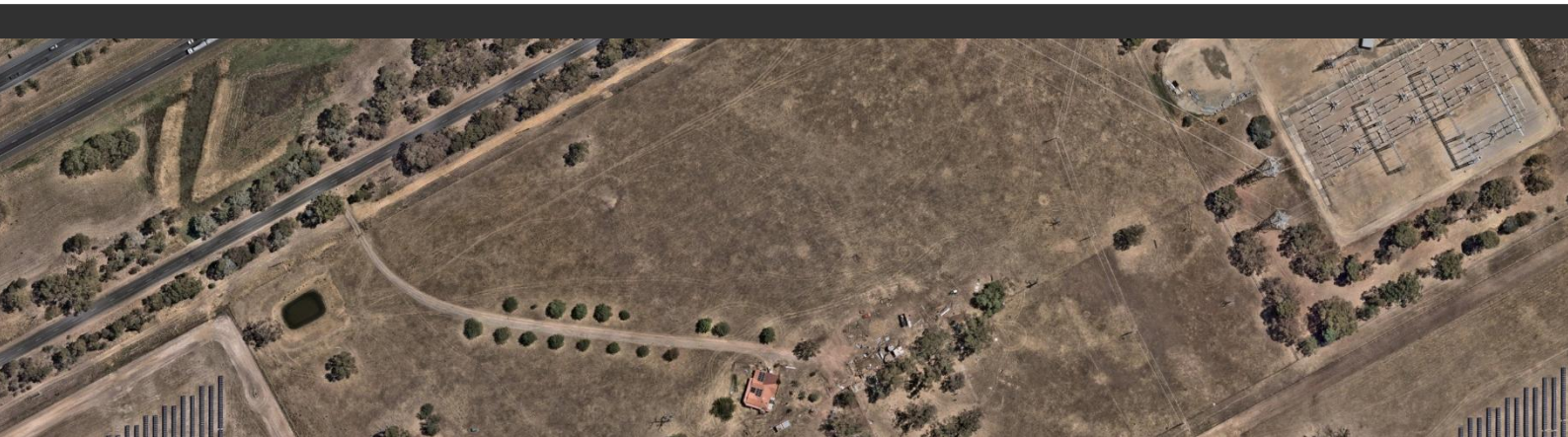


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576 Winton-Glenrowan Road, Winton

Transport Impact Assessment



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29 May 2026

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DOCUMENT INFORMATION

Prepared for	Winton Renewable Energy Stability & Storage Terminal Pty Ltd		
File Name	260082TIA001C-F.docx	Report Date	29 May 2026
Prepared by	FEW	Reviewed by	VPG

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APPENDICES

APPENDIX A SWEEP PATH DIAGRAMS

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1 INTRODUCTION

onemilegrid has been requested by Winton Renewable Energy Stability & Storage Terminal Pty Ltd to undertake a Transport Impact Assessment of the proposed Battery Energy Storage System (BESS) development at 576 Winton-Glenrowan Road, Winton.

This analysis has been undertaken in accordance with Department of Environment, Land, Water and Planning (DELWP) *Solar Energy Facilities Design and Development Guideline* (October 2022), and aims to identify key traffic impacts associated with the construction and operation of the proposed battery energy storage system, 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 SOLAR ENERGY FACILITIES DESIGN AND DEVELOPMENT GUIDELINES

The Department of Environment, Land, Water and Planning (DELWP), now succeeded by the Department of Energy Environment and Climate Action (DEECA) and the 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 document also includes provisions for the inclusion of battery storage facilities which are broadly considered to be applicable to the Winton BESS in the absence of a standalone BESS guideline.

It is intended to guide both proponents and decision makers, by providing best practice guidance and an overview of documentation that should be provided with any application.

Relevant to traffic engineering matters, the guidelines identify a requirement for a Traffic Impact Assessment, that should:

- 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.

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3 EXISTING CONDITIONS

3.1 Site Location

The [subject site](#) is addressed as 576 Winton-Glenrowan Road, Winton, and is located on the southern side of Winton-Glenrowan Road, as shown in Figure 1.

Figure 1 Site Location (6th January 2026)



Copyright Nearmap

The site is currently occupied by a single dwelling and is mostly farmland.

The site is accessible from a crossover to Winton-Glenrowan Road, located toward the north-western corner of the site.

Land use in the immediate vicinity of the site is primarily industrial/agricultural in nature, and includes Glenrowan Terminal Station, Winton Solar Farm and Glenrowan West Solar Farm.

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3.2 Planning Zones and Overlays

It is shown in Figure 2 that the site is located within a Farming Zone (FZ).

Figure 2 Planning Scheme Zones



Additionally, the site abuts Winton-Glenrowan Road which is within a Transport Zone (TRZ3), designating it a Significant Municipal Road.

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3.3 Road Network

3.3.1 Winton-Glenrowan Road

Winton-Glenrowan Road is a local road generally aligned east-west, running between Gladstone Street (Glenrowan) in the east and Hume Freeway in west. Winton-Glenrowan Road provides a single traffic lane with gravel shoulders in each direction adjacent to the site.

A full diamond interchange is available with the Hume Freeway to the west which offers movements in all directions for vehicles.

The cross-section of Winton-Glenrowan Road at the frontage of the site is shown in Figure 3.

Figure 3 Winton-Glenrowan Road, looking east adjacent to the subject site



Image date: March 2026

A 100 km/h speed limit applies to Winton-Glenrowan Road in the vicinity of the site.

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3.4 Traffic Volumes

Traffic volume, speed and classification surveys were undertaken by Trans Traffic Survey on behalf of **onemilegrid** on Winton-Glenrowan Road adjacent Glenwest Lane, for a one-week period from Thursday 24th October 2024 to Wednesday 30th October 2024 inclusive. The results of the surveys are summarised in Table 1.

Table 1 Traffic Volume and Speed Surveys

Time Period	Direction	Traffic Volume (vpd)	Average Speed (km/h)	85 th Percentile Speed (km/h)
Weekday Average	Eastbound	224	95.6	103.2
	Westbound	303	92.8	99.7
	Both Directions	527	94.4	101.7
7 Day Average	Eastbound	235	96.0	103.6
	Westbound	312	93.3	100.1
	Both Directions	547	94.5	101.5

The above surveys also provide the existing peak hour traffic volumes along Winton-Glenrowan Road as shown in Table 2.

Table 2 Existing Peak Hour Traffic Volumes

Period	Eastbound	Westbound	Total
AM Peak	14	32	46
PM Peak	24	32	56

Based on the above, peak hour vehicle movements in both directions along Winton-Glenrowan Road is equivalent to less than 1 vehicle movement per minute.

3.5 Crash History

Crash history information for Winton-Glenrowan Road was obtained through the Department of Transport and Planning (VicRoads) CrashStats (the Victorian accident statistics and mapping program) for the latest available five-year period.

The CrashStats database shows no incidents on Winton-Glenrowan Road in the vicinity of the site in the last five years.

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

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4 DEVELOPMENT PROPOSAL

4.1 General

Based on concept plans, it is proposed to develop the site for a Battery Energy Storage System (BESS) with a 400 MW output and 1600 MWh capacity.

Other infrastructure within the site area will include underground electrical cabling, telecommunications equipment, a substation, amenities and storage facilities, along with security fencing and gates.

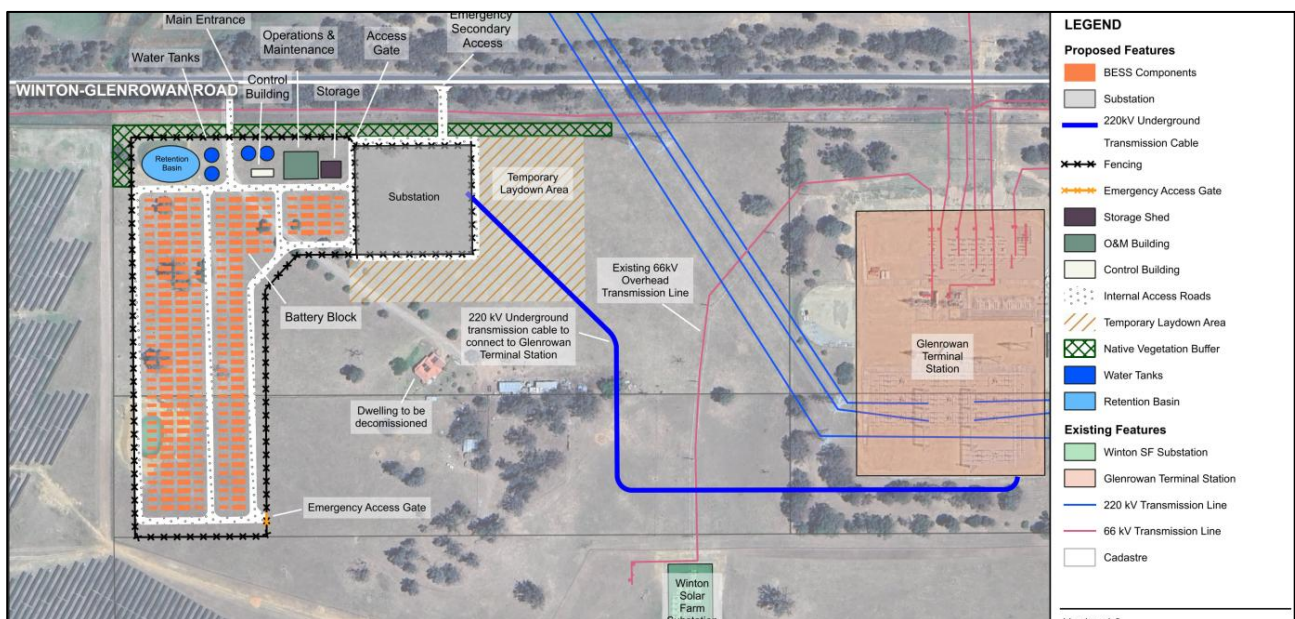
In addition to the key components outlined above, there would be temporary infrastructure required to facilitate the construction and decommissioning phases of the proposed BESS. The construction compound would likely include:

- Temporary construction offices;
- A site office; and
- Laydown areas.

These will all be accommodated within the subject site.

An excerpt of the proposed development concept plan is shown below in Figure 4.

Figure 4 Proposed Development Concept Plan



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4.2 Construction / Installation

During the construction phase of the project, we have been advised of the following operational characteristics:

- Construction timeframe of approximately 12-18 months across three stages including the following anticipated stages:
 - + Civil Works;
 - + Construction of the development, expected to overlap the civil and commissioning stages for two months each; and
 - + Commissioning.
- Construction hours/days:
 - + Monday to Friday; 7:00 am to 5:00 pm; and
 - + Saturday; 8:00 am to 3:00 pm.

During the construction stages, the following vehicle movements are expected.

Table 3 Construction Vehicle Traffic (Average Daily)

Stage	Duration of Stage	No of Personnel On-Site	Light Vehicles	Semi-trailers (19 m)	B-Double (26 m)	Total Vehicles
Civil Works	6 months	100	80	50	0	130
Construction	10 months (Overlap preceding and following stages)	150	160	50	7	217
Commissioning	6 months	100	80	10	0	90

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4.3 Operation

During operation, the site will have minimal requirements for staff due to largely automated operation. Consequently, on a daily basis, staff are unlikely to be required to attend the site. There will be occasional need to access the site for maintenance and inspection.

4.4 Access

Two access points are proposed for the site along Winton-Glenrowan Road. The existing access point located at the north-western corner of the site will be upgraded to accommodate construction vehicles. This will be the primary access point for the site.

Additionally, a secondary access point will be constructed roughly 155 metres east of the primary access point.

Both the primary and secondary access points will be utilised by construction vehicles during the construction period. Post-construction however, the secondary access point will only be used by emergency vehicles if required.

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

4.5 Car Parking and Vehicular Access

Car parking for staff will be provided within a parking area at the entrance to the BESS once constructed.

During construction, parking will be provided across the broader site as required.

As discussed in Section 4.3, during operation staff will only attend the site sporadically for maintenance and inspection. Consequently, it is expected that four formal parking spaces will be available during operation with additional informal parking area/s available if required.

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5 ACCESS REVIEW

5.1 General Access

It is expected that all vehicles will approach the site from the west along Winton-Glenrowan Road via Hume Freeway. Similarly, vehicles are anticipated to exit the site to the west using Winton-Glenrowan Road to reach Hume Freeway.

The access route in the vicinity of the site is depicted in Figure 5 below.

Figure 5 Access/Egress Routes

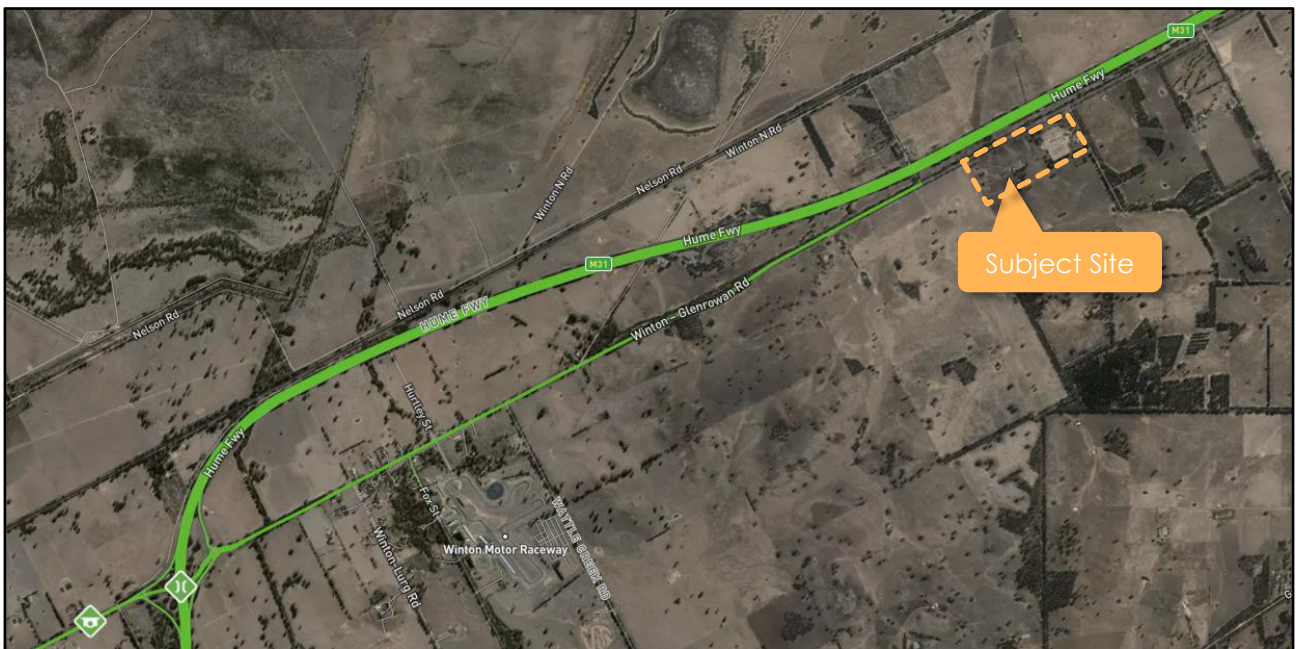


Winton-Glenrowan Road is a gazetted B-double route between Hume Freeway and the now closed Bowers Road intersection with Hume Freeway. It is noted that a small section of Winton-Glenrowan Road that is not gazetted between Bowers Road and the subject site, as shown in Figure 6 below. However, the swept paths attached in Appendix A demonstrate that suitable turning movements at the primary and secondary access points can be accommodated. The proposed access/egress route is therefore considered to be suitable for B-doubles.

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Figure 6 Gazetted B-double Routes



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5.2 Over Dimensional Vehicles

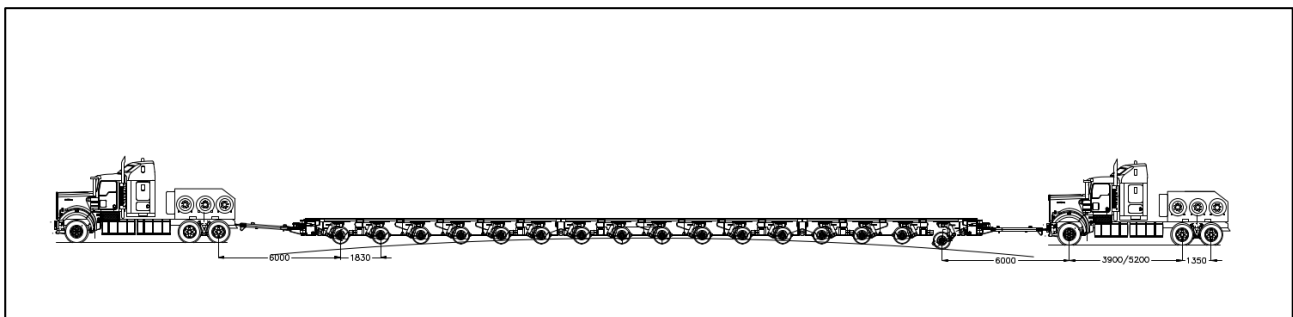
During construction the primary vehicles accessing the site will be 19m semi-trailers and tandem trucks. In addition to these, there will be a requirement for Over-Size Over-Mass (OSOM) vehicles to access the site, facilitating the delivery of large transformers. The number of these deliveries will be limited to around 4 – 5 through the duration of the project and each will require a separate permit approval from the National Heavy Vehicle Regulator (NHVR).

It is expected that the transformer delivery vehicle will consist of a 16-axle trailer to carry the load, with 2-4 prime movers connected to push/pull the trailer. The combined vehicles will have an overall length of approximately 80 m, while the trailer itself has a length of 30.5 m and can be operated as a standalone vehicle.

The transformer is expected to sit centrally on the trailer and will have a length of approx. 8 m, a width of 3.5 m. The combined height of the trailer and transformer will be less than 5.5 m.

The indicative trailer and prime mover combination is shown in Figure 7.

Figure 7 Transformer Delivery Vehicle



It is expected that the full-length vehicle will be utilised between the pick-up location for the transformers and the subject site.

onemilegrid has prepared swept paths for the trailer entering and exiting the primary and secondary access points to identify any tree pruning or removal that may be required to facilitate access. It is noted that the nearby energy facilities have been recently constructed and accordingly the greater network has already been proven to suitably accommodate the necessary vehicles.

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6 TRAFFIC

6.1 Traffic Generation

It should be highlighted that during the normal operation of the battery energy storage facility, the traffic generation of the site will be minimal, with only occasional access required for maintenance and inspection.

The vast majority of traffic is anticipated to occur during the construction and installation phase for the proposed BESS, as such our assessment of traffic impacts will be confined to the construction phase only, expected to occur over a 12-18 month period.

The anticipated traffic generation is shown in Table 4 below, based on information provided in Section 4.2.

Table 4 Anticipated Daily Traffic Movements

Stage	Duration of Stage	Light Vehicles	Semi-trailers (19.0m)	26m B-Double (BD)	Total
Civil Works	6 months	80	50	0	130
Construction	10 months (Overlap preceding and following stages)	160	50	7	217
Commissioning	6 months	80	10	0	90

Given the length of operating hours during the week, it is expected that the arrival of staff and deliveries will be distributed across the hours of operation. Based on the above, the subject site is expected to generate up to 18 vehicle movements per hour during the periods of overlap of the construction stage with the civil works and commissioning stages. Lower peak traffic generation in the civil works and commissioning stages is expected.

6.2 Traffic Distribution

All traffic movements to and from the site will be distributed via Winton-Glenrowan Road.

It is anticipated that the majority of traffic movements will originate and depart to/from the west with the closest interchange with Hume Freeway located roughly six kilometres west of the site.

Some movements are expected to be generated to/from the east with staff and construction workers travelling to/from Sydney or Glenrowan.

For the purposes of a conservative assessment, it will be assumed that all traffic movements will originate and depart from the west. Accordingly, there will be a higher number of expected right turning movements assessed below than are anticipated to be generated in practice.

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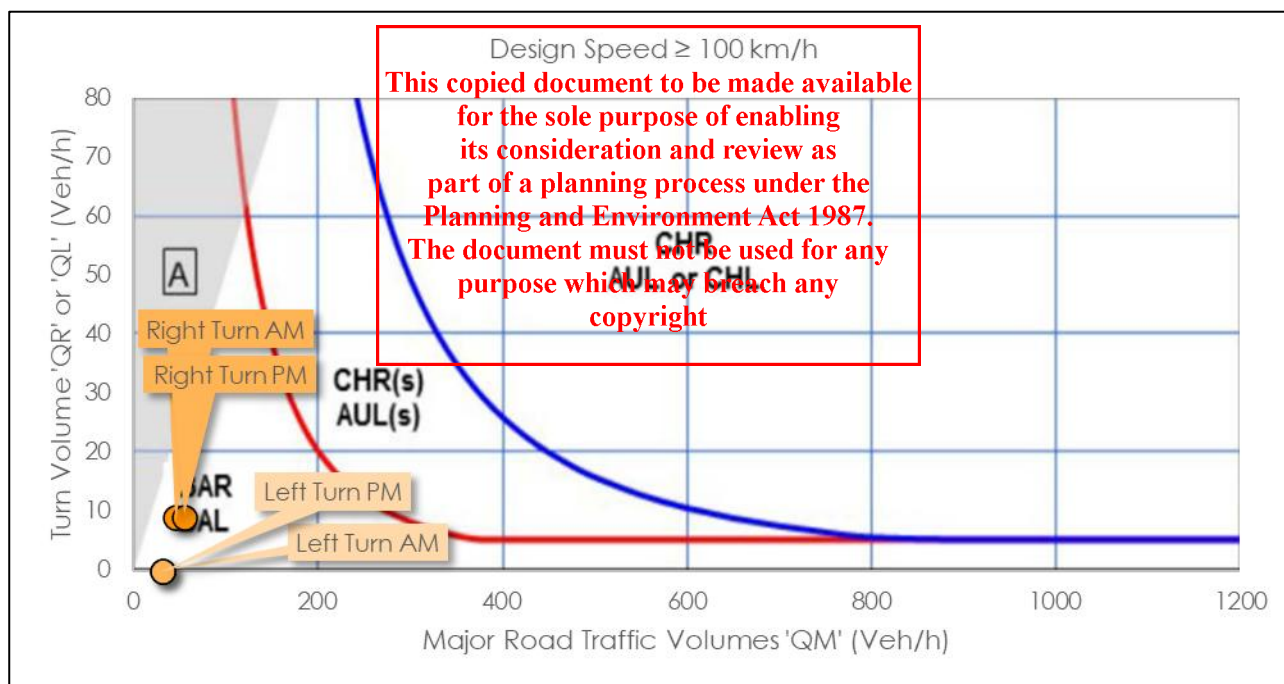
6.3 Traffic Impact

Reviewing the volumes above, it is noted that a maximum of 18 vehicle movements per hour are expected, equivalent to just under one vehicle trip every three minutes. Note that these movements will be split across two access points and that the traffic volumes generated by the subject site are very low, and are expected to be easily absorbed into the surrounding road network.

Furthermore, in evaluating the suitability of the proposed access points to Winton-Glenrowan Road, reference is made to the *Austrroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management* 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.

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 peak generated construction traffic volumes presented above. The turn lane requirements are demonstrated in Figure 8. Note that the below assessment assumes that all generated movements will pass through only one of the access points. In practice, traffic movements generated by the site will be split between the primary and secondary access points reducing the intensity of the traffic impact. As a result, the below assessment is conservative in nature.

Figure 8 Austrroads Turn Treatment Warrants



The figure above suggests that peak hour traffic volumes to and from the subject site would warrant provision of at most a basic right turn treatment (BAR) which provides localised widening to allow through traffic to overtake a turning vehicle if required.

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 *Austrroads 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, 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 the proposed BESS, the access will only be trafficked for a 12-18 month period, with a peak traffic generating period of up to four months, after which the use will be operational and volumes generated through both access points will effectively cease.

Having regard to the low levels of existing peak hour traffic (less than 1 movement per minute), the modest volume of traffic generated during construction (a maximum of 9 right-turn movements in the peak hour), and the short construction period, it is not considered necessary in this instance for any significant road works at the site access.

In addition to the above, Winton-Glenrowan Road has previously been utilised as a construction route for surrounding projects including the Glenrowan Terminal Station and solar farms at 34 Glenwest Lane and 458 Winton-Glenrowan Road. Similar to the subject site, these uses had low traffic generation during the construction phase with virtually zero traffic generation once operational.

With consideration of the low traffic generation, the previous use of Winton-Glenrowan Road to accommodate construction traffic, and the short duration of works, additional works at the intersection are not considered to be necessary.

It is recommended to implement advanced warning signage at the primary and secondary access points as part of the construction traffic management strategy during the construction period to assist with vehicle access and advising motorists of changed traffic conditions.

6.4 Other Considerations

Although the following discussion is usually reserved for Construction Traffic Management Plans, **onemilegrid** expects the following construction traffic management procedures will be utilised to ensure the safety of all road users during construction:

- All construction works will be advised by standard traffic management signage as appropriate, including reduced speed limits and advance warning signage;
- During construction hours, vehicle access can be assisted by traffic controller supervision, including heavy vehicle access as required; and
- Temporary fencing with shade cloth will be installed and is to be located around the perimeter of the construction zone to protect the work zone.

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7 CONCLUSIONS

It is proposed to develop the subject site for the purposes of a Battery Energy Storage System (BESS).

Considering the analysis presented above, it is concluded that:

- It is proposed to use the site for the purposes of a battery energy storage system;
- Construction phase:
 - ✦ The peak traffic generation will be equal to 217 daily and 18 peak hour traffic movements, equivalent to just under one vehicle trip every three minutes during peak periods;
 - ✦ Given the short-term nature of the construction phase and the low traffic generation, the installation of turning lanes is considered unnecessary; and
 - ✦ The level of construction traffic generated is not expected to have an impact on the operation of the road network.
- Operation phase:
 - ✦ Staff will only be required at the site sporadically due to the automated nature of the proposed BESS;
 - ✦ The traffic generation at the subject site is therefore expected to be smaller than the current generation due to the existing dwelling at the site; and
 - ✦ During operation it is not expected that there will be any traffic impacts on the surrounding road network.
- Car parking will be provided within the site as required ensuring no dangerous or illegal on-street parking will occur on Winton-Glenrowan Road; and
- There are no traffic engineering reasons which would preclude a permit from being issued for this proposal.

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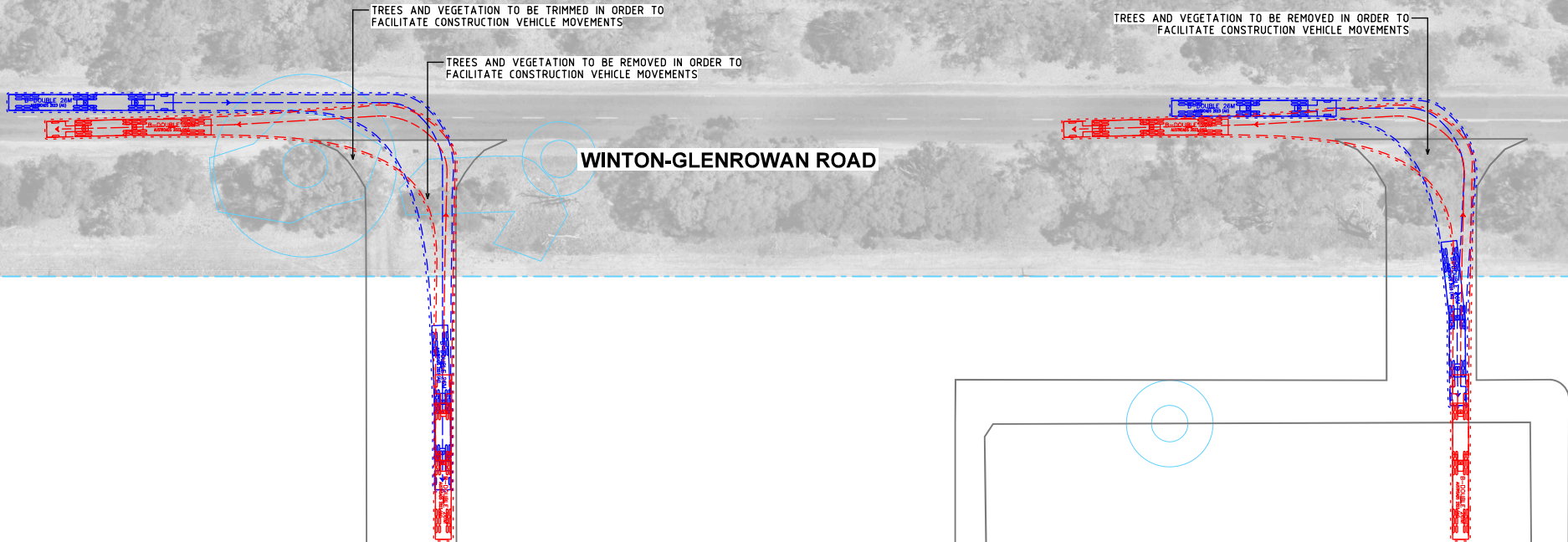
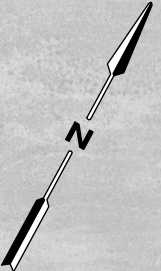
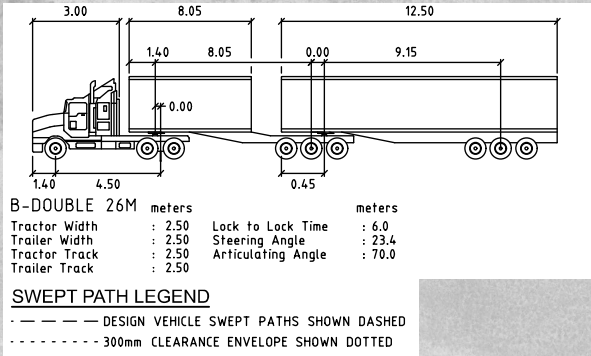
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Appendix A *Swept Path Diagrams*

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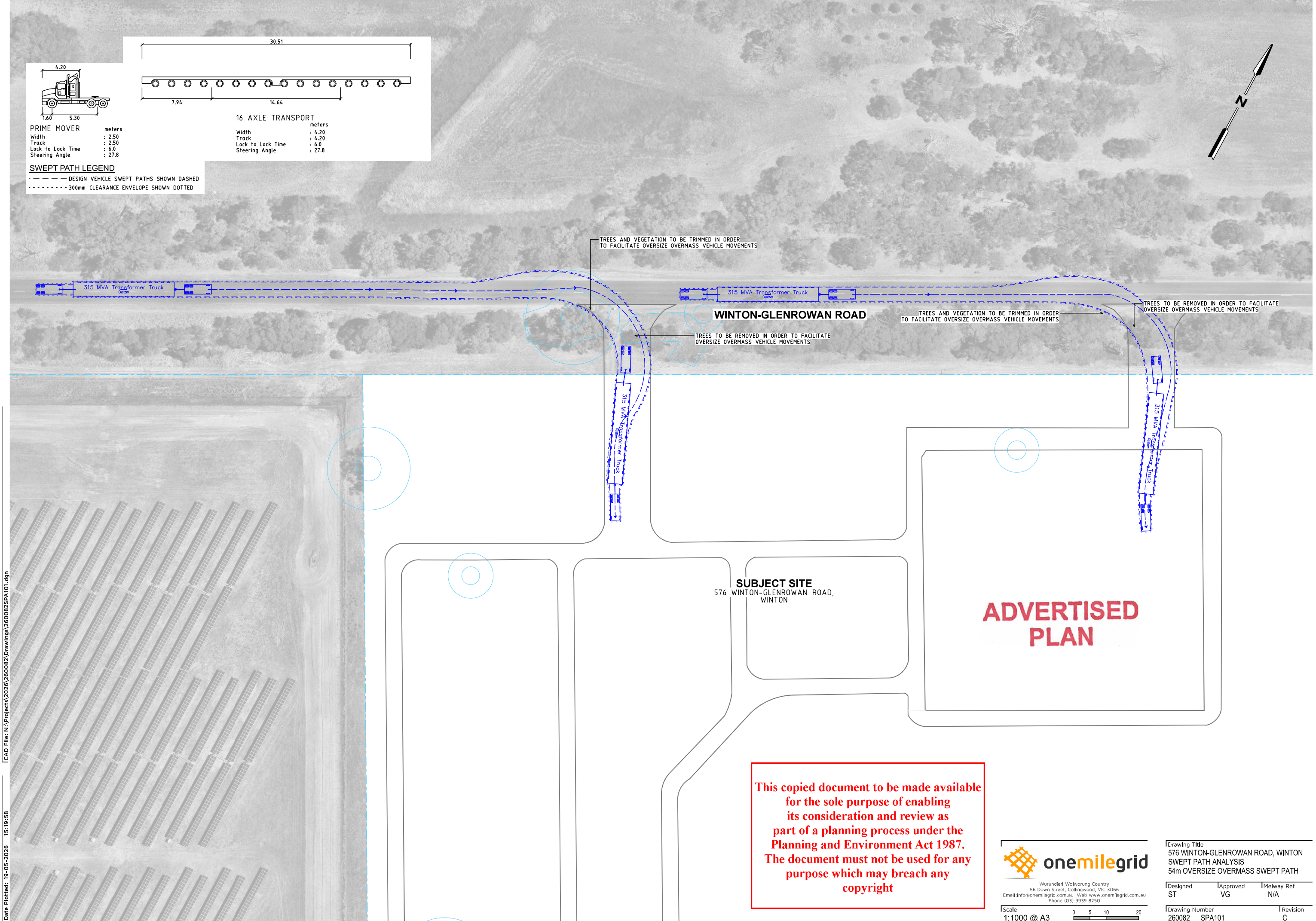
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Drawing Title 576 WINTON-GLENROWAN ROAD, WINTON SWEPT PATH ANALYSIS 26m B-DOUBLE SWEPT PATH		
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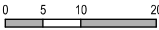
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Drawing Title 576 WINTON-GLENROWAN ROAD, WINTON SWEEP PATH ANALYSIS 54m OVERSIZE OVERMASS SWEEP PATH		
Designed ST	Approved VG	Melway Ref N/A
Drawing Number 260082 SPA101	Revision C	