



M^cLAREN TRAFFIC ENGINEERING

Address: Shop 7, 720 Old Princes Highway Sutherland NSW 2232
Postal: P.O Box 66 Sutherland NSW 1499

Telephone: +61 2 9521 7199
Web: www.mclarenttraffic.com.au
Email: admin@mclarenttraffic.com.au

Division of RAMTRANS Australia ABN: 45067491678 RPEQ: 19457

Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

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Reference: 250560.01FD

EDPR Australia
GPO Box 1429
Canberra ACT 2601
Attention: Jou Jong

**TRAFFIC AND PARKING IMPACT STATEMENT OF THE
PROPOSED SOLAR FARM & BATTERY ENERGY STORAGE SYSTEM
AT 873 WALLACES GAP ROAD, BALLALABA**

Dear Jou,

Reference is made to your request to provide a Traffic and Parking Impact Statement for the proposed solar farm & Battery Energy Storage System (BESS) at 873 Wallaces Gap Road, Ballalaba. The proposed plans are provided in **Annexure A**.

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1 Description and Scale of Development

The proposed development has the following characteristics relevant to traffic and parking:

- Tracker system solar farm with an AC output of 4.99MW on an existing grazing site;
- Vehicular access via a proposed two-way access driveway from Wallaces Gap Road which provides access to the western boundary of the subject site;
- Provides temporary / informal parking for infrequent maintenance operations.

2 Site Location and Context

The location of the site is depicted on an aerial image in **Figure 1**. The characteristics of the site and the surrounding transport network are summarised in **Table 1**.

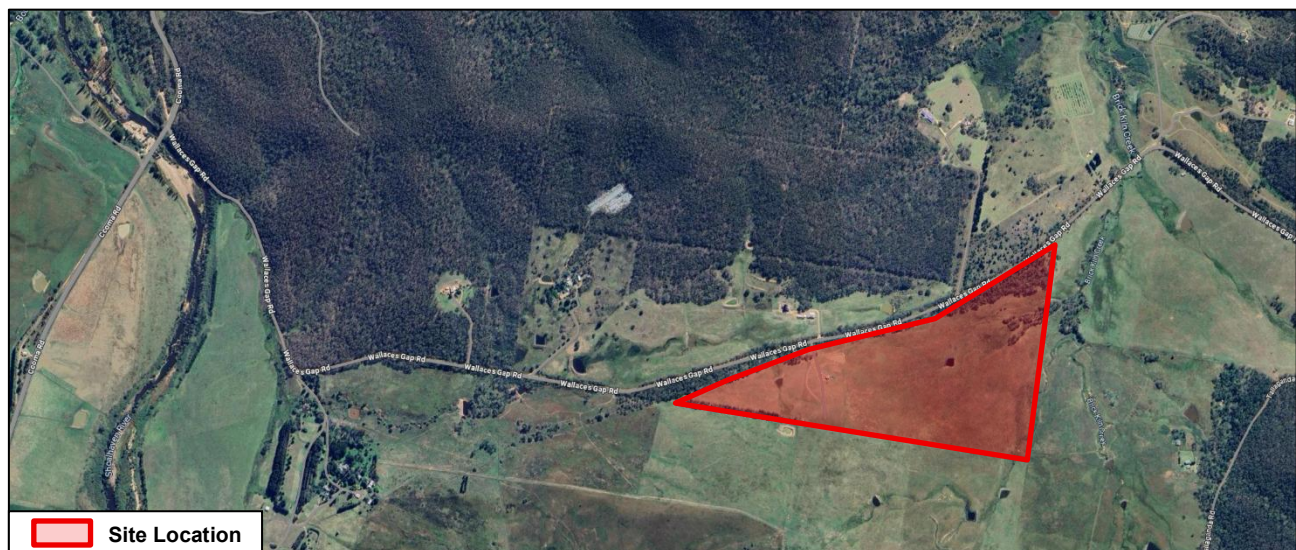


FIGURE 1: SITE CONTEXT – AERIAL PHOTO

TABLE 1: SITE CONTEXT

Zoning	The site is zoned <i>RU1 – Primary Production</i> under the Queanbeyan-Palerang Regional Local Environmental Plan 2022.
Roads Fronting Site	The subject site has frontage to the following road: • Wallaces Gap Road (Unclassified COLLECTOR Road). Access is proposed from Wallaces Gap Road.
State Planning Controls	The site is not of sufficient size or capacity or fronted by a classified road and is therefore not required to be referred to Transport for NSW (TfNSW) as part of the Development Application process.
Public Transport	The site is not located in close proximity to any public transport facilities.

3 Existing Traffic and Parking Conditions

3.1 Road Hierarchy

3.1.1 Wallaces Gap Road

- Unclassified COLLECTOR Road;
- Approximately 6m wide unsealed carriageway facilitating traffic flow in both directions;
- No signposted speed limit – Default 100km/h speed limit for rural roads applies, however, in practice vehicles are likely to only travel below 100km/h due to the unsealed nature of the road;
- Kerbside parking generally not available on both sides of the road.

3.1.2 Cooma Road

- TfNSW Classified Regional Road (No. 270);
- Approximately 7m wide carriageway facilitating one (1) traffic flow lane in each direction;
- Signposted 100km/h speed limit;
- Kerbside parking generally not available on both sides of the road.

3.2 Crash Data

The TfNSW website provides crash data statistics for a five (5) year period between 2020 and 2024. The crashes recorded within the relevant area are presented in **Figure 2** and summarised within **Table 2**.

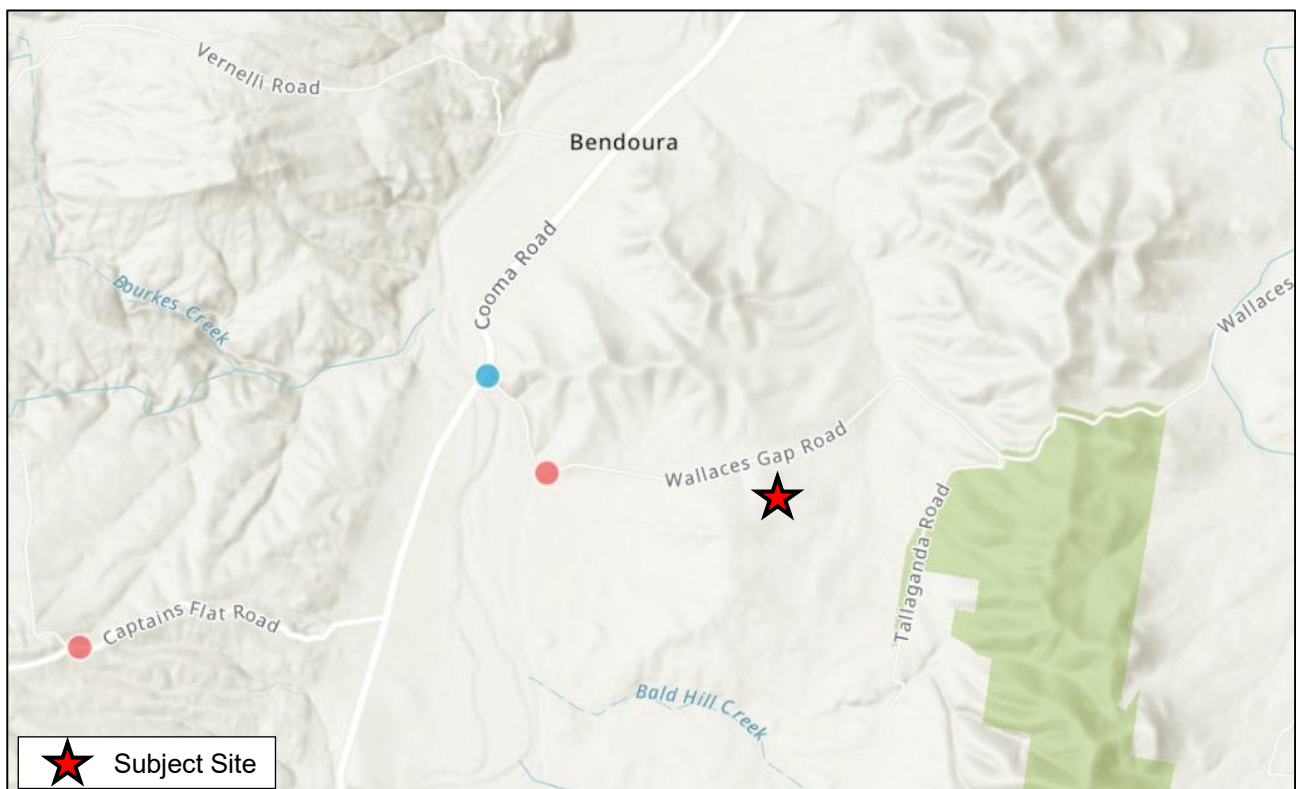


FIGURE 2: TFNSW CRASH STATISTICS

As can be seen in **Figure 2** above, there have been two (2) recorded incidents on Wallaces Gap Road within a near vicinity of the proposed access point over a 5-year period. The details of these incidents are shown below in **Table 2**. Typically, over a 5-year period, 3 or more collisions per year of a specific and repeated type of crash at a cluster location is the trigger above which ameliorative action is required. The types of crashes, or lack thereof, on Wallaces Gap Road indicate that there are no existing safety concerns in relation to the existing road design.

TABLE 2: TFNSW CRASH STATISTICS

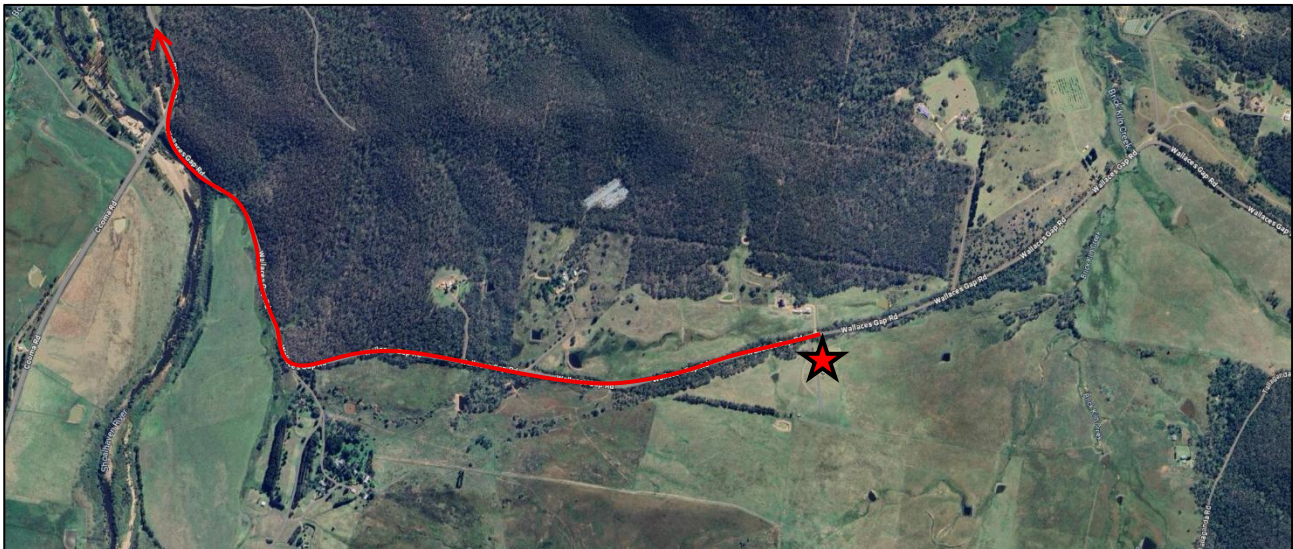
Reporting year	Crash Id	Degree of crash	RUM - code	RUM - description	Type of location	Natural lighting	Longitude	Latitude	Number killed	Number injured
2020	1248575	Moderate Injury	87	Off lft/lft bnd into obj.	2-way undivided	Daylight	149.631267	-35.572459	0	1
2023	1317710	Non-casualty (towaway)	71	Off rd left into obj.	2-way undivided	Daylight	149.636288	-35.579275	0	0

4 Vehicular Access Design

4.1.1 Heavy Vehicle Haulage

All construction vehicles required to access the site will utilise the existing road network. The largest construction vehicle required to access the site is a 20m Articulated Vehicle (AV) and is to access the site via a left turn from Cooma Road onto Wallaces Gap Road before entering the site in a forward direction. A 20m AV is classified as a General Access Vehicle under NHVR and as such has as-of-right access to the network unless signposted otherwise.

Vehicle egress will occur in a forward direction with the AV performing a left turn onto Wallaces Gap Road before proceeding to turn right onto Cooma Road. The route between the subject site and Cooma Road is shown diagrammatically in **Figure 3** and the swept path test results are reproduced in **Annexure B**. The swept path tests show that AV access via the existing driveway is successful, subject to minor widening of the driveway to accommodate swept path requirements. Any such widening works can be undertaken with a temporary treatment commensurate with the construction-phase duration of use.



★ Subject Site Driveway — 25/26m B-double Route

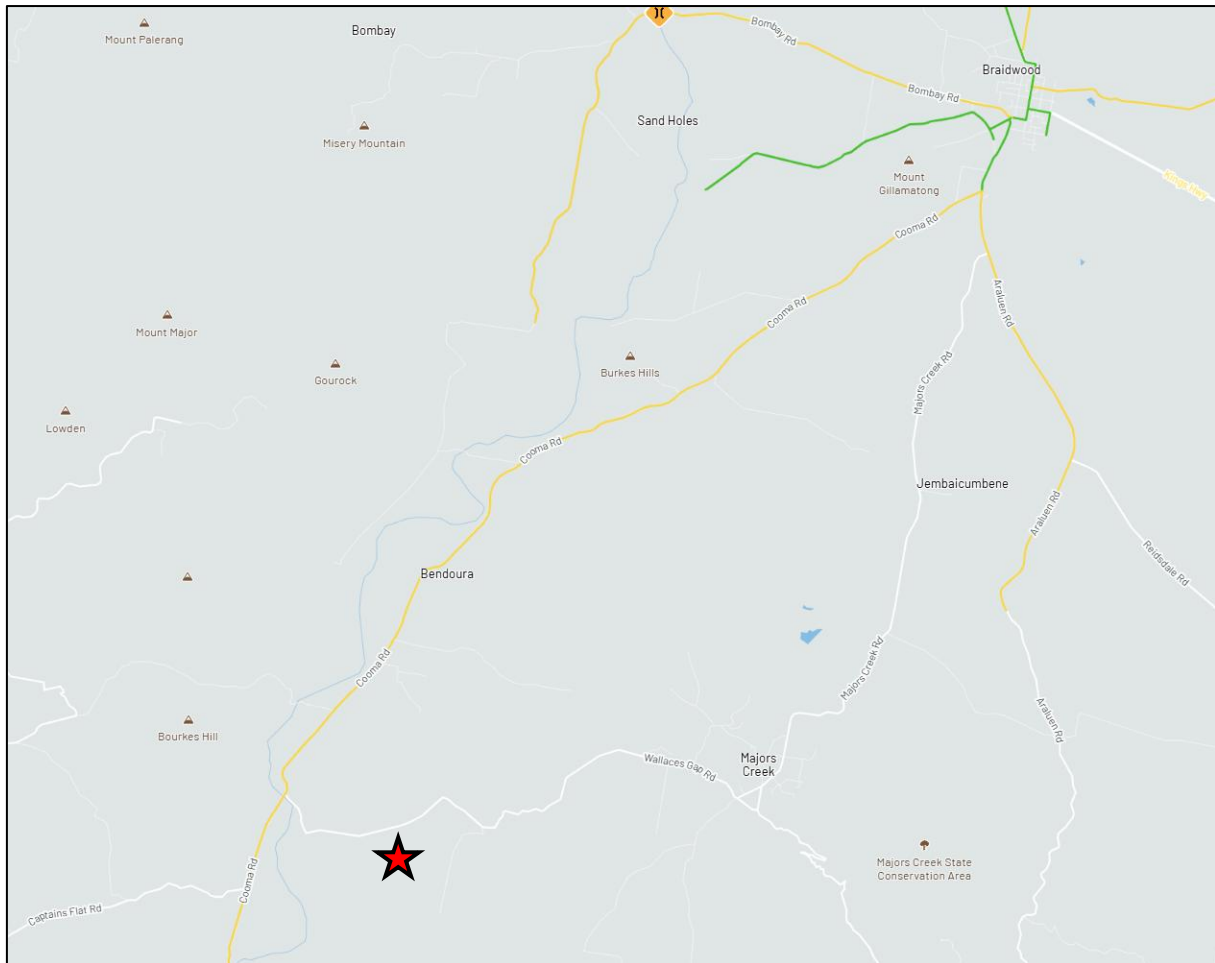
FIGURE 3: HAULAGE ROUTE

The GML & CML 25/26m B-Double route access map from the National Heavy Vehicle Regulator is presented in **Figure 4** below for reference. As can be seen, the proposed haulage route via Cooma Road is an approved B-Double route with the following conditions:

Travel not permitted on:

- A. school days between 7:45-9:00am and 3:15-4:30pm.
- B. During times when the Back Creek road bypass is under water.

To avoid oversize and/or overmass (OSOM) requirements, the BESS system is a prefabricated, off-the-shelf product that is stored within four shipping containers. Each container can weigh approximately 36 tonnes and is delivered via skeletal trailers. The solar farm's development does not require the use of OSOM vehicles, neither during the construction or operation phases.



★ Subject Site — 25/26m B-double Routes — Approved with Conditions

FIGURE 4: SITE CONTEXT – RESTRICTED ACCESS VEHICLE MAP

Wallaces Gap Road is an unsealed road of approximately 6m in width as measured using aerial imagery. A 6m wide road is sufficient to accommodate two-way passing of trucks at low speeds so long as there is adequate sight lines available along the road. If sight lines are restrictive and the road width isn't adequately widened at this location then temporary traffic management can be installed along Wallaces Gap Road as part of a detailed Construction Traffic Management Plan. This temporary traffic management can include reductions of speed, management of site deliveries and the introduction of temporary traffic signals. It should be noted that the largest vehicle to access the egress the site for the purpose of construction is a 20m AV which is a general access vehicle and is currently permitted to travel along Wallaces Gap Road.

Furthermore, the need for AV access is only required for the construction of the solar farm and will not be required for the operation of the site. It is expected that construction vehicles access will be included and assessed as part of a detailed construction traffic management plan as a condition of consent.

4.1.2 Sight Distance Assessment

Wallaces Gap Road has a default rural speed limit of 100km/h. In accordance with *Figure 3.3* of AS2890.2:2018, the 8 second gap required from an access driveway for heavy vehicles with a frontage road design of 100km/h is **222m**. The 8s gap parameter has been adopted as the design parameter due to the need to get AV vehicles into and out of the subject site. It should be noted that the Stopping Sight Distance (SSD) for a 100km/h road is 160m.

A preliminary desktop sight distance assessment has been undertaken from the proposed driveway location to the east and west. The sight line assessment has used Nearmap imagery with results of the horizontal sight line assessment presented below.

The required sight distance from the private property access along Wallaces Gap Road is presented in **Annexure C**. As shown below in **Figure 5** and **Figure 6**, there is more than the minimum sight distance required for vehicles exiting Wallaces Gap Road, resulting in compliance with AS2890.1:2004 and AS2890.2:2018.



 Driveway Location

FIGURE 5: SIGHT DISTANCE TO THE PROPOSED DRIVEWAY APPROXIMATELY 220M FROM THE WEST



○ Driveway Location

FIGURE 6: SIGHT DISTANCE TO THE PROPOSED DRIVEWAY APPROXIMATELY 220M FROM THE EAST

5 Parking and Access Design

5.1 First Principles Assessment

Palerang Development Control Plan 2015 (PDCP 2015) does not provide a car parking provision applicable to solar farm developments. As such, an assessment of the required parking will be undertaken on a first principles assessment.

There is expected to be up to approximately 50 personnel from various specialised trades working on-site during the construction stage, typically dispersed at varying times and not necessarily all at once. However, it has been advised that there will be a maximum of 30 staff on-site at any one time. Noting that the site location has limited access to public transport facilities, it is reasonable to assume that all staff members will arrive to the site via private vehicle. However, it is expected that a proportion of staff will carpool.

Following construction, a maximum of three (3) maintenance staff will attend the site at any one time during the operational stage of the project.

It is noted that there will be no visitor access to the site and no haulage trucks will be parked on-site overnight.

Hence, the following assumptions have been made to determine the maximum parking demand of the site:

- A maximum of 30 construction staff will be onsite at any one time during the construction stage of the project;
- Approximately 80% of construction staff will drive and 20% of construction staff will carpool.

The resultant car parking demand is shown in **Table 3** below.

TABLE 3: STAFF PARKING DEMAND

Land Use	Scale	Rate	Spaces Required
CONSTRUCTION PHASE			
Solar Farm	Up to 30 staff	0.8 spaces per 1 staff ⁽¹⁾	24

Notes: (1) Assuming 20% carpooling between construction workers.

As per the first principle assessment, the development requires the provision of **24** staff car parking spaces during the construction phase.

Hence, it is expected that temporary car parking for up to 24 light vehicles will be needed to cater for the 30 construction workers on-site during peak construction periods considering that a proportion of these workers will carpool to / from the site. If more car parking spaces are needed on-site than what can be accommodated, a shuttle bus service will be implemented to transport construction workers to and from an alternate location.

It should be noted that a development of this nature typically allows for temporary/informal car parking located throughout the site, provided on the side of any internal roads. In this case the proposed internal road would allow informal car parking as required during both the construction phase and the operational phase. Therefore, the proposed development will satisfy the parking demand on-site.

5.2 Bicycle & Motorcycle Parking

The PDCP 2015 does not require the provision of bicycle / motorcycle parking. Accordingly, no bicycle / motorcycle parking facilities have been provided, thus satisfying Council requirements.

5.3 Accessible Parking

There is no formal carparking proposed for the subject development and as such there is no requirement to provide any formal accessible car parking during the construction or operation of the site. Indeed, given the physical demands of the work, it is unlikely that any workers would have a disability that necessitates the provision of accessible parking.

5.4 Loading and Servicing Facilities

The PDCP 2015 does not outline any service rates for a solar farm and as such the provision of these facilities will be based upon the operational requirements of the site.

For the operation of the proposed development, the site will require a maintenance vehicle typically undertaken by a B99 vehicle. If a larger vehicle is required to access the property for occasional repairs there is ample room on-site to accommodate truck loading and can be organised on an as needed basis.

5.5 Car Park Design

No formal car parking has been proposed on site and as such no car parking compliance has been undertaken. It should be noted that there is adequate space for 24 informal car parking spaces during the construction phase. Permanent parking spaces are not considered necessary due to the short 3-month duration of the construction stage. During the operational phase, maintenance will be performed by a small crew of 2-3 workers using a light vehicle that will be mobile and traversing the site, therefore, permanent parking will not be required.

6 Traffic Generation and Impact

Typically, the TfNSW Guide to Transport Impact Assessment is used to forecast future development traffic generation. However, the TfNSW Guide does not specify trip generation rates for solar farms. Accordingly, the future development traffic generation has been estimated based upon a first principles approach as per the below subsections.

6.1 Traffic Generation During Construction

Typically, detailed construction traffic management plans are provided during the construction certificate stage prior to construction and as part of responding to a Council consent condition. Nevertheless, when a builder is engaged, confirmation of the number of staff and construction vehicles can be provided and assessed (if required). Construction vehicular traffic is temporary in nature and is not expected to exceed the operating capacities of nearby intersections.

Indeed, it has been advised that the subject site will require approximately 65 trucks (up to and including 20m AVs) for delivery over the entire construction period and expected to generate up to eight (8) truck movements per day (4 inbound, 4 outbound). The trucks will access the site throughout the day, generally between 10am and 2pm, and would therefore not contribute to morning or afternoon peak hour traffic. It has also been advised that at peak construction periods there would be up to 30 staff on-site at any one time and it has been assumed all staff arrive in the morning and depart in the afternoon. Assuming that all staff arrive over a 2-hour period and every staff member drives to the site it would be expected to generate 15 inbound vehicle trips in the morning and 15 outbound vehicle trips in the AM and PM peak hour period, respectively. This level of traffic is minor and temporary in nature and will not have an adverse impact to any of the surrounding intersections.

Clarification on construction vehicle movements and staff numbers can be confirmed during the submission of a detailed construction traffic management plan during construction certificate stage as part of a consent condition as mentioned previously. It is expected that the largest vehicle to travel to and from the site during construction will be a 20m Articulated Vehicle.

6.2 Traffic Generation During Operation

6.2.1 Staff Trips

The *TfNSW Guide to Transport Impact Assessment (2024)* does not provide traffic generation rates for the proposed land use, thus traffic generation volumes must be determined through a first principles analysis. A maximum of three (3) staff will be present at the solar farm, once per quarter, or as required for maintenance operations.

This at most relates to a traffic generation of 24 (12 in, 12 out) vehicle trips per year assuming all three (3) workers travel independently which is extremely minor and will have no adverse impact to the surrounding road network.

6.2.2 Requirement for Impact Assessment

Reference is made to *Austrroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments Figure 5.1* which states the following regarding peak hour vehicle trips:

Likely impact of development:

Low Impact (<10 Trips): No Detailed Assessment Required

Moderate Impact (10-100 Trips): Traffic Impact Statement Required

High Impact (>100 Trips): Traffic Impact Assessment Required

Accordingly, the proposal is a low impact development, and no detailed assessment is required.

6.3 Traffic Generation Summary

A summary of the traffic generation during the different phases of the development is presented in **Table 4**.

TABLE 4: SUMMARY OF TRAFFIC GENERATION

Phase	Description of Vehicles	Expected Vehicle Trips
Establishment	10-15 trucks and trailers to deliver gravel with 4-5 workers with 2 persons per vehicle	10 vehicle trips per day for 2 to 3 days
	Light vehicles	4 to 6 vehicle trips per day
Construction	65 articulated trucks of 20m length to deliver equipment	8 vehicle trips per day
	40 light vehicle trips for 40 construction workers (worst case with no shuttle bus operation)	80 vehicle trips per day
Commissioning	Light & Heavy Rigid Vehicles for 10 workers with 2 persons per vehicle	10 vehicle trips per day
Operational	1 light vehicle for maintenance contractor	2 vehicle trips every 2 to 3 months

7 Conclusions

In view of the foregoing, the subject Solar Farm & Battery Energy Storage System proposal at 873 Wallaces Gap Road, Ballalaba (as depicted in **Annexure A**) is fully supportable in terms of its traffic and parking impacts. The following outcomes of this traffic and parking impact assessment are relevant to note:

- a) The proposed development does not require any regular parking for operation and as such the development will demand the provision of 24 staff car parking spaces during the construction phase which will be provided in a temporary/informal manner.
- b) Council's DCP does not require the provision of bicycle and motorcycle parking facilities. As such nil (0) bicycle / motorcycle parking spaces have been provided.
- c) During the construction phase of the development the construction will require approximately 65 trucks (up to and including 20m AVs) for delivery over the entire construction period, and expected to generate up to eight (8) truck movements per day. In addition, construction staff are expected to generate 15 trips in the AM peak hour and 15 trips in the PM peak hour.
 - o The largest construction vehicle required to access the site is a 20m Articulated Vehicle and is to access and egress the site via Wallaces Gap Road and Cooma Road.
- d) AV access via the existing driveway was assessed as "successful", subject to minor widening of the driveway to accommodate swept path requirements. Any such widening works can be undertaken with a temporary treatment commensurate with the construction-phase duration of use.
- e) During the operational period of the development the site is only required to be accessed for maintenance which will occur once (1) per quarter by three (3) staff. This at most relates to a traffic generation of 24 (12 in, 12 out) vehicle trips per year which is extremely minor and will have no adverse impact to the surrounding road network.

Please contact the undersigned should you require further information or assistance.

Yours faithfully
McLaren Traffic Engineering



Daniel Walker
Principal Traffic Engineer

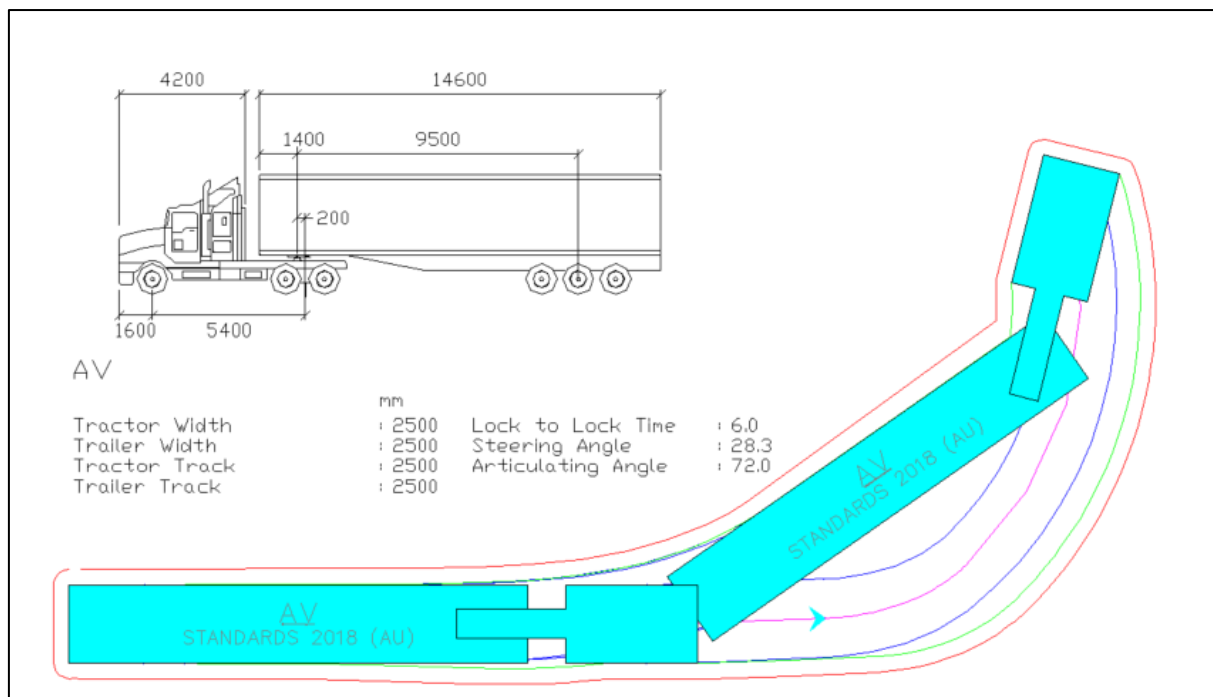
B.E. (Hons) (Schol) (Civil Engineering)
TfNSW Accredited Level 3 Road Safety Auditor (RSA-02-1453)
SafeWork NSW Prepare a Work Zone Traffic Management Plan (Cert No. TCT1083198)



**ANNEXURE A: PROPOSED PLANS
(1 SHEET)**



**ANNEXURE B: SWEEP PATH TESTING
(3 SHEETS)**



AUSTRALIAN STANDARD ARTICULATED VEHICLE (AV)

Blue – Tyre Path
 Green – Vehicle Body
 Red – 500mm Clearance



AV ENTRY / EXIT VIA SITE DRIVEWAY

Successful – Subject to driveway widening at the road interface



AV LEFT TURN FROM COOMA ROAD TO WALLACE GAPS ROAD
Successful



AV RIGHT TURN FROM WALLACE GAPS ROAD TO COOMA ROAD
Successful



**ANNEXURE C: SIGHTLINE ASSESSMENT
(1 SHEET)**



MCLAREN TRAFFIC ENGINEERING
A division of RAMTRANS Australia Pty. Ltd.
Shop 7, 716-720 Old Princes Hwy, Sutherland NSW 2232
P : (02) 9521 - 7199
E : admin@mclarentraffic.com.au
www.mclarentraffic.com.au

Client / Project:
EDPR Australia / Solar Farm & BESS

Project Address:
873 Wallaces Gap Road, Ballalaba

Notes:
CONCEPT PLAN ONLY.
NOT FOR CONSTRUCTION.

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