



Tilbuster 2 Solar Farm

Traffic Impact Assessment

EP Sunspot 5 Pty Ltd

4 June 2026

→ The Power of Commitment



Project name		Tilbuster Stage 2 Solar Farm					
Document title		Tilbuster 2 Solar Farm Traffic Impact Assessment					
Project number		12636761					
File name		12636761_REP_Tilbuster Stage 2 Solar Farm TIA.docx					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	0	M. Zhong	L. King		S. Murphy		05/11/24
S4	1	M. Lucas	L. King		S. Murphy		04/03/25
S4	2	M Lucas	L King		S Murphy		21/10/25
S4	3	M Lucas	S Clarke L King		S Murphy		18/11/25
S4	4	M Lucas	S Clarke L King		S Murphy		18/03/26
S4	4	M Lucas	L King		S Murphy		04/06/26

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Contents

1.	Introduction	1
1.1	Background	1
1.2	Proposal overview	1
1.3	Purpose of this report	4
1.4	Scope of work	4
1.5	Assumptions and qualifications	4
1.6	Limitations	5
2.	Existing conditions	6
2.1	Literature review	6
2.2	Existing road network	6
2.2.1	Road hierarchy	6
2.2.2	New England Highway	7
2.3	Crash data review	7
2.4	Active and public transport	8
2.5	Over size and over mass (OSOM) vehicles	8
2.6	Freight routes	9
2.7	Traffic data	9
2.8	Road network performance	12
3.	Impact assessment	13
3.1	Proposed development	13
3.1.1	Construction activities	13
3.1.2	Construction hours	13
3.1.3	Workforce	13
3.1.4	Operational activities	14
3.1.5	Decommissioning traffic	14
3.1.6	Access arrangements	14
3.2	Traffic generation	16
3.3	Traffic distribution	17
3.4	Site impacts	17
3.4.1	Turn treatment	17
3.4.2	Impacts to traffic	20
3.4.3	Impacts to public and active transport	20
3.4.4	Impacts to road safety	20
3.4.5	Impacts to parking	20
3.5	State Environmental Planning Policy (Transport and Infrastructure) 2021	20
3.6	Cumulative impact	21
4.	Mitigation measures	25
5.	Conclusion	26
6.	References	27

Table index

Table 1.1	Traffic and transport SEARs	4
Table 2.1	New England Highway key features	7
Table 2.2	New England Highway weekday traffic volume data	11
Table 2.3	Typical mid-block capacity for urban roads with interrupted flow	12
Table 3.1	Traffic generation during peak construction periods	16
Table 3.2	Warrant assessment criteria	18
Table 3.3	Potential cumulative Impact	21
Table 4.1	Mitigation measures – traffic and transport	25

Figure index

Figure 1.1	Local context	2
Figure 1.2	Revised proposal overview	3
Figure 2.1	New England Highway at access road (source: TfNSW)	7
Figure 2.2	Crash data in proximity to subject site (2020 – 2024) (source: TfNSW)	8
Figure 2.3	Freight routes – 26 metre B-double (source: TfNSW)	9
Figure 2.4	Count location (source: Google Maps modified by GHD)	10
Figure 2.5	New England Highway - current peak hour volume (both directions)	11
Figure 3.1	Upgraded intersection design	15
Figure 3.2	Construction traffic volumes at site access 2027 – Stage 1 and Stage 2 traffic	18
Figure 3.3	Warrant assessment criteria	18
Figure 3.4	AM construction peak hour assessment (design speed > 100 km/h)	19
Figure 3.5	PM construction peak hour assessment (design speed > 100 km/h)	19

Appendices

Appendix A	TfNSW additional requirements
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Glossary

Term	Definition
AV	Articulated vehicles
BAL	Basic left turn treatment
BAR	Basic right turn treatment
BESS	Battery Energy Storage System
CTMP	Construction Traffic Management Plan
DPHI	Department of Planning, Housing and Infrastructure
EIS	Environmental impact statement
EP&A Act	Environmental Planning and Assessment Act 1979
EP Sunspot 5	EP Sunspot 5 Pty Ltd
GHD	GHD Pty Ltd
ha	Hectare
HRV	Heavy Rigid Trucks
km	Kilometre
km/hr	Kilometres per hour
kV	Kilovolt
LGA	Local Government Area
LoS	Level of Service
m	Metre
MRV	Medium Rigid Trucks
MW	Megawatt
MWh	Megawatt per hour
OSOM	Over size over mass
Proposal	The construction, operation and decommissioning of a ground-mounted photovoltaic (PV) solar array, which would generate approximately 140 MW
Project	Approved Stage 1 of Tilbuster Solar Farm
PV	Photovoltaic
QR	Right turns from the major road into the access (vph)
QL	Left turns from the major road into the access (vph)
QM	Major road traffic volume parameter
RAV	Restricted Access Vehicle
SEARs	Secretary's environmental assessment requirements
SSD	State Significant Developments
TIA	Traffic Impact Assessment
TfNSW	Transport for NSW
Transport and Infrastructure SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
veh/h	Vehicles per hour
vpd	Vehicles per day
vph	Vehicles per hour

1. Introduction

1.1 Background

EP Sunspot 5 Pty Ltd (EP Sunspot 5) is developing the Tilbuster Solar Farm (State Significant Development (SSD) 9619), which was approved under Section 2.22 and Clause 20 of Schedule 1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 3 March 2022. The Tilbuster Solar Farm (the project) is located approximately 15 kilometres (km) north of Armidale in the Armidale Regional local government area (LGA), see Figure 1.1.

The project involves the construction, operation and decommissioning of a new solar farm with a generating capacity of 150 megawatts (MW) and 15 MW per hour (MWh) of battery energy delivery capacity. The solar farm will connect to the existing Transgrid 330 kilovolt (kV) transmission line, which traverses the site and connects the Dumaresq Substation to the Armidale Substation.

Due to design refinements made in response to ecological and heritage constraints identified during the preparation of the Environmental Impact Statement (EIS), the project was approved with a lower MW capacity than originally anticipated. As a result, EP Sunspot 5 have acquired adjacent land and proposes developing Stage 2 of the project to maximise the generation potential of the site (the proposal).

The proposal is located on land adjoining the project and would make use of transmission, storage and construction facilities on that site.

1.2 Proposal overview

The proposal involves the construction, operation and decommissioning of a ground-mounted photovoltaic (PV) solar array, which would generate approximately 80 MW in addition to the 150 MW generated by the project.

The proposal site is located at Lot 4 DP800611, 11915 New England Highway, Black Mountain NSW 2365. The proposal site has an area of approximately 250 hectares (ha), with the proposed development to be constructed on approximately 105 ha of this land.

In total, the construction phase of the proposal is expected to take 12 months, and the facility is expected to operate for around 30 years or extended pending further approvals. The proposal would be constructed as part of the overall construction of the approved project. This would reduce the construction period for the proposal and minimise impacts on the community.

The primary access point for light and heavy vehicles during construction and operation would be via an existing access off the New England Highway, which is currently under construction for the project. Temporary construction compounds and laydown areas would also be located on the proposal site.

Construction of the proposal is anticipated to commence, pending approval, in early 2026. Up to 100 construction workers would be required.

Up to five full time equivalent operations and maintenance staff and service contractors would operate the proposal as part of the operation of the approved project. Existing transmission and storage infrastructure within the approved project footprint would be used to connect the proposal to the national electricity grid.

Figure 1.2 shows the indicative layout for the proposal, including the location of solar PV panels, associated infrastructure and internal access roads.

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Figure 1.1 **Local context**

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Figure 1.2 *Revised proposal overview*

1.3 Purpose of this report

GHD has prepared this Traffic Impact Assessment (TIA) to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning, Housing and Infrastructure (DPHI) for the proposal. A summary of the SEARs is provided in Table 1.1 together with the relevant sections of the TIA addressing the particular requirement.

Additionally, Transport for NSW (TfNSW) have provided additional requirements for the proposal in response to correspondence sent by GHD on 1 July 2024. These are addressed in Appendix A.

This version of the TIA has been revised to address comments provided by TfNSW during the public exhibition of the EIS for the proposal.

Table 1.1 *Traffic and transport SEARs*

SEARs	Where addressed in this report
Detail of the proposed development, including daily and peak traffic generation (Including over mass and over dimensional vehicles/ heavy vehicles requiring escort and construction worker transportation.	Details of the proposed development are provided in Section 3.1. The expected vehicle activity is detailed in Section 1.1.
Analysis of the impacts of the proposed development to the site access route (s), site access point (s) and any Crown land including road capacity and condition, intersection performances, road safety and any impact from surrounding development.	The traffic impacts of the proposed development are detailed in Section 3.4.
Measures to mitigate any traffic impacts, including a schedule and strategic design of required road upgrades (including those resulting from heavy vehicle and over mass and over dimensional traffic haulage routes), road maintenance contributions, and any other traffic control measures, prepared in consultation with relevant road and rail authorities (if required).	Mitigation measures are detailed in Section 4.

1.4 Scope of work

The scope of work for this TIA is to identify the traffic and transport impacts of the proposal on the adjoining road network. The report:

- Identifies the traffic and transport facilities in proximity to the subject site.
- Assesses the traffic/transport impacts of the construction and operation of the proposal.
- Recommends measures to mitigate and manage the potential traffic/transport impacts.
- Responds to comments received from TfNSW on 9 July 2025.

1.5 Assumptions and qualifications

This report is based on the following assumptions and qualifications:

- Traffic volumes from the New England Highway were sourced from data provided by TfNSW.
- No traffic surveys or intersection modelling has been undertaken.
- The site will generate negligible additional operational vehicle activity.
- Two shuttle buses with a capacity of 25 workers each will transfer workers to and from the subject site during peak morning and afternoon periods.
- The remaining workers will drive, generating up to 40 vehicle movements per day.
- During the construction, up to 24 heavy vehicle movements (including rigid trucks and articulated vehicles) would be generated per day (based on information provided by EP Sunspot 5).
- Workers will arrive on site prior to 8:00 am and depart the site after 5:00 pm.

1.6 Limitations

This report has been prepared by GHD for EP Sunspot 5 Pty Ltd and may only be used and relied on by EP Sunspot 5 Pty Ltd for the purpose agreed between GHD and EP Sunspot 5 Pty Ltd as set out in this report.

GHD otherwise disclaims responsibility to any person other than EP Sunspot 5 Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

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The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

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2. Existing conditions

2.1 Literature review

In August 2021, Amber Traffic and Transportation prepared the *Tilbuster Solar Farm Traffic Impact Assessment for Stage 1 of the Tilbuster Solar Farm*. Key aspects of the TIA were as follows:

- The (Stage 1) solar farm is expected to take approximately 12 months to construct.
- A maximum of 125 workers will be onsite during construction, with an average of 90 workers.
- Shuttle buses (with a capacity of 25 persons) will be used to transfer approximately 80 percent of workers to and from the construction site.
- The remaining workers will drive with an average vehicle occupancy of 1.35 workers per car.
- During peak construction activity, the site would generate up to 35 heavy and 66 light vehicle movements per day and 38 vehicle movements in the morning and afternoon peak hours.
- On average, during construction, the site would generate 14 heavy vehicle and 32 light vehicle movements per day and 18 vehicle movements during the morning and afternoon peak hours.
- During operation, the solar farm will generate up to six vehicle movements per day.
- Vehicles will access the site via the New England Highway and will then travel south along an unnamed road before entering the site using the access point.
- It is anticipated that most workers will be located in nearby regional towns such as Armidale and Guyra. For the purposes of the assessment, it was estimated that 75 percent of staff will be travelling from the south, and the remaining 25 percent will travel from the north.
- Rigid heavy vehicles will predominantly consist of water trucks and vehicles transporting materials such as concrete and fencing supplies.
- It was assumed that 75 percent of heavy vehicles will be travelling from the south and the remaining 25 percent will travel from the north.
- The construction impacts of the Stage 1 solar farm were expected to be minimal.
- The intersection of the unnamed access road with the New England Highway would be upgraded to a basic right (BAR) and basic left (BAL) turning lanes.

The NSW Minister for Planning approved Stage 1 of the Tilbuster Solar Farm in 2022. A condition of consent for the development is a restriction of heavy vehicle movements to a maximum of 35 a day.

2.2 Existing road network

2.2.1 Road hierarchy

Functional road classification involves the relative balance of mobility and access functions. TfNSW defines four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility to high accessibility and low mobility. These road classes are:

- **Arterial Roads** – generally controlled by TfNSW, typically no limit in flow and designed to carry vehicles long distance between regional centres.
- **Sub-Arterial Roads** – can be managed by either TfNSW or local council. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a subregion or provide connectivity from arterial road routes (regional links).
- **Collector Roads** – provide connectivity between local roads and the arterial road network and typically carry between 2,000 and 10,000 vehicles per day.
- **Local Roads** – provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

2.2.2 New England Highway

The New England Highway (A15, refer to Figure 2.1) is an arterial road that connects Newcastle in NSW to Yarraman in Queensland. The New England Highway connects the townships within the New England Northwest and the Hunter Regions and serves as a vital freight transport route linking inland mining areas in the Hunter to the Port of Newcastle.

The key features of New England Highway in the vicinity of the study area are summarised in Table 2.1.

Table 2.1 *New England Highway key features*

Feature	Description
Carriageway	Sealed, divided, line marked, single carriageway with one lane in each direction Carriageway widths of approximately seven metres (3.5 metres per lane)
Road owner	TfNSW (classified road)
Parking	No designated parking facilities are provided
Speed limit	100 km per hour (km/hr) outside urban areas
Pedestrian facilities	No pedestrian facilities are provided
Bicycle facilities	No dedicated cycling facilities
Public transport	No bus stops in the vicinity of the proposal site



Figure 2.1 *New England Highway at access road (source: TfNSW)*

2.3 Crash data review

A review of crash data from the TfNSW Centre for Road Safety has been undertaken based on the last five years of data (2020 – 2024), as displayed in Figure 2.2.

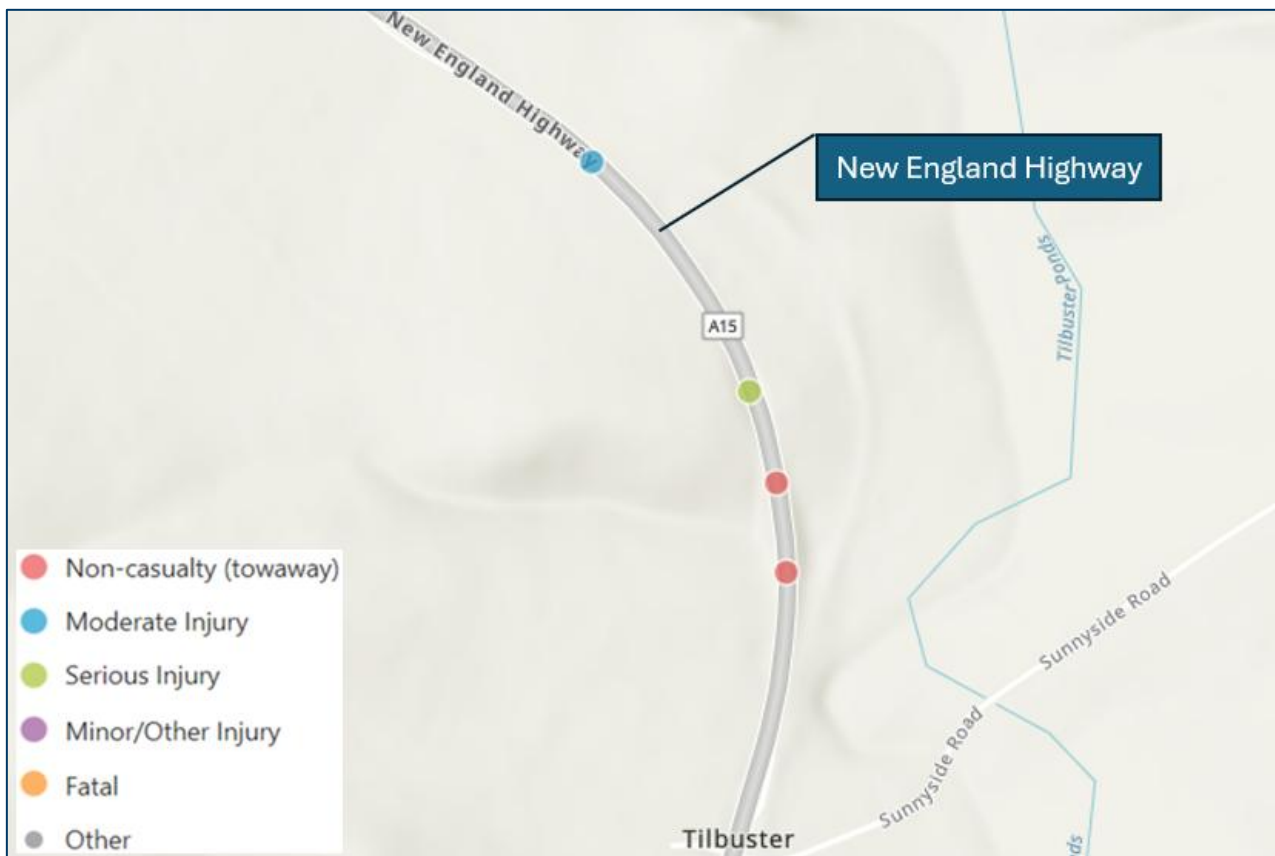


Figure 2.2 Crash data in proximity to subject site (2020 – 2024) (source: TfNSW)

The data indicates that four crashes occurred on the New England Highway in proximity to the subject site, as follows:

- Three crashes involved vehicles driving off the road, one resulting in a moderate injury and two were designated as “non-casualty” crashes.
- One crash involved a vehicles crashing while seeking to overtake, resulting in a serious injury.

2.4 Active and public transport

There are no active transport facilities in proximity to the proposal. There are school bus routes along the New England Highway, travelling from Armidale to Llangothlin (S303) and from Armidale to Guyra Tenterden Road (S304). The Armidale to Tenterfield Coach Service (327) provides a daily service that traverses the New England Highway. In summary, there are few public transport services in proximity to the proposal site.

2.5 Over size and over mass (OSOM) vehicles

The National Heavy Vehicle Regulator (NHVR) refers to OSOM vehicles as ‘Class 1 load carrying vehicles’, which are defined as:

- A vehicle and its load exceeding prescribed mass or dimension requirements.
- Carrying a designed for purpose or large indivisible item.

The Additional Access Conditions: Oversize and overmass heavy vehicles and loads (TfNSW 2020) specifies the requirements for escort/pilot vehicles in accordance with the size of the OSOM vehicle, as follows:

- Vehicles up to 3.5 metres wide and 26 metres long do not require an escort vehicle.
- Vehicles between 3.6 metres to 4.6 metres wide and 19 metres to 30 metres long require a single escort vehicle.
- Vehicles larger than this require two to three escort vehicles.

TfNSW has developed a load declaration form that certifies the mass and dimensions of the OSOM vehicle comply with permit conditions. Additionally, a Transport Management Plan (TMP) that describes how an OSOM movement will be undertaken for 'high risk' OSOM movements is required. A high risk movement is defined as:

- Vehicles that exceed certain dimensions, i.e. longer than 40 metres and six metres wide.
- Vehicles that travel on high risk routes.
- Vehicles that carry sensitive loads, i.e. radiation, chemicals, etc.

No OSOM vehicles will be required to support the construction of the proposal.

2.6 Freight routes

The NHVR map indicates that the New England Highway and other arterial roads in general proximity to the subject site are authorised to 26 metre B-doubles, as displayed in Figure 2.3.



Figure 2.3 Freight routes – 26 metre B-double (source: TfNSW)

2.7 Traffic data

Additional traffic survey was undertaken on the New England Highway for the Stage 1 project, approximately 2.75 kilometres north of the proposal site, as shown in Figure 2.4. The traffic survey was undertaken by Trans Traffic Survey between 4 December 2024 and 11 December 2024.



Figure 2.4 Count location (source: Google Maps modified by GHD)

The outputs of the traffic surveys are displayed in Figure 2.5.

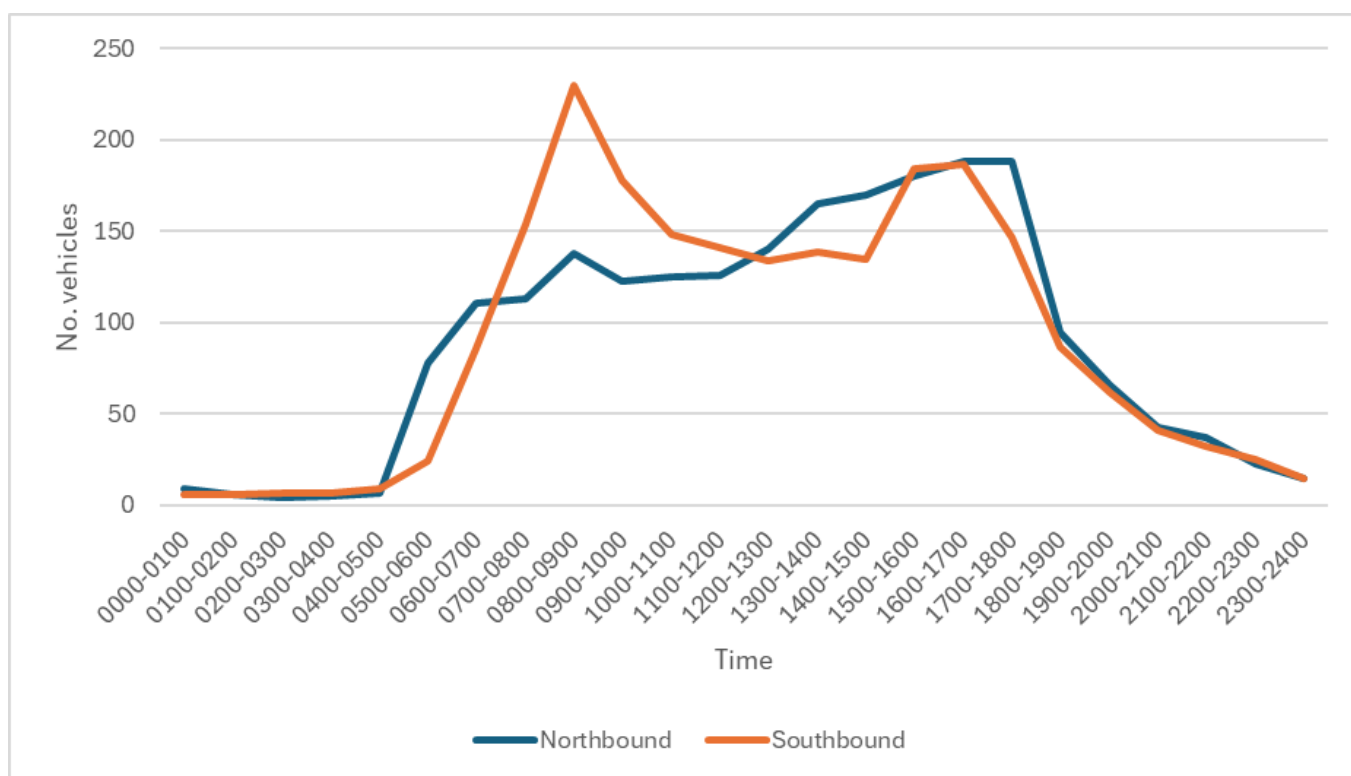


Figure 2.5 New England Highway traffic volumes (2024)

The data in Figure 2.5 indicates that the road network peak hours are as follows:

- 8:00 am to 9:00 am
- 4:00 pm to 5:00 pm

As detailed in Section 3.1.2, the hours of construction activity are expected to be 7:00 am – 6:00 pm. For the purposes of analysis the construction peak hours of activity are assumed to be:

- 7:00 am to 8:00 am
- 5:00 pm to 6:00 pm

To determine the current vehicle activity (2027), a 1.5 percent annual growth rate has been applied to the 2024 traffic survey data, and the assumed current average weekday vehicle activity is displayed in Figure 2.5.

A summary of the traffic survey data accounting for the growth rate is presented in Table 2.2.

Table 2.2 New England Highway weekday traffic volume data

Road	Recorded volume (2024)	Growth factor	Current traffic volume (network, 2027)	Construction peak hour (2027)
New England Highway	4,339 vpd 85% light 15% heavy	1.5%	4,534 vpd 385 vph (AM) 392 vph (PM)	279 vph (AM) 350 vph (PM)

Analysis of the traffic survey data in Table 2.2 indicates that for the New England Highway:

- The AM construction peak hour between 7:00 am and 8:00 am, is expected to be 118 northbound vehicles and 161 southbound vehicles.
- The PM construction peak hour between 5:00 pm and 6:00 pm, is expected to be 196 northbound vehicles and 154 southbound vehicles.

2.8 Road network performance

Level of Service (LoS) is a qualitative measure used to describe the operating conditions of a section of road or an intersection. LoS are designated from A to F, from best (free flow conditions) to worst (forced flow with stop-start operation, long queues and delays), and represent the perception of the road conditions by motorists, including speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety.

According to *Guide to Traffic Management, Part 3: Traffic Studies and Analysis* (Austroads, 2020a), the one-way mid-block capacity of an arterial road with interrupted flow varies depending on the type of lane. The typical mid-block capacity for roads with interrupted flows is outlined in Table 2.3.

Table 2.3 Typical mid-block capacity for urban roads with interrupted flow

Type of lane	One-way mid-block capacity (passenger cars per hour (pc/h))
Median or inner lane	
Divided Road	1000
Undivided road	
Middle lane (of a 3 lane carriageway)	900
Divided road	900
Undivided road	1000
Kerb lane	
Adjacent to parking lane	900
Occasional parked vehicles	600
Clearway conditions	900

Source: Table 5.1 in *Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis* (Austroads, 2020a).

For the purposes of this assessment, a one-way mid-block capacity of has been adopted for the New England Highway.

The data in Table 2.2 indicates that the New England Highway is currently estimated to be accommodating up to 385 vehicles in the morning peak hour and 392 vehicles in the afternoon peak hour, which is well within the capacity of the road network and the road is expected to operate within a good LoS.

Accounting for the higher traffic volumes and greater percentage of heavy vehicles at the TfNSW count station, the data indicates that the New England Highway is operating well within its mid-block capacity.

3. Impact assessment

3.1 Proposed development

3.1.1 Construction activities

Construction of the proposal is anticipated to take 12 months, with a peak construction period of three to four months. Construction works are expected to commence, pending approval, in early 2026.

The main construction activities are expected to include:

- Site preparation and earthworks.
- Establishment of temporary construction facilities and fencing.
- Geotechnical investigations, surveying, etc.
- Construction of the internal road network.
- Installation of PV panels and associated infrastructure.
- Testing and commissioning.
- Removal of temporary construction facilities and rehabilitation of disturbed areas.
- Landscaping.

Materials transported to the site on heavy vehicles up to B-double would include, but not limited to the following:

- Photovoltaic (PV) solar panels.
- Piles, mounting structures and frameworks.
- Electrical equipment and infrastructure, including cabling, auxiliary electrical equipment and machinery.
- Construction buildings and associated infrastructure.
- Earthworks, grading and lifting machinery and equipment.

Pending the finalisation of the construction schedule, it is expected that some stages of construction would occur concurrently. The intent is for construction to be undertaken in conjunction with works for the adjacent approved project. This would reduce the timeframe of impacts for the community.

3.1.2 Construction hours

The proposed working hours, in accordance with the EPA's Interim Construction Noise Guideline, are as follows:

- Monday to Friday: 7:00 am – 6:00 pm
- Saturday: 8:00 am – 1:00 pm
- No work on Sundays or public holidays

Construction works are proposed to be carried out during the standard construction hours only, and it has been assumed that workers will arrive on site prior to 8:00 am and depart the site after 5:00 pm.

If works are required outside standard construction hours, additional assessment and mitigation would be required.

3.1.3 Workforce

Construction supervisors and the construction labour force, made up of labourers and technicians, would be hired locally where possible. Workers that are not local are expected to use existing accommodation within the local area, such as Armidale, Uralla and Guyra. The proposal would largely be constructed using the existing workforce for the approved project, which is estimated to require up to 100 workers.

3.1.4 Operational activities

During operation, the following activities would be undertaken:

- Routine visual inspections, general maintenance and cleaning of the solar array as required.
- Vegetation management in accordance with the landscaping, fire management and biodiversity management plans, as relevant.
- Site security response (24 hour), if required.
- Site operational response (24 hour), if required.
- Pest plant and animal control, as required.

It is estimated that the daily peak travel demand during operation (for Stage 1 and Stage 2) would be approximately six light vehicle movements a day.

3.1.5 Decommissioning traffic

Once the proposal reaches the end of its operational life, a decision will be made to either decommission or repower the facility, subject to approval requirements.

If the proposal is decommissioned, all above ground structures will be removed and the site rehabilitated generally to its pre-existing land use, as far as practicable. The disposal and recycling of the proposal infrastructure will be done in accordance with current waste management legislation at the time of decommissioning. Wherever possible, efforts will be made to reduce the amount going to landfill in line with best-practice sustainability principles.

Additionally:

- Internal roads will be removed unless needed for farming or fire access, and the site will be restored as closely as possible to its original condition.
- Traffic levels during decommissioning are expected to be similar to average construction traffic.
- A Construction Traffic Management Plan will be developed in consultation with relevant road authorities to ensure road safety and network efficiency during this phase.

3.1.6 Access arrangements

The proposal would be accessed via the existing unnamed Crown road off the New England Highway. The unnamed Crown road will be sealed and widened as part of the approved Stage 1 project.

The approved Stage 1 project also includes the upgrade of the intersection of the unnamed road with the New England Highway in accordance with Austroads and TfNSW requirements to accommodate the required construction and operational traffic for that project. The intersection upgrade includes the provision of basic right (BAR) and basic left (BAL) lanes on the New England Highway (refer to Figure 3.1).

The intersection upgrade has been constructed. The construction of additional access points from the New England Highway is, therefore, not required for the proposal.

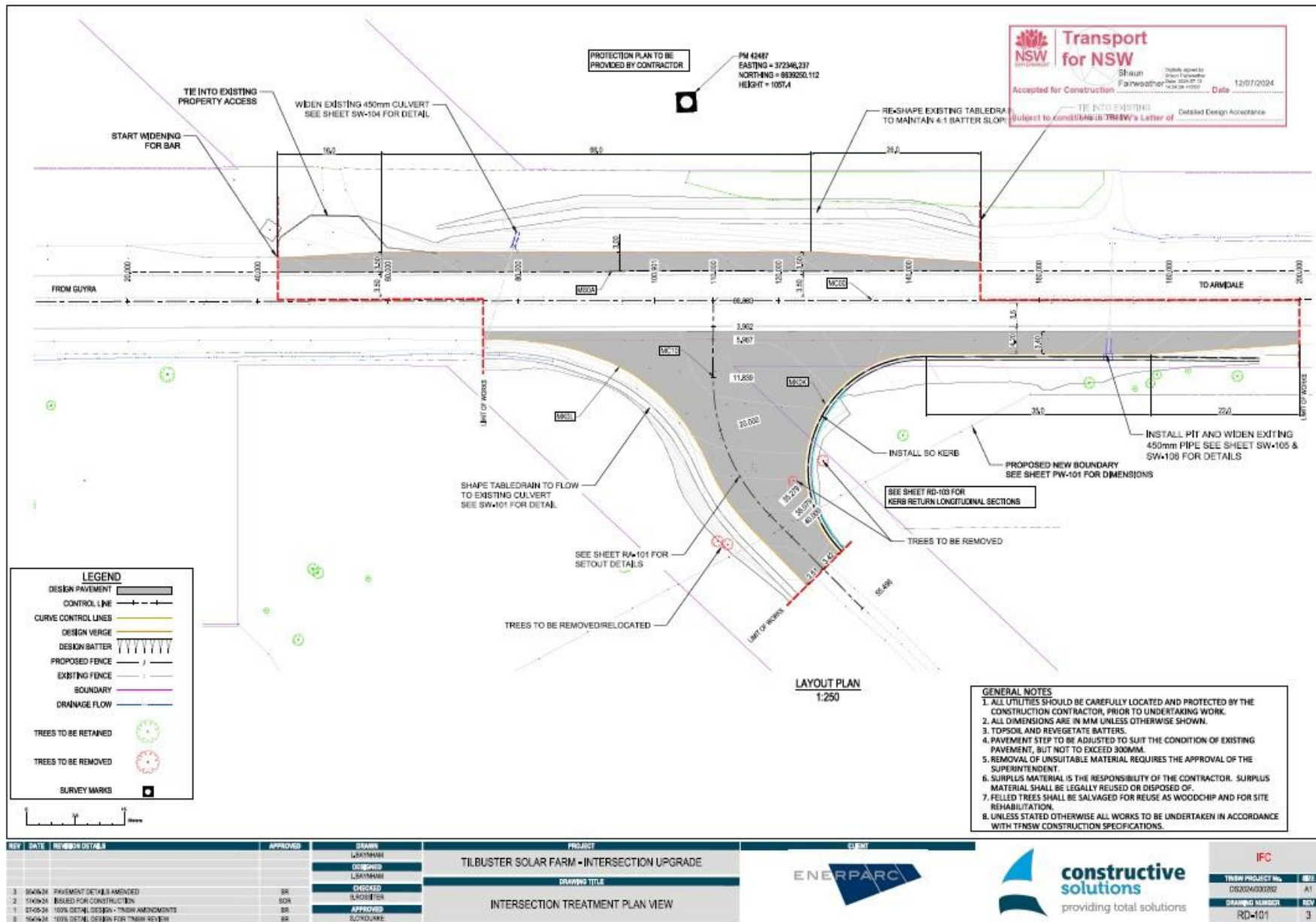


Figure 3.1 Upgraded intersection design

3.2 Traffic generation

Construction traffic generated by the proposal can broadly be separated into the following four categories:

- Light vehicles associated with transporting staff to/from the site, including mini-buses and personal vehicles.
- Medium and Heavy Rigid Trucks (MRV and HRV as defined within AS 2890.2:2018) are used to deliver raw materials and smaller plant equipment.
- Articulated Vehicles (AV as defined within AS 2890.2:2018) used to transport plant and equipment, including:
 - Panels, racking and general materials.
 - Steel, piling and heavy structural components.
 - Concrete and ballast.
 - Bulk earthworks.

The dimensions of the heavy vehicles proposed to be used during construction are as follows:

- MRV – 8.8 metres by 2.5 metres.
- HRV – 12.5 metres by 2.5 metres.
- AV – 20 metres by 2.5 metres.

The road network is able to accommodate these vehicles, given that similar loads and vehicles are regularly transported on the highway for similar projects, such as the Sapphire and White Rock Solar Farms, which are both located within the vicinity of the proposal site. Additionally, the New England Highway is a NHVR approved heavy vehicle route (refer to Figure 2.3).

Information provided by the client indicates that no OSOM vehicles are required to support the construction of the proposal.

Table 3.1 summarises the peak traffic movements generated during the construction period for the proposal.

Table 3.1 *Traffic generation during peak construction periods*

Vehicle type	Peak vehicle movements per day	
	Daily (vpd)	Peak hour (vph)
Light vehicle (car / 4WD)	40	18 (inbound AM peak and outbound PM peak)
Shuttle bus	8	4 (two inbound and outbound in peak periods)
MRV/HRV	16	2 (one inbound and outbound in peak periods)
AV	8	2 (one inbound and outbound in peak periods)
Total	72 vehicles	26 vehicles

Accordingly, the site is expected to generate up to approximately 26 vehicle movements during the morning and evening peak hours and 72 movements daily during the peak construction period.

3.3 Traffic distribution

Construction traffic will access/egress the site via the New England Highway, the upgraded access point and the proposed internal road network. The following provides a breakdown of the distribution for each of the vehicle classifications outlined within Table 3.1.

- Light vehicles: It is anticipated that most staff will be located in nearby regional towns such as Armidale and Guyra. For the purposes of this assessment, it is estimated that 90 percent of staff will be travelling from the south, and the remaining 10 percent will travel from the north. This is potentially an overestimate as worker accommodation would be situated in Armidale to the south and freight traffic would travel from Port Botany to the south. Only a small amount of local worker traffic is expected from the north.
- Shuttle bus: It has been assumed that all shuttle buses will travel to/from the south.
- MRV/HRV: These vehicles will predominantly be water trucks and vehicles transporting materials such as concrete and fencing supplies. These materials will be sourced from Armidale, and it has been assumed that all shuttle buses will travel to/from the south.

For the purposes of analysis, it has been assumed that:

- The peak hour for the proposal will occur in the morning and afternoon periods, when staff are transported to/from the site.
- Heavy vehicle movements will be distributed throughout the day and will be split evenly between inbound and outbound movements.

3.4 Site impacts

3.4.1 Turn treatment

As detailed in Section 3.1.6, a turning treatment assessment completed for the Stage 1 approved project indicated that the access intersection upgrade for the project will include the provision of basic right (BAR) and basic left (BAL) lanes on the New England Highway (refer to Figure 3.1). The proposal would utilise the access provided by the approved project, and an access from the highway is not part of the proposal.

This turn treatment assessment accounts for the combined Stage 1 and Stage 2 construction peak hour trips, during the construction peak hours. As stated previously:

- Stage 1 is expected to generate:
 - An average of construction 24 peak hour trips.
 - Up to construction 38 peak hour trips.
- Stage 2 is expected to generate up to 24 construction peak hour trips.

In accordance with the trip distribution assumptions detailed in Section 3.3 and the background traffic volumes detailed in Section 2.7, the expected peak hour construction vehicles for both projects at the access intersection are displayed in Figure 3.2.

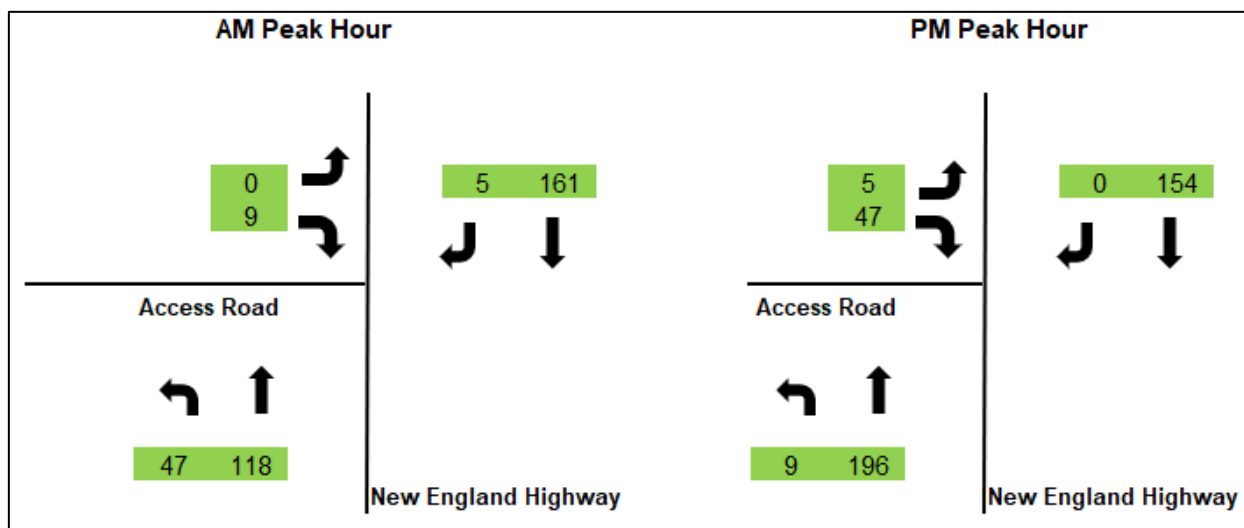


Figure 3.2 Construction traffic volumes at site access 2027 – Stage 1 and Stage 2 traffic

The criteria on which the turning lane warrant assessment is completed are displayed in Figure 3.3.

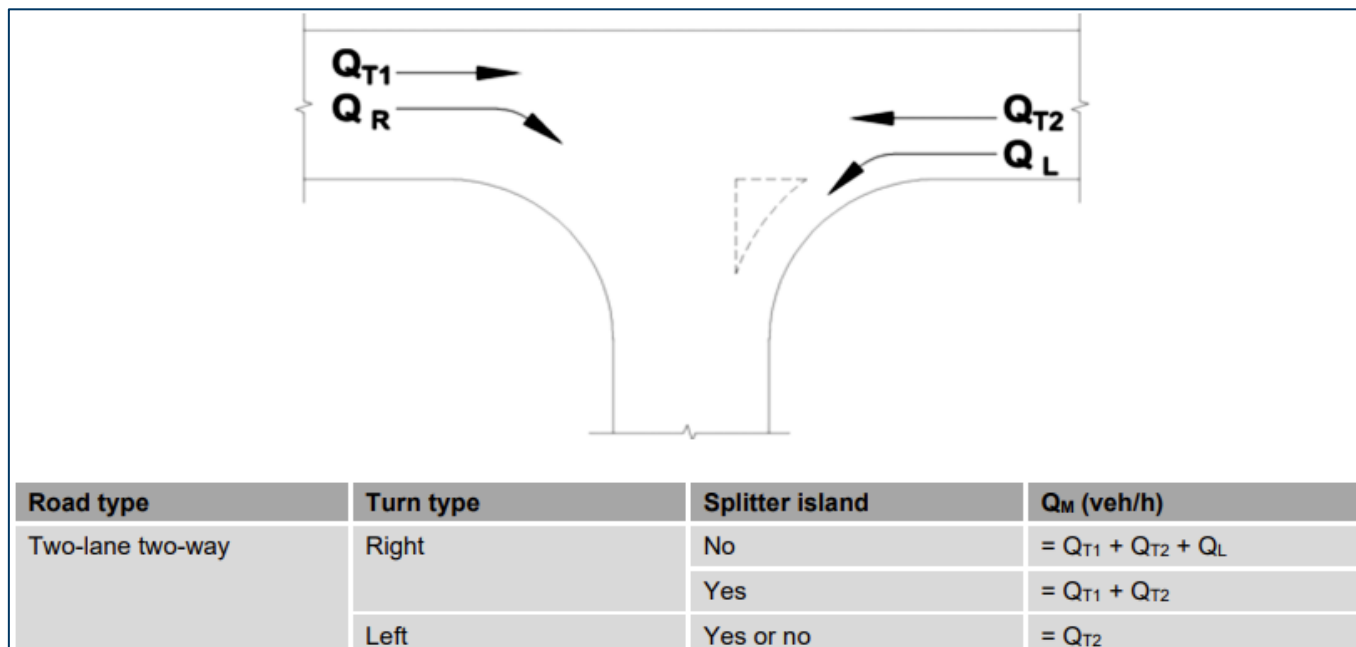


Figure 3.3 Warrant assessment criteria

Source: Austroads Guide to Traffic Management Part 6 Intersection, Interchanges and Crossings Management

A summary of the Q_L , Q_R and Q_M traffic volumes (based on the volumes in Figure 3.2) is detailed in Table 3.2.

Table 3.2 Warrant assessment criteria

Direction	Total (Q_M)	Turning (Q_L or Q_R)
Left Turn (AM)	118	47
Right Turn (AM)	326	5
Left Turn (PM)	196	9
Right Turn (PM)	359	0

The warrant assessments for the access road intersection with the New England Highway, based on a speed limit of equal or greater than 100 km/h (based on Austroads Guide to Traffic Management Part 6 Intersection, Interchanges and Crossings Management), are as follows:

- AM construction peak hour – refer to Figure 3.4
- PM construction peak hour – refer to Figure 3.5

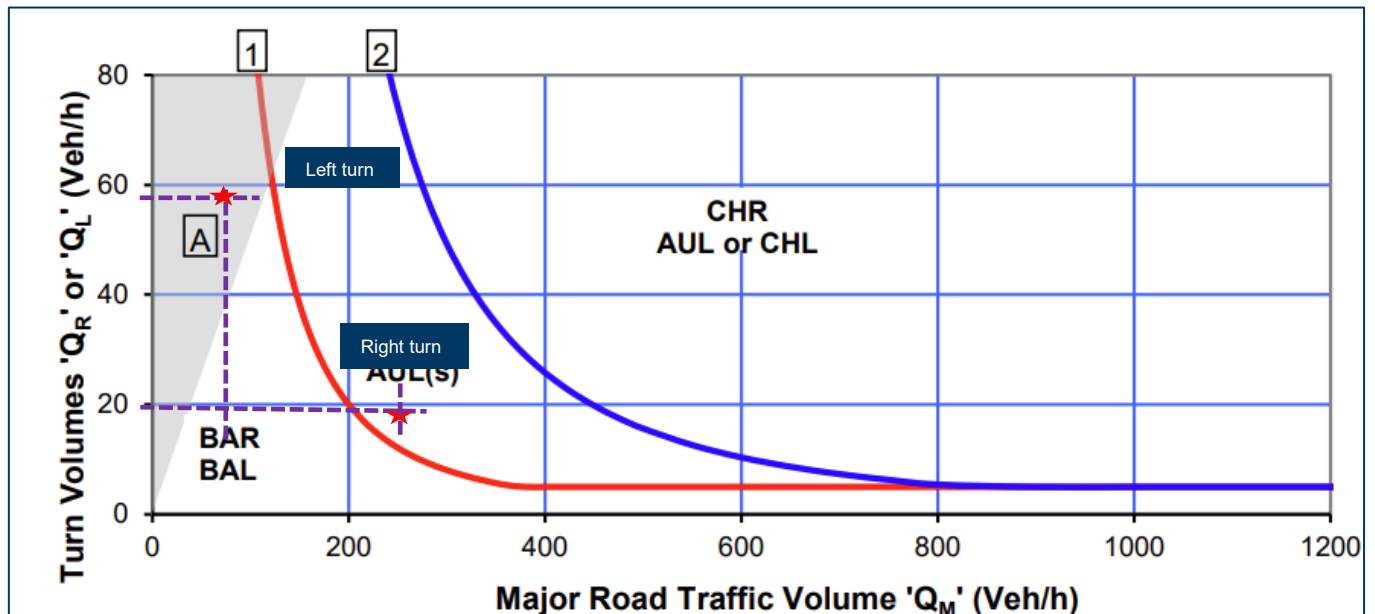


Figure 3.4 AM construction peak hour assessment (design speed > 100 km/h)

Source: Austroads Guide to Traffic Management Part 6 Intersection, Interchanges and Crossings Management Modified by GHD

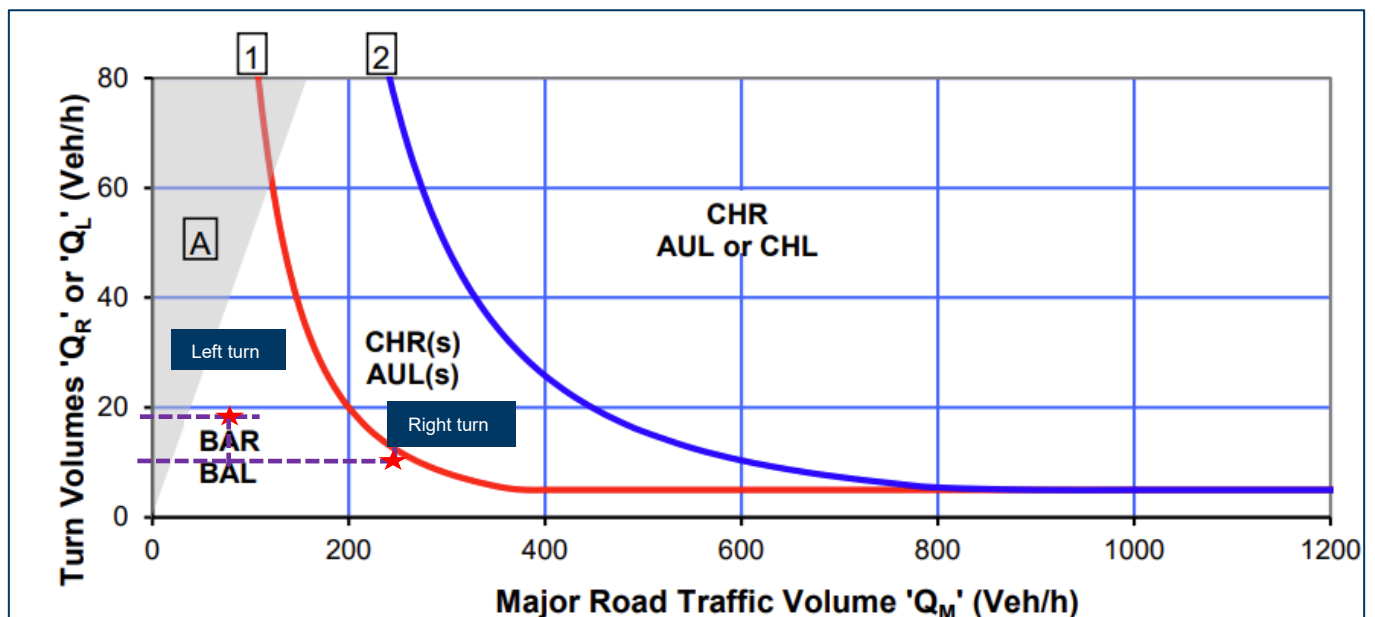


Figure 3.5 PM construction peak hour assessment (design speed > 100 km/h)

Source: Austroads Guide to Traffic Management Part 6 Intersection, Interchanges and Crossings Management Modified by GHD

The data in Figure 3.4 and Figure 3.5 indicate that the provision of a BAL and BAR on the New England Highway, as currently constructed, is suitable to accommodate the expected combined Stage 1 and Stage 2 construction trips and the background traffic volumes on the New England Highway during the AM and PM construction peak hours.

3.4.2 Impacts to traffic

With respect to the traffic impacts of the proposal, the following is noted:

- The available information indicates that the roads in proximity to the proposal site are operating with a good LoS during peak periods of road network activity.
- Operational vehicle activity is expected to be negligible.
- The vehicle activity associated with the construction of the proposal would be minor. Accordingly, the traffic impacts of the proposal are expected to be negligible and fall within the daily fluctuations of the adjoining arterial road network.

3.4.3 Impacts to public and active transport

As there are no active transport facilities in proximity to the proposal site, there will be no impact on such facilities.

There are some public transport routes on the New England Highway, including the Armidale to Tenterfield Coach Service and a small number of school buses. However, given their infrequent nature as well as the small number of construction vehicles, the impact on public transport services is expected to be negligible.

3.4.4 Impacts to road safety

With respect to impacts on road safety:

- The crash review outlined in Section 2.3 shows there have been three recorded crashes in proximity to the proposal site in the last five years on the New England Highway.
- Appropriate traffic control measures in the vicinity of the site should be adopted to ensure that the safety of all road users is not impacted by construction-related vehicles travelling to and from the site.
- The construction/operational volumes generated by the proposal are minor.

Accordingly, the impacts of proposal construction and operational vehicles on road safety are expected to be negligible.

3.4.5 Impacts to parking

With respect to impacts on parking, the following is noted:

- On-street parking is not permitted on New England Highway in proximity to the proposal site, therefore there is not expected to be any impact to on street parking.
- Parking for workers would be provided within the proposal site.

Accordingly, the impacts on parking associated with the construction and operation of the proposal are expected to be negligible.

3.5 State Environmental Planning Policy (Transport and Infrastructure) 2021

The proposal has also been assessed in accordance with *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP), clause 2.119 (development with frontage to a classified road).

The objectives of the clause are as follows:

- To ensure that new development does not compromise the effective and ongoing operation and function of classified roads.
- To prevent or reduce the potential impact of traffic noise and vehicle emission on development adjacent to classified roads.

Clause 2.119 specifies that the consent authority must not grant consent to development on land that has a frontage to a classified road unless it is satisfied that:

- (a) *where practicable and safe, vehicular access to the land is provided by a road other than the classified road, and*
- (b) *the safety, efficiency and ongoing operation of the classified road will not be adversely affected by the development as a result of—*
 - (i) *the design of the vehicular access to the land, or*
 - (ii) *the emission of smoke or dust from the development, or*
 - (iii) *the nature, volume or frequency of vehicles using the classified road to gain access to the land, and*
- (c) *the development is of a type that is not sensitive to traffic noise or vehicle emissions, or is appropriately located and designed, or includes measures, to ameliorate potential traffic noise or vehicle emissions within the site of the development arising from the adjacent classified road.*

The proposal would be accessed via the approved Stage 1 access road off the New England Highway (A15). TfNSW is the roads authority for the New England Highway. The unnamed Crown road will be sealed and widened as part of the approved project. The project will also upgrade the intersection of the unnamed road with the New England Highway in accordance with Austroads and TfNSW requirements to accommodate the required construction and operational traffic for that project.

The sealing of the Crown road will reduce the potential dust emissions. As such, the proposal is consistent with the objectives in clause 2.119 of the Transport and Infrastructure SEPP.

3.6 Cumulative impact

The primary traffic impact of the proposal is generated during construction. The assessment undertaken in the preceding sections demonstrates that the road network will continue to operate with capacity during the peak construction period of the proposal. The following provides an assessment of the potential for cumulative impacts with major projects that are proposed in the surrounding area.

Table 3.3 *Potential cumulative Impact*

Project and timing	Description	Potential vehicle conflict
Tilbuster Solar Farm Stage 1. Approved 03 March 2022. Construction not yet commenced. Will be constructed concurrently with the proposal.	The project is located adjacent to the proposal site. The proposal is the second stage of the Tilbuster Solar Farm.	The construction of Stage 1 and Stage 2 will coincide. The proposal will utilise the same route and intersection upgrade planned for Stage 1 during construction and operation. Both projects are anticipated to have staff located in Armidale and Guyra. Construction traffic impacts are considered in this assessment.
Doughboy Wind Farm. Application withdrawn 18 July 2024.	The project is located about 40 km east of Armidale and involves the construction of approximately 52 wind turbines. Access to the site is proposed from Waterfall Way and Guyra Road. The site is expected to generate approximately 40 vehicle movements during the morning and evening peak hours during the peak construction period, and 138 vehicle movements per day.	No impacts.
New England Solar Farm. Approved 05 May 2023. Construction completed April 2026.	New England Solar Farm is located approximately 6 km east of the township of Uralla. Stage 1 for the New England Solar Farm is completed. The Stage 2 modification was approved and construction is proposed to commence in 2024.	No impacts with operational traffic are likely.

Project and timing	Description	Potential vehicle conflict
Oxley Solar Farm. Approved 11 December 2023. Construction planned to commence in late 2023 but current status unknown.	Oxley Solar Farm is located approximately 10 km southeast of Armidale, to the south of Waterfall Way. Construction workers are proposed to be located in Armidale, with access proposed via Waterfall Way and Gara Road. The project was approved in December 2023.	There is potential for construction of both projects to overlap. Construction traffic generated by the projects may interact within the township of Armidale where staff for both projects are proposed to be located. Traffic impacts are unlikely as the project appears on hold.
Thunderbolt Wind Farm. Approved 08 May 2024. Construction anticipated from 2025 but no confirmed proof of commencement.	The proposed Thunderbolt Wind Farm is located in the Kentucky area approximately 40 km northeast of Tamworth adjacent to New England Highway. The Thunderbolt Wind Farm is proposed to include wind electricity generation and battery storage.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale. Traffic impacts are unlikely as the project appears on hold.
Rangoon Wind Farm. Prepare EIS.	The wind farm is located near the villages of Ben Lomond and Glencoe NSW approximately 60 km north of Armidale and 40 km south of Glen Innes. The proposal involves construction of approximately 25 wind turbines.	Both projects are anticipated to have staff located in Armidale and Guyra. Construction periods are unlikely to overlap as the project is not yet approved.
Winterbourne Wind Farm More information required.	The Windbourne Wind Farm is located 7 km east of Walcha and involves the construction of approximately 133 wind turbines. Access to the site is proposed from.	Both projects are anticipated to have staff located in Armidale and will utilise a similar transport route with plant for the wind farm to be delivered from the Port of Newcastle. Construction periods are unlikely to overlap as the project is not yet approved.
Armidale Battery Energy Storage System (BESS). Approved 05 December 2025. Pre-construction is underway, with construction expected to finish around 2027.	The Armidale BESS is the development of a 500 MW/1000 MWh battery energy storage facility with associated infrastructure. The project is located. The BESS is approximately 18 km west of Armidale. Construction is expected to commence in late-2025 or 2026.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale. Construction traffic impacts are considered in this assessment.
Gara BESS. Assessment. Construction phase projected to start in 2026 until 2028.	The Gara BESS is the development of a 400 MW/1760 MWh battery storage system and associated infrastructure including grid connection. The proposed vehicle access would be via the New England Highway and Waterfall Way/Grafton Road, utilising a proposed access location. Construction is expected to commence in late-2025.	Both projects are anticipated to have staff located in Armidale and utilise the New England Highway. Construction periods are unlikely to overlap as the project is not yet approved.
Eastern Hub Firming Battery. Prepare EIS.	The Eastern Hub firming battery is the development of a 1000 MW battery energy storage system and associated infrastructure. This project is located at Salisbury Plains. Current scheduling anticipates that construction phase of the project will commence late 2027–early 2028.	The construction periods for the projects are unlikely to overlap. Both projects are anticipated to have staff located in Armidale.
Deeargee Solar Farm. Prepare EIS.	The Deeargee Solar Farm involves the construction, operation, and decommissioning of a 320 MW Solar Farm, ancillary infrastructure, and a battery energy storage system. The project will be located about 12 km south-east of Uralla. Project construction is expected to commence in 2027.	The construction periods for the projects are unlikely to overlap. Both projects are anticipated to utilise the New England Highway.

Based on the above assessment, cumulative traffic impacts may occur with increased construction traffic from the Stage 1 project and the Armidale BESS. The Stage 1 traffic is included in the data assessed in this TIA.

The Armidale BESS was approved in 2025, and the available data indicates that its construction will be finalised in 2027. The BESS site is located adjacent to the Armidale Substation on Waterfall Way, approximately five kilometres east of the Armidale township, as displayed in Figure 3.6.



Figure 3.6 Armidale BESS site (source: Google Maps modified by GHD)

Data in the Armidale BESS Traffic Impact Assessment (Impact Traffic Engineering, 2024) indicates that:

- During peak periods of construction, the BESS will generate 80 light vehicle movements (40 inbound and 40 outbound) and 10 heavy vehicle (five inbound and five outbound) movements per day.
- Heavy vehicles are expected to access/egress to and from Armidale.
- Construction workers will reside in Armidale.

Therefore, the construction of the BESS will generate negligible volumes of traffic on section of the New England Highway in proximity to the proposal site. As the Armidale BESS is located to the south of the proposal, additional construction traffic at the proposal location is not expected to be significant, i.e. traffic for this project is likely to be predominantly from the south.

This assessment has identified that New England Highway is operating with a good LoS with spare capacity. Therefore, the cumulative increase in traffic generated by the proposal and these other projects would have a minimal impact on the road network through Armidale and Guyra.

4. Mitigation measures

A Construction Traffic Management Plan (CTMP) will be prepared by the appointed contractor prior to the commencement of construction activities. Mitigation measures that should be included in the CTMP to avoid or minimise traffic and transport impacts during the construction of the proposal are listed in Table 4.1.

Table 4.1 Mitigation measures – traffic and transport

Outcome	Mitigation measure	Timing
Potential for traffic, transport, access and parking impacts during construction	A CTMP will be prepared prior to construction and implemented as part of the Construction Environmental Management Plan. The plan will detail processes and responsibilities to minimise traffic and access delays and disruptions and identify and respond to changes to road access. The plan will be developed in consultation with relevant stakeholders, including Armidale Council, TfNSW, emergency services and public transport/ bus operators as necessary. The plan will include a driver's code of conduct for haulage operations, which will include but not be limited to: – Safety initiatives for haulage through residential areas and/or school zones. – An induction process for vehicle operators and regular toolbox meetings. – A public complaint resolution process.	Pre-construction, construction
Minimise environmental impacts associated with the movement of vehicles	Rectify any road deposits caused by site vehicles, to maintain the safety of road users. Where possible, offset the construction vehicle activity from peak periods of road network activity. Induct employees and contractors to raise awareness and understanding of traffic and transport mitigation measures to be implemented during construction.	Construction
Emergency vehicle access	Emergency vehicle access routes that may be impacted by the project will be identified, and appropriate control measures will be implemented in consultation with the relevant emergency services providers. Emergency services will be advised of any restrictions to vehicular access for both public and private areas where traffic conditions are changed.	Construction
Impacts on local roads	Road condition surveys will be undertaken of the public roads proposed to be used, prior to and following completion of construction, and provided to the relevant road authority. Condition monitoring will be carried out during construction. Rectification measures will be implemented as needed, during and/or following completion of construction, to address any damage caused during construction.	Construction
Efficacy of the intersection with the New England Highway	The proposal would not generate more than 24 heavy vehicle movements per day during construction and two vehicles per hour during peak hour periods of: – 7:00 am and 8:00 am. – 5:00 pm and 6:00 pm.	Construction
Managing the potential for cumulative transport and traffic impacts	The potential for cumulative construction transport and traffic impacts will be reviewed and coordinated with other projects, in consultation with relevant stakeholders, including, Armidale Council, private developers and TfNSW. The review will include: – Projects with the potential to affect access and capacity. – Coordinating works and identifying efficient re-routing options as appropriate.	Construction

5. Conclusion

GHD has prepared this TIA on behalf of EP Sunspot 5 to accompany the EIS for the proposal. The TIA has been revised to address comments from TfNSW received during the public exhibition of the EIS.

The proposal involves the construction, operation and decommissioning of a new solar farm with a generating capacity of 80 MW, which would connect to the existing Transgrid 330 kV transmission line that traverses the site and connects the Dumaresq Substation to the Armidale Substation.

The proposal would be accessed via the existing unnamed Crown road off the New England Highway. The unnamed Crown road will be sealed and widened as part of the approved Tilbuster Solar Farm Stage 1 project.

The approved Stage 1 project includes the upgrade of the intersection of the unnamed road with the New England Highway in accordance with Austroads and TfNSW requirements to accommodate the required construction and operational traffic for that project. The intersection upgrade includes the provision of basic right (BAR) and basic left (BAL) lanes on the New England Highway.

The assessment herein determined the following:

- The available traffic survey data indicate that the New England Highway is currently operating well within its midblock capacity.
- The proposal will generate up to 72 vehicle movements per day and 26 vehicle movements per hour during peak periods of construction.
- The traffic impacts of the proposal are expected to be negligible and fall within the daily fluctuations of the adjoining arterial road network.
- There is no active transport in proximity to the proposal site.
- There are infrequent bus routes in proximity to the site that operate at most once a day. The impact of the construction activity on these services are expected to be negligible.
- The impacts of proposal construction and operational vehicles on road safety are expected to be negligible.
- The warrant assessment indicates that the provision of a BAL and BAR on the New England Highway, as currently constructed, is suitable to accommodate the expected combined Stage 1 and Stage 2 construction trips and the background traffic volumes on the New England Highway during the AM and PM construction peak hours.
- In order to mitigate the impacts of development during construction, a CTMP will be prepared, which should include recommendations detailed in Section 4.

In summary, it is concluded that the proposal's construction and operational vehicle activity will have a minor impact on the operation of the nearby traffic and transport facilities.

6. References

Amber 2021, *Tilbuster Solar Farm (Stage 1) Traffic Impact Assessment*, NGH Consulting Pty Ltd.

Environmental Planning and Assessment Act 1979 (EP&A Act).

Impact Traffic Engineering, 2024, *Armidale Battery Energy Storage System (BESS) Traffic Impact Assessment*.

National Heavy Vehicle Regulator 2024, *National Network Map*, accessed 3 July 2024, https://maps.nhvr.gov.au/?networkLayerContext=NATIONAL_MAP&view=Category&exemptionSetId=-2, Brisbane.

NSW Government n.d., *Major Projects*, accessed 10 July 2024, <https://www.planningportal.nsw.gov.au/major-projects>, NSW Government, Sydney.

RTA 2002, *Guide to Traffic Generating Developments*, NSW.

TfNSW, 2016, *New England Highway Urban Design Framework*, NSW Government.

TfNSW, 2020, Additional Access Conditions Oversize and overmass heavy vehicles and loads, chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/<https://www.transport.nsw.gov.au/system/files/media/documents/2022/osom-additional-access-conditions.pdf>

TfNSW 2024, Traffic Volume Viewer, accessed 5 July 2024, <https://maps.transport.nsw.gov.au/egeomaps/traffic-volumes/index.html#/?z=6>, NSW Government.

TfNSW 2024, *NSW Combined High Mass Limits (HML) and Restricted Access Vehicle (RAV) Map*, accessed 3 July 2024, <https://maps.transport.nsw.gov.au/egeomaps/restricted-access-vehicles-map/index.html>, Land and Registry Services.

TfNSW n.d. *LGA view – Crashes map*, accessed 3 July 2024, <https://www.transport.nsw.gov.au/roadsafety/statistics/interactive-crash-statistics/lga-view-crashes-map>, NSW Government.

TfNSW 2024, *Trip Planner*, accessed 3 July 2024, <https://transportnsw.info/trip#/trip>, NSW Government.

Appendices

Appendix A

TfNSW additional requirements

TfNSW response received 24 July 2024

Requirement	Response
Traffic Impact Assessment requirements	
The TIA is to be tailored to the scope of the proposed development and include, but not be limited to, the following:	
– Identify the hours of construction of works, days for construction, staging and scheduling of construction (inclusive of pre-construction minor works), peak of construction and timeframe for construction (i.e. commencement year and completion year).	Construction hours of operation are detailed in Section 3.1.2.
– Detailed plans identifying the proposed location of any infrastructure within or outside of the project boundaries.	Access intersection upgrades are not proposed.
– Identify the key accesses and routes for all traffic types required for the project.	Freight routes are detailed in Section 6. Access to the proposal is via the already constructed intersection for the Stage 1 approved project.
– The EIS and TIA must identify the source for input materials and quantify the traffic generation associated with the haulage of the source materials.	Traffic generation is detailed in Section 1.1.
Traffic generation assessments and traffic surveys requirements:	
– Existing background traffic must be informed by traffic surveys undertaken at the intersection or access point with the state classified road network at all access points with the classified road network associated with the light and heavy vehicle routes. The traffic surveys are required to be undertaken in accordance with <i>Austrroads Guide to Traffic Management</i> (AGTM) Part 3 with raw data from the surveys provided with the TIA. • Project-related traffic primarily for worst-case scenario for the project (generally peak of construction). • Assessment of the turn warrants for the applicable design speed and in accordance with the requirements for turn warrants assessment specified in AGTM Part 6. The worst-case scenario traffic generation for the project AM/PM peaks is required to be applied to the background traffic volumes. To be representative of the traffic volumes of the network the following must be included to inform the background traffic volumes for the turn warrants assessment, the existing background traffic volumes at the network AM/PM peak, annual growth rate applied linearly to the year of peak of the traffic vehicle movements and accumulative traffic associated with Major Projects (EIS and approved) with coinciding construction timeframes using through and turning movements using the same routes and intersections as the project. • Assess the Safe Intersection Sight Distance (SISD) in accordance with Part 4A of <i>Austrroads Guide to Road Design</i> (AGRD) and TfNSW supplements. • Identify the necessary road network infrastructure upgrades that are required to cater for and mitigate the impact of project related traffic at the key state classified road intersections that form part of the project construction routes.	The details of the traffic volumes on the New England Highway are provided in Section 7. The worst case traffic generation is detailed in Section 1.1. A warrants assessment for the constructed intersection is provided in Section 3.4.1. An SISD assessment has not been completed for the proposal. An SISD assessment has been completed for the approved project (Stage 1), which found the intersection complied with all requirements, refer https://majorprojects.planningportal.nsw.gov.au No road network infrastructure upgrades are proposed.

Requirement	Response
Traffic characteristics:	
Number and ratio of heavy vehicles to light vehicles.	Construction traffic volume data is detailed in Section 1.1.
Identify the number of OSOM that do not require an NHVR permit and if they will occur during the AM/PM project peaks.	No OSOM vehicles will be required to support the construction of the proposal.
Identify the single vehicle trips required for each type of vehicle required to access the site during the AM/PM project peak, vehicles per an hour and vehicles per a day.	Construction traffic volume data is detailed in Section 1.1.
Include traffic volumes associated with input and outputs required during the construction of the development.	Construction traffic volume data is detailed in Section 1.1.
Identify the vehicle types required to access each intersection and access point along the route and site access points connecting to the state classified road network:	Construction traffic volume data is detailed in Section 1.1.
The origins, distribution, and directional splits for the worst-case scenario for all vehicle types at each state classified road intersections and access points required to facilitate the vehicle movements for the proposed project. Including low risk OSOMs moving in accordance with the NSW Class 1 Operators Guide.	Trip distribution data is detailed in Section 3.3.
Capacity analysis using AGRD at intersections with classified (State) road/s, and where relevant, analysis of any other intersections along the proposed transport route/s.	Traffic impacts are detailed in Section 2.
Impact on rail corridors and level crossings along transport route/s detailing any proposed interface treatments, where applicable.	N/A
A review of crash data along the identified transport route/s for the most recent 5-year reporting period and an assessment of road safety along the proposed transport route/s.	Crash data is detailed in Section 2.3.
Workforce Accommodation Camp (if applicable)	
If workforce accommodation is proposed, then the TIA is required to assess the worst-case scenario based on the inclusion of the workforce accommodation camp, with respect to: – The construction schedule, staging, traffic generation until the point of when the workforce would be fully accommodated at the camp. – The traffic volumes during construction and if any parallel construction or pre-construction would be occurring in parallel. – Identify the traffic generation of all construction traffic post full occupation of the workforce accommodation camp. – Identify the traffic volumes associated with any pre-construction and construction works occurring in parallel to the construction and full occupation of the workforce accommodation camp. – Assess for the full and partial (where staged) the traffic volumes, vehicle types, changes to routes, turning directions/distributions, changes to the AM/PM project peaks for the operation of the workforce accommodation camp. – Identify any emergency accesses or other accesses to the state classified road required for the workforce accommodation camp.	N/A

Requirement	Response
A review of crash data along the identified transport route/s for the most recent 5-year reporting period and an assessment of road safety along the proposed transport route/s.	Section 2.3.
Emergency access to a state classified road (if applicable):	
Must identify how the access will be managed (i.e. gates) to prevent the use of the access for other vehicles associated with the development during peak of construction and operation.	Access will be via the approved intersection with the New England Highway. To ensure informal or farm accesses along the highway frontage (including at approximately 30°23'08.2"S, 151°40'53.7"E) are not used, the Construction Traffic Management Plan (CTMP) will include the following measures (see mitigation measure T04): – Gates and any existing informal openings to the highway will be closed during construction. – Entry only signage will be installed at the approved access and advance direction signs on both approaches. – Route cards and inductions for all contractors and delivery drivers will identify the approved entry. – Compliance with access requirements will be monitored during peak construction periods and apply corrective actions for any breach.
Identify the emergency design vehicle and provide a swept path analysis identifying.	Not required.
Provision of sufficient storage at the throat of the access to allow for the emergency vehicle to store within the access and not within the through lane or shoulder.	The access intersection can accommodate emergency vehicles. The internal road network will be designed to accommodate emergency vehicles.
Identify compliance with SISD for the design speed (posted speed +10 km/hr).	N/A
Concept Level Route Analysis required for High Risk OSOM	
The route assessment is required for high risk OSOM (as defined on TfNSW website) required to deliver components to the project. The concept level route analysis must include: – The port or point of origin and must be for the entire route to the site access or intersections required to facilitate the high risk OSOM movements required for the project. – The TIA is required to include details of all high risk OSOM loads and vehicle configurations for the project. – The location of pull-over bays / rest areas along the high risk OSOM routes (including GPS coordinates) and demonstrate through swept paths that the high risk OSOMs can be physically accommodate all high risk OSOMs for the project (in terms of size, width and accessibility).	No high risk OSOM vehicles will be required to support the construction of the proposal.
Expanding on the points above, the concept route assessment is required to include:	
Details of the road geometry and alignment along the identified transport route/s, including existing formations, crossings, bridges, intersection treatments and any identified hazards, including: – Bridge Assessments for any at risk bridges on the classified road network due to dimensions and weight of OSOM vehicles. – Swept path analysis demonstrating the largest design vehicle can enter and leave the development, and simultaneously pass through intersections along the proposed transport route/s.	Not required as no high risk OSOM vehicles.

Requirement	Response
– The design vehicle templates used in the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN). – Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.	
Identify and provide the following measurements parameters of OSOM components / materials to be moved: – Identify types and numbers of high risk OSOM vehicles proposed to be used for the project. – Overall combination type, configuration, load and vehicle configuration: • Length, width, height and mass (GCM, tare, weight to axle and payload) for components and nominated vehicles. • Wheelbase dimensions. • Maximum trailer articulation angle(s). • Minimum overhang heights above the road surface. • Vehicle configurations. • Traffic mitigation measures or road works, modifications, or road upgrades to facilitate the movement of the high risk OSOM(s) associated with the project. • Potential high level mitigation measures or commitments to mitigate known traffic, safety and impacts to road users along the high risk OSOM route (i.e. school bus routes, mining shift changes, TSRs, harvest periods and events).	As above.
Identify and assess implications of any road and rail projects that may be under construction during the indicative schedule for the OSOM movements. <i>Note: NHVR permits do not cover road works or upgrades and environmental approvals required along any proposed OSOM route. Any road works or upgrades works required along the OSOM route must be included within the scope of works in the SSD to ensure the development is constructable.</i> <i>Note: given the high number of renewable energy and other large scale projects requiring haulage of OSOM components on the road network, restrictions, and limitations on OSOM movements may be imposed. In this regard, it is recommended that you engage earlier with TfNSW's Development Services Renewables team to discuss the requirements of the route assessment.</i>	As above.
Strategic concept designs	
Identify the necessary road upgrades and scope to achieve compliance with Austroads and TfNSW requirements to mitigate the traffic, safety, efficiency and impacts to TfNSW assets on the state classified road network associated with the project. Any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council. Works must be appropriately designed in accordance with <i>Austroads Guide to Road Design</i>.	No road upgrades are proposed.

Requirement	Response
Strategic concept designs will need to be accompanied by swept paths for the largest vehicle required to access the access point or intersection. The swept paths must demonstrate that the largest vehicle can turn concurrently in all turn directions without crossing into the incorrect lane, tracking off the proposed/existing pavement and within the existing intersection treatments (where applicable). Swept paths will be required for the high risk OSOM to demonstrate that the high risk OSOM can be delivered within the existing or proposed pavement and if further pavement widening is required to accommodate these movements.	No high risk OSOM vehicles will be required to support the construction of the proposal.
The strategic concept designs must identify any acquisition required to facilitate the scope of the road upgrades and road works. The Developer will be responsible for the dedication and acquisition of land if required to accommodate the road infrastructure including, but not limited to, footways, structures, stormwater drainage, batters, maintenance access and utilities, to the satisfaction of TfNSW. <i>Note: The design needs to comply with TfNSW Strategic design requirements for DAs, TfNSW technical directions, supplements, corridor strategies and Austroads and any other applicable TfNSW policies/strategies. To assist you in preparing the designs, please refer to link below:</i> <u>https://roads-waterways.transport.nsw.gov.au/business-industry/partners-suppliers/documents/planning-principles/strategic-design-fact-sheet-02-2022.pdf</u>	No road upgrades are proposed.



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