

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright



Tramway Road BESS

Transport Impact Assessment



**ADVERTISED
PLAN**

240674TIA001B-F
16 December 2024

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

onemilegrid

ABN: 79 168 115 679

(03) 9939 8250
Wurundjeri Woieworung Country
56 Down Street
COLLINGWOOD, VIC 3066
www.onemilegrid.com.au

ADVERTISED PLAN



DOCUMENT INFORMATION

Prepared for	Eku Energy		
File Name	240674TIA001B-F	Report Date	16 December 2024
Prepared by	JAR	Reviewed by	VPG

onemilegrid operates from Wurundjeri Woieworung Country of the Kulin nation. We acknowledge and extend our appreciation to the Wurundjeri People, the Traditional Owners of the land. We pay our respects to leaders and Elders past, present and emerging for they hold the memories, the traditions, the culture, and the hopes of all Wurundjeri Peoples.

© One Mile Grid Pty Ltd. This document has been prepared by **onemilegrid** for the client as per the terms of engagement. It may not be modified or altered, copied, reproduced, sold or transferred in whole or in part in any format to any person other than by agreement. **onemilegrid** does not assume responsibility or liability to any third party arising out of misuse of this document.

CONTENTS

1	INTRODUCTION.....	5
2	SOLAR ENERGY FACILITIES DESIGN AND DEVELOPMENT GUIDELINES	5
3	EXISTING CONDITIONS	6
3.1	Site Location	6
3.2	Planning Zones and Overlays.....	8
3.3	Road Network.....	9
3.3.1	Tramway Road	9
3.3.2	Monash Way	10
3.4	Traffic Volumes	11
3.5	Public Transport	12
4	DEVELOPMENT PROPOSAL.....	13
4.1	General	13
4.2	Construction / Installation.....	13
4.2.1	Typical Construction Phase	13
4.2.2	Peak Construction Phase.....	13
4.2.3	Temporary Speed Limit Reduction	13
4.3	Operation.....	14
4.4	Access	14
4.5	Car Parking	14
5	DESIGN ASSESSMENT	15
5.1	Access Route	15
5.2	Site Access	16
5.2.1	Sight Lines.....	16
5.2.2	Access Design	17
6	TRAFFIC.....	18
6.1	Traffic Generation	18
6.1.1	Overview	18
6.1.2	Typical Construction Phase	18
6.1.3	Peak Construction Phase.....	18
6.1.4	Anticipated Daily Traffic Generation	19
6.1.5	Peak Hour Traffic Generation	19
6.2	Traffic Distribution	20
6.3	Resultant Traffic Volumes	21
6.4	Traffic Impact	21
7	CONCLUSIONS.....	23

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

TABLES

Table 1	Traffic Volume and Speed Surveys.....	11
Table 2	Weekday Peak Hour Averages.....	11
Table 3	Anticipated Daily Traffic Movements.....	19
Table 4	Anticipated Peak Hour Traffic Movements	19

FIGURES

Figure 1	Site Location	6
Figure 2	Site Context (10 September 2024)	7
Figure 3	Planning Scheme Zones.....	8
Figure 4	Tramway Road, looking south adjacent to the subject site.....	9
Figure 5	Monash Way, looking north adjacent to the subject site	10
Figure 6	Public Transport Provision – Churchill bus network.....	12
Figure 7	Access Route Review	15
Figure 8	Austroads SISD	16
Figure 9	Generated Traffic Volumes – Peak Construction Phase.....	20
Figure 10	Resultant Future Traffic Volumes – Peak Construction Phase	21
Figure 11	Austroads Turn Treatment Warrants – Peak Construction Phase	22

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

1 INTRODUCTION

onemilegrid has been requested by Eku Energy to undertake a Transport Impact Assessment of the proposed Battery Energy Storage System (BESS) development at Tramway Road, Hazelwood North.

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) 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 Tramway Road BESS.

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.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

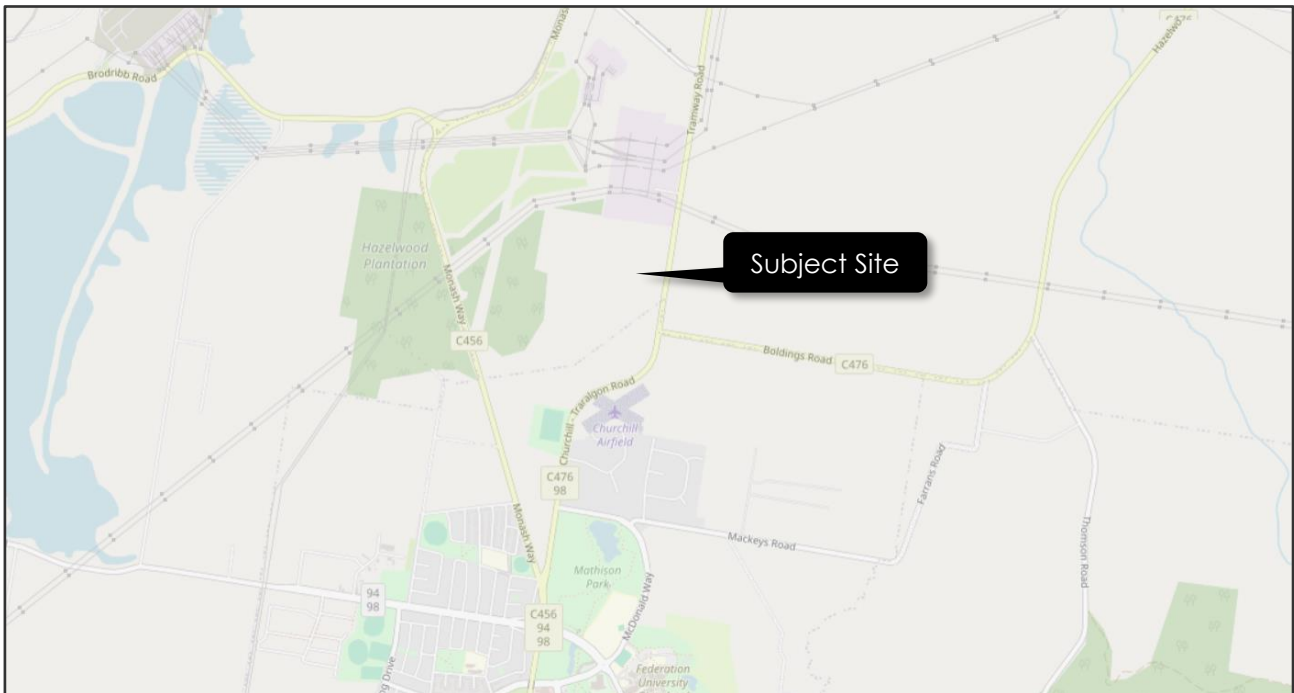
**ADVERTISED
PLAN**

3 EXISTING CONDITIONS

3.1 Site Location

The [subject site](#) has no formal street number, though is addressed as Monash Way, Hazelwood North. The site is provided a frontage to Tramway Road to the east, and Monash Way is to the west of the site, though the site is not provided a direct frontage to Monash Way.

Figure 1 Site Location



Source: OpenStreetMap

The site is currently used for agricultural grazing, with a single dwelling located in the southern portion of the site.

The site is not currently provided with an access point via Tramway Road, with access currently provided via Monash Way, with a concealed access track connecting through to the site.

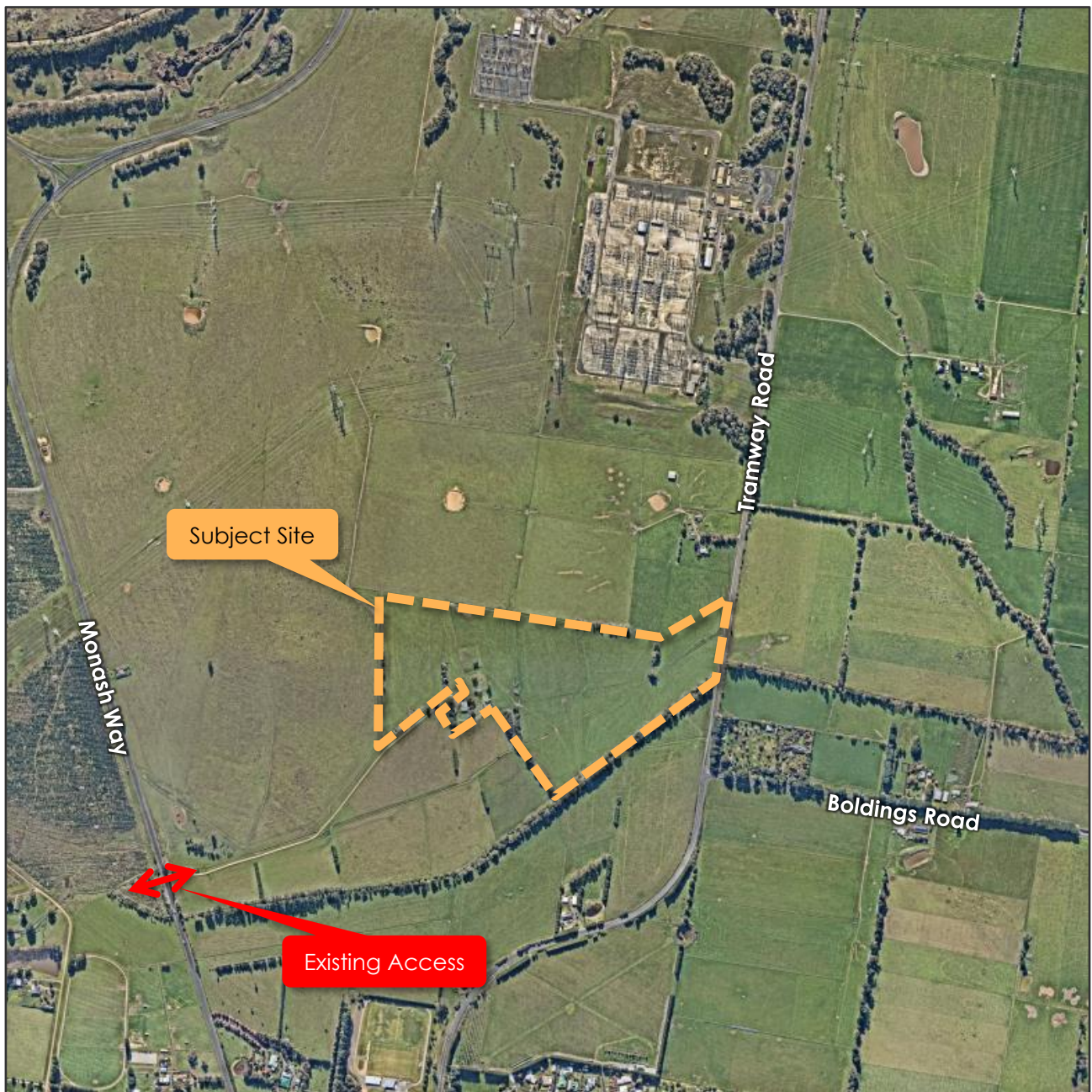
Land use in the immediate vicinity of the site is generally farming uses, and includes the Hazelwood Terminal Station to the north of the site.

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

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

Figure 2 Site Context (10 September 2024)



Copyright Nearmap

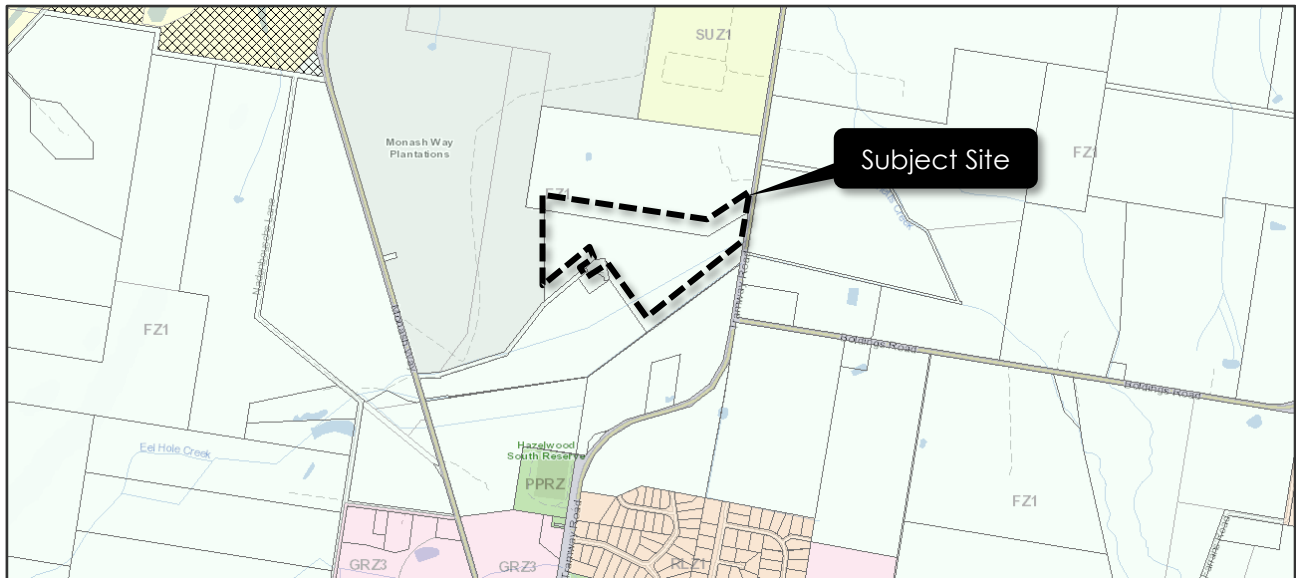
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

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



Additionally, the site abuts Tramway Road, which is within a Transport Zone (TRZ2), designating the Principal Road Network.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

3.3 Road Network

3.3.1 Tramway Road

Tramway Road is an arterial road generally aligned north-south, running between Princes Drive in the north, and Monash Way in the south. Tramway Road provides a single traffic lane in each direction adjacent to the site with double centre line marking.

Grassed verges are provided on each side of the road, with guard rail provided on the east side of the road at the intersection with the creek to manage the level difference between the road and the creek.

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

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

Figure 4 Tramway Road, looking south adjacent to the subject site



Image date: November 2024

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

3.3.2 Monash Way

Monash Way is an arterial road generally aligned north-south, running between Princes Freeway in Morwell, and Tarwin Street in Boolarra. Monash Way provides a single traffic lane and sealed shoulders in each direction adjacent to the site.

A 100 km/h speed limit applies to Monash Way in the vicinity of the site.

The cross-section of Monash Way at the frontage of the site is shown in Figure 5.

Figure 5 Monash Way, looking north adjacent to the subject site



Copyright Google (Image date: June 2024)

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

3.4 Traffic Volumes

Traffic volume, speed and classification surveys were undertaken by Trans Traffic Survey on behalf of **onemilegrid** on Tramway Road adjacent the site, for a one-week period from Friday 22nd November 2024 to Thursday 28th November 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	Northbound	1,620	93.9	101.3
	Southbound	1,477	92.0	99.1
	Both Directions	3,097	92.9	100.2
7 Day Average	Northbound	1,421	93.5	100.8
	Southbound	1,300	92.0	99.2
	Both Directions	2,721	92.7	100.0

The data was further assessed to determine the traffic volumes during the weekday peak periods, which are shown below:

Table 2 Weekday Peak Hour Averages

Period	Both Directions	Northbound	Southbound
AM Peak (8:00 am to 9:00 am)	257	181	76
PM Peak (4:00 pm to 5:00 pm)	287	113	174

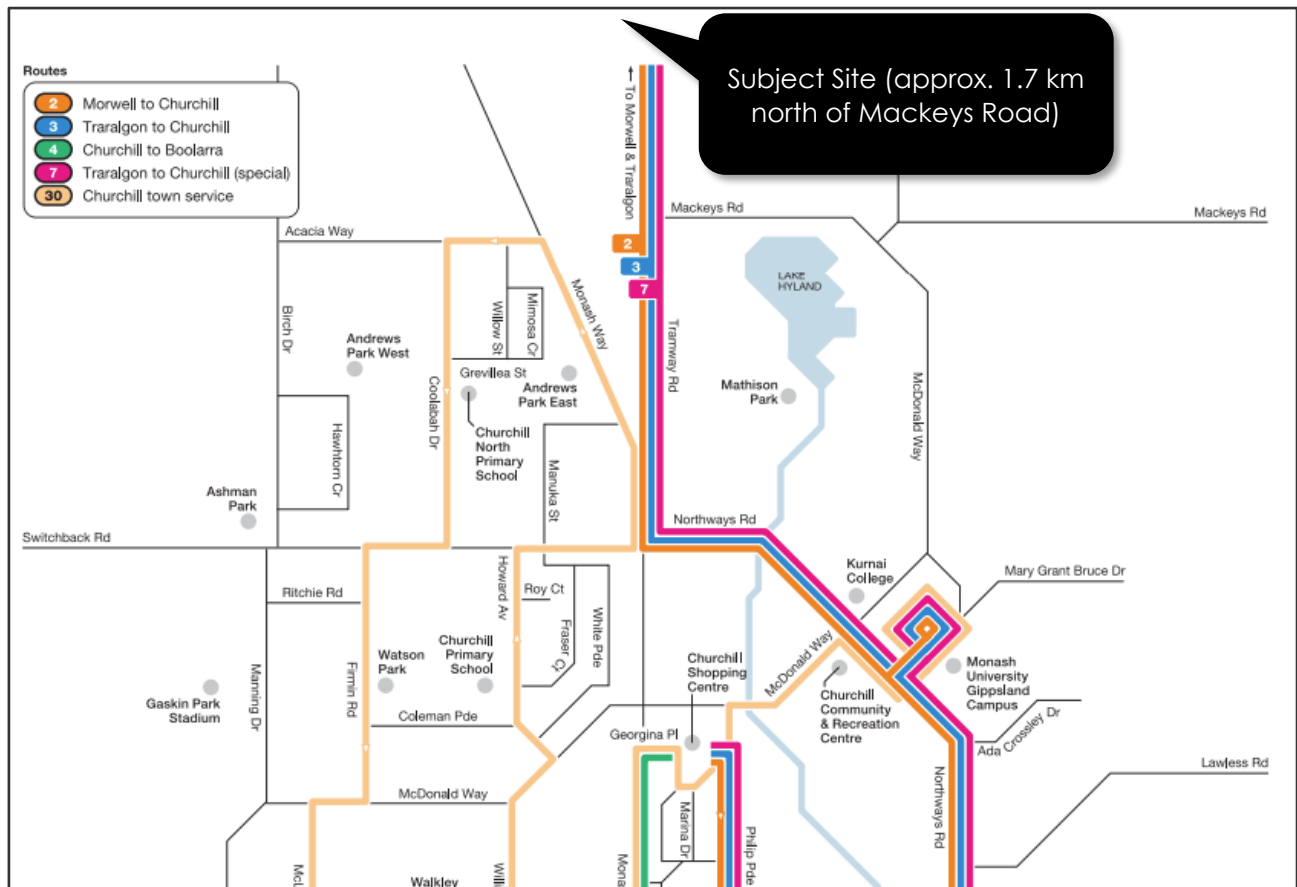
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

3.5 Public Transport

The Churchill bus network is shown in Figure 6.

Figure 6 Public Transport Provision – Churchill bus network



Though the Route 2, 3 & 7 bus routes pass the subject site on Tramway Road, the closest stop is approximately 1.7 km south of the site at the corner of Mackeys Road and Tramway Road. These bus routes connect Churchill to Morwell and Traralgon, respectively.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

4 DEVELOPMENT PROPOSAL

4.1 General

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

It is proposed to develop the site for the purposes of a 300MW/1200MWh Battery Energy Storage System (BESS), including associated switching station, electrical infrastructure and underground transmission line connecting to the Hazelwood Terminal Station.

In addition to the key components outlined above, there will 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.

**ADVERTISED
PLAN**

These will all be accommodated within the subject site.

The proposed BESS units are to be located towards the western boundary of the site, with the eastern portion of the site to remain largely vacant.

4.2 Construction / Installation

Construction of the facility is expected to take place over an 18-month period. This can be broken up into two distinct phases, a typical construction phase and a peak construction phase, as discussed below.

The operator has advised that the largest vehicles that will access the site will be OSOM vehicles between 30 and 40 metres in length associated with the Main TX, and switch room / control room buildings. It is expected that a maximum of 10 OSOM vehicle deliveries will occur over the course of the construction of the facility.

The majority of heavy vehicle deliveries are expected to be via 20 m articulated vehicles (AV).

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 staff 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 18 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 150 staff on-site, and up to a maximum of 50 heavy vehicle deliveries per day, evenly distributed throughout the day.

Provision will be made by the operator for staff to travel to the site by bus during the peak phase.

4.2.3 Temporary Speed Limit Reduction

It is proposed that a temporary speed limit reduction to 80 km/hr will be sought along Tramway Road during the construction of the facility, which will be implemented in conjunction with any other construction traffic management measures required for the development.

4.3 Operation

The operator has outlined the site may accommodate a maximum of two maintenance staff on-site during the typical operations of the site.

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

4.4 Access

Vehicular access to the site is proposed to be established from Tramway Road, in the north-east corner of the site. The proposed access will facilitate fully directional vehicle movements into and out of the site to Tramway Road.

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

The existing driveway to the west of the site connecting to Monash Way is proposed to be retained to provide secondary/emergency access to the site.

4.5 Car Parking

Car parking for construction staff will be provided within a parking area adjacent the access point on Tramway Road. Given the large area of the overall site and the position of the BESS units in the western portion of the site, all car parking demands are expected to be comfortably accommodated on-site.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

5

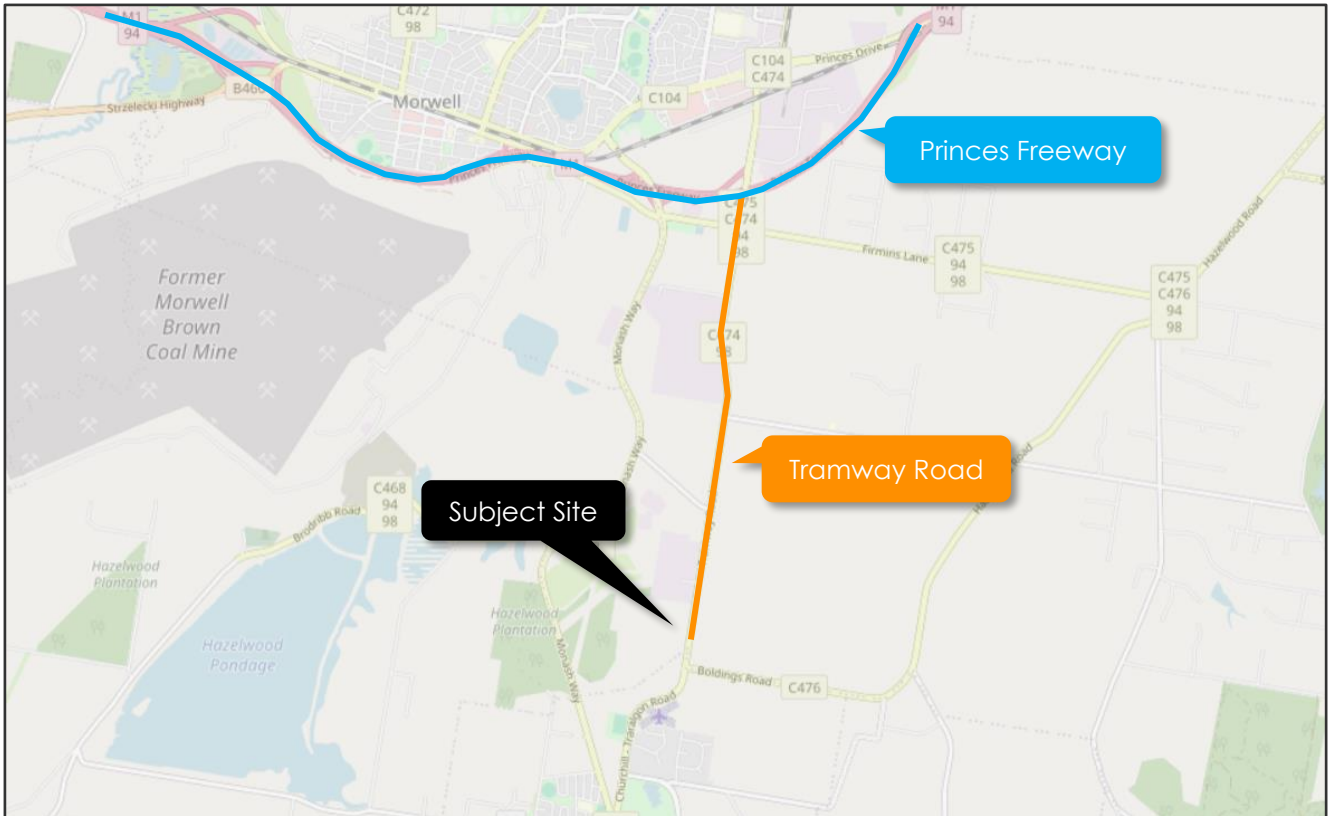
5.1

It is expected that all vehicles will approach the site from the north along Tramway Road, with Princes Freeway being the preferred major access route to and from the site.

Tramway Road is specified as a B-double approved route, in addition to Monash Way and Bonds Lane in the vicinity of the site.

The access route in the vicinity of the site is depicted in Figure 7.

Figure 7 Access Route Review



Source: OpenStreetMap

As part of the detailed design provides, a swept path assessment using a suitable OSOM vehicle shall be undertaken to ensure suitable path for the site access and route to the site.

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

ADVERTISED PLAN

5.2 Site Access

5.2.1 Sight Lines

It is noted that sight lines to and from the north of the site are reduced, due to the existing crest in Tramway Road. As part of **onemilegrid**'s investigations, a sight distance assessment was undertaken along Tramway Road in the vicinity of the site. It was determined that from the north-east corner of the site a maximum sight distance of approximately 215 metres is provided. It is acknowledged that this is below the sight distance required for major roads with a 100 km/hr speed limit, as outlined within *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*, with the SISD requirements detailed below in Figure 8.

Figure 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					
	$R_T = 1.5 \text{ sec}^{(3)}$		$R_T = 2.0 \text{ sec}$		$R_T = 2.5 \text{ sec}$	
	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*

Based on the reduced sight lines available, it is proposed to seek a temporary speed reduction along Tramway Road during construction of the facility. The speed reduction would be in conjunction with any construction traffic management requirements of the development, with a reduction to 80km/h reducing the sight distance requirement to around 180 metres, and therefore would be sufficient given the sight distance constraints detailed above. Further, it is also recommended that advanced warning signage is implemented along Tramway 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.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

5.2.2 Access Design

Detailed designs for the site access points have not been undertaken at this stage. The site access should be designed to accommodate the largest vehicles that will access the site during the operational phase of the facility. In relation to the OSOM vehicles it is expected that additional widening will be required around the site access to facilitate movements into and out of the site.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

6 TRAFFIC

6.1 Traffic Generation

6.1.1 Overview

The majority of traffic generated by the proposed development will be generated during the construction / installation phase 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.

6.1.2 Typical Construction Phase

As noted in Section 4.2.1, a maximum of 40 staff will be accommodated on-site during the typical construction phase. Due to the location of the site, carpooling will be necessary and can be managed by the operator and individual trades. A driver ratio of 2/3 will be applied, equating to 27 private vehicles accessing the site each day, and it will be assumed that all staff arrive and depart during a single peak hour.

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.

6.1.3 Peak Construction Phase

The peak construction phase is anticipated to accommodate a maximum of 150 construction staff on-site.

Due to the large volume of staff travelling to the site during the 6 month peak construction phase, the operator has outlined that provision will be made for staff to travel to the site via buses. It will be assumed that one third of staff will arrive via buses. It will be assumed that 3 standard buses will be provided, each accommodating 10-20 staff, therefore approximately 50 staff will arrive via bus. This equates to 6 vehicle movements associated with buses arriving and departing the site during the peak hours.

Further, a driver ratio of 1/2 will be applied to the remaining 100 staff, equating to 50 private vehicles accessing the site each day. Further, due to the large number of staff accessing the site, it will be assumed that 50% of the movements associated with these staff arriving and departing the site will occur during the commuter peak hours. This equates to 25 vehicle movements during the AM and PM peak hours.

It will again be assumed that 10% of the 50 heavy vehicle deliveries occur during the peak periods, equating to 5 trucks arriving and departing during the peak periods.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

6.1.4 Anticipated Daily 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.

Table 3 Anticipated Daily Traffic Movements

Stage	Light Vehicles	Buses	Heavy Vehicles	Total
Typical Construction	54	0	60	114
Peak Construction	100	12	100	212
Typical Operation	4	0	0	4
Annual Inspections	12	0	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 212 daily trips.

6.1.5 Peak Hour Traffic Generation

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

Table 4 Anticipated Peak Hour Traffic Movements

Stage	Light Vehicles	Buses	Heavy Vehicles	Total
Typical Construction	26	0	6 (3 arrivals 3 departures)	32
Peak Construction	25	6 (3 arrivals 3 departures)	10 (5 arrivals 5 departures)	41
Typical Operation	2	0	0	2
Annual Inspections	6	0	2	8

As detailed above, during the peak period for construction the site is anticipated to generate a maximum of 41 vehicle movements during the AM and PM peak periods.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

6.2 Traffic Distribution

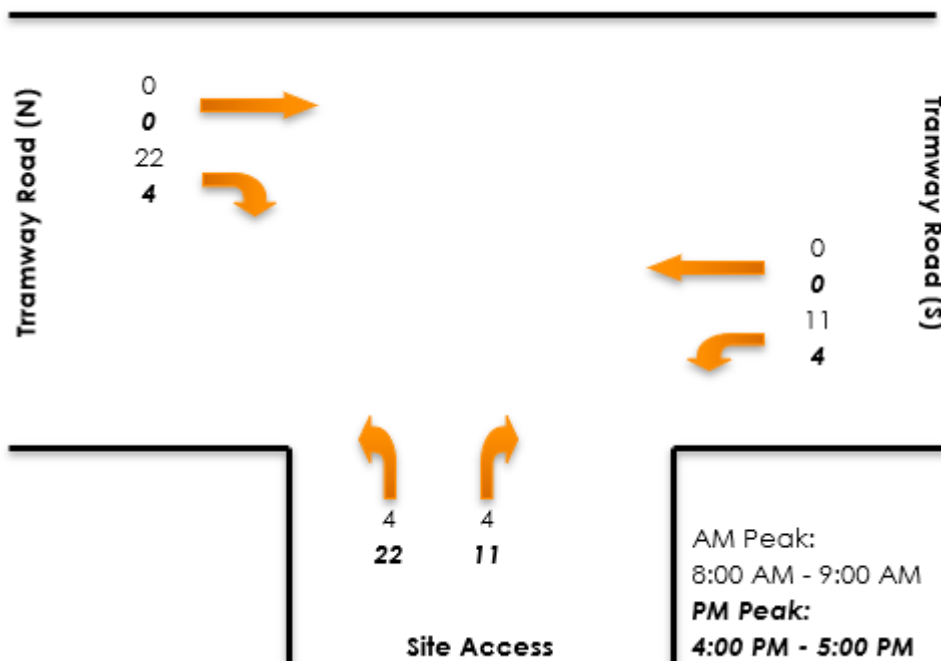
All traffic movements to and from the site will be distributed via the proposed access point to Tramway Road in the north-east corner of the site.

Given the sites proximity to Princes Freeway, it is anticipated that 75% of private vehicle and heavy vehicle traffic movements will originate and depart to/from the north via Princes Freeway, with the remaining 25% being distributed to / from the south.

Given the sites close proximity to the town of Churchill, it will be assumed that temporary accommodation will be arranged in this town, and therefore all vehicle movements associated with the buses will originate and depart from the south.

Application of the above assumptions returns the anticipated turning movements at the proposed site access as depicted in Figure 9.

Figure 9 Generated Traffic Volumes – Peak Construction Phase



This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

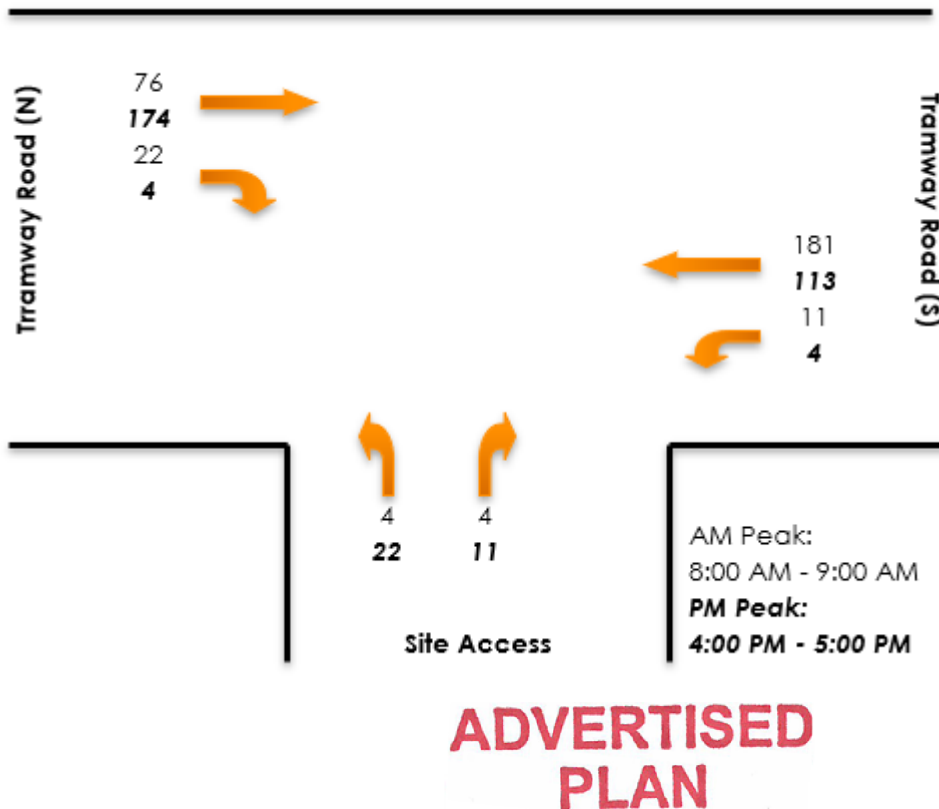
**ADVERTISED
PLAN**

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

6.3 Resultant Traffic Volumes

Based on the above, the future volumes at the site access 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 10.

Figure 10 Resultant Future Traffic Volumes – Peak Construction Phase



6.4 Traffic Impact

During the peak construction phase of the proposed development, the anticipated traffic generation of the development is 56 vehicle movements during the peak periods. This is considered low in traffic engineering terms, and is equivalent to less than one vehicle movement every minute. Even when focussed into one access point, the traffic volumes generated by the proposed development are low, and Tramway Road and the surrounding road network are expected to be able to accommodate the traffic generated by the proposed development.

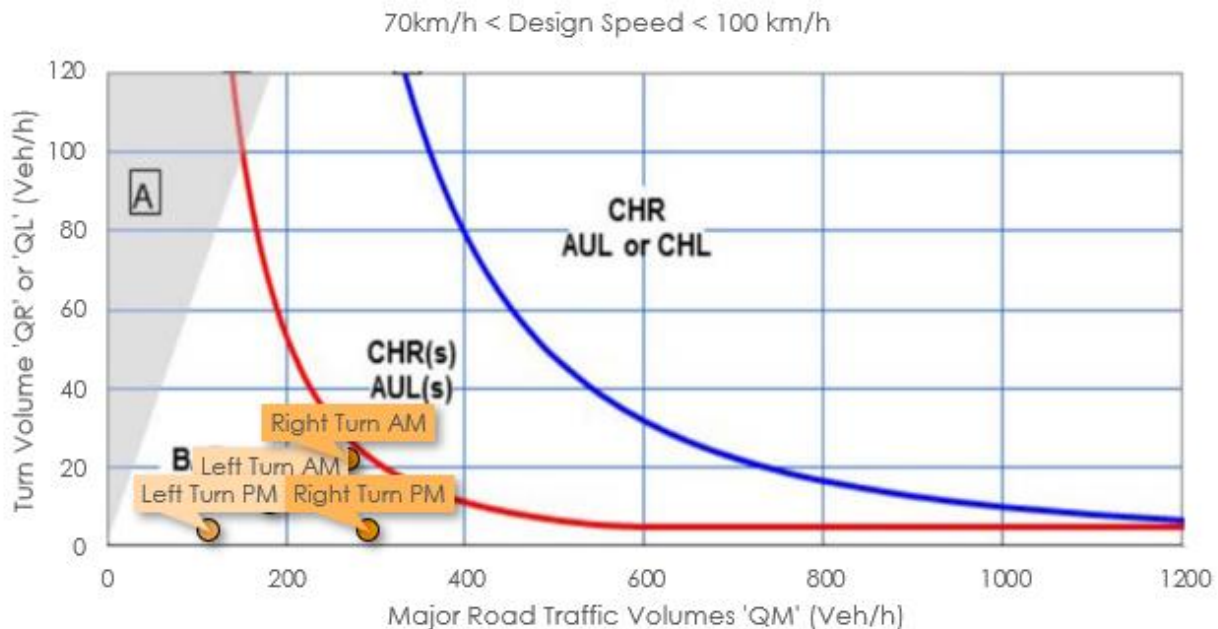
In evaluating the suitability of the proposed access design along Tramway Road, reference is made to the *Austroads Guide for Road Design Part 4A: Unsignalised and Signalised Intersections* which outlines what physical form of turn treatment will provide an appropriate level of safety at priority controlled intersections, balanced with additional construction costs associated with higher level treatments. It should be noted that the minimum treatment contemplated by the turn lane warrants is a Basic turn lane, which would therefore apply to even to a single turning movement generated to Tramway Road. Application of the turn lane warrants to any intersection or site access point can therefore not conclude that no turn lane is required.

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.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

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 temporary speed limit reduction proposed on Tramway Road, reducing the speed limit to 80 km/hr, the turn lane requirements are demonstrated in Figure 11.

Figure 11 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, 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 an 18-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 minimal during the peak hours, with 22 right turning movements projected at peak construction operation. Traffic generation to the site is expected to consist primarily of light vehicles during these periods and only 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.

**ADVERTISED
PLAN**

Nevertheless, it is recommended to implement advanced warning signage along Tramway Road on the approaches to the proposed site access as part of the construction traffic management strategy during the construction period to assist with vehicle access.

7 CONCLUSIONS

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

- It is proposed to use the site for the purposes of a battery energy storage system (BESS);
- During the construction phase, the level of traffic generated is expected to have a minimal impact on the operation of the external road network;
- During operation the site is expected to have a negligible impact on the surrounding road network;
- Car parking will be provided on-site as required.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**