Appendix 8

Traffic Impact Assessment

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

18th June 2020 Reference: 190509.01FC

Concrete Recyclers
14 Thackeray Street
Camellia NSW 2142
Attention: Anthony Males

LETTER OF ADVICE OF
PROPOSED RESOURCE RECOVERY FACILITY
AT 7 MONTORE ROAD, MINTO

Dear Anthony,

Reference is made to your request to provide Letter of Advice for the Proposed Resource Recovery Facility at 7 Montore Road, Minto (Concept Site layout in **Annexure A**). This letter addresses comments from the Department of Planning in reference to *M^CLaren Traffic Engineering's* (**MTE**) Traffic and Parking Impact Assessment (*TPIA*) dated 5th February 2019 (ref 18259.01FB). The Department comments are quoted below followed by **MTE**'s responses.

> *Provide a stacking plan to show how the site would operate in peak periods when there is a heavy vehicle movement every minute, include the range of expected heavy vehicle types in the plan. How long will it take to unload the waste, inspect it and place onto the relevant stockpile (refer to the EPA's new Standards for Managing Construction Waste)? Only the weighbridge operation has been taken into account for queuing traffic.*

MTE Response: The peak hourly inbound traffic generation is 44 movements (18 in, 26 out) and 32 movements (19 in, 13 out) in the AM and PM peak hours, according to *Section 5.1* of **MTE**'s *TPIA*. This is significantly less than one movement per minute as suggested in the comment above.

Notwithstanding the above, **MTE** has undertaken a queuing analysis for the onsite loading and unloading operations, utilising a peak generation of one (1) vehicle per minute as a conservative assessment. As a further worst-case assessment, it is assumed that all of the 60 trips are associated with either loading or unloading activities separately. For example, 30 vehicles enter the site to be loaded, then depart the site after being loaded (a total of 60 movements). Queue length calculations have been undertaken based on these parameters. Results of the assessment are summarised below, with detailed calculations reproduced in **Annexure B** for reference.

30 Loading Vehicles

MTE has been advised that the estimated average loading duration per truck is 65s and two (2) trucks can be loaded at the same time. Based on a peak inbound traffic generation of **30** vehicles

the resulting 98th percentile queue is nil (0) vehicles such that no queuing is expected to occur internally.

30 Unloading Vehicles

MTE has been advised that the estimated average unloading duration per truck is 180s and there are six (6) locations to unload concurrently. Based on a peak inbound traffic generation of **30** vehicles the resulting 98th percentile queue is nil (0) vehicles such that no queuing is expected to occur internally.

Show the waiting bays on a plan

MTE Response: The truck waiting bays are shown on the plans in **Annexure A**. The waiting areas are large enough to accommodate six (6) AV's prior to the weighbridge. As discussed above it is not expected that any waiting areas will be required for loading or unloading operations within the site. Regardless, there is sufficient area internally to accommodate trucks waiting within the site.

Detail key transport routes by road name in the EIS including a plan showing the relevant roads. The EIS doesn't explain why drivers of heavy vehicles will be required to avoid Raby Road between Campbelltown Road and Eagle Vale Drive. If required to avoid Raby Road, which route would the heavy vehicles take? Elsewhere in the EIS it is stated that some heavy vehicles may use Raby Road, yet this has not been assessed.

MTE Response: The transport routes are described in detail in **Annexure F** of **MTE**'s *TPIA*. Drivers are required to avoid Raby Road between Campbelltown Road and Eagle Vale Drive to reduce impacts on local residents. Further, drivers of laden heavy vehicles (over 40t) are restricted by the 40t load limit on the bridge on Ben Lomond Road over Bow Bowing Creek. The alternative route is via Ben Lomond Road, Pembroke Road and Rose Payten Drive. Light vehicles may use Raby Road given that they are in low quantity and will have no discernible impact on Raby Road.

Describe the site access, will it be upgraded?

MTE Response: The site access is shown in the plans in **Annexure A**. The proposal requires a significantly wider layback than what is provided on the existing site. The singular layback will provide access and egress to both the weighbridge for AV's and the car park for passenger vehicles. The existing and proposed laybacks are compared in **Figure 1** and **Figure 2** below. Additionally, the original TPIA, dated 5th February 2019, has been updated to include these figures.

FIGURE 1: EXISTING SITE DRIVEWAY CONDITIONS

Driveway Layback Site

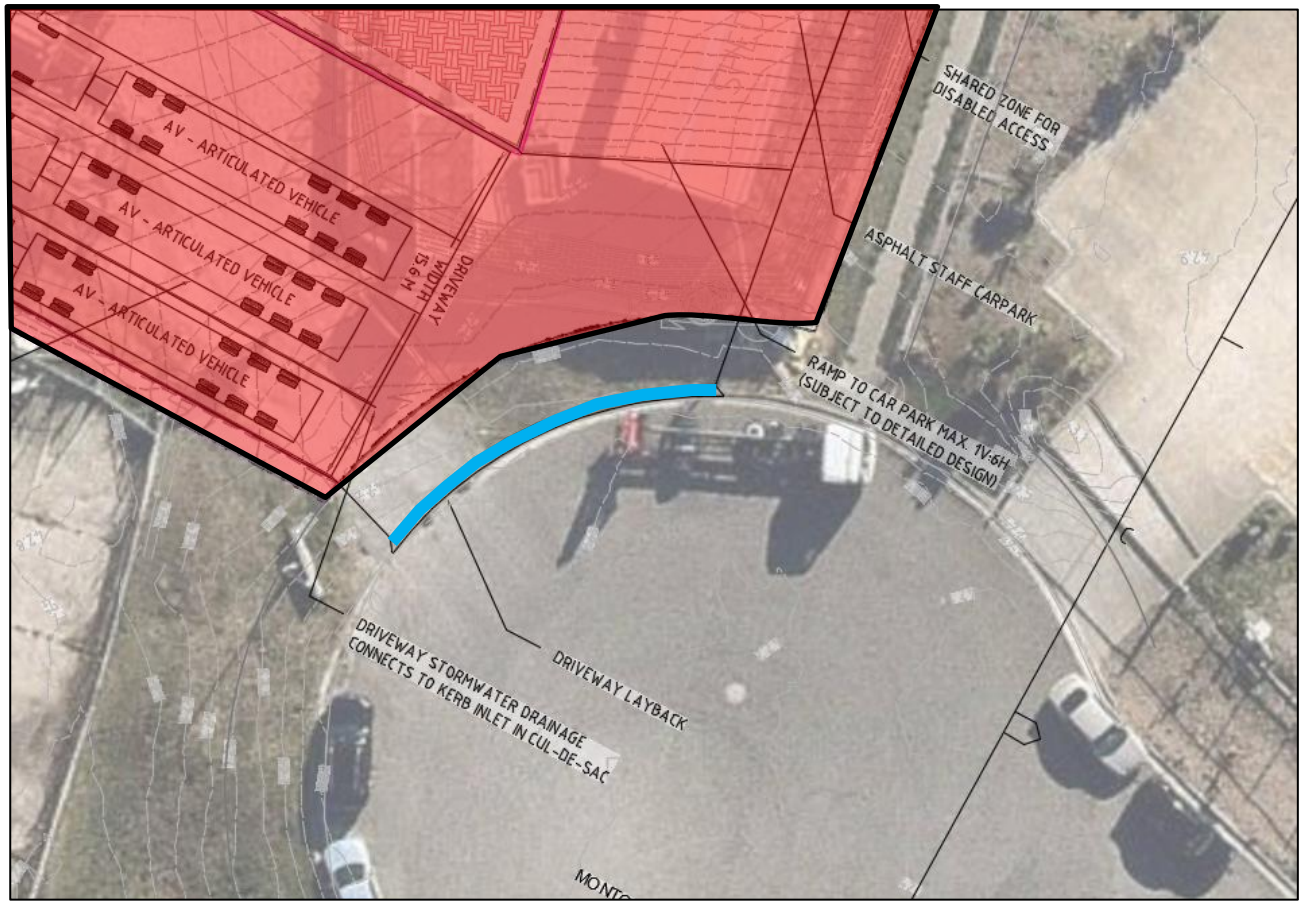
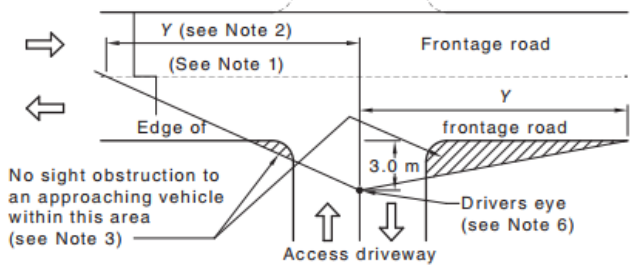


FIGURE 2: PROPOSED SITE DRIVEWAY CONDITIONS

Driveway Layback Site

Assess impacts on safety of the surrounding road network.

MTE Response: Montore Road is 50km/h road and the site access is proposed via a two-way driveway from a cul-de-sac. The geometry of the road and the proposed location of the driveway would result in vehicles passing the site at a speed lower than the speed limit of 50km/h. Regardless, the sight line of the driveway has been assessed against the requirements of a 50km/h road under *AS2890.2:2018.* The minimum sight line required is a 5s gap along the frontage road which corresponds to a distance of 69m as detailed in *Figure 3.3* of *AS2890.2:2018* and reproduced in **Figure 3** below.



Frontage road speed (see Note 4) km/h	Distance (*Y*) along frontage road (see Note 5) m	
	5 s gap	8 s gap
40	55	89
50	69	111
60	83	133
70	97	156
80	111	178
90	125	200
100	139	222
110	153	244

NOTE 1 Centre-line or centre of roadway (undivided road), or right-hand edge of right-hand through lane (divided road).

NOTE 2 A check to the left is not required at a divided road where the median is wide enough to shelter a vehicle leaving the driveway.

NOTE 3 Parking on this side of the frontage road may need to be restricted on either side of the driveway so that the sight distance required by the above table to an approaching vehicle is not obstructed.

NOTE 4 This is the posted or general speed limit unless the 85th percentile speed is significantly higher.

NOTE 5 These distances are equivalent to minimum gap sight distance (MGSD) for an exiting vehicle. The minimum requirement is a 5 s gap. A right turn exit into a six lane road may require up to an 8 s gap, unless the median is wide enough to shelter a vehicle leaving the driveway.

NOTE 6 When checking sight distance the height of the object (approaching vehicle) is to be taken as 1.15 m above the road surface. The driver's eye height is to be taken as any height in the range 1.15 m to 2.5 m, to cater for both car and commercial vehicle drivers.

FIGURE 3: AS2890.2:2018 – SIGHT DISTANCE REQUIREMENTS AT ACCESS DRIVEWAY EXITS

The proposed driveway location provides sight distances well in excess of the minimum 69m required by *AS2890.2:2018* as shown in **Figure 4**.

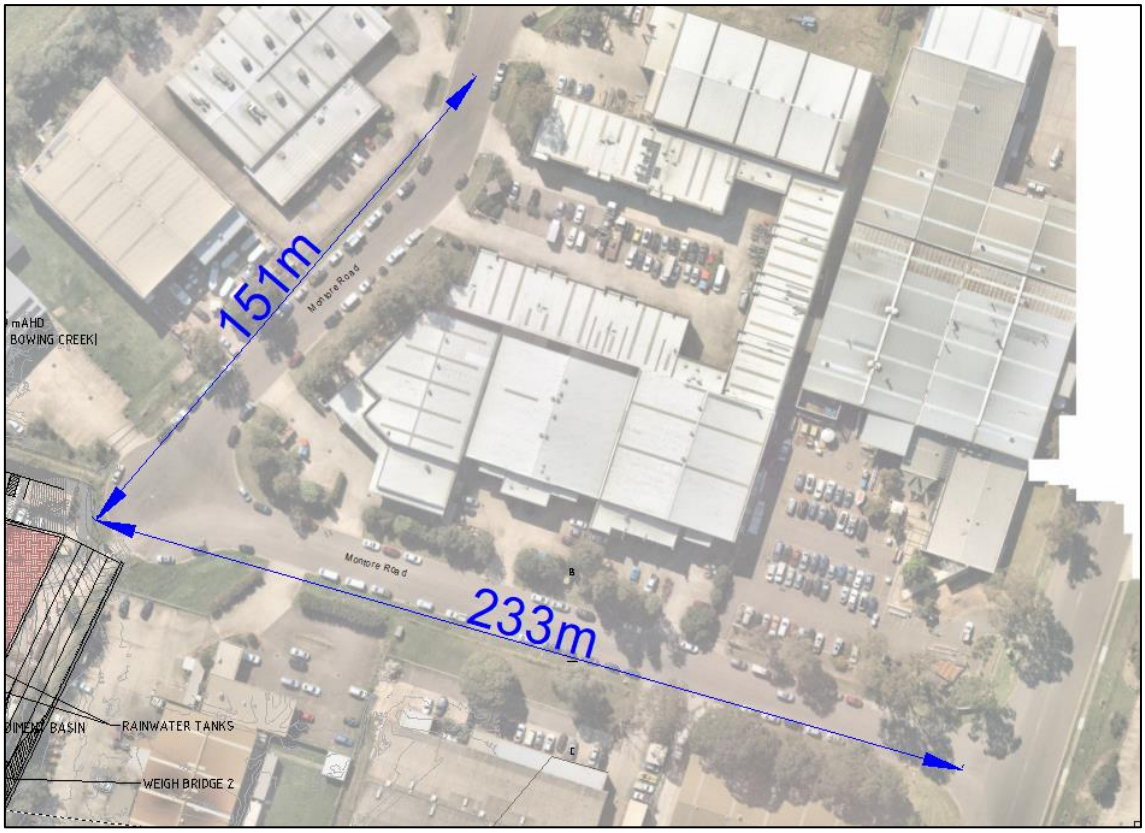


FIGURE 4: SIGHT LINES FROM PROPOSED DRIVEWAY

The requirements for sight lines between pedestrians along the site frontage and egressing vehicles is described in *AS2890.2:2018* and shown in **Figure 5** below.

(b) *Sight distance to pedestrians* — Minimum dimensions for sight distance splays required to enable a pedestrian on the public road footpath to evade a vehicle emerging from an access driveway shall be as shown in Figure 3. . Wherever practicable, larger splays should be provided.

Dimensions in metres

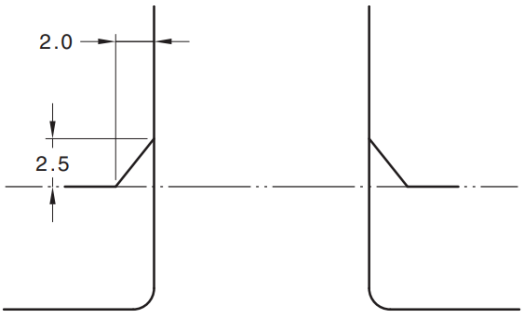


FIGURE 5: AS2890.2:2018 – PEDESTRIAN SIGHT DISTANCE REQUIREMENTS

The proposed access driveway provides adequate sight lines for pedestrians as shown in **Figure 6** below.

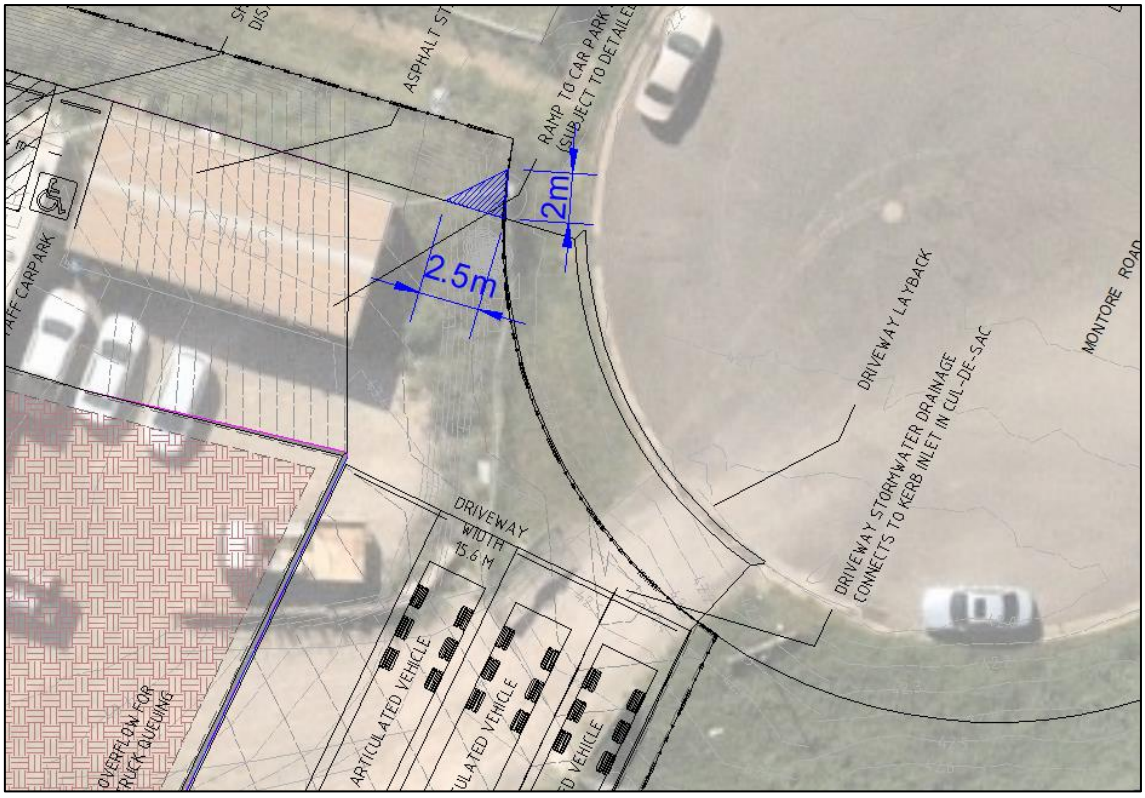
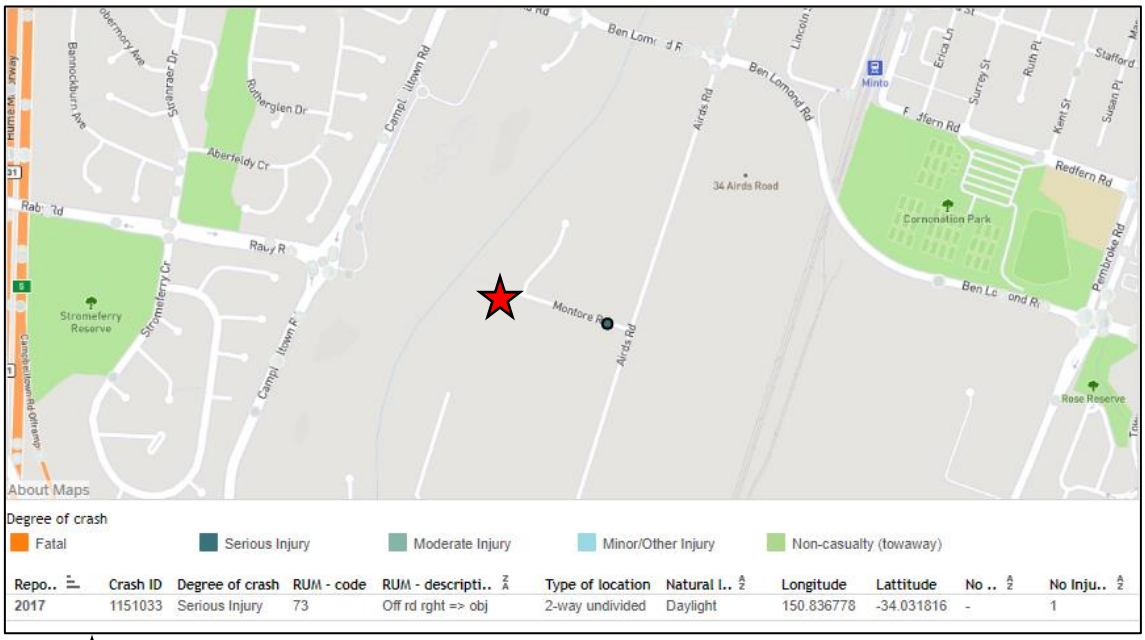


FIGURE 6: PEDESTRIAN SIGHT TRIANGLE

A review of TfNSW crashes map has not identified any cluster of crashes within close proximity to the proposed site driveway. The nearest available crash statistic is shown in **Figure 7** below.



Repo..	Crash ID	Degree of crash	RUM - code	RUM - descripti..	Type of location	Natural l..	Longitude	Lattitude	No ..	No Inju..
2017	1151033	Serious Injury	73	Off rd rght => obj	2-way undivided	Daylight	150.836778	-34.031816	-	1

Site Location

FIGURE 7: TFNSW CRASH STATISTICS

Therefore, given the lack of historical crashes within close proximity to the proposed driveway and the ample sight lines provided to both vehicles and pedestrians the proposed development will not negatively impact the safety of the road network within the immediate vicinity of the site.

Furthermore, all of the surrounding roads on the haulage routes are B-Double approved routes. The site does not propose any vehicles larger than the pre-approved B-Doubles. SIDRA Intersection analysis was undertaken as a part of **MTE**'s *TPIA* determined that the traffic associated with the site

can be readily accommodated within the surrounding road network. Further, it is shown in the *TPIA* that the queueing area onsite is more than adequate to accommodate the 98th percentile queue from the weighbridge such that a vehicle queue will not extend into the roadway. Therefore, there will be no adverse safety effects on the surrounding road network provided that all heavy vehicles adhere to the required haulage routes detailed in **MTE**'s TPIA.

> *Include a table in the EIS showing existing LoS and delay compared with existing plus development and then future operating conditions.*

MTE Response: *Section 2.3* of **MTE**'s TPIA provides the existing LoS and delay of the surrounding intersections and *Section 5.3* of **MTE**'s *TPIA* compares the LoS and delay between the existing condition and the future condition (existing traffic volumes plus the expected development traffic). The overall LoS does not change for any of the relevant intersections, and the delays increase by a maximum of one second across all intersections.

> *Explain why the outbound trips are more than double inbound trips in a respective period – please explain whether trucks would be full or empty.*

MTE Response: It has been advised by the operators of the site that the traffic profile provided in *Table 2* of **MTE**'s TPIA is representative of the proposed operation of the site. In terms of traffic impact, the estimated profile forms traffic generation peaks in the AM and PM peaks, which results in a conservative assessment compared to an average arrival and departure. Furthermore, having more trips either entering or exiting the site provides a more conservative assessment of the surrounding intersections as there is more demand on critical turning movements.

The number of full and empty trucks is presented in *Figure 4* of **MTE**'s TPIA. During a weekday it is expected that **89** full trucks will enter the site, unload and exit the site empty. Conversely, **82** empty trucks will enter the site, load and exit the site full. Therefore, it is expected that 52% of entering vehicles are full and 48% are empty, vice versa for exiting traffic. It is relevant to note that this split between loading / unloading vehicles relieves queueing, as it divides trucks between the loading and unloading service areas. As a worst case, **MTE**'s queuing analysis in **Annexure B** assumes 100% loading vehicles and 100% unloading vehicles as separate assessments.

> *Section 10.4.3 of the EIS states that each industrial building/unit having a gross floor area more than 1,500m^2 will provide a loading area to allow for heavy rigid vehicles to manoeuvre – please discuss this aspect in the project description and show the loading areas on a plan.*

MTE Response: Heavy vehicles up to 19m long articulated vehicles can circulate throughout the site. Loading and unloading operations will occur in multiple locations which can all be accessed by a 19m long articulated vehicle. It is important to note that neither the loading and unloading areas block heavy vehicle circulation around the site, allowing unrestricted vehicle flows within the site. Swept paths of an articulated vehicle circulating the site while loading and unloading activities (shown in indicative locations) are occurring is provided in **Annexure C**. Additionally, the figures provided in **Annexure C** are included in the modified TPIA.

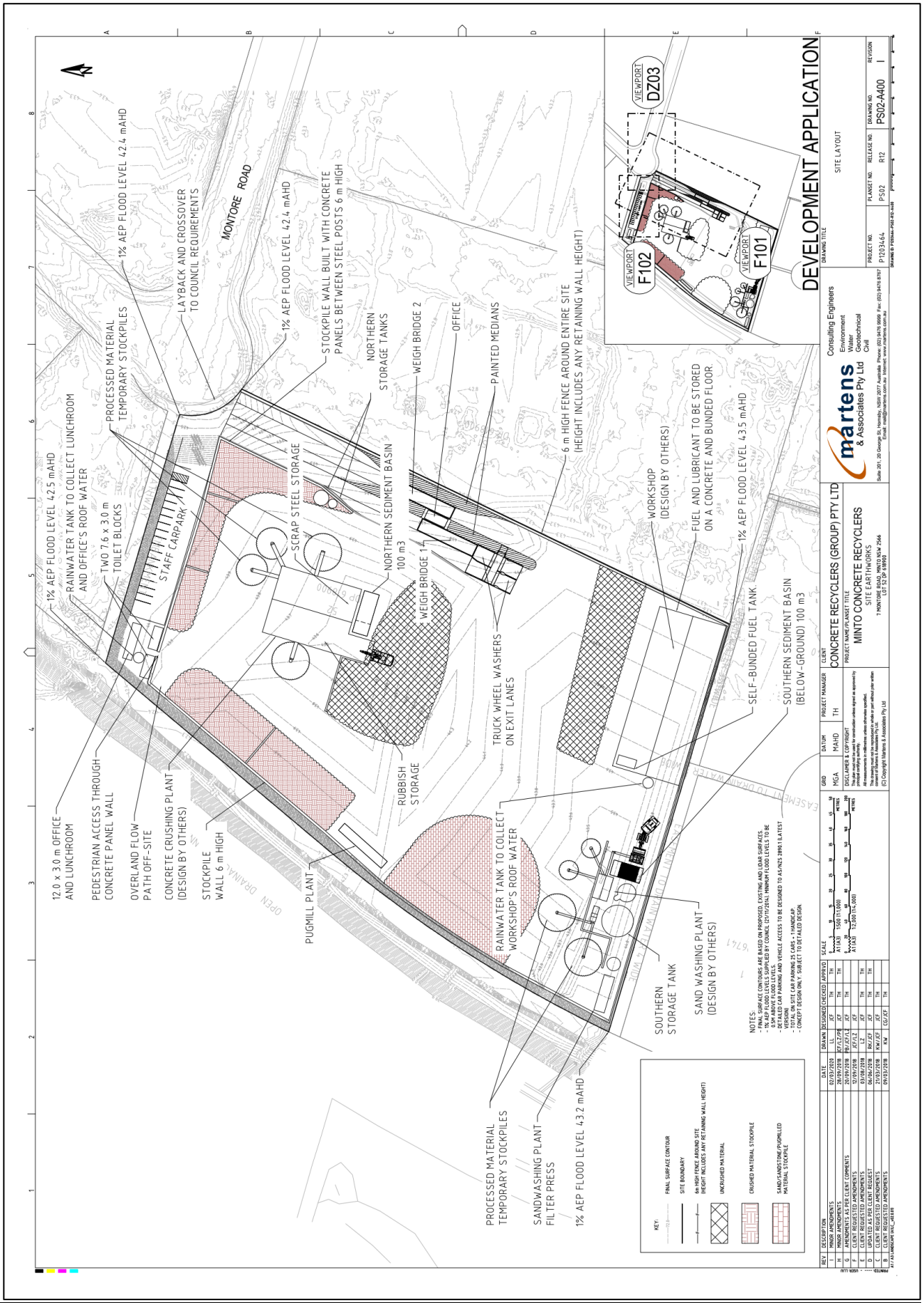
Please contact the undersigned should you require further information or assistance.
Yours faithfully,

McLaren Traffic Engineering

Craig McLaren
Director
BE Civil, Grad Dip (Transport Engineering), MAITPM, MITE
RPEQ 19457
RMS Accredited Level 3 Road Safety Auditor [1998]
RMS Accredited Traffic Management Plan Designer [2018]

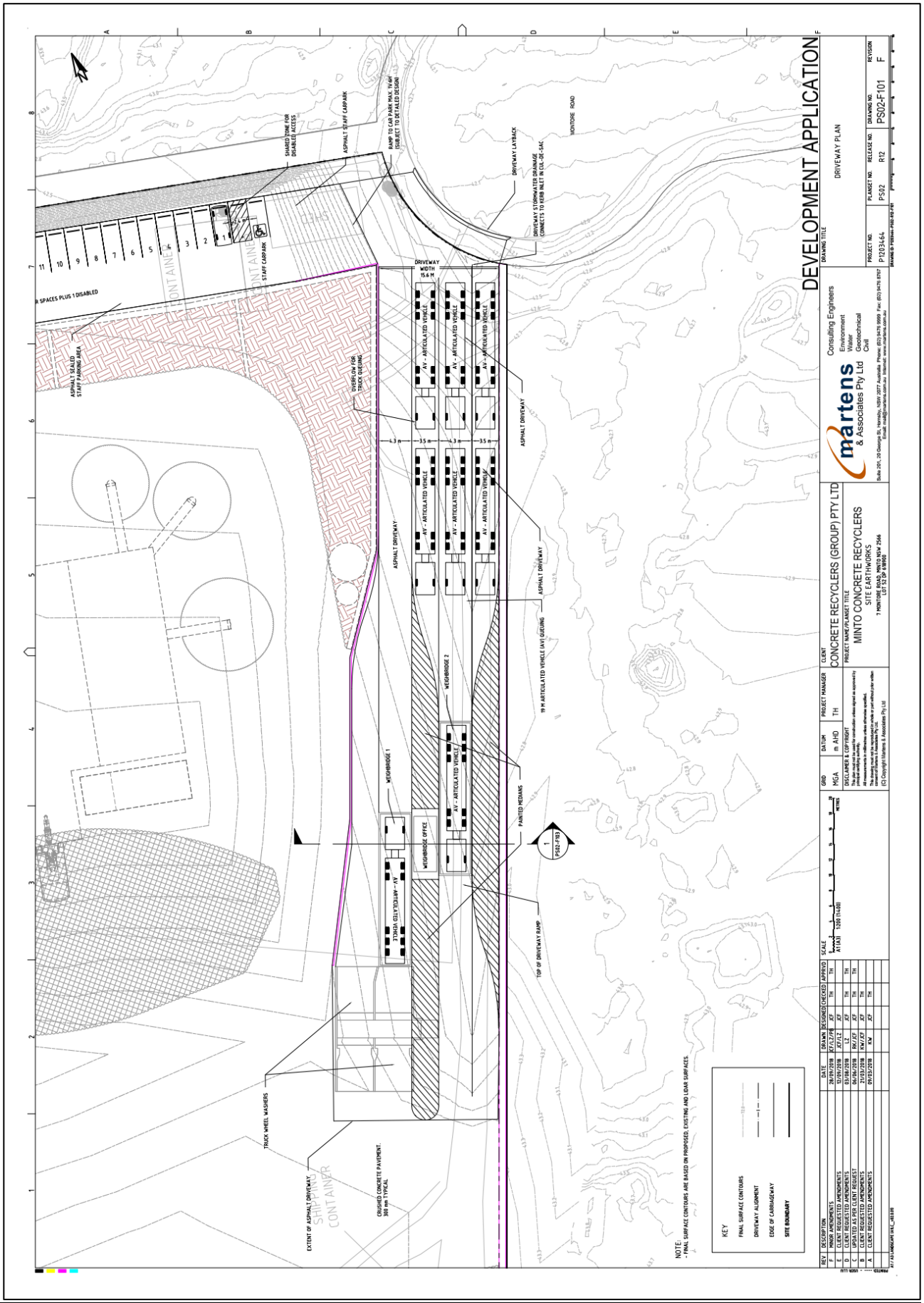
ANNEXURE A: PLANS

(SHEET 1 OF 3)



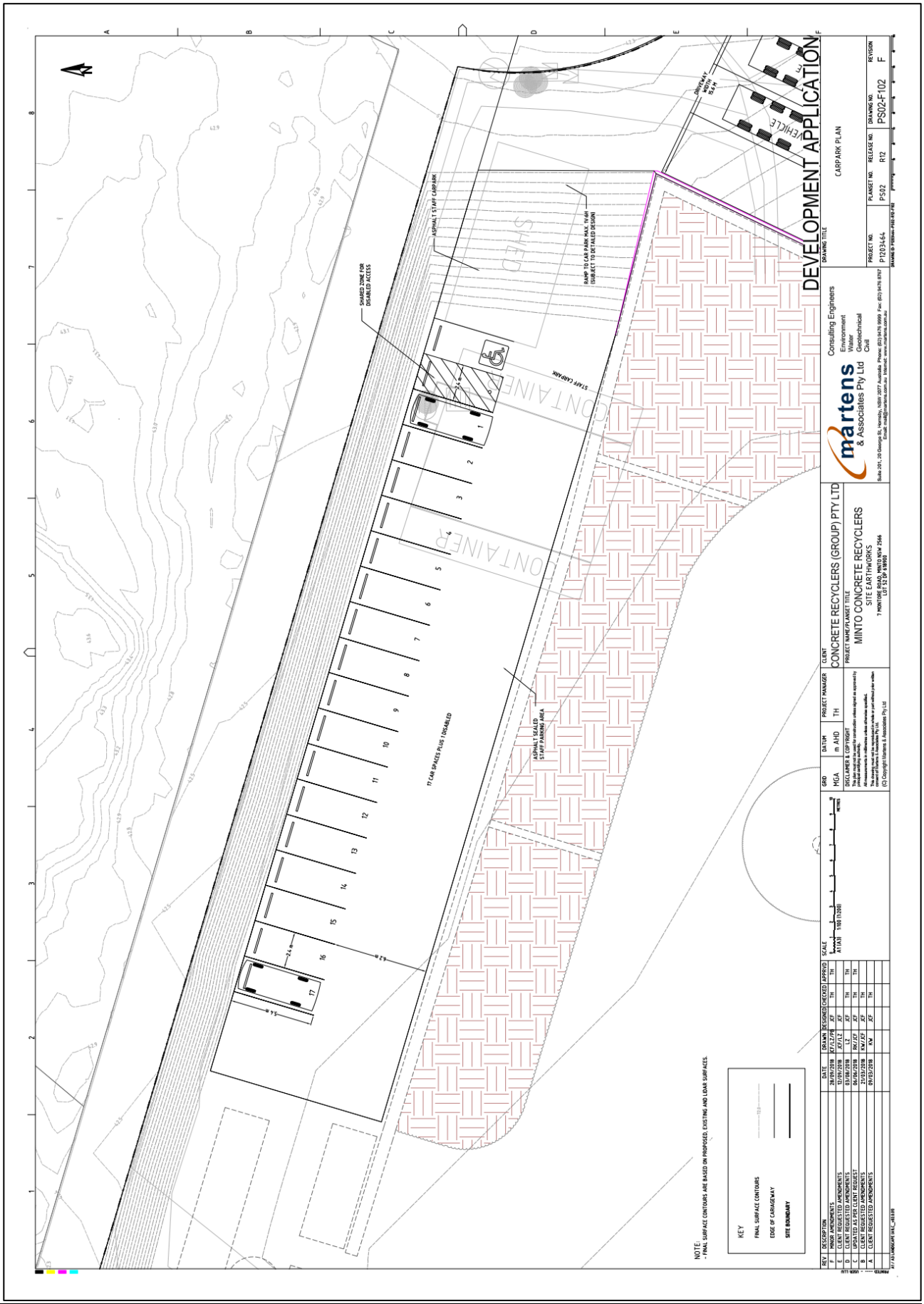
ANNEXURE A: PLANS

(SHEET 2 OF 3)



ANNEXURE A: PLANS

(SHEET 3 OF 3)



6.3 Queue Lengths and Delays

For many metering situations, it is satisfactory to treat the arrival of vehicles at the metering point as Poisson distributed. In most situations, vehicles are usually serviced on a first-come first-served basis, and it can be assumed that service times follow a negative exponential distribution.

On this basis, then for a single service channel the following relationships apply:

- average arrival rate : q_a vehicles per second
- average service rate : q_s vehicles per second
- utilisation factor : $\rho = q_a / q_s$
- probability of n vehicles in the system, including the one being serviced
  $P(n) = (1 - \rho)\rho^n$
- probability of more than n vehicles in the system, including the one being serviced
  $P(>n) = \rho^{n+1}$
- The mean queue length, including the vehicle being serviced,
  $n_q = \rho / (1 - \rho)$
- The variance of the mean queue length, including the vehicle being serviced
  $\sigma^2(n) = \rho / (1 - \rho)^2$
- The mean waiting time (delay) in the system, including the time being serviced
  $W_m = n_q / q_a = 1 / q_s \ (1-\rho)$ *seconds*

As the flow through a metering point approaches capacity, the utilisation factor ρ approaches one, and this situation is associated with long queues and long waiting times. As far as practicable, metering points should be designed so that the utilisation factor does not exceed about 0.8. ❑

Source: AUSTROADS *Guide to Traffic Engineering Practice, Part 2: Roadway Capacity*

ANNEXURE B: QUEUING ANALYSIS

(SHEET 2 OF 3)

Based on AUSTROADS the detailed queueing analysis for the proposed weighbridge is outlined below:

- **Loading**
- Adopted service time of 65 seconds.
- Number of service bays = 2
- Inbound traffic flow 30 trucks per hour

Based on *Austroads Guide to Traffic Management: Part 3: Traffic Studies and Analysis, Section 5.1.2,* the resulting queueing results are shown below.

TABLE 1: QUEUING RESULTS

Number of units in system	Number of vehicles in queue	Probability of this many units in system (%)	Probability of this many units in system or less (%)	Probability of this many units in system or more (%)
0	0	72.92	72.92	100.00
1	0	19.75	92.66	31.70
2	0	5.35	98.01	10.05

Based upon the queue theory, the provision of nil (**0**) queueing bays would satisfy the 98th percentile queue demand. The satisfaction of the 98th percentile is in accordance with AS2890.1:2004 requirements.

ANNEXURE B: QUEUING ANALYSIS

(SHEET 3 OF 3)

Based on AUSTROADS the detailed queueing analysis for the proposed weighbridge is outlined below:

- **Unloading**
- Adopted service time of 180 seconds.
- Number of service bays = 6
- Inbound traffic flow 30 trucks per hour

Based on *Austroads Guide to Traffic Management: Part 3: Traffic Studies and Analysis, Section 5.1.2,* the resulting queueing results are shown below.

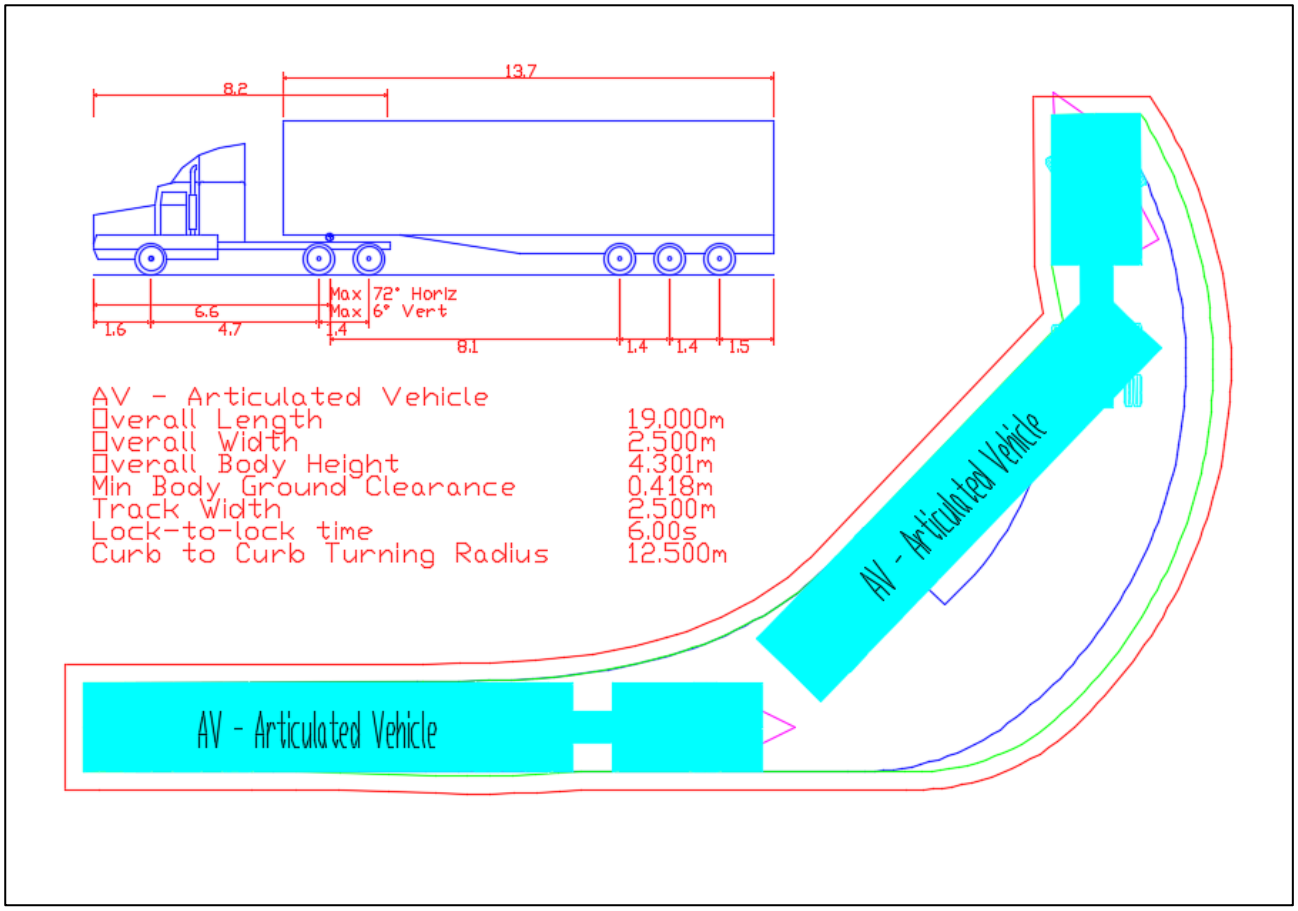
TABLE 2: QUEUING RESULTS

Number of units in system	Number of vehicles in queue	Probability of this many units in system (%)	Probability of this many units in system or less (%)	Probability of this many units in system or more (%)
0	0	75.00	75.00	100.00
1	0	18.75	93.75	25.00
2	0	4.69	98.44	6.25

Based upon the queue theory, the provision of nil (**0**) queueing bays would satisfy the 98th percentile queue demand. The satisfaction of the 98th percentile is in accordance with AS2890.1:2004 requirements.

ANNEXURE C: SWEPT PATH TESTS

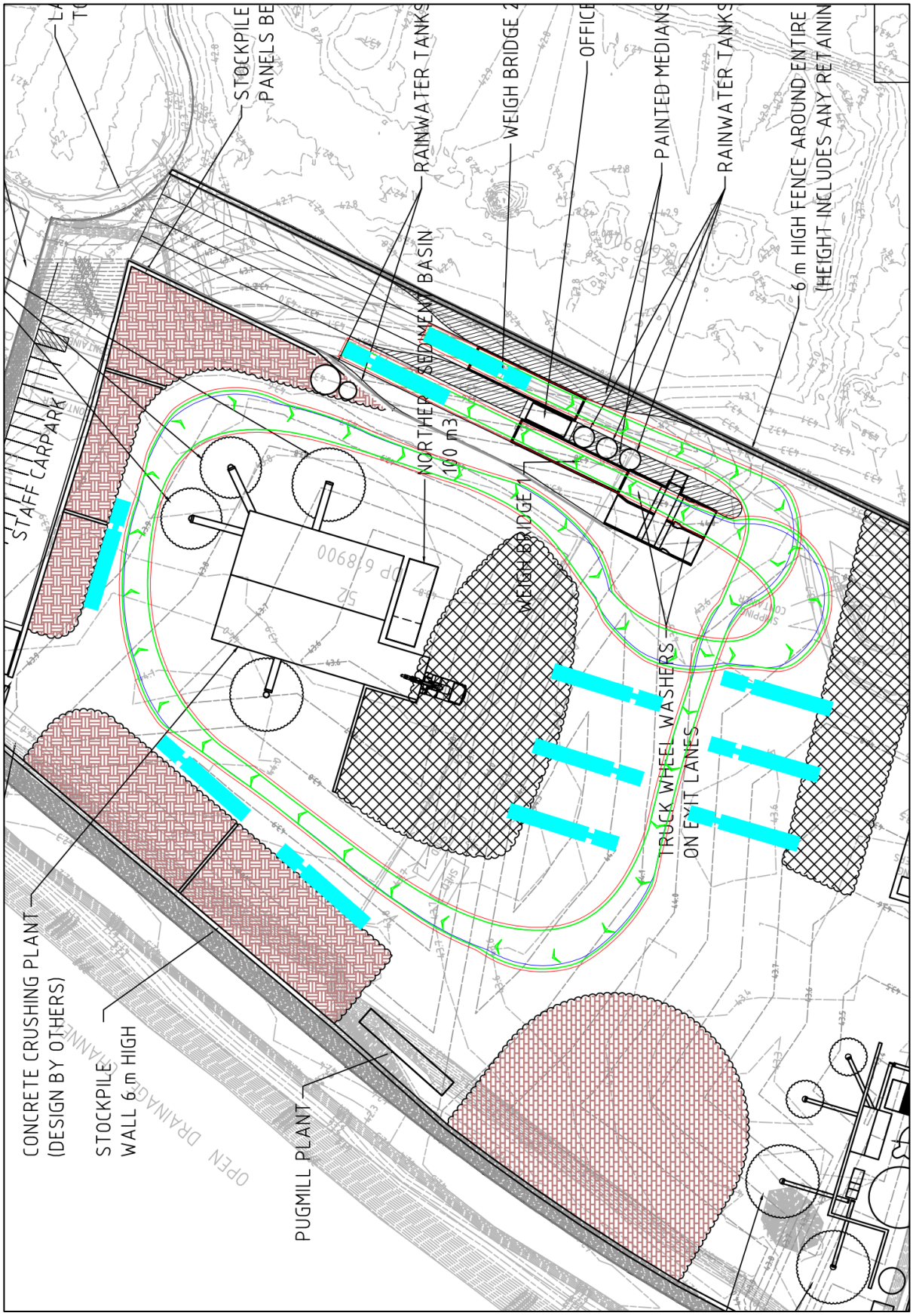
(SHEET 1 OF 2)



AUSTRALIAN STANDARD 19M ARTICULATED VEHICLE (AV)

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

ANNEXURE C: SWEPT PATH TESTS
(SHEET 2 OF 2)



AV Circulation - SUCCESSFUL

TRAFFIC AND PARKING IMPACT ASSESSMENT OF

PROPOSED RESOURCE RECOVERY FACILITY

AT 7 MONTORE ROAD, MINTO

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

18259.01FD - 5th March 2020

Development Type: **Proposed Resource Recovery Facility**

Site Address: **7 Montore Road, Minto**

Prepared for: **Camolaw Pty Ltd**

Document reference: **18259.01FD**

Status	Issue	Prepared By	Checked By	Date
Draft	A	DW/DF	CM	15th January 2019
Final	A	DW		4th February 2019
Final	B	DW		5th February 2019
Final	C	DW		20th February 2020
Final	D	DW		5th March 2020

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1 INTRODUCTION

M^CLaren Traffic Engineering (MTE) was commissioned by *Camolaw Pty* Ltd to provide a traffic and parking impact assessment of the Proposed Resource Recovery Facility at 7 Montore Road, Minto.

1.1 Site Description

The site comprises a vacant lot located at 7 Montore Road, Minto, as shown in **Figure 1** and **Figure 2**. It is located within the Minto industrial precinct, with a flood canal running along the western boundary.

The site has one vehicular access point from Montore Road at the site's north-eastern corner.

1.2 Description and Scale of Development

The proposed development, shown in **Annexure A**, involves the construction of a resource recovery facility with an intended capacity of 450,000 tonnes per annum. A brief description of the facility's components are outlined in the list below:

- 3 x 35-tonne class wheel loaders
- 1 x 45-tonne excavator
- 2 x 30-tonne excavators
- Storm water storage tanks
- 1 x water cart
- 1 x 20,000-litre capacity self-bunded fuel tank
- 2 x weighbridges
- Wheel wash
- Workshop for general repairs
- Staff lunch room and associated amenities
- Car park.

The proposed hours of operation will be Monday to Friday, 6:00am to 7:00pm and Saturday, 7:00am to 4:00pm. The site will have a total of 25 employees broken down as follows:

- One (1) site foreman
- Three (3) loader drivers
- Three (3) excavator drivers
- Two (2) weighbridge attendants
- Two (2) fitters
- Four (4) labourers
- Ten (10) contract drivers who will arrive at the site in their trucks.

1.2.1 Proposed Site Access

The proposed development will make use of a single entry/exit driveway on Montore Road. It is expected that the site will need to accommodate a maximum sized vehicle similar to a design 19m semi-trailer vehicle. Refer to the swept path analysis shown in **Annexure B**.

1.2.2 Proposed Truck Routes

Trucks will utilise both Ben Lomond Road to the north and Rose Payten Drive for site access, both of which are existing approved B-Double routes. Whilst the facility is proposed to operate between 6:00am to 7:00pm on weekdays, haulage will generally occur between 6:00am to 5:00 pm, with the peak truck traffic occurring between 8:00am to 10:00am.

Campbelltown Council has implemented load limits on nearby bridges / culverts, impacting the truck routes for mass limits of 32 tonnes and 40 tonnes as follows:

1) Ben Lomond Road, Minto; Bridge over Bow Bowing Channel between Cary Grove and Airds Road. A load limit of 40 tonnes applies
2) Airds Road, Minto; Bridge over Bow Bowing Channel between Swaffham Road and Culverston Road. A load limit of 32 tonnes applies.

1.3 State Environmental Planning Policy (Infrastructure) 2007

The proposed development qualifies as a development with relevant size and/or capacity under Clause 104 of the SEPP (Infrastructure) 2007. Accordingly, formal referral to the Roads and Maritime Services (RMS) is required, with their correspondence to be binding on the Development Application (DA).

1.4 Secretary's Environmental Assessment Requirements (SEARs)

As part of this assessment, specific requirements for the preparation of the Environmental Impact Statement for the proposed development are to be addressed. The Secretary's Environmental Assessment Requirements relevant to traffic and transport are as follows, and are addressed within the sections of this report described in **Table 1** (extract reproduced in **Annexure C**, dated July 2017).

TABLE 1: SEARS ITEMS AND SECTION ADDRESSED IN THIS REPORT

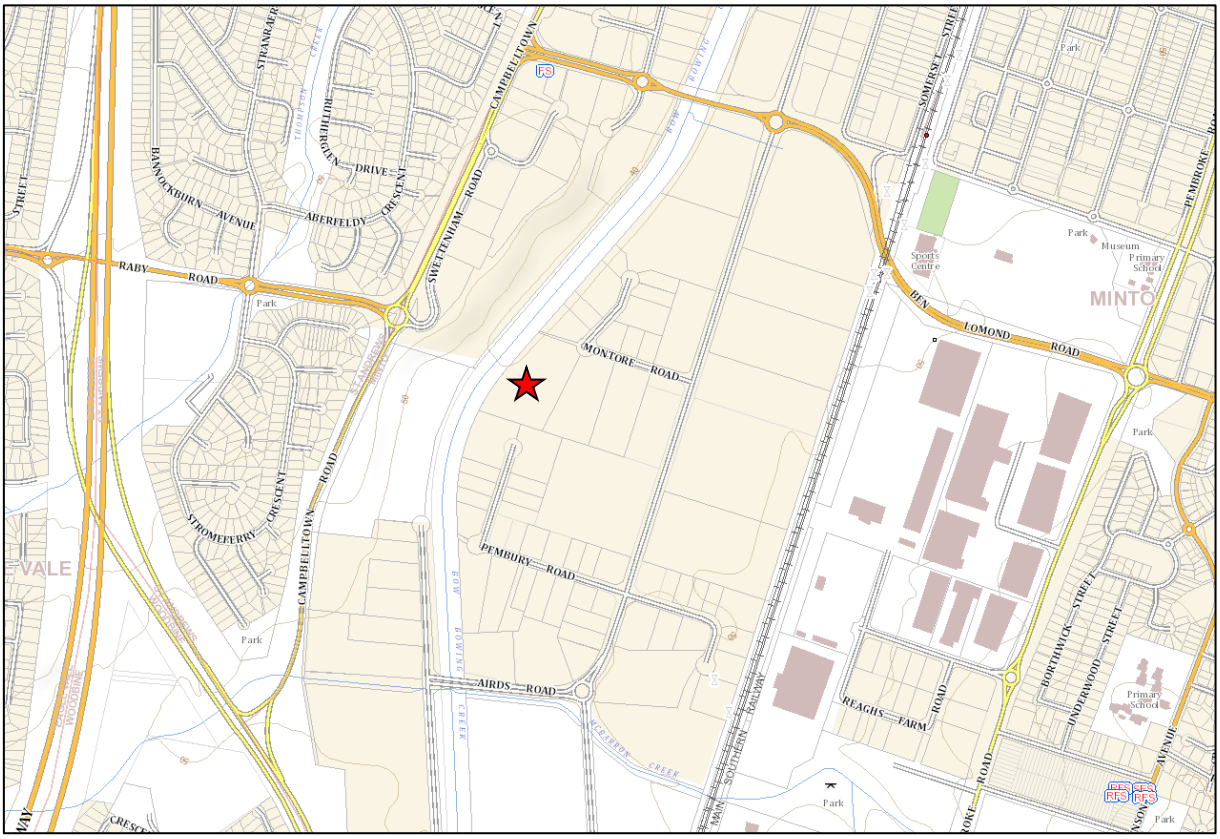
SEARs Item	Addressed Section Number
Details of traffic types and volumes likely to be generated during construction and operation.	**5.1**
Plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queueing in the street network.	**5.4**
An assessment of the predicted impacts of this traffic on the safety and capacity of the surrounding road network and a description of the measure that would be implemented to upgrade and/or maintain this network over time.	**5.3**
Details of key transport, site access, internal roadways, infrastructure works and parking.	**3.5** & **5.2**
Detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.	**3.5**
During the preparation of the EIS, you should consult with the relevant local State and Commonwealth authorities, service providers, community groups and potentially affected landowners. In particular, you must consult with: • Environmental Protection Authority; • Office of Environmental Protection Authority; • Office of Environment and Heritage; • Department of Primary Industries; • NSW Roads and Maritime Service; and • Campbelltown City Council. The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	**4**

1.5 Site Context

The site location is illustrated in **Figure 1** and **Figure 2** below.

Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 Road Hierarchy

Montore Road has the following characteristics within close proximity to the site:

- LOCAL road classification;
- The carriageway is 13m in width with 2 lanes of traffic (one in each direction) and permitted parking on both sides;
- Speed limit of 50km/h applies;
- The site is located at a mid-block bend within Montore Road at its westernmost point.

Airds Road has the following characteristics within close proximity to the site:

- LOCAL road classification;
- Carriageway width of approximately 16m with 2 lanes of traffic (one in each direction);
- Unrestricted kerbside parking permitted on both sides of the roadway;
- Sign posted speed restriction of 60km/h;
- Give way sign control junction with Montore Road.

Pembroke Road has the following characteristics within close proximity to the site:

- RMS Classified STATE road (No. 680);
- The carriageway is generally 8m in width with two (2) lanes of traffic (one in each direction), except for near the signalised intersection with Rose Payten Drive, where it is approximately 22m in width with five (5) lanes of traffic (two in each direction and a single right turn short lane upon all approaches to the intersection);
- Speed limit of 60km/h applies;
- The road is used as a truck route to / from the site.

Ben Lomond Road has the following characteristics within close proximity to the site:

- REGIONAL road (No. 7196);
- Carriageway width of approximately 17m with four (4) lanes of traffic (two in each direction);
- Sign posted speed restriction of 60km/h;
- The road is used as a truck route to / from the site.

The industrial precinct of Minto, in particular the road network, is an approved B-Double route with access from Ben Lomond Road to the north, Pembroke Road to the east or Rose Payten Drive to the south of the site.

2.2 Existing Traffic Management

Within the vicinity of the subject site, the following controls are in place:

- Priority controlled junction of Montore Road / Airds Road;
- Roundabout intersection of Airds Road / Ben Lomond Road;
- Roundabout intersection of Ben Lomond Road / Pembroke Road;
- Signalised intersection of Rose Payten Drive / Pembroke Road / Smith Creek Bypass;
- Signalised junction of Rose Payten Drive / Campbelltown Road.

2.3 Existing Traffic and Parking Environment

Traffic counts were completed at the intersections of Campbelltown Rd / Rose Payten Dr, Ben Lomond Rd / Airds Rd, Airds Rd / Montore Rd, Rose Payten Dr / Pembroke Rd / Smith Street Bypass and Ben Lomond Rd / Pembroke Rd on Thursday 13th December 2018, representing a typical weekday, with results reproduced in **Annexure D** for reference.

Existing intersection performances have been assessed using SIDRA INTERSECTION 8.0. The analysis is summarised in **Table 2** below (detailed results are shown in **Annexure E**).

TABLE 2: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8.0)

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/veh)	Level of Service[3][4]	Control Type	Worst Movement	95th Percentile Queue
EXISTING PERFORMANCE							
Airds Rd / Montore Rd	AM	0.17	1.0 (Worst 8.9)	**NA** (Worst A)	Give Way	RT from Montore Rd (W)	0.3 veh (2.4m) Airds Rd (N)
	PM	0.20	0.9 (Worst 9.7)	**NA** (Worst A)		RT from Montore Rd (W)	0.2 veh (1.8m) Airds Rd (N)
Airds Rd / Ben Lomond Rd	AM	0.66	7.5 (Worst 17.1)	**A** (Worst B)	Roundabout	RT from Airds Road (N)	7.1 veh (52.3m) Ben Lomond Rd (W)
	PM	0.70	9.8 (Worst 21.8)	**A** (Worst B)		RT from Airds Road (N)	8 veh (59.2m) Ben Lomond Rd (W)
Pembroke Rd / Ben Lomond Rd	AM	0.49	8.1 (Worst: 14.2)	**A** (Worst: A)	Roundabout	RT from Pembroke Rd (N)	3.9 veh (27.9m) Pembroke Rd (N)
	PM	0.73	12 (Worst: 24.9)	**A** (Worst: B)		RT from Pembroke Rd (N)	9.4 veh (67m) Pembroke Rd (N)
Rose Payten Dr / Smiths Creek Bypass / Pembroke Rd	AM	0.82	22.6	**B**	Signals	RT from Smiths Creek Bypass (SE)	16.4 veh (117.9m) Pembroke Rd (NE)
	PM	0.70	28.2	**B**		RT from Smiths Creek Bypass (SE)	23 veh (163.4m) Pembroke Rd (NE)
Campbelltown Rd / Rose Payten Dr	AM	0.85	19.9	**B**	Signals	RT from Rose Payten Dr (E)	26.7 veh (194.1m) Campbelltown Rd (N)
	PM	0.84	18.5	**B**		RT from Rose Payten Dr (E)	32.6 veh (233.9m) Campbelltown Rd (N)

NOTES:
(1) The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
(2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
(3) The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
(4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

It is evident from **Table 2** above that all relevant intersections operate at a GOOD Level of Service (LoS) during the weekday peak periods as the surrounding road network has minimal delay. The signalised intersections of Pembroke Road / Rose Payten Drive and Campbelltown Road / Rose Payten Drive are operating at LoS B. These intersections are operating with acceptable delays according to the RMS guidelines.

2.4 Public Transport

The proposed site on Montore Road has numerous public transport networks surrounding the industrial precinct of Minto. Minto Railway Station is approximately 1km walking distance to the north, and Leumeah Railway Station is 3km to the south. Both stations are on the South Line, Cumberland Line and Airport & East Hills Line.

Public bus networks service Minto station as shown below, however, no service runs along Airds Road which would be a key link to the site. This suggests only a low percentage of staff and visitors to the proposed development will utilise public transport. The public transport network map in relation to the site location is shown in **Figure 3**.

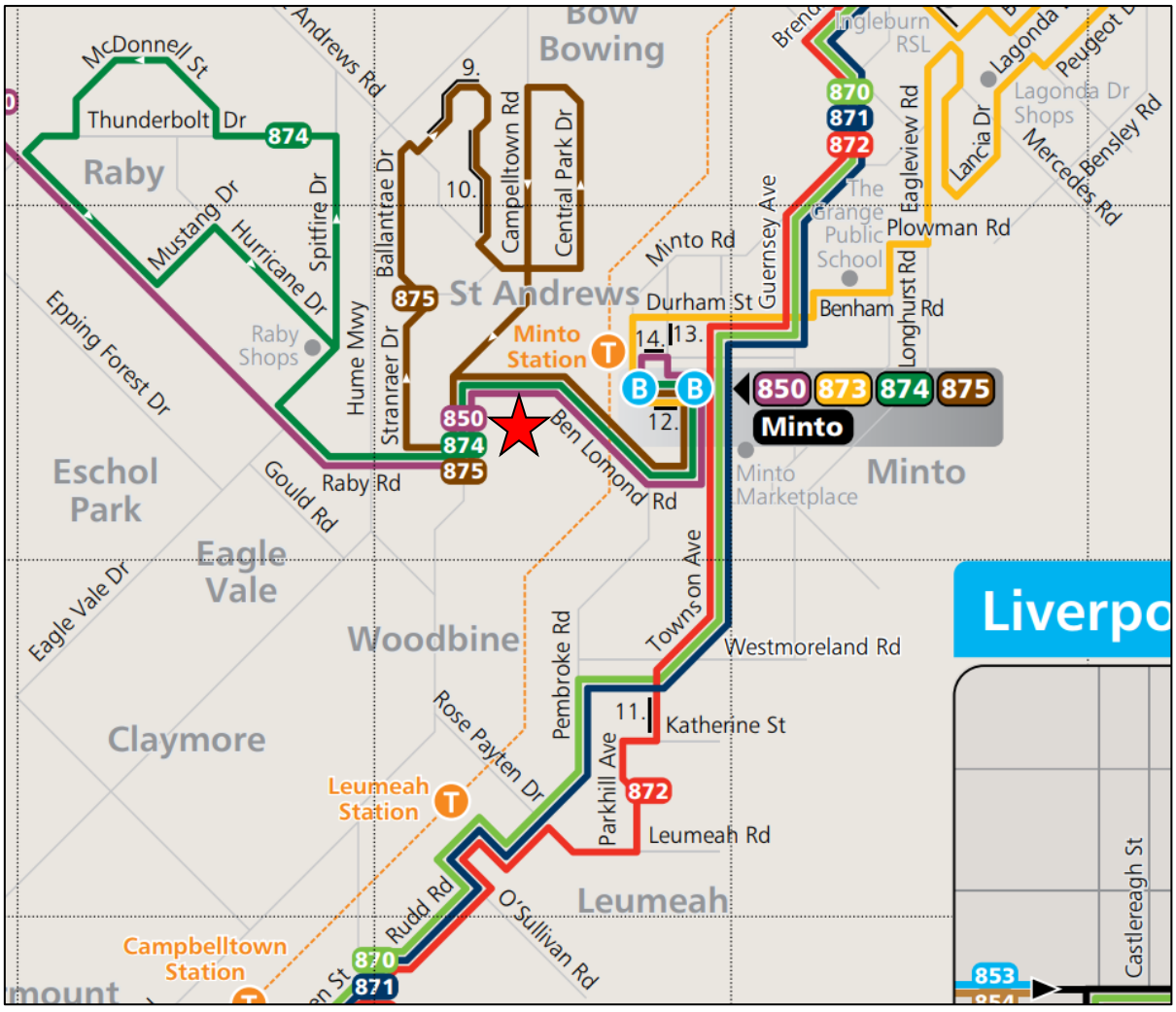


FIGURE 3: PUBLIC TRANSPORTATION NETWORK

3 PARKING ASSESSMENT

3.1 Car Parking Requirement

Whilst *Campbelltown (Sustainable City) Development Control Plan 2015 – Part 6 Industrial Development* provides car parking rates based on storage and office units on-site, it is considered that the operation of the recovery facility, which has small office space and large storage facilities for bulk materials, should be based on a merit assessment.

The subject proposal is expected to have a total of 25 employees, 15 of whom will require the provision of car parking (as the remaining 10 contract drivers will arrive in trucks). It is thus more feasible to provide a parking rate of 1 space per 1 employee onsite at any one time. This will equate to 15 staff car spaces.

Similar developments see approximately 10 visitor trips per day. Parking provision for visitors to the site would be a supply of 1 to 2 car spaces as visitors tend to stay for less than 1-2 hours. This gives a suitable on-site provision of **16** to **17** car parking spaces.

At least one car parking space should be a dedicated disabled space with adjacent shared zone as per AS2890.6:2009.

The proposed layout shows a total of **18** car parking spaces complying with the above recommendations, including one (1) disabled space.

3.2 Bicycle & Motorcycle parking Requirements

Council's DCP does not provide bicycle or motorcycle parking rates for industrial land uses and, as such, no on-site parking for bicycles and motorcycles has been provided. If necessary, there is adequate space within the car parking area to provide bicycle or motorcycle facilities.

3.3 Servicing & Loading

The site will have access for vehicles up to and including 19m semi-trailers, and servicing provisions for the site will be adequately catered for on site. It should be noted that all servicing vehicles should follow the following requirements as per the DCP:

- *Provision shall be made for all loading and unloading to take place wholly within the designated loading area.*
- *No loading or unloading shall be carried out across parking spaces, landscaped areas, pedestrian aisles or on roadways.*
- *Each industrial building/unit having a gross floor area more than 1500 square metres shall provide a loading area to allow for a heavy rigid vehicle to manoeuvre on site.*

The proposed development sufficiently meets these requirements.

3.4 Disabled Parking

Council's DCP requires accessible parking to comply with the minimum standards of the BCA. The BCA does not specify a building class or parking requirement for industrial land uses such as recovery facilities. A provision of one (1) disabled parking space as noted above is therefore considered adequate provision. This is provided and therefore achieves compliance with Council's DCP.

3.5 Car Park Design & Compliance

The car park has been designed to comply with the relevant Australian Standards (AS2890.1:2004, AS2890.6:2009).

Council's DCP further stipulates the following requirements for industrial sites:

- *Sufficient space shall be provided on site so that no vehicle shall be required to make more than a three-point movement to exit the site in a forward direction.*
- *No car parking spaces shall be designed in a stacked configuration.*
- *Each site shall have a:*
  - *(i) maximum of one ingress and one egress for heavy vehicles (combined or separated).*
  - *(ii) each site may have an additional ingress/egress for cars (and other light vehicles).*
- *A minimum of 10% of the required car parking spaces, including disabled spaces, shall be located within close proximity to the main pedestrian entry to the building.*

Each of these conditions has been satisfied in the proposed plans.

3.5.1 Site Access Upgrade

The site access is shown in the plans in **Annexure A**. The proposal requires a significantly wider layback than what is provided on the existing site. The singular layback will provide access and egress to both the weighbridge for AV's and the car park for passenger vehicles. The existing and proposed laybacks are compared in **Figure 4** and **Figure 5** below.

FIGURE 4: EXISTING SITE DRIVEWAY CONDITIONS

Driveway Layback Site

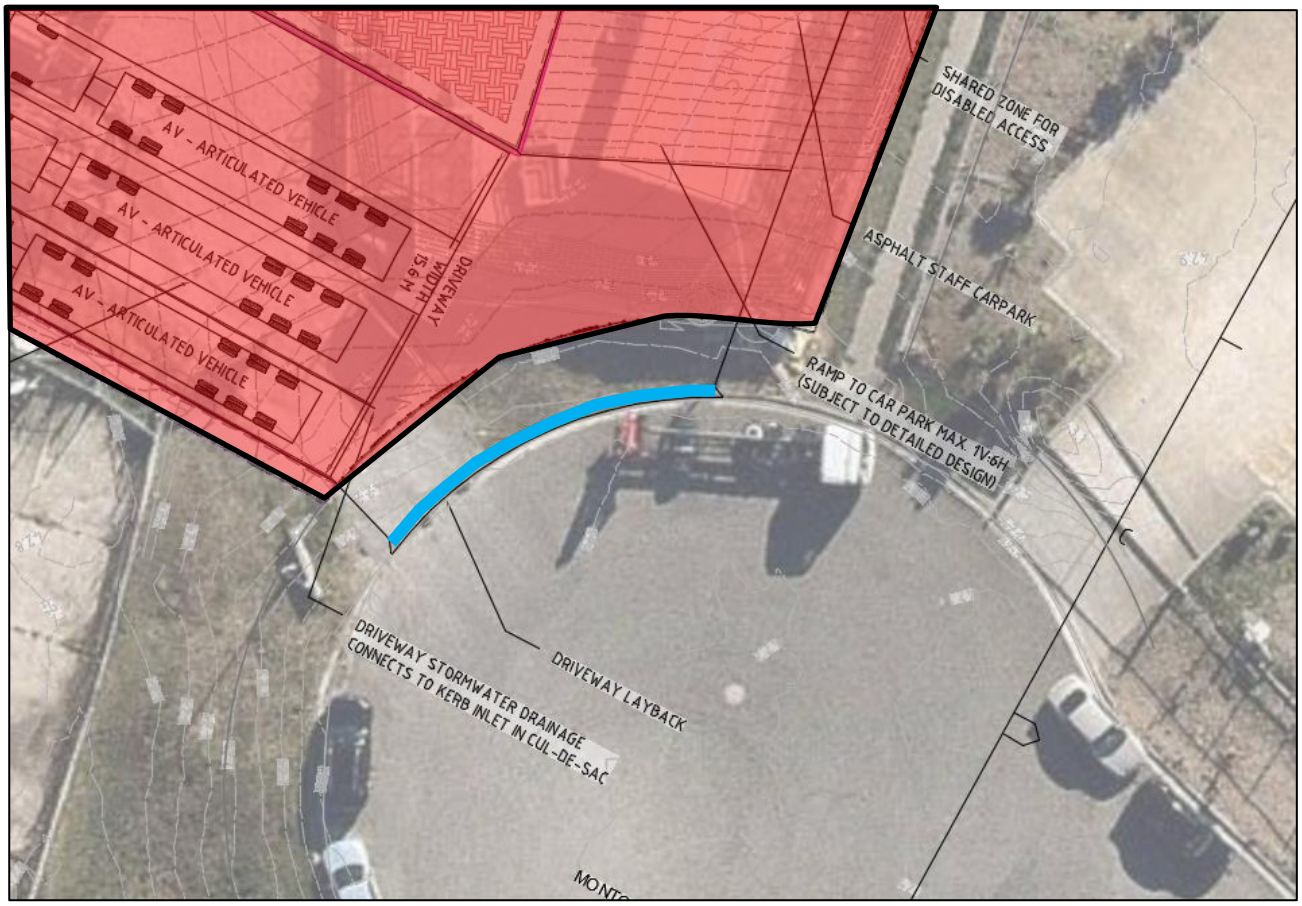


FIGURE 5: PROPOSED SITE DRIVEWAY CONDITIONS

Driveway Layback Site

3.6 Service Vehicle Design and Compliance

The development achieves the following outcomes in terms of servicing and loading:

- Internal clockwise circulation for entering / exiting heavy vehicles;
- Sufficient area to accommodate vehicles up to and including 19m Articulated Vehicles (AV);
- Six (6) waiting bays which can accommodate AVs;
- Driveway widths to accommodate simultaneous AV entry and exit maneuvers.

Swept path tests of AVs circulating within site and entering / exiting the site are reproduced in **Annexure B**.

4 CONSULTATION

4.1 Resident

Concerns from a local resident (Brad Harris) were received via email on Wednesday 6th June 2018 with regard to the proposed development. The resident's concerns are reproduced below:

> *Hi Neil,*
>
> *Thank you for your letter dated 14 May 2018 advising local residents of the subject proposal.*
>
> *My wife and I live at 7 Indaal Place St. Andrews. Whilst I would not anticipate being unduly affected by the proposal, having been subjected to extreme noise impacts from a glass crushing plant in Swaffham Road Minto, (which Council in its wisdom approved for 24 hours operation) I nonetheless wish to ensure that noise impacts are adequately addressed. The glass crushing plant is operating in flagrant disregard of conditions of consent and I will be making a complaint to Council in this regard.*
>
> *Knowing that Industrial developments regard themselves as 'out of sight, out of mind' and rarely fully comply with conditions of consent, I encourage you to ensure the impact on residential properties in St. Andrews to the west of the site is carefully addressed and hours of operation recommended to reflect the potential for noise impacts associated with truck movements and crushing of materials. A Plan of Management should be prepared which requires post-approval monitoring of noise levels (at least for a period of time) to ensure anticipated noise levels are complied with.*
>
> *In relation to traffic impacts the route of trucks exiting the site and intending to travel north on the Hume Motorway should be carefully assessed. If these trucks head north along Airds Road, west along Ben Lomond Road, south along Campbelltown Road and then west along Raby Road in order to access the Motorway, they will contribute to the increasingly heavy traffic flows on Raby Road resulting from traffic westbound toward newly developed residential estates in the South West Growth Sector. The constant stream of traffic heading west on Raby Road during the PM peak makes it almost impossible for cars wishing to turn right at the roundabout at the Motorway entry/Campbelltown Road exit point to find a break in traffic. This roundabout is hopelessly inadequate because of its location and the imbalance in traffic flows. One reason is that there is only one entry point onto Raby Road and this does not result in enough breaks in the east-west flow of traffic to enable cars entering from the Campbelltown Road off-ramp. Cars travelling west on Raby Road do not even slow down presuming (incorrectly) that they have right of way.*
>
> *The roundabout at Raby Road/Stromeferry Crescent/Stranraer Drive is also problematic having regard to the imbalance of east-west and north-south traffic. Again, Raby Road traffic assumes it has right of way and there is little chance for local St. Andrews residents to break into the stream of traffic in Raby Road.*
>
> *In my opinion, trucks from the proposed facility, should by way of an adopted Management Plan, require drivers travelling north on the Hume Motorway*

to exit south along Airds Road in order to enter Campbelltown Road (and then onto the Motorway) via Rose Paten Drive.

Please let me know if your require any clarification of the above concerns.

Regards,

Brad Harris

A consultation meeting was undertaken on Monday 26th November 2018 between 5-6PM at the residence of Mr and Mrs Harris. The parties in attendance to the consultation meeting were Mr and Mrs Harris, Mr Brent Lawson and Mr Craig McLaren.

In response to the resident concerns outlined above, the applicant and traffic consultant illustrated that a natural restriction by large articulated trucks exists by the existing load limits on bridges on Ben Lomond Road (40 tonne limit) and Airds Road (32 tonne limit). Light vehicles and rigid trucks that are generated by the proposed resource recovery facility that could use Raby Road will be low in quantity and will have no discernible impact on Raby Road, particularly the roundabout intersection of Raby Road / Stromeferry Crescent / Stranraer Drive and the roundabout offramp immediately to the west of Hume Motorway.

4.2 Council

Consultation with Campbelltown City Council resulted in several requirements for the preparation of an E.I.S. presented in an email from Brendan Leo, dated 25th June 2012. The requirements relevant to this traffic assessment are presented below:

- *Traffic Study*
- *Location of the weighbridge so that trucks waiting to dump concrete do not queue on public roads.*

A traffic study has been undertaken and is presented within this report. The location of the weighbridge with respect to trucks queueing onto the public road was analysed and presented in **Section 5.4** which shows that there is sufficient space onsite to accommodate queuing from the weigh bridge.

4.3 NSW Roads and Maritime Service

Consultation with RMS resulted in several issues to be included in this traffic report included in an email from James Hall, dated 29th June 2012. The issues are presented below:

- *Daily and peak traffic movements likely to be generated by the proposed development including the impact on nearby intersection and the need / associated funding for upgrading or road improvement works (if required)*
- *Details of the proposed accesses and the parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards (ie: turn paths, sight distance requirements, aisle widths, etc).*
- *Proposed number of car parking spaces and compliance with the appropriate parking codes.*
- *Details of service vehicle movements (including vehicle type and likely arrival and departure times).*

A parking and traffic assessment was undertaken in **Section 3** and **Section 4** which address each of the issues raised by RMS.

5 TRAFFIC ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

5.1 Traffic Generation

Traffic generation associated with the proposed Resource Recovery Facility is based on the sites annual production (50-week year), truck capacities and expected daily input and output of materials. The traffic generation has been calculated for weekday and weekend as follows and summarised in **Figure 6** & **Figure 7** respectively:

Expected weekday process tonnage = 1,600 t/day

Average capacity of 18 tonnes for inbound vehicles and 20 tonnes for outbound vehicles

Product	In	Out
Raw waste materials	89 loaded	89 empty
Processed product from site	80 empty	80 loaded
Other materials for off-site recycling	1 empty	1 loaded
Residual waste to landfill	1 empty	1 loaded
Total	**171**	**171**

FIGURE 6: DAILY ESTIMATED WEEKDAY TRUCK MOVEMENTS

Expected weekend process tonnage = 1,000 t/day (Only operating on Saturdays)

Average capacity of 18 tonnes for inbound vehicles and 20 tonnes for outbound vehicles

Product	In	Out
Raw waste materials	56 loaded	56 empty
Processed product from site	50 empty	50 loaded
Total	**106**	**106**

FIGURE 7: DAILY ESTIMATED WEEKEND TRUCK MOVEMENTS

Table 2 below breaks down the proposed arrival/departure rates of inbound and outbound trucks over a typical weekday (operating hours 6:00am to 7:00pm).

TABLE 2: TRUCK TRAFFIC GENERATION

Period	Inbound	Outbound
6:00-8:00am	20	51
8:00-10:00am	37	51
10:00am-12:00pm	37	33
12:00-2:00pm	37	26
2:00-5:00pm	40	10
Daily Total	**171**	**171**

The total number of daily truck trips (entering and exiting the site) will therefore be 342 on any given weekday. The morning peak period occurs between 8:00-10:00am with a total of 88 truck trips. The afternoon peak period will occur between 12:00-2:00pm with a total of 63 truck trips. For the purpose of analysis and as a worst-case scenario, peak hour rates of 44 vehicle trips for the AM (18 inbound; 26 outbound) and 32 for the PM (19 inbound: 13 outbound) will be adopted.

Staff vehicle trips will occur predominately outside of the site's operating hours.

5.2 Traffic Assignment

The traffic assignment for the proposed development and associated vehicle trips will be similar to that described below:

- Inbound
    - 90% from the north feeding from the M5 and M7; and
    - 10% will travel from the local streets in the precinct.
- Outbound
    - 30% of outbound trips will travel to the north;
    - 30% will travel to the south;
    - 30% will travel to the west; and
    - 10% will travel throughout the local streets.

The masses of the trucks are expected to be:

- All empty vehicles will be less than 32-tonnes;
- 45% of full trucks will be greater than 40-tonnes;
- 55% of full trucks will be less than 32-tonnes.

The volumes associated with relevant turning movements are summarised in **Annexure F** along with alternate routes for different sized trucks affected by tonnage limits over Bow Bowing Creek.

5.3 Traffic Impact

The impact of the traffic generated by the site has been loaded onto the road network analysed in **Section 2.3**. Analysis was carried out using the SIDRA 8.0 program with the results summarised in **Table 4** below and the detailed output reproduced in **Annexure G**.

TABLE 4: FUTURE INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8.0)

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/veh)	Level of Service[3]	Control Type	Worst Movement	95th Percentile Queue
FUTURE PERFORMANCE							
Airds Rd / Montore Rd	AM	0.18	1.8 (Worst: 12.2)	**NA** (Worst: A)	Give Way	RT from Montore Rd (W)	0.4 veh (3.2m) Airds Rd (N)
	PM	0.22	1.4 (Worst: 13.5)	**NA** (Worst: A)		RT from Montore Rd (W)	0.4 veh (2.9m) Airds Rd (N)
Airds Rd / Ben Lomond Rd	AM	0.67	7.6 (Worst: 17.3)	**A** (Worst: B)	Roundabout	RT from Airds Road (N)	7.3 veh (53.3m) Ben Lomond Rd (W)
	PM	0.70	10 (Worst: 22.3)	**A** (Worst: B)		RT from Airds Road (N)	8.2 veh (60.8m) Ben Lomond Rd (W)
Pembroke Rd / Ben Lomond Rd	AM	0.50	8.3 (Worst: 14.4)	**A** (Worst: A)	Roundabout	RT from Pembroke Rd (N)	4 veh (28.8m) Pembroke Rd (N)
	PM	0.74	12.3 (Worst: 25.6)	**A** (Worst: B)		RT from Pembroke Rd (N)	9.6 veh (68.7m) Pembroke Rd (N)
Rose Payten Dr / Smiths Creek Bypass / Pembroke Rd	AM	0.82	22.6	**B**	Signals	RT from Smiths Creek Bypass (SE)	16.4 veh (117.9m) Pembroke Rd (NE)
	PM	0.71	28.2	**B**		RT from Smiths Creek Bypass (SE)	23 veh (163.2m) Pembroke Rd (NE)
Campbelltown Rd / Campbelltown Rd	AM	0.85	20.1	**B**	Signals	RT from Rose Payton Dr (E)	26.7 veh (194.1m) Campbelltown Rd (N)
	PM	0.84	18.5	**B**		RT from Rose Payton Dr (E)	32.6 veh (233.9m) Campbelltown Rd (N)

NOTES:

(1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.

(2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.

(3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

The loaded traffic outlined in **Section 5.1** has had little to no impact on the performance of all intersections in comparison to the results shown in **Table 2**. The traffic associated with the site has been readily accommodated by the surrounding road network.

5.4 Queuing at Entrance to Weighbridge

Six (6) standing bays are provided at the entrance to the site before the weighbridge to accommodate vehicles waiting to enter the site while another vehicle is being weighed and recorded. Queue length calculations have been undertaken based on the above inbound traffic generation and the analysis is reproduced in **Annexure H** for reference.

5.4.1 Queuing Analysis

It is estimated that the weighbridge operation will take approximately 60 seconds per vehicle to complete, however, 95% of outgoing trucks entering the site empty won't stop on the weighbridge as the empty masses will be known.

Based on a peak hour traffic generation of **19** vehicles and as a worst-case scenario, all trucks entering the site are laden with material such they are required to stop on the weighbridge. The resulting 98th percentile queue is **2** vehicles which are accommodated on site and represents compliance with the 98th percentile traffic demand.

6 Operational Plan of Management & Driver Code of Conduct

The traffic management component of the Operational Plan of Management (OPM) and Driver Code of Conduct (DCC) has been attached in **Annexure I** for reference.

The traffic management component of the OPM and DCC outlines the following:

- Site inductions for drivers;
- Operational and management procedures,
- Driver safety and behaviour;
- Incident responses;
- Vehicular movement restrictions.

7 CONCLUSION

The proposed development is supportable on traffic grounds in terms of traffic flow efficiency, road safety and local amenity considerations.

The onsite parking supply, calculated on a merits-based approach, results in a requirement of 16 to 17 car parking spaces which will be adequate to serve the proposed staff and expected visitor numbers. The proposed layout shows a total of 18 car parking spaces (including 1 disabled space) complying with the above recommendations.

All traffic will ingress and egress via one existing entry/exit driveway from Montore Road. The car parking design complies with the relevant Australian Standards, with the clockwise internal circulation the most practicable and safest operation.

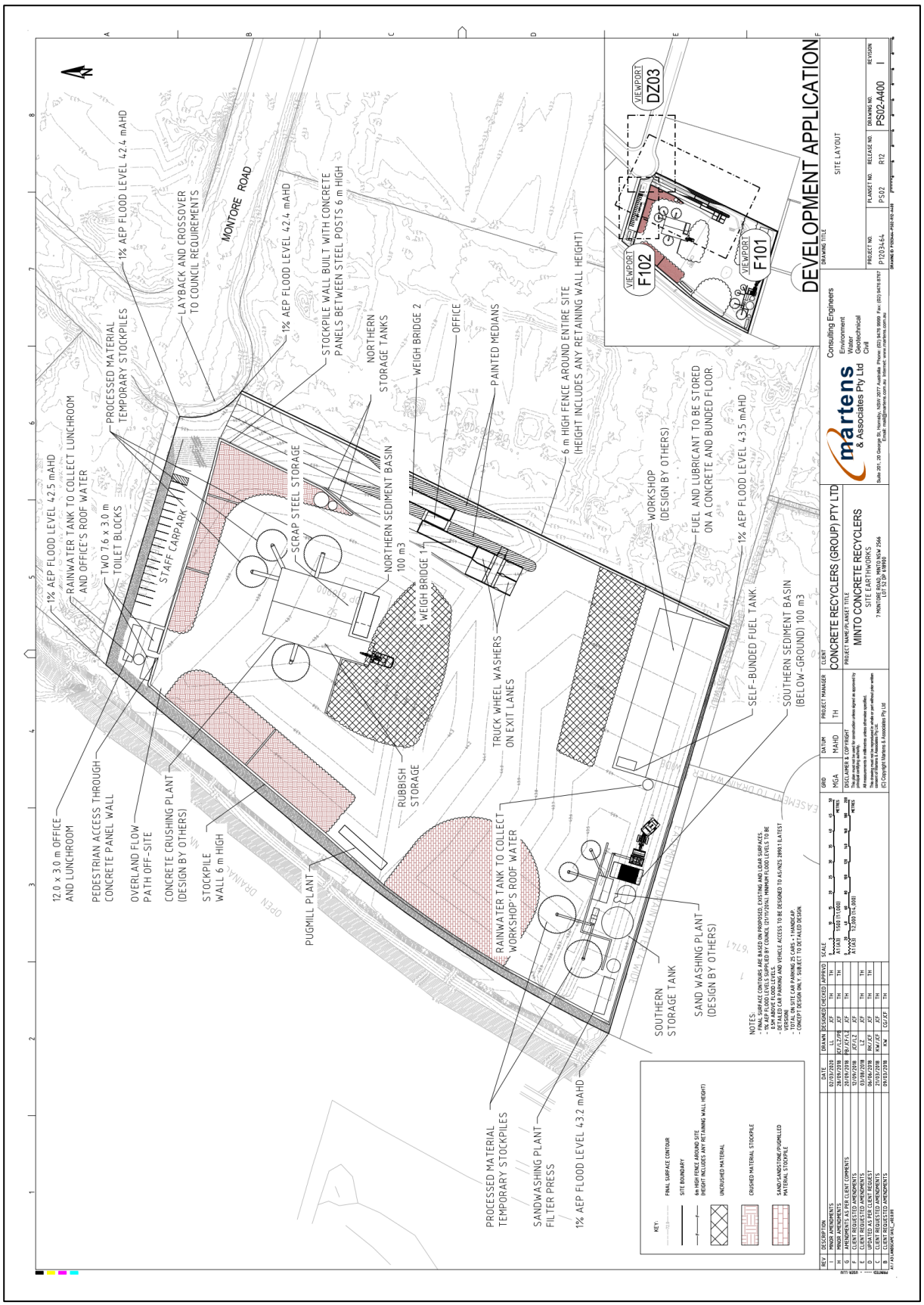
The proposed development will operate with a capacity of 1,600t per day, generating a total of 342 vehicle trips during the day. This includes a morning peak hour generation of 44 vehicle trips, with 32 vehicle trips in the afternoon peak hour. Analysis shows the surrounding road network can adequately cater for the additional traffic generated.

The haulage routes will predominantly favour the approaches from Ben Lomond Road to the north and Rose Payten Drive to the south, both of which are RMS approved B-Double routes.

To reduce impacts on local residents, drivers of laden heavy vehicles will be required under an Operational Plan of Management and Driver Code of Conduct to follow the routes outlined in **Annexure I** and to avoid Raby Road between Campbelltown Road and Eagle Vale Drive.

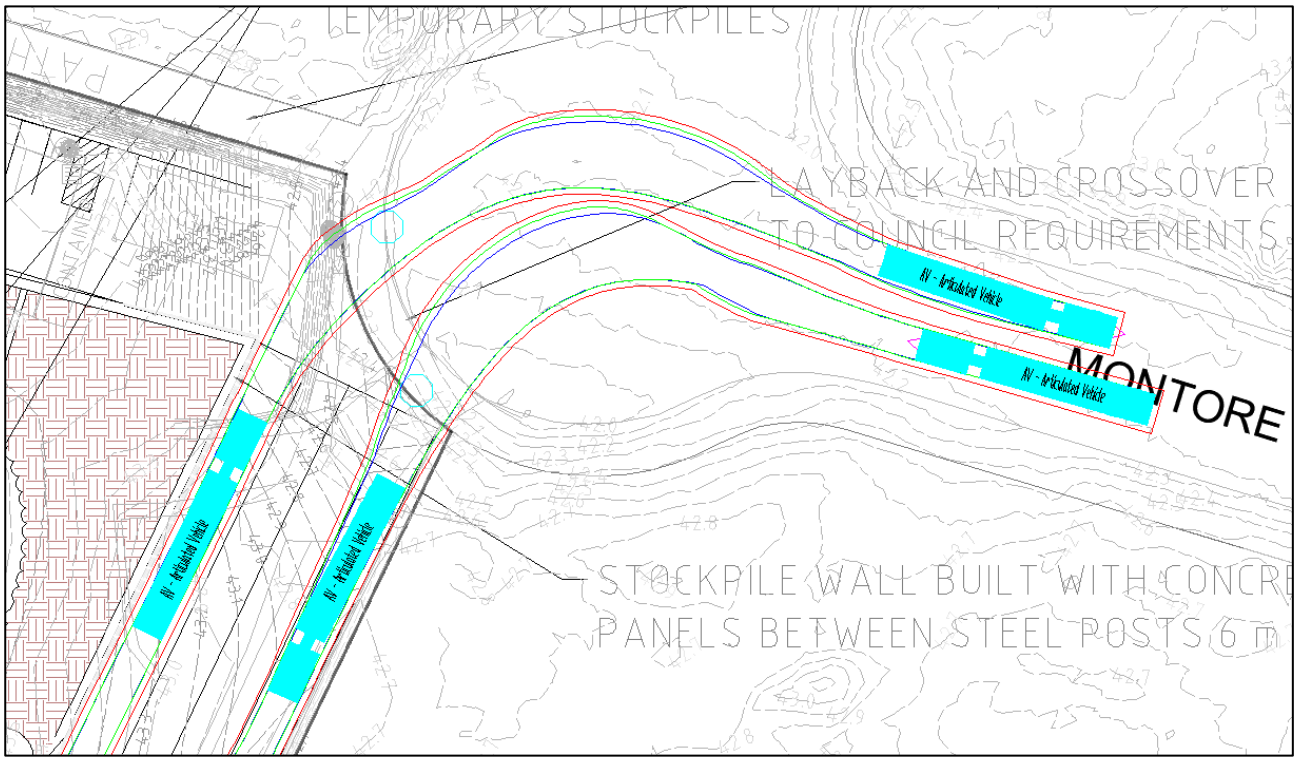
ANNEXURE A: PROPOSED PLAN

(SHEET 1 OF 1)



ANNEXURE B: SWEPT PATH TESTS

(Sheet 1 of 4)

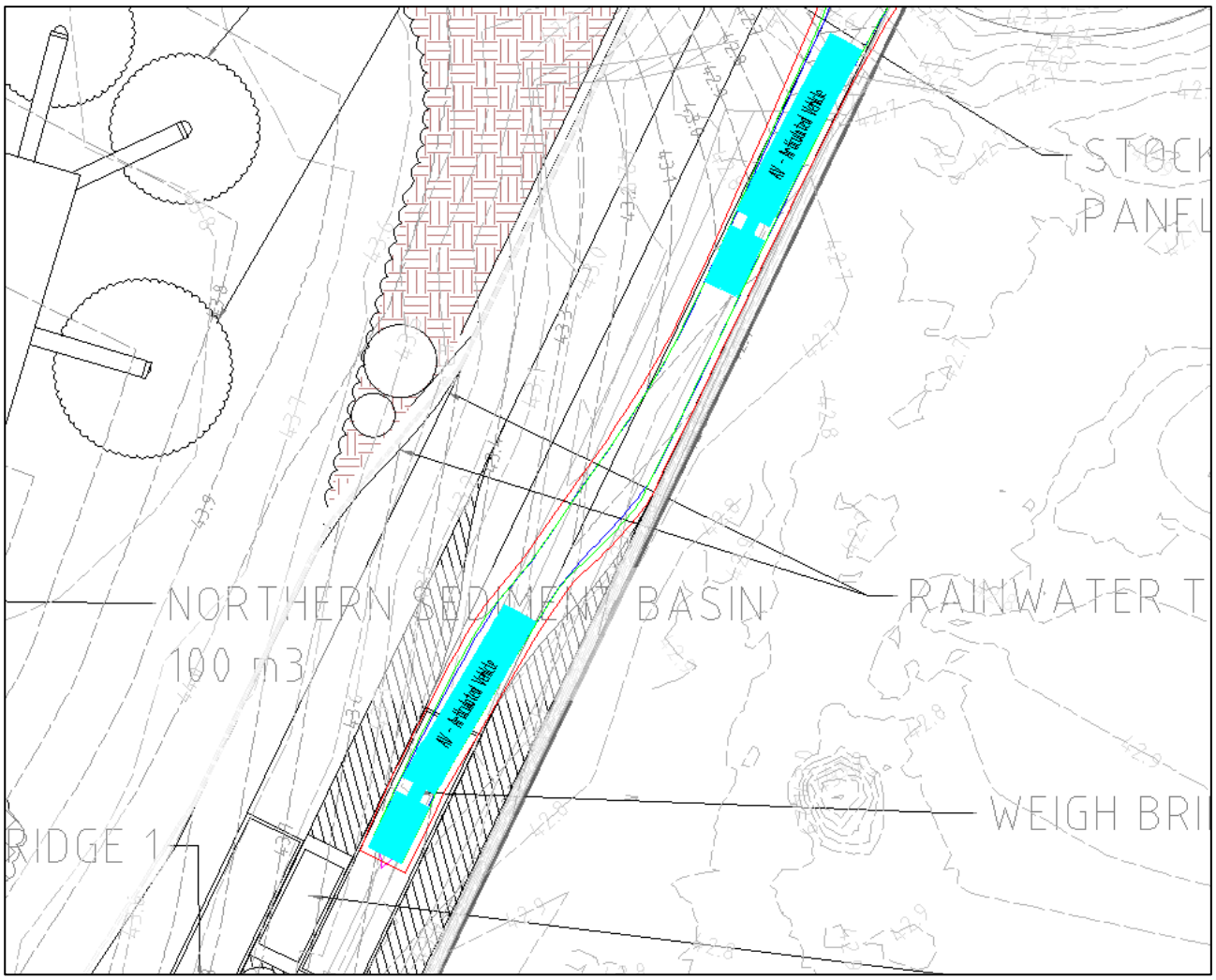


19m Articulated Vehicle site entry / exit
Tested @ 10km/h within public road, 5km/h internally
Successful

Blue = Tyre Path
Green = Vehicle body
Red = 500mm clearance

Annexure B: SWEPT PATH TESTS

(Sheet 2 of 4)

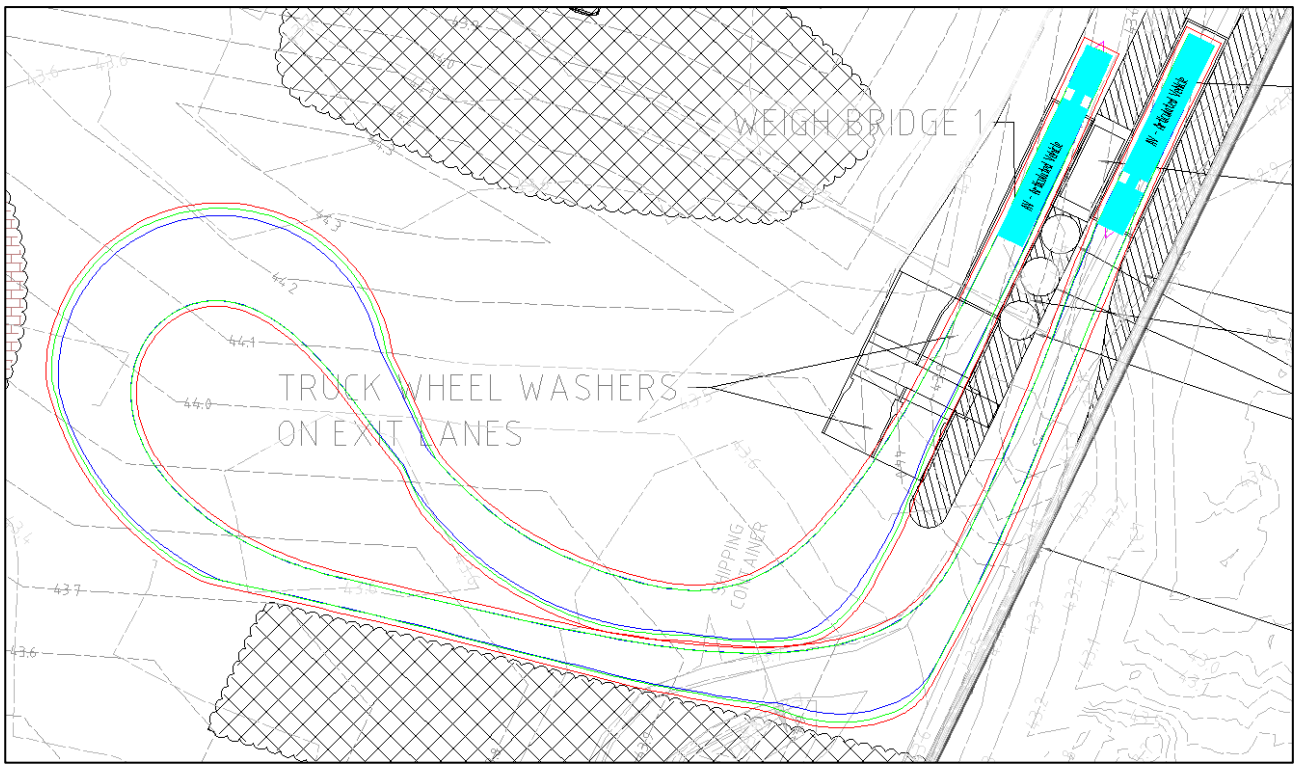


19m Semi-Articulated entry onto weighbridge from queue
Tested @ 5km/h
Successful

Blue = Tyre Path
Green = Vehicle body
Red = 500mm clearance

Annexure B: SWEPT PATH TESTS

(Sheet 3 of 4)

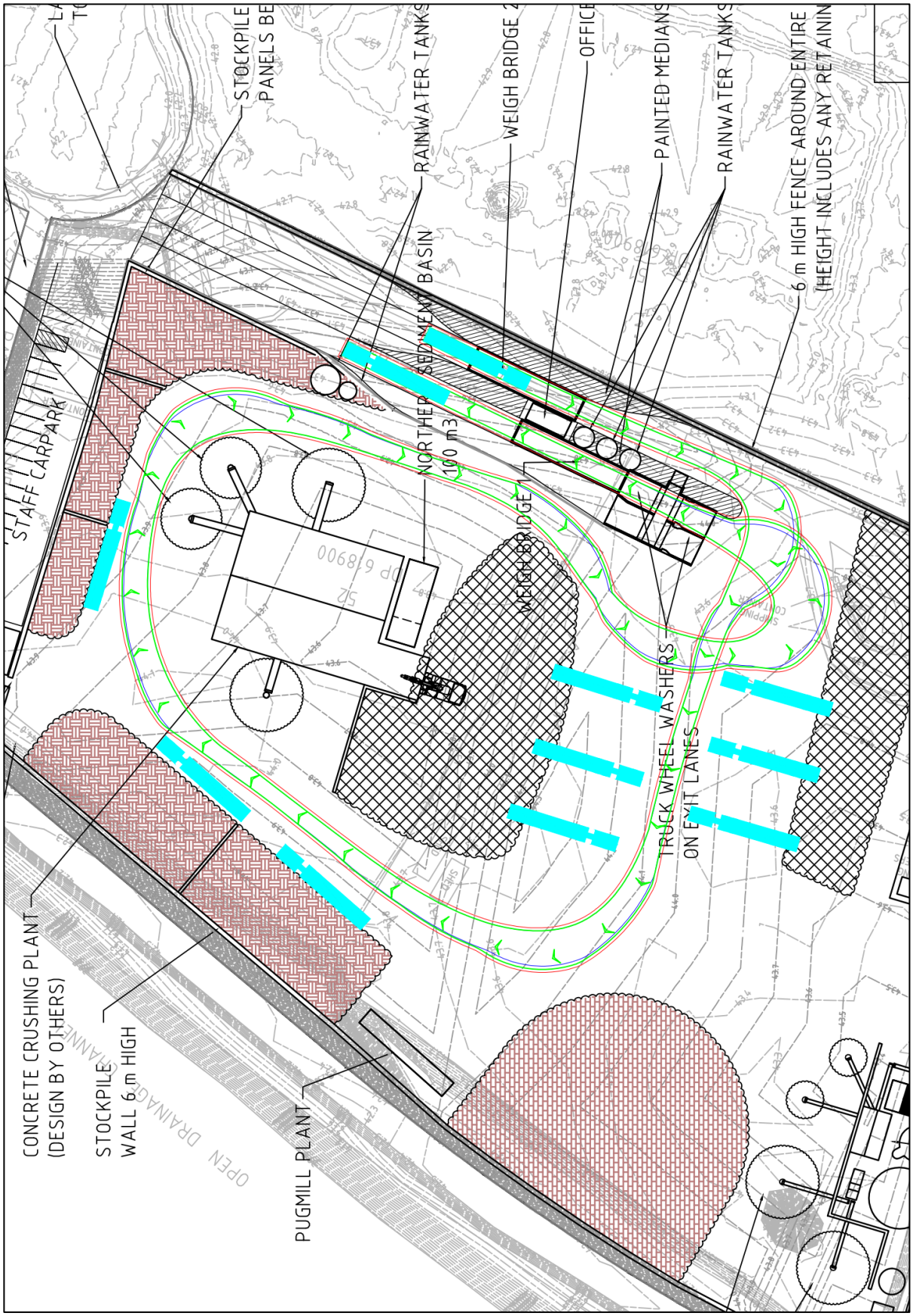


19m Articulated Vehicle turnaround on-site, exiting via truck wheel wash
Tested @ 5km/h
Successful

Blue = Tyre Path
Green = Vehicle body
Red = 500mm clearance

Annexure B: SWEPT PATH TESTS

(Sheet 1 of 4)



AV Circulation - SUCCESSFUL

ANNEXURE C: SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

(Sheet 1 of 3)

NSW GOVERNMENT Planning & Environment

Contact: Emma Barnet
Phone: (02) 9274 6412
Email: emma.barnet@planning.nsw.gov.au

Mr Neil Kennan
Nexus Environmental Planning Pty Ltd
PO Box 212
Concord NSW 2137

kennan@ozemail.com.au

Dear Mr Kennan

State Significant Development – Secretary's Environmental Assessment Requirements
Minto Waste and Resource Recovery Facility – (SSD 5339)

Please find attached amended Secretary's Environmental Assessment Requirements (SEARs) for the proposed Minto Waste and Resource Recovery Facility at 7 Montore Road, Minto in the Campbelltown local government area (LGA).

The SEARs have been amended to update the Technical and Policy Guidelines in Attachment 1 and provide additional requirements in relation to the following key issues:

- Soil and Water;
- Traffic and Transport; and
- Fire and Incident Management.

The Department has not carried out additional consultation with the government agencies or Council and the comments and requirements previously provided in Attachment 2 remain valid. Please note that the Secretary may alter the SEARs at any time.

You must consult further with the Secretary if you do not lodge a development application and Environmental Impact Statement (EIS) for the development by 31 December 2018.

I wish to emphasise the importance of effective and genuine community consultation and the need for the proposal to proactively respond to the community's concerns. Accordingly, you must undertake a comprehensive, detailed and genuine community consultation and engagement process during the preparation of the EIS. This process must ensure that the community is informed of the development and engaged with issues of concern to them. Sufficient information must be provided to the community to enable a good understanding of the development and any potential impacts.

Your development may require separate approval under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). If an EPBC Act approval is required, please advise the Department accordingly, as the Commonwealth assessment process may be integrated into the NSW assessment process, and supplementary SEARs may need to be issued.

Please contact the Department at least two weeks before you intend lodge the EIS and any associated documentation for the development. This will enable the Department to determine the:

- applicable fee (under Division 1AA, Part 15 of the *Environmental Planning and Assessment Regulation 2000*); and
- consultation and public exhibition arrangements, including copies and format requirements of the EIS.

Department of Planning & Environment
Level 22, 320 Pitt Street Sydney NSW 2000 | GPO Box 39 Sydney NSW 2001 | T 1300 305 695 | **www.planning.nsw.gov.au**

ANNEXURE C: SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

(Sheet 2 of 3)

If you have any enquiries about these SEARs, please contact Emma Barnet on the details above.

Yours sincerely

Chris Ritchie 11/7/17.
Director
Industry Assessments
as delegate of the Secretary

Department of Planning & Environment
Level 22, 320 Pitt Street Sydney NSW 2000 | GPO Box 39 Sydney NSW 2001 | T 1300 305 695 | **www.planning.nsw.gov.au**

ANNEXURE C: SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

(Sheet 3 of 3)

following specific matters:

- **strategic context** – including:
  - justification for the proposal and suitability of the site; and
  - demonstration that the proposal is generally consistent with all relevant planning strategies, environmental planning instruments, and justification for any inconsistencies.
- **waste management** – including:
  - identify, classify and quantify the likely waste streams that would be handled/stored/disposed of at the facility;
  - describe how this waste would be treated, stored, used, disposed and handled on site, and transported to and from the site, and the potential impacts associated with these issues, including current and future offsite waste disposal methods;
  - details on the location and size of stockpiles of unprocessed and processed recycled waste at the site;
  - identify proposed sources of the waste; and
  - the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the *NSW Waste Avoidance and Resource Recovery Strategy 2007* and *Draft NSW Waste Avoidance and Resource Recovery Strategy 2013-21*.
- **air quality and odour** – including:
  - a quantitative assessment of the potential air quality and odour impacts for the development on surrounding landowners and sensitive receptors;
  - construction and operational impacts, including dust generation from the transport of materials; and
  - details of the proposed management and monitoring measures.
- **traffic and transport** – including:
  - details of traffic types and volumes likely to be generated during construction and operation;
  - plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network;
  - an assessment of the predicted impacts of this traffic on the safety and capacity of the surrounding road network and a description of the measures that would be implemented to upgrade and/or maintain this network over time;
  - details of key transport routes, site access, internal roadways, infrastructure works and parking; and
  - detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.
- **noise and vibration** – including:
  - a quantitative assessment of the potential construction, operational and transport noise and vibration impacts; and
  - details of the proposed noise and vibration management and monitoring measures.
- **soil and water** – including:
  - a detailed water balance for the development outlining the measures that would be implemented to minimise the use of water on site and measures to ensure an adequate and secure water supply is available for the proposal;
  - wastewater predictions, and the measures that would be implemented to treat, reuse and/or dispose of this water;
  - the proposed erosion and sediment controls during construction;
  - the proposed stormwater management system;
  - characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria (including details of the contaminants of concern that may leach from waste into the wastewater and proposed mitigation measures to manage any impacts to receiving waters);

ANNEXURE D: TRAFFIC SURVEY

(Sheet 1 of 5)

TRANS TRAFFIC SURVEY trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Montore Rd and Airds Rd, Minto

GPS	-34.03192, 150.83729
Date:	Thu 13/12/18
Weather:	Overcast
Suburban:	Minto
Customer:	McLaren

North:	Airds Rd
East:	N/A
South:	Airds Rd
West:	Montore Rd

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	3:15 PM-4:15 PM

All Vehicles

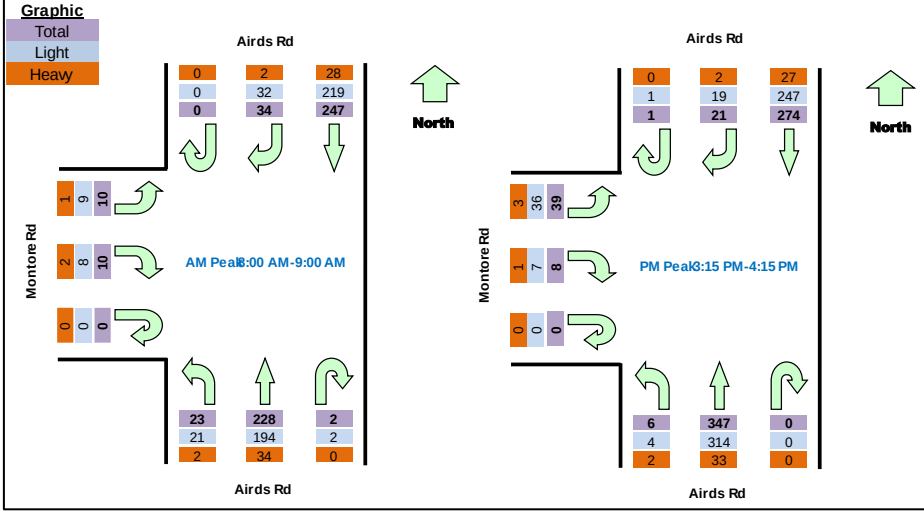
Time		North Approach Airds Rd			South Approach Airds Rd			West Approach Montore Rd			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:00	7:15	0	15	65	0	42	6	0	0	2	450	
7:15	7:30	0	8	43	0	47	5	0	0	2	459	
7:30	7:45	0	2	40	0	49	6	0	1	2	479	
7:45	8:00	0	7	46	1	46	9	0	1	5	524	
8:00	8:15	0	12	65	1	52	4	0	3	2	554	Peak
8:15	8:30	0	10	57	1	48	6	0	2	1	546	
8:30	8:45	0	5	63	0	63	6	0	4	4	553	
8:45	9:00	0	7	62	0	65	7	0	1	3	538	
9:00	9:15	0	10	57	0	49	4	0	4	7	513	
9:15	9:30	0	4	56	0	58	5	0	4	5		
9:30	9:45	0	3	57	0	65	4	0	0	1		
9:45	10:00	0	8	46	0	51	9	0	3	3		
15:00	15:15	0	5	53	0	86	3	1	5	8	684	
15:15	15:30	1	1	72	0	98	4	0	2	6	696	Peak
15:30	15:45	0	8	59	0	75	0	0	1	6	660	
15:45	16:00	0	8	67	0	99	2	0	0	14	635	
16:00	16:15	0	4	76	0	75	0	0	5	13	591	
16:15	16:30	0	4	63	0	67	0	0	4	10	573	
16:30	16:45	0	3	64	0	50	2	0	1	4	605	
16:45	17:00	2	6	62	0	62	1	0	4	9	613	
17:00	17:15	0	2	72	0	60	2	0	5	14	599	
17:15	17:30	0	5	75	0	78	1	0	9	12		
17:30	17:45	1	6	61	0	55	0	0	3	6		
17:45	18:00	1	3	65	0	47	2	0	6	8		

Peak Time		North Approach Airds Rd			South Approach Airds Rd			West Approach Montore Rd			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	34	247	2	228	23	0	10	10	554
15:15	16:15	1	21	274	0	347	6	0	8	39	696

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuratio

Graphic

Total
Light
Heavy



ANNEXURE D: TRAFFIC SURVEY

(Sheet 2 of 5)

TRANS TRAFFIC SURVEY trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Ben Lomond Rd and Airds Rd, Minto

GPS	*-34.02707, 150.83916*
Date:	Thu 13/12/18
Weather:	Overcast
Suburban:	Minto
Customer:	McLaren

North:	Airds Rd
East:	Ben Lomond Rd
South:	Airds Rd
West:	Ben Lomond Rd

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	3:15 PM-4:15 PM

All Vehicles

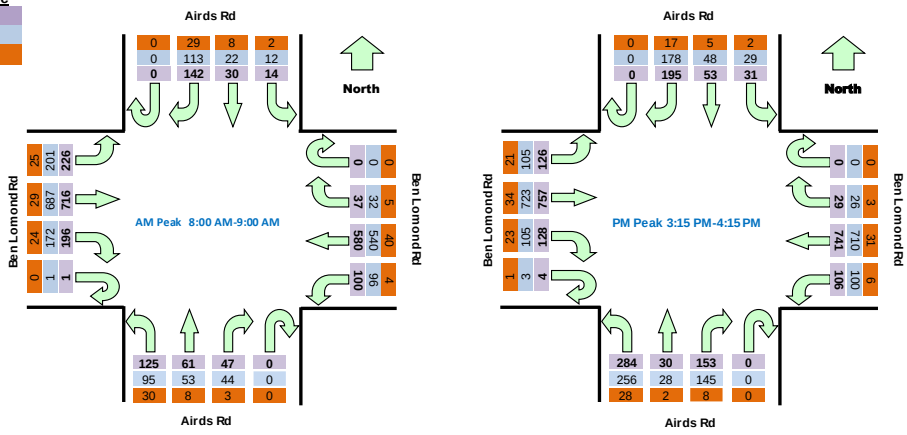
Time		North Approach Airds Rd				East Approach Ben Lomond Rd				South Approach Airds Rd				West Approach Ben Lomond Rd				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	38	2	4	0	10	118	31	0	7	17	26	0	59	104	77	2043	
7:15	7:30	0	39	5	4	0	7	141	13	0	13	12	36	0	29	116	92	2110	
7:30	7:45	0	40	4	0	0	13	115	33	0	13	12	33	0	36	108	89	2162	
7:45	8:00	0	50	6	2	0	10	139	24	0	15	10	28	0	30	142	91	2241	
8:00	8:15	0	39	6	2	0	8	132	23	0	8	19	25	1	65	158	74	2275	Peak
8:15	8:30	0	53	10	3	0	13	145	18	0	10	9	31	0	44	157	66	2224	
8:30	8:45	0	28	6	4	0	6	164	33	0	13	19	31	0	44	188	39	2173	
8:45	9:00	0	22	8	5	0	10	139	26	0	16	14	38	0	43	213	47	2075	
9:00	9:15	0	17	1	5	0	8	155	32	0	15	10	32	1	46	156	31	1922	
9:15	9:30	1	23	9	1	0	13	153	22	0	14	13	32	2	27	163	35		
9:30	9:45	0	24	4	4	0	11	159	24	0	16	9	45	0	34	118	29		
9:45	10:00	0	23	5	4	0	3	134	19	3	13	9	34	2	28	122	29		
15:00	15:15	0	38	8	5	1	7	195	17	0	35	14	50	2	28	158	31	2587	
15:15	15:30	0	45	14	8	0	9	222	31	0	44	6	90	1	23	172	32	2637	Peak
15:30	15:45	0	54	11	6	0	4	194	22	0	34	6	62	2	34	191	25	2568	
15:45	16:00	0	50	15	15	0	9	150	29	0	45	11	71	1	34	195	31	2502	
16:00	16:15	0	46	13	2	0	7	175	24	0	30	7	61	0	37	199	38	2466	
16:15	16:30	0	71	18	12	0	5	163	18	0	33	6	56	1	24	195	26	2478	
16:30	16:45	0	67	14	9	0	7	151	20	0	24	5	43	0	30	180	29	2595	
16:45	17:00	0	53	13	7	1	5	168	15	0	33	8	53	0	40	197	27	2632	
17:00	17:15	0	57	12	3	0	7	186	20	0	27	4	63	0	33	206	33	2600	
17:15	17:30	0	71	13	7	0	4	229	30	0	41	7	57	1	49	208	28		
17:30	17:45	0	63	8	3	0	5	167	33	0	26	3	40	0	25	213	30		
17:45	18:00	0	79	8	6	0	4	165	25	0	19	2	39	1	34	173	33		

Peak Time		North Approach Airds Rd				East Approach Ben Lomond Rd				South Approach Airds Rd				West Approach Ben Lomond Rd				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	142	30	14	0	37	580	100	0	47	61	125	1	196	716	226	2275
15:15	16:15	0	195	53	31	0	29	741	106	0	153	30	284	4	128	757	126	2637

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



ANNEXURE D: TRAFFIC SURVEY

(Sheet 3 of 5)

TRANS TRAFFIC SURVEY trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Ben Lomond Rd and Pembroke Rd, Minto

GPS	-34.03181, 150.84725
Date:	Thu 13/12/18
Weather:	Overcast
Suburban:	Minto
Customer:	McLaren

North:	Pembroke Rd
East:	Ben Lomond Rd
South:	Pembroke Rd
West:	Ben Lomond Rd

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-6:00 PM
Traffic Peak	AM:	8:30 AM-9:30 AM
	PM:	3:15 PM-4:15 PM

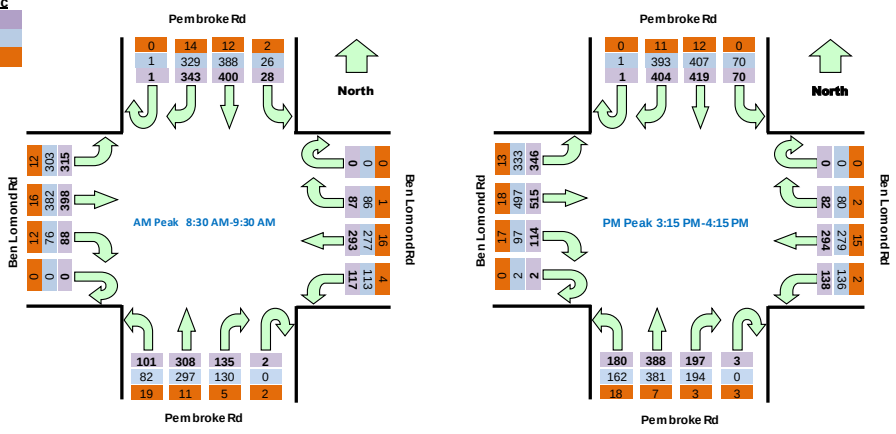
All Vehicles

Time		North Approach Pembroke Rd				East Approach Ben Lomond Rd				South Approach Pembroke Rd				West Approach Ben Lomond Rd				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	1	64	38	11	1	32	77	18	3	17	46	26	0	27	32	63	1964	
7:15	7:30	0	55	25	4	0	39	68	16	2	16	57	29	0	16	34	79	2101	
7:30	7:45	0	57	43	16	0	49	59	17	1	21	71	27	0	17	38	74	2262	
7:45	8:00	0	60	71	22	0	47	81	13	1	19	59	39	1	23	58	84	2430	
8:00	8:15	1	72	57	17	0	37	76	19	0	28	80	33	0	26	69	78	2558	
8:15	8:30	0	75	83	11	0	21	81	21	1	29	67	37	0	21	81	73	2592	
8:30	8:45	0	71	108	6	0	25	84	30	0	31	88	18	0	27	91	79	2616	Peak
8:45	9:00	0	84	109	7	0	22	71	27	2	30	85	26	0	24	129	90	2525	
9:00	9:15	1	91	84	7	0	20	76	29	0	41	72	33	0	22	92	59	2388	
9:15	9:30	0	97	99	8	0	20	62	31	0	33	63	24	0	15	86	87		
9:30	9:45	1	98	88	14	0	21	78	19	1	34	53	19	0	13	61	67		
9:45	10:00	0	73	89	9	0	23	71	33	0	21	79	25	0	18	78	50		
15:00	15:15	0	97	70	5	0	14	84	28	1	53	102	51	0	26	105	75	3110	
15:15	15:30	0	120	103	18	0	21	77	39	0	58	98	56	2	25	127	80	3153	Peak
15:30	15:45	0	106	103	18	0	18	75	36	2	48	113	52	0	23	136	81	3049	
15:45	16:00	1	91	126	17	0	20	65	36	1	35	85	30	0	32	129	96	2949	
16:00	16:15	0	87	87	17	0	23	77	27	0	56	92	42	0	34	123	89	2951	
16:15	16:30	0	101	115	21	0	24	50	29	0	32	89	36	0	18	119	86	2955	
16:30	16:45	0	89	101	15	0	19	50	27	0	49	105	36	1	25	105	89	3084	
16:45	17:00	0	93	126	16	0	19	64	43	0	45	96	30	0	31	123	80	3145	
17:00	17:15	0	91	108	28	1	11	80	28	1	39	93	34	0	19	142	83	3130	
17:15	17:30	0	118	134	19	0	20	85	31	1	38	88	56	0	28	136	95		
17:30	17:45	0	85	138	33	0	20	60	32	0	36	103	37	0	20	135	73		
17:45	18:00	0	97	138	14	0	26	83	35	0	39	91	26	0	17	116	69		

Peak Time		North Approach Pembroke Rd				East Approach Ben Lomond Rd				South Approach Pembroke Rd				West Approach Ben Lomond Rd				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:30	9:30	1	343	400	28	0	87	293	117	2	135	308	101	0	88	398	315	2616
15:15	16:15	1	404	419	70	0	82	294	138	3	197	388	180	2	114	515	346	3153

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic: Total / Light / Heavy



ANNEXURE D: TRAFFIC SURVEY

(Sheet 4 of 5)

TRANS TRAFFIC SURVEY trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Smiths Cr Bypass and Pembroke Rd, Minto

GPS	-34.04985, 150.83677
Date:	Thu 13/12/18
Weather:	Overcast
Suburban:	Minto
Customer:	McLaren

North:	Pembroke Rd
East:	Smiths Cr Bypass
South:	Pembroke Rd
West:	Rose Payten Dr

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-6:00 PM
Traffic Peak	AM:	8:15 AM-9:15 AM
	PM:	3:15 PM-4:15 PM

All Vehicles

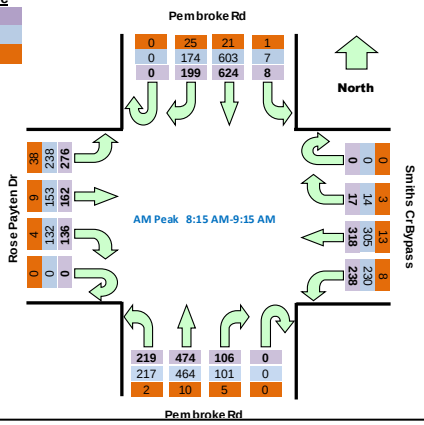
Time		North Approach Pembroke Rd				East Approach Smiths Cr Bypass				South Approach Pembroke Rd				West Approach Rose Payten Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	23	40	1	0	1	83	45	0	15	79	65	0	18	26	75	2029	
7:15	7:30	0	30	47	0	0	0	113	43	0	17	72	61	0	23	30	49	2139	
7:30	7:45	0	38	61	3	0	3	94	36	0	20	92	63	0	23	27	38	2305	
7:45	8:00	0	45	108	0	0	0	99	41	0	14	113	53	0	22	30	50	2493	
8:00	8:15	0	30	75	0	0	3	105	42	0	25	103	64	0	33	37	64	2690	
8:15	8:30	0	37	122	0	0	5	67	67	0	30	112	72	0	25	45	69	2777	Peak
8:30	8:45	0	42	158	5	0	2	82	61	0	17	122	48	0	27	50	72	2715	
8:45	9:00	0	58	193	2	0	7	98	59	0	29	124	60	0	44	29	69	2584	
9:00	9:15	0	62	151	1	0	3	71	51	0	30	116	39	0	40	38	66	2344	
9:15	9:30	0	47	138	1	0	1	59	44	0	25	92	62	0	34	33	53		
9:30	9:45	0	41	127	2	0	1	65	46	0	23	88	54	0	27	32	49		
9:45	10:00	0	31	131	2	0	0	55	47	0	17	107	35	0	40	26	41		
15:00	15:15	0	43	140	5	0	3	50	59	0	44	125	43	0	65	81	78	3100	
15:15	15:30	0	79	186	7	0	5	73	44	0	42	153	63	0	45	81	53	3130	Peak
15:30	15:45	0	47	151	7	0	5	52	34	0	61	150	44	0	78	71	57	3059	
15:45	16:00	0	55	188	6	0	0	45	41	0	43	146	52	0	55	88	57	3038	
16:00	16:15	0	80	167	3	0	4	48	35	0	38	145	43	0	76	80	47	3048	
16:15	16:30	0	54	162	5	0	2	59	26	0	53	146	42	0	71	91	49	3050	
16:30	16:45	0	60	157	4	0	8	29	50	0	42	136	43	0	51	101	55	3039	
16:45	17:00	0	52	168	5	0	2	41	44	0	47	158	55	0	83	82	49	3081	
17:00	17:15	0	52	152	9	0	0	41	55	0	62	118	46	0	97	84	52	3112	
17:15	17:30	0	51	158	5	0	6	52	40	0	48	137	43	0	85	77	47		
17:30	17:45	0	59	171	6	0	2	37	47	0	54	131	38	0	104	80	49		
17:45	18:00	0	58	166	7	0	1	69	67	0	59	105	40	0	91	108	46		

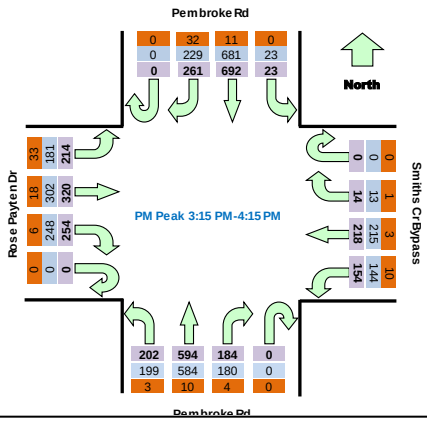
Peak Time		North Approach Pembroke Rd				East Approach Smiths Cr Bypass				South Approach Pembroke Rd				West Approach Rose Payten Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:15	9:15	0	199	624	8	0	17	318	238	0	106	474	219	0	136	162	276	2777
15:15	16:15	0	261	692	23	0	14	218	154	0	184	594	202	0	254	320	214	3130

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy





ANNEXURE D: TRAFFIC SURVEY

(Sheet 5 of 5)

TRANS TRAFFIC SURVEY trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Rose Payten Dr and Campbelltown Rd

GPS -34.04542, 150.82943

Date:	Thu 13/12/18
Weather:	Overcast
Suburban:	Minto
Customer:	McLaren

North:	Campbelltown Rd
East:	Rose Payten Dr
South:	Campbelltown Rd
West:	N/A

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-6:00 PM
Traffic Peak	AM:	7:45 AM-8:45 AM
	PM:	4:45 PM-5:45 PM

All Vehicles

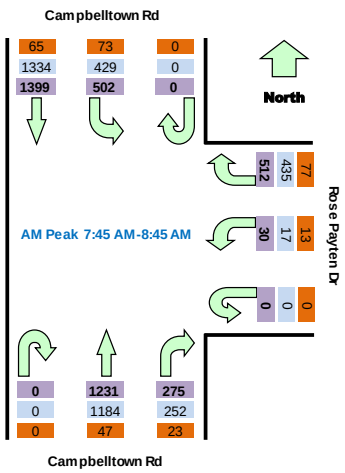
Time		th Approach Campbelltown			st Approach Rose Payten			th Approach Campbelltown			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	208	93	0	124	8	0	52	359	3561	
7:15	7:30	0	195	105	0	165	9	0	59	357	3668	
7:30	7:45	0	217	117	0	124	9	0	48	335	3821	
7:45	8:00	0	328	112	0	117	9	0	74	337	3949	Peak
8:00	8:15	0	300	136	0	146	5	0	66	298	3947	
8:15	8:30	0	397	138	0	121	4	0	65	318	3829	
8:30	8:45	0	374	116	0	128	12	0	70	278	3653	
8:45	9:00	0	414	109	0	121	11	0	57	263	3451	
9:00	9:15	0	332	106	0	113	9	0	37	236	3237	
9:15	9:30	0	317	116	0	100	10	0	47	277		
9:30	9:45	0	287	100	0	105	9	0	36	239		
9:45	10:00	0	306	110	0	82	13	0	29	221		
15:00	15:15	0	323	132	0	125	12	0	39	241	3924	
15:15	15:30	0	390	122	0	109	26	0	58	293	4000	
15:30	15:45	0	410	142	0	129	20	0	47	339	3964	
15:45	16:00	0	379	141	0	110	12	0	58	267	3797	
16:00	16:15	0	403	165	0	93	18	0	38	231	3856	
16:15	16:30	0	405	126	0	94	14	0	58	265	3902	
16:30	16:45	0	388	119	0	81	15	0	47	270	3985	
16:45	17:00	0	422	166	0	85	13	0	48	292	4015	Peak
17:00	17:15	0	378	146	0	119	12	0	51	288	3981	
17:15	17:30	0	445	149	0	98	20	0	42	291		
17:30	17:45	0	402	157	0	117	10	0	47	217		
17:45	18:00	0	480	146	0	70	14	0	46	236		

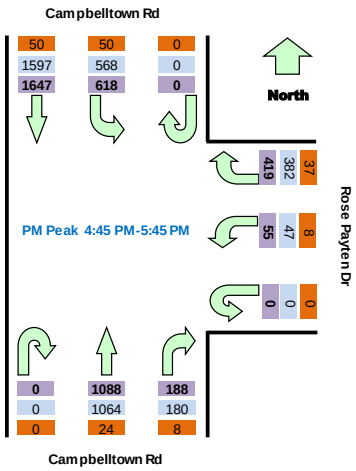
Peak Time		th Approach Campbelltown			st Approach Rose Payten			th Approach Campbelltown			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
7:45	8:45	0	1399	502	0	512	30	0	275	1231	3949
16:45	17:45	0	1647	618	0	419	55	0	188	1088	4015

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuratio

Graphic

Total
Light
Heavy





ANNEXURE E: EXISTING SIDRA RESULTS

(Sheet 1 of 5)

MOVEMENT SUMMARY

Site: 101 [Airds Rd / Montore Rd EX AM]

Airds Road / Montore Road
Exising conditions
AM peak period
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airds Rd (S)												
1	L2	24	8.7	0.150	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	57.4
2	T1	242	14.8	0.150	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.4
Approach		266	14.2	0.150	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.3
North: Airds Rd (N)												
8	T1	260	11.3	0.170	0.2	LOS A	0.3	2.4	0.12	0.08	0.12	58.8
9	R2	36	5.9	0.170	6.7	LOS A	0.3	2.4	0.12	0.08	0.12	56.3
Approach		296	10.7	0.170	1.0	NA	0.3	2.4	0.12	0.08	0.12	58.5
West: Montore Rd (W)												
10	L2	11	10.0	0.025	6.5	LOS A	0.1	0.7	0.39	0.63	0.39	51.7
12	R2	11	20.0	0.025	8.9	LOS A	0.1	0.7	0.39	0.63	0.39	50.7
Approach		21	15.0	0.025	7.7	LOS A	0.1	0.7	0.39	0.63	0.39	51.2
All Vehicles		583	12.5	0.170	1.0	NA	0.3	2.4	0.07	0.09	0.07	58.5

MOVEMENT SUMMARY

Site: 101 [Airds Rd / Montore Rd EX PM]

Airds Road / Montore Road
Exising conditions
AM peak period
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airds Rd (S)												
1	L2	6	33.3	0.203	5.9	LOS A	0.0	0.0	0.00	0.01	0.00	56.6
2	T1	365	9.5	0.203	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		372	9.9	0.203	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
North: Airds Rd (N)												
8	T1	288	9.9	0.178	0.2	LOS A	0.2	1.8	0.09	0.05	0.09	59.2
9	R2	23	9.1	0.178	7.4	LOS A	0.2	1.8	0.09	0.05	0.09	56.5
Approach		312	9.8	0.178	0.8	NA	0.2	1.8	0.09	0.05	0.09	59.0
West: Montore Rd (W)												
10	L2	41	7.7	0.053	7.1	LOS A	0.2	1.4	0.44	0.65	0.44	51.9
12	R2	8	12.5	0.053	9.7	LOS A	0.2	1.4	0.44	0.65	0.44	51.1
Approach		49	8.5	0.053	7.5	LOS A	0.2	1.4	0.44	0.65	0.44	51.7
All Vehicles		733	9.8	0.203	0.9	NA	0.2	1.8	0.07	0.07	0.07	58.8

ANNEXURE E: EXISTING SIDRA RESULTS
(Sheet 2 of 5)

MOVEMENT SUMMARY

Site: 101 [Ben Lomond Rd / Airds Rd EX AM]

Ben Lomond Road / Airds Road
Existing Conditions
AM peak period
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airds Rd (S)												
1	L2	132	24.0	0.179	9.6	LOS A	1.2	10.1	0.80	0.79	0.80	50.5
2	T1	64	13.1	0.183	10.3	LOS A	1.1	8.7	0.80	0.83	0.80	50.5
3	R2	49	6.4	0.183	14.6	LOS B	1.1	8.7	0.80	0.83	0.80	50.5
Approach		245	17.6	0.183	10.8	LOS A	1.2	10.1	0.80	0.81	0.80	50.5
East: Ben Lomond Rd (E)												
4	L2	105	4.0	0.356	6.3	LOS A	2.5	18.2	0.63	0.63	0.63	52.5
5	T1	611	6.9	0.356	6.5	LOS A	2.5	18.2	0.64	0.66	0.64	53.6
6	R2	39	13.5	0.356	11.7	LOS A	2.3	17.4	0.65	0.69	0.65	52.9
Approach		755	6.8	0.356	6.8	LOS A	2.5	18.2	0.64	0.66	0.64	53.4
North: Airds Road (N)												
7	L2	15	14.3	0.093	14.0	LOS A	0.6	4.7	0.88	0.85	0.88	47.7
8	T1	32	26.7	0.295	14.0	LOS A	2.3	18.9	0.91	0.88	0.91	48.2
9	R2	149	20.4	0.295	17.1	LOS B	2.3	18.9	0.96	0.92	0.96	47.3
Approach		196	21.0	0.295	16.4	LOS B	2.3	18.9	0.95	0.91	0.95	47.5
West: Ben Lomond Rd (W)												
10	L2	238	11.1	0.133	3.6	LOS A	0.0	0.0	0.00	0.46	0.00	55.8
11	T1	754	4.1	0.661	5.3	LOS A	7.1	52.3	0.61	0.56	0.61	53.5
12	R2	206	12.2	0.661	10.1	LOS A	7.1	52.3	0.61	0.56	0.61	53.0
Approach		1198	6.9	0.661	5.8	LOS A	7.1	52.3	0.49	0.54	0.49	53.8
All Vehicles		2394	9.1	0.661	7.5	LOS A	7.1	52.3	0.60	0.63	0.60	52.8

MOVEMENT SUMMARY

Site: 101 [Ben Lomond Rd / Airds Rd EX PM]

Ben Lomond Road / Airds Road
Existing Conditions
AM peak period
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airds Rd (S)												
1	L2	299	9.9	0.471	14.9	LOS B	4.4	33.0	0.99	1.02	1.16	47.4
2	T1	32	6.7	0.400	15.5	LOS B	3.0	22.0	0.94	1.01	1.04	46.3
3	R2	161	5.2	0.400	20.0	LOS B	3.0	22.0	0.94	1.01	1.04	46.2
Approach		492	8.1	0.471	16.6	LOS B	4.4	33.0	0.97	1.02	1.11	46.9
East: Ben Lomond Rd (E)												
4	L2	112	5.7	0.437	6.5	LOS A	3.4	24.4	0.69	0.65	0.69	52.2
5	T1	780	4.2	0.437	6.7	LOS A	3.4	24.4	0.70	0.67	0.70	53.4
6	R2	31	10.3	0.437	11.8	LOS A	3.2	23.0	0.71	0.69	0.71	52.9
Approach		922	4.6	0.437	6.8	LOS A	3.4	24.4	0.70	0.67	0.70	53.3
North: Airds Road (N)												
7	L2	33	6.5	0.150	15.6	LOS B	1.0	7.6	0.94	0.91	0.94	47.0
8	T1	56	9.4	0.476	16.7	LOS B	4.6	34.7	0.98	0.99	1.09	46.2
9	R2	205	8.7	0.476	21.8	LOS B	4.6	34.7	1.00	1.04	1.18	45.1
Approach		294	8.6	0.476	20.2	LOS B	4.6	34.7	0.99	1.02	1.14	45.5
West: Ben Lomond Rd (W)												
10	L2	133	16.7	0.077	3.7	LOS A	0.0	0.0	0.00	0.46	0.00	55.7
11	T1	797	4.5	0.696	6.1	LOS A	8.0	59.2	0.75	0.62	0.77	53.0
12	R2	135	18.0	0.696	11.0	LOS A	8.0	59.2	0.75	0.62	0.77	52.4
Approach		1064	7.7	0.696	6.4	LOS A	8.0	59.2	0.66	0.60	0.67	53.2
All Vehicles		2772	6.8	0.696	9.8	LOS A	8.0	59.2	0.76	0.74	0.81	51.1

ANNEXURE E: EXISTING SIDRA RESULTS
(Sheet 3 of 5)

MOVEMENT SUMMARY

Site: 101 [Pembroke Rd / Ben Lomond Rd EX AM]

Pembroke Road / Ben Lomond Road
Existing Conditions
AM peak period
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pembroke Rd (S)												
1	L2	106	18.8	0.327	6.6	LOS A	1.7	12.9	0.65	0.65	0.65	53.0
2	T1	324	3.6	0.327	6.3	LOS A	1.7	12.9	0.65	0.70	0.65	54.3
3	R2	144	5.1	0.327	12.4	LOS A	1.6	11.9	0.66	0.78	0.66	53.3
Approach		575	6.8	0.327	7.9	LOS A	1.7	12.9	0.65	0.71	0.65	53.8
East: Ben Lomond Rd (E)												
4	L2	123	3.4	0.322	5.9	LOS A	1.7	12.1	0.69	0.63	0.69	53.3
5	T1	308	5.5	0.322	6.1	LOS A	1.7	12.1	0.69	0.68	0.69	54.3
6	R2	92	1.1	0.322	12.0	LOS A	1.6	11.3	0.69	0.75	0.69	53.8
Approach		523	4.2	0.322	7.1	LOS A	1.7	12.1	0.69	0.68	0.69	53.9
North: Pembroke Rd (N)												
7	L2	29	7.1	0.490	8.1	LOS A	3.9	27.9	0.80	0.81	0.88	52.3
8	T1	421	3.0	0.490	7.9	LOS A	3.9	27.9	0.80	0.81	0.88	54.1
9	R2	361	4.1	0.469	14.2	LOS A	3.4	24.6	0.79	0.92	0.87	50.7
Approach		812	3.6	0.490	10.7	LOS A	3.9	27.9	0.80	0.86	0.87	52.4
West: Ben Lomond Rd (W)												
10	L2	332	3.8	0.377	6.0	LOS A	1.9	13.8	0.61	0.72	0.61	54.0
11	T1	419	4.0	0.482	5.8	LOS A	3.0	21.7	0.64	0.64	0.69	54.4
12	R2	93	13.6	0.482	11.8	LOS A	3.0	21.7	0.64	0.64	0.69	54.3
Approach		843	5.0	0.482	6.5	LOS A	3.0	21.7	0.63	0.67	0.66	54.2
All Vehicles		2753	4.8	0.490	8.1	LOS A	3.9	27.9	0.70	0.74	0.73	53.5

MOVEMENT SUMMARY

Site: 101 [Pembroke Rd / Ben Lomond Rd EX PM]

Pembroke Road / Ben Lomond Road
Existing Conditions
AM peak period
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pembroke Rd (S)												
1	L2	189	10.0	0.488	7.6	LOS A	3.3	24.3	0.77	0.82	0.87	52.7
2	T1	408	1.8	0.488	7.6	LOS A	3.3	24.3	0.77	0.86	0.88	53.6
3	R2	207	1.5	0.488	13.8	LOS A	3.2	22.4	0.77	0.92	0.89	52.5
Approach		805	3.7	0.488	9.2	LOS A	3.3	24.3	0.77	0.87	0.88	53.1
East: Ben Lomond Rd (E)												
4	L2	145	1.4	0.381	6.3	LOS A	2.2	15.9	0.77	0.70	0.80	53.0
5	T1	309	5.1	0.381	6.8	LOS A	2.2	15.9	0.77	0.76	0.81	53.8
6	R2	86	2.4	0.381	12.9	LOS A	2.1	14.9	0.77	0.81	0.82	53.4
Approach		541	3.7	0.381	7.7	LOS A	2.2	15.9	0.77	0.75	0.81	53.5
North: Pembroke Rd (N)												
7	L2	74	0.0	0.728	17.2	LOS B	9.4	67.0	1.00	1.21	1.54	46.9
8	T1	441	2.9	0.728	17.2	LOS B	9.4	67.0	1.00	1.21	1.54	48.2
9	R2	425	2.7	0.733	24.9	LOS B	8.5	61.0	1.00	1.22	1.58	44.4
Approach		940	2.6	0.733	20.7	LOS B	9.4	67.0	1.00	1.22	1.56	46.3
West: Ben Lomond Rd (W)												
10	L2	364	3.8	0.477	7.4	LOS A	2.8	20.5	0.72	0.87	0.81	53.3
11	T1	542	3.5	0.685	8.2	LOS A	6.0	43.7	0.82	0.92	1.05	53.4
12	R2	122	14.7	0.685	14.2	LOS A	6.0	43.7	0.82	0.92	1.05	53.3
Approach		1028	4.9	0.685	8.6	LOS A	6.0	43.7	0.78	0.91	0.96	53.3
All Vehicles		3315	3.7	0.733	12.0	LOS A	9.4	67.0	0.84	0.96	1.09	51.1

ANNEXURE E: EXISTING SIDRA RESULTS
(Sheet 4 of 5)

MOVEMENT SUMMARY

Site: 1 [Rose Payten Dr / Pembroke Rd EX AM]

Rose Payten Drive / Pembroke Road
Existing conditions
AM peak period
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Smiths Creek Bypass (SE)												
4	L2	251	3.4	0.279	10.7	LOS A	3.1	22.5	0.55	0.71	0.55	50.4
5	T1	335	4.1	0.617	32.4	LOS C	5.7	41.5	0.99	0.82	1.03	39.3
6	R2	18	17.6	0.099	37.3	LOS C	0.6	4.7	0.92	0.69	0.92	36.6
Approach		603	4.2	0.617	23.5	LOS B	5.7	41.5	0.80	0.77	0.83	43.1
NorthEast: Pembroke Rd (NE)												
7	L2	8	12.5	0.007	6.9	LOS A	0.0	0.3	0.25	0.58	0.25	52.8
8	T1	657	3.4	0.821	27.9	LOS B	16.4	117.9	0.95	0.90	1.08	41.2
9	R2	209	12.6	0.502	21.3	LOS B	4.7	36.2	0.91	0.79	0.91	43.7
Approach		875	5.7	0.821	26.1	LOS B	16.4	117.9	0.93	0.87	1.03	41.9
NorthWest: Rose Payten Dr (NW)												
10	L2	291	13.8	0.241	8.3	LOS A	2.8	21.7	0.37	0.65	0.37	51.7
11	T1	171	5.6	0.122	15.6	LOS B	1.9	14.1	0.69	0.54	0.69	47.8
12	R2	143	2.9	0.368	28.2	LOS B	4.1	29.7	0.89	0.76	0.89	40.5
Approach		604	8.9	0.368	15.1	LOS B	4.1	29.7	0.59	0.65	0.59	47.5
SouthWest: Pembroke Rd (SW)												
1	L2	231	0.9	0.196	8.8	LOS A	2.2	15.6	0.43	0.67	0.43	51.8
2	T1	499	2.1	0.721	30.5	LOS C	9.6	68.1	0.97	0.87	1.10	40.1
3	R2	112	4.7	0.398	22.6	LOS B	2.4	17.5	0.94	0.76	0.94	43.2
Approach		841	2.1	0.721	23.5	LOS B	9.6	68.1	0.82	0.80	0.89	43.2
All Vehicles		2923	5.0	0.821	22.6	LOS B	16.4	117.9	0.80	0.78	0.86	43.6

MOVEMENT SUMMARY

Site: 1 [Rose Payten Dr / Pembroke Rd EX PM]

Rose Payten Drive / Pembroke Road
Existing conditions
AM peak period
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 110 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Smiths Creek Bypass (SE)												
4	L2	162	6.5	0.257	15.1	LOS B	3.5	26.0	0.56	0.70	0.56	47.5
5	T1	229	1.4	0.588	49.8	LOS D	7.6	53.6	0.98	0.78	0.99	33.1
6	R2	15	7.1	0.190	65.2	LOS E	0.8	6.1	1.00	0.68	1.00	28.8
Approach		406	3.6	0.588	36.5	LOS C	7.6	53.6	0.81	0.75	0.82	37.4
NorthEast: Pembroke Rd (NE)												
7	L2	24	0.0	0.022	8.7	LOS A	0.2	1.7	0.34	0.61	0.34	51.9
8	T1	728	1.6	0.694	29.1	LOS C	23.0	163.4	0.85	0.75	0.85	40.7
9	R2	275	12.3	0.697	25.6	LOS B	8.5	65.8	0.89	0.83	0.92	41.6
Approach		1027	4.4	0.697	27.7	LOS B	23.0	163.4	0.85	0.77	0.86	41.2
NorthWest: Rose Payten Dr (NW)												
10	L2	225	15.4	0.236	9.5	LOS A	3.5	27.5	0.36	0.65	0.36	50.8
11	T1	337	5.6	0.363	28.9	LOS C	9.3	68.3	0.78	0.65	0.78	40.8
12	R2	267	2.4	0.693	50.5	LOS D	12.7	90.5	0.98	0.99	1.41	32.5
Approach		829	7.2	0.693	30.6	LOS C	12.7	90.5	0.73	0.76	0.87	39.7
SouthWest: Pembroke Rd (SW)												
1	L2	213	1.5	0.203	10.2	LOS A	2.7	19.1	0.44	0.68	0.44	50.8
2	T1	625	1.7	0.539	27.3	LOS B	16.5	117.3	0.80	0.69	0.80	41.5
3	R2	194	2.2	0.530	25.4	LOS B	5.4	38.6	0.89	0.80	0.89	41.9
Approach		1032	1.7	0.539	23.4	LOS B	16.5	117.3	0.74	0.71	0.74	43.2
All Vehicles		3295	4.2	0.697	28.2	LOS B	23.0	163.4	0.78	0.74	0.82	40.9

ANNEXURE E: EXISTING SIDRA RESULTS
(Sheet 5 of 5)

MOVEMENT SUMMARY

Site: 101 [Campbelltown Rd/ Rose Payten Dr EX AM]

Campbelltown Road / Rose Payten Drive
Existing Conditions
AM peak period
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Campbelltown Rd (S)												
2	T1	1296	3.8	0.542	7.9	LOS A	12.4	89.9	0.61	0.55	0.61	53.2
3	R2	289	8.4	0.534	31.1	LOS C	4.6	34.6	0.97	0.80	0.97	39.0
Approach		1585	4.6	0.542	12.1	LOS A	12.4	89.9	0.67	0.59	0.67	49.9
East: Rose Payton Dr (E)												
4	L2	32	43.3	0.054	13.8	LOS A	0.5	4.7	0.55	0.65	0.55	47.3
6	R2	539	15.0	0.803	40.2	LOS C	10.1	79.5	1.00	0.95	1.25	35.5
Approach		571	16.6	0.803	38.7	LOS C	10.1	79.5	0.98	0.93	1.22	36.0
North: Campbelltown Rd (N)												
7	L2	528	14.5	0.445	8.1	LOS A	4.9	38.5	0.43	0.68	0.43	51.8
8	T1	1473	4.6	0.851	25.3	LOS B	26.7	194.1	0.96	0.99	1.13	42.4
Approach		2001	7.3	0.851	20.8	LOS B	26.7	194.1	0.82	0.91	0.94	44.6
All Vehicles		4157	7.5	0.851	19.9	LOS B	26.7	194.1	0.78	0.79	0.88	44.9

MOVEMENT SUMMARY

Site: 101 [Campbelltown Rd/ Rose Payten Dr EX PM]

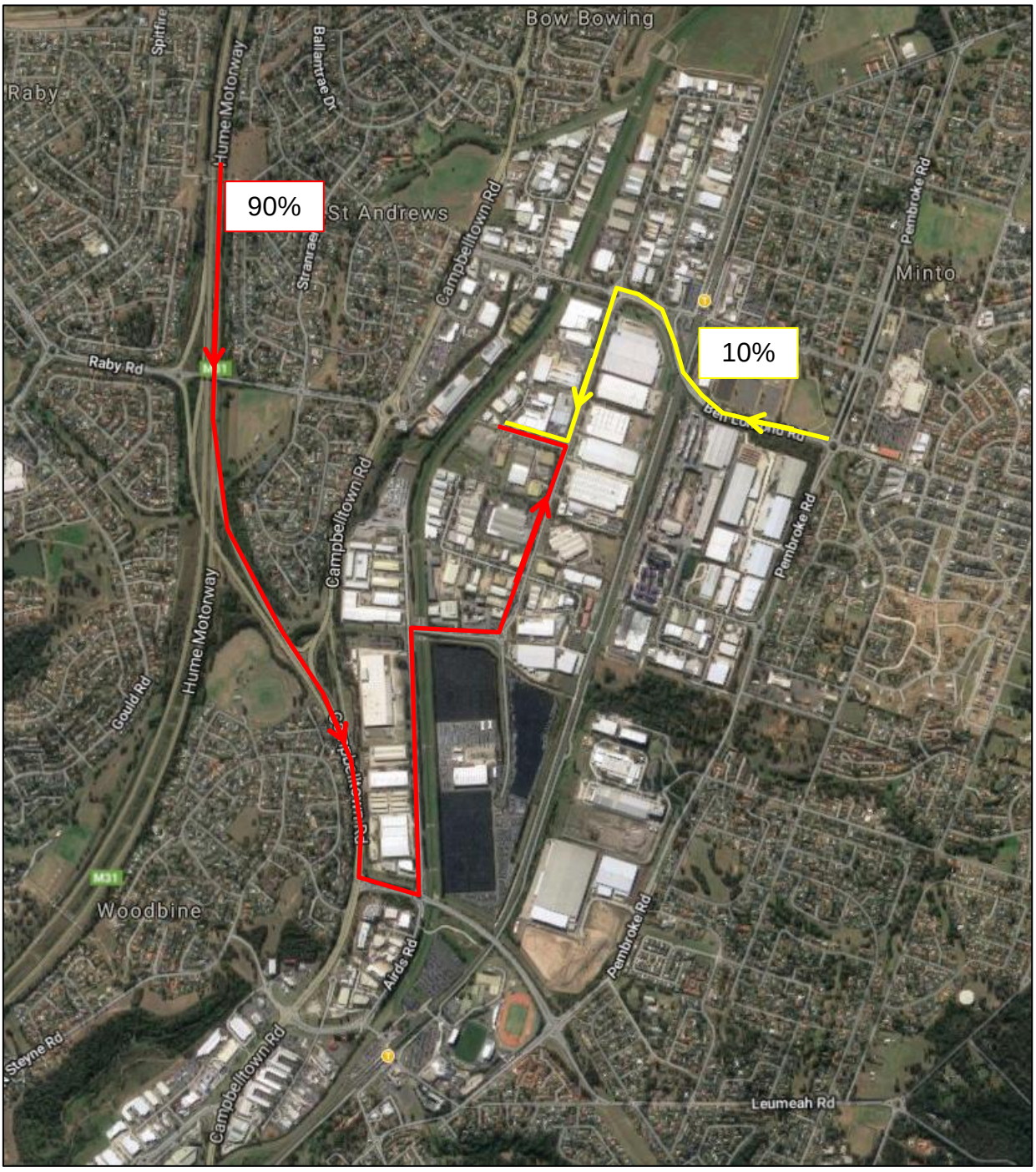
Campbelltown Road / Rose Payten Drive
Existing Conditions
AM peak period
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 80 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Campbelltown Rd (S)												
2	T1	1145	2.2	0.433	5.9	LOS A	9.8	70.2	0.48	0.43	0.48	54.7
3	R2	198	4.3	0.406	32.8	LOS C	3.5	25.5	0.93	0.80	0.93	38.4
Approach		1343	2.5	0.433	9.9	LOS A	9.8	70.2	0.55	0.48	0.55	51.5
East: Rose Payton Dr (E)												
4	L2	58	14.5	0.100	15.6	LOS B	1.1	8.8	0.58	0.68	0.58	46.9
6	R2	441	8.8	0.777	45.0	LOS D	9.2	69.1	1.00	0.91	1.20	34.0
Approach		499	9.5	0.777	41.6	LOS C	9.2	69.1	0.95	0.89	1.13	35.1
North: Campbelltown Rd (N)												
7	L2	651	8.1	0.520	8.5	LOS A	7.6	56.6	0.45	0.70	0.45	51.7
8	T1	1734	3.0	0.843	22.2	LOS B	32.6	233.9	0.92	0.92	1.02	44.0
Approach		2384	4.4	0.843	18.5	LOS B	32.6	233.9	0.79	0.86	0.86	45.9
All Vehicles		4226	4.4	0.843	18.5	LOS B	32.6	233.9	0.73	0.74	0.79	45.8

ANNEXURE F: TRAFFIC ASSIGNMENT

(Sheet 1 of 6)



INBOUND trucks less than 32t

ANNEXURE F: TRAFFIC ASSIGNMENT

(Sheet 2 of 6)

INBOUND trucks between 32t and 40t

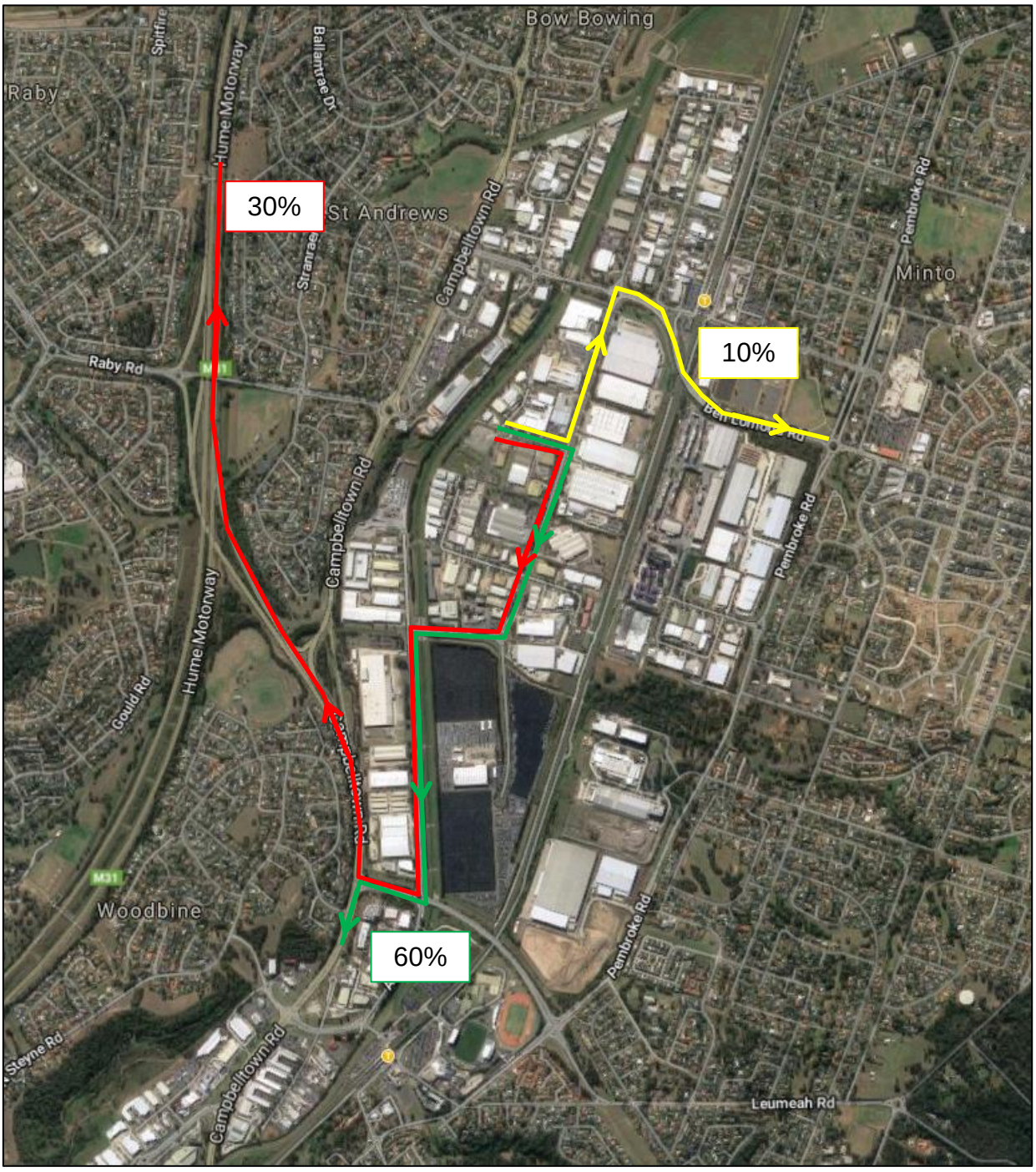
ANNEXURE F: TRAFFIC ASSIGNMENT

(Sheet 3 of 6)

INBOUND trucks over 40t

ANNEXURE F: TRAFFIC ASSIGNMENT

(Sheet 4 of 6)



OUTBOUND trucks less than 32t

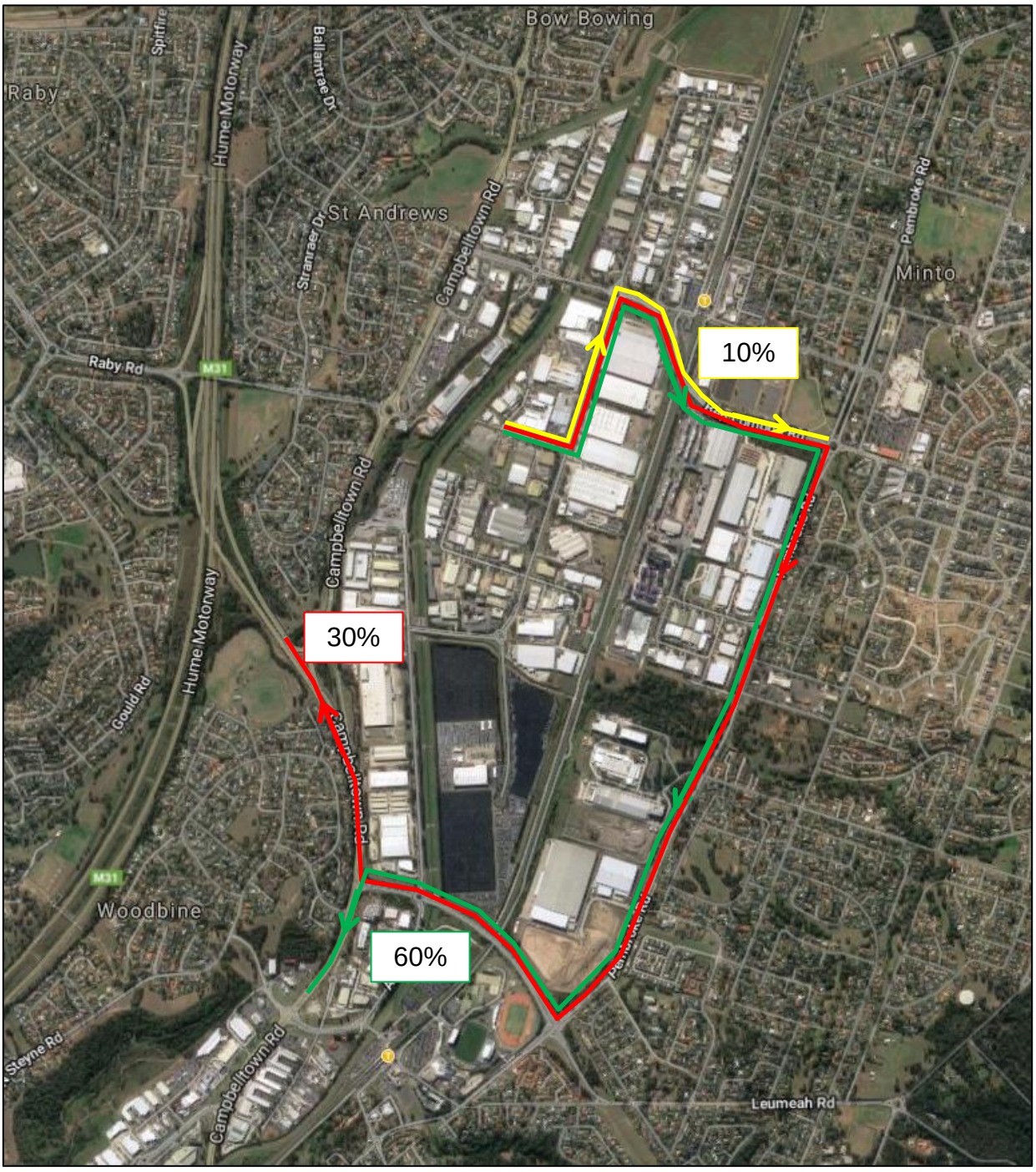
ANNEXURE F: TRAFFIC ASSIGNMENT

(Sheet 5 of 6)

OUTBOUND trucks between 32t and 40t

ANNEXURE F: TRAFFIC ASSIGNMENT

(Sheet 6 of 6)



OUTBOUND trucks over 40t

ANNEXURE G: FUTURE SIDRA RESULTS

(Sheet 1 of 5)

MOVEMENT SUMMARY

▽ Site: 101 [Airds Rd / Montore Rd FUT AM]

Airds Road / Montore Road
Future conditions
AM peak period
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airds Rd (S)												
1	L2	38	41.7	0.163	6.0	LOS A	0.0	0.0	0.00	0.08	0.00	55.8
2	T1	242	14.8	0.163	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	59.4
Approach		280	18.4	0.163	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.9
North: Airds Rd (N)												
8	T1	260	11.3	0.179	0.3	LOS A	0.4	3.1	0.15	0.08	0.15	58.7
9	R2	41	17.9	0.179	7.1	LOS A	0.4	3.1	0.15	0.08	0.15	55.6
Approach		301	12.2	0.179	1.3	NA	0.4	3.1	0.15	0.08	0.15	58.3
West: Montore Rd (W)												
10	L2	19	50.0	0.089	7.5	LOS A	0.3	3.2	0.48	0.71	0.48	48.7
12	R2	29	71.4	0.089	12.2	LOS A	0.3	3.2	0.48	0.71	0.48	47.4
Approach		48	63.0	0.089	10.3	LOS A	0.3	3.2	0.48	0.71	0.48	47.9
All Vehicles		629	18.9	0.179	1.8	NA	0.4	3.2	0.11	0.13	0.11	57.6

MOVEMENT SUMMARY

▽ Site: 101 [Airds Rd / Montore Rd FUT PM]

Airds Road / Montore Road
Future conditions
AM peak period
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airds Rd (S)												
1	L2	21	80.0	0.217	6.5	LOS A	0.0	0.0	0.00	0.03	0.00	54.4
2	T1	365	9.5	0.217	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.9
Approach		386	13.4	0.217	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.6
North: Airds Rd (N)												
8	T1	288	9.9	0.190	0.4	LOS A	0.4	2.9	0.13	0.06	0.13	59.0
9	R2	29	28.6	0.190	8.3	LOS A	0.4	2.9	0.13	0.06	0.13	55.4
Approach		318	11.6	0.190	1.1	NA	0.4	2.9	0.13	0.06	0.13	58.7
West: Montore Rd (W)												
10	L2	45	16.3	0.092	7.4	LOS A	0.3	2.8	0.49	0.69	0.49	50.6
12	R2	18	58.8	0.092	13.5	LOS A	0.3	2.8	0.49	0.69	0.49	48.4
Approach		63	28.3	0.092	9.1	LOS A	0.3	2.8	0.49	0.69	0.49	49.9
All Vehicles		767	13.9	0.217	1.4	NA	0.4	2.9	0.10	0.10	0.10	58.3

ANNEXURE G: FUTURE SIDRA RESULTS
(Sheet 2 of 5)

MOVEMENT SUMMARY

Site: 101 [Ben Lomond Rd / Airds Rd FUT AM]

Ben Lomond Road / Airds Road
Future Conditions
AM peak period
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airds Rd (S)												
1	L2	132	24.0	0.179	9.6	LOS A	1.2	10.1	0.80	0.79	0.80	50.5
2	T1	64	13.1	0.204	10.4	LOS A	1.3	10.2	0.80	0.84	0.80	50.3
3	R2	58	20.0	0.204	15.4	LOS B	1.3	10.2	0.80	0.84	0.80	49.8
Approach		254	20.3	0.204	11.1	LOS A	1.3	10.2	0.80	0.81	0.80	50.3
East: Ben Lomond Rd (E)												
4	L2	111	8.6	0.360	6.4	LOS A	2.5	18.7	0.63	0.63	0.63	52.4
5	T1	611	6.9	0.360	6.6	LOS A	2.5	18.7	0.64	0.66	0.64	53.6
6	R2	39	13.5	0.360	11.7	LOS A	2.4	17.7	0.65	0.69	0.65	52.9
Approach		760	7.5	0.360	6.8	LOS A	2.5	18.7	0.64	0.66	0.64	53.4
North: Airds Road (N)												
7	L2	15	14.3	0.095	14.3	LOS A	0.6	4.9	0.88	0.86	0.88	47.5
8	T1	32	26.7	0.303	14.2	LOS A	2.4	19.6	0.92	0.88	0.92	48.1
9	R2	149	20.4	0.303	17.3	LOS B	2.4	19.6	0.97	0.93	0.97	47.2
Approach		196	21.0	0.303	16.6	LOS B	2.4	19.6	0.96	0.91	0.96	47.3
West: Ben Lomond Rd (W)												
10	L2	238	11.1	0.133	3.6	LOS A	0.0	0.0	0.00	0.46	0.00	55.8
11	T1	754	4.1	0.670	5.4	LOS A	7.3	53.3	0.63	0.57	0.63	53.4
12	R2	206	12.2	0.670	10.3	LOS A	7.3	53.3	0.63	0.57	0.63	52.9
Approach		1198	6.9	0.670	5.9	LOS A	7.3	53.3	0.51	0.55	0.51	53.7
All Vehicles		2407	9.6	0.670	7.6	LOS A	7.3	53.3	0.62	0.64	0.62	52.7

MOVEMENT SUMMARY

Site: 101 [Ben Lomond Rd / Airds Rd FUT PM]

Ben Lomond Road / Airds Road
Future Conditions
AM peak period
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airds Rd (S)												
1	L2	299	9.9	0.472	14.9	LOS B	4.4	33.1	0.99	1.02	1.16	47.4
2	T1	32	6.7	0.414	15.9	LOS B	3.2	23.5	0.95	1.03	1.07	46.0
3	R2	165	7.6	0.414	20.6	LOS B	3.2	23.5	0.95	1.03	1.07	45.8
Approach		496	8.9	0.472	16.9	LOS B	4.4	33.1	0.98	1.02	1.12	46.7
East: Ben Lomond Rd (E)												
4	L2	118	10.7	0.442	6.6	LOS A	3.4	24.9	0.69	0.65	0.69	52.0
5	T1	780	4.2	0.442	6.7	LOS A	3.4	24.9	0.70	0.67	0.70	53.4
6	R2	31	10.3	0.442	11.8	LOS A	3.2	23.3	0.71	0.70	0.71	52.9
Approach		928	5.2	0.442	6.8	LOS A	3.4	24.9	0.70	0.67	0.70	53.2
North: Airds Road (N)												
7	L2	33	6.5	0.152	15.7	LOS B	1.0	7.7	0.94	0.91	0.94	46.9
8	T1	56	9.4	0.482	17.0	LOS B	4.7	35.5	0.98	1.00	1.10	46.0
9	R2	205	8.7	0.482	22.3	LOS B	4.7	35.5	1.00	1.05	1.19	44.9
Approach		294	8.6	0.482	20.6	LOS B	4.7	35.5	0.99	1.02	1.15	45.3
West: Ben Lomond Rd (W)												
10	L2	133	16.7	0.077	3.7	LOS A	0.0	0.0	0.00	0.46	0.00	55.7
11	T1	797	4.5	0.701	6.2	LOS A	8.2	60.8	0.76	0.64	0.78	52.9
12	R2	135	18.0	0.701	11.2	LOS A	8.2	60.8	0.76	0.64	0.78	52.3
Approach		1064	7.7	0.701	6.5	LOS A	8.2	60.8	0.67	0.62	0.69	53.2
All Vehicles		2782	7.2	0.701	10.0	LOS A	8.2	60.8	0.77	0.75	0.82	51.0

ANNEXURE G: FUTURE SIDRA RESULTS
(Sheet 3 of 5)

MOVEMENT SUMMARY

Site: 101 [Pembroke Rd / Ben Lomond Rd FUT AM]

Pembroke Road / Ben Lomond Road
Future Conditions
AM peak period
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pembroke Rd (S)												
1	L2	111	21.9	0.331	6.7	LOS A	1.7	13.2	0.65	0.65	0.65	52.9
2	T1	324	3.6	0.331	6.3	LOS A	1.7	13.2	0.66	0.70	0.66	54.3
3	R2	144	5.1	0.331	12.4	LOS A	1.7	12.1	0.66	0.78	0.66	53.3
Approach		579	7.5	0.331	7.9	LOS A	1.7	13.2	0.66	0.71	0.66	53.8
East: Ben Lomond Rd (E)												
4	L2	123	3.4	0.326	5.9	LOS A	1.7	12.4	0.69	0.63	0.69	53.2
5	T1	311	6.1	0.326	6.2	LOS A	1.7	12.4	0.69	0.69	0.69	54.2
6	R2	92	1.1	0.326	12.0	LOS A	1.6	11.5	0.70	0.75	0.70	53.8
Approach		525	4.6	0.326	7.1	LOS A	1.7	12.4	0.69	0.68	0.69	53.9
North: Pembroke Rd (N)												
7	L2	29	7.1	0.497	8.3	LOS A	4.0	28.8	0.81	0.83	0.90	52.3
8	T1	421	3.0	0.497	8.1	LOS A	4.0	28.8	0.81	0.83	0.90	54.0
9	R2	361	4.1	0.476	14.4	LOS A	3.5	25.4	0.80	0.93	0.89	50.5
Approach		812	3.6	0.497	10.9	LOS A	4.0	28.8	0.81	0.88	0.90	52.3
West: Ben Lomond Rd (W)												
10	L2	332	3.8	0.379	6.0	LOS A	1.9	13.9	0.62	0.72	0.62	54.0
11	T1	422	4.7	0.495	5.9	LOS A	3.1	23.1	0.65	0.66	0.70	54.3
12	R2	98	18.3	0.495	12.0	LOS A	3.1	23.1	0.65	0.66	0.70	54.1
Approach		852	5.9	0.495	6.7	LOS A	3.1	23.1	0.64	0.68	0.67	54.2
All Vehicles		2767	5.3	0.497	8.3	LOS A	4.0	28.8	0.70	0.75	0.74	53.5

MOVEMENT SUMMARY

Site: 101 [Pembroke Rd / Ben Lomond Rd FUT PM]

Pembroke Road / Ben Lomond Road
Future Conditions
AM peak period
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pembroke Rd (S)												
1	L2	194	12.0	0.492	7.8	LOS A	3.4	24.8	0.77	0.83	0.87	52.6
2	T1	408	1.8	0.492	7.7	LOS A	3.4	24.8	0.77	0.87	0.88	53.5
3	R2	207	1.5	0.492	13.9	LOS A	3.2	22.7	0.77	0.92	0.90	52.5
Approach		809	4.2	0.492	9.3	LOS A	3.4	24.8	0.77	0.87	0.88	53.0
East: Ben Lomond Rd (E)												
4	L2	145	1.4	0.384	6.4	LOS A	2.2	16.2	0.77	0.71	0.81	53.0
5	T1	312	5.7	0.384	6.9	LOS A	2.2	16.2	0.77	0.76	0.82	53.8
6	R2	86	2.4	0.384	12.9	LOS A	2.1	15.1	0.77	0.82	0.83	53.4
Approach		543	4.1	0.384	7.7	LOS A	2.2	16.2	0.77	0.76	0.82	53.5
North: Pembroke Rd (N)												
7	L2	74	0.0	0.735	17.8	LOS B	9.6	68.7	1.00	1.22	1.57	46.6
8	T1	441	2.9	0.735	17.8	LOS B	9.6	68.7	1.00	1.22	1.57	47.9
9	R2	425	2.7	0.741	25.6	LOS B	8.7	62.6	1.00	1.23	1.60	44.1
Approach		940	2.6	0.741	21.3	LOS B	9.6	68.7	1.00	1.23	1.58	46.0
West: Ben Lomond Rd (W)												
10	L2	364	3.8	0.478	7.5	LOS A	2.9	20.6	0.72	0.88	0.81	53.3
11	T1	543	3.7	0.693	8.3	LOS A	6.1	45.1	0.82	0.94	1.06	53.3
12	R2	125	16.8	0.693	14.4	LOS A	6.1	45.1	0.82	0.94	1.06	53.2
Approach		1033	5.3	0.693	8.7	LOS A	6.1	45.1	0.79	0.92	0.97	53.3
All Vehicles		3325	4.1	0.741	12.3	LOS A	9.6	68.7	0.84	0.97	1.10	51.0

ANNEXURE G: FUTURE SIDRA RESULTS
(Sheet 4 of 5)

MOVEMENT SUMMARY

Site: 1 [Rose Payten Dr / Pembroke Rd FUT AM]

Rose Payten Drive / Pembroke Road
Future conditions
AM peak period
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Smiths Creek Bypass (SE)												
4	L2	251	3.4	0.279	10.7	LOS A	3.1	22.5	0.55	0.71	0.55	50.4
5	T1	335	4.1	0.617	32.4	LOS C	5.7	41.5	0.99	0.82	1.03	39.3
6	R2	18	17.6	0.099	37.3	LOS C	0.6	4.7	0.92	0.69	0.92	36.6
Approach		603	4.2	0.617	23.5	LOS B	5.7	41.5	0.80	0.77	0.83	43.1
NorthEast: Pembroke Rd (NE)												
7	L2	8	12.5	0.007	6.9	LOS A	0.0	0.3	0.25	0.58	0.25	52.8
8	T1	657	3.4	0.821	27.9	LOS B	16.4	117.9	0.95	0.90	1.08	41.2
9	R2	215	14.7	0.521	21.4	LOS B	4.8	38.0	0.91	0.80	0.91	43.6
Approach		880	6.2	0.821	26.1	LOS B	16.4	117.9	0.93	0.87	1.03	41.9
NorthWest: Rose Payten Dr (NW)												
10	L2	295	15.0	0.247	8.4	LOS A	2.8	22.3	0.38	0.65	0.38	51.6
11	T1	171	5.6	0.122	15.6	LOS B	1.9	14.1	0.69	0.54	0.69	47.8
12	R2	143	2.9	0.368	28.2	LOS B	4.1	29.7	0.89	0.76	0.89	40.5
Approach		608	9.5	0.368	15.1	LOS B	4.1	29.7	0.59	0.65	0.59	47.5
SouthWest: Pembroke Rd (SW)												
1	L2	231	0.9	0.197	8.8	LOS A	2.2	15.6	0.43	0.67	0.43	51.8
2	T1	499	2.1	0.721	30.5	LOS C	9.6	68.1	0.97	0.87	1.10	40.1
3	R2	112	4.7	0.398	22.6	LOS B	2.4	17.5	0.94	0.76	0.94	43.2
Approach		841	2.1	0.721	23.5	LOS B	9.6	68.1	0.82	0.80	0.89	43.2
All Vehicles		2933	5.3	0.821	22.6	LOS B	16.4	117.9	0.80	0.78	0.86	43.6

MOVEMENT SUMMARY

Site: 1 [Rose Payten Dr / Pembroke Rd FUT PM]

Rose Payten Drive / Pembroke Road
Future conditions
AM peak period
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 110 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Smiths Creek Bypass (SE)												
4	L2	162	6.5	0.257	15.1	LOS B	3.5	26.0	0.56	0.70	0.56	47.5
5	T1	229	1.4	0.588	49.8	LOS D	7.6	53.6	0.98	0.78	0.99	33.1
6	R2	15	7.1	0.192	65.3	LOS E	0.8	6.1	1.00	0.68	1.00	28.7
Approach		406	3.6	0.588	36.5	LOS C	7.6	53.6	0.81	0.75	0.82	37.4
NorthEast: Pembroke Rd (NE)												
7	L2	24	0.0	0.022	8.9	LOS A	0.3	1.8	0.35	0.62	0.35	51.8
8	T1	728	1.6	0.693	29.1	LOS C	23.0	163.2	0.85	0.75	0.85	40.7
9	R2	278	13.3	0.710	26.1	LOS B	8.8	68.2	0.90	0.84	0.94	41.3
Approach		1031	4.7	0.710	27.8	LOS B	23.0	163.2	0.85	0.77	0.87	41.1
NorthWest: Rose Payten Dr (NW)												
10	L2	229	17.0	0.242	9.6	LOS A	3.6	28.6	0.36	0.65	0.36	50.7
11	T1	337	5.6	0.365	28.9	LOS C	9.4	68.6	0.78	0.65	0.78	40.8
12	R2	267	2.4	0.693	50.5	LOS D	12.7	90.5	0.98	0.99	1.41	32.5
Approach		834	7.7	0.693	30.5	LOS C	12.7	90.5	0.73	0.76	0.87	39.7
SouthWest: Pembroke Rd (SW)												
1	L2	213	1.5	0.203	10.2	LOS A	2.7	19.1	0.44	0.68	0.44	50.8
2	T1	625	1.7	0.540	27.3	LOS B	16.5	117.5	0.80	0.69	0.80	41.5
3	R2	194	2.2	0.529	25.4	LOS B	5.4	38.6	0.89	0.80	0.89	41.9
Approach		1032	1.7	0.540	23.4	LOS B	16.5	117.5	0.74	0.71	0.74	43.2
All Vehicles		3302	4.4	0.710	28.2	LOS B	23.0	163.2	0.78	0.74	0.82	40.9

ANNEXURE G: FUTURE SIDRA RESULTS
(Sheet 5 of 5)

MOVEMENT SUMMARY

Site: 101 [Campbelltown Rd/ Rose Payten Dr FUT AM]

Campbelltown Road / Rose Payten Drive
Future Conditions
AM peak period
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Campbelltown Rd (S)												
2	T1	1296	3.8	0.542	7.9	LOS A	12.4	89.9	0.61	0.55	0.61	53.2
3	R2	289	8.4	0.534	31.1	LOS C	4.6	34.6	0.97	0.80	0.97	39.0
Approach		1585	4.6	0.542	12.1	LOS A	12.4	89.9	0.67	0.59	0.67	49.9
East: Rose Payton Dr (E)												
4	L2	48	63.0	0.090	14.2	LOS A	0.8	8.4	0.56	0.67	0.56	46.6
6	R2	547	16.3	0.823	41.3	LOS C	10.4	83.3	1.00	0.97	1.30	35.1
Approach		596	20.1	0.823	39.1	LOS C	10.4	83.3	0.96	0.94	1.24	35.8
North: Campbelltown Rd (N)												
7	L2	545	17.2	0.465	8.2	LOS A	5.2	41.4	0.43	0.69	0.43	51.7
8	T1	1473	4.6	0.851	25.3	LOS B	26.7	194.1	0.96	0.99	1.13	42.4
Approach		2018	8.0	0.851	20.7	LOS B	26.7	194.1	0.82	0.91	0.94	44.6
All Vehicles		4199	8.5	0.851	20.1	LOS B	26.7	194.1	0.78	0.79	0.88	44.8

MOVEMENT SUMMARY

Site: 101 [Campbelltown Rd/ Rose Payten Dr FUT AM]

Campbelltown Road / Rose Payten Drive
Future Conditions
AM peak period
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Campbelltown Rd (S)												
2	T1	1296	3.8	0.542	7.9	LOS A	12.4	89.9	0.61	0.55	0.61	53.2
3	R2	289	8.4	0.534	31.1	LOS C	4.6	34.6	0.97	0.80	0.97	39.0
Approach		1585	4.6	0.542	12.1	LOS A	12.4	89.9	0.67	0.59	0.67	49.9
East: Rose Payton Dr (E)												
4	L2	48	63.0	0.090	14.2	LOS A	0.8	8.4	0.56	0.67	0.56	46.6
6	R2	547	16.3	0.823	41.3	LOS C	10.4	83.3	1.00	0.97	1.30	35.1
Approach		596	20.1	0.823	39.1	LOS C	10.4	83.3	0.96	0.94	1.24	35.8
North: Campbelltown Rd (N)												
7	L2	545	17.2	0.465	8.2	LOS A	5.2	41.4	0.43	0.69	0.43	51.7
8	T1	1473	4.6	0.851	25.3	LOS B	26.7	194.1	0.96	0.99	1.13	42.4
Approach		2018	8.0	0.851	20.7	LOS B	26.7	194.1	0.82	0.91	0.94	44.6
All Vehicles		4199	8.5	0.851	20.1	LOS B	26.7	194.1	0.78	0.79	0.88	44.8

(Sheet 1 of 2)

6.3 Queue Lengths and Delays

For many metering situations, it is satisfactory to treat the arrival of vehicles at the metering point as Poisson distributed. In most situations, vehicles are usually serviced on a first-come first-served basis, and it can be assumed that service times follow a negative exponential distribution.

On this basis, then for a single service channel the following relationships apply:

- average arrival rate : q_a vehicles per second
- average service rate : q_s vehicles per second
- utilisation factor : $\rho = q_a / q_s$
- probability of n vehicles in the system, including the one being serviced
  $P(n) = (1 - \rho)\rho^n$
- probability of more than n vehicles in the system, including the one being serviced
  $P(>n) = \rho^{n+1}$
- The mean queue length, including the vehicle being serviced,
  $n_q = \rho / (1 - \rho)$
- The variance of the mean queue length, including the vehicle being serviced
  $\sigma^2(n) = \rho / (1 - \rho)^2$
- The mean waiting time (delay) in the system, including the time being serviced
  $W_m = n_q / q_a = 1 / q_s \ (1-\rho)$ *seconds*

As the flow through a metering point approaches capacity, the utilisation factor ρ approaches one, and this situation is associated with long queues and long waiting times. As far as practicable, metering points should be designed so that the utilisation factor does not exceed about 0.8. ❑

Source: AUSTROADS *Guide to Traffic Engineering Practice, Part 2: Roadway Capacity*

ANNEXURE H: QUEUING ANALYSIS

(Sheet 2 of 2)

Based on AUSTROADS the detailed queueing analysis for the proposed weighbridge is outlined below:

- Adopted service time of 60 seconds.
- Number of service bays = 1
- Inbound traffic flow is worst case 19 laden trucks per hour

Based on *Austroads Guide to Traffic Management: Part 3: Traffic Studies and Analysis, Section 5.1.2,* the resulting queueing results are shown below.

TABLE 3: QUEUING RESULTS

Number of units in system	Number of vehicles in queue	Probability of this many units in system (%)	Probability of this many units in system or less (%)	Probability of this many units in system or more (%)
0	0	68.30	68.30	100.00
1	0	21.65	89.95	31.70
2	1	6.86	96.81	10.05
3	2	2.18	98.99	3.19

Based upon the queue theory, the provision of two (**2**) queueing bays would satisfy the 98th percentile queue demand. The satisfaction of the 98th percentile is in accordance with AS2890.1:2004 requirements.

ANNEXURE I: OPERATIONAL PLAN OF MANAGEMENT & DRIVER CODE OF CONDUCT

(15 SHEETS)

M^CLAREN TRAFFIC ENGINEERING

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Division of RAMTRANS Australia ABN: 45067491678 RPEQ: 19457

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

5th February 2019 Reference: 18259.02FB

Concrete Recyclers
c/o Nexus Environmental Planning Pty Ltd
PO Box 212
Concord NSW 2137
Attention: Neil Kennan

OPERATIONAL PLAN OF MANAGEMENT (SPECIFIC TO TRAFFIC MANAGEMENT) AND DRIVER'S CODE OF CONDUCT FOR PROPOSED CONCRETE RECYCLING FACILITY AT 7 MONTORE ROAD, MINTO

Dear Neil,

Reference is made to your request to provide an Operational Plan of Management (OPM), specific to external traffic management and Driver's Code of Conduct (DCC) in regards to the proposed concrete recycling facility at 7 Montore Road, Minto.

A OPM, including driver's code of conduct, has been prepared and is attached in **Appendix A**. It is recommended that the attached OPM and Code of Conduct be implemented on site and be submitted as part of any future development applications for the site.

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

Yours faithfully
M^CLaren Traffic Engineering

Craig M^CLaren
Director
BE Civil. Graduate Diploma (Transport Eng) MAITPM MITE [1985]
RMS Accredited Level 3 Road Safety Auditor
RMS Accredited Traffic Control Planner, Auditor & Certifier (Orange Card)

APPENDIX A: OPERATIONAL PLAN OF MANAGEMENT (SPECIFIC TO TRAFFIC MANAGEMENT) AND DRIVER CODE OF CONDUCT FOR CONCRETE RECYCLING PLANT AT MONTORE ROAD, MINTO

Issue	Approved by Traffic Engineer (DATE)	Approved by Proprietor (DATE)	Adopted Date
A	Craig M^{C}Laren (5/02/2019)		

1 INTRODUCTION

1.1 Background

M^CLaren Traffic Engineering was commissioned in November 2018 by *Nexus Environmental Planning Pty Ltd* to prepare an Operational Plan of Management (OPM), specific to traffic management and Driver Code of Conduct (DCC) for the proposed concrete recycling facility at 7 Montore Road, Minto.

1.2 Site Description

This OPM and DCC applies to the subject site, being 7 Montore Road, Minto, which is also known as Lot 52 DP628900. The site map is presented in **Appendix I**.

1.3 Objective

This OPM & DCC, reproduced below in part, for the proposed concrete recycling facility at Montore Road, Minto applies to all vehicular traffic entering, exiting and moving within the site and within the public road network to maximise safety for staff and contractors of the recycling facility and other road users.

1.4 Definitions

The following terms are defined for use specific to this OPM and DCC:

- Staff – refers to Concrete Recycling employees.
- Parties – refers to all contractors, truck drivers, heavy vehicle drivers, light vehicle drivers, employees, sub-contractor employees and visitors to the site.
- Laden Truck - refers to any truck of over 6m in length that is carrying a load, is articulated or is towing a trailer, such as a truck and dog.

2 Modifications To This Operational Plan of Management (Specific To Traffic Management) And Driver Code Of Conduct

2.1 This document is able to be reasonably modified following the consultation with and approval by:

a) The owner and proprietor of Lot 52 DP618900; and

b) A suitably qualified traffic engineer with RMS accredited Level 3 road safety auditing qualifications or similar qualifications.

The traffic management component of the OPM and Driver Code of Conduct should be reviewed every 6 months for the first year of operation and then every 36 months thereafter or sooner if site operation, external road conditions or work practices significantly alter.

2.2 Significant modifications to this document, including but not limited to those that involve changes to external road network that results in changes to vehicle departure routes or changes to the land use on the site, require consultation with and approval by:

a) The owner and proprietor of Lot 52 DP618900; and

b) A suitably qualified traffic engineer with RMS accredited Level 3 road safety auditing qualifications or similar qualifications; and

c) The consent authority of the modifications proposed.

3 Management Procedures

3.1 General Requirements

Heavy vehicle drivers delivering to and from Concrete Recyclers must:

a) Have undertaken a Site Induction carried out by an approved member of the Concrete Recyclers staff or suitably qualified person under the direction of the Concrete Recyclers management.

b) Hold a valid driver's license and carry while on duty for the class of vehicle operated.

c) Operate a vehicle in a safe manner within and external to the Concrete Recyclers site. This includes abiding with Roads and Maritime Services road rules and driving without being under the influence of drugs or alcohol.

d) Comply with the direction of authorised personnel when within the site.

e) Participate in the health screen program as detailed in the TruckSafe standards prior to commencing work for Concrete Recyclers.

3.2 Induction

a) All staff of the concrete recycling facility will be provided and notified of the Traffic Management component of this OPM and Driver's Code of Conduct, prior to or on the first day of attendance.

b) All parties completing deliveries to and from the site by truck shall be provided and notified of the traffic management component of this OPM and Driver's Code of Conduct prior to the arrival of that party to the site.

c) All parties will be required to attend an initial induction meeting with relevant Concrete Recyclers staff on the first day of attendance at the site at which time both documents will be fully explained by Concrete Recyclers staff identifying clearly their obligations when conducting work on the site and when travelling to and from the site.

d) All parties upon completion of the initial induction meeting will be required to sign an induction attendance sheet at the conclusion of the meeting confirming that they will fully comply with their obligations, requirements and directions in regard to the Traffic Management component of this OPM and Driver's Code of Conduct.

e) The induction attendance records / register shall be kept on the premises at all times and be readily available upon request by authorised Council or RMS officers.

3.3 Management

a) Maintain a commitment to ongoing training for heavy vehicle drivers as outlined in the standards.

b) Ensure vehicles are loaded appropriately including abiding to manufacturer and regulatory requirements of maximum load limits.

c) Address their duty of care requirements in accordance with NSW Work Health and Safety legislation.

d) Allow vehicle drivers sufficient time to conduct trips in a legal, compliant and safe manner.

3.4 Driver Specific

To maintain courtesy to individuals and promote positive driver behaviour, drivers must:

a) Notify Concrete Recyclers management if they are not fit for duty prior to commencing work.

b) Notify management immediately should their status or conditions of their driver's license change in the anyway.

c) Not engage with individuals through providing information regarding the Concrete Recyclers operation beyond providing them with the suitable contact details at the site.

d) Minimise idling of engines.

e) Ensure that they do not dump litter on haulage routes or on site.

f) Maintain trucks in a good working order and in a clean and tidy condition.

g) Not block residential driveways or any other access points.

3.5 Heavy Vehicle Driver Fatigue

Fatigue is one of the biggest causes of crashes for heavy vehicle drivers. The Heavy Vehicle Driver Fatigue Reform was therefore developed by the National Transport Commission (NTC) and approved by Ministers from all States and Territories in February 2007.

The heavy vehicle driver fatigue law commenced in NSW on 28 September 2008 and applies to trucks and truck combinations over 12 tonne GVM (however there are Ministerial Exemption Notices that can apply).

Under the law, industry has the choice of operating under three fatigue management schemes:

a) Standard Hours of Operation;

b) Basic Fatigue Management (BFM);

c) Advanced Fatigue Management (AFM).

All heavy vehicle drivers operating out of the Concrete Recyclers are to be aware of their adopted fatigue management scheme and operate within its requirements.

3.6 Operating Conditions

The following best practices shall be adopted by all truck drivers hauling from Concrete Recyclers:

a) Implement best management practice, to minimise the construction, operational and traffic noise of the truck;

b) Apply and enforce a speed limit of 10km/h for all vehicles on site;

c) Ensure that waiting trucks do not block the entry to the concrete recyclers site or other driveways;

d) At commencement of the working day it may be that drivers arrive early. If this occurs drivers are to wait with engines off;

e) To reduce the impact of vehicle noise at commencement of the working day heavy vehicles waiting for the site to open are to wait with engines off.

f) Ensure that laden trucks do not use Raby Road between Campbelltown Road and Eagle Vale Drive;

g) All truck vehicles must be operated and maintained in a safe and roadworthy condition as outlined in the TruckSafe standards and vehicle standards regulations. This includes compliance to the appropriate Australian Vehicle Standards and Design Rules.

These conditions do not apply in the event of a direction from police or other relevant authority for safety or emergency reasons regarding works which may need to be undertaken to avoid loss of life, property loss and/or to prevent environmental harm.

3.7 Vehicular Movement Restrictions

h) Drivers shall comply with load limits of any given roads on the haulage routes. Load limits of 40 tonnes and 32 tonnes are applied to the bridges over Bow Bowing Creek on Ben Lomond Road and Airds Road respectively. Vehicles entering and exiting the

site must abide by the restrictions applied to the bridges. Alternate routes are presented in **Appendix II** along with other routes to / from likely destinations.

i) All vehicular traffic on site shall not exceed a speed limit of 10km/h.

j) All vehicles entering and exiting the site are to do so in a forward direction.

k) All drivers of laden trucks greater than 32-tonnes are to avoid using Raby Road between Campbelltown Road and Eagle Vale Drive at all times, unless in cases of emergency. Refer to **Appendix III**.

3.8 Breakdowns and Incidents

In the case of a breakdown the vehicle must be towed to nearest breakdown point as soon as possible. All breakdowns must be reported to the Concrete Recyclers management and the vehicle protected to minimise the effect as a hazard to traffic. Rapid response from the company is required and drivers must contact the Concrete Recyclers Manager as soon as the stranded vehicle and load are safely secured.

If there is a product spill while loading/unloading or en-route the driver must:

a) Immediately warn persons in the area who may be at risk;

b) The Concrete Recyclers manager must immediately be informed so that emergency services can be contacted, and a clean-up initiated;

c) All spills must be adequately cleaned up and waste disposed of in an appropriate and environmental manner;

d) Put out warning triangles where it is safe to do so.

Drivers are to ensure that when passing pedestrians/cyclists a safe separation distance exists between trucks and pedestrians as well as a reduction in speed if appropriate.

TABLE 1: OPERATIONAL AND EMERGENCY CONTACT NUMBERS

Organisation	Contact Details
RMS Transport Management Centre	131 700
Campbelltown City Council	02 4645 4000
Concrete Recyclers Head Office	02 8832 7400

3.9 Truck Size Limits

No trucks greater than 19m long articulated vehicles will be permitted for the concrete recycling operation at the site.

4 DRIVER'S Code of Conduct

All staff of the concrete recycling facility and any employees contracted to it, whether directly or indirectly, who engage in the movement of delivery trucks or motor vehicles on the site shall abide by the following code of conduct. All drivers of vehicles including employee and contractor truck drivers will be required to sign a register of inducted drivers confirming that they agree to the obligations, requirements and directions in regard to the Traffic Management component of the OPM and Driver's Code of Conduct. The signed drivers code of conduct register shall be kept on the premises at all times and be readily available upon request by authorised Council or RMS officers.

In the event that a statutory requirement overlaps the scope of this plan then the statutory requirements will take precedence. If there is a real or perceived difference between the statutory regulations and this document then the contractor or staff member must first seek clarification from the proponent on the implementation of that action for which the difference is identified.

a) Drivers to be appropriately licenced by RMS or another Australian state for the vehicle size and combination.

b) Drivers will abide by the (NSW) Road Rules 2014 as amended at all times when travelling on public roads and within the site.

c) It is prohibited to be under the influence of alcohol while operating a motor vehicle in accordance with the NSW Road Rules or as specified in contractual agreements for all employees. This specifically includes consumption by any worker who will operate machinery or a vehicle during their work period.

d) It is prohibited to be under the influence of drugs, other than alcohol, while operating a motor vehicle in accordance with NSW Road Rules or as specified in contractual agreements for all employees. This includes illicit drugs and those which may directly or indirectly have an effect such as those accompanied by the warning of *"This medicine may cause drowsiness and may increase the effect of alcohol. If affected do not drive a motor vehicle or operate machinery"*.

e) Contractors will specifically be required to abide by this code of conduct and management plan at all times while engaged in performing their duties during their work period. Failure of a contractor to comply with this code of conduct (without due cause) may result in reprimand or severance of employment by the land owner/proprietor in accordance with relevant government policies and contractual agreements for all employees. Failure of compliance will be recorded by Concrete Recyclers staff.

f) Drivers should adjust their driving speeds and turning movements during times of poor weather including rain, fog and wind. Drivers should also turn on headlights / fog lights during fog weather conditions.

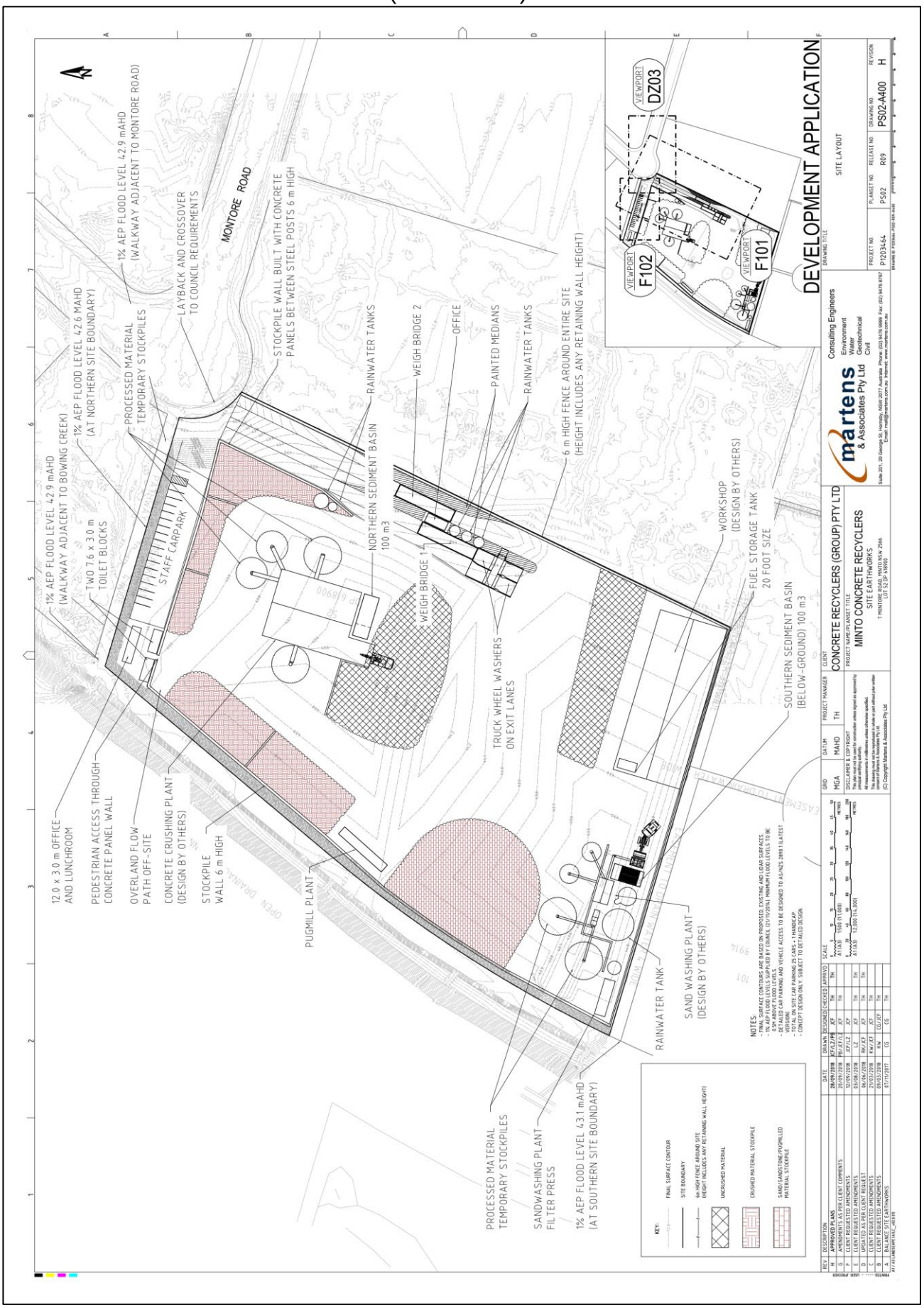
g) Drivers will comply with the direction of authorised staff when within the site.

h) Drivers queued in the truck queueing area will travel into the site as far as possible to form the queue. When space becomes available ahead of their vehicle the driver will progress forward into the available space to allow for additional queueing behind the vehicle.

i) Drivers will follow the nominated vehicle movement routes referred to in the Traffic Management component of the OPM and **Appendix II**, including movements limited by, prevailing traffic conditions, vehicle size and vehicle mass. Drivers are to obey temporary changes in travel routes as directed by regulatory signage or under the direction of Police or traffic controller at work sites and drive their vehicles in a compliant manner appropriate to the size of the vehicle and road conditions.

APPENDIX I – SITE MAP

(Sheet 1 of 1)



APPENDIX II – ROUTE MAPS

(Sheet 1 of 3)

★ **Site Location**

ROUTES FOR VEHICLES LESS THAN 32t

APPENDIX II – ROUTE MAPS
(Sheet 2 of 3)

★ **Site Location**

ROUTES FOR VEHICLES BETWEEN 32t AND 40t

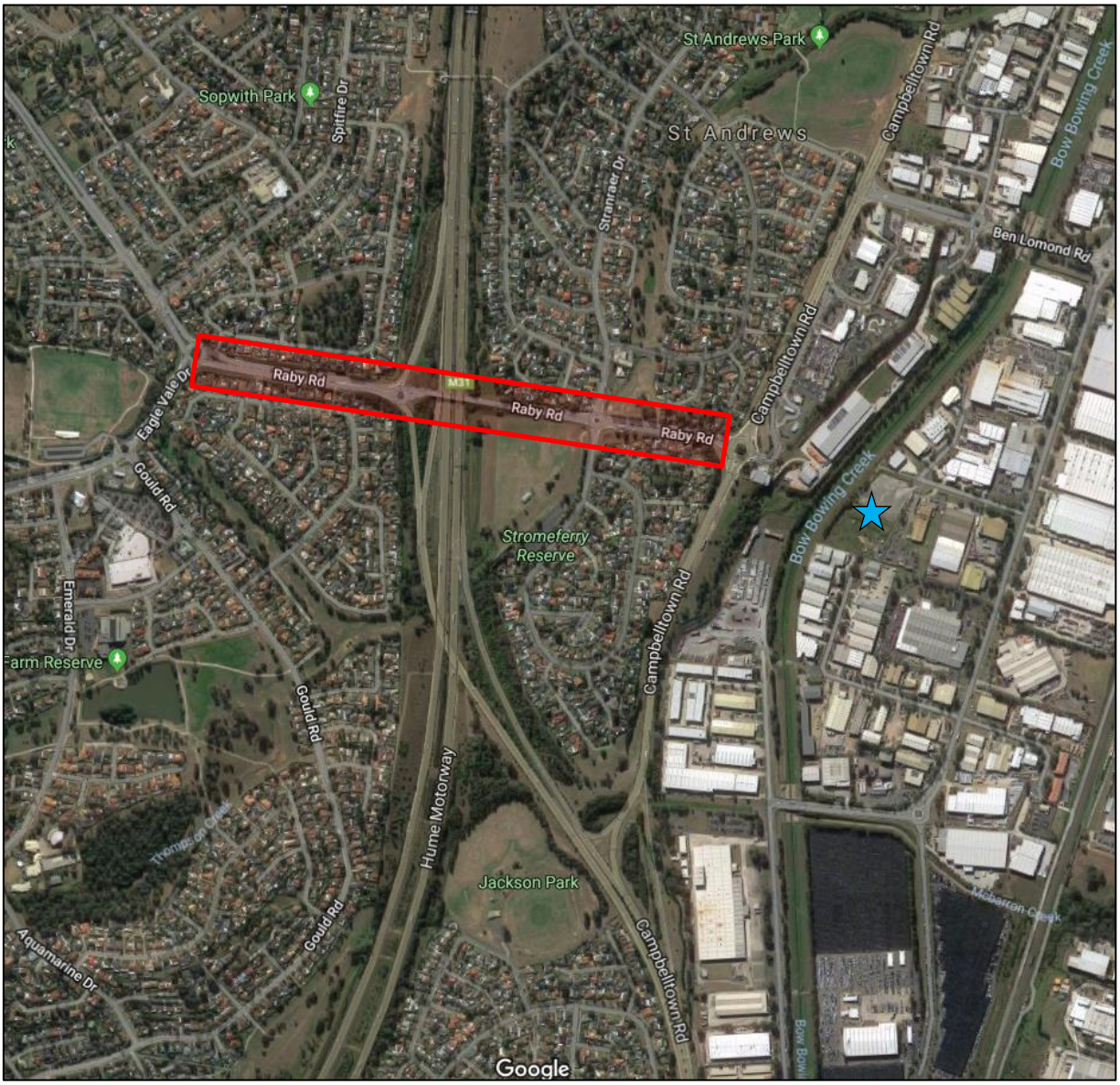
APPENDIX II – ROUTE MAPS
(Sheet 3 of 3)

★ **Site Location**

ROUTES VEHICLES OVER 40t

APPENDIX III – PROHIBITED ROAD SEGMENT BY LADEN TRUCKS

(Sheet 1 of 1)



Prohibited Road Segment by Trucks Greater than 32t

Site Location