

88 MURRAYS FLAT ROAD, TOWRANG

PROPOSED SCRAP METAL RECYCLING FACILITY

**TRAFFIC & PARKING
IMPACT ASSESSMENT**

MAY 2026

HEMANOTE CONSULTANTS PTY LTD
TRAFFIC ENGINEERING & DESIGN CONSULTANTS
PO BOX 743, MOOREBANK NSW 1875
CONTACT: 0414 251 845
EMAIL: projects@hemanote.com.au

TRAFFIC & PARKING IMPACT ASSESSMENT
88 MURRAYS FLAT ROAD, TOWRANG
PROPOSED SCRAP METAL RECYCLING FACILITY
DEVELOPMENT
DATE: 11 MAY 2026

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1 INTRODUCTION

This Traffic and Parking Impact Assessment has been prepared by Hemanote Consultants to evaluate the traffic and parking implications of the proposed scrap metal recycling facility to be located on the front portion of the subject site at **88 Murrays Flat Road, Towrang**.

The report should be read in conjunction with the architectural plans prepared by JEP Environment & Planning (a reduced copy (dated 9 September 2025)) is included in **Appendix 'A'** of this report) and is submitted to Goulburn Mulwaree Council as part of the Development Application.

This report is structured as follows:

- **Section 2:** Describes the existing site and its current use.
- **Section 3:** Details the existing traffic conditions surrounding the site.
- **Section 4:** Outlines the proposed development, including vehicular access, on-site parking, layout, and circulation.
- **Section 5:** Assesses the proposed intersection treatment.
- **Section 6:** Evaluates the impact on parking.
- **Section 7:** Analyses the impact on traffic in the surrounding area.
- **Section 8.** Response to SEAR's Traffic & Parking Matters
- **Section 9.** Response to TfNSW Issues
- **Section 10:** Presents the report conclusions.

2 EXISTING SITE DESCRIPTION

➤ *Site Location*

The subject site is located on the eastern side of Murrays Flat Road at property No. 88 (legally known as Lot 3 of DP251779), within the suburb of Towrang. The site has a frontage of approximately 487.6 metres to Murrays Flat Road from the west. Refer to Figure 1 for a site locality map.

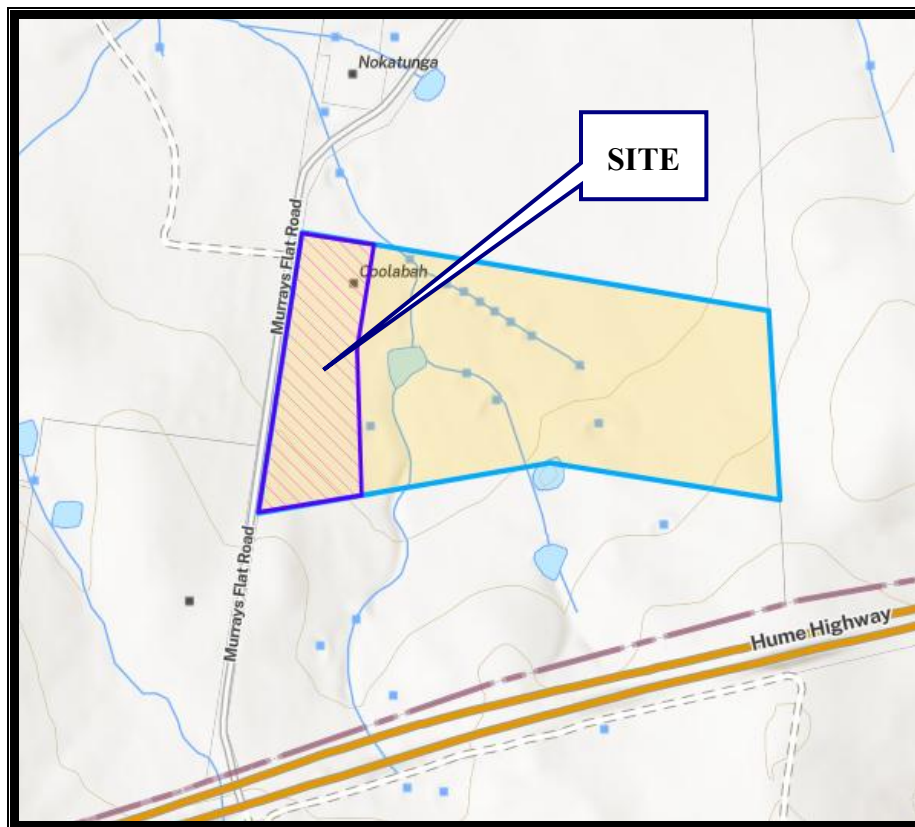


Figure 1: Site Locality Map

➤ ***Existing Site & Surrounding Land Use***

The subject lot has an area of approximately 32 hectares with an operational area of 7.7 hectares and is currently occupied by a residential dwelling. It is located in a mainly rural area, characterised by vacant land, farms and residential dwellings, as well as some nearby commercial and industrial sites. The site is also located approximately 9.1 kilometres from Goulburn Railway Station.



Photo 1: Site frontage to Murrays Flat Road

3 EXISTING TRAFFIC CONDITIONS

3.1 Road Network and Classification

The subject section of Murrays Flat Road is a local road that runs in a north to south direction and is connected to a 2-staged intersection with Hume Highway (state road) to the south.

3.2 Road Description and Traffic Control

Murrays Flat Road has a two-way undivided carriageway with a width between edges of the bitumen of approximately 7 metres. This carriageway generally provides one travel lane per direction, with no kerbside parking available.

The legal speed limit on Murrays Flat Road is 50km/h. Murrays Flat Road intersects with Hume Highway via a 2-staged intersection crossing and is controlled by a signposted 'Give Way', with priority given to traffic travelling along Hume Highway. Eastbound vehicles travelling on Hume Highway intersects with Murrays Flat Road with the northern (top) section of the 2-staged intersection, with westbound vehicles travelling on Hume Highway intersecting Murrays Flat Road at the southern (bottom) section of the 2-staged intersection.

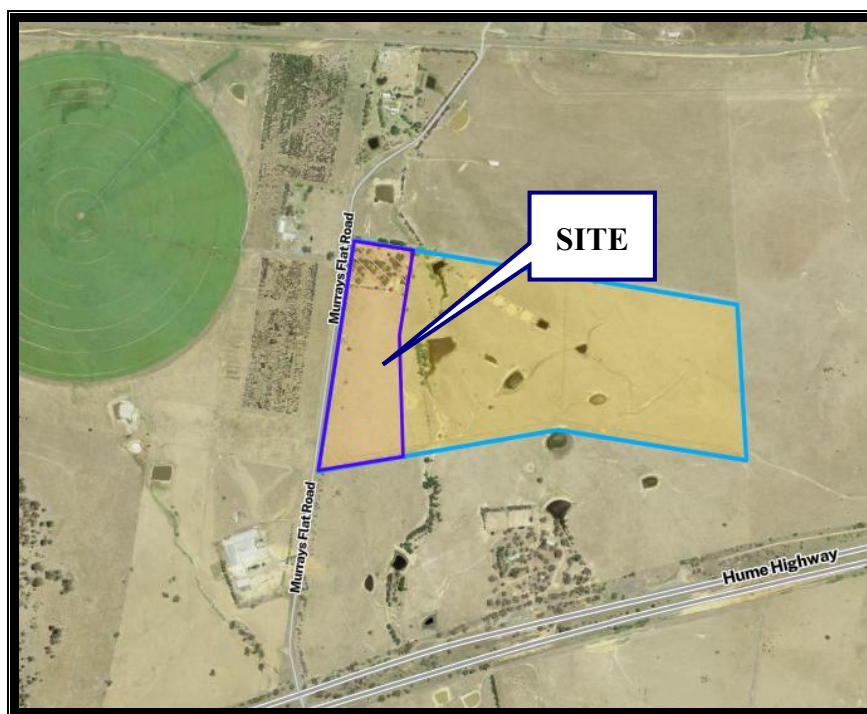


Figure 2: Aerial photograph of the subject site and surrounding road network



Photo 2: Murrays Flat Road at its intersection with Hume Highway – facing south



Photo 3: Hume Highway at its intersection with Murrays Flat Road – facing east



Photo 4: Aerial photo of the 2-staged intersection with Hume Highway and Murrays Flat Road

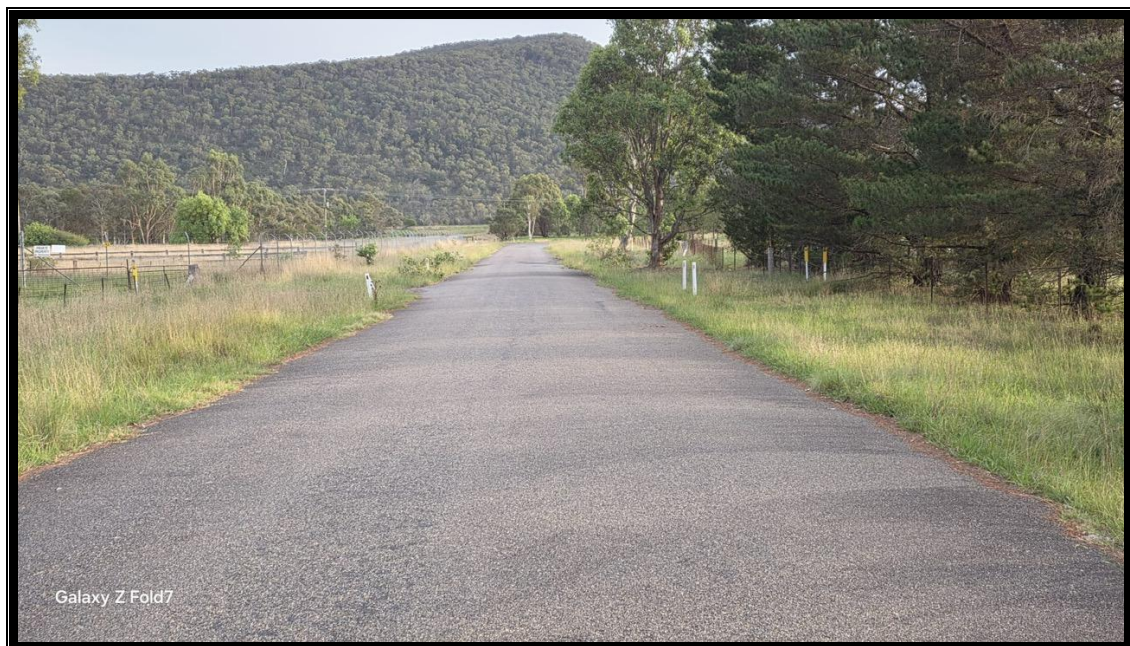


Photo 5: Site frontage on Murrays Flat Road – facing north



Photo 6: Site frontage on Murrays Flat Road – facing south

3.3 Current Traffic Flows

A traffic volume count was undertaken by GeoCounts Data Supply on behalf of Hemanote Consultants at the intersection of Murrays Flat Road / Hume Highway in the vicinity of the subject site on Wednesday 30 April 2025, during morning period (6:00am to 10:00am) and afternoon period (2:00pm to 6:00pm), considering traffic peak periods. The traffic volume count was undertaken outside of the NSW school holiday period.

The current traffic flows in the morning & afternoon peak hours are shown in Table 1 below.

Traffic movement	Morning Peak Hour (Vehicles Per Hour)	Evening Peak Hour (Vehicles Per Hour)
	9.00am – 10.00am	2.45pm – 3.45pm
Murrays Flat Road (North of Hume Highway)		
Northbound	2	1
Southbound	3	3
Hume Highway (East of Murrays Flat Road)		
Eastbound	721	995
Westbound	887	988
Hume Highway (West of Murrays Flat Road)		
Eastbound	720	997
Westbound	889	992

Table 1: Current Peak traffic flows in the vicinity of the subject site (on a typical weekday)

The results of the traffic volume counts undertaken determined that the traffic morning peak period was between 9.00am to 10.00am and the afternoon peak period was between 2.45pm to 3.45pm on a typical weekday.

The traffic flows on Murrays Flat Road and Hume Highway are typical for local and state roads in a mainly rural area, where traffic is free flowing, with spare capacity.

It is determined that the existing mid-block level of service on Murrays Flat Road is at level 'A', in accordance with Table 4.4 of the Roads & Maritime Services' *"Guide to Traffic Generating Developments - 2002"*, where peak hour flow is less than 200 vehicles/hr.

It is determined that the existing mid-block level of service on Hume Highway ranges between level 'A' and 'B', in accordance with Table 4.4 of the Roads & Maritime Services' *"Guide to Traffic Generating Developments - 2002"*, where peak hour flow is more than 900 vehicles/hr but less than 1,400 vehicles/hr.

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

Table 4.4: Urban road peak hour flows per direction (RMS Guide)

➤ **Current Intersection Performance**

Average Vehicle Delay (AVD) and Level of Service (LOS) – The AVD and LOS provide a measure of the operational performance of an intersection, as indicated in Table 4.2 of the Roads & Maritime Services' *"Guide to Traffic Generating Developments - 2002"* (shown below).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Table 4.2: Level of Service Criteria for intersections (RMS Guide)

A SIDRA (version 9.1) intersection performance analysis was undertaken for the existing 2-staged intersection of Murrays Flat Road/Hume Highway (Eastbound traffic) and Murrays Flat Road/Hume Highway (Westbound traffic) in the vicinity of the subject site (Pre-development).

Refer to Figure 3 below, showing the existing cross-intersection layout controlled by the signposted 'Give Way'.

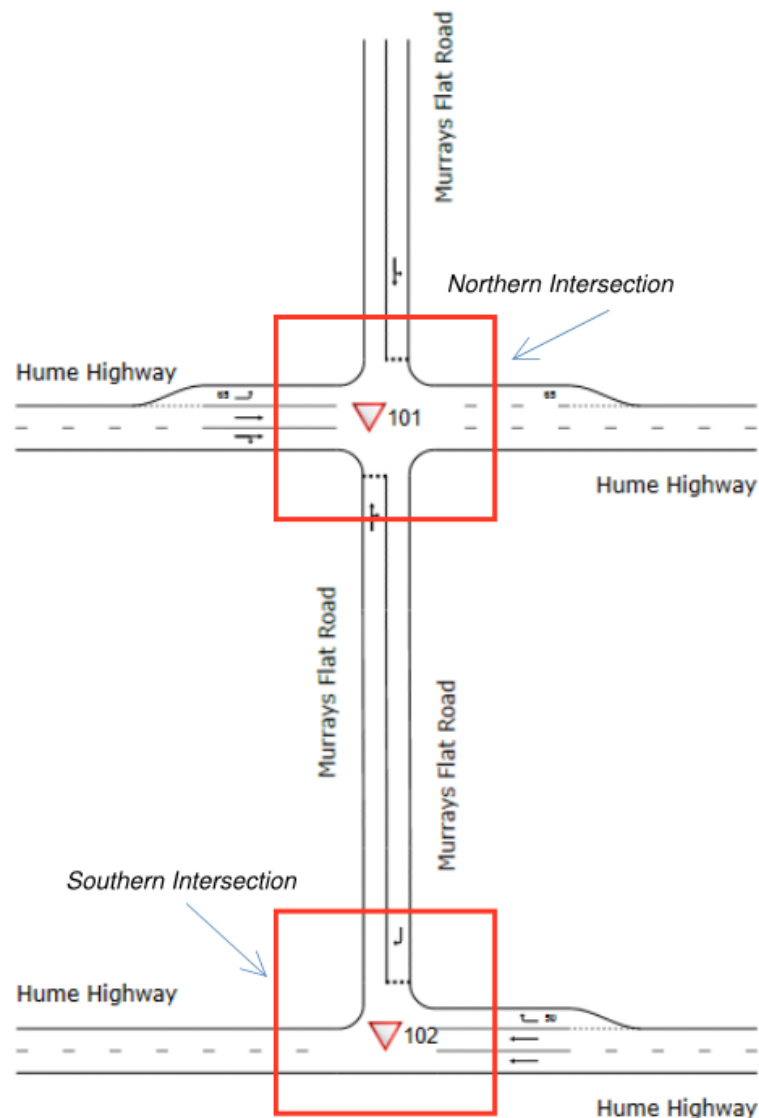


Figure 3: Existing two-staged intersection layout

The SIDRA analysis results for the base year pre-development have been summarised in Tables 2 and 3 on the following pages.

Base Year 2025 – Pre Development (AM)						
Approach Leg	Turning Movement	Movement class	Average LOS	Average Delay (sec)	Average Back of Queue (vehicle)	DOS (Veh/C)
Northern Intersection						
South	Through	LV	A	6.3	0.0	0.005
		HV	-	-	-	-
	Right	LV	A	8.8	0.0	0.005
		HV	-	-	-	-
North	Left	LV	A	6.3	0.0	0.004
		HV	A	6.3	0.0	0.004
	Through	LV	A	4.5	0.0	0.004
		HV	-	-	-	-
West	Left	LV	A	8.4	0.0	0.001
		HV	-	-	-	-
	Through	LV	A	0.0	0.0	0.221
		HV	A	0.0	0.0	0.221
	Right	LV	A	8.0	0.0	0.221
		HV	-	-	-	-
Southern Intersection						
East	Through	LV	A	0.1	0.0	0.267
		HV	A	0.1	0.0	0.267
	Right	LV	-	-	-	-
		HV	A	11.5	0.0	0.001
North	Right	LV	A	2.7	0.0	0.001
		HV	-	-	-	-

Table 2: Network SIDRA Modelling – Hume Highway / Murrays Flat Rd – 9.00am – 10.00am

Base Year 2025 – Pre Development (PM)						
Approach Leg	Turning Movement	Movement class	Average LOS	Average Delay (sec)	Average Back of Queue (vehicle)	DOS (Veh/C)
Northern Intersection						
South	Through	LV	A	11.6	0.0	0.009
		HV	-	-	-	-
	Right	LV	B	16.2	0.0	0.009
		HV	-	-	-	-
North	Left	LV	A	4.6	0.0	0.030
		HV	-	-	-	-
	Through	LV	A	6.6	0.0	0.030
		HV	A	10.8	0.0	0.030
West	Left	LV	-	-	-	-
		HV	A	11.8	0.0	0.001
	Through	LV	A	0.0	0.0	0.296
		HV	A	0.0	0.0	0.296
	Right	LV	-	-	-	-
		HV	A	11.5	0.0	0.296
Southern Intersection						
East	Through	LV	A	0.1	0.0	0.301
		HV	A	0.1	0.0	0.301
	Right	LV	A	8.0	0.0	0.001
		HV	-	-	-	-
North	Right	LV	A	3.2	0.0	0.006
		HV	A	8.0	0.0	0.006

Table 3: Network SIDRA Modelling – Hume Highway / Murrays Flat Rd – 2.45pm – 3.45pm

The SIDRA (version 9.1) performance analysis results above determined that the current operational performance of the overall two-staged Hume Highway / Murrays Flat Road intersection is in good operation at Level of Service 'A', with exception for the right-turn movement the south approach leg at the northern intersection to travel on Hume Highway from Murrays Flat Road. This movement is at a Level of Service 'B' only during the afternoon peak period, with an average delay of less than 17 seconds per vehicle

Refer to the summary of the results of the SIDRA intersection performance analysis attached in **Appendix 'D'** of this report.

3.4 Existing Transportation Services

The subject site does not have access to public transport services, with the nearest bus stop and train station located within Goulburn. The site is located approximately 9.1 kilometres from Goulburn Railway Station.

Bus services operate along Taralga Road, Tarlo Street and Victoria Street (i.e. bus routes 818, 821A, and 821B).

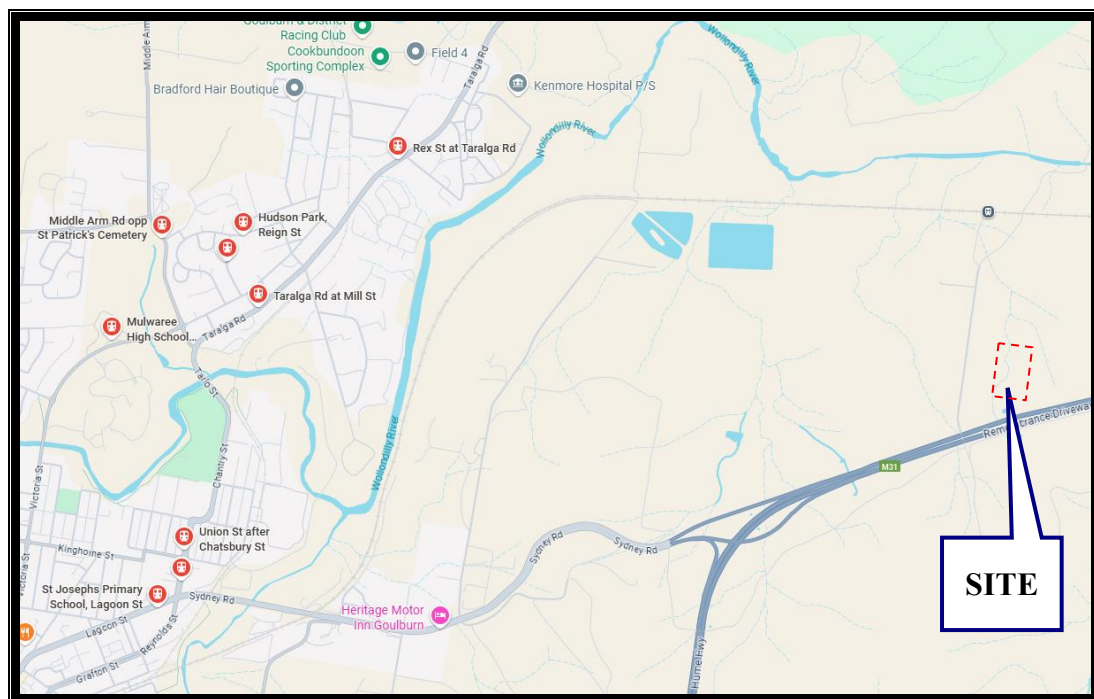


Figure 4: Bus services near the subject site

4 PROPOSED DEVELOPMENT

4.1 Description of the Proposal

The proposed development seeks approval to convert the front portion of the subject site at 88 Murrays Flat Road, Towrang into a scrap metal recycling plant. **It should be noted that the proposed recycling facility will not be open to the general public.**

Key components of the development include:

- A ground-level scrap metal recycling facility with an operational site area of 7.7 hectares;
- Three weighbridges (each 20 metres long): two at the entry/exit driveway and one internal;
- Dedicated unprocessed and processed material bays;
- Workshop and staff amenities;
- Existing cottage/amenities building to be converted into an administrative office;
- Eighteen (18) on-site car parking spaces (including one accessible space with an adjacent shared area), located at grade level near the administrative office.

The largest size vehicle to access the subject site is an Articulated Vehicle (AV-20 metres in length).

Refer to **Appendix 'A'** for the proposed development plans.

Staffing:

- A maximum of 15 staff members will be on-site at any one time.

Operating Hours:

- 6:00am to 6:00pm, Monday to Friday.
- 7:00am to 4:30pm, Saturdays

No operations are to occur on site on Sunday and public holidays. There will not be any operation of the hammermill shredder and pre-shredder during the morning

period 6am – 7am. Operations during this time may include inbound and outbound truck movements, material handlers, and maintenance of plant and equipment. While maintenance and cleaning activities can occur at any time of the day (24 hours), to maintain the efficiency of operations. They will occur predominantly during:

- 6:00am to 6:00pm, Monday to Saturday.
- 24-hour basis on Sundays

4.2 Vehicular Access

The vehicular access to and from the subject site will be via three (3) driveways, one (1) on the north to be used for administration office, one (1) for trucks on the northern side of the site and one (1) on the southern side of the site.

The new access driveway adjacent to the administration office, to the north, is to have a width of 22 meters that will act as an entry and exit driveway for trucks only. A new access driveway located on the south corner of the site is to be utilised as an exit only for trucks only, with a width of 20m. The proposed access driveways for trucks are adequate in accordance with AS2890.2:2018.

The existing access driveway is to be widened, where two vehicles can pass each other. The subject existing access driveway is located more than 6 metres from the tangent point of the adjacent kerb line, in accordance with Figure 3.1 of AS2890.1:2004. The access driveway for staff and visitor vehicles is to have a width of 5.8m metres, which is adequate for a low volume (Category 1) access driveway in accordance with AS2890.1:2004 – Table 3.2.

Vehicular access is to be located and constructed with the design plan, attached in **Appendix 'C'**, and in accordance with the requirements of AS2890.1:2004 and AS2890.2:2018, where vehicles enter and exit the site in a forward direction at all times.

The clear sight line triangle (2.5m x 2m) between the driver's eye view and pedestrians is provided on the exit side of the driveway, as per Figure 3.3 of AS2890.1:2004 and Figure 3.4 of AS2890.2:2018.

4.3 On-site Parking Provision

The Goulburn Mulwaree Development Control Plan (2009) does not specify parking rates for scrap metal recycling plants. A reasonable provision has been adopted:

- One space per employee (15 spaces);
- Three additional spaces for visitors (for maintenance and deliveries).

The proposed off-street car parking area provides a total of eighteen (18) on-site car parking spaces with thirteen (13) car parking spaces to be located next to the administration office for staff parking, and 5 spaces to be located directly in front of the administration office for two (2) staff and three (3) visitor car parking spaces (including 1 accessible parking space with an adjacent shared area).

It should be noted that this development is not open to general public and is expected that visitor spaces are to be used for general office maintenance or office deliveries. The site layout has also been designed to accommodate all heavy vehicles required to process the total annual volume of scrap metal up to 30,000 tonnes.

Therefore, the proposed off-street parking and loading/unloading provision is adequate for the development.

4.4 On-site Parking Layout and Circulation

The on-site car parking and manoeuvring layout has been designed to provide safe and efficient vehicular access. Vehicles are able to enter and exit the site in a forward direction, supported by adequate internal aisle widths and turning areas.

Operational trucks and light vehicles (staff and visitors) are provided with separate driveways, ensuring segregation between heavy vehicle movements and staff/visitor access to the site and administration office.

Light Vehicles (Staff and Visitors)

AS2890.1:2004 Parking facilities Part 1: Off-street car parking requires a minimum parking space width of 2.4 meters (for all day parking) and a minimum length of 5.4

meters. The off-street car parking spaces have a width of 2.5 metres and a length of 5.4 meters each, which is adequate.

The accessible car parking space has a width of 2.5 metres, in addition to an adjacent 2.5 metres wide shared area, which is adequate in accordance with AS2890.6:2009.

Clause 2.4.2 of AS2890.1:2004 requires a minimum aisle width of 5.8 metres for two-way aisles adjacent 90-degree parking spaces. The proposed internal aisles have a minimum width of 6.7 metres, which is adequate for two-way traffic and for vehicles to manoeuvre into and out of the parking spaces.

Operational Heavy Vehicles

The largest size vehicle to access the subject site is an Articulated Vehicle (AV 20 metres in length).

The layout of the truck manoeuvring arrangements has been designed to ensure smooth and safe movements for all trucks within the scrap metal yard. The truck circulation has been designed for single direction movements starting from the access driveway located on the north of the site.

Within the site, internal circulation has been supported by line marking and signage to guide truck movements, enhance safety, and minimise conflict points within the scrap metal yard.

Conclusion:

All vehicular manoeuvring within the site has been designed and checked using the articulated vehicles and various sizes of rigid vehicles ranging from small to heavy as well as passenger vehicles (B99 and B85). Vehicles swept paths analysis has been undertaken in accordance with AS2890.1:2004 and AS2890.2:2018. Refer to the vehicle swept paths diagrams attached in **Appendix 'B'** of this report.

Therefore, the on-site parking layout, vehicular manoeuvring and circulation arrangements are adequate for the proposed development and in compliance with AS2890.1:2004, AS2890.6:2009 and AS2890.2:2018, where vehicles enter and exit the site in a forward direction at all times.

5 PROPOSED INTERSECTION TREATMENT

The existing two-stage intersection of Murrays Flat Road and the Hume Highway does not comply with Austroads standards and therefore requires upgrading works.

To determine appropriate intersection treatments, a warrant assessment was undertaken in accordance with *Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management*.

As noted in Section 3.3 of this report, the Hume Highway currently carries a maximum of 887 vehicles in the AM peak and 995 vehicles in the PM peak. The proposed development is estimated to generate a maximum of 19 vehicle trips per peak hour, as detailed in Section 7 of this report.

Based on the Hume Highway's signposted speed of 110 km/h and the above traffic volumes, an assessment using Figure 2.25 (*Warrants for Turn Treatments on Major Roads at Signalised Intersections*, Austroads Guide) indicates that a channelised right-turn lane (CHR), a channelised left-turn lane (CHL), or an auxiliary left-turn lane (AUL) are warranted.

A channelised left-turn lane (CHL) will improve safe intersection sight distance (SISD) for vehicles approaching the Hume Highway from Murrays Flat Road. Therefore, the following intersection treatments are proposed:

- **CHL Lane:** To be constructed at the northern intersection (for eastbound traffic).
- **CHR Lane:** To be constructed at the southern intersection (for westbound traffic).

5.1 Safety Considerations

Due to safety concerns at the Hume Highway / Murrays Flat Road intersection, historical crash data has been reviewed to identify contributing factors and potential mitigation measures. The TfNSW crash map (<https://www.transport.nsw.gov.au/roadsafety/statistics/interactive-crash-statistics/lga-view-crashes-map>) indicates that seven (7) crashes were recorded between 2022 and 2024 within 100 metres of the intersection of Hume Highway and Murrays Flat Road.

As a result, the right-turn movement from Murrays Flat Road onto the Hume Highway will be prohibited for all vehicles, along with any U-turn movements for eastbound vehicles intending to travel back towards Goulburn. These movements have been identified as a recurring safety issue, primarily due to the inability to provide adequate deceleration lanes given the site's geographic constraints.

Right-turn movements from the Hume Highway (westbound) into Murrays Flat Road will be retained, with a compliant deceleration lane designed in accordance with Austroads guidelines. A site inspection undertaken by Hemanote Consultants confirms that sufficient gap availability exists to safely accommodate these movements.

All articulated vehicles (AVs) accessing the site will be controlled with mitigation measures to ensure safe access to the site. Mitigation measures such as safe driving policies, inductions, adequate communication and route management can be implemented as a condition to access the site.

A 'Drivers Code of Conduct' will be undertaken for all staff, truck drivers, employed by Sydney Metal Traders and all contract or customer truck drivers. A condition of employment or accessing the facility will be that the code of conduct is to be signed and a refresher training is done once a year to ensure compliance with access to and from the facility.

These vehicles will approach from the north and will be prohibited from turning right into Murrays Flat Road from the Hume Highway. Instead, they will be directed to use the Hume Highway / Hume Street roundabout to undertake a U-turn, allowing them to travel eastbound and enter Murrays Flat Road via the upgraded CHL.

All vehicles exiting the site will be restricted to a left-turn movement onto the Hume Highway. Articulated vehicles (AVs) will proceed northbound towards Sydney.

Passenger vehicles and small to medium heavy vehicles intending to travel southbound will be required to turn left into Carrick Road and undertake a left turn into the road reserve, turning right back to Carrick Road before rejoining the Hume Highway via the Carrick Road intersection. Refer to Figure 8 of the report showing the MRV swept path, being the maximum size vehicle performing a turning manoeuvre to head back to the Hume Highway / Carrick Road intersection.

The TfNSW crash map indicates that three (3) crashes were recorded between 2022 and 2024 within 100 metres of the intersection of Hume Highway and Carrick Road. Out of the three (3) recorded crashes, only one (1) occurs at the T-junction of Hume Highway and Carrick Road. It should be noted that none of them contained any fatality.

In summary, the proposed intersection upgrade removes the turning movements responsible for the majority of recorded crashes, while achieving compliance with Austroads design standards.

5.2 Concept Traffic Design Plan

Concept traffic design plans for the proposed intersection upgrades have been prepared by Hemanote Consultants based on available survey data and in accordance with the *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*.

The concept layout plan (refer to **Figure 5**) illustrates the proposed traffic control treatments, which include:

- Extending the existing channelised right-turn lane on the Hume Highway (westbound) into Murrays Flat Road to 185 metres, in compliance with Austroads standards.
- Installation of a median island to guide traffic and prevent right-turn movements from Murrays Flat Road (towards the west).

- Extending and upgrading the existing auxiliary left-turn lane on the Hume Highway (eastbound) into a channelised left-turn lane of 185 metres, including chevron line marking for guidance.
- Construction of a 1.0-metre-wide median island on Murrays Flat Road, offset by 1.0 metre from the Hume Highway, to separate inbound and outbound traffic and provide safe clearance.
- Installation of regulatory signage and line marking to prohibit right-turn movements from Murrays Flat Road.





Figure 5: Traffic Control Treatment for Intersection of Hume Highway / Murrays Flat Road

Refer to the Traffic Design Plans attached in **Appendix 'C'** of this report, which outlines the proposed intersection treatments, including sign & line-markings, SISD assessment, swept paths analysis and proposed road widening. The Traffic Design Plans should be read in conjunction with the Brief Design Statement submitted with the Development Application.

6 ON-STREET PARKING PROVISION

6.1 Existing Parking Controls

The subject site is located in a mainly rural area, with no parking is available on Murrays Flat Road and Hume Highway.

6.2 Impacts of Proposed Development on Parking

The parking demand resulting from the proposed industrial development can be accommodated within the proposed adequate and compliant off-street car parking and loading/unloading facilities.

Therefore, the proposed development will not have adverse impacts on parking in the surrounding area.

7 EXTERNAL TRAFFIC IMPACT

7.1 Estimated Future Traffic Generation

An indication of the potential traffic generation for the proposed development has been calculated based on an anticipated total annual trading volume of up to **30,000 tonnes** of metal.

The following assumptions and factual information were derived from the operational characteristics of the 24-hour **Port Kembla Metal Recyclers** facility and have been applied to estimate daily traffic generation during a typical week of operation. These estimates reflect the proposed operating hours referred in **section 4.1**:

- The site will handle up to 30,000 tonnes of unprocessed material annually, equating to approximately 577 tonnes per operating week.
- Unprocessed material will be delivered to the site from the southern region via tipper trucks and semi-trailers.
- Processed material, representing 75% of the unprocessed volume, will be transported to the Port Kembla Metal Recyclers facility using tipper and semi-trailer trucks owned and operated by the development.
- Residual waste material, comprising the remaining 25% of the unprocessed volume, will be transported to landfill sites in the northern region using purpose-built semi-trailers that arrive empty and depart loaded.
- The site will not be open to the general public for trading of unprocessed scrap material.
- Staff travel to the site is assumed to be evenly split between northern and southern suburbs.

Traffic generation during peak periods has been estimated as follows:

- **AM inbound peak hour:**
 - 25% of daily operational trucks;
 - 90% of total daily staff vehicle movements.
- **PM inbound peak hour:**
 - 25% of daily operational trucks;
 - 10% of total daily staff vehicle movements.
- **AM outbound peak hour:**
 - 25% of daily operational trucks;
 - 10% of total daily staff vehicle movements.
- **PM outbound peak hour:**
 - 25% of daily operational trucks;
 - 90% of total daily staff vehicle movements.

Tables 4 and 5 below illustrate the method used to calculate the estimated annual traffic volumes generated by the maximum trading volume of up to **30,000 tonnes** of unprocessed materials.

ESTIMATED INBOUND TRAFFIC GENERATION

Annual Unprocessed Materials 29,983 tonnes

Weekdays Daily Inbound Traffic 34 vehicles / day
 Weekend Daily Inbound Traffic 12 vehicles / day
 AM Peak Hour Inbound Traffic 19 vehicles / peak hour (Calculated by having 25% of daily incoming trucks + 90% of staff coming to site)
 PM Peak Hour Inbound Traffic 7 vehicles / peak hour (Calculated by having 25% of daily incoming trucks + 10% of staff coming to site)

Unprocessed Material

Vehicle Type	(a) Average Tonnage per vehicle (T)	(b) Typical Weekdays Vehicles Unloading (Mon-Fri)	(c) Typical Weekend Vehicles Unloading (Sat)	(d) Typical Weekdays Tonnage (T) [a x b]	(e) Typical Saturdays Tonnage (T) [a x c]	(f) Typical Weekly Tonnage (T) [(5 x d) + e]	(g) % Weekly Tonnage per vehicle (%) [f / total (f)]	(h) Typical Annual Tonnage (T) [52 working weeks x f]
Small Truck	1.00	3	2	3.0	2.0	17.0	2.95%	884
Medium Truck	1.60	3	1	4.8	1.6	25.6	4.44%	1,331
Tipper Trucks	4.50	5	3	22.5	13.5	126.0	21.85%	6,552
Semi-Trailer (AV)	12.00	6	4	72.0	48.0	408.0	70.76%	21,216
TOTAL		17	10	102	65	577	100%	29,983

Empty Trucks for Residual Material (25% of total mass of unprocessed material).

Vehicle Type	(a) Average Tonnage per vehicle (T)	(b) Typical Weekdays Vehicles Unloading (Mon-Fri)	(c) Typical Weekend Vehicles Unloading (Sat)	(d) Typical Weekdays Tonnage (T) [a x b]	(e) Typical Saturdays Tonnage (T) [a x c]	(f) Typical Weekly Tonnage (T) [(5 x d) + e]	(g) % Weekly Tonnage per vehicle (%) [f / total (f)]	(h) Typical Annual Tonnage (T) [52 working weeks x f]
Semi-Trailer (AV)	12.00	2	2	24.0	24.0	144.0	24.97%	7,488
TOTAL		2	2	24	24	144	25%	7,488

Staff Operational Vehicles (Maximum of 15 Staff at any point of time).

Vehicle Type	(a) Maximum number of vehicles per day
Passenger Vehicle	15
TOTAL	15

Table 4: Estimated inbound traffic generation based on maximum trading volume of up to 30,000 tonnes of unprocessed materials

ESTIMATED OUTBOUND TRAFFIC GENERATION

Annual Processed Materials	22,360 tonnes	75% of unprocessed material
Annual Residual Waste Materials (Landfill)	7,488 tonnes	25% of unprocessed material
Weekdays Daily Outbound Traffic	34 vehicles / day	
Weekend Daily Outbound Traffic	12 vehicles / day	
AM Peak Hour Outbound Traffic	7 vehicles / peak hour	(Calculated by having 25% of daily outgoing trucks + 10% of staff leaving the site)
PM Peak Hour Outbound Traffic	19 vehicles / peak hour	(Calculated by having 25% of daily outgoing trucks + 90% of staff leaving the site)

Processed Material

Vehicle Type	(a) Average Tonnage per vehicle (T)	(b) Typical Weekdays Vehicles Unloading (Mon-Fri)	(c) Typical Weekend Vehicles Unloading (Sat)	(d) Typical Weekdays Tonnage (T) [a x b]	(e) Typical Saturdays Tonnage (T) [a x c]	(f) Typical Weekly Tonnage (T) [(5 x d) + e]	(g) % Weekly Tonnage per vehicle (%) [f / total (f)]	(h) Typical Annual Tonnage (T) [52 working weeks x f]
Small Truck	1.00	0	0	0.0	0.0	0.0	0.00%	-
Medium Truck	1.60	0	0	0.0	0.0	0.0	0.00%	-
Tipper Trucks	5.00	3	3	15.0	15.0	90.0	15.61%	4,680
Semi-Trailer (AV)	20.00	3	2	60.0	40.0	340.0	58.97%	17,680
TOTAL		6	5	75	55	430	75%	22,360

Trucks Leaving Empty after unloading Unprocessed Materials

Vehicle Type	(a) Average Tonnage per vehicle (T)	(b) Typical Weekdays Vehicles Unloading (Mon-Fri)	(c) Typical Weekend Vehicles Unloading (Sat)	(d) Typical Weekdays Tonnage (T) [a x b]	(e) Typical Saturdays Tonnage (T) [a x c]	(f) Typical Weekly Tonnage (T) [(5 x d) + e]	(g) % Weekly Tonnage per vehicle (%) [f / total (f)]	(h) Typical Annual Tonnage (T) [52 working weeks x f]
Small Truck	0.00	3	2	0.0	0.0	0.0	0.00%	-
Medium Truck	0.00	3	1	0.0	0.0	0.0	0.00%	-
Tipper Trucks	0.00	2	0	0.0	0.0	0.0	0.00%	-
Semi-Trailer (AV)	0.00	3	2	0.0	0.0	0.0	0.00%	-
TOTAL		11	5	-	-	-	0%	-

Trucks with Residual Material (25% of total mass of unprocessed material)

Vehicle Type	(a) Average Tonnage per vehicle (T)	(b) Typical Weekdays Vehicles Unloading (Mon-Fri)	(c) Typical Weekend Vehicles Unloading (Sat)	(d) Typical Weekdays Tonnage (T) [a x b]	(e) Typical Saturdays Tonnage (T) [a x c]	(f) Typical Weekly Tonnage (T) [(5 x d) + e]	(g) % Weekly Tonnage per vehicle (%) [f / total (f)]	(h) Typical Annual Tonnage (T) [52 working weeks x f]
Semi-Trailer (AV)	12.00	2	2	24.0	24.0	144.0	24.97%	7,488
TOTAL		2	2	24	24	144	25%	7,488

Staff Operational Vehicles (Maximum of 15 Staff at any point of time)

Vehicle Type	(a) Maximum number of vehicles per day
Passenger Vehicle	15
TOTAL	15

Table 5: Estimated outbound traffic generation based on maximum trading volume of up to 30,000 tonnes of unprocessed materials

Based on the information provided in Tables 4 and 5, the total estimated peak hour traffic generation for the proposed development is as follows:

- **AM peak:** 26 vehicle trips (19 in / 7 out)
- **PM peak:** 26 vehicle trips (7 in / 19 out)

The projected traffic volumes are considered low-impact and are not expected to significantly affect existing traffic flows on Murrays Flat Road or the surrounding road network.

7.2 Road Transport Route

As indicated in **Section 4.1** of this report, the proposed scrap metal recycling facility will not be open to the general public. It is anticipated that all articulated heavy vehicles (i.e. vehicles larger than MRV) arriving at and departing from the site will be owned and operated by the facility owner, Sydney Metal Traders, and will travel to/from the northern region (towards Sydney) only.

Due to the proposed left-out-only restriction from Murrays Flat Road onto the Hume Highway, vehicles intending to travel southbound towards Goulburn will be required to travel via Carrick Road, where a suitable location has been identified to undertake a left turn onto the road reserve area and turning right back onto Carrick Road before rejoining the Hume Highway.

The following vehicle routes have been developed in accordance with the proposed intersection treatments outlined in Section 5 of this report.

ARRIVING TO THE SITE:

Vehicle Size: MRV or Smaller

From South Region (eastbound on Hume Highway):

- Travel along the Hume Highway and turn left onto Murrays Flat Road.
- Continue along Murrays Flat Road for approximately 860 metres and turn right into the subject site.

From North Region (westbound on Hume Highway):

- Travel along the Hume Highway and turn right onto Murrays Flat Road.
- Continue along Murrays Flat Road for approximately 860 metres and turn right into the subject site.

Articulated Vehicles

From North Region (westbound on Hume Highway):

- Travel along the Hume Highway and pass the Murrays Flat Road intersection.
- Continue for approximately 12 km to the Hume Highway / Hume Street roundabout.
- Undertake a U-turn at the roundabout to travel eastbound on the Hume Highway.
- Travel approximately 12 km and turn left onto Murrays Flat Road via the upgraded CHL.
- Continue along Murrays Flat Road for approximately 860 metres and turn right into the subject site.

DEPARTING THE SITE

Vehicle Size: MRV or Smaller

Towards North Region (Sydney):

- Travel along Murrays Flat Road for approximately 860 metres and turn left onto the Hume Highway.
- Continue northbound towards Sydney.

Towards South Region (Goulburn):

- Travel along Murrays Flat Road for approximately 860 metres and turn left onto the Hume Highway.
- Continue for approximately 4.28 kilometres and turn left onto Carrick Road.
- Travel approximately 212 metres and undertake a left turn onto the road reserve area before turning right back onto Carrick Road (**refer to photo 9 and figure 8 on page 39**).
- Travel approximately 257 metres and turn right onto the Hume Highway.
- Continue southbound towards Goulburn.

Articulated Vehicles

Towards North Region (Sydney):

- Travel along Murrays Flat Road for approximately 860 metres and turn left onto the Hume Highway.
- Continue northbound towards Sydney.

Refer to the attached vehicle route map shown in Figure 6 and 7 in the following pages.

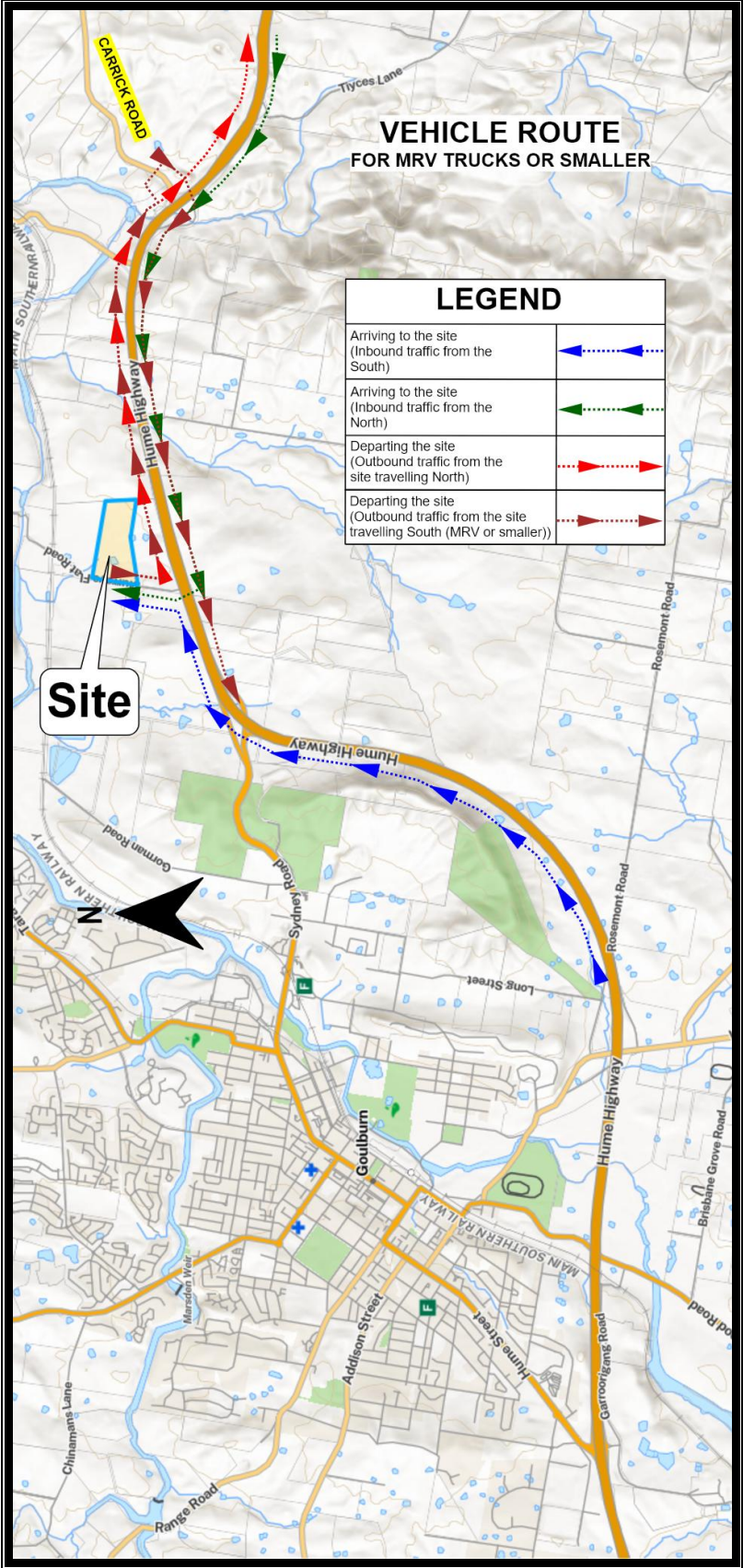


Figure 6. Vehicle Route for vehicle MRV or smaller

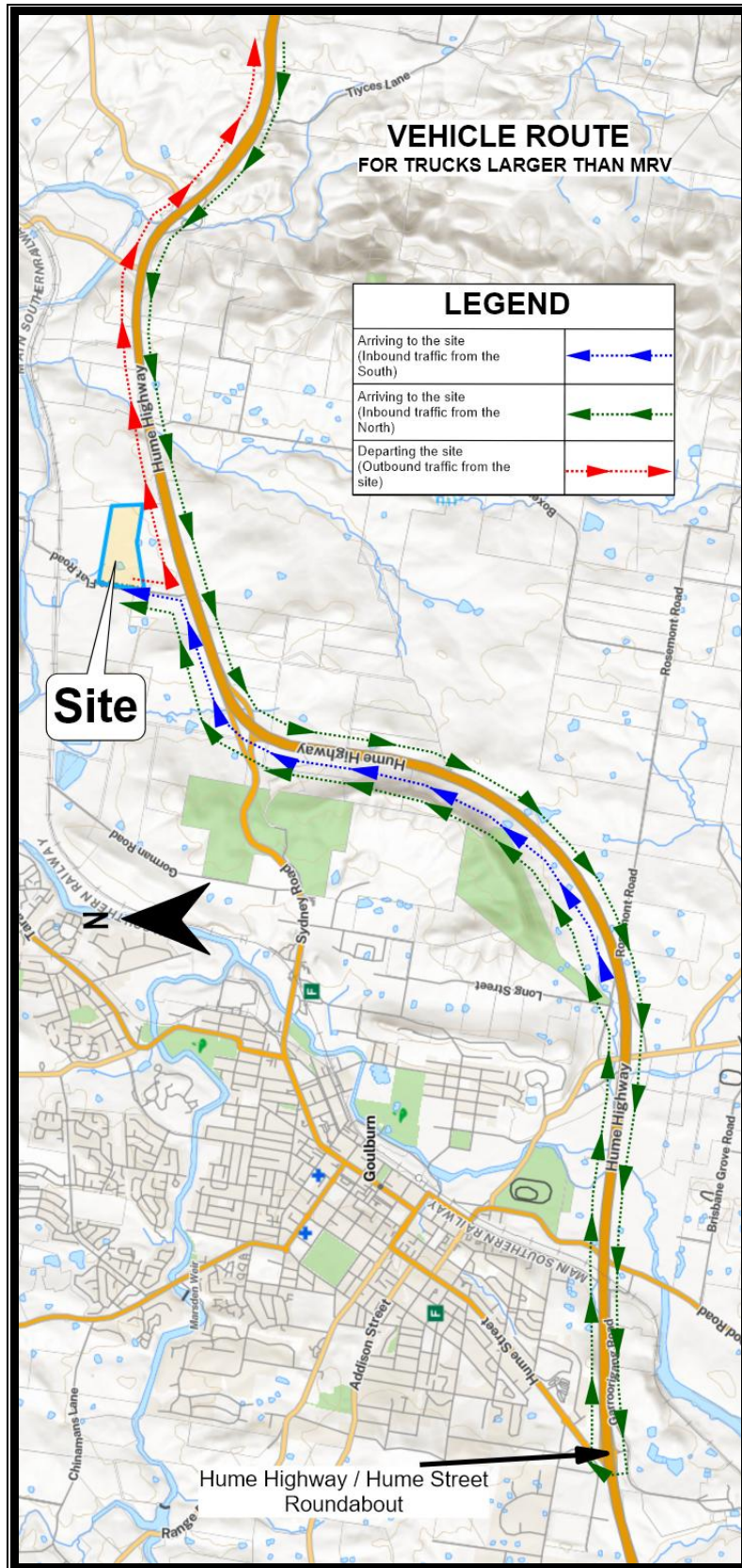


Figure 7. Vehicle Route for vehicles larger than MRV

Refer to photos 7 and 8 below for images in Carrick Road where a vehicle can undertake a turn left into a road reserve area and do a right turn back to Carrick Road to travel back towards the intersection.



Photo 7: Carrick Road – facing east



Photo 8: Carrick Road – facing west



Photo 9: Aerial map of Carrick Road and turning area

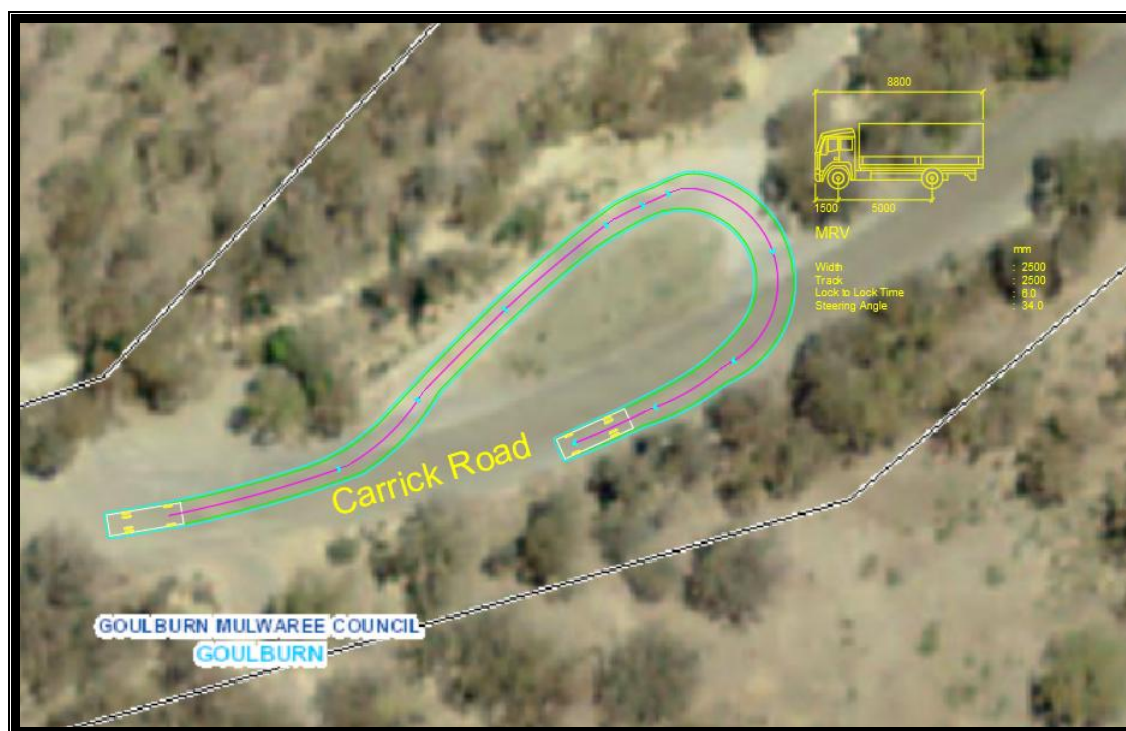


Figure 8: Swept path of turning area along Carrick Road

7.3 Operational Compliance

The operation of the proposed scrap metal recycling facility will be managed in accordance with the approved access arrangements, intersection treatments, and vehicle routing strategy detailed in this report. The following operational requirements are to be implemented and maintained at all times:

Operational Access and Routing Controls

- The facility must **not be open to the general public**, with all vehicle movements limited to authorised personnel, contractors, and pre-approved heavy vehicle operators.
- All **articulated vehicles (greater than MRV)** must be **restricted to travel to and from the northern region (towards Sydney) only**. No southbound movements on the Hume Highway are permitted for these vehicles.
- All vehicles exiting the site must be **restricted to a left-turn movement onto the Hume Highway**, in accordance with the proposed intersection design.
- **Passenger vehicles and small to medium heavy vehicles** intending to travel southbound must utilise **Carrick Road to undertake a left turn manoeuvre onto the road reserve area following a right turn movement** prior to rejoining the Hume Highway.
- All vehicle movements must be undertaken in accordance with the **approved vehicle routing diagrams (Figures 6 and 7)** contained within this report.

Driver Management and Enforcement

- All heavy vehicle drivers must be **inducted prior to accessing the site**, including provision of approved route maps and explicit instruction regarding prohibited movements.
- The operator must implement **appropriate on-site signage and wayfinding measures** to reinforce all turn restrictions and approved travel paths.
- The operator must maintain **operational procedures and monitoring systems** to ensure ongoing compliance with the approved vehicle access and routing arrangements.

Traffic Management Plan (TMP) Requirement

- A **Traffic Management Plan (TMP)** must be prepared and implemented prior to commencement of operations. The TMP must include, but not be limited to:
 - Detailed **vehicle routing plans** consistent with Figures 6 and 7
 - **Driver induction procedures and communication protocols**
 - Measures to ensure **compliance with left-in/left-out restrictions** at Murrays Flat Road
 - Identification of the **approved turning area on Carrick Road**
 - **Monitoring and corrective actions** in the event of non-compliance
- The TMP must be **reviewed and updated as required** to ensure continued compliance with any conditions of consent and relevant TfNSW requirements.

The above measures ensure that vehicle access and operational practices are consistent with the proposed intersection upgrades and Austroads design principles, while addressing safety risks associated with turning movements at the Hume Highway / Murrays Flat Road intersection. These controls provide a clear, enforceable framework to minimise traffic conflicts and maintain safe and efficient operation of the surrounding road network.

7.4 Projected Intersection Performance

Average Vehicle Delay (AVD) and Level of Service (LOS) – The AVD and LOS provide a measure of the operational performance of an intersection, as indicated in Table 4.2 of the Roads & Maritime Services “*Guide to Traffic Generating Developments – 2002*” (shown below).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Table 4.2: Level of Service Criteria for intersections (RMS Guide)

A SIDRA (version 9.1) intersection performance modelling analysis was undertaken for the cross-intersection of Murrays Flat Road / Hume Highway, in the vicinity of the subject site.

Refer to the summary of the results of the SIDRA intersection performance analysis (undertaken for pre & post development, including the 10-year future growth) attached in **Appendix 'D'** of this report. The post-SIDRA Network modelling has also considered the proposed addition of a channelised left-turn lane to Murrays Flat Road from Hume Highway, and the restrictions of no right turn on Murrays Flat Road to Hume Highway. Refer to the proposed network intersection layout as shown in Figure 9 on the next page.

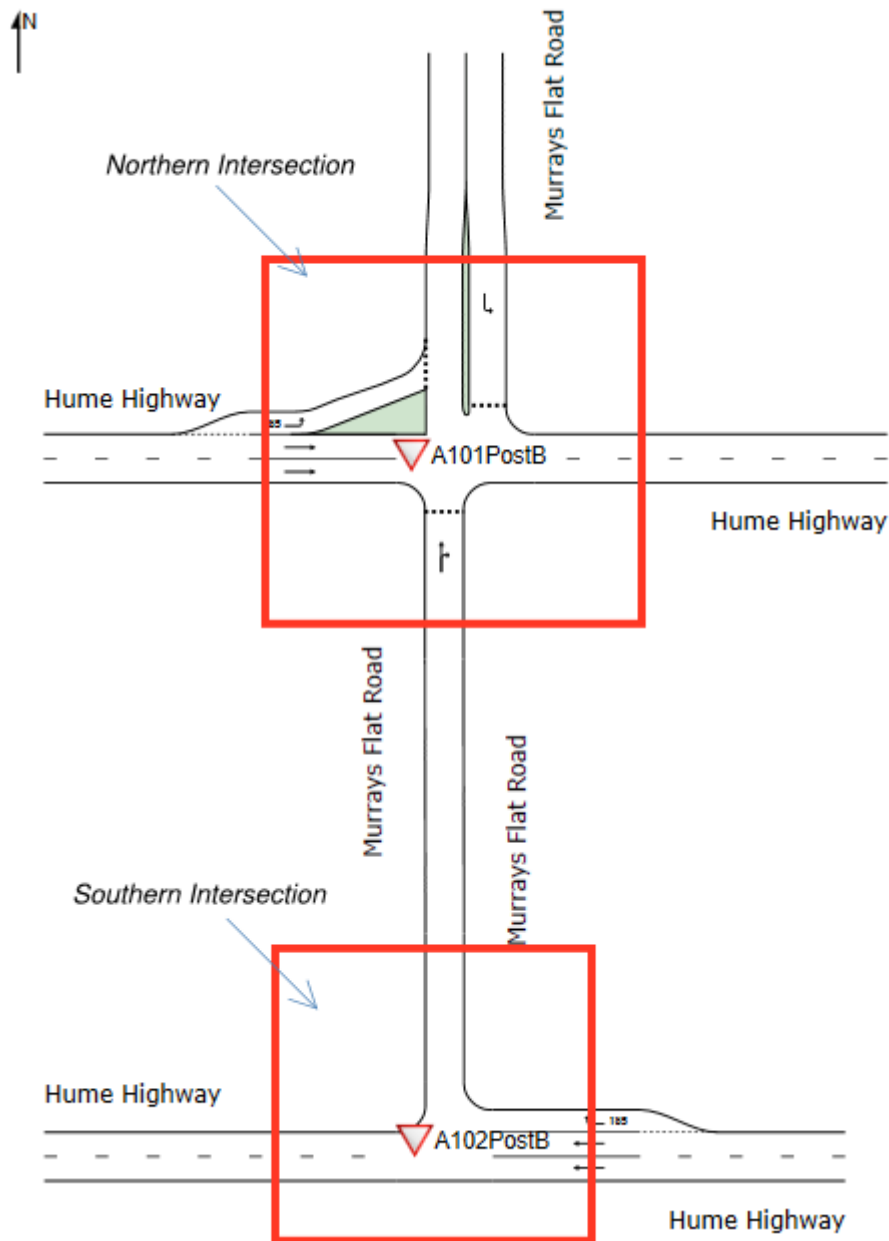


Figure 9: Proposed two-staged intersection layout with the proposed intersection upgrade

The annual traffic growth rate for the 10-year future period was based on the SIDRA intersection analysis software, which allows for future analysis in surrounding traffic by applying a uniform growth rate of 2% for each year over the 10-year period.

The following assumptions have been considered and adopted in the SIDRA Network Intersection modelling for the post-development conditions considering that the main access to and from the subject site is through Murrays Flat Road:

- The estimated morning and afternoon peak traffic generation has been used, as outlined in Section 7.1 of this report.
- The traffic generation from 15 staff vehicles arriving to the site in the AM peak is 90% (13 vehicles) of all staff, with 10% (2 vehicles) of staff vehicles leaving in the AM Peak.
- The traffic generation from staff vehicles arriving to the site in the PM peak is 10% (2 vehicles) of all staff, with 90% (13 vehicles) of staff vehicles leaving in the PM Peak.
- The sum of the traffic generated from trucks for both AM and PM peak is 50% of the total daily truck generation volume.
- All skippers and semi-trailer vehicles will be approaching from the north and following the vehicular route in section 7.2 of this report to drop off and pick up materials before delivering to Port Kembla towards the north.
- Vehicles wanting to travel towards Goulburn will be required to turn left onto Hume Highway from Murrays Flat Road and utilise a safer intersection to turn right and travel westbound towards Goulburn.
- Carrick Road has a suitable turning area for vehicle size up to MRV to do a left turn onto the road reserve area followed with a right turn to Carrick Road to travel back Hume Highway / Murrays Flat Road intersection and then undertake a right-turn to travel west-bound towards Goulburn.
- Carrick Road has not been modelled into SIDRA intersection analysis to assess the impacts the performance of the intersection.
- Pre-development network analysis is modelled for the base year (2025) and 10 years of future growth (2035) in surrounding traffic. The annual traffic growth rate for the 10-year future period was based on the SIDRA intersection analysis software, which allows for future analysis of surrounding traffic by applying a uniform growth rate of 2% for each year over the 10-year period.
- Post-development network analysis is modelled for once the scrap metal recycling plant development is in operation and after 10 years of future growth in surrounding traffic.
- Future post-development volume is based on 10 years of future growth on Hume Highway and Murrays Flat Road **PLUS** the current proposed traffic generation.

These assumptions will result in the development trip distribution shown in Figures 10 and 11, on the next pages, for relevant traffic movement and modelled intersections.

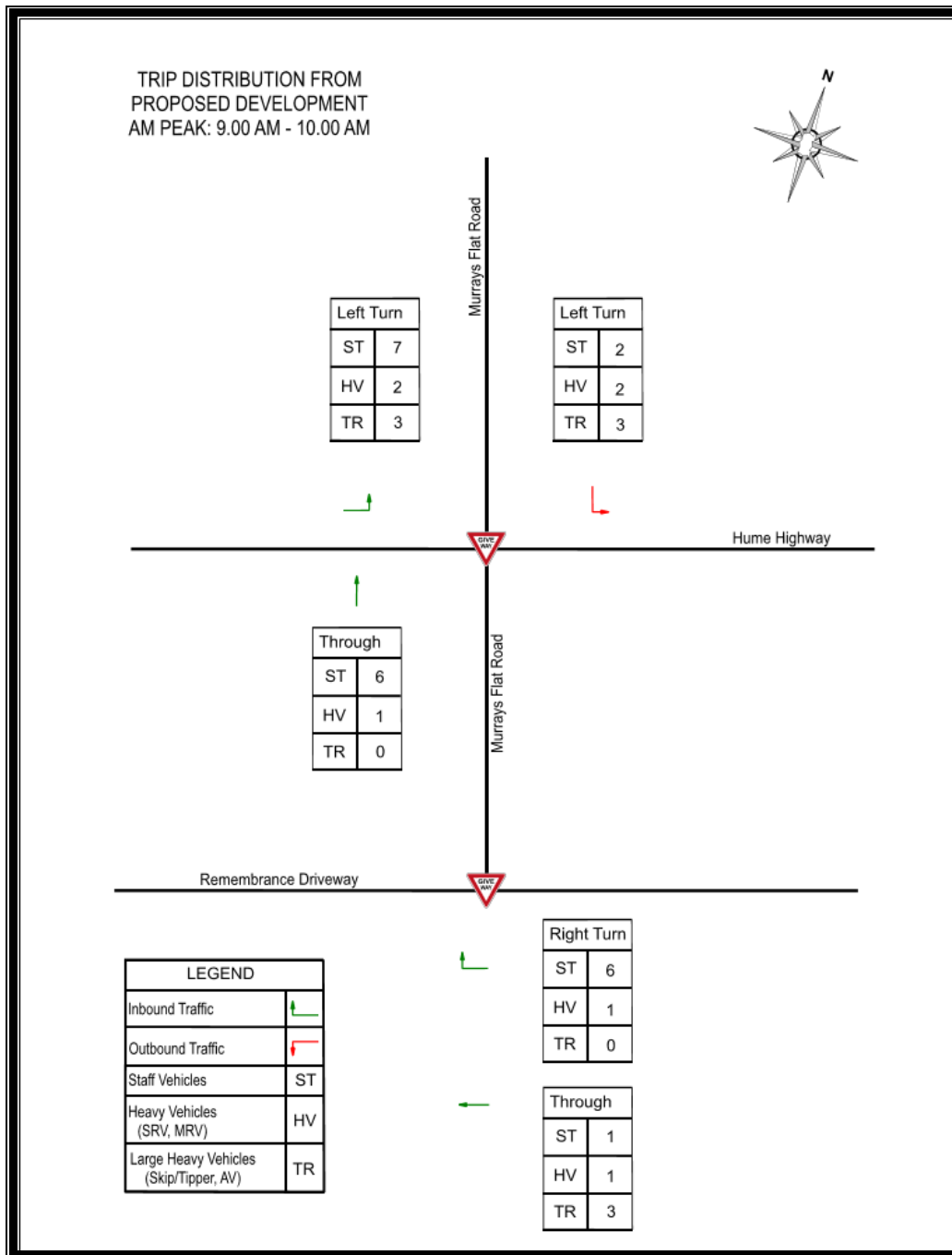


Figure 10: Development Traffic Distribution on the Surrounding Road Network – AM Peak

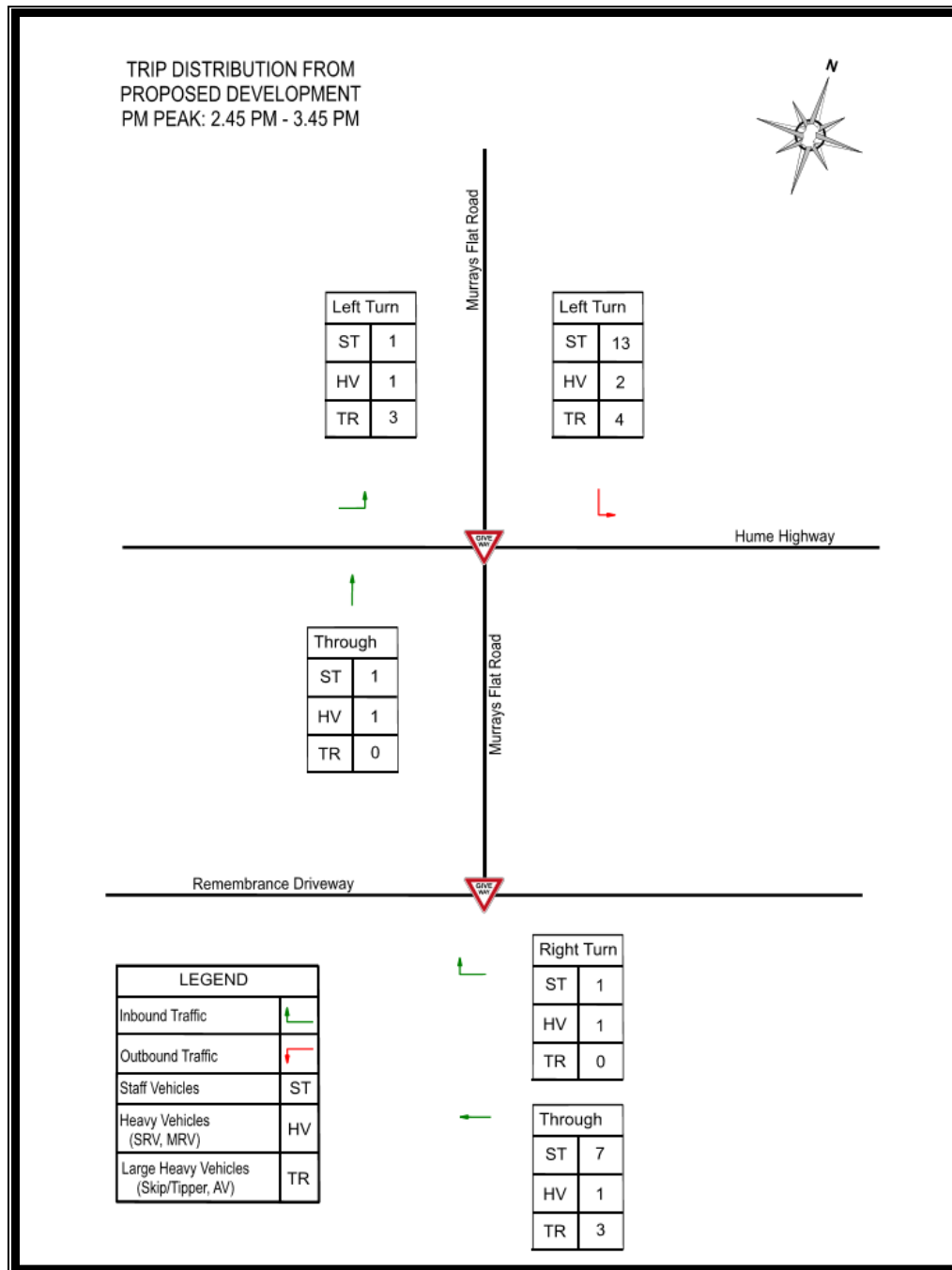


Figure 11: Development Traffic Distribution on the Surrounding Road Network – PM Peak

A summary of the SIDRA results of the base year findings can be found in table 6 and 7, with the future year findings shown in table 8 to 11.

Base Year 2025 – Post Development (AM)						
Approach Leg	Turning Movement	Movement class	Average LOS	Average Delay (sec)	Average Back of Queue (vehicle)	DOS (Veh/C)
Northern Intersection						
South	Through	LV	A	3.8	0.0	0.017
		HV	-	-	-	-
		ST	A	3.8	0.0	0.017
		HV	A	10.8	0.0	0.017
		TR	-	-	-	-
	Right	LV	A	6.1	0.0	0.017
		HV	-	-	-	-
North	Left	LV	A	6.7	0.0	0.023
		HV	A	8.9	0.0	0.023
		ST	A	6.7	0.0	0.023
		HV	A	8.9	0.0	0.023
		TR	B	18.3	0.0	0.023
West	Left	LV	A	10.3	0.0	0.013
		HV	-	-	-	-
		ST	A	10.3	0.0	0.013
		HV	A	10.4	0.0	0.013
		TR	A	10.4	0.0	0.013
	Through	LV	A	0.0	0.0	0.221
		HV	A	0.0	0.0	0.221
Southern Intersection						
East	Through	LV	A	0.1	0.0	0.270
		HV	A	0.1	0.0	0.270
		ST	A	0.1	0.0	0.270

		HV	A	0.1	0.0	0.270
		TR	A	0.1	0.0	0.270
	Right	LV	-	-	-	-
		HV	A	9.0	0.0	0.005
		ST	A	9.0	0.0	0.005
		HV	A	9.0	0.0	0.005
		TR	-	-	-	-

Table 6: Network SIDRA Modelling – Hume Highway / Murrays Flat Rd – 9.00am – 10.00am

Base Year 2025 – Post Development (PM)						
Approach Leg	Turning Movement	Movement class	Average LOS	Average Delay (sec)	Average Back of Queue (vehicle)	DOS (Veh/C)
Northern Intersection						
South	Through	LV	A	6.5	0.0	0.015
		HV	-	-	-	-
		ST	A	6.5	0.0	0.015
		HV	B	21.7	0.0	0.015
		TR	-	-	-	-
	Right	LV	A	10.1	0.0	0.015
		HV	-	-	-	-
North	Left	LV	A	7.3	0.1	0.057
		HV	A	11.2	0.1	0.057
		ST	A	7.3	0.1	0.057
		HV	A	11.2	0.1	0.057
		TR	C	29.8	0.1	0.057
West	Left	LV	-	-	-	-
		HV	A	12.1	0.0	0.007
		ST	A	12.1	0.0	0.007
		HV	A	12.1	0.0	0.007
		TR	A	12.1	0.0	0.007
	Through	LV	A	0.0	0.0	0.295
		HV	A	0.0	0.0	0.295
Southern Intersection						
East	Through	LV	A	0.1	0.0	0.305
		HV	A	0.1	0.0	0.305

		ST	A	0.1	0.0	0.305
		HV	A	0.1	0.0	0.305
		TR	A	0.1	0.0	0.305
	Right	LV	A	9.3	0.0	0.002
		HV	-	-	-	-
		ST	A	9.3	0.0	0.002
		HV	A	9.3	0.0	0.002
		TR	-	-	-	-

Table 7: Network SIDRA Modelling – Hume Highway / Murrays Flat Rd – 2.45pm – 3.45pm

Future Year 2035 – Pre Development (AM)						
Approach Leg	Turning Movement	Movement class	Average LOS	Average Delay (sec)	Average Back of Queue (vehicle)	DOS (Veh/C)
North Intersection						
South	Through	LV	A	9.0	0.0	0.008
		HV	-	-	-	-
	Right	LV	A	12.5	0.0	0.008
		HV	-	-	-	-
North	Left	LV	A	6.6	0.0	0.005
		HV	A	6.6	0.0	0.005
	Through	LV	A	4.5	0.0	0.005
		HV	-	-	-	-
West	Left	LV	A	8.2	0.0	0.001
		HV	-	-	-	-
	Through	LV	A	0.0	0.0	0.265
		HV	A	0.0	0.0	0.265
	Right	LV	A	7.7	0.0	0.265
		HV	-	-	-	-
Southern Intersection						
East	Through	LV	A	0.1	0.0	0.321
		HV	A	0.1	0.0	0.321
	Right	LV	-	-	-	-
		HV	A	10.9	0.0	0.001
North	Right	LV	A	3.5	0.0	0.001
		HV	-	-	-	-

Table 8: Network SIDRA Modelling – Hume Highway / Murrays Flat Rd – 9.00am – 10.00am

Future Year 2035 – Pre Development (PM)						
Approach Leg	Turning Movement	Movement class	Average LOS	Average Delay (sec)	Average Back of Queue (vehicle)	DOS (Veh/C)
Northern Intersection						
South	Through	LV	B	18.7	0.0	0.016
		HV	-	-	-	-
	Right	LV	B	26.5	0.0	0.016
		HV	-	-	-	-
North	Left	LV	A	6.0	0.1	0.067
		HV	-	-	-	-
	Through	LV	A	9.4	0.1	0.067
		HV	B	24.4	0.1	0.067
West	Left	LV	-	-	-	-
		HV	A	11.2	0.0	0.001
	Through	LV	A	0.0	0.0	0.355
		HV	A	0.0	0.0	0.355
	Right	LV	-	-	-	-
		HV	A	10.9	0.0	0.355
Southern Intersection						
East	Through	LV	A	0.2	0.0	0.361
		HV	A	0.2	0.0	0.361
	Right	LV	A	7.7	0.0	0.001
		HV	-	-	-	-
North	Right	LV	A	4.3	0.0	0.011
		HV	A	11.9	0.0	0.011

Table 9: Network SIDRA Modelling – Hume Highway / Murrays Flat Rd – 2.45pm – 3.45pm

Future Year 2035 – Post Development (AM)						
Approach Leg	Turning Movement	Movement class	Average LOS	Average Delay (sec)	Average Back of Queue (vehicle)	DOS (Veh/C)
Northern Intersection						
South	Through	LV	A	5.8	0.0	0.024
		HV	-	-	-	-
		ST	A	5.8	0.0	0.024
		HV	B	18.6	0.0	0.024
		TR	-	-	-	-
	Right	LV	A	8.9	0.0	0.024
		HV	-	-	-	-
North	Left	LV	A	7.2	0.0	0.033
		HV	A	10.6	0.0	0.033
		ST	A	7.2	0.0	0.033
		HV	A	10.6	0.0	0.033
		TR	B	26.1	0.0	0.033
West	Left	LV	A	10.3	0.0	0.013
		HV	-	-	-	-
		ST	A	10.3	0.0	0.013
		HV	A	10.3	0.0	0.013
		TR	A	10.3	0.0	0.013
	Through	LV	A	0.0	0.0	0.279
		HV	A	0.0	0.0	0.279
Southern Intersection						
East	Through	LV	A	0.1	0.0	0.340
		HV	A	0.1	0.0	0.340
		ST	A	0.1	0.0	0.340

		HV	A	0.1	0.0	0.340
		TR	A	0.1	0.0	0.340
	Right	LV	A	8.6	0.0	0.005
		HV	-	-	-	-
		ST	A	8.6	0.0	0.005
		HV	A	8.6	0.0	0.005
		TR	-	-	-	-

Table 10: Network SIDRA Modelling – Hume Highway / Murrays Flat Rd – 9.00am – 10.00am

Future Year 2035 – Post Development (PM)						
Approach Leg	Turning Movement	Movement class	Average LOS	Average Delay (sec)	Average Back of Queue (vehicle)	DOS (Veh/C)
Northern Intersection						
South	Through	LV	A	11.5	0.0	0.032
		HV	-	-	-	-
		ST	A	11.5	0.0	0.032
		HV	D	47.0	0.0	0.032
		TR	-	-	-	-
	Right	LV	B	17.3	0.0	0.032
		HV	-	-	-	-
North	Left	LV	A	3.5	0.1	0.099
		HV	A	10.1	0.1	0.099
		ST	A	3.5	0.1	0.099
		HV	A	10.1	0.1	0.099
		TR	D	47.1	0.1	0.099
West	Left	LV	-	-	-	-
		HV	A	12.1	0.0	0.007
		ST	A	12.1	0.0	0.007
		HV	A	12.1	0.0	0.007
		TR	A	12.1	0.0	0.007
	Through	LV	A	0.0	0.0	0.373
		HV	A	0.0	0.0	0.373
Southern Intersection						
East	Through	LV	A	0.1	0.0	0.384
		HV	A	0.1	0.0	0.384

		ST	A	0.1	0.0	0.384
		HV	A	0.1	0.0	0.384
		TR	A	0.1	0.0	0.384
	Right	LV	A	8.9	0.0	0.003
		HV	-	-	-	-
		ST	A	8.9	0.0	0.003
		HV	A	8.9	0.0	0.003
		TR	-	-	-	-

Table 11: Network SIDRA Modelling – Hume Highway / Murrays Flat Rd – 2.45pm – 3.45pm

The SIDRA analysis results above, indicate that the proposed development will have a **minor impact** on the operational performance of key intersections within the study area, both in the base year and in the 10-year future scenario, as outlined below:

Base Year Findings:

- The overall operational performance of the two-stage intersection at the Hume Highway / Murrays Flat Road intersection is expected to remain at current Levels of Service (LOS) LOS 'A'.

Future Year Findings:

- **Without the development and existing intersection layout:**
 - The southern intersection of the two-stage intersection at Hume Highway / Murrays Flat Road is expected to maintain LOS 'A' during both the AM and PM peak periods.
 - At the northern intersection:
 - The right turn movement in the south approach legs is expected to experience a minor decrease in performance, from LOS 'A' to LOS 'B' during the PM peak period only.
 - AM peak performance is expected to remain unchanged.

- **With the development and proposed intersection upgrade:**
 - The Hume Highway / Murrays Flat Road intersection is expected to maintain similar operational performance with exception to the south approach leg at the northern intersection, where it is expected to change from LOS 'A' to LOS 'B' due to the increase in existing traffic volume.
 - The proposed intersection upgrade is considered a practical and effective measure to preserve pre-development intersection performance.

The additional traffic generated by the proposed development can be effectively accommodated within the existing road network layout. The upgrade ensures that operational efficiency and safety are maintained, with no adverse impacts on the surrounding area's amenity.

Therefore, the traffic generated by the proposed development is expected to have a **low impact** on traffic flows along Murrays Flat Road and surrounding streets. The existing intersection is anticipated to continue operating at acceptable Levels of Service, with no significant degradation in performance due to the development, both in the base year and in the 10-year future scenarios.

8 RESPONSE TO SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEAR) TRAFFIC & TRANSPORT MATTERS

In response to the Department of Planning and Environment's Secretary's Environmental Assessment Requirements (SEARs) – SEAR number 1819 – the following key traffic and transport-related issues have been identified and addressed. The table 12 below outlines the matters raised in the SEARs and the corresponding sections in this report that respond to each matter.

SEAR's Traffic & Transport Matters	Response to SEAR Matters
Details of road transport routes and access to the site	The road transport route for all vehicles accessing the site is provided in detail in Section 7.2 of this report. Any movement restrictions have been provided with an alternative arrangement to safely to enter and exit the site.
Road traffic predictions for the development during construction and operation	Predicted traffic generation based on the site's operation of processing 30,000 tonnes of unprocessed material annually is detailed in Section 7.1 of this report. Also, estimated traffic generated during varies stages of construction is outlined in the Construction Traffic Management Plan (CTMP) prepared by Hemanote Consultants and submitted with this report.
Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site	Swept path diagrams demonstrating the movement of the largest vehicle entering and exiting the site are included in Appendix 'B' .
An assessment of impacts to the safety and function of the road network and the details of any road upgrades required for	An upgrade to the existing intersection at Hume Highway / Murrays Flat Road is proposed in Section 5 of this report to meet

the development	current Austroads requirements. The upgrade of the intersection has considered crashes that has occurred between the years 2022 and 2024. The upgrade has removed the recurring factor of the inadequate deceleration lane for vehicles travelling along Hume Highway. The proposed intersection now incorporates a in-compliant deceleration lane, and the removal of the right turn movement, where an adequate deceleration lane cannot be provided.
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Table 12. SEARs compliance table

9 RESPONSE TO TRANSPORT FOR NEW SOUTH WALES (TFNSW) ISSUES

In response to Transport for New South's concerns with Hume Highway / Murrays Flat Road intersection (TfNSW reference: STH25/00238/001), the following key issues has been outlined and resolved below:

TFNSW ISSUES:

1. *Generally, TfNSW seek access arrangements which do not rely on at grade right turn movements.*
 - a. *Right turn performed at grade intersections on high-speed dual carriageways pose significant road safety risks*
 - b. *In the first instance, consideration should be given to alternative routes to the site that do not use the Hume Highway/Murrays Flat intersection, ie the building of a local road connection. TfNSW notes that Council's Employment Land Strategy (2016) identifies issues with access to the industrial area at Murrays Flat including 'safe access on and off the highway is problematic'... and 'there is opportunity to establish an alternative access to Murrays Flat Road from Gorman Road in the west'.*
2. *TfNSW has concerns with the current intersection arrangement at Hume Highway and Murrays Flat Road, including but limited to:*
 - a. *The intersection does not comply with current Austroads standards, including Austroads Guide to Road Design Part 4A,*
 - b. *The median break on Hume Highway at Murrays Flat Road does not appear to be able to facilitate trucks in the median simultaneously, and*
 - c. *The current intersection does not have deceleration and acceleration lanes.*

RESOLUTION:

1(a) Right-Turn Movements

The concern regarding unsafe right-turn movements is acknowledged and has been directly addressed through the proposed design and operational controls.

The upgraded intersection (refer to **Section 5** of this report) incorporates extended deceleration lanes in accordance with Austroads requirements, together with the prohibition of right-turn movements for:

- Vehicles travelling eastbound on the Hume Highway; and
- Vehicles exiting Murrays Flat Road onto the Hume Highway.

These measures remove the highest-risk turning movements at the intersection, which are understood to account for the majority of recorded crash incidents. As such, the proposed design is expected to significantly improve overall intersection safety and reduce the likelihood of future incidents.

This approach is consistent with the Austroads Safe System principles and guidance within:

- *Austroads Guide to Road Design Part 4A* (treatment of turning movements at high-speed intersections); and
- *Austroads Guide to Traffic Management Part 6* (minimising conflict points at intersections).

Heavy vehicles using the facility will be directed to utilise a controlled routing strategy (refer Section 7.2), utilising grade-separated or lower-risk turning opportunities (i.e. roundabout U-turn movements).

Accordingly, the proposed design does not rely on at-grade right-turn movements for heavy vehicles and is considered to address TfNSW's safety concern.

1(b) Alternative Access via Gorman Road

The potential for an alternative access via Gorman Road is acknowledged; however, such infrastructure is strategic in nature and outside the scope of the proposed development.

Notwithstanding, the subject development incorporates a site-specific mitigation framework, including:

- Intersection upgrade in accordance with Austroads standards;
- Removal of high-risk turning movements;
- Controlled vehicle routing and operational restrictions (refer Sections 7.2 and 7.3).

These measures provide a safe, compliant, and immediately deliverable solution, independent of future regional road network upgrades.

Accordingly, the proposed access arrangement is considered appropriate for the scale and nature of the development.

2(a) Compliance with Austroads Standards

The proposed intersection upgrade has been developed in accordance with the:

- *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections; and*
- Relevant provisions for auxiliary lanes, channelised turn treatments, and intersection geometry.

The design incorporates:

- Channelised left-turn and right-turn treatments (CHL/CHR);
- Appropriate lane lengths based on speed environment;
- Compliant turning path geometry; and

- Provision of Safe Intersection Sight Distance (SISD).

Accordingly, the proposed design achieves compliance with the applicable Austroads standards.

2(b) Median Storage Capacity

The concern regarding median storage capacity has been specifically assessed through SIDRA modelling, with the intersection configured as a two-stage crossing, consistent with Austroads guidance for divided roads.

The modelling (refer Section 7.3 and Appendix 'D') confirms that:

- The median provides adequate storage for design vehicles, including heavy vehicles;
- Queue lengths do not extend into through lanes under both existing and future conditions; and
- Gap acceptance criteria are satisfied, enabling safe staged crossing manoeuvres.

This is consistent with the principles outlined in:

- *Austroads Guide to Traffic Management Part 6* (gap selection and staged crossing); and
- *Austroads Guide to Road Design Part 4A* (median treatment and storage requirements).

Accordingly, the median break is considered adequate to safely accommodate vehicle movements.

2(c) Deceleration and Acceleration Lanes

The proposed design includes deceleration lanes (approximately 185 metres in length) on both approaches to Murrays Flat Road, designed in accordance with:

- Austroads Guide to Road Design Part 4A (*Auxiliary Lane requirements for high-speed environments*).

In relation to acceleration lanes, the design has been assessed against **Safe Intersection Sight Distance (SISD)** requirements. The available sight distance and observed gap availability confirm that vehicles can safely enter and merge with through traffic without the need for a formal acceleration lane.

This approach is consistent with Austroads guidance, which allows for at-grade merge movements where adequate SISD and gap acceptance are achieved.

Accordingly, the proposed design satisfies the intent of Austroads requirements for safe entry onto the Hume Highway.

In summary, the proposed intersection upgrade and associated operational controls provide a robust and compliant response to the issues raised by TfNSW by:

- Eliminating high-risk right-turn movements for heavy vehicles;
- Providing an intersection layout consistent with Austroads design standards;
- Demonstrating adequate median storage and safe operational performance through SIDRA modelling; and
- Implementing enforceable vehicle routing and operational controls.

On this basis, the proposed access arrangement is considered to address TfNSW's concerns and is suitable to support the proposed development.

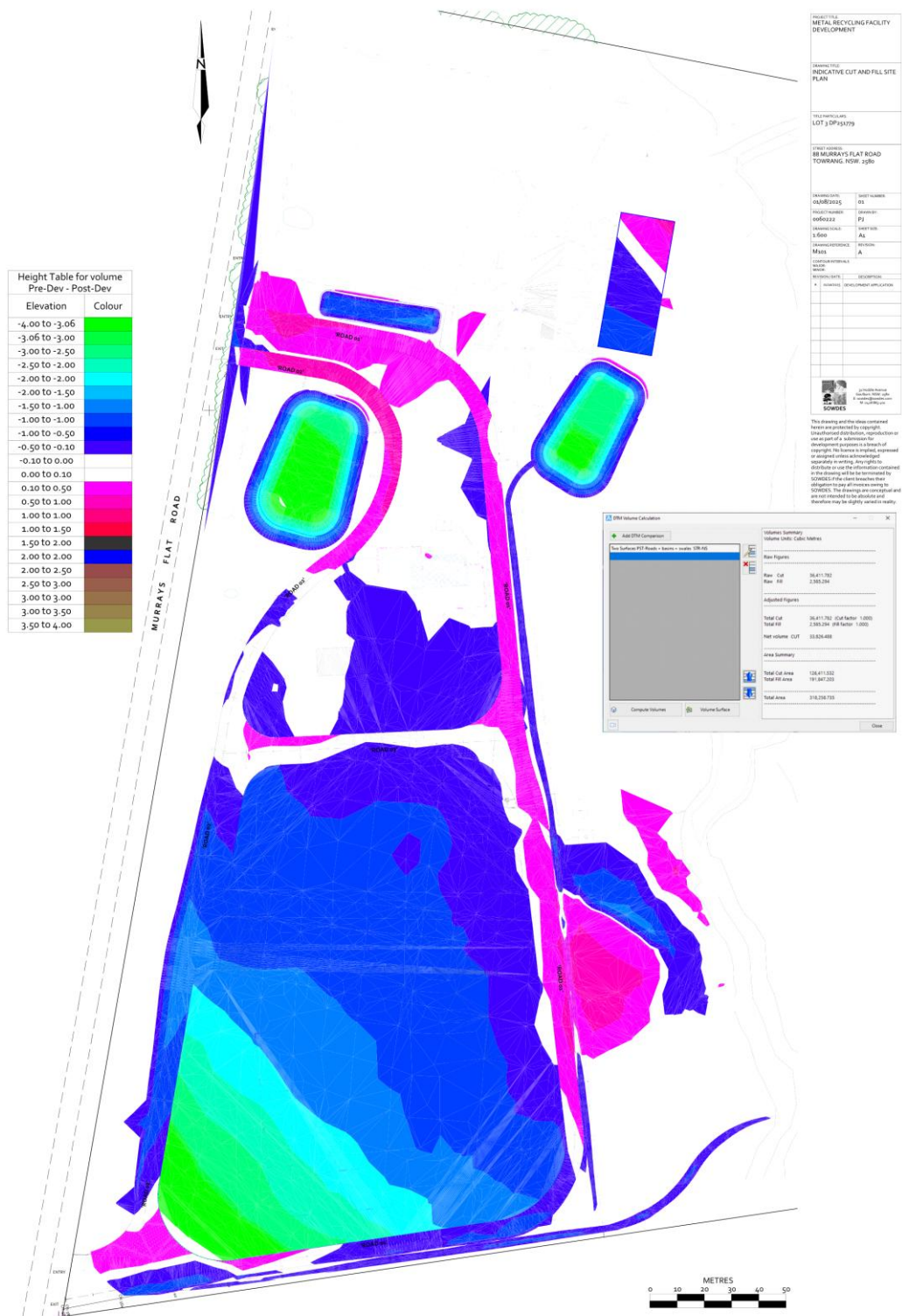
10 CONCLUSION

It can be concluded from the traffic and parking impact assessment that the proposed industrial development at 88 Murrays Flat Road, Towrang, will not have adverse impacts on existing traffic or parking conditions and is worthy of Council's support in its present form.

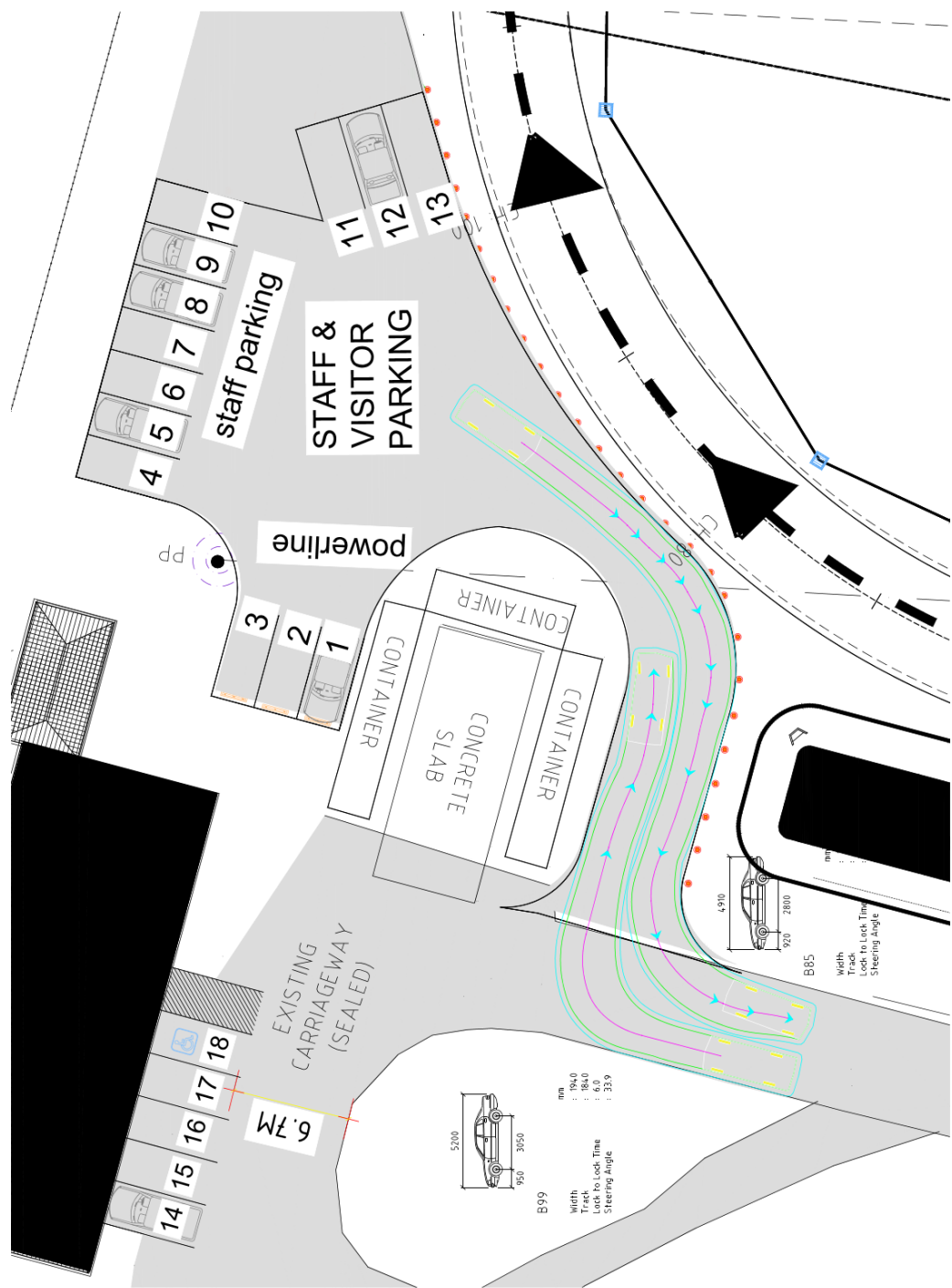
- The existing traffic flows on Hume Highway and Murrays Flat Road are typical for a state road and a local road, respectively, located in a mainly rural area, characterised by vacant land, farms and residential dwellings, as well as some nearby commercial and industrial sites, where traffic is controlled by existing 2-staged intersection and a 'T' priority, with spare capacity.
- Hume Highway 2-staged intersection requires upgrade works that is to comply with the current Austroads Standards, which includes increasing channelised turning lanes length.
- The estimated traffic generation from the proposed development is of low impact on existing flows on Hume Highway and Murrays Flat Road and will not have adverse impacts on the current operational performance of the subject existing intersections, which will continue to operate at a similar level of service.
- The potential increase in the number of vehicle movements in and about Murrays Flat Road will not have adverse impacts on the amenity of the area.
- The parking demand resulting from the proposed industrial development can be easily accommodated within the proposed adequate and compliant on-site parking spaces and loading/unloading facilities.
- The on-site vehicular access, car parking layout and vehicular circulation internal roads is adequate for the proposed development and in accordance with AS2890.1:2004, AS2890.6:2009 and AS2890.2:2018, where vehicles enter and exit the site in a forward direction at all times.
- The proposed development will not have adverse impacts on parking in the surrounding area.
- All TfNSW issues and SEARs matters has been resolved.

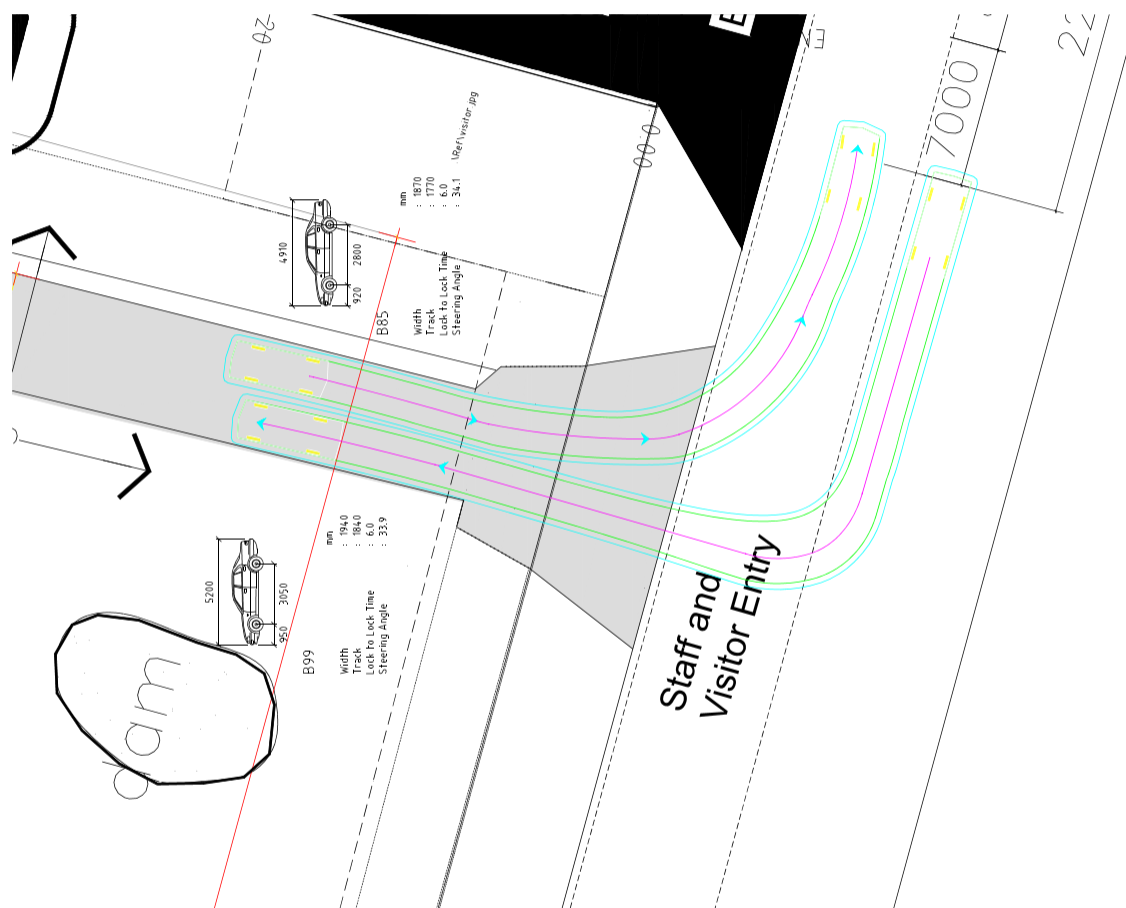
Appendix 'A' – Proposed Development Plan and Cut & Fill Plan

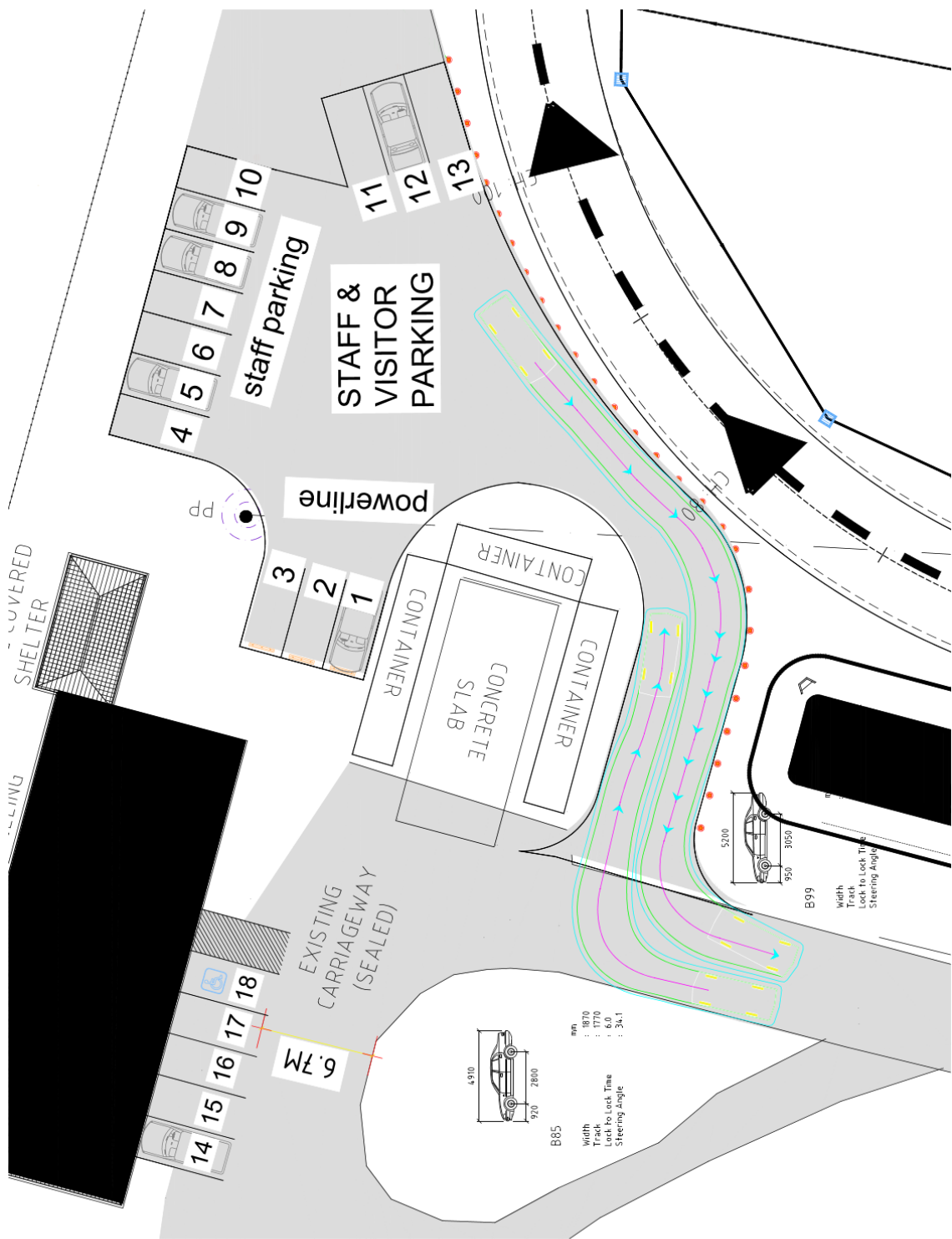


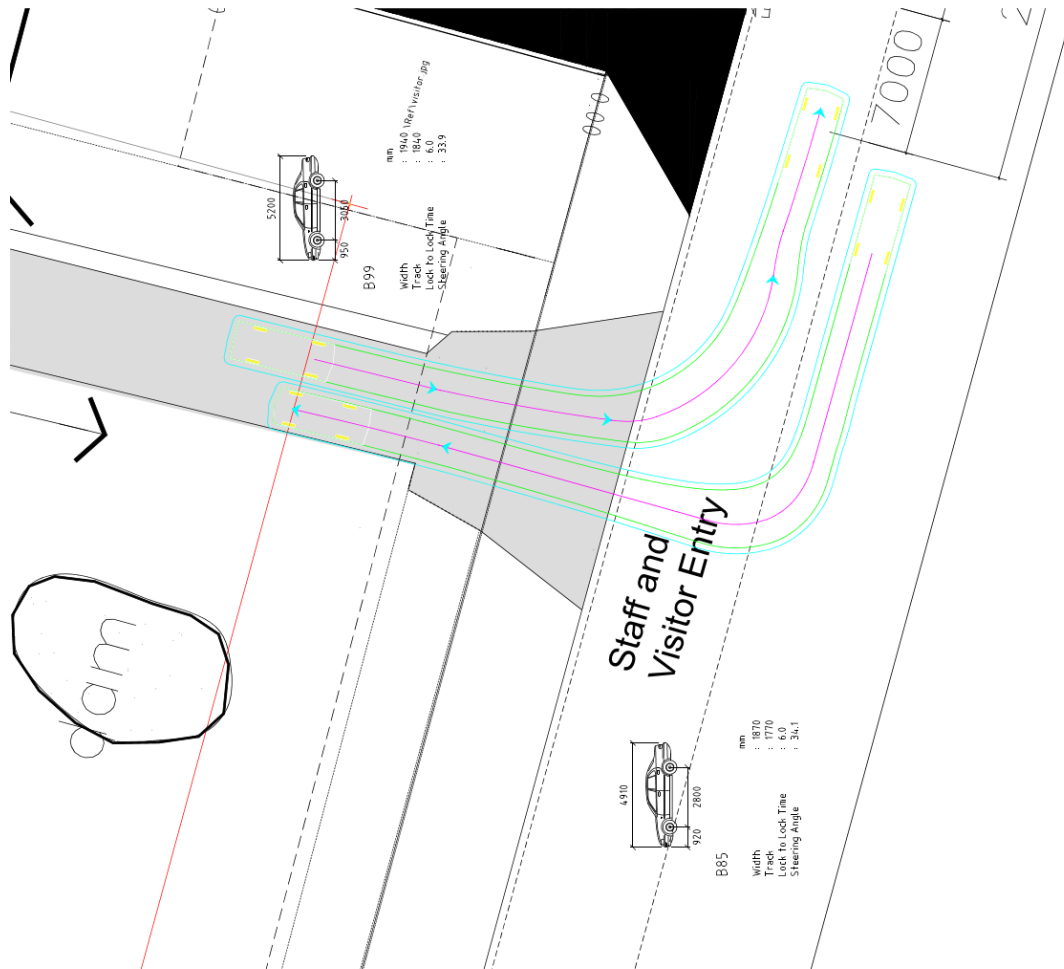


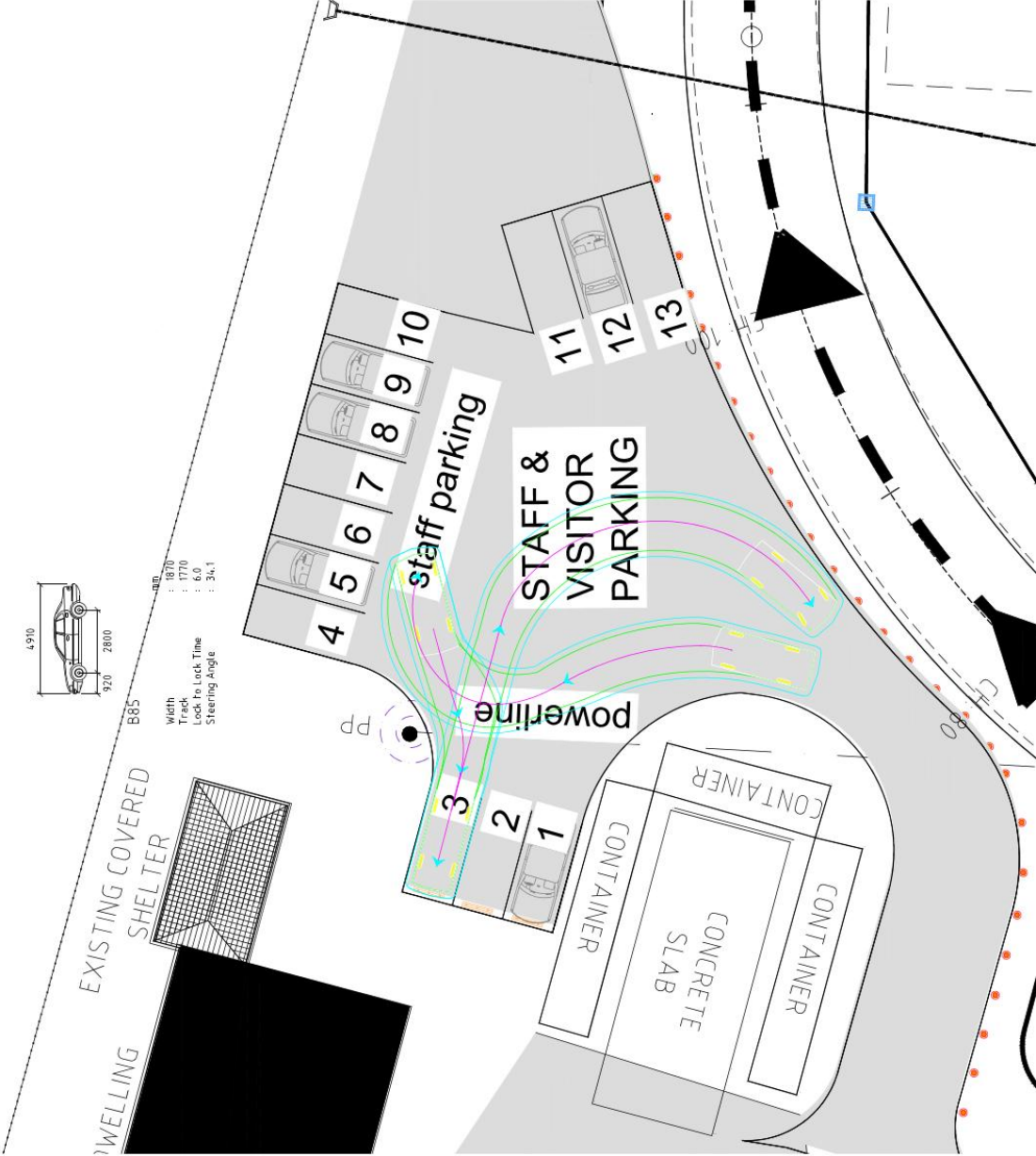
Appendix 'B' – Vehicle Swept Paths

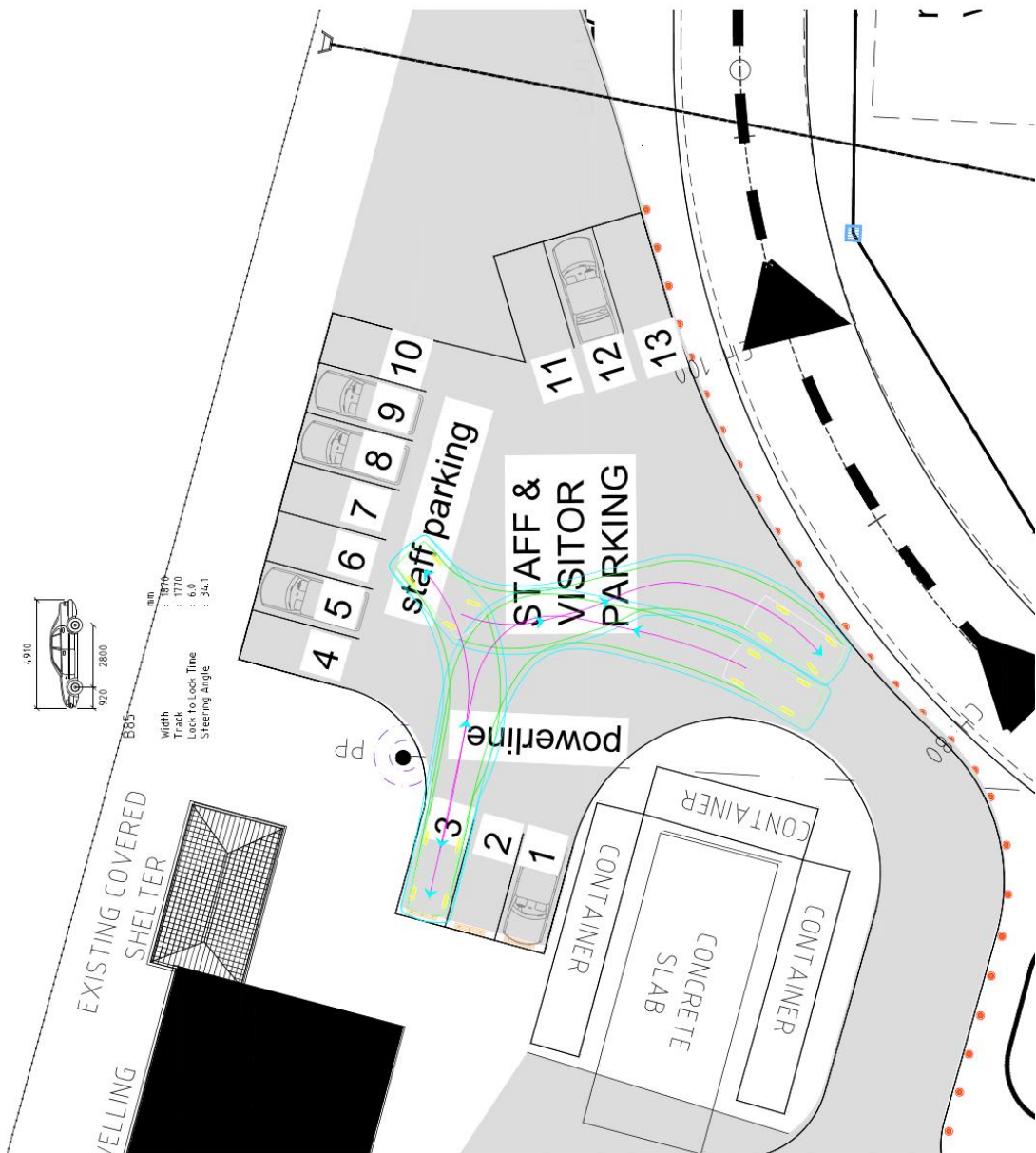


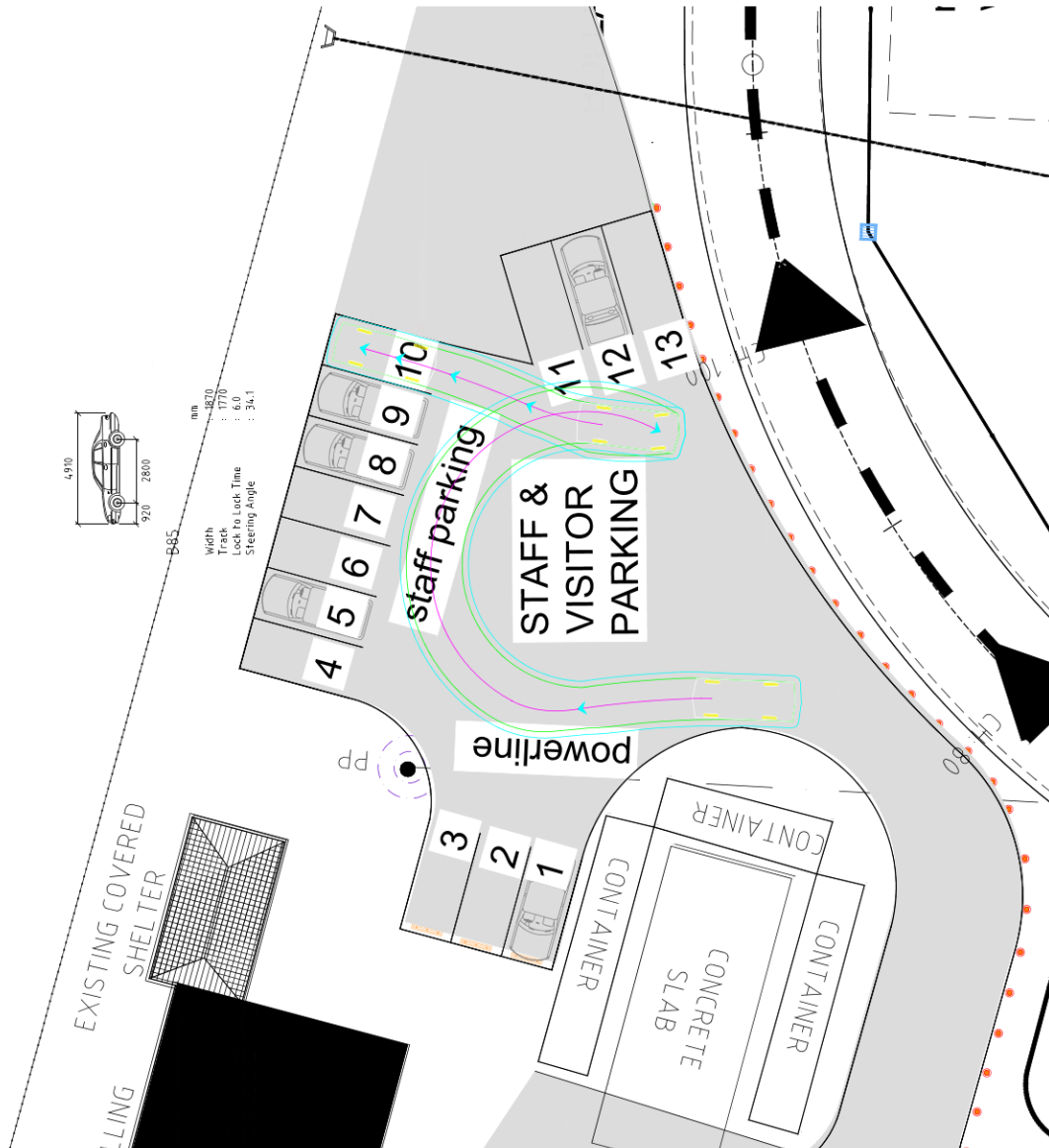


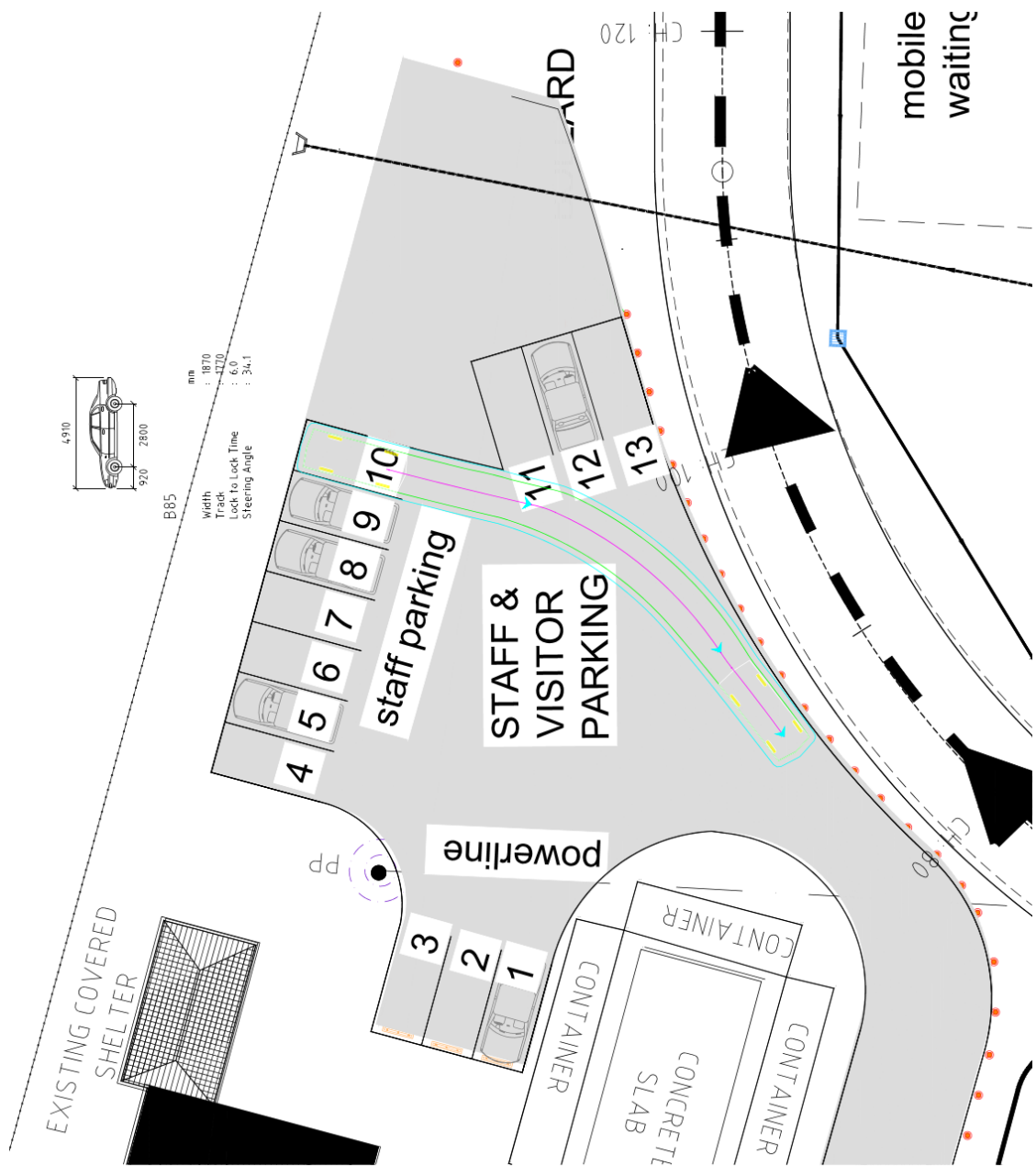


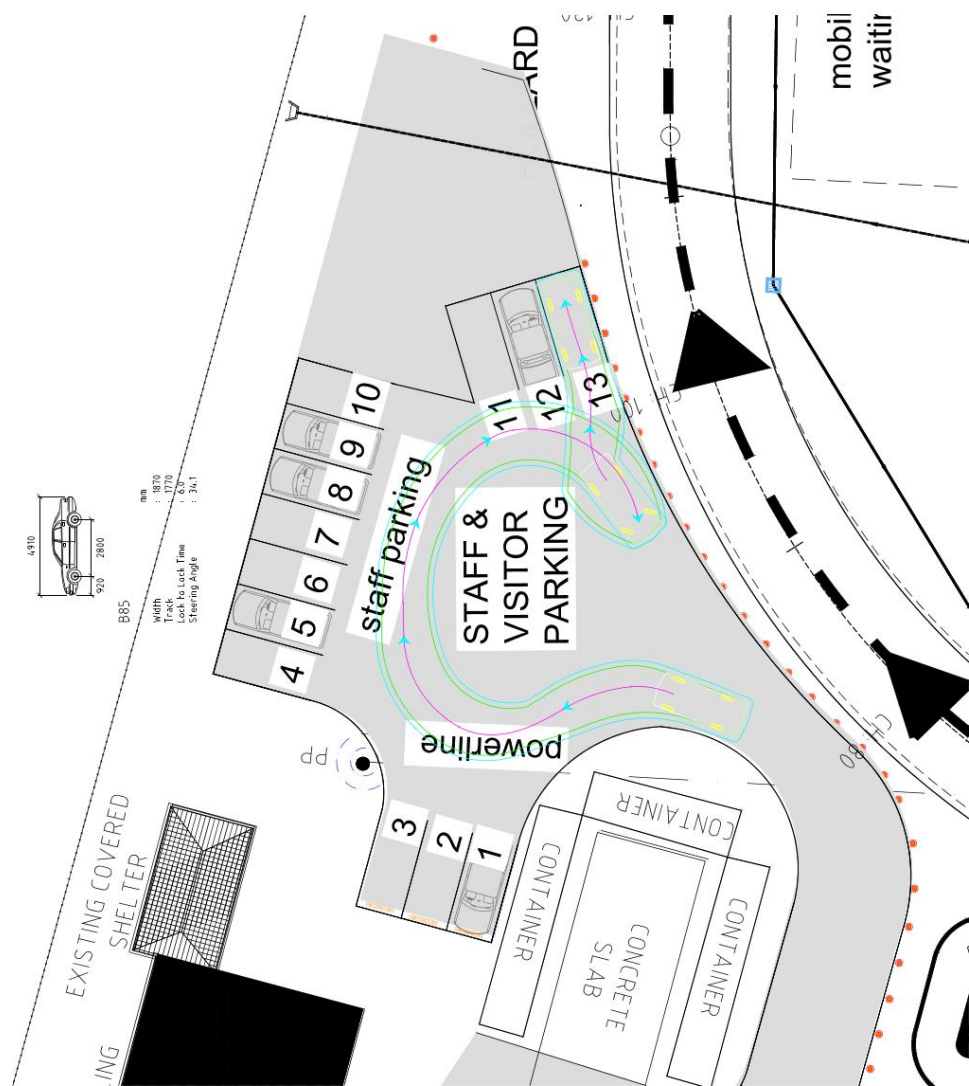


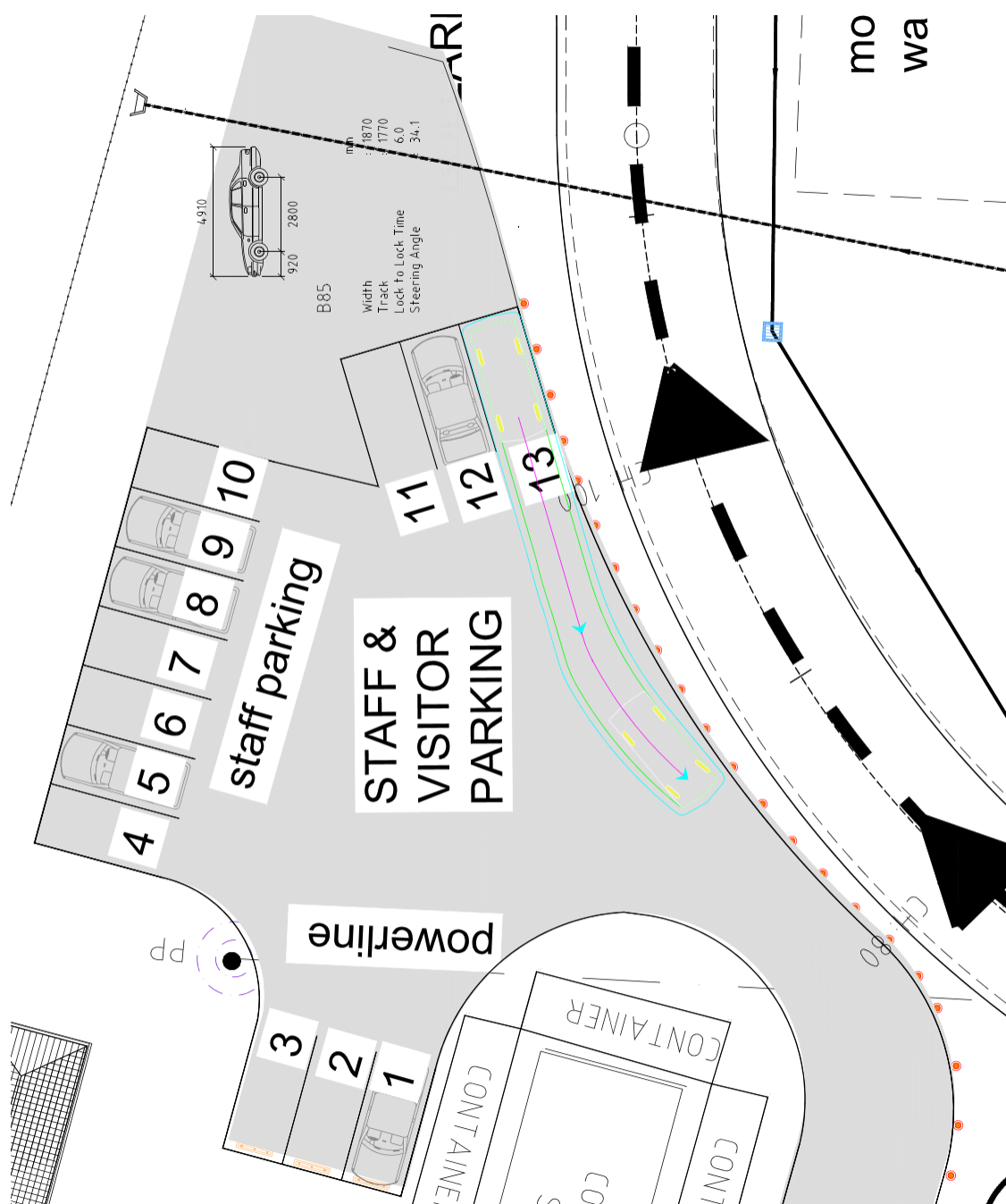


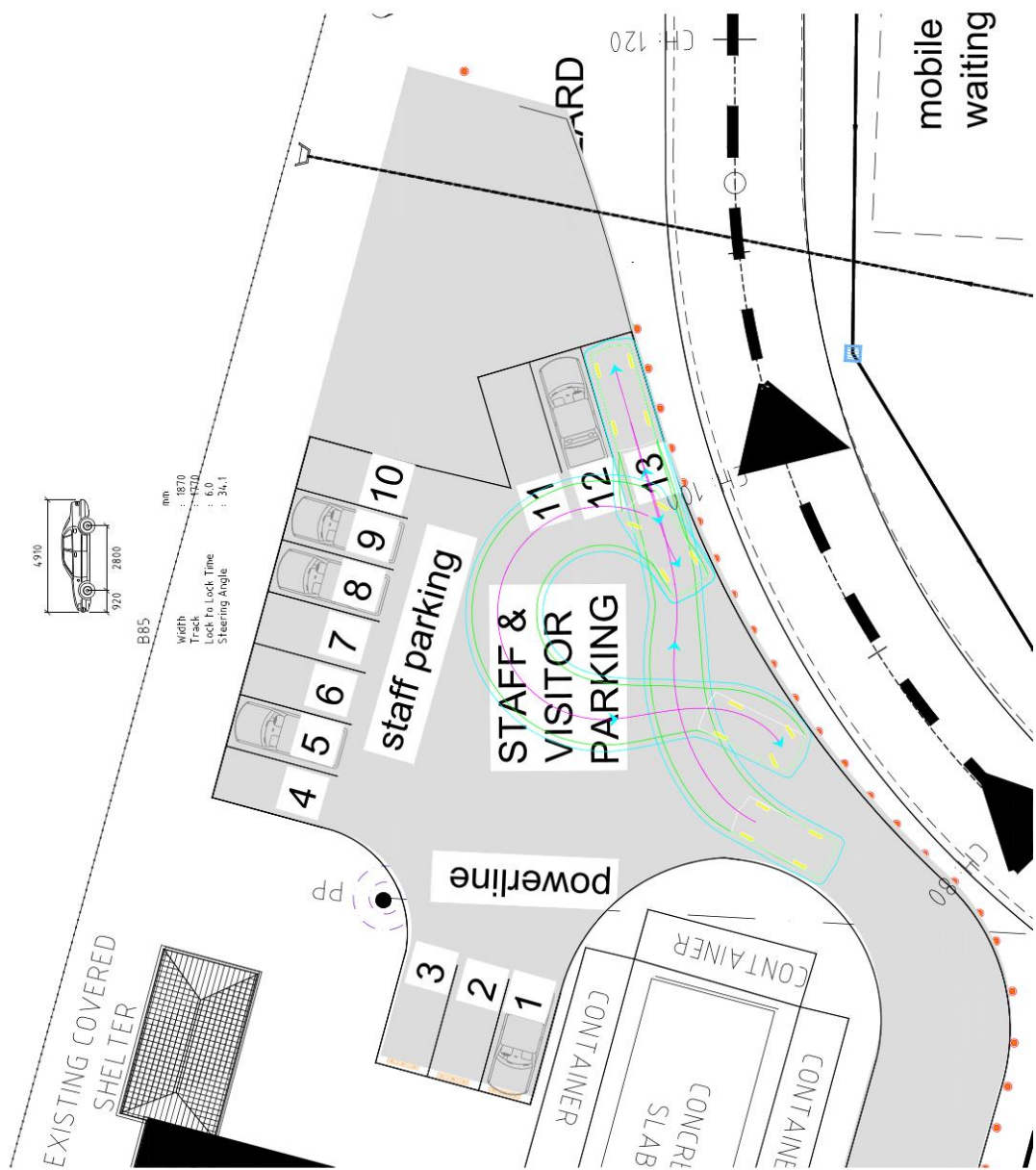


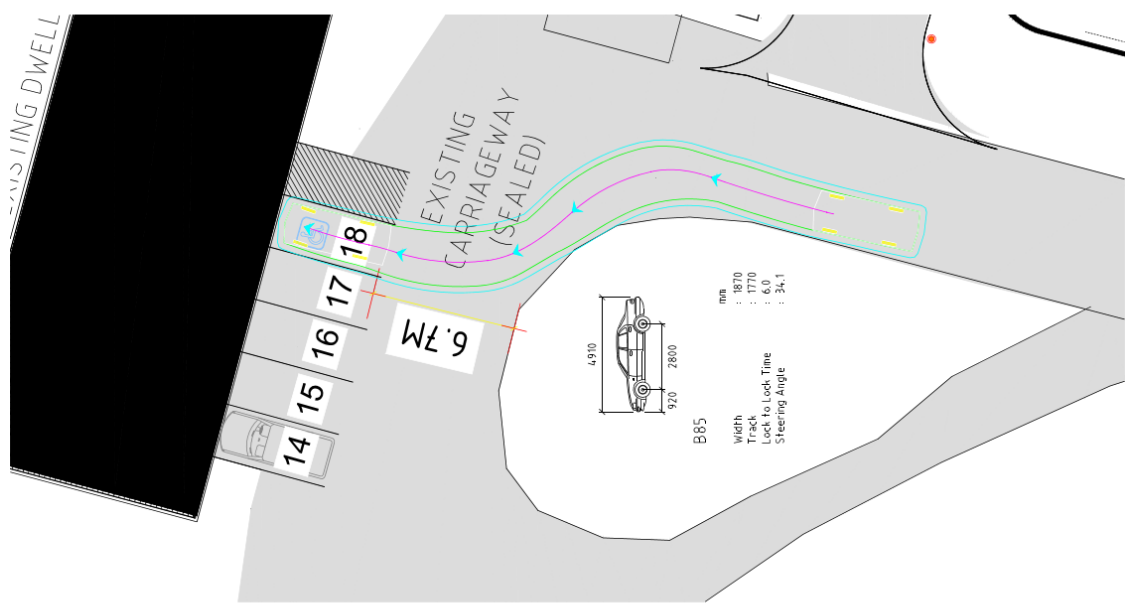


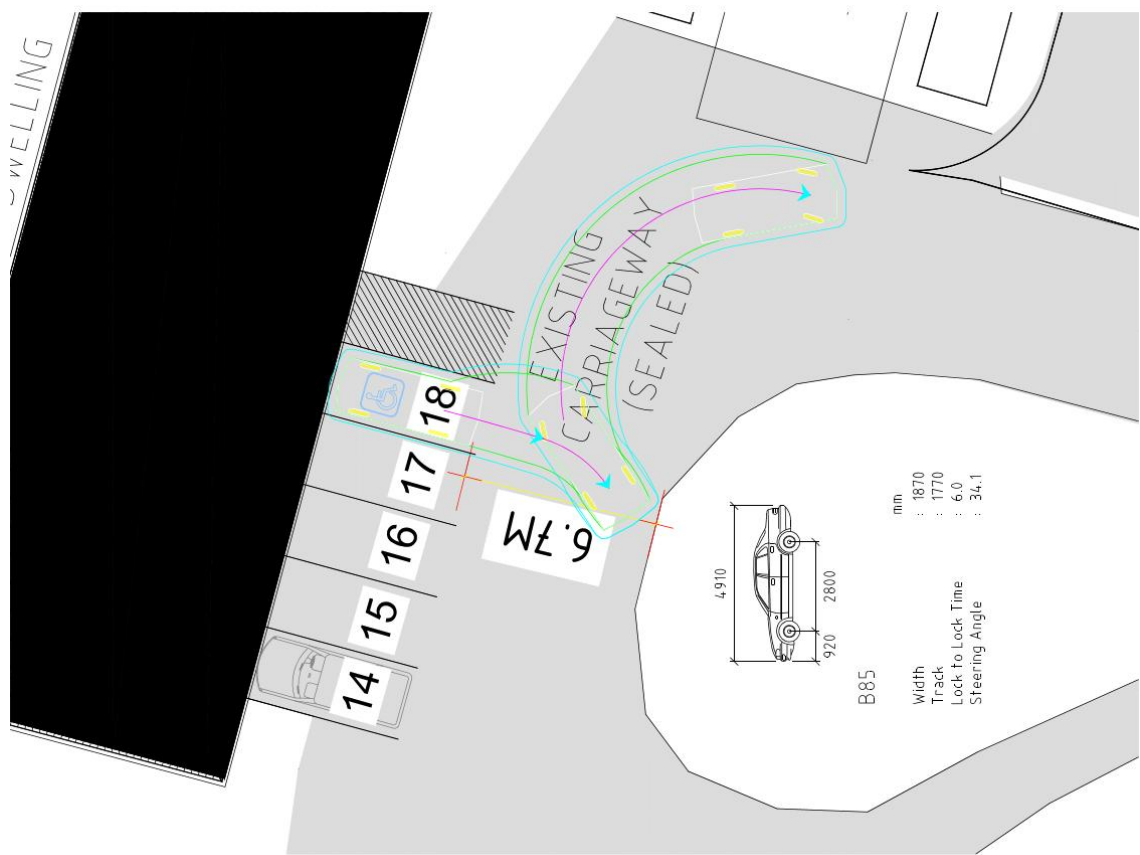


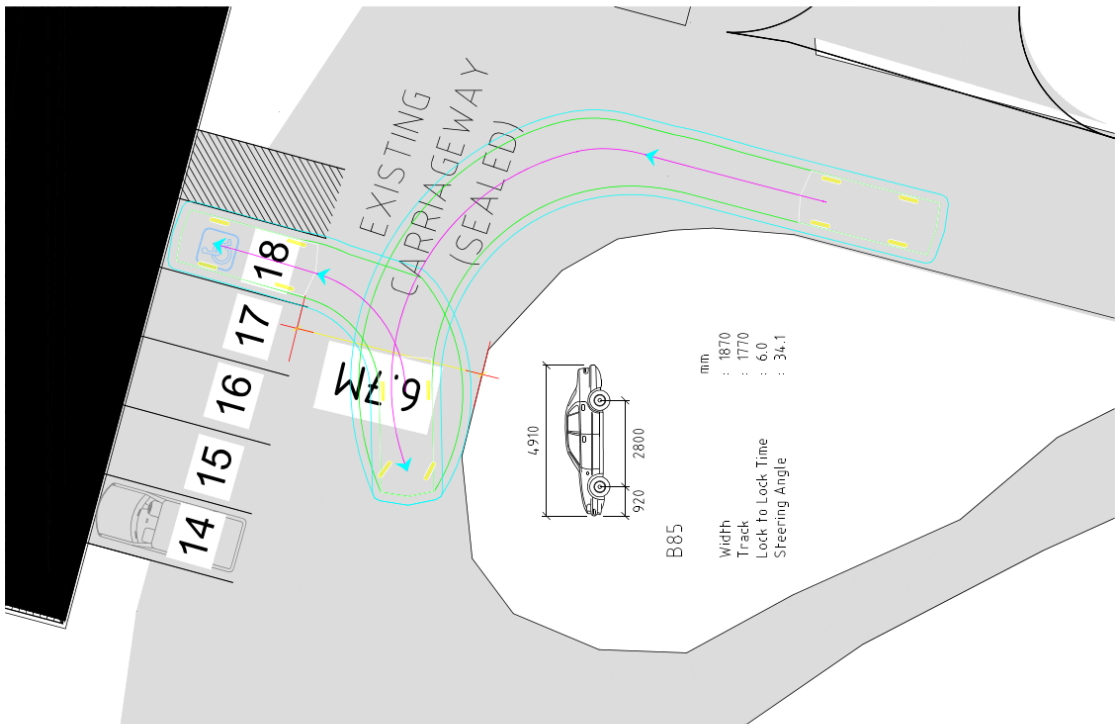


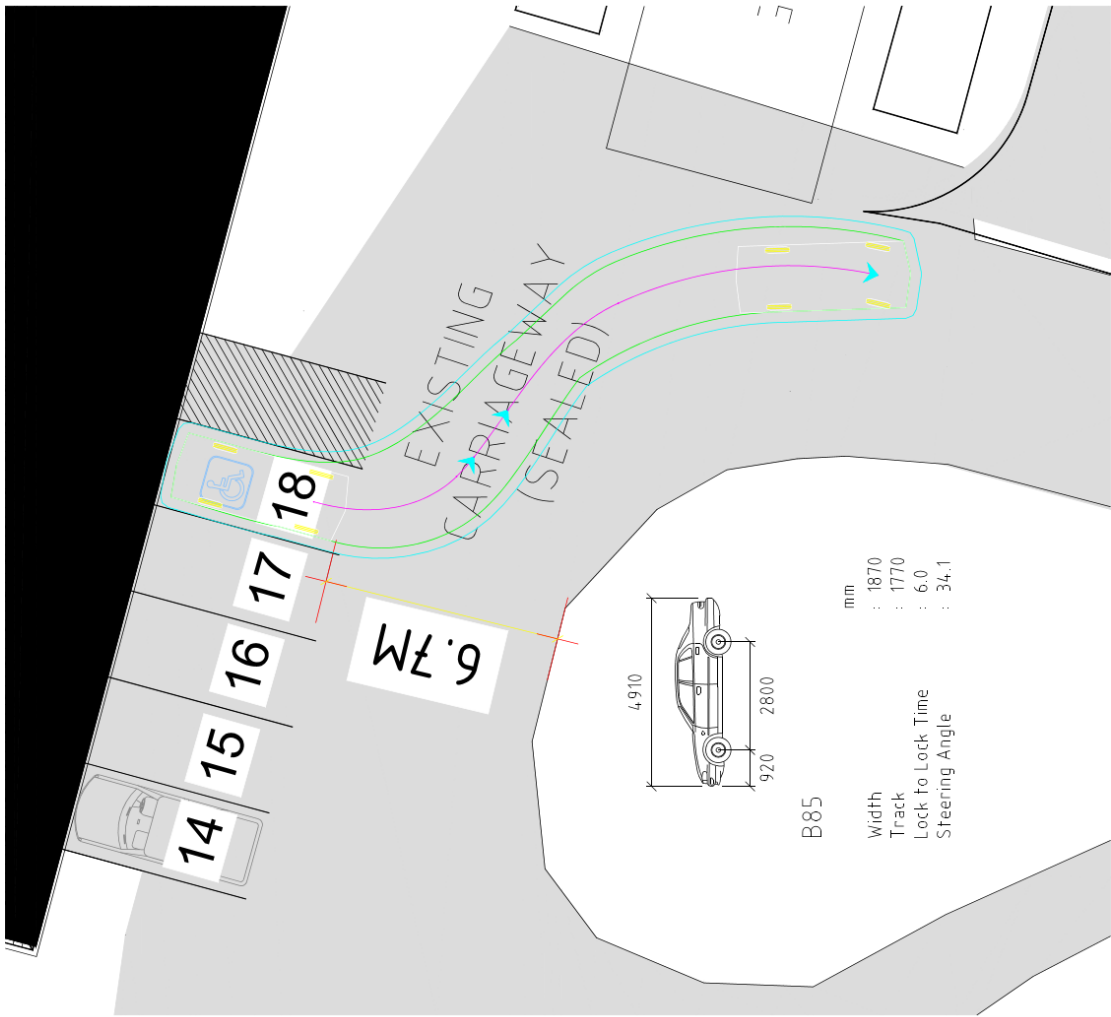












Appendix 'C' – Traffic Design Plans

Proposed Hume Highway / Murrays Flat Road Intersection Upgrade

88 MURRAYS FLAT ROAD, TOWRANG PROPOSED NEW METAL SCRAP YARD

GENERAL NOTES

- [illegible]

DRAWING SCHEDULE

- | | |
|-------|--------------------------------------|
| 1/12 | NOTES & SCHEDULES |
| 2/12 | GENERAL LAYOUT-PROPERTY |
| 3/12 | GENERAL LAYOUT-INTERSECTION 1 |
| 4/12 | GENERAL LAYOUT-INTERSECTION 2 |
| 5/12 | SIGNS AND LINES-INTERSECTION 1 |
| 6/12 | SIGNS AND LINES-INTERSECTION 2 |
| 7/12 | TURNING PATHS- AV TRUCK |
| 8/12 | TURNING PATHS- B99 VEHICLE |
| 9/12 | TURNING PATHS- M9V VEHICLE |
| 10/12 | TURNING PATHS- AV TRUCK |
| 11/12 | SID ASSESSMENT- HORIZONTAL ALIGNMENT |
| 12/12 | SID ASSESSMENT- HORIZONTAL ALIGNMENT |

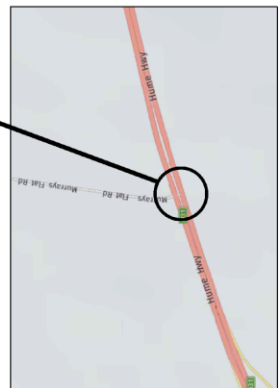


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ES.

IMPORTANT
THE LOCATION OF
UNDERGROUND SERVICES
HAVE NOT BEEN SHOWN ON

NOTE
ALL DIMENSIONS ARE
IN MILLIMETERS UNLESS
OTHERWISE SHOWN.

LOCATION OF WORKS



EARTHWORKS

- [illegible]

EROSION AND SEDIMENT CONTROL

- [illegible]

GENERAL NOTES (ADDITIONAL)

- [illegible]

CONCRETE

- C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND AMENDMENT. FORMWORK TO BE USED SHALL BE IN ACCORDANCE WITH A.S. 3610.
- C2. CONCRETE QUALITY.
- | BLEND | SLUMP | MAX AGGREGATE SIZE | CEMENT TYPE | CEMENT GRADE |
|-------|-------|--------------------|-------------|--------------|
| ALL | 50mm | 20mm | GP | 250kg |
- NO ARMATURES SHALL BE USED WITHOUT THE APPROVAL OF THE ENGINEER.
- C3. CLEAR CONCRETE COVER TO REINFORCEMENT SHALL BE AS FOLLOWS UNLESS OTHERWISE SHOWN:-
- | SURFACE OF SURFACE OF | SURFACE OF SURFACE OF |
|-----------------------|-----------------------|
|-----------------------|-----------------------|

ELEVATION	SURFACE OF MEMBER IN INTERIOR ENVIRONMENT	SURFACE OF MEMBER ABOVE GROUND EXTERIOR ENVIRONMENT	SURFACE OF MEMBER IN CONTACT WITH GROUND	SURFACE OF MEMBER IN CONTACT WITH WATER
ALL	35	45	55	75

NOTE: 1. COVER MAY BE REDUCED BY 10mm IF THE SURFACE IS PROTECTED BY ANOTHER COVER. 2. MEMBERS EXPOSED TO COMBUSTIBLE VAPOURS, CORROSIVE GASES, SEA WATER, OR SPRAY ARE TO HAVE REINFORCEMENT COVER AS NOTED ON THE DRAWINGS.

- [illegible]

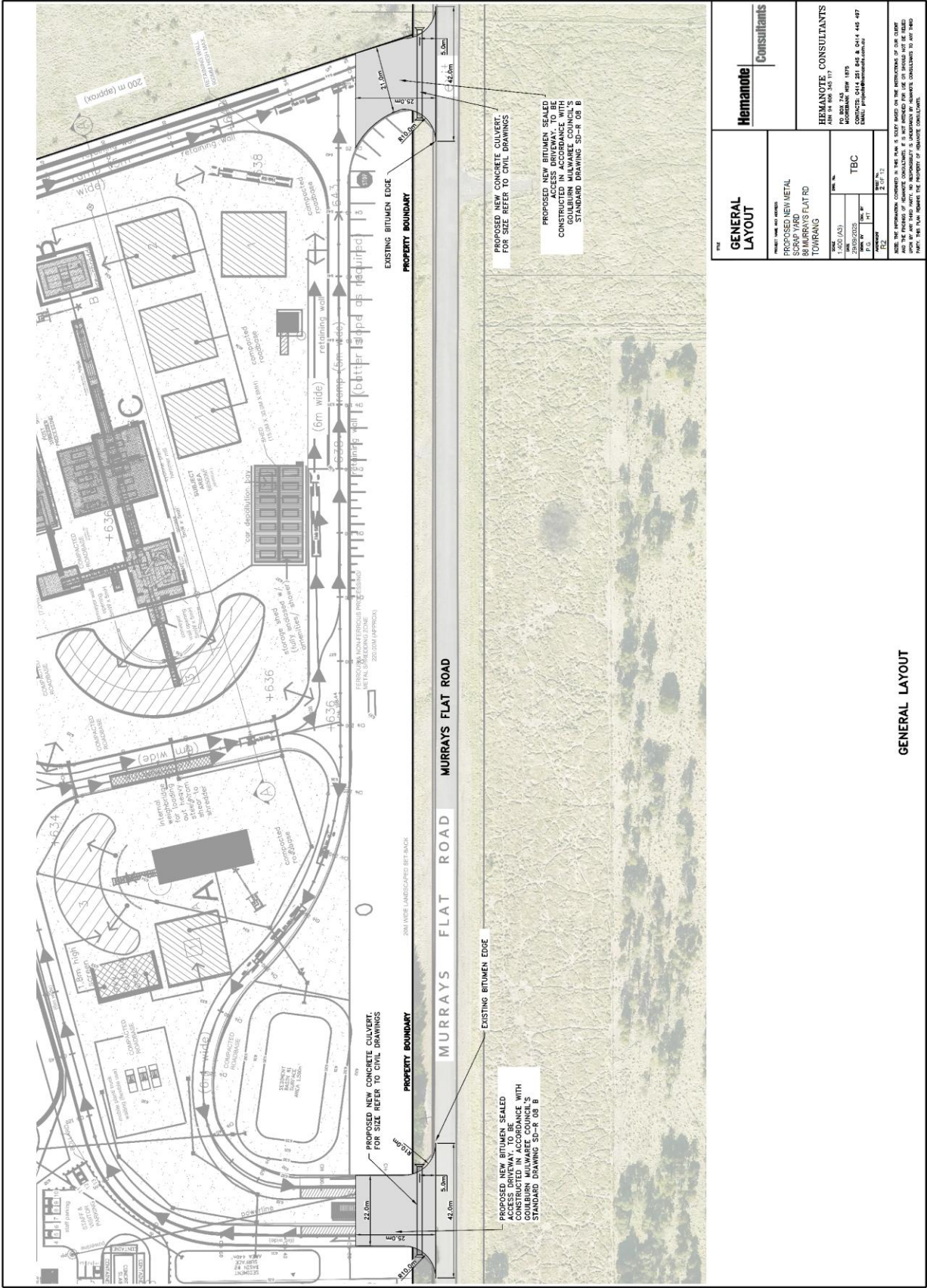
REINFORCEMENT

- [illegible]

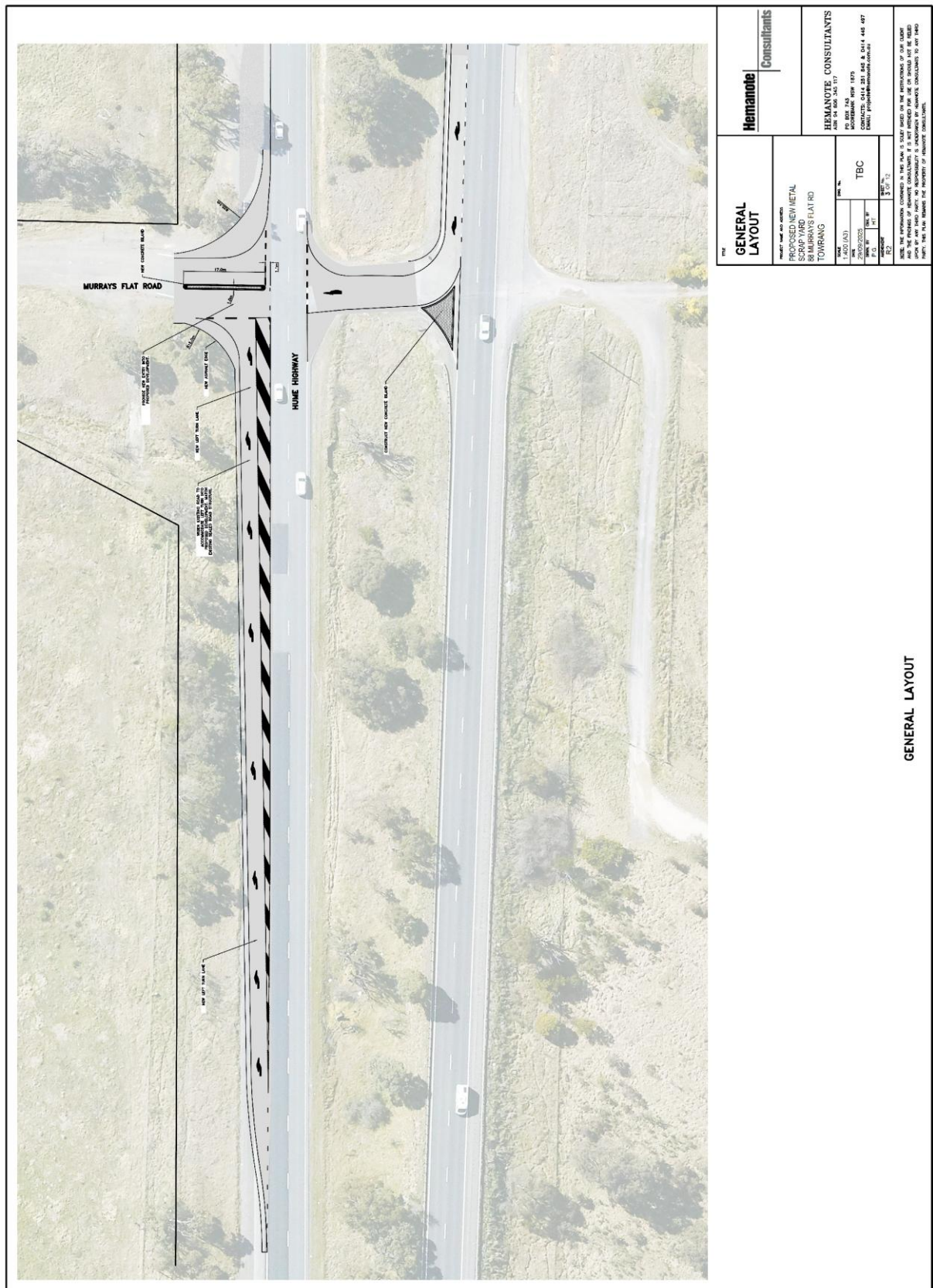
SPECIAL CONDITIONS

- [illegible]

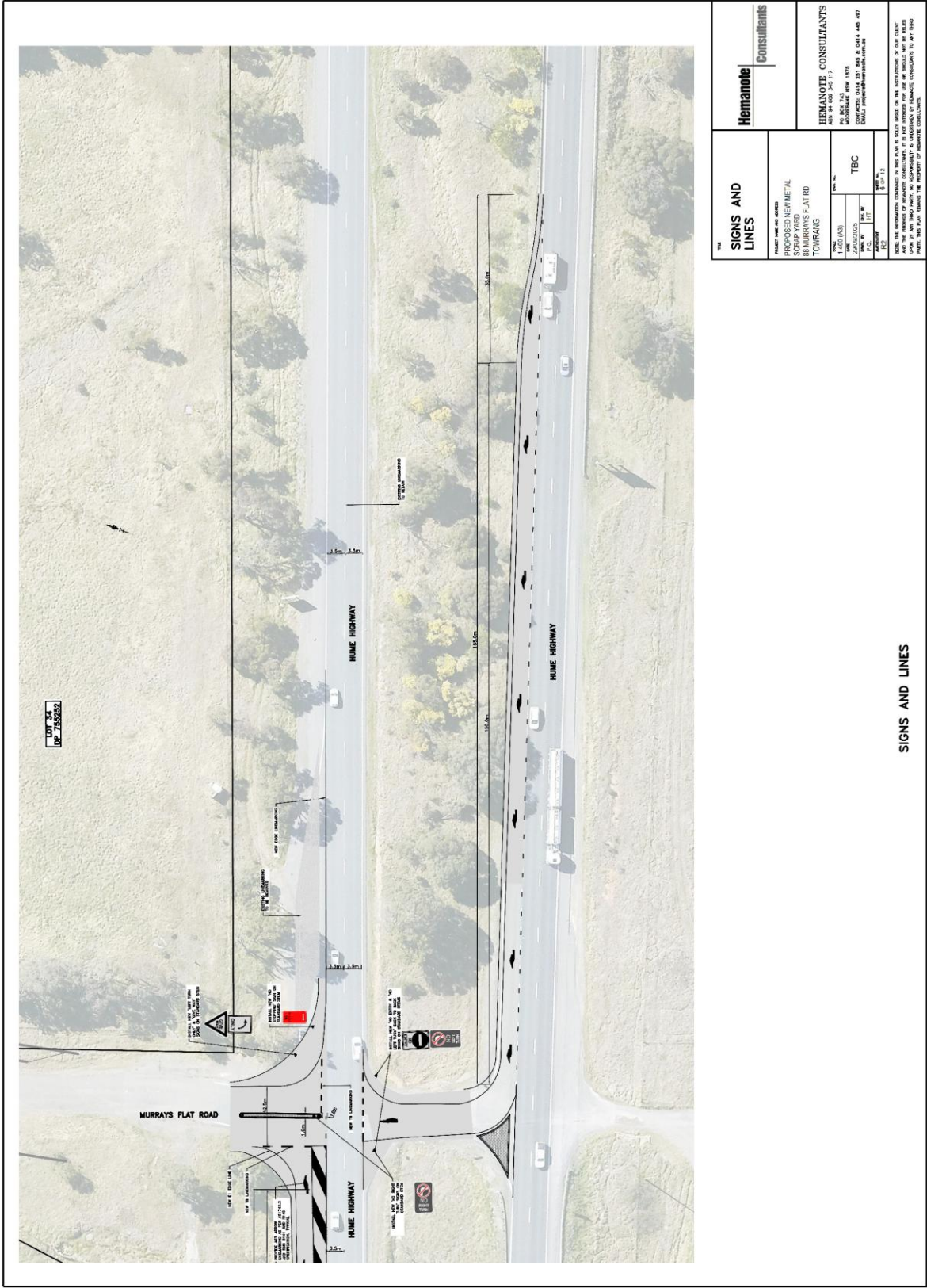
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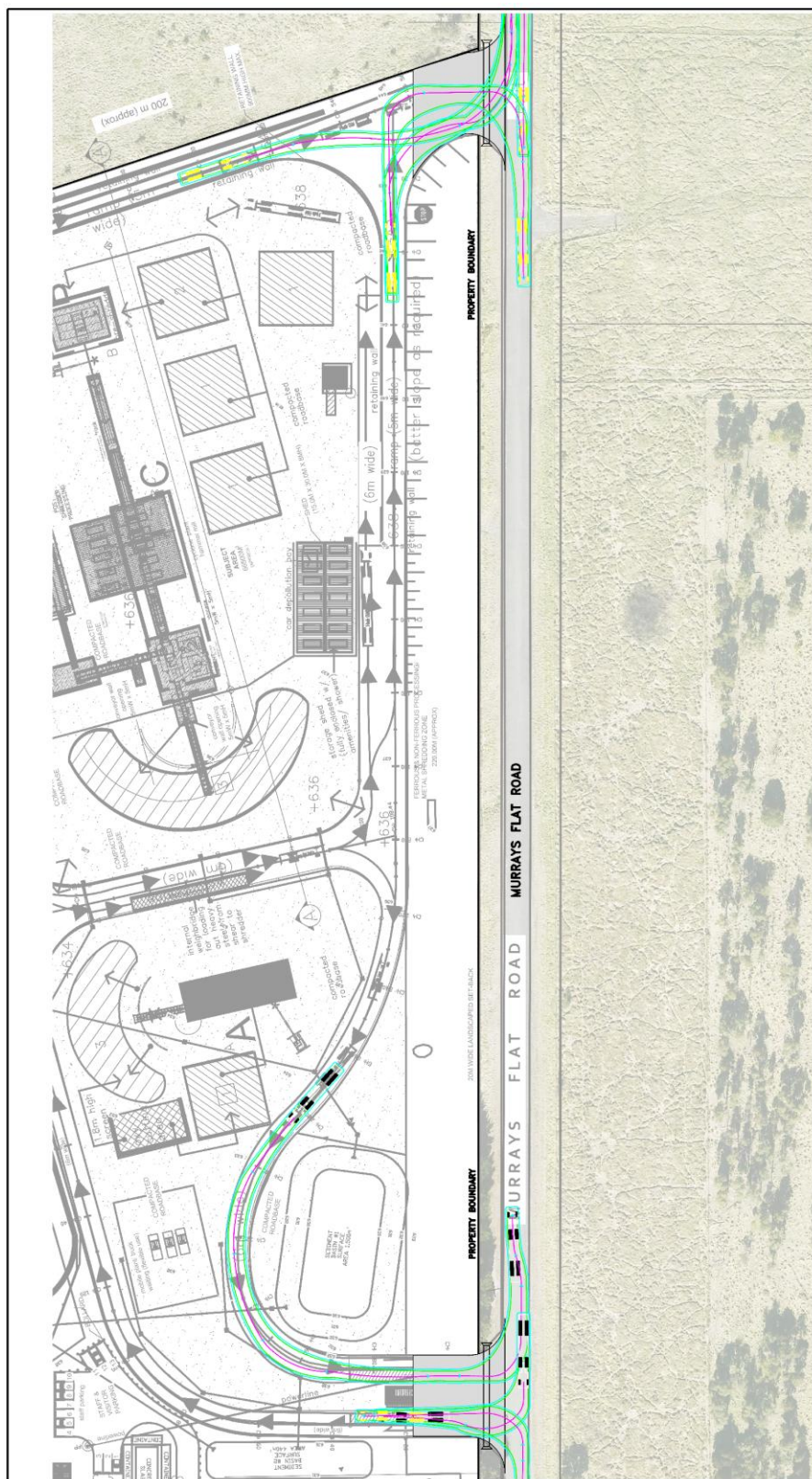


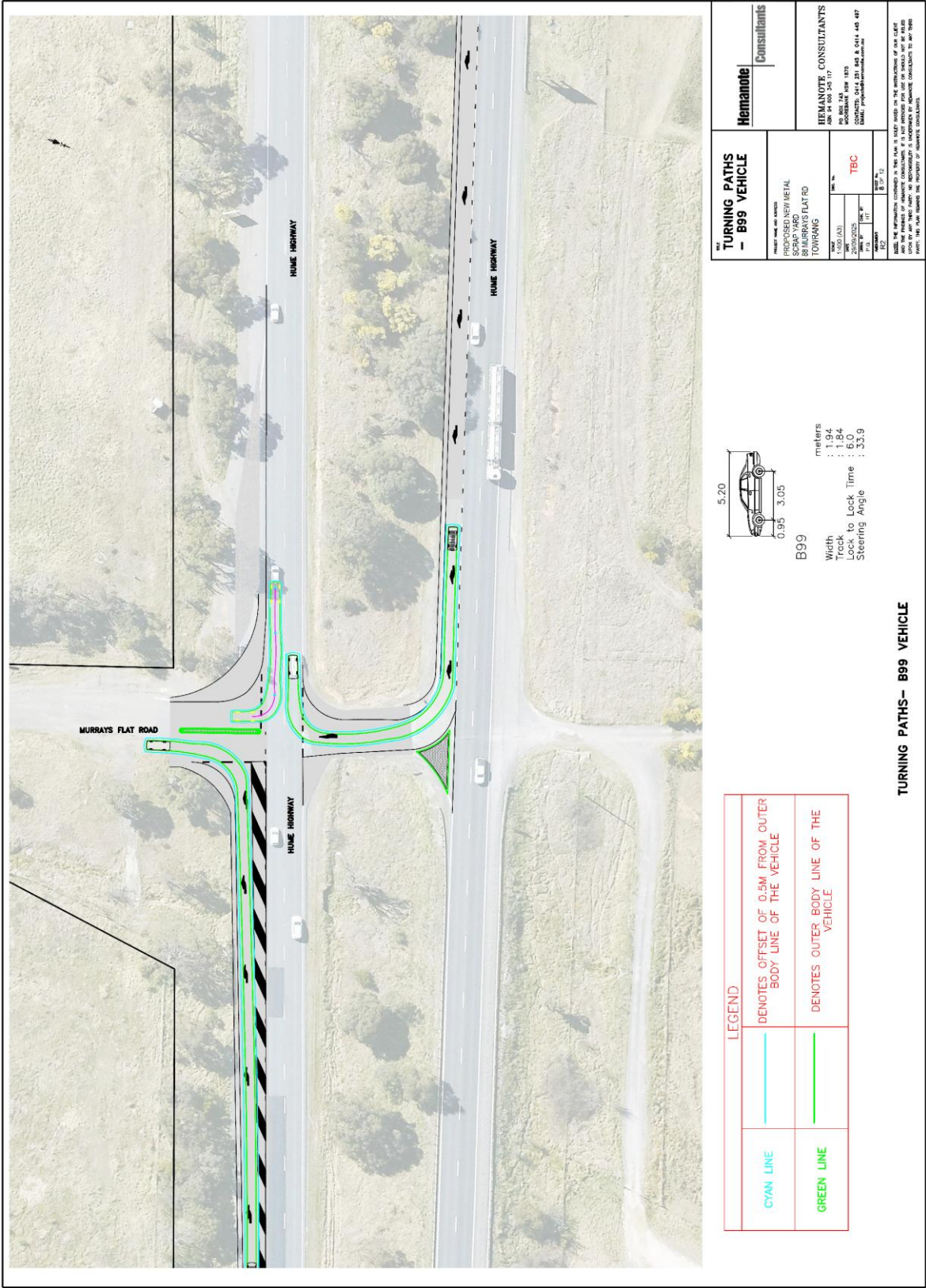
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PROJECT NAME AND ADDRESS		HEMANOTE CONSULTANTS AIRB 04 806 345 117 20/000 20000 HICKMANN NSW 1875 CONTACTS: 0144 251 046 & 0414 448 497 EMAIL: info@hemanote.com.au	
PROPOSED NEW METAL SCRAP YARD		TBC	
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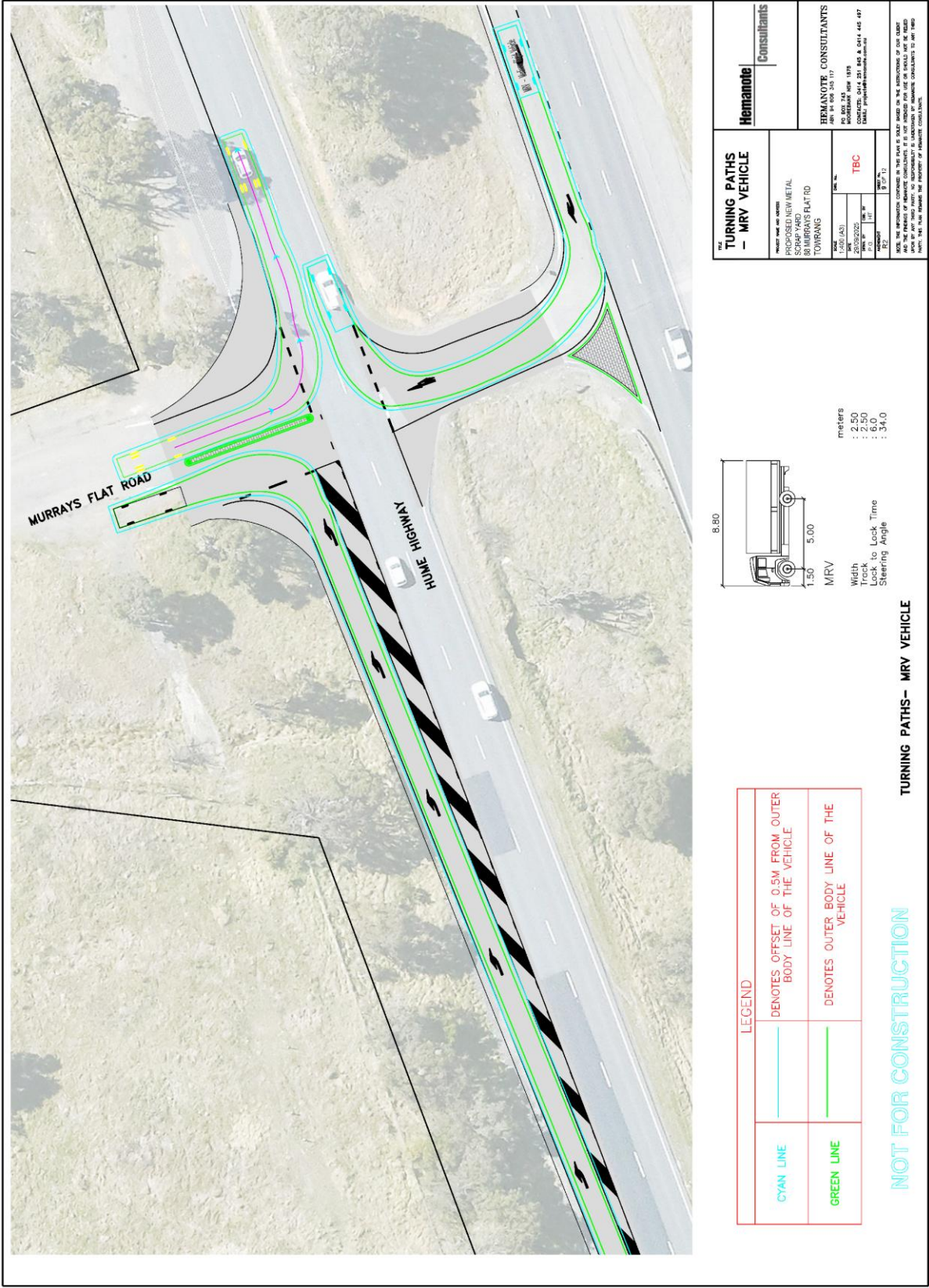


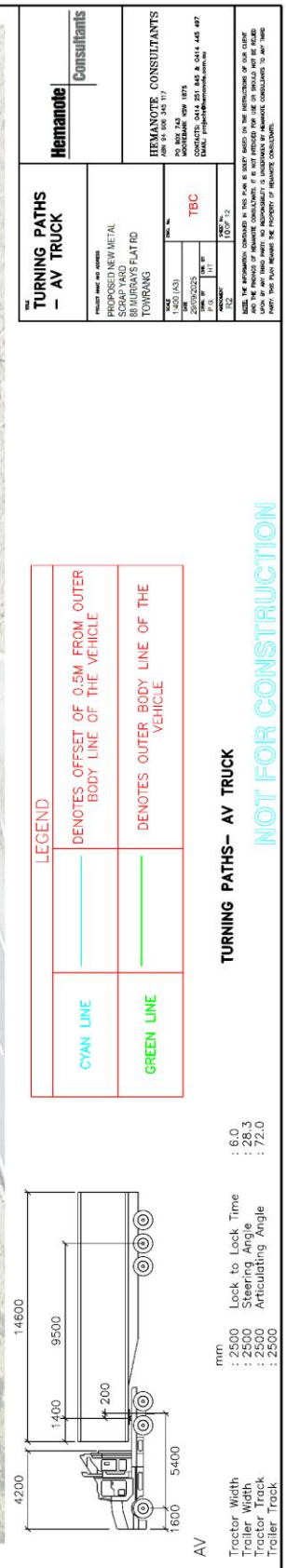














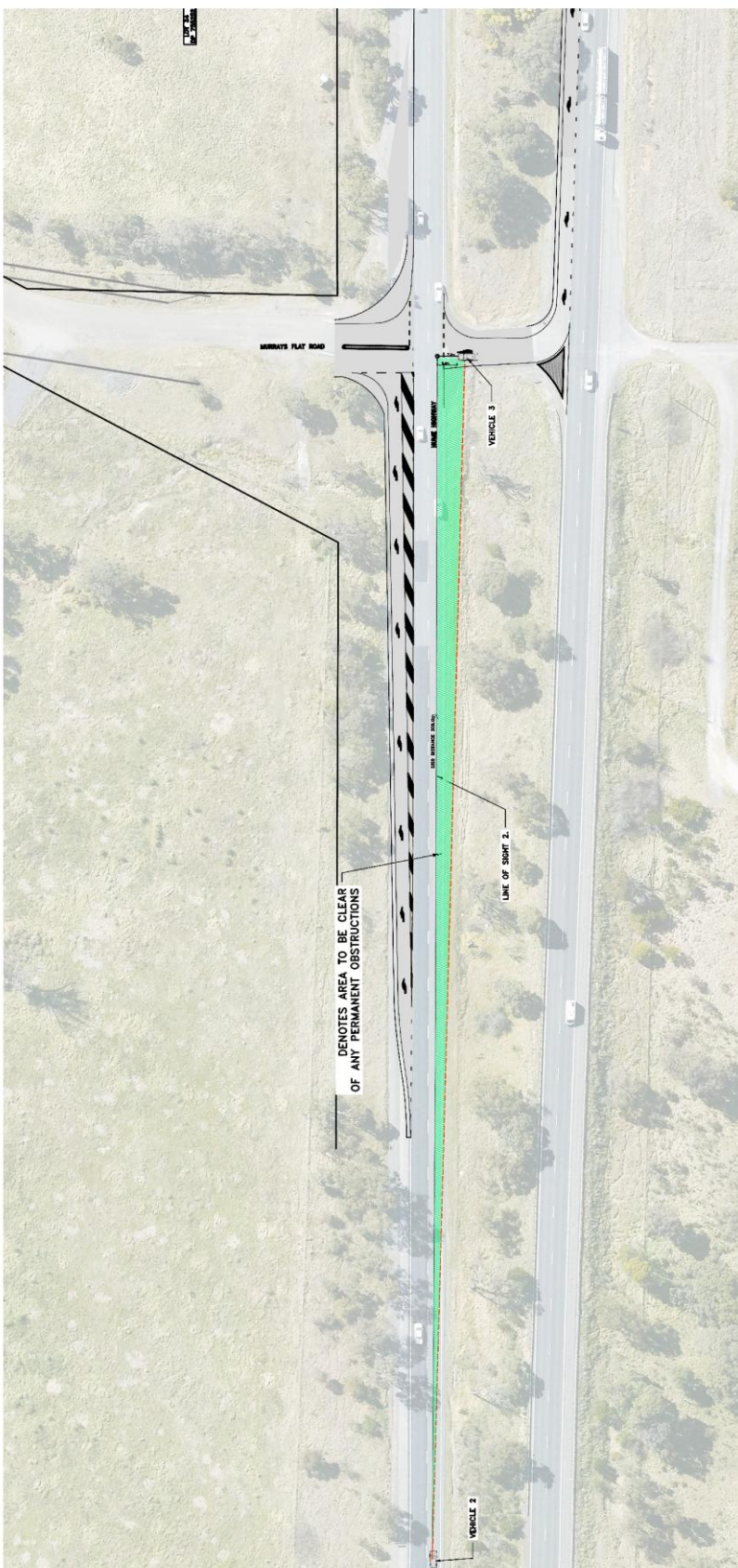
SISD ASSESSMENT	
V	110km/h
d	0.36
Rt	1.5sec
correction	-2
SISD = 308m	

LINE OF SIGHT 1		DENOTES LINE OF SIGHT BETWEEN DRIVER ON MAIN ROAD AND VEHICLE ON MINOR ROAD (7m BACK FROM CONFLICT POINT)
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NOT FOR CONSTRUCTION

ISSID ASSESSMENT- HORIZONTAL ALIGNMENT

[illegible]



SISD ASSESSMENT	
V	110km/h
d	0.36
Rt	1.5sec
correction	-2
SISD = 308m	

NOT FOR CONSTRUCTION

LINE OF SIGHT 2		DENOTES LINE OF SIGHT BETWEEN DRIVER ON MAIN ROAD AND VEHICLE ON MINOR ROAD (7m BACK FROM CONFLICT POINT)
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SISD ASSESSMENT- HORIZONTAL ALIGNMENT

[illegible]

Appendix 'D' – SIDRA Intersection Results

MOVEMENT SUMMARY – AM Peak (9.00am – 10.00am) – Base Year 2025 – Hume Highway / Murrays Flat Road (North)

Pre-Development															Post-Development														
Vehicle Movement Performance															Vehicle Movement Performance														
Vehicle ID	Move	Class	Desired Arrivals Flows		Desired	Arrival Flows		Level of Service	Prop. Queue	Prop. Delay	Average Queue Length	Level of Service	Prop. Queue	Prop. Delay															
			veh	%	total	veh	%	veh	sec	sec	veh	veh	sec	sec															
South Murrays Flat Road															South Murrays Flat Road														
2	T1	All M/Cs	1	0.0	1	0.0	0.005	6.3	LOS A	0.0	0.1	0.60	0.55	0.68	45.7														
	L1	L1	1	0.0	1	0.0	0.005	6.3	LOS A	0.0	0.1	NA	NA	NA	45.7														
	HV	HV	0	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA														
3	R2	All M/Cs	1	0.0	1	0.0	0.005	8.8	LOS A	0.0	0.1	0.68	0.55	0.68	101.6														
	L1	L1	1	0.0	1	0.0	0.005	8.8	LOS A	0.0	0.1	NA	NA	NA	101.6														
	HV	HV	0	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA														
Approach			2	0.0	2	0.0	0.005	7.5	LOS A	0.0	0.1	0.68	0.55	0.68	70.2														
North Murrays Flat Road															North Murrays Flat Road														
7	L2	All M/Cs	2	50.0	2	50.0	0.004	6.3	LOS A	0.0	0.0	0.00	0.52	0.00	72.3														
	L1	L1	1	50.0	1	50.0	0.004	6.3	LOS A	0.0	0.0	NA	NA	NA	72.3														
	HV	HV	1	50.0	1	50.0	0.004	6.3	LOS A	0.0	0.0	NA	NA	NA	72.3														
8	T1	All M/Cs	1	0.0	1	0.0	0.004	4.5	LOS A	0.0	0.0	0.00	0.52	0.00	48.5														
	L1	L1	1	0.0	1	0.0	0.004	4.5	LOS A	0.0	0.0	NA	NA	NA	48.5														
	HV	HV	0	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA														
Approach			3	33.3	3	33.3	0.004	5.7	LOS A	0.0	0.0	0.00	0.52	0.00	67.2														
West Hume Highway															West Hume Highway														
10	L2	All M/Cs	2	0.0	2	0.0	0.001	8.4	LOS A	0.0	0.0	0.00	0.67	0.00	104.2														
	L1	L1	2	0.0	2	0.0	0.001	8.4	LOS A	0.0	0.0	NA	NA	NA	104.2														
	HV	HV	0	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA														
11	T1	All M/Cs	757	25.9	757	25.9	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	119.9														
	L1	L1	561	196	561	196	0.221	0.0	LOS A	0.0	0.0	NA	NA	NA	119.9														
	HV	HV	196	196	196	196	0.221	0.0	LOS A	0.0	0.0	NA	NA	NA	119.9														
12	R2	All M/Cs	1	0.0	1	0.0	0.221	8.0	LOS A	0.0	0.0	0.00	0.00	0.00	119.9														
	L1	L1	1	0.0	1	0.0	0.221	8.0	LOS A	0.0	0.0	NA	NA	NA	119.9														
	HV	HV	0	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA														
Approach			760	25.8	760	25.8	0.221	0.1	NA	0.0	0.0	0.00	0.00	0.00	119.9														
All Vehicles			765	25.7	765	25.7	0.221	0.1	NA	0.0	0.1	0.00	0.01	0.00	118.4														

NOTE: SIDRA VERSION 9.1 HAS BEEN USED TO PROCESS AND PRODUCED THE RESULTS

Legend: Existing Traffic (LV – Light Vehicles, HV – Heavy Vehicles), Traffic Generated (SI – Staff Vehicles, MRVs & SRVs, TR – Skip/Tipplers & AVs).

MOVEMENT SUMMARY – AM Peak (9.00am – 10.00am) – Base Year 2025 – Hume Highway / Murrays Flat Road (South)

Pre-Development															Post-Development															
Vehicle Movement Performance															Vehicle Movement Performance															
Mov ID	Turn	Class	Demand Flows [Total HV] [Total HV] %	Desp. Satn	Aves. Delay	Level of Service	Aves. Block Of Queue [Veh. veh] m	Prop. Chn	Lk. Ship Rate	Aves. Mo of Cycles	Aves. Special				Mov ID	Turn	Class	Demand Flows [Total HV] [Total HV] %	Desp. Satn	Aves. Delay	Level of Service	Aves. Block Of Queue [Veh. veh] m	Prop. Chn	Lk. Ship Rate	Aves. Mo of Cycles	Aves. Special				
East Hume Highway															East Hume Highway															
5	T1	All M/Cs	934 22.4 934 22.4	0.267	0.1	LOS-A	0.0	0.00	0.00	0.00	119.2			5	T1	All M/Cs	934 22.8 934 22.8	0.270	0.1	LOS-A	0.0	0.00	0.00	0.00	119.2					
	LV		724	0.267	0.1	LOS-A	0.0	0.0	NA	NA	119.2				LV		724	0.270	0.1	LOS-A	0.0	0.0	NA	NA	119.2					
	HV		209	0.267	0.1	LOS-A	0.0	0.0	NA	NA	119.2				HV		209	0.270	0.1	LOS-A	0.0	0.0	NA	NA	119.2					
6	R2	All M/Cs	1100.0 1100.0	0.001	11.5	LOS-A	0.0	0.00	0.73	0.00	109.2				ST		1	0.270	0.1	LOS-A	0.0	0.0	NA	NA	119.2					
	LV		0	-	-	-	-	NA	NA	NA	NA				TR		3	0.270	0.1	LOS-A	0.0	0.0	NA	NA	119.2					
	HV		1	0.001	11.5	LOS-A	0.0	0.00	0.00	0.00	109.2				R2	All M/Cs	6 25.0 0 25.0	0.005	9.0	LOS-A	0.0	0.0	0.00	0.72	0.00	119.4				
Approach															Approach															
			935 22.5 935 22.5	0.267	0.1	NA	0.0	0.00	0.00	0.00	119.2				LV		0	-	-	-	-	-	NA	NA	NA	119.4				
North Murrays Flat Road															North Murrays Flat Road															
9	R2	All M/Cs	1 0.0 1 0.0	0.001	2.7	LOS-A	0.0	0.52	0.39	0.52	85.1				ST		0	0.005	9.0	LOS-A	0.0	0.0	NA	NA	NA	119.4				
	LV		1	0.001	2.7	LOS-A	0.0	0.0	NA	NA	85.1				HV		1	0.005	9.0	LOS-A	0.0	0.0	NA	NA	NA	119.4				
	HV		0	-	-	-	-	NA	NA	NA	NA				TR		1	0.005	9.0	LOS-A	0.0	0.0	NA	NA	NA	119.4				
Approach															Approach															
			1 0.0 1 0.0	0.001	2.7	LOS-A	0.0	0.0	0.52	0.39	0.52	85.1						947 22.8 947 22.8	0.270	0.2	NA	0.0	0.00	0.91	0.00	119.2				
All Vehicles															All Vehicles															
			935 22.5 936 22.5	0.267	0.1	NA	0.0	0.00	0.00	0.00	119.2							947 22.8 947 22.8	0.270	0.2	NA	0.0	0.00	0.91	0.00	119.2				

NOTE: SIDRA VERSION 9.1 HAS BEEN USED TO PROCESS AND PRODUCED THE RESULTS

Legend: Existing Traffic (LV – Light Vehicles, HV – Heavy Vehicles), HV – MRVs & SRVs, TR – Skip/Tippers & AVs).

MOVEMENT SUMMARY – PM Peak (2.45pm – 3.45pm) – Base Year 2025 – Hume Highway / Murrays Flat Road (North)

Pre-Development															Post-Development														
Vehicle Movement Performance															Vehicle Movement Performance														
Mov ID	Turn	Class	Flows [Total HV]	Actual Flows [Total HV]	Delay s/c	Level of Service	Avg. Delay s/c	Avg. Delay s/c	Queue Length m	Prp. Queue	Eff. Stop Rate	Avg. No. of Cycles	Speed km/h		Mov ID	Turn	Class	Flows [Total HV]	Actual Flows [Total HV]	Delay s/c	Level of Service	Avg. Delay s/c	Avg. Delay s/c	Queue Length m	Prp. Queue	Eff. Stop Rate	Avg. No. of Cycles	Speed km/h	
South Murrays Flat Road															South Murrays Flat Road														
2	T1	All MCs	1 0.0	1 0.0	0.009	LOS A	0.0	0.1	0.61	0.74	0.81	44.0			2	T1	All MCs	3 33.3	3 33.3	0.015	LOS A	0.0	0.1	0.76	0.75	0.76	0.76	44.4	
	L1	L1	1 0.0	1 0.0	0.009	LOS A	0.0	0.1	NA	NA	NA	44.0				L1	L1	0 0.0	0 0.0	0.015	LOS A	0.0	0.1	NA	NA	NA	NA	45.0	
	HV	HV	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA				HV	HV	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA	46.8	
3	R2	All MCs	1 0.0	1 0.0	0.009	LOS B	0.0	0.1	0.61	0.74	0.81	56.7			3	R2	All MCs	1 0.0	1 0.0	0.015	LOS B	0.0	0.1	NA	NA	NA	NA	41.9	
	L1	L1	1 0.0	1 0.0	0.009	LOS B	0.0	0.1	NA	NA	NA	56.7				L1	L1	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA	-	
	HV	HV	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA				HV	HV	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA	-	
Approach			2 0.0	2 0.0	0.009	LOS A	0.0	0.1	0.61	0.74	0.81	67.2			Approach			4 25.0	4 25.0	0.015	LOS A	0.0	0.1	0.76	0.75	0.76	0.76	55.6	
North Murrays Flat Road															North Murrays Flat Road														
7	L2	All MCs	1 0.0	1 0.0	0.030	LOS A	0.0	0.3	0.65	0.50	NA	74.3			7	L2	All MCs	24 34.8	24 34.8	0.007	LOS A	0.1	0.7	0.58	0.74	0.58	0.74	79.7	
	L1	L1	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA				L1	L1	2 2.0	2 2.0	0.007	LOS A	0.1	0.7	NA	NA	NA	NA	79.8	
	HV	HV	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA				HV	HV	2 2.0	2 2.0	0.007	LOS A	0.1	0.7	NA	NA	NA	NA	79.8	
8	T1	All MCs	3 66.7	3 66.7	0.030	LOS A	0.0	0.3	0.65	0.50	0.05	47.5			8	T1	All MCs	14 14.0	14 14.0	0.007	LOS A	0.1	0.7	NA	NA	NA	NA	71.9	
	L1	L1	1 0.0	1 0.0	0.030	LOS A	0.0	0.3	NA	NA	NA	48.3				L1	L1	2 2.0	2 2.0	0.007	LOS A	0.1	0.7	NA	NA	NA	NA	71.9	
	HV	HV	2 2.0	2 0.0	0.030	LOS A	0.0	0.3	NA	NA	NA	47.0				HV	HV	2 2.0	2 0.0	0.007	LOS A	0.1	0.7	NA	NA	NA	NA	71.9	
Approach			4 50.0	4 50.0	0.030	LOS A	0.0	0.3	0.65	0.50	0.05	57.3			Approach			24 34.8	24 34.8	0.007	LOS A	0.1	0.7	0.58	0.74	0.58	0.74	79.7	
West Hume Highway															West Hume Highway														
10	L2	All MCs	1100.0	1100.0	0.001	LOS A	0.0	0.0	0.00	0.89	0.00	82.7			10	L2	All MCs	6 83.3	6 83.3	0.007	LOS A	0.0	0.2	0.64	0.64	0.64	0.64	55.9	
	L1	L1	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA				L1	L1	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA	-	
	HV	HV	1 1.0	1 0.001	11.8	LOS A	0.0	0.0	NA	NA	NA	82.7				HV	HV	1 1.0	0.007	12.1	LOS A	0.0	0.2	NA	NA	NA	NA	58.9	
11	T1	All MCs	1947 19.6	1947 19.6	0.296	LOS A	0.0	0.0	0.00	0.00	0.00	119.9			11	T1	All MCs	1047 18.6	1047 18.6	0.296	LOS A	0.0	0.0	0.00	0.00	0.00	0.00	119.9	
	L1	L1	842 8.4	842 8.4	0.296	LOS A	0.0	0.0	NA	NA	NA	119.9				L1	L1	205 2.0	205 2.0	0.296	LOS A	0.0	0.0	NA	NA	NA	NA	119.9	
	HV	HV	205 2.0	205 2.0	0.296	LOS A	0.0	0.0	NA	NA	NA	119.9				HV	HV	205 2.0	205 2.0	0.296	LOS A	0.0	0.0	NA	NA	NA	NA	119.9	
12	R2	All MCs	1100.0	1100.0	0.296	LOS A	0.0	0.0	0.00	0.00	0.00	119.9			12	R2	All MCs	1047 18.6	1047 18.6	0.296	LOS A	0.0	0.0	0.00	0.00	0.00	0.00	119.9	
	L1	L1	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA				L1	L1	0 0.0	0 0.0	-	-	-	-	NA	NA	NA	NA	-	
	HV	HV	1 1.0	1 0.296	11.5	LOS A	0.0	0.0	NA	NA	NA	119.9				HV	HV	1 1.0	0.296	11.8	LOS A	0.0	0.0	NA	NA	NA	NA	119.9	
Approach			1949 19.8	1949 19.8	0.296	LOS A	0.0	0.0	0.00	0.00	0.00	119.8			Approach			1054 10.5	1054 10.5	0.296	LOS A	0.0	0.2	0.60	0.60	0.60	0.60	119.4	
All Vehicles			1055 10.6	1055 10.6	0.296	LOS A	0.0	0.3	0.00	0.00	0.00	119.4			All Vehicles			1002 10.3	1002 10.3	0.296	LOS A	0.1	0.7	0.62	0.62	0.62	0.62	117.0	

NOTE: SIDRA VERSION 9.1 HAS BEEN USED TO PROCESS AND PRODUCED THE RESULTS
Legend: Existing Traffic (LV – Light Vehicles, HV – Heavy Vehicles), Traffic Generated (SI – Staff Vehicles, IR – MRVs & SRVs, IR – Skip/Tippers & AVs).

MOVEMENT SUMMARY – PM Peak (2.45pm – 3.45pm) – Base Year 2025 – Hume Highway / Murrays Flat Road (South)

Pre-Development															Post-Development														
Vehicle Movement Performance															Vehicle Movement Performance														
Mov ID	Turn	Class	Demand Flows [Total HV] veh/h	Annual Flows [Total HV] veh/yr	Disq. Sat	Avg Delay sec	Level of Service	Avg Back of Queue [Veh.]	Prop. Que	EIT Stop Rate	Avg. No. of Cycles	Avg. Speed km/h																	
East Hume Highway															East Hume Highway														
5	T1	All M/Cs	1040 24.1	1040 24.1	0.301	0.1	LOS A	0.0	0.00	0.00	0.00	119.9																	
	LV	LV	789	789	0.301	0.1	LOS A	0.0	0.0	NA	NA	119.9																	
	HV	HV	251	251	0.301	0.1	LOS A	0.0	0.0	NA	NA	119.9																	
6	R2	All M/Cs	1 0.0	1 0.0	0.001	0.0	LOS A	0.0	0.00	0.70	0.00	111.5																	
	LV	LV	1	1	0.001	0.0	LOS A	0.0	0.0	NA	NA	111.5																	
	HV	HV	0	0	-	-	-	-	NA	NA	NA	-																	
Approach			1041 24.1	1041 24.1	0.301	0.1	NA	0.0	0.00	0.00	0.00	119.9																	
North Murrays Flat Road															North Murrays Flat Road														
9	R2	All M/Cs	3 66.7	3 66.7	0.006	6.4	LOS A	0.0	0.1	0.67	0.61	50.7																	
	LV	LV	1	1	0.006	3.2	LOS A	0.0	0.1	NA	NA	52.6																	
	HV	HV	2	2	0.006	6.4	LOS A	0.0	0.1	NA	NA	49.7																	
Approach			3 66.7	3 66.7	0.006	6.4	LOS A	0.0	0.1	0.67	0.61	50.7																	
All Vehicles			1044 24.2	1044 24.2	0.301	0.1	NA	0.0	0.1	0.00	0.00	119.8																	

Post-Development

Vehicle Movement Performance														
Mov ID	Turn	Class	Demand Flows [Total HV]	Annual Flows [Total HV]	Disq. Sat	Avg Delay	Level of Service	Avg Back of Queue [Veh.]	Prop. Que	EIT Stop Rate	Avg. No. of Cycles	Avg. Speed		
East Hume Highway														
5	T1	All M/Cs	1052 24.3	1052 24.3	0.305	0.1	LOS A	0.0	0.00	0.00	0.00	118.6		
		LV	799	799	0.305	0.1	LOS A	0.0	0.0	NA	NA	118.6		
		HV	253	253	0.305	0.1	LOS A	0.0	0.0	NA	NA	118.6		
6	R2	All M/Cs	3 33.3	3 33.3	0.002	9.3	LOS A	0.0	0.00	0.72	0.00	111.4		
		LV	1	1	0.002	9.3	LOS A	0.0	0.0	NA	NA	111.4		
		HV	1	1	0.002	9.3	LOS A	0.0	0.0	NA	NA	111.4		
Approach			1055 24.3	1052 24.3	0.305	0.1	NA	0.0	0.00	0.00	0.00	118.6		
All Vehicles			1055 24.3	1055 24.3	0.305	0.1	NA	0.0	0.00	0.00	0.00	118.6		

NOTE: SIDRA VERSION 9.1 HAS BEEN USED TO PROCESS AND PRODUCED THE RESULTS

Legend: Existing Traffic (LV – Light Vehicles, HV – Heavy Vehicles), Traffic Generated (SI – Staff Vehicles, MRVs & SRVs, IR – Skip/Tippers & AVs).

MOVEMENT SUMMARY – AM Peak (9.00am – 10.00am) – Future Year 2035 – Hume Highway / Murrays Flat Road (North)

Pre-Development

Post-Development

Vehicle Movement Performance															
Move ID	Team	Demand	Arrival Pkgs	Req. Cntr	Avg. Delay	Level of Service	Avg. Delay	Avg. Delay of Queue	Prop. Que. Del	Eff. Rate	Avg. Delay	Avg. Delay of Queue	Avg. Delay	Avg. Delay of Queue	
		[Total HW]		[Total HW]		[Total HW]		[Total HW]		[Total HW]		[Total HW]		[Total HW]	
		veh	%	veh	%	veh	%	veh	%	veh	%	veh	%	veh	%
South Mainway Flt Road															
2	T1	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	0.60	0.95	0.90	43.7	NA	46.0
	L2	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L3	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
3	R2	All MCs	1	1.0	1.00	8.8	LOS A	0.0	0.1	0.60	0.55	0.60	101.8	NA	43.7
	L2	All MCs	1	1.0	1.00	8.8	LOS A	0.0	0.1	NA	NA	NA	101.8	NA	43.7
	L3	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L4	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L5	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L6	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L7	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L8	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L9	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L10	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L11	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L12	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L13	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L14	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L15	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L16	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L17	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L18	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L19	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L20	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L21	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L22	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L23	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L24	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L25	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L26	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L27	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L28	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L29	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L30	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L31	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L32	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L33	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L34	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L35	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L36	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L37	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L38	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L39	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L40	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L41	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L42	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L43	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L44	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L45	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L46	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L47	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L48	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L49	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L50	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L51	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L52	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L53	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L54	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L55	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L56	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L57	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L58	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L59	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L60	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L61	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L62	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L63	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L64	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L65	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L66	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L67	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L68	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L69	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L70	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L71	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L72	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L73	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L74	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L75	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L76	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L77	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L78	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L79	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L80	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L81	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L82	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L83	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L84	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L85	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L86	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L87	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L88	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L89	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L90	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L91	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L92	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L93	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L94	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L95	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L96	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L97	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L98	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA	NA	NA	43.7	NA	46.0
	L99	All MCs	1	0.0	1.00	6.3	LOS A	0.0	0.1	NA					

NOTE: SIDRA VERSION 9.1 HAS BEEN USED TO PROCESS AND PRODUCED THE RESULTS

Legend: Existing Traffic (**LV** – Light Vehicles, **HV** – Heavy Vehicles), Traffic Generated (**ST** – Staff Vehicles, **HV** – MRVs & SRVs, **TR** – Skip/Tippers & AVs).

MOVEMENT SUMMARY – AM Peak (9.00am – 10.00am) – Future Year 2035 – Hume Highway / Murrays Flat Road (South)

Pre-Development														
Vehicle Movement Performance														
Mov ID	Turn	Mov	Class	Desired Flows [Total HV] [Total IV]	Actual Flows [Total HV] [Total IV]	Disq Satn	Avg Delay sec	Level of Service	Avg Risk of Queue [Veh. h]	Prop Queue	Eff. Stop Rate	Avg No. of Cycles	Avg Speed km/h	
East Hume Highway														
5	T1	All MCs		934 22.4	934 22.4	0.267	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	119.9
		LV		724	724	0.267	0.1	LOS A	0.0	0.0	NA	NA	NA	119.9
		HV		209	209	0.267	0.1	LOS A	0.0	0.0	NA	NA	NA	119.9
6	R2	All MCs		1100.0	1100.0	0.001	11.5	LOS A	0.0	0.0	0.00	0.73	0.00	100.2
		LV		0	0	-	-	-	-	NA	NA	NA	NA	-
		HV		1	1	0.001	11.5	LOS A	0.0	0.0	0.00	0.00	0.00	119.9
Approach														
		All MCs		935 22.5	935 22.5	0.267	0.1	NA	0.0	0.0	0.00	0.00	0.00	119.9
North Murrays Flat Road														
9	R2	All MCs		1 0.0	1 0.0	0.001	2.7	LOS A	0.0	0.0	0.52	0.39	0.52	85.1
		LV		1	1	0.001	2.7	LOS A	0.0	0.0	NA	NA	NA	85.1
		HV		0	0	-	-	-	-	NA	NA	NA	NA	-
Approach														
		All MCs		1 0.0	1 0.0	0.001	2.7	LOS A	0.0	0.0	0.52	0.39	0.52	85.1
All Vehicles														
				938 22.5	938 22.5	0.267	0.1	NA	0.0	0.0	0.00	0.00	0.00	119.9

Post-Development

Vehicle Movement Performance														
Mov ID	Turn	Mov	Class	Desired Flows [Total HV] [Total IV]	Actual Flows [Total HV] [Total IV]	Disq Satn	Avg Delay sec	Level of Service	Avg Risk of Queue [Veh. h]	Prop Queue	Eff. Stop Rate	Avg No. of Cycles	Avg Speed km/h	
East Hume Highway														
5	T1	All MCs		1154 22.7	1154 22.7	0.340	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	119.3
		LV		935	935	0.340	0.1	LOS A	0.0	0.0	NA	NA	NA	119.3
		HV		219	219	0.340	0.1	LOS A	0.0	0.0	NA	NA	NA	119.3
6	R2	All MCs		1384 22.8	1384 22.8	0.340	0.1	LOS A	0.0	0.0	0.00	0.72	0.00	111.4
		LV		2	2	0.005	8.6	LOS A	0.0	0.0	NA	NA	NA	111.4
		HV		0	0	-	-	-	-	NA	NA	NA	NA	-
		PT		1	1	0.005	8.6	LOS A	0.0	0.0	NA	NA	NA	111.4
		TR		0	0	-	-	-	-	NA	NA	NA	NA	-
Approach														
		All MCs		1154 22.8	1154 22.8	0.340	0.2	NA	0.0	0.0	0.00	0.01	0.00	119.3
All Vehicles														
				1154 22.8	1154 22.8	0.340	0.2	NA	0.0	0.0	0.00	0.01	0.00	119.3

NOTE: SIDRA VERSION 9.1 HAS BEEN USED TO PROCESS AND PRODUCED THE RESULTS

Legend: Existing Traffic (**LV** – Light Vehicles, **HV** – Heavy Vehicles), Traffic Generated (**ST** – Staff Vehicles, **HV** – MRVs & SRVs, **TR** – Skip/Tipplers & AVs).

MOVEMENT SUMMARY – PM Peak (2.45pm – 3.45pm) – Future Year 2035 – Hume Highway / Murrays Flat Road (North)

Pre-Development																												Post-Development																											
Vehicle ID	Movement	Team	Performance				Arrival Flows [Total HV] [Total HV]	Delay	Level of Service	Avg. Back of Queue [Veh. wait] [Est. wait]	Prop. Queue	LE Rate	Avg. No. of Cycles	Speed	Vehicle ID	Movement	Team	Performance				Arrival Flows [Total HV] [Total HV]	Delay	Level of Service	Avg. Back of Queue [Veh. wait] [Est. wait]	Prop. Queue	LE Rate	Avg. No. of Cycles	Speed																										
			Vol	%	Wait	Wait												Vol	%	Wait	Wait									Vol	%	Wait	Wait	Vol	%	Wait	Wait																		
South Murrays Flat Road																																																							
2	T1	All M/Cs	1	0.0	0.0	0.009	11.5	LOS A	0.0	0.1	0.01	0.74	0.01	44.0	2	T1	All M/Cs	4	25.0	4	0.02	20.4	LOS B	0.0	0.3	0.05	0.06	42.3																											
		LV	1	1	0.0	0.009	11.5	LOS A	0.0	0.1	NA	NA	NA	44.6			LV	2	2	0.02	11.5	LOS A	0.0	0.3	NA	NA	44.6																												
		HV	0	0	-	-	-	-	-	-	NA	NA	NA	-			HV	1	1	0	0.02	11.5	LOS A	0.0	0.3	NA	NA	44.6																											
3	R2	All M/Cs	1	0.0	1	0.0	0.009	16.2	LOS B	0.0	0.1	0.01	0.74	0.01	96.7			HV	1	1	0.02	47.6	LOS D	0.6	0.3	NA	NA	36.7																											
		LV	0	0	-	-	-	-	-	-	NA	NA	NA	-			RV	1	1	0.02	47.6	LOS D	0.6	0.3	NA	NA	36.7																												
		HV	0	0	-	-	-	-	-	-	NA	NA	NA	-			RV	0	0	-	-	-	-	-	-	NA	NA	-																											
Approach			2	0.0	2	0.0	0.009	13.9	LOS A	0.0	0.1	0.01	0.74	0.01	67.2			LV	1	1	0.02	17.3	LOS B	0.0	0.3	0.08	0.08	39.8																											
		HV	0	0	-	-	-	-	-	-	NA	NA	NA	-			RV	1	1	0.02	17.3	LOS B	0.0	0.3	NA	NA	39.8																												
North Murrays Flat Road																																																							
7	L2	All M/Cs	1	0.0	1	0.0	0.000	4.5	LOS A	0.0	0.3	0.05	0.50	0.05	74.3			LV	1	1	0.00	19.5	LOS A	0.1	1.1	0.00	0.05	30.7																											
		HV	0	0	-	-	-	-	-	-	NA	NA	NA	-			L2	M/Cs	3	3	0.00	35.5	LOS A	0.1	1.1	NA	NA	46.4																											
		HV	0	0	-	-	-	-	-	-	NA	NA	NA	-			L2	M/Cs	3	3	0.00	35.5	LOS A	0.1	1.1	NA	NA	46.4																											
8	T1	All M/Cs	3	66.7	3	66.7	0.000	9.4	LOS A	0.0	0.3	0.05	0.50	0.05	47.5			LV	5	5	0.009	16.1	LOS A	0.1	1.1	NA	NA	39.0																											
		LV	1	1	0.000	6.8	LOS A	0.0	0.3	NA	NA	NA	NA	48.3			ST	14	14	0.068	35.5	LOS A	0.1	1.1	NA	NA	48.4																												
		HV	2	2	0.000	10.8	LOS A	0.0	0.3	NA	NA	NA	NA	47.0			ST	2	2	0.068	16.1	LOS A	0.1	1.1	NA	NA	39.9																												
Approach			4	50.0	4	50.0	0.000	8.2	LOS A	0.0	0.3	0.05	0.50	0.05	57.3			TH	4	4	0.068	47.6	LOS D	0.1	1.1	0.08	0.08	37.1																											
West Hume Highway																																																							
10	L2	All M/Cs	1	100.0	1	100.0	0.001	11.8	LOS A	0.0	0.0	0.00	0.69	0.00	82.7			L2	All M/Cs	6	6.0	0.007	12.1	LOS A	0.0	0.2	0.04	0.04	50.9																										
		LV	0	0	-	-	-	-	-	-	NA	NA	NA	-			L2	All M/Cs	1	1	0.007	12.1	LOS A	0.0	0.2	NA	NA	50.0																											
		HV	0	0	-	-	-	-	-	-	NA	NA	NA	-			HV	1	1	0.007	12.1	LOS A	0.0	0.2	NA	NA	50.0																												
11	T1	All M/Cs	1047	19.6	1047	19.6	0.296	13.9	LOS A	0.0	0.0	0.00	0.00	119.9			ST	1	1	0.007	12.1	LOS A	0.0	0.2	NA	NA	58.0																												
		LV	842	0.296	0.296	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	119.9			HV	1	1	0.007	12.1	LOS A	0.0	0.2	NA	NA	58.0																												
		HV	205	205	205	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	119.9			TH	3	3	0.007	12.1	LOS A	0.0	0.2	NA	NA	58.0																												
12	R2	All M/Cs	1100.0	1100.0	0.296	11.5	LOS A	0.0	0.0	0.0	0.00	0.00	0.00	119.9			L2	All M/Cs	1333	19.6	1333	19.6	LOS A	0.0	0.0	0.00	0.00	119.9																											
		LV	0	0	-	-	-	-	-	-	NA	NA	NA	-			TH	3	3	0.007	12.1	LOS A	0.0	0.2	NA	NA	119.9																												
		HV	1	1	0.296	11.5	LOS A	0.0	0.0	0.0	0.00	0.00	0.00	119.9			HV	296	296	0.296	11.5	LOS A	0.0	0.0	0.00	0.00	119.9																												
Approach			1049	19.6	1049	19.6	0.296	11.5	LOS A	0.0	0.0	0.00	0.00	119.9			HV	296	296	0.296	11.5	LOS A	0.0	0.0	0.00	0.00	119.9																												
All Vehicles			1056	19.6	1056	19.6	0.296	11.5	LOS A	0.0	0.0	0.00	0.00	119.9			All Vehicles	1333	20.3	1333	20.3	LOS A	0.0	0.2	0.00	0.00	119.9																												

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Legend: Existing Traffic (LV – Light Vehicles, HV – Heavy Vehicles), Traffic Generated (SI – Staff Vehicles, TR – MRVs & SRVs, TR – Skip/Tipplers & AVs).

Pre-Development															Post-Development														
Vehicle Movement Performance															Vehicle Movement Performance														
Move ID	Team	Move Type	Distance Cases	Actual Flow [Total HV]	Desired Flow [Total HV]	Day Satn	Sec	Level of Service	Aver Risk [veh/h]	Prop Que Del [min]	Eff Que Rate	Aver Speed Cycles	Aver Speed	km/h	Move ID	Team	Move Type	Distance Cases	Actual Flow [Total HV]	Desired Flow [Total HV]	Day Satn	Sec	Level of Service	Aver Risk [veh/h]	Prop Que Del [min]	Eff Que Rate	Aver Speed Cycles	Aver Speed	km/h
East Hume Highway																													
5																													
T1 All MCs																													
LV																													
HV																													
ST																													
R2 All MCs																													
LV																													
HV																													
Approach																													
North Murray Road																													
9																													
R2 All MCs																													
LV																													
HV																													
Approach																													
All Vehicles																													

NOTE: SIDRA VERSION 9.1 HAS BEEN USED TO PROCESS AND PRODUCED THE RESULTS

Legend: Existing Traffic (**LV** – Light Vehicles, **HV** – Heavy Vehicles, **ST** – Staff Vehicles, **HV** – MRVs & SRVs, **TR** – Skip/Tipplers & AVs).