

TRAFFIC IMPACT ASSESSMENT

AURA PRECINCT 13 INDUSTRIAL HUB

Version 1.5



Document information

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1 INTRODUCTION

1.1 Background

Egis was engaged to undertake a Traffic Impact Assessment (TIA) to assess the traffic and transport impacts associated with the proposed industrial/business park at Precinct 13 of the Aura Development, located in Nimba. This TIA is intended to support the Development Application submission to Economic Development Queensland as part of the Caloundra South Priority Development Area (CSPDA).

1.2 Scope of Work

This Transport Infrastructure Assessment has been prepared to evaluate the likely impacts of the proposed development on the local transport network. The assessment assumes 2032 will be the Base Year, consistent with the anticipated commencement of the development. As no staged development of the road network connected for this development is planned, traffic modelling has only been completed for a future horizon scenario, adopting 2042 as the horizon year for the purpose of determining intersection performance.

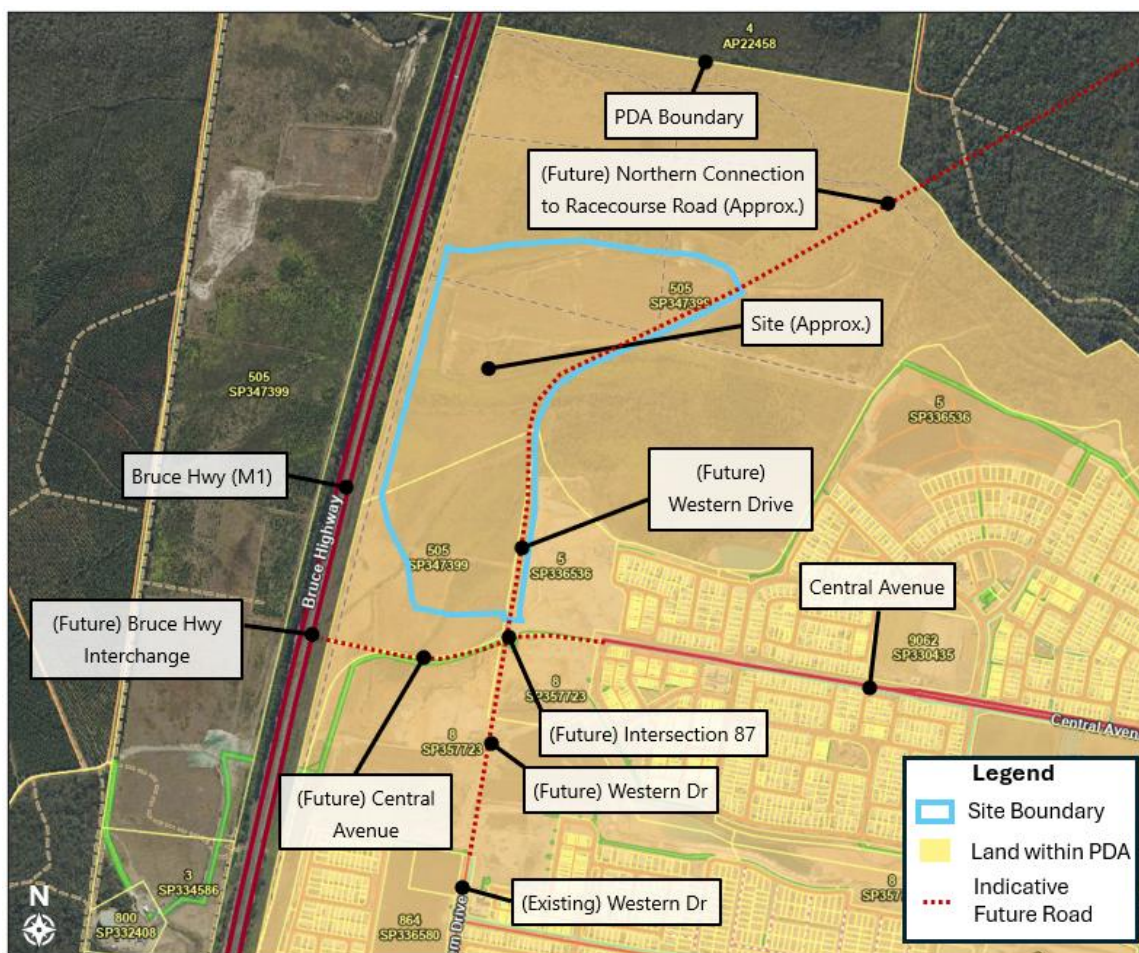
The following traffic and transport impacts have been assessed:

- A review of existing traffic and transport conditions within the study area.
- A description of the proposed development and associated land use, including precinct layout, access arrangements, and operational characteristics.
- An assessment of vehicular trip generation associated with the development and the distribution of traffic on the surrounding road network.
- An analysis of the operational performance of key intersections under existing conditions and future scenarios, both with and without development-generated traffic.
- Consideration of transport safety outcomes and the adequacy of infrastructure for all road users, including pedestrians and cyclists.
- An evaluation of strategies to mitigate the development's impact on the road network, including sustainable transport opportunities of walking, cycling, and public transport access, consistent with relevant TMR and Austroads guidelines.

As connecting roads to the site are not currently constructed, there are no traffic counts undertaken in the immediate vicinity of the proposed site. As such, traffic volumes were estimated for the development road network based on PWC VISUM model outputs for 2041. These volumes were used as the baseline values for the surrounding road network, with specific development volumes being calculated for the site through land yield and trip generation rate estimates.

1.3 Study Area

The subject land consists of parcels Lot 505 SP357764 and Lot 5 on SP353735. This land sits in the suburb of Nimba within the Caloundra South Priority Development Area which is regulated by Economic Development Queensland (State of Queensland, 2025) through the Caloundra South PDA Development Scheme (CSPDS). The site is bordered by the Bruce Highway (M1) to the west and will be bordered by Central Avenue to the south and Western Drive to the east when constructed.



2 EXISTING CONDITIONS

2.1 Land Use, Zoning and Approvals

The site is currently zoned as 'Industry and Business' under Economic Development Queensland's 'Caloundra South PDA Development Scheme' (CSPDS) which commenced on 8 October 2011 and was amended on 28 February 2025 (State of Queensland, 2025). All development is assessed under this scheme instead of Sunshine Coast Council. Surrounding land uses include low density residential under the 'Urban Living' scheme zone. To the west of the Bruce Highway the land use is 'Rural Zone'.

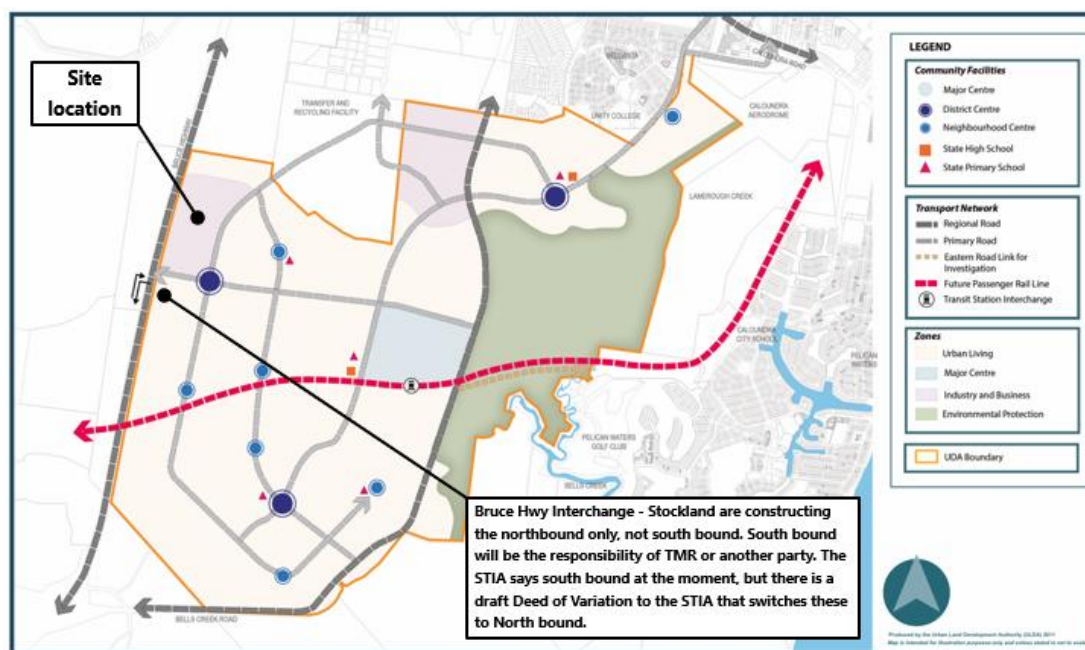


FIGURE 2: ZONING (SOURCE: ECONOMIC DEVELOPMENT QUEENSLAND, 2025)

2.2 Surrounding Road Network Details

The surrounding road network includes the M1 Bruce Highway, and primary roads including Western Drive and Central Avenue. According to 'Caloundra South PDA Development Scheme', the Bruce Highway is classified as a 'regional route' with Western Drive and Central Avenue classed as 'Primary Roads' (Economic Development Queensland, 2025) as shown in **Figure 3**. As part of this PDA, Bruce Highway access through north-facing ramps will be provided, located to the southwest of the site.

The characteristics of the road network are shown in **Table 1** below:

TABLE 1: ROAD CHARACTERISTICS

Road	Authority	Road Hierarchy	Posted Speed	Carriageway Formation
Western Drive	SCC	Primary Road	60km/h	Under Construction, two-lane, two-way
Central Avenue	SCC	Primary Road	60km/h	Under Construction, four-lane (long-term), two-way
Bruce Hwy	TMR NC	Regional Road	110km/h	Sealed, four-lane, two-way

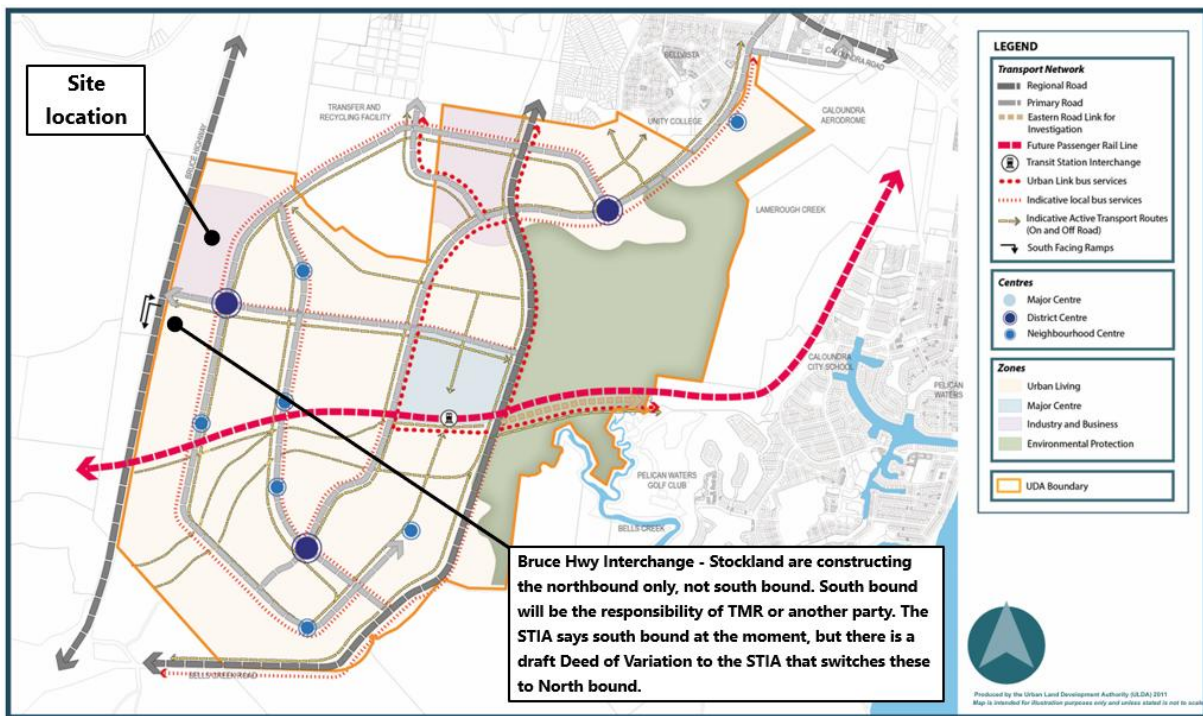


FIGURE 3: ROAD NETWORK (ECONOMIC DEVELOPMENT QUEENSLAND, 2025)

2.2.1 CSPDS Infrastructure Plan

The Infrastructure Plan under the Caloundra South PDA Development Scheme includes intended road construction projects to be undertaken before the ultimate year of 2041 which are relevant to the site. The relevant projects shown in **Figure 4** include:

- 6: Northern bridge across the Bruce Highway
- 16: Racecourse Road – Connecting northern boundaries of the UDA to the industrial estate

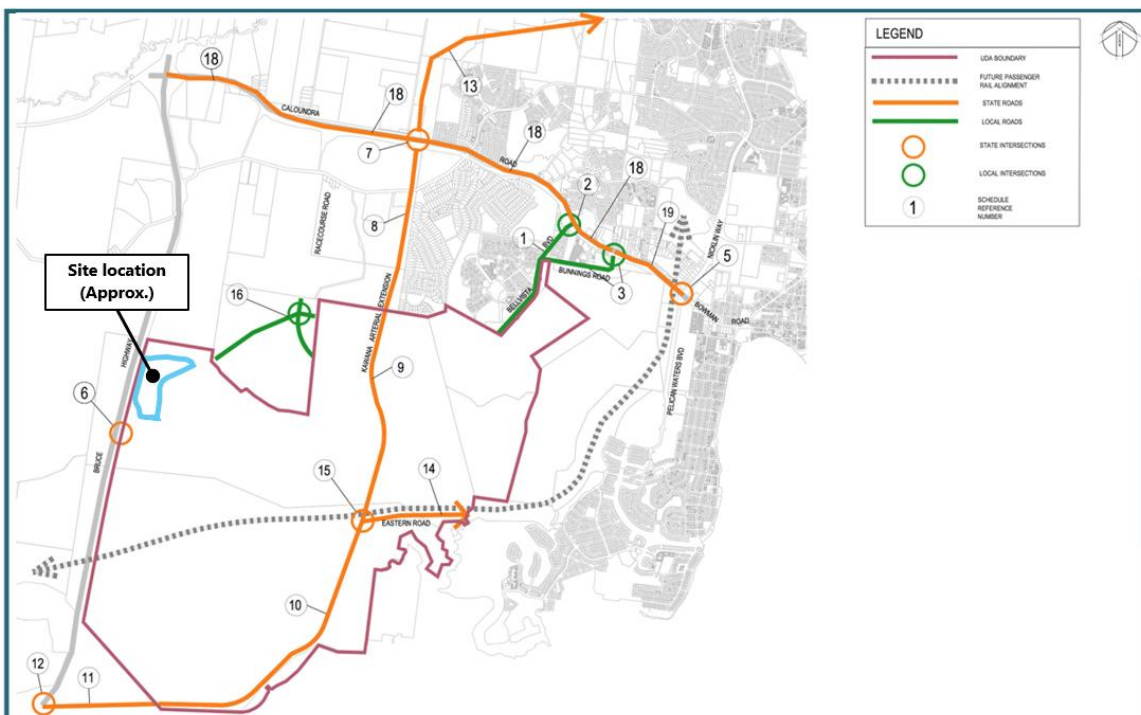


FIGURE 4: CSPDS INFRASTRUCTURE PLAN (SOURCE: ECONOMIC DEVELOPMENT QUEENSLAND, 2025)

2.3 Traffic Volumes

As these roads have not currently been built, no traffic count data is available for the development. As such, VISUM traffic network modelling, which was completed for the broader Aura development by PWC, has been used to inform background traffic volumes for the base and future horizon periods. The PWC modelling was completed for a 2041 scenario, which has been predominantly used for background traffic data. A 2.5% annual growth rate has been adopted for the purpose of scaling background traffic up to expected horizon year volumes.

The key access to the development area will be from the Central Ave/Western Drive intersection (Intersection 87) as shown in **Figure 1** and **Figure 10**. The assumed background turning movements for this intersection can be seen in **Figure 5**.

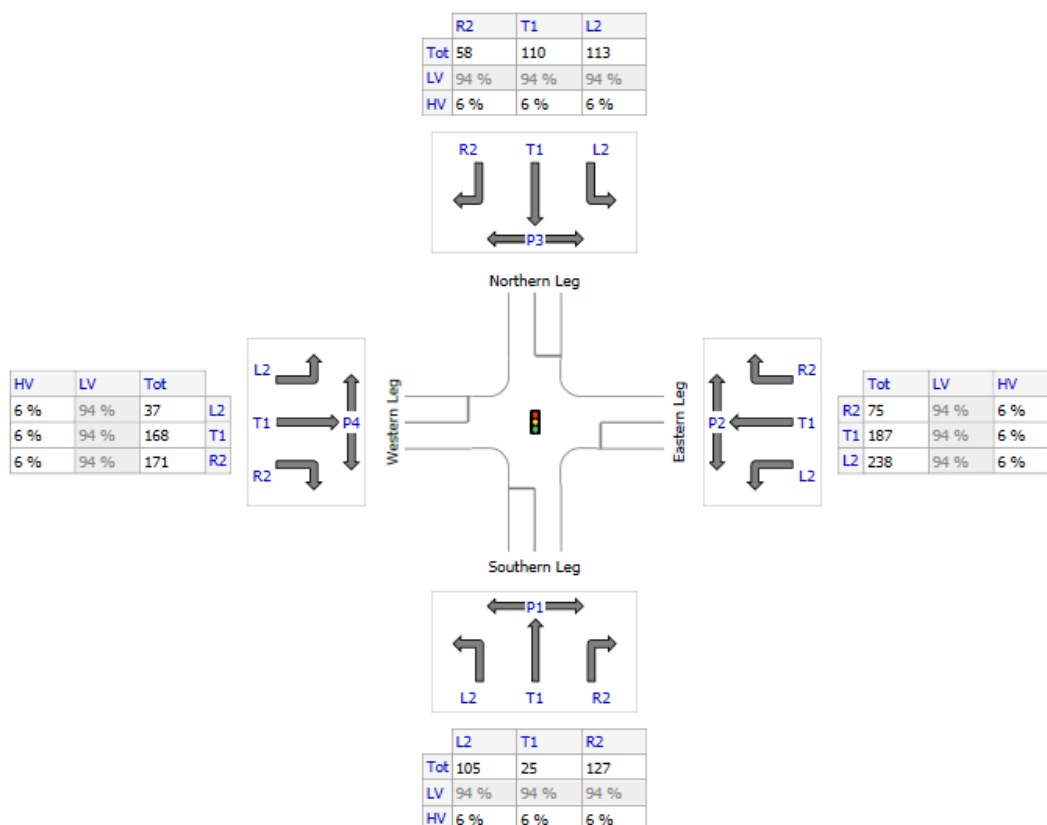


FIGURE 5: INTERSECTION 87 PM PEAK MOVEMENTS – BASE SCENARIO (PWC 2041 OUTPUTS)

2.4 Road Safety Issues

The road network in the area is not developed yet, so a typical road crash analysis was not undertaken for this location.

2.5 Site Access

The site is currently constrained by road construction on Western Avenue and Central Avenue, however southern access via Western Avenue will occur as part of this development. A future trunk road will provide northern access to the site.

2.6 Public Transport

Precinct 13 is located approximately 18.2km or 20 minutes by existing roads from Beerwah Station located on the Sunshine Coast rail line. The proposed Direct Sunshine Coast Rail Line or 'The Wave' will provide a heavy rail connection from Birtinya to Brisbane, and metro-style service to Maroochydore Airport, with the nearest station of Aura Central Station to be located approximately 3.5km, a 6-minute drive or a 10-minute bicycle ride, from the site. This will make the site highly accessible to the regional public transport network. The site is

also serviced by the existing 608 hourly bus route; however, this service is located approximately 2.5km from the south-eastern corner of the site with a walking travel time of approximately 35 minutes. According to the Caloundra South PDA Development Scheme, the site is planned to be served by a local bus service on Western Drive and Central Avenue, with UrbanLink bus services on Aura Boulevard.

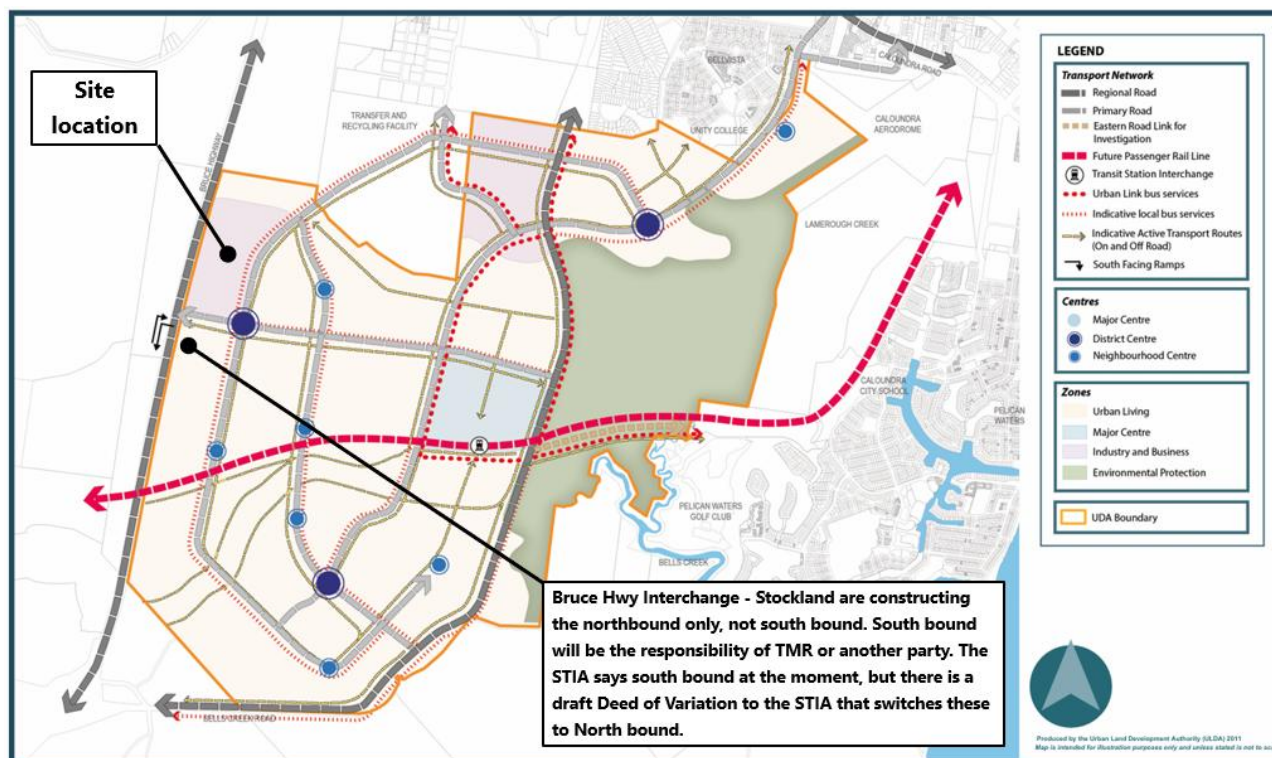


FIGURE 6: PUBLIC TRANSPORT NETWORK (SOURCE: ECONOMIC DEVELOPMENT QUEENSLAND, 2025)

2.7 Active Transport

The immediate active transport network to the site consists of a separated cycleway on the southern side of Central Avenue and the eastern side of Western Drive. This cycleway connects to the broader network, including to separated cycleways along Banya Avenue and Aura Boulevard. This provides safe walking and cycling connections throughout the Caloundra South Priority Development Area as well as connectivity to Caloundra CBD including the Sunshine Coast Coastal Pathway via a mix of shared paths and footpaths. Active transport to the new Aura rail station, located approximately 3.5km from the site or an approximate 10-minute ride, will be easily accessible using separated cycleway infrastructure along Central Avenue and Aura Boulevard. Prior to the construction of the Direct Sunshine Coast Rail Line, the current active transport connection to the rail network is possible via separated cycleways, shared pathways, and mixed traffic conditions to Mooloolah Station. There are no listed routes on the Queensland Government's Priority Cycle Network Plan adjacent to Precinct 13.

Footpaths and pedestrian links are provided throughout the PDA, provided on at least one side of residential streets. The proposed Nirimba (Aura) station will be an approximate 45-minute walk from the subject site.

2.8 Heavy Vehicle Network

The heavy vehicle network consists of the following classes near the study area:

- B23 Route (B-Double 23m network)
- B Double 25/26 Route (PBS Level 2A)
- 1 tonne mass transfer
- High mass limit
- Identified as a Critical Road

Key Routes relevant to the site include parts of the M1 Bruce Highway, Caloundra Road, Steve Irwin Way and Racecourse Road. These routes can be seen in **Figure 7**.

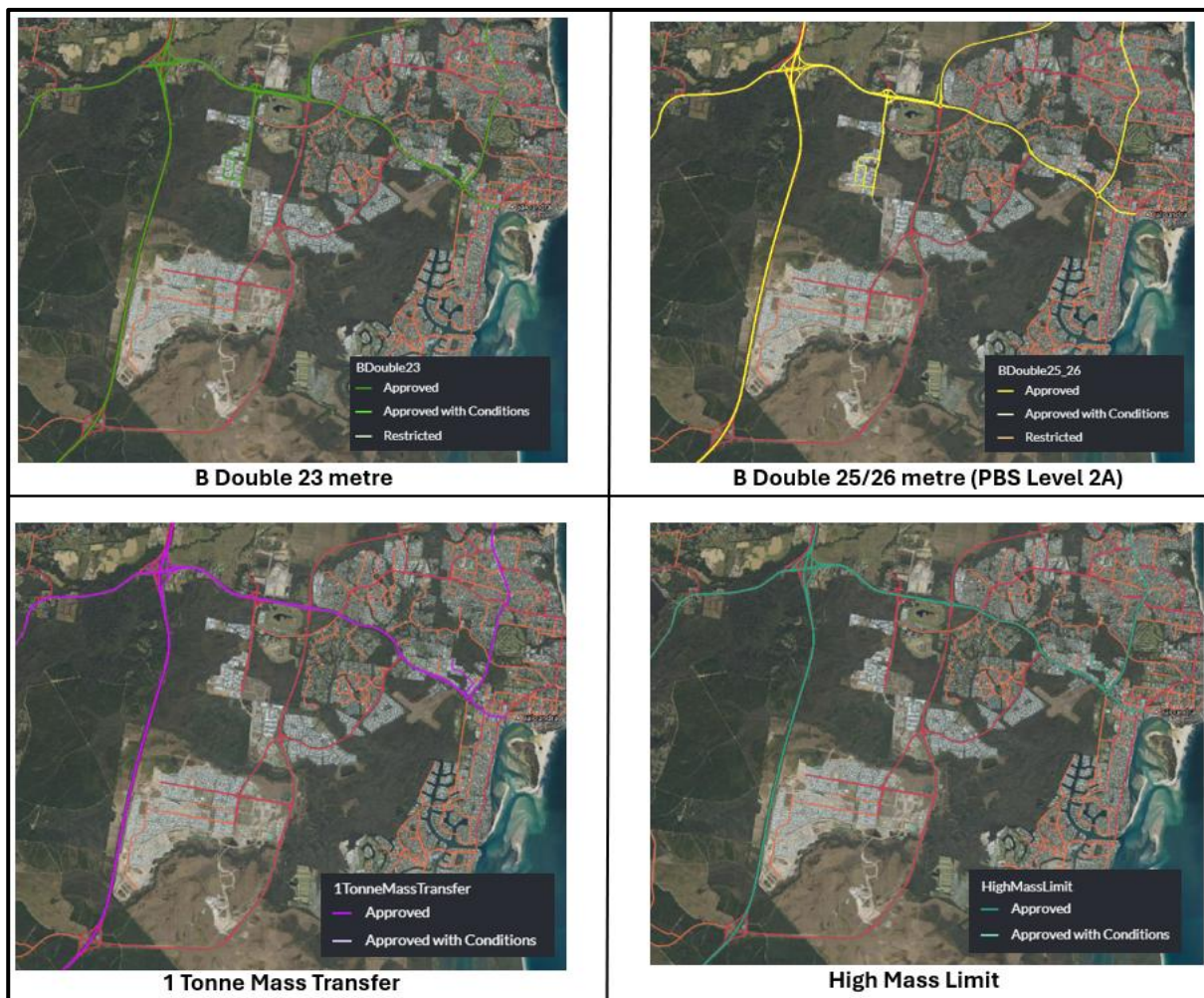


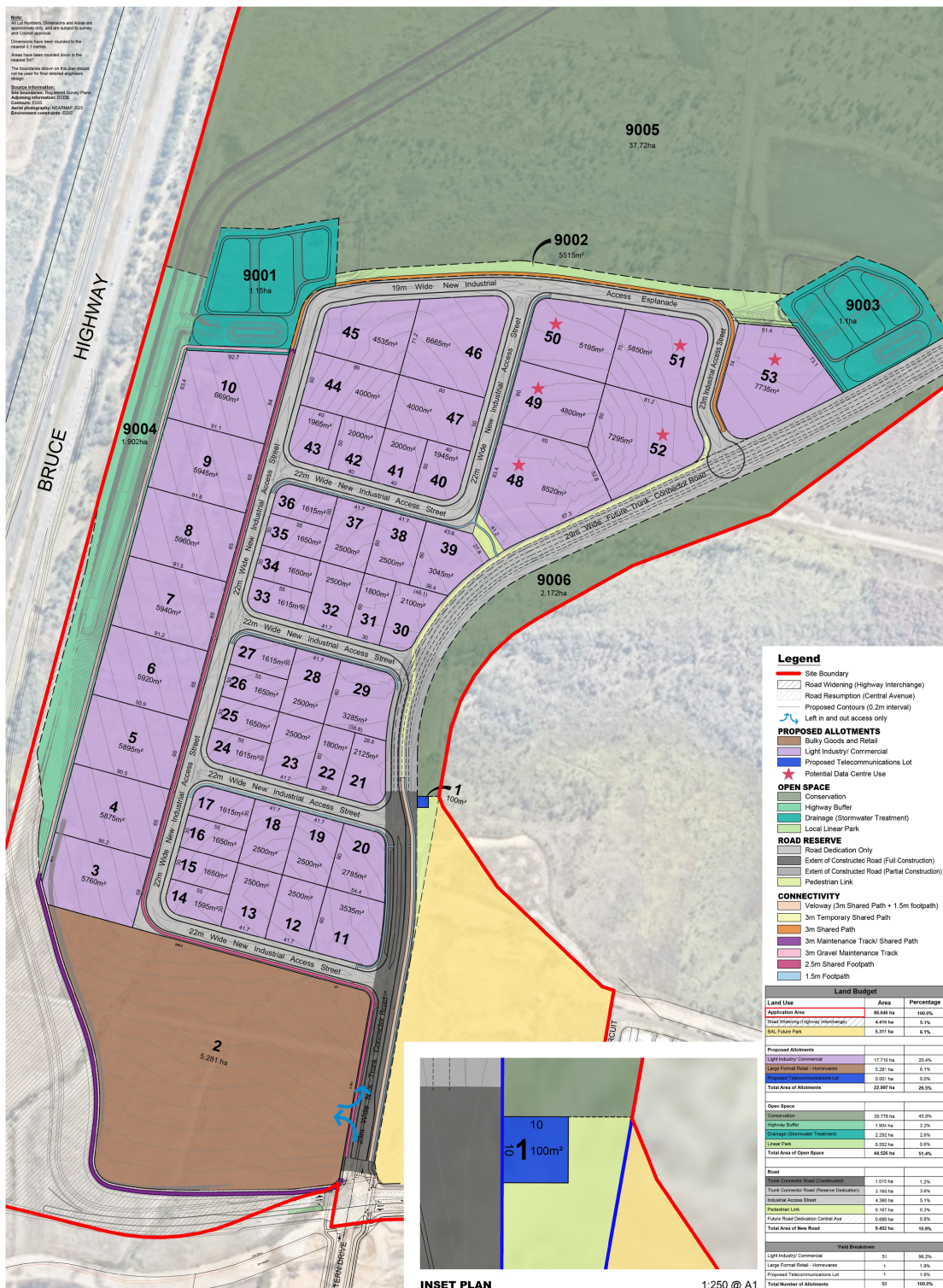
FIGURE 7: HEAVY VEHICLE ROUTES (QUEENSLAND GLOBE, 2026)

3 PROPOSED DEVELOPMENT

3.1 Development Site Plan

The proposed development comprises of 80.691 hectares of land, situated between the Bruce Highway to the west and the proposed road extensions of Central Avenue to the south and Western Drive to the east. The proposed development consists of 28.4% of the total land area comprising of saleable allotments, 55.2% for dedicated open space and drainage parcels, 10.8% for access corridors, and 5.6% for the construction of the Bruce Highway interchange with Central Avenue. The sizes of the 53 saleable lots are intended to range from 1595m² to 5.15 ha.

The development plan is shown in **Figure 8** below.



3.2 Proposed Site Yield

This development includes light industry lots, a showroom/large format retail (homewares or hardware) store, a service station, and two (2) fast-food establishments as detailed in **Table 2**.

TABLE 2: DEVELOPMENT LAND USE ASSUMPTIONS

Stage #	Lot #	Land Use	Lot Size	GFA Size
1A	2	Service Station	5,151 ha	300m ² GFA
1A	2	Fast Food – McDonalds*		500m ² GFA
1A	2	Fast Food – KFC*		500m ² GFA
1A	2	Large format retail showroom		20,000m ² GFA
1B to 4	3 to 53	Light Industry	17,716 ha	136,439m ² GFA

* Indicative business for trip generation purposes

3.3 Staging Plan

As shown in **Figure 9**, the development will be delivered in fifteen stages, commencing at the southern side of the site. Prior to Stage 1, the Bruce Highway Interchange at Central Avenue is planned to be delivered. The southern portion of the site encompassing the retail allotment and light industry will be developed in Stage 1A and 1B. Light Industry/Commercial developments will occur in Stages 1B to 4. Drainage treatments and highway buffers will be delivered in Stages 5 to 7, and conservation works are undertaken in Stages 10-11.

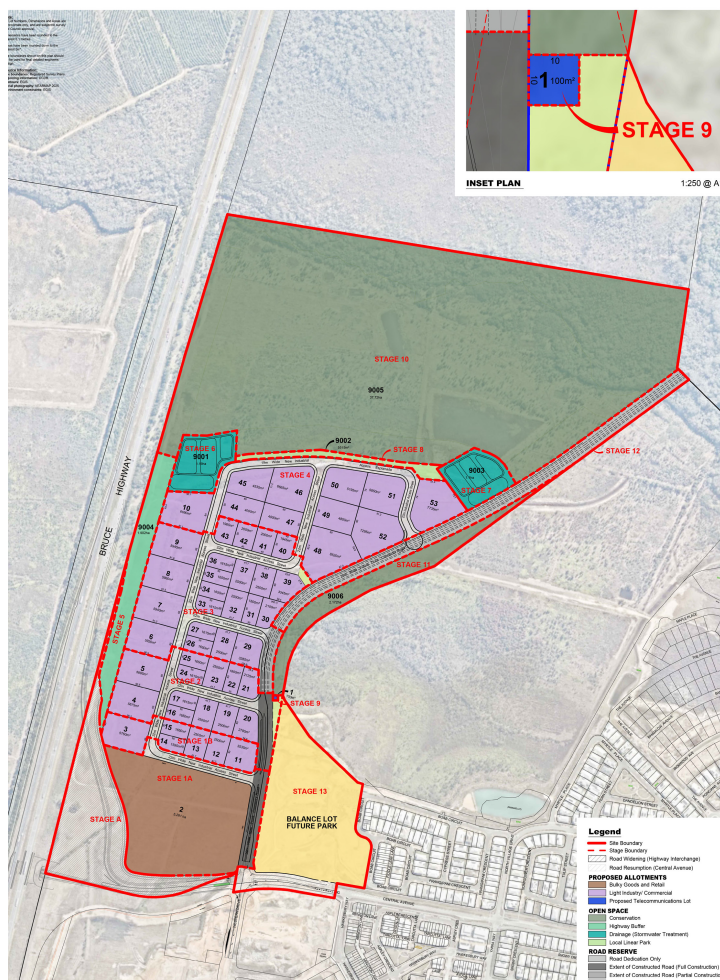


FIGURE 9: AURA PRECINCT 13 - STAGING PLAN (RPS, 2026)

3.4 Proposed Access and Parking

Vehicle access to the site will be provided by a network of new internal and external roads, with further details on the access types provided in **Figure 10**. This includes a new 29m wide industrial connector street along Western Drive, four 22m wide new industrial access streets to the south of the site (one of which will be a future connection), and a new 19m wide new industrial access esplanade at the northern part of the site. There is also road (or private connection) connecting the fast-food outlets and service station to the first internal industrial access road. This road is left-in/left out on the South North industrial connector side as it is very close to Intersection 87, in the section that is divided by a median. The proposed road network is generally in accordance with the EDQ Road Typologies (**Appendix B**). The main site access will be from the south of the site at Western Drive with the intersection of Central Avenue. A potential future north-eastern site access through an extension of Western Drive is anticipated, according to the CSPDS Infrastructure Plan Schedule 16 (**Figure 4**) and Transport Network (**Figure 6**) maps. Pedestrian access to the site will be provided via a dedicated pedestrian link between Western Drive and a 22m wide new industrial access street located near the centre of the site.

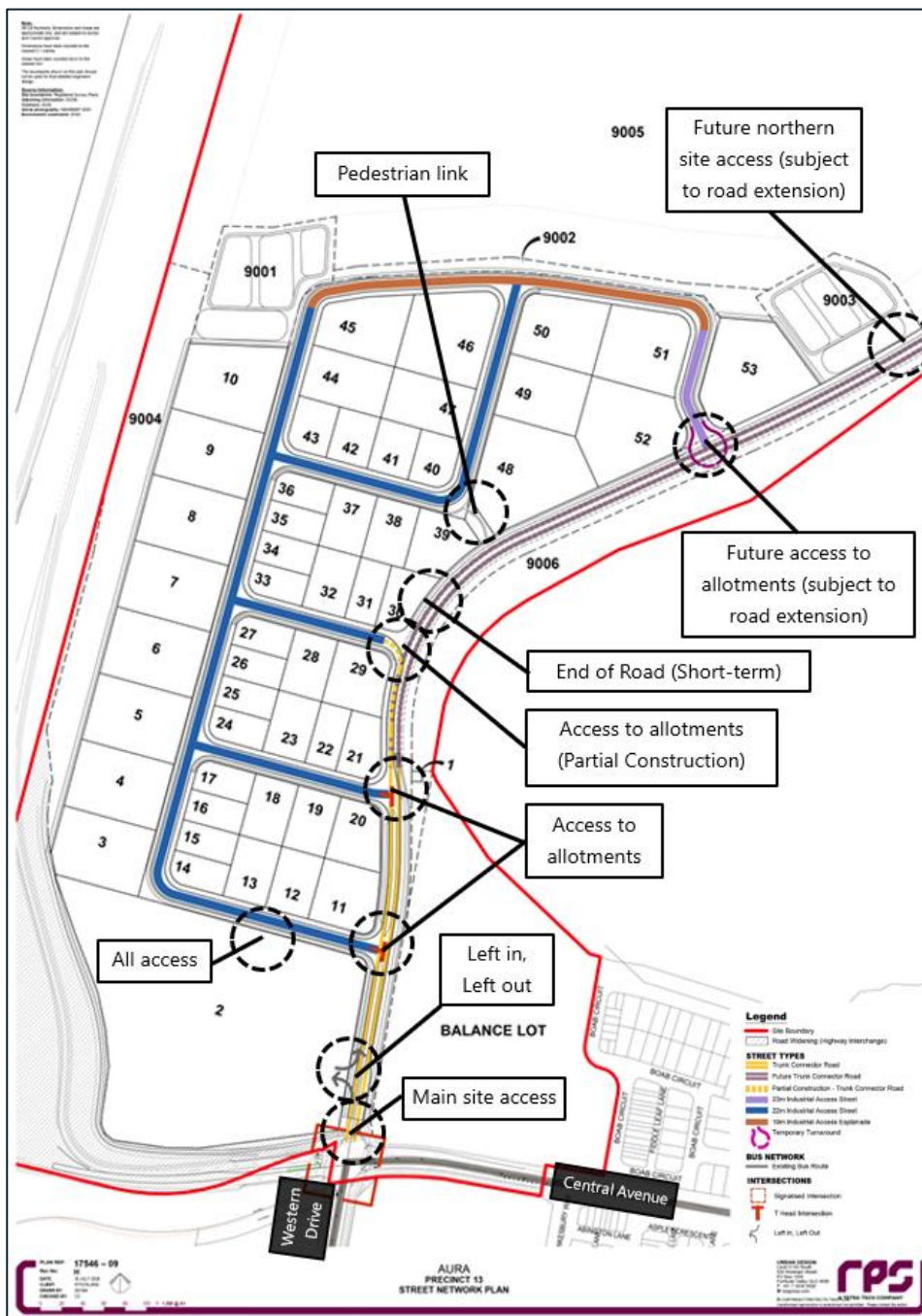


FIGURE 10: LOCATION OF PROPOSED SITE ACCESS (ADAPTED FROM RPS, 2025)

The Plan of Development (RPS, Revision F | July 2026) submitted with this application includes parking requirements generally set out in accordance with the Transport and Parking Code in the Sunshine Coast Regional Council's Planning Scheme, as referred to by the Caloundra South PDA Development Scheme. The specific parking rates can be found in Appendix H of the Plan of Development.

4 DEVELOPMENT TRAFFIC

4.1 Traffic Generation

The traffic generation for this development has been estimated from the proposed site yields detailed in **Table 2**, combined with trip generation rates sourced from several sources. For the rates associated with fast food venues, trip generation rates from the *Trip Generation and Parking Demand Surveys of Fast Food Outlets Analysis Report* for TfNSW (ex -Roads and Maritime Services) - 2016 report were adopted. For the Hardware Store, trip generation rates from the *Roads and Traffic Authority (TfNSW) Trip Generation and Parking Generation Surveys Bulky Goods / Hardware Stores* 2009 were adopted. For light industry, the estimated trips were adopted from the BDO Precinct 13 Aura Traffic Modelling Update – July 2026. For the service station, trip generation rates were seen to vary significantly between size and location of the area. As such, survey data from similar sites was instead used to calculate the expected generation of this land use (TfNSW (2013), Service Stations – Analysis Report).

The expected generation for the development within the PM peak period can be seen within **Table 3** below.

TABLE 3: DEVELOPMENT TRIP GENERATION

Stage #	Land Use	Generation Rate	Trips PM peak	Discounted Trips PM peak
1A	Service Station	TfNSW (2013), Service Stations – Analysis Report	144	130
1A	Fast Food – McDonalds	Fixed Rate per Outlet (TfNSW)	183	165
1A	Fast Food – KFC	Fixed Rate per Outlet (TfNSW)	73	65
1A	Hardware Store ¹	2.28 trips / 100m ² GFA (TfNSW)	456	410
1B to 4	Light Industry	0.28 trips / 100m ² GFA (BDO report)	382	382

The above trips were reduced by 10% for all land uses except for Light Industry (refer discounted trips column) to reflect combined (multi-purpose) trips. This is considered a conservative approach as in reality land uses such as fast food and service station rely heavily on "pass-by" traffic, and a higher percentage of trips are non-specific to the site.

4.1.1 Inbound/Outbound Splits

The ITE trip generation rates 9th edition rates for equivalent descriptions were used to estimate the inbound/outbound splits.

TABLE 4: INBOUND/OUTBOUND SPLITS

Description/ITE Code	PM In %	PM Out %	PM In	PM Out
Gasoline/Service Station 944	50%	50%	65	65
Fast Food with Drive Thru 934	52%	48%	86	79
Fast Food with Drive Thru 934	52%	48%	34	32
Home Improvement Superstore 862 ¹	49%	51%	201	209
General Light Industrial 110	21%	79%	80	302

¹ Hardware Store is used as the worst-case trip generation scenario between a Homewares Store and a Hardware Store option for the Showroom / Large Format Retail land use of this lot.

4.2 Traffic Distribution

The traffic generated from the development was distributed to the different movements at intersection 87 which is the sole access point, following the splits that were provided in the PWC modelling report (Table 5).

TABLE 5: PM PEAK TRAFFIC VOLUMES SPLIT - INTERSECTION 87 (PWC)

Turn Movement	PM In	Split %	PM Out	Split %
Right	65	22.18%	72	24.16%
Through	71	24.23%	73	24.50%
Left	157	53.58%	153	51.34%
Total	293	100.00%	298	100.00%

These percentages were applied to the development generated traffic to estimate the “with development” volumes for Intersection 87.

TABLE 6: INTERSECTION 87 DEVELOPMENT TRAFFIC VOLUMES

Land Use	PM In	PM Out	West - L	South - T	East - R	North - R	North - T	North - L
Service Station	65	65	14	16	35	16	16	33
Fast Food	86	79	19	21	46	19	19	41
Fast Food	34	32	8	8	18	8	8	16
Hardware Store	201	209	45	49	108	51	51	107
Light Industry/ Commercial	80	302	18	19	43	73	74	155
Total	466	686	103	113	250	166	168	352

Traffic was also distributed to the internal intersections and new roads within Precinct 13. As per **Figure 11** below, assumptions were made on how different road users will access the different land uses within Precinct 13. It was assumed that all traffic relating to the Fast Food outlets and the Service Station will access the site via the Left In/Left Out access road at the southern end of the development (just north of Intersection 87). Traffic relating to the Hardware Store will predominantly use the first internal road (Intersection 1 in **Figure 11**). The light industry lots will be accessed from the intersections closer to them with a general tendency to avoid intersection 1 to avoid the retail related traffic. Obviously, the lots along the first internal industrial access road (lots 11-14 and lots 3 and 4) will still access the site via the first internal road.

5 IMPACT ASSESSMENT AND MITIGATION

5.1 Intersection Analysis

Due to the nature of this development and the fact that the adjacent road network is not developed yet, a classic traffic impact assessment of 'with' and 'without development' cannot be completed. The assessment includes an investigation for the need of turning treatments and intersection controls for the main access point, Intersection 87 and the internal road network intersections with the North South Industrial Connector.

5.1.1 Intersection 87 – Central Ave and Western Drive

The traffic volumes calculated for Precinct 13 (**Table 7**) were used to replace the relevant turning movement volumes calculated from the strategic modelling provided volumes (**Figure 5**). These new volumes were used to undertake a SIDRA Analysis of Intersection 87. Egis undertook a number of different iterations of this analysis to understand how the proposed intersection geometry can accommodate the generated and background traffic. The layout that provided compliant results is shown in **Figure 12** below.

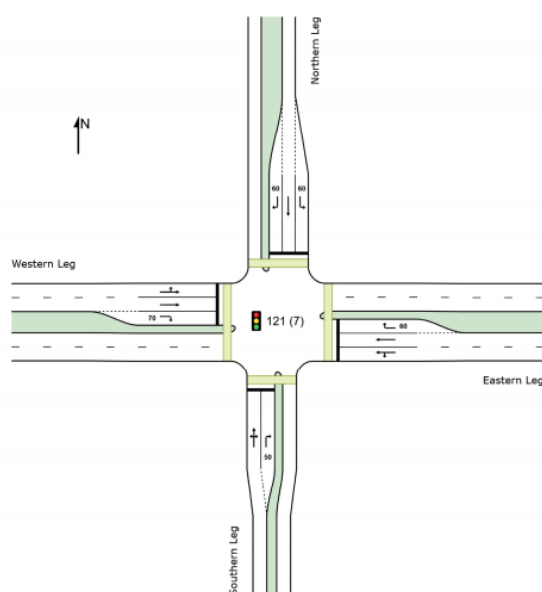


FIGURE 12: INTESECTION 87 MODELLED LAYOUT

Due to the nature of the precinct, a 6% Heavy Vehicle percentage was used. The following phasing sequence and timing was used.

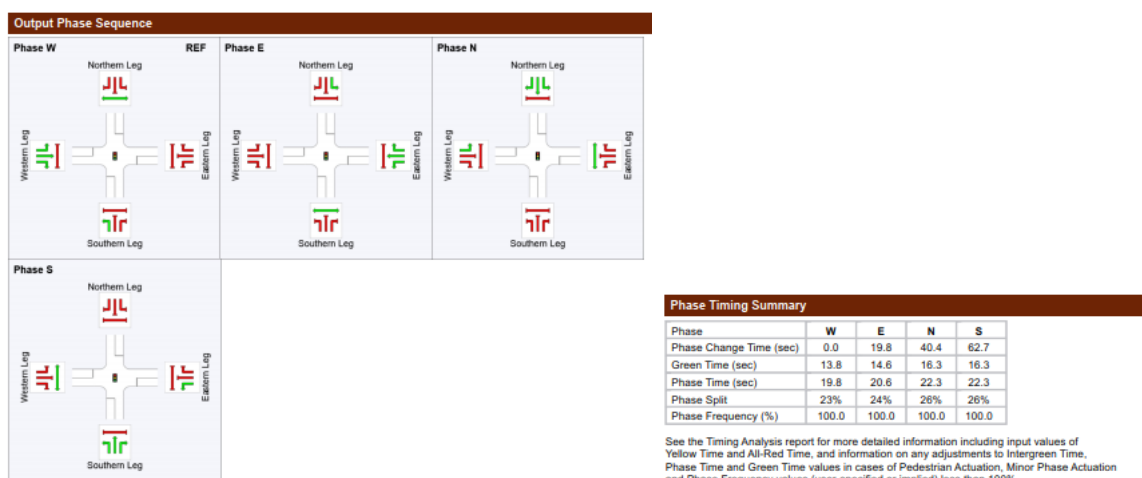


FIGURE 13: PHASING SEQUENCE AND TIMING

The intersection performance was found to be compliant with the EDQ and SCC requirements (**Figure 14**). Complete SIDRA Analysis results can be found in **Appendix A**.

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart
			[Total veh/h	[HV] %	[Total veh/h	[HV] %				[Veh. veh	[Dist] m			
South: Southern Leg														
1	L2	All MCs	111	6.0	111	6.0	0.621	30.0	LOS C	9.0	66.0	0.97	0.81	0.97
2	T1	All MCs	119	6.0	119	6.0	* 0.621	43.9	LOS D	9.0	66.0	0.97	0.81	0.97
3	R2	All MCs	134	6.0	134	6.0	0.388	38.9	LOS D	5.0	36.7	0.92	0.78	0.92
Approach			363	6.0	363	6.0	0.621	37.8	LOS D	9.0	66.0	0.95	0.80	0.95
East: Eastern Leg														
4	L2	All MCs	251	6.0	251	6.0	0.475	14.8	LOS B	4.9	35.8	0.84	1.08	0.84
5	T1	All MCs	197	6.0	197	6.0	0.475	33.9	LOS C	6.0	44.1	0.92	0.83	0.92
6	R2	All MCs	263	6.0	263	6.0	* 0.851	50.5	LOS D	12.2	90.2	1.00	0.99	1.29
Approach			711	6.0	711	6.0	0.851	33.3	LOS C	12.2	90.2	0.92	0.98	1.03
North: Northern Leg														
7	L2	All MCs	371	6.0	371	6.0	0.479	24.2	LOS C	11.0	81.1	0.76	0.80	0.76
8	T1	All MCs	177	6.0	177	6.0	0.492	34.0	LOS C	6.7	49.6	0.94	0.77	0.94
9	R2	All MCs	175	6.0	175	6.0	* 0.512	39.9	LOS D	6.7	49.4	0.94	0.80	0.94
Approach			722	6.0	722	6.0	0.512	30.4	LOS C	11.0	81.1	0.85	0.79	0.85
West: Western Leg														
10	L2	All MCs	108	6.0	108	6.0	0.309	11.6	LOS B	3.1	22.7	0.78	1.07	0.78
11	T1	All MCs	177	6.0	177	6.0	0.309	27.2	LOS C	3.6	26.4	0.86	0.88	0.86
12	R2	All MCs	180	6.0	180	6.0	* 0.615	43.0	LOS D	7.3	53.5	0.98	0.82	1.00
Approach			465	6.0	465	6.0	0.615	29.7	LOS C	7.3	53.5	0.89	0.90	0.89
All Vehicles			2261	6.0	2261	6.0	0.851	32.4	LOS C	12.2	90.2	0.90	0.87	0.93

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.
 Intersection and Approach LOS values are based on average delay for all vehicle movements.
 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 Green.
 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.
 * Critical Movement (Signal Timing)

FIGURE 14: INTERSECTION ANALYSIS RESULTS 2042 PM

5.1.2 Internal Road Network

A check against the Austroads warrants for turn treatments (AGTM6) was completed for the intersections of the internal roads with the North South Industrial Connector.

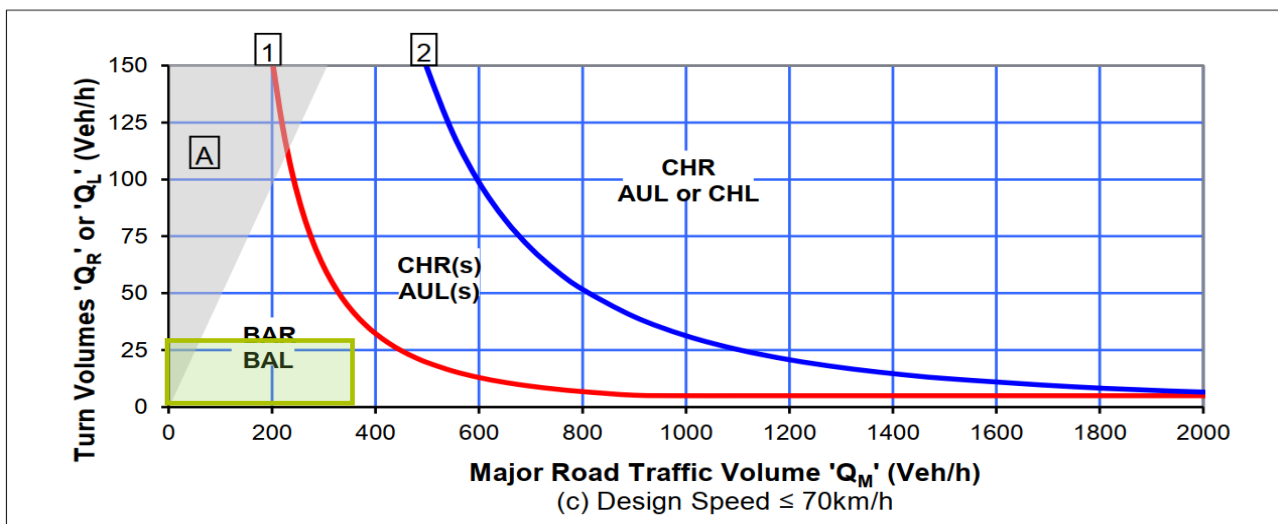
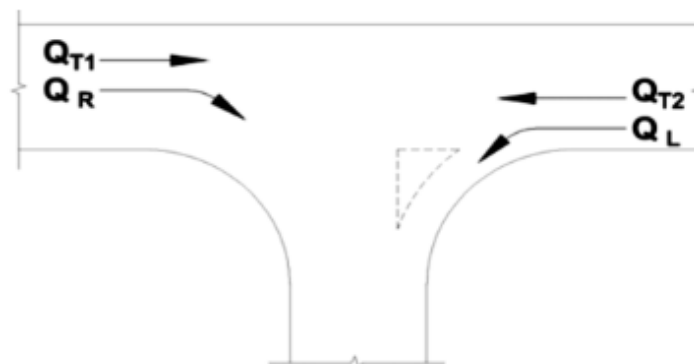


Figure 2.26: Calculation of the major road traffic volume Q_M



Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$
Four-lane two-way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 50\% \times Q_{T2}$
Six-lane two-way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$

Source: TMR (2016a).

FIGURE 15: TURNING TREATMENT WARRANTS

The results shown in **Table 7** and indicated by the green frame area in **Figure 15** above, indicate that there is no need to add turning treatments to the internal intersections. Turn movements for the development road network can also be seen in **Figure 11** above.

It must be noted that this is mainly due to the North South Industrial Connector not being connected to the north and in turn very limited to no right turns in are expected at these intersections. In the future, when the N/S Connector is completed, turning treatments at these intersections need to be reassessed.

TABLE 7: TURNING TREATMENT ASSESSMENT

Intersection 1			Intersection 2			Intersection 3	
Q_{T1}	285		Q_{T1}	208		Q_{T1}	104
Q_{T2}	76		Q_{T2}	54		Q_{T2}	27
Q_R	7		Q_R	0		Q_R	0
Q_L	5		Q_L	22		Q_L	27
Splitter?	No		Splitter?	No		Splitter?	No
Right turn Q_M	364.7		Right turn Q_M	284		Right turn Q_M	158.1
Left turn Q_M	75.63		Left turn Q_M	54.12		Left turn Q_M	27

5.2 Road Safety Impact Assessment and Mitigation

At this stage of the development only general guidance on road safety issues and mitigation can be provided.

5.2.1 Site Distance at Proposed Site Access

Implement 'No Standing Zones' to include the area within a minimum of 20m from a signalised intersection and 10m for an unsignalized intersection on each approach. However, a greater clearance distance is highly recommended due to the likelihood of larger trucks accessing the site which may require wide swept paths.

5.2.2 Public and Active Transport Mitigation Measures

- Provide footpaths throughout the precinct on at least one side of the road
- Installing signage to reinforce give way to pedestrian when entering or leaving a road
- Provision of pedestrian crossing infrastructure including refuge islands, marked pedestrian (zebra) crossings, and raised (wombat) pedestrian crossings where appropriate and subject to detailed design
- Ensure compliant kerb ramps with Warning and Directional Tactile Ground Surface Indicators are provided at all crossing points throughout the precinct

5.2.3 Road Design Measures

- Minimise turning radius where possible to reduce vehicle speeds (however wide enough to accommodate truck movements)
- Appropriate turning and U-turn radius needs to be provided for large vehicles (B-doubles)

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of Impacts and Mitigation Measures Proposed

The development's impact on the surrounding road network is summarised as follows:

- Intersection 87 under the proposed layout will perform within the EDQ and SCC requirements in the 2042 horizon year (10 years post development)
- In summary, and based on this traffic analysis, the proposed land use plan of Precinct 13 is supported from a transport and traffic perspective.

APPENDIX A

Intersection 87 SIDRA ANALYSIS 2042 PM

USER REPORT FOR SITE

Site User Report

 **Site: [121 (7)] Intersection 87 (2042 PM) - Scenario D** (Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

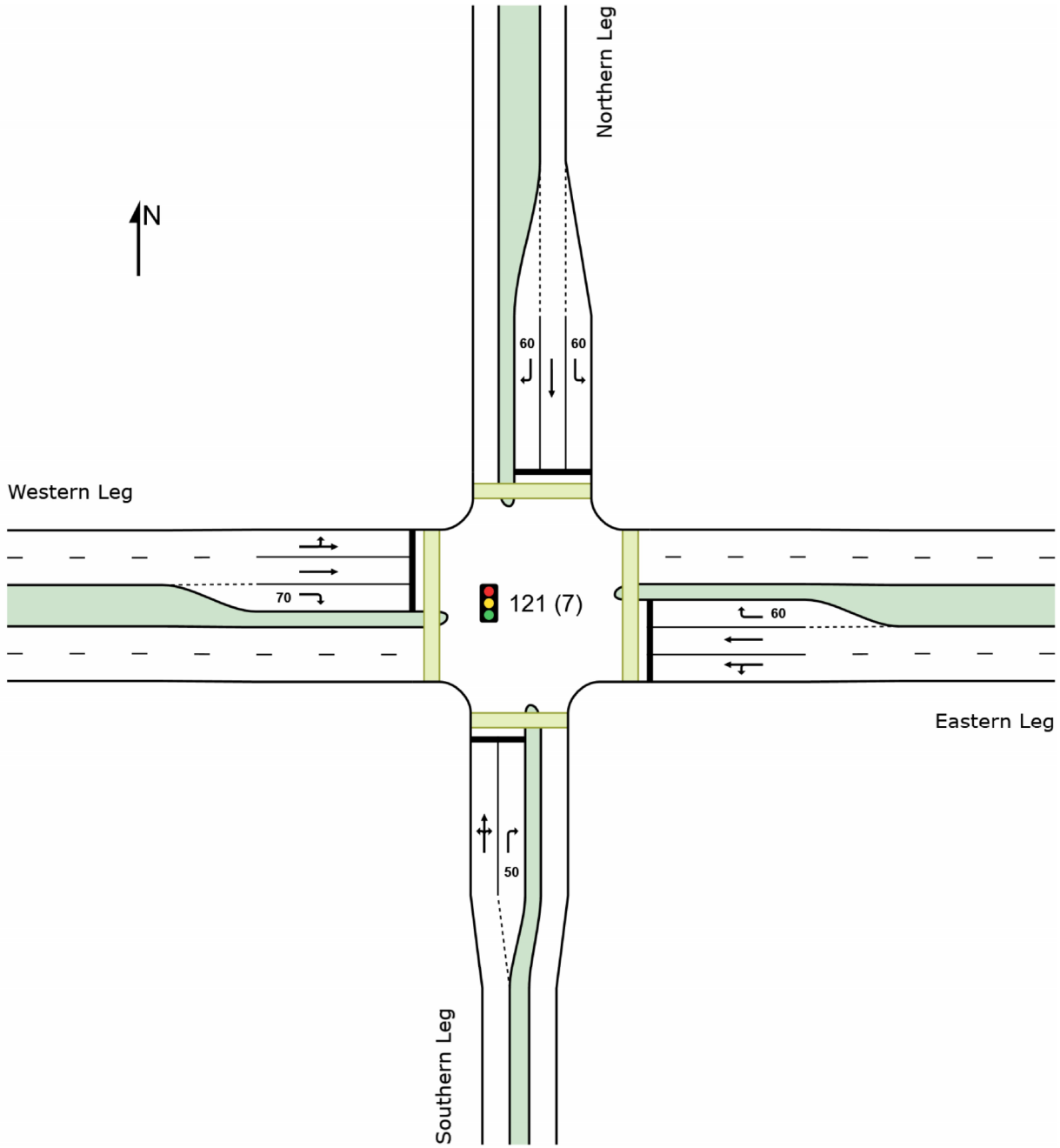
Intersection 87

Site Category: Future Conditions 1
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85.0 seconds (Site Optimum Cycle Time - Minimum Delay)
Site Scenario: 1 | Local Volumes

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Four-Phase Split Phasing
Input Phase Sequence: W, E, N, S
Output Phase Sequence: W, E, N, S
Reference Phase: Phase W

Site Layout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Southern Leg															
1	L2	All MCs	111	6.0	111	6.0	0.621	30.0	LOS C	9.0	66.0	0.97	0.81	0.97	29.7
2	T1	All MCs	119	6.0	119	6.0	* 0.621	43.9	LOS D	9.0	66.0	0.97	0.81	0.97	21.0
3	R2	All MCs	134	6.0	134	6.0	0.388	38.9	LOS D	5.0	36.7	0.92	0.78	0.92	19.7
Approach			363	6.0	363	6.0	0.621	37.8	LOS D	9.0	66.0	0.95	0.80	0.95	23.7
East: Eastern Leg															
4	L2	All MCs	251	6.0	251	6.0	0.475	14.8	LOS B	4.9	35.8	0.84	1.08	0.84	22.4
5	T1	All MCs	197	6.0	197	6.0	0.475	33.9	LOS C	6.0	44.1	0.92	0.83	0.92	33.1
6	R2	All MCs	263	6.0	263	6.0	* 0.851	50.5	LOS D	12.2	90.2	1.00	0.99	1.29	18.2
Approach			711	6.0	711	6.0	0.851	33.3	LOS C	12.2	90.2	0.92	0.98	1.03	23.9
North: Northern Leg															
7	L2	All MCs	371	6.0	371	6.0	0.479	24.2	LOS C	11.0	81.1	0.76	0.80	0.76	27.3
8	T1	All MCs	177	6.0	177	6.0	0.492	34.0	LOS C	6.7	49.6	0.94	0.77	0.94	22.4
9	R2	All MCs	175	6.0	175	6.0	* 0.512	39.9	LOS D	6.7	49.4	0.94	0.80	0.94	29.8
Approach			722	6.0	722	6.0	0.512	30.4	LOS C	11.0	81.1	0.85	0.79	0.85	27.1
West: Western Leg															
10	L2	All MCs	108	6.0	108	6.0	0.309	11.6	LOS B	3.1	22.7	0.78	1.07	0.78	29.1
11	T1	All MCs	177	6.0	177	6.0	0.309	27.2	LOS C	3.6	26.4	0.86	0.88	0.86	31.7
12	R2	All MCs	180	6.0	180	6.0	* 0.615	43.0	LOS D	7.3	53.5	0.98	0.82	1.00	27.7
Approach			465	6.0	465	6.0	0.615	29.7	LOS C	7.3	53.5	0.89	0.90	0.89	29.5
All Vehicles			2261	6.0	2261	6.0	0.851	32.4	LOS C	12.2	90.2	0.90	0.87	0.93	26.2

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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 Green.

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.

* Critical Movement (Signal Timing)

Lane Use and Performance															
	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %	
South: Southern Leg															
Lane 1	229	6.0	229	6.0	369	0.621	100	37.2	LOS D	9.0	66.0	Full	135	0.0	0.0
Lane 2	134	6.0	134	6.0	345	0.388	62 ⁵	38.9	LOS D	5.0	36.7	Short	50	0.0	NA
Approach	363	6.0	363	6.0		0.621		37.8	LOS D	9.0	66.0				
East: Eastern Leg															
Lane 1	292	6.0	292	6.0	615	0.475	100	16.8	LOS B	4.9	35.8	Full	185	0.0	0.0
Lane 2	155	6.0	155	6.0	326	0.475	100	35.3	LOS D	6.0	44.1	Full	185	0.0	0.0
Lane 3	263	6.0	263	6.0	309	0.851	100	50.5	LOS D	12.2	90.2	Short	60	0.0	NA
Approach	711	6.0	711	6.0		0.851		33.3	LOS C	12.2	90.2				
North: Northern Leg															
Lane 1	371	6.0	371	6.0	773	0.479	100	24.2	LOS C	11.0	81.1	Short	60	0.0	NA
Lane 2	177	6.0	177	6.0	360	0.492	100	34.0	LOS C	6.7	49.6	Full	180	0.0	0.0
Lane 3	175	6.0	175	6.0	341	0.512	100	39.9	LOS D	6.7	49.4	Short	60	0.0	NA
Approach	722	6.0	722	6.0		0.512		30.4	LOS C	11.0	81.1				
West: Western Leg															
Lane 1	190	6.0	190	6.0	615	0.309	100	14.5	LOS B	3.1	22.7	Full	500	0.0	0.0
Lane 2	95	6.0	95	6.0	308	0.309	100	34.8	LOS C	3.6	26.4	Full	500	0.0	0.0
Lane 3	180	6.0	180	6.0	292	0.615	100	43.0	LOS D	7.3	53.5	Short	70	0.0	NA
Approach	465	6.0	465	6.0		0.615		29.7	LOS C	7.3	53.5				
All Vehicles	2261	6.0	2261	6.0		0.851		32.4	LOS C	12.2	90.2				

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

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

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 Green.

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

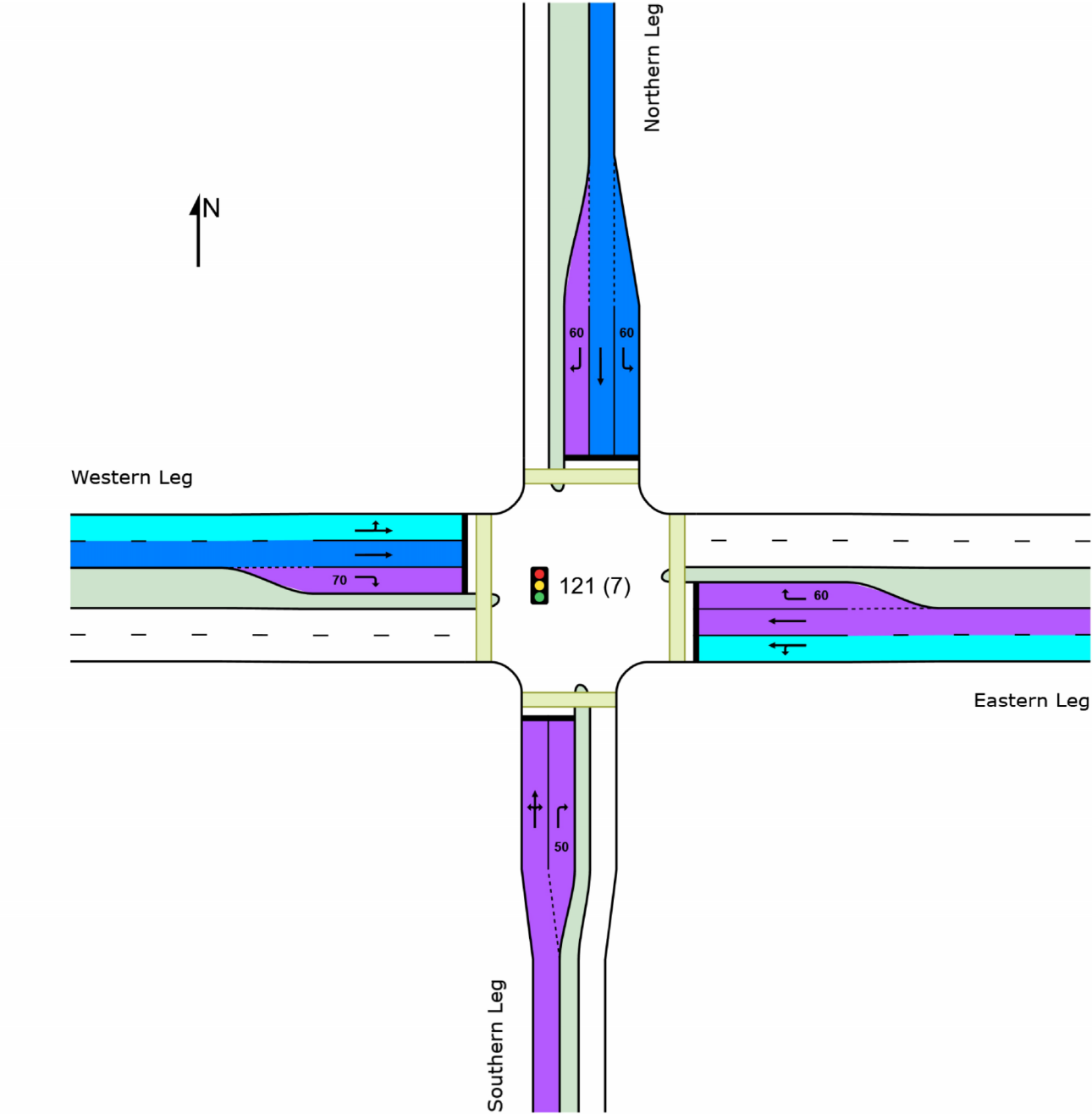
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

⁵ Lane under-utilisation found by the program

Level of Service

	Approaches				Intersection
	South	East	North	West	
LOS	D	C	C	C	C

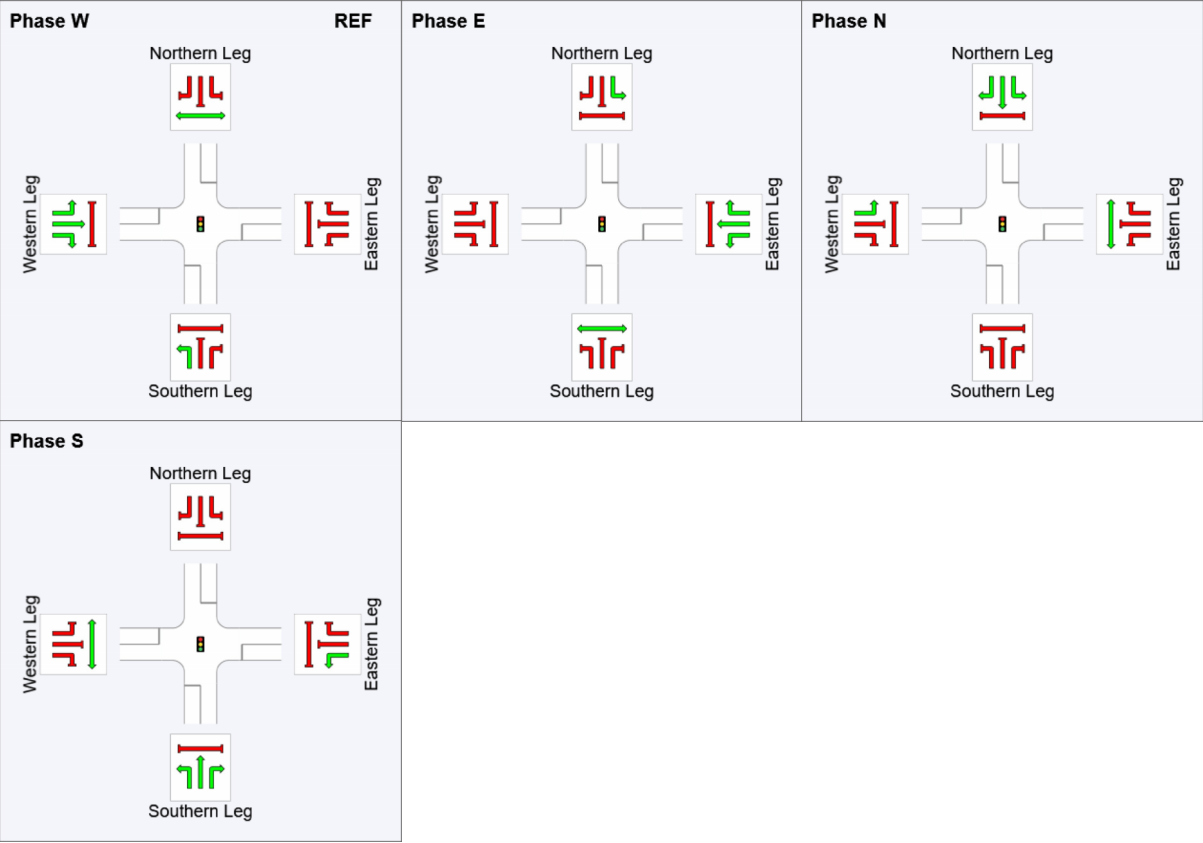


Colour code based on Level of Service

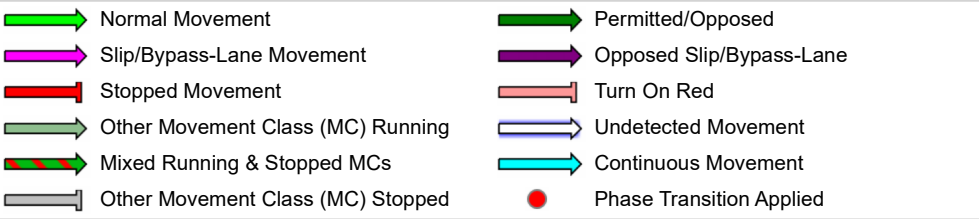


Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Phase Timing Summary

Phase	W	E	N	S
Phase Change Time (sec)	0.0	19.8	40.4	62.7
Green Time (sec)	13.8	14.6	16.3	16.3
Phase Time (sec)	19.8	20.6	22.3	22.3
Phase Split	23%	24%	26%	26%
Phase Frequency (%)	100.0	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

APPENDIX B

Road Typologies – Industrial Access (EDQ)

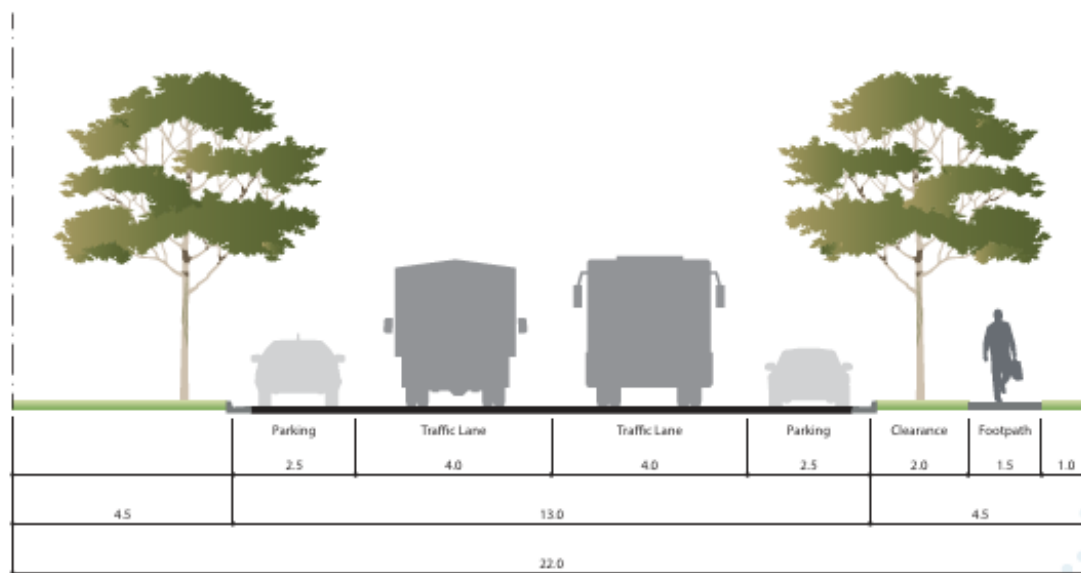


Industrial access street

Table 10 Industrial access street characteristics

Street type	Industrial Access Street (Fig 13)
Function	Industrial access streets provide direct access to properties. Parking lanes are to be provided on both sides to cater for employees and a footpath on one side of the street.
Traffic volume	< 3,000 vpd
Reservation	2.2 m
Median	No
Trafficable lanes	4.0 m in each direction
Parking	2.5 m parking lane both sides
Footpath	1.5 m minimum on one side
Bus route	No
Cycleway	No
Property access	Direct property access
Traffic calming	No
Kerb type	Upright
Posted speed	Default 50 km/h, unless signed otherwise
Intersection spacing	100 metres minimum

Figure 13: Demonstration example - industrial access street



APPENDIX C

Intersection 87 provided volumes (PWC)

Aura Precinct 11- 14 Traffic Modelling Refresh

Stockland

*Aura P11-14 Traffic
Modelling Report*

July 2020

pwc

Forecast turning volumes

Intersection	Approach	Movement	AM Peak				PM Peak			
			Volume	Aver. Delay	LOS	DOS	Volume	Aver. Delay	LOS	DOS
85	W	Left	0	--	--	--	0	--	--	--
85	W	Right	9	56.6	E	0.1	14	50.9	D	0.08
85	E	Through	224	15.9	B	0.22	118	13.7	B	0.11
85	E	Right	7	56	E	0.08	23	51.9	D	0.14
85	E	Left	0	--	--	--	0	--	--	--
85	N	Right	0	--	--	--	0	--	--	--
85	N	Left	31	46.3	D	0.14	26	49.1	D	0.14
85	N	Through	0	--	--	--	1	49.1	D	0
85	S	Left	20	53.4	D	0.15	8	57.1	E	0.1
85	S	Right	0	--	--	--	0	--	--	--
85	S	Through	1	53.4	D	0	1	57.1	E	0.01
86	N	Right	6	4.5	A	0.01	15	4.6	A	0.02
86	N	Left	24	3.7	A	0.02	46	3.9	A	0.04
86	W	Left	24	0	A	0	7	0	A	0
86	W	Through	23	0	A	0	17	0	A	0
86	E	Through	19	0	A	0	18	0	A	0
86	E	Right	36	2.5	A	0.02	29	2.4	A	0.02
87	N	Right	25	34.5	C	0.05	72	51.5	D	0.32
87	N	Through	24	48	D	0.09	73	65.5	E	0.25
87	N	Left	77	48	D	0.28	153	65.5	E	0.51
87	W	Left	65	46.1	D	0.14	38	25.8	C	0.05
87	W	Right	105	55.6	E	0.46	104	70.4	E	0.63
87	W	Through	236	46.1	D	0.5	226	25.8	C	0.3
87	S	Through	71	55.7	E	0.25	39	47.9	D	0.13
87	S	Left	102	55.7	E	0.36	80	47.9	D	0.27
87	S	Right	275	45.9	D	0.61	34	48.2	D	0.15
87	E	Right	157	67.9	E	0.7	70	59.4	E	0.42
87	E	Through	124	39.2	D	0.27	113	29.8	C	0.16
87	E	Left	59	39.2	D	0.13	255	29.8	C	0.37
88	S	Through	448	10.9	B	0.37	152	9	A	0.13
88	S	Right	40	64.7	E	0.38	21	60.9	E	0.24
88	S	Left	1	10.9	B	0	0	--	--	--
88	N	Through	180	8.8	A	0.15	430	11.3	B	0.36
88	N	Left	7	8.8	A	0.01	1	11.3	B	0
88	N	Right	0	--	--	--	0	--	--	--
88	E	Left	23	64.4	E	0.29	32	60.5	E	0.3
88	E	Right	0	--	--	--	0	--	--	--
88	E	Through	1	64.4	E	0.01	1	60.5	E	0.01
88	W	Right	0	--	--	--	1	54.7	D	0.01
88	W	Left	0	--	--	--	0	--	--	--
88	W	Through	1	54.4	D	0.01	1	54.7	D	0.01
89	N	Through	171	0	A	0	379	0	A	0

Stockland
PwC

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