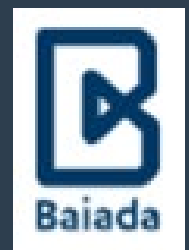




TANGARATTA FEED MILL 771 WALLAMORE RD WALLAMORE

TRAFFIC IMPACT ASSESSMENT

26 June 2024



Document Control

Document: Project Name: Tangaratta Feed Mill – 771 Wallamore Road, Wallamore
PSA Job Number: 1636
Report Name: Traffic Impact Assessment

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Revision History

VERSION	DATE	DETAILS	AUTHOR	AUTHORISATION
V3	26 June 2024	FINAL	Hamish Flett	 Hannah Richardson

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LIST OF ACRONYMS

AADT	Average Annual Daily Traffic
ASD	Approach Sight Distance
BAL	Basic Left Treatment
BAR	Basic Right Treatment
HML	Higher Mass Limits
HV	Heavy Vehicle
LV	Light Vehicle
NSW	New South Wales
PSA	PSA Consulting
RAV	Restricted Access Vehicle
SISD	Sade Intersection Sight Distance
TIA	Traffic Impact Assessment
TfNSW	Transport for NSW
TRC	Tamworth Regional Council

1 INTRODUCTION

1.1 BACKGROUND

PSA Consulting has been engaged by Baiada to provide traffic engineering advice and prepare a Traffic Impact Assessment (TIA) to accompany a Development Application (DA) for the proposed Tangaratta Feed Mill located at 771 Wallamore Road, Wallamore. The site locality plan is highlighted in Figure 1.



Figure 1: Site Locality Plan (Source: Nearmap, 2023)

1.2 REPORT STRUCTURE

This report addresses the relevant requirements of Tamworth Regional Council and includes the following sections:

- Existing Conditions.
- Development Profile.
- Traffic Impact Assessment.
- Service Vehicle Swept Path Assessment.
- On-site Parking requirements.

2 EXISTING CONDITIONS

2.1 ROAD NETWORK

The proposed development is located at the north-west corner of Wallamore Road and Bowlers Lane, approximately 9km north-west of Tamworth, and approximately 2.5km east of the Oxley Highway. Wallamore Road is a two-lane, two-way road.

The road surface is sealed with an approximate width of 8m. Wallamore Road is classified as a Local Road under the Transport for NSW Road Network Classification with a posted speed limit of 100km/h. The road network with respect to the development site is evidenced below in Figure 2.

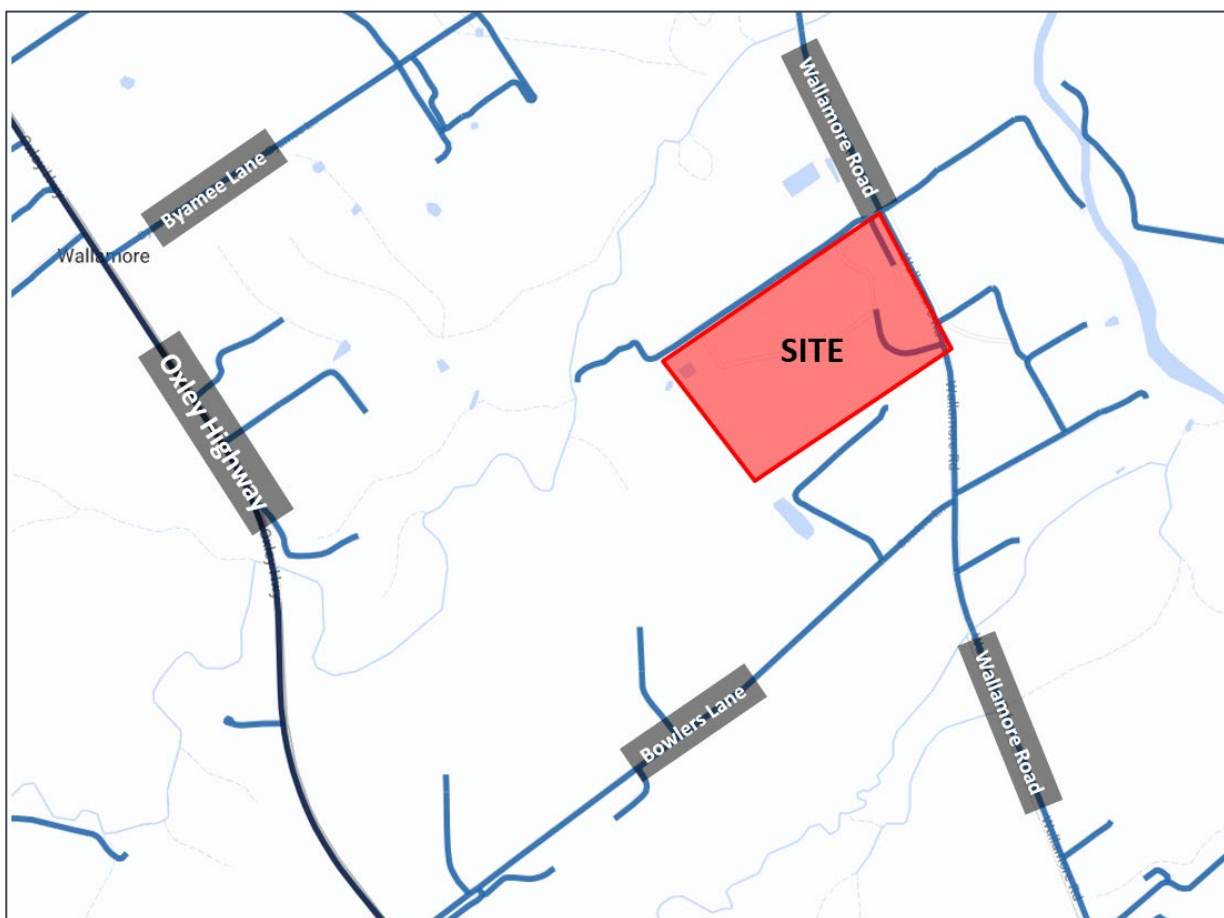


Figure 2: Road Classification (Source: Transport for NSW, PSA Consulting)

2.1.1 Freight Network

Wallamore Road falls under the approved 25/26m B-Double Routes as per the Transport for NSW Combined Higher Mass Limits (HML), General Mass Limit (GML) and Concessional Mass Limits (CML) Networks within the Restricted Access Vehicle (RAV) Map, as shown in Figure 3.

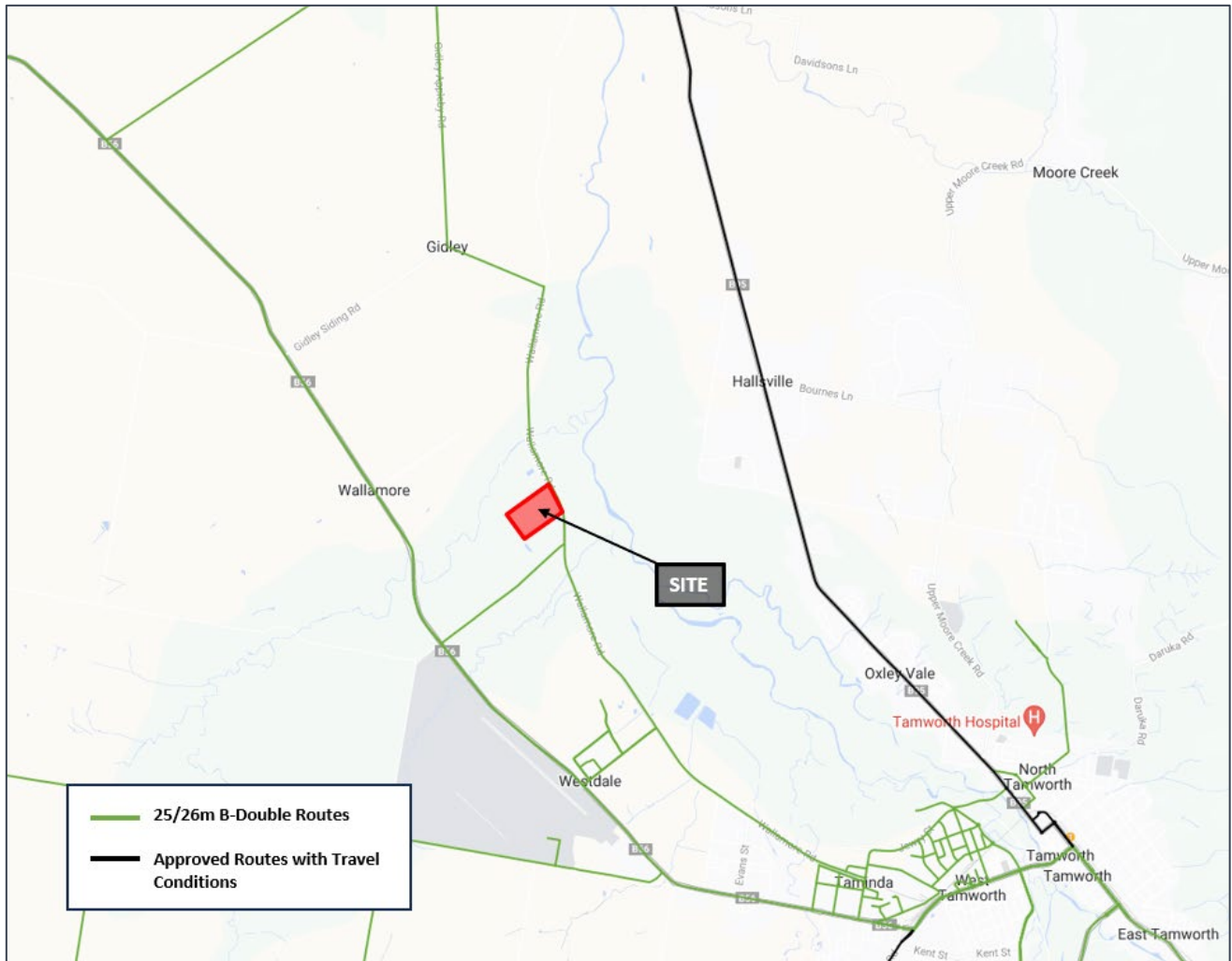


Figure 3: NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map (Source: Transport for NSW)

2.2 EXISTING SITE

The proposed development relates to land at 771 Wallamore Road, Wallamore which contains the current Tangaratta Stockfeeds mill. The site is formally described as Lot 4 on DP578865 and has an area of 40.62ha.

The development will also include Lot 1 on DP1077646 as the existing access driveway to the site traverses the Main Northern Rail Line Corridor. This is an unconstructed rail corridor running north / south along Wallamore Road owned by the NSW State Rail Authority and managed by UGL Regional Linx.

2.3 EXISTING AND FUTURE YEAR BACKGROUND TRAFFIC VOLUMES

Traffic census data was obtained through collaboration with Tamworth Regional Council (TRC). A traffic counter was positioned approximately 3.2km southeast of the development site access from May 26th (2022) to June 9th (2022), as illustrated in Figure 4. This device recorded the movements of vehicles classified as class 1 through 12 over a 24-hour period each day.

To establish a reliable measure of peak hour movements relevant to light and heavy vehicle profiles, the weekday values, representing the highest volume numbers across a seven-day week, were aggregated and averaged to derive an average vehicles per day (VPD) value. The average distribution between heavy and light vehicles was then applied. Finally, a conservative 10% adjustment was made to determine the peak hour vehicle movements for both heavy and light vehicles. This breakdown of values is noted in Table 1

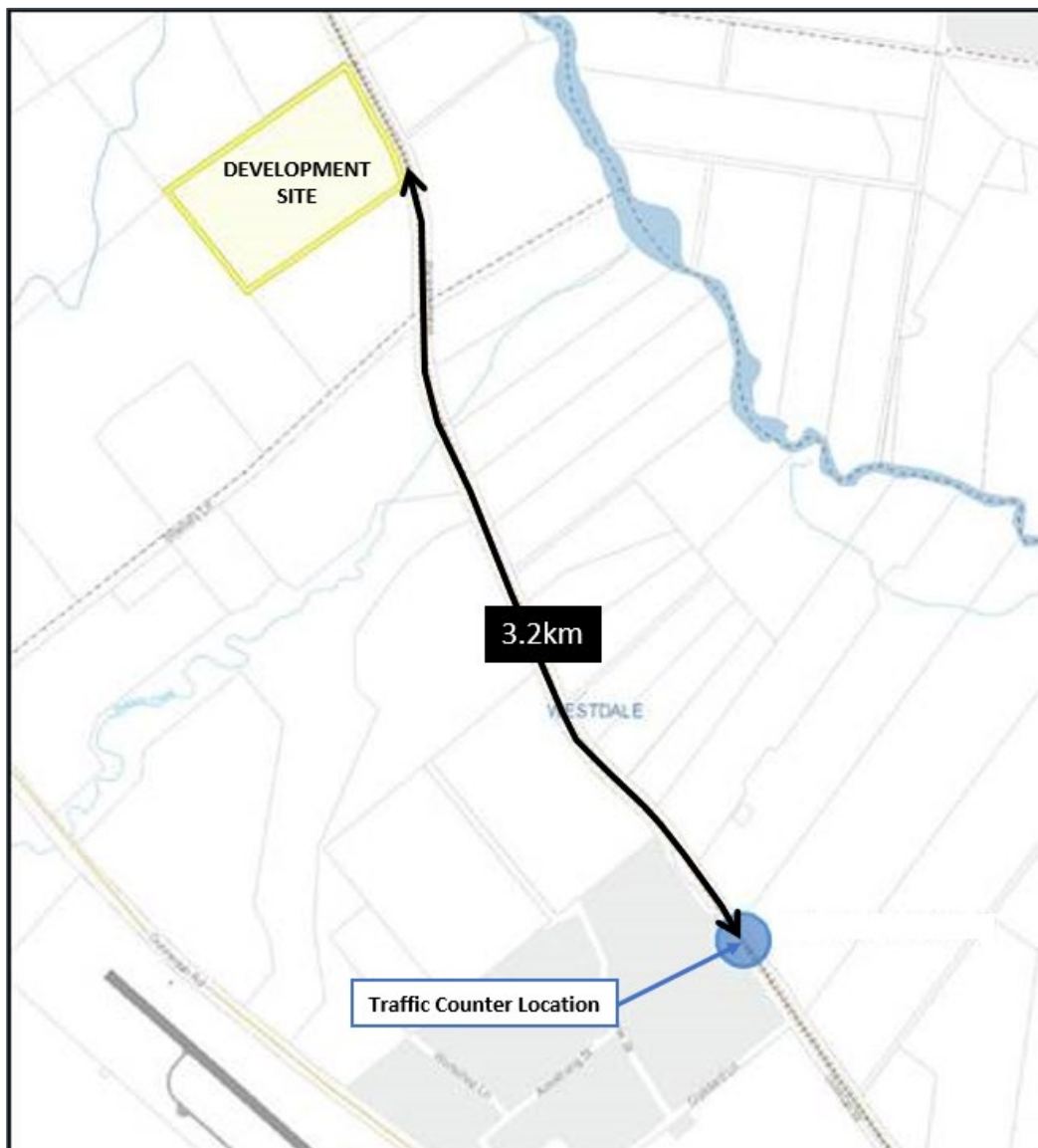


Figure 4: Traffic Counter Locality (Source: Tamworth Regional Council, PSA Consulting)

Table 1: Background Traffic Volumes (Source: PSA Consulting)

BACKGROUND TRAFFIC VOLUMES					
Year	AADT	Split Light Vehicles	Split Heavy Vehicles	Light Vehicles Peak Hour	Heavy Vehicles Peak Hour
		70%	30%		
2022	856	603	254	61	26
2025 (Stage 1)	936	629	278	66	28
2026 (Stage 2)	964	678	286	68	29
2036	1295	911	384	92	39

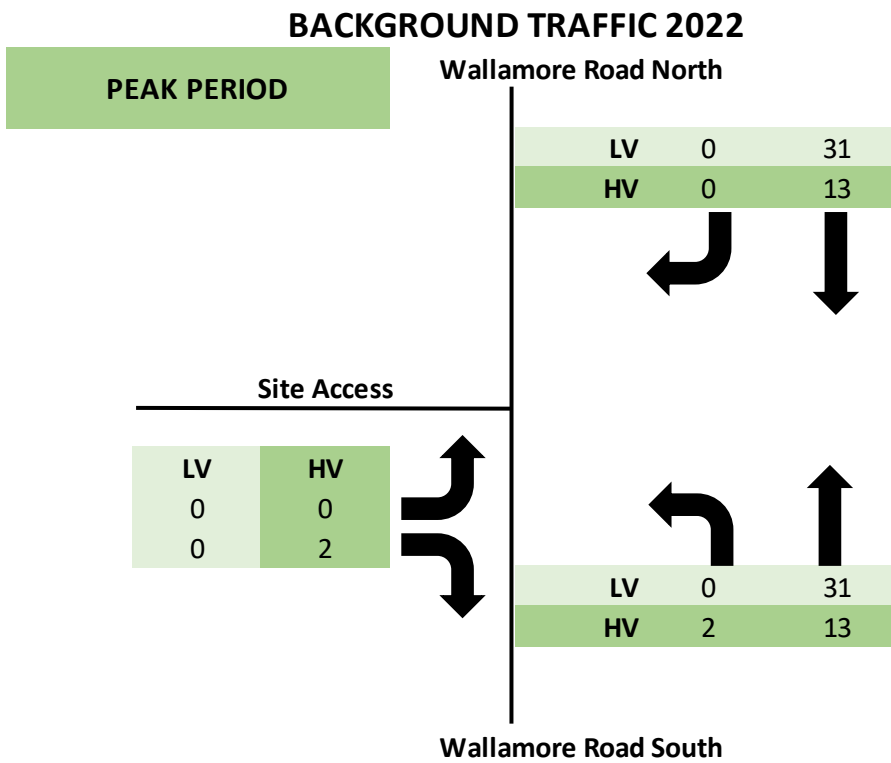


Figure 5: Background Traffic Volumes 2022 Peak Period (Source: PSA Consulting)

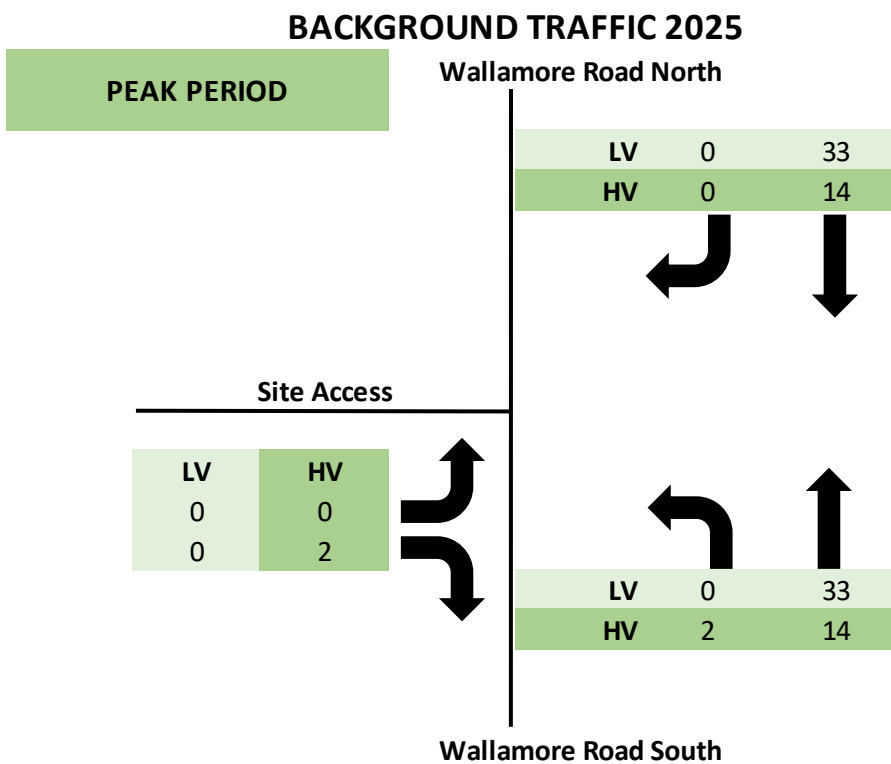


Figure 6: Background Traffic Volumes 2025 Peak Period (Source: PSA Consulting)

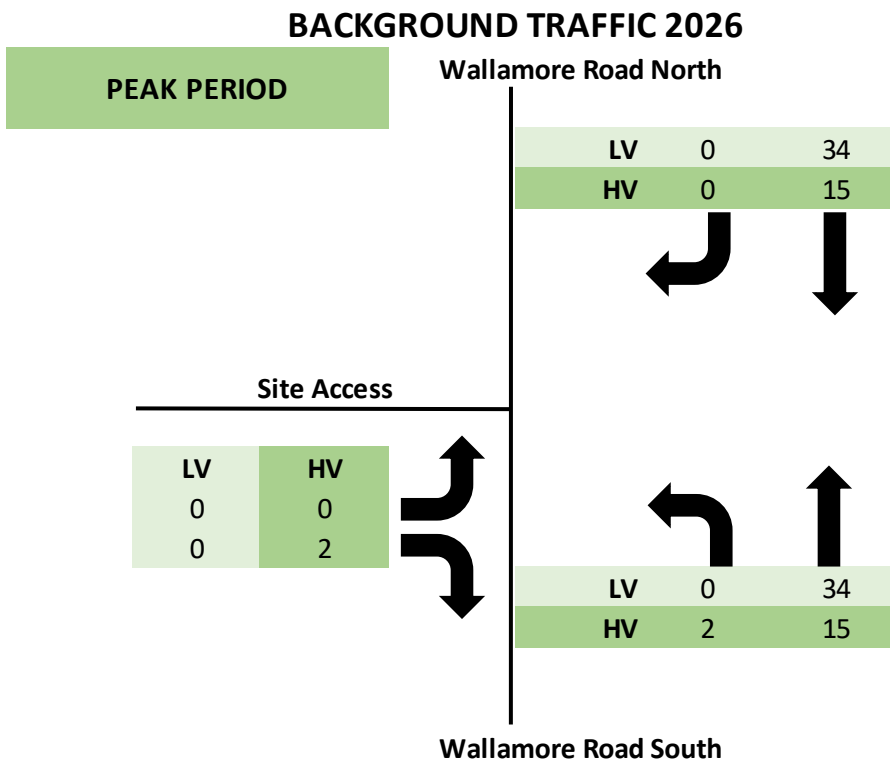


Figure 7: Background Traffic Volumes 2026 Peak Period (Source: PSA Consulting)

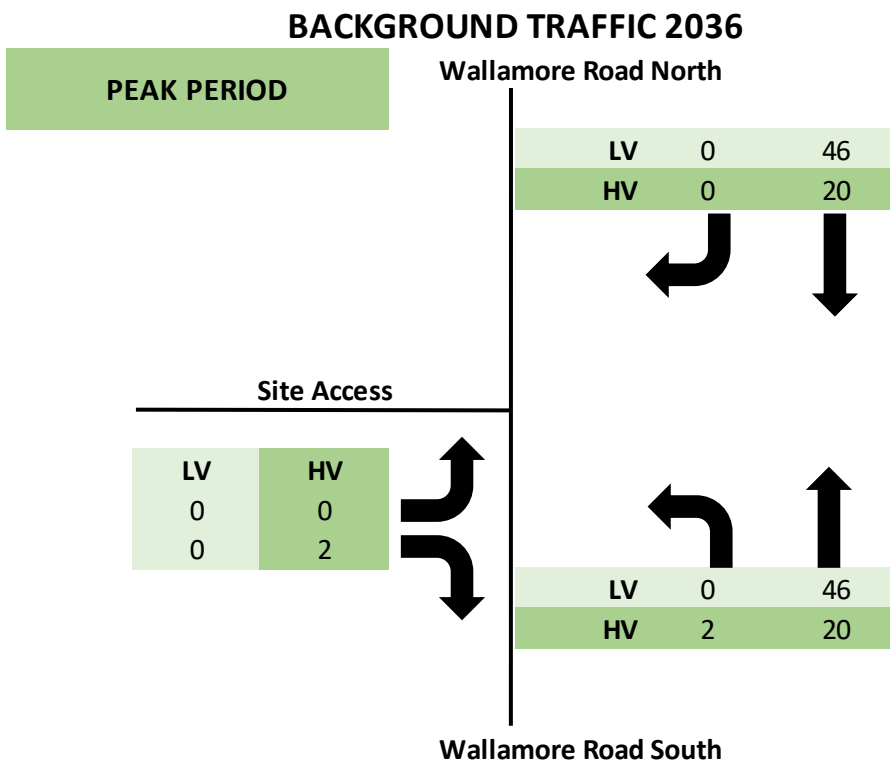


Figure 8: Background Traffic Volumes 2036 Peak Period (Source: PSA Consulting)

4 IMPACT ASSESSMENT

4.1 ASSESSMENT PARAMETERS

It is a standard requirement when analysing traffic impacts to adopt a 10-year design horizon from the year of opening/full operation of the proposed development. Intrinsically, the following development parameters have been adopted for the purpose of this assessment:

- Existing traffic count 2022
- Year of Stage 1 operation 2025
- Year of Stage 2 operation 2026
- 10-year design horizon 2036

4.2 DEVELOPMENT TRAFFIC GENERATION AND DISTRIBUTION

The traffic generated by the proposed development has been determined through consultation with Baiada. Anticipated traffic flow during operations will follow a three-shift schedule, primarily consisting of light vehicle movements from shift workers, including staff, management, and maintenance personnel. There will be a slight increase in heavy vehicle movements during two-stage construction periods, with these vehicles expected to enter and exit the site within an hour of arrival.

The three-shift operations will run as follows: Day shift from 6am to 2pm, Afternoon shift from 2pm to 10pm, and Night shift from 10pm to 6am. Employees are expected to arrive approximately 20 minutes before their shift starts and leave 20 minutes after it ends. The distribution staff during the shifts is as follows:

- Day shift – 6 Staff (6 light vehicle)
- Afternoon shift – 5 Staff (5 light vehicles)
- Night shift – 4 Staff (4 light vehicles)

Maintenance will operate over two shifts between 7am to 3:30pm, while Management operates from 8am to 4:30pm. The distribution is as follows:

- Maintenance – 3 Staff (3 light vehicles)
- Management – 5 Staff (5 light vehicles)

It is assumed that as a conservative figure each staff member will be arriving and exiting the site in their own vehicle, therefore staff numbers will be reflective of light vehicle movements accessing the site.

4.2.1 Anticipated Heavy Vehicle Movements

During Stage 1, at full capacity (10,000 tonnes per week plus an additional 2,500 tonnes per week from the old mill), this will average 1190 truck movements (where a movement reflects a trip in or trip out) per week. This translates to approximately 199 truck movements per day over a seven-day operation. Approximately 80% of these movements will occur between 6am and 10pm, with the remaining 20% between 10pm and 6am. During the earlier timeframe, there will be an average of 160 truck movements, or 10 per hour, and during the latter, there will be approximately 40 truck movements, or 5 per hour.

In Stage 2, at full capacity (17,000 tonnes per week), resulting in an average of 1618 truck movements (where a movement reflects a trip in or trip out) per week. The distribution of truck movements during operational hours will be 216 truck movements per day, or 14 per hour, between 6am and 10pm, and 54 truck movements, or 7 per hour, between 10pm and 6am.

This distribution of operational production quantities and associated heavy vehicle movements has been summarised in Table 2.

Table 2: Operational Volumes and Heavy Vehicle Requirements (Source: Baiada)

Anticipated Heavy Vehicle Requirements			
Operational Phase	Feed/Grain Volume (Tonnes per week)	Truck Movements Per Week (42 tonnes per load)	Truck Movements Per Day (7-day operation)
Stage 1 (+2,500 tonnes from existing move)	25,000 tonnes (12.5k in and 12.5k out)	1190 Heavy Vehicle Movements (In & Out)	199 Heavy Vehicle Movements
Stage 2	34,000 (17k in and 17k out)	1618 Heavy Vehicle Movements (In & Out)	216 Heavy Vehicle Movements

Distribution of the development traffic has been provided through consultation with Baiada, where the following distributions have been concluded:

- **Light Vehicles (Staff)**
 - 90% arrive and exit from the south.
 - 10% arrive and exit from the north.

- **Heavy Vehicles**
 - Finished Feed Trucks (50% of Overall Heavy Vehicle Movements)
 - 10% arrive and exit from the north.
 - 90% arrive and exit from the south.
 - Raw Material Deliveries (50% of Overall Heavy Vehicle Movements)
 - 100% arrive and exit from the south.
 - 65% arrive from the south via Bowlers Lane.
 - 35% arrive from the south via Goddards Lane.

These movements across the development span have been illustrated below for Light Vehicles in Table 3 and Heavy Vehicles in Table 4.

Table 3: Light Vehicle Daily Traffic Generation (Source: Baiada, PSA Consulting)

LIGHT VEHICLE MOVEMENTS							
3 Shift Operation	Time	Staff (LV)		Management		Maintenance	
		Arrive	Leave	Arrive	Leave	Arrive	Leave
Day	6am-2pm	6	4	3	-	5	-
Afternoon	2pm-10pm	5	6	-	3	-	5
Night	10pm-6am	4	5	-	-	-	-

Table 4: Heavy Vehicle Daily Traffic Generation (Source: Baiada, PSA Consulting)

HEAVY VEHICLE MOVEMENTS							
Stage	Time	Split	Total HV per Week	Week	Total HV per Day	Day (7)	Hour
Stage 1	6am - 10pm	80%	1190	952	199	160	10
	10pm - 6am	20%		238		40	5
Stage 2	6am - 10pm	80%	1618	1295	270	216	14
	10pm - 6am	20%		324		54	7

*Values in table have been rounded up to the nearest whole number.

To ascertain the peak volume of vehicles entering and exiting the site, an hourly breakdown has been organised to identify the two values representing these periods. The resulting peak hour generation is depicted in Table 5 below.

Table 5: AM and PM Peak Hour Traffic Generation (Source: PSA Consulting)

VEHICLE MOVEMENTS PER HOUR						
Hour	Light Vehicle Movements			Heavy Vehicle Movements		Total Vehicle Movements *Stage 2
	Arrive	Leave	Total	Stage 1	Stage 2	
5-6am	6	-	6	5	7	13
6-7am	3	4	7	10	14	21
7-8am	5	-	5	10	14	19
2-3pm	5	6	11	10	14	25
3-4pm	-	3	3	10	14	17
4-5pm	-	5	5	10	14	19
10-11pm	4	5	9	5	7	16

From the above table, the two periods of peak vehicle movements have been confirmed as 6am-7am for the Peak AM and 2pm-3pm being the Peak PM periods. The breakdown of traffic distribution for the AM and PM Peak periods is further highlighted in Figure 10, Figure 11, Figure 12 and Figure 13.

STAGE 1 DEVELOPMENT TRAFFIC 2025

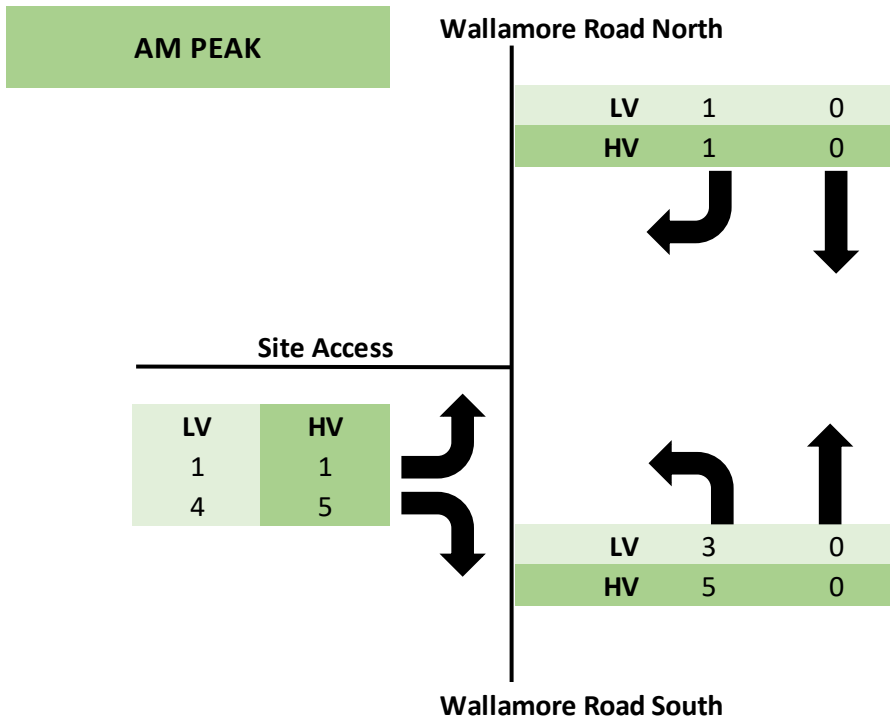


Figure 10: Stage 1 Development Traffic AM Peak (Source: PSA Consulting)

STAGE 1 DEVELOPMENT TRAFFIC 2025

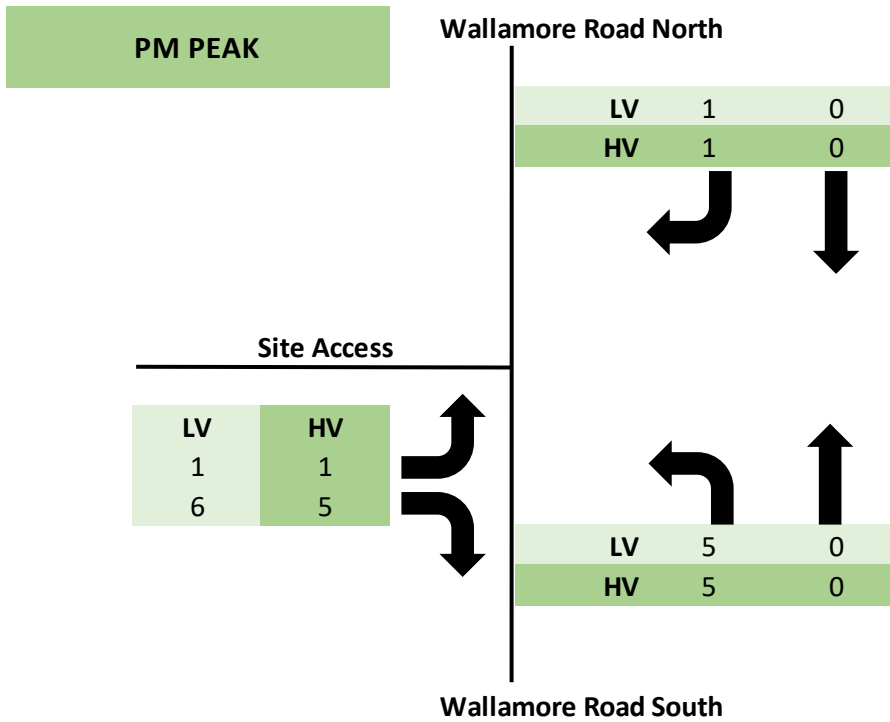


Figure 11: Stage 1 Development Traffic PM Peak (Source: PSA Consulting)

STAGE 2 DEVELOPMENT TRAFFIC 2026

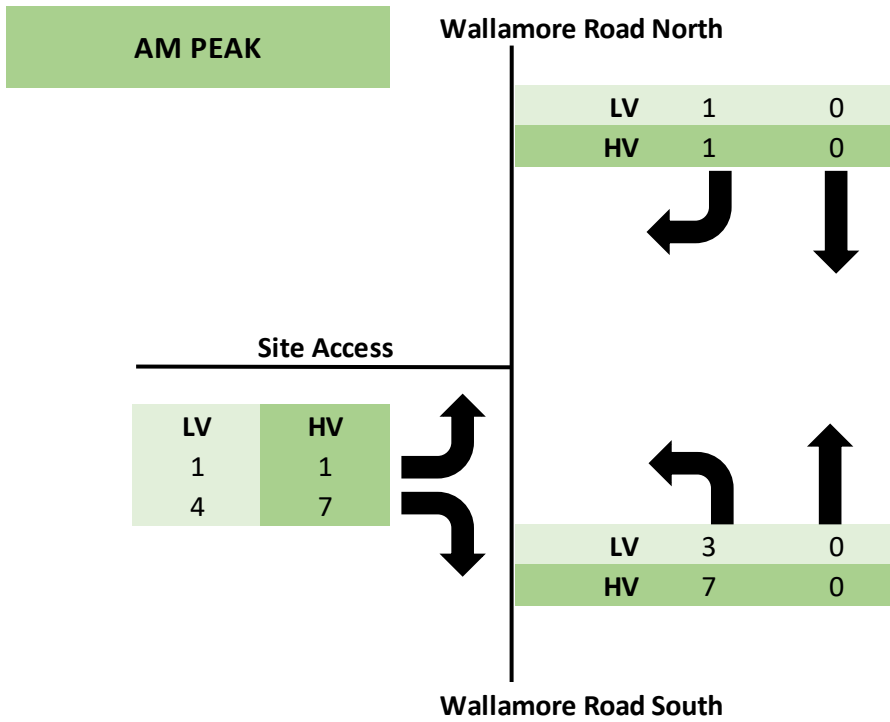


Figure 12: Stage 2 Development Traffic AM Peak (Source: PSA Consulting)

STAGE 2 DEVELOPMENT TRAFFIC 2026

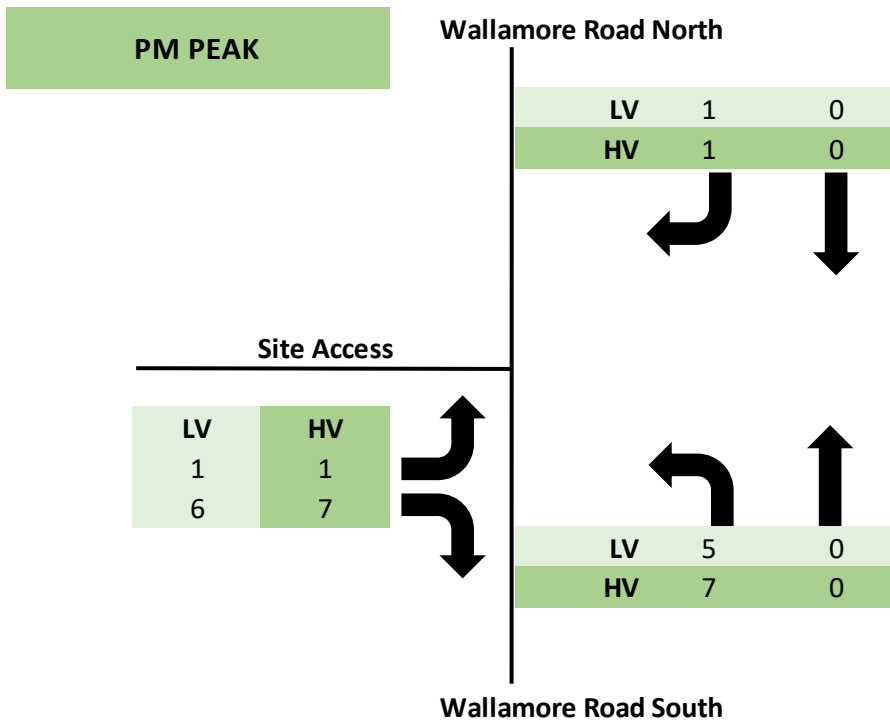


Figure 13: Stage 2 Development Traffic PM Peak (Source: PSA Consulting)

4.3 TRAFFIC IMPACT ASSESSMENT

Based on the assumptions outlined in section 2.3, along with a conservative background traffic growth rate of 3%, anticipated future-year background traffic volumes have been determined. These volumes have been amalgamated with the traffic volumes generated by the development to derive the design traffic volumes for this evaluation.

The assessment considers two key scenarios: the year of the development's opening and a 10-year design horizon. The figures below depict the amalgamation of background and development-generated traffic generation for these scenarios.

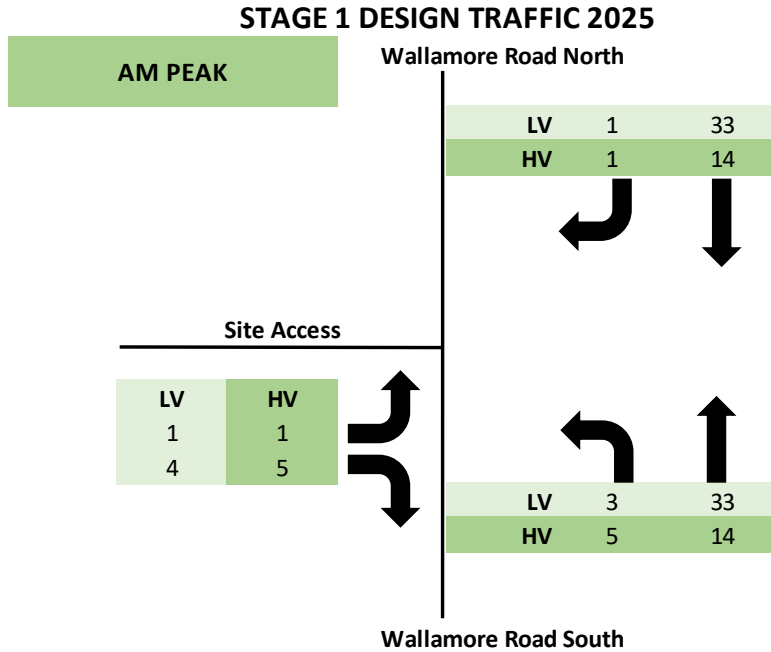


Figure 14: Stage 1 2025 Design Traffic AM Peak (Source: PSA Consulting)

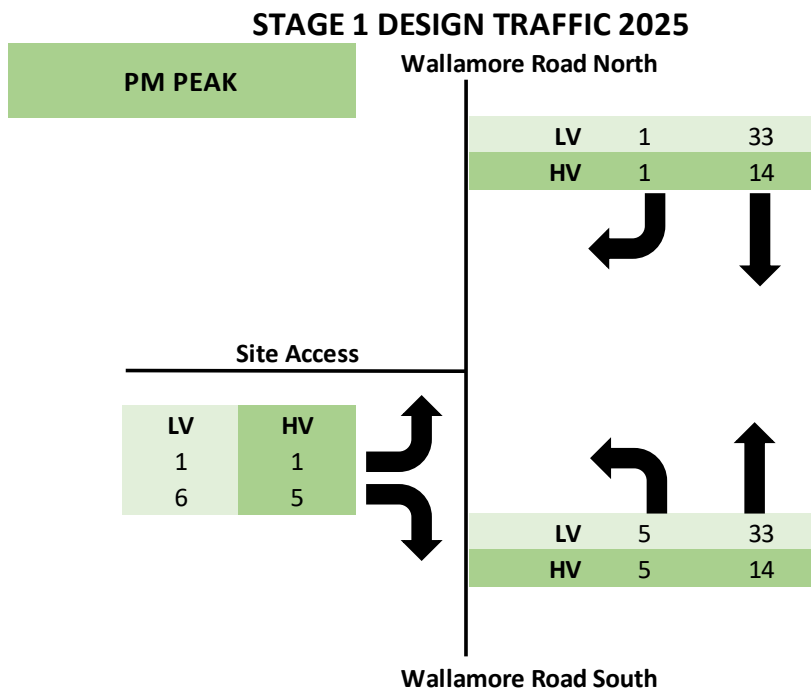


Figure 15: Stage 1 2025 Design Traffic PM Peak (Source: PSA Consulting)

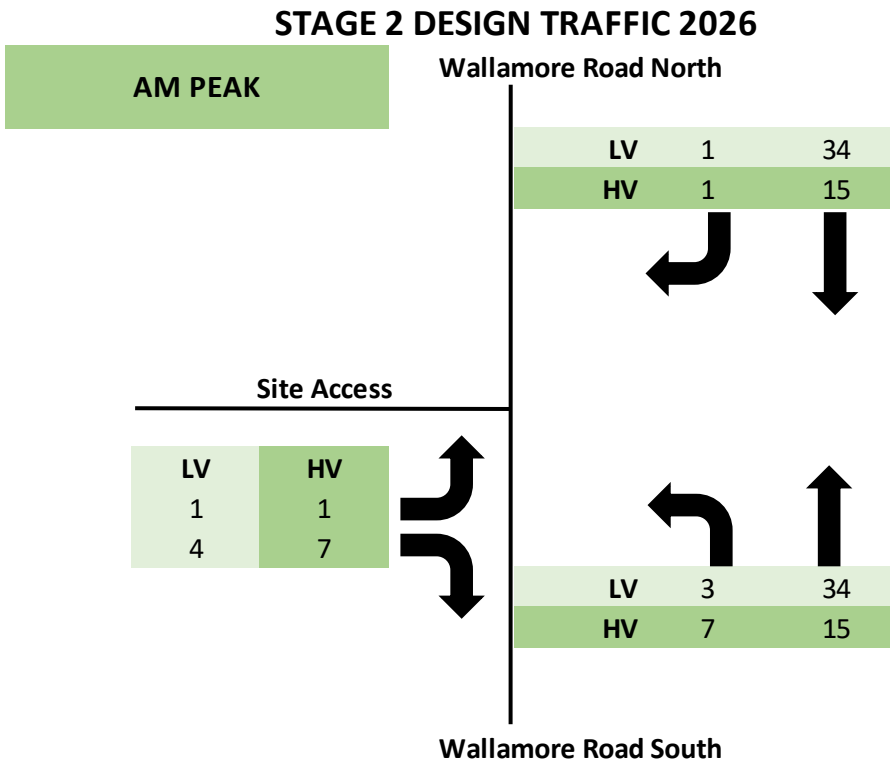


Figure 16: Stage 2 Design Traffic AM Peak (Source: PSA Consulting)

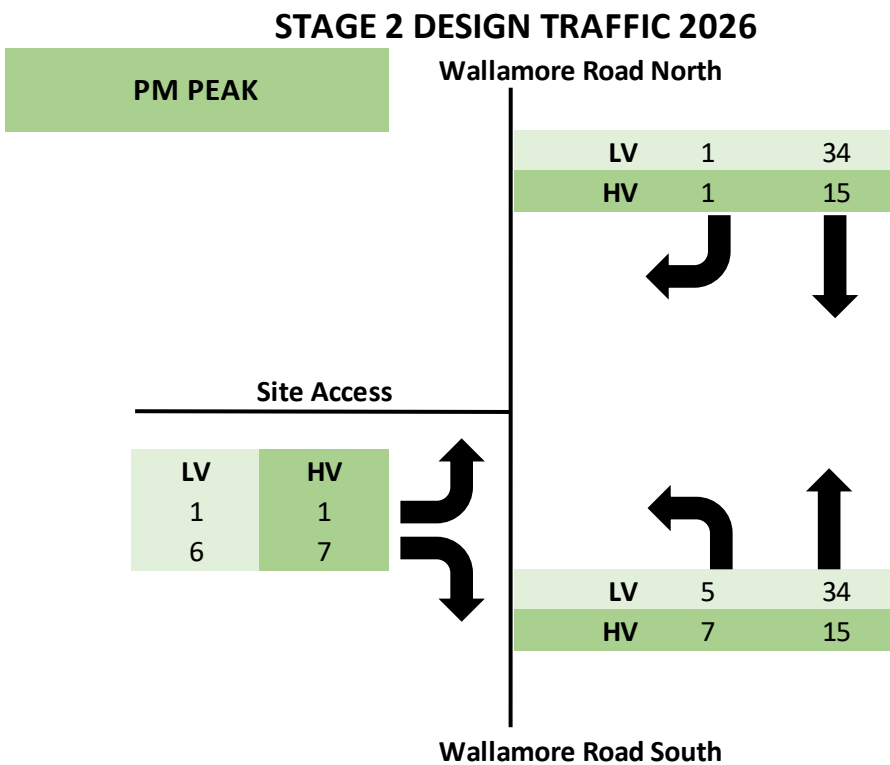


Figure 17: Stage 2 Design Traffic PM Peak (Source: PSA Consulting)

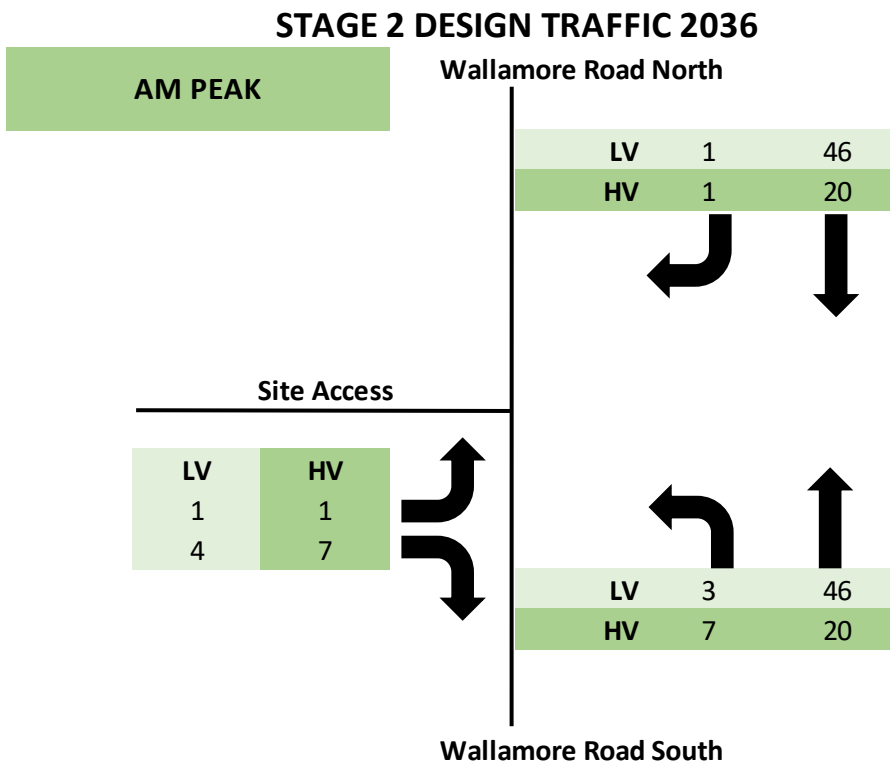


Figure 18: Stage 2 10 Year Design AM Peak (Source: PSA Consulting)

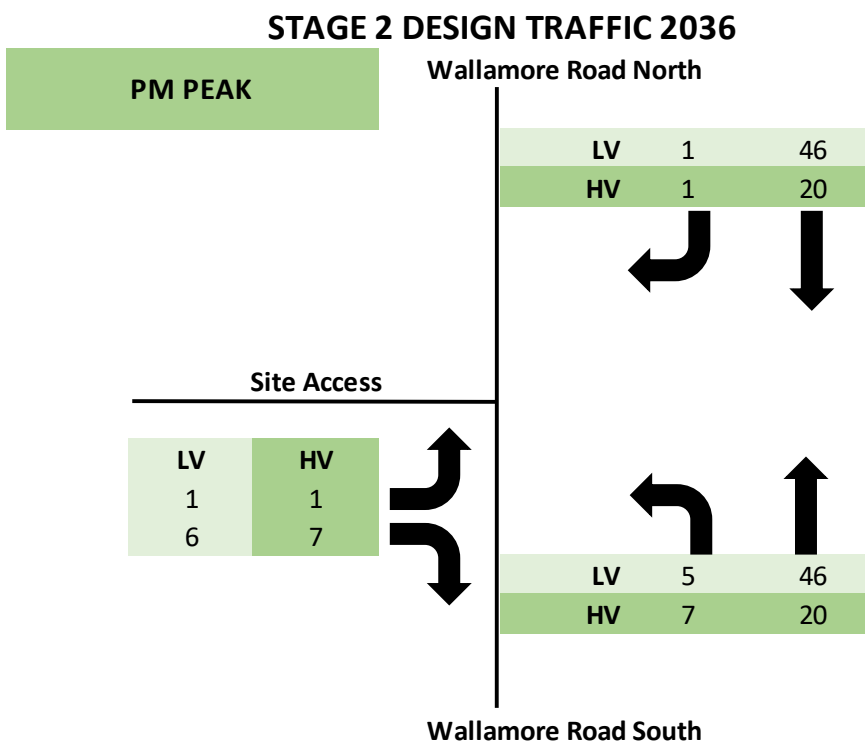


Figure 19: Stage 2 10 Year Design PM Peak (Source: PSA Consulting)

4.3.1 Key Performance Factors

Three key measures of performance are generally used when assessing the operations of intersections. These include:

- Level of Service (LOS) and delay;
- Degree of Saturation (DOS) and practical capacity; and
- Queue Length for critical movements.

Allowable thresholds used for this study are defined in the following sections. These thresholds are based on standard practice adopted within Queensland and form the basis of the determination of any deficiencies within the existing road network.

4.3.1.1 Level of Service and Delay

Levels of Service (LOS) and delay definitions are shown in Table 6. These values are industry accepted thresholds published by the NSW RTA.

Table 6: Level of Service and delay - all intersection types (Source: Roads and Traffic Authority)

LEVEL OF SERVICE	AVERAGE DELAY PER VEHICLE (SECS/VEH)	COMMENTS TRAFFIC SIGNAL AND ROUNDABOUT	COMMENTS GIVE WAY & STOP SIGN
A	$d \leq 14.5$	Good operation	Good operation
B	$14.5 < d \leq 28.5$	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	$28.5 < d \leq 42.5$	Satisfactory	Satisfactory, but accident study required
D	$42.5 < d \leq 55$	Nearing Capacity	Near capacity & accident study required
E	$55 < d \leq 70.5$	At capacity, requires upgrade or other control mode	At capacity, requires other control mode
F	$70.5 < d$		

4.3.1.2 Degree of Saturation

The effect of differing levels of traffic flow on the operating performance of intersections has traditionally been assessed by dividing the intersection volume with its capacity – referred to as the DOS. As traffic volumes approach the capacity of the intersection, the DOS approaches the theoretical capacity of 1. The practical DOS thresholds which have been used for comparison in this study are presented in Table 7. These thresholds were originally published within the Department of TMR's *Guidelines for Assessment of Road Impacts of Development* (GARID). It is noted that GARID is now superseded by the GTIA which specifies that most intersections have a DOS above these levels and average delay should be used to assist in determining intersection performance.

Table 7: Practical Degree of Saturation at intersections (Source: Roads and Maritime Services)

INTERSECTION TYPE	PRACTICAL DEGREE OF SATURATION (DOS)
Sign Controlled	0.8
Roundabout	0.85
Signalised Intersection	0.9

4.3.1.3 Queue Lengths

The SIDRA queue lengths reported herein are 95th percentile queues. This means that 95% of the time, queue lengths will not exceed the specified queue length. Queue lengths are deemed acceptable if queuing is contained within given storage areas. Where queuing exceeds the short lane capacity, queue lengths can also be deemed acceptable if queues do not impact upon major adjacent conflict points (e.g., an adjacent through lane).

4.3.2 Wallamore Road / Site Access

SIDRA intersection analysis was conducted to evaluate the potential impacts of increased traffic volumes generated by the proposed development. As indicated in Table 1, background traffic movements and existing feed mill access road movements have been determined from previous traffic data supplied by TRC and the existing movements along Wallamore Road for the key development periods 2025, 2026, 2036 generated with a conservative growth factor of 3% applied to the all background movements.

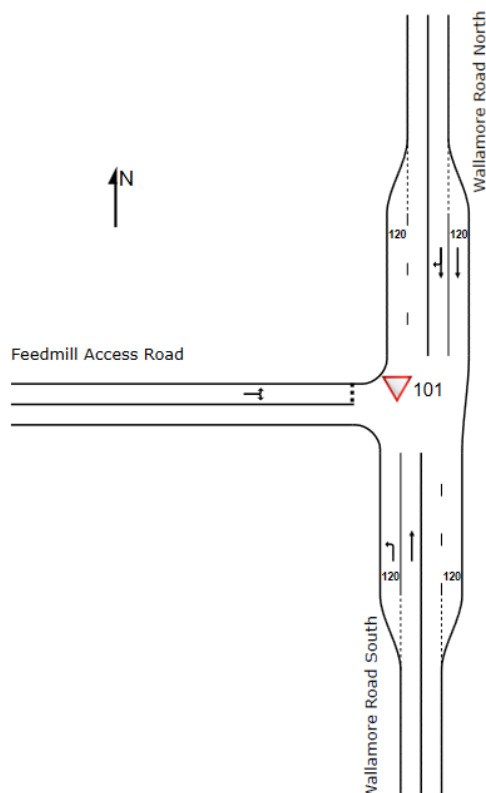


Figure 20: SIDRA LAYOUT Site Access / Wallamore Road (Source: SIDRA, PSA Consulting)

Table 8: Wallamore Road / Site Access SIDRA Analysis (Source: SIDRA, PSA Consulting)

SCENARIO	DEGREE OF SATURATION	AVERAGE DELAY (SEC)	LEVEL OF SERVICE	QUEUE LENGTH (M)
Background Traffic				
Peak Hour – 2025	0.029	0.4	LOS A	0.2
Peak Hour – 2026	0.030	0.4	LOS A	0.2
Peak Hour - 2036	0.041	0.3	LOS A	0.2
Design Traffic				
Peak Hour – 2025	0.029	1.3	LOS A	0.6
Peak Hour – 2026	0.030	1.4	LOS A	0.7
Peak Hour - 2036	0.041	1.2	LOS A	0.8

The results demonstrate that with the conservative combined background traffic volumes and the expected generated traffic volumes generated from the development, the intersection is forecast to remain within its current level of operation with all performance factors operating above satisfactory levels.

4.3.3 Wallamore Road / Bowlers Lane

SIDRA intersection analysis was conducted to evaluate the potential impacts of increased traffic volumes generated by the proposed development. for the Bowler’s Lane / Wallamore Road intersection where background traffic counts were derived from the supplied traffic counts from TRC, and previous analysis undertaken for the Oakburn Processing Plant (June 2019). To estimate the adjusted traffic volumes for the key development operation periods in 2025, 2026, and 2036, a conservative growth factor of 3% was applied to all background traffic movements on the network.

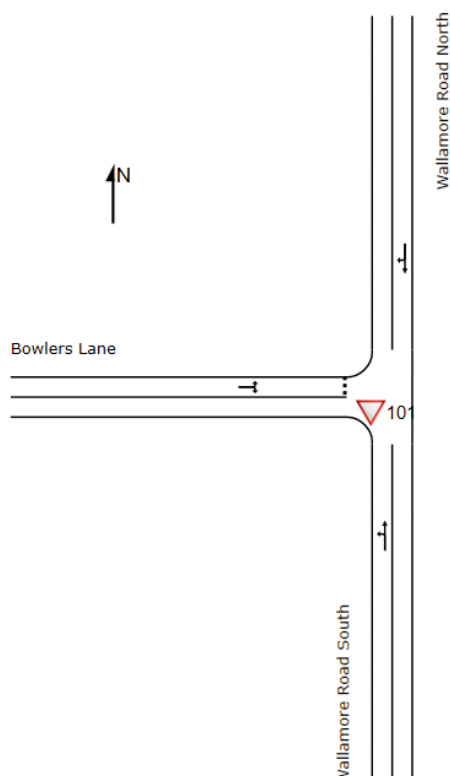


Figure 21: SIDRA LAYOUT Bowlers Lane / Wallamore Road (Source: SIDRA, PSA Consulting)

Table 9: Wallamore Road / Bowlers Lane SIDRA Analysis (Source: SIDRA, PSA Consulting)

SCENARIO	DEGREE OF SATURATION	AVERAGE DELAY (SEC)	LEVEL OF SERVICE	QUEUE LENGTH (M)
Background Traffic				
Peak Hour – 2025	0.051	4.8	LOS A	1.6
Peak Hour – 2026	0.055	4.8	LOS A	1.7
Peak Hour - 2036	0.081	4.7	LOS A	2.6
Design Traffic				
Peak Hour – 2025	0.058	4.7	LOS A	1.9
Peak Hour – 2026	0.064	4.7	LOS A	2.1
Peak Hour - 2036	0.090	4.8	LOS A	3.0

As indicated in Table 9, expected generated traffic from the proposed development is shown to have negligible impact on the Wallamore / Bowlers Lane intersection. All performance factors are projected to operate above satisfactory levels.

4.3.4 Oxley Highway / Bowlers Lane

The SIDRA intersection analysis was conducted to evaluate the potential impacts of increased traffic volumes generated by the proposed development. Background traffic volumes for the Oxley Highway / Bowler’s Lane intersection were obtained from the yearly AADT traffic volumes available on TfNSW’s Traffic Volume Viewer. The data was collected from a counter located 380 meters south of the assessed intersection, using the most recent complete year, 2023.

To estimate the traffic volumes for the key development operation periods in 2025, 2026, and 2036, a growth factor of 3% was applied. The traffic data includes only north and south movements along the Oxley Highway. Therefore, a theoretical 33% of the expected turning movements into Bowlers Lane from the Oxley Highway was applied, along with anticipated minor movements via Old Winton Road. This distribution factor is considered conservative and will assist in determining whether the generated traffic movements will significantly impact the development.

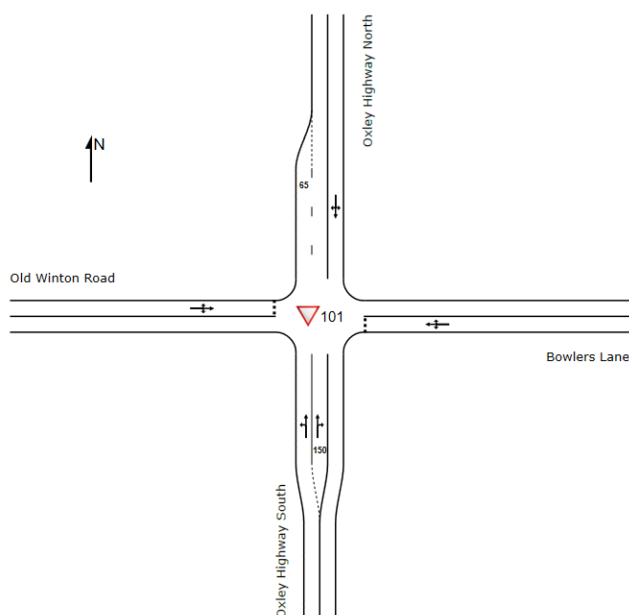


Figure 22: SIDRA LAYOUT Oxley Highway / Bowlers Lane (Source: SIDRA, PSA Consulting)

Table 10: Oxley Highway / Bowlers Lane SIDRA Analysis (Source: SIDRA, PSA Consulting)

SCENARIO	DEGREE OF SATURATION	AVERAGE DELAY (SEC)	LEVEL OF SERVICE	QUEUE LENGTH (M)
Background Traffic				
Peak Hour – 2025	0.185	4.1	LOS B	6.5
Peak Hour – 2026	0.203	4.4	LOS B	7.2
Peak Hour - 2036	0.346	5.5	LOS C	15.4
Design Traffic				
Peak Hour – 2025	0.207	4.4	LOS B	7.5
Peak Hour – 2026	0.231	4.7	LOS B	8.6
Peak Hour - 2036	0.361	5.7	LOS C	16.6

The results indicate that, even with the conservative background traffic volumes and the expected traffic generated by the development, the intersection is forecasted to maintain its current level of operation. All performance factors are projected to operate at or above satisfactory levels.

4.4 Crash History

The vehicle crash history within the vicinity of the development was sourced from the TfNSW’s LGA View Crashes Map which occurred within a 5-year period (2018-2022) from this report as show in Figure 23.

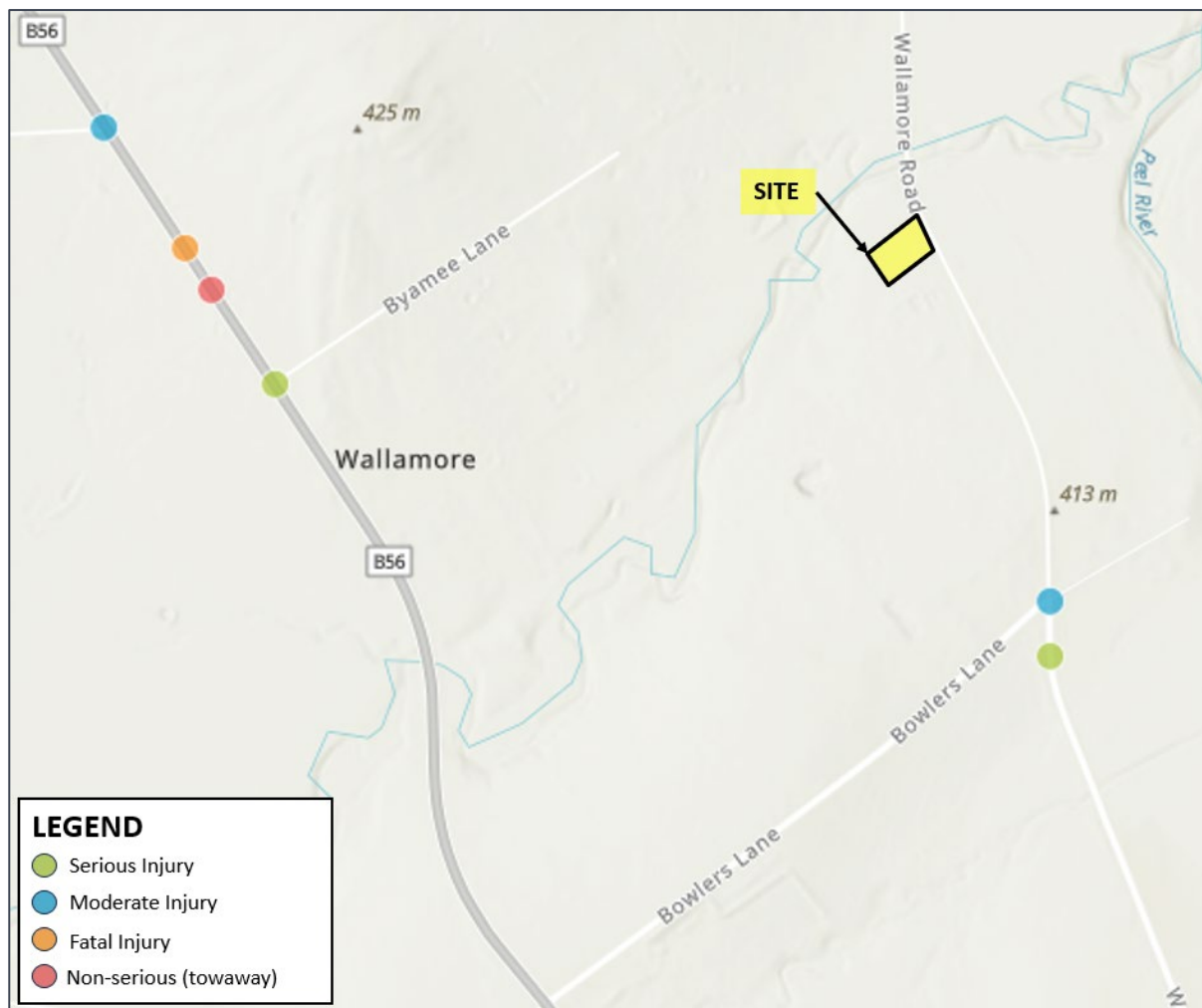


Figure 23: Surrounding Development Crash Locations (Source: TfNSW)

The crash locations identified in Figure 23 have been further analysis by the characteristics of the crashes included in Table 11. There are minimal incidents of crashes within the immediate vicinity of the development site, with the majority occurring on the Oxley Highway.

Based on the assessed crash data, there are no discernible trends within the accident type or degrees.

Table 11: Surrounding Crash Data Locations Characteristics (Source: TfNSW)

Year	Crash ID	Degree of Crash	Description	No. Injured	No. Fatalities
2019	1194441	Moderate Injury	Object on road	1	-
2019	1205912	Serious Injury	Left rear	1	-
2019	1219031	Serious Injury	Off left/RT bend - object	1	-
2020	1247470	Moderate Injury	Off end of road	1	-
2021	1272791	Non-casualty (towaway)	Rear end	-	-
2022	1288547	Fatal	Head on	1	1

5 SITE ACCESS AND ON-SITE PARKING

5.1 PROPOSED DEVELOPMENT SITE ACCESS

Currently, all access to the existing Feed Mill is facilitated through a single driveway off Wallamore Road. The plan is to continue using this driveway for both Stage 1 and Stage 2 operations of the proposed new feed mill. Given the effective utilisation of this access driveway by current heavy vehicle classes, it is expected that the same vehicle profiles will access the site and be accommodated through this driveway for the proposed development. Swept Path Analysis outlined in section 5.5 will assess this in further detail.

5.2 DESKTOP SIGHT DISTANCE ASSESSMENT

A desktop safe sight distance assessment has been undertaken for the Wallamore Road / Site Access intersection. Wallamore Road has a posted speed limit of 100km/h and therefore the sight distance requirements for a 110km/h design speed in Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* are shown in Table 12.

Table 12: Wallamore Road / Site Access Sight Distance Requirements (Source: Austroads)

SCENARIO	ASD ^a	SISD ^b	MGSD ^c
Wallamore Road Posted Speed: 100km/h Design Speed: 110km/h	193m	285m	153m

^a Approach Sight Distance – Minimum sight distance required from Site access to the Wallamore Road / Site Access intersection

^b Safe Intersection Sight Distance – Minimum sight distance required from Wallamore Road / Site Access intersection

^c Minimum Gap Sight Distance – Minimum sight distance required at the intersection from the Site access to see vehicles on Wallamore Road

Sight distance triangles have been created using the SISD lengths as specified in Table 12 and are shown below in Figure 24.

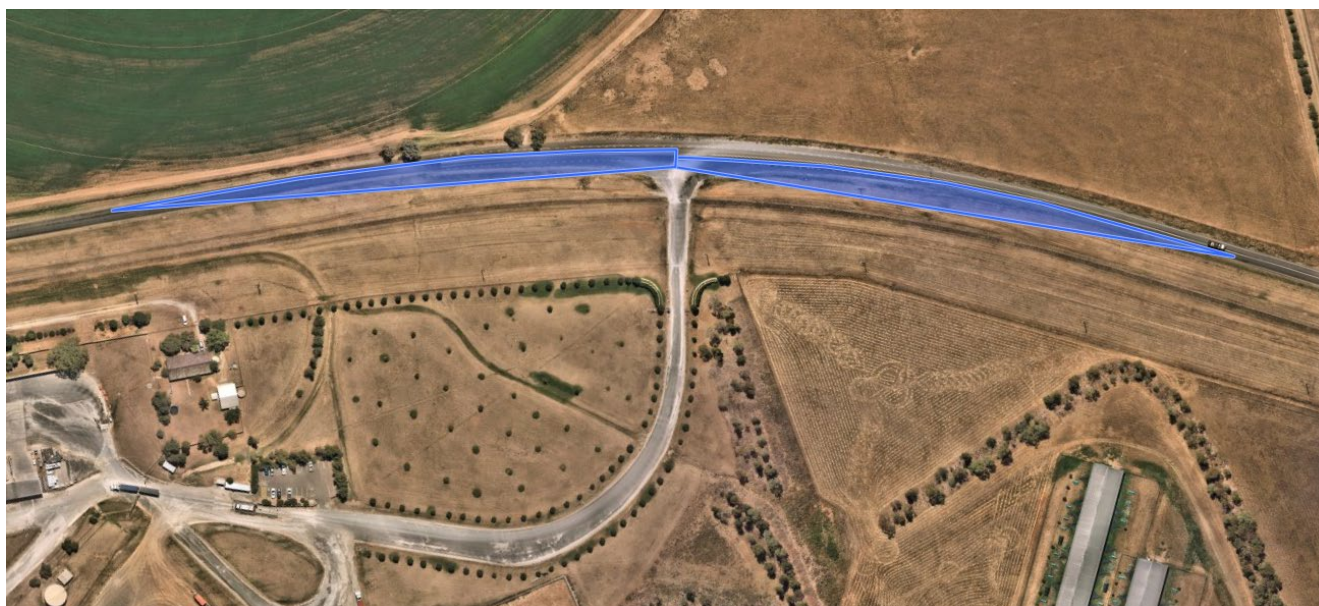


Figure 24: Wallamore Road / Site Access Sight Distance Triangles (Source: Nearmap, PSA Consulting)

Sight Distance images from Wallamore Road 285m north and south from the site access are provided below in Figure 25 and Figure 26 below. As demonstrated, the site access is visible from the required sight distance position on Wallamore Road.



Figure 25: Sight Distance at Sight Access Facing North (Source: Google 2024)



Figure 26: Sight Distance at Sight Access Facing South (Source: Google 2024)

As demonstrated in the desktop assessment and Figure 27 and Figure 28 below, the site access is visible from the required sight distance position on Wallamore Road, with no major obstructions noted within the field of view from both the site access and required position along Wallamore Road.



Figure 27: Sight Distance from Wallamore Road Facing North to Site Access (Source: Google 2024, PSA Consulting)



Figure 28: Sight Distance from Wallamore Road Facing South to Site Access (Source: Google 2024, PSA Consulting)

5.3 SITE ACCESS TURN WARRANTS ASSESSMENT

A turn warrants assessment has been carried out for the Wallamore Road and Site Access T-Intersection. Both the year of opening Stage 2 (2026) and 10-year design horizon (2036) traffic volumes have been analysed as these will be considered the largest quantities of vehicle movements through the intersection at any one time. The turn warrants have been assessed using Figure 4A-10b – Warrants for turn treatments on the major road at unsignalised intersection from Austroads Guide to Road Design Part 4: Intersections and Crossings.

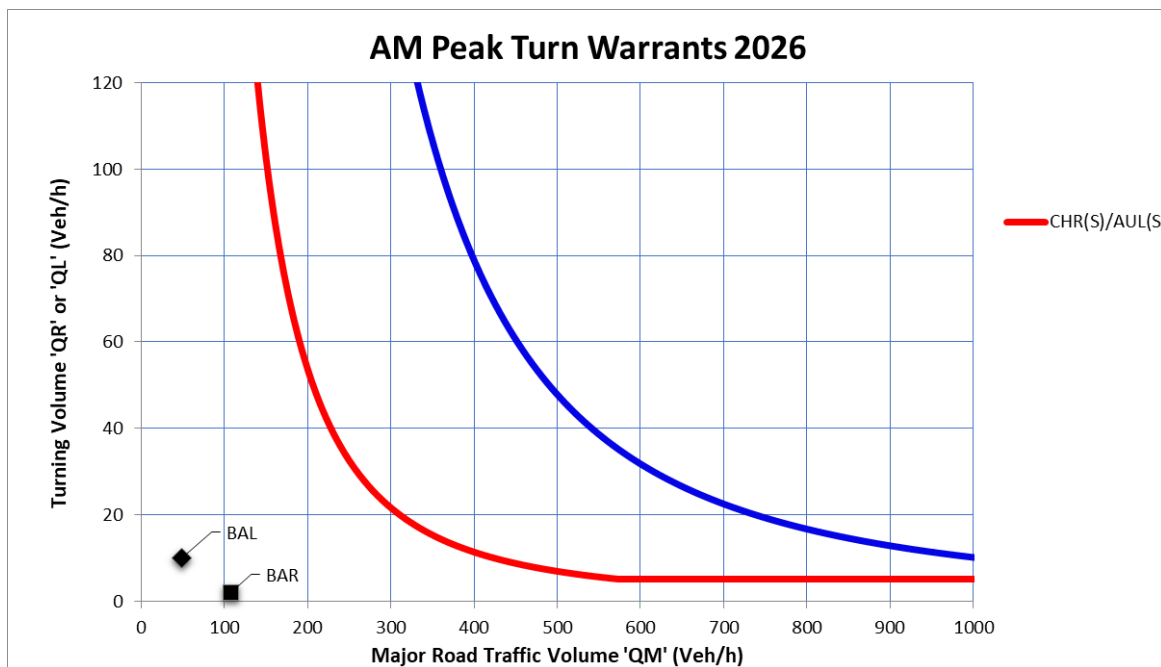


Figure 29: Turn Warrants Assessment - Wallamore Road / Site Access Stage 2 AM Peak 2026 (Source: Austroads, PSA Consulting)



Figure 30: Turn Warrants Assessment - Wallamore Road / Site Access Stage 2 PM Peak 2026 (Source: Austroads, PSA Consulting)

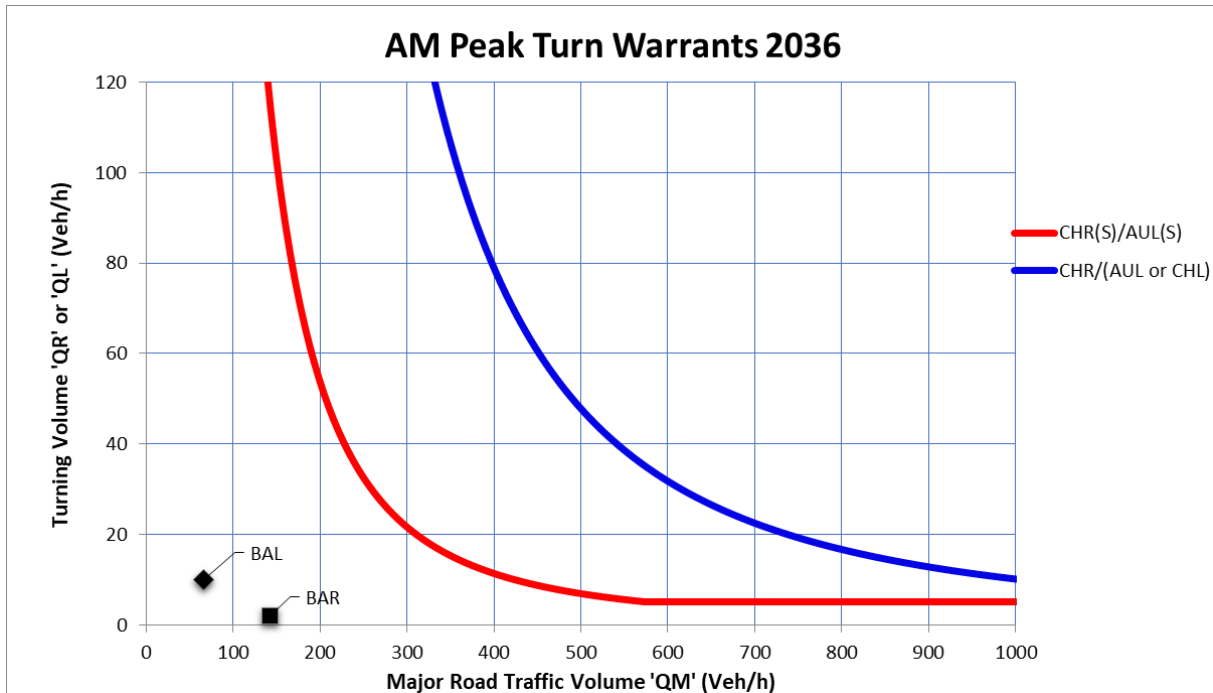


Figure 31: Turn Warrants Assessment - Wallamore Road / Site Access Stage 2 AM Peak 2036 (Source: Austroads, PSA Consulting)

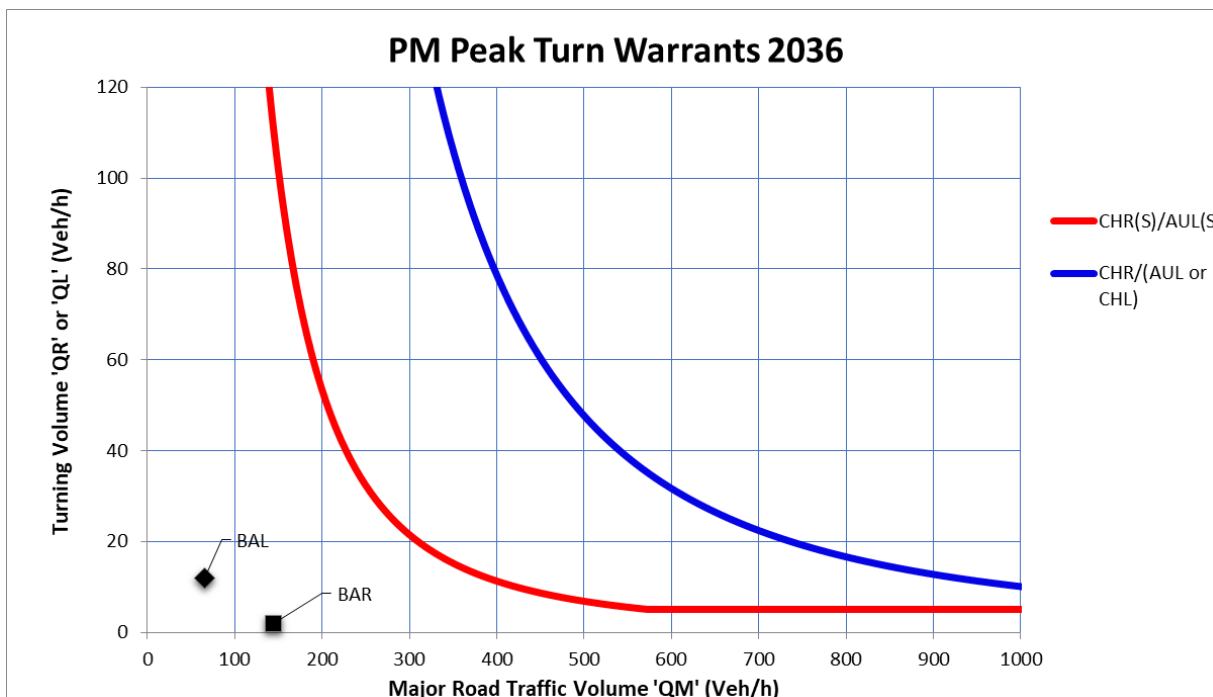


Figure 32: Turn Warrants Assessment - Wallamore Road / Site Access Stage 2 PM Peak 2036 (Source: Austroads, PSA Consulting)

As evidenced, the design specifications justify implementing a minimum of a Basic Left (BAL) and Basic Right (BAR) turn treatments. However, since the current site access driveway already caters to comparable vehicle profiles and incorporates Rural Basic Right (BAR) and Rural Basic Left (BAL) turn treatments, it is deemed unnecessary to undertake any further formal upgrades to the access points.

5.4 ON-SITE PARKING AND SERVICING REQUIREMENTS

Tamworth Regional Development Control Plan 2010 does not prescribe a staff parking rate for *rural industry* and require the relevant provisions to be determined as part of a Traffic Assessment Report. In this regard, at full operation, the proposed feed mill will be operated by 22 full time equivalent (FTE) staff. The existing feed mill currently provides 15 full time equivalent (FTE) positions. During Stage 1 of the development the existing mill will require 10 FTE's and the new mill will require 12 FTE's. Upon completion of Stage 2, staff will be involved in the new mill operations. To accommodate the employees onsite an office / staff amenities building is provided with 24 new parking spaces, in addition to the 20 provided at the existing mill. These spaces are shown in Figure 33 and are sufficient to cater for the peak demand for parking anticipated on site for both employees and visitors.

The design of the staff car parking area has been reviewed with regard to Australian Standard 2890.1 (2004). The design meets or exceeds the minimum requirements of that Standard with regard to the dimensions of the parking bays, aisles and driveway access road.

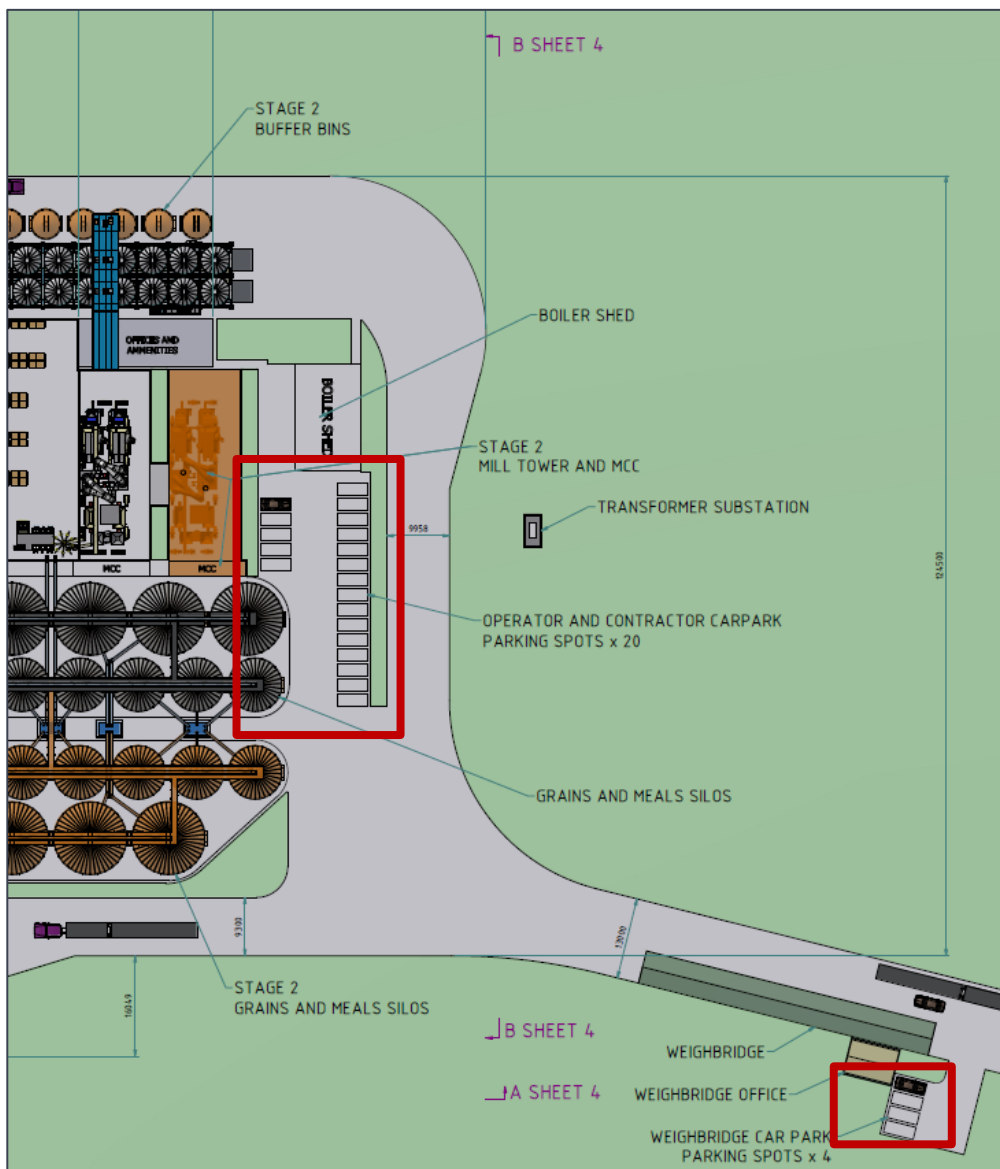


Figure 33: Site Parking Arrangements (Source: Baiada)

5.5 SWEPT PATH ANALYSIS

A comprehensive analysis of vehicle movements has been conducted for the proposed project, including an examination of both heavy and light vehicles expected to enter the site during all operational phases. The breakdown of anticipated vehicles includes:

- Semi-Trailer (for existing mill operations involving grain and meal deliveries)
- B-Double (for grain and meal deliveries)
- A-Double (for grain and meal deliveries)
- A-Triple (for grain deliveries)
- B99 and B85 (for staff)

Given that this Traffic Impact Assessment pertains to the development's Stage 1 and Stage 2, the following specific vehicle paths have been identified for consideration:

- Access of B-Double vehicles to and from the site
- Access of A-Double vehicles to and from the site
- Access of A-Triple vehicles to and from the site
- Manoeuvring of B-Double vehicles within the site
- Manoeuvring of A-Double vehicles within the site
- Manoeuvring of A-Triple vehicles within the site
- Manoeuvring and car parking arrangement for B99 vehicles

After conducting analysis using AutoCAD and AutoTURN modelling software, it was determined that both B-Doubles and A-Double vehicles could effectively manoeuvre within the development site and access it via the Wallamore Road entrance. A-Triples, which currently access the existing mill through the current driveway, will also use the same driveway for grain deliveries to the new development. It is advised that A-Triples access the site are staged to ensure safe navigation onto the premises without conflicts with exiting vehicles.

Refer to Appendix 2 for each swept path movement undertaken.

6 SUMMARY

PSA Consulting has undertaken a detailed Traffic Impact Assessment (TIA) for the proposed Tangaratta Feed Mill development at 771 Wallamore Road, Wallamore. The assessment focused on analysing the traffic implications associated with the two development stages and their operational timeframes of the feed mill. Key findings from the assessment include:

- The proposed development is situated at the intersection of Wallamore Road and Bowlers Lane, approximately 9km northwest of Tamworth, with Wallamore Road serving as the primary access route.
- The development site falls within the approved B-Double (25/26m) freight network, facilitating the movement of heavy vehicles essential for the transportation of feed materials.
- Traffic generation estimates were derived with consultation with Baiada considering a three-shift operational schedule and anticipated light and heavy vehicle movements during full operation stages.
- The proposed development is expected to generate a maximum of 11 light vehicle trips during a peak hour period (inbound and outbound total) and 14 heavy vehicle trips during a peak hour period (inbound and outbound total). The peak hour traffic generation, expected to occur during two periods, with an AM Peak between 6am-7am and a PM Peak between 2pm-3pm.
- Distribution patterns for both light and heavy vehicles were determined through consultations with Baiada, with the majority of traffic expected to enter and exit the site from the south towards Tamworth.
- Future-year traffic volumes were projected based on a 3% annual growth rate, integrating both background traffic and development-generated traffic to determine design traffic volumes for 2025 (Stage 1), 2026 (Stage 2) and 2036.
- SIDRA intersection capacity analysis indicated that there were negligible impacts to the existing network based on future growth of background traffic and expected development traffic.
- Historic crash analysis also revealed no common trends within the expect network of the development traffic or expected impacts to the network road users.
- Site access and parking requirements were evaluated, confirming the suitability of the existing driveway for access of all vehicle profiles, and providing ample parking provisions for staff and visitors.
- Swept path analysis was conducted to ensure that heavy vehicles, including B-Doubles, A-Doubles and A-Triples, could safely manoeuvre within the development site and access the designated areas.

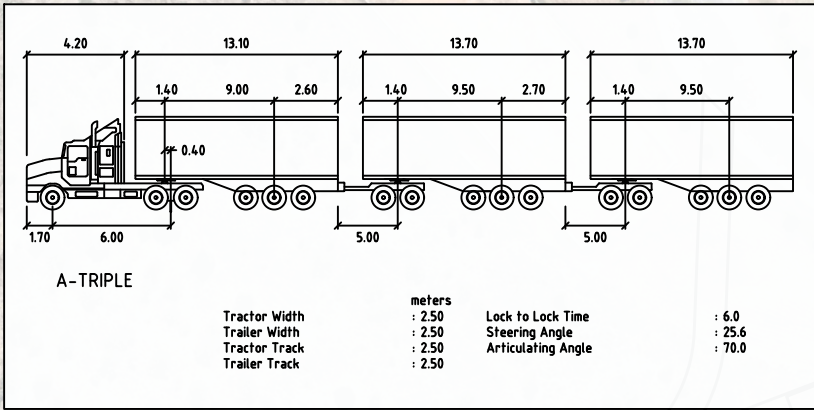
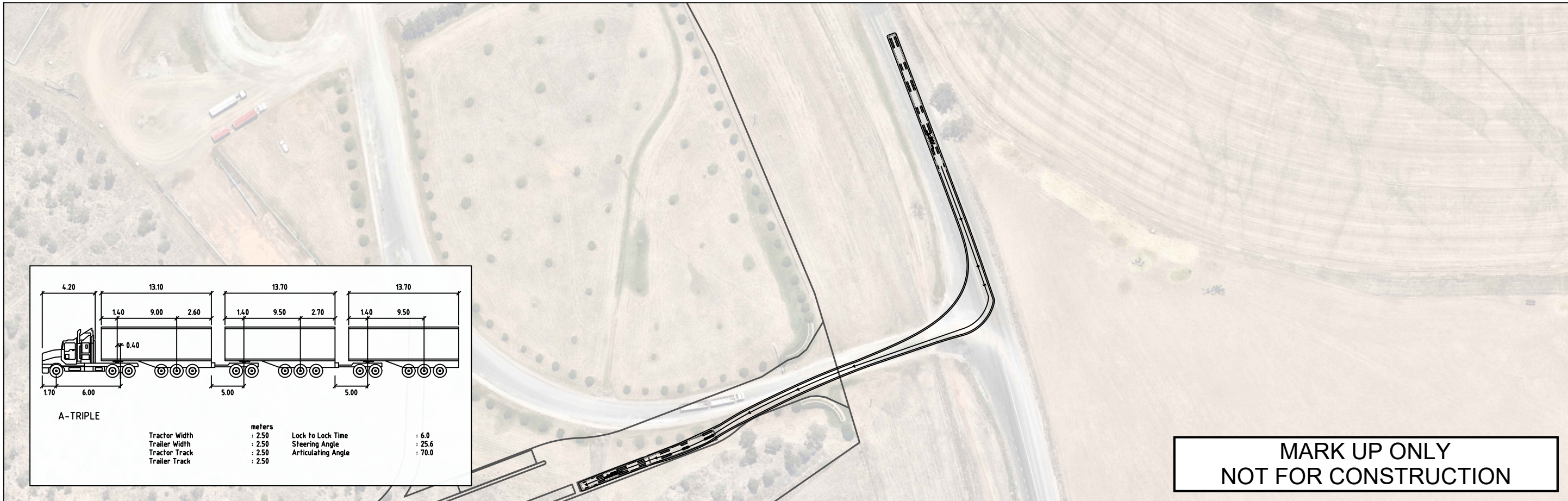
Overall, the assessment concludes that the proposed Tangaratta Feed Mill development is expected to have negligible traffic impacts, with appropriate measures in place to address access, parking, and manoeuvrability requirements.

APPENDIX 1: DEVELOPMENT PLANS

AP01

APPENDIX 2: SWEEP PATH ANALYSIS

AP02



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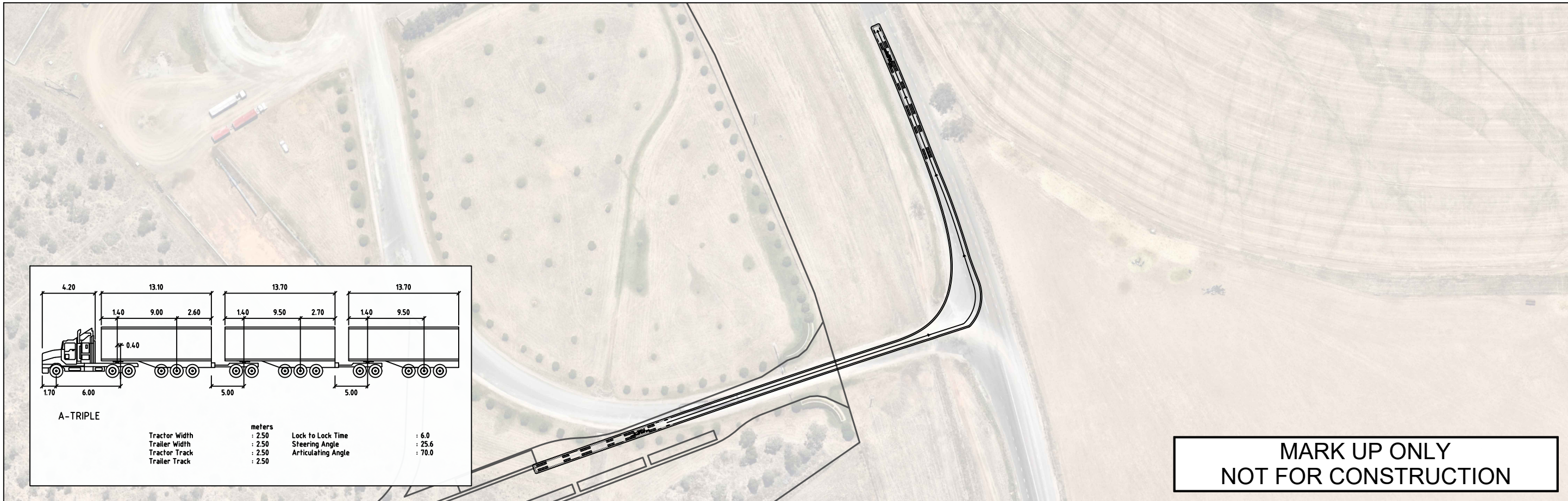
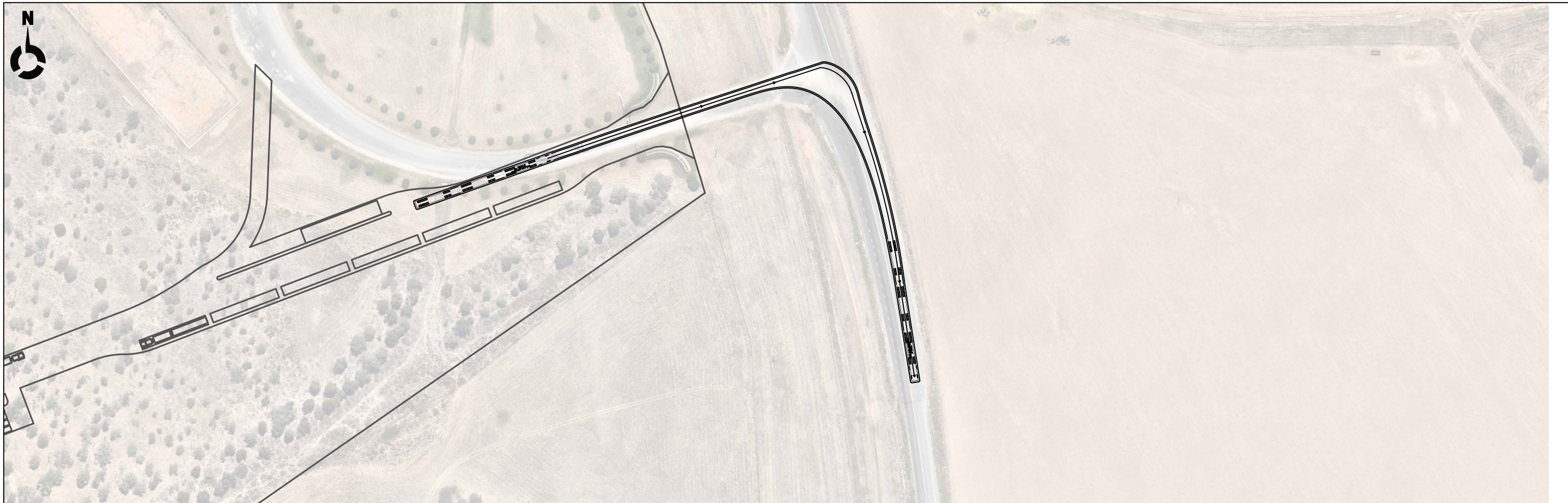


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 CLIENT: **BAIADA POULTRY**
 PROJECT: **TANGARATTA FEED MILL**
 LOCATION: **771 WALLAMORE ROAD, WALLAMORE 2340 NSW**

DRAWING DATE	FEBRUARY 2024	DRAWN BY	H.F
ORIGINAL SIZE	A1	CHECKED BY	H.R
SCALE	SCALE A3: 1:1500	APPROVED BY	H.R
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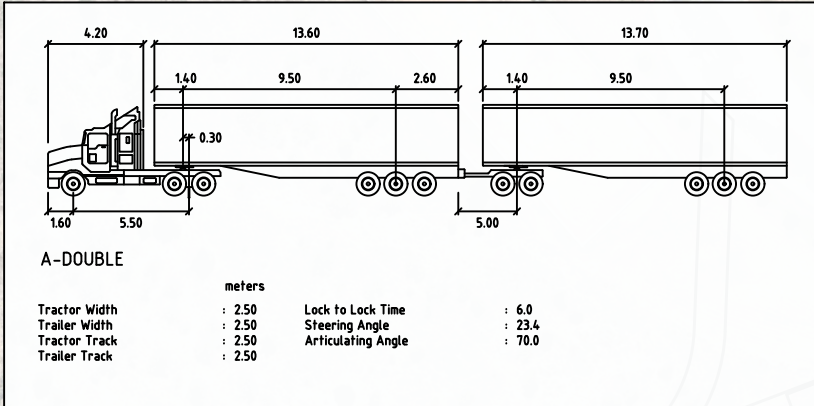
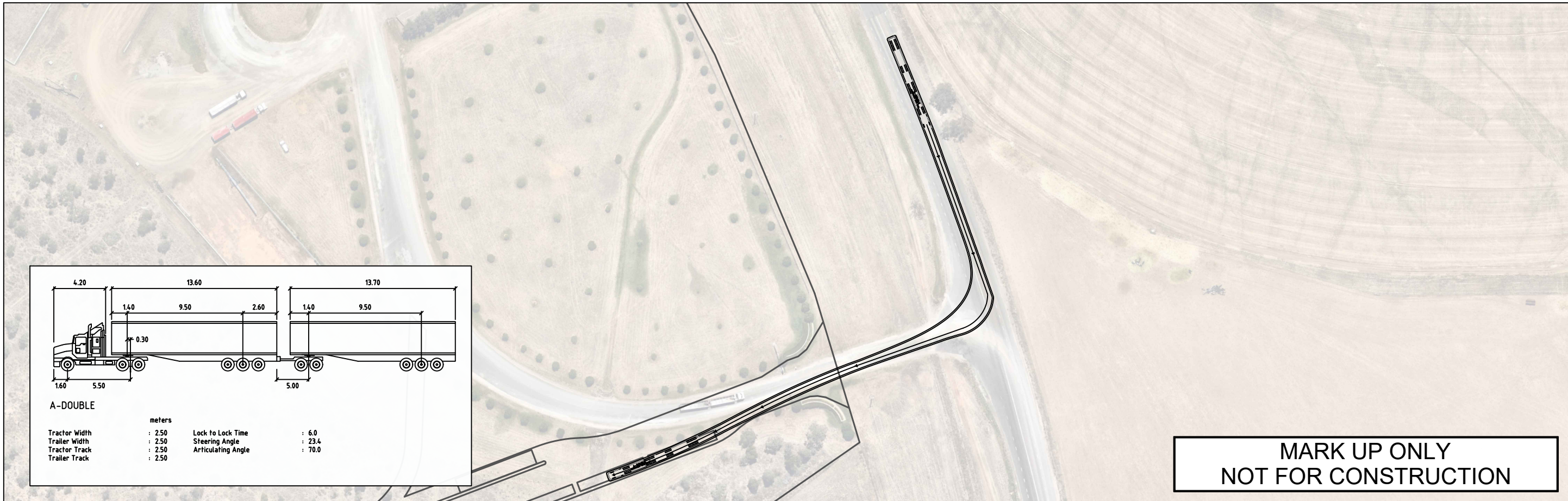
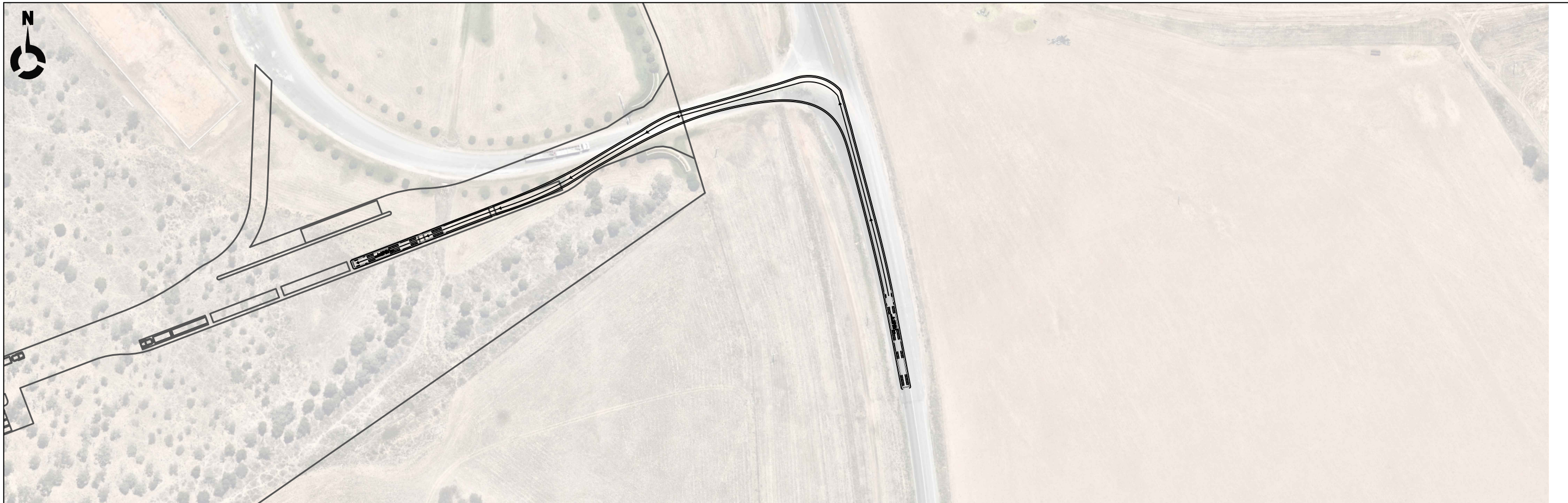


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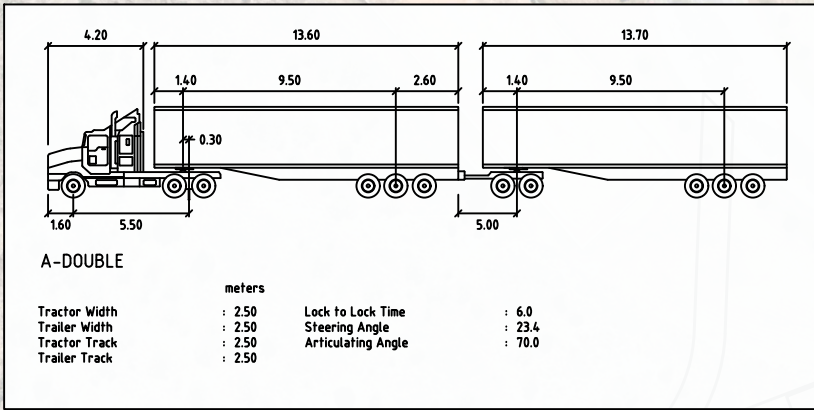
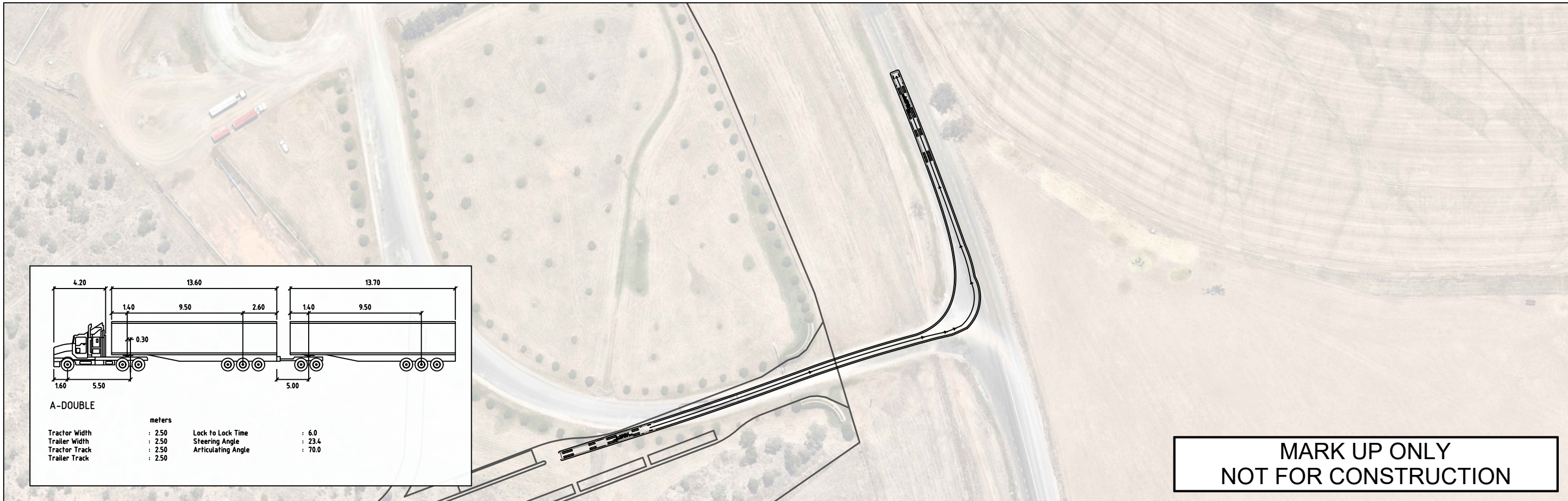
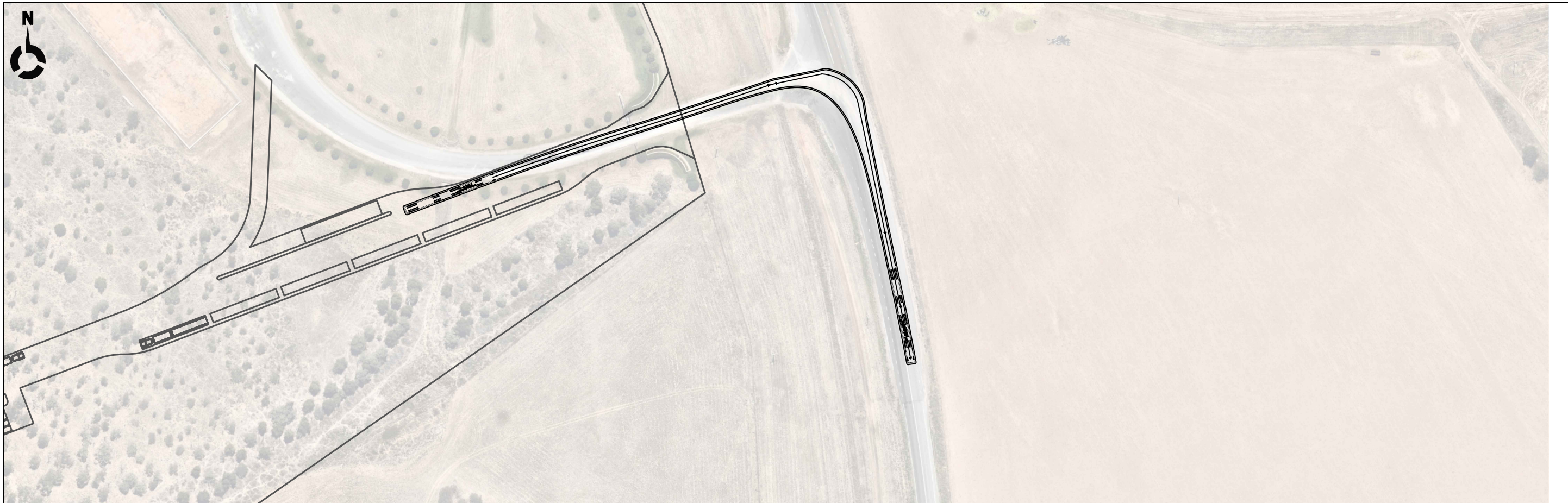
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PROJECT TANGARATTA FEED MILL
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PROJECT NO.	1636	REVISION	SK03 1
SCALE 1:750(A1)			



A-DOUBLE

meters	
Tractor Width	: 2.50
Trailer Width	: 2.50
Tractor Track	: 2.50
Trailer Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 23.4
Articulating Angle	: 70.0

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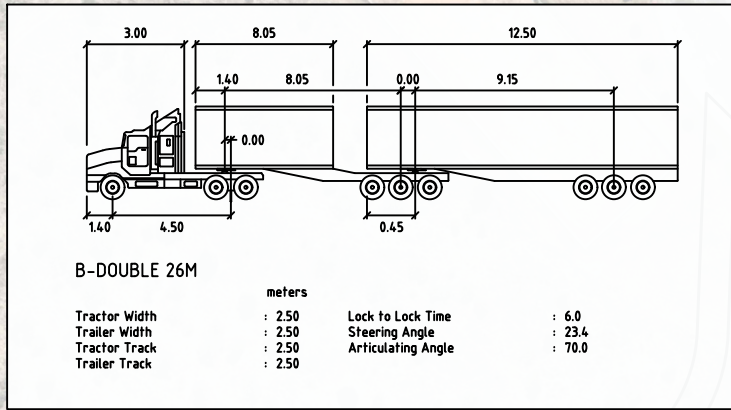
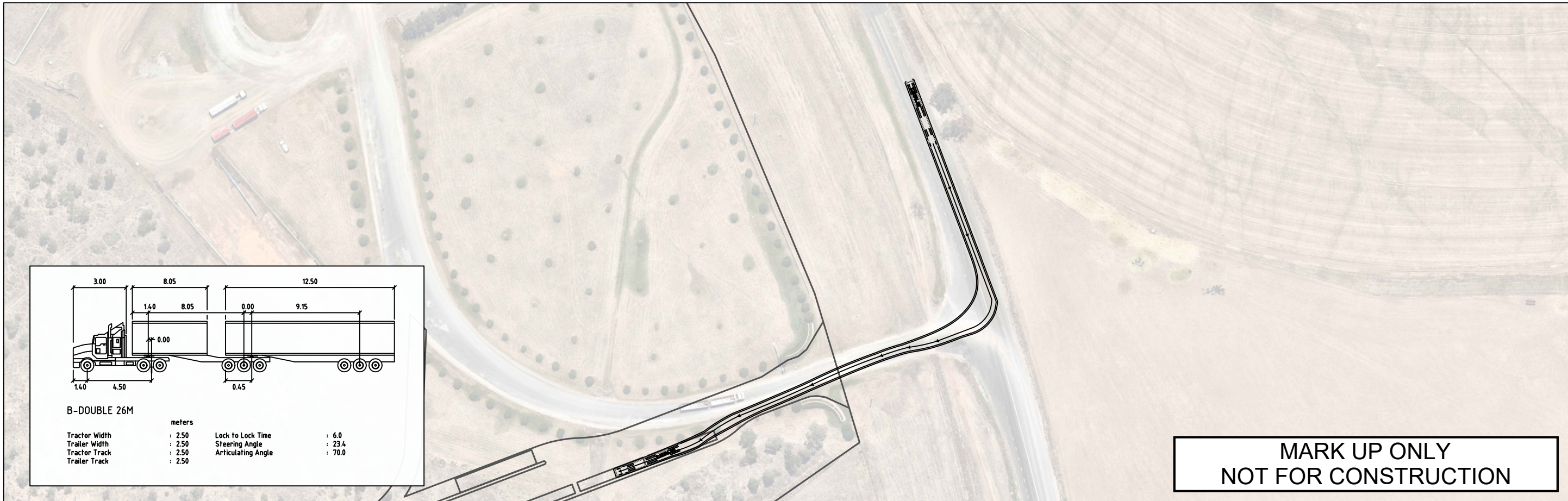
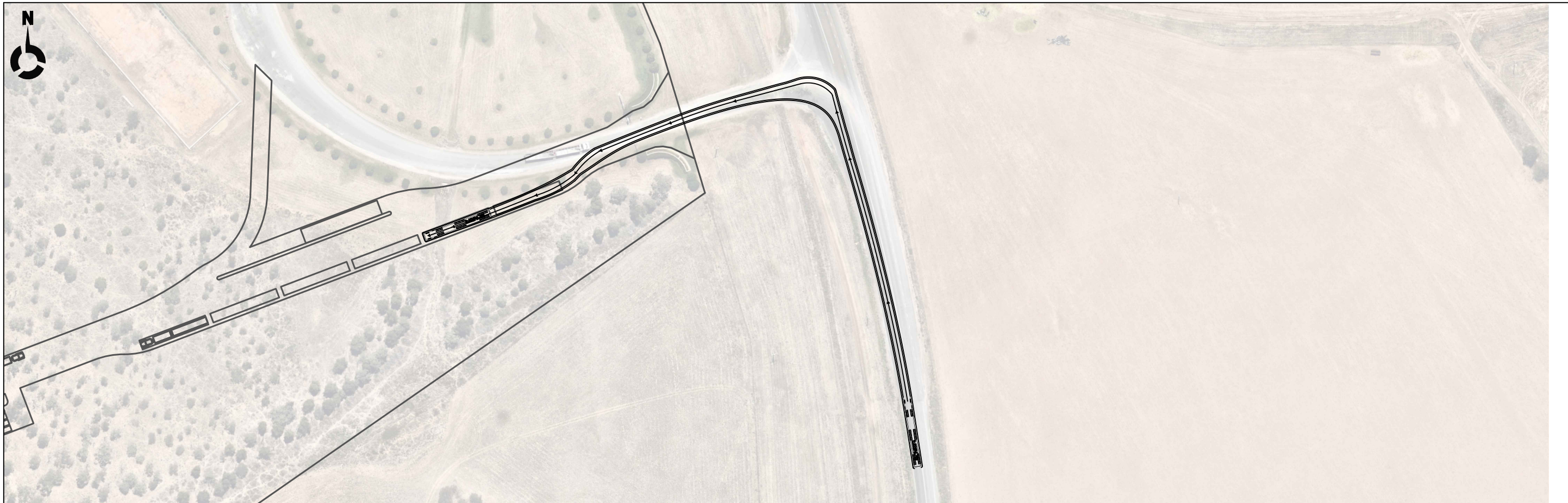


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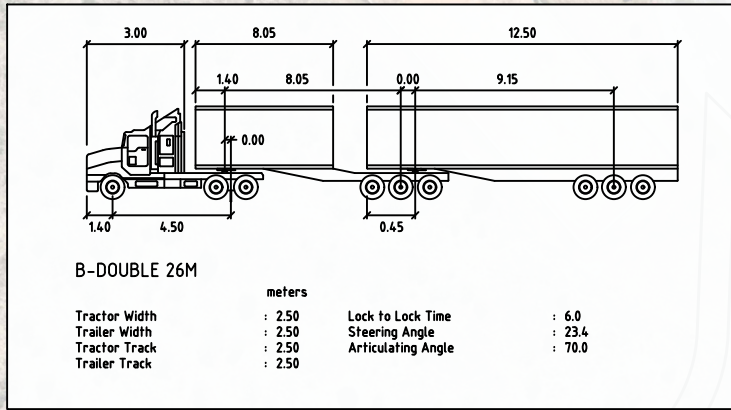
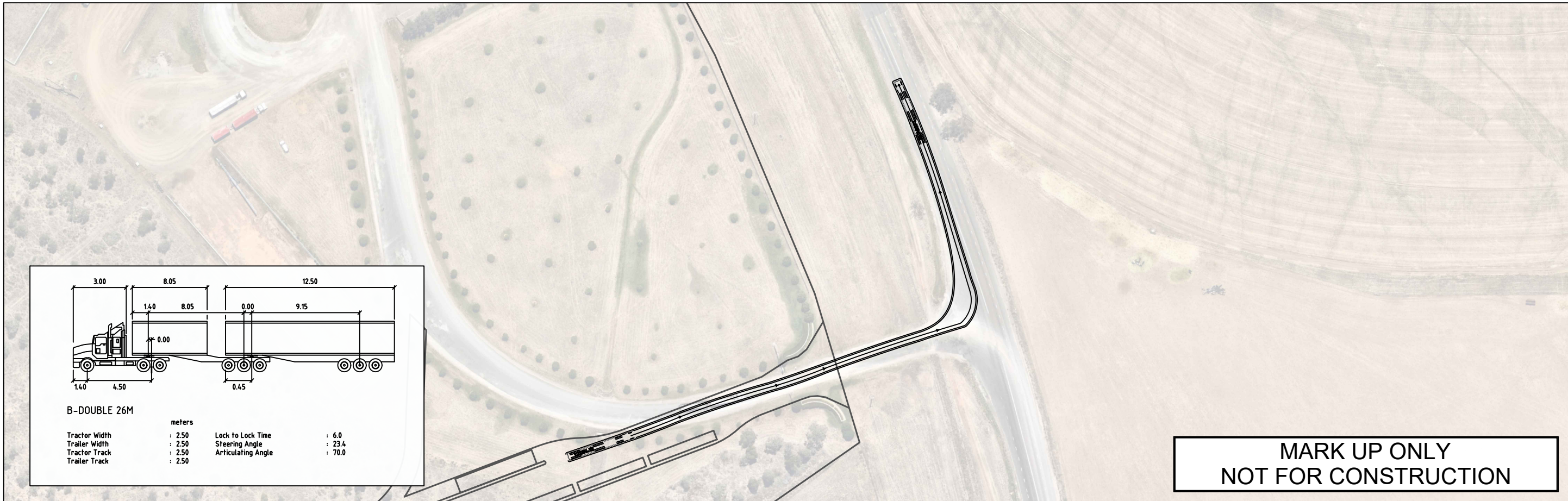
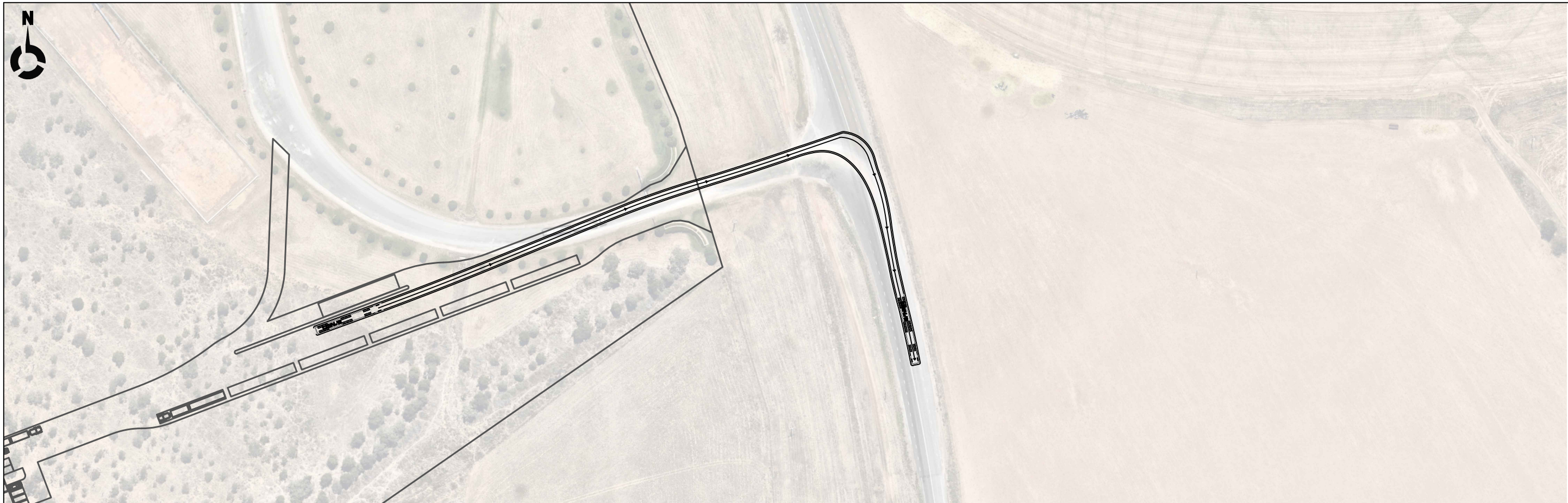
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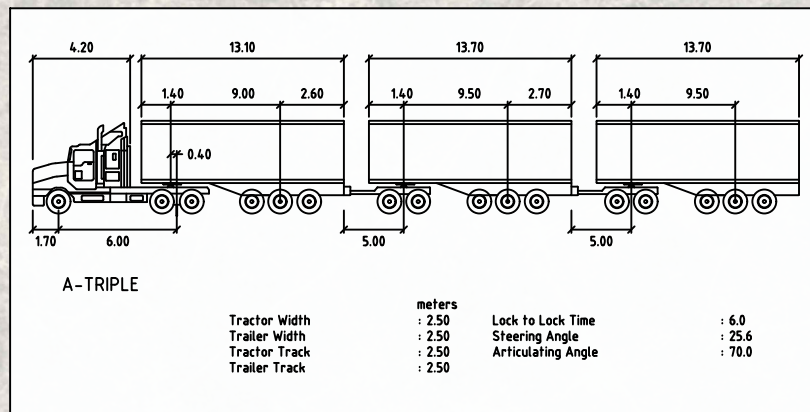
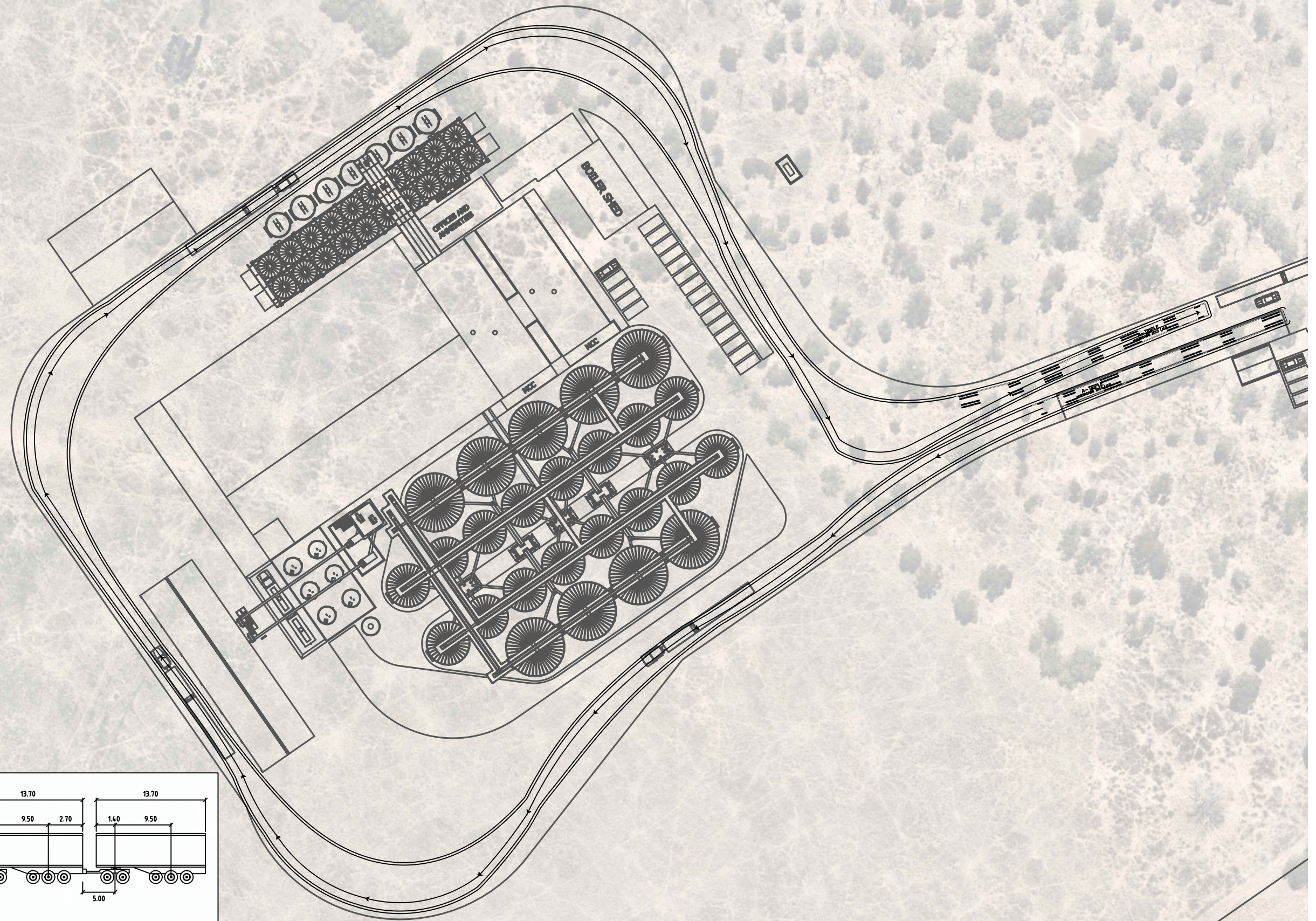


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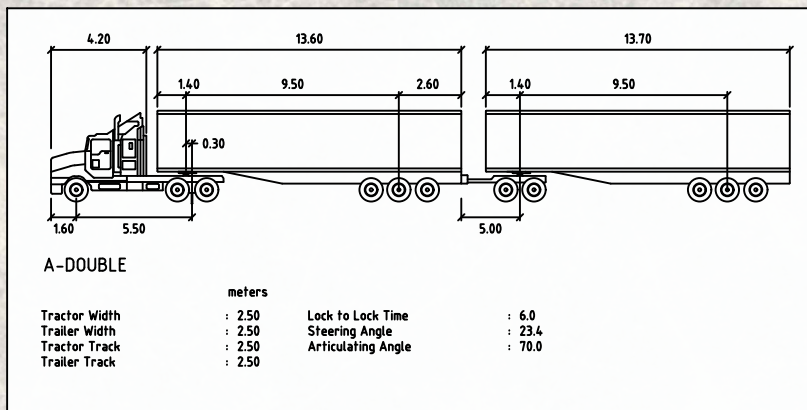
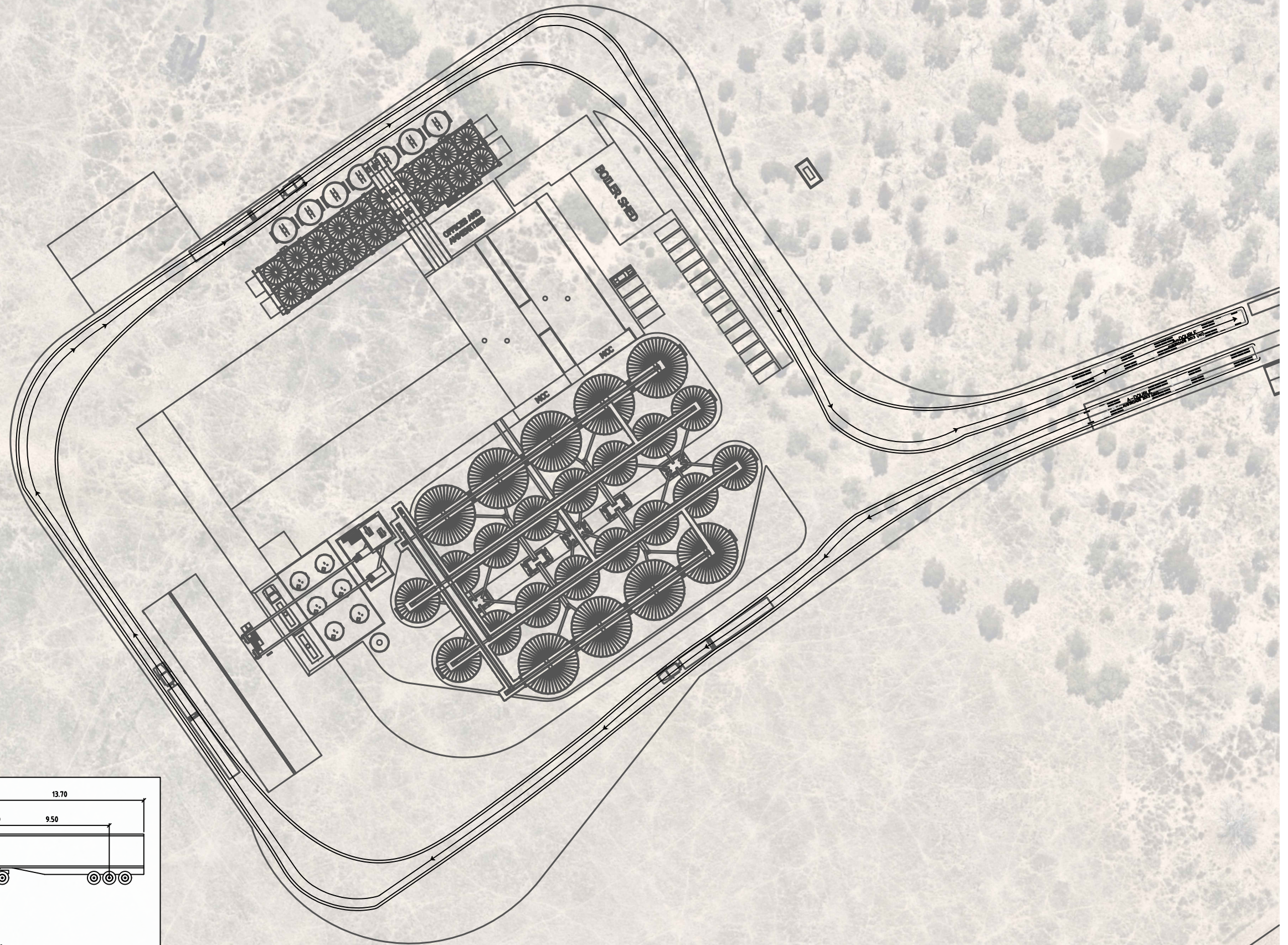
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PROJECT TANGARATTA FEED MILL
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ORIGINAL SIZE A1 **SCALE A3:** 1:800
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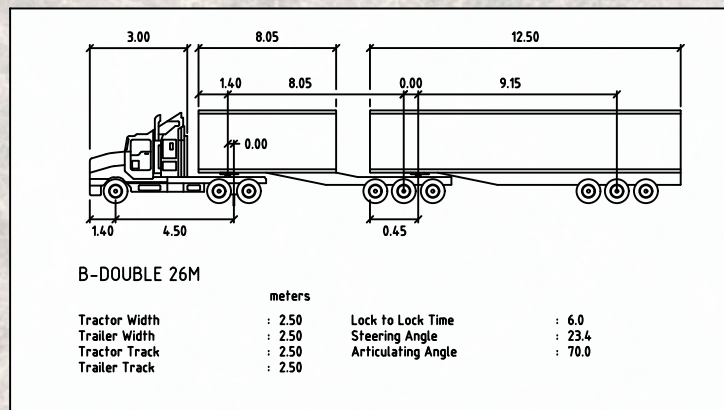
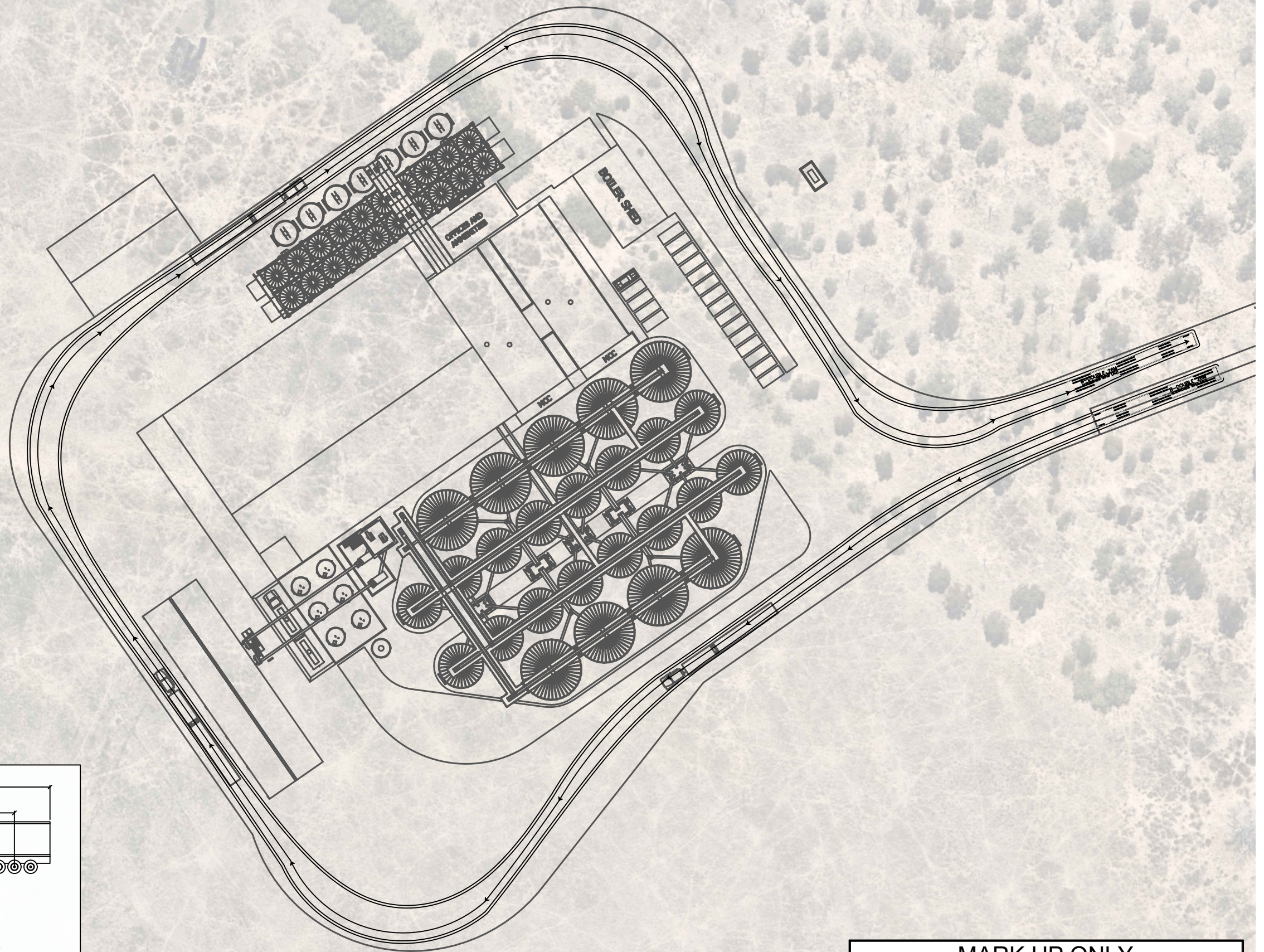


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DRAWING TITLE: **SWEPT PATH ANALYSIS - SITE MANOEUVRE (A-DOUBLE)**
 CLIENT: **BAIADA POULTRY**
 PROJECT: **TANGARATTA FEED MILL**
 LOCATION: **771 WALLAMORE ROAD, WALLAMORE 2340 NSW**

DRAWING DATE	FEBRUARY 2024	DRAWN BY	H.F
ORIGINAL SIZE	A1	SCALE A3:	1:800
CHECKED BY	H.R	APPROVED BY	H.R
PROJECT NO.	1636	DRAWING NO.	SK08
SCALE	0 8 16 24m		REVISION
SCALE 1:400 (A1)			1



**MARK UP ONLY
NOT FOR CONSTRUCTION**

REVISION	DESCRIPTION	BY	DATE
1	ORIGINAL ISSUE	H.F	21.02.2024

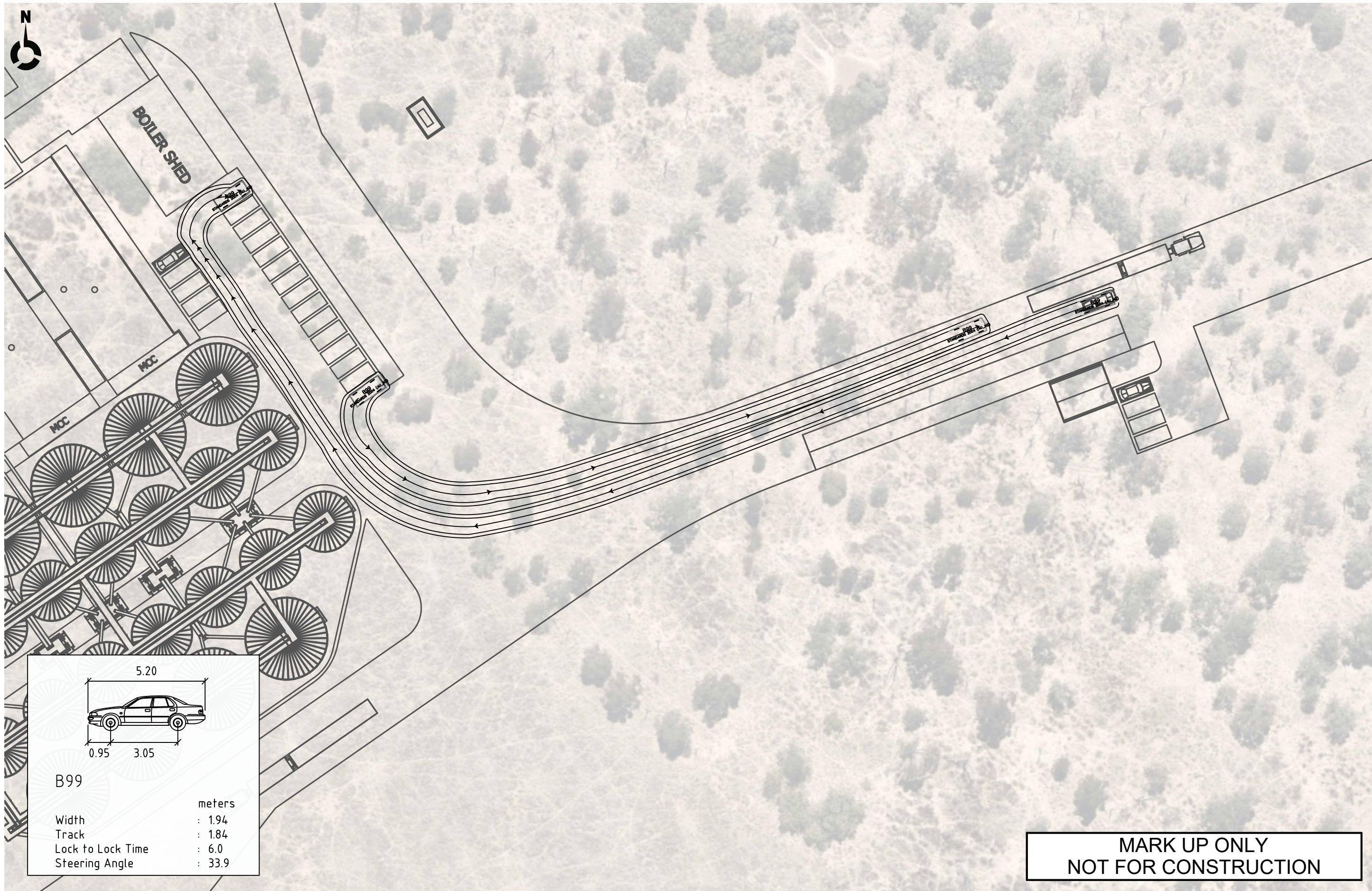


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DRAWING TITLE SWEPT PATH ANALYSIS - SITE MANOEUVRE (B-DOUBLE)
CLIENT BAIADA POULTRY
PROJECT TANGARATTA FEED MILL
LOCATION 771 WALLAMORE ROAD, WALLAMORE 2340 NSW

DRAWING DATE	FEBRUARY 2024	DRAWN BY	H.F
ORIGINAL SIZE	A1	SCALE A3:	1:800
CHECKED BY	H.R	APPROVED BY	H.R
PROJECT NO.	1636	DRAWING NO.	SK09
SCALE	0 8 16 24m		REVISION
	SCALE 1:400 (A1)		1



B99

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

**MARK UP ONLY
NOT FOR CONSTRUCTION**

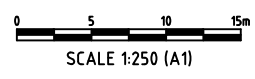
REVISION	DESCRIPTION	BY	DATE
1	ORIGINAL ISSUE	H.F	21.02.2024

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DRAWING TITLE	SWEPT PATH ANALYSIS - SITE MANOEUVRE (B99)
CLIENT	BAIADA POULTRY
PROJECT	TANGARATTA FEED MILL
LOCATION	771 WALLAMORE ROAD, WALLAMORE 2340 NSW

DRAWING DATE	FEBRUARY 2024	DRAWN BY	H.F
ORIGINAL SIZE	A1	SCALE A3:	1:500
SCALE		CHECKED BY	H.R
		APPROVED BY	H.R
		PROJECT NO.	1636
		DRAWING NO.	SK10
		REVISION	1



APPENDIX 3: SIDRA ANALYSIS

AP03

MOVEMENT SUMMARY

Site: 101 [Site Access - Wallamore Road Peak Hour AM (Site Folder: Site Access / Wallamore Background 2025)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	2 100.0	2 100.0	0.002	6.7	LOS A	0.0	0.0	0.00	0.56	0.00	46.1
2	T1	All MCs	47 29.8	47 29.8	0.029	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			49 32.7	49 32.7	0.029	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.4
North: Wallamore Road North													
8	T1	All MCs	47 29.8	47 29.8	0.018	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.8
9	R2	All MCs	1 0.0	1 0.0	0.018	5.5	LOS A	0.0	0.1	0.01	0.02	0.01	56.4
Approach			48 29.2	48 29.2	0.018	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.8
West: Feedmill Access Road													
10	L2	All MCs	1 0.0	1 0.0	0.004	5.7	LOS A	0.0	0.2	0.23	0.53	0.23	49.8
12	R2	All MCs	2 100.0	2 100.0	0.004	8.1	LOS A	0.0	0.2	0.23	0.53	0.23	45.3
Approach			3 66.7	3 66.7	0.004	7.3	LOS A	0.0	0.2	0.23	0.53	0.23	46.7
All Vehicles			100 32.0	100 32.0	0.029	0.4	NA	0.0	0.2	0.01	0.03	0.01	59.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Site Access - Wallamore Road Peak Hour AM (Site Folder: Site Access / Wallamore Background 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	2 100.0	2 100.0	0.002	6.7	LOS A	0.0 0.0	0.00	0.56	0.00	46.1	
2	T1	All MCs	49 30.6	49 30.6	0.030	0.0	LOS A	0.0 0.0	0.00	0.00	0.00	60.0	
Approach			51 33.3	51 33.3	0.030	0.3	NA	0.0 0.0	0.00	0.02	0.00	59.4	
North: Wallamore Road North													
8	T1	All MCs	49 30.6	49 30.6	0.019	0.0	LOS A	0.0 0.1	0.01	0.01	0.01	59.8	
9	R2	All MCs	1 0.0	1 0.0	0.019	5.5	LOS A	0.0 0.1	0.01	0.02	0.01	56.4	
Approach			50 30.0	50 30.0	0.019	0.1	NA	0.0 0.1	0.01	0.01	0.01	59.8	
West: Feedmill Access Road													
10	L2	All MCs	1 0.0	1 0.0	0.004	5.7	LOS A	0.0 0.2	0.24	0.53	0.24	49.8	
12	R2	All MCs	2 100.0	2 100.0	0.004	8.2	LOS A	0.0 0.2	0.24	0.53	0.24	45.3	
Approach			3 66.7	3 66.7	0.004	7.4	LOS A	0.0 0.2	0.24	0.53	0.24	46.7	
All Vehicles			104 32.7	104 32.7	0.030	0.4	NA	0.0 0.2	0.01	0.03	0.01	59.2	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Site Access - Wallamore Road Peak Hour AM (Site Folder: Site Access / Wallamore Background 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h		veh/h					veh	m				
South: Wallamore Road South															
1	L2	All MCs	2 100.0		2 100.0		0.002	6.7	LOS A	0.0	0.0	0.00	0.56	0.00	46.1
2	T1	All MCs	66 30.3		66 30.3		0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			68 32.4		68 32.4		0.041	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
North: Wallamore Road North															
8	T1	All MCs	66 30.3		66 30.3		0.025	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
9	R2	All MCs	1 0.0		1 0.0		0.025	5.6	LOS A	0.0	0.1	0.01	0.02	0.01	56.5
Approach			67 29.9		67 29.9		0.025	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.8
West: Feedmill Access Road															
10	L2	All MCs	1 0.0		1 0.0		0.004	5.8	LOS A	0.0	0.2	0.29	0.53	0.29	49.5
12	R2	All MCs	2 100.0		2 100.0		0.004	8.8	LOS A	0.0	0.2	0.29	0.53	0.29	45.0
Approach			3 66.7		3 66.7		0.004	7.8	LOS A	0.0	0.2	0.29	0.53	0.29	46.4
All Vehicles			138 31.9		138 31.9		0.041	0.3	NA	0.0	0.2	0.01	0.02	0.01	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Site Access - Wallamore Road Peak Hour AM (Site Folder: Site Access / Wallamore with Stage 2 Development 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h		veh/h					veh	m				
South: Wallamore Road South															
1	L2	All MCs	10	70.0	10	70.0	0.008	6.4	LOS A	0.0	0.0	0.00	0.57	0.00	48.2
2	T1	All MCs	66	30.3	66	30.3	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			76	35.5	76	35.5	0.041	0.8	NA	0.0	0.0	0.00	0.07	0.00	58.4
North: Wallamore Road North															
8	T1	All MCs	66	30.3	66	30.3	0.026	0.1	LOS A	0.0	0.2	0.02	0.02	0.02	59.8
9	R2	All MCs	2	50.0	2	50.0	0.026	6.4	LOS A	0.0	0.2	0.03	0.04	0.03	53.5
Approach			68	30.9	68	30.9	0.026	0.3	NA	0.0	0.2	0.02	0.02	0.02	59.6
West: Feedmill Access Road															
10	L2	All MCs	2	50.0	2	50.0	0.019	6.5	LOS A	0.1	0.8	0.31	0.56	0.31	47.8
12	R2	All MCs	11	63.6	11	63.6	0.019	8.1	LOS A	0.1	0.8	0.31	0.56	0.31	47.0
Approach			13	61.5	13	61.5	0.019	7.8	LOS A	0.1	0.8	0.31	0.56	0.31	47.1
All Vehicles			157	35.7	157	35.7	0.041	1.2	NA	0.1	0.8	0.03	0.09	0.03	58.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Site Access - Wallamore Road Peak Hour AM (Site Folder: Site Access / Wallamore with Stage 1 Development 2025)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	8 62.5	8 62.5	0.006	6.3	LOS A	0.0	0.0	0.00	0.57	0.00	48.5
2	T1	All MCs	47 29.8	47 29.8	0.029	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			55 34.5	55 34.5	0.029	0.9	NA	0.0	0.0	0.00	0.08	0.00	58.3
North: Wallamore Road North													
8	T1	All MCs	47 29.8	47 29.8	0.019	0.0	LOS A	0.0	0.2	0.02	0.03	0.02	59.8
9	R2	All MCs	2 50.0	2 50.0	0.019	6.3	LOS A	0.0	0.2	0.03	0.05	0.03	53.4
Approach			49 30.6	49 30.6	0.019	0.3	NA	0.0	0.2	0.02	0.03	0.02	59.5
West: Feedmill Access Road													
10	L2	All MCs	2 50.0	2 50.0	0.015	6.4	LOS A	0.1	0.6	0.25	0.55	0.25	48.2
12	R2	All MCs	9 55.6	9 55.6	0.015	7.3	LOS A	0.1	0.6	0.25	0.55	0.25	47.8
Approach			11 54.5	11 54.5	0.015	7.2	LOS A	0.1	0.6	0.25	0.55	0.25	47.9
All Vehicles			115 34.8	115 34.8	0.029	1.3	NA	0.1	0.6	0.03	0.10	0.03	57.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Site Access - Wallamore Road Peak Hour AM (Site Folder: Site Access / Wallamore with Stage 2 Development 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	10 70.0	10 70.0	0.008	6.4	LOS A	0.0	0.0	0.00	0.57	0.00	48.2
2	T1	All MCs	49 30.6	49 30.6	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			59 37.3	59 37.3	0.030	1.1	NA	0.0	0.0	0.00	0.10	0.00	58.0
North: Wallamore Road North													
8	T1	All MCs	49 30.6	49 30.6	0.020	0.1	LOS A	0.0	0.2	0.02	0.03	0.02	59.8
9	R2	All MCs	2 50.0	2 50.0	0.020	6.3	LOS A	0.0	0.2	0.03	0.05	0.03	53.4
Approach			51 31.4	51 31.4	0.020	0.3	NA	0.0	0.2	0.02	0.03	0.02	59.5
West: Feedmill Access Road													
10	L2	All MCs	2 50.0	2 50.0	0.018	6.4	LOS A	0.1	0.7	0.26	0.55	0.26	48.1
12	R2	All MCs	11 63.6	11 63.6	0.018	7.6	LOS A	0.1	0.7	0.26	0.55	0.26	47.3
Approach			13 61.5	13 61.5	0.018	7.4	LOS A	0.1	0.7	0.26	0.55	0.26	47.4
All Vehicles			123 37.4	123 37.4	0.030	1.4	NA	0.1	0.7	0.04	0.12	0.04	57.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Wallamore Road - Bowlers Lane Peak Hour (Site Folder: Wallamore / Bowlers Background 2025)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	34 41.2	34 41.2	0.035	6.0	LOS A	0.0	0.0	0.00	0.38	0.00	52.6
2	T1	All MCs	17 41.2	17 41.2	0.035	0.0	LOS A	0.0	0.0	0.00	0.38	0.00	56.5
Approach			51 41.2	51 41.2	0.035	4.0	NA	0.0	0.0	0.00	0.38	0.00	53.8
North: Wallamore Road North													
8	T1	All MCs	16 31.3	16 31.3	0.031	0.2	LOS A	0.1	1.2	0.16	0.39	0.16	56.1
9	R2	All MCs	31 29.0	31 29.0	0.031	6.0	LOS A	0.1	1.2	0.16	0.39	0.16	52.3
Approach			47 29.8	47 29.8	0.031	4.0	NA	0.1	1.2	0.16	0.39	0.16	53.5
West: Bowlers Lane													
10	L2	All MCs	30 23.3	30 23.3	0.051	5.9	LOS A	0.2	1.6	0.11	0.56	0.11	51.7
12	R2	All MCs	31 29.0	31 29.0	0.051	6.2	LOS A	0.2	1.6	0.11	0.56	0.11	51.1
Approach			61 26.2	61 26.2	0.051	6.1	LOS A	0.2	1.6	0.11	0.56	0.11	51.4
All Vehicles			159 32.1	159 32.1	0.051	4.8	NA	0.2	1.6	0.09	0.45	0.09	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Wallamore Road - Bowlers Lane Peak Hour (Site Folder: Wallamore / Bowlers Background 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	36 41.7	36 41.7	0.038	6.0	LOS A	0.0	0.0	0.00	0.38	0.00	52.6
2	T1	All MCs	19 42.1	19 42.1	0.038	0.0	LOS A	0.0	0.0	0.00	0.38	0.00	56.6
Approach			55 41.8	55 41.8	0.038	4.0	NA	0.0	0.0	0.00	0.38	0.00	53.9
North: Wallamore Road North													
8	T1	All MCs	18 33.3	18 33.3	0.034	0.2	LOS A	0.2	1.3	0.16	0.38	0.16	56.1
9	R2	All MCs	33 30.3	33 30.3	0.034	6.1	LOS A	0.2	1.3	0.16	0.38	0.16	52.2
Approach			51 31.4	51 31.4	0.034	4.0	NA	0.2	1.3	0.16	0.38	0.16	53.5
West: Bowlers Lane													
10	L2	All MCs	32 25.0	32 25.0	0.055	5.9	LOS A	0.2	1.7	0.11	0.56	0.11	51.6
12	R2	All MCs	33 30.3	33 30.3	0.055	6.3	LOS A	0.2	1.7	0.11	0.56	0.11	51.0
Approach			65 27.7	65 27.7	0.055	6.1	LOS A	0.2	1.7	0.11	0.56	0.11	51.3
All Vehicles			171 33.3	171 33.3	0.055	4.8	NA	0.2	1.7	0.09	0.45	0.09	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Wallamore Road - Bowlers Lane Peak Hour (Site Folder: Wallamore / Bowlers Background 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	46 34.8	46 34.8	0.052	6.0	LOS A	0.0	0.0	0.00	0.34	0.00	53.2
2	T1	All MCs	33 36.4	33 36.4	0.052	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	56.9
Approach			79 35.4	79 35.4	0.052	3.5	NA	0.0	0.0	0.00	0.34	0.00	54.7
North: Wallamore Road North													
8	T1	All MCs	26 34.6	26 34.6	0.049	0.3	LOS A	0.2	2.0	0.20	0.39	0.20	56.0
9	R2	All MCs	46 30.4	46 30.4	0.049	6.2	LOS A	0.2	2.0	0.20	0.39	0.20	52.1
Approach			72 31.9	72 31.9	0.049	4.1	NA	0.2	2.0	0.20	0.39	0.20	53.5
West: Bowlers Lane													
10	L2	All MCs	46 26.1	46 26.1	0.081	6.0	LOS A	0.3	2.6	0.16	0.56	0.16	51.4
12	R2	All MCs	46 30.4	46 30.4	0.081	6.6	LOS A	0.3	2.6	0.16	0.56	0.16	50.9
Approach			92 28.3	92 28.3	0.081	6.3	LOS A	0.3	2.6	0.16	0.56	0.16	51.1
All Vehicles			243 31.7	243 31.7	0.081	4.7	NA	0.3	2.6	0.12	0.44	0.12	52.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Wallamore Road - Bowlers Lane Peak Hour (Site Folder: Wallamore / Bowlers with Development 2025)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	34 41.2	34 41.2	0.037	6.0	LOS A	0.0	0.0	0.00	0.36	0.00	52.7
2	T1	All MCs	21 42.9	21 42.9	0.037	0.0	LOS A	0.0	0.0	0.00	0.36	0.00	56.7
Approach			55 41.8	55 41.8	0.037	3.7	NA	0.0	0.0	0.00	0.36	0.00	54.2
North: Wallamore Road North													
8	T1	All MCs	21 33.3	21 33.3	0.041	0.2	LOS A	0.2	1.6	0.17	0.39	0.17	56.1
9	R2	All MCs	39 33.3	39 33.3	0.041	6.1	LOS A	0.2	1.6	0.17	0.39	0.17	52.1
Approach			60 33.3	60 33.3	0.041	4.1	NA	0.2	1.6	0.17	0.39	0.17	53.5
West: Bowlers Lane													
10	L2	All MCs	38 28.9	38 28.9	0.058	6.0	LOS A	0.2	1.9	0.12	0.55	0.12	51.4
12	R2	All MCs	31 29.0	31 29.0	0.058	6.3	LOS A	0.2	1.9	0.12	0.55	0.12	51.0
Approach			69 29.0	69 29.0	0.058	6.1	LOS A	0.2	1.9	0.12	0.55	0.12	51.2
All Vehicles			184 34.2	184 34.2	0.058	4.7	NA	0.2	1.9	0.10	0.44	0.10	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Wallamore Road - Bowlers Lane Peak Hour (Site Folder: Wallamore / Bowlers with Development 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	36 41.7	36 41.7	0.041	6.0	LOS A	0.0	0.0	0.00	0.35	0.00	52.7
2	T1	All MCs	24 45.8	24 45.8	0.041	0.0	LOS A	0.0	0.0	0.00	0.35	0.00	56.8
Approach			60 43.3	60 43.3	0.041	3.6	NA	0.0	0.0	0.00	0.35	0.00	54.3
North: Wallamore Road North													
8	T1	All MCs	24 37.5	24 37.5	0.046	0.3	LOS A	0.2	1.9	0.18	0.38	0.18	56.1
9	R2	All MCs	42 35.7	42 35.7	0.046	6.2	LOS A	0.2	1.9	0.18	0.38	0.18	52.0
Approach			66 36.4	66 36.4	0.046	4.0	NA	0.2	1.9	0.18	0.38	0.18	53.4
West: Bowlers Lane													
10	L2	All MCs	41 31.7	41 31.7	0.064	6.0	LOS A	0.2	2.1	0.13	0.55	0.13	51.2
12	R2	All MCs	33 30.3	33 30.3	0.064	6.4	LOS A	0.2	2.1	0.13	0.55	0.13	51.0
Approach			74 31.1	74 31.1	0.064	6.2	LOS A	0.2	2.1	0.13	0.55	0.13	51.1
All Vehicles			200 36.5	200 36.5	0.064	4.7	NA	0.2	2.1	0.11	0.43	0.11	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Wallamore Road - Bowlers Lane Peak Hour (Site Folder: Wallamore / Bowlers with Development 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Wallamore Road South													
1	L2	All MCs	51 41.2	51 41.2	0.057	6.0	LOS A	0.0	0.0	0.00	0.35	0.00	52.7
2	T1	All MCs	33 45.5	33 45.5	0.057	0.0	LOS A	0.0	0.0	0.00	0.35	0.00	56.7
Approach			84 42.9	84 42.9	0.057	3.7	NA	0.0	0.0	0.00	0.35	0.00	54.2
North: Wallamore Road North													
8	T1	All MCs	32 37.5	32 37.5	0.061	0.4	LOS A	0.3	2.5	0.22	0.39	0.22	56.0
9	R2	All MCs	55 34.5	55 34.5	0.061	6.3	LOS A	0.3	2.5	0.22	0.39	0.22	52.0
Approach			87 35.6	87 35.6	0.061	4.1	NA	0.3	2.5	0.22	0.39	0.22	53.4
West: Bowlers Lane													
10	L2	All MCs	55 30.9	55 30.9	0.090	6.1	LOS A	0.3	3.0	0.16	0.55	0.16	51.2
12	R2	All MCs	46 30.4	46 30.4	0.090	6.7	LOS A	0.3	3.0	0.16	0.55	0.16	50.9
Approach			101 30.7	101 30.7	0.090	6.4	LOS A	0.3	3.0	0.16	0.55	0.16	51.0
All Vehicles			272 36.0	272 36.0	0.090	4.8	NA	0.3	3.0	0.13	0.44	0.13	52.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Bowlers Lane - Oxley Highway Peak Hour (Site Folder: Bowlers / Oxley HWY Background 2025)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Oxley Highway South													
1	L2	All MCs	4 50.0	4 50.0	0.034	6.1	LOS A	0.0 0.0	0.00	0.04	0.00	54.9	
2	T1	All MCs	124 26.6	124 26.6	0.094	0.5	LOS A	0.4 3.5	0.17	0.23	0.17	57.8	
3	R2	All MCs	62 25.8	62 25.8	0.094	6.7	LOS A	0.4 3.5	0.29	0.37	0.29	52.8	
Approach			190 26.8	190 26.8	0.094	2.7	NA	0.4 3.5	0.21	0.28	0.21	56.0	
East: Bowlers Lane													
4	L2	All MCs	63 25.4	63 25.4	0.185	6.5	LOS A	0.8 6.5	0.44	0.63	0.44	49.7	
5	T1	All MCs	4 50.0	4 50.0	0.185	10.4	LOS B	0.8 6.5	0.44	0.63	0.44	49.4	
6	R2	All MCs	63 25.4	63 25.4	0.185	11.1	LOS B	0.8 6.5	0.44	0.63	0.44	49.4	
Approach			130 26.2	130 26.2	0.185	8.9	LOS A	0.8 6.5	0.44	0.63	0.44	49.5	
North: Oxley Highway North													
7	L2	All MCs	64 25.0	64 25.0	0.121	5.9	LOS A	0.1 0.5	0.02	0.21	0.02	54.6	
8	T1	All MCs	128 24.2	128 24.2	0.121	0.0	LOS A	0.1 0.5	0.02	0.21	0.02	58.1	
9	R2	All MCs	4 50.0	4 50.0	0.121	6.7	LOS A	0.1 0.5	0.02	0.21	0.02	53.3	
Approach			196 25.0	196 25.0	0.121	2.1	NA	0.1 0.5	0.02	0.21	0.02	56.8	
West: Old Winton Road													
10	L2	All MCs	4 50.0	4 50.0	0.022	6.7	LOS A	0.1 0.8	0.39	0.54	0.39	48.5	
11	T1	All MCs	4 50.0	4 50.0	0.022	10.1	LOS B	0.1 0.8	0.39	0.54	0.39	49.1	
12	R2	All MCs	4 50.0	4 50.0	0.022	12.4	LOS B	0.1 0.8	0.39	0.54	0.39	48.3	
Approach			12 50.0	12 50.0	0.022	9.7	LOS A	0.1 0.8	0.39	0.54	0.39	48.6	
All Vehicles			528 26.5	528 26.5	0.185	4.1	NA	0.8 6.5	0.20	0.34	0.20	54.4	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Bowlers Lane - Oxley Highway Peak Hour (Site Folder: Bowlers / Oxley HWY Background 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Oxley Highway South													
1	L2	All MCs	6 50.0	6 50.0	0.035	6.1	LOS A	0.0 0.0	0.00	0.06	0.00	54.8	
2	T1	All MCs	127 26.0	127 26.0	0.098	0.6	LOS A	0.4 3.6	0.18	0.25	0.18	57.7	
3	R2	All MCs	64 26.6	64 26.6	0.098	6.8	LOS A	0.4 3.6	0.30	0.38	0.30	52.8	
Approach			197 26.9	197 26.9	0.098	2.8	NA	0.4 3.6	0.21	0.28	0.21	55.9	
East: Bowlers Lane													
4	L2	All MCs	66 25.8	66 25.8	0.203	6.5	LOS A	0.8 7.2	0.46	0.64	0.46	49.5	
5	T1	All MCs	6 50.0	6 50.0	0.203	10.8	LOS B	0.8 7.2	0.46	0.64	0.46	49.2	
6	R2	All MCs	66 25.8	66 25.8	0.203	11.6	LOS B	0.8 7.2	0.46	0.64	0.46	49.2	
Approach			138 26.8	138 26.8	0.203	9.2	LOS A	0.8 7.2	0.46	0.64	0.46	49.3	
North: Oxley Highway North													
7	L2	All MCs	66 24.2	66 24.2	0.127	5.9	LOS A	0.1 0.8	0.04	0.22	0.04	54.6	
8	T1	All MCs	132 25.0	132 25.0	0.127	0.1	LOS A	0.1 0.8	0.04	0.22	0.04	58.0	
9	R2	All MCs	6 50.0	6 50.0	0.127	7.0	LOS A	0.1 0.8	0.04	0.22	0.04	53.2	
Approach			204 25.5	204 25.5	0.127	2.2	NA	0.1 0.8	0.04	0.22	0.04	56.7	
West: Old Winton Road													
10	L2	All MCs	6 50.0	6 50.0	0.034	6.7	LOS A	0.1 1.2	0.40	0.54	0.40	48.3	
11	T1	All MCs	6 50.0	6 50.0	0.034	10.5	LOS B	0.1 1.2	0.40	0.54	0.40	48.9	
12	R2	All MCs	6 50.0	6 50.0	0.034	13.0	LOS B	0.1 1.2	0.40	0.54	0.40	48.1	
Approach			18 50.0	18 50.0	0.034	10.1	LOS B	0.1 1.2	0.40	0.54	0.40	48.4	
All Vehicles			557 27.1	557 27.1	0.203	4.4	NA	0.8 7.2	0.22	0.36	0.22	54.1	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Bowlers Lane - Oxley Highway Peak Hour (Site Folder: Bowlers / Oxley HWY Background 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Oxley Highway South													
1	L2	All MCs	10 50.0	10 50.0	0.050	6.1	LOS A	0.0	0.0	0.00	0.07	0.00	54.7
2	T1	All MCs	171 25.7	171 25.7	0.137	0.8	LOS A	0.6	5.4	0.22	0.28	0.22	57.6
3	R2	All MCs	86 26.7	86 26.7	0.137	7.3	LOS A	0.6	5.4	0.37	0.43	0.37	52.6
Approach			267 27.0	267 27.0	0.137	3.1	NA	0.6	5.4	0.26	0.32	0.26	55.8
East: Bowlers Lane													
4	L2	All MCs	88 26.1	88 26.1	0.346	7.7	LOS A	1.8	15.4	0.61	0.76	0.74	47.3
5	T1	All MCs	10 50.0	10 50.0	0.346	16.1	LOS C	1.8	15.4	0.61	0.76	0.74	47.1
6	R2	All MCs	88 26.1	88 26.1	0.346	17.0	LOS C	1.8	15.4	0.61	0.76	0.74	47.0
Approach			186 27.4	186 27.4	0.346	12.5	LOS B	1.8	15.4	0.61	0.76	0.74	47.2
North: Oxley Highway North													
7	L2	All MCs	89 24.7	89 24.7	0.174	6.0	LOS A	0.2	1.5	0.06	0.23	0.06	54.5
8	T1	All MCs	177 24.3	177 24.3	0.174	0.1	LOS A	0.2	1.5	0.06	0.23	0.06	57.9
9	R2	All MCs	10 50.0	10 50.0	0.174	7.6	LOS A	0.2	1.5	0.06	0.23	0.06	53.2
Approach			276 25.4	276 25.4	0.174	2.3	NA	0.2	1.5	0.06	0.23	0.06	56.6
West: Old Winton Road													
10	L2	All MCs	10 50.0	10 50.0	0.074	7.0	LOS A	0.3	2.6	0.53	0.60	0.53	46.5
11	T1	All MCs	10 50.0	10 50.0	0.074	14.3	LOS B	0.3	2.6	0.53	0.60	0.53	47.0
12	R2	All MCs	10 50.0	10 50.0	0.074	17.9	LOS C	0.3	2.6	0.53	0.60	0.53	46.3
Approach			30 50.0	30 50.0	0.074	13.1	LOS B	0.3	2.6	0.53	0.60	0.53	46.6
All Vehicles			759 27.4	759 27.4	0.346	5.5	NA	1.8	15.4	0.28	0.41	0.31	53.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Bowlers Lane - Oxley Highway Peak Hour (Site Folder: Bowlers / Oxley HWY with Development 2025)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Oxley Highway South													
1	L2	All MCs	4 50.0	4 50.0	0.036	6.1	LOS A	0.0 0.0	0.00	0.04	0.00	54.9	
2	T1	All MCs	124 26.6	124 26.6	0.098	0.6	LOS A	0.4 3.8	0.18	0.24	0.18	57.8	
3	R2	All MCs	68 27.9	68 27.9	0.098	6.8	LOS A	0.4 3.8	0.31	0.40	0.31	52.6	
Approach			196 27.6	196 27.6	0.098	2.9	NA	0.4 3.8	0.22	0.29	0.22	55.8	
East: Bowlers Lane													
4	L2	All MCs	69 27.5	69 27.5	0.207	6.5	LOS A	0.9 7.5	0.46	0.63	0.46	49.5	
5	T1	All MCs	4 50.0	4 50.0	0.207	10.8	LOS B	0.9 7.5	0.46	0.63	0.46	49.3	
6	R2	All MCs	69 27.5	69 27.5	0.207	11.6	LOS B	0.9 7.5	0.46	0.63	0.46	49.1	
Approach			142 28.2	142 28.2	0.207	9.1	LOS A	0.9 7.5	0.46	0.63	0.46	49.3	
North: Oxley Highway North													
7	L2	All MCs	70 27.1	70 27.1	0.126	5.9	LOS A	0.1 0.5	0.02	0.22	0.02	54.4	
8	T1	All MCs	128 24.2	128 24.2	0.126	0.0	LOS A	0.1 0.5	0.02	0.22	0.02	58.0	
9	R2	All MCs	4 50.0	4 50.0	0.126	6.6	LOS A	0.1 0.5	0.02	0.22	0.02	53.3	
Approach			202 25.7	202 25.7	0.126	2.2	NA	0.1 0.5	0.02	0.22	0.02	56.6	
West: Old Winton Road													
10	L2	All MCs	4 50.0	4 50.0	0.022	6.7	LOS A	0.1 0.8	0.40	0.54	0.40	48.4	
11	T1	All MCs	4 50.0	4 50.0	0.022	10.3	LOS B	0.1 0.8	0.40	0.54	0.40	49.0	
12	R2	All MCs	4 50.0	4 50.0	0.022	12.7	LOS B	0.1 0.8	0.40	0.54	0.40	48.2	
Approach			12 50.0	12 50.0	0.022	9.9	LOS A	0.1 0.8	0.40	0.54	0.40	48.5	
All Vehicles			552 27.5	552 27.5	0.207	4.4	NA	0.9 7.5	0.21	0.36	0.21	54.1	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Bowlers Lane - Oxley Highway Peak Hour (Site Folder: Bowlers / Oxley HWY with Development 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Oxley Highway South													
1	L2	All MCs	6 50.0	6 50.0	0.037	6.1	LOS A	0.0 0.0	0.00	0.06	0.00	54.8	
2	T1	All MCs	127 26.0	127 26.0	0.103	0.6	LOS A	0.5 4.1	0.18	0.25	0.18	57.7	
3	R2	All MCs	71 29.6	71 29.6	0.103	6.9	LOS A	0.5 4.1	0.33	0.40	0.33	52.5	
Approach			204 27.9	204 27.9	0.103	3.0	NA	0.5 4.1	0.23	0.30	0.23	55.7	
East: Bowlers Lane													
4	L2	All MCs	73 28.8	73 28.8	0.231	6.6	LOS A	1.0 8.6	0.48	0.64	0.48	49.2	
5	T1	All MCs	6 50.0	6 50.0	0.231	11.3	LOS B	1.0 8.6	0.48	0.64	0.48	49.0	
6	R2	All MCs	73 28.8	73 28.8	0.231	12.3	LOS B	1.0 8.6	0.48	0.64	0.48	48.8	
Approach			152 29.6	152 29.6	0.231	9.5	LOS A	1.0 8.6	0.48	0.64	0.48	49.0	
North: Oxley Highway North													
7	L2	All MCs	73 27.4	73 27.4	0.133	5.9	LOS A	0.1 0.8	0.04	0.23	0.04	54.4	
8	T1	All MCs	132 25.0	132 25.0	0.133	0.1	LOS A	0.1 0.8	0.04	0.23	0.04	57.9	
9	R2	All MCs	6 50.0	6 50.0	0.133	7.0	LOS A	0.1 0.8	0.04	0.23	0.04	53.2	
Approach			211 26.5	211 26.5	0.133	2.3	NA	0.1 0.8	0.04	0.23	0.04	56.5	
West: Old Winton Road													
10	L2	All MCs	6 50.0	6 50.0	0.035	6.8	LOS A	0.1 1.3	0.41	0.55	0.41	48.1	
11	T1	All MCs	6 50.0	6 50.0	0.035	10.8	LOS B	0.1 1.3	0.41	0.55	0.41	48.7	
12	R2	All MCs	6 50.0	6 50.0	0.035	13.4	LOS B	0.1 1.3	0.41	0.55	0.41	48.0	
Approach			18 50.0	18 50.0	0.035	10.3	LOS B	0.1 1.3	0.41	0.55	0.41	48.3	
All Vehicles			585 28.5	585 28.5	0.231	4.7	NA	1.0 8.6	0.23	0.37	0.23	53.8	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Bowlers Lane - Oxley Highway Peak Hour (Site Folder: Bowlers / Oxley HWY with Development 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Oxley Highway South													
1	L2	All MCs	10 50.0	10 50.0	0.052	6.1	LOS A	0.0	0.0	0.00	0.07	0.00	54.7
2	T1	All MCs	171 25.7	171 25.7	0.143	0.9	LOS A	0.7	5.9	0.22	0.29	0.22	57.5
3	R2	All MCs	93 29.0	93 29.0	0.143	7.4	LOS A	0.7	5.9	0.39	0.46	0.39	52.3
Approach			274 27.7	274 27.7	0.143	3.3	NA	0.7	5.9	0.27	0.34	0.27	55.6
East: Bowlers Lane													
4	L2	All MCs	91 25.3	91 25.3	0.361	7.8	LOS A	1.9	16.6	0.63	0.77	0.78	47.1
5	T1	All MCs	10 50.0	10 50.0	0.361	16.8	LOS C	1.9	16.6	0.63	0.77	0.78	46.9
6	R2	All MCs	91 25.3	91 25.3	0.361	17.6	LOS C	1.9	16.6	0.63	0.77	0.78	46.8
Approach			192 26.6	192 26.6	0.361	12.9	LOS B	1.9	16.6	0.63	0.77	0.78	47.0
North: Oxley Highway North													
7	L2	All MCs	96 27.1	96 27.1	0.179	6.0	LOS A	0.2	1.5	0.05	0.24	0.05	54.3
8	T1	All MCs	177 24.3	177 24.3	0.179	0.1	LOS A	0.2	1.5	0.05	0.24	0.05	57.9
9	R2	All MCs	10 50.0	10 50.0	0.179	7.7	LOS A	0.2	1.5	0.05	0.24	0.05	53.1
Approach			283 26.1	283 26.1	0.179	2.4	NA	0.2	1.5	0.05	0.24	0.05	56.4
West: Old Winton Road													
10	L2	All MCs	10 50.0	10 50.0	0.076	7.0	LOS A	0.3	2.7	0.54	0.61	0.54	46.3
11	T1	All MCs	10 50.0	10 50.0	0.076	14.8	LOS B	0.3	2.7	0.54	0.61	0.54	46.8
12	R2	All MCs	10 50.0	10 50.0	0.076	18.4	LOS C	0.3	2.7	0.54	0.61	0.54	46.1
Approach			30 50.0	30 50.0	0.076	13.4	LOS B	0.3	2.7	0.54	0.61	0.54	46.4
All Vehicles			779 27.7	779 27.7	0.361	5.7	NA	1.9	16.6	0.29	0.42	0.33	53.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.