFICIAL

From: Rico Kobelt <rkobelt@amberorg.com.au>

Sent: Wednesday, 23 July 2025 12:41 PM

To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>

Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Oliver Mihaila <omihaila@amberorg.com.au>

Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

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Hi Tobias,

Estimates are provided per the attached. Note these are very much approximate as the procurement process for the transformer and logistics contractor are a long way away given the project is currently only at the Prepare EIS stage.

If you could provide an update on timeframes for the assessment, that would be appreciated.

Kind regards,

Rico Kobelt
BE (Hons) BSc
Traffic Engineer

Ph: +61 431 099 588



From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Sent: Tuesday, 22 July 2025 3:22 PM
To: Rico Kobelt <rkobelt@amberorg.com.au>
Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>
Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

Hi Rico,

Can you advise what the axle mass will be?

Kind Regards

Tobias Shannon
A/ Manager Road Access
Freight Branch
Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 E tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

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OFFICIAL

From: Darren Wilkins <Darren.WILKINS@transport.nsw.gov.au> **On Behalf Of** special_permits_unit@rms.nsw.gov.au
Sent: Thursday, 17 July 2025 2:09 PM
To: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Tobias Shannon
<Tobias.SHANNON@transport.nsw.gov.au>
Subject: FW: Request: Bridge and Culvert Assessment (SSD-78100252)

Kind Regards
Darren Wilkins
Road Access Officer
Freight Branch
Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 E spu@transport.nsw.gov.au

transport.nsw.gov.au

Cnr Grey & Ferguson St
Glen Innes NSW 2370



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Please consider the environment before printing this email.

OFFICIAL

From: Rico Kobelt <rkobelt@amberorg.com.au>
Sent: Thursday, 17 July 2025 11:41 AM
To: special_permits_unit@rms.nsw.gov.au <spu@transport.nsw.gov.au>
Cc: Oliver Mihaila <omihaila@amberorg.com.au>
Subject: Request: Bridge and Culvert Assessment (SSD-78100252)

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Hi there,

Amber are assisting with the preparation of a Traffic Impact Assessment report for the Willavale Park BESS (refer: <https://www.planningportal.nsw.gov.au/major-projects/projects/willavale-park-battery-energy-storage-system>)

Whilst the project is at an early stage of development we have been requested by the TfNSW Development Renewables team to seek a bridge and culvert assessment of the anticipated OSOM vehicle combinations transporting the transformer from port (Port Botany) to site, on behalf of ERM Consulting (we will forward the fees onto them).

The proposed vehicle combination is shown attached with relevant details provided, including the NHVR Route ID (2N8VQ-5 v1). Note these are relatively approximate given that the project is yet to be approved and loads and transit time to be confirmed.

Please feel free to contact me if any further information is required.

Kind regards,

Rico Kobelt
BE (Hons) BSc
Traffic Engineer

Ph: +61 431 099 588



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From: [Kirk Ballantyne](#)
To: [Tobias Shannon](#); [Michelle Shannon](#)
Cc: [Rico Kobelt](#)
Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)
Date: Wednesday, 30 July 2025 3:27:00 PM
Attachments: [image003.png](#)
[image005.png](#)
[image008.png](#)
[image009.png](#)
[image010.png](#)
[image011.png](#)

Thanks for your help Tobias!

We'll rely on the Willavale Park BESS bridge and culvert assessment for Canyonleigh.

Cheers,

Kirk Ballantyne

BEng (Hons), MEng (Civil & Transport), RPEng
Associate

Ph: +61 432 047 414



From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Sent: Wednesday, 30 July 2025 3:15 PM
To: Kirk Ballantyne <kballantyne@amberorg.com.au>; Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>
Cc: Rico Kobelt <rkobelt@amberorg.com.au>
Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

Thanks Kirk,

No issues are identified on the HLP for the additional roads.

Kind Regards

Tobias Shannon

A/ Manager Road Access

Freight Branch

Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 E tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

Cnr Grey & Ferguson St
Glen Innes NSW 2370



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OFFICIAL

From: Kirk Ballantyne <kballantyne@amberorg.com.au>
Sent: Wednesday, 30 July 2025 2:32 PM
To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>; Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>
Cc: Rico Kobelt <rkobelt@amberorg.com.au>
Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

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Hi Tobias,

The route can be seen here - https://www.google.com/maps/d/viewer?mid=1FekcgHjmweil70AGarkONEnh_J0m6KI&ll=-34.312079358891175%2C150.59798500000002&z=10

Thanks again for your help

Kirk Ballantyne

BEng (Hons), MEng (Civil & Transport), RPEng
Associate

Ph: +61 432 047 414



From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Sent: Wednesday, 30 July 2025 12:17 PM
To: Kirk Ballantyne <kballantyne@amberorg.com.au>; Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>
Cc: Rico Kobelt <rkobelt@amberorg.com.au>
Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

Hi Kirk,

Could you please provide the route and I will check to ensure there are no TfNSW structures on the council roads. Some council roads do have TfNSW structures on them.

Kind Regards

Tobias Shannon

A/ Manager Road Access

Freight Branch

Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 E tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

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Glen Innes NSW 2370



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From: Kirk Ballantyne <kballantyne@amberorg.com.au>

Sent: Wednesday, 30 July 2025 11:55 AM

To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>; Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>

Cc: Rico Kobelt <rkobelt@amberorg.com.au>

Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

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Hi Tobias,

The roads between the Marulan interchange with Hume Highway and the site are all Council managed, so wouldn't form part of TfNSW assessment.

Does this mean that we can just rely on the findings of the Willavale Park BESS, as per Rico's request?

Thanks

Kirk Ballantyne

BEng (Hons), MEng (Civil & Transport), RPEng
Associate

Ph: +61 432 047 414



From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Sent: Wednesday, 30 July 2025 11:28 AM
To: Kirk Ballantyne <kballantyne@amberorg.com.au>; Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>
Cc: Rico Kobelt <rkobelt@amberorg.com.au>
Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

Hi Kirk,

We can base a majority of the route as per Ricos enquiry. We would just need to check the route once the vehicle turns off at Marulan.

Kind Regards

Tobias Shannon

A/ Manager Road Access
Freight Branch
Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 E tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

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OFFICIAL

From: Kirk Ballantyne <kballantyne@amberorg.com.au>
Sent: Friday, 25 July 2025 11:21 AM
To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>; Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>
Cc: Rico Kobelt <rkobelt@amberorg.com.au>
Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

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Hi Tobias,

Further to Rico's email below, we are also assisting with the preparation of the Traffic Impact Assessment report for Canyonleigh BESS (refer: <https://www.planningportal.nsw.gov.au/major-projects/projects/canyonleigh-battery-energy-storage-system>).

Canyonleigh BESS is the same Proponent, uses the same OSOM vehicle combinations, and the same port of import and route as Willavale Park BESS. The only difference is that vehicles would exit the Hume Highway earlier at the Marulan interchange, whereas for the Willavale Park BESS vehicles would continue along the Hume. See image below.

Can TfNSW please confirm if Canyonleigh BESS will require a separate bridge and culvert assessment for Canyonleigh BESS, or can we use the same findings as the Willavale Park BESS assessment (as requested in the below email chain), given the projects are essentially identical? It would be appreciated if we could get an indication ASAP to begin the process if a separate application is required.

Feel free to give me a call with any questions.



Kind regards,

Kirk Ballantyne

BEng (Hons), MEng (Civil & Transport), RPEng

Associate

Ph: +61 432 047 414



From: Rico Kobelt

Sent: Wednesday, 23 July 2025 12:41 PM

To: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>

Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Oliver Mihaila <omihaila@amberorg.com.au>

Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

Hi Tobias,

Estimates are provided per the attached. Note these are very much approximate as the procurement process for the transformer and logistics contractor are a long way away given the project is currently only at the Prepare EIS stage.

If you could provide an update on timeframes for the assessment, that would be appreciated.

Kind regards,

Rico Kobelt

BE (Hons) BSc

Traffic Engineer

Ph: +61 431 099 588



From: Tobias Shannon <Tobias.SHANNON@transport.nsw.gov.au>
Sent: Tuesday, 22 July 2025 3:22 PM
To: Rico Kobelt <rkobelt@amberorg.com.au>
Cc: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>
Subject: RE: Request: Bridge and Culvert Assessment (SSD-78100252)

Hi Rico,

Can you advise what the axle mass will be?

Kind Regards

Tobias Shannon
A/ Manager Road Access
Freight Branch
Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 E tobias.shannon@transport.nsw.gov.au

transport.nsw.gov.au

Cnr Grey & Ferguson St
Glen Innes NSW 2370



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OFFICIAL

From: Darren Wilkins <Darren.WILKINS@transport.nsw.gov.au> **On Behalf Of** special_permits_unit@rms.nsw.gov.au
Sent: Thursday, 17 July 2025 2:09 PM
To: Michelle Shannon <Michelle.Shannon@transport.nsw.gov.au>; Tobias Shannon

<Tobias.SHANNON@transport.nsw.gov.au>

Subject: FW: Request: Bridge and Culvert Assessment (SSD-78100252)

Kind Regards

Darren Wilkins

Road Access Officer

Freight Branch

Planning, Integration and Passenger

Transport for NSW

T 1300 656 371 E spu@transport.nsw.gov.au

-

transport.nsw.gov.au

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OFFICIAL

From: Rico Kobelt <rkobelt@amberorg.com.au>

Sent: Thursday, 17 July 2025 11:41 AM

To: special_permits_unit@rms.nsw.gov.au <spu@transport.nsw.gov.au>

Cc: Oliver Mihaila <omihaila@amberorg.com.au>

Subject: Request: Bridge and Culvert Assessment (SSD-78100252)

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CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi there,

Amber are assisting with the preparation of a Traffic Impact Assessment report for the Willavale Park BESS (refer: <https://www.planningportal.nsw.gov.au/major-projects/projects/willavale-park-battery-energy-storage->

[system\)](#)

Whilst the project is at an early stage of development we have been requested by the TfNSW Development Renewables team to seek a bridge and culvert assessment of the anticipated OSOM vehicle combinations transporting the transformer from port (Port Botany) to site, on behalf of ERM Consulting (we will forward the fees onto them).

The proposed vehicle combination is shown attached with relevant details provided, including the NHVR Route ID (2N8VQ-5 v1). Note these are relatively approximate given that the project is yet to be approved and loads and transit time to be confirmed.

Please feel free to contact me if any further information is required.

Kind regards,

Rico Kobelt

BE (Hons) BSc

Traffic Engineer

Ph: +61 431 099 588



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Appendix J

Shuttle Bus Correspondence – Urban Legends Tour Co



Re: Enquiry regarding project bus charters for Willavale Park BESS (SSD-78100252) construction

From Urban Legends Tour Co <jared@urbanlegendstourco.com>

Date Wed 10/1/2025 3:51 PM

To Lawrence Wonhas <lawrence.wonhas@erm.com>

 4 attachments (14 MB)

IMG-20250401-WA0014.jpg; IMG-20250118-WA0008.jpg; Luxury Coach Sydney.jpg; Bus hire sydney .jpg;

WARNING: The sender of this email could not be validated and may not match the person in the "From" field.

EXTERNAL MESSAGE

WILLAVALE PARK BESS PROJECT - FLEET CAPACITY CONFIRMATION

To: Lawrence Wonhas

CC: Lucy, Tom, Frazer, matilde.tobon@x-elio.com

RE: Daily Shuttle Bus Charter - Willavale Park BESS (SSD-78100252)

G'day Lawrence,

Thanks for reaching out regarding the Willavale Park BESS project shuttle requirements. This is exactly the kind of large-scale, long-term contract we're built to handle, and I'm confident we can deliver exceptional service for your team over the two-year construction period.

The short answer: Yes, we absolutely have the capacity to service this project – from your baseline 70 workers right through to your peak 180+ capacity requirements and beyond.

Let me break down how our dynamic fleet can scale with your project needs.

OUR DYNAMIC FLEET - BUILT FOR SCALABILITY

We operate a tiered fleet strategy designed specifically for large-scale, long-term contracts like yours. Here's what we bring to the Willavale Park project:

TIER 1: OUR PREMIUM NSW FLEET ★

These are our owned vehicles - your primary service fleet for consistent, premium quality:

14-Seater Mercedes Sprinter VIP

- **Capacity:** 4-14 passengers (12 optimal)
- **Year:** 2012 Model
- **Features:**
 - Reclining leather seats
 - Bluetooth audio system
 - Climate control throughout
 - Storage + luggage trailer
 - Professional finish and maintenance
- **Best For:** Small group shuttles, backup capacity, flexibility

27-Seater Yutong D7 Executive

- **Capacity:** 20-27 passengers
- **Year:** 2024 Model (Brand New)
- **Features:**
 - Black bucket seats with premium upholstery
 - USB chargers at every seat
 - Wood Grain floors for premium aesthetic
 - Bluetooth music system
 - Climate control
 - Luggage trailer available
- **Best For:** Core shuttle service, reliable daily operation

41-Seater King Long Luxury Coach

- **Capacity:** 30-41 passengers
- **Year:** 2024 Model (Brand New)
- **Features:**
 - Black & red leather reclining captain seats
 - USB charging at every seat
 - Bluetooth sound system
 - Spacious luggage bays
 - Full climate control
 - Premium comfort for longer journeys
- **Best For:** Larger daily groups, flagship service quality

TIER 2: PEAK CAPACITY FLEET - 57-SEATER LUXURY COACHES

For your 6-month peak construction period, we scale up with trusted subcontractor partners:

57-Seater Luxury Coach

- **Capacity:** 42-57 passengers
- **Year:** 2020-2024 Models (Modern, well-maintained fleet)

- **Features:**
 - Fixed bucket seating (construction-site durable)
 - Bluetooth sound system
 - Multi-zone climate control
 - Large undercarriage luggage bays
 - Professional-grade suspension for country roads
 - Proven reliability for daily service
 - **Best For:** Peak period capacity, multiple unit deployment
 - **Availability:** Multiple coaches can be deployed simultaneously
-

WHY THIS TWO-TIER APPROACH WORKS:

- ✓ **Regular Period (70-120 workers):** Our own premium fleet delivers consistent, high-quality service you can count on every single day
 - ✓ **Peak Period (120-180+ workers):** We seamlessly scale up with proven 57-seater partners without compromising reliability
 - ✓ **Cost Efficiency:** You're not paying premium rates for oversized vehicles during regular periods
 - ✓ **Service Consistency:** Same professional drivers, same operational standards, same account management
 - ✓ **Flexibility:** We can adjust the mix daily based on actual worker attendance
-



OUR FLEET CAPACITY FOR WILLAVAL PARK

REGULAR CONSTRUCTION PERIOD (70-120 Workers)

Our Own Premium Fleet - Priority Recommendation:

We operate a modern, luxury NSW-based fleet that we prioritise for long-term contracts like yours:

- **14-Seater Mercedes Sprinter VIP** (4-14 capacity)
- **27-Seater Yutong D7 Executive** (20-27 capacity)
- **41-Seater King Long Luxury Coach** (30-41 capacity)

Recommended Configuration for 70-120 Workers:

OPTION 1: 41-Seater + 27-Seater Combination

- Combined capacity: **68 passengers per run**
- Perfect for your baseline-to-mid range (70-100 workers)
- Both vehicles from our premium fleet
- Consistent service quality across both coaches

OPTION 2: 41-Seater + 27-Seater + 14-Seater Combination

- Combined capacity: **82 passengers per run**
- Covers your upper regular period range (100-120 workers)
- Complete flexibility with our own fleet
- Can drop the 14-seater on lighter days

PEAK CONSTRUCTION PERIOD (120-180+ Workers - Early 2027)

For your six-month peak period, we scale up using our trusted subcontractor network to provide additional large-capacity vehicles while maintaining service quality:

OPTION 1: 57-Seater Luxury Coach

- Capacity: **42-57 passengers**
- Multiple units available
- Modern, well-maintained fleet

OPTION 2: 57-Seater + 41-Seater Combination

- Combined capacity: **98 passengers per run**
- Ideal for 100-120 workers during peak

OPTION 3: 57-Seater + 57-Seater Combination

- Combined capacity: **114 passengers per run**
- Strong solution for 120-140 workers

OPTION 4: Triple 57-Seater Configuration

- Combined capacity: **171 passengers per run**
- Handles up to 170 workers comfortably

OPTION 5: 57 + 57 + 57 + 27 Combination ★

- Combined capacity: **198 passengers per run**
- Exceeds your 180 maximum with buffer capacity

OPTION 6: 57 + 57 + 57 + 41 Combination ★ MAXIMUM CAPACITY

- Combined capacity: **212 passengers per run**
 - Substantial buffer above 180 for flexibility and growth
-

WHY URBAN LEGENDS FOR WILLA VALE PARK?

Scalable Fleet Architecture

Our fleet strategy is built exactly for projects like yours:

- **Own premium fleet (14/27/41-seaters)** handles your regular period with consistent quality
- **Trusted network (57+ seaters)** scales capacity during peak demand
- **Dynamic daily adjustments** based on actual worker numbers
- **No capacity ceiling** – we can go well beyond 180 if needed

Long-Term Contract Experience

- **9 years operating** premium transport across NSW

- Experience with multi-year corporate contracts
- Proven reliability for daily operational requirements
- Professional drivers familiar with construction site protocols

Geographic Advantage

- **Wollongong is 20km from Goulburn** – minimal positioning costs
- **72km from Yass** – efficient service radius
- We know these routes intimately
- Quick response times for any operational adjustments

Operational Flexibility

- **Monday-Saturday service capability** as required
- Multiple daily runs or continuous shuttle options
- Staggered shift change accommodation
- Real-time capacity adjustments based on daily worker attendance

Premium Service Standards

- Modern, well-maintained luxury vehicles
- Professional, experienced drivers
- Reliable, punctual service (critical for construction schedules)
- Comprehensive insurance and compliance
- Dedicated account management for the contract duration

ROUTE CONFIGURATIONS

We can service all potential pickup locations efficiently:

Goulburn ↔ Wollongong: 20km each way (40km round trip)

Yass ↔ Wollongong: 72km each way (144km round trip)

Wollongong ↔ Wollongong: 174km each way (348km round trip) *(if required)*

We can run simultaneous routes (e.g., Goulburn pickup + Yass pickup) or sequential runs depending on your workforce distribution and shift timing preferences.

SITE LOGISTICS CONSIDERATION

You mentioned the site plan currently has two bus parking spots for 25-seat shuttles. As your worker numbers scale, we'd be bringing larger coaches (27-57 seaters) and potentially multiple vehicles during peak periods.

We're happy to:

- Work with your site team on parking/staging solutions
- Implement staggered arrival times to manage on-site vehicle flow

- Use off-site staging areas if needed
- Adapt our operational approach to your site constraints

This is a common challenge on construction sites, and we've successfully managed it on numerous projects.



INDICATIVE DAILY PRICING STRUCTURE

The pricing below is based on half-day charter rates for return journey service (morning pickup + evening return) including all positioning, fuel, tolls, and operational costs. Final pricing will be confirmed upon discussion of specific requirements, service frequency, and operational details.

REGULAR CONSTRUCTION PERIOD PRICING (70-120 Workers)

Goulburn Route - Individual Vehicle Options:

Vehicle	Capacity	Daily Rate (Mon-Sat)
14-Seater Mercedes Sprinter	4-14 passengers	\$1,100/day
27-Seater Yutong Executive	20-27 passengers	\$1,300/day
41-Seater King Long Luxury	30-41 passengers	\$1,450/day

Goulburn Route - Recommended Fleet Combinations:

Configuration	Total Capacity	Daily Rate (Mon-Sat)
41 + 27 Seater Combo ★	68 passengers	\$2,750/day
41 + 27 + 14 Seater Combo	82 passengers	\$3,850/day

Yass Route - Individual Vehicle Options:

Vehicle	Capacity	Daily Rate (Mon-Sat)
14-Seater Mercedes Sprinter	4-14 passengers	\$1,300/day
27-Seater Yutong Executive	20-27 passengers	\$1,500/day
41-Seater King Long Luxury	30-41 passengers	\$1,650/day

Yass Route - Recommended Fleet Combinations:

Configuration	Total Capacity	Daily Rate (Mon-Sat)
41 + 27 Seater Combo ★	68 passengers	\$3,150/day
41 + 27 + 14 Seater Combo	82 passengers	\$4,450/day

PEAK CONSTRUCTION PERIOD PRICING (120-180+ Workers - Early 2027)

Goulburn Route - 57-Seater Configurations:

Configuration	Total Capacity	Daily Rate (Mon-Sat)
Single 57-Seater	42-57 passengers	\$2,250/day
57 + 41 Seater Combo	98 passengers	\$3,700/day
57 + 57 Seater Combo	114 passengers	\$4,500/day
Triple 57-Seater	171 passengers	\$6,750/day
57 + 57 + 57 + 27 Combo ★	198 passengers	\$8,050/day
57 + 57 + 57 + 41 Combo (MAX)	212 passengers	\$8,200/day

Yass Route - 57-Seater Configurations:

Configuration	Total Capacity	Daily Rate (Mon-Sat)
Single 57-Seater	42-57 passengers	\$2,450/day
57 + 41 Seater Combo	98 passengers	\$4,100/day
57 + 57 Seater Combo	114 passengers	\$4,900/day
Triple 57-Seater	171 passengers	\$7,350/day
57 + 57 + 57 + 27 Combo ★	198 passengers	\$8,850/day
57 + 57 + 57 + 41 Combo (MAX)	212 passengers	\$9,000/day

PRICING NOTES:

- ✓ **All-inclusive rates:** Professional drivers, fuel, tolls, vehicle positioning, comprehensive insurance
- ✓ **Goulburn Route:** Goulburn ↔ Wollongorang daily shuttle service (20km each way)
- ✓ **Yass Route:** Yass ↔ Wollongorang daily shuttle service (72km each way)
- ✓ **Service model:** Return journey (morning pickup + evening return = ~4-5 hours daily service)
- ✓ **Monday-Saturday:** Standard weekday rates applied consistently
- ✓ **Transparent pricing:** All operational costs included in quoted rates

⚠ **Subject to confirmation:** Final pricing will be tailored based on:

- Exact service hours and timing requirements
- Simultaneous multi-route requirements (if both Goulburn + Yass pickups needed daily)
- Any additional operational specifications
- Contract terms and payment structure for 2-year commitment

NEXT STEPS - LET'S DISCUSS SPECIFICS

To provide you with a detailed proposal and pricing structure, it would be great to discuss:

Service Structure:

- Preferred pickup/drop-off times (e.g., morning pickup + evening return?)
- Shift patterns and timing
- Continuous shuttle vs scheduled runs
- Weekend requirements (full Saturday service or half-day?)

Worker Distribution:

- Expected split between Goulburn and Yass pickup locations
- Any Wollongong-based workers requiring transport?
- Accommodation arrangements (single pickup points or multiple?)

Operational Requirements:

- Daily, weekly, or monthly billing preference
- Volume discount structure for 2-year commitment
- Minimum notice for daily capacity adjustments
- Peak period exact timing (which months in early 2027?)

Contract Preferences:

- Fixed monthly retainer vs per-service billing
- Pricing structure: per vehicle, per passenger, or hybrid?
- Deposit and payment terms for long-term contract
- Cancellation/modification policies

I'D LOVE TO JUMP ON A CALL

Given the scale and duration of this project, I'd welcome the opportunity to discuss this in more detail via phone or video call. We can walk through:

- Specific vehicle configurations for your expected worker ranges
- Detailed pricing proposals for both regular and peak periods
- Operational logistics and site-specific considerations
- Contract terms and volume discount structures
- Any other questions or requirements from your team

I'm available this week at your convenience.



OUR COMMITMENT

If selected for this contract, Urban Legends will provide:

- ☒ Dedicated account manager (me, directly) for the contract duration
- ☒ Consistent, reliable daily service Monday-Saturday
- ☒ Scalable capacity from 70 to 210+ passengers
- ☒ Modern, premium fleet prioritising your project
- ☒ Professional drivers trained for construction site environments
- ☒ Transparent pricing with no hidden costs
- ☒ Flexible capacity adjustments as your workforce fluctuates
- ☒ Comprehensive insurance and full transport compliance

This is exactly the kind of long-term partnership we excel at, and we're genuinely excited about the opportunity to support the Willavale Park BESS project.

Let's set up a time to discuss the details and get you a comprehensive proposal.

Looking forward to working with you on this project, Lawrence.

Warm regards,

Jared Malcolm

Founder & Managing Director
Urban Legends Tour Co

☎ 0434 363 911

✉ jared@urbanlegendstourco.com

🌐 www.urbanlegendstourco.com

ABN: 79 659 310 127

 **Premium Fleet** | ⚡ **Scalable Capacity** | ❤️ **Long-Term Reliability**



Jared Malcolm
Managing Director
Urban Legends Tour Company PTY LTD

Ph: 0434363911

Email: jared@urbanlegendstourco.com

www.urbanlegendstourco.com

On Wed, Oct 1, 2025 at 11:07 AM Lawrence Wonhas <lawrence.wonhas@erm.com> wrote:

Hi Jared,

We are looking to understand your capacity for providing a daily shuttle bus charter to and from Willavale Park BESS (SSD-78100252) a renewable energy construction project on Wollogorang Road, Wollogorang NSW, 20km west of Goulburn. We are looking to provide services to workers on each working day (Monday to Saturday) to and from the centers of Goulburn and Yass. These services would be required over a two-year period commencing mid-2026. As we do not have a firm number of workers (current range of 70-180), we are expecting on site, we are primarily enquiring to gauge your capacity to provide these services. There will be a peak construction period of six months beginning early 2027 where more services will be required. The site plan has two bus parking spots for 25 seat shuttle buses at present.

Thank you,

Lawrence Wonhas
Consulting Associate

Sydney
+61451363428

erm.com

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Appendix K

Shuttle Bus Correspondence – Yass Valley Council & Goulburn Mulwaree Council



Oliver Mihaila

From: Eddie Kobeissi <ekobeissi@yass.nsw.gov.au>
Sent: Wednesday, 22 October 2025 11:10 AM
To: Lucy Baker
Cc: Terry Cooper; Andrew Neil
Subject: Willavale Park BESS (SSD-78100252) and Canyonleigh BESS (SSD-78247462) - Shuttle buses

You don't often get email from ekobeissi@yass.nsw.gov.au. [Learn why this is important](#)

EXTERNAL MESSAGE

Hi Lucy,

Thanks for the conversation this morning and as discussed, Yass Valley Council has no major engineering concerns with proposed shuttle bus pick-up and drop-off locations outlined in your email correspondence. When the DA consent is granted, we're happy to meet and discuss traffic details and movement activities around these locations.

Regards,

Eddie Kobeissi | Development & Standards Engineer | **Yass Valley Council**

D: +61 (0)2 6226 9288 | P: +61 (0)2 6226 1477

E: ekobeissi@yass.nsw.gov.au | W: www.yassvalley.nsw.gov.au

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From: Lucy Baker <lucy.baker@erm.com>
Sent: Thursday, 16 October 2025 9:11 AM
To: Kate Baker <KBaker@yass.nsw.gov.au>
Cc: Matilde Tobon Maya <matilde.tobon@x-elio.com>; Frazer Bayliss <frazer.bayliss@erm.com>; Tom Parry <tom.parry@erm.com>; Oliver Mihaila <omihaila@amberorg.com.au>; Kirk Ballantyne <kballantyne@amberorg.com.au>; Sophie Butcher <sophie.butcher@erm.com>; Catherine Mackay <catherine.mackay@erm.com>
Subject: Willavale Park BESS (SSD-78100252) and Canyonleigh BESS (SSD-78247462) - Shuttle buses

[EXTERNAL] Please exercise caution when clicking on links or attachments from external sources.

Hi Kate,

Did you have any comments in relation to the shuttle bus locations for the two projects.

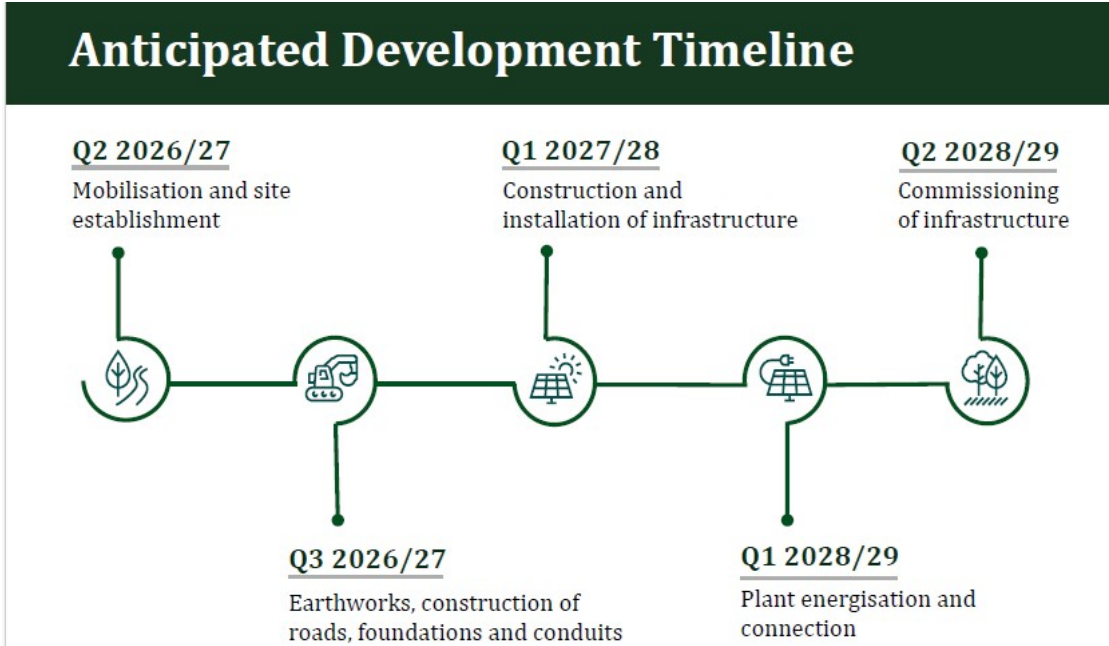
Each one of these projects will have in peak construction about 100 full time equivalent workers and an average annual workforce of 70 workers.

For the Willavale Park BESS we are planning on having shuttle bus pick-up and drop-off locations within Goulburn and Yass at the following locations to provide a convenient and attractive travel option for a large portion of the workforce while minimising any potential impacts to the broader community. Several potential locations have been identified as outlined below:

Yass

- Laidlaw Street near Victoria Park.
- Laidlaw Street public car park adjacent to Yass Skate Park.
- Comur Street / Browne Street near Coronation Park.

For the Canyonleigh BESS we are planning on having shuttle bus pick-up and drop-off locations within Goulburn and Yass at the above locations to provide a convenient and attractive travel option for a large portion of the workforce while minimising any potential impacts to the broader community. The locations for Canyonleigh will be the same as the locations for Willavale Park BESS project.



Cheers,



Lucy Baker
Partner, CPEng, FIEAust, RPIA

L14/207 Kent Street Sydney, Australia, NSW 2000
+61 401 222 746 erm.com



From: Lucy Baker

Sent: Tuesday, October 14, 2025 2:13 PM

To: 'Kate Baker' <KBaker@yass.nsw.gov.au>

Cc: Matilde Tobon Maya <matilde.tobon@x-elio.com>; Frazer Bayliss <frazer.bayliss@erm.com>; Tom Parry <tom.parry@erm.com>; Oliver Mihaila <omihaila@amberorg.com.au>; Kirk Ballantyne <kballantyne@amberorg.com.au>; Sophie Butcher <sophie.butcher@erm.com>; Catherine Mackay <catherine.mackay@erm.com>

Subject: Willavale Park BESS SSD-78100252 and Canyonleigh BESS - Shuttle buses

Hi Kate,

We are assuming that these two projects will be running in parallel. Find the program for Willavale Park BESS:

Anticipated Development Timeline

Q2 2026/27

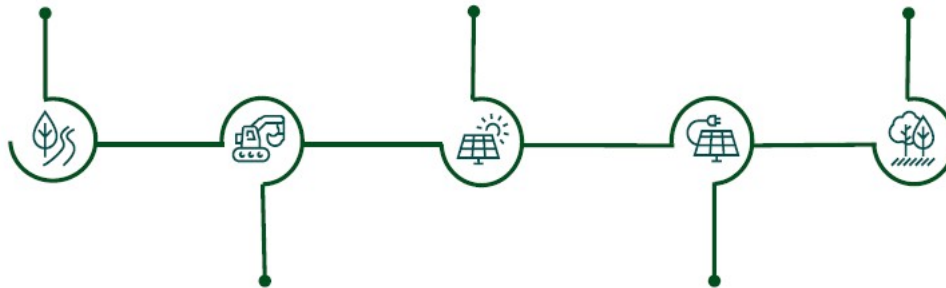
Mobilisation and site establishment

Q1 2027/28

Construction and installation of infrastructure

Q2 2028/29

Commissioning of infrastructure



Q3 2026/27

Earthworks, construction of roads, foundations and conduits

Q1 2028/29

Plant energisation and connection

Cheers,



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Lucy Baker
Partner, CPEng, FIEAust, RPIA

L14/207 Kent Street Sydney, Australia,
NSW 2000
+61 401 222 746

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From: Kate Baker <KBaker@yass.nsw.gov.au>
Sent: Tuesday, October 14, 2025 1:28 PM
To: Lucy Baker <lucy.baker@erm.com>
Cc: Matilde Tobon Maya <matilde.tobon@x-elio.com>; Frazer Bayliss <frazer.bayliss@erm.com>; Tom Parry <tom.parry@erm.com>; Oliver Mihaila <omihaila@amberorg.com.au>; Kirk Ballantyne <kballantyne@amberorg.com.au>; Sophie Butcher <sophie.butcher@erm.com>; Catherine Mackay <catherine.mackay@erm.com>
Subject: RE: Willavale Park BESS SSD-78100252 and Canyonleigh BESS - Shuttle buses

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EXTERNAL MESSAGE

Thanks Lucy.

So I can better understand the cumulative impact on the Yass Valley and in particular the availability of rental accommodation, is it likely that these projects will be undertaken simultaneously?

Kate Baker | Acting Director Planning & Environment | **Yass Valley Council**
P: +61 (0)2 6226 1477
E: KBaker@yass.nsw.gov.au | W: www.yassvalley.nsw.gov.au

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From: Lucy Baker <lucy.baker@erm.com>
Sent: Tuesday, 14 October 2025 12:39 PM
To: Kate Baker <KBaker@yass.nsw.gov.au>
Cc: Matilde Tobon Maya <matilde.tobon@x-elio.com>; Frazer Bayliss <frazer.bayliss@erm.com>; Tom Parry <tom.parry@erm.com>; Oliver Mihaila <omihaila@amberorg.com.au>; Kirk Ballantyne <kballantyne@amberorg.com.au>; Sophie Butcher <sophie.butcher@erm.com>; Catherine Mackay <catherine.mackay@erm.com>
Subject: Willavale Park BESS SSD-78100252 and Canyonleigh BESS - Shuttle buses

[EXTERNAL] Please exercise caution when clicking on links or attachments from external sources.

Hi Kate,

For Willavale Park BESS or Canyonleigh BESS the peak workforce that will be residing in Yass Valley Council will be 35 workers for each project. See the breakdown for Willavale Park BESS below. Both projects will have the same breakdown and the same number of peak workers residing at Yass Valley Council. Each shuttle bus can take up to 25 workers.

DETAILS		PLEASE COMPLETE
Workforce Overview		
Total duration of construction period (months)		

Maximum (peak) workforce expected to be on-site at any time

Average workforce expected to be on-site

On-Site Accommodation Camp

Leave this section blank if

No. of personnel expected to use on-site accommodation camp during peak construction period

Shuttle Buses

Leave this section blank if

No. of personnel expected to use shuttle buses during peak construction period

No. of seats assumed on each shuttle bus

No. of daily shuttle bus services required (peak)

Light Vehicles

No. of personnel expected to use light vehicles during peak construction period

Carpooling rate: Specify no. of personnel per light vehicle (see notes)

Traffic Distributions

List all potential towns/cities where personnel would be based and estimated proportions. Exclude any personnel expected to utilise on-site accommodation.

Town/City Name

Goulburn

Yass

Bowral

Sydney

Cheers,



Sustainability is our business

Lucy Baker
Partner, CPEng, FIEAust, RPIA



From: Kate Baker <KBaker@yass.nsw.gov.au>
Sent: Tuesday, October 14, 2025 12:30 PM
To: Lucy Baker <lucy.baker@erm.com>
Subject: RE: Willavale Park BESS SSD-78100252 and Canyonleigh BESS - Shuttle buses

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EXTERNAL MESSAGE

Hi Lucy

Thanks for the information.

Can you clarify the number of workforce for each project anticipated to be residing in Yass during peak periods.

Kind regards
Kate

Kate Baker | Acting Director Planning & Environment | **Yass Valley Council**
P: +61 (0)2 6226 1477
E: KBaker@yass.nsw.gov.au | W: www.yassvalley.nsw.gov.au

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From: Lucy Baker <lucy.baker@erm.com>
Sent: Friday, 10 October 2025 5:20 PM
To: YVC Customer Service Team <Council@yass.nsw.gov.au>
Cc: Terry Cooper <TCooper@yass.nsw.gov.au>; eddie.kobeissi@yass.nsw.gov.au; Kate Baker <KBaker@yass.nsw.gov.au>; Matilde Tobon Maya <matilde.tobon@x-elio.com>; Tom Parry <tom.parry@erm.com>; Sophie Butcher <sophie.butcher@erm.com>; Katie Porritt <Katie.Porritt@erm.com>
Subject: Willavale Park BESS SSD-78100252 and Canyonleigh BESS - Shuttle buses

[EXTERNAL] Please exercise caution when clicking on links or attachments from external sources.

Hi Terry and Eddie,

We are keen to organise a meeting to have a chat about the suitability of nominated locations for our shuttle bus pick up / drop off points for two State significant Development Projects. Plus, we can give you an overview on our two projects. Find attached a copy of the Willavale Park BESS Traffic Impact assessment report.

I spoke to your duty planner today about the two State Significant Development Projects that we are working with X-Elio Australia, that involve the construction, operation, and decommissioning of a battery energy storage system (BESS) with a capacity of 300MW/1200MWh and ancillary infrastructure at two different locations in Goulburn Mulwaree Council area:

<https://www.planningportal.nsw.gov.au/major-projects/projects/willavale-park-battery-energy-storage-system>

<https://www.planningportal.nsw.gov.au/major-projects/projects/canyonleigh-battery-energy-storage-system>

Each one of these projects will have during peak construction about 100 full time equivalent workers and an average annual workforce of 70 workers during construction.

For the Willavale Park BESS we are planning on having shuttle bus pick-up and drop-off locations within Goulburn and Yass at the following locations to provide a convenient and attractive travel option for a large portion of the workforce while minimising any potential impacts to the broader community. Several potential locations have been identified as outlined below:

Yass

- Laidlaw Street near Victoria Park.
- Laidlaw Street public car park adjacent to Yass Skate Park.
- Comur Street / Browne Street near Coronation Park.

For the Canyonleigh BESS we are planning on having shuttle bus pick-up and drop-off locations within Goulburn and Yass at the above locations to provide a convenient and attractive travel option for a large portion of the workforce while minimising any potential impacts to the broader community. The locations for Canyonleigh will be the same as the locations for Willavale Park BESS project.

We expect that parking will be at the accommodation locations and not at the shuttle bus collection points, as we are keen for people to walk to the shuttle bus pick up location to prevent impacting local amenity. DPHI have requested us to nominate shuttle bus locations in the EIS and to discuss these with the respective council. We will further refine parking locations for the workforce with the council. X-Elio Australia have advised that shuttle buses will be utilised to transport a portion of the workforce to/from Goulburn and Yass. You can see the distribution of the workforce below for each project during the peak period:

DETAILS		PLEASE COMPLETE
Workforce Overview		
Total duration of construction period (months)		
Maximum (peak) workforce expected to be on-site at any time		
Average workforce expected to be on-site		
Shuttle Buses		<i>Leave this section blank if not applicable</i>
No. of personnel expected to use shuttle buses during peak construction period		
No. of seats assumed on each shuttle bus		
No. of daily shuttle bus services required (peak)		
Light Vehicles		
No. of personnel expected to use light vehicles during peak construction period		
Carpooling rate: Specify no. of personnel per light vehicle (see notes)		
Traffic Distributions		
List all potential towns/cities where personnel would be based and estimated proportions. Exclude any personnel expected to utilise on-site accommodation.	Town/City Name	
	Goulburn	
	Yass	
	Bowral	
	Sydney	

cheers,



Lucy Baker
Partner, CPEng, FIEAust, RPIA

L14/207 Kent Street Sydney, Australia,
NSW 2000
+61 401 222 746

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Oliver Mihaila

From: Lucy Baker <lucy.baker@erm.com>
Sent: Tuesday, 28 October 2025 9:31 AM
To: Danae Vitnell
Cc: Scott Martin; Matilde Tobon Maya; Tom Parry; Frazer Bayliss; Oliver Mihaila; Kirk Ballantyne; Mike Willson
Subject: Willavale Park BESS SSD-78100252 - Shuttle buses

Hi Danae,

Thanks for providing feedback are you happy with any shuttle bus location (25 seater). Some thoughts for locations are for workers to walk to the bus pick up / drop off points:

- Goulburn Station
- Clinton Street (Quest)

We want to locate the shuttle bus location within walking distance to the pick-up / drop off point. We will have multiple stops, so that workers can walk to the locations.

The reason that we are keen to use shuttle buses is to limit the number of cars in the local roads.

Cheers,



Lucy Baker
Partner, CPEng, FIEAust, RPIA

L14/207 Kent Street Sydney, Australia,
NSW 2000
+61 401 222 746

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From: Danae Vitnell <Danae.Vitnell@goulburn.nsw.gov.au>
Sent: Friday, October 24, 2025 8:40 AM
To: Lucy Baker <lucy.baker@erm.com>
Cc: Scott Martin <Scott.Martin@goulburn.nsw.gov.au>; Matilde Tobon Maya <matilde.tobon@x-elio.com>; Tom Parry <tom.parry@erm.com>; Frazer Bayliss <frazer.bayliss@erm.com>; Oliver Mihaila <omihaila@amberorg.com.au>; Kirk Ballantyne <kballantyne@amberorg.com.au>; Mike Willson

<mike@amberorg.com.au>

Subject: Re: Willavale Park BESS SSD-78100252 - Shuttle buses

EXTERNAL MESSAGE

Hi Lucy

Just flagging my earlier comments at the bottom of the email thread around accommodation locations and the proposed sites below.

I note your response around requesting staff to walk to the collection point, but suggest this is unrealistic due to the geographical isolation from accommodation venues.

Are these measures in place to avoid excess car parking at these sites during shift times?

Kind regards

Danae



Danae Vitnell

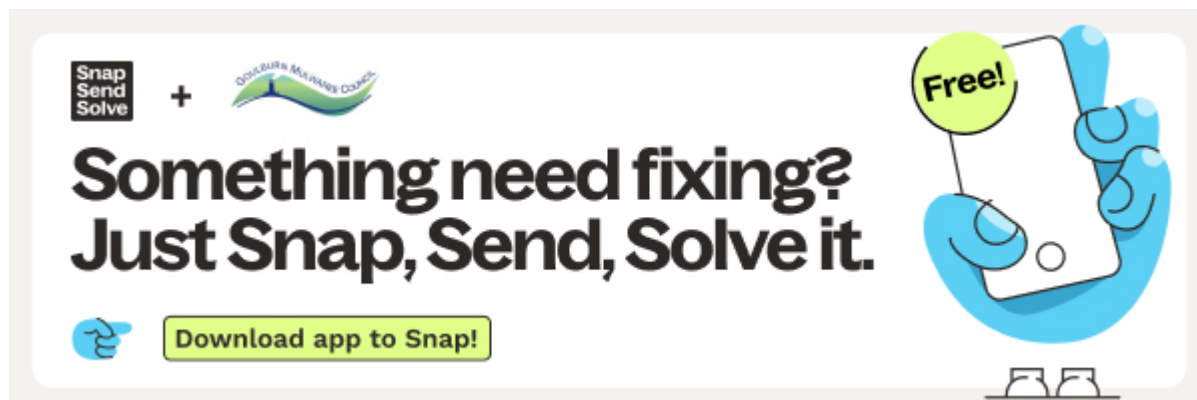
Economic Development Manager

P 02 4823 4493 | M 0400 649 312

E Danae.Vitnell@goulburn.nsw.gov.au

www.goulburn.nsw.gov.au

Locked Bag 22 | Goulburn NSW 2580



Goulburn Mulwaree Council acknowledge the traditional custodians of the land where the Goulburn Mulwaree Local Government operates today and pay our respects to Elders past, present and emerging.

From: Lucy Baker <lucy.baker@erm.com>

Sent: Tuesday, 14 October 2025 2:25 PM

To: Danae Vitnell <Danae.Vitnell@goulburn.nsw.gov.au>

Cc: Scott Martin <Scott.Martin@goulburn.nsw.gov.au>; Matilde Tobon Maya <matilde.tobon@x-elio.com>; Tom Parry <tom.parry@erm.com>; Frazer Bayliss <frazer.bayliss@erm.com>; Oliver Mihaila <omihaila@amberorg.com.au>; Kirk Ballantyne <kballantyne@amberorg.com.au>; Mike Willson <mike@amberorg.com.au>

Subject: Willavale Park BESS SSD-78100252 - Shuttle buses

Hi Danae,

Just following up to see if you had any comments for the shuttle bus locations for the two X-Elio projects: Willavale Park BESS and Canyonleigh BESS:

Can Goulburn Mulwaree Council confirm that they are OK with the below shuttle bus pick-up and drop-off locations within Goulburn:

- **Goulburn**
 - Clifford Street / Deccan Street / Verner Street / Faithfull Street near Victoria Park, Seiffert Oval, Prell Oval.
 - Sloane Street / Market Street / Auburn Street / Montague Street near Belmore Park.
 - Crookwell Road public car park adjacent to Marsden Weir Park.
 - Wilmot Street / Chantry Street adjacent to North Park.
 - Finlay Road adjacent to Goulburn Hockey Centre.

The pick-up and drop-off locations would be confirmed closer to the commencement of the construction phase when there is more detailed information available regarding the workforce accommodation arrangements.

The Project layout provided in attachment Project layout Map 2 of 5 shows that a shuttle bus parking area for two buses is proposed within the on-site car park. The buses would use the internal road network to access the parking area for drop-off and pick-up of personnel. The buses are smaller than many of the various heavy vehicle combinations that would access the site and accordingly are expected to be able to suitably manoeuvre throughout the site. On-site reversing manoeuvres would be minimised or avoided as far as is practicable to maintain a safe environment.

Measures to ensure the shuttle bus program can be practically achieved and monitored will be included within the Construction Environmental Management Plan and/or TMP. Recommended measures include:

- Limiting car parking for light vehicles on-site.
- Regular toolbox meeting sessions identifying method of travel to work and strongly encouraging use of the shuttle buses.
- Identifying the bus drop off/pick up location and clearly communicating these locations with the workforce.
- Allocating a team member to be responsible for enforcement and management of the shuttle buses.
- Identifying mechanisms to be put in place if shuttle bus passenger numbers are not achieved.

Final details of the employee shuttle bus service including confirmed pick up and drop off points and bus schedules will be outlined within the TMP.

DETAILS		PLEASE COMPLETE
Workforce Overview		
Total duration of construction period (months)		
Maximum (peak) workforce expected to be on-site at any time		
Average workforce expected to be on-site		
On-Site Accommodation Camp		
No. of personnel expected to use on-site accommodation camp during peak construction period		
Shuttle Buses		
No. of personnel expected to use shuttle buses during peak construction period		

No. of seats assumed on each shuttle bus

No. of daily shuttle bus services required (peak)

Light Vehicles

No. of personnel expected to use light vehicles during peak construction period

Carpooling rate: Specify no. of personnel per light vehicle (see notes)

Traffic Distributions

List all potential towns/cities where personnel would be based and estimated proportions. Exclude any personnel expected to utilise on-site accommodation.

Town/City Name

Goulburn

Yass

Bowral

Sydney

Cheers,



Sustainability is our business

Lucy Baker
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From: Lucy Baker

Sent: Thursday, October 9, 2025 9:06 AM

To: 'Danae Vitnell' <Danae.Vitnell@goulburn.nsw.gov.au>

Cc: Scott Martin <Scott.Martin@goulburn.nsw.gov.au>; Matilde Tobon Maya <matilde.tobon@x-elio.com>; Tom Parry <tom.parry@erm.com>; Frazer Bayliss <frazer.bayliss@erm.com>; Nicky Sutherland <nicky.sutherland@erm.com>; Katie Porritt <Katie.Porritt@erm.com>; Oliver Mihaila <omihaila@amberorg.com.au>; Kirk Ballantyne <kballantyne@amberorg.com.au>; Mike Willson <mike@amberorg.com.au>

Subject: Willavale Park BESS SSD-78100252 - Shuttle buses

Hi Danae,

At the moment we expect that parking will be at the accommodation locations and not at the shuttle bus collection points, as we are keen for people to walk to the shuttle bus pick up location to prevent impacting local amenity. We will further refine parking locations for the workforce with the council. The Proponent has advised that shuttle buses will be utilised to transport a portion of the workforce to/from Goulburn and Yass. We have assumed that there will be 25 people from Goulburn and 25 people from Yass.

Cheers,



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Lucy Baker
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From: Danae Vitnell <Danae.Vitnell@goulburn.nsw.gov.au>

Sent: Thursday, October 9, 2025 8:50 AM

To: Lucy Baker <lucy.baker@erm.com>

Cc: Scott Martin <Scott.Martin@goulburn.nsw.gov.au>; Matilde Tobon Maya <matilde.tobon@x-elio.com>; Tom Parry <tom.parry@erm.com>; Frazer Bayliss <frazer.bayliss@erm.com>; Nicky Sutherland <nicky.sutherland@erm.com>; Katie Porritt <Katie.Porritt@erm.com>; Oliver Mihaila <omihaila@amberorg.com.au>; Kirk Ballantyne <kballantyne@amberorg.com.au>; Mike Willson <mike@amberorg.com.au>

Subject: Re: Willavale Park BESS SSD-78100252 - Shuttle buses

EXTERNAL MESSAGE

Thanks Lucy.

We will review the below and will come back to you with our comments.

For clarity, do you expect the workforce would drive to the shuttle bus collection locations?
From a quick look, there does not appear to be any accommodation near the sites (with the exception of Sloane Street).

Should your workforce require parking at these locations, this would require additional commentary.

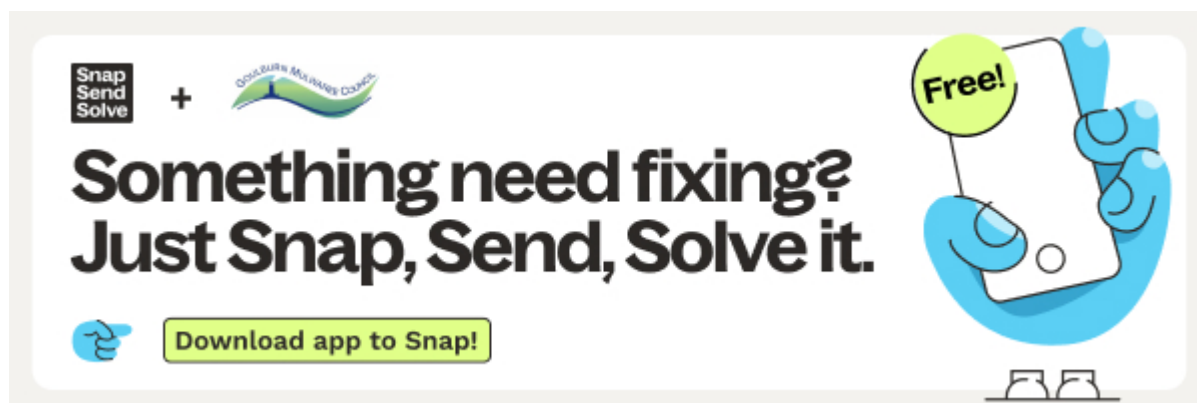
I look forward to your thoughts.

Kind regards

Danae



Danae Vitnell
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Locked Bag 22 | Goulburn NSW 2580



Goulburn Mulwaree Council acknowledge the traditional custodians of the land where the Goulburn Mulwaree Local Government operates today and pay our respects to Elders past, present and emerging.

From: Lucy Baker <lucy.baker@erm.com>

Sent: Thursday, 9 October 2025 7:05 AM

To: Danae Vitnell <Danae.Vitnell@goulburn.nsw.gov.au>

Cc: Scott Martin <Scott.Martin@goulburn.nsw.gov.au>; Matilde Tobon Maya <matilde.tobon@x-elio.com>; Tom Parry <tom.parry@erm.com>; Frazer Bayliss <frazer.bayliss@erm.com>; Nicky Sutherland <nicky.sutherland@erm.com>; Katie Porritt <Katie.Porritt@erm.com>; Oliver Mihaila <omihaila@amberorg.com.au>; Kirk Ballantyne <kballantyne@amberorg.com.au>; Mike Willson <mike@amberorg.com.au>

Subject: Willavale Park BESS SSD-78100252 - Shuttle buses

Hi Danae,

For the Willavale Park BESS we are planning on having shuttle bus pick-up and drop-off locations within Goulburn and Yass at the following locations to provide a convenient and attractive travel option for a large portion of the workforce while minimising any potential impacts to the broader community. Several potential locations have been identified as outlined below:

- **Yass**
 - Laidlaw Street near Victoria Park.
 - Laidlaw Street public car park adjacent to Yass Skate Park.
 - Comur Street / Browne Street near Coronation Park.

Can Goulburn Mulwaree Council confirm that they are OK with the below shuttle bus pick-up and drop-off locations within Goulburn:

- **Goulburn**
 - Clifford Street / Deccan Street / Verner Street / Faithfull Street near Victoria Park, Seiffert Oval, Prell Oval.
 - Sloane Street / Market Street / Auburn Street / Montague Street near Belmore Park.
 - Crookwell Road public car park adjacent to Marsden Weir Park.
 - Wilmot Street / Chantry Street adjacent to North Park.
 - Finlay Road adjacent to Goulburn Hockey Centre.

The pick-up and drop-off locations would be confirmed closer to the commencement of the construction phase when there is more detailed information available regarding the workforce accommodation arrangements.

The Project layout provided in attachment Project layout Map 2 of 5 shows that a shuttle bus parking area for two buses is proposed within the on-site car park. The buses would use the internal road network to access the parking area for drop-off and pick-up of personnel. The buses are smaller than many of the various heavy vehicle combinations that would access the site and accordingly are expected to be able to suitably manoeuvre throughout the site. On-site reversing manoeuvres would be minimised or avoided as far as is practicable to maintain a safe environment.

Measures to ensure the shuttle bus program can be practically achieved and monitored will be included within the Construction Environmental Management Plan and/or TMP. Recommended measures include:

- Limiting car parking for light vehicles on-site.
- Regular toolbox meeting sessions identifying method of travel to work and strongly encouraging use of the shuttle buses.
- Identifying the bus drop off/pick up location and clearly communicating these locations with the workforce.
- Allocating a team member to be responsible for enforcement and management of the shuttle buses.
- Identifying mechanisms to be put in place if shuttle bus passenger numbers are not achieved.

Final details of the employee shuttle bus service including confirmed pick up and drop off points and bus schedules will be outlined within the TMP.

The traffic generation for shuttle buses is provided in the below Table in the TIA.

Table 7: Traffic Generation During Construction Period

Vehicle Type		Average Construction Periods		Peak Construction Period	
		Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)	Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)
Light Vehicles		70	35	100	50
Shuttle Buses		8	2	8	2
Heavy Vehicles	Rigid Trucks	8	1	20	2
	Truck and Dog	24	3	40	4
	Semi-trailers	4	1	4	1
	B-Doubles	2	1	2	1
	Non High Risk OSOM	6	2	0	0
	<i>HV Subtotal</i>	<i>44</i>	<i>8</i>	<i>66</i>	<i>8</i>
Total		122	45	174	60