



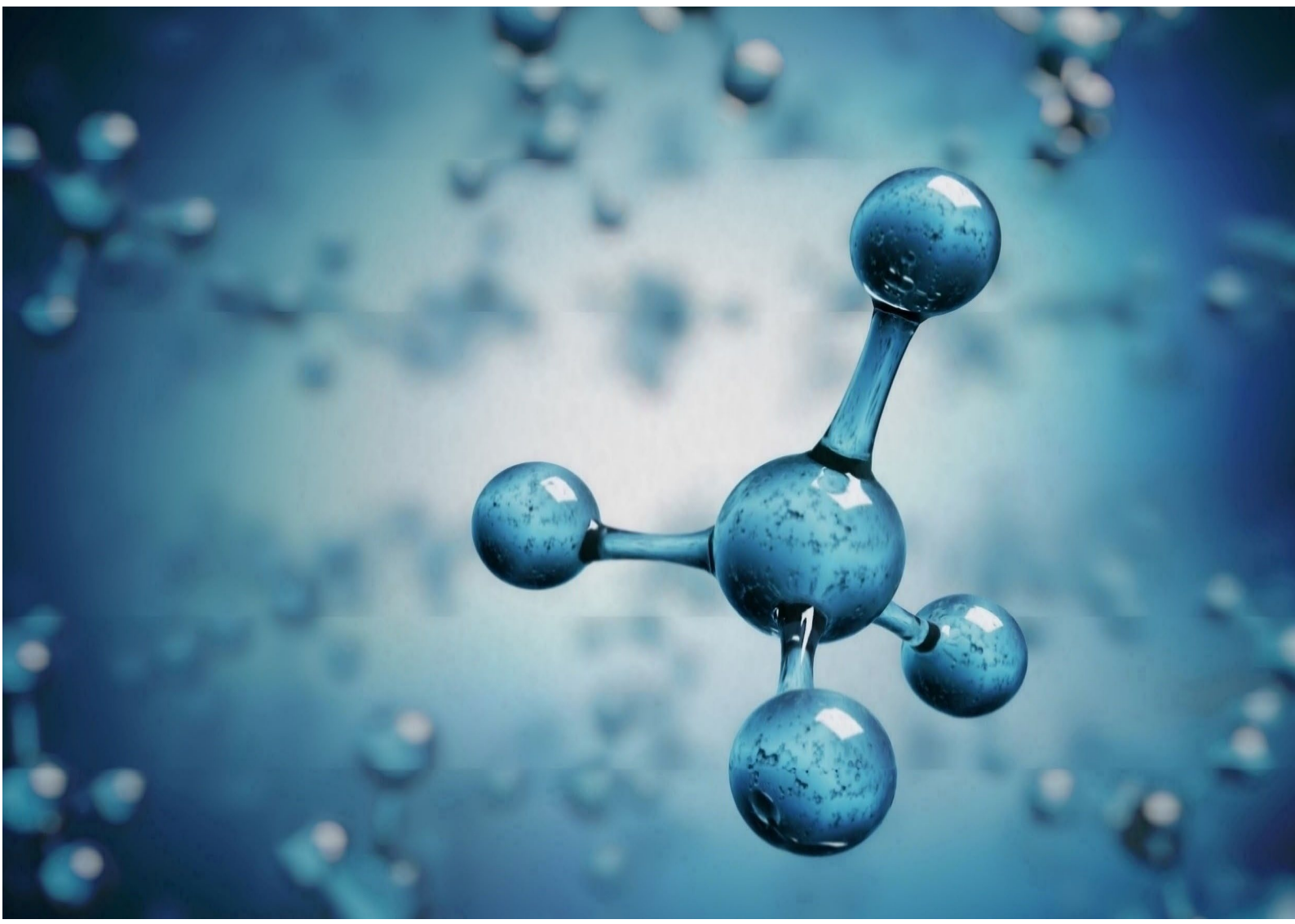
Lucas Heights Bioenergy Facility

Traffic Impact Assessment

LMS Energy Pty Ltd

October 2025

→ **The Power of Commitment**



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GHD Pty Ltd | ABN 39 008 488 373

133 Castlereagh Street, Level 15

Sydney, New South Wales 2000, Australia

T +61 2 9239 7100 | **F** +61 2 9239 7199 | **E** sydmal@ghd.com | **ghd.com**

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Executive summary

The project

LMS Energy Pty Ltd (LMS) proposes to upgrade the landfill biogas management infrastructure at the Lucas Heights Resource Recovery Park (LHRRP), by upgrading the existing power station (the project) to produce renewable energy from landfill biogas generated at the LHRRP.

The new bioenergy facility would be a like for like replacement of the existing power station land fill biogas generators within the existing power station site, with improvements that comply with modern standards and regulations and forecasted biogas generation capacity requirements. The project ensures appropriate capacity to manage forecast peak recoverable biogas and renewable energy generation would effectively continue through the remaining landfilling and post closure periods for the landfill.

This report

This Traffic Impact Assessment report has been prepared on behalf of LMS to support the environmental impact statement (EIS) for the project and responds to the Secretary's Environmental Assessment Requirements (SEARs) SSD-79933225 for the assessment of potential traffic impact issues from the construction and operation of the project.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.5 and the assumptions and qualifications contained throughout the report.

Existing environment

As part of this assessment, intersection modelling was undertaken at the intersection of New Illawarra Road and Little Forest Road.

The SIDRA analysis indicates that the intersection operates within practical capacity (worst Level of Service D) during both AM and PM peak periods. However, during the AM peak period, right-turn movements from the north and west approaches experience delays of 55 seconds and 41 seconds, respectively. This indicates potential issues with turning gaps or priority. Improvements may be required to address these localised delays and enhance intersection performance, although it is noted that the impacts are not as a result of the project.

Impacts from the project during construction

In the construction stage, the SIDRA modelling of the New Illawarra Road / Little Forrest Road intersection indicates that by 2026:

- During the AM peak period, the intersection is expected to operate with similar average delay in the '*without construction*' and the '*with construction*' scenarios. The SIDRA modelling indicates that the construction traffic would have a negligible impact to the operation of the intersection during the AM peak period.
- During the PM peak, the intersection is expected to operate within capacity with satisfactory LoS in both '*with construction*' and '*without construction*'.
- The expected maximum queue length is 11 metres, which is expected to occur on the northern side of New Illawarra Road during the AM peak. The storage length of the dedicated right turn lane on the northern side of New Illawarra Road is 160 metres. As such, no queueing impact is expected.

Impacts from the project during operation

In the operation stage, the SIDRA modelling indicates that by 2035:

- In the AM peak periods, the intersection is expected to operate at LoS F in both ‘*with operation*’ and ‘*without operation*’ scenarios. It is also noted that this is a worst case assessment, as all impacts of the proposed project are likely to be offset by the equivalent reduction in vehicle movement associated with the operation of the existing power station. Similar to the construction stage, the analysis shows that:
 - The northern side of New Illawarra Road is expected to experience extensive delays. This is mainly due to the longer time required to find a gap to make a right turn onto Little Forest Road due to heavy traffic volumes on both sides of New Illawarra Road.
 - Similar to the northern side of New Illawarra Road, Little Forest Road is also expected to experience extensive delays due to the longer time required to find a gap to make a right turn onto New Illawarra Road.
- In the PM peak period, the intersection is expected to operate within practical capacity (worst LoS C) in both ‘*with operation*’ and ‘*without operation*’ scenarios.
- The expected maximum queue length is 21 metres, which is expected to occur on the northern side of New Illawarra Road during the AM peak. The storage length of the dedicated right turn lane on the northern side of New Illawarra Road is 160 metres. As such, no queueing impact is expected.

It is worth noting that, even without the operation of the project, the intersection performance is expected to experience LoS F. As such, traffic generated by the operation activities is not expected to have a significant impact on the operation of the road network.

Mitigation and management measures

The following measures focus on the management of construction traffic as the construction stage is expected to generate more vehicles than the operation of the project:

- Construction Traffic and Pedestrian Management Plan (CTPMP)
- Traffic management measures, including:
 - site access and parking management measures, including logistics management and carpooling opportunities
 - parking management.
- Site induction based on CTPMP
- Heavy vehicle access management (i.e. place traffic controllers in the construction stage, if required).

Key terms, acronyms and abbreviations

Terms and abbreviations	Definition
CEMP	Construction environmental management plan
CTPMP	Construction Traffic and Pedestrian Management Plan
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
FTE	Full time equivalent
km	Kilometres
LFG	Landfill gas
LGA	Local government area
LHRRP	Lucas Heights Resource Recovery Park
LoS	Level of Service
MW	Megawatt
MWh	Megawatt hours
M	Metres
NSW	New South Wales
SSD	State significant development
TfNSW	Transport for NSW

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1. Introduction

1.1 Project overview

LMS Energy Pty Ltd (LMS) proposes to upgrade the landfill biogas management infrastructure at the Lucas Heights Resource Recovery Park (LHRRP), by upgrading the existing power station (the project) to produce renewable energy from landfill biogas generated at the LHRRP.

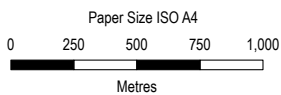
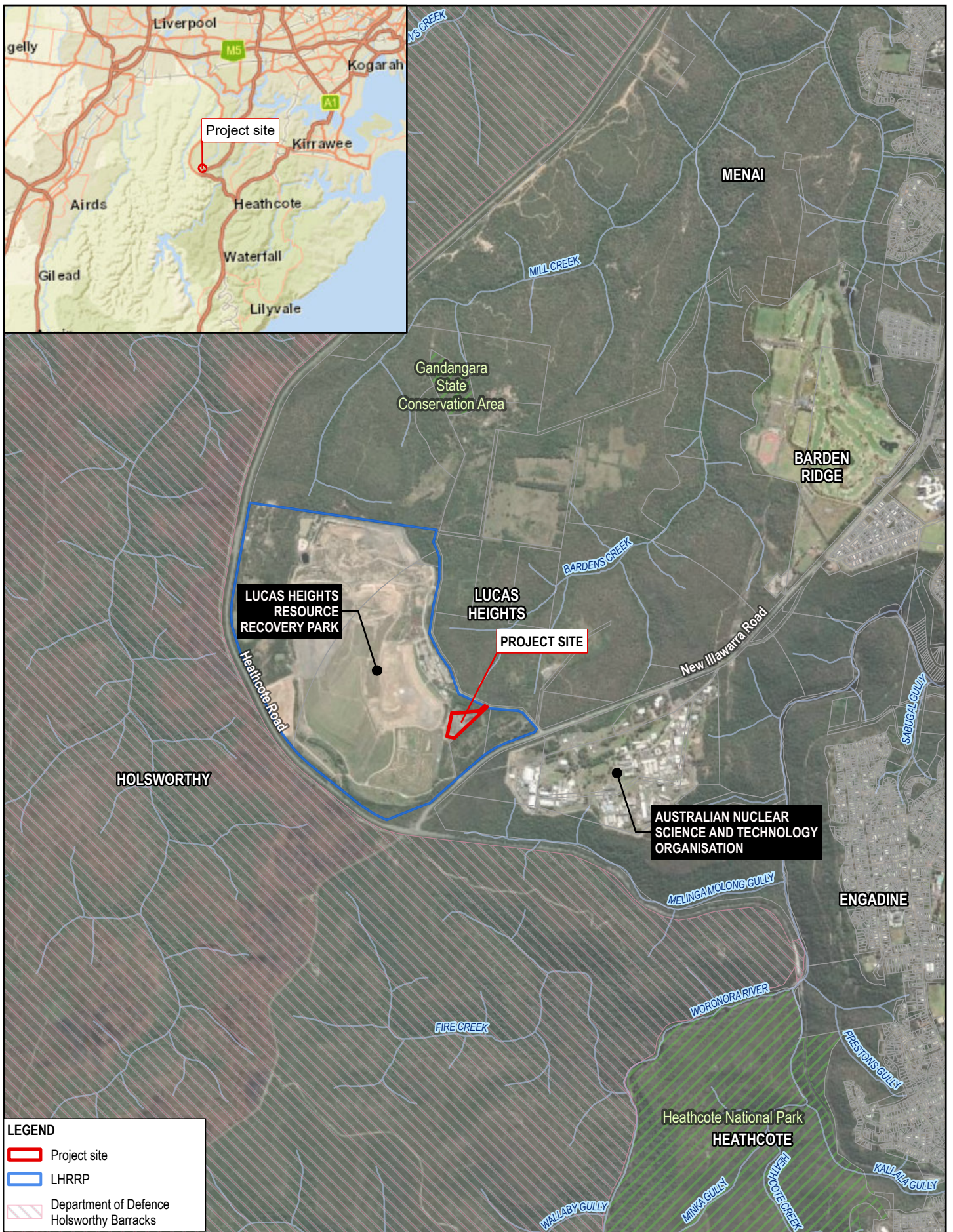
The new bioenergy facility would be a like for like replacement of the existing power station land fill biogas generators within the existing power station site, with improvements that comply with modern standards and regulations and forecasted biogas generation capacity requirements. The project ensures appropriate capacity to manage forecast peak recoverable biogas and renewable energy generation would effectively continue through the remaining landfilling and post closure periods for the landfill.

1.2 Site location

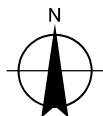
The project is located within the Sutherland Shire local government area (LGA), about 30 kilometres southwest of the Sydney central business district within the suburb of Lucas Heights. Lucas Heights sits between the Royal National Park, Heathcote National Park and the Cubbitch Barta National Estate Area, which is managed by the Department of Defence as a part of the Holsworthy Barracks.

The bioenergy facility would be located on Lot 102 DP 1009354 (existing power station site) which has an area of approximately 1.80 hectares.

The project site is accessed via Little Forest Road, off New Illawarra Road. An overview of the site context is shown on Figure 1.1.



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56



LMS Energy
Lucas Heights Bioenergy facility

Regional context

Project No. **12649882**
Revision No. **0**
Date **17/09/2025**

FIGURE 1.1

1.2.1 Key features

The key features of the project are summarised in Table 1.1. A detailed description of the project is provided in Chapter 3 of the EIS.

Table 1.1 Key features of the project

Project element	Summary
Output capacity	20 x 1.1 MW modular lean burn generator sets to provide a total output of approximately 22 MW
Proposed built infrastructure	<p>New proposed infrastructure</p> <ul style="list-style-type: none"> – Gas delivery and metering system – Transformers to step up the electrical output voltage from LV to HV to match the local grid voltage – Electricity metering, protection and communication equipment – Covered storage bund for chemical and coolant storage – HV Switchroom / Control room – Lightning poles – External lighting – Safety showers <p>Retained/ upgraded infrastructure</p> <ul style="list-style-type: none"> – Gas delivery, metering, and condensate removal system – Lunchroom / Toilet – Offices / Workshop – Car parking for on site operators – Security fencing – External lighting – Waste oil and clean oil tanks <p>Buildings to be decommissioned</p> <ul style="list-style-type: none"> – Workshop x 2 – Existing generators – Existing flare facility – Cooling towers.
Utilities connections	<p>Proposed new connections</p> <ul style="list-style-type: none"> – New underground high voltage (HV) electricity line to the Ausgrid 33 kilovolt (kV) distribution network as an extension of the connection from the existing electrical infrastructure to the Lucas Heights Zone Substation <p>Existing utilities</p> <ul style="list-style-type: none"> – Fibre connection to the Lucas Heights Zone Substation – Potable water connection from LHRRP.
Hours of operation	<ul style="list-style-type: none"> – 6am to 6pm for operational staff – Remote operation 24 hours per day, 7 days per week outside of operational hours.
Workforce	<ul style="list-style-type: none"> – 6 full time equivalent (FTE) staff during operation – 15 FTE staff during construction.

1.3 Secretary’s Environmental Assessment Requirements

This Traffic Impact Assessment (TIA) has been prepared to address the Secretary’s Environmental Assessment Requirements (SEARs). Table 1.2 outlines the requirements relevant to this assessment.

Table 1.2 SEARs relevant to this assessment

Requirement	Where addressed in this report
A quantitative transport impact assessment prepared in accordance with the Transport for NSW Guide to Transport Impact Assessment (GTIA) and Austroads guidelines.	In this report
An estimate of trip generation, arrival/departure profiles and trip distribution	Sections 4.1 and 4.2
An assessment of cumulative traffic impact on road performance and safety at key intersections using an appropriate modelling framework	Section 4
Plans demonstrating how all vehicles generated during construction and operation can be accommodated on the site to avoid queuing in the street network	Sections 4 and 5
Plans of any proposed internal road network, access points for the duration of operation, loading area, on-site parking, pedestrian and cyclist facilities	Sections 4.5 and 4.8
Swept path diagrams for the largest vehicles manoeuvring through site access points	Section 4.8
Details of any required road upgrades for the development	NA
A draft Construction Traffic and Pedestrian Management Plan	Section 5.1

1.4 Purpose of this report

This report has been prepared by GHD Pty Ltd (GHD) as part of the EIS for the project. The EIS has been prepared to accompany the application for approval of the project and addresses the environmental assessment requirements of the Secretary of the Department of Planning and Environment (the SEARs), issued on 6 March 2025.

The purpose of this report is to assess potential traffic impact issues from the construction and operation of the project site and, where required, identify feasible and reasonable mitigation and management issues. The report:

- addresses the relevant SEARs
- provides a description of the existing traffic environment in the study area
- reviews the existing road and transport conditions, traffic volumes, access arrangements, parking and crash data
- considers the relevant issues discussed in public authority responses to requests for key issues
- assesses potential impacts during all stages of the project (construction and operation)
- recommends measures to mitigate and manage the potential impacts identified.

1.5 Scope and limitations

This report: has been prepared by GHD for LMS Energy Pty Ltd and may only be used and relied on by LMS Energy Pty Ltd for the purpose agreed between GHD and LMS Energy Pty Ltd as set out in section 1.4 of this report.

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

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

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.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1.6 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

1.6 Assumptions

The preparation of this assessment has relied on the following data sources:

- Peak hour intersection traffic counts commissioned by GHD. Intersection counts at the following locations were used for this study:
 - New Illawarra Road / Little Forest Road, collected on Thursday 20 March 2025.
- In addition to the site visit, the assessment of existing conditions of the surrounding network is based on a desktop review utilising the following data sources:
 - Aerial photography by Google Maps / Near maps and Street view images by Google Maps
 - Public transport routes and schedules from Transport for NSW Trip Planner
 - Road crash data published by Transport for NSW Centre for Road Safety.

The following assumptions have been made in the preparation of this assessment:

- Construction of the project is expected to be completed by 2026.
- The expected construction and operational traffic generated by the project have been estimated based on the information provided by LMS.
- Traffic distribution estimation has been assumed as:
 - 50% of generated traffic coming from the south and 50% of generated traffic coming from the north in the AM peak
 - 50% of generated traffic exit to the south and 50% of generated traffic exit to the north in the PM peak.
- A traffic growth rate of 1.0% per annum was utilised, which is considered to represent a conservative assessment of traffic growth in the study area.
- It has been assumed that all construction workers will drive, with a car occupancy of one, i.e. no carpooling.
- It has been assumed that 20 heavy vehicles would occur in a day during the construction of the concrete slabs. To support a conservative assessment, eight heavy vehicle movements per hour are assumed during peak periods.

2. Methodology

This chapter summarises the legislation, guidelines and/or policies driving the approach to the assessment.

2.1 Legislative and policy context

The following guidelines were used in the assessment:

- *Guide to Road Design Part 3: Geometric Design (Austroads, 2021)*
- *Guide to Road Design Part 4A: Unsignalised and Signalised intersection (Austroads, 2021)*
- *Guide to Traffic Management Part 6: Interchanges, Intersections and Crossing Management (Austroads, 2020)*
- *Guide to Transport Impact Assessment (Transport for NSW, 2024)*
- *NSW Planning Guidelines for Walking and Cycling*
- *Australian Standard 2890.1 (2004) – Off-street car parking*
- *Australian Standard 2890.1 (2018) – Off-street commercial vehicle facilities*
- *Roads and Maritime Services Traffic Modelling Guidelines (Roads and Maritime Services, 2013).*

The SEARs requirements relevant to traffic impacts and where these have been addressed in this report, are discussed in section 1.3.

2.1.1 Traffic generation and assessment of traffic impacts

An intersection traffic performance assessment was undertaken (described further in section 2.1.2) based on the available traffic count data and the expected peak generated traffic for the project during the weekday AM and PM peak periods.

The traffic implications from the construction / operational activities were assessed based on road network capacity, safety and amenity. Future traffic performance was compared against existing conditions to analyse the impact of the project on the road network.

Potential impacts on public transport, pedestrians and bicycle riders were also assessed by inspecting how the traffic generated by the project would potentially interact with existing facilities.

2.1.2 Intersection assessment

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA 9.1 intersection modelling software was used to assess the proposed peak hour operating performance of intersections on the surrounding road network. Intersection performance is represented through the following key parameters:

- Average Delay (given in seconds per vehicle)
- Level of Service (LoS, conversion of the average delay)
- Queue Length (95th percentile in metres)
- Degree of Saturation (DoS, ratio of traffic demand to capacity).

The criteria for evaluating the operational performance of intersections, as provided by the *Guide to Transport Impact Assessment (TfNSW, 2024)*, are summarised in Table 2.1 and Table 2.2. The criteria for evaluating the operational performance of intersections are based on a qualitative measure (i.e. LoS), which is applied to each band of average vehicle delay.

Table 2.1 *LoS criteria for intersections*

LoS	Average Delay per Vehicle (seconds/veh)	Traffic Signals, Roundabouts
A	<14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity, at signals, incidents will cause excessive delays, roundabouts require other control modes
F	>70	Over capacity, unstable operation

Source: TfNSW Traffic Modelling Guidelines

Table 2.2 *Maximum practical degree of saturation by intersection control*

Intersection Control	Maximum Practical Degree of Saturation
Traffic Signals	0.90
Roundabouts	0.85
Priority-Controlled	0.80

Source: TfNSW Traffic Modelling Guidelines

3. Existing environment

3.1 Road network

3.1.1 Road hierarchy

Roads within New South Wales are categorised by classification (ownership) and the function that they perform.

Road classification

Roads are classified (as defined by the *NSW Roads Act 1993*) based on their importance to the movement of people and goods within New South Wales.

The classification of a road allows Transport for NSW to exercise authority of all or part of the road. Classified roads include Main Roads, State Highways, Tourist Roads, Secondary Roads, Tollways, Freeways, and Transitways. For management purposes, Transport for NSW has three administrative classes of roads:

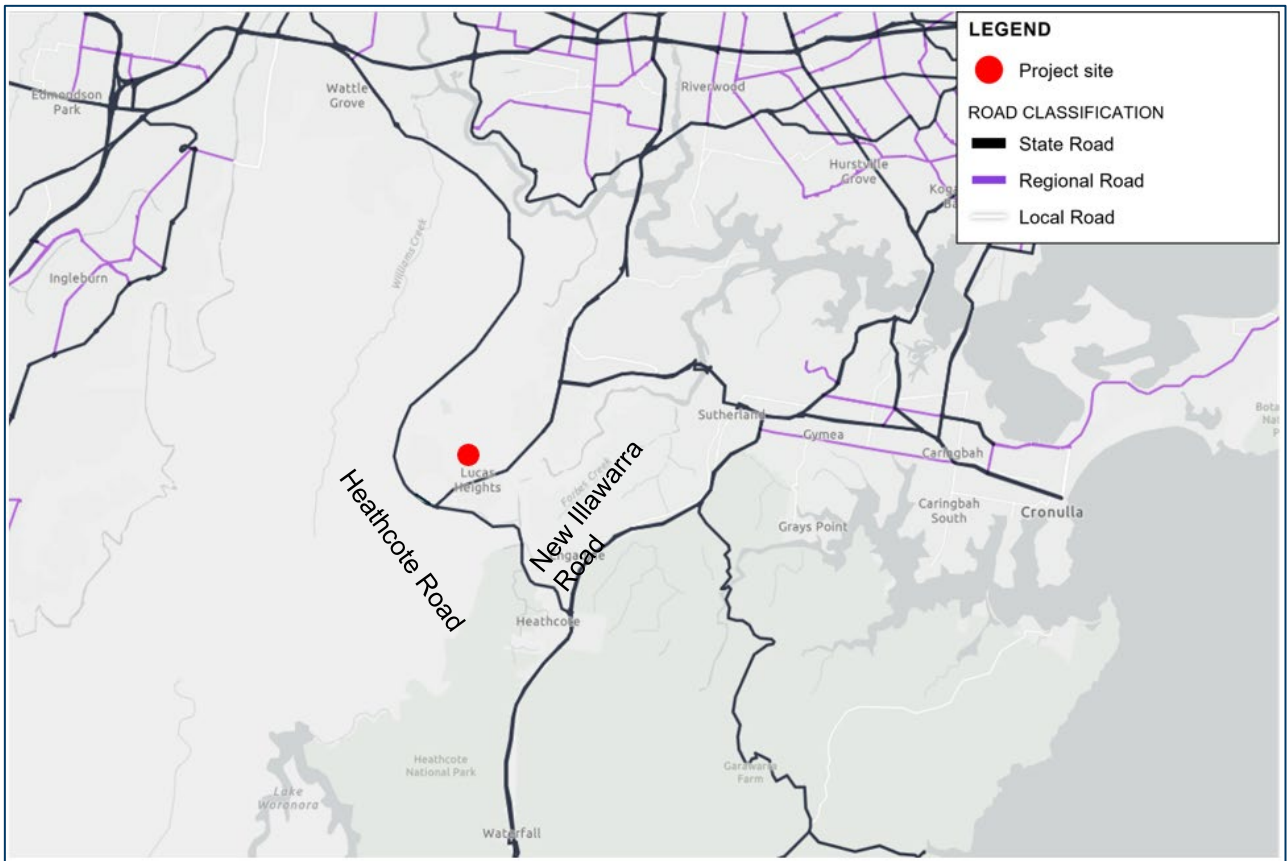
- **State Roads** – Major Arterial links throughout NSW and within major urban areas. They are the principal traffic-carrying roads and are fully controlled and maintained by Transport for NSW. State Roads include all Tollways, Freeways and Transitways; and all or part of a Main Road, Tourist Road or State Highway.
- **Regional Roads** – Roads of secondary importance between State Roads and Local Roads which, along with State Roads, provide the main connections to and between smaller towns and perform a Sub-Arterial function in major urban areas. Regional roads are the responsibility of councils for maintenance funding, though Transport for NSW funds some maintenance based on traffic and infrastructure. Traffic management on Regional Roads is controlled under the delegations to local government from Transport for NSW. Regional Roads may own all or part of the State Roads; or other roads as determined by Transport for NSW.
- **Local Roads** – The remainder of the council-controlled roads, Local Roads are the responsibility of councils for maintenance funding. Transport for NSW may fund some maintenance and improvements based on specific programs (e.g. urban bus routes, road safety programs). Traffic management on Local Roads is controlled under the delegations to local government from Transport for NSW.

Functional hierarchy

Functional road classification involves the relative balance of the mobility and access functions. Transport for NSW 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 Transport for NSW, they typically have no limit in flow and are designed to carry vehicles long distances between regional centres.
- **Sub-Arterial Roads** – can be managed by either Transport for NSW 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 sub region 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.

A map of the road classifications of the surrounding road network is shown on Figure 3.1.



Source: NSW Road Network Classifications, TfNSW (2023)

Figure 3.1 Road classification of surrounding road network

3.1.2 Road characteristics

The following sections describe the roads in proximity to the project site.

New Illawarra Road

New Illawarra Road (refer to Figure 3.2) is a major Arterial Road that runs from Lucas Heights towards the southern suburbs of Sydney. New Illawarra Road serves as a key connection between the **A6 (Heathcote Road)** and the **A1 (Princes Highway)**, facilitating regional traffic movements.

The key features of New Illawarra Road in the vicinity of the project site are summarised in Table 3.1.

Table 3.1 *New Illawarra Road key features*

Feature	Description
Classification	State Road
Functional Hierarchy	Arterial Road
Carriageway	A single travel lane is provided in each direction, marked with a central line, and with shoulders on both sides of the road. Dedicated turning bays provided for traffic turning left and right into Little Forrest Road from New Illawarra Road.
Parking	No designated parking facilities are provided.
Speed limit	80 km/h.
Pedestrian facilities	No pedestrian facilities are provided.
Bicycle facilities	No dedicated cycling facilities are provided.
Public transport	No public transport services or bus stops.



Image Source: Google (image taken September 2023)

Figure 3.2 *New Illawarra Road facing towards Heathcote Road*

Heathcote Road

Heathcote Road (refer to Figure 3.3) is a significant Arterial Road in New South Wales connecting the southwestern suburbs of Sydney with the Sutherland Shire. Heathcote Road serves as a key connection between the **A1 (Princes Highway)** and the **A34 (Newbridge Road)**, facilitating regional traffic movements.

The key features of Heathcote Road in the vicinity of the project site are summarised in Table 3.2.

Table 3.2 Heathcote Road key features

Feature	Description
Classification	State Road
Functional Hierarchy	Arterial Road
Lane	A single travel lane is provided in each direction, marked with a central line and with shoulders on both sides
Parking	No designated parking facilities are provided
Speed limit	Varies between 70 km/h to 90 km/h
Pedestrian facilities	No pedestrian facilities are provided
Bicycle facilities	No dedicated cycling facilities
Public transport	Limited public transport services or bus stops



Image Source: Google (image taken October 2023)

Figure 3.3 Heathcote Road facing towards New Illawarra Road

Little Forest Road

Little Forest Road is a local road that links New Illawarra Road and LHRRP (refer to Figure 3.4). The key features of Little Forest Road are summarised in Table 3.3.

Table 3.3 *Little Forest Road features*

Feature	Description
Classification and Functional Hierarchy	Local Road
Parking	No designated parking facilities are provided
Carriageway	Single travel lane in each direction
Speed limit	40 km/h. Speed humps to maintain low vehicle speeds.
Pedestrian facilities	No pedestrian facilities are provided
Bicycle facilities	No dedicated cycling facilities. A new car park and cycle pathway is currently being constructed for the Mill Creek Mountain Bike Club, accessed from Little Forrest Road.
Public transport	No public transport services or bus stops



Image Source: Google (image taken March 2020)

Figure 3.4 *Little Forest Road toward Lucas Heights facility site access*

3.1.3 Heavy vehicle routes

Heavy vehicle access on both State and local roads are regulated by the National Heavy Vehicle Regulator in accordance with the NSW Heavy Vehicle Access Policy Framework (Transport for NSW, 2018). The framework outlines the strategy for heavy vehicle access in NSW with the aim of achieving safe and efficient freight movements. The framework also addresses local amenity issues, network impacts and infrastructure constraints.

A description of the heavy vehicle types relevant to the project are provided in the following sub-sections. These descriptions were sourced from the Transport for NSW website¹.

General access heavy vehicles






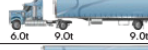
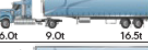
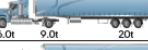
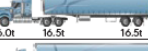
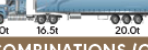








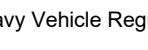
Under the national mass and loading arrangements, general access heavy vehicles are vehicles with unrestricted access to the road system, except where a road or bridge is signposted otherwise. Provided these vehicles have current registration appropriate to the vehicle configuration, no specific access restrictions apply, and no additional permits are required. Vehicles that fall within the limits described in Table 3.4 and Table 3.5 do not exceed prescribed mass and dimension limits and are, therefore, considered as general access heavy vehicles.

Table 3.4 General access vehicles – prescribed dimension limits

Vehicle Type	Dimension limits (metres)		
	Length	Height	Width
Truck	12.5	4.3 (all vehicles)	2.5 (all vehicles)
Bus	12.5		
Truck and trailer	19.0		
Articulated Vehicle	19.0		

¹ Heavy Vehicle Road Access: <https://roads-waterways.transport.nsw.gov.au/business-industry/heavy-vehicles/road-access/index.html>

Table 3.5 General access vehicles – prescribed mass limits

	Description	Maximum Length (metres)	Maximum Regulatory Mass under GML (tonnes)
1. COMMON RIGID TRUCKS - GENERAL ACCESS			
(a)	 2 Axle Rigid Truck	≤ 12.5	15.0
(b)	 3 Axle Rigid Truck	≤ 12.5	22.5
(c)	 4 Axle Rigid Truck	≤ 12.5	26.0
(d)	 4 Axle Twinsteer Rigid Truck	≤ 12.5	26.5
(e)	 5 Axle Twinsteer Rigid Truck	≤ 12.5	30.0
2. COMMON SEMITRAILER COMBINATIONS - GENERAL ACCESS			
(a)	 3 Axle Semitrailer	≤ 19.0	24.0
(b)	 4 Axle Semitrailer	≤ 19.0	31.5
(c)	 5 Axle Semitrailer	≤ 19.0	35.0
(d)	 5 Axle Semitrailer	≤ 19.0	39.0
(e)	 6 Axle Semitrailer	≤ 19.0	42.5
3. COMMON RIGID TRUCK AND TRAILER COMBINATIONS (General access when complying with prescribed mass and dimension requirements)			
(a)	 2 Axle Truck and 2 Axle Dog Trailer	≤ 19.0	30.0
(b)	 2 Axle Truck and 2 Axle Pig Trailer	≤ 19.0	30.0
(c)	 3 Axle Truck and 2 Axle Dog Trailer	≤ 19.0	40.5
(d)	 3 Axle Truck and 2 Axle Pig Trailer	≤ 19.0	37.5
(e)	 3 Axle Truck and 3 Axle Dog Trailer	≤ 19.0	42.5
(f)	 3 Axle Truck and 3 Axle Pig Trailer	≤ 19.0	40.5
(g)	 3 Axle Truck and 4 Axle Dog Trailer	≤ 19.0	42.5
(h)	 4 Axle Truck and 3 Axle Dog Trailer	≤ 19.0	42.5
(i)	 4 Axle Truck and 4 Axle Dog Trailer	≤ 19.0	42.5

Source: Excerpt from the National Heavy Vehicle Regulator [Common Heavy Freight Vehicle Configurations Chart \(NHVR, 2017\)](#)

Restricted access heavy vehicles

Any single motor vehicle or combination with a combined load that exceeds the general access overall dimensions as defined in the Heavy Vehicle National Regulation is considered a Restricted Access Vehicle.

The Transport for NSW interactive map for heavy vehicles identifies a network of routes that are approved to accommodate heavy vehicles of various sizes. Figure 3.5 shows outputs from the Restricted Access Vehicle map indicating approved 26 metre B-double routes in proximity to the project site.

As shown, the nearest key freight routes to the project site authorised to accommodate vehicles up to the size of 26 metre B-double trucks include New Illawarra Road and Heathcote Road.

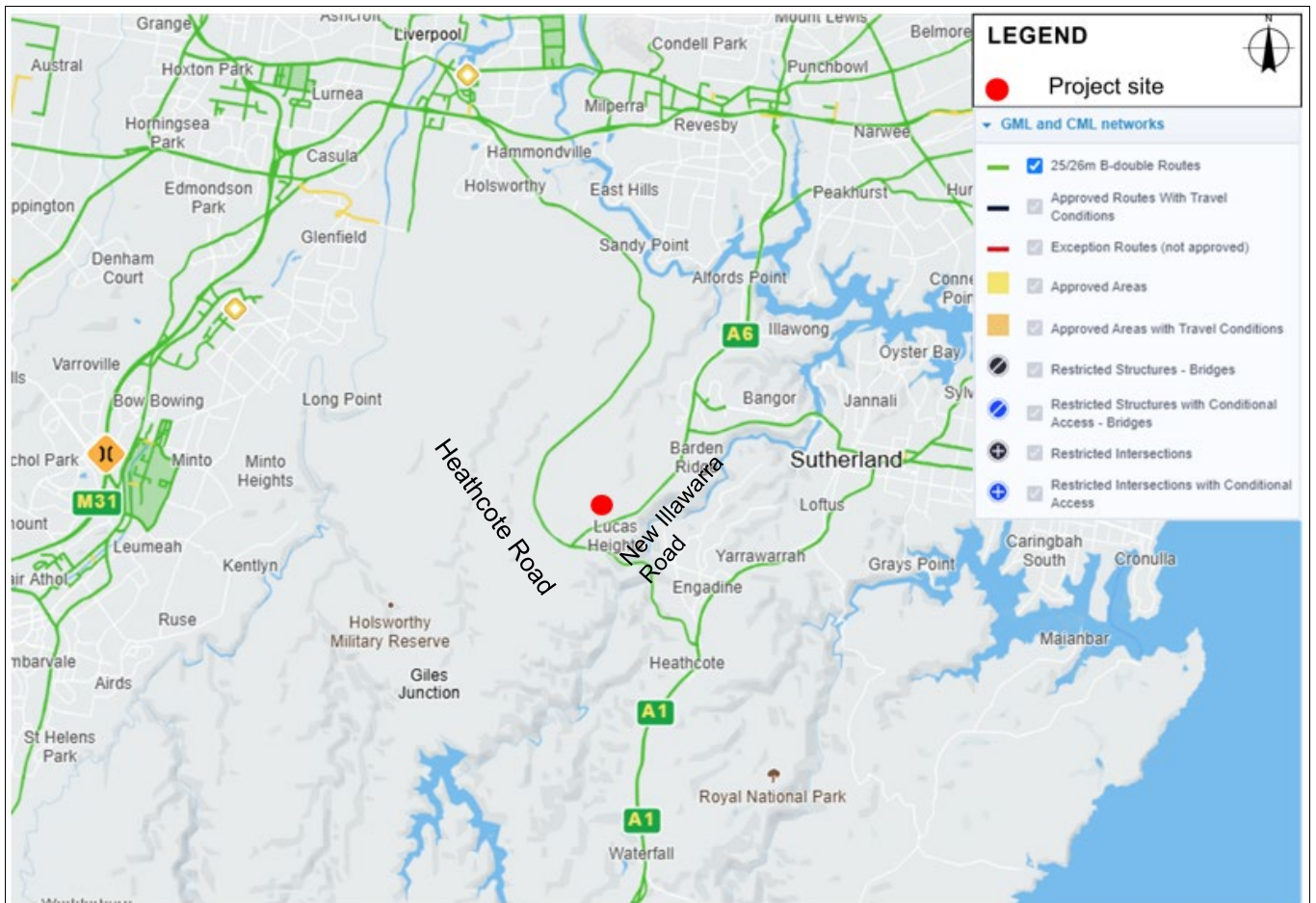


Figure 3.5 Approved heavy vehicle routes for 26 m B-doubles

Source: [NSW Combined Higher Mass Limits \(HML\) and Restricted Access Vehicle \(RAV\) Map \(TfNSW, 2023\)](#)

3.2 Public and active transport

Project activities and changes in the road environment can impact all road users, including those on public transport and active transport (walking or cycling).

In reviewing the site and its accessibility to public transport opportunities, reference was made to the *NSW Planning Guidelines for Walking and Cycling* (Transport for NSW, 2004). Details of public transport, walking and bicycle riding access in the study area are provided in the following sub-sections.

3.2.1 Bus services

The nearest bus stops to the project site are in eastern Lucas Heights, which is over four kilometres away from the main site access point. This distance exceeds comfortable walking distances of around 800 metres (equivalent to about 10 minutes of walking).

The schedule and frequency of trips that can be taken from these bus stops are summarised in Table 3.6.

Table 3.6 *Bus services*

Bus Route Description	Bus Service Frequency
Route 996 (U-Go Mobility: Engadine to Heathcote East)	Monday to Friday: Every 30–60 minutes during peak hours, less frequent during off-peak hours
Route S089 (School service: Inaburra School to Lucas Heights Community School)	Monday to Friday: Morning peak only, 7:50 AM departure
Route S020 (School service: Lucas Heights Community School to Tharawal Public School)	Monday to Friday: Morning peak only
Route S070 (School service: Lucas Heights Community School to Menai High School)	Monday to Friday: Morning peak only
ANSTO Shuttle (Mini bus: ANSTO to Sutherland Interchange)	Monday to Friday: Operates at specific times, generally during business hours (7:00 AM – 5:00 PM)

Source: Bus Route Timetables, Transport for NSW

None of these bus service routes operate on the key roads in proximity to the project site (as described in section 3.1.2).

3.2.2 Active transport (walking and cycling)

In proximity to the project site, active transport facilities are limited to bicycle paths that can be found north of New Illawarra Road (refer to Figure 3.6 and Figure 3.7). There are currently no dedicated footpaths and cycling lanes that provide direct access to the project site. Cycling is generally allowed along road shoulders on the section of New Illawarra Road to Old Illawarra Road, as indicated by the purple line in Figure 3.6.

The area also features the Mill Creek mountain bike trails, offering a variety of mountain biking experiences for all skill levels, and numerous walking tracks. The trail head for the mountain bike trails is off Little Forest Road to the north of the LHRPP site entrance and the trails extend into the Lucas Heights Conservation Area.

Due to the limited public and active transport facilities surrounding the site, it is assumed that all trips to the site would be made by private vehicle.

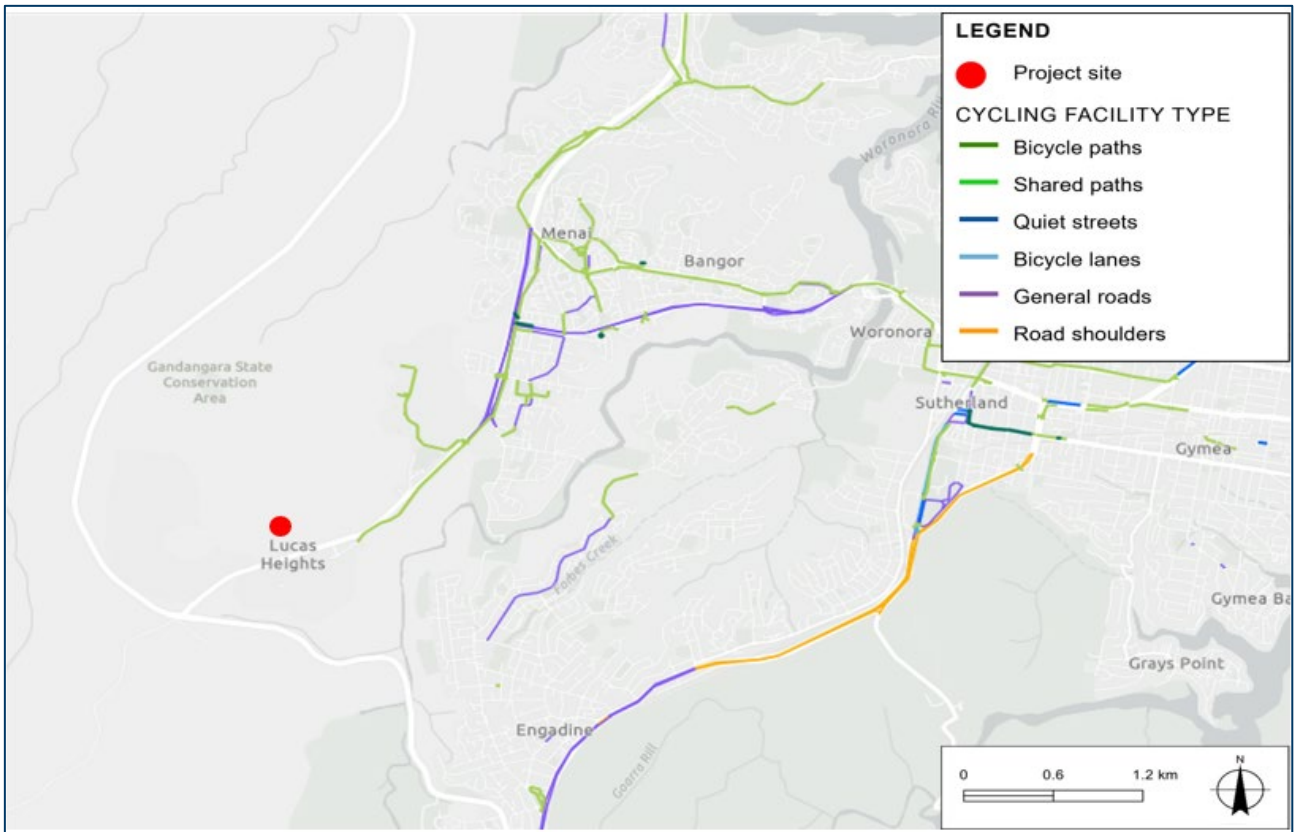


Image Source: TfNSW Cycleway Finder, modified by GHD

Figure 3.6 Cycling facilities

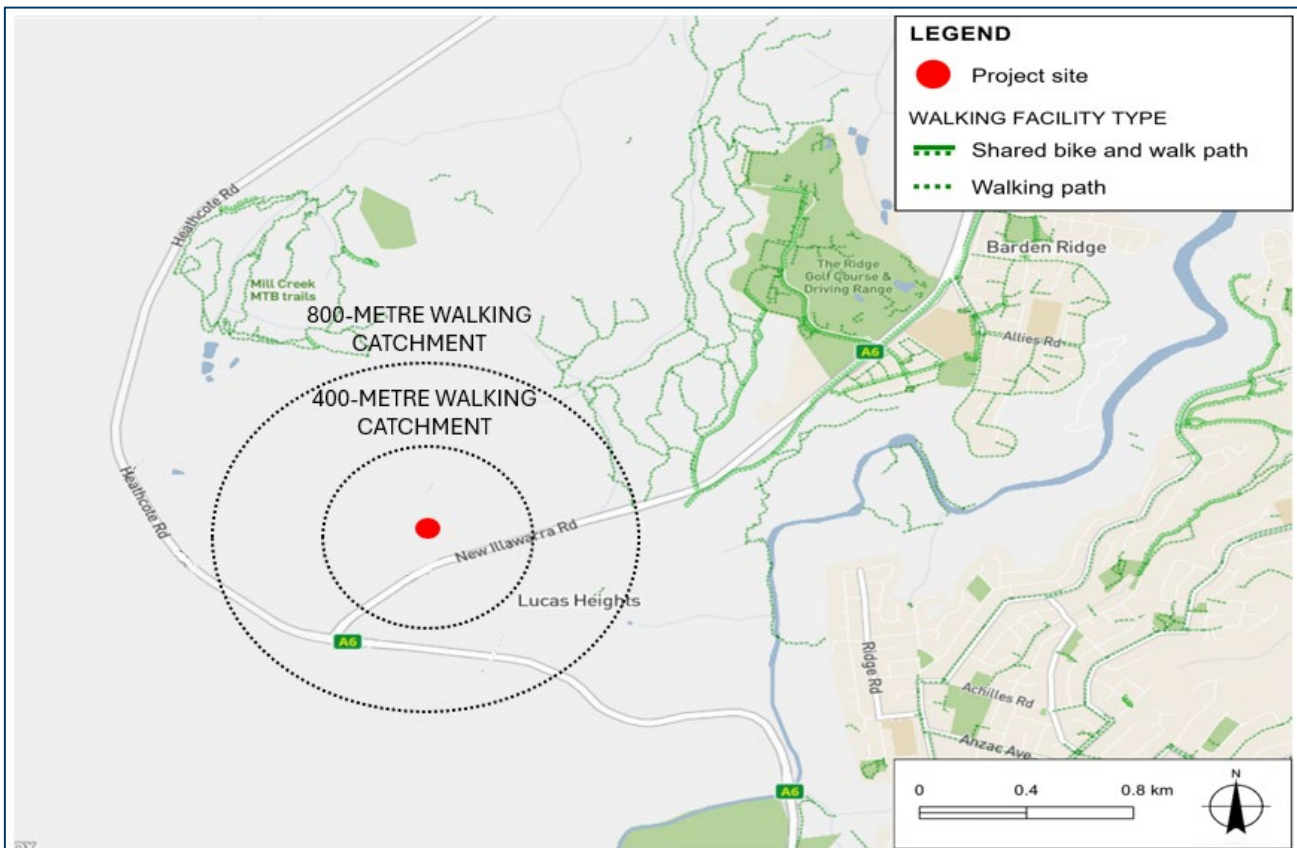
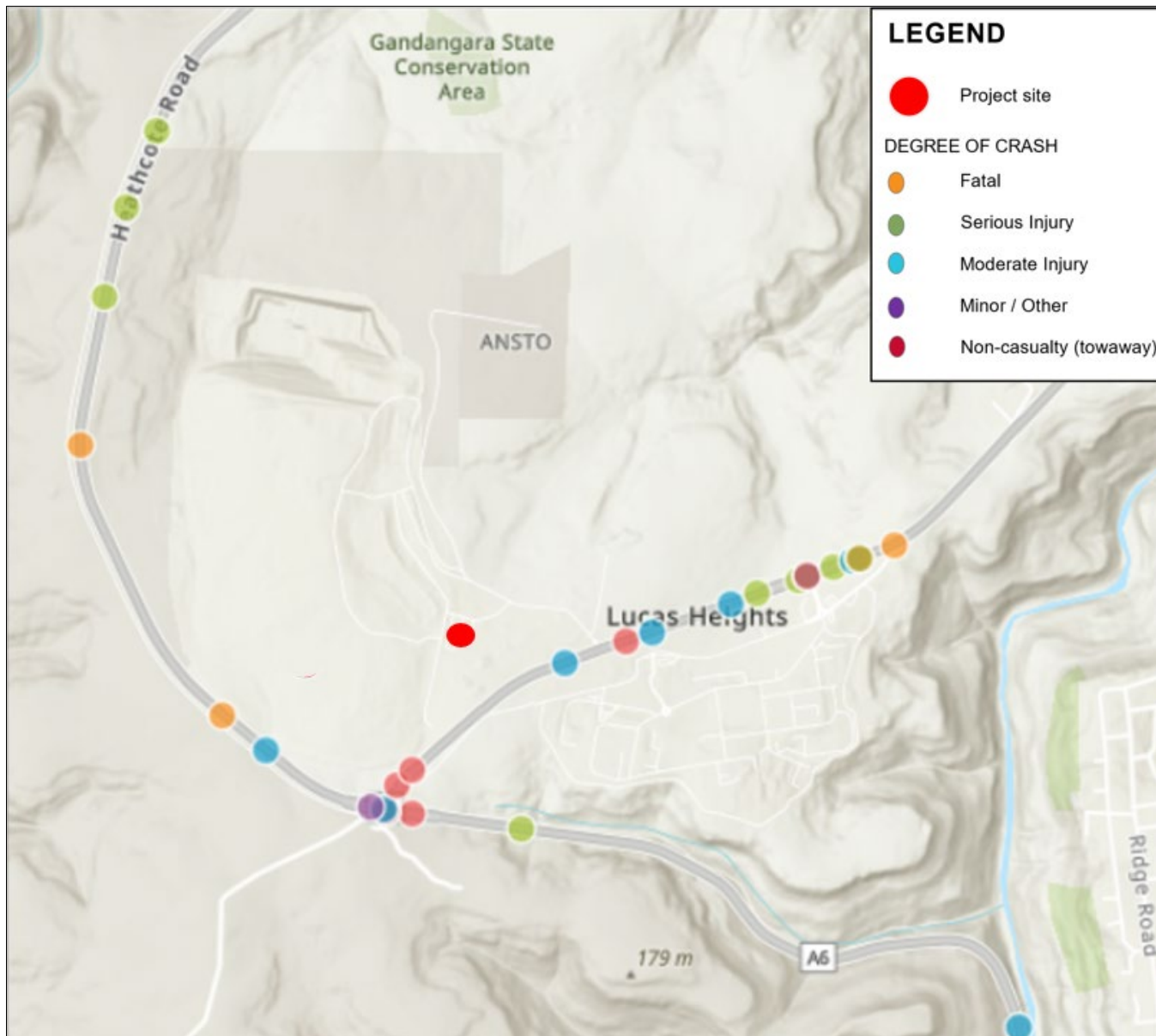


Image Source: TfNSW Trip Planner, modified by GHD

Figure 3.7 Walking facilities

3.3 Crash data review

Road crash information in the vicinity of the project site was collected from road crash statistics published by the NSW Centre for Road Safety over a five-year period for all State roads, regional roads and local roads. From 2019 to 2023, a total of 38 crash incidents were recorded on State roads within a 2 kilometre radius of the project site (refer to Figure 3.8).



Data source: NSW Road Crash Data 2019-2023

Figure 3.8 Road crash incidents in the vicinity of the site

Of the 38 crashes in the crash review study area, three resulted in fatalities, fourteen resulted in serious injury, ten resulted in moderate injury, two resulted in minor injury, and nine were non-casualty crashes (tow-away).

The most common type of crash was head-on (nine incidents), and the next most common type of crash involved vehicles travelling in the same direction (e.g. rear end, seven incidents).

A summary of the road crash incidents is presented in Table 3.7.

Table 3.7 Road crash incidents in the vicinity of the site

Year	Degree of Crash					Total
	Non-casualty (towaway)	Minor/Other Injury	Moderate Injury	Serious Injury	Fatal	
2019	1	0	2	3	2	8
2020	0	0	3	2	0	5
2021	4	1	3	3	0	11
2022	1	0	1	2	0	4
2023	3	1	1	4	1	10
Total	9	2	10	14	3	38

3.4 Existing traffic volumes

Traffic surveys were undertaken at the intersection of New Illawarra Road / Little Forest Road to determine the traffic volumes in proximity to the project site.

Turning movement counts were collected on Thursday, 20 March 2025 between 5.30 to 8.30am and 3.30 to 6.30 pm to capture typical peak traffic periods. The time intervals with the highest volume are highlighted on Figure 3.9. The following peak hours have been identified for the intersection of New Illawarra Road and Little Forest Road.

- Weekday AM peak hour: between 6.45 to 7.45am
- Weekday PM peak hour: between 3.30 to 4.30pm.

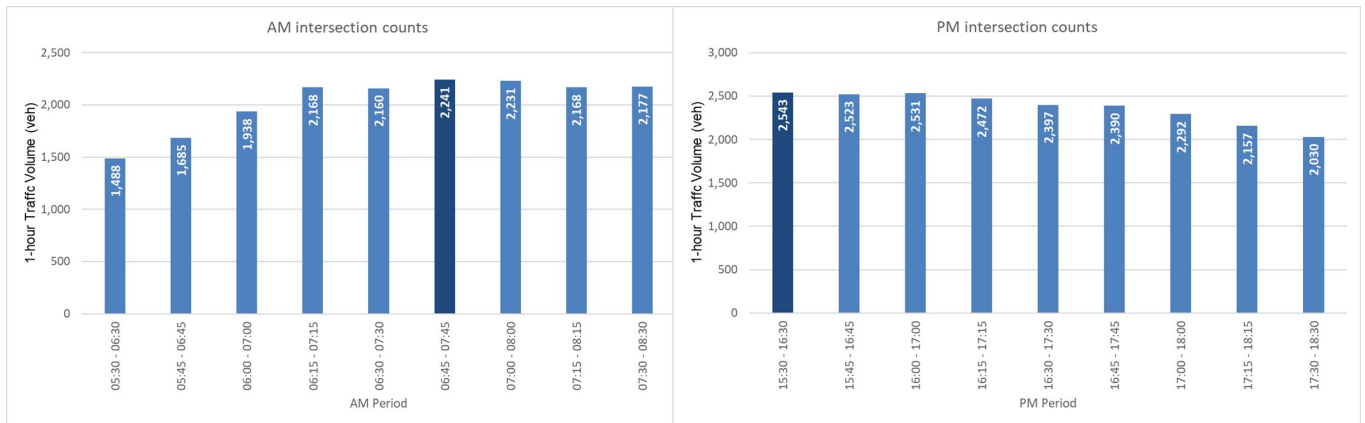


Figure 3.9 Hourly traffic volumes (AM and PM Peak)

A summary of the surveyed AM and PM peak hour traffic volumes is presented in Figure 3.10 and Figure 3.11.

AM: 6.45-7.45

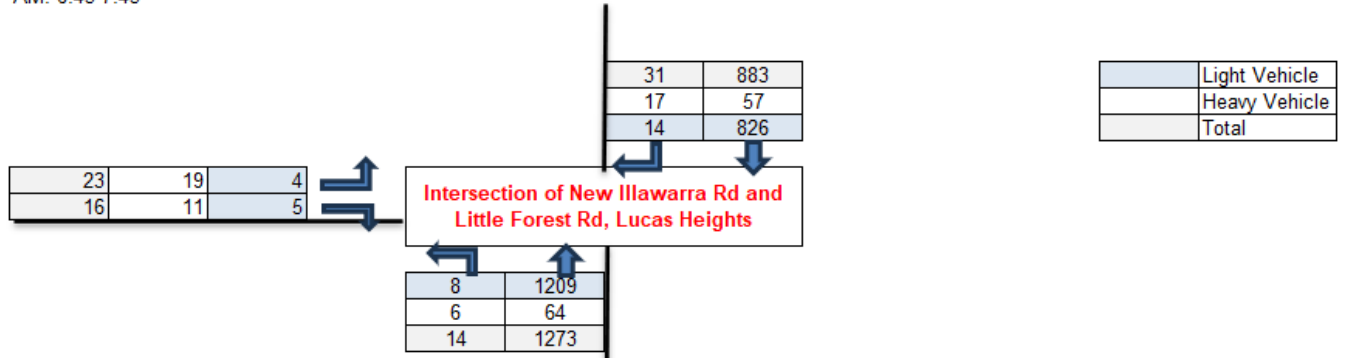


Figure 3.10 Existing traffic volumes (AM Peak)

PM: 3.30-4.30

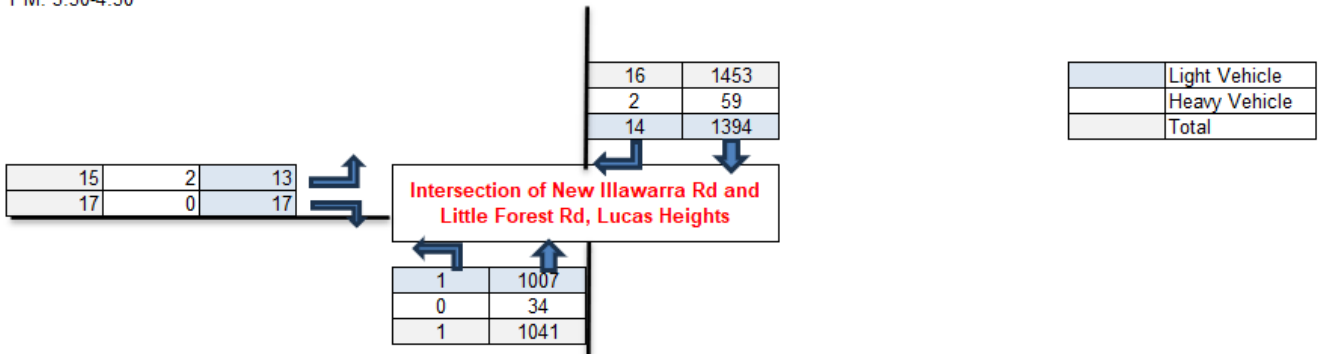


Figure 3.11 Existing traffic volumes (PM Peak)

Cleanaway undertook a traffic analysis from January 2022 until September 2025 focusing on the transfer truck movements associated with the LHRRP landfill operations (Cleanaway, 2025). The analysis was not presented as a formal report but rather as a comparative graph illustrating queue lengths of transfer trucks when landfill opening times were adjusted from 3am to 5am.

The findings indicate that the peak traffic period occurs at the 5:00 am landfill opening, when a queue of Cleanaway bulk waste transport trucks and Council vehicles typically forms to access the site. This queue is generally cleared within approximately 30 minutes of opening.

3.5 Existing intersection performance

The “base” 2025 traffic models were developed using the weekday AM and PM peak hour traffic count data. The existing traffic flows at key intersections were analysed using SIDRA 9.1 to identify the current operation of the key intersection in accordance with the criteria detailed in section 2.1.2. It is noted that the majority of vehicles turning into and out of Little Forrest Road are waste trucks servicing the LHRRP.

The geometry of the New Illawarra Road / Little Forest Road access road, as modelled in SIDRA 9.1, is displayed in Table 3.8.

Table 3.8 New Illawarra Road / Little Forest Road intersection layout



The results of the SIDRA analysis for the intersection with existing traffic volumes are shown in Table 3.9, with the SIDRA outputs provided as Appendix A.

A summary of the average LoS for the New Illawarra Road and Little Forest Road intersection is provided in Table 3.9. The SIDRA analysis indicates that the intersection operates within practical capacity (worst LoS D) during both AM and PM peak periods.

However, during the AM peak period, right-turn movements from the north and west approaches experience delays of 55 seconds and 41 seconds, respectively. This indicates potential issues with turning gaps or priority.

Table 3.9 New Illawarra Road / Little Forest Road current intersection performance

Approach	Intersection Leg	AM Peak			PM Peak		
		Ave delay (sec)	LOS	95 th % queue (m)	Ave delay (sec)	LOS	95 th % queue (m)
South	New Illawarra Road	8	A	< 5	7	A	< 5
North	New Illawarra Road	55	D	9	19	B	< 5
West	Little Forest Road	41	C	< 5	20	B	< 5
Total		55	D	9	20	B	< 5

LEGEND Free flow Congested

Notes:

- The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
- The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
- The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
- Average delay is given in seconds per vehicle.

4. Impact assessment

This chapter provides details of the estimated traffic that is expected to be generated by the project and an analysis of its potential impact on the adjoining road work.

4.1 Traffic generation

This section provides details of the estimated traffic that is expected to be generated by the proposed works. The term “vehicle movement” signifies a one-way movement of a vehicle from one point to another (i.e., one round trip is equivalent to two vehicle movements).

Construction

Estimates of peak hour construction vehicle activity have been undertaken on a first principles basis in accordance with the expected volumes of workers and heavy vehicles. The project is expected to generate employment for up to 15 personnel during construction.

The project construction hours are as follows:

- Monday to Friday: 7am to 5pm
- Saturday to Sunday: 8am to 5pm.

The expected volume of workers is 15, which is equivalent to 15 light vehicles. It has been assumed that all construction workers would drive, with a car occupancy of one, i.e. no carpooling.

It has been assumed that 20 heavy vehicles would occur per day (10 inbound and 10 outbound) during the construction of the concrete slabs, which is expected to be for a period of less than two weeks. To support a conservative assessment, four heavy vehicle movements (two inbound and two outbound) have been assumed during the morning and afternoon peak hours.

A summary of the traffic generated in the construction stage is provided in Table 4.1.

Table 4.1 Traffic generation – expected vehicle movement in construction stage

Traffic generation	Estimated Peak Daily vehicle movements	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Light vehicles	30	15	0	15	0	15	15
Heavy vehicles	8	2	2	4	2	2	4

Operation

The project is expected to generate employment for up to six people per day during the operation stage. Additionally, two to three delivery vehicles per weekday are expected to be generated for maintenance and general delivery purposes, based on a conservative estimate. The vehicles range from bulk oil deliveries (monthly) by semi/tanker, to light parcels delivered by courier van, and are assumed to arrive during the AM peak, stay on the project site for a short period of unloading, and exit the project site shortly afterwards.

It has been assumed that all operational staff will drive, with a car occupancy of one, i.e., no carpooling.

During peak hours, it has been conservatively estimated that the operation of the project would generate up to six light vehicle movements and two heavy vehicle movements in the AM peak and PM peak. A summary of the traffic generated in the operation stage is displayed in Table 4.2.

Table 4.2 Traffic generation – expected vehicle movement in operation stage

Traffic generation	Estimated Peak Daily vehicle movements	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Light vehicles	12	6	0	6	0	6	6
Heavy vehicles	4	2	0	2	0	2	2

4.2 Traffic distribution (construction and operation)

Estimates of the vehicle distribution on the road network have been made based on high-level assumptions as follows:

- All workers will enter in the AM peak and exit in the PM peak.
- Heavy vehicles will enter and exit in the AM and PM peak.
- 50% of generated traffic coming from the south and 50% of generated traffic coming from the north in the AM peak.
- 50% of generated traffic exit to the south and 50% of generated traffic exit to the north in the PM peak.

The traffic distribution for the construction and operation stages are provided in Figure 4.1 and Figure 4.2.

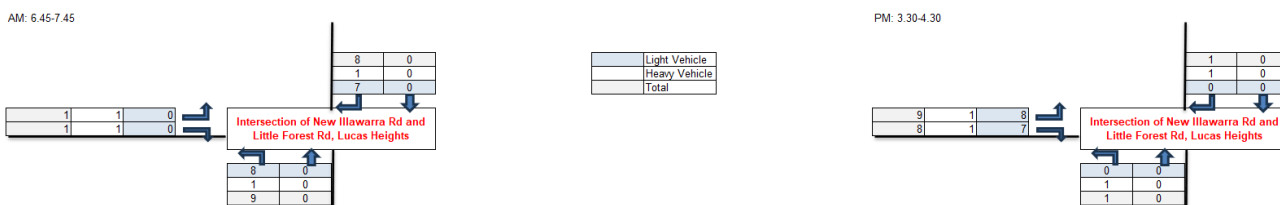


Figure 4.1 Traffic distribution-2026-construction stage

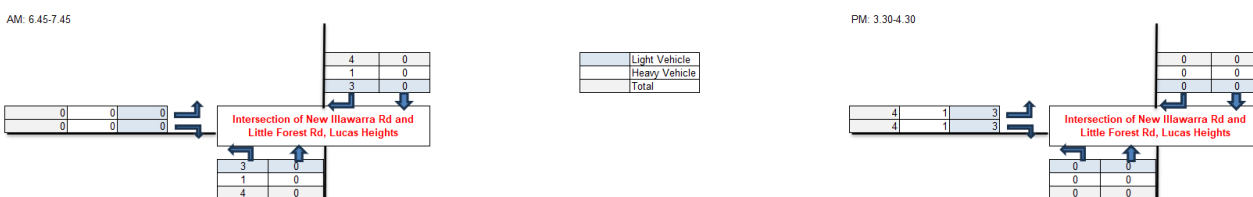


Figure 4.2 Traffic distribution-2035-operation stage

4.3 Future intersection performance (construction stage)

The impacts of the project on the road network were quantified by adding the traffic generated by the project construction activities to the expected future traffic volumes on the road network. For the purposes of this assessment, future baseline traffic was estimated for the year 2026, when the construction works are expected to end.

Future baseline traffic for the year 2026 was estimated by applying a growth rate of 1% per annum to the existing traffic volumes in section 3.4. Vehicle traffic generated during the construction stage was then added to the baseline traffic to assess the project’s impact on the affected roads.

The traffic impact of the project was determined by comparing the future intersection performance of the key intersections “without” and “with” the project construction activities, as follows:

- 2026 – future baseline scenario, without construction (refer to Figure 4.3)
- 2026 – future scenario with construction (refer to Figure 4.4).

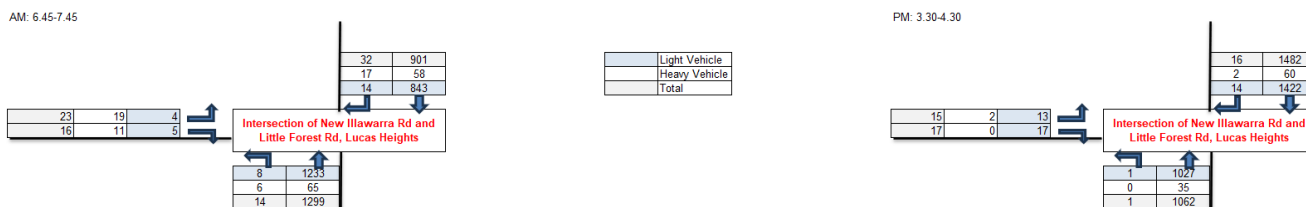


Figure 4.3 2026-future baseline scenario, without construction (AM and PM)

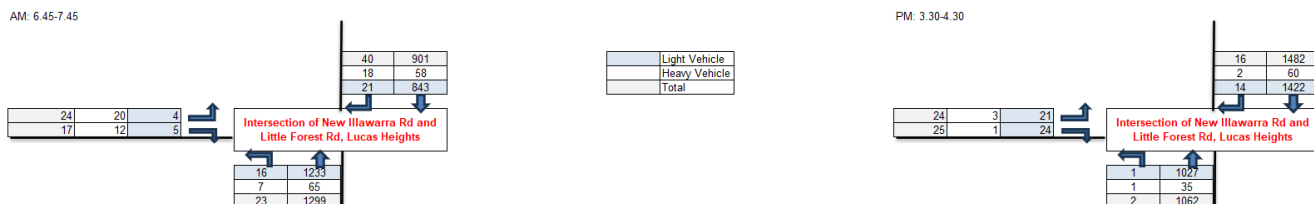


Figure 4.4 2026-future baseline scenario, with construction (AM and PM)

A summary of the SIDRA results for future construction scenarios are provided in Table 4.3 and Table 4.4.

Table 4.3 Future intersection performance – 2026, without construction

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LOS	95 th % queue (m)	Average Delay (s)	LOS	95 th % queue (m)
South: New Illawarra Road	8	A	< 5	7	A	< 5
North: New Illawarra Road	60	E	10	17	B	< 5
West: Little Forest Road	45	D	< 5	21	B	< 5
Total	60	E	10	21	B	< 5

Table 4.4 Future intersection performance – 2026, with construction

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LOS	95 th % queue (m)	Average Delay (s)	LOS	95 th % queue (m)
South: New Illawarra Road	8	A	< 5	8	A	< 5
North: New Illawarra Road	56	D	11	17	B	< 5
West: Little Forest Road	46	D	5	24	B	< 5
Total	56	D	11	24	B	< 5

LEGEND Free flow Congested

Notes:

- The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
- The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
- The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
- Average delay is given in seconds per vehicle.

Results of the SIDRA modelling indicate that by 2026:

- During the AM peak period, the intersection is expected to operate at LoS E in ‘without construction’ and LoS D in ‘with construction’. In addition, analysis shows that:
 - The northern approach of New Illawarra Road is expected to experience relatively long delays. This is mainly due to the longer time required to find a gap to make a right turn onto Little Forest Road due to heavy traffic volumes on both sides of New Illawarra Road.
 - Similar to the northern side of New Illawarra Road, Little Forest Road is also expected to experience relatively long delays due to the longer time required to find a gap to make a right turn onto New Illawarra Road.

- During the PM peak, the intersection is expected to operate within capacity with satisfactory LoS in both the ‘with construction’ and ‘without construction’ scenarios.
- The expected maximum queue length is 11 metres, which is expected to occur on the northern side of New Illawarra Road during the AM peak. The storage length of the dedicated right turn lane on the northern side of New Illawarra Road is 160 m. As such, no queueing impact is expected.

As noted above, during the AM peak period the SIDRA modelling indicates that the under the ‘without construction’ scenario, the New Illawarra Road north right turn would operate with a slightly higher average delay of than the ‘with construction’ scenario. This is attributed to a higher proportion of heavy vehicles making this movement in the ‘without construction’ scenario. The SIDRA results broken down separately for light vehicles and heavy vehicles are summarised in Table 4.5, which indicates slightly lower delays for both light and heavy vehicles in the ‘without construction’ scenario, although the overall average delay is slightly higher for the ‘with construction’ scenario.

Table 4.5 Future intersection performance – 2026 (AM), with and without construction

Turn	Movement Class	With Construction				Without Construction			
		Veh/h	HV %	Average Delay (s)	LOS	Veh/h	HV %	Average Delay (s)	LOS
North: New Illawarra Road (R2)	Total	39	46.2	56.3	LOS D	31	54.8	60.4	LOS E
	LV	21		31.5	LOS C	14		31.1	LOS C
	HV	18		85.2	LOS F	17		84.5	LOS F

LEGEND  Free flow Congested

Further to the above, the actual increase in traffic for the New Illawarra Road north right turn movement is only one additional heavy vehicle and seven light vehicles. This increase is considered to be minor and within the daily fluctuation in traffic.

A summary of the total traffic volumes at the Little Forest Road (west approach) is provided in Table 4.6. The comparison outlines the total traffic volumes and highlights the percentage increase during both “with” and “without” construction scenarios. This indicates that the development is expected to have a negligible traffic impact on this approach, with 18 additional traffic movements.

Table 4.6 Total traffic volumes and percentage increase at Little Forest Road – construction

Scenario	Without Construction (veh/h)	With Construction (veh/h)	Change (veh/h)	% Increase
AM peak two-way volumes	67	85	18	21%
PM peak two-way volumes	47	65	18	28%

A summary of the total intersection traffic volumes at the Little Forest Road and New Illawarra Road intersection is provided in Table 4.7 showing changes in overall traffic demand under both “with” and “without” construction and operation scenarios.

Table 4.7 Total traffic volumes and percentage increase at Little Forest Road/ New Illawarra Road intersection – construction

Scenario	Total volume (veh/h)	Change (veh/h)	% Increase
Without construction	2283	-	-
With construction	2302	18	0.83%

As shown above, the increase in traffic volume during the construction stage is 18 vehicles per hour equivalent to a 0.83% increase. These minimal changes indicate that the proposed development is not expected to have a significant impact on the performance of the intersection.

Peak heavy vehicle traffic on Little Forest Road occurs around 5am, coinciding with Cleanaway bulk waste transport and Council vehicles which typically queue to access the LHRRP. As project construction is proposed between 7am and 5pm, it would avoid the early morning peak period, thereby minimising potential conflicts with operational traffic and maintaining safe, efficient site access.

4.4 Future intersection performance (operation stage)

The impacts of the project on the road network were quantified by adding the traffic generated by the project's operational activities to the expected future traffic volumes on the road network. For the purposes of this assessment, future baseline traffic was estimated for the year 2035 (a ten-year horizon), when the project site is expected to be in operation.

Future baseline traffic for the year 2035 was estimated by applying a growth rate of 1% per annum to the existing traffic volumes in section 3.4. Vehicle traffic generated during the operation stage was then added to the baseline traffic to assess the project's impact on the affected roads. It is noted that the existing baseline traffic would include operational movements associated with the existing power station which would be decommissioned following the transfer of landfill biogas to the new bioenergy facility.

The traffic impact of the project was determined by comparing the future intersection performance of the key intersections "without" and "with" the project operational activities, as follows:

- 2035 – future baseline scenario, without operation (refer to Figure 4.5)
- 2035 – future scenario with operation (refer to Figure 4.6).

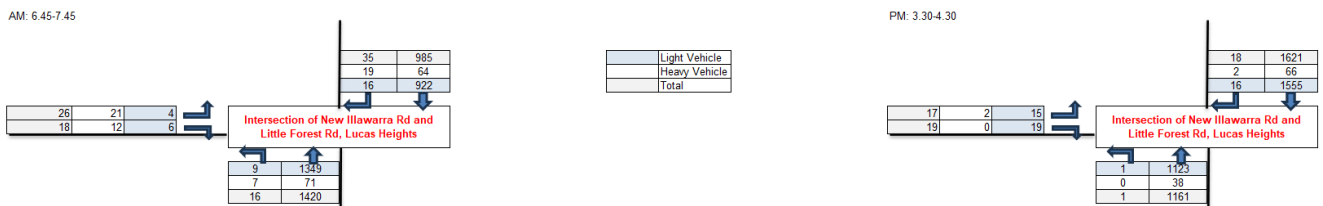


Figure 4.5 2035-future baseline scenario, without operation (AM and PM)

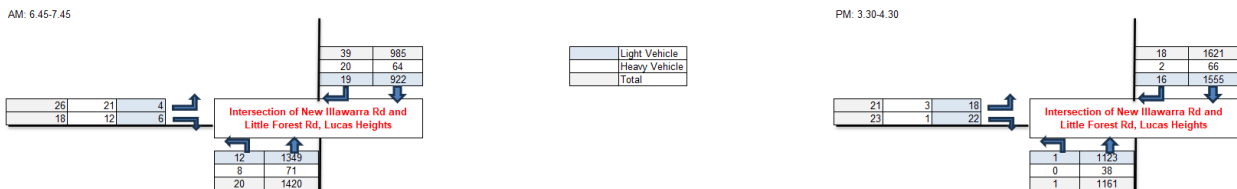


Figure 4.6 2035-future baseline scenario, with operation (AM and PM)

A summary of the SIDRA results for future scenarios is provided in Table 4.8 and Table 4.9.

Table 4.8 Future intersection performance – 2035, without operation

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LOS	95 th % queue (m)	Average Delay (s)	LOS	95 th % queue (m)
South: New Illawarra Road	8	A	< 5	7	A	< 5
North: New Illawarra Road	136	F	19	23	B	< 5
West: Little Forest Road	67	E	7	33	C	< 5
Total	136	F	19	33	C	< 5

Table 4.9 Future intersection performance – 2035, with operation

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LOS	95 th % queue (m)	Average Delay (s)	LOS	95 th % queue (m)
South: New Illawarra Road	8	A	< 5	7	A	< 5
North: New Illawarra Road	140	F	21	21	B	< 5
West: Little Forest Road	68	E	7	41	C	< 5
Total	140	F	21	41	C	< 5

LEGEND  Free flow Congested

Notes:

- The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
- The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
- The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
- Average delay is given in seconds per vehicle.

Results of the SIDRA modelling indicate that by 2035:

- In the AM peak periods, the intersection is expected to operate at LoS F in both ‘with operation’ and ‘without operation’ scenarios. Similar to the construction stage, the analysis shows that:
 - The northern side of New Illawarra Road is expected to experience extensive delays. This is mainly due to the longer time required to find a gap to make a right turn onto Little Forest Road due to heavy traffic volumes on both sides of New Illawarra Road.
 - Similar to the northern side of New Illawarra Road, Little Forest Road is also expected to experience extensive delays due to the longer time required to find a gap to make a right turn onto New Illawarra Road.
- In the PM peak period, the intersection is expected to operate within practical capacity (Worst LoS C) in both ‘with operation’ and ‘without operation’ scenarios.
- The expected maximum queue length is 21 metres, which is expected to occur on the northern side of New Illawarra Road during the AM peak. The storage length of the dedicated right turn lane on the northern side of New Illawarra Road is 160 metres. As such, no queueing impact is expected.

Further to above, the expected minor increases in traffic during operations would be offset by a similar reduction of movements by the existing power station operators which are included in the background or ‘without operation’ scenarios. As such, the operation activities would have no material impact on the operation of the road network, which is already expected to operate near or over capacity.

A summary of the total traffic volumes at the Little Forest Road (west approach) is provided in Table 4.10. The comparison outlines the total traffic volumes and highlights the percentage increase during both “with” and “without” operation scenarios. This indicates that the development is expected to have a negligible traffic impact on this approach, with eight additional traffic movements, which again represent a replacement of operational traffic movements from the existing power station and would not have a material effect on vehicle movements.

Table 4.10 Total traffic volumes and percentage increase at Little Forest Road - operation

Scenario	Without Operation (veh/h)	With Operation (veh/h)	Change (veh/h)	% Increase
AM peak two-way volumes	95	103	8	8%
PM peak two-way volumes	55	63	8	13%

A summary of the total intersection traffic volumes at the Little Forest Road and New Illawarra Road intersection is provided in Table 4.11 showing changes in overall traffic demand under both “with” and “without” operation scenarios.

Table 4.11 Total traffic volumes and percentage increase at Little Forest Road/ New Illawarra Road intersection - operation

Scenario	Total volume (veh/h)	Change (veh/h)	% Increase
Without Operation	2,500	-	-
With Operation	2,508	8	0.32%

As shown above, the increase in traffic volume during construction is eight vehicles per hour equivalent to a 0.32% increase. These minimal changes indicate that the proposed development is not expected to have a significant impact on the performance of the intersection.

4.5 Public and active transport impacts

Impacts from the project on public transport facilities and services are expected to be minimal, as the project site and its access point are not located near any public transport facilities and are not expected to interfere with existing public transport routes.

There is no formal active transport infrastructure in proximity to the project site. Therefore, the expected vehicle activity associated with the construction and operation of the project is expected to have a negligible impact on the active transport infrastructure in proximity to the project site. Proposed measures are provided in Chapter 5 to mitigate or minimise any impacts to other road users.

4.6 Car parking impacts

Parking for all vehicles associated with the project will be contained on site within the project boundaries. As such, vehicle parking demand generated by the project would have no impact on parking spaces or roads surrounding the site.

4.7 Cumulative impacts

Cumulative impacts for the investigated intersections due to the future and ongoing projects were assessed with reference to the *Cumulative Impact Assessment Guidelines for State Significant Projects* guidelines (DPIE, 2014).

In accordance with the guidelines this cumulative impact assessment has considered future projects that could result in a material impact on traffic. A study area for the cumulative impact assessment was selected based on the State Significant Development (SSD) that is in Lucas Heights Resource Recovery Park.

Table 4.12 shows the list of the projects that could result in a traffic impact, their scoping summary and potential cumulative impacts.

Table 4.12 Cumulative impact scoping projects

Project	Approx. distance to the project site	Assessment type and decision	Indicative timing / overlap	Potential cumulative impact
1 Lucas Heights Resource Recovery Park Project Little Forest Road, Lucas Heights	Within Lucas Heights Resource Recovery Park	State Significant Development Approved	Operation overlap: Yes, currently operating	Not impacting the assessed intersections as the traffic associated with the currently operating has been captured in the traffic surveys. To minimise cumulative impacts during the early morning peak, construction vehicles will avoid accessing the site before 6:00 am. This will reduce overlap with operational traffic and maintain safe, efficient site access on Little Forest Road.
2 Lucas Heights Resource Recovery Park Western Expansion Little Forest Road, Lucas Heights	Within Lucas Heights Resource Recovery Park	State Significant Development Prepare EIS	Construction overlap: TBC Operation overlap: NA	Not impacting the assessed intersections at this stage. there will be no overlap of construction and cumulative impacts are not anticipated.
3 Mill Creek Mountain Bike Club Car Park	450 m to the southeast, accessed from Little Forrest Road	Approved	Currently under construction	Sutherland Shire Council are currently constructing a car park to serve the Mill Creek Mountain Bike trails. This car park would provide 52 car parking spaces and an access pathway for mountain bikers to ride off road along the Little Forest Road. Minor impacts on the operation of the assessed intersections are expected, as traffic associated with the Mill Creek Mountain Bike trails already use Little Forrest Road, with vehicles parking informally along Little Forrest Road. The proposed formalised car parking facility is expected to improve road safety along Little Forrest Road, with reduced conflicts between vehicles accessing the Lucas Heights Resource Recovery Park and vehicles parking along Little Forest Road to access the mountain biking trails.
4 LHRRP Flare Modification	The project is immediately north of the project footprint.	Mod 3 – Modification Approved	Construction overlap: To be developed prior to bioenergy facility.	Construction and operation of an enclosed flaring facility that would comprise four 3,000 m ³ /hour and one 1,000 m ³ /hour landfill gas combustion capacity flares. The modification is expected to result in a minor increase number of additional vehicles, in the order of around 5-10 vehicles per day during construction and on average 0.5 vehicles per day during operation associated with maintenance activities. The modification is therefore expected to have negligible impacts to traffic operations at Little Forrest Road and New Illawarra Road.
5 LHRRP Eastern FOGO Facility Modification	Within Lucas Heights Resource Recovery Park	Mod 4 – Scoping letter submitted – Prepare Mod report	Construction overlap: Potentially, early – mid 2026 Operation overlap: Yes	The modification is expected to result in a maximum of 40 heavy vehicle and 7 light vehicle movements per day through the LHRRP weighbridge and main access point.

Project	Approx. distance to the project site	Assessment type and decision	Indicative timing / overlap	Potential cumulative impact
				<p>Exact construction timing is unknown. While there is potential for some overlap in construction timeframes, the works would be relatively small in scale and are expected to use separate internal access routes within the broader LHRRP site. Consequently, no significant cumulative traffic impacts are anticipated.</p> <p>Due to low volume of operational traffic proposed for the bioenergy facility, this would not have any impact on traffic numbers accessing the LHRRP on Litte Forest Road during FOGO operating hours.</p>

4.8 Access arrangement and swept path analysis

Access to the project site for both light and heavy vehicles during construction and operation would be via Little Forest Road, as follows:

- all vehicles would enter the project site via Little Forest Road
- all vehicles would egress the project site via Little Forest Road
- all vehicles will access and egress the project site in a forward direction
- the project has been designed to accommodate vehicles up to the size of a large B-double truck (26 metres).

A swept path assessment was undertaken using AutoTURN 11.0 to confirm that the proposed site layout would allow vehicles to safely enter / exit the site using the design vehicle shown in Table 4.13. The switchroom is expected to be the largest module for oversized and overmass (OSOM) transport, which would be transported using a B-double vehicle (26 metres in length). It is expected that a B-doubles (26 metres in length), would be the maximum size vehicles to be typically used and is expected to occur in the construction stage only, with smaller heavy vehicles expected during operation.

The swept path simulations were undertaken using vehicle speeds of 5 kilometres per hour, with the assessment based on the proposed site plan and aerial image. The result of the turn path assessment, as shown in Figure 4.7 indicates that the design vehicle is expected to generally manoeuvre with appropriate clearances within the site.

Table 4.13 outlines the design vehicle and swept path elements utilised in the swept path analysis provided in Figure 4.8.

Table 4.13 Swept path design vehicles

AutoTURN Design Vehicle	Design Vehicle Dimensions																				
B-double 26m length, Austroads 2013	<p>B-DOUBLE 26M</p> <table border="0"> <tr> <td></td> <td style="text-align: center;">mm</td> <td></td> <td></td> </tr> <tr> <td>Tractor Width</td> <td>: 2500</td> <td>Lock to Lock Time</td> <td>: 6.0</td> </tr> <tr> <td>Trailer Width</td> <td>: 2500</td> <td>Steering Angle</td> <td>: 23.4</td> </tr> <tr> <td>Tractor Track</td> <td>: 2500</td> <td>Articulating Angle</td> <td>: 70.0</td> </tr> <tr> <td>Trailer Track</td> <td>: 2500</td> <td></td> <td></td> </tr> </table>		mm			Tractor Width	: 2500	Lock to Lock Time	: 6.0	Trailer Width	: 2500	Steering Angle	: 23.4	Tractor Track	: 2500	Articulating Angle	: 70.0	Trailer Track	: 2500		
	mm																				
Tractor Width	: 2500	Lock to Lock Time	: 6.0																		
Trailer Width	: 2500	Steering Angle	: 23.4																		
Tractor Track	: 2500	Articulating Angle	: 70.0																		
Trailer Track	: 2500																				
Swept Path Elements	Swept Path Elements: 																				

The swept path analysis indicates that a B-double, 26 metres in length, would experience conflicts (including encroachment into the opposing lane) when entering and exiting at the corners as shown on Figure 4.7.

A preliminary swept path assessment has also been undertaken for OSOM vehicle to transport the switchroom as shown on Figure 4.8. The analysis indicates the OSOM will straddle the opposing lane for left and right turns into Little Forest Road and there would be some encroachment on the road verge.

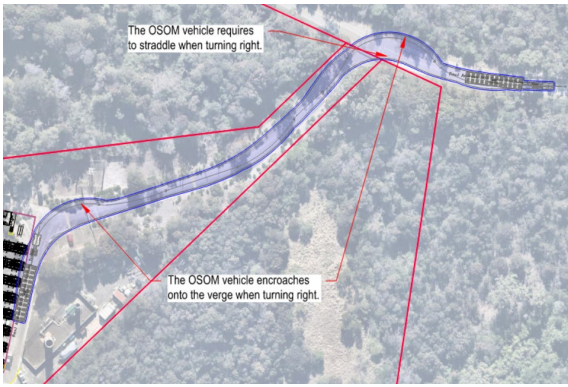
As such, it is recommended traffic controllers to be in place to ensure safety and manage traffic flow within the site in accordance with *Technical Direction – TD0003:2022, Traffic control at work sites*.

On-site vehicle parking and access arrangements during construction and operation will be prepared in the Construction Traffic and Pedestrian Management Plan.

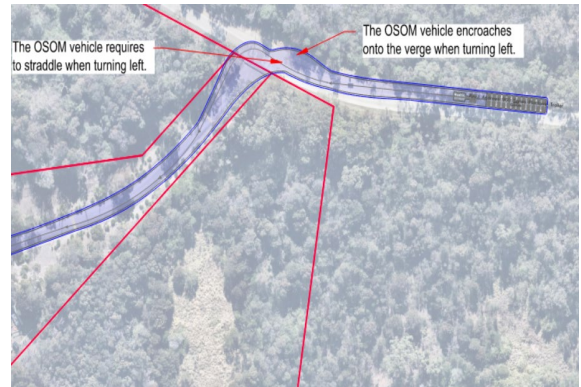


Figure 4.7 Swept path analysis Insets (B-double, 26 metres)

A preliminary swept path assessment has also been undertaken for an OSOM vehicle to transport the switchroom. The analysis, shown on Figure 4.8, indicates there are some locations where the vehicle movements would straddle adjacent traffic lanes when turning at intersections. The OSOM vehicle movement would need to be managed as part of the detailed CTMP. It should be noted that the swept turn paths are indicative only and would need to be confirmed by the contractor by providing a detailed OSOM route analysis from the point of origin to / from the site.



OSOM Exiting



OSOM Entering



OSOM Entering (left turn)



OSOM Entering (right turn)



OSOM Existing (left turn)



OSOM Existing (right turn)

Figure 4.8 Swept path analysis Insets – OSOM for the switchboard transportation

5. Mitigation and management measures

This chapter describes the measures that can be implemented to avoid or minimise potential impacts on traffic and transport.

The following measures focus on the management of construction traffic as the construction stage is expected to generate more vehicles than the operation of the project. However, these measures may still be adopted (as applicable) during operation.

5.1 Construction Traffic and Pedestrian Management Plan

A draft Construction Traffic and Pedestrian Management Plan (CTPMP) has been prepared and will be updated prior to the commencement of construction to maintain the safety of all workers and road users within the vicinity of the project site. The CTPMP will provide guidance on the safe and efficient management of staff and vehicle access to the site. At a minimum, the CTPMP will provide a description of:

- the proposed activities
- the type and number of vehicles that would be generated during each stage of the works
- access arrangements and routes for vehicles entering and egressing the site.

The CTPMP will outline strategies to:

- manage vehicular traffic movement associated with the project
- minimise the impact of site-generated vehicle traffic on the operation of the adjoining road network
- facilitate the continuous, safe, and efficient travel of workers, contractors, and the general public.

The draft CTPMP is provided as Appendix B.

5.2 Traffic Management Measures

5.2.1 Site access and parking

The following measures are proposed to minimise the number of traffic movements to/from the site:

- Logistics management shall be controlled by the site supervisor to ensure the efficient movement of equipment and materials and to minimise the number of trips that will need to be taken for all vehicle types.
- Carpooling opportunities for personnel living in close proximity to one another shall be utilised where feasible.
- Security requirements and other site access authorisation arrangements are to be developed as to minimise the risk of queuing on New Illawarra Road/Little Forest Road.
- No site access shall be granted to vehicles that do not have proper authorisation to enter the work site.
- All vehicles shall comply with road traffic rules, particularly for any local traffic rules.
- All parking shall be contained within the project site premises. Under no circumstance are personnel, company vehicles, or heavy vehicles allowed to use any public road for long-term parking, including leaving parked or unattended vehicles.
- Construction-related vehicles should avoid accessing Little Forest Road before 6:00am to avoid interaction with early morning operational traffic and reduce congestion at the LHRRP site entrance.

5.2.2 Safety

- All staff and subcontractors engaged on site shall be required to undergo a site induction. The induction shall outline the requirements of the CTPMP, including site access routes, environmental and occupational health and safety responsibilities, emergency procedures, potential carpooling/shuttle service opportunities, and vehicle height and mass restrictions, among others. Additionally, the Site Manager will discuss CTPMP requirements regularly as a part of regular “toolbox talks”.
- Access for emergency vehicles shall be maintained at the site during the construction works, in accordance with emergency vehicle requirements. The emergency services, including fire, ambulance and police, shall be advised of all planned changes to traffic arrangements prior to the commencement of works.
- Preparation of a Traffic Guidance Scheme, detailing adequate road signage at construction work sites to inform motorists and pedestrians of the work site ahead to ensure that the risk of road accidents and disruption to surrounding land uses is minimised.
- Protection shall be provided through advanced warning of roadworks, speed changes, safety barriers with adequate offsets and deflection allowance, where necessary.
- The CTPMP shall cover strategies to manage vehicular flow to facilitate the safe movement of road users (i.e., workers and staff, and the general public – pedestrians, cyclists, and other non-project vehicles) within, around, and to/from the project site.

5.2.3 Heavy vehicle access

- Key stakeholders, including owners/operators of adjacent lands and emergency service providers, shall be notified of any changes to the traffic management arrangements prior to the commencement of works. Coordination and approval with the owners of the access roads (if an external party) shall be secured prior to the commencement of works.
- Truck drivers shall be directed to follow the predetermined haulage routes. Additionally, all drivers must observe posted speed limits (where applicable) on adjoining road networks to comply with Australian Road Rules. Drivers are to adjust speeds to suit the road environment and weather conditions appropriately to ensure the safe movement of the vehicles based on the individual vehicle configurations.
- A turnaround facility within the project site that can accommodate the largest vehicle entering the site shall be provided to allow all vehicles to exit the site in a forward direction, with vehicles to also enter in a forward direction.
- Two traffic controllers shall be placed onsite for 26 metre B-double manoeuvre at the identified encroachment areas.

6. Conclusion

This TIA has been prepared as part of the EIS to support the development application for the construction and operation of the bioenergy facility.

The TIA provides an overview of the existing road network and traffic conditions, a review of site access arrangements, an assessment of the potential traffic implications arising from the project, and recommendations on measures to minimise any adverse effects of the project to road users.

The key findings of the TIA are summarised as follows:

- Traffic surveys were undertaken on Thursday 20 March 2025 to determine the existing traffic conditions at the intersection of Little Forest Road and New Illawarra Road.
- Data from the survey indicate the following peak periods:
 - AM peak hour occurs between 6.45am to 7.45pm
 - PM peak hour occurs between 3.30am to 4.30pm.
- The SIDRA analysis indicates that the intersection operates within practical capacity (worst approach LoS D) during both AM and PM peak periods.
- The project is expected to generate the following vehicles movements during the road network peak hour. For assessment purposes and for the worst-case scenario, the following vehicle movements are considered.
 - **Construction:**
 - **Light vehicles:** 30 vehicle movements (15 inbound in the AM, 15 outbound in the PM)
 - **Heavy vehicles:** 8 vehicle movements (2 inbound and 2 outbound in the AM, 2 inbound and 2 outbound in the PM)
 - **Operation:**
 - **Light vehicles:** 12 vehicle movements (6 inbound in the AM, 6 outbound in the PM)
 - **Heavy vehicles:** 4 vehicle movements (2 inbound in the AM, 2 outbound in the PM).
- The analysis of traffic performance using SIDRA indicated the following intersection performance in the construction stage (2026):
 - During the AM peak period, the intersection is expected to operate at LoS E in ‘*without construction*’ and LoS D in ‘*with construction*’. In addition, analysis shows that:
 - The northern side of New Illawarra Road is expected to experience relatively long delays. This is mainly due to the longer time required to find a gap to make a right turn onto Little Forest Road due to heavy traffic volumes on both sides of New Illawarra Road.
 - Similar to the northern side of New Illawarra Road, Little Forest Road is also expected to experience relatively long delays due to the longer time required to find a gap to make a right turn onto New Illawarra Road.
 - As noted above, during the AM peak period the SIDRA modelling indicates that the under the ‘*with construction*’ scenario, the New Illawarra Road north right turn would operate with a slightly higher average delay of than the ‘*without construction*’ scenario. This is attributed to a higher proportion of heavy vehicles making this movement in the ‘*without construction*’ scenario.
 - During the PM peak, the intersection is expected to operate within capacity with satisfactory LoS in both the ‘*with construction*’ and ‘*without construction*’ scenarios.
 - The expected maximum queue length is 11 metres, which is expected to occur on the northern side of New Illawarra Road during the AM peak. The storage length of the dedicated right turn lane on the northern side of New Illawarra Road is 160 metres. As such, no queueing impact is expected.

- The analysis of traffic performance using SIDRA indicated the following intersection performance in the operation stage (2035):
 - In the AM peak periods, the intersection is expected to operate at LoS F in both ‘*with operation*’ and ‘*without operation*’ scenarios. Similar to the construction stage, the analysis shows that:
 - The northern side of New Illawarra Road is expected to experience extensive delays. This is mainly due to the longer time required to find a gap to make a right turn onto Little Forest Road due to heavy traffic volumes on both sides of New Illawarra Road.
 - Similar to the northern side of New Illawarra Road, Little Forest Road is also expected to experience extensive delays due to the longer time required to find a gap to make a right turn onto New Illawarra Road.
 - In the PM peak period, the intersection is expected to operate within practical capacity (Worst LoS C) in both ‘*with operation*’ and ‘*without operation*’ scenarios.
 - The expected maximum queue length is 21 metres, which is expected to occur on the northern side of New Illawarra Road during the AM peak. The storage length of the dedicated right turn lane on the northern side of New Illawarra Road is 160 metres. As such, no queueing impact is expected.
 - The expected increases in traffic during operations would be offset by a similar reduction of operational movements by the operators of the existing power station which will be replaced by the project. As such, traffic generated by the operation activities is not expected to have a significant impact on the operation of the road network, which is already expected to operate near or over capacity
- There is no formal active transport infrastructure in proximity to the project site. Therefore, the expected vehicle activity associated with the construction and operation of the project is expected to have a negligible impact on the active transport infrastructure in proximity to the project site.
- A swept path has been undertaken to assess the turning movement of a 26 metre B-Double to access the project site. All the vehicles will access and egress the project in a forward direction.
- The CTPMP will be updated prior to the commencement of works. The aim of the CTPMP is to maintain the safety of all workers and road users within the vicinity site. It is proposed that a site induction for construction personnel will be undertaken to outline the requirements of the CTPMP.
- Based on the assumptions and findings outlined in this report, it is considered that the project is expected to have a negligible impact on the existing road network operations due to the number of traffic generated by development in the construction stage and the operation stage. As such, no upgrades are required as part of the project.

7. References

- Austrroads (2021) Guide to Road Design Part 3: Geometric Design
- Austrroads (2020) Guide to Traffic Management – Part 6: Interchanges, Intersections and Crossing Mangement
- DPIE (2014) Cumulative Impact Assessment Guidelines for State Significant Projects guidelines
- Transporf for NSW (2024) Guide to Transport Imapct Assessment (Ver 1.1)
- Australian Standard (2004) AS2890.1 – Part1: Off-street car parking
- Australian Standard (2018) AS2890.2 – Part2: Off-street commercial vehicle facilities
- Roads and Maritime Services (2013) Roads and Maritimes Services Traffic Modelling Guideline
- Cleanaway (2025). Lucas Heights Resource Recovery Park – Traffic survey (January 2022 – September 2025).

Appendices

Appendix A

SIDRA modelling results

MOVEMENT SUMMARY

Site: 101 [2025_Existing_New Illawara Road/Little Forest Road-AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m			km/h	
South: New Illawara Road															
1	L2	All MCs	14	42.9	14	42.9	0.011	7.7	LOS A	0.0	0.0	0.00	0.63	0.00	60.0
		LV	8		8		0.011	7.7	LOS A	0.0	0.0	NA	NA	NA	60.0
		HV	6		6		0.011	7.7	LOS A	0.0	0.0	NA	NA	NA	60.0
2	T1	All MCs	1273	5.0	1273	5.0	0.686	0.6	LOS A	0.0	0.0	0.00	0.00	0.00	78.9
		LV	1209		1209		0.686	0.6	LOS A	0.0	0.0	NA	NA	NA	78.9
		HV	64		64		0.686	0.6	LOS A	0.0	0.0	NA	NA	NA	78.9
Approach			1287	5.4	1287	5.4	0.686	0.7	NA	0.0	0.0	0.00	0.01	0.00	78.7
North: New Illawara Road															
8	T1	All MCs	883	6.5	883	6.5	0.482	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
		LV	826		826		0.482	0.2	LOS A	0.0	0.0	NA	NA	NA	79.5
		HV	57		57		0.482	0.2	LOS A	0.0	0.0	NA	NA	NA	79.5
9	R2	All MCs	30	56.7	30	56.7	0.321	55.0	LOS D	0.9	9.1	0.94	1.01	1.08	34.4
		LV	13		13		0.321	28.2	LOS B	0.9	9.1	NA	NA	NA	43.9
		HV	17		17		0.321	75.6	LOS F	0.9	9.1	NA	NA	NA	29.5
Approach			913	8.1	913	8.1	0.482	2.0	NA	0.9	9.1	0.03	0.03	0.04	77.3
West: Little Forest Road															
10	L2	All MCs	23	82.6	23	82.6	0.024	28.0	LOS B	0.0	0.0	0.00	0.44	0.00	38.2
		LV	4		4		0.024	28.0	LOS B	0.0	0.0	NA	NA	NA	38.2
		HV	19		19		0.024	28.0	LOS B	0.0	0.0	NA	NA	NA	38.2
12	R2	All MCs	16	68.8	16	68.8	0.156	41.3	LOS C	0.4	4.1	0.90	0.95	0.92	30.9
		LV	5		5		0.156	21.1	LOS B	0.4	4.1	NA	NA	NA	35.3
		HV	11		11		0.156	50.5	LOS D	0.4	4.1	NA	NA	NA	29.2

Approach	39	76.9	39	76.9	0.156	33.5	LOS C	0.4	4.1	0.37	0.65	0.38	34.5
All Vehicles	2239	7.8	2239	7.8	0.686	1.8	NA	0.9	9.1	0.02	0.03	0.02	76.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [2025_Existing_New Illawara Road/Little Forest Road - PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
South: New Illawara Road															
1	L2	All MCs	1	0.0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	68.0
		LV	1		1		0.001	6.9	LOS A	0.0	0.0	NA	NA	NA	68.0
		HV	0		0		-	-	-	-	-	NA	NA	NA	-
2	T1	All MCs	1041	3.3	1041	3.3	0.551	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	79.4
		LV	1007		1007		0.551	0.3	LOS A	0.0	0.0	NA	NA	NA	79.4
		HV	34		34		0.551	0.3	LOS A	0.0	0.0	NA	NA	NA	79.4
Approach			1042	3.3	1042	3.3	0.551	0.3	NA	0.0	0.0	0.00	0.00	0.00	79.4
North: New Illawara Road															
8	T1	All MCs	1453	4.1	1453	4.1	0.775	0.8	LOS A	0.0	0.0	0.00	0.00	0.00	78.3
		LV	1394		1394		0.775	0.8	LOS A	0.0	0.0	NA	NA	NA	78.3
		HV	59		59		0.775	0.8	LOS A	0.0	0.0	NA	NA	NA	78.3
9	R2	All MCs	8	25.0	8	25.0	0.026	19.0	LOS B	0.1	0.7	0.79	0.90	0.79	52.4
		LV	6		6		0.026	14.6	LOS B	0.1	0.7	NA	NA	NA	55.3
		HV	2		2		0.026	32.1	LOS C	0.1	0.7	NA	NA	NA	45.1
Approach			1461	4.2	1461	4.2	0.775	0.9	NA	0.1	0.7	0.00	0.00	0.00	78.2
West: Little Forest Road															
10	L2	All MCs	15	13.3	15	13.3	0.012	7.8	LOS A	0.0	0.0	0.00	0.45	0.00	38.3
		LV	13		13		0.012	7.8	LOS A	0.0	0.0	NA	NA	NA	38.3
		HV	2		2		0.012	7.8	LOS A	0.0	0.0	NA	NA	NA	38.3
12	R2	All MCs	17	0.0	17	0.0	0.039	19.9	LOS B	0.1	0.8	0.67	0.82	0.67	36.9
		LV	17		17		0.039	19.9	LOS B	0.1	0.8	NA	NA	NA	36.9
		HV	0		0		-	-	-	-	-	NA	NA	NA	-

Approach	32	6.3	32	6.3	0.039	14.2	LOS A	0.1	0.8	0.36	0.65	0.36	37.5
All Vehicles	2535	3.8	2535	3.8	0.775	0.8	NA	0.1	0.8	0.01	0.01	0.01	77.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: \\ghdnet\ghd\AU\Sydney\Projects\21\12649882\Tech\Traffic\SIDRA\12649882-Project Bright -SIDRA model_V2.sip9

MOVEMENT SUMMARY

▽ Site: 101 [2026_Future with construction_New Illawara Road/Little Forest Road-AM (Site Folder: 2026 with construction)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
South: New Illawara Road															
1	L2	All MCs	23	30.4	23	30.4	0.016	7.5	LOS A	0.0	0.0	0.00	0.63	0.00	62.1
		LV	16		16		0.016	7.5	LOS A	0.0	0.0	NA	NA	NA	62.1
		HV	7		7		0.016	7.5	LOS A	0.0	0.0	NA	NA	NA	62.1
2	T1	All MCs	1298	5.0	1298	5.0	0.699	0.7	LOS A	0.0	0.0	0.00	0.00	0.00	78.8
		LV	1233		1233		0.699	0.7	LOS A	0.0	0.0	NA	NA	NA	78.8
		HV	65		65		0.699	0.7	LOS A	0.0	0.0	NA	NA	NA	78.8
Approach			1321	5.5	1321	5.5	0.699	0.8	NA	0.0	0.0	0.00	0.01	0.00	78.6
North: New Illawara Road															
8	T1	All MCs	901	6.4	901	6.4	0.492	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
		LV	843		843		0.492	0.2	LOS A	0.0	0.0	NA	NA	NA	79.5
		HV	58		58		0.492	0.2	LOS A	0.0	0.0	NA	NA	NA	79.5
9	R2	All MCs	39	46.2	39	46.2	0.404	56.3	LOS D	1.1	10.8	0.95	1.03	1.15	34.6
		LV	21		21		0.404	31.5	LOS C	1.1	10.8	NA	NA	NA	43.4
		HV	18		18		0.404	85.2	LOS F	1.1	10.8	NA	NA	NA	28.0
Approach			940	8.1	940	8.1	0.492	2.5	NA	1.1	10.8	0.04	0.04	0.05	76.7
West: Little Forest Road															
10	L2	All MCs	24	83.3	24	83.3	0.026	31.4	LOS C	0.0	0.0	0.00	0.44	0.00	38.2
		LV	4		4		0.026	31.4	LOS C	0.0	0.0	NA	NA	NA	38.2
		HV	20		20		0.026	31.4	LOS C	0.0	0.0	NA	NA	NA	38.2
12	R2	All MCs	17	70.6	17	70.6	0.185	46.2	LOS D	0.4	4.9	0.91	0.97	0.95	30.0
		LV	5		5		0.185	23.1	LOS B	0.4	4.9	NA	NA	NA	34.9
		HV	12		12		0.185	55.9	LOS D	0.4	4.9	NA	NA	NA	28.4

Approach	41	78.0	41	78.0	0.185	37.6	LOS C	0.4	4.9	0.38	0.66	0.40	34.0
All Vehicles	2302	7.8	2302	7.8	0.699	2.2	NA	1.1	10.8	0.02	0.04	0.03	76.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▽ Site: 101 [2026_Future with construction_New Illawara Road/Little Forest Road - PM (Site Folder: 2026 with construction)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
South: New Illawara Road															
1	L2	All MCs	2	50.0	2	50.0	0.002	7.9	LOS A	0.0	0.0	0.00	0.63	0.00	58.8
		LV	1		1		0.002	7.9	LOS A	0.0	0.0	NA	NA	NA	58.8
		HV	1		1		0.002	7.9	LOS A	0.0	0.0	NA	NA	NA	58.8
2	T1	All MCs	1062	3.3	1062	3.3	0.563	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	79.4
		LV	1027		1027		0.563	0.4	LOS A	0.0	0.0	NA	NA	NA	79.4
		HV	35		35		0.563	0.4	LOS A	0.0	0.0	NA	NA	NA	79.4
Approach			1064	3.4	1064	3.4	0.563	0.4	NA	0.0	0.0	0.00	0.00	0.00	79.3
North: New Illawara Road															
8	T1	All MCs	1482	4.0	1482	4.0	0.791	0.9	LOS A	0.0	0.0	0.00	0.00	0.00	78.2
		LV	1422		1422		0.791	0.9	LOS A	0.0	0.0	NA	NA	NA	78.2
		HV	60		60		0.791	0.9	LOS A	0.0	0.0	NA	NA	NA	78.2
9	R2	All MCs	16	12.5	16	12.5	0.045	17.3	LOS B	0.1	1.1	0.78	0.92	0.78	55.3
		LV	14		14		0.045	14.9	LOS B	0.1	1.1	NA	NA	NA	57.1
		HV	2		2		0.045	33.8	LOS C	0.1	1.1	NA	NA	NA	45.5
Approach			1498	4.1	1498	4.1	0.791	1.0	NA	0.1	1.1	0.01	0.01	0.01	77.9
West: Little Forest Road															
10	L2	All MCs	24	12.5	24	12.5	0.019	8.1	LOS A	0.0	0.0	0.00	0.45	0.00	38.3
		LV	21		21		0.019	8.1	LOS A	0.0	0.0	NA	NA	NA	38.3
		HV	3		3		0.019	8.1	LOS A	0.0	0.0	NA	NA	NA	38.3
12	R2	All MCs	25	4.0	25	4.0	0.064	24.1	LOS B	0.2	1.3	0.69	0.83	0.69	36.6
		LV	24		24		0.064	23.5	LOS B	0.2	1.3	NA	NA	NA	36.8
		HV	1		1		0.064	37.3	LOS C	0.2	1.3	NA	NA	NA	33.4

Approach	49	8.2	49	8.2	0.064	16.2	LOS B	0.2	1.3	0.35	0.65	0.35	37.4
All Vehicles	2611	3.9	2611	3.9	0.791	1.0	NA	0.2	1.3	0.01	0.02	0.01	77.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▽ Site: 101 [2026_Future without construction_New Illawara Road/Little Forest Road-AM (Site Folder: 2026 without construction)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
South: New Illawara Road															
1	L2	All MCs	14	42.9	14	42.9	0.011	7.7	LOS A	0.0	0.0	0.00	0.63	0.00	60.0
		LV	8		8		0.011	7.7	LOS A	0.0	0.0	NA	NA	NA	60.0
		HV	6		6		0.011	7.7	LOS A	0.0	0.0	NA	NA	NA	60.0
2	T1	All MCs	1298	5.0	1298	5.0	0.699	0.7	LOS A	0.0	0.0	0.00	0.00	0.00	78.8
		LV	1233		1233		0.699	0.7	LOS A	0.0	0.0	NA	NA	NA	78.8
		HV	65		65		0.699	0.7	LOS A	0.0	0.0	NA	NA	NA	78.8
Approach			1312	5.4	1312	5.4	0.699	0.7	NA	0.0	0.0	0.00	0.01	0.00	78.6
North: New Illawara Road															
8	T1	All MCs	901	6.4	901	6.4	0.492	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
		LV	843		843		0.492	0.2	LOS A	0.0	0.0	NA	NA	NA	79.5
		HV	58		58		0.492	0.2	LOS A	0.0	0.0	NA	NA	NA	79.5
9	R2	All MCs	31	54.8	31	54.8	0.360	60.4	LOS E	1.0	10.0	0.95	1.02	1.11	33.0
		LV	14		14		0.360	31.1	LOS C	1.0	10.0	NA	NA	NA	42.8
		HV	17		17		0.360	84.5	LOS F	1.0	10.0	NA	NA	NA	27.8
Approach			932	8.0	932	8.0	0.492	2.2	NA	1.0	10.0	0.03	0.03	0.04	77.1
West: Little Forest Road															
10	L2	All MCs	23	82.6	23	82.6	0.024	31.0	LOS C	0.0	0.0	0.00	0.44	0.00	38.2
		LV	4		4		0.024	31.0	LOS C	0.0	0.0	NA	NA	NA	38.2
		HV	19		19		0.024	31.0	LOS C	0.0	0.0	NA	NA	NA	38.2
12	R2	All MCs	16	68.8	16	68.8	0.169	44.6	LOS D	0.4	4.4	0.90	0.96	0.94	30.3
		LV	5		5		0.169	22.4	LOS B	0.4	4.4	NA	NA	NA	35.1
		HV	11		11		0.169	54.6	LOS D	0.4	4.4	NA	NA	NA	28.6

Approach	39	76.9	39	76.9	0.169	36.6	LOS C	0.4	4.4	0.37	0.65	0.38	34.2
All Vehicles	2283	7.7	2283	7.7	0.699	2.0	NA	1.0	10.0	0.02	0.03	0.02	76.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▽ Site: 101 [2026_Future without construction_New Illawara Road/Little Forest Road - PM (Site Folder: 2026 without construction)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
South: New Illawara Road															
1	L2	All MCs	1	0.0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	68.0
		LV	1		1		0.001	6.9	LOS A	0.0	0.0	NA	NA	NA	68.0
		HV	0		0		-	-	-	-	-	NA	NA	NA	-
2	T1	All MCs	1062	3.3	1062	3.3	0.563	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	79.4
		LV	1027		1027		0.563	0.4	LOS A	0.0	0.0	NA	NA	NA	79.4
		HV	35		35		0.563	0.4	LOS A	0.0	0.0	NA	NA	NA	79.4
Approach			1063	3.3	1063	3.3	0.563	0.4	NA	0.0	0.0	0.00	0.00	0.00	79.4
North: New Illawara Road															
8	T1	All MCs	1482	4.0	1482	4.0	0.791	0.9	LOS A	0.0	0.0	0.00	0.00	0.00	78.2
		LV	1422		1422		0.791	0.9	LOS A	0.0	0.0	NA	NA	NA	78.2
		HV	60		60		0.791	0.9	LOS A	0.0	0.0	NA	NA	NA	78.2
9	R2	All MCs	16	12.5	16	12.5	0.046	17.4	LOS B	0.1	1.2	0.78	0.92	0.78	55.2
		LV	14		14		0.046	15.0	LOS B	0.1	1.2	NA	NA	NA	57.0
		HV	2		2		0.046	34.2	LOS C	0.1	1.2	NA	NA	NA	45.3
Approach			1498	4.1	1498	4.1	0.791	1.0	NA	0.1	1.2	0.01	0.01	0.01	77.9
West: Little Forest Road															
10	L2	All MCs	15	13.3	15	13.3	0.012	8.1	LOS A	0.0	0.0	0.00	0.45	0.00	38.3
		LV	13		13		0.012	8.1	LOS A	0.0	0.0	NA	NA	NA	38.3
		HV	2		2		0.012	8.1	LOS A	0.0	0.0	NA	NA	NA	38.3
12	R2	All MCs	17	0.0	17	0.0	0.040	21.3	LOS B	0.1	0.8	0.68	0.83	0.68	36.8
		LV	17		17		0.040	21.3	LOS B	0.1	0.8	NA	NA	NA	36.8
		HV	0		0		-	-	-	-	-	NA	NA	NA	-

Approach	32	6.3	32	6.3	0.040	15.1	LOS B	0.1	0.8	0.36	0.65	0.36	37.5
All Vehicles	2593	3.8	2593	3.8	0.791	0.9	NA	0.1	1.2	0.01	0.01	0.01	77.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▽ Site: 101 [2035_Future with Operation_New Illawara Road/Little Forest Road-AM (Site Folder: 2035 with Operation)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m			km/h	
South: New Illawara Road															
1	L2	All MCs	20	40.0	20	40.0	0.015	7.7	LOS A	0.0	0.0	0.00	0.63	0.00	60.4
		LV	12		12		0.015	7.7	LOS A	0.0	0.0	NA	NA	NA	60.4
		HV	8		8		0.015	7.7	LOS A	0.0	0.0	NA	NA	NA	60.4
2	T1	All MCs	1420	5.0	1420	5.0	0.765	0.9	LOS A	0.0	0.0	0.00	0.00	0.00	78.4
		LV	1349		1349		0.765	0.9	LOS A	0.0	0.0	NA	NA	NA	78.4
		HV	71		71		0.765	0.9	LOS A	0.0	0.0	NA	NA	NA	78.4
Approach			1440	5.5	1440	5.5	0.765	1.0	NA	0.0	0.0	0.00	0.01	0.00	78.1
North: New Illawara Road															
8	T1	All MCs	986	6.5	986	6.5	0.538	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	79.4
		LV	922		922		0.538	0.3	LOS A	0.0	0.0	NA	NA	NA	79.4
		HV	64		64		0.538	0.3	LOS A	0.0	0.0	NA	NA	NA	79.4
9	R2	All MCs	39	51.3	39	51.3	0.759	139.6	LOS F	2.1	21.0	0.99	1.12	1.58	20.5
		LV	19		19		0.759	88.5	LOS F	2.1	21.0	NA	NA	NA	27.3
		HV	20		20		0.759	188.2	LOS F	2.1	21.0	NA	NA	NA	16.6
Approach			1025	8.2	1025	8.2	0.759	5.6	NA	2.1	21.0	0.04	0.04	0.06	74.0
West: Little Forest Road															
10	L2	All MCs	25	84.0	25	84.0	0.027	59.5	LOS E	0.0	0.0	0.00	0.44	0.00	38.2
		LV	4		4		0.027	59.5	LOS E	0.0	0.0	NA	NA	NA	38.2
		HV	21		21		0.027	59.5	LOS E	0.0	0.0	NA	NA	NA	38.2
12	R2	All MCs	18	66.7	18	66.7	0.285	67.6	LOS E	0.6	7.0	0.94	1.00	1.04	26.8
		LV	6		6		0.285	32.8	LOS C	0.6	7.0	NA	NA	NA	33.0
		HV	12		12		0.285	85.0	LOS F	0.6	7.0	NA	NA	NA	24.5

Approach	43	76.7	43	76.7	0.285	62.9	LOS E	0.6	7.0	0.39	0.67	0.44	32.0
All Vehicles	2508	7.8	2508	7.8	0.765	3.9	NA	2.1	21.0	0.02	0.03	0.03	75.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▽ Site: 101 [2035_Future with Operation_New Illawara Road/Little Forest Road - PM (Site Folder: 2035 with Operation)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
South: New Illawara Road															
1	L2	All MCs	1	0.0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	68.0
		LV	1		1		0.001	6.9	LOS A	0.0	0.0	NA	NA	NA	68.0
		HV	0		0		-	-	-	-	-	NA	NA	NA	-
2	T1	All MCs	1161	3.3	1161	3.3	0.615	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	79.2
		LV	1123		1123		0.615	0.4	LOS A	0.0	0.0	NA	NA	NA	79.2
		HV	38		38		0.615	0.4	LOS A	0.0	0.0	NA	NA	NA	79.2
Approach			1162	3.3	1162	3.3	0.615	0.5	NA	0.0	0.0	0.00	0.00	0.00	79.2
North: New Illawara Road															
8	T1	All MCs	1621	4.1	1621	4.1	0.865	1.4	LOS A	0.0	0.0	0.00	0.00	0.00	76.9
		LV	1555		1555		0.865	1.4	LOS A	0.0	0.0	NA	NA	NA	76.9
		HV	66		66		0.865	1.4	LOS A	0.0	0.0	NA	NA	NA	76.9
9	R2	All MCs	18	11.1	18	11.1	0.065	20.5	LOS B	0.2	1.6	0.83	0.94	0.83	53.3
		LV	16		16		0.065	17.3	LOS B	0.2	1.6	NA	NA	NA	55.5
		HV	2		2		0.065	46.1	LOS D	0.2	1.6	NA	NA	NA	40.3
Approach			1639	4.1	1639	4.1	0.865	1.6	NA	0.2	1.6	0.01	0.01	0.01	76.7
West: Little Forest Road															
10	L2	All MCs	21	14.3	21	14.3	0.017	9.6	LOS A	0.0	0.0	0.00	0.45	0.00	38.3
		LV	18		18		0.017	9.6	LOS A	0.0	0.0	NA	NA	NA	38.3
		HV	3		3		0.017	9.6	LOS A	0.0	0.0	NA	NA	NA	38.3
12	R2	All MCs	23	4.3	23	4.3	0.071	40.9	LOS C	0.2	1.4	0.75	0.86	0.75	36.1
		LV	22		22		0.071	40.1	LOS C	0.2	1.4	NA	NA	NA	36.3
		HV	1		1		0.071	59.0	LOS E	0.2	1.4	NA	NA	NA	31.9

Approach	44	9.1	44	9.1	0.071	26.0	LOS B	0.2	1.4	0.39	0.67	0.39	37.1
All Vehicles	2845	3.9	2845	3.9	0.865	1.5	NA	0.2	1.6	0.01	0.02	0.01	76.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▽ Site: 101 [2035_Future without Operation_New Illawara Road/Little Forest Road-AM (Site Folder: 2035 without operation)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
South: New Illawara Road															
1	L2	All MCs	16	43.8	16	43.8	0.013	7.7	LOS A	0.0	0.0	0.00	0.63	0.00	59.8
		LV	9		9		0.013	7.7	LOS A	0.0	0.0	NA	NA	NA	59.8
		HV	7		7		0.013	7.7	LOS A	0.0	0.0	NA	NA	NA	59.8
2	T1	All MCs	1420	5.0	1420	5.0	0.765	0.9	LOS A	0.0	0.0	0.00	0.00	0.00	78.4
		LV	1349		1349		0.765	0.9	LOS A	0.0	0.0	NA	NA	NA	78.4
		HV	71		71		0.765	0.9	LOS A	0.0	0.0	NA	NA	NA	78.4
Approach			1436	5.4	1436	5.4	0.765	1.0	NA	0.0	0.0	0.00	0.01	0.00	78.2
North: New Illawara Road															
8	T1	All MCs	986	6.5	986	6.5	0.538	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	79.4
		LV	922		922		0.538	0.3	LOS A	0.0	0.0	NA	NA	NA	79.4
		HV	64		64		0.538	0.3	LOS A	0.0	0.0	NA	NA	NA	79.4
9	R2	All MCs	35	54.3	35	54.3	0.715	136.2	LOS F	1.9	19.3	0.99	1.10	1.46	20.8
		LV	16		16		0.715	82.0	LOS F	1.9	19.3	NA	NA	NA	28.3
		HV	19		19		0.715	181.8	LOS F	1.9	19.3	NA	NA	NA	17.0
Approach			1021	8.1	1021	8.1	0.715	4.9	NA	1.9	19.3	0.03	0.04	0.05	74.6
West: Little Forest Road															
10	L2	All MCs	25	84.0	25	84.0	0.027	59.5	LOS E	0.0	0.0	0.00	0.44	0.00	38.2
		LV	4		4		0.027	59.5	LOS E	0.0	0.0	NA	NA	NA	38.2
		HV	21		21		0.027	59.5	LOS E	0.0	0.0	NA	NA	NA	38.2
12	R2	All MCs	18	66.7	18	66.7	0.283	67.2	LOS E	0.6	7.0	0.94	1.00	1.04	26.9
		LV	6		6		0.283	32.6	LOS C	0.6	7.0	NA	NA	NA	33.1
		HV	12		12		0.283	84.5	LOS F	0.6	7.0	NA	NA	NA	24.6

Approach	43	76.7	43	76.7	0.283	62.8	LOS E	0.6	7.0	0.39	0.67	0.44	32.0
All Vehicles	2500	7.8	2500	7.8	0.765	3.7	NA	1.9	19.3	0.02	0.03	0.03	75.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▽ Site: 101 [2035_Future without Operation_New Illawara Road/Little Forest Road - PM (Site Folder: 2035 without operation)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Illawara Road/Little Forest Road
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec							km/h
South: New Illawara Road															
1	L2	All MCs	1	0.0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	68.0
		LV	1		1		0.001	6.9	LOS A	0.0	0.0	NA	NA	NA	68.0
		HV	0		0		-	-	-	-	-	NA	NA	NA	-
2	T1	All MCs	1161	3.3	1161	3.3	0.615	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	79.2
		LV	1123		1123		0.615	0.4	LOS A	0.0	0.0	NA	NA	NA	79.2
		HV	38		38		0.615	0.4	LOS A	0.0	0.0	NA	NA	NA	79.2
Approach			1162	3.3	1162	3.3	0.615	0.5	NA	0.0	0.0	0.00	0.00	0.00	79.2
North: New Illawara Road															
8	T1	All MCs	1621	4.1	1621	4.1	0.865	1.4	LOS A	0.0	0.0	0.00	0.00	0.00	76.9
		LV	1555		1555		0.865	1.4	LOS A	0.0	0.0	NA	NA	NA	76.9
		HV	66		66		0.865	1.4	LOS A	0.0	0.0	NA	NA	NA	76.9
9	R2	All MCs	18	11.1	18	11.1	0.078	22.6	LOS B	0.2	1.7	0.85	0.95	0.85	51.9
		LV	16		16		0.078	18.4	LOS B	0.2	1.7	NA	NA	NA	54.7
		HV	2		2		0.078	56.6	LOS E	0.2	1.7	NA	NA	NA	36.7
Approach			1639	4.1	1639	4.1	0.865	1.7	NA	0.2	1.7	0.01	0.01	0.01	76.7
West: Little Forest Road															
10	L2	All MCs	17	11.8	17	11.8	0.014	9.3	LOS A	0.0	0.0	0.00	0.45	0.00	38.3
		LV	15		15		0.014	9.3	LOS A	0.0	0.0	NA	NA	NA	38.3
		HV	2		2		0.014	9.3	LOS A	0.0	0.0	NA	NA	NA	38.3
12	R2	All MCs	19	0.0	19	0.0	0.059	33.0	LOS C	0.2	1.1	0.76	0.87	0.76	36.2
		LV	19		19		0.059	33.0	LOS C	0.2	1.1	NA	NA	NA	36.2
		HV	0		0		-	-	-	-	-	NA	NA	NA	-

Approach	36	5.6	36	5.6	0.059	21.8	LOS B	0.2	1.1	0.40	0.67	0.40	37.1
All Vehicles	2837	3.8	2837	3.8	0.865	1.4	NA	0.2	1.7	0.01	0.01	0.01	76.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix B

Draft Construction Traffic Management Plan



Lucas Heights Bioenergy Facility

Construction Traffic and Pedestrian Management Plan (CTPMP) – Stage 2

Report Date: 15/10/2025
Report Reference: 20057-RG-062
Revision: A

LMS ENERGY Pty Ltd
ACN: 059 428 474
25 Blue Rock Drive, Yatala QLD 4207
T: +61 07 2899 7800
lms.com.au

Plan Title:	Construction Traffic and Pedestrian Management Plan (CTPMP) Stage 2
Plan Reference:	20057-RG-062
Written/Submitted By:	Yolanda Sarich Group Manager – Health and Safety
Reviewed/Approved By:	Edward Styles Group Manager – Projects
Client:	Internal
Client / Strategic Partner	Cleanaway (CWY)
Project:	Lucas Heights Bioenergy Facility
Purpose of the Document	This document outlines the construction and traffic management methodology for the proposed Power Station within the Lucas Heights Bioenergy Facility.

DRAFT

Document Control

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LMS ENERGY Pty Ltd
ACN: 059 428 474

Head Office:
118 Greenhill Road
Unley, SA 5061
Tel: (08) 8291 9000
lms.com.au

Revision status

Rev No.	Status (Draft \Final) / Description of changes	Date	Writer	Reviewer	Approver
A	Draft	15/10/2025	Yolanda Sarich	Richard Sargeson	Edward Styles

Record of distribution (this revision)

Type (Electronic, Paper copy)	Recipient Name	Position & Company

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1. Purpose

This Construction Traffic and Pedestrian Management Plan (CTPMP) outlines the management of construction related vehicle traffic and pedestrian movements to ensure safety and compliance during the construction of the proposed Power Station within the Lucas Heights Bioenergy Facility. This CTPMP identifies control measures to be implemented to minimise and manage the health and safety risks to workers and visitors associated with the location and frequency of vehicle and mobile plant movements.

This CTPMP will:

- Provide directions and guidance on the location of Site facilities, and access points for deliveries, and
- Specify the traffic management requirements at Site, and
- Enable compliance to applicable Codes of Practice and Safe Work Australia – Traffic Management Guide for Construction Work.

In this CTMP:

- Site refers to the construction project area under the control of LMS as the Principal Contractor, located within Lot 102 (DP1009354) Little Forest Road, Lucas Heights, NSW (**Site**) which is located outside the Cleanaway Lucas Heights Resource Recovery Park.
- Traffic, wherever used in this CTPMP, encompasses both vehicles/mobile plant and pedestrians' movement.

2. Scope

This CTPMP applies to all Workers and Visitors entering the Site.

This document applies to construction works within the new power station location outside the CWY Lucas Heights Resource Recovery Park (LHRRP). A separate document (20057-RG-060) has been prepared to address traffic and pedestrian management for the flaring facility within the LHRRP.

This CTPMP outlines requirements for the controlled movement of vehicles / mobile plant and pedestrians on Site and considers all vehicle / mobile plant activity, such as the loading / unloading of goods and designated parking areas for vehicles and mobile plant on Site.

3. General Requirements

This CTPMP considers risks and hazards presented by traffic and movement of plant, vehicles and pedestrians and aims to achieve several key requirements, including but not limited to:

- Provide a convenient, safe and appropriate environment for pedestrians, including signage, and visibility;
- Manage and control traffic / mobile plant movements and Site parking;
- Maintain access to other properties adjacent to the Site;
- Maintain safety for all Workers and Visitors;
- Workplace layout and Site plan to include traffic volumes routes, priorities and exclusion zones;
- Maintain Loading and Unloading Exclusion Zones (LUEZ);
- The use of suitably competent operators for any transport vehicle or mobile plant operations;
- Ensuring supervision in controlling the task and risks;
- Ensure the loading of vehicles complies with Chain of Responsibility (CoR) mass and dimension obligations, and loads are evenly distributed;

- Drivers and operators are responsible for securing their load before moving.

4. CTPMP Risk Assessment

The CTPMP risk assessment will be documented and take into account the following risk factors as a minimum:

- The actual or predicted path of pedestrian and traffic movement,
- The risk of interaction of vehicles/mobile plant and pedestrians (frequency and exposures),
- The strategy for placement of signage, barriers, or other traffic guides,
- Short term traffic management,
- Training and competency requirements, and
- Emergencies.

The CTPMP risk assessment will be reviewed regularly throughout the construction of the Lucas Heights Bioenergy Facility and inform the development and updates to this CTPMP. Thereby ensuring:

- Minimum mandatory requirements for mobile plant and people interaction are met,
- The hierarchy of control is applied,
- Best practice principles are adopted where reasonably practicable,
- Practical and effective critical risk control measures are implemented,
- A management of change process is applied to capture any lessons learnt,
- The Site traffic and pedestrian management map (diagram) reflects the infield controls, and
- Consultation with Health & Safety Representatives (HSR's) where applicable.

Common hazards that will be considered as part of the risk assessment include, but are not limited to:

Potential Site hazard	Relevant areas, associated plant/Site structures
Vehicle/pedestrian interaction	<ul style="list-style-type: none"> • Road crossings / vehicle access
Shared roadways/work areas	<ul style="list-style-type: none"> • Light / heavy / mobile plant travel paths
'Blind' corners/crest	<ul style="list-style-type: none"> • Entering / exiting vehicles
Loading/ unloading activities	<ul style="list-style-type: none"> • Mobile plant operation
Traffic flow	<ul style="list-style-type: none"> • Pedestrian access
Reversing vehicles	<ul style="list-style-type: none"> • Parking areas
Inducted Visitors	<ul style="list-style-type: none"> • Site induction / Site access / exit points
Building/drains	<ul style="list-style-type: none"> • Work areas / access points
Inclement weather/road conditions	<ul style="list-style-type: none"> • Site speed limits

5. Roles and Responsibilities

All Workers working on or visiting the Site during construction have an obligation to appropriately manage safety and have a responsibility to take care of their own health and safety and that of others that may be affected by their actions or omissions.

All Workers and visitors must comply with applicable road laws.

Role	Responsibilities
Construction Manager	<ul style="list-style-type: none"> • Overall implementation of this CTPMP • Ensure all Workers and Visitors entering the Site (including delivery drivers) are provided with information, training instruction and supervision regarding the requirements contained in this CTPMP and the associated risk assessment to ensure their safety while on Site. • Review the CTPMP risk assessment regularly during the construction of the Lucas Heights Bioenergy Facility or when changes to traffic management are required to ensure risks are identified and appropriate controls are implemented and updates documented in the CTPMP • Ensure all Workers are aware of their duties in relation to Chain of Responsibility (CoR).
LMS Supervisors	<ul style="list-style-type: none"> • Support and guide workers to ensure effective implementation of this CTPMP. • Undertake regular checks to ensure controls are in place and working effectively. • Understand and apply the requirements of Chain of Responsibility (CoR).
Workers (employees and contractors)	<ul style="list-style-type: none"> • Follow and support safety processes outlined in this CTPMP. • Report immediately to the Site supervisor or construction manager when issues arise in relation to the in-field controls. • Ensure they are fit-for-duty and not influenced by fatigue and/or alcohol or other drugs including (prescriptive and non-prescriptive medications).
Visitors	<ul style="list-style-type: none"> • Ensure the health and safety of themselves and all others who may be affected by their acts or omissions. • Comply so far as is reasonably practicable, with any reasonable instruction given by their inducted site escort person. The escort person must be an LMS Worker who holds a Construction Induction (White Card). • Ensure they are fit-for-duty and not influenced by fatigue and/or alcohol or other drugs including (prescriptive and non-prescriptive medications).

6. Information, Training, Instruction and Supervision

All Workers must complete the Lucas Heights Construction Induction prior to attendance at Site to familiarise themselves with the designated safe routes, parking areas, pedestrian exclusion zones and speed limits for the Site.

Delivery drivers will be provided with information on any restrictions associated with vehicle sizes or types, entries and exits and any other safety procedures or processes before entering the Site.

Visitors will be fully escorted by an inducted Worker and will be provided traffic management information as part of the Visitor induction.

Changes to the CTPMP will be communicated to all Workers via pre-start and/or toolbox meetings and a current Traffic Management Map (Diagram) will be displayed on the Site H&S Notice Board at all times.

6.1. Training and Licences

All Workers to operate mobile plant/equipment shall be trained, suitably licensed and be current in accordance with State regulations. No mobile plant/equipment is to be operated unless the Worker is licensed and competent. Trainee Workers may only operate equipment under the direct supervision of a Trainer Worker or Assessor and only after approval for the task has been authorized in writing by the Project Manager.

All licenses and verification of competencies shall be maintained in ELMO for Workers who are LMS employees and 1Breadcrumb for Workers who are contractors.

It is the responsibility of every Worker to ensure the currency of all licenses and if their circumstances change, they must inform the Construction Manager.

7. Site Access

7.1. General Requirements

7.1.1. Driver Safety

All Workers accessing the Site must adhere to the site traffic requirements when travelling in the common areas at the Lucas Heights Bioenergy Facility and apply the 'right of way' principle. These rules include:

- Reversing trucks and forklifts have overall right of way over all vehicles and pedestrians.
- Operational areas to be free of pedestrians prior to commencement of vehicle/mobile plant activity.
- All other vehicles have right of way over pedestrians except on designated pedestrian walkways where pedestrians have right of way
- Vehicles parking have right of way over all other vehicles/mobile plant entering / leaving the car park.
- All forklifts must have working reverse alarms, reverse lights and flashing beacon lights
- Reverse parking applies in car parking areas.
- Adhering to the maximum site entry and exit road speed of **40km/hr**.
- Operating forklifts at or below 5km/hr.
- Applying walking speed in or around pedestrian crosswalk areas.
- Adhere to advisory speed limits as signed at various locations.
- Use UHF 27 for radio communications inside the LMS Construction Site.

Any non-adherences will be investigated, and disciplinary actions may be taken for any Worker not adhering to the Site rules.

All Worker accessing Site must be fit-for-duty and not influenced by fatigue and/or alcohol or other drugs including (prescriptive and non-prescriptive medications).

7.1.2. Personal Protective Equipment (PPE)

All Workers and Visitors must always wear the appropriate Personal Protective Equipment (PPE) when accessing the Bioenergy Facility Construction Activity Zone Area.

Refer to section 28.14 of the Construction Safety Management Plan (CSMP) 20057-RG-063 for further details.

PPE requirements shall be communicated to delivery drivers, Heavy Vehicle/mobile plant operators and Visitors prior to their Site attendance.

7.2. Light Vehicle Access

A light vehicle is defined as a vehicle of less than 4.5 tonnes Gross Vehicle Mass (GVM) or aggregate trailer mass (ATM). All light vehicles will access the Site via Little Forest Road, Lucas Heights, as per the diagram below.

Under no circumstances are vehicles allowed to queue along New Illawarra Road in order to access Little Forest Road, Lucas Heights. If significant traffic is expected for Workers or Deliveries, out of hours access may be permitted by prior agreement with the Construction Manager.

All other gates to Site always remain locked except for when they are monitored or when earth moving equipment is brought onto the Site after hours.

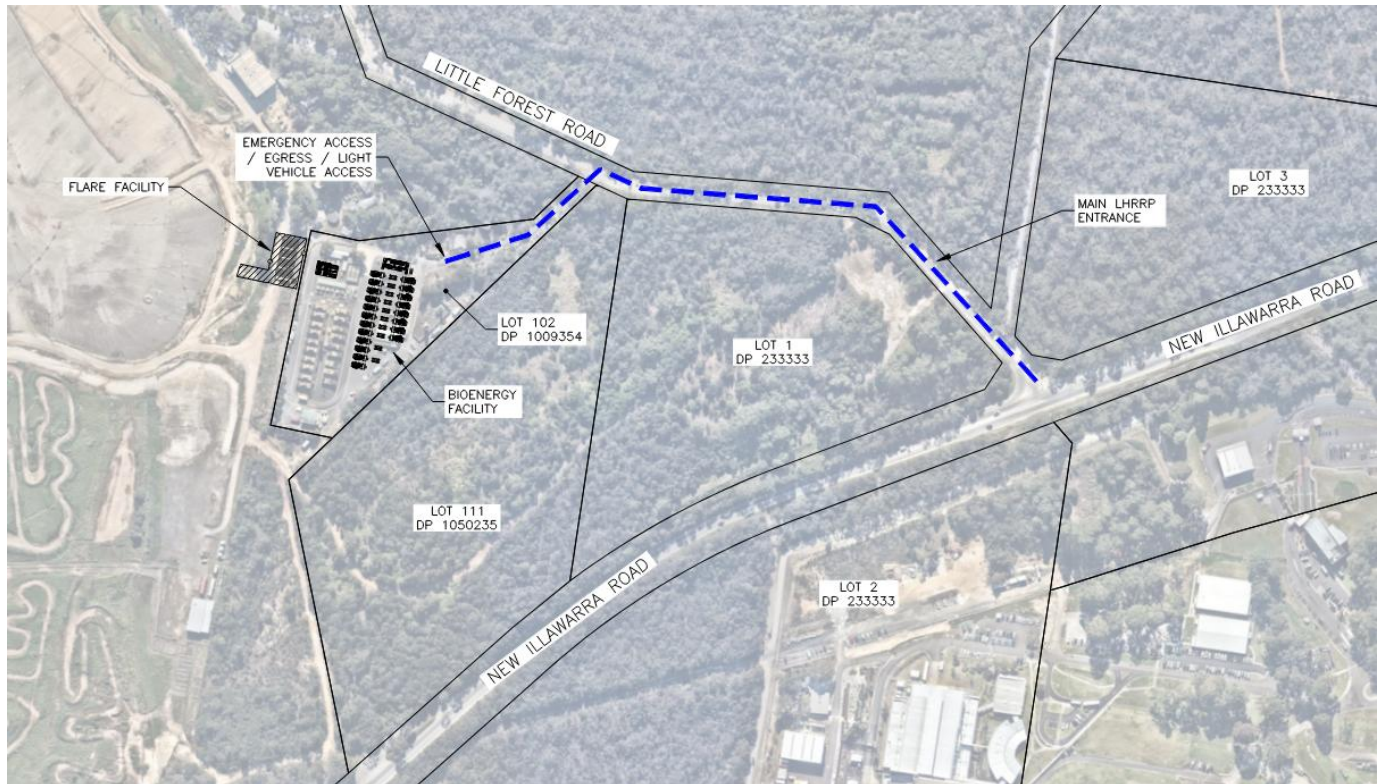


Figure 1 - General Site Access light vehicles

Subject to the conditions of consent, the Site will be unlocked between the hours of:

- 6:30am to 5:00pm (Monday to Friday)
- 7:30am to 5:00pm (Saturday to Sunday)

Where access is required outside the normal construction times, approval will be required by the Construction Manager or Project Manager.

In the case of an emergency evacuation, the emergency exit gate will be used to evacuate the Site. Emergency exit gate locations are to be confirmed. Where full-site evacuation is required the LMS Incident Controller will provide instructions to Workers in line with the Construction Emergency Response Plan.

7.2.1. Visitor Access

All Visitors are to advise the Construction Manager of their anticipated arrival time prior to Site arrival and are required to complete the LMS Visitor Induction.

Visitors are not permitted to operate LMS and/or Contractor's plant or equipment on Site.

7.2.2. Delivery Driver Access

All delivery drivers operating vehicles with a Gross Vehicle Mass or aggregate trailer mass of less than 4.5 tonnes will be required to:

- Access Site in accordance with the Light Vehicle Site access requirements outlined in section 7.2 of this CTPMP and comply with the PPE requirements in section 7.1.2 of this CTPMP.

- Require a Worker to escort them to the Site.

7.3. Heavy Vehicle Access (including Mobile Plant)

A Heavy Vehicle is defined in as a vehicle that has a gross vehicle mass (GVM) or aggregate trailer mass (ATM) of more than 4.5 tonnes. The Construction Manager is to be advised in advance (where reasonably practicable) of all anticipated arrival times for Heavy Vehicles. Access will be provided via Little Forest Road as shown in drawing 20057-GA-016 in Appendix A. Note heavy vehicle access routes will be updated after detailed route survey.

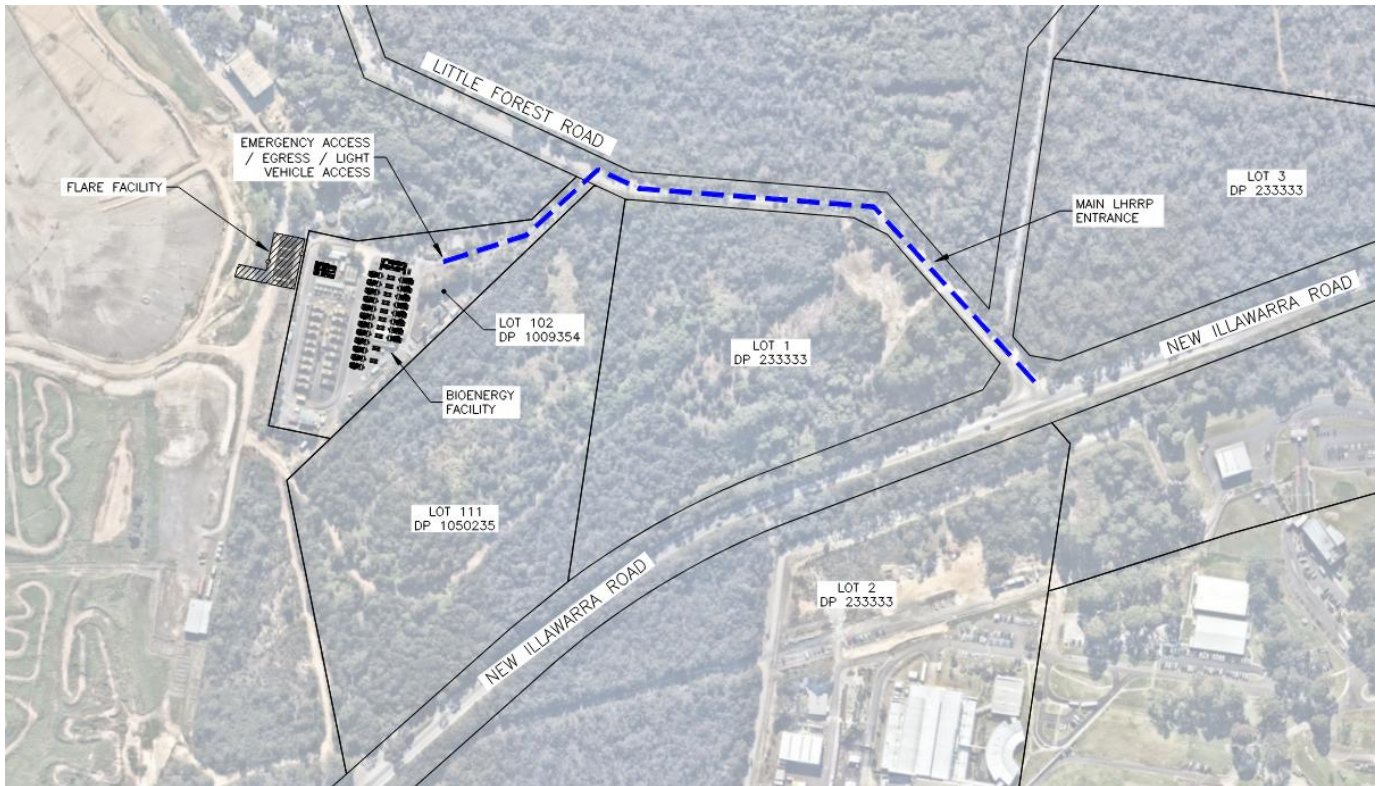


Figure 2 - Heavy Vehicle Access (including Mobile Plant)

In addition to the general driver safety requirements outlined in section 7.1.1 of the CTPMP all truck drivers and mobile plant operators must maintain a high level of professional conduct and as a minimum must:

- Use the horn only as a warning device.
- Allow enough room between vehicles for movement to occur without adverse interactions
- Respect and be watchful for pedestrians and other drivers on Site

For Heavy Vehicle loading and unloading refer to Section 9 of the CTPMP and Construction Activity Zone drawing 20057-GA-057 in Appendix B.

8. Traffic and Pedestrian Management within the Site

8.1. General Requirements

The following applies to vehicles and mobile plant operating within the Site:

- Pre-start and post inspection checks must be completed before and after use.

- All Mobile Plant entering the Site must comply with the applicable road rules, vehicle/plant registration standards and maintain up-to-date log books.
- Refuelling will be undertaken in a designated area to minimise loss of product to ground.
- No maintenance activities will be undertaken on Site except for emergency breakdowns. Risk assessments will need to be conducted as appropriate prior to maintenance work being undertaken.
- 2-way radio communication is the preferred method for positive communications between plant operators and spotters (UHF 26 for LMS).

8.2. Vehicle/Equipment Reversing on Site

When reversing, Workers must:

- Plan to use the shortest possible reversing distance.
- Get out and have a look if you are not sure what is behind you.
- Activate hazard warning lights, reverse sensors or audible reversing alarms, rotating lights/flashing beacons.
- Reverse slowly, use the mirrors, cameras, and check both sides.
- Remain stationary and give way if a Vehicle/Equipment approaches from behind.
- Use the Vehicle/Equipment horn to warn pedestrians if reversing across an obscured area.
- For Heavy Vehicles and trailers, use another Worker as a spotter to help guide you whenever possible, (remembering you must be able to see that Worker at all times).

8.3. Pedestrian Interaction with vehicles including mobile plant

Pedestrian interaction safety measures must be considered where pedestrians are working with or near vehicles and powered mobile plant, for example forklifts, cranes, loading and unloading trucks:

Maximising the separation distance between vehicles / mobile plant and pedestrians is always the preferred option.

At times, pedestrians and vehicles/mobile plant may be required to work in the same general area. Where this is necessary, the interaction shall be carefully managed using a minimum of one of the following principles:

- Physical barriers (preferably hard barricading) around exclusive pedestrian walkways and mobile plant and pedestrian exclusion zones
- The Worker acting as a Spotter to maintain direct contact with the mobile plant operator (where a Spotter is a trained Worker responsible for assisting in the safe movement of vehicles or mobile plant).

The following rules apply regarding pedestrian movements around the Site.

- Under no circumstance are Visitors to enter the Site unless escorted and Visitors must complete the Visitor induction
- All Workers working in and entering operational areas of the Site are required to wear high visibility clothing/vest with reflective tape in operational areas.
- You must always ensure your personal safety on Site by staying out of the path of moving vehicles, plant and equipment.
- Use pedestrian walkways and crosswalks where provided on Site.
- Always stay alert for moving vehicles and plant whilst in operational areas.
- Always ensure positive visual contact with Driver/Operators when moving within the vicinity of forklifts and mobile equipment.
- Workers are not permitted in a three-meter clearance between any operating small Vehicle/Equipment e.g., forklift and ten-meter clearance for any operating Heavy Vehicle/Equipment e.g., truck.

8.3.1. Pedestrian Walkways

Within the Site, eliminating the risk by separating vehicles/mobile plant and pedestrians shall be considered. Where this is not reasonably practicable consider the following:

- Designated clearly delineated walkways using permanent hard barricading (such as fixed fencing bollards etc.) or temporary barricading (such as chains, bunting, cones etc.).
- Provide pedestrian access gates and signage
- Other traffic control measures, including vehicle speed limits.

8.4. Demarcation Zones

Pedestrians shall not enter demarcation zones delineating vehicle or plant operational areas. Demarcation zones will be clearly marked with signage and hard or temporary barricading when in use.

9. Loading And Unloading Exclusion Zones

All Workers or Visitors other than the loading / unloading operator must NOT be within the Loading and Unloading Exclusion Zone (LUEZ) during the process of loading / unloading. The only exception being, where an authorized Worker is being used as a spotter to assist in the task (the person must always be in view of the Worker acting as the Mobile Plant Operator and the Spotter is not in a position where they can be affected by the task (i.e. trapped, struck, falling objects etc.)

Where an unauthorized Worker or Visitor is identified within the Loading and Unloading Exclusion Zone, the operation shall be immediately ceased until those unauthorized persons are removed.

The following apply to Loading and Unloading Exclusion Zones (LUEZ):

- A LUEZ must be set up when there is loading and/or unloading activities being undertaken at the Site.
- Clear demarcation of a LUEZ using physical barricading (such as bollards, flagging etc).
- The Worker setting up the LUEZ is required to remove the LUEZ once all activities are completed. This includes making any changes to the set up if required.
- No other unauthorised vehicles shall enter the LUEZ during loading and unloading.
- When loading, drivers can only remain inside the vehicle if the driver can be protected from the risk of falling objects/materials. Positive communications must be established to ensure there is no entry into LUEZ during loading / unloading activities.
- Where a Spotter is required, spotter zones must be established prior to commencing the task and stay in that zone until the task has been completed.

The Worker operating the mobile plant on Site such as forklifts, Manitou or Hiab should control the exclusion zone and is responsible for:

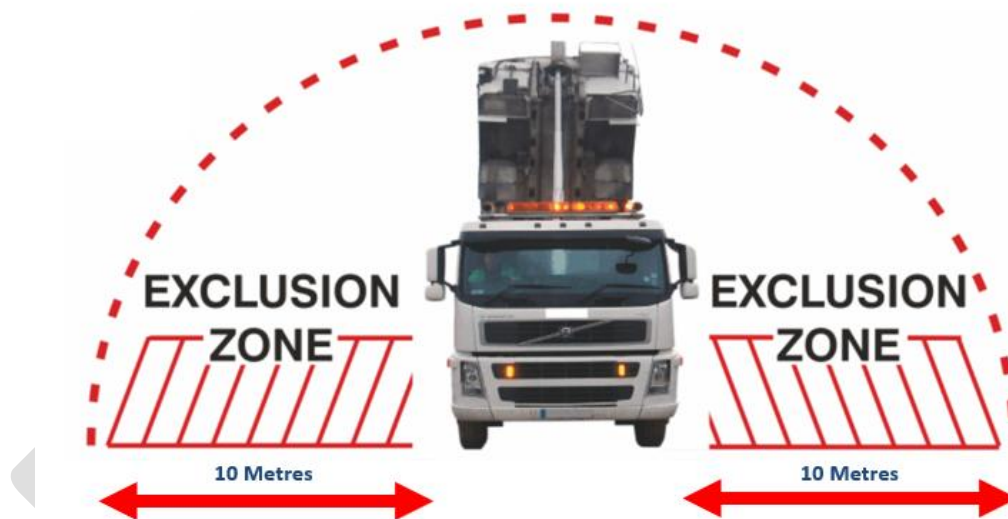
- Displaying signage to warn other pedestrians and Driver/Operators of the danger e.g., Loading Zone DO NOT ENTER.
- Establishing a safe zone in full view of the Driver/Operator for the driver and other pedestrians.
- Ensuring the driver remains in a safe zone whilst loading or unloading operations are being conducted.
- Stopping the task if the driver cannot be seen or needs to enter the exclusion zone.
- Stopping if a pedestrian enters the exclusion zone.
- Reporting to the site Supervisor if the exclusion zone is breached.
- Being vigilant at all times of Workers working/ walking in the surrounding areas.
- Ensuring all loads are correctly attached or restrained to the mobile plant.
- Paperwork is completed after loading and signed by the driver.

10. Three and Ten Meter Rule

To minimise the potential for personal injury, no one shall enter a three-meter radius around any operating vehicle/equipment e.g., forklift.



For Heavy Vehicle/Equipment, no one shall enter a ten-meter radius around any operating Vehicle/Equipment e.g., trucks. Where the ten-meter rule is not possible, alternate controls must be implemented to create an exclusion zone.



In all cases, you must:

- Gain the attention of the Vehicle/Equipment Driver/Operator.
- Wait for the machinery to come to a complete stop.
- Wait for the Driver/Operator to turn off their machinery and engage the handbrake.
- Wait for the Driver/Operator to give you permission to approach safely.

11. Signage

Appropriate traffic control signage is displayed throughout the Site. These signs serve as a constant reminder to all vehicle / mobile plant operators, Workers and pedestrians of the conditions and requirements when accessing various areas on the Site.

The following lists general and specific comments on the traffic control signage.

- All drivers are to follow instructions from LMS site staff.
- Speed is controlled around the Site by signages indicating the allowed speed limit per area.
- Traffic flow within the Site is controlled by directional arrows and “Exit” signs.

- All Workers are to drive in a safe manner whilst on Site and on the local approach road.
- Use of a mobile phone and talking on a mobile phone while driving is not permitted.
- In the event of the Site been closed, the gates are to be shut, and signs are to be displayed stating “Sorry we are closed” sign on the front entry gates.
- “STOP” signs “Give Way” signs and “Speed Humps” are also in place at various locations along entry points and haul roads.

12. Parking

The following minimum controls apply to parking at the Site:

- Vehicles must be reverse parked to enable their first movement to be in a forward motion.
- Where possible, parking bays shall be designated.
- Worker parking must only be in the designated parking sections. Parking of vehicles in truck parking areas or truck movement areas is restricted.

The following additional controls apply for all truck parking on Site:

- Where possible, parking bays must be sufficiently spaced to allow truck doors on vehicles parking side by side to be open at the same time.
- Parking areas must not be used as a thoroughfare.
- Access to and from the parking areas should be along designated walkways.

13. Monitoring & Review

This CTPMP will be reviewed regularly during the construction project and as minimum in the following circumstances:

- When the scope of work changes directly impacting the Site vehicular access or pedestrian movements around the Site.
- Following a near miss or incident involving traffic or pedestrian management.
- Where a new risk is identified in relation to traffic or pedestrian management.
- Following feedback from Workers of drivers (Heavy Vehicle or delivery drivers).

14. Document & Record Management

If a conflict is found between this document and the other construction specific documents or LMS procedures/processes, then the highest form of safety protocol shall take precedence. Following its discovery, the matter shall be reviewed by LMS and all relevant stakeholders and where necessary the resolution process applied.

15. Definitions

Term	Definition
Chain of Responsibility (CoR)	Applies any time goods or people are sent or received by road using a heavy vehicle with a Gross Vehicle Mass or aggregate trailer mass of more than 4.5 tonnes. The primary duty of care defined in the Heavy Vehicle National Law (HVNL) is that everyone in the CoR has a shared responsibility, so far as is reasonably practicable, to the safety of transport activities. This includes an obligation to eliminate or minimise public risks and a prohibition against directly or indirectly causing or encouraging a driver or other person, including a party in the CoR to contravene the HVNL.
Heavy Vehicle	A vehicle with a gross vehicle mass (GVM) or aggregate trailer mass greater than 4.5 tonnes.
Signage	Approved traffic and pedestrian control signs used to direct vehicles, Workers and Visitors.
Spotter	Means a trained Worker responsible for assisting in the safe movement of vehicles or mobile plant and who must:

	<ul style="list-style-type: none"> • Ensure a temporary LUEZ is maintained whilst loading/unloading processes are being undertaken. • Remain at a safe distance from the loading/unloading activity. • Maintain clear communication with the Loader/Unloader.
Traffic	Encompasses both vehicles/mobile plant and pedestrian movement.
Visitor	Means any person attending the Site who is not considered to be a Worker.
Worker	<p>Worker means a person who carries out work in any capacity for LMS, including work as:</p> <ul style="list-style-type: none"> • an employee • a contractor or subcontractor • an employee of a contractor or subcontractor • an employee of a labour hire company who has been assigned to work at LMS • an outworker • an apprentice or trainee • a student gaining work experience • a volunteer • a worker of a prescribed class.

16. Reference Documents

LMS Documents

- 20057-RG-063 – Construction Safety Management (CSMP) Lucas Heights Bioenergy Facility
- 20057-RG-064 – Construction Emergency Response Plan (CERP)
- 20057-GA-016 – Traffic Access Plan Drawing
- 20057-GA-057 – Construction Activity Zone Drawing
- PR553 - Chain of Responsibility (CoR)

External Supporting Documents

- Safe Work Australia – Traffic Management: Guide for Construction Work (April 2021)

Appendix A – TRAFFIC ACCESS PLAN, 20057-GA-016

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