Technical Memorandum

Title	**Joe White Malting Plant** **Response to RMS and Campbelltown Council Comments**		
Client	Cargill	Project No	600330
Date	01/05/2017	Status	Version B
Author	Aaron Pau / David Hazell	Discipline	Traffic and Transport
Reviewer	Ivo Pais	Office	Sydney

1 Introduction

This technical memorandum is prepared for Cargill in response to comments from Campbelltown Council (email dated 15/02/2017) and Roads and Maritime Services (email dated 20/02/2017) in regards to the Application MP 08_0157.

2 Response to Comments

2.1 Noise

An acoustic assessment was prepared by PKA Acoustic Consulting as an addendum letter to PKA acoustic report (216 126 dated 30 August 2016) and to the first addendum letter (25 November 2016). The acoustic assessment was written in response to Department of Planning & Environment requesting additional information to assess the daytime & night time noise impacts from the additional trucks.

The assessment found the relative noise increase from the additional 18 trucks will be 0.3 dBa. This value is within the 2 dBa guideline for relative increase criteria hence, the increase in trucks complies with the guidelines.

The full letter can be found in **Attachment A**.

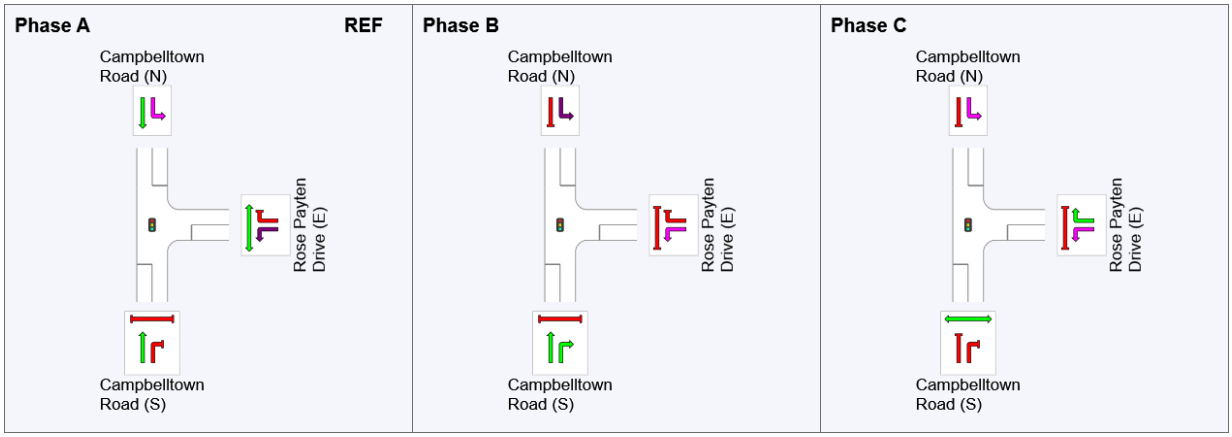
2.2 Roads and Maritime Service' comments

2.2.1 The 'Practical Cycle Time' option adopted in the SIDRA Model is not supported and the existing cycles times should be used to provide a better indication of existing traffic conditions.

To satisfy and address the comment regarding practical cycle time, Cardno interrogated the survey results and footage for both signalised intersections. The following SIDRA outputs are based on the actual signal phasing sequence and phase times. The SIDRA files can be delivered upon request.

Campbelltown Road / Rose Payten Drive Intersection

The following phase sequence was used for Campbelltown Road / Rose Payten Drive Intersection:



With the above phasing sequence, the following SIDRA movement summaries were observed. The full SIDRA movement summaries can be found in **Attachment B**.

Table 1 Revised Campbelltown Road / Rose Payten Drive Intersection SIDRA Results

Campbelltown Road / Rose Payten Drive Intersection	AM Peak			PM Peak		
	DoS	Delay (Sec)	Level of Service (LoS)	DoS	Delay (Sec)	Level of Service (LoS)
2016 Base	0.811	26.1	B	1.085	72.7	F
2026 Base	0.971	32.1*	C	1.259	135.4	F
2026 Base + Development	0.986	33.2*	C	1.259	135.9	F

*SIDRA provided a diagnostic message indicating an unstable solution

As shown in Table 1, the development generated traffic (trucks) results in negligible changes to the operational level of this intersection in both peak periods.

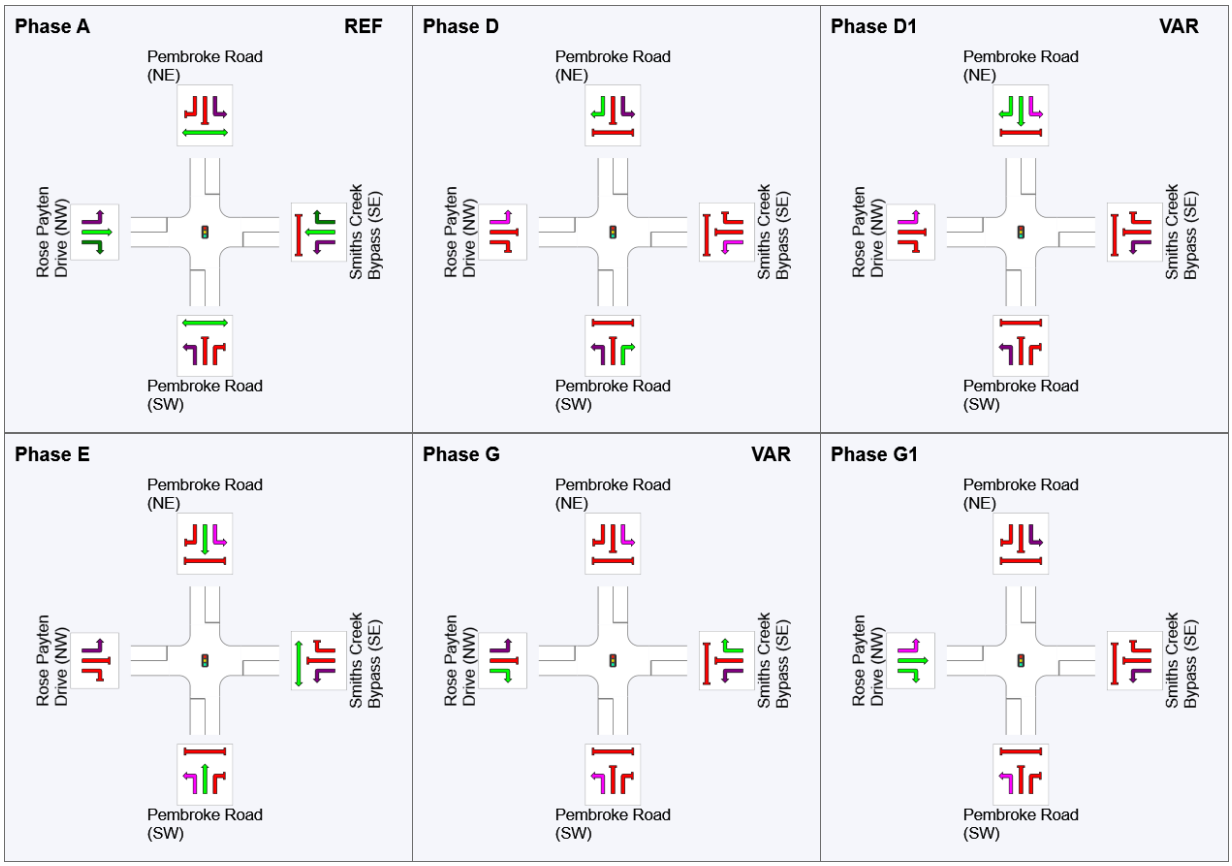
The previous SIDRA results for Campbelltown Road / Rose Payten Drive Intersection are summarised below.

Table 2 Previous Campbelltown Road / Rose Payten Drive Intersection SIDRA Results

Campbelltown Road / Rose Payten Drive Intersection	AM Peak			PM Peak		
	DoS	Delay (Sec)	Level of Service (LoS)	DoS	Delay (Sec)	Level of Service (LoS)
2016 Base	0.879	25.3	B	0.955	36.1	C
2026 Base	0.891	30.6	C	1.128	102.1	F
2026 Base + Development	0.895	31.2	C	1.129	102.7	F

Rose Payten Drive / Pembroke Road / Smiths Creek Bypass Intersection

The following phase sequence was used for Rose Payten Drive / Pembroke Road / Smiths Creek Bypass Intersection:



With the above phasing sequence, the following SIDRA movement summaries were observed. The full SIDRA movement summaries can be found in **Attachment B**.

Table 3 Revised Rose Payten Drive / Pembroke Road / Smith Creek Bypass Intersection SIDRA Results

Rose Payten Drive / Pembroke Road / Smiths Creek Bypass Intersection	AM Peak			PM Peak		
	DoS	Delay (Sec)	Level of Service (LoS)	DoS	Delay (Sec)	Level of Service (LoS)
2016 Base	0.747	23.5	B	1.036	33.0	C
2026 Base	0.837	24.3	B	1.362	71.2*	F
2026 Base + Development	0.870	24.6*	B	1.362	69.6	E

*SIDRA provided a diagnostic message indicating an unstable solution

As shown in Table 3, the development generated traffic (trucks) results in negligible changes to the operational level of this intersection in both peak periods. In the PM peak, the delay actually experiences a marginal reduction (from 71.2sec to 69.6sec) which is somewhat counterintuitive. This is caused by the “unstable solution” warning returned by SIDRA when the actual phasing is entered to the model, which can lead to some minor fluctuations to the results when the model inputs are updated. Overall, the results indicate that no tangible impact to the intersection operation would be experienced.

The previous SIDRA results for Rose Payten Drive / Pembroke Road / Smiths Creek Bypass Intersection are summarised below.

Table 4 Previous Rose Payten Drive / Pembroke Road / Smith Creek Bypass Intersection SIDRA Results

Rose Payten Drive / Pembroke Road / Smiths Creek Bypass Intersection	AM Peak			PM Peak		
	DoS	Delay (Sec)	Level of Service (LoS)	DoS	Delay (Sec)	Level of Service (LoS)
2016 Base	0.831	30.0	C	0.905	31.0	C
2026 Base	0.937	42.5	D	1.148	85.4	F
2026 Base + Development	0.947	43.4	D	1.148	85.5	F

2.2.2 It is noted that the SIDRA modelling for the proposed increase in import by road suggests that the Stonny Batter Road/Pembroke Road intersection is operating at a level of service A. However, the Department of Planning Assessment report provided in Appendix A of Cardno's response dated 22 November 2016, for the previous modification application (08_0157 MOD1), states that this intersection is already failing during both AM and PM peak hour traffic conditions. It is not clear how an increase in traffic movements will result in an improved level of service at this intersection.

After reviewing video footage, it is clear that the intersection operated with no significant operational issues / delays on the day that the survey was undertaken. The surveys were undertaken on Tuesday 26 July 2016. It is noted that there is a significant difference from LoS F to LoS A however, it must be noted that the previous assessment was done in December 2011 with the surveys being conducted on 18/10/2011. According to the traffic survey data from October 2011, through volumes on Pembroke Road in the order of 2,000 were observed (compared to some 300 to 600 in July 2016 depending on the peak and the direction). Traffic volumes of this magnitude would inevitably lead to a LoS F, as was the case in October 2010.

It is plausible that the upgrades to the Hume Motorway (M31) happening in 2011 caused significant route diversion from the M31 to occur due to the road works / construction impact. In 2016, the M31 configuration near the study area features the full upgrade (from a four-lane two-way cross section to a six-lane two-way cross section). The increased capacity has possibly contributed to a significant reduction in route diversion from this corridor.

To confirm the existing intersection is operating with no significant operational issues / delays, Cardno will provide RMS with the video footage taken on Tuesday 26 July 2016 on a hard drive.

As shown in **Figure 1** and **Figure 2**, no extensive queues are displayed on any leg of Stonny Batter Road / Pembroke Road intersection.

Figure 1 Typical AM Peak Hour

Figure 2 Typical PM Peak Hour

2.2.3 The truck intake forecast indicates that 60,770 tonnes of the proposed 103,000 tonnes will be imported between 6am and 3pm. So it is assumed that the remaining 42,230 tonnes will be imported between 3pm and 6pm. However, the proponent has not addressed the increase in potential traffic generation in the PM peak in the latest submission.

The remaining 42,230 tonnes are expected to be delivered between 3pm and 6pm on weekdays and 6am to 2pm on Saturdays. As no deliveries currently take place during these periods (since they lie outside of the existing operational hours) they were assumed to be distributed evenly. This would result in 18 additional hours per week to transport 42,230 tonnes. Assuming an even distribution, that would equate to under 1 truck per hour.

The most recent traffic analysis consisted of an addendum to the original TIA and should be read in conjunction with the TIA. The TIA has already assessed the impacts of the PM truck volumes on the nearby road network assuming 2 trucks during the PM peak hour and it was concluded that no significant impacts would be expected.

2.3 Council's Comments

2.3.1 The traffic volume comparison in table 1 of Cardno's 'Response to RFI' (Appendix 3) contains data for all traffic. Council was specifically interested in the increase in the number of heavy vehicles that would be utilising the roads. The percentages identified in the table are very minor, however, the question asked was in relation to the increase in heavy vehicle traffic, not overall traffic – as a measure of the potential impacts on the road surface over time.

The question raised in Council's letter of late September 2016 specifically mentioned equivalent standard axle loading, but this has not been considered in the table as the percentage increase of heavy vehicles has not been nominated. This is of most interest in determining the potential impacts increased b-double traffic (at 45 tonnes payload) might have on roads over time.

Cardno has revised the Traffic Volumes table to only include Heavy Vehicles. This information was also incorporated in the detailed pavement assessment (see below).

Table 5 Traffic Volume Comparison

Location	Annual Traffic Volumes		
	Existing	Additional Trucks	% Increase
Campbelltown Rd north of Rose Payten Dr	914694.2	2513	0.27%
Campbelltown Rd south of Rose Payten Dr	545467.9	2513	0.46%
Rose Payten Dr between Campbelltown Rd and Airds Rd	704966.6	5026	0.71%
Airds Rd north of Rose Payten Dr	499351.4	0	0.00%
Airds Rd south of Rose Payten Dr	293736.1	0	0.00%
Rose Payten Dr between Airds Rd and Pembroke Rd	318997.4	5026	1.58%
Pembroke Rd southwest of Rose Payten Dr	180354	0	0.00%
Smiths Creek Bypass east of Pembroke Rd	71377.87	0	0.00%
Pembroke Rd between Rose Payten Dr and Stonny Creek Rd	281105.4	5026	1.79%
Stonny Batter Rd west of Pembroke Rd	247619.5	5026	2.03%
Pembroke Rd north of Stonny Batter Rd	293736.1	0	0.00%

Pavement Assessment

Pavement Structure

Stonny Batter Road

Council advised that the pavement structure comprises 300 mm cement stabilised base with 50 mm asphalt wearing course from Pembroke Rd to #6 Stonny Batter Rd (about 2/3rds road length) constructed in November 2014. The remainder is described as 50 mm asphalt over “unknown” also constructed November 2014. From Google Streetview imagery, the full length of Stonny Batter Rd appears to be of uniform structure and age and is in good condition. The structure has been assumed to be uniform for the full length.

Other Roads

Council advised that Pembroke Road is RMS owned. Pavement structure details are unknown. It is assumed that all other arterial roads leading to the site are also RMS owned.

The design traffic loading for the pavement structure on these roads is also not known.

Traffic Loading

Actual heavy vehicle traffic loads were estimated based on the surveyed turn volumes. For pavement design purposes an annual growth rate of 3% was adopted.

The pavement wear resulting from an average heavy vehicle has been assumed to be 1.8 ESAs per vehicle. This average value considers the full range of heavy vehicles using the road network from two axle delivery trucks to semi-trailers and B Doubles in laden, partially laden and unladen conditions. This number is derived from the Austroads Pavement Structural Design and is the value obtained from Weigh in Motion data for James Ruse Drive Parramatta. This is assumed to be representative of the urban arterial roads impacted by this proposal.

A 9 axle B Double operating under Concessional Mass Limits (CML) has an allowable gross mass of 21 tonnes per triaxle, 16.5 tonnes per tandem axles and 6 tonnes steer axle (Total 64.5 tonnes). For pavement wear calculation, 20 tonnes per triaxle has been used as per CML approvals. The pavement wear for each pass of a fully laden vehicle is 6.35 ESAs.

Subgrade Design CBR

A design subgrade CBR in the range 3% to 5% has been assumed for theoretical design analysis. This is based on soil map descriptions of soils in the Minto area as “Clay”.

Findings

The proposed additional 103,000 tonnes per annum haulage will result in pavement wear increases over 20 years of:

- between 0.72% to 1.21% for Campbelltown Road
- 1.87% for Rose Payten Drive between Campbelltown Rd and Airds Rd
- 4.13% for Rose Payten Drive between Airds Rd and Pembroke Rd
- 4.69% for Pembroke Rd between Rose Payton Drive and Stonny Batter Rd
- 5.32% for Stonny Batter Rd

The increase in pavement wear exceeds the normal growth allowance assumed in pavement design (typically 3% per annum) for Rose Payten Drive east of Airds Rd, Pembroke Rd south of Stonny Batter Rd, and Stonny Batter Rd.

Design Assessment of Stonny Batter Road

Based on the structural configuration of Stonny Batter Rd, CIRCLY modelling was undertaken to determine the theoretical design life of the structure. Assuming a subgrade CBR of 3% indicates a theoretical life of 1.4 x 10^6 ESAs. A design CBR of 5% increase this to 6.2 x 10^6 ESAs. This compares with a predicted 20 year traffic demand of 5.99 x 10^6 ESAs. These calculation checks indicate that the current pavement structure is marginally adequate for the existing traffic loading and would not be suitable for an increased traffic loading.

In order to determine the degree of strengthening required for the proposed additional grain haulage, further CIRCLY modelling was undertaken. Assuming a worst case subgrade CBR of 3%, a **45 mm AC14(AR450) asphalt overlay** provides a theoretical design life of 1.05 x 10^7 ESAs. This exceeds the likely traffic loading arising from the increased freight task and would be a suitable strengthening option. Milling of the edge of existing pavement adjacent to concrete gutters would allow the overlay to match existing drainage levels.

Design Assessment of Other Roads

In the absence of pavement structural information, nor of theoretical structural design life, it is not possible to determine the residual design life of the other RMS arterial roads leading to the site. The predicted increase in pavement wear over 20 years under current traffic levels for part of Rose Payten Drive and Pembroke Rd of between 4% and 5% will result in a small reduction in the expected life of these roads. Further advice and comment from RMS is required as to whether such increases are considered to be a concern.

Recommendations

Cardno's recommendation is as follows:

> as a condition of approval to increase road freight of 103,000 tonnes per annum, that Stonny Batter Road be strengthened with a 45 mm AC14(AR450) asphalt overlay prior to additional vehicles using the road.

2.3.2 The truck routes on page 6 and in Appendix C of the proponent's 'Operational Traffic Management Plan' do not appear to consider the 40 tonne load limit that is applied to the bridge on Ben Lomond Road (between Airds Road and Carey Grove). Further, the right turn proposed from Campbelltown Road to the Hume Highway north is not possible. There are no right turn facilities in that location. A revised route for those movements impacted by the load limit and turn treatments shall be provided.

Cardno has revised the operational routes for the truck movements. The operational routes are based on liaison with Kelvin Baxter Transport who are nominated by Cargill to transport the additional grain.

Figure 3, **Figure 4**, **Figure 5** and **Figure 6** illustrates the proposed operational routes.

The operational traffic management plan has been updated (see **Attachment C**).

Updated SIDRA analysis for the signalised intersections of Campbelltown Road / Rose Payten Drive and Pembroke Road / Rose Payten Drive / Smiths Creek Bypass was carried to account for the revised truck routes and the results are shown in Section 2.2 of this document.

For completeness, the SIDRA files for the remaining intersections (Rose Payten Drive / Airds Road and Pembroke Road / Stonny Batter Road) have also been updated to reflect the changes made to the operational routes. The SIDRA files can be delivered upon request.

Rose Payten Drive / Airds Road

The revised SIDRA results for Rose Payten Drive / Airds Road Intersection are summarised in the table below. The full SIDRA movement summaries can be found in **Attachment B**.

Table 6 Revised Rose Payten Drive / Airds Road Intersection SIDRA Results

Rose Payten Drive / Airds Road	AM Peak			PM Peak		
	DoS	Delay (Sec)	Level of Service (LoS)	DoS	Delay (Sec)	Level of Service (LoS)
2016 Base	0.148	11.1	A	0.278	11.7	A
2026 Base	0.182	11.5	A	0.347	12.4	A
2026 Base + Development	0.183	11.5	A	0.348	12.4	A

As shown in Table 6, the development generated traffic (trucks) results in no changes to the operational level of this intersection in both peak periods.

The previous SIDRA results for Rose Payten Drive / Airds Road Intersection are summarised below.

Table 7 Previous Rose Payten Drive / Airds Road Intersection SIDRA Results

Rose Payten Drive / Airds Road	AM Peak			PM Peak		
	DoS	Delay (Sec)	Level of Service (LoS)	DoS	Delay (Sec)	Level of Service (LoS)
2016 Base	0.328	5.7	A	0.369	6.4	A
2026 Base	0.392	6.0	A	0.441	6.8	A
2026 Base + Development	0.393	6.0	A	0.443	6.8	A

Pembroke Road / Stonny Batter Road

The revised SIDRA results for Pembroke Road / Stonny Batter Road Intersection are summarised in the table below. The full SIDRA movement summaries can be found in **Attachment B**.

Table 8 Revised Pembroke Road / Stonny Batter Road Intersection SIDRA Results

Pembroke Road / Stonny Batter Road	AM Peak			PM Peak		
	DoS	Delay (Sec)	Level of Service (LoS)	DoS	Delay (Sec)	Level of Service (LoS)
2016 Base	0.099	10.3	A	0.185	10.5	A
2026 Base	0.124	11.1	A	0.230	11.2	A
2026 Base + Development	0.145	12.2	A	0.239	11.4	A

As shown in Table 8, the development generated traffic (trucks) results in no substantial changes to the operational level of this intersection in both peak periods.

The previous SIDRA results for Pembroke Road / Stonny Batter Road Intersection are summarised below.

Table 9 Previous Pembroke Road / Stonny Batter Road Intersection SIDRA Results

Pembroke Road / Stonny Batter Road	AM Peak			PM Peak		
	DoS	Delay (Sec)	Level of Service (LoS)	DoS	Delay (Sec)	Level of Service (LoS)
2016 Base	0.418	4.9	A	0.368	4.8	A
2026 Base	0.489	5.0	A	0.428	4.9	A
2026 Base + Development	0.495	5.1	A	0.431	4.9	A

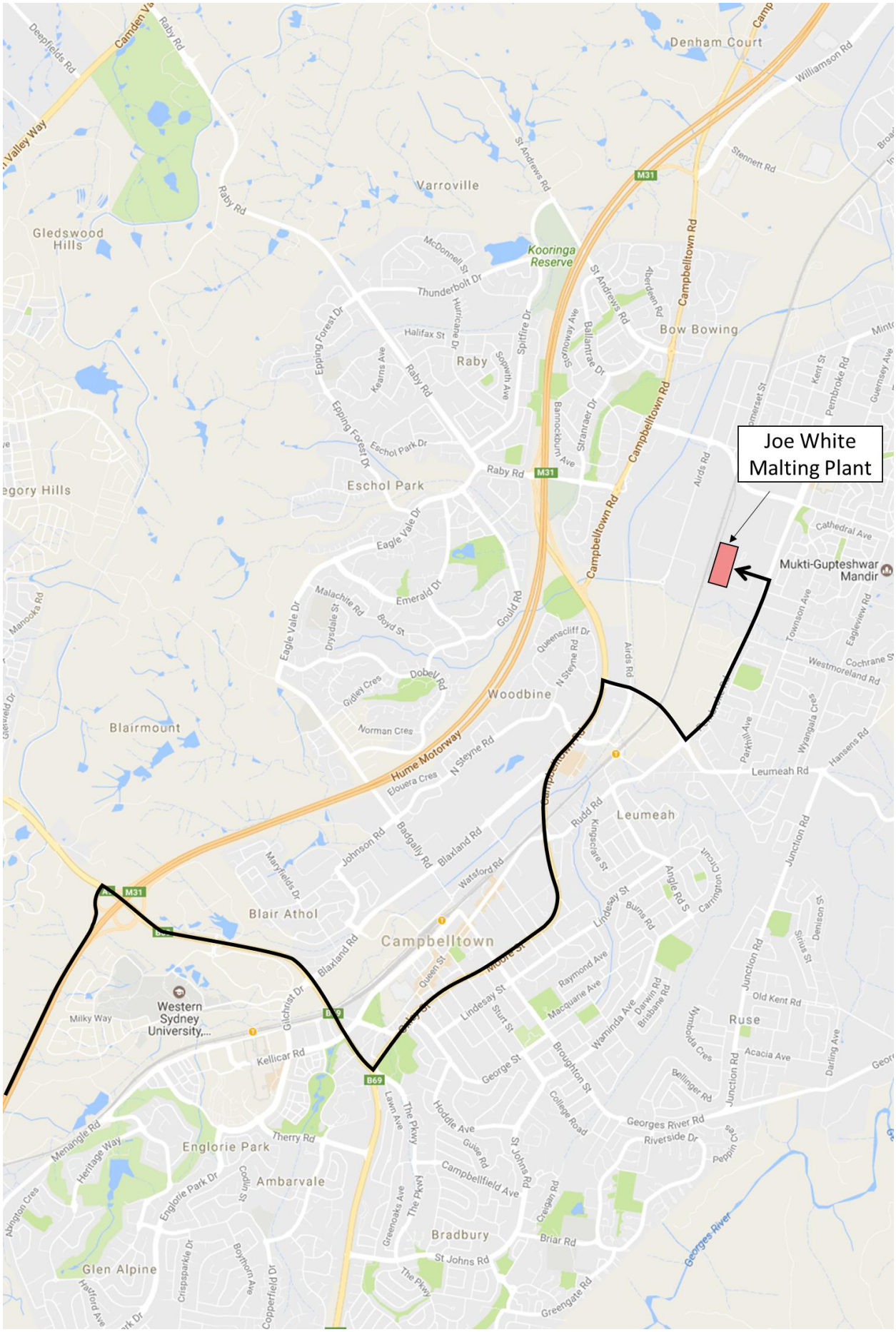


Figure 3 Inbound Operational Truck Route from the South

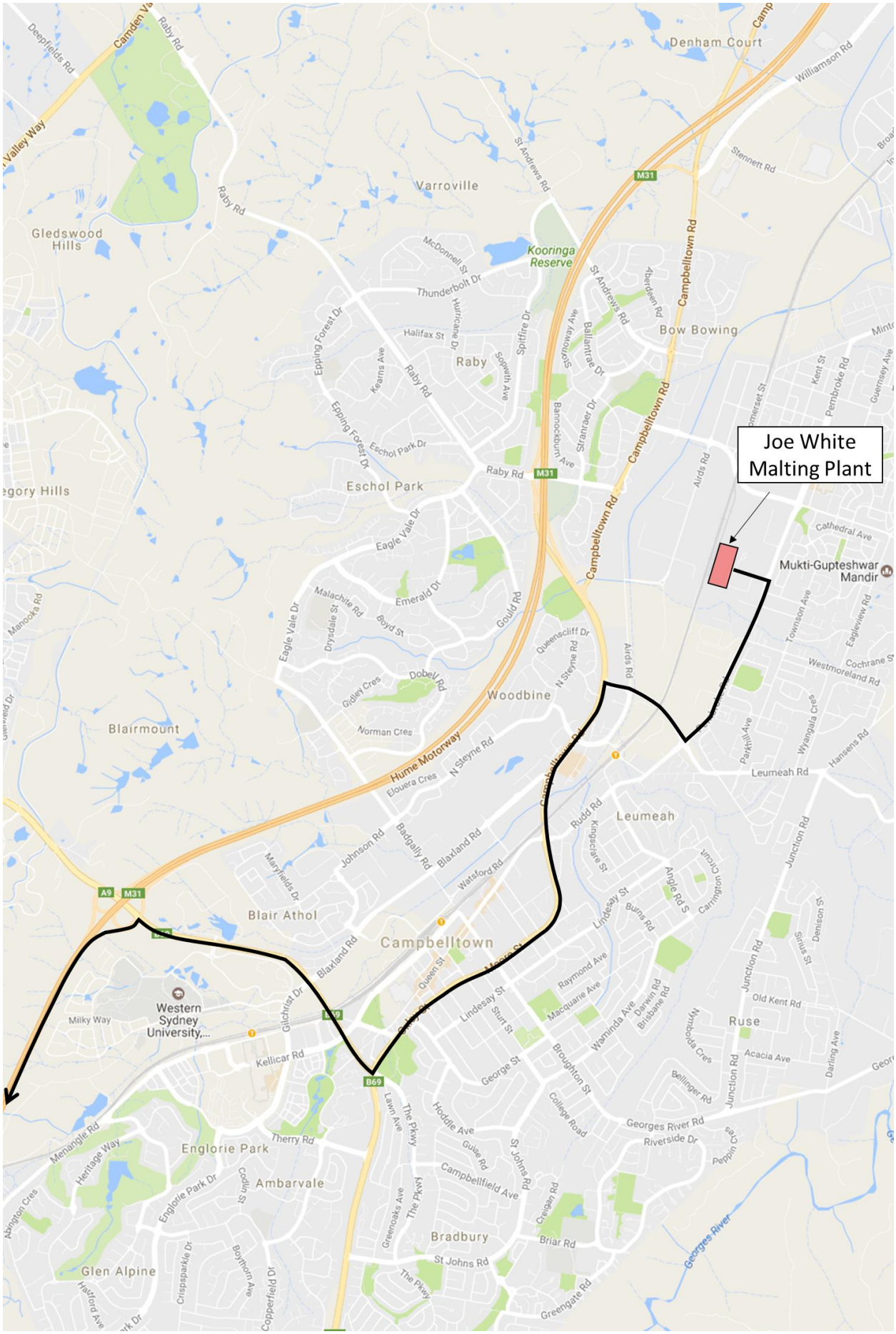


Figure 4 Outbound Operational Truck Route to the South

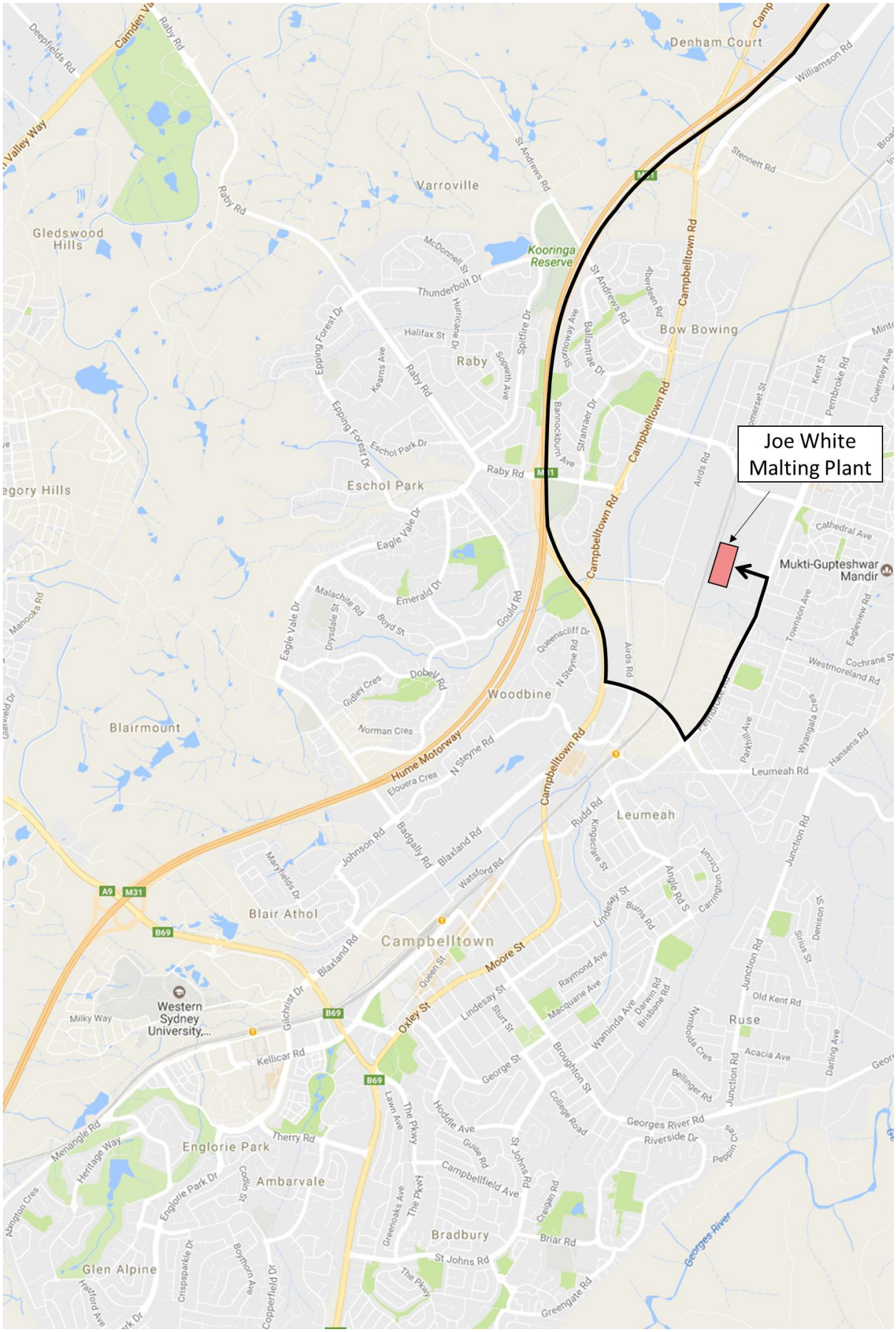


Figure 5 Inbound Operational Truck Route from the North

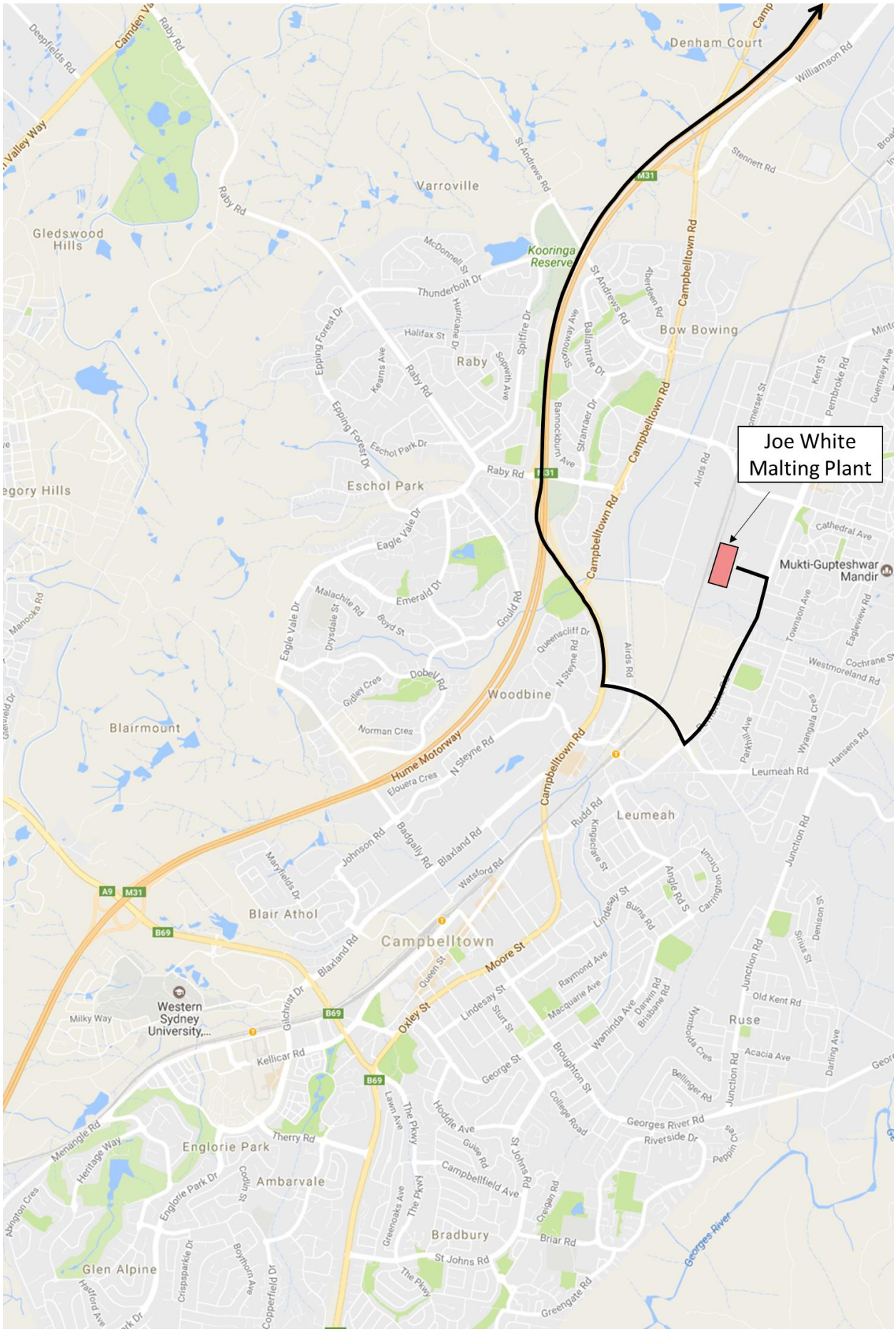


Figure 6 Outbound Operational Truck Route to the North

Joe White Malting Plant

APPENDIX A

ACOUSTIC ASSESSMENT LETTER

Cardno
Shaping the Future

Date	24 March, 2017
Reference	216 126
Project	Joe White Malting, Minto
Contact	Tracy Davey
Email	Tracy.davey@cardno.com.au
Company	Cardno
Address	L9, 203 Pacific Highway, St Leonards, NSW
File	*Addendum letter 2- Acoustic report*

Re: Acoustic report - Addendum letter 2

Dear Tracy,

This is an addendum letter to PKA acoustic report (216 126 dated 30 August 2016) and to the first addendum letter (25 Nov 2016). This is in response of Department of Planning & Environment requesting additional information to assess the daytime & night time noise impacts from the additional trucks.

Section 5 of the Traffic Report (Report by Cardno, Ref 600330, dated 16 August 2016) is on Conclusions and states that the proposed modification will yield a traffic generation potential of:

- 2 truck movements during the AM and PM peak hour (ie an additional 1 truck arriving & departing the site in the same hour)
- 18 truck movements on a typical weekday (ie an additional 9 trucks arriving & departing on the same weekday), and
- 12 truck movements on a Saturday (ie an additional 6 trucks arriving & departing on the same Saturday).

Pembroke Road is a defined as a state road (similar to a sub-arterial road). The assessment period for traffic noise on arterial/ sub-arterial roads is generally 15 hours for daytime, using Leq (15 hours) and 9 hours for night time, using Leq(9 hours) descriptors. As the subject site stops operation at 6 pm, we have considered a new descriptor Leq (11 hours) for this assessment.

To calculate the noise impact of the additional trucks we have onsidered the relative noise impact from addition of 18 trucks on Pembroke Road where the nearest residential buildings are located.

The sound power level of a 20 Ton truck is 107 dBA. The equivalent sound pressure level of 18 trucks over 11 hours (daytime period) was calculated and has a value of Leq(11 hrs) 59 dBA. As the traffic flow on Pembroke Road is continuous & constant during the day, we can safely assume that the existing equivalent noise level over 11 hour daytime period (Leq(11 hours)) will have the same value as the measured Leq(15 min) 70 dBA.

The noise increase from the addition of 18 trucks Leq(11 hours) 59 dBA over the existing daytime Leq(11 hours) 70 dBA will be 0.3 dBA. This values is within the 2 dBA guideline for relative increase criteria hence complies with the guidelines.

The relative increase of 0.3 dBA is not noticeable by human hearing. We expect the noise increase will be marginal and not noticeable by the residential buildings on Pembroke Road.

It should be noted that if the standard Leq(15 hours) descriptor were used in the assessment, the relative noise increase of 0.3 dBA would have been even lower resulting in even a lower impact.

The assessment does not consider the night time noise impact as the subject plant does not operate at night time.

Yours faithfully,

Peter Knowland

PKA Acoustic Consulting

Joe White Malting Plant

APPENDIX B

SIDRA MOVEMENT SUMMARIES

Cardno
Shaping the Future

MOVEMENT SUMMARY

Site: 101 [2016 AM]

Campbelltown Road & Rose Payten Drive Intersection
Signals - Fixed Time Isolated Cycle Time = 142 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Campbelltown Road (S)											
2	T1	1100	8.2	0.414	8.4	LOS A	14.9	111.5	0.43	0.39	59.3
3	R2	239	8.2	0.645	73.9	LOS F	8.3	61.9	1.00	0.81	26.8
Approach		1339	8.2	0.645	20.1	LOS B	14.9	111.5	0.53	0.47	48.7
East: Rose Payten Drive (E)											
4	L2	56	8.2	0.081	12.8	LOS A	1.2	9.1	0.38	0.64	48.9
6	R2	548	8.2	0.811	69.5	LOS E	19.9	148.7	1.00	0.90	28.5
Approach		604	8.2	0.811	64.2	LOS E	19.9	148.7	0.94	0.88	29.7
North: Campbelltown Road (N)											
7	L2	487	8.2	0.342	7.2	LOS A	5.3	39.9	0.23	0.62	52.8
8	T1	1360	8.2	0.644	21.9	LOS B	31.4	235.1	0.74	0.67	44.2
Approach		1847	8.2	0.644	18.0	LOS B	31.4	235.1	0.60	0.66	46.2
All Vehicles		3791	8.2	0.811	26.1	LOS B	31.4	235.1	0.63	0.63	43.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	59.6	LOS E	0.2	0.2	0.92	0.92
P2	East Full Crossing	53	18.8	LOS B	0.1	0.1	0.52	0.52
All Pedestrians		105	39.2	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2016 PM]

Campbelltown Road & Rose Payten Drive Intersection
Signals - Fixed Time Isolated Cycle Time = 143 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Campbelltown Road (S)											
2	T1	1508	3.1	0.537	8.7	LOS A	22.5	161.7	0.48	0.44	59.0
3	R2	186	3.1	0.293	61.2	LOS E	5.7	40.9	0.91	0.77	29.6
Approach		1695	3.1	0.537	14.5	LOS B	22.5	161.7	0.52	0.48	53.2
East: Rose Payten Drive (E)											
4	L2	56	3.1	0.082	30.7	LOS C	2.3	16.2	0.65	0.70	39.5
6	R2	564	3.1	0.863	76.1	LOS F	21.4	154.0	1.00	0.93	27.4
Approach		620	3.1	0.863	72.0	LOS F	21.4	154.0	0.97	0.91	28.2
North: Campbelltown Road (N)											
7	L2	704	3.1	0.479	6.9	LOS A	7.9	56.6	0.25	0.63	53.1
8	T1	1931	3.1	1.085	148.1	LOS F	131.8	947.5	1.00	1.52	17.3
Approach		2635	3.1	1.085	110.3	LOS F	131.8	947.5	0.80	1.28	21.1
All Vehicles		4949	3.1	1.085	72.7	LOS F	131.8	947.5	0.73	0.96	27.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	62.0	LOS F	0.2	0.2	0.93	0.93
P2	East Full Crossing	53	23.0	LOS C	0.1	0.1	0.57	0.57
All Pedestrians		105	42.5	LOS E			0.75	0.75

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2026 AM]

Campbelltown Road & Rose Payten Drive Intersection
Signals - Fixed Time Isolated Cycle Time = 142 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Campbelltown Road (S)											
2	T1	1277	8.2	0.480	9.0	LOS A	18.5	139.0	0.47	0.43	58.7
3	R2	277	8.2	0.747	76.6	LOS F	9.9	74.1	1.00	0.86	26.3
Approach		1554	8.2	0.747	21.1	LOS B	18.5	139.0	0.56	0.50	48.1
East: Rose Payten Drive (E)											
4	L2	65	8.2	0.100	16.8	LOS B	1.8	13.5	0.46	0.67	46.4
6	R2	637	8.2	0.971	102.1	LOS F	30.4	227.6	1.00	1.06	22.8
Approach		702	8.2	0.971	94.2	LOS F	30.4	227.6	0.95	1.02	23.9
North: Campbelltown Road (N)											
7	L2	565	8.2	0.401	7.5	LOS A	7.2	53.9	0.26	0.63	52.5
8	T1	1578	8.2	0.793	24.2	LOS B	44.7	334.6	0.82	0.75	43.0
Approach		2143	8.2	0.793	19.8	LOS B	44.7	334.6	0.67	0.72	45.1
All Vehicles		4399	8.2	0.971	32.1	LOS C	44.7	334.6	0.68	0.69	40.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	59.6	LOS E	0.2	0.2	0.92	0.92
P2	East Full Crossing	53	18.8	LOS B	0.1	0.1	0.52	0.52
All Pedestrians		105	39.2	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2026 PM]

Campbelltown Road & Rose Payten Drive Intersection
Signals - Fixed Time Isolated Cycle Time = 143 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Campbelltown Road (S)											
2	T1	1751	3.1	0.650	9.8	LOS A	31.6	226.7	0.54	0.50	58.0
3	R2	216	3.1	0.340	61.8	LOS E	6.7	47.8	0.92	0.78	29.5
Approach		1966	3.1	0.650	15.5	LOS B	31.6	226.7	0.58	0.53	52.5
East: Rose Payten Drive (E)											
4	L2	65	3.1	0.096	30.9	LOS C	2.7	19.1	0.66	0.70	39.5
6	R2	655	3.1	1.015	125.1	LOS F	33.7	242.3	1.00	1.12	20.0
Approach		720	3.1	1.015	116.5	LOS F	33.7	242.3	0.97	1.08	20.9
North: Campbelltown Road (N)											
7	L2	817	3.1	0.561	7.3	LOS A	11.7	83.8	0.30	0.65	52.8
8	T1	2240	3.1	1.259	293.4	LOS F	211.6	1520.4	1.00	2.09	10.1
Approach		3057	3.1	1.259	216.9	LOS F	211.6	1520.4	0.81	1.71	12.9
All Vehicles		5743	3.1	1.259	135.4	LOS F	211.6	1520.4	0.75	1.23	18.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	62.0	LOS F	0.2	0.2	0.93	0.93
P2	East Full Crossing	53	23.0	LOS C	0.1	0.1	0.57	0.57
All Pedestrians		105	42.5	LOS E			0.75	0.75

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2026 AM + Development]

Campbelltown Road & Rose Payten Drive Intersection
Signals - Fixed Time Isolated Cycle Time = 142 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Campbelltown Road (S)											
2	T1	1277	8.2	0.480	9.0	LOS A	18.5	139.0	0.47	0.43	58.7
3	R2	279	8.9	0.767	77.5	LOS F	10.1	76.7	1.00	0.87	26.1
Approach		1556	8.3	0.767	21.3	LOS B	18.5	139.0	0.56	0.51	48.0
East: Rose Payten Drive (E)											
4	L2	67	11.1	0.111	16.9	LOS B	1.9	15.1	0.46	0.67	46.2
6	R2	639	8.5	0.986	109.0	LOS F	31.7	239.1	1.00	1.08	21.8
Approach		706	8.7	0.986	100.2	LOS F	31.7	239.1	0.95	1.04	23.0
North: Campbelltown Road (N)											
7	L2	567	8.5	0.406	7.7	LOS A	7.6	57.7	0.27	0.64	52.4
8	T1	1578	8.2	0.794	24.3	LOS B	44.8	335.5	0.82	0.75	43.0
Approach		2145	8.3	0.794	19.9	LOS B	44.8	335.5	0.67	0.72	45.1
All Vehicles		4407	8.4	0.986	33.2	LOS C	44.8	335.5	0.68	0.70	39.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	59.6	LOS E	0.2	0.2	0.92	0.92
P2	East Full Crossing	53	18.8	LOS B	0.1	0.1	0.52	0.52
All Pedestrians		105	39.2	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2026 PM + Development]

Campbelltown Road & Rose Payten Drive Intersection
Signals - Fixed Time Isolated Cycle Time = 143 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Campbelltown Road (S)											
2	T1	1751	3.1	0.650	9.8	LOS A	31.6	227.1	0.54	0.50	58.0
3	R2	217	3.6	0.346	61.9	LOS E	6.7	48.7	0.92	0.78	29.4
Approach		1967	3.2	0.650	15.5	LOS B	31.6	227.1	0.58	0.53	52.4
East: Rose Payten Drive (E)											
4	L2	66	4.6	0.100	31.0	LOS C	2.7	20.2	0.66	0.70	39.4
6	R2	656	3.3	1.022	128.8	LOS F	34.4	247.9	1.00	1.13	19.5
Approach		722	3.4	1.022	119.9	LOS F	34.4	247.9	0.97	1.09	20.5
North: Campbelltown Road (N)											
7	L2	818	3.2	0.564	7.3	LOS A	11.8	84.9	0.31	0.66	52.8
8	T1	2240	3.1	1.259	293.7	LOS F	211.8	1521.6	1.00	2.09	10.1
Approach		3058	3.1	1.259	217.1	LOS F	211.8	1521.6	0.81	1.71	12.9
All Vehicles		5747	3.2	1.259	135.9	LOS F	211.8	1521.6	0.75	1.23	18.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	62.0	LOS F	0.2	0.2	0.93	0.93
P2	East Full Crossing	53	23.0	LOS C	0.1	0.1	0.57	0.57
All Pedestrians		105	42.5	LOS E			0.75	0.75

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2016 AM]

Rose Payten Drive, Pembroke Road and Smiths Creek Bypass Intersection
Signals - Fixed Time Isolated Cycle Time = 88 seconds (User-Given Phase Times)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (SW)											
1	L2	252	3.6	0.389	13.4	LOS A	8.2	59.5	0.51	0.62	50.0
2	T1	527	3.6	0.681	23.8	LOS B	14.3	103.4	0.81	0.76	42.7
3	R2	117	3.6	0.710	51.7	LOS D	5.3	38.6	1.00	0.86	32.0
Approach		896	3.6	0.710	24.6	LOS B	14.3	103.4	0.75	0.73	42.6
East: Smiths Creek Bypass (SE)											
4	L2	242	3.6	0.536	13.7	LOS A	8.2	59.1	0.72	0.71	50.1
5	T1	431	3.6	0.536	21.5	LOS B	9.0	64.7	0.83	0.75	43.7
6	R2	19	3.6	0.048	26.9	LOS B	0.6	4.2	0.78	0.66	40.9
Approach		692	3.6	0.536	18.9	LOS B	9.0	64.7	0.79	0.73	45.6
North: Pembroke Road (NE)											
7	L2	9	3.6	0.322	28.8	LOS C	6.6	47.9	0.78	0.66	42.9
8	T1	578	3.6	0.645	25.6	LOS B	13.8	99.3	0.86	0.73	42.3
9	R2	231	3.6	0.747	46.6	LOS D	10.2	73.5	1.00	0.89	33.6
Approach		818	3.6	0.747	31.5	LOS C	13.8	99.3	0.90	0.77	39.4
West: Rose Payten Drive (NW)											
10	L2	281	3.6	0.198	7.7	LOS A	2.7	19.6	0.25	0.63	52.6
11	T1	173	3.6	0.249	21.1	LOS B	5.2	37.4	0.74	0.61	44.6
12	R2	129	3.6	0.351	26.6	LOS B	3.8	27.5	0.87	0.77	41.1
Approach		583	3.6	0.351	15.9	LOS B	5.2	37.4	0.53	0.65	47.2
All Vehicles		2988	3.6	0.747	23.5	LOS B	14.3	103.4	0.76	0.73	43.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	38.3	LOS D	0.1	0.1	0.93	0.93
P2	East Full Crossing	53	34.6	LOS D	0.1	0.1	0.89	0.89
P3	North Full Crossing	53	38.3	LOS D	0.1	0.1	0.93	0.93
All Pedestrians		158	37.1	LOS D			0.92	0.92

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2016 PM]

Rose Payten Drive, Pembroke Road and Smiths Creek Bypass Intersection
Signals - Fixed Time Isolated Cycle Time = 97 seconds (User-Given Phase Times)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (SW)											
1	L2	249	1.9	0.432	13.1	LOS A	8.6	61.1	0.62	0.66	50.4
2	T1	619	1.9	0.756	26.9	LOS B	19.5	138.6	0.87	0.82	41.2
3	R2	232	1.9	0.645	45.4	LOS D	10.4	73.9	0.97	0.83	33.9
Approach		1100	1.9	0.756	27.7	LOS B	19.5	138.6	0.83	0.78	41.1
East: Smiths Creek Bypass (SE)											
4	L2	159	1.9	0.283	15.7	LOS B	5.7	40.7	0.52	0.62	48.5
5	T1	205	1.9	0.283	23.9	LOS B	5.7	40.7	0.72	0.66	42.3
6	R2	12	1.9	0.039	27.4	LOS B	0.4	2.6	0.79	0.66	40.7
Approach		376	1.9	0.283	20.6	LOS B	5.7	40.7	0.64	0.64	44.7
North: Pembroke Road (NE)											
7	L2	20	1.9	0.434	36.5	LOS C	8.7	61.6	0.86	0.73	39.2
8	T1	573	1.9	0.871	40.8	LOS C	19.0	135.5	0.94	0.91	35.9
9	R2	196	1.9	1.036	113.7	LOS F	15.4	109.6	1.00	1.28	20.6
Approach		788	1.9	1.036	58.8	LOS E	19.0	135.5	0.95	1.00	30.4
West: Rose Payten Drive (NW)											
10	L2	224	1.9	0.316	11.6	LOS A	5.0	35.6	0.53	0.65	50.8
11	T1	465	1.9	0.552	23.1	LOS B	14.5	103.3	0.80	0.72	43.2
12	R2	358	1.9	0.734	31.4	LOS C	13.5	95.7	0.92	0.85	39.0
Approach		1047	1.9	0.734	23.5	LOS B	14.5	103.3	0.78	0.75	43.0
All Vehicles		3312	1.9	1.036	33.0	LOS C	19.5	138.6	0.82	0.81	38.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	42.8	LOS E	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	39.1	LOS D	0.1	0.1	0.90	0.90
P3	North Full Crossing	53	42.8	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		158	41.6	LOS E			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2026 AM]

Rose Payten Drive, Pembroke Road and Smiths Creek Bypass Intersection
Signals - Fixed Time Isolated Cycle Time = 85 seconds (User-Given Phase Times)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (SW)											
1	L2	292	3.6	0.444	12.7	LOS A	9.1	65.4	0.50	0.62	50.5
2	T1	612	3.6	0.777	25.3	LOS B	17.8	128.4	0.84	0.83	42.0
3	R2	136	3.6	0.797	52.3	LOS D	6.2	44.9	1.00	0.92	31.9
Approach		1039	3.6	0.797	25.3	LOS B	17.8	128.4	0.77	0.78	42.2
East: Smiths Creek Bypass (SE)											
4	L2	281	3.6	0.601	15.2	LOS B	11.0	79.1	0.75	0.75	49.1
5	T1	500	3.6	0.601	21.6	LOS B	11.0	79.1	0.85	0.77	43.6
6	R2	22	3.6	0.061	33.1	LOS C	0.7	5.2	0.80	0.70	38.3
Approach		803	3.6	0.601	19.6	LOS B	11.0	79.1	0.81	0.76	45.2
North: Pembroke Road (NE)											
7	L2	11	3.6	0.377	28.1	LOS B	7.4	53.3	0.80	0.70	43.3
8	T1	671	3.6	0.756	26.1	LOS B	16.3	117.4	0.87	0.79	42.0
9	R2	267	3.6	0.837	49.3	LOS D	12.3	88.6	1.00	0.96	32.7
Approach		948	3.6	0.837	32.7	LOS C	16.3	117.4	0.91	0.83	38.9
West: Rose Payten Drive (NW)											
10	L2	326	3.6	0.280	8.7	LOS A	3.9	28.3	0.37	0.66	51.7
11	T1	200	3.6	0.279	19.9	LOS B	5.8	41.7	0.74	0.61	45.3
12	R2	151	3.6	0.501	28.4	LOS B	4.6	33.2	0.92	0.78	40.3
Approach		677	3.6	0.501	16.4	LOS B	5.8	41.7	0.60	0.67	46.8
All Vehicles		3467	3.6	0.837	24.3	LOS B	17.8	128.4	0.78	0.77	42.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	36.8	LOS D	0.1	0.1	0.93	0.93
P2	East Full Crossing	53	33.2	LOS D	0.1	0.1	0.88	0.88
P3	North Full Crossing	53	36.8	LOS D	0.1	0.1	0.93	0.93
All Pedestrians		158	35.6	LOS D			0.92	0.92

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2026 PM]

Rose Payten Drive, Pembroke Road and Smiths Creek Bypass Intersection
Signals - Fixed Time Isolated Cycle Time = 93 seconds (User-Given Phase Times)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (SW)											
1	L2	289	1.9	0.558	19.6	LOS B	12.7	90.4	0.72	0.78	46.3
2	T1	718	1.9	0.975	54.0	LOS D	33.2	236.5	0.92	1.14	31.6
3	R2	268	1.9	1.362	377.3	LOS F	43.3	307.8	1.00	2.06	8.1
Approach		1276	1.9	1.362	114.2	LOS F	43.3	307.8	0.89	1.25	20.6
East: Smiths Creek Bypass (SE)											
4	L2	184	1.9	0.360	17.4	LOS B	6.7	47.4	0.65	0.68	47.3
5	T1	238	1.9	0.360	25.7	LOS B	6.7	47.4	0.80	0.71	41.6
6	R2	14	1.9	0.049	26.0	LOS B	0.4	2.8	0.80	0.66	41.4
Approach		436	1.9	0.360	22.2	LOS B	6.7	47.4	0.74	0.70	43.8
North: Pembroke Road (NE)											
7	L2	23	1.9	0.491	34.6	LOS C	9.5	67.3	0.88	0.79	40.1
8	T1	664	1.9	0.985	58.5	LOS E	27.6	196.1	0.95	1.11	30.6
9	R2	227	1.9	1.154	200.1	LOS F	25.0	177.7	1.00	1.59	13.6
Approach		915	1.9	1.154	93.1	LOS F	27.6	196.1	0.96	1.22	23.5
West: Rose Payten Drive (NW)											
10	L2	260	1.9	0.346	12.7	LOS A	7.2	50.9	0.48	0.61	50.1
11	T1	540	1.9	0.604	21.8	LOS B	16.1	114.5	0.79	0.73	43.8
12	R2	416	1.9	0.885	42.7	LOS D	17.9	127.5	1.00	1.01	34.8
Approach		1216	1.9	0.885	27.0	LOS B	17.9	127.5	0.80	0.80	41.3
All Vehicles		3842	1.9	1.362	71.2	LOS F	43.3	307.8	0.86	1.04	27.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	40.8	LOS E	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	37.1	LOS D	0.1	0.1	0.89	0.89
P3	North Full Crossing	53	40.8	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		158	39.6	LOS D			0.92	0.92

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2026 AM + Development]

Rose Payten Drive, Pembroke Road and Smiths Creek Bypass Intersection
Signals - Fixed Time Isolated Cycle Time = 85 seconds (User-Given Phase Times)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (SW)											
1	L2	292	3.6	0.448	13.2	LOS A	9.3	67.0	0.52	0.63	50.1
2	T1	612	3.6	0.783	25.8	LOS B	18.0	130.2	0.85	0.84	41.7
3	R2	136	3.6	0.797	52.3	LOS D	6.2	44.9	1.00	0.92	31.9
Approach		1039	3.6	0.797	25.7	LOS B	18.0	130.2	0.78	0.79	42.0
East: Smiths Creek Bypass (SE)											
4	L2	281	3.6	0.601	14.9	LOS B	11.0	79.1	0.74	0.74	49.3
5	T1	500	3.6	0.601	21.4	LOS B	11.0	79.1	0.85	0.77	43.7
6	R2	22	3.6	0.061	33.1	LOS C	0.7	5.2	0.80	0.70	38.3
Approach		803	3.6	0.601	19.5	LOS B	11.0	79.1	0.81	0.76	45.3
North: Pembroke Road (NE)											
7	L2	11	3.6	0.377	28.1	LOS B	7.4	53.3	0.80	0.70	43.3
8	T1	671	3.6	0.756	26.1	LOS B	16.3	117.4	0.87	0.79	42.0
9	R2	272	5.1	0.870	52.4	LOS D	13.0	97.6	1.00	0.99	31.8
Approach		953	4.0	0.870	33.6	LOS C	16.3	117.4	0.91	0.85	38.5
West: Rose Payten Drive (NW)											
10	L2	331	4.8	0.288	9.0	LOS A	4.1	30.6	0.38	0.66	51.4
11	T1	200	3.6	0.279	19.9	LOS B	5.8	41.7	0.74	0.61	45.3
12	R2	151	3.6	0.505	28.4	LOS B	4.6	33.2	0.92	0.78	40.3
Approach		681	4.2	0.505	16.5	LOS B	5.8	41.7	0.61	0.67	46.7
All Vehicles		3476	3.8	0.870	24.6	LOS B	18.0	130.2	0.79	0.78	42.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	36.8	LOS D	0.1	0.1	0.93	0.93
P2	East Full Crossing	53	33.2	LOS D	0.1	0.1	0.88	0.88
P3	North Full Crossing	53	36.8	LOS D	0.1	0.1	0.93	0.93
All Pedestrians		158	35.6	LOS D			0.92	0.92

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2026 PM + Development]

Rose Payten Drive, Pembroke Road and Smiths Creek Bypass Intersection
Signals - Fixed Time Isolated Cycle Time = 93 seconds (User-Given Phase Times)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (SW)											
1	L2	289	1.9	0.542	13.0	LOS A	9.3	66.4	0.70	0.72	50.5
2	T1	718	1.9	0.947	43.5	LOS D	29.6	210.6	0.91	1.05	34.8
3	R2	268	1.9	1.362	377.3	LOS F	43.3	307.8	1.00	2.06	8.1
Approach		1276	1.9	1.362	106.8	LOS F	43.3	307.8	0.88	1.19	21.5
East: Smiths Creek Bypass (SE)											
4	L2	184	1.9	0.360	17.4	LOS B	6.7	47.5	0.65	0.68	47.3
5	T1	238	1.9	0.360	25.7	LOS B	6.7	47.5	0.81	0.71	41.6
6	R2	14	1.9	0.049	26.0	LOS B	0.4	2.8	0.80	0.66	41.4
Approach		436	1.9	0.360	22.2	LOS B	6.7	47.5	0.74	0.70	43.8
North: Pembroke Road (NE)											
7	L2	23	1.9	0.491	34.6	LOS C	9.5	67.3	0.88	0.79	40.1
8	T1	664	1.9	0.985	58.5	LOS E	27.6	196.1	0.95	1.11	30.6
9	R2	229	2.8	1.181	222.9	LOS F	27.0	196.2	1.00	1.66	12.5
Approach		917	2.1	1.181	99.0	LOS F	27.6	196.2	0.96	1.24	22.6
West: Rose Payten Drive (NW)											
10	L2	262	2.7	0.346	12.8	LOS A	7.2	52.1	0.48	0.61	50.0
11	T1	540	1.9	0.604	21.9	LOS B	16.1	114.5	0.79	0.73	43.8
12	R2	416	1.9	0.853	38.4	LOS C	16.9	120.3	0.99	0.97	36.3
Approach		1218	2.1	0.853	25.6	LOS B	16.9	120.3	0.79	0.79	42.0
All Vehicles		3846	2.0	1.362	69.6	LOS E	43.3	307.8	0.86	1.02	27.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	40.8	LOS E	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	37.1	LOS D	0.1	0.1	0.89	0.89
P3	North Full Crossing	53	40.8	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		158	39.6	LOS D			0.92	0.92

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2016 AM]

Rose Payten Drive & Airds Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Airds Road (South)											
1	L2	9	11.2	0.071	7.0	LOS A	0.3	2.1	0.54	0.65	53.1
2	T1	104	11.2	0.163	6.2	LOS A	0.7	5.6	0.53	0.67	53.7
3	R2	94	11.2	0.163	11.0	LOS A	0.7	5.6	0.52	0.68	53.2
Approach		207	11.2	0.163	8.4	LOS A	0.7	5.6	0.53	0.67	53.4
East: Rose Payten Drive (East)											
4	L2	227	11.2	0.328	5.0	LOS A	1.7	13.0	0.40	0.52	54.0
5	T1	525	11.2	0.328	5.0	LOS A	1.7	13.0	0.41	0.50	55.5
6	R2	2	11.2	0.328	10.3	LOS A	1.7	12.8	0.41	0.49	55.3
Approach		755	11.2	0.328	5.0	LOS A	1.7	13.0	0.40	0.51	55.0
North: Airds Road (North)											
7	L2	13	11.2	0.065	7.1	LOS A	0.3	2.1	0.54	0.63	53.1
8	T1	124	11.2	0.148	6.2	LOS A	0.7	5.5	0.53	0.64	54.0
9	R2	55	11.2	0.148	11.1	LOS A	0.7	5.5	0.53	0.64	53.7
Approach		192	11.2	0.148	7.7	LOS A	0.7	5.5	0.53	0.64	53.8
West: Rose Payten Drive (West)											
10	L2	252	11.2	0.325	4.8	LOS A	1.5	11.9	0.34	0.50	54.2
11	T1	459	11.2	0.325	4.9	LOS A	1.5	11.9	0.34	0.51	55.5
12	R2	55	11.2	0.325	10.1	LOS A	1.5	11.7	0.35	0.51	55.2
Approach		765	11.2	0.325	5.2	LOS A	1.5	11.9	0.34	0.51	55.1
All Vehicles		1919	11.2	0.328	5.7	LOS A	1.7	13.0	0.41	0.54	54.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2016 PM]

Rose Payten Drive & Airds Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Airds Road (South)											
1	L2	33	4.7	0.082	6.5	LOS A	0.3	2.4	0.51	0.64	53.5
2	T1	66	4.7	0.188	5.8	LOS A	0.9	6.3	0.51	0.68	53.6
3	R2	159	4.7	0.188	10.6	LOS A	0.9	6.3	0.50	0.70	52.8
Approach		258	4.7	0.188	8.9	LOS A	0.9	6.3	0.50	0.69	53.1
East: Rose Payten Drive (East)											
4	L2	151	4.7	0.265	5.2	LOS A	1.3	9.8	0.45	0.54	53.9
5	T1	428	4.7	0.265	5.2	LOS A	1.3	9.8	0.46	0.53	55.4
6	R2	1	4.7	0.265	10.5	LOS A	1.3	9.6	0.46	0.52	55.3
Approach		580	4.7	0.265	5.2	LOS A	1.3	9.8	0.46	0.53	55.0
North: Airds Road (North)											
7	L2	46	4.7	0.122	7.7	LOS A	0.5	3.8	0.61	0.74	52.8
8	T1	197	4.7	0.278	6.7	LOS A	1.5	10.6	0.64	0.72	53.5
9	R2	98	4.7	0.278	11.7	LOS A	1.5	10.6	0.64	0.72	53.4
Approach		341	4.7	0.278	8.3	LOS A	1.5	10.6	0.64	0.72	53.3
West: Rose Payten Drive (West)											
10	L2	117	4.7	0.353	4.8	LOS A	1.7	12.7	0.36	0.49	54.2
11	T1	689	4.7	0.353	4.9	LOS A	1.7	12.7	0.36	0.50	55.7
12	R2	43	4.7	0.353	10.1	LOS A	1.7	12.5	0.37	0.51	55.5
Approach		849	4.7	0.353	5.1	LOS A	1.7	12.7	0.36	0.50	55.4
All Vehicles		2028	4.7	0.353	6.2	LOS A	1.7	12.7	0.45	0.57	54.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2026 AM]

Rose Payten Drive & Airds Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Airds Road (South)											
1	L2	11	11.2	0.087	7.5	LOS A	0.4	2.7	0.58	0.69	52.9
2	T1	121	11.2	0.199	6.6	LOS A	0.9	7.2	0.58	0.71	53.5
3	R2	108	11.2	0.199	11.3	LOS A	0.9	7.2	0.58	0.72	52.9
Approach		240	11.2	0.199	8.8	LOS A	0.9	7.2	0.58	0.71	53.2
East: Rose Payten Drive (East)											
4	L2	264	11.2	0.392	5.2	LOS A	2.2	16.6	0.45	0.55	53.7
5	T1	609	11.2	0.392	5.3	LOS A	2.2	16.6	0.46	0.53	55.2
6	R2	2	11.2	0.392	10.6	LOS A	2.1	16.3	0.47	0.52	55.0
Approach		876	11.2	0.392	5.3	LOS A	2.2	16.6	0.46	0.53	54.8
North: Airds Road (North)											
7	L2	15	11.2	0.080	7.6	LOS A	0.3	2.6	0.58	0.67	52.8
8	T1	144	11.2	0.182	6.6	LOS A	0.9	7.0	0.59	0.68	53.7
9	R2	63	11.2	0.182	11.5	LOS A	0.9	7.0	0.59	0.68	53.4
Approach		222	11.2	0.182	8.1	LOS A	0.9	7.0	0.59	0.68	53.5
West: Rose Payten Drive (West)											
10	L2	292	11.2	0.387	5.0	LOS A	2.0	15.1	0.38	0.53	54.0
11	T1	533	11.2	0.387	5.1	LOS A	2.0	15.1	0.39	0.53	55.3
12	R2	63	11.2	0.387	10.3	LOS A	1.9	14.8	0.39	0.53	55.0
Approach		887	11.2	0.387	5.4	LOS A	2.0	15.1	0.39	0.53	54.8
All Vehicles		2225	11.2	0.392	6.0	LOS A	2.2	16.6	0.46	0.57	54.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2026 PM]

Rose Payten Drive & Airds Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Airds Road (South)											
1	L2	38	4.7	0.100	6.9	LOS A	0.4	3.0	0.55	0.68	53.3
2	T1	77	4.7	0.229	6.2	LOS A	1.1	8.0	0.55	0.72	53.4
3	R2	184	4.7	0.229	10.9	LOS A	1.1	8.0	0.55	0.74	52.6
Approach		299	4.7	0.229	9.2	LOS A	1.1	8.0	0.55	0.72	52.9
East: Rose Payten Drive (East)											
4	L2	175	4.7	0.321	5.4	LOS A	1.7	12.5	0.51	0.58	53.6
5	T1	497	4.7	0.321	5.6	LOS A	1.7	12.5	0.52	0.56	55.1
6	R2	1	4.7	0.321	10.8	LOS A	1.7	12.2	0.52	0.55	55.0
Approach		673	4.7	0.321	5.5	LOS A	1.7	12.5	0.51	0.56	54.7
North: Airds Road (North)											
7	L2	54	4.7	0.152	8.3	LOS A	0.7	4.9	0.66	0.79	52.4
8	T1	228	4.7	0.347	7.3	LOS A	1.9	14.2	0.71	0.78	53.1
9	R2	114	4.7	0.347	12.4	LOS A	1.9	14.2	0.72	0.77	53.0
Approach		396	4.7	0.347	8.9	LOS A	1.9	14.2	0.70	0.78	52.9
West: Rose Payten Drive (West)											
10	L2	136	4.7	0.422	5.1	LOS A	2.3	16.4	0.41	0.51	54.0
11	T1	800	4.7	0.422	5.1	LOS A	2.3	16.4	0.41	0.52	55.4
12	R2	51	4.7	0.422	10.4	LOS A	2.2	16.0	0.42	0.53	55.2
Approach		986	4.7	0.422	5.4	LOS A	2.3	16.4	0.41	0.52	55.2
All Vehicles		2354	4.7	0.422	6.5	LOS A	2.3	16.4	0.51	0.60	54.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2026 AM + Development]

Rose Payten Drive & Airds Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Airds Road (South)											
1	L2	11	11.2	0.088	7.5	LOS A	0.4	2.7	0.58	0.69	52.8
2	T1	121	11.2	0.200	6.6	LOS A	0.9	7.3	0.58	0.71	53.5
3	R2	108	11.2	0.200	11.3	LOS A	0.9	7.3	0.58	0.72	52.9
Approach		240	11.2	0.200	8.8	LOS A	0.9	7.3	0.58	0.71	53.2
East: Rose Payten Drive (East)											
4	L2	264	11.2	0.397	5.2	LOS A	2.2	17.0	0.46	0.55	53.7
5	T1	614	11.8	0.397	5.3	LOS A	2.2	17.0	0.47	0.53	55.2
6	R2	2	11.2	0.397	10.6	LOS A	2.2	16.8	0.47	0.52	55.0
Approach		880	11.6	0.397	5.3	LOS A	2.2	17.0	0.46	0.54	54.7
North: Airds Road (North)											
7	L2	15	11.2	0.080	7.6	LOS A	0.3	2.6	0.58	0.68	52.8
8	T1	144	11.2	0.183	6.6	LOS A	0.9	7.1	0.59	0.68	53.7
9	R2	63	11.2	0.183	11.5	LOS A	0.9	7.1	0.59	0.68	53.4
Approach		222	11.2	0.183	8.1	LOS A	0.9	7.1	0.59	0.68	53.5
West: Rose Payten Drive (West)											
10	L2	292	11.2	0.392	5.0	LOS A	2.0	15.5	0.39	0.53	54.0
11	T1	537	11.9	0.392	5.1	LOS A	2.0	15.5	0.39	0.53	55.2
12	R2	63	11.2	0.392	10.3	LOS A	2.0	15.2	0.40	0.53	54.9
Approach		892	11.6	0.392	5.5	LOS A	2.0	15.5	0.39	0.53	54.8
All Vehicles		2234	11.5	0.397	6.0	LOS A	2.2	17.0	0.46	0.57	54.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2026 PM + Development]

Rose Payten Drive & Airds Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Airds Road (South)											
1	L2	38	4.7	0.101	6.9	LOS A	0.4	3.0	0.55	0.68	53.3
2	T1	77	4.7	0.229	6.2	LOS A	1.1	8.0	0.56	0.72	53.4
3	R2	184	4.7	0.229	11.0	LOS A	1.1	8.0	0.56	0.74	52.6
Approach		299	4.7	0.229	9.2	LOS A	1.1	8.0	0.56	0.73	52.9
East: Rose Payten Drive (East)											
4	L2	175	4.7	0.324	5.4	LOS A	1.7	12.7	0.51	0.58	53.6
5	T1	499	5.1	0.324	5.6	LOS A	1.7	12.7	0.52	0.56	55.1
6	R2	1	4.7	0.324	10.8	LOS A	1.7	12.4	0.52	0.55	55.0
Approach		675	5.0	0.324	5.6	LOS A	1.7	12.7	0.52	0.57	54.7
North: Airds Road (North)											
7	L2	54	4.7	0.153	8.4	LOS A	0.7	5.0	0.66	0.79	52.4
8	T1	228	4.7	0.348	7.4	LOS A	2.0	14.2	0.71	0.78	53.1
9	R2	114	4.7	0.348	12.4	LOS A	2.0	14.2	0.72	0.78	53.0
Approach		396	4.7	0.348	8.9	LOS A	2.0	14.2	0.71	0.78	52.9
West: Rose Payten Drive (West)											
10	L2	136	4.7	0.424	5.1	LOS A	2.3	16.7	0.41	0.51	54.0
11	T1	802	5.0	0.424	5.1	LOS A	2.3	16.7	0.42	0.52	55.4
12	R2	51	4.7	0.424	10.4	LOS A	2.2	16.2	0.42	0.54	55.2
Approach		988	4.9	0.424	5.4	LOS A	2.3	16.7	0.42	0.52	55.2
All Vehicles		2358	4.9	0.424	6.5	LOS A	2.3	16.7	0.51	0.60	54.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2016 AM]

Pembroke Road & Stonny Batter Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (S)											
1	L2	94	8.3	0.129	4.7	LOS A	0.5	4.0	0.22	0.48	50.7
2	T1	625	8.3	0.418	4.5	LOS A	2.5	18.5	0.23	0.42	55.8
Approach		719	8.3	0.418	4.6	LOS A	2.5	18.5	0.23	0.43	55.1
North: Pembroke Road (N)											
8	T1	386	8.3	0.255	4.3	LOS A	1.5	11.0	0.14	0.44	55.8
9	R2	68	8.3	0.255	8.9	LOS A	1.5	11.0	0.14	0.45	52.1
Approach		455	8.3	0.255	5.0	LOS A	1.5	11.0	0.14	0.44	55.2
West: Stonny Batter Road (W)											
10	L2	46	8.3	0.099	5.8	LOS A	0.4	3.3	0.56	0.69	48.4
12	R2	28	8.3	0.099	10.3	LOS A	0.4	3.3	0.56	0.69	49.5
Approach		75	8.3	0.099	7.6	LOS A	0.4	3.3	0.56	0.69	48.8
All Vehicles		1248	8.3	0.418	4.9	LOS A	2.5	18.5	0.21	0.45	54.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2016 PM]

Pembroke Road & Stonny Batter Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (S)											
1	L2	22	4.0	0.114	4.3	LOS A	0.5	3.5	0.08	0.41	51.2
2	T1	707	4.0	0.368	4.2	LOS A	2.1	15.4	0.08	0.40	56.6
Approach		729	4.0	0.368	4.2	LOS A	2.1	15.4	0.08	0.40	56.5
North: Pembroke Road (N)											
8	T1	366	4.0	0.227	4.5	LOS A	1.2	9.0	0.22	0.42	55.8
9	R2	14	4.0	0.227	9.1	LOS A	1.2	9.0	0.22	0.42	52.2
Approach		380	4.0	0.227	4.6	LOS A	1.2	9.0	0.22	0.42	55.7
West: Stonny Batter Road (W)											
10	L2	77	4.0	0.185	6.0	LOS A	0.8	5.7	0.57	0.75	48.1
12	R2	69	4.0	0.185	10.5	LOS A	0.8	5.7	0.57	0.75	49.2
Approach		146	4.0	0.185	8.1	LOS A	0.8	5.7	0.57	0.75	48.6
All Vehicles		1256	4.0	0.368	4.8	LOS A	2.1	15.4	0.18	0.45	55.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2026 AM]

Pembroke Road & Stonny Batter Road Intersection
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (S)											
1	L2	108	8.3	0.151	4.8	LOS A	0.6	4.8	0.24	0.48	50.6
2	T1	725	8.3	0.489	4.6	LOS A	3.2	24.0	0.27	0.43	55.6
Approach		834	8.3	0.489	4.7	LOS A	3.2	24.0	0.27	0.44	54.9
North: Pembroke Road (N)											
8	T1	448	8.3	0.296	4.3	LOS A	1.8	13.6	0.16	0.44	55.7
9	R2	79	8.3	0.296	9.0	LOS A	1.8	13.6	0.16	0.45	52.0
Approach		527	8.3	0.296	5.0	LOS A	1.8	13.6	0.16	0.44	55.1
West: Stonny Batter Road (W)											
10	L2	54	8.3	0.124	6.6	LOS A	0.6	4.3	0.62	0.74	48.0
12	R2	33	8.3	0.124	11.1	LOS A	0.6	4.3	0.62	0.74	49.0
Approach		86	8.3	0.124	8.3	LOS A	0.6	4.3	0.62	0.74	48.4
All Vehicles		1447	8.3	0.489	5.0	LOS A	3.2	24.0	0.25	0.46	54.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2026 PM]

Pembroke Road & Stonny Batter Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (S)											
1	L2	25	4.0	0.132	4.3	LOS A	0.6	4.1	0.09	0.41	51.2
2	T1	821	4.0	0.428	4.2	LOS A	2.7	19.7	0.10	0.39	56.6
Approach		846	4.0	0.428	4.3	LOS A	2.7	19.7	0.10	0.39	56.4
North: Pembroke Road (N)											
8	T1	425	4.0	0.267	4.5	LOS A	1.5	11.2	0.25	0.43	55.7
9	R2	16	4.0	0.267	9.1	LOS A	1.5	11.2	0.25	0.43	52.1
Approach		441	4.0	0.267	4.7	LOS A	1.5	11.2	0.25	0.43	55.5
West: Stonny Batter Road (W)											
10	L2	89	4.0	0.230	6.7	LOS A	1.0	7.4	0.62	0.80	47.7
12	R2	81	4.0	0.230	11.2	LOS A	1.0	7.4	0.62	0.80	48.7
Approach		171	4.0	0.230	8.8	LOS A	1.0	7.4	0.62	0.80	48.2
All Vehicles		1458	4.0	0.428	4.9	LOS A	2.7	19.7	0.20	0.45	55.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2026 AM + Development]

Pembroke Road & Stonny Batter Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (S)											
1	L2	113	11.7	0.153	4.9	LOS A	0.6	5.2	0.25	0.49	50.6
2	T1	725	8.3	0.495	4.6	LOS A	3.3	24.8	0.28	0.43	55.6
Approach		838	8.8	0.495	4.7	LOS A	3.3	24.8	0.28	0.44	54.9
North: Pembroke Road (N)											
8	T1	448	8.3	0.304	4.4	LOS A	1.9	14.1	0.18	0.44	55.6
9	R2	79	8.3	0.304	9.0	LOS A	1.9	14.1	0.19	0.45	51.9
Approach		527	8.3	0.304	5.1	LOS A	1.9	14.1	0.18	0.44	55.0
West: Stonny Batter Road (W)											
10	L2	54	8.3	0.145	6.7	LOS A	0.7	5.6	0.64	0.77	47.6
12	R2	37	18.8	0.145	12.2	LOS A	0.7	5.6	0.64	0.77	48.4
Approach		91	12.6	0.145	9.0	LOS A	0.7	5.6	0.64	0.77	47.9
All Vehicles		1456	8.8	0.495	5.1	LOS A	3.3	24.8	0.27	0.46	54.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2026 PM + Development]

Pembroke Road & Stonny Batter Road Intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	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 per veh	Average Speed km/h
South: Pembroke Road (S)											
1	L2	27	11.4	0.133	4.3	LOS A	0.6	4.3	0.09	0.41	51.1
2	T1	821	4.0	0.431	4.2	LOS A	2.8	20.0	0.10	0.39	56.6
Approach		848	4.2	0.431	4.3	LOS A	2.8	20.0	0.10	0.39	56.4
North: Pembroke Road (N)											
8	T1	425	4.0	0.269	4.6	LOS A	1.6	11.2	0.26	0.43	55.6
9	R2	16	4.0	0.269	9.1	LOS A	1.6	11.2	0.26	0.43	52.0
Approach		441	4.0	0.269	4.7	LOS A	1.6	11.2	0.26	0.43	55.5
West: Stonny Batter Road (W)											
10	L2	89	4.0	0.239	6.7	LOS A	1.1	7.9	0.62	0.81	47.6
12	R2	83	6.4	0.239	11.4	LOS A	1.1	7.9	0.62	0.81	48.6
Approach		173	5.2	0.239	9.0	LOS A	1.1	7.9	0.62	0.81	48.1
All Vehicles		1462	4.3	0.431	5.0	LOS A	2.8	20.0	0.21	0.46	55.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Joe White Malting Plant

APPENDIX C

OPERATIONAL TRAFFIC MANAGEMENT PLAN

Cardno
Shaping the Future

Minto Joe White Malting Plant

Operational Traffic Management Plan

Prepared for Joe White Malting's Pty Ltd

June 2012

Cardno
Shaping the Future

Document Information

Prepared for	Joe White Malting's Pty Ltd
Project Name	Minto Joe White Malting Plant Operational Traffic Management Plan
File Reference	600330 Minto Joe White Malting Plant Operational TMP
Job Reference	600330
Date	June 2012

Document Control

Version	Date	Author	Author Initials	Reviewer	Reviewer Initials
1 (DRAFT)	June 2012	Duncan Tjin	DST	Ray Cook	RJC
2 (FINAL)	June 2012	Duncan Tjin	DST	Ray Cook	RJC

Table of Contents

Appendices

Cardno
Shaping the Future

1 Introduction

1.1 Background

Joe White Malting's Pty Ltd (JWM) has commissioned Cardno to prepare an Operational Traffic Management Plan (Operational TMP) to satisfy the requirements of condition 19 of the modified Project Approval 08_0157 issued on 20 April 2012 which required the modified TMP.

This Operational TMP is based upon and updates the existing Traffic Management Plan for the Malting Plant to reflect increased truck movements associated with the amended proposal to import a proportion of raw materials and export a proportion of malt via the road network.

1.2 Key objectives

The key objectives of the Operational Traffic Management Plan are to:

> Maximise safety for internal and external users of the Malting plant associated with the amended proposed truck movements.
> Manage the operational arrival and departure as well as onsite circulation of truck movements.
> Manage the movement of trucks on the road network surrounding the site.

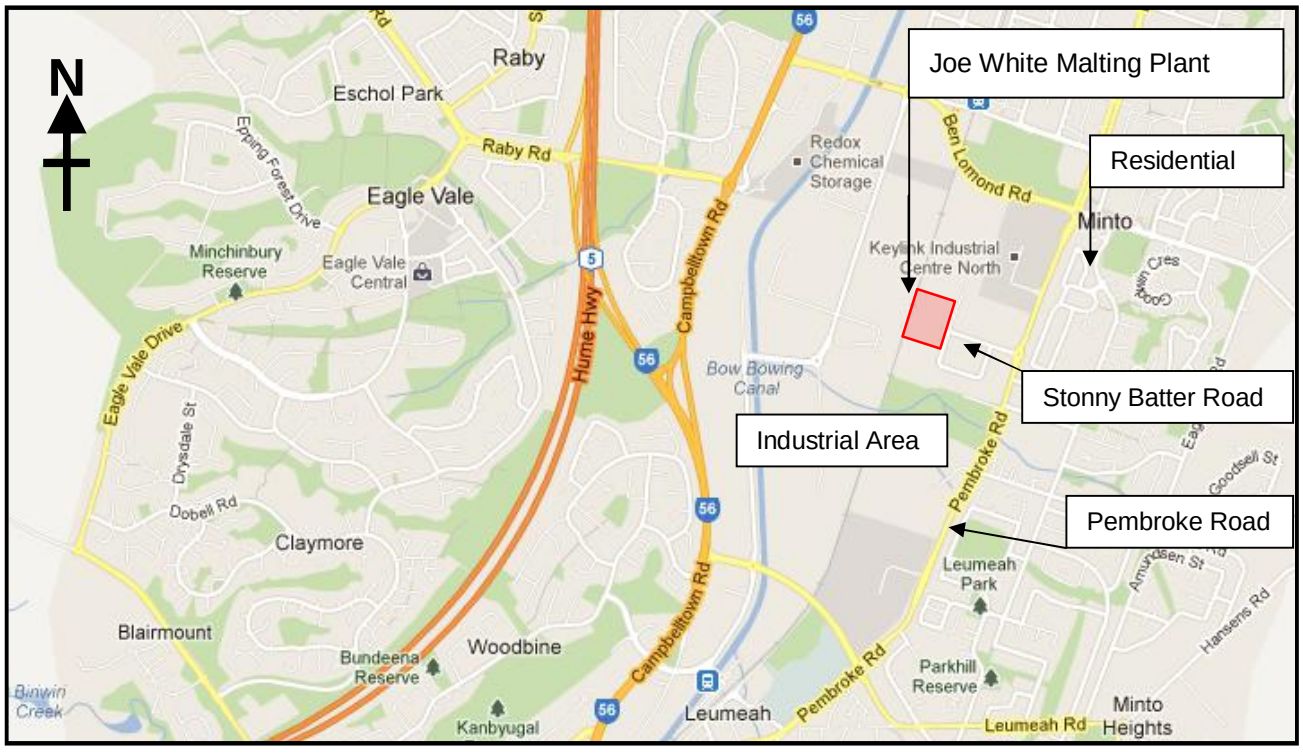
1.3 Study Area

The Joe White Malting Plant is located at 11 Stonny Batter Road, Minto, within the Minto Industrial Area and is bound by Pembroke Road to the east, Main Southern Railway line to the west and Ben Lomand Road to the north.

The site is surrounded by light manufacturing, warehousing and other allied industrial land uses, including a pharmaceuticals manufacturer, steel and metal fabricators and an intermodal shipping terminal. The nearest residential area is located approximately 400m to the east of the site.

Figure 1 illustrates the location of the Minto Malting Plant and identifies the surrounding land uses and road network included within the Study Area.

Figure 1 Joe White Malting Plant Study Area



Cardno prepared a *Traffic Impact Assessment Addendum* report for the modified development detailing the impact of the associated additional truck moments on the surrounding road network. The addendum report considered traffic movements in the vicinity of the site as well as internal circulation and queuing. The report concluded that impacts to the road network will be minimal due to the scale of background traffic demand from the surrounding industrial area.

1.4 Reference documents

The documents referenced within the Operational Traffic Management Plan are listed below:

> Department of Planning and Infrastructure Assessment Report, *Assessment Report*, 20 April 2012.
> Department of Planning and Infrastructure, *Notice of Modification*, 20 April 2012.
> Cardno, *Minto Joe White Malting's Plant Traffic Impact Assessment Addendum*, December 2011.
> Viterra, DRAFT *Malt Sydney Traffic Management Plan*.
> BMD, *Sydney Maltings Project Traffic Management Plan – Construction Phase*, July 2011.
> Heavy Vehicle Drivers Handbook (Roads & Maritime Services)

2 Operational TMP Consideration

2.1 Department of Planning and Infrastructure requirement

The Operational TMP as discussed herein, addresses the recommendation as stated by the Department of Planning and Infrastructure (DPI) *Assessment Report* dated 20 April 2012 as well as condition 19 of the modified approval.

Below is an extract of the Operational TMP recommendation as stated within the Assessment Report, with the entire document included at **Appendix A**.

"…the Department has recommended that the Proponent be required to prepare and implement an Operational Traffic Management Plan of the project to ensure:

- *Any traffic impacts on the surrounding road network are minimised*
- *The project does not result in any vehicle queuing on the public road network*
- *The exportation/importation of material does not occur during night time hours except due to circumstances beyond the control of JWM."*

The modified approval therefore reads as follows:

"5) Replacing Condition 19 Schedule 3 with the following:

19The Proponent shall prepare and implement an Operational Traffic Management Plan for the Project to the satisfaction of the Director-General. The Plan must:

a. *be prepared in consultation with RMS and Council;*
b. *be submitted to the Director-General for approval prior to the commencement of importation or exportation of grain, barley or malt to/from the site via road;*
c. *nominate routes for the heavy vehicles accessing the site*
d. *provide details on restrictions proposed for the hours that heavy vehicles may access the site;*
e. *describe the measures that would be implemented to manage traffic safely during operation of the project;*
f. *describe the measures that would be implemented to manage heavy vehicle driver behaviour and traffic noise associated with the development."*

Further, the Operational TMP is based upon and provides an update to the existing Traffic Management Plan prepared for the Malting Plant. This report incorporates the additional truck movements associated with the amended proposal which is to import up to 54,000 tonnes of grain and export up to 25,000 tonnes of malt via the road network.

2.2 Operational TMP report

The Operational TMP has been structured to address the above recommendation and modified condition of approval as follows:

> Authority consultation, addresses:
  - Amended condition 19, Part a.
> Truck Import and Export Operations, addresses
  - Assessment Report, first, second and third dot point
  - Amended condition 19, Part d and e
> Truck Import and Export Routes, addresses
  - Amended condition 19, Part c
> Drivers Code of Conduct, addresses
  - Amended condition, Part f

It is noted that by the submission of this document, Part b of amended condition 19 is addressed.

3 Authority Consultation

Consultation with both Council (Campbelltown City Council) and RMS (Roads and Maritime Services) was undertaken to ensure that this Operational TMP document was prepared in accordance with authority requirements.

Cardno contacted the Land Use and Transport Planning Section within RMS on 1 June 2012 and again on 05 June 2012, which resulted in the following discussed items:

> No standard template is available for an Operational Traffic Management Plan.
> All requirements for RMS are stated by the above DPI recommendation and conditions.

Cardno contacted the Council's Planning & Environment Department on 1 June 2012 and again on 05 June 2012, which resulted in the following:

> No additional concerns were raised.
> All requirements for Council are stated by the above DPI recommendation and conditions.

4 Truck Import and Export Operations

4.1 Malting Plant operational hours

According to site management, the manned operational hours of the Malting Plant outside of which truck access to and from the site is not proposed except in unforeseen circumstances is between 6am - 6pm Monday to Friday.

4.2 Plant access

As stated within the Traffic Impact Assessment Addendum report (prepared by Cardno, 2011), to minimise the impact on the road network:

> all truck movements associated with the import of grain and export of malts are expected to be dispatched as required, between 9am and 5pm, Monday to Friday.
> no trucks associated with grain and/or malt transport shall access the site during the weekend hours or outside daylight hours except in unforeseen circumstances where management will need to arrange to unlock the gate to permit access.

Should truck movements occur outside the stated periods as well as during emergency scenarios the following Joe White Malting personnel shall be available to address all traffic management issues.

Table 1 Emergency Contact Numbers

Name	Mobile Number	Role
Mr Jase Carroll	0467 793 826	Logistics Manager
Mr Miroslav Prazak	0428 730 151	Plant Manager

4.3 Truck Circulation

The additional trucks required to import and export materials to/from the Malting Plant shall access via the existing entry/exit location on Stonny Batter Road. It is noted that the Intermodal Terminal located at the northern end of Regents Farm Road will provide off site truck storage (should this be required).

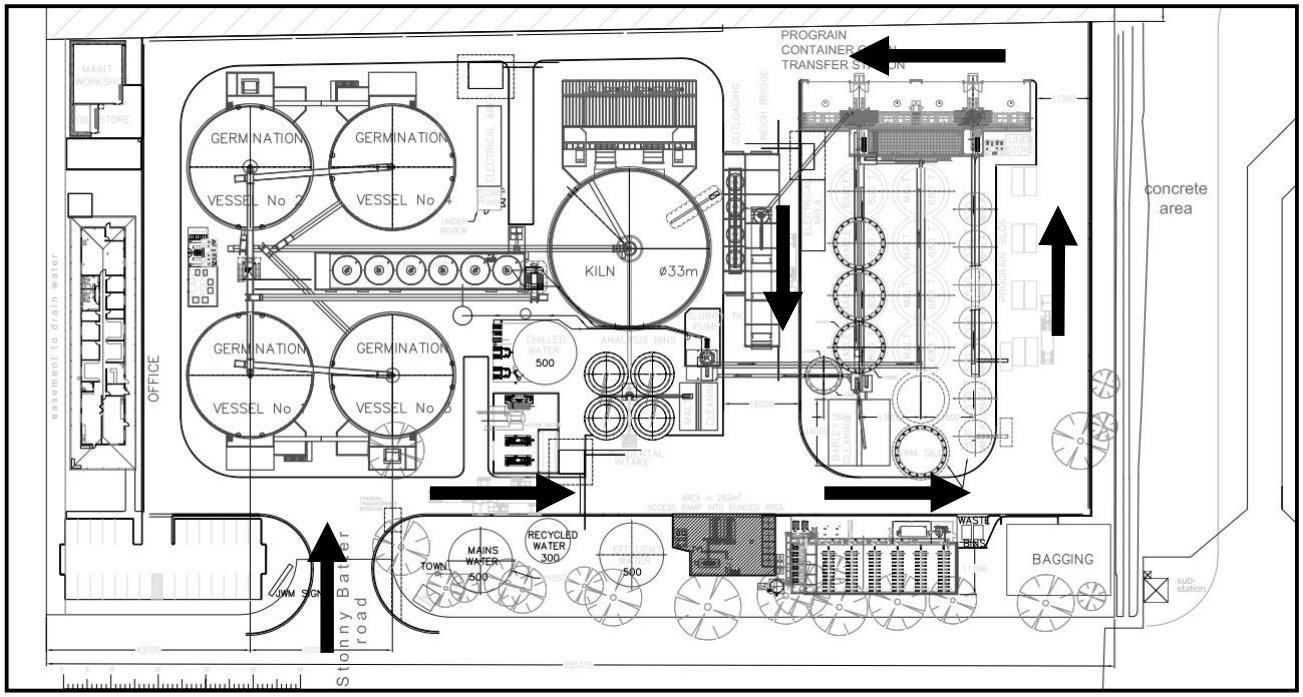
Upon entry, the existing 20m vehicle storage area at the access gate shall be used to provide a queue facility should the expected 19m Articulated Vehicle (AV) be required to stop before proceeding into the site. Due to the even distribution of trucks arriving per day, as discussed in **Section 4.2**, the entry storage area is deemed adequate to alleviate conflict on Stonny Batter Road.

Should the plant be inaccessible due to vehicles occupying the entry storage area, all arriving trucks are to proceed to the Intermodal Terminal to minimise conflict with the local road network.

Internal truck circulation at the plant will be as follows and as indicated on **Figure 2,** in that trucks will:

> Enter the plant via the Stonny Batter Road access in a forward gear.
> Turn right and travel northbound along the eastern boundary.
> Turn left and travel westbound along the northern boundary (past the grain drop off area).
> Turn left and travel southbound along the western boundary.
> Turn left and travel eastbound beside the weigh bridge area (past the malt pick up area).

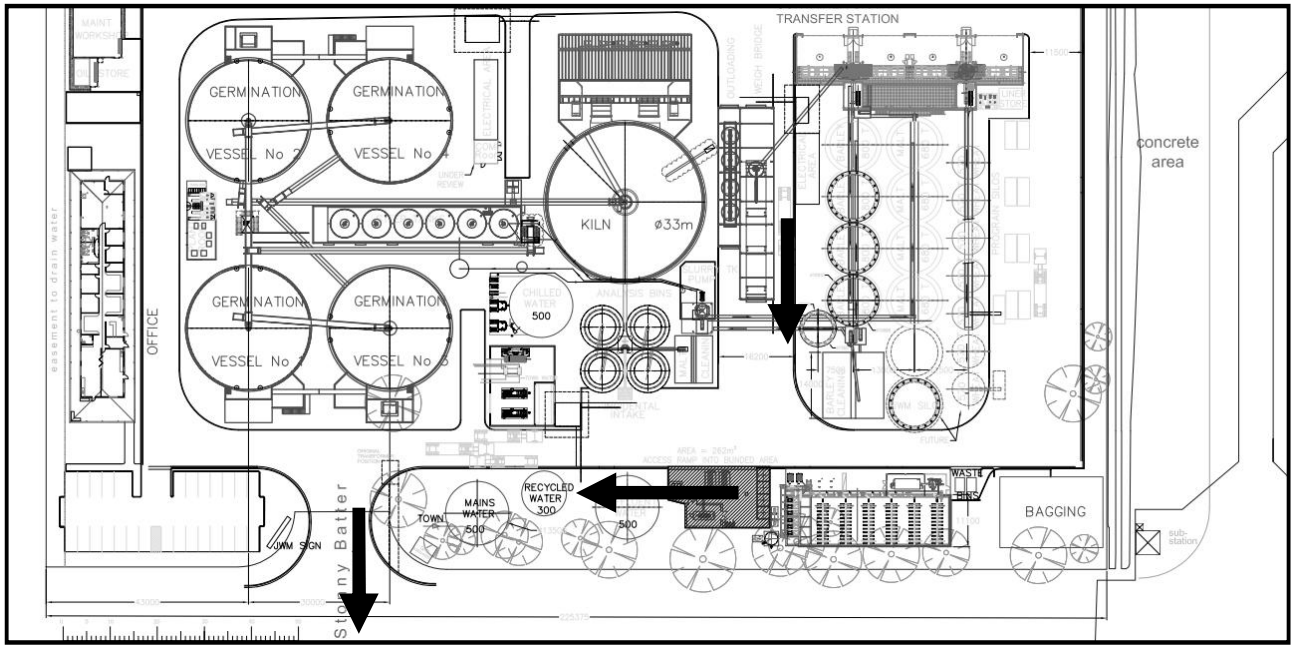
Figure 2 Internal Circulation - Entry



For all trucks exiting the plant, circulation will be as follows and as indicated on **Figure3,** in that trucks will:

> Proceed from the Malting pick up area and travel eastbound.
> Turn right and travel southbound along the eastern boundary.
> Turn left and exit the plant in a forward gear.

Figure 3 Internal Circulation - Exit



Truck swept paths are included at **Appendix B**.

4.4 Truck Impacts on Local Road Network

According to the Traffic Impact Assessment Addendum report, confirmed by the Department of Planning and Infrastructure, due to the minor increase in heavy vehicle volumes (around 1%), the amended truck operations would not significantly impact the surrounding road network.

Additionally, as mentioned above, the Intermodal Terminal will be available to store trucks off the road network to ensure plant operations do not result in queuing on Stonny Batter Road.

5 Truck Import and Export Routes

Trucks connecting between the plant and surrounding road network (namely Hume Highway) shall utilise the surrounding existing B-Double route. Additionally, it is noted that connections with grain supply and malt storage will be transported via the Hume Highway exit at Campbelltown Road.

Further, for directional origins, trucks shall utilise the following road network to access the site:

> From north, Hume Highway –
  - Travel southbound along Hume Highway.
  - Exit at Campbelltown Road (south) and travel southbound.
  - Turn left at Rose Payten Drive and travel eastbound.
  - Turn left at Pembrooke Road and travel northbound.
  - Turn left at Stonny Batter Road and travel westbound.
  - Enter the Joe White Malting Plant.

> To north, Hume Highway –
  - Exit the Joe White Malting Plant and travel eastbound along Stonny Batter Road.
  - Turn right at Pembrooke Road and travel southbound.
  - Turn right at Rose Payten Drive and travel westbound.
  - Turn right at Campbelltown Road and travel northbound.
  - Turn right at Hume Highway on-ramp (Campbelltown Road south exit).
  - Travel northbound along Hume Highway.

> From south, along Hume Highway –
  - Travel northbound along Hume Highway.
  - Exit at Narellan Road and turn right onto Narellan Road and travel eastbound.
  - Turn left at Oxley Street and continue onto Moore Street and Campbelltown Road.
  - Turn right at Rose Payten Drive and travel eastbound.
  - Turn left at Pembrooke Road and travel northbound.
  - Turn left at Stonny Batter Road and travel westbound.
  - Enter the Joe White Malting Plant.

> To south, along Hume Highway –
  - Exit the Joe White Malting Plant and travel eastbound along Stonny Batter Road.
  - Turn right at Pembrooke Road and travel southbound.
  - Turn right at Rose Payten Drive and travel westbound.
  - Turn left at Campbelltown Road and continue onto Moore Street and Oxley Street.
  - Turn right at Narellan Road and travel westbound.
  - Turn left at Hume Highway on-ramp.
  - Travel southbound along Hume Highway.

The above vehicle routes are illustrated on diagrams at **Appendix C**.

6 Driver Code of Conduct and Traffic Noise

6.1 General

This section addresses the requirement to address driver behaviour and traffic noise.

6.2 Driver behaviour

Driver behaviour for vehicles entering and exiting the plant shall be managed by on-site personnel and include the following processes:

> All truck drivers are to be made aware of and adhere to the existing Traffic Management Plan as well as this Operational Traffic Management Plan.
> All truck drivers are to adhere to the RMS *Heavy Vehicle Driver Handbook*, December 2011
> All complaints and comments regarding driver behaviour shall be directed to the following Joe White Malting personnel –

Table 2 Driver Behaviour Contact Numbers

Name	Mobile Number	Role
Mr Jase Carroll	0467 793 826	Logistics Manager
Mr Miroslav Prazak	0428 730 151	Plant Manager

6.3 Traffic noise

Due to the minor increase in heavy vehicle volumes (around 1%), and considering that the Malting Plant is located within an existing industrial area and that truck access to the site is restricted to daylight hours except in unforeseen circumstances when access will otherwise be managed, the additional traffic noise on the surrounding area will be negligible.

It is noted, however, that truck drivers shall be required to adhere to the RMS *Heavy Vehicle Driver Handbook*, December 2011 document to minimise noise impacts on the surrounding road network.

APPENDIX A

A

DPI REQUIREMENTS

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NSW GOVERNMENT | Planning & Infrastructure

ASSESSMENT REPORT

Section 75W Modification
Joe White Maltings, Minto Malting Plant and Packing Facility

Modification to allow Import/Export Via Road
(08_0157 MOD 1)

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1. BACKGROUND

In May 2009, the then Minister for Planning approved an application from Joe White Maltings Pty Ltd (JWM) to construct a new maltings plant and grain packing facility at Minto in the Campbelltown Local Government Area (see Figure 1).

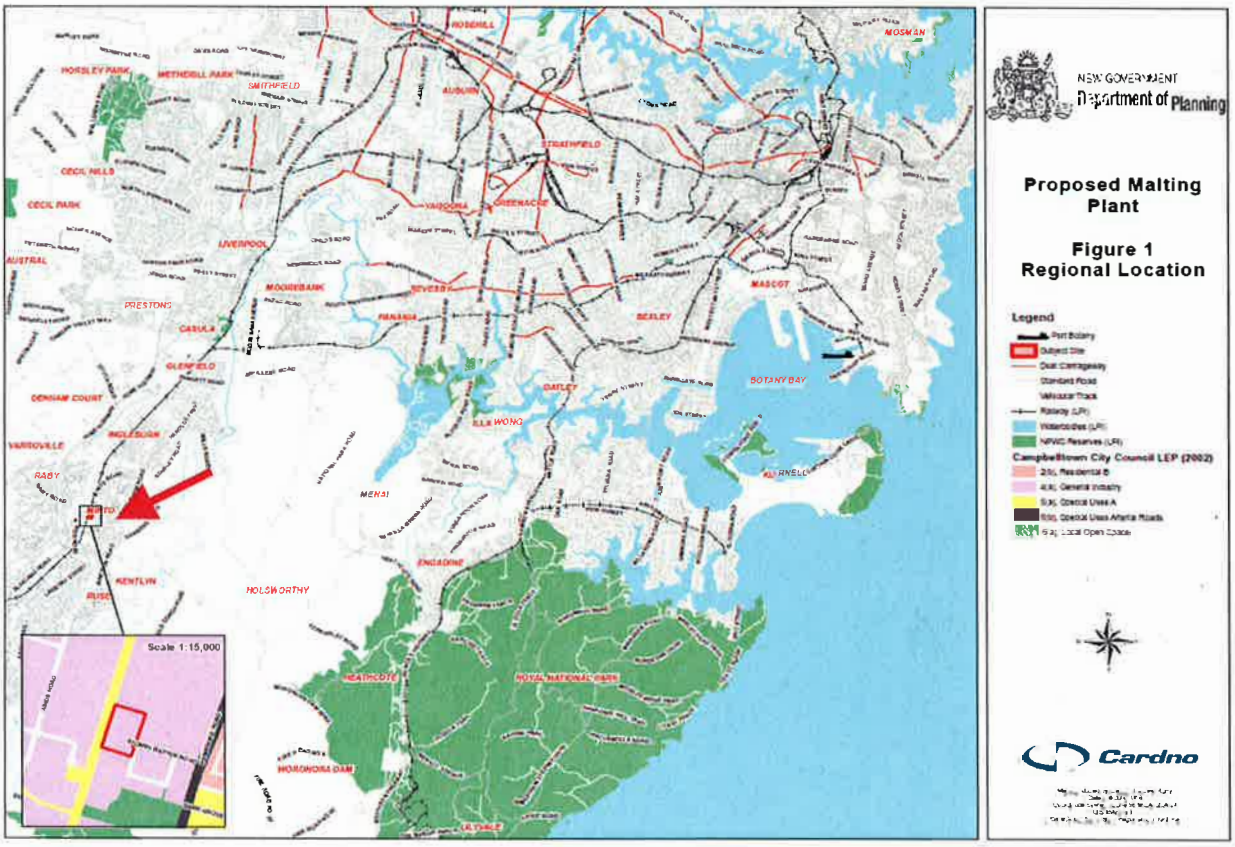

Figure 1: Regional Context (source: Cardno EA)

Generally the 'malting' process involves the germination of cereal grains, such as barley, by initially soaking the grains in water. Once germination occurs the process is halted and the grains are dried and the germination process ceases. Malted grains are then packaged and transported from the site and used to make products such as beer, whisky, malted shakes, malt vinegar, confections, flavoured drinks and baked goods.

The site is located within the Minto industrial area and is adjacent to the Main Southern Railway, which runs along its western boundary (see Figure 2). The site is surrounded by light manufacturing, warehousing and other allied industrial land uses, such as a pharmaceuticals manufacturer, steel and metal fabricators and an intermodal shipping terminal. The nearest residences are located approximately 400 metres to the east of the site.

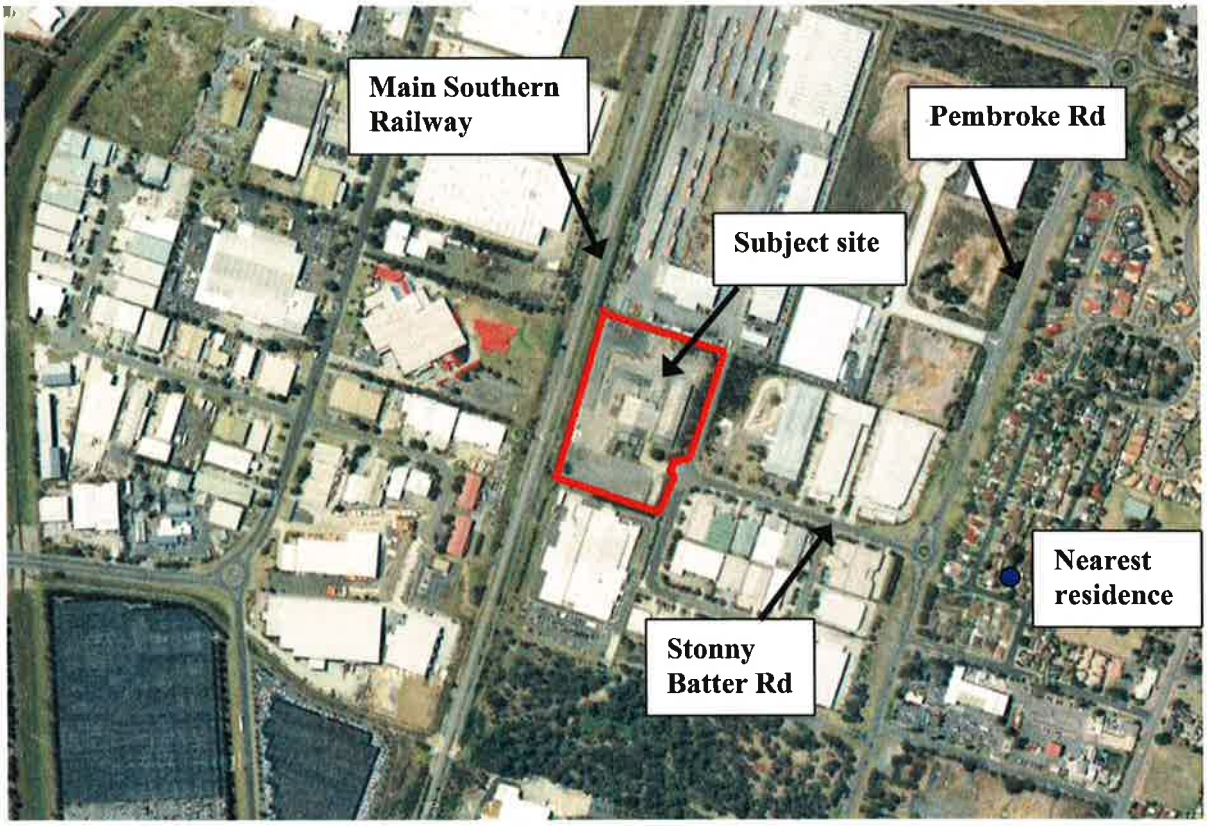

Figure 2: Aerial photograph of the site and surrounding land uses

The 2009 Ministerial approval provided for:

- the importation of no more than 270,000 tpa of malt barley or grain to the site for processing;
- the production of up to 130,000 tpa of processed malt; and
- the exportation of up to 140,000 tpa of processed grain and 130,000 tpa of malt from the site.

Condition 7 of Schedule 2 of the Minister's approval specifies that all raw and finished product deliveries and dispatches must be rail utilising the adjacent Main Southern Railway. Under the current approval, all the grain and malt would arrive at, and be dispatched from the site within shipping containers and would be loaded utilising materials handling equipment located at the adjoining Macarthur Intermodal Shipping Terminal (MIST).

As such, the approved project provides for a maximum of only 68 vehicle movements per day. This figure includes light and heavy vehicles, contractor, visitor and waste removal vehicles.

JWM are now seeking to modify the approval to allow the transfer of a limited quantity of raw and finished product by road.

2. PROPOSED MODIFICATION

JWM seeks to amend Condition 7 of Schedule 2 of the existing project approval, to permit the transportation of 54,000 tpa (20%) of imported grain and barley, and 25,000 tpa (20%) of exported malt from the site by road.

As stated in Section 1 of this assessment report, the 2009 approval allowed for the exportation of up to 130,000 tpa of malt product via rail. JWM now proposes that 25,000 tpa of the malt would be exported via road. Likewise, the original approval allowed for up to 270,000 tpa of grain to be imported via rail.

JWM now proposes that 54,000 tpa of the grain material would be imported by road. No less than 80% of raw and processed product would continue to arrive at, and leave the site via the existing heavy rail siding adjacent to the site.

Condition 7 of Schedule 2 states that;

> *"The Proponent shall ensure that all the grain and barley imported onto the site, and all the malt and grain exported from the site, occurs via the adjoining rail siding to the Main Southern Railway. However, in exceptional circumstances, the Proponent may ignore these restrictions for short periods with the written approval of the Director-General".*

In the original traffic assessment it was stated that the Proponent would be taking maximum advantage of the existing intermodal infrastructure, especially the ability to reduce road freight impacts, costs and inefficiencies by utilising rail, with access to an excess of containers available for storage and export on the adjacent MIST site. Notwithstanding, it has recently become apparent to JWM that a limited amount of product would need to be transported via road.

JWM's major domestic customer, Tooheys Brewery at Lidcombe, now requires that the malt supplied for their processing comes from the Minto plant via road, as it is not possible to deliver malt to the brewery by rail. Additionally, the supply of grain can change seasonally and limited storage and low railhead stock availability makes it necessary for a percentage of grain to be transported by road from northern NSW.

3. STATUTORY CONTEXT

Under clause 8J(8) of the *Environmental Planning and Assessment Regulation 2000*, the Minister's consent is taken to be an approval under Part 3A of the Act and can be modified by the Minister under section 75W of the Act.

The Executive Director may determine this application on behalf of the Minister in accordance with the Minister's delegation of 14 September 2011, subject to the following:

- the relevant local Council has not made an objection;
- a political disclosure statement has not been made; and
- there are less than 25 public submissions in the nature of objection.

As Council has not objected to the proposal, no public submissions have been made, and JWM has not made a political donation, the Department is satisfied that the application meets the terms of the delegation and the Executive Director may determine the application under delegated authority.

4. CONSULTATION

Under Section 75W of the EP&A Act, the Department is not required to notify or exhibit the application.

The Department made the EA for the modification publicly available on its website and sought submissions from the Campbelltown City Council (Council) and the Roads and Maritime Service (RMS). Consultation with other government agencies and neighbouring sites was considered unnecessary, as the environmental impacts of the proposal would essentially remain unchanged from the approved project. A copy of the agencies submissions is available at Appendix 3.

The RMS did no objection to the proposed modification and raised no issues of concern.

Council did not objection to the proposed modification however, concerns were raised in regard to developer contributions, truck queuing on public roads and traffic noise. These issues are addressed in Section 5 of this assessment report.

5. ASSESSMENT

In its review of the modification application, the Department has considered:

- the previous approval;
- submissions made on the original and current applications; and
- JWM's traffic impact assessment for the proposed modification (Cardno, 2011).

The Department has assessed the application on its merits, and considers the key environmental issue to be traffic, noise and developer contributions.

5.1 Traffic

Issue

Increased truck movements to and from the subject site could impact on the traffic conditions on surrounding road networks.

Consideration

JWM proposes to utilise 19 metre articulated vehicles (AV) to transport a portion of the malt and grain materials via road. Approximately 10 AV's would be required to transport grain and malt material to and from the site (this equates to approximately 20 truck movements) per working day. It is expected that AV entry and exit movements would be evenly distributed throughout the day, with only one truck evident during each AM and PM peak hour periods.

The two main roads that would be immediately affected by the increased vehicle movements into and out of the site are Stonny Batter Road and Pembroke Road (refer to Figure 3). Pembroke Road is a north-south running State road which provides a connection to Rose Payten Drive and Ben Lomond Road. Pembroke Road carries approximately 1,000 vehicles in both directions during weekday peak periods, and varies from a four-lane divided carriageway to a two-lane undivided carriageway.

Stonny Batter Road is a Council road running east-west from Pembroke Road to the railway line. It is 12 metres wide and devoid of line marking, except at its eastern end where three lanes are marked on approach to the Pembroke Road intersection. Stonny Batter Road carries approximately 50 vehicles in both directions during the weekday AM peak period and 150 vehicles in both directions in the weekday PM peak period.

The proposed 10 AV's per day would amount to a 1% increase in existing background traffic volumes, which JWM considers to be minor. According to the SIDRA analysis program, which calculates the performance of intersections, the Pembroke/Stonny Batter Road intersection is already failing during both AM and PM peak hour traffic conditions, with an average Level of Service of F. The estimated 1% increase in traffic generation by the proposed modification is not considered to be significant.

In its submission on the modification proposal, Council generally raised no objection. However, Council's submission requested that the Department consider the potential impacts of trucks queuing on Stonny Batter Road prior to entering the site and the physical impact of increased truck movements on local and State roads.

The RMS raised no objections to the proposed modification or concerns regarding the minor increase in traffic.

Conclusion

The Department is satisfied that the minor increase in traffic numbers associated with the proposed modification would not result in any significant impact to the surrounding road network. Further, the existing approval includes conditions that require the Proponent to ensure the Project does not result in any queuing on public roads, which addresses Council's concerns.

Notwithstanding, the Department has recommended that the Proponent be required to prepare and implement an Operational Traffic Management Plan for the Project to ensure:

- any traffic impacts on the surrounding road network are minimised;
- the project does not result in any vehicles queuing on the public road network; and
- the exportation/importation of material does not occur during night time hours except due to circumstances beyond the control of JWM.

Figure 3: Intersection of Stonny Batter Road and Pembroke Road

5.2 Noise

Issue

An increase in traffic could potentially increase traffic noise for surrounding residents.

Consideration

The Department notes that increased truck movements could generate noise impacts on surrounding receivers, in particular the residential area located directly east of Pembroke Road. Monitoring was conducted during the original assessment and traffic noise was not considered to be a key noise issue for surrounding residents.

Given that the Project is expected to only marginally increase traffic generation (only 1%), it is considered that the additional 10 trucks per day would not result in any existing noise levels. Further, the site is located within a heavy industrial area, and existing conditions prohibit truck movements during the night time periods except under exceptional circumstances, as a means of managing noise generation from the site.

In its submission on the modification proposal, Council raised concerns that the proposal could result in an increase to background noise levels resulting from an increase in road transportation from the site.

Conclusion

Given the limited number of additional traffic movements from the modification and the existing conditions which restrict night time activities on the site, the Department is satisfied that any increase in background noise levels would be negligible.

The Department is satisfied that any potential noise impacts could be managed through existing conditions of approval.

5.3 Developer Contributions

Issue

The requirement for the Proponent to pay additional developer contributions.

Consideration

As part of the determination of the JWM Project, conditions were included in the approval which required the Proponent pay a development contribution to Council to the amount of $50,000 (ref. Condition 13 Schedule 2 of the existing approval).

As the proposed modification seeks to increase local road use, Council has requested that additional contributions be made by the Proponent to provide for the funding of maintenance for local road projects.

The *Campbelltown City Council Section 94A Levy Contributions Plan* was adopted in August 2011. The Plan specifies the types of development to which the plan applies and that contributions are required to be paid based on the value of the development.

Table 1 of the Plan specifies that development comprising work valued at less then (or equal to) $100,000 do not attract a contribution levy. JWM has indicated that the proposed modification does not have any capital investment value, and as such, there is no trigger for payment under the current contributions Plan.

Conclusion

The proposed modification would not result in an increase in employment or an increase in demand on existing infrastructure and resources; and does not have any capital cost. As such, the Department does not consider there to be a nexus between Council's request for additional developer contributions and the proposed modification.

6. CONCLUSION

The Department has assessed the proposed modification in accordance with the requirements of clause 8B of the Regulations. This assessment has found that the proposed modification:

- is unlikely to have any environmental impacts beyond the approved facility; and
- would allow for the transport of grains and products to regional customers and clients, which would give a greater product flexibility; and support regional business.

Consequently, the Department is satisfied that the modification should be approved.

7. RECOMMENDATION

It is RECOMMENDED that the Acting Executive Director:

- **consider** the finding and recommendations of this report;
- **approve** the proposed modification subject to conditions; and
- **sign** the attached notice of modification (tagged A).

Christine Chapman
Environmental Planner
Industry, MPA

Chris Ritchie
Manager – Industry
Major Project Assessments
20/4/12

Heather Warton
A/Executive Director
Major Project Assessments
20/4/12

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

As delegate for the Minister for Planning and Infrastructure, I hereby modify the project approval to in Schedule 1, subject to the conditions in Schedule 2.

Heather Warton
A/Executive Director
Major Projects Assessment

Sydney 20th April 2012

SCHEDULE 1

Application Number:	08_0157
Proponent:	Joe White Maltings Pty Ltd
Approval Authority:	Minister for Planning
Land:	Lot 201 DP 813362 - Stonny Batter Road, Minto
Project:	Minto Malting and Grain Project

SCHEDULE 2

1) **Delete the following references from Definitions and Schedules 2, 3 and 4:**

DECC	Department of Environment and Climate Change
RTA	Roads and Traffic Authority

2) **Insert the following references in Definitions and Schedules 2, 3 and 4:**

Department	Department of Planning & Infrastructure
Director-General	Director-General of Department of Planning & Infrastructure, or delegate
EPA	Environmental Protection Authority
Minister	Minister for Planning & Infrastructure, or delegate
RMS	NSW Roads and Maritime Service

3) **Replace Condition 2 Schedule 2 with the following:**

2. The Proponent shall carry out the project generally in accordance with:
   a. EA;
   b. site plan (see Appendix 1);
   c. statement of commitments (see Appendix 2);
   d. Modification Application 08_0157 - Mod 1 with supporting documentation by Cardno dated 11 December 2011 and 14 December 2011; and
   e. conditions of this approval.

4) **Replace Condition 7 Schedule 2 with the following:**

7. The Proponent shall ensure that the Project:
   a) does not import more than 54,000 tonnes per annum of grain and barley by road;
   b) does not export more than 25,000 tonnes per annum of malt and grain by road; and
   c) imports/exports all remaining grain and malting barley via the rail siding to the Main Southern Railway.

   However, in exceptional circumstances, the Proponent may be exempt from these restrictions for short periods with the written approval of the Director-General.

5) **Replacing Condition 19 Schedule 3 with the following:**

19. The Proponent shall prepare and implement an Operational Traffic Management Plan for the Project to the satisfaction of the Director-General. The Plan must:
   a. be prepared in consultation with the RMS and Council;
   b. be submitted to the Director-General for approval prior to the commencement of importation or exportation of grain, barley or malt to/from the site via road;
   c. nominate routes for the heavy vehicles accessing the site;
   d. provide details on restrictions proposed for the hours that heavy vehicles may access the site;
   e. describe the measures that would be implemented to manage traffic safety during operation of the project; and
   f. describe the measures that would be implemented to manage heavy vehicle driver behaviour and traffic noise associated with the development.

APPENDIX B

B

TRUCK SWEPT PATHS

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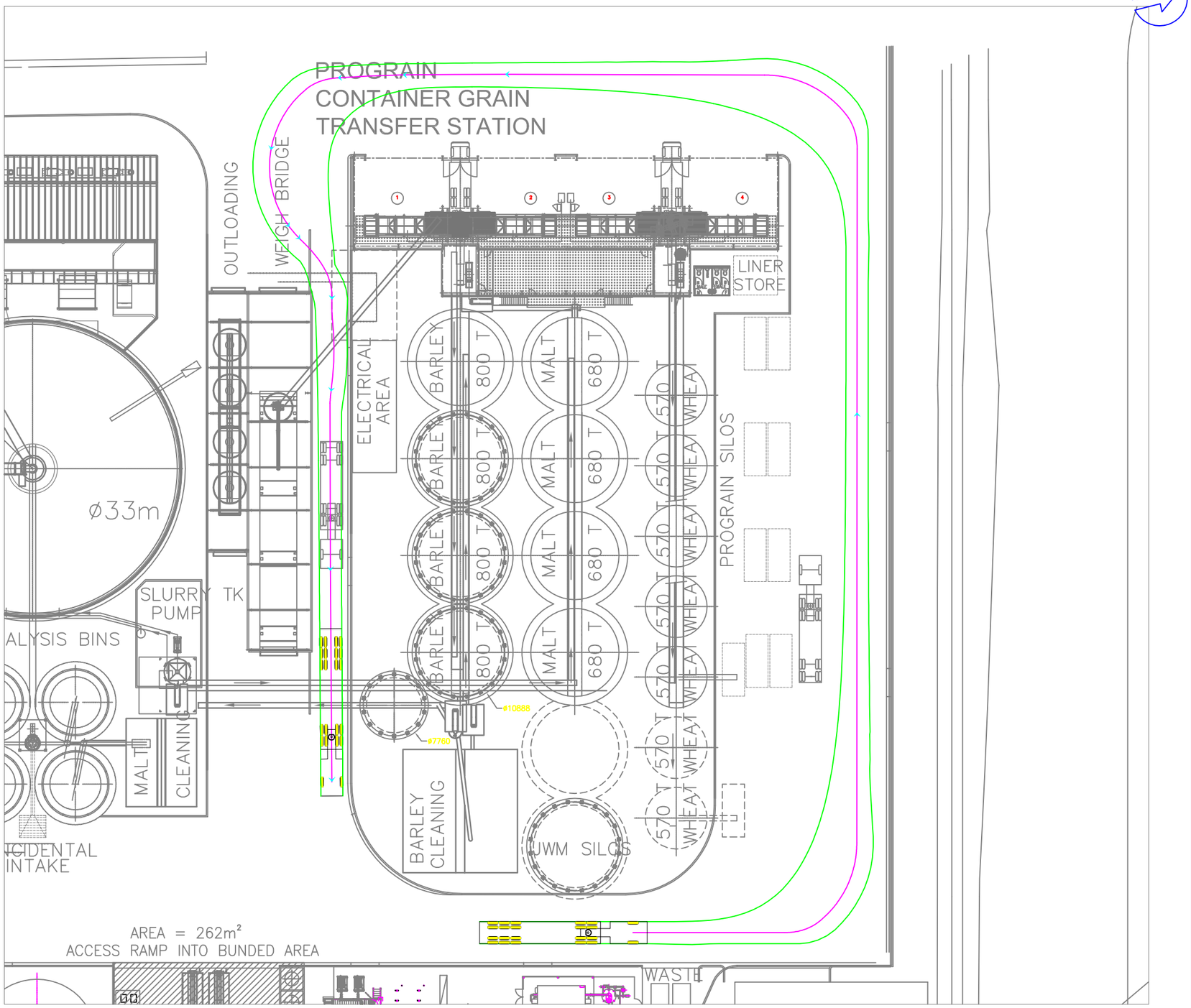

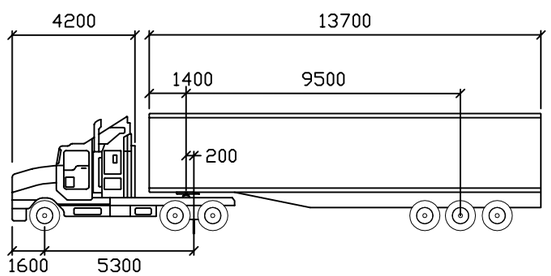

S ARTICULATED 19M mm

Tractor Width	: 2500	Lock to Lock Time	
Trailer Width	: 2500	Steering Angle	
Tractor Track	: 2500	Articulating Angle	
Trailer Track	: 2500		

JOE WHITE MALTINGS PLANT
19m Articulated Vehicle Swept Path

Figure No: SK-03 | Project No: 600330 | Date: Nov 2011

Cardno Eppell Olsen

FILE NAME: X:/ 600330 Swept Paths

APPENDIX C

C

TRUCK ROUTES

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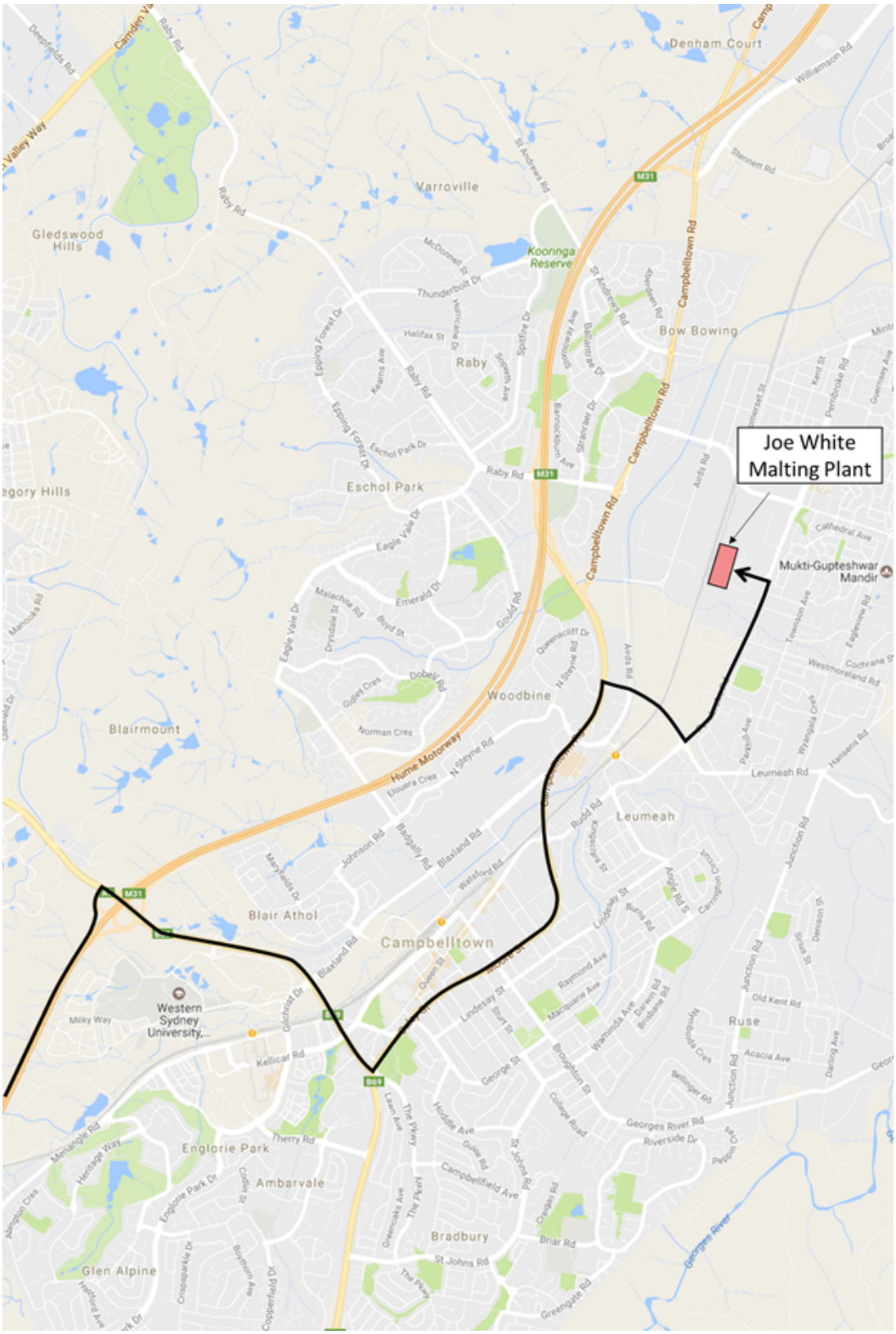
Joe White Malting Plant
Denham Court
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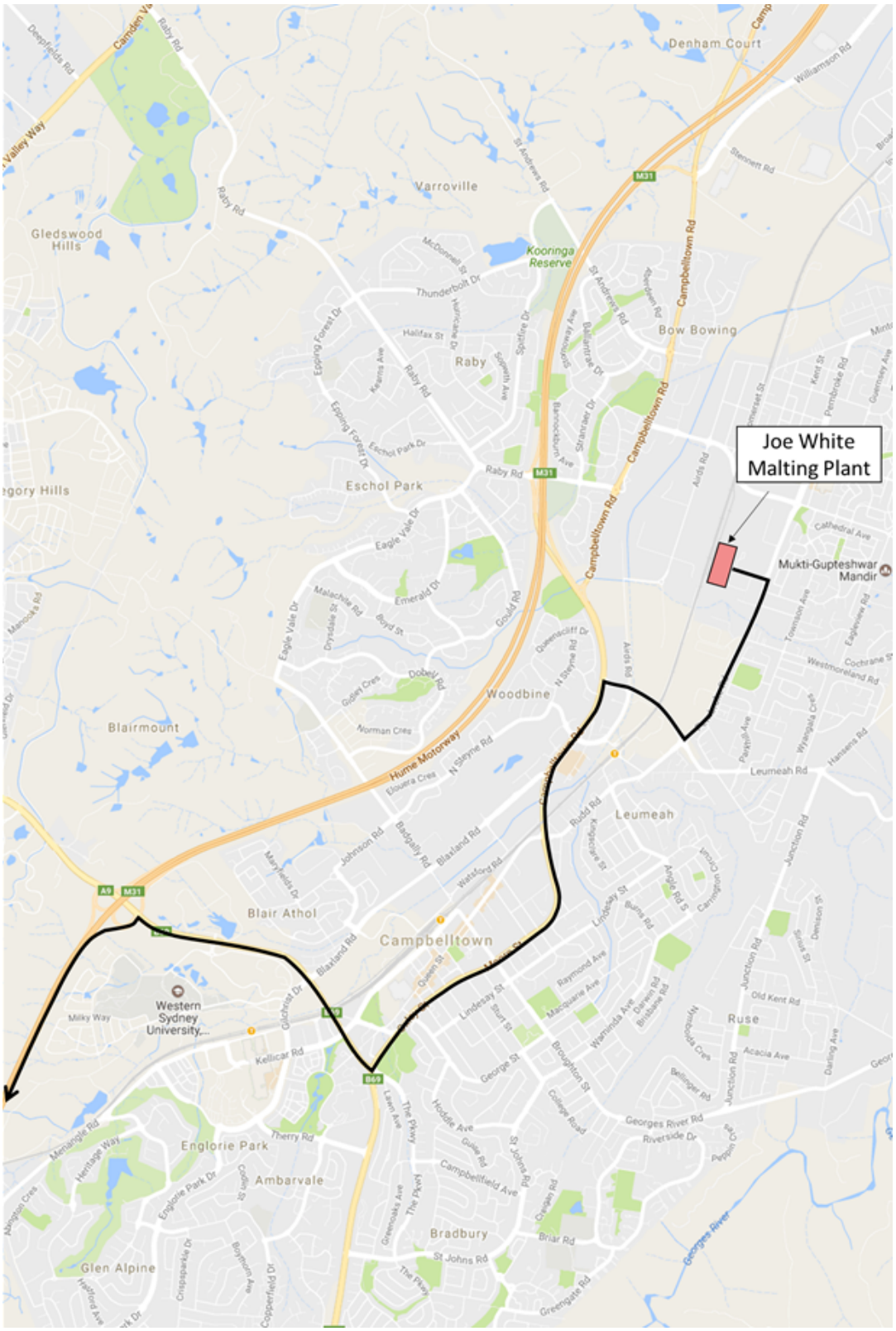
Gledswood Hills
Kooringa Reserve
Bow Bowing
Raby
Eschol Park
Campbelltown Rd
Mukti-Gupteshwar Mandir
Woodbine
Blairmount
Hume Motorway
Leumeah
Blair Athol
Campbelltown
Western Sydney University
Ruse
Englorie Park
Ambarvale
Bradbury
Glen Alpine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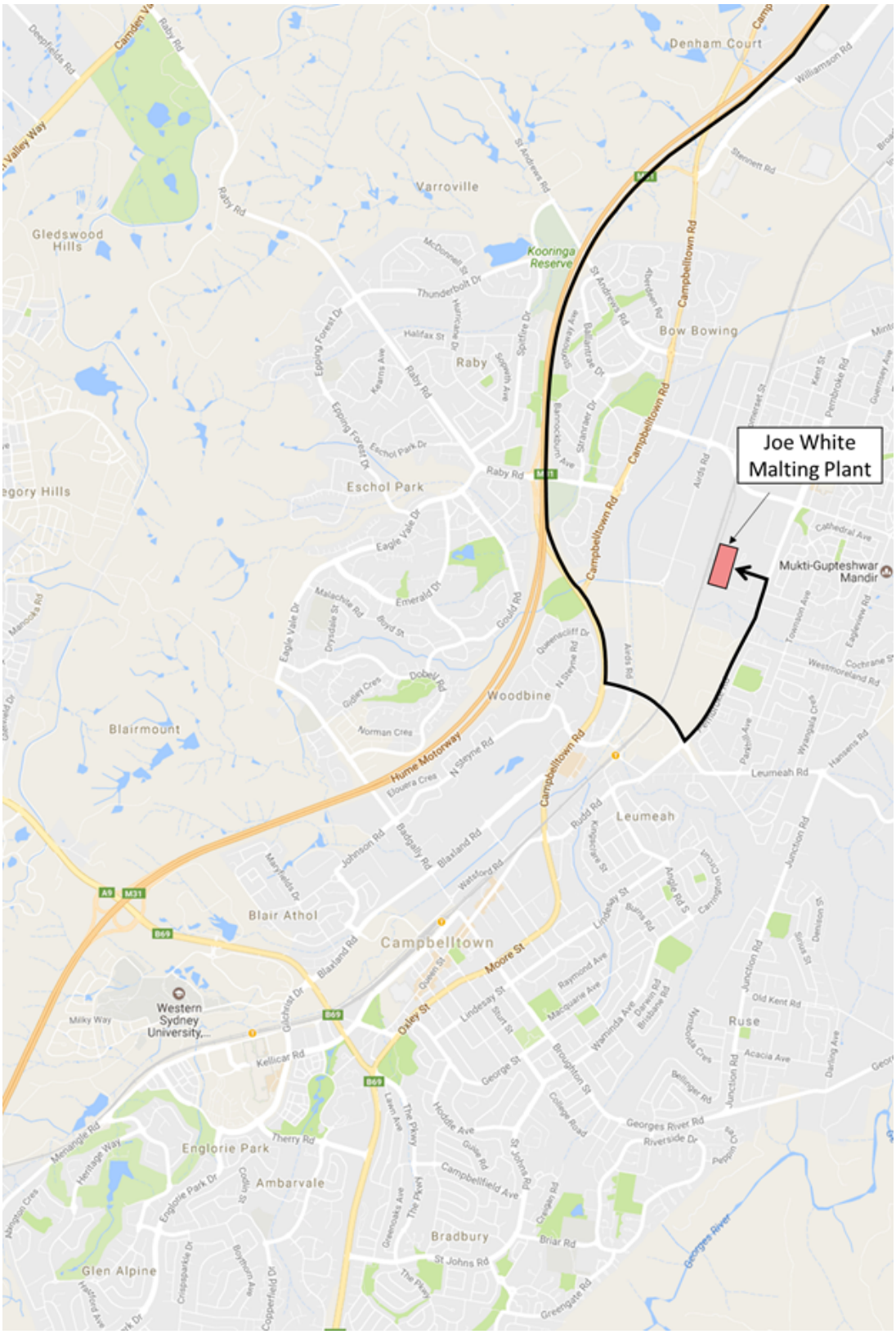
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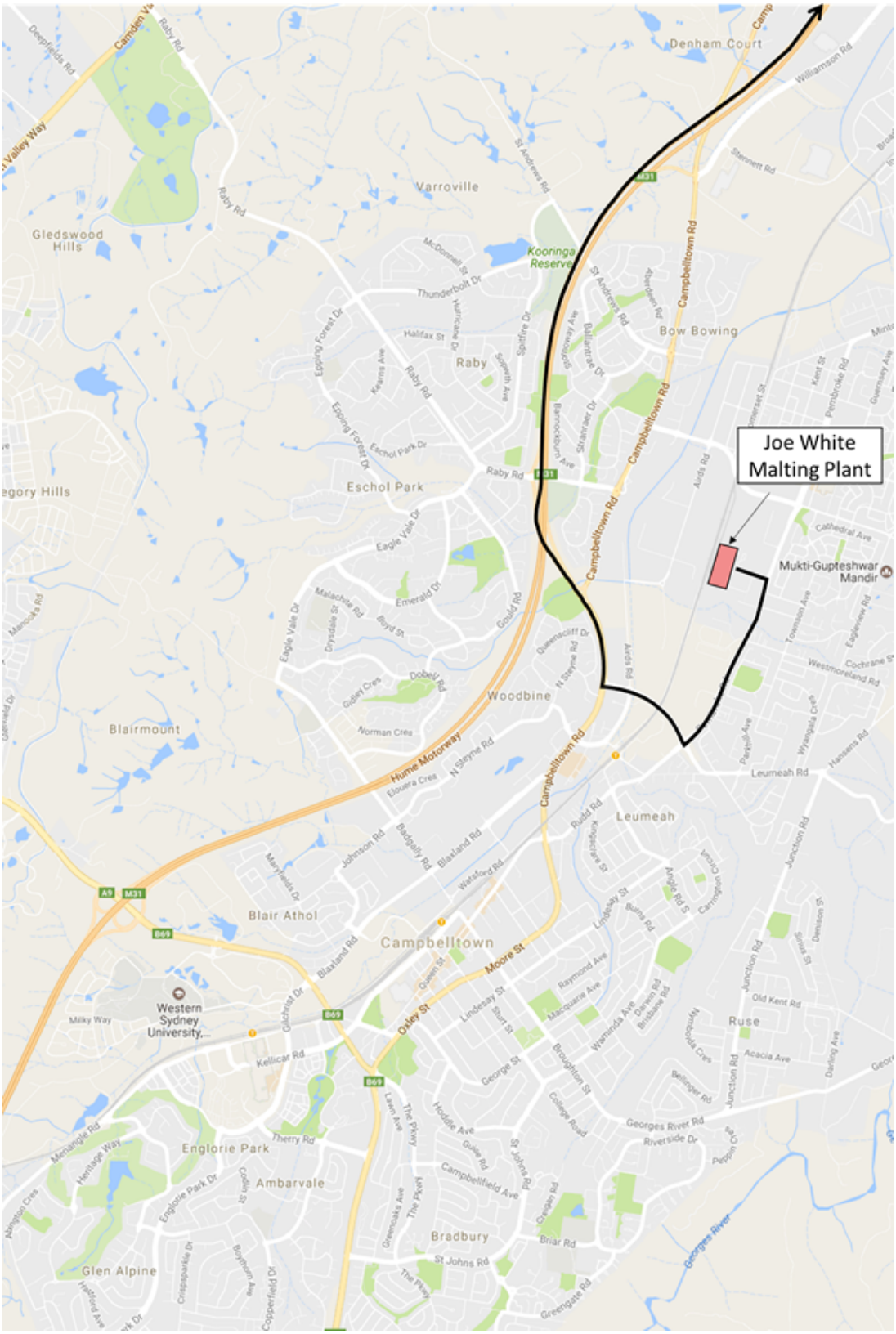
Englorie Park
Ambarvale
Bradbury
Glen Alpine
Georges River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Ambarvale
Bradbury
Glen Alpine
Mukti-Gupteshwar Mandir
Western Sydney University
Hume Motorway
Campbelltown Rd
Moore St
Oxley St
Raby Rd
Williamson Rd
Leumeah Rd
Georges River Rd
Junction Rd
Blaxland Rd
Kellicar Rd
St Johns Rd