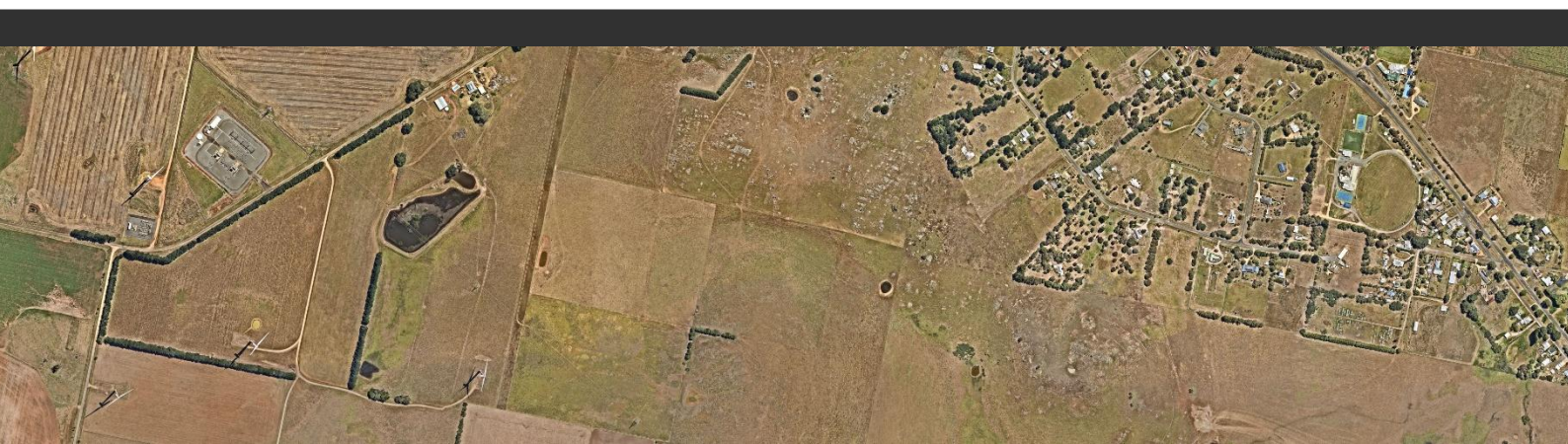


ADVERTISED PLAN

Waubra BESS

Transport Impact Assessment



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4 June 2026

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EXECUTIVE SUMMARY

onemilegrid has been requested by Acciona Energia to undertake a Transport Impact Assessment of the proposed battery energy storage system (BESS) at Waubra BESS.

The proposed BESS has a capacity of 200 Megawatts (MW) / 400 Megawatt hours (MWh), and will include associated infrastructure such as operation and maintenance areas, a transmission line connection to the Waubra Terminal Station and a substation. It should be noted the final storage capacity of the BESS may be subject to change based on outcomes of the detailed design process.

In addition to the key components outlined above, there will be temporary infrastructure required to facilitate the construction and commissioning phases of the proposed BESS. The construction compound would likely include:

- Temporary construction offices;
- Batching plant;
- Construction compound;
- A site office; and
- Laydown areas.

This Transport Impact Assessment (TIA) has been prepared to assess the traffic and transport impacts of the proposed BESS during the construction and operational phases of the project. Construction of the facility is expected to take place over an approximate 24-month period.

Vehicle access to the site is proposed via the existing accessway and gate to Troys Road. A secondary access is also provided to Gordons Road although this will be used for emergency vehicles only.

The proponent proposes to upgrade the intersection of Sunraysia Highway and Troys Road to improve the safety of this intersection, including a realignment / widening of Troys Road.

The construction period includes a 6 month peak construction period, whereby it is anticipated that the proposed development will generate a maximum of 174 light vehicle movements and 110 heavy vehicle movements per day (two-way). It is anticipated that the surrounding road network will be able to comfortably accommodate the traffic generated during the peak construction period.

A maximum of three Oversize and/or Overmass (OSOM) vehicles are expected to require access to the site during the construction period. The proponent has advised that the OSOM vehicle has a total length of 66 metres, including three prime movers (two at the front and one at the rear) and a 16 line modular trailer, with a gross weight of 175 tonnes for the trailer. Based on the constraints of the NHVR OSOM network, it is recommended that OSOM deliveries access the site via the south along Sunraysia Highway.

ABBREVIATIONS

<i>Term</i>	<i>Definition</i>
AUL	Auxiliary left turn treatment
B99	99.8 th percentile passenger vehicle
BAL	Basic left turn treatment
BAR	Basic right turn treatment
BD	26 m B-Double
BESS	Battery Energy Storage System
CHL	Channelised left turn treatment
CHR	Channelised right turn treatment
DEECA	Department of Energy Environment and Climate Action, Victoria
DELWP	Department of Environment, Land, Water and Planning, Victoria (dissolved 31 December 2022)
DTP	Department of Transport and Planning, Victoria
IDM	Infrastructure Design Manual
MW	Megawatts
MWh	Megawatt hours
NHVR	National Heavy Vehicle Regulator
OSOM	Oversize and/or Overmass
SISD	Safe intersection sight distance
TIA	Transport Impact Assessment
vpd	Vehicles per day

CONTENTS

EXECUTIVE SUMMARY	3
ABBREVIATIONS 4	
1 INTRODUCTION.....	7
2 DEVELOPMENT GUIDELINES	7
2.1 Planning Guidelines for Development of Wind Energy Facilities	7
2.2 Solar Energy Facilities Design and Development Guidelines	7
3 EXISTING CONDITIONS	8
3.1 Site Location	8
3.2 Planning Zones and Overlays.....	9
3.3 Road Network.....	10
3.3.1 Troys Road	10
3.3.2 Gordons Road.....	10
3.3.3 Sunraysia Highway.....	11
3.3.4 Sunraysia Highway / Troys Road Intersection	12
3.4 Traffic Volumes.....	16
3.5 Crash History.....	17
4 DEVELOPMENT PROPOSAL.....	19
4.1 General	19
4.2 Construction / Installation.....	19
4.2.1 Typical Construction Phase	19
4.2.2 Peak Construction Phase.....	19
4.2.3 Deliveries	20
4.3 Operation.....	20
4.4 Access	20
4.5 Car Parking.....	21
4.6 External Road Upgrades	21
5 DESIGN ASSESSMENT	22
5.1 Access Design.....	22
5.2 Sight Distance Review	22
5.3 Sunraysia Highway / Troys Road Intersection	23
5.3.1 Light Vehicles / General Heavy Vehicles	23
5.3.2 OSOM Vehicles	23
6 ACCESS ROUTE REVIEW	25
6.1 General	25
6.2 Route Maps.....	25
6.2.1 B-Double Network.....	25
6.2.2 Oversize and Overmass (OSOM) Network.....	26
6.3 Recommended Routes	27
6.3.1 General Heavy Vehicles	27
6.3.2 OSOM Deliveries	29
7 TRAFFIC.....	31
7.1 Traffic Generation	31
7.1.1 Typical Construction Phase	31
7.1.2 Peak Construction Phase.....	31
7.1.3 Anticipated Traffic Generation.....	31
7.1.4 Peak Hour Traffic Generation.....	32
7.2 Traffic Distribution	32
7.3 Resultant Traffic Volumes	33
7.4 Traffic Impact	34
7.4.1 Peak Period Impacts	34
7.4.2 Daily Traffic Volumes	35
8 TRAFFIC MANAGEMENT PLAN	36
8.1 General	36

8.2	Traffic Management Recommendations	36
8.3	Community Impacts	37
9	INTERSECTION SAFETY ASSESSMENT	ERROR! BOOKMARK NOT DEFINED.
9.1	Troys Road Angle	Error! Bookmark not defined.
9.2	Troys Road Width	Error! Bookmark not defined.
9.3	Recommended Upgrades	Error! Bookmark not defined.
10	RESPONSE TO PRE-APPLICATION COMMENTS	38
10.1	Council Comments	38
10.2	DTP Comments	39
11	CONCLUSIONS	41

TABLES

Table 1	Likelihood	13
Table 2	Severity	14
Table 3	Austroads RSA Risk Matrix	14
Table 4	Treatment Approach	14
Table 1	Intersection Road Safety Assessment	14
Table 1	Traffic Volume and Speed Surveys – Troys Road	17
Table 2	Crash Data Summary	18
Table 3	Austroads SISD	22
Table 4	Anticipated Daily Traffic Movements (two-way)	32
Table 5	Anticipated Peak Hour Traffic Movements (two-way)	32
Table 6	Response to Pyrenees Shire Council Comments	38
Table 7	Response to DTP Comments	39

FIGURES

Figure 1	Site Location	8
Figure 2	Site Context (25 February 2025)	9
Figure 3	Planning Scheme Zones	9
Figure 4	Troys Road, looking west adjacent to the subject site	10
Figure 5	Gordons Road, looking south adjacent to the subject site	11
Figure 6	Sunraysia Highway, looking north adjacent to Troys Road	12
Figure 7	Sunraysia Highway / Troys Road Intersection	13
Figure 8	Existing Traffic Volumes – 8 May 2025	16
Figure 9	Crash History	18
Figure 10	16 Axle Transformer delivery vehicle	20
Figure 11	Victoria's Gazetted B-Double Network	25
Figure 12	Victoria's Oversize/Overmass Network	26
Figure 13	Standard Vehicle Access Route	28
Figure 14	OSOM Access Route to Port of Geelong	29
Figure 15	Generated Traffic Volumes – Sunraysia Highway / Troys Road (Peak Construction) .	33
Figure 16	Resultant Future Traffic Volumes – Sunraysia Highway / Troys Road (Peak Construction)	33
Figure 17	Austroads Turn Treatment Warrants – Peak Construction Phase	34

APPENDICES

APPENDIX A	CONCEPT LAYOUT PLANS
APPENDIX B	SWEPT PATH DIAGRAMS

1 INTRODUCTION

onemilegrid has been requested by Acciona Energia to undertake a Transport Impact Assessment of the proposed Battery Energy Storage System (BESS) at 151 Troys Road, Waubra.

This analysis has been undertaken in accordance with Department of Transport and Planning (DTP) *Planning Guidelines for Development of Wind Energy Facilities* (September 2023) and aims to identify key traffic impacts associated with the construction and operation of the proposed BESS, and identify any infrastructure necessary to support the use and mitigate potential impacts.

As part of this assessment the subject site has been inspected with due consideration of the development proposal, traffic data has been sourced, and relevant background information has been reviewed.

2 DEVELOPMENT GUIDELINES

2.1 Planning Guidelines for Development of Wind Energy Facilities

The Department of Transport and Planning (DTP) published the Planning Guidelines for Development of Wind Energy Facilities in September 2023.

The document provides a consistent and balanced framework to assist the assessment of wind energy projects, and guidance on how planning permit requirements are met. The document also includes provisions for larger wind energy facilities that may include a battery energy storage system, and is therefore broadly considered to be applicable to the Waubra BESS.

Relevant to traffic engineering matters, the guidelines identify the following requirements:

- Identify access roads on and in the vicinity of the site;
- Swept path diagrams demonstrating oversize vehicle access to the site, including impacts to roadside vegetation;
- Direction and distances to major roads;

2.2 Solar Energy Facilities Design and Development Guidelines

The Department of Environment, Land, Water and Planning (DELWP), now dissolved and preceded by the Department of Energy Environment and Climate Action (DEECA) and Department of Transport and Planning (DTP), prepared the *Solar Energy Facilities Design and Development Guidelines* in October 2022.

This document outlines the fundamentals of solar power facilities within Victoria in regard to policies, legislative and statutory planning arrangements. The guidelines include specific provisions relevant to traffic engineering, such as the requirement for a Traffic Impact Assessment. The following requirements are considered relevant to the proposed development:

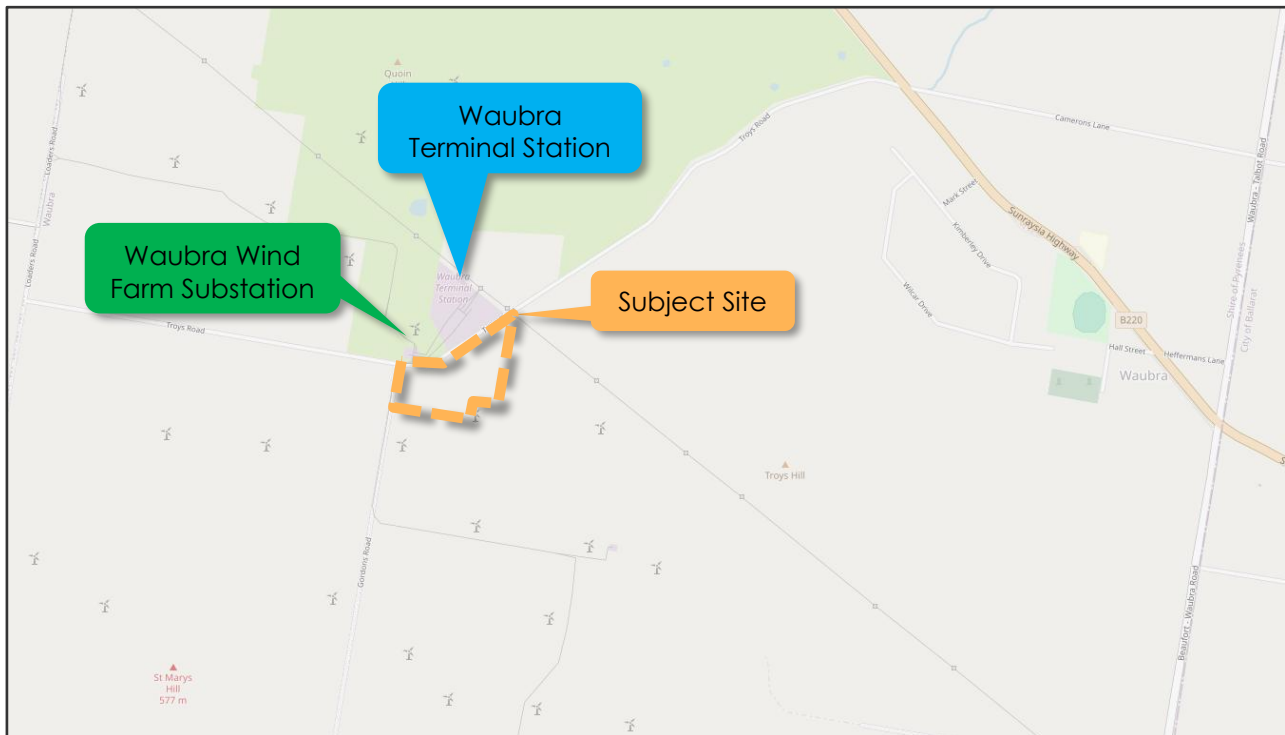
- Identify access routes and all roads that will be used to transport construction materials;
- Identify access routes, types of vehicles and traffic generation when the facility operates;
- Specify the timing, type of vehicle, daily volume and scheduled delivery times of construction materials;
- Provide timelines for the whole construction stage; and
- Identify intersection upgrades and any road works required to accommodate access to the site, and specify if these are temporary arrangements.

3 EXISTING CONDITIONS

3.1 Site Location

The [subject site](#) is located on part of the land addressed as 151 Troys Road, Waubra, and is located on the south side of Troys Road and the east side of Gordons Road, as shown in Figure 1. The site is located adjacent to the Waubra Terminal Station and Waubra Wind Farm Substation on the north side of Troys Road.

Figure 1 Site Location



Source: OpenStreetMap

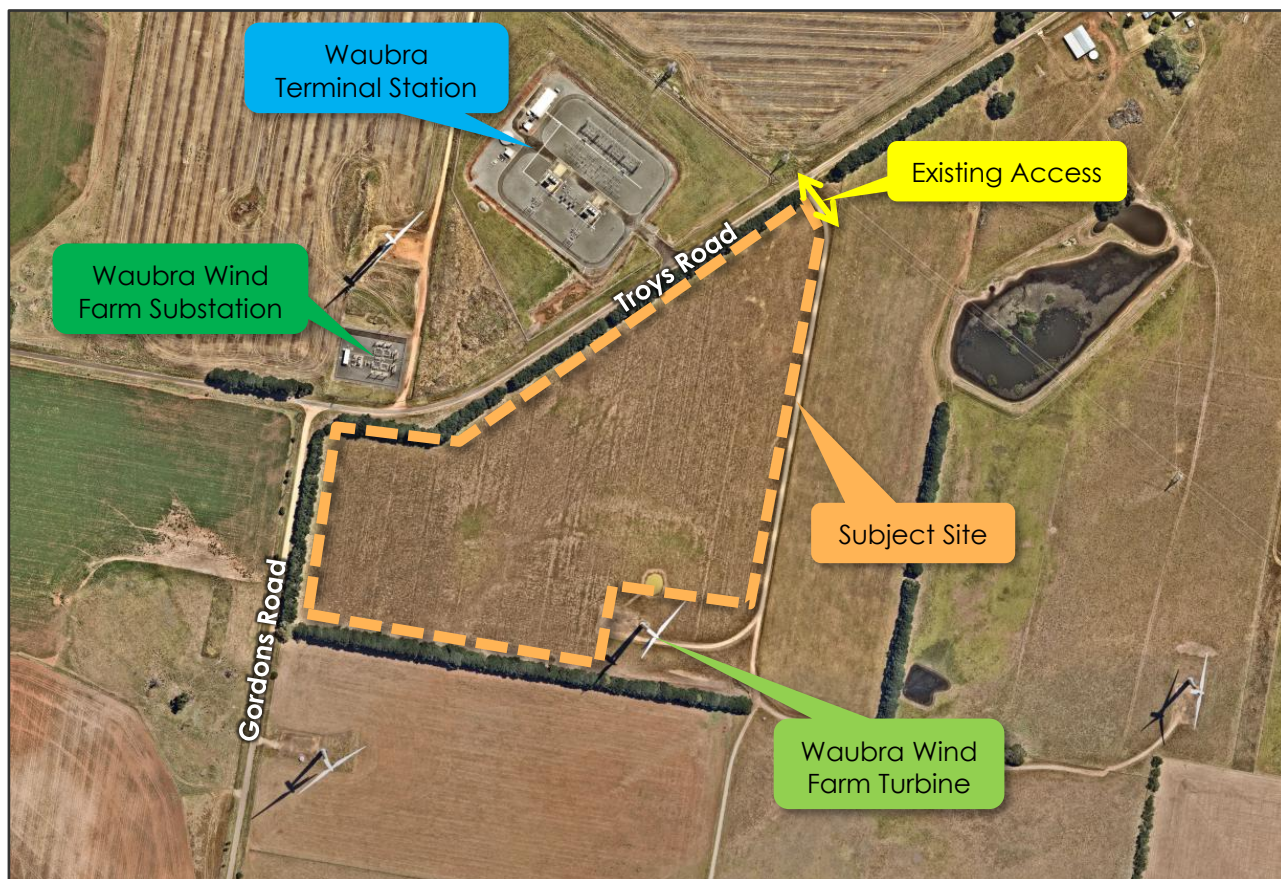
The site area is currently vacant. A Waubra Wind Farm Turbine is located in the south east corner of the property, but is outside the site boundary.

Access to the site is provided via a concealed crossover to Troys Road in the north-east corner of the site, connecting through to the wind turbine on the subject site, and other wind turbines on adjacent sites in the vicinity. The existing access to Troys Road comprises a four-panel double gate which has an open width of approximately 14.4m.

Land use in the immediate vicinity of the site is generally similar rural land, with the site being within the overall area of the Waubra Wind Farm.

An aerial view of the subject site is provided in Figure 2.

Figure 2 Site Context (25 February 2025)

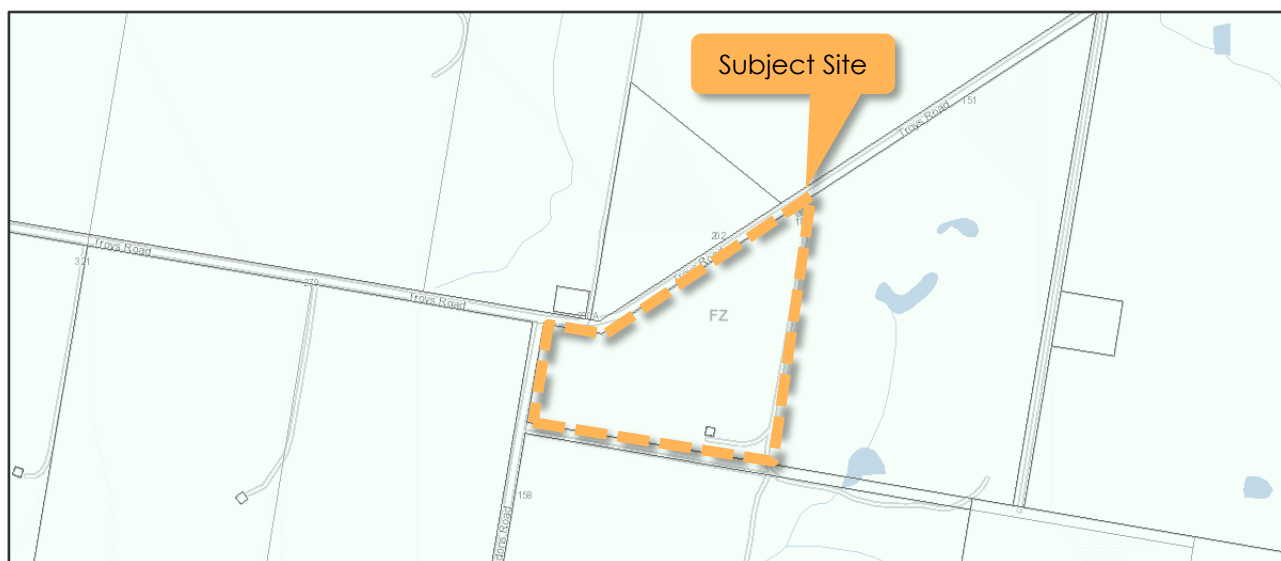


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3.2 Planning Zones and Overlays

It is shown in Figure 3 that the site is located within a Farming Zone (FZ).

Figure 3 Planning Scheme Zones



Source: Department of Transport and Planning (DTP)

3.3 Road Network

3.3.1 Troys Road

Troys Road is a local road generally aligned east-west, running between Sunraysia Highway in the east, and Glenbrae School Road in the west. Troys Road is provided with an approximately 3.5m wide carriageway adjacent to the site with a combination of gravel and grassed shoulders provided on both sides of the road.

The rural default 100 km/h speed limit applies to Troys Road.

The cross-section of Troys Road at the frontage of the site is shown in Figure 4.

Figure 4 Troys Road, looking west adjacent to the subject site



Image date: April 2025

3.3.2 Gordons Road

Gordons Road is a local road generally aligned north-south, running between Troys Road in the north, and Beaufort-Waubra Road in the south. In the vicinity of the site, Gordons Road is unsealed.

The rural default 100 km/h speed limit applies to Gordons Road.

The cross-section of Gordons Road at the frontage of the site is shown in Figure 5.

Figure 5 Gordons Road, looking south adjacent to the subject site



Image date: April 2025

3.3.3 Sunraysia Highway

Sunraysia Highway is an arterial road (named Highway) generally aligned north-south, running between Western Freeway in Mitchell Park, a north western suburb of Ballarat, and Calder Highway in Ouyen. Sunraysia Highway provides a single traffic lane and grassed shoulders in each direction in the vicinity of the site.

A 100 km/h speed limit applies to Sunraysia Highway in the vicinity of the intersection with Troys Road, and transitions to an 80 km/h speed limit approximately 270 m to the southeast, on the approach to the Waubra township.

The cross-section of Sunraysia Highway at the intersection with Troys Road is shown in Figure 6.

Figure 6 Sunraysia Highway, looking north adjacent to Troys Road



Image date: April 2025

3.3.4 Sunraysia Highway / Troys Road Intersection

Troys Road intersects with Sunraysia Highway at its eastern end, via a T-intersection. The roads intersect at an angle of approximately 35 degrees (or 145 degrees), with a gravel area located on the northern side of the Troys Road approach which acts as a wider 'throat' for vehicles to prop into when waiting to turn onto Sunraysia Highway.

The intersection is offset from the opposite intersection with Camerons Lane.

An aerial view of the intersection between Sunraysia Highway and Troys Road is provided in Figure 7.

Figure 7 Sunraysia Highway / Troys Road Intersection



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3.3.4.1 Intersection Safety Assessment

onemilegrid have undertaken an intersection safety assessment for the existing intersection between Sunraysia Highway and Troys Road, following conversations with Department of Transport and Planning (DTP).

As outlined in Austroads Guide to Road Safety – Part 6: Road Safety Audit, each risk and hazard has been assessed, with consideration given to the likelihood and severity of potential crashes.

These parameters have also been utilised to give a 'priority' for risk mitigation.

The risk parameter and risk mitigation priorities, as per Austroads Guide to Road Safety – Part 6: Road Safety Audit are summarised below, noting that any risks with a severity rating of Serious or Fatal are considered to be above the Safe System crash outcome threshold.

The safety assessment does not guarantee that every deficiency has been identified. Further, if all the recommendations in this report were to be followed, this would not guarantee that the site is 'safe'; rather, adoption of the recommendations should improve the level of safety of the facility.

Table 1 Likelihood

Likelihood	Description
Almost Certain	Occurrence once per quarter
Likely	Occurrence once per quarter to once per year
Possible	Occurrence once per year to once every three years
Unlikely	Occurrence once per every three years to once every seven years
Rare	Occurrence less than once every seven years

Table 2 Severity

Severity	Description
Insignificant	Property Damage
Minor	Minor First Aid
Moderate	Major first aid and/or presents to hospital (not admitted)
Serious	Admitted to hospital
Fatal	At scene or within 30 days

Table 3 Austroads RSA Risk Matrix

	Insignificant	Minor	Moderate	Serious	Fatal
Almost Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	Extreme	Extreme
Possible	Low	Medium	High	High	Extreme
Unlikely	Negligible	Low	Medium	High	Extreme
Rare	Negligible	Negligible	Low	Medium	High

Table 4 Treatment Approach

Risk	Suggested treatment approach
Extreme	Must be corrected regardless of cost
High	Should be corrected or the risk significantly reduced, even if the treatment cost is high
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high
Low	Should be corrected or the risk reduced if the treatment cost is low
Negligible	No action required

The safety assessment is provided as Table 5.

Table 5 Intersection Road Safety Assessment

Safety Assessment Finding	Level of Risk	Recommendation
The intersection is located on a section of Sunraysia Highway which has a speed limit of 100 km/h. Any crashes which may occur at the intersection would exceed the Safe System threshold. Notwithstanding, intersections along highways with high speed limits in rural settings is common however consideration of high speeds should be factored into other considerations on intersection safety.	Note	Note

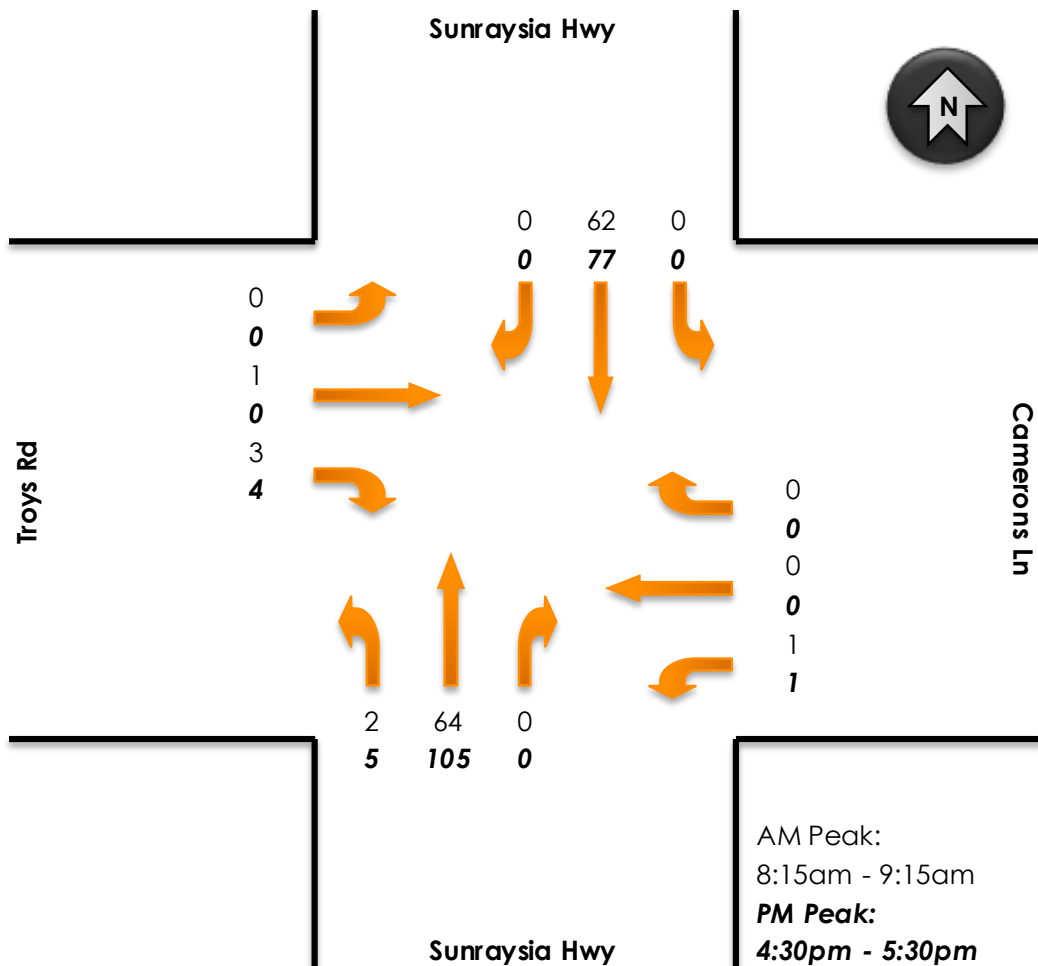
Safety Assessment Finding	Level of Risk	Recommendation
The roads intersect at an acute angle. The acute angle restricts driver sight lines, increases travel distances for some turn movements and can distort the perception of speed and distance for drivers waiting to turn. Within a high speed environment (100 km/h) the negatively impacted sight distances pose a significant risk. Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections outlines the following with regard to the angle that roads meet at: <i>“Large angles can be a significant issue for older drivers, particularly those who may have difficulty in turning their head and neck to detect the presence of conflicting vehicles (Austroads 2000). For new at-grade intersections where right of way is not restricted, the roadway should meet at a 90° angle to provide the best sight lines. For re-design of existing at-grade intersections where right of way is restricted, the roadway should meet at an angle of not less than 70°.”</i>	Rare Fatal High	Realign the intersection to improve sight distances and driver expectations.
Vehicles turning left from Troys Road onto Sunraysia Highway are currently using the widened gravel area. The gravel reduces vehicle traction which could cause a vehicle to lose control or increase the time taken for the necessary turning movement.	Unlikely Serious High	Seal the gravel section.
Troys Road has a narrow carriageway (approximately 4 m) which requires opposing vehicle movements to use the road shoulder for passing. The restriction on passing at the intersection increases potential for vehicle side swipes, or vehicles suddenly stopping on Sunraysia Highway and increasing chances of rear end crashes.	Unlikely Serious High	Increase width of Troys Road at the intersection to accommodate vehicle passing.
There are culverts on Sunraysia Highway between the intersections with Troys Road and Camerons Lane which convey the open drains on each side of the highway. The culverts are quite close to the road and present a run-off-road risk for any vehicles that might leave the carriageway. Their proximity to the intersection increases the likelihood of run-off-road incidents as vehicles are turning.	Unlikely Moderate Medium	Reposition intersection with greater offset to the culverts.

3.4 Traffic Volumes

Traffic volume surveys were undertaken by Trans Traffic Survey on behalf of **onemilegrid** at the intersection of Sunraysia Highway and Troys Road, on Thursday 8th May 2025, between 6:30am and 9:30am, and between 2:30pm and 6:30pm.

The peak hour results of the surveys are shown in Figure 8.

Figure 8 Existing Traffic Volumes – 8 May 2025



The data indicates that the vast majority of traffic accessing Troys Road approaches via the south on Sunraysia Highway.

Traffic volume, speed and classification surveys were undertaken by Trans Traffic Survey on behalf of **onemilegrid** on Troys Road adjacent the site, for a one-week period from Friday 2nd May 2025 to Thursday 8th May 2025 inclusive. The results of the surveys are summarised in Table 6.

Table 6 Traffic Volume and Speed Surveys – Troys Road

<i>Time Period</i>	<i>Direction</i>	<i>Traffic Volume (vpd)</i>	<i>Average Speed (km/h)</i>	<i>85th Percentile Speed (km/h)</i>
Weekday Average	Eastbound	22	74.2	79.6
	Westbound	21	80.9	86.7
	Both Directions	43	77.3	82.8
7 Day Average	Eastbound	21	75.5	81.7
	Westbound	20	83.4	88.3
	Both Directions	41	79.6	84.9

The traffic surveys indicate that Troys Road accommodates minimal traffic, with an average of 43 vehicles per day on weekdays. Additionally, speeds are lower than the speed limit, with an 85th percentile speed of 84.9 km/h.

3.5 Crash History

Crash history information for the area surrounding the site was obtained through the Department of Transport and Planning (VicRoads) CrashStats (the Victorian accident statistics and mapping program) for the latest available 5-year period. The severity of each incident is classified as either fatal, serious, or other, as described below:

- **Fatal:** At least one person was killed or died within 30 days of the crash
- **Serious Injury:** At least one person was injured and admitted to hospital and did not die within 30 days of the crash
- **Other Injury:** Those involved were injured and required medical treatment, such as, bruising, contusions, unconscious, pain, soreness, etc and were not admitted to hospital nor died within 30 days of the crash

It is acknowledged that the crash stats only include the incidents recorded by police and therefore may exclude minor incidents which were not reported.

Each of the recorded crashes is shown below in Figure 9 and detailed in Table 7.

Figure 9 Crash History



Table 7 Crash Data Summary

Accident No.	Crash Day/Date	Crash Time	Crash Type	DCA Code	Severity
T20200011724	Saturday 16/05/2020	14:30	No collision and no object struck	Out of control on carriageway (on straight)	Other injury
T20200015031	Monday 10/08/2020	20:30	Collision with a fixed object	Left off carriageway into object/parked vehicle	Serious Injury
T20200020334	Monday 16/11/2020	14:05	No collision and no object struck	Off carriageway to left	Serious injury
T20220019371	Saturday 27/08/2022	13:40	Collision with a fixed object	Right off carriageway into object/parked vehicle	Serious injury
T20240008569	Friday 5/04/2024	17:20	Vehicle overturned (no collision)	Off carriageway on right bend	Other Injury

The crash information is summarised below:

- A total of 5 crashes were recorded over the 5-year period;
- Of these, 0 involved a fatality, 3 involved a serious injury;
- 4 accidents were along Sunraysia Highway, and all of these involved a vehicle veering off the carriageway.

The crash data did not indicate a trend for crashes at a specific location. Furthermore, there were no crashes recorded on Troys Road or the subsequent intersection with Sunraysia Highway.

4 DEVELOPMENT PROPOSAL

4.1 General

It is proposed to develop the site for the purposes of a 200MW/400MWh Battery Energy Storage Facility (BESS), with associated infrastructure including operation and maintenance areas, an on-site substation, and transmission line connection to the Waubra Terminal Station. It should be noted the final storage capacity of the BESS may be subject to change based on outcomes of the detailed design process.

In addition to the key components outlined above, there will be temporary infrastructure required to facilitate the construction and commissioning phases of the proposed BESS. The construction compound would likely include:

- Temporary construction offices;
- Batching plant;
- Construction compound;
- A site office; and
- Laydown areas.

These will all be accommodated within the subject site.

The proposed BESS units are to be located in the western portion of the site.

No changes to the wind turbines within proximity of the site are expected.

4.2 Construction / Installation

Construction of the facility is expected to take place over an approximate 24-month period. This can be broken up into two distinct phases, a typical construction phase and a peak construction phase.

Additionally, construction hours are generally to be limited to the following (unless required for specific activities):

- Monday to Friday: 7:00 AM to 6:00 PM;
- Saturday to Sunday: 7:00 AM to 1:00 PM.

A breakdown of the typical construction periods and peak construction periods is discussed below.

4.2.1 Typical Construction Phase

During the typical construction period associated with the facility, the site is expected to accommodate a maximum of 40 staffs on-site at a given time. Additionally, up to 30 heavy vehicle deliveries are expected per day, with the timing of these deliveries distributed throughout the day.

4.2.2 Peak Construction Phase

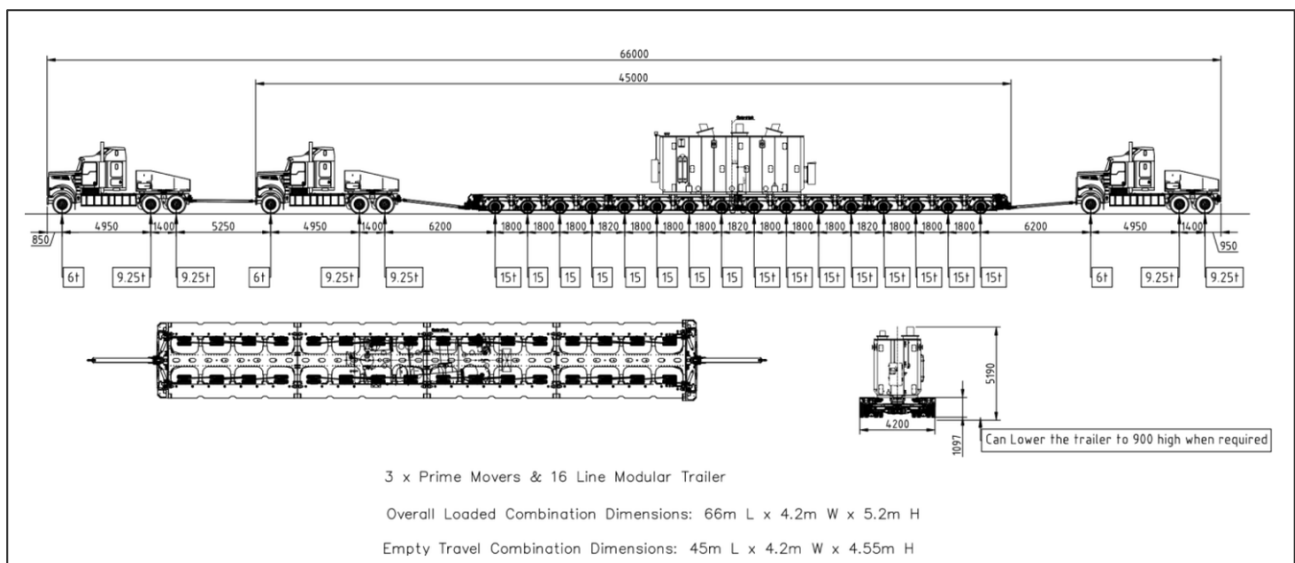
Included within the 24 month construction period, a 6 month peak construction phase has been designated. During this peak phase, the site is expected to accommodate a maximum of 100 staffs on-site, and up to a maximum of 55 heavy vehicle deliveries and 3 light vehicle deliveries per day, evenly distributed throughout the day.

4.2.3 Deliveries

The majority of heavy vehicle deliveries are expected to be via 6.4 m to 12.5m rigid trucks, 19 m semi-trailers and 20 m tandem tipper and trailers (truck and dogs). Other heavy vehicles that require occasional access are low loader trailers and 26 m B-Double's (BD).

The proponent, Acciona Energia, has advised that the largest vehicles that will require access to the site during the construction phase will be Oversize and Overmass (OSOM) vehicles with a 16-axle trailer, associated with the delivery of high voltage transformers (subject to confirmation regarding final BESS design). The indicative OSOM vehicle includes three prime movers (two at the front and one at the rear) and a 16 line modular trailer with a total length of 66 m, and a gross weight of 175 tonnes. A view of this vehicle is provided below. It is expected that a maximum of 3 OSOM vehicle deliveries will occur over the duration of the construction of the facility.

Figure 10 16 Axle Transformer delivery vehicle



4.3 Operation

The proponent has outlined the site may accommodate a maximum of 10 maintenance staffs on-site during the typical operations.

Annual access to the site will be necessary for major maintenance and inspections, with a maximum of 14 staffs expected on-site, including two heavy vehicles.

4.4 Access

Primary vehicular access to the site is proposed to be provided via upgrading the existing access in the northeast corner of the site to Troys Road, in accordance with IDM Standard Drawing SD265. The proposed primary access will facilitate fully directional vehicle movements into and out of the site to Troys Road, although noting the likely origin and destination movements will be left in, right out only.

A secondary / emergency access is also to be provided to Gordons Road to the west.

It is anticipated that access to the site will be secured against unauthorised access outside of construction hours/days, and at all times once operational.

4.5 Car Parking

Car parking for construction staff will be provided within a parking area on-site, expected within the eastern portion of the site though the location is expected to be finalised in the detailed design phase of the project. Additionally, the eastern portion of the site can be used for any overspill and therefore all car parking demands will be accommodated on-site. The proponent will ensure that no parking associated with the construction or operation of the site occurs external to the site boundary. Noting the nature of the development and the context, the car parking surface will comprise a gravel construction.

For the operational phase of the project a smaller car parking area is expected to be provided. Given the large area of the overall site and the small operational workforce this is expected to be comfortably accommodated on-site.

4.6 External Road Upgrades

The proponent proposes to upgrade the intersection of Sunraysia Highway and Troys Road to facilitate access to the site. The proposed upgrade realigns the Troys Road approach to enable vehicles to position perpendicular to the Sunraysia Highway carriageway, significantly increasing sight lines, mitigating risks outlined in Table 5. A concept layout plan is provided in Appendix A showing the proposed intersection upgrade.

Preliminary conversations have been held between **onemilegrid** and Department of Transport and Planning (DTP) on the proposed intersection upgrade and an existing conditions safety assessment undertaken as Section 3.3.4.1 of this report.

5 DESIGN ASSESSMENT

5.1 Access Design

Vehicle access to the site will be provided by upgrading the existing driveway connection to Troys Road. The access has been designed in accordance with IDM Standard Drawing SD265, allowing a semi-trailer to prop clear of the Troys Road carriageway when opening the gates. The concept design for the Troys Road access is provided in Appendix A.

onemilegrid have undertaken a swept path assessment demonstrating that the proposed access and gate are able to accommodate the turning movements for the 19m semi-trailer and the OSOM vehicle. Further details on the OSOM vehicle are provided below. The swept paths are provided in Appendix B.

The existing access is considered suitable for the typical construction and operation vehicles.

The secondary access is intended solely as an emergency-only access to satisfy CFA requirements for fire trucks to have multiple ingress/egress points. It will not be used for construction or operational traffic. The secondary access to Gordons Road is on a straight section of this road, offering good sight lines and turning opportunities.

5.2 Sight Distance Review

As part of **onemilegrid**'s investigations, a sight distance assessment was undertaken along Troys Road in the vicinity of the site access, using both in person observations and verification using Google Streetview Imagery.

A reaction time of 2.0 seconds is considered the absolute minimum value for alert driving situations in rural areas, however the general minimum value for high speed rural roads is 2.5 seconds. The corresponding sight distance criteria for both 2 seconds and 2.5 seconds reaction time are highlighted below in orange and red, respectively.

Table 8 Austroads SISD

Design speed (km/h)	Based on safe intersection sight distance for cars ⁽¹⁾ $h_1 = 1.1$; $h_2 = 1.25$, $d = 0.36$ ⁽²⁾ ; Observation time = 3 sec					
	$R_T = 1.5$ sec ⁽³⁾		$R_T = 2.0$ sec		$R_T = 2.5$ sec	
	SISD (m)	K	SISD (m)	K	SISD (m)	K
40	67	4.9	73	6	–	–
50	90	8.6	97	10	–	–
60	114	14	123	16	–	–
70	141	22	151	25	–	–
80	170	31	181	35	–	–
90	201	43	214	49	226	55
100	234	59	248	66	262	74
110	–	–	285	87	300	97
120	–	–	324	112	341	124
130	–	–	365	143	383	157

Source: Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections

Noting the observed 85th percentile speed of 84.9 km/h along Troys Road the above sight line requirements are considered conservative. Regardless, it is expected that minimum sight distances of over 300 m are provided in both directions adjacent the site access.

Notwithstanding, it is recommended that advanced warning signage is implemented along Troys Road as part of the construction traffic management strategy to warn motorists that vehicles may be entering or exiting the site. Again, this will be managed through the construction traffic management proposal.

5.3 Sunraysia Highway / Troys Road Intersection

The proposed upgrade of Sunraysia Highway and Troys Road includes the following:

- Realignment of the eastern end of Troys Road which intersects Sunraysia Highway at 90 degrees;
- Widening of Troys Road at the intersection to permit vehicles in opposing directions to pass; and
- Sealing of Troys Road for the respective turn movements.

A Concept Layout Plan and associated swept path assessment have been prepared for the proposed intersection upgrade and included as Appendix A and Appendix B, respectively.

The intersection upgrade works are proposed to assist with addressing safety risks identified as part of the Intersection Safety Assessment included as Section 3.3.4.1 of this report.

5.3.1 Light Vehicles / General Heavy Vehicles

A swept path assessment has been undertaken demonstrating semi-trailer turning movements at the intersection between Sunraysia Highway and Troys Road intersection. The swept path assessment, included as Appendix B shows that this vehicle can turn at the upgraded intersection via the respective lanes on Sunraysia Highway.

Passing opportunities will be limited on Troys Road in the vicinity of the intersection however the probability of vehicle movements in opposing directions is considered to be very low given the tidal nature of vehicle movements for the construction of the site and the low existing traffic volumes for Troys Road.

5.3.2 OSOM Vehicles

During the construction phase of the project, there will be a need for up to 3 x OSOM vehicles to access the site, typically involved with transporting heavy equipment, such as the transformer. Information provided by the proponent indicated that the OSOM vehicles will comprise a 16-axle modular trailer with 3 x prime movers (2 at the front and 1 at the rear). This vehicle has a total length of 66m when including all of the prime movers, and a typical height clearance of 5.19m when loaded (although this can be lowered slightly if needed).

This OSOM vehicle is a highly specialised vehicle configuration designed to carry extremely heavy and large loads. It features multiple independently steerable axles and is operated with multi-prime mover control to manage its weight and manoeuvrability. A summary of the turning mechanics for this vehicle is provided below:

- Front Prime Movers (x2) – The prime movers at the front of the vehicle combination pull the trailer and initiate the turn, setting the path for the rest of the vehicle. The use of 2 prime movers at the front of the vehicle combination increases traction and torque for heavy loads.

- **Modular Trailer** – The modular trailer includes 16-axes which are each hydraulically or electronically steerable. The axes are programmed to steer in coordination with the trailer's movement, reducing the swept path and preventing tyre scrubbing. During the turns, the front axles steer in the direction of the turn, while the rear axles steer in the opposite direction, allowing the trailer to 'follow' the curve smoothly. The steering of the trailer may be managed remotely by an operator walking beside the vehicle or riding in a control cab. Additionally, the trailer may be removed from the prime movers and steered solo at critical junctions (at slow speed).
- **Rear Prime Mover** – The prime mover at the rear of the vehicle combination pushes the load and helps with directional stability and turn control. It is critical for support with tight turns, especially at low speeds where it can help guide the trailers rear end around corners more accurately.

onemilegrid have undertaken swept path assessments for the site access and intersection of Sunraysia Highway and Troys Road, detailing circulation of the 16-axle modular trailer, which is understood to be the critical component in relation to the turning circle of the vehicle. Based on our experience, the trailer can be unhooked from the prime movers at critical junctions and can move independently (at slow speeds).

The swept paths showing the movements of OSOM vehicles are attached in Appendix B, which demonstrates that the trailer can access the site via Troys Road and traverse the upgraded Sunraysia Highway / Troys Road intersection.

Furthermore, it is expected that all movements via OSOM vehicles will be managed via traffic management along the journey.

6 ACCESS ROUTE REVIEW

6.1 General

The proponent, Acciona Energia, has advised that construction vehicles and deliveries will originate / depart from the Port of Geelong or Port of Melbourne. Port of Geelong is considered the more likely location considering the slightly shorter travel route, in addition to reduced impact on the local traffic network in the vicinity of the port.

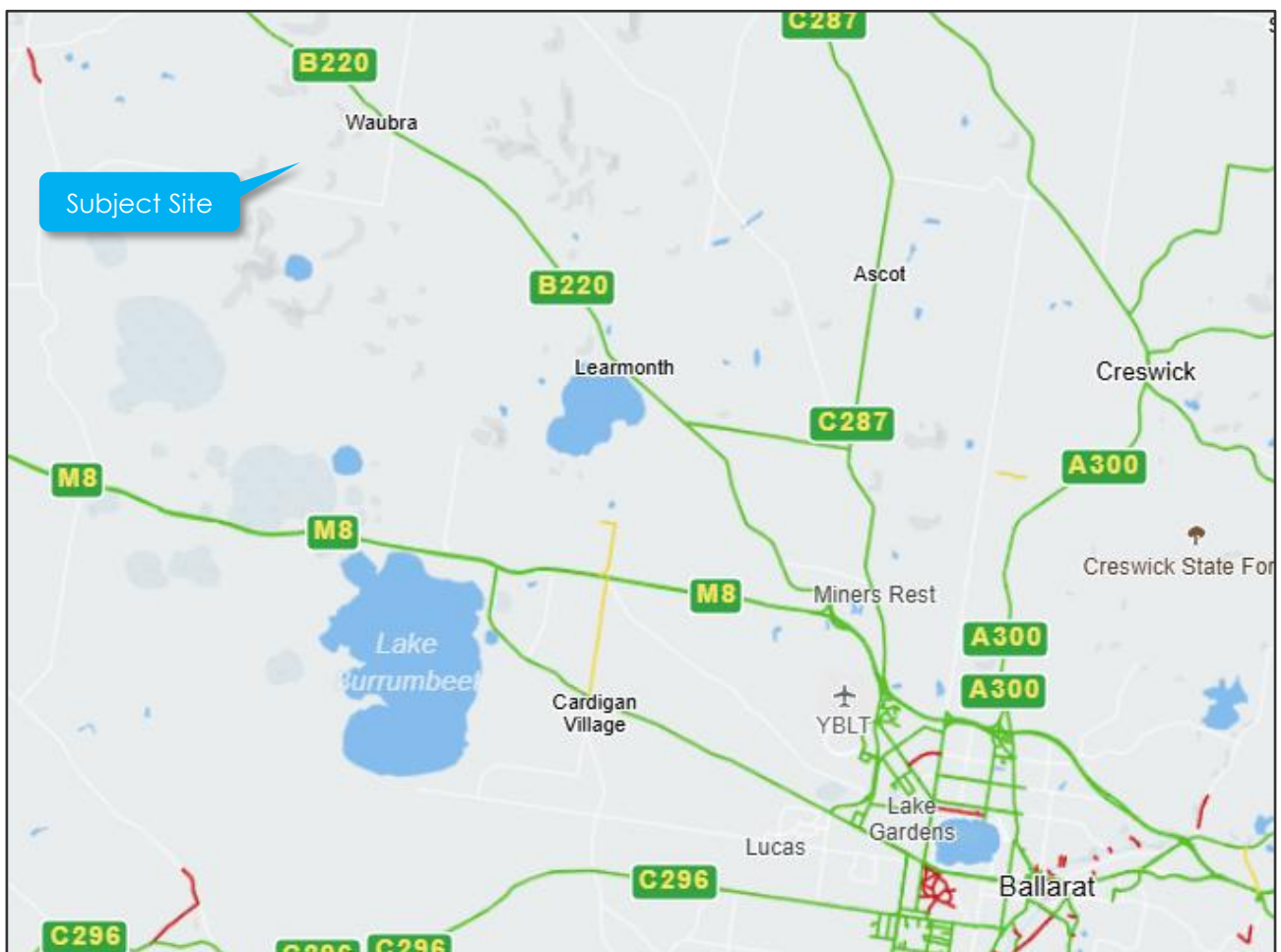
6.2 Route Maps

onemilegrid has reviewed the National Heavy Vehicle Regulator (NHVR) National Network Maps from the subject site to the Port of Geelong, and provides the following information.

6.2.1 B-Double Network

Victoria's gazetted arterial and municipal roads for Class 2 B-Doubles and Class 3 B-doubles operating under Victoria's Livestock Loading scheme in the vicinity of the subject site is shown below in Figure 11.

Figure 11 Victoria's Gazetted B-Double Network



Source: NHVR

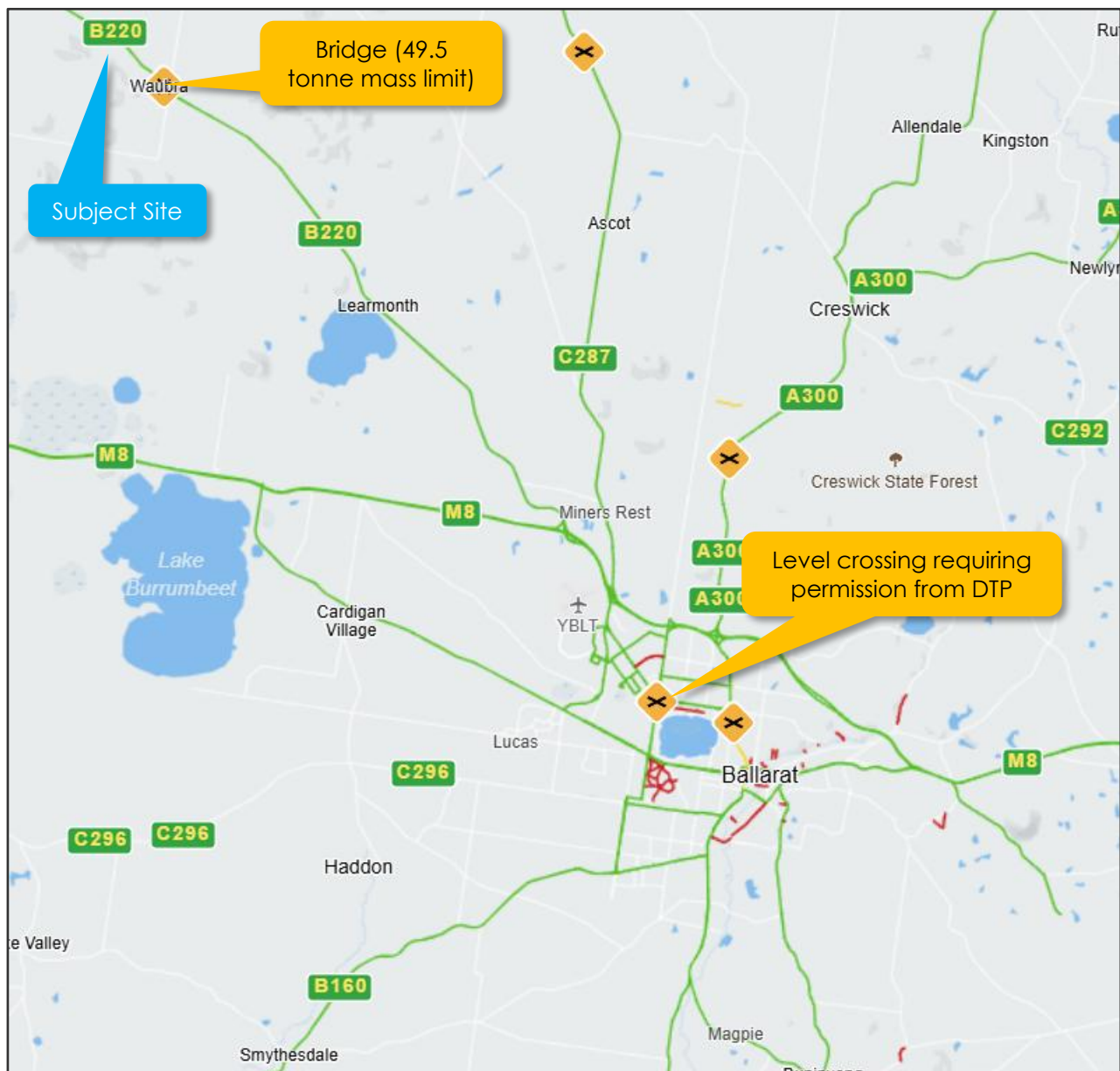
It is shown that Sunraysia Highway is an approved road, in addition to a number of roads in the Ballarat region such as Western Freeway to the east and Geelong Road to the south.

It is assumed that all roads on the B-Double network are accessible by vehicles up to and including a B-Double in size (26 metres). It is therefore anticipated that all heavy vehicle deliveries that comply with standard vehicle dimensions will access the site via the south along Sunraysia Highway.

6.2.2 Oversize and Overmass (OSOM) Network

The Multi-State Class 1 Load Carrying Vehicle Dimension Exemption Notice and the Multi-State Class 1 Load Carrying Vehicle Mass Exemption Notice enables eligible vehicles up to 5m wide, 5m high, 30m long, and 100t mass access to roads in Victoria, subject to meeting the eligibility requirements and all conditions specified in the notice and on the OSOM network map. The OSOM Network in the vicinity of the site is shown below in Figure 12.

Figure 12 Victoria's Oversize/Overmass Network



Source: NHVR

While Sunraysia Highway is approved as part of the OSOM network, there is a bridge on Sunraysia Highway, with a 49.5 tonne mass limit, restricting access. The bridge is located between the intersections of Waubra-Talbot Road and Heffernans Lane in Waubra, south of the site. Further investigations will be required to confirm OSOM vehicle access on Sunraysia Highway, through Waubra and the subject bridge. Preliminary investigations reveal that the bridge is approximately 15 m long. The proposed 16 axle trailer is approximately 30m long, and therefore only up to half of the vehicle (and the load) will be on the bridge at a specific time.

Additionally, it should be noted for vehicles in excess of 26m long or 4.9m high, permission is required from DTP to traverse all rail crossings. A level crossing is located on Gillies Street in Ballarat as shown above.

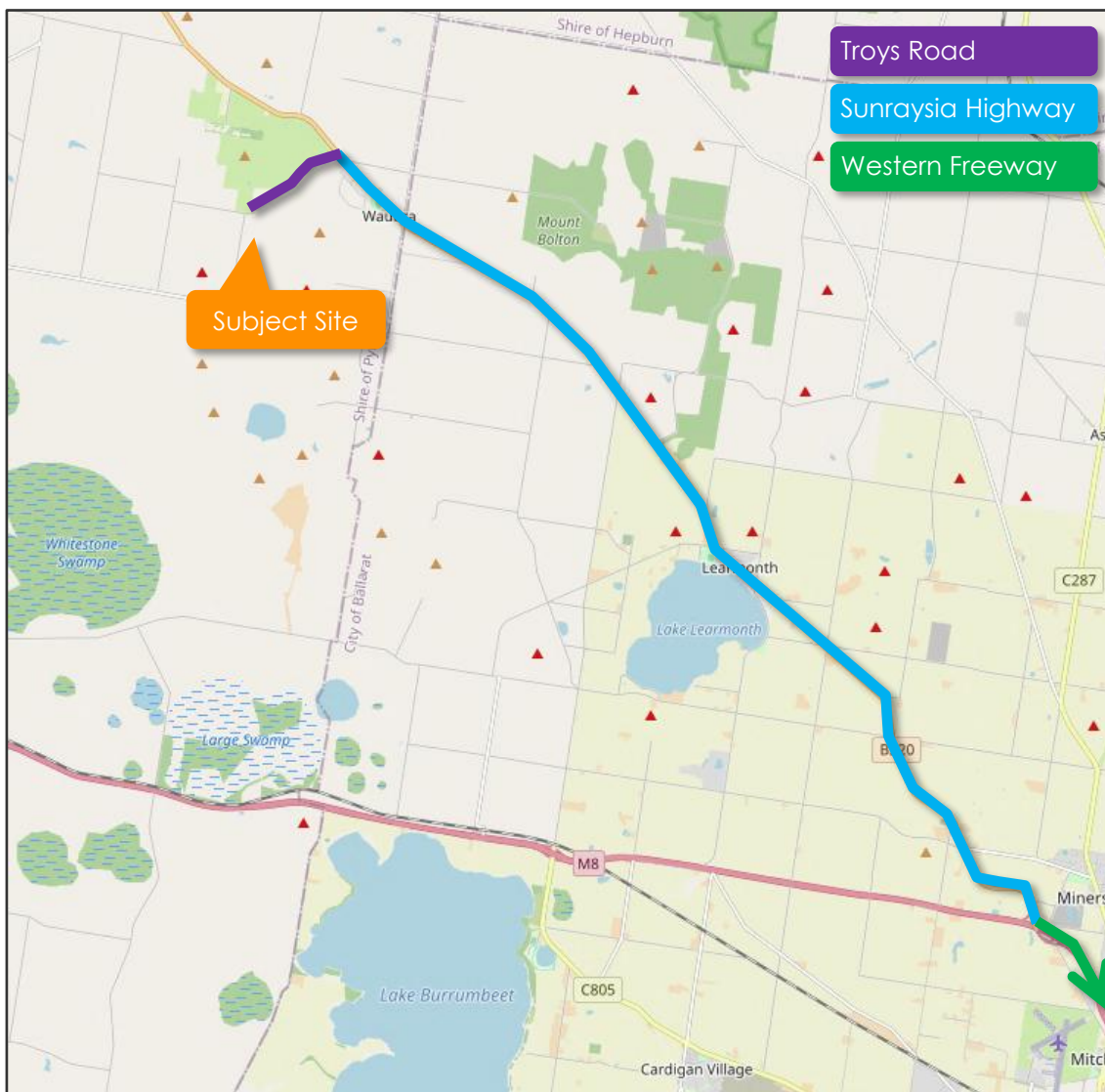
It is also acknowledged that the proposed OSOM vehicle for the site exceeds the dimensions detailed within the vehicle register and further coordination will be required with NHVR.

6.3 Recommended Routes

6.3.1 General Heavy Vehicles

Standard sized heavy vehicle deliveries arriving via the Port of Geelong and Port of Melbourne are expected to utilise Sunraysia Highway and Western Freeway to access the site, in accordance with the B-double and OSOM network shown in Figure 11. The access route in the vicinity of the site is shown below in Figure 13.

Figure 13 Standard Vehicle Access Route



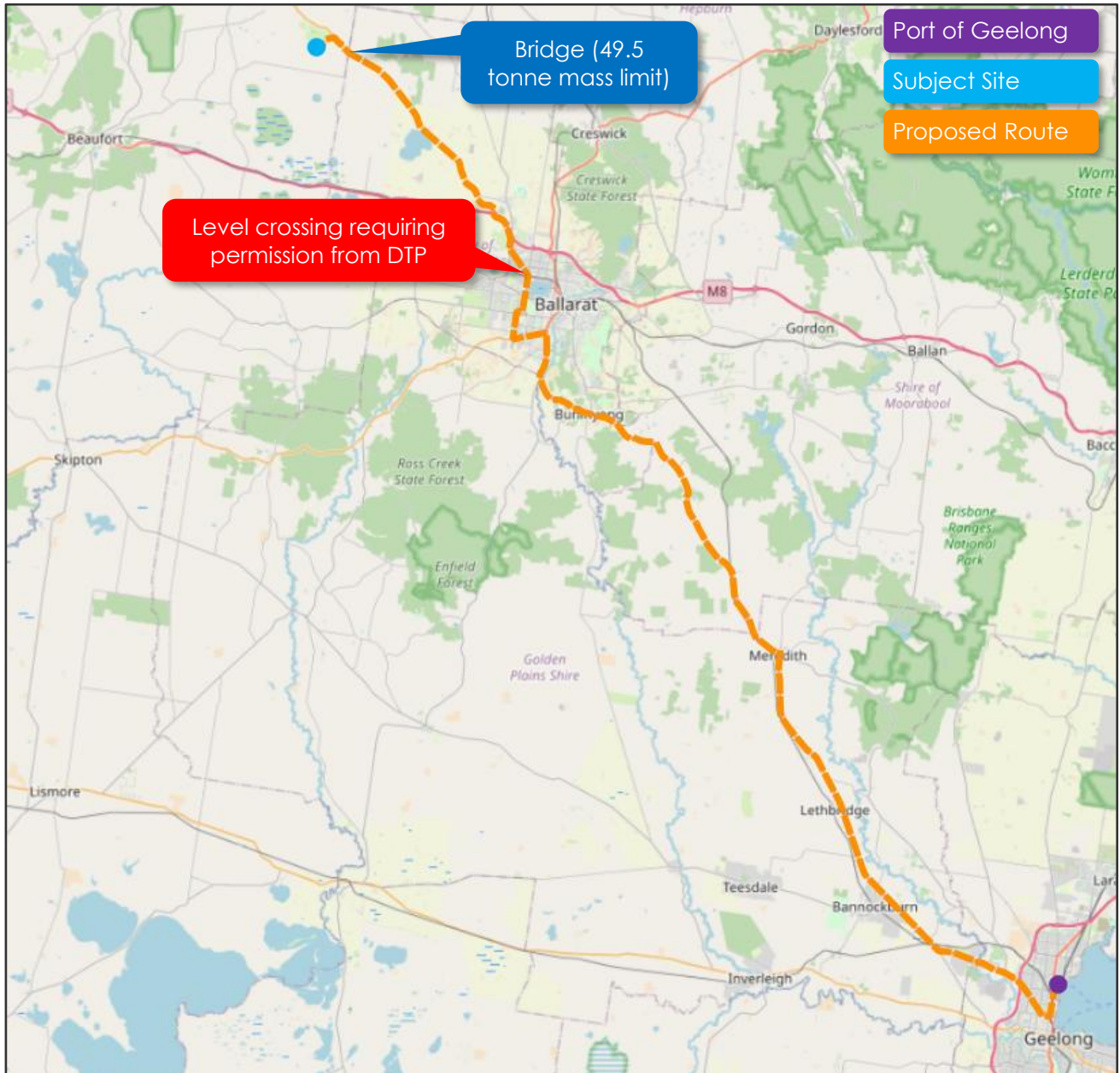
Source: OpenStreetMap

Suitable approvals will be required via the NHVR and Council for the use of Troys Road as this road is not included on the approved B-double or OSOM network. Given that Troys Road forms part of the "last mile" of the route and provides direct access to the site, this is considered to be an appropriate outcome, as it is commonly recognised that deliveries require access to a local road for the last leg of freight deliveries.

6.3.2 OSOM Deliveries

The recommended route for OSOM deliveries via Port of Geelong, based on the OSOM Network shown in Figure 12, is demonstrated below in Figure 14.

Figure 14 OSOM Access Route to Port of Geelong



Source: OpenStreetMap

The recommended route primarily utilises Midland Highway on approach to Ballarat, while utilising roads gazetted as part of the OSOM Network to bypass to the west of the centre of Ballarat. Additionally, the route utilises Western Freeway and Sunraysia Highway for the final portion of the route from Ballarat, using the same route as general heavy vehicle deliveries.

As noted previously, the route requires passing over a bridge in Waubra with a 49.5 tonne mass limit and a rail crossing in Ballarat, and will require approval from the NHVR and DTP prior to construction. An alternative route is available by bypassing the bridge via a right turn onto

Waubra–Talbot Road, then a left turn onto Camerons Lane, continuing through to cross Sunraysia Highway and onto Troys Road. However, it should be noted that this route would require additional travel on roads that are not approved as part of the OSOM network, and preliminary investigations identify a bridge crossing over Waubra–Talbot Road, approximately 45 m north of Heffernans Lane, that is expected to have similar or more restrictive mass limits compared to the bridge on Sunraysia Highway.

With the exception of Troys Road, which is council managed, and the internal roads within Geelong Port, all roads nominated in the access route are arterial roads managed by the Department of Transport and Planning (DTP).

As noted above, **onemilegrid** has prepared swept paths for the site access and intersection of Sunraysia Highway and Troys Road with a 16-axle modular trailer. The swept paths are provided in Appendix B.

As part of the detailed design process, a swept path assessment using a 16-axle modular trailer shall be undertaken to ensure suitable path for the entirety of the route to the site. Noting large / wide loads will be escorted it is not expected that there would be any impassable locations along either route.

7 TRAFFIC

7.1 Traffic Generation

The majority of traffic generated by the proposed development will be generated during the construction / installation phases associated with trade persons, facility staff and deliveries. During the future operational phase, the level of traffic generated will be significantly reduced due to the low employee intensity requirements of the facility. Notwithstanding an assessment of the anticipated traffic generated by the site during each phase of the project follows.

7.1.1 Typical Construction Phase

As noted in Section 4.2.1, approximately 40 staffs will be accommodated on-site during the typical construction phase. Due to the location of the site, carpooling will be likely and can be managed by the proponent and individual trades. It will be assumed that there will be an average occupancy of 1.5 staff members per private vehicle, equating to approximately 27 private vehicles accessing the site each day during the typical construction period. It will be assumed that all staff arrive and depart during a single peak hour, equating to 27 vehicle movements during the AM and PM peak hours.

During the typical construction phase, it is expected that the 30 heavy vehicle deliveries will occur at regular intervals throughout the day, and therefore 10% will be assumed to occur during the peak periods, equating to 3 trucks arriving and departing during the peak periods.

7.1.2 Peak Construction Phase

The peak construction phase of the project requires a maximum of 100 construction staffs on-site.

It will be assumed that there will be an average occupancy of 1.5 staff members per private vehicle, equating to approximately 67 private vehicles accessing the site each day during the peak construction period. Further, it will be assumed that all staff will arrive and depart during a single peak hour, equating to 67 vehicle movements during the AM and PM peak hours.

It will again be assumed that 10% of the 55 heavy vehicle deliveries occur during the peak periods, equating to 6 trucks arriving and departing during the peak periods. The 3 light van deliveries will be assumed to be dispersed throughout the day and will not coincide with the external road network peak.

7.1.3 Anticipated Traffic Generation

Based on the above, the anticipated daily traffic generation of the proposed development is shown below. For clarity the traffic generation of the operational phases, as discussed in Section 4.3 has been included.

Noting the location of the site approximately 2.5 km from central Waubra, there has been an allowance made for return trips to the site for staff to purchase lunch. For the purposes of analysis, it will be assumed that one quarter of the private vehicles that access the site during the typical and peak construction periods will depart and return back to the site over the course of the day. This equates to an additional 7 inbound and outbound trips during the typical construction period, and 17 inbound and outbound trips during the peak construction period.

Table 9 Anticipated Daily Traffic Movements (two-way)

Stage	Light Vehicles	Heavy Vehicles	Total
Typical Construction	68	60	128
Peak Construction	174	110	284
Typical Operation	4	0	4
Annual Inspections	12	4	16

As shown above, the peak period for traffic generation of the site is during the peak construction period, when the site is expected to generate 284 daily trips.

7.1.4 Peak Hour Traffic Generation

Based on the above, the following traffic generation is expected during the AM and PM peak periods.

Table 10 Anticipated Peak Hour Traffic Movements (two-way)

Stage	Light Vehicles	Heavy Vehicles	Total
Typical Construction	27	6 (3 arrivals 3 departures)	33
Peak Construction	67	11 (6 arrivals 5 departures)	78
Typical Operation	2	0	2
Annual Inspections	6	2	8

As detailed above, during the peak period for construction the site is anticipated to generate a maximum of 78 vehicle movements during the AM and PM peak periods.

7.2 Traffic Distribution

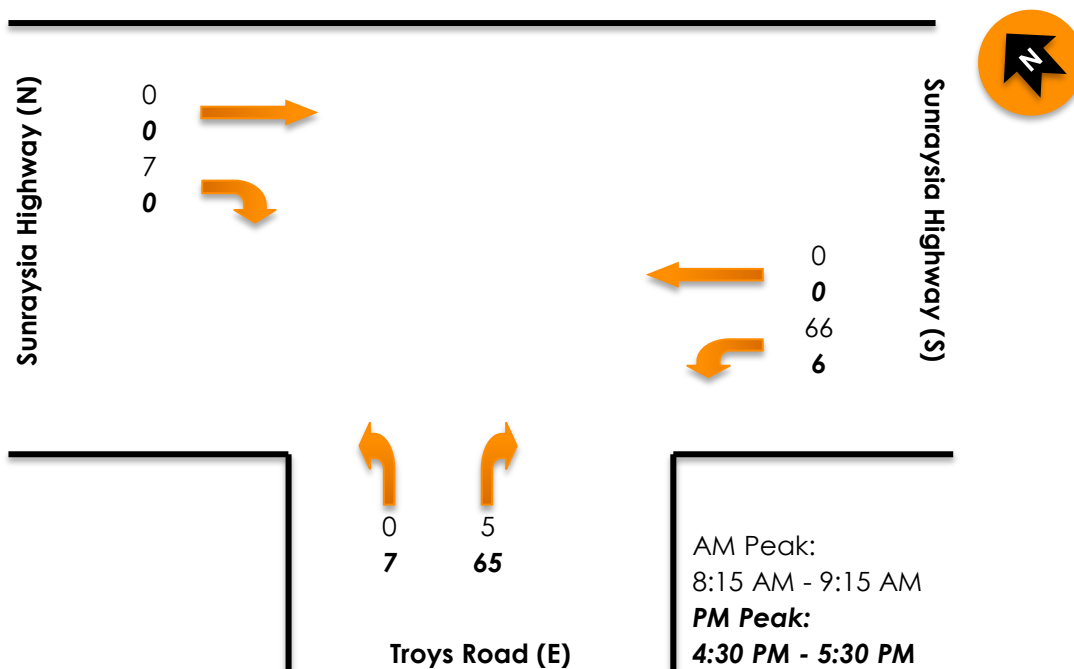
All traffic movements to and from the site will be distributed from the site via the intersection of Sunraysia Highway and Troys Road.

The site is in close proximity to the small town of Waubra, though the closest major population centre is Ballarat, which is approximately 30 km southeast of the subject site. Therefore, it will be assumed that 90% of private vehicle movements will be distributed to and from the south via Sunraysia Highway, with the remainder distributed to the north.

As noted in Section 6.1, heavy vehicle deliveries will originate from and depart to both Melbourne and Geelong, from the south.

Application of the above assumptions returns the anticipated turning movements at the Sunraysia Highway / Troys Road intersection as depicted in Figure 15.

Figure 15 Generated Traffic Volumes – Sunraysia Highway / Troys Road (Peak Construction)

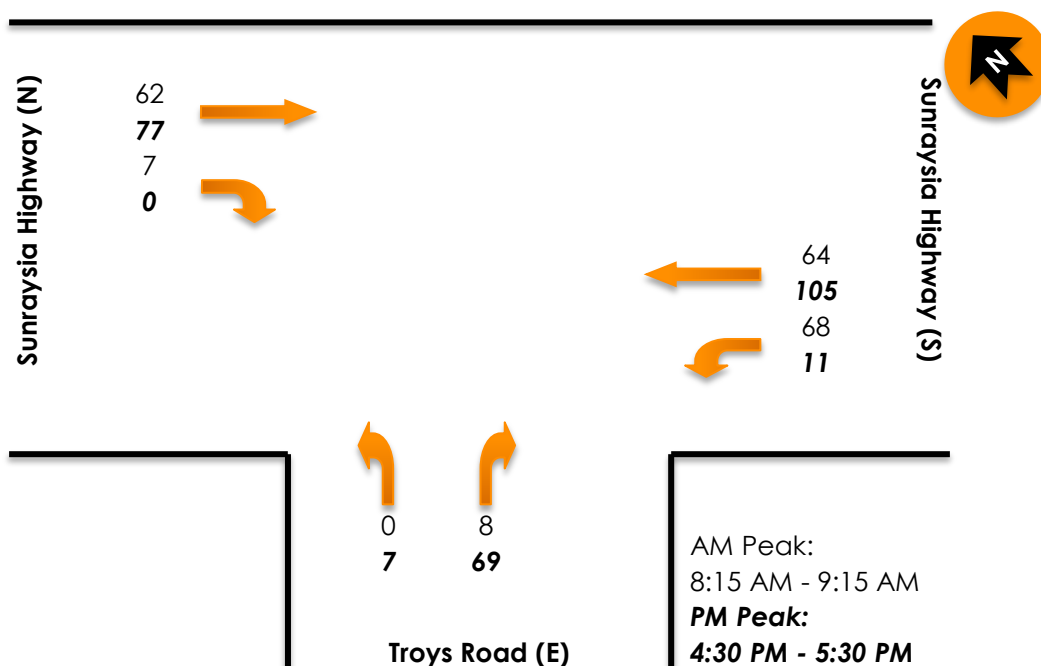


7.3 Resultant Traffic Volumes

Based on the above, the future volumes at the Sunraysia Highway / Troys Road intersection can be calculated by superimposing the existing volumes with the anticipated traffic generated by the proposed development.

The resultant peak hour traffic volumes during the peak construction period are shown in Figure 16.

Figure 16 Resultant Future Traffic Volumes – Sunraysia Highway / Troys Road (Peak Construction)



7.4 Traffic Impact

7.4.1 Peak Period Impacts

During the peak construction phase of the proposed development, the anticipated traffic generation of the development is 78 vehicle movements during the peak periods. This is considered low, and is equivalent to less than two vehicle movements every minute. Even when focussed into one access point, the Sunraysia Highway / Troys Road intersection, the traffic volumes generated by the proposed development are low, and Sunraysia Highway and Troys Road and the surrounding road network are expected to be able to accommodate the traffic generated by the proposed development.

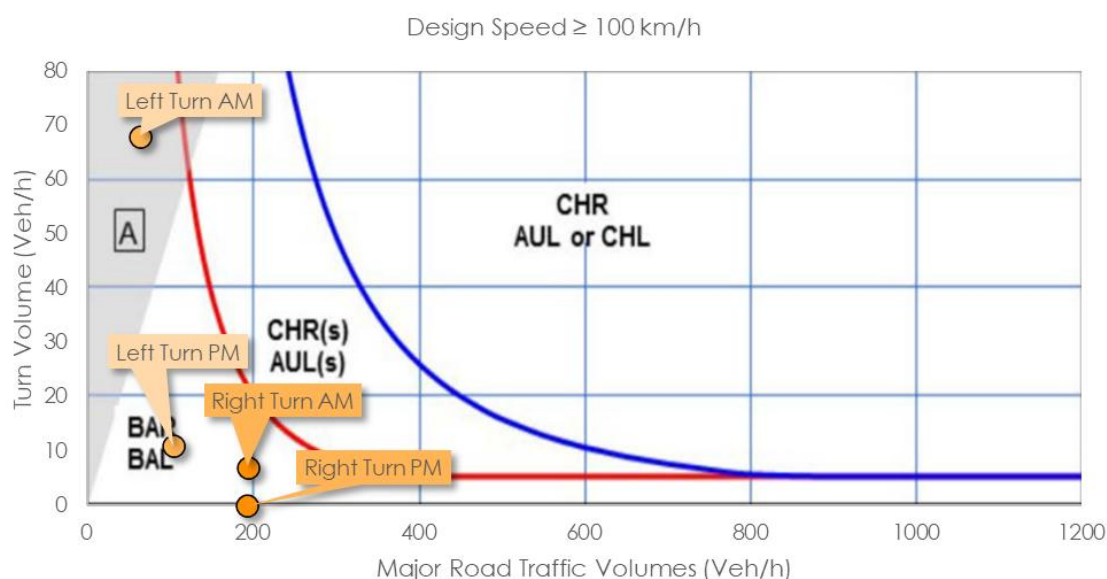
It should be noted the above analysis conservatively assumes that all staff arrive during the AM peak hour, and all staff depart during the PM peak hour. Based on the proposed construction hours 7:00 AM to 6:00 PM on weekdays, it is expected that the majority of staff will arrive prior to the existing AM peak period of 8:15 AM to 9:15 AM. Similarly, outbound staff movements are expected to be more evenly distributed throughout the afternoon, rather than being concentrated within the PM peak period of 4:30 PM to 5:30 PM.

In evaluating the suitability of the Sunraysia Highway / Troys Road to cater for construction traffic, reference is made to the *Austroads Guide for Road Design Part 4A: Unsignalised and Signalised Intersections* which outlines what physical form of turn treatment will provide an appropriate level of safety at priority controlled intersections, balanced with additional construction costs associated with higher level treatments.

Consequently, it is considered that the design process should initially decide whether a turn lane is actually required, and then, if it is decided that a turn lane is required, the Austroads Turn Lane Warrants may be used as guidance as to what turn lane design may be the most appropriate.

A review of the warrants for Basic, Auxiliary and Channelised turn treatments has been undertaken for the intersection, based on the existing traffic volumes and the generated construction traffic volumes presented above. Noting the speed limit of 100 km/hr along Sunraysia Highway, the turn lane requirements are demonstrated in Figure 17.

Figure 17 Austroads Turn Treatment Warrants – Peak Construction Phase



The figure above suggests that peak hour traffic volumes to and from the development would warrant provision of at most a basic right turn treatment (BAR) and basic left turn treatment (BAL) into the site.

It is noted that these warrants effectively balance the additional construction cost of higher-order treatments against the reduction in estimated crash costs. Commentary within the associated Austroads Guide to Traffic Management Part 6 does however note that these warrants are based on the construction of intersections on **new** roads (i.e., greenfield sites), and are not strictly applicable for the construction of new intersections on existing roads or the upgrade of existing intersections, where construction costs of these treatments may be higher due to the presence of existing infrastructure or other site constraints.

Furthermore, it is noted that the warrants do not allow any consideration of the duration of traffic impacts, instead assuming that traffic volumes continue in perpetuity. In the case of construction of the proposed BESS, the access will only be trafficked for a 24-month period, after which the use will be operational and volumes generated through the access will effectively cease, leaving any upgrades disused.

Having regard to the above, the number of turning vehicles is expected to be relatively low during the peak hours, with 7 right turning and 68 left turning movements projected at peak construction during the AM peak period. Traffic generation to the site is expected to consist primarily of light vehicles during the peak periods and the above is only applicable during the relatively short (6 months) peak construction period.

The diagrams above show that the generated turning volumes and the observed through traffic volumes are low and the operation of the intersection is not expected to be compromised under this scenario, and no turn lanes are required along the Sunraysia Highway approaches.

Nevertheless, it is recommended to implement advanced warning signage along Sunraysia Highway on the approaches to the Troys Road intersection, and along Troys Road in the vicinity of the proposed site access as part of the construction traffic management strategy during the construction period to assist with vehicle access.

7.4.2 Daily Traffic Volumes

It is acknowledged that the proposed development will increase daily traffic volumes along Troys Road during the construction period.

Currently, Troys Road carries approximately 40 vehicles per day on weekdays, while the proposed development is expected to generate a maximum of 284 movements during the peak construction period. Consequentially, during the peak construction period total traffic volumes on Troys Road are expected to be in the range of 320 vehicles per day.

The Infrastructure Design Manual (IDM) identifies that Rural Access and Rural Collector roads should be provided a 4 m sealed surface for daily traffic volumes between 51-150 vehicles per day (vpd), and a 6.2 m sealed surface for traffic volumes in excess of 150 vpd.

Troys Road is currently provided with a 4 m sealed surface, in accordance with the IDM guidelines. Considering the relatively short duration of the construction period, with traffic volumes generally to return to existing volumes once construction ceases, the existing 4 m sealed carriageway is considered to be appropriate. It is acknowledged that the increased traffic volumes on Troys Road during construction may result in increased frequency of vehicles relying on the shoulder to pass one another. However, considering the existing low vehicle speeds and warning signage expected during the construction period, the existing arrangement is expected to be appropriate to accommodate infrequent passing, with gravel/grass shoulders provided on both sides of Troys Road.

It is recommended that the pavement is monitored by the construction contractor and proponent to identify if any maintenance is required during or after completion of the construction phase of the project. This process may be supported through the preparation of a pre-construction condition report and a post-construction dilapidation report, carried out by a suitably qualified professional.

8 TRAFFIC MANAGEMENT PLAN

8.1 General

As demonstrated in the above assessment, the proposed development is not anticipated to have an adverse impact on the operation of the surrounding road network, and has been designed to allow for appropriate vehicle access to the site.

Regardless, it is expected that a detailed Construction Traffic Management Plan (CTMP) will be prepared for all stages of the construction period, to be submitted by the construction contractor as part of the overall Construction Management Plan.

Broadly, the CTMP should include the following information:

- Detailed construction timeframes and phases;
- Number of construction vehicles and personnel on-site per day;
- Construction vehicle ingress and egress routes;
- Swept paths at pinch points along the entirety of the construction access route;
- Proposed construction traffic management measures (see below) for all relevant stages and scenarios, and including site hoarding, construction loading areas and traffic management equipment and signage; and
- A Worksite Hazards Assessment.

8.2 Traffic Management Recommendations

In accordance with the assessments included within this report, and based on **onemilegrid's** experience it is recommended that the CTMP considers the following traffic management measures:

- Temporary speed limit reduction along Troys Road in the vicinity of the site, recommended speed limit: 60 km/hr;
- Temporary speed limit reduction along Sunraysia Highway in the vicinity of the Troys Road intersection, recommended speed limit: 80 km/hr;
- Radio communications between construction vehicles at all times;
- All movements by OSOM vehicles to be controlled via Traffic controllers; and
- Truck warning signage to be installed on Troys Road and Sunraysia Highway in the vicinity of the primary parcel.

It should be noted the above is not intended to be exhaustive, and the final CTMP should comply with Austroads Guide to Temporary Traffic Management (AGTTM) and other relevant guidelines, and be prepared in consultation with Pyrenees Shire Council, Department of Transport and Planning (DTP), and other relevant stakeholders.

8.3 Community Impacts

Given Troys Road provides access to a small number of dwellings (less than 10) and farming properties, the below traffic management techniques are recommended to alleviate concerns to affected residents.

- Neighbour Engagement: Providing advanced notice to affected residents through letter drops and/or direct communication, outlining expected traffic volumes, peak periods, and any mitigation measures;
- Traffic Scheduling & Restrictions: Where feasible, scheduling heavy vehicle movements outside of peak residential access times (e.g., school runs, peak commuting hours) to minimise disruption;
- Traffic Controllers & Signage: Temporary traffic controllers or clear signage in critical sections to enhance safety and awareness, particularly along Troys Road; and
- Speed & Noise Controls: Implementing reduced speed limits and noise management strategies in sensitive areas to improve safety and minimise disturbances.

9 RESPONSE TO PRE-APPLICATION COMMENTS

9.1 Council Comments

onemilegrid provides the following information in response to Council's pre-application comments.

Table 11 Response to Pyrenees Shire Council Comments

Comment	Response
1. Access point driveway on Troy Rd	
<i>Potential Impact to vegetation on the opposite side of the intersection and recommend referral to Noel (Environmental officer). I also assume any major works to this area would be reinstated after the 24 month construction period and we would make this a requirement for any road works for the OSOM vehicle as these are assume to be a once off delivery.</i>	The permit applicant agrees to accommodate this request.
<i>Access should be upgraded to an indented access point like the IDM standard drawing SD265 due to the number of heavy vehicles at 55 per day and also for future heavy vehicle use so that they don't need to park on the road to open the gate.</i>	We have prepared a Concept Layout Plan for the proposed access to Troys Road. The access gate has been offset from the edge of through lane by 22 m in accordance with IDM Standard Drawing SD265, allowing a semi-trailer to park off the road when opening the gates. The full crossover design is provided in Appendix A.
<i>Also shoulder widening most likely needs to be considered on the opposite side of Troys Rd to reduce shoulder edge breaks/drop off hazards.</i>	The shoulder on the northern side of Troys Road adjacent the access will be widened temporarily to accommodate the proposed OSOM vehicle.
<i>Upgrades to the access point will require a works within road reserve ("road excavation permit") for the driveway construction and any works to the road.</i>	Noted, we understand that this is a standard condition for construction within a road reserve.
2. Troys Rd / Sunraysia Hwy intersection:	
<i>The main issue with this intersection is the angle and site vision to the north mainly for heavy vehicle due to the cab of trucks. This has been previously raised by the community and we have already been trying to get funding from DTP to upgrade as this is a DTP intersection/issue.</i>	The permit applicant has agreed to commit to upgrading this intersection to a configuration commensurate with the concept design prepared by Council, dated May 2025. The proposed re-alignment will allow vehicles waiting to turn onto Sunraysia Highway from Troys Road to position the vehicle perpendicular to the road, which will significantly improve sight lines. The concept design is attached to this report in Appendix A.
3. Maintenance of the Troys Rd during the 24 month construction period (or the main 6 month peak period)	

Comment	Response
It is anticipated that the additional traffic including 100 cars, 55 Heavy Vehicles and 3 Light vehicles predicted each day in the peak construction period will impact the condition of the road, mainly the shoulders and require additional maintenance/cost to Council. I can't see any mention of this in the report but there is a couple of different options with agreements between the developer/council for either the developer to complete any maintenance/defective works or council to complete for a fee. We typically would also require a dilapidation survey before and after construction on Troys Rd to make sure the asset is left in no worse of condition.	Please refer to commentary at the end of Section 7.4.2. It is recommended that the proponent monitors pavement conditions along Troys Road during and after construction, including both a pre-construction condition assessment and post-construction dilapidation reports. This is a common permit condition for renewable energy projects and can be incorporated into the Construction Environmental Management Plan (CEMP).
4. Curves on Troys Rd	
There are some dangerous curves on Troys Rd between the access point and Sunraysia Hwy. I haven't been able to fully inspect by I think the site distance, seal width/shoulder width, signage need improvement to cater for the 150 additional vehicles per day. As per the below, I think the worst curve is the one highlighted in red with the google screen snip also below:	The peak traffic periods associated with construction will be accompanied with signage and other coordination to assist with reducing the traffic impacts along Troys Road. Please refer to traffic management recommendations in Section 8. Noting that the road is currently utilised by existing traffic, it is considered that additional road widening is unnecessary to cater for temporary construction traffic.

9.2 DTP Comments

onemilegrid provides the following information in response to DTP's pre-application comments.

Table 12 Response to DTP Comments

Comment	Response
RFI 1	
1. The Traffic Impact Assessment Report must be amended to include a focussed Road Safety Audit of the potential impacts to the Troys Road – Sunraysia Highway intersection. Primarily, this audit must consider the following key issues:	Please refer to Section 3.3.4.1 of this report for the intersection safety assessment. The proponent is now proposing to upgrade the Troys Road / Sunraysia Highway intersection. A concept plan has been prepared, attached in Appendix A. As noted above, the design will rectify the existing sight line issues, by allowing vehicles to prop perpendicular to Sunraysia Highway when approaching along Troys Road.
a. The safety and operational suitability of the intersection's existing angled/offset design, given the additional spike in transportation loads through the intersection.	
b. Information that describes the suitability of the Sunraysia Highway's road pavement, and that it is able to withstand the additional braking and turning forces generated by construction traffic turning into Troys Road from the Sunraysia Highway.	This RFI item has been superseded. See RFI 2.

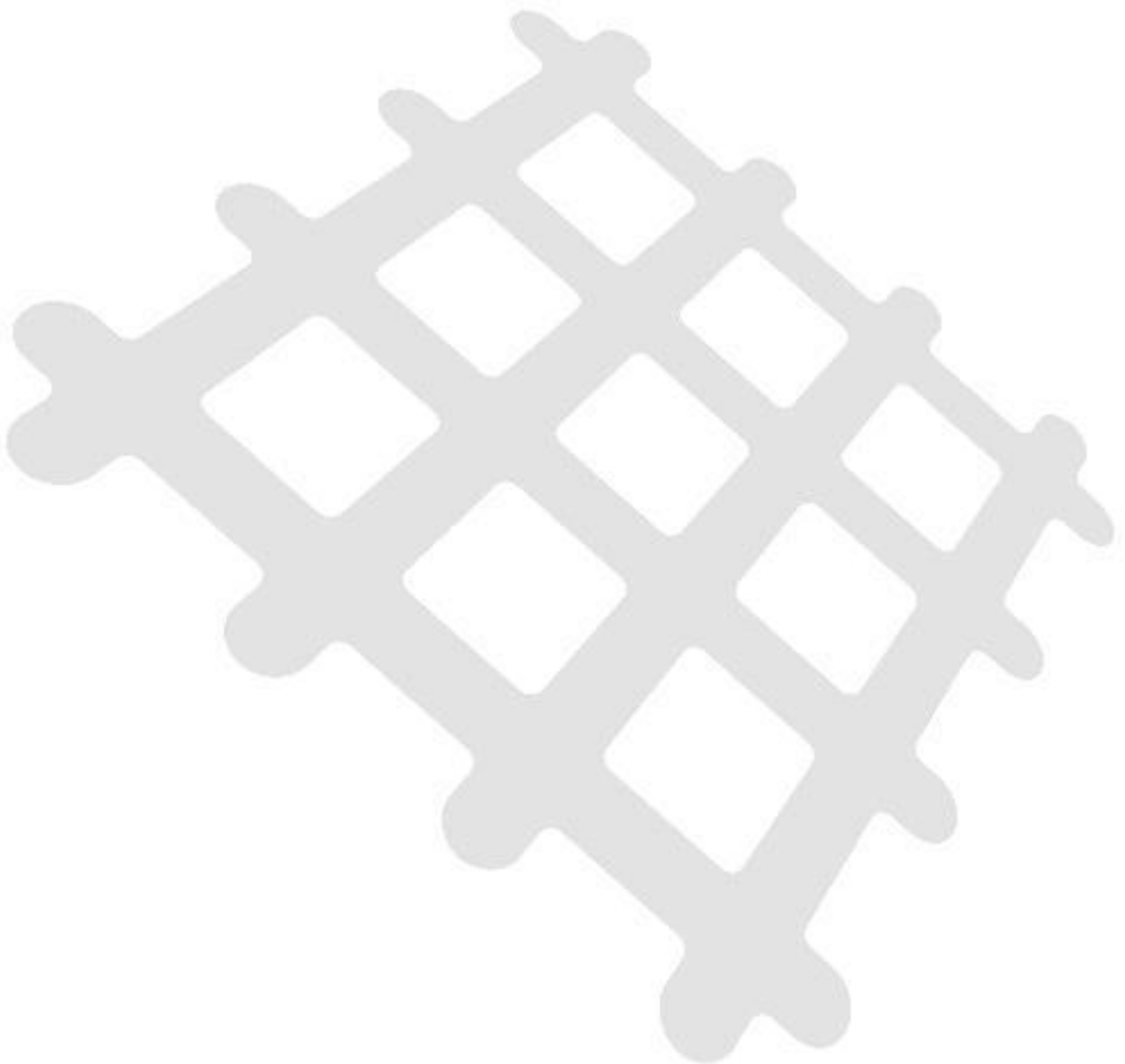
Comment	Response
RFI 2	
On review of your suggestion, in principle, DTP supports ACCONIA's approach of undertaking the works in favour of undertaking a Road Safety Audit. However, the submitted concept plan must include the following modifications before the plan is endorsed by DTP to be used as the basis for a Detailed Design Plan. All works must be designed in accordance with the AUSTROADS Design Manuals:	Please refer to Section 3.3.4.1 for intersection safety assessment. The onemilegrid concept plan is attached in Appendix A (OMG Ref: 250230CLP100C).
1. Left and right turns lane must be included.	The proposed concept layout plan does not include left and right turn lanes. The turn lane warrant assessment presented in Section 7.4.1 indicate that during peak construction, the anticipated traffic volumes warrant provision of at most basic left and right turn lanes. Existing traffic volumes through the Sunraysia Highway / Troys Road intersection are low, and construction traffic will be temporary and largely tidal in nature, with inbound movements concentrated in the morning and outbound movements in the afternoon. Given that traffic levels are expected to effectively return to existing conditions following construction, the provision of dedicated turn lanes are not considered necessary. The proposed realignment of the Troys Road approach is anticipated to provide the greatest safety benefits to the intersection. Further to the above, we also note the following: - There is no existing crash history at the intersection - The sight distances at this location are good (roughly 300m), which provides appropriate time to observe and react to a stationary vehicle within the roadway - Due to the low traffic volumes, it is assumed that delays and queues for turning vehicles are low which would indicate that it is unlikely for a vehicle to remain stationary on the roadway for a significant amount of time.
2. Impacted existing culverts must be extended to accommodate the turning lanes and any proposed works.	The proposed intersection upgrade does not include widening of the Sunraysia Highway carriageway which will impact the existing culverts.
3. The proposed splitter island can be deleted.	A splitter island has not been included for the intersection upgrade.

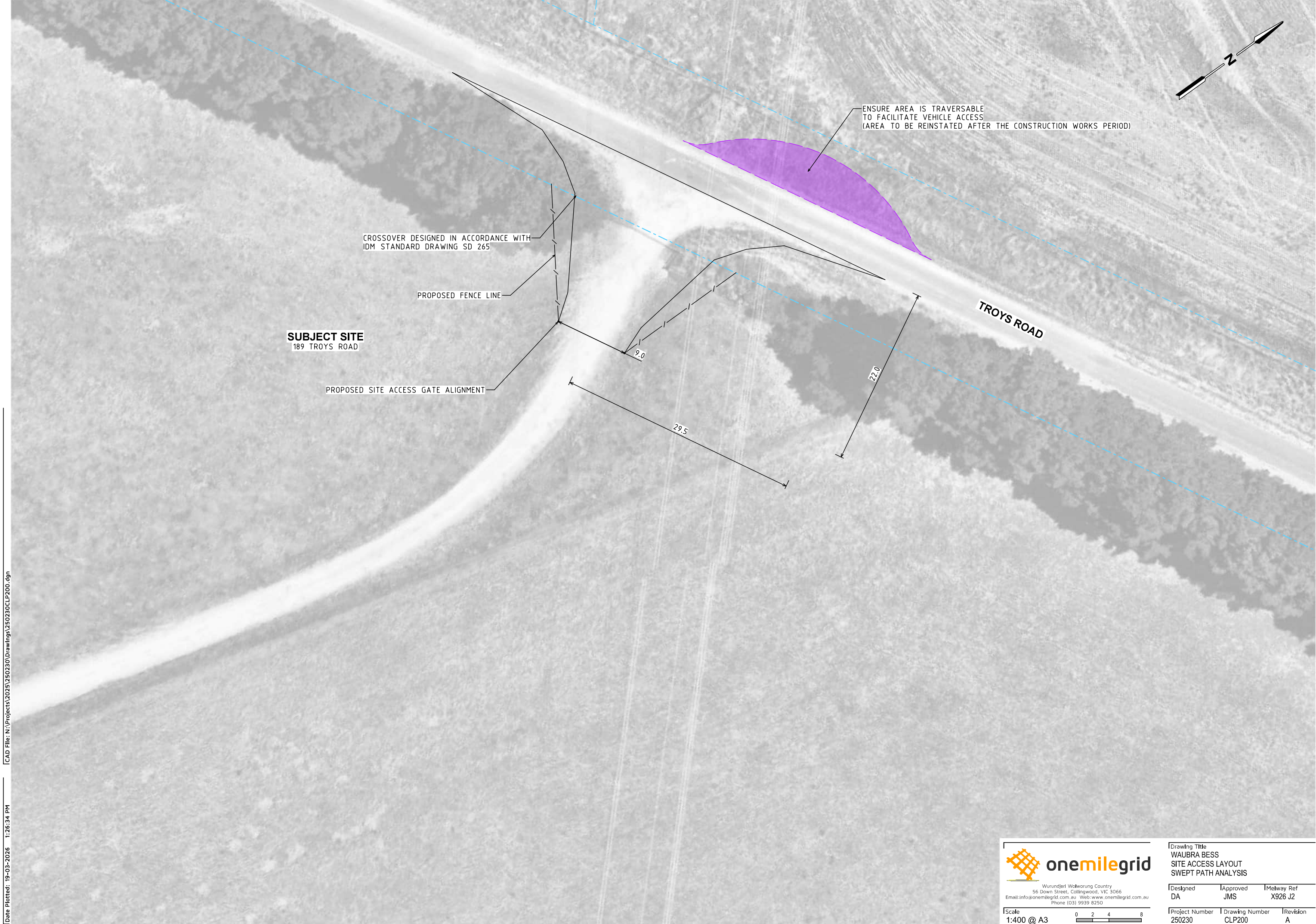
10 CONCLUSIONS

Based on the foregoing assessment, it is concluded as follows:

- The subject site is located on part of the land addressed as 151 Troys Road. The site is located on the south side of Troys Road and the east side of Gordons Road, adjacent to the Waubra Terminal Station and Waubra Wind Farm Substation on the north side of Troys Road;
- The traffic volume surveys identified that Troys Road adjacent the site currently carries an average of 43 vehicles per day;
- It is proposed to use the subject site for the purposes of constructing and operating a battery energy storage system (BESS);
- To improve access to the site it is proposed to upgrade the Sunraysia Highway / Troys Road intersection to realign the Troys Road approach;
- Based on the NHVR OSOM network, the recommended route for OSOM deliveries is predominantly via Midland Highway, whilst also bypassing to the west of the centre of Ballarat, before utilising Western Freeway and Sunraysia Highway to access the site;
- The proposed OSOM access route passes over a bridge with a 49.5 tonne load limit, and will therefore require further approvals via the NHVR;
- During the peak construction phase, the proposed BESS is anticipated to generate a maximum of 284 daily trips (two-way), including 174 light vehicle movements and 110 heavy vehicle movements;
- The level of traffic generated during the construction phase is anticipated to create short-term, elevated levels of vehicle movements, though the level of traffic generated is expected to have a minimal impact on the operation of the external road network;
- Traffic management measures are recommended during the construction period, such as heavy vehicle warning signage in the vicinity of the site along Troys Road and Sunraysia Highway;
- During operation the site is expected to have a negligible impact on the surrounding road network; and
- Car parking will be comfortably provided on-site as required.

Appendix A Concept Layout Plans





CAD File: N:\Project\2025\250230\Drawings\250230CLP200.dgn

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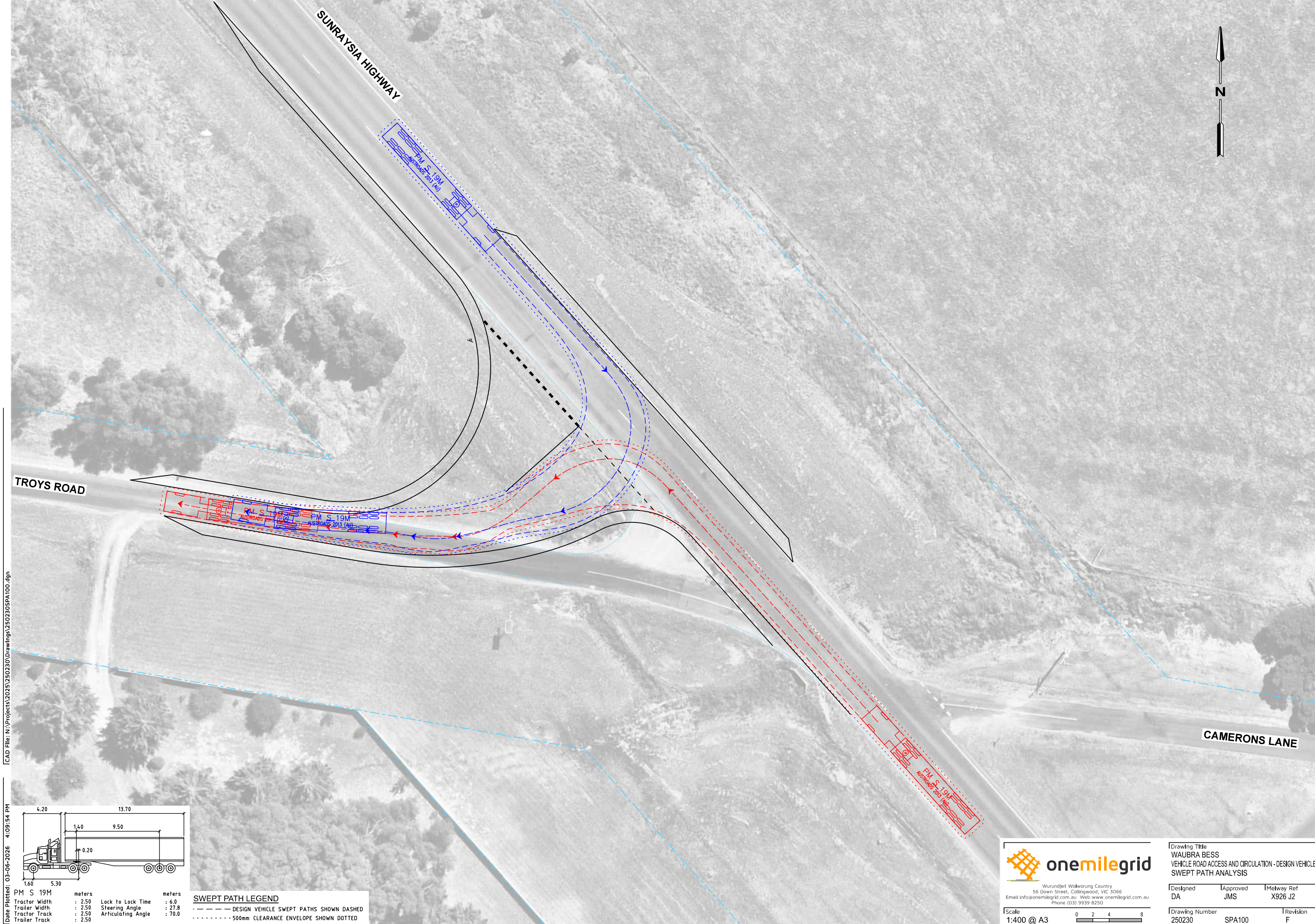
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Designed DA	Approved JMS	Melway Ref X926 J2
Project Number 250230	Drawing Number CLP200	Revision A

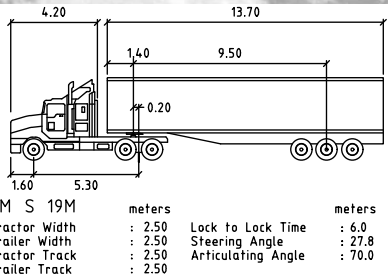
Appendix B Swept Path Diagrams





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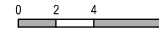
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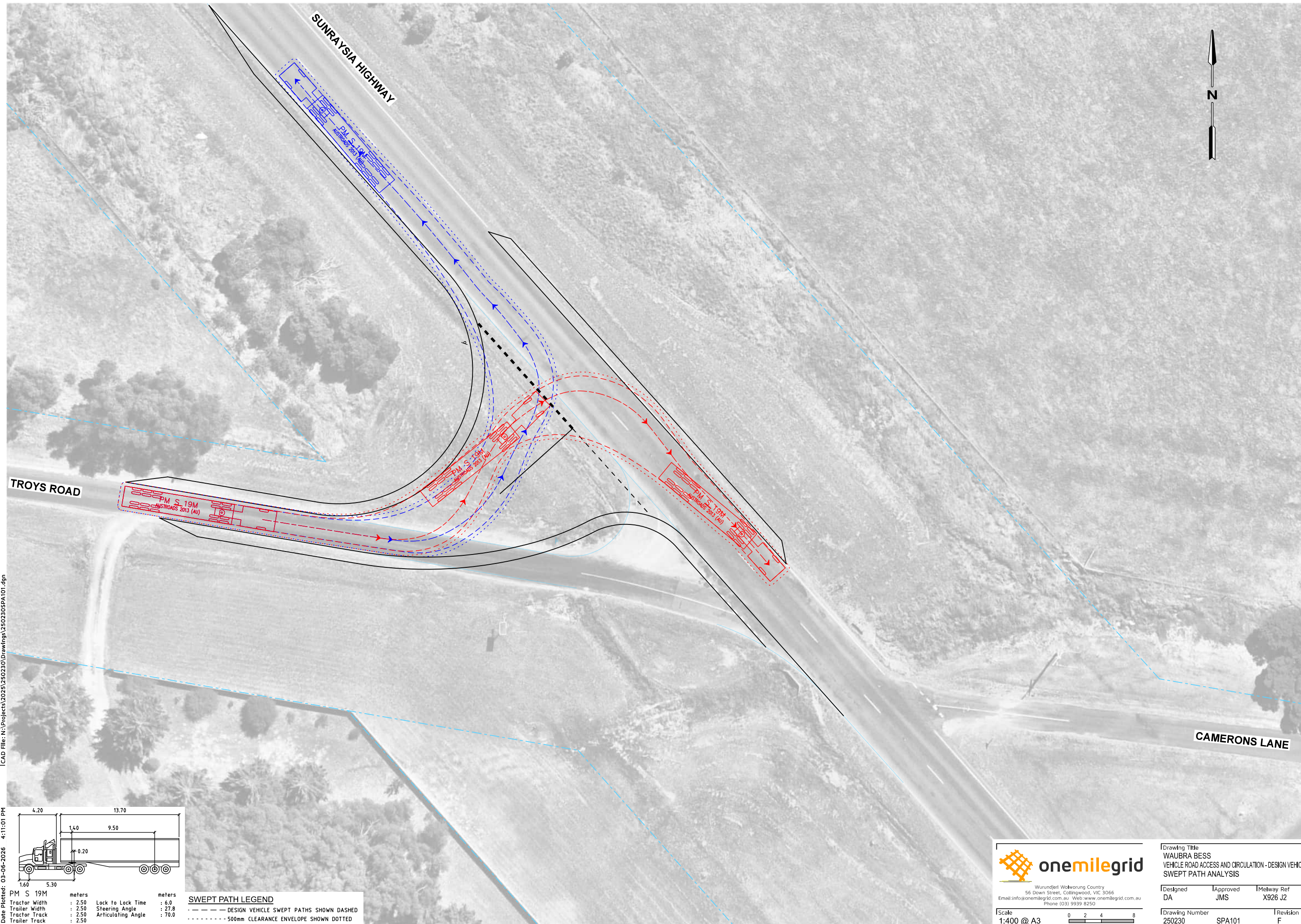


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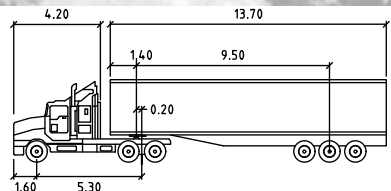


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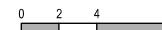
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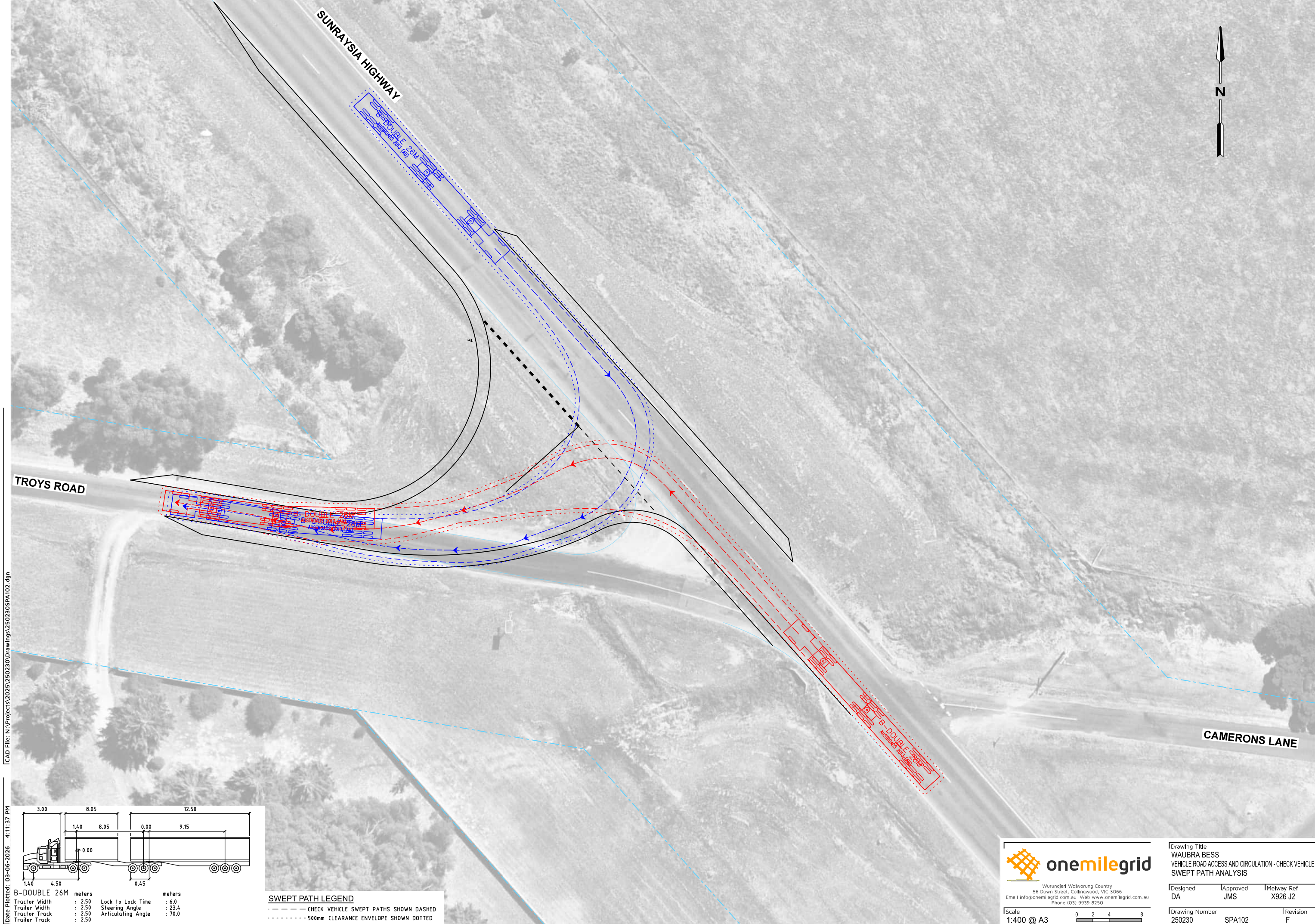
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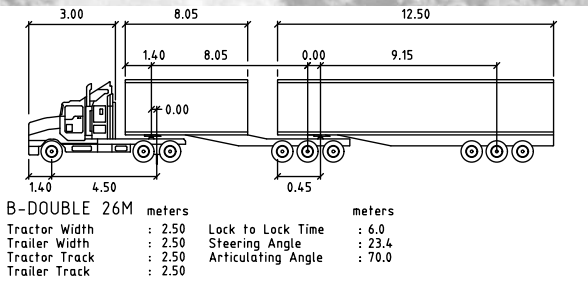
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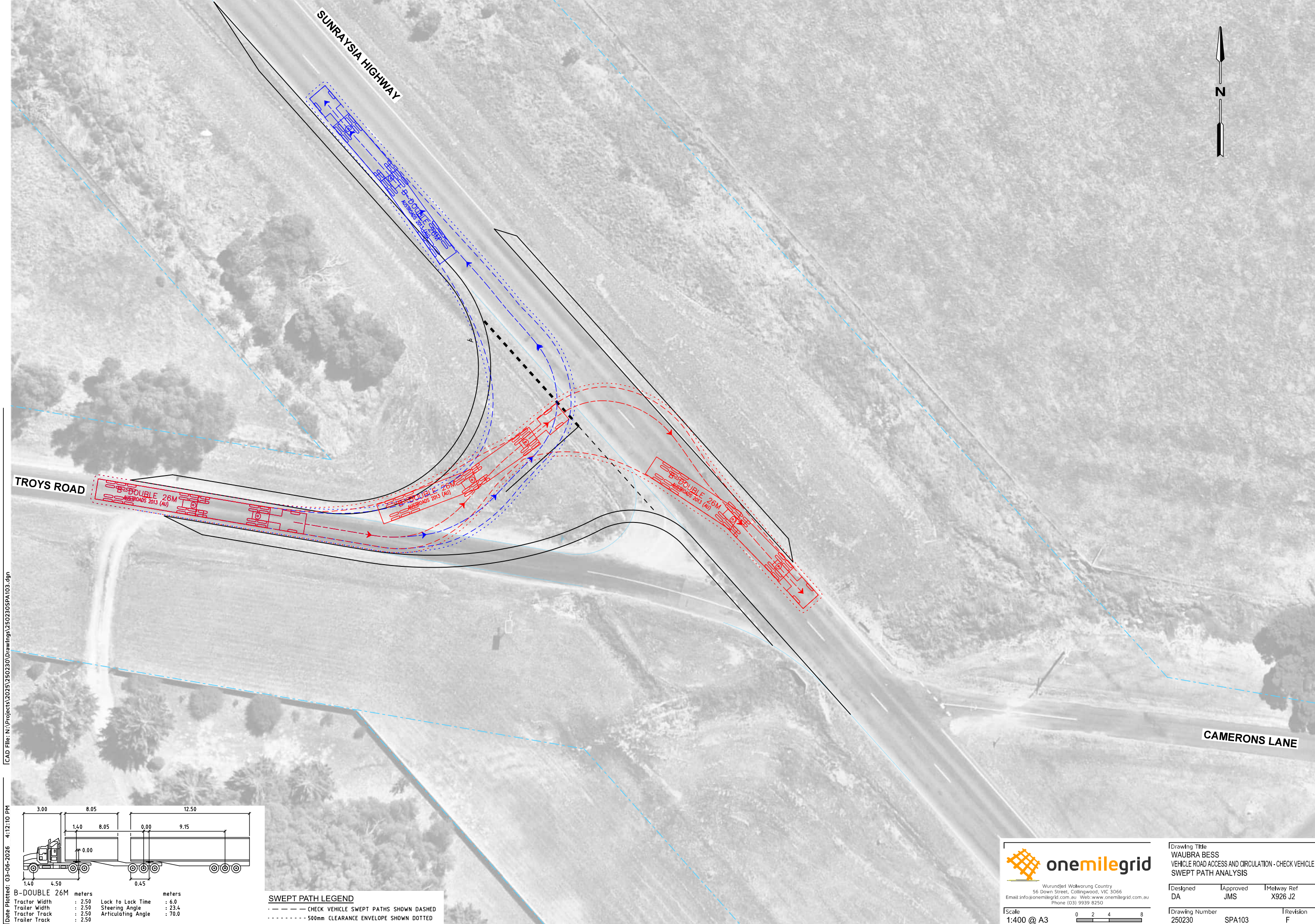
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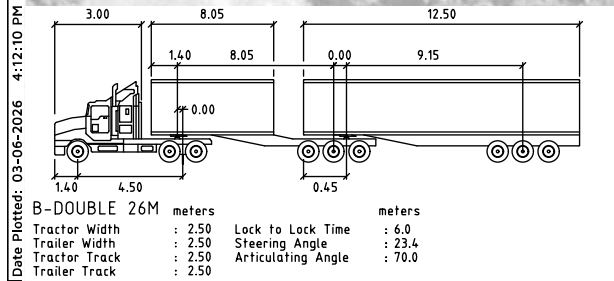
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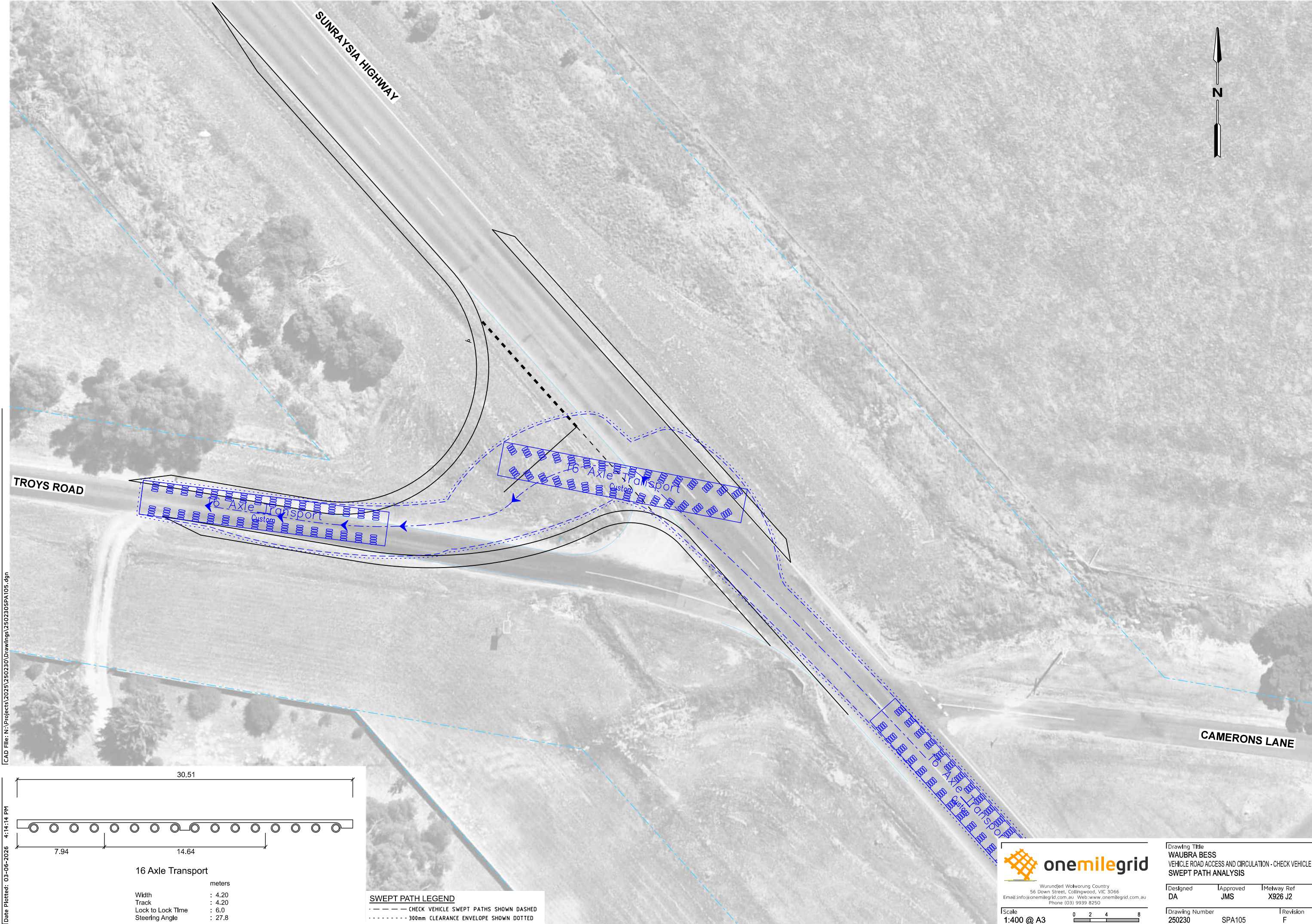


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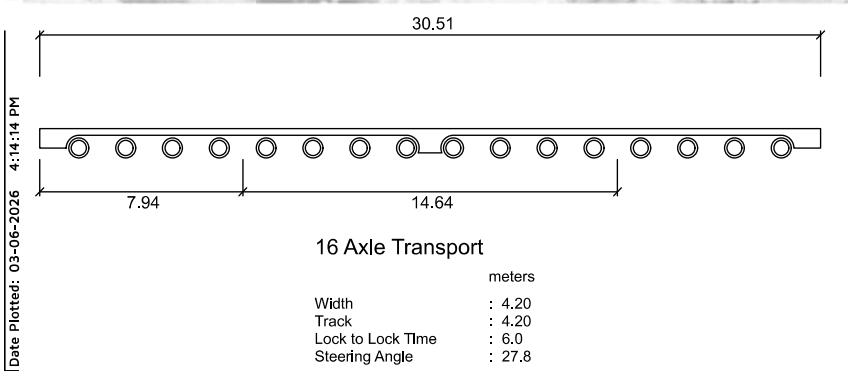


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Drawing Number 250230	SPA103	Revision F



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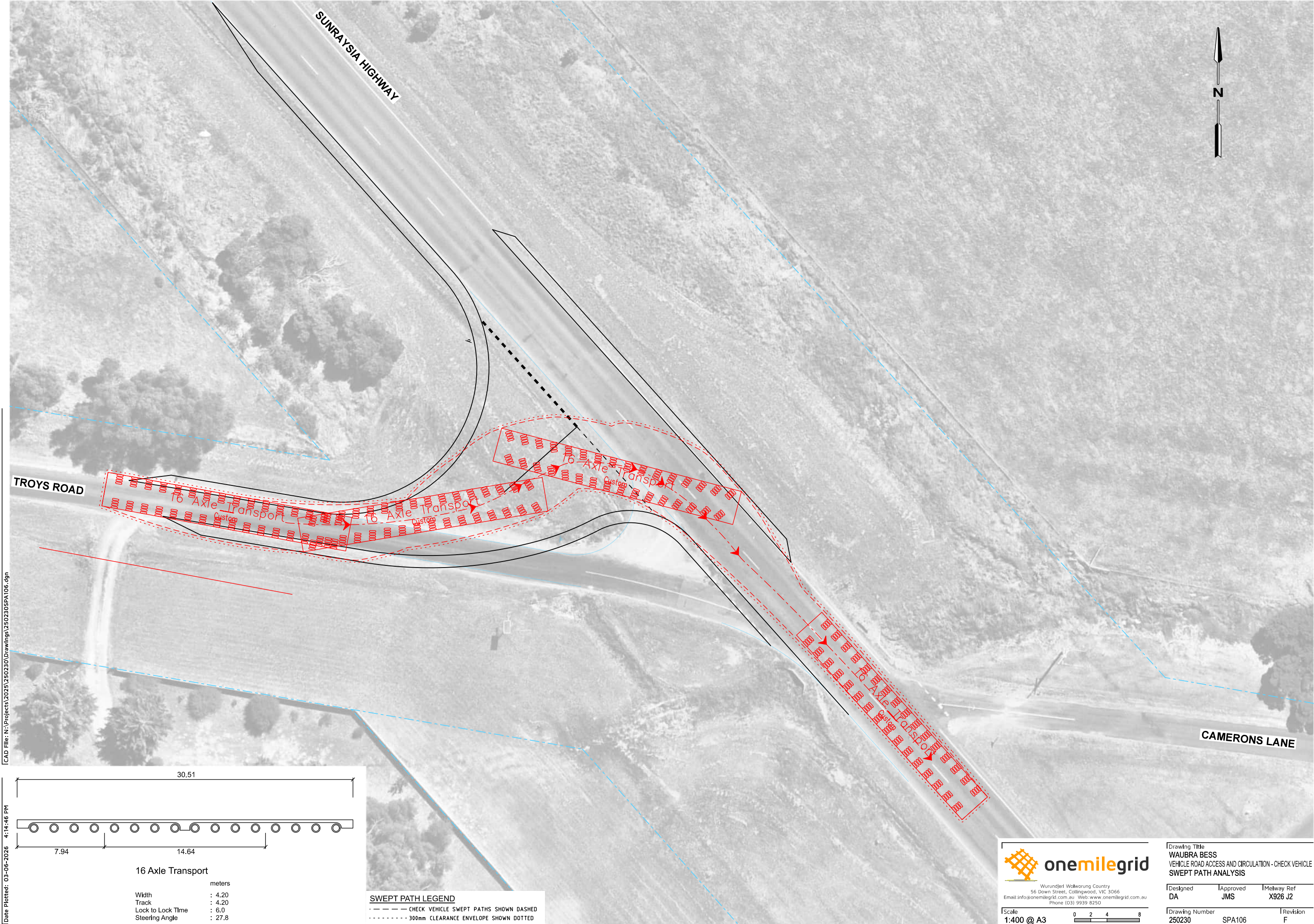
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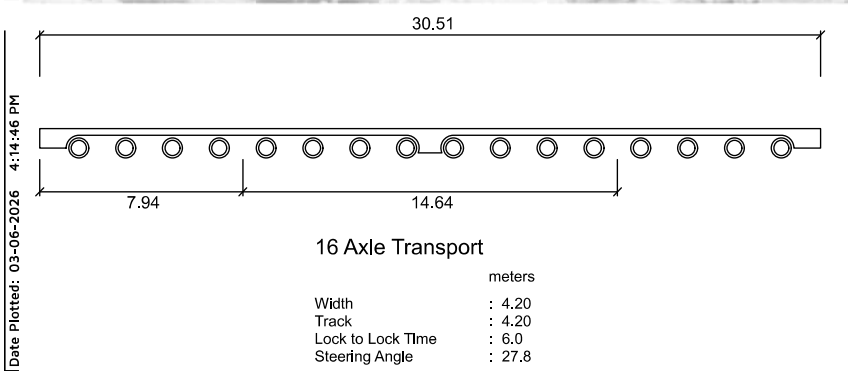
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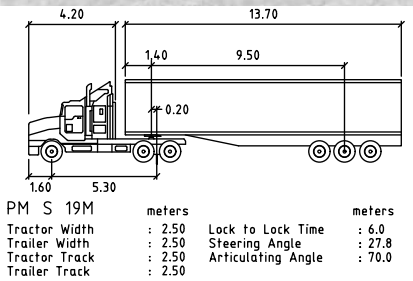
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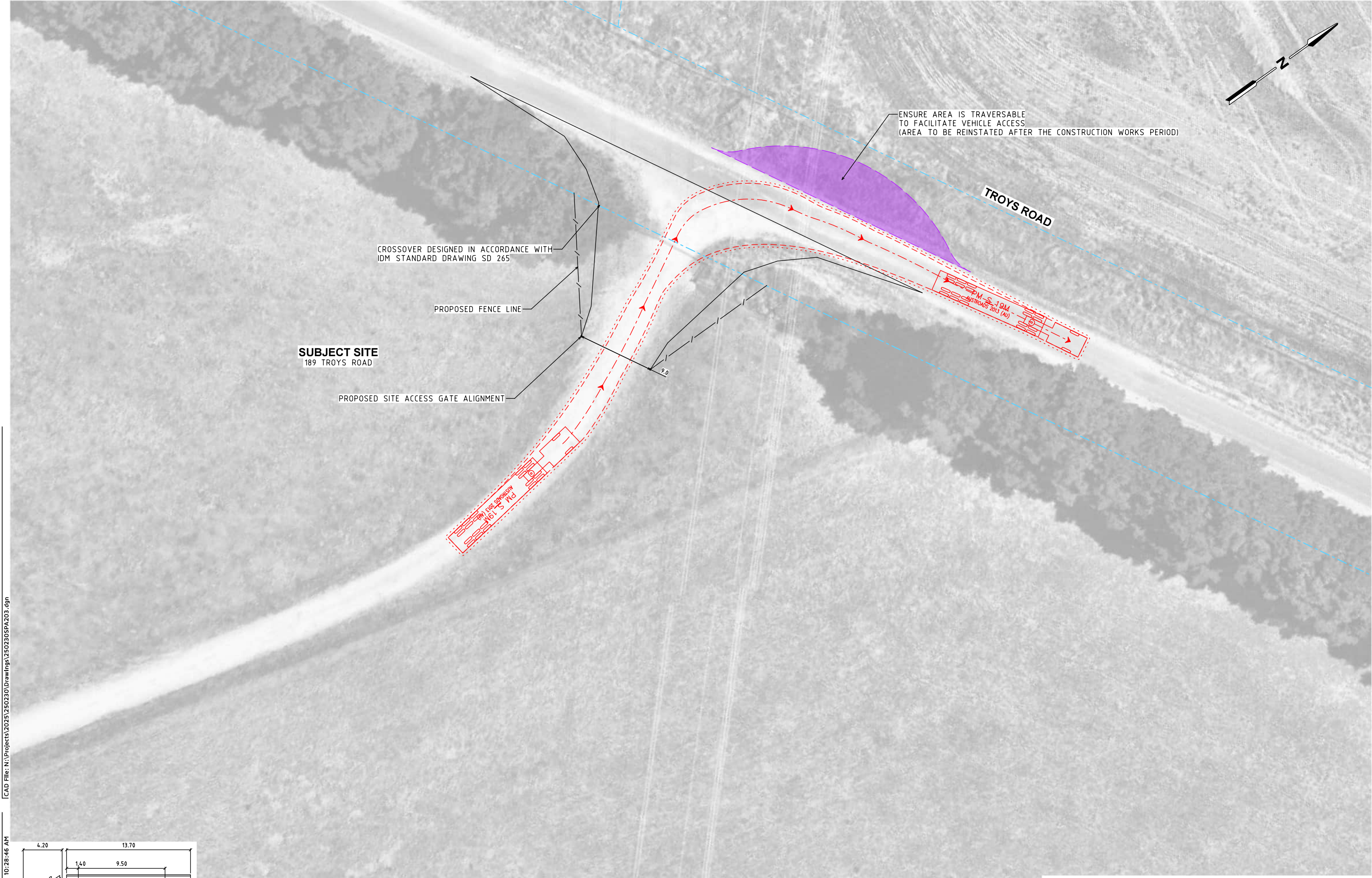
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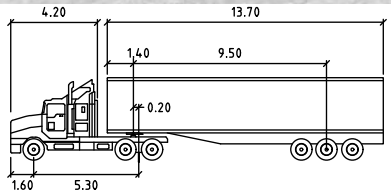
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Project Number 250230	Drawing Number SPA202	Revision B



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SWEPT PATH LEGEND

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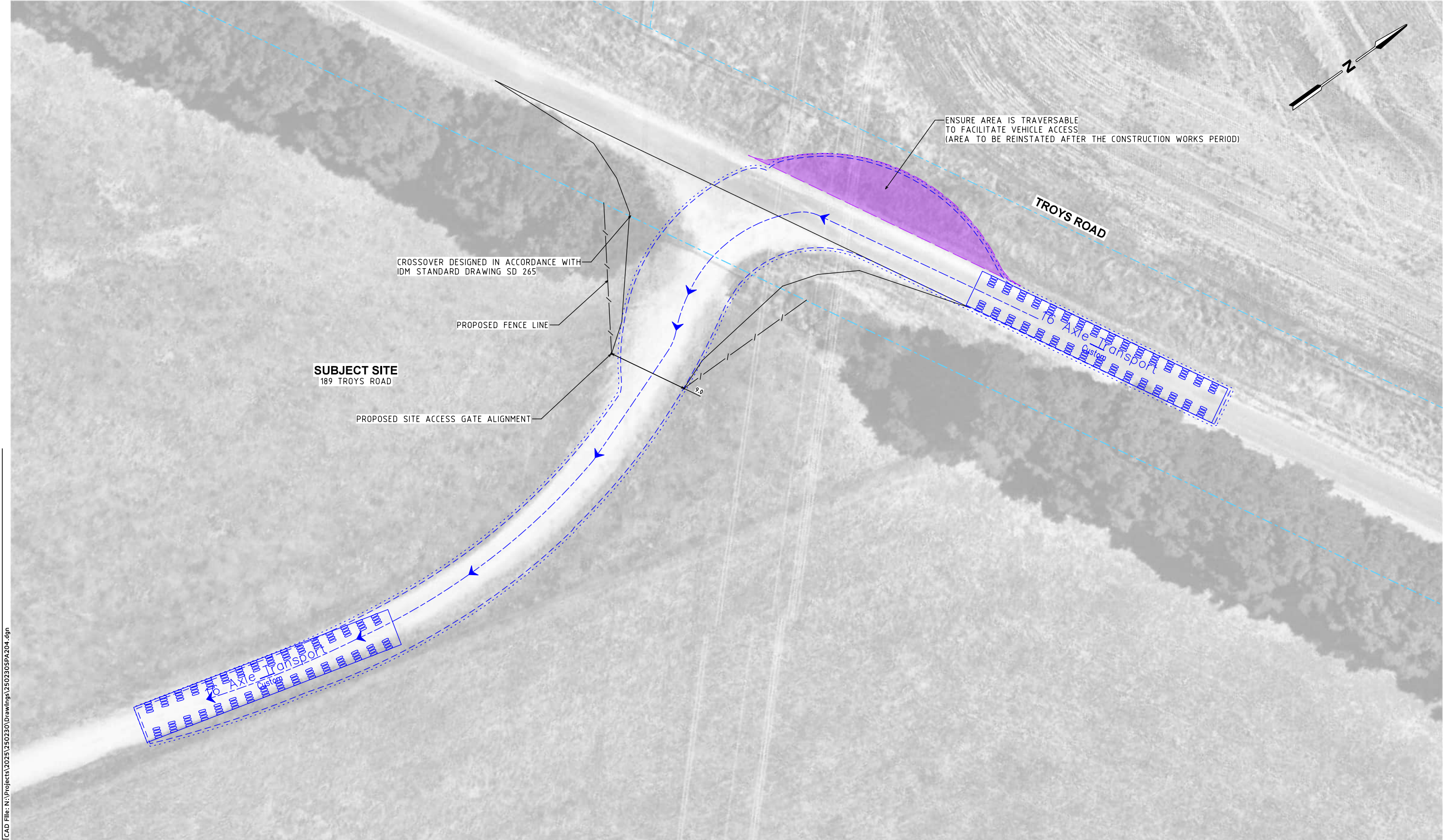


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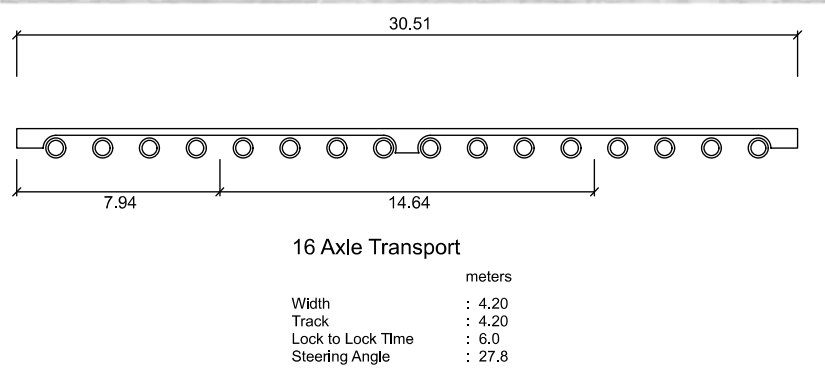


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16 Axle Transport

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SWEPT PATH LEGEND

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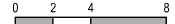
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