APPENDIX B

TRANSPORT AND TRAFFIC ASSESSMENT

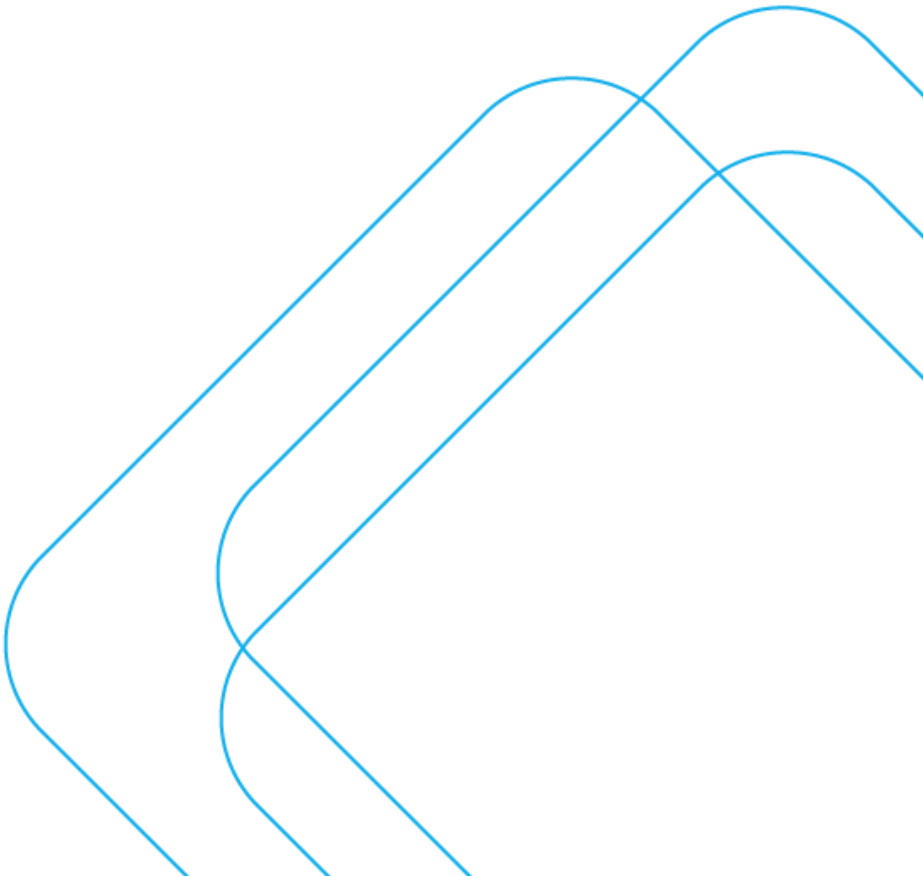
SCT Consulting

CHLORINE LIQUEFACTION PLANT - MODIFICATION TO STATE SIGNIFICANT DEVELOPMENT CONSENT

Transport and Traffic Assessment

24 MARCH 2025

SCT Consulting acknowledges
the traditional owners of the lands
on which we work.
We pay our respects to Elders
past, present and emerging.



Quality Assurance

Project:	Chlorine Liquefaction Plant - Modification to State Significant Development Consent		
Project Number:	SCT_00630		
Client:	Element Environment PTY. LTD.	**ABN:**	45 162 835 083
Prepared by:	SCT Consulting PTY. LTD. (SCT Consulting)	**ABN:**	53 612 624 058

Information	Name	Position	Signature
Author:	Anneli Clasie	Principal Consultant	
Reviewer:	Nick Bernard	Associate Director	
Authoriser:	Nick Bernard	Associate Director	

Version	Date	Details
1.0	20 September 2024	Draft report
2.0	8 November 2024	Final draft report
3.0	19 November 2024	Final report
4.0	24 March 2025	Updated final report

Contents

Appendices

1.0 Introduction

1.1 Background

IXOM Operations Pty Ltd (IXOM) proposes to construct and operate a new chlorine liquefaction plant, within IXOM's Botany Chlor-alkali Plant (CAP) in the Botany Industrial Park (BIP) in Banksmeadow, to provide the Australian liquefied chlorine market with redundancy if the chlorine liquefaction plant at Laverton, Victoria becomes non-operational. The site is in the Bayside Council Local Government Area (LGA), approximately 11 kilometres (km) south of Sydney Central Business District (CBD), as seen in **Figure 1-1**. The proposed chlorine liquefaction plant will have a maximum production capacity of 50 tonnes per day (tpd) but will normally operate at a reduced rate to supply liquefied chlorine in 13 tonne tankers to the NSW region, which is currently supplied from the Laverton plant in Victoria.

SCT Consulting was engaged by Element Environment to assess the likely traffic impacts on the surrounding road network associated with the proposed chlorine liquefaction plant. This transport and traffic impact assessment will assist the development application to NSW Department of Planning, Housing and Infrastructure (DPHI), for the modification of a State significant development (SSD) consent under Section 4.55(2) of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act).

Figure 1-1 Site context

1.2 The site

The site (Lot 1105 DP 1227173) is at 16-20 Beauchamp Road in Banksmeadow, in the Bayside Council LGA, as seen in **Figure 1-2**. The site is zoned IN1 General Industrial in the Botany Industrial Park (BIP) and covers about 67,500 m^2, including private internal two-way roads that it shares with other users of the BIP.

The site is bordered by a rail corridor to the west, Beauchamp Road to the south, Denison Street to the east and other users of the BIP to the north. Banksmeadow is bordered by the residential suburbs of Hillsdale and Matraville to the east, Botany and Pagewood to the west, Daceyville to the north and the industrial suburb of Port Botany to the south. The closest residents are in Hillsdale, on the eastern side of Denison Street.

Figure 1-2 The site location

1.3 Technical requirements

The technical requirements raised by DPHI, TfNSW and Council, and where in the report these have been addressed, are outlined in **Table 1-1**.

Table 1-1 Technical requirements raised by DPHI, TfNSW and Council

Requirements	Addressed in section
DPHI requirements	
Daily and peak traffic movements generated by the modification including the impact on nearby intersections and the need for any road upgrades to support the modification. Key intersections to be modelled include: – Beauchamp Road / Denison Street – Botany Road / Beauchamp Road – Wentworth Avenue / Denison Street – Beauchamp Road / Perry Street – Gate 1 Access / Beauchamp Road – Gate 3 Access / Denison Street (if proposed to be used for access)	Section 2.2 Section 3.3 Section 4.1
A base case and base case + development scenario to demonstrate the impacts on the road network in terms of safety and efficiency for both vehicles and pedestrians	Section 4.1
Details of proposed accesses and parking including compliance with relevant Australian Standards	Section 3.3 Section 3.4
Details of service vehicle movements and routes, including vehicle types, arrival and departure times, swept paths of the largest vehicles entering, manoeuvring and exiting the site and the key access gates	Section 3.1 Section 3.3 Section 3.4

Details of demolition and construction activities including vehicular routes, number of trucks, hours of construction, access arrangements and traffic control measures	Section 5.0
Details of measures to ensure drivers adhere to designated dangerous goods routes and do not use local roads.	Section 5.8
TfNSW requirements	
Daily and peak traffic movements likely to be generated by the proposed Chlorine Liquefaction Plant including the impact on nearby intersections and the need/associated funding for upgrading or road improvement works (if required). The key intersections to be examined / modelled include: – Beauchamp Road/Denison Street – Botany Road/Beauchamp Road – Wentworth Ave/Denison Street Gate 1 Access/Beauchamp Road and Gate 3 Access/Denison Street (if proposed to be used for access to the development).	Section 2.2 Section 3.3 Section 4.1
The assessment should include a base case and base + development scenario. Any transport and traffic impact assessment prepared as well as modelling undertaken should demonstrate that the intensification of the development would be of minimal impact to the classified road network in terms of safety and efficiency for both vehicles and pedestrians.	Section 4.1
Details of the proposed accesses and parking associated with the proposed development including compliance with the requirements of the relevant Australian Standards (i.e. turn paths, sight distance requirements, aisle widths, etc.)	Section 3.3 Section 3.4
Details of service vehicle movements (including vehicle type and likely arrival and departure times), as well as swept paths of the design vehicle entering and exiting the site at the key access Gates to the site.	Section 3.1 Section 3.3 Section 3.4
Preliminary details of demolition/construction activities, detailing vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures.	Section 5.0
The transport and traffic impact assessment should assess the implications of the proposed development for non- car travel modes (including public transport, walking and cycling) and the potential for implementing a location- specific sustainable travel plan (e.g. Green Travel Plan) to increase the non-car mode share for travel to and from the site (where practical).	Section 4.0 Section 5.0
Bayside Council requirements	
A Traffic Report shall be provided for the development in accordance with the RTA guide to traffic generating developments and Bayside Development Control Plan 2022 (BDCP 2022) Section 3.5.2. The traffic generation from the development and any impacts it has on the surrounding road network and intersections is to be assessed.	Section 2.2 Section 3.3 Section 4.1
The largest service vehicle (truck) proposed to access the development shall be clearly detailed as per AS2890.2:2018. Swept path analysis prepared by a suitably qualified engineer (in accordance with AS2890.2:2018) shall be submitted demonstrating sufficient area for vehicular manoeuvring, loading and satisfactory ingress/egress at the driveway access to the site. The routes service vehicles will use to access this site through the LGA shall be detailed.	Section 3.3 Section 3.4
Randwick Council requirements	
Please provide a Traffic Impact Assessment for the proposal that includes:	
Estimate of vehicle movements/day	Section 3.3
Details of days/times of these traffic movements	Section 3.3
Details of onsite capacity for trucks to park while waiting to access the loading point	Section 3.4 Section 3.5
Mechanism and measures to ensure drivers adhere to designated dangerous goods routes and do not use local roads	Section 5.8
An assessment of the development's traffic impacts on local traffic, especially at key nearby intersections i.e., Perry Street and Beauchamp Road and Denison and Beauchamp Roads.	Section 4.1

1.4 Report structure

This Traffic and Transport Assessment was prepared to assess the likely traffic impacts on the surrounding road network associated with constructing and operating a new chlorine liquefaction plant within the BIP in Banksmeadow.

This report contains the following sections:

- **Section 1.0 Introduction:** an overview of the purpose of the report and technical requirements for the report
- **Section 2.0 Existing conditions:** the existing transport context for the development
- **Section 3.0 The Proposal:** a description of the development proposal
- **Section 4.0 Transport and traffic Impact assessment:** details of the impacts of the development on the surrounding road network, for all modes of transport
- **Section 5.0 Construction activities:** a description of likely construction activities and associated traffic management and impact on the surrounding transport network
- **Section 6.0 Summary and conclusion:** summarises the key outcomes and the conclusion of the study.

2.0 Existing conditions

2.1 The site

The site (Lot 1105 DP 1227173) is at 16-20 Beauchamp Road in Banksmeadow, in the Bayside Council LGA, and is zoned IN1 General Industrial. It covers about 67,500 m^2, including private internal two-way roads that it shares with other users of the BIP. The site is flat and predominantly sealed with hardstand or surfaced with gravel, with a grassed area around the office building and the overflow car parking off Beauchamp Road, where there are also several exotic and native plantings.

2.1.1 Existing traffic generation

The site operates 24 hours a day, seven days a week for 350 days a year. There is an allowance of 15 days per year for planned and unplanned maintenance work, including scheduled plant shutdowns. The site employs approximately 45 people in total (16 of which are on a 24/7 shift roster). The site receives and dispatches heavy vehicles during normal operations and during salt delivery campaigns.

The site's actual (existing) traffic generation is below the truck movements approved in the original Environmental Impact Statement (EIS) for the site, as described in the following sections.

Approved traffic movements

The approved traffic movements for the site (as outlined in the EIS) are:

– A total of **76 truck movements per day** during normal operations, associated with plant operations for all materials and products.

– Approximately **1,000 truckloads (or 2,000 movements) per day** in total, during salt campaigns.

– A total of **100 light vehicle movements per day** associated with employees, contractors and visitors.

Actual (existing) traffic generation

The actual (existing) traffic movements for the site are:

– Truck movements during normal operations:

  - Current deliveries associated with chlorine deliveries to and from the site this year (between 1 January and 4 November) were 4,347 deliveries. Over this period of 309 days, this equates to **14 deliveries (or 28 truck movements)** per day.
  - Current deliveries associated with all other movements are 2,708 deliveries, which equates to **9 deliveries (or 18 truck movements)** per day.
  - In total, the site currently generates an average of **46 truck movements per day**, which is 30 truck movements below or about 60 per cent of the approved amount (of 76 truck movements).

– Approximately **1,000 truckloads (or 2,000 movements) per day** during salt campaigns.

– A total of **100 light vehicle movements per day** are associated with employees, contractors and visitors.

2.2 Road network

The site is bordered by a rail corridor to the west, Beauchamp Road to the south, Denison Street to the east and other users of the BIP to the north, and is accessed by the following State roads:

– From south – Botany Road, Beauchamp Road and Denison Street.

– From north – M1 Motorway, Wentworth Avenue and Denison Street.

All vehicles entering the site must operate on designated sealed internal roads only and must only travel to areas for which clearance has been granted from the appropriate control room. All employees and contractors entering the site must be authorised by the Operations Manager.

Employees must use the car parks provided external to the plant and all visitors must park outside of a security fence and report to reception. The BIP is accessible via main gates (1-3) on Beauchamp Road and Denison Street and Gate 4, which provides access from Corish Circle, but Gate 3 (Denison Street) is the main heavy vehicle access. Gate 5 is for emergency exit or entry.

2.2.1 Road hierarchy

The road network surrounding the site is shown in **Figure 2-1**. The characteristics of the key roads are:

– **Beauchamp Road** is a four-lane two-way undivided arterial road that runs in an east-west direction, extending from Bunnerong Road in the east and Botany Road in the south. It is the main road connecting the site to the surrounding arterial road network, via Bunnerong Road or Botany Road. The section of Beauchamp Road to the south-west of Denison Street is classified as a State road, while the section to the north-east of Denison Street is classified as a regional road. Beauchamp Road is signposted as a 50km/h speed zone with a 40km/h school zone between Flack Avenue and Bunnerong Road.

  In proximity to the site, the kerbside lane in each direction is designated as a parking lane, and footpaths are provided on both sides of the road. Access to the site is currently provided from Beauchamp Road, approximately 140m north of Perry Street.

– **Denison Street** is a four-lane two-way undivided State road linking Wentworth Avenue in the north to Beauchamp Road in the south. It is a sub-arterial road that provides inter-regional connectivity between the Pagewood, Matraville and Sydney Airport precincts with the Port Botany Precinct. As well as being a key access route to the site from the north, it is also a critical access route for the residential and heavy industry land uses adjacent to this road, including Qenos and Orica on the western side, and the Hillsdale precinct on the eastern side of the road.

  In proximity to the site, Denison Street contains a footpath along its eastern side. Denison Street is signposted as a 60km/h speed zone. Access to the site (via Gate 3) is currently provided from Denison Street, approximately 750m north of Beauchamp Road.

– **Perry Street** is an east-west local road south of the site, extending from Bunnerong Road in the east to Beauchamp Road in the west. The road commences as a divided road configuration at its eastern end, and then transitions to an undivided single carriageway road at the western end. Footpaths are provided on both sides of the road.

  Perry Street provides access to the residential and light industrial land uses either side of the road and has a signposted speed limit of 60km/h. Heavy vehicles weighing 3.5t or over are not permitted along Perry Street.

– **Botany Road** is a State road that commences from Bunnerong Road in the east and extends westward towards Botany Bay and is the key access route from the south to the site, via Beauchamp Road. Between Bunnerong Road and the Penrhyn Road / Foreshore Road intersection, the route has a six-lane divided road configuration. The section of Botany Road between Bunnerong Road and Penrhyn Road/ Foreshore Road is a critical access route for the existing two container terminals (DP World and Patricks), as well as the bulk liquid storage facilities and associated container / freight handling services, in the Port Botany Precinct

  The entire Botany Road – Foreshore Road route between Bunnerong Road and General Holmes Drive is signposted as a 70km/h speed zone.

– **Wentworth Avenue** is a two-way, two- to six-lane State road that runs in an east-west direction north of the site and extends from Bunnerong Road in the east to Botany Road in the west. It functions as an arterial road providing a regional link between Maroubra, Pagewood and Eastgardens at its eastern end, and Mascot, the Sydney Airport Precinct, and the Sydney Orbital road network at its western end.

  Wentworth Avenue is part of the access route from the north to the site and connects the site to the M1 north of the site, and to General Holmes Drive, as well as access to Southern Cross Drive for access to the northern and inner-city suburbs. The road is signposted as a 70km/h and 60km/h speed zone to the east and west of Dransfield Avenue respectively. Footpaths are provided on both sides of the route.

Figure 2-1 Road network

2.2.2 Intersection performance

To understand how the road network surrounding the site performs, AM and PM weekday traffic surveys were undertaken on Thursday 8 August 2024 at six key intersections surrounding the site (as shown in **Figure 2-2**). Based on the collected traffic volumes and signal data provided by TfNSW, analysis of the performance of these intersections was undertaken using SIDRA.

Figure 2-2 Analysed intersections surrounding the site

Intersection level of service definition

Intersection Level of Service (LoS) is a typical measure used by traffic engineers to identify when roads are congested. The Level of Service, as defined in TfNSW Traffic Modelling Guidelines, is provided in **Table 2-1**.

Table 2-1 Level of Service definitions

Level of Service	Average delay per vehicle	Performance explanation
A	Less than 14.5s	Good operation
B	14.5s to 28.4s	Good with acceptable delays and spare capacity
C	28.5s to 42.4s	Satisfactory
D	42.5s to 56.4s	Operating near capacity
E	56.5s to 70.4s	At capacity. At signals incidents will cause excessive delays. Roundabouts require another control method.
F	70.5s or greater	At capacity. At signals incidents will cause excessive delays. Roundabouts require another control method.

Source: Roads and Maritime Services (2002), Traffic Modelling Guidelines

In addition, the Degree of Saturation (DoS) is also used as a measure of performance to complement the LoS measure. The DoS is a measure of the volume/capacity for the worst turning movement at the intersection. A DoS of 1.0 implies the turning movement is at capacity.

Intersection performance results

The performance of the surrounding intersections is shown in **Table 2-2** and **Table 2-3**, with detailed results presented in **Appendix A**.

The modelling results indicate that all analysed intersections are currently operating at a good level of service during both AM and PM peak hours. The worst performing intersections are the Botany Road / Beauchamp Road and Wentworth Avenue / Denison Street intersections, with high degrees of saturation reported in the AM peak hour.

The reason for the high DoS at the Botany Road / Beauchamp Road intersection is that:

– The right turn from Botany Road east (with a volume of only 52 vehicles) operates at a LoS F and a DoS of 0.46

– Both the right turn and left turn movements from Beauchamp Road operate with a LoS F and a DoS of 0.96.

Signal priority is given to traffic on Botany Road and other traffic movements at the Botany Road / Beauchamp Road intersection are reported as operating at LoS A and minimal delays.

The reason for the high DoS at the Wentworth Avenue / Denison Street intersection is that the right turn from the western approach on Wentworth Avenue operates at a LoS F and a DoS of 0.95. All other traffic movements at the intersection are reported as operating at LoS D or better and with DoS less than 0.54.

The other four intersections operate with average delays less than 27 seconds, at LoS A or B, and with a DoS of less than 0.84 during both the AM and PM peak hours.

Because the existing traffic generation is 30 truck movements (or 60 per cent) per day less than what is approved in the EIS, the existing intersection performance is better than what it would be if the site was operating at its approved truck movement capacity.

Table 2-2 2024 Existing intersection performance (AM Peak hour)

Intersection	Volume (vph)	LoS	DoS	Delay (sec)
Beauchamp Road / Denison Street	1,776	B	0.77	14.8
Botany Road / Beauchamp Road	3,001	B	0.96	25.7
Wentworth Avenue / Denison Street	2,721	C	0.95	28.9
Beauchamp Road / Perry Street	1,953	B	0.77	16.8
Gate 1 Access / Beauchamp Road	1,526	B	0.38	0.2
Gate 3 Access / Denison Street	1,123	B	0.22	0.6

Note: Performance metrics of the worst-performing intersection movement are reported for priority-controlled intersections.

Table 2-3 2024 Existing intersection performance (PM Peak hour)

Intersection	Volume (vph)	LoS	DoS	Delay (sec)
Beauchamp Road / Denison Street	1,832	B	0.84	18.5
Botany Road / Beauchamp Road	2,978	B	0.88	26.1
Wentworth Avenue / Denison Street	3,028	B	0.90	26.9
Beauchamp Road / Perry Street	1,943	A	0.64	13.1
Gate 1 Access / Beauchamp Road	1,574	B	0.42	0.1
Gate 3 Access / Denison Street	1,132	B	0.25	0.8

Note: Performance metrics of the worst-performing intersection movement are reported for priority-controlled intersections.

2.3 Active transport

There are no formal cycle routes surrounding the site, as seen in **Figure 2-3**. Denison Street and McCauley Street (south of the site, off Perry Street) are however classified as 'general roads', which means bicycles can share the road space with motor vehicles (mixed traffic), buses (bus lane) or parked cars (parking lane).

There is a shared path along the southern side of Wentworth Avenue, which is part of the site's northern access route, which suggests cyclists may be present. Cycling is also permitted along the shoulders along the Southern Cross Drive north of the site and along Foreshore Road (west of Botany Road) south of the site.

Figure 2-3 Active transport network surrounding the site

Footpaths are provided along both sides of Beauchamp Street and along the eastern side of Denison Street in the vicinity of the site. Signalised pedestrian crossings are provided on all legs of the Beauchamp Street / Perry Street intersection and the western leg of the Beauchamp Street / Denison Street intersection.

The main pedestrian access to the administration building and reception on the site is from Beauchamp Road, which is separate to the main heavy vehicle entrance at Denison Street (Gate 3).

The footpaths along Beauchamp Road together with the signalised crossings provide good access to bus stops located on both sides of the road, near Perry Street and Denison Street respectively.

2.4 Public transport

In proximity to the site, buses run along Botany Road, Beauchamp Road, Wentworth Avenue, Southern Cross Drive, Bunnerong Road and Perry Street, as seen in **Figure 2-4**.

The nearest bus stops to the site are provided at Beauchamp Road, north of Perry Street, which provide access to route 309, which runs daily between Port Botany and Redfern. Footpaths and signalised pedestrian crossings are provided between the site and these bus stops.

Other routes in proximity to the site are route 392 (Little Bay to Redfern) along Bunnerong Road and route 350 (Sydney airport to Bondi Junction) along Wentworth Avenue.

Figure 2-4 Public transport network

2.5 Crash statistics

Crash data over five years between 2018 and 2022 (inclusive) was analysed to determine where crashes have occurred in the proximity to the site, as well as the severity of the crashes, as shown in **Figure 2-5**.

Over the period, a total of 16 crashes were reported along McPherson Street (west of Beauchamp Road), Beauchamp Road (between Botany Road and Denison Street) and Denison Street (between Beauchamp Road and Wentworth Avenue) in proximity to the site, including:

– Fatal: 0

– Serious injury: 7

– Minor/Other Injury: 2

– Moderate Injury: 3

– Non-casualty: 4

Of the 16 crashes in proximity to the site, one serious injury, one minor/other injury and four towaway crashes involved heavy vehicles, while none involved pedestrians.

The details of the 16 crashes in proximity to the site are further described in **Table 2-4**. As seen, one towaway crash occurred at the site entrance at Beauchamp Road when a vehicle emerged from the site driveway.

Although some crashes involving heavy vehicles have occurred in proximity to the site, there is no pattern to these crashes, and no clusters of heavy vehicle crashes were found in proximity to the site.

Figure 2-5 Crashes in proximity to the site (2018-2022 inclusive)

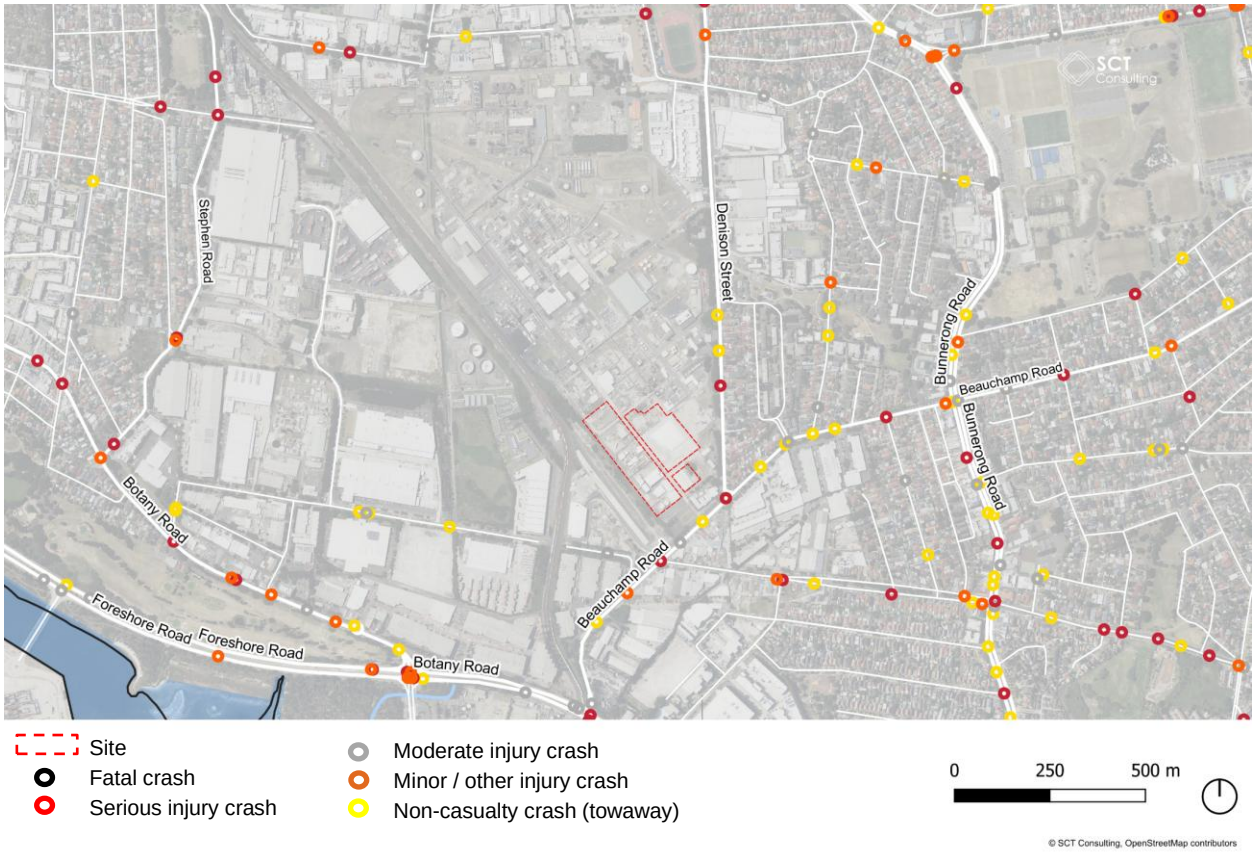


Table 2-4 Heavy vehicle crashes in proximity to the site

Crash location	Severity of crash	Vehicles involved	Type of crash
Botany Road / Beauchamp Road intersection	Serious injury	Large rigid truck B-double truck	Rear-end crash
Denison Street, south of Fraser Avenue	Minor / other injury	Light truck Semi-trailer	Head-on
Denison Street, south of Grace Campbell Crescent	Towaway	Car Semi-trailer	Head-on
Denison Street, south of Grace Campbell Crescent	Towaway	Light truck 4-wheel drive	Head-on, left turn side swipe (near site entrance)
Beauchamp Road, west of Denison Street	Towaway	Light truck Station wagon	Vehicle emerging from driveway (at site entrance)
Beauchamp Road, south of McPherson Street	Towaway	Light truck Car	Vehicle emerging from driveway

2.6 Heavy vehicle routes

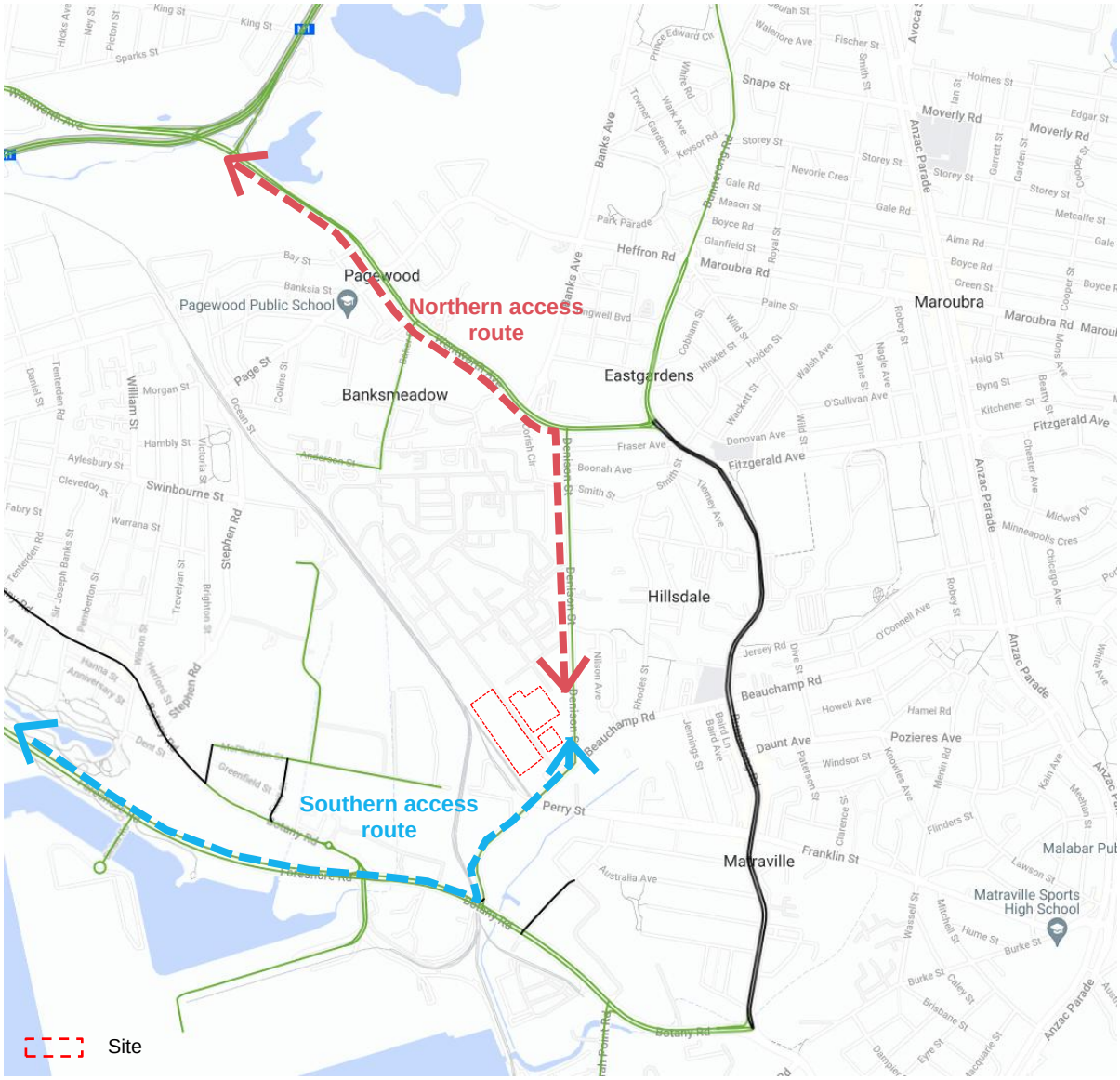
The site is accessed by the following State roads:

– From south – Botany Road, Beauchamp Road and Denison Street.

– From north – M1 Motorway, Wentworth Avenue and Denison Street.

As shown in **Figure 2-6**, the proposed heavy vehicle access routes to and from the site are all 25/26m B-double approved routes. There is however a 'restricted structure' restriction in place for 25/26 m and 23 m B-double routes, for the section of Botany Road, at the Beauchamp Road intersection, which runs over the railway. This restriction does not however apply to 19m B-doubles.

Figure 2-6 Approved 19m B-double routes



Source: Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) interactive map (TfNSW, 2024)

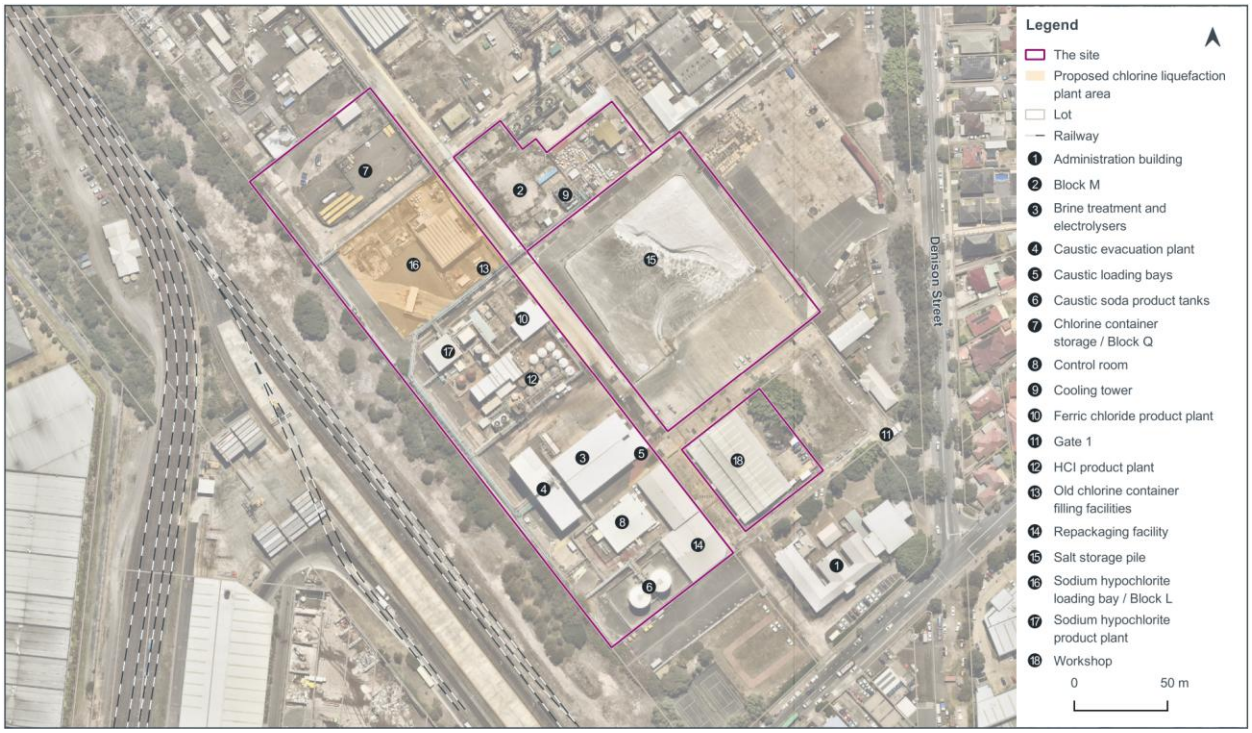
3.0 The Proposal

3.1 Proposed modification

IXOM proposes to construct and operate a new chlorine liquefaction plant (the proposal), within IXOM's Chlor-alkali Plant (CAP) in Banksmeadow, to provide the Australian liquefied chlorine market with redundancy if the chlorine liquefaction plant at Laverton, Victoria becomes non-operational.

The proposed chlorine liquefaction plant will have a maximum production capacity of 50 tpd but will normally operate at a reduced rate to supply liquefied chlorine in 13 tonne tankers to the NSW region. The part of the site that is proposed to be redeveloped is shown in **Figure 3-1**.

Figure 3-1 The proposed chlorine liquefaction plant area



Source: Botany Chlorine Liquefaction Plant Modification to State Significant Development Scoping Report (Element, 2024)

The proposal will be integrated into existing site operations with all chlorine material being sourced from existing CAP processes. The plant will provide redundancy if the existing chlorine liquefaction plant at Laverton becomes non-operational or is no longer able to meet market demands. During this unlikely scenario, the proposed plant would produce liquified chlorine as required to compensate for any loss of production volume at the Laverton liquefaction plant. During normal operation, the chlorine liquefaction plant will operate at a reduced rate to supply bulk liquefied chlorine throughout NSW.

Future chlorine deliveries from the site will be delivered in a purer form of chlorine and not ‘watered down’ into products that are currently being produced and delivered from the site. Therefore, any increase in chlorine deliveries from the site as part of the proposed modification would in fact act to reduce the number of truck movements generated.

Existing employees will occupy the building during tanker loading and carry out routine inspections and maintenance as required. No change to employment numbers is expected.

Heavy vehicles accessing the site will do so in the same way as current access route, as shown in **Figure 2-6**.

3.2 Hours of operation

The site **currently operates 24 hours a day, seven days a week for 350 days a year**. There is an allowance of 15 days per year for planned and unplanned maintenance work including scheduled plant shutdowns.

In the normal operating mode, operations will be required to produce liquefied chlorine from the control room. This work is likely to be absorbed and as such there should be **no change to employment** compared to the existing situation.

For the contingent scenario, where the Laverton Chlorine Liquefaction Plant may become non-operational for an extended period, employees could be mobilised from the Laverton plant. These employees would return to the Laverton plant once it became operational again.

3.3 Trip generation and site access

The likely number of trips generated by the proposal once operational are presented in the following sections. A discussion around likely construction activities and potential impacts are discussed further in **Section 5.0**. Because the site will generate a different number of trips depending on if the Laverton site is operational or not, two different trip generation scenarios have been presented:

– **Scenario 1**: Normal operations scenario – when the Laverton site is operational

– **Scenario 2**: Extreme case scenario – when the Laverton site is non-operational (absolute worst-case scenario). This also includes the Scenario 1 trips.

3.3.1 Scenario 1: Normal operations scenario

During normal operations (Scenario 1), the Laverton site will still be operational. For this scenario, there will be no change in staff numbers at the site with the implementation of the proposal. On average, **three 13t bulk liquid tankers per week** (spread across seven days) shall be filled with liquefied chlorine and dispatched from site. As a worst-case scenario, these three tankers would arrive, park in the Liquefaction Building awaiting to be filled, and leave in one day, which equates to **six two-way movements per day**. However, as presented in **Section 2.1**, the site's existing traffic generation is already 30 truck movements per day less than what is approved in the EIS. Therefore, even when adding the additional six two-way movements, the traffic generated by the proposed modification will still be less than the approved traffic movements. This is even when conservatively not considering the reduction in truck numbers due to chlorine being diverted into liquefaction rather than other products.

The number of trucks entering and leaving the site in the AM and PM peak hours would be driven by customer requirements / demand and the assumption that site had sufficient chlorine in the stock tank. It can be assumed that the transport company would send one truck at a time to be filled as opposed to all three being sent during the peak hour, as the trucks would have to be waiting onsite for the first tanker, and then the second tanker, to be filled. Therefore, the possibility of all trucks arriving during the same peak hour is very unlikely.

However, from a traffic impact perspective, and for modelling purposes, the absolute worst-case scenario would be if three trucks arrived and left within the same peak hour, so as a worst-case scenario, the following trip generation is assumed for Scenario 1:

– Three additional trucks would arrive within the AM and PM peak hours respectively, resulting in **six additional truck movements (in and out) per AM and PM peak hour**. It is assumed that two of these trucks would come from the north and one from the south, to access the site, and would enter the site via Gate 3 on Denison Street.

– No additional light vehicles will be generated.

3.3.2 Scenario 2: Laverton non-operational scenario

For the contingent case (Scenario 2), where Laverton is offline for an extended period, and all chlorine cylinders and drums will be dispatched from Botany, the following trips will be generated in addition to the Scenario 1 trips:

– Up to 31 bulk deliveries to Victoria customers per year. If assuming one delivery trip per week, and as a worst-case scenario one trip per peak hour, this would result in **two additional truck movements (in and out) per AM and PM respectively**.

– No flatbed trucks would arrive from Laverton (two fewer trucks per week). Assuming one of these would have arrived in the peak hour would result in **two fewer truck movements (in and out) per AM and PM peak hour**.

– Botany would also service Laverton container customers (105 to 140 trucks per year or three per week). This would result in an **additional six truck movements (in and out) per AM and PM peak hour**, assuming the three weekly trips would all arrive in the peak hours (as a worst-case scenario).

Based on the above, six additional trucks (Scenario 1 and Scenario 2 trucks combined) would arrive in the AM and PM peak hours respectively, resulting in **12 additional truck movements (in and out) per AM and PM peak hour**, and enter the site via Gate 3 on Denison Street. It is assumed that two of these trucks (from Scenario 1) would come from the north and four from the south, to access the site.

As described for Scenario 1, the site's existing traffic generation is already 30 truck movements per day less than what is approved in the EIS. Therefore, even when adding the additional 12 two-way movements, the traffic generated by the proposed modification will still be less than the approved traffic movements. This is the case even when conservatively not considering the reduction in truck numbers due to chlorine being diverted into liquefaction rather than other products.

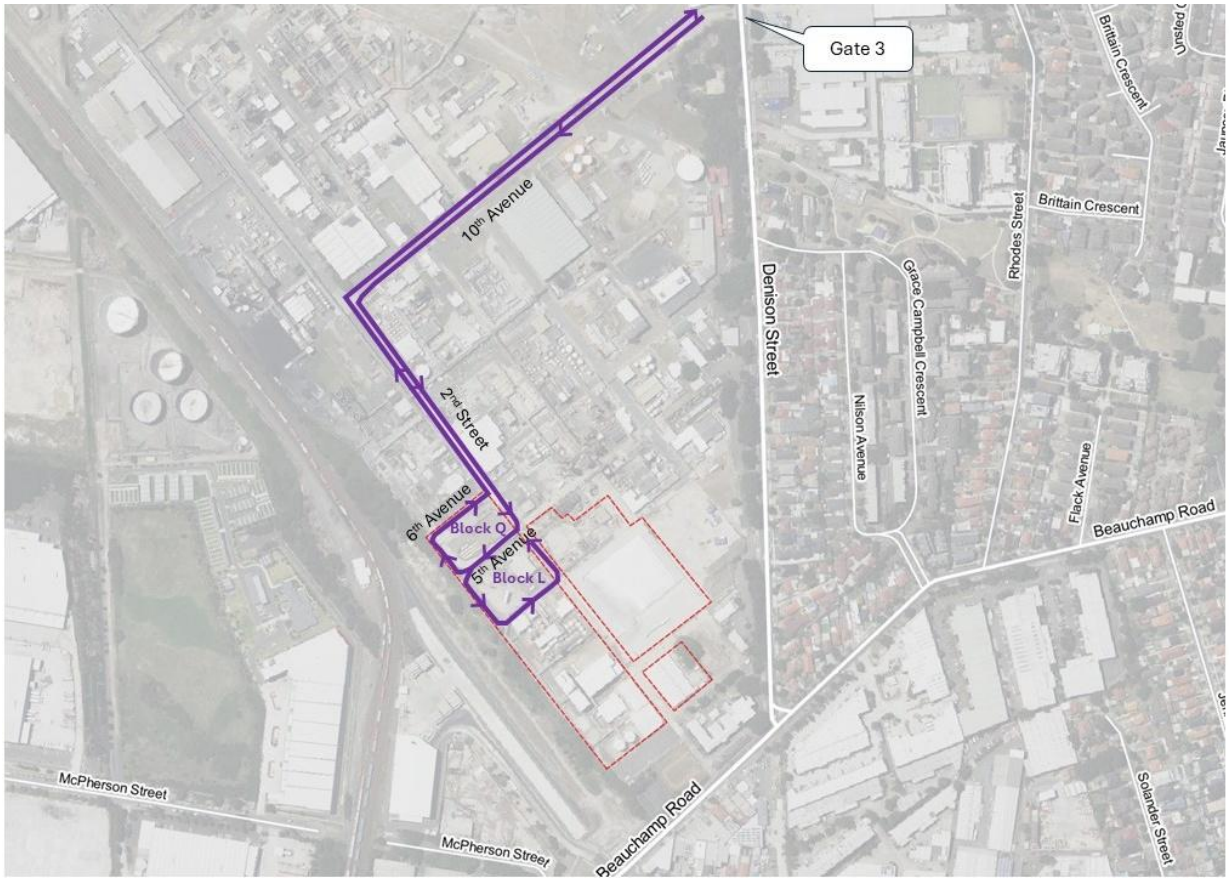
For Scenario 2, approximately 10-11 staff would also relocate and fly up from Laverton to the Botany site, resulting in additional light vehicle movements accessing the site via the Beauchamp Road entrance (where they will park). It is assumed that these employees would stay in nearby hotels, or in shared temporary accommodation, and arrive at the site in shared vehicles. If assuming that, on average, five employees would share a van, an additional **two light vehicles** would arrive at the site in the AM peak hour and leave in the PM peak hour. These vehicles will arrive at the site with the same distribution (from the north or south) as the existing traffic volumes' arrival patterns, and park at the site off Beauchamp Road.

3.4 Swept path analysis

Swept path analysis was undertaken to determine if a 13-tonne tanker would be able to enter and exit the site from Denison Street, internally drive via 10th Avenue, 2nd Street and 5th Avenue in a clock-wise circulation around Block Q, or a counter-clockwise circulation around Block L, and then exit the site via Gate 3, as seen in **Figure 3-2**.

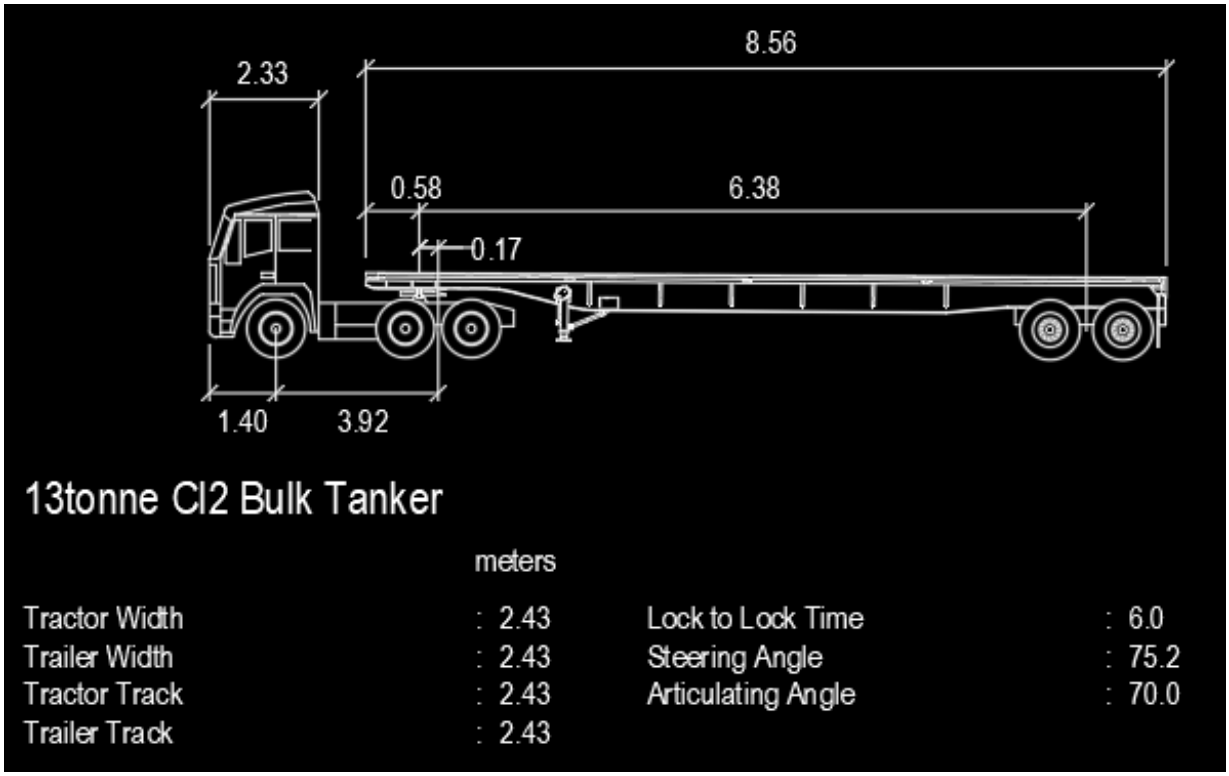
Trucks for both chlorine and hypochlorite loading will access and exit the site this way. The dimensions of the analysed 13-tonne tanker are shown in **Figure 3-3**, and the swept path analysis is provided in **Appendix B**. As seen, there will be sufficient internal and external space for heavy vehicles to enter the site, drive through Block Q / L, and exit the site.

Figure 3-2 Access routes to and from the site



Source: SCT Consulting, with input from Element, 2024

Figure 3-3 Dimensions of a 13tonne tanker to access the site



Source: Element, 2024

3.5 Car parking

For Scenario 1, there will be no additional staff because of the proposal, so no additional car parking will be needed. Staff already working at the site are expected to keep parking the same way as they currently do, by using the employee car parks provided externally to the site.

For Scenario 2, the staff from the Laverton site temporarily working at the Botany site, are expected to park at the car park off Beauchamp Road south of the site.

Visitor parking is provided outside the site security fence. All visitors must report to reception.

As per current practice, contractors bringing vehicles into the plant area for authorised activities must endeavour to park their vehicles, so they do not impede traffic flow or create other hazards.

4.0 Transport and traffic impact assessment

4.1 Road network impact

As described in **Section 3.3**, the likely number of trips generated by the proposal once operational are:

– **Scenario 1**: Normal operations scenario – when the Laverton site is operational

- Three additional trucks would arrive within the AM and PM peak hours respectively (as a worst-case scenario), resulting in **six additional truck movements (in and out) per AM and PM peak hour**.
- No additional light vehicles will be generated.

– **Scenario 2**: Extreme case scenario – when the Laverton site is non-operational (absolute worst-case scenario). This also includes the Scenario 1 trips.

- Six additional trucks would arrive in the AM and PM peak hours, resulting in **12 additional truck movements (in and out) per AM and PM peak hour (including trucks from Scenario 1)**.
- **Two light vehicles** will arrive at the site in the AM peak hour and leave the site in the PM peak hour.

SIDRA analysis of the impact on intersection performance was undertaken as presented in **Table 4-1** and **Table 4-2**, with detailed results presented in **Appendix C**.

Table 4-1 2024 intersection performance (AM Peak Hour)

Intersection	Volume (vph)	LoS	DoS	Delay (sec)
Existing scenario				
Beauchamp Road / Denison Street	1,776	B	0.77	14.8
Botany Road / Beauchamp Road	3,001	B	0.96	25.7
Wentworth Avenue / Denison Street	2,721	C	0.95	28.9
Beauchamp Road / Perry Street	1,953	B	0.77	16.8
Gate 1 Access / Beauchamp Road	1,526	B	0.38	0.2
Gate 3 Access / Denison Street	1,123	B	0.22	0.6
Scenario 1: Normal operations				
Beauchamp Road / Denison Street	1,778	B	0.78 (+0.01)	14.9 (+0.1s)
Botany Road / Beauchamp Road	3,003	B	0.97 (+0.01)	25.9 (+0.2s)
Wentworth Avenue / Denison Street	2,725	C	0.96 (+0.01)	30.8 (+1.9s)
Beauchamp Road / Perry Street	1,955	B	0.77 (-)	16.8 (-)
Gate 1 Access / Beauchamp Road	1,528	B	0.39 (+0.01)	0.2 (-)
Gate 3 Access / Denison Street	1,129	B	0.22 (-)	0.8 (+0.2s)
Scenario 2: Laverton site non-operational				
Beauchamp Road / Denison Street	1,785	B	0.79 (+0.02)	15.1 (+0.3s)
Botany Road / Beauchamp Road	3,011	B	0.97 (+0.01)	26.6 (+0.9s)
Wentworth Avenue / Denison Street	2,726	C	0.97 (+0.02)	31.0 (+2.1s)
Beauchamp Road / Perry Street	1,962	B	0.77 (-)	16.7 (-0.1s)
Gate 1 Access / Beauchamp Road	1,533	B	0.41 (+0.03)	0.2 (-)
Gate 3 Access / Denison Street	1,135	B	0.22 (-)	0.8 (+0.2s)

Note: Performance metrics of the worst-performing intersection movement are reported for priority-controlled intersections. Numbers in brackets illustrate the change from the Existing scenario.

Table 4-2 2024 intersection performance (PM Peak Hour)

Intersection	Volume (vph)	LoS	DoS	Delay (sec)
Existing scenario				
Beauchamp Road / Denison Street	1,832	B	0.84	18.5
Botany Road / Beauchamp Road	2,978	B	0.88	26.1
Wentworth Avenue / Denison Street	3,028	B	0.90	26.9
Beauchamp Road / Perry Street	1,943	A	0.64	13.1
Gate 1 Access / Beauchamp Road	1,574	B	0.42	0.1
Gate 3 Access / Denison Street	1,132	B	0.25	0.8
Scenario 1: Normal operations				
Beauchamp Road / Denison Street	1,834	B	0.85 (+0.01)	18.7 (+0.2s)
Botany Road / Beauchamp Road	2,980	B	0.88 (-)	26.2 (+0.1s)
Wentworth Avenue / Denison Street	3,033	B	0.91 (+0.01)	27.2 (+0.3s)
Beauchamp Road / Perry Street	1,945	A	0.64 (-)	13.1 (-)
Gate 1 Access / Beauchamp Road	1,576	B	0.42 (-)	0.1 (-)
Gate 3 Access / Denison Street	1,138	B	0.25 (-)	1.0 (+0.2s)
Scenario 2: Laverton site non-operational				
Beauchamp Road / Denison Street	1,841	B	0.87 (+0.03)	19.5 (+1.0s)
Botany Road / Beauchamp Road	2,987	B	0.89 (+0.01)	26.5 (+0.4s)
Wentworth Avenue / Denison Street	3,034	B	0.91 (+0.01)	28.1 (+1.2s)
Beauchamp Road / Perry Street	1,953	A	0.65 (+0.01)	13.2 (+0.1s)
Gate 1 Access / Beauchamp Road	1,584	B	0.42 (-)	0.1 (-)
Gate 3 Access / Denison Street	1,145	B	0.25 (-)	1.2 (+0.4s)

Note: Performance metrics of the worst-performing intersection movement are reported for priority-controlled intersections. Numbers in brackets illustrate the change from the Existing scenario.

Due to the low number of additional trucks generated by the site, the SIDRA analysis shows that the impact of **Scenario 1** on the surrounding intersections is minimal. The impact on the worst-performing (in the base) intersections of Wentworth Avenue / Denison Street and Botany Road / Beauchamp Road in the AM peak hour, is minimal with a slight (0.01) increase in DoS and less than 1s increase in average delay, for both intersections.

For **Scenario 2**, the impact on the analysed intersections is slightly higher than for Scenario 1. However, the impact is still minor, especially considering that Scenario 2 is only an unlikely scenario, which will only happen in the rare case that the Laverton site is non-operational.

As described in **Section 3.3**, the existing traffic generation is 30 truck movements per day less than what is approved in the EIS. Therefore, even when adding the additional six (Scenario 1) or 12 (Scenario 2) two-way truck movements, the traffic generated by the proposed modification will still be less than the approved traffic movements. This is the case even when conservatively not considering the reduction in truck numbers due to chlorine being diverted into liquefaction rather than other products. Therefore, the above impact on intersection performance is a conservative testing scenario.

Due to the minimal impact of the proposal, no infrastructure upgrades will be required for the analysed intersections, because of the proposal.

4.2 On-street parking impact

For Scenario 1 (normal operations), there will be no additional staff, and staff already working at the site are expected to keep parking the same way as they currently do, by using the employee car parks provided externally to the site.

For Scenario 2 (when the Laverton site is non-operational), the staff from the Laverton site temporarily working at the Botany site, are expected to park at the car park off Beauchamp Road south of the site.

The impact on public parking surrounding the site is expected to be negligible.

4.3 Active transport network impact

For Scenario 1 (normal operations), the proposal does not involve an increase in staff numbers, and it is expected that all vehicles generated by the site will be heavy vehicles. Therefore, Scenario 1 would not have an impact on the active transport network or pedestrian or cycling activity.

For Scenario 2 (when the Laverton site is non-operational), an additional 10-11 staff will be generated by the site. It is however expected that these additional patrons will access the site by sharing a van, park off the Beauchamp Road site access and follow the same procedures to access the site as the existing site staff. The additional 10-11 staff are not expected to have a significant impact on the surrounding active transport road network.

4.4 Public transport network impact

For Scenario 1 (normal operations), the proposal does not involve an increase in staff numbers, and it is expected that all vehicles generated by the site will be heavy vehicles, so there will be no increase in public transport patrons because of the proposal.

For Scenario 2 (when the Laverton site is non-operational), it has been assumed that the additional 10-11 staff will arrive at the site by a shared van, and not public transport. However, the public transport network is expected to be able to cater for the additional small number of site staff if they all were to arrive to the site via public transport.

As presented in **Section 4.1**, the additional heavy vehicles generated by the site will have a minimal impact on the surrounding road network and is therefore also expected not to impact bus operations.

5.0 Construction activities

5.1 Introduction

The proposal will involve the construction of a new chlorine liquefaction plant including associated plant and equipment. This will necessitate the re-location of the existing hypochlorite loading bay from Block L to Block Q, and the construction of the chlorine liquefaction plant on Block L.

5.2 Construction activities

The construction stage will comprise:

– Block Q:
  - Works to prepare Block Q for relocation of the sodium hypochlorite loading bay, comprising removal of surface material and paving the access driveway and hardstand.
  - Dismantling the Sodium hypochlorite loading bay on Block L and relocating to/assembly on Block Q.

– Block L:
  - Earthworks on Block L to remove existing surface material, level the block, excavate building footings and install services.
  - Paving external hardstand areas and pouring the reinforced concrete building floor.
  - Erection of the steel girt frame and portal frame roof.
  - Cladding of external walls and installation of roof sheeting.
  - Installation of internal componentry.
  - Commissioning and testing.

5.3 Program and working hours

It will take approximately 12 months to construct the proposal. The proposal will be constructed during standard construction hours:

– Monday-Friday: 7am-6pm.

– Saturday: 8am-1pm.

– Sunday and public holidays: no construction.

5.4 Construction traffic

It is assumed that construction vehicles entering and leaving the site would do so via the operational heavy vehicle routes, and enter the site via Denison Street, as shown in **Figure 5-1**.

Construction equipment will likely comprise:

– Excavator including rock hammer

– Front end loader, backhoe and/or skid steer loader

– Roller

– Forklift

– Franna crane

– Concrete agitator

– Generator

– Site truck

– Delivery and dump trucks.

For this scale of the proposed demolition, it is not expected significant number of heavy vehicles would be generated. Further estimation of detailed heavy vehicle traffic volumes will be provided in the Construction Environmental Management Plan (CEMP) to be prepared prior to the construction works.

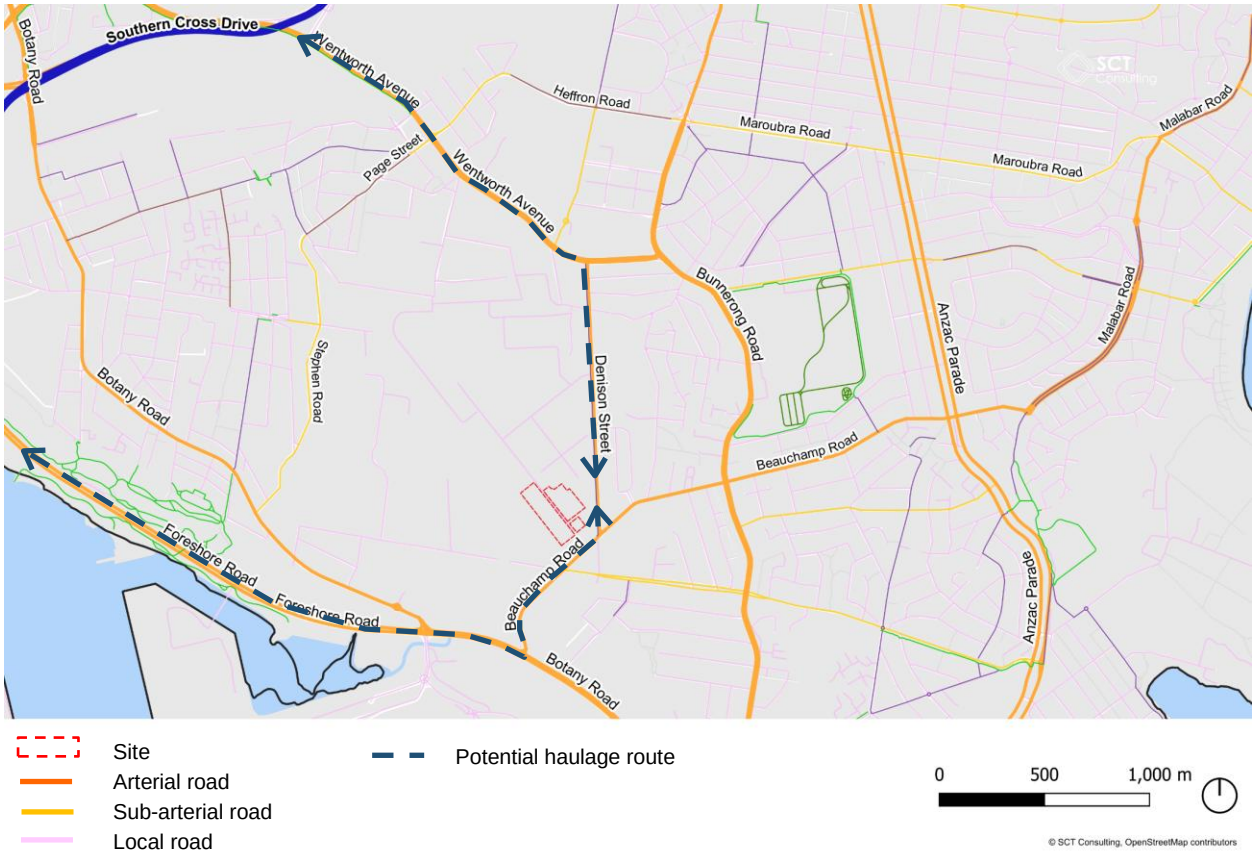
It is estimated that there would be up to 20 construction personnel on site at any one time. If all employees arrive and leave the site in the AM and PM peak hour respectively, as a worst-case scenario, 20 light vehicles per hour would be generated (if each employee arrives in one car). However, given the proximity to some bus routes, some construction workers are expected to arrive on-site via public transport.

Because the site is already frequently accessed by heavy vehicles, and the fact that the number of construction vehicles is expected to be relatively minor, the additional impact on the surrounding road network during the construction period is expected to be minor.

5.5 Construction vehicle haulage routes

Construction vehicles accessing the site are likely to do so via the same access routes currently used by heavy vehicles, as seen in **Figure 5-1**. There are also approved dangerous goods routes that drivers would adhere to, if required.

Figure 5-1 Potential haulage routes during construction



5.6 Construction parking impacts

Construction workers are expected to use the existing employee car parks provided externally to the site. On back-shifts, for increased security, employees (with approved vehicles) may enter the Site at Gate 3 and park in designated areas.

Because there are designated parking areas for vehicles already associated with the site, the impact on public on-street parking surrounding the site is expected to be negligible.

5.7 Pedestrian and cyclist access impacts

Because the site is already frequently accessed by heavy vehicles, the construction activities is not expected to have a significant additional impact on the active transport network surrounding the site.

To manage pedestrian and cyclist traffic, traffic controllers should be used if required, and heavy vehicle drivers should give way to pedestrians and cyclists.

5.8 Mitigation of impacts

The impact on the surrounding road network during the construction period is expected to be minor and is expected to be managed as follows:

– Truckloads would be covered during transportation off-site

– All activities, including the delivery of materials, would not impede traffic flow along local roads

– Materials would be delivered, and spoil removed during standard construction hours

– Avoidance of idling trucks alongside sensitive receivers

– Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at the site at any one time

– The community should be notified of major concrete pour days when heavy vehicle traffic is expected to be higher

– Timing of truck arrivals should be managed to avoid the peak school pick up and drop off times.

To manage drivers' conduct, the following measures are to be implemented:

– All truck movements will be scheduled.

– Vehicles are to enter and exit the site in a forward direction along the travel path shown on delivery maps.

– Drivers are to always give way to pedestrians

– Drivers to adhere to designated dangerous goods routes and not to use local roads.

When required during construction, Road Occupancy Licenses will be requested from the relevant road authority.

The CEMP will include overall traffic management of the site during the construction phase, including provision for vehicular and pedestrian access, parking for construction vehicles and appropriate wayfinding. The vehicular movements and expected routes to and from the site will also be further quantified and defined.

6.0 Summary and conclusion

In summary:

- IXOM proposes to construct and operate a new chlorine liquefaction plant (the proposal), within IXOM's Chlor-alkali Plant in Banksmeadow, to provide the Australian liquefied chlorine market with redundancy if the chlorine liquefaction plant at Laverton, Victoria becomes non-operational.
- The trucks generated by the proposal will use 19m B-double approved routes to access and leave the site.
- The site's actual (existing) traffic generation is below the truck movements approved in the original EIS. The site currently generates an average of **46 truck movements per day**, which is 30 truck movements below the approved amount of 76 truck movements.
- Analysis of crashes from 2018 to 2022 (inclusive) showed that six crashes involved heavy vehicles. However, no crash pattern was noted, and no clusters of heavy vehicle crashes were found in proximity to the site.
- Two scenarios were assessed for trip generation purposes:
    - Scenario 1: Normal operations scenario – when the Laverton site is operational
        - Three additional trucks would arrive within the AM and PM peak hours respectively (as a worst-case scenario), resulting in **six additional truck movements (in and out) per AM and PM peak hour**.
        - No additional light vehicles will be generated.
    - Scenario 2: Extreme case scenario – when the Laverton site is non-operational (absolute worst-case scenario).
        - Six additional trucks (Scenarios 1 and 2 trucks combined) would arrive in the AM and PM peak hours respectively, resulting in **12 additional truck movements** (in and out) per AM and PM peak hour.
        - **Two light vehicles** will arrive at the site in the AM peak hour and leave the site in the PM peak hour.
- Even when adding the additional six (Scenario 1) or 12 (Scenario 2) two-way truck movements, the traffic generated by the proposed modification will still be less than the approved traffic movements (since the site currently generates 30 movements less than approved limits). However, the impact of the additional traffic has been tested as a conservative scenario.
- SIDRA modelling indicates that all analysed intersections are currently operate at a good level of service during both AM and PM peak hours. The worst performing intersections are the Wentworth Avenue / Denison Street intersection and the Botany Road / Beauchamp Road intersection in the AM peak hour.
- SIDRA modelling showed that, under both scenarios, the proposal is likely to have minimal impact on traffic operations and road performance during the traffic peak hours. No infrastructure upgrades will be required because of the proposal.
- The swept path analysis showed that there will be sufficient internal and external space for heavy vehicles to enter the site, drive through Block Q / L, and exit the site.
- For Scenario 1, there will be no additional staff, and staff already working at the site are expected to keep parking the same way as they currently do, by using the employee car parks provided externally to the site. For Scenario 2, the staff from the Laverton site temporarily working at the Botany site, are expected to park at the car park off Beauchamp Road south of the site. The impact on public parking surrounding the site is therefore expected to be negligible.
- There is no forecast impact on public transport and active transport networks. For Scenario 2, the additional 10-11 staff that are expected to access the site in two shared vehicles, would park at the Beauchamp Road site access and follow the same procedures to access the site as the existing site staff. The public transport network would be able to cater for the additional patrons if they all were to arrive to the site via public transport.
- Construction traffic impacts are expected to be minimal. A Construction Environmental Management Plan will be prepared for the proposal and will include proposed access routes, along with any management protocols or controls required to minimise potential impact of construction traffic on the road network, prior to construction commencing.

The assessment confirms that the proposal would not have a significant impact on the surrounding traffic and transport network.

APPENDIX A

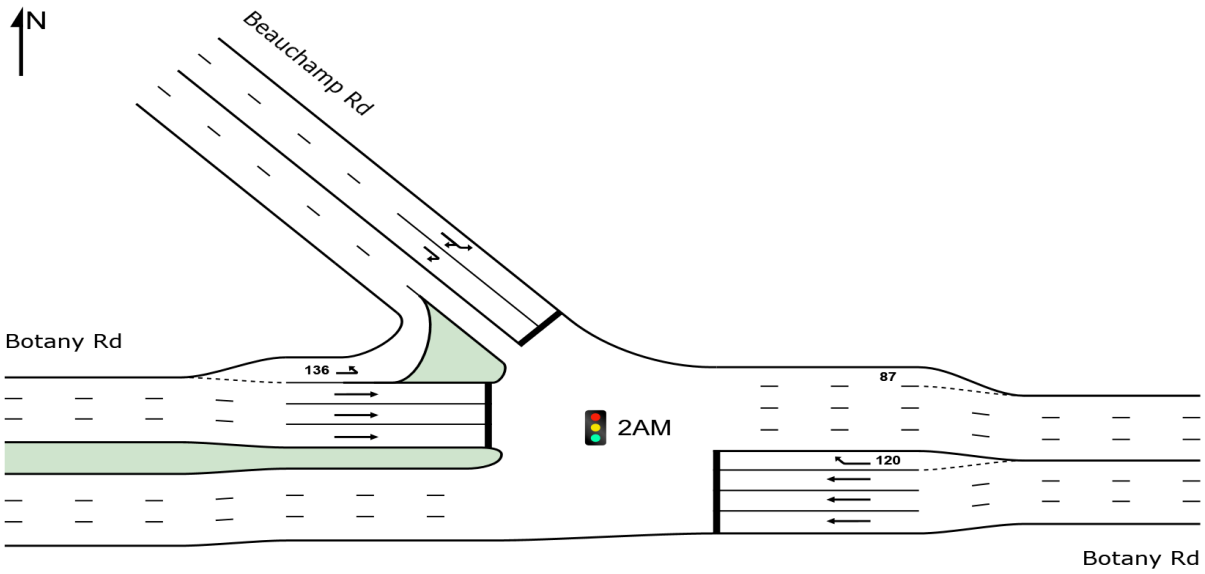
SIDRA INTERSECTION PERFORMANCE RESULTS (EXISTING)

SITE LAYOUT

Site: 2AM [BEA_BOT_2_2024AM (Site Folder: AM Base)]

TCS 1526 SS 8
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

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



MOVEMENT SUMMARY

Site: 2AM [BEA_BOT_2_2024AM (Site Folder: AM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N103 [AM Base (Network Folder: General)]

TCS 1526 SS 8
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Rd															
2	T1	All MCs	587	38.9	587	38.9	0.182	6.4	LOS A	4.0	37.5	0.35	0.30	0.35	62.4
6a	R1	All MCs	52	34.7	52	34.7	0.459	70.9	LOS F	3.3	30.2	1.00	0.76	1.00	19.3
Approach			639	38.6	639	38.6	0.459	11.6	LOS A	4.0	37.5	0.40	0.34	0.40	56.9
NorthWest: Beauchamp Rd															
27a	L1	All MCs	77	30.1	77	30.1	* 0.963	79.6	LOS F	25.8	205.1	1.00	1.13	1.43	22.7
29b	R3	All MCs	539	11.3	539	11.3	0.963	93.9	LOS F	25.8	205.1	1.00	1.13	1.44	22.7
Approach			616	13.7	616	13.7	0.963	92.1	LOS F	25.8	205.1	1.00	1.13	1.44	22.7
West: Botany Rd															
10b	L3	All MCs	864	11.3	864	11.3	0.573	8.3	LOS A	0.0	0.0	0.00	0.60	0.00	54.1
8	T1	All MCs	882	26.0	882	26.0	* 0.307	6.6	LOS A	5.2	44.1	0.30	0.26	0.30	62.1
Approach			1746	18.7	1746	18.7	0.573	7.5	LOS A	5.2	44.1	0.15	0.43	0.15	59.1
All Vehicles			3001	21.9	3001	21.9	0.963	25.7	LOS B	25.8	205.1	0.38	0.55	0.47	42.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

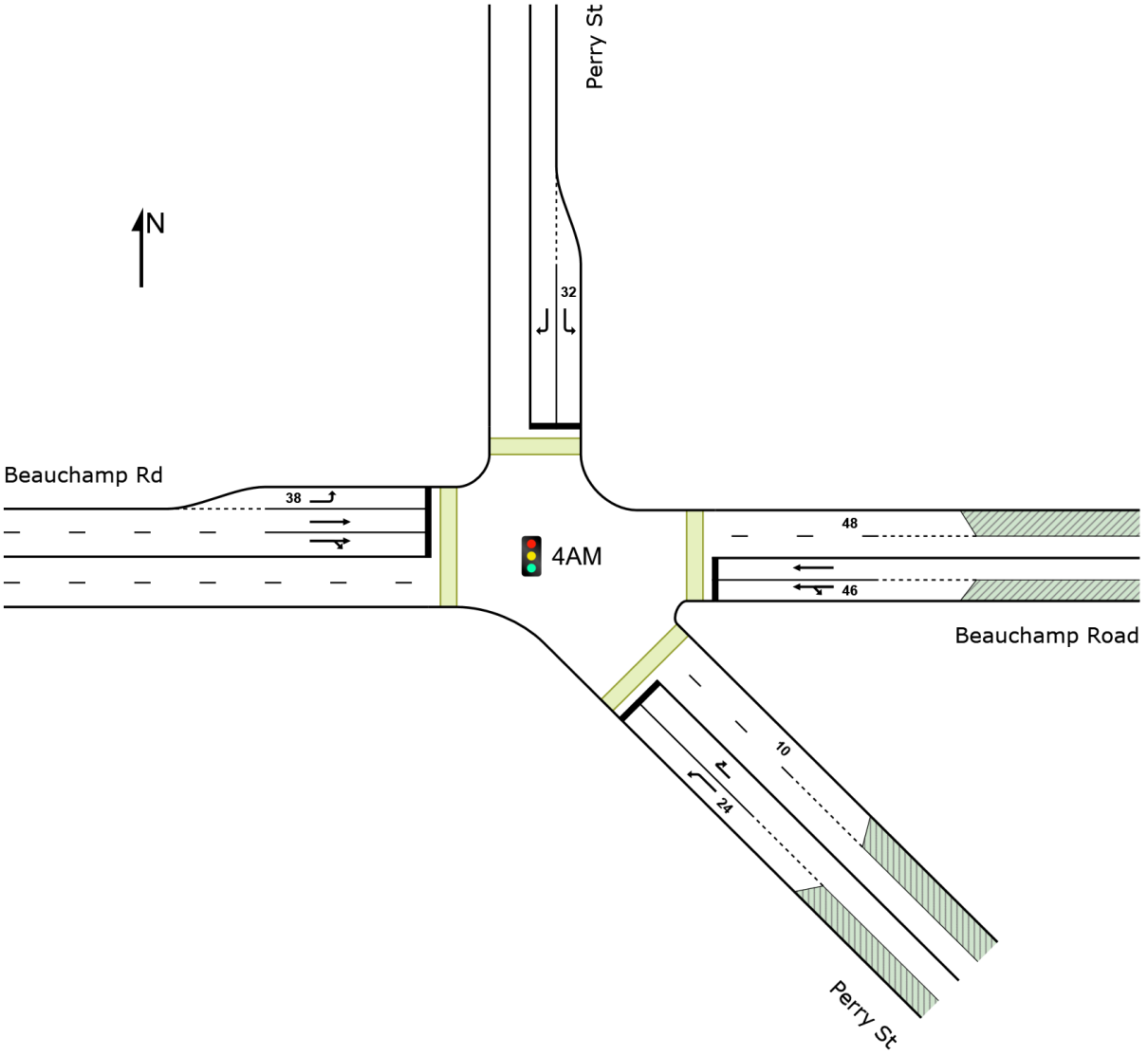
* Critical Movement (Signal Timing)

SITE LAYOUT

Site: 4AM [BEA_PER_4_2024AM (Site Folder: AM Base)]

TCS 1532 SS 22
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

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



MOVEMENT SUMMARY

Site: 4AM [BEA_PER_4_2024AM (Site Folder: AM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N103 [AM Base (Network Folder: General)]

TCS 1532 SS 22
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 84 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Perry St															
21a	L1	All MCs	187	5.6	187	5.6	0.592	45.7	LOS D	7.1	52.1	0.95	0.81	0.95	27.0
23b	R3	All MCs	206	8.2	206	8.2	* 0.765	52.9	LOS D	8.8	66.2	0.99	0.90	1.18	24.6
Approach			394	7.0	394	7.0	0.765	49.5	LOS D	8.8	66.2	0.97	0.85	1.07	23.0
East: Beauchamp Road															
4b	L3	All MCs	189	7.2	189	7.2	0.306	13.0	LOS A	5.6	42.5	0.48	0.60	0.48	43.1
5	T1	All MCs	457	15.0	457	15.0	0.306	7.1	LOS A	6.1	48.2	0.48	0.46	0.48	27.9
Approach			646	12.7	646	12.7	0.306	8.9	LOS A	6.1	48.2	0.48	0.51	0.48	36.3
North: Perry St															
7	L2	All MCs	7	100.0	7	100.0	0.032	36.1	LOS C	0.2	3.2	0.82	0.66	0.82	26.0
9	R2	All MCs	14	100.0	14	100.0	0.059	34.6	LOS C	0.5	6.0	0.82	0.68	0.82	25.9
Approach			21	100.0	21	100.0	0.059	35.1	LOS C	0.5	6.0	0.82	0.67	0.82	26.0
West: Beauchamp Rd															
10	L2	All MCs	23	95.5	23	95.5	0.034	10.9	LOS A	0.3	4.4	0.38	0.60	0.38	41.5
11	T1	All MCs	658	12.8	658	12.8	0.667	5.5	LOS A	11.2	85.5	0.38	0.37	0.38	42.7
12a	R1	All MCs	211	6.5	211	6.5	* 0.667	13.8	LOS A	11.2	85.5	0.58	0.60	0.58	46.1
Approach			892	13.5	892	13.5	0.667	7.6	LOS A	11.2	85.5	0.42	0.43	0.42	43.9
All Vehicles			1953	12.8	1953	12.8	0.765	16.8	LOS B	11.2	85.5	0.56	0.54	0.58	35.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Perry St											
P5	Full	1	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
East: Beauchamp Road											
P2	Full	9	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

North: Perry St										
P3 Full	2	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
West: Beauchamp Rd										
P4 Full	1	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
All Pedestrians	14	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

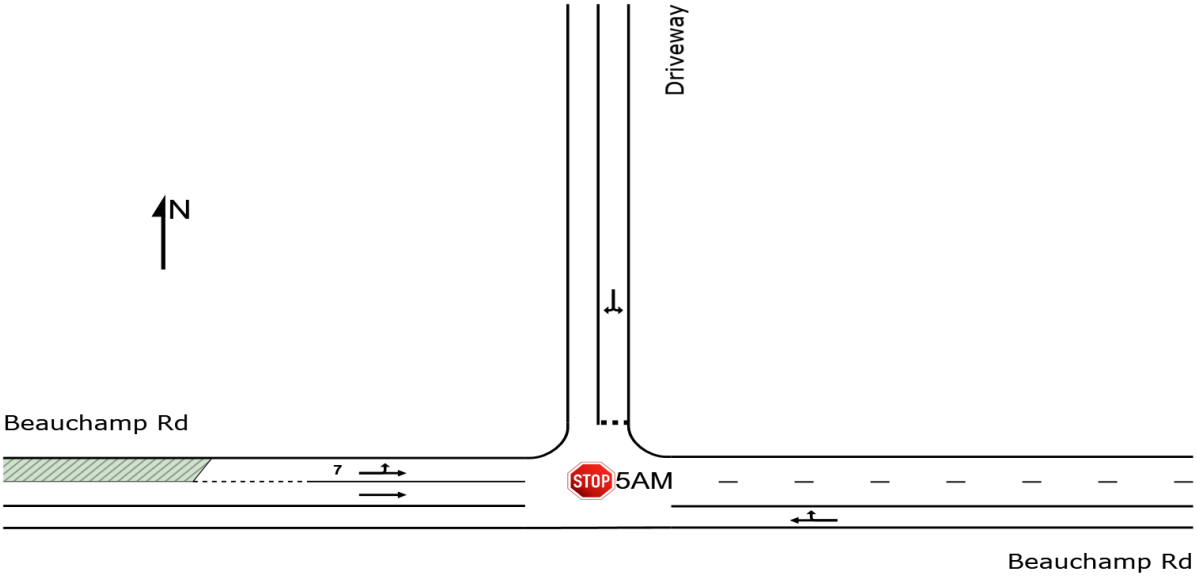
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SITE LAYOUT

Site: 5AM [BEA_DRI_5_2024AM (Site Folder: AM Base)]

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

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



MOVEMENT SUMMARY

Site: 5AM [BEA_DRI_5_2024AM (Site Folder: AM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N103 [AM Base (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	648	12.3	648	12.3	0.382	0.2	LOS A	0.2	1.2	0.03	0.03	0.03	47.4
6	R2	All MCs	7	0.0	7	0.0	0.382	11.0	LOS A	0.2	1.2	0.03	0.03	0.03	47.4
Approach			656	12.2	656	12.2	0.382	0.3	NA	0.2	1.2	0.03	0.03	0.03	47.4
North: Driveway															
7	L2	All MCs	1	0.0	1	0.0	0.006	6.9	LOS A	0.0	0.1	0.69	0.66	0.69	41.0
9	R2	All MCs	1	0.0	1	0.0	0.006	21.8	LOS B	0.0	0.1	0.69	0.66	0.69	41.0
Approach			2	0.0	2	0.0	0.006	14.3	LOS A	0.0	0.1	0.69	0.66	0.69	41.0
West: Beauchamp Rd															
10	L2	All MCs	2	0.0	2	0.0	0.248	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	47.9
11	T1	All MCs	866	12.6	866	12.6	0.248	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			868	12.6	868	12.6	0.248	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.8
All Vehicles			1526	12.4	1526	12.4	0.382	0.2	NA	0.2	1.2	0.01	0.02	0.01	49.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

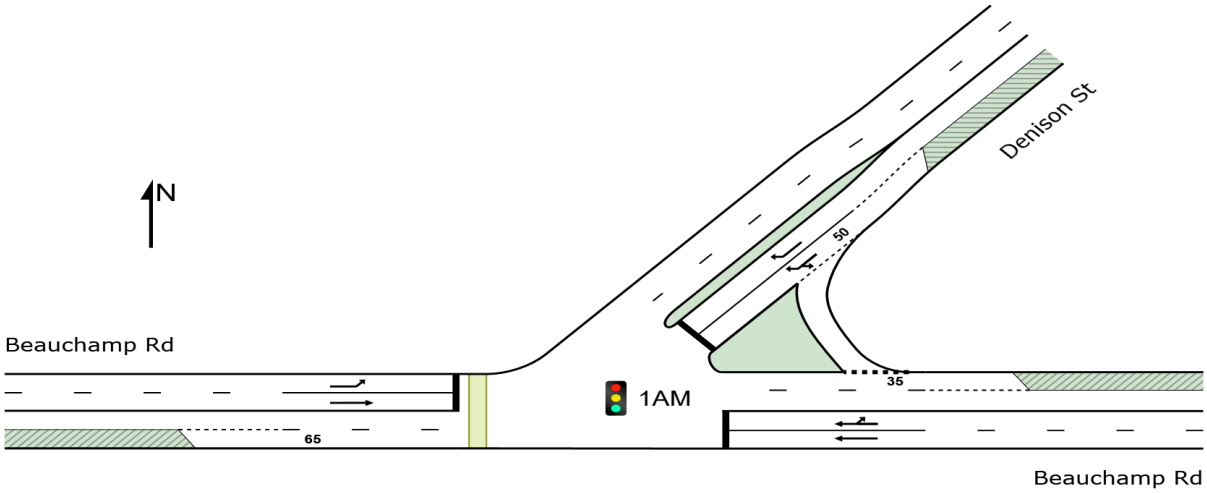
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 1AM [DEN_BEA_1_2024AM (Site Folder: AM Base)]

TCS 1548 SS 24
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



MOVEMENT SUMMARY

Site: 1AM [DEN_BEA_1_2024AM (Site Folder: AM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N103 [AM Base (Network Folder: General)]

TCS 1548 SS 24
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 87 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	347	10.0	347	10.0	* 0.505	6.7	LOS A	6.4	47.1	0.54	0.50	0.54	40.8
6b	R3	All MCs	128	1.6	128	1.6	* 0.505	18.7	LOS B	6.4	47.1	0.67	0.68	0.67	37.1
Approach			476	7.7	476	7.7	0.505	9.9	LOS A	6.4	47.1	0.58	0.55	0.58	39.8
NorthEast: Denison St															
24b	L3	All MCs	116	7.3	116	7.3	0.281	9.5	LOS A	3.0	22.8	0.69	0.74	0.69	45.7
26a	R1	All MCs	315	14.4	315	14.4	* 0.774	43.5	LOS D	12.0	94.2	0.96	0.88	1.08	32.0
Approach			431	12.5	431	12.5	0.774	34.4	LOS C	12.0	94.2	0.88	0.85	0.98	36.1
West: Beauchamp Rd															
10a	L1	All MCs	477	16.3	477	16.3	0.338	5.3	LOS A	4.2	33.4	0.23	0.60	0.23	25.8
11	T1	All MCs	393	8.0	393	8.0	0.383	10.8	LOS A	9.0	67.6	0.58	0.51	0.58	39.7
Approach			869	12.6	869	12.6	0.383	7.8	LOS A	9.0	67.6	0.39	0.56	0.39	36.9
All Vehicles			1776	11.3	1776	11.3	0.774	14.8	LOS B	12.0	94.2	0.56	0.63	0.58	37.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Beauchamp Rd											
P4	Full	1	37.7	LOS D	0.0	0.0	0.93	0.93	191.6	200.0	1.04
All Pedestrians		1	37.7	LOS D	0.0	0.0	0.93	0.93	191.6	200.0	1.04

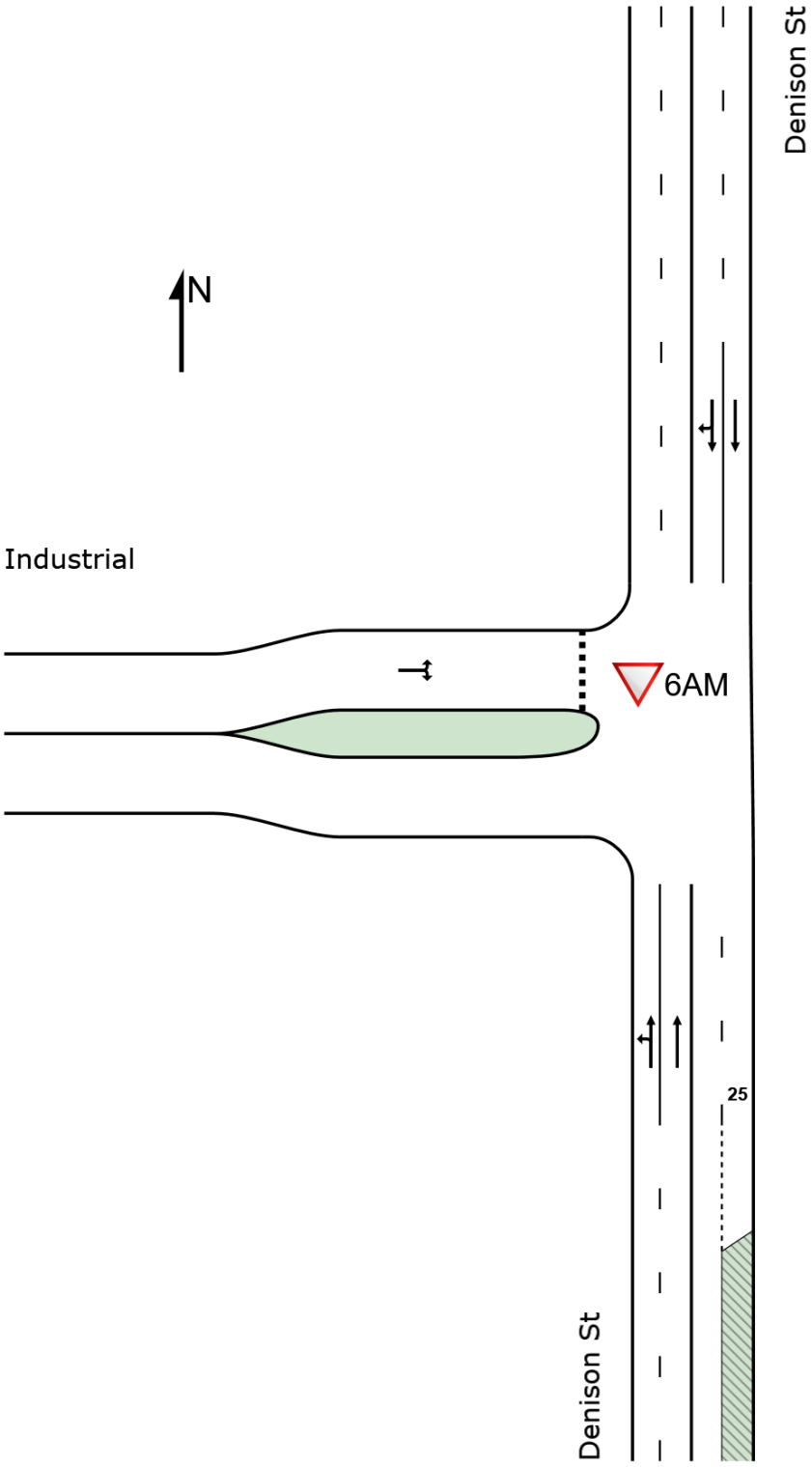
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SITE LAYOUT

Site: 6AM [DEN_IND_6_2024AM (Site Folder: AM Base)]

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

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



MOVEMENT SUMMARY

Site: 6AM [DEN_IND_6_2024AM (Site Folder: AM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N103 [AM Base (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	18	11.8	18	11.8	0.185	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	57.0
2	T1	All MCs	628	12.2	628	12.2	0.185	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			646	12.2	646	12.2	0.185	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
North: Denison St															
8	T1	All MCs	449	11.2	449	11.2	0.216	0.4	LOS A	0.2	1.3	0.04	0.05	0.04	59.1
9	R2	All MCs	11	10.0	11	10.0	0.216	10.7	LOS A	0.2	1.3	0.05	0.07	0.05	52.9
Approach			460	11.2	460	11.2	0.216	0.7	NA	0.2	1.3	0.04	0.05	0.04	58.8
West: Industrial															
10	L2	All MCs	8	25.0	8	25.0	0.044	6.5	LOS A	0.1	1.1	0.62	0.71	0.62	37.8
12	R2	All MCs	8	0.0	8	0.0	0.044	17.9	LOS B	0.1	1.1	0.62	0.71	0.62	37.8
Approach			17	12.5	17	12.5	0.044	12.2	LOS A	0.1	1.1	0.62	0.71	0.62	37.8
All Vehicles			1123	11.8	1123	11.8	0.216	0.6	NA	0.2	1.3	0.03	0.04	0.03	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

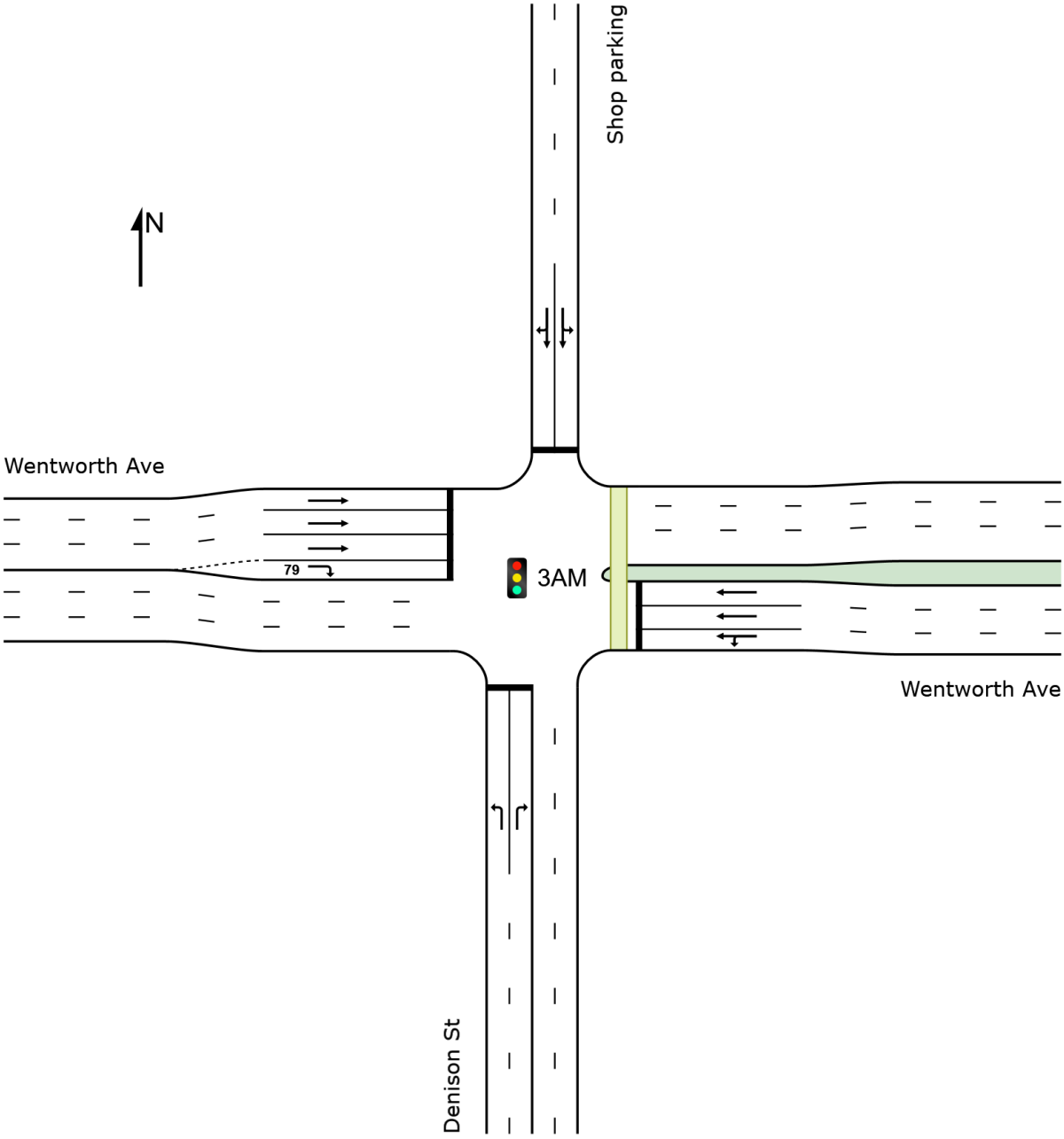
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3AM [WEN_DEN_3_2024AM (Site Folder: AM Base)]

TCS 1586 SS 1
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

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



MOVEMENT SUMMARY

Site: 3AM [WEN_DEN_3_2024AM (Site Folder: AM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N103 [AM Base (Network Folder: General)]

TCS 1586 SS 1
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 128 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	546	15.2	546	15.2	* 0.537	8.4	LOS A	9.9	78.4	0.39	0.71	0.39	50.5
3	R2	All MCs	143	5.9	143	5.9	0.344	43.0	LOS D	7.0	51.4	0.82	0.78	0.82	34.5
Approach			689	13.3	689	13.3	0.537	15.6	LOS B	9.9	78.4	0.48	0.72	0.48	46.1
East: Wentworth Ave															
4	L2	All MCs	105	4.0	105	4.0	0.428	28.1	LOS B	9.2	67.3	0.62	0.62	0.62	33.3
5	T1	All MCs	685	5.1	685	5.1	* 0.428	22.5	LOS B	9.6	70.2	0.62	0.55	0.62	43.5
Approach			791	4.9	791	4.9	0.428	23.3	LOS B	9.6	70.2	0.62	0.56	0.62	42.6
North: Shop parking															
7	L2	All MCs	26	0.0	26	0.0	0.093	36.9	LOS C	2.4	16.5	0.73	0.63	0.73	32.4
8	T1	All MCs	28	0.0	28	0.0	0.093	31.3	LOS C	2.4	16.5	0.73	0.63	0.73	23.2
9	R2	All MCs	38	0.0	38	0.0	0.146	38.9	LOS C	1.8	12.3	0.76	0.70	0.76	31.0
Approach			93	0.0	93	0.0	0.146	36.0	LOS C	2.4	16.5	0.75	0.66	0.75	29.6
West: Wentworth Ave															
11	T1	All MCs	678	9.9	678	9.9	0.218	12.7	LOS A	3.9	29.3	0.29	0.25	0.29	53.8
12	R2	All MCs	471	11.0	471	11.0	* 0.947	79.6	LOS F	30.8	236.2	1.00	1.16	1.28	19.8
Approach			1148	10.4	1148	10.4	0.947	40.1	LOS C	30.8	236.2	0.58	0.62	0.70	32.9
All Vehicles			2721	9.2	2721	9.2	0.947	28.9	LOS C	30.8	236.2	0.57	0.63	0.62	38.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Wentworth Ave											
P2	Full	57	58.3	LOS E	0.2	0.2	0.96	0.96	212.1	200.0	0.94
All Pedestrians		57	58.3	LOS E	0.2	0.2	0.96	0.96	212.1	200.0	0.94

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

MOVEMENT SUMMARY

Site: 2PM [BEA_BOT_2_2024PM (Site Folder: PM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N102 [PM Base (Network Folder: General)]

TCS 1526 SS 8
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 121 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Rd															
2	T1	All MCs	889	20.5	889	20.5	0.281	10.3	LOS A	7.7	63.2	0.47	0.41	0.47	58.4
6a	R1	All MCs	82	26.9	82	26.9	0.464	61.4	LOS E	4.7	40.7	0.98	0.78	0.98	21.4
Approach			972	21.0	972	21.0	0.464	14.6	LOS B	7.7	63.2	0.52	0.44	0.52	54.2
NorthWest: Beauchamp Rd															
27a	L1	All MCs	56	26.4	56	26.4	* 0.880	45.5	LOS D	24.6	188.9	1.00	1.00	1.21	28.0
29b	R3	All MCs	688	8.6	688	8.6	0.880	64.3	LOS E	24.6	188.9	1.00	1.00	1.21	27.9
Approach			744	9.9	744	9.9	0.880	62.9	LOS E	24.6	188.9	1.00	1.00	1.21	27.9
West: Botany Rd															
10b	L3	All MCs	707	5.2	707	5.2	0.451	8.2	LOS A	0.0	0.0	0.00	0.61	0.00	54.3
8	T1	All MCs	555	18.8	555	18.8	* 0.229	19.6	LOS B	6.4	51.8	0.62	0.52	0.62	50.9
Approach			1262	11.2	1262	11.2	0.451	13.2	LOS A	6.4	51.8	0.27	0.57	0.27	52.2
All Vehicles			2978	14.1	2978	14.1	0.880	26.1	LOS B	24.6	188.9	0.53	0.64	0.59	42.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

MOVEMENT SUMMARY

Site: 4PM [BEA_PER_4_2024PM (Site Folder: PM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N102 [PM Base (Network Folder: General)]

TCS 1532 SS 22
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 82 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Perry St															
21a	L1	All MCs	173	3.7	173	3.7	0.517	39.3	LOS C	6.4	46.1	0.94	0.80	0.94	27.0
23b	R3	All MCs	172	4.3	172	4.3	* 0.589	41.9	LOS C	6.5	47.2	0.96	0.81	0.96	26.2
Approach			344	4.0	344	4.0	0.589	40.6	LOS C	6.5	47.2	0.95	0.81	0.95	25.9
East: Beauchamp Road															
4b	L3	All MCs	193	2.7	193	2.7	0.336	12.4	LOS A	6.2	46.5	0.47	0.58	0.47	44.0
5	T1	All MCs	549	13.2	549	13.2	0.336	6.6	LOS A	6.7	52.1	0.47	0.46	0.47	28.8
Approach			742	10.5	742	10.5	0.336	8.1	LOS A	6.7	52.1	0.47	0.50	0.47	36.6
North: Perry St															
7	L2	All MCs	2	100.0	2	100.0	0.010	36.1	LOS C	0.1	0.9	0.83	0.62	0.83	25.9
9	R2	All MCs	1	0.0	1	0.0	0.003	32.9	LOS C	0.0	0.2	0.82	0.59	0.82	26.5
Approach			3	66.7	3	66.7	0.010	35.0	LOS C	0.1	0.9	0.82	0.61	0.82	26.1
West: Beauchamp Rd															
10	L2	All MCs	3	100.0	3	100.0	0.005	10.1	LOS A	0.0	0.6	0.35	0.56	0.35	41.5
11	T1	All MCs	658	8.3	658	8.3	0.638	4.5	LOS A	9.6	70.9	0.33	0.34	0.33	43.7
12a	R1	All MCs	193	3.8	193	3.8	* 0.638	12.5	LOS A	9.6	70.9	0.53	0.56	0.53	46.9
Approach			854	7.6	854	7.6	0.638	6.3	LOS A	9.6	70.9	0.38	0.39	0.38	44.8
All Vehicles			1943	8.2	1943	8.2	0.638	13.1	LOS A	9.6	70.9	0.51	0.50	0.52	37.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Perry St											
P5	Full	1	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
East: Beauchamp Road											
P2	Full	1	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
North: Perry St											

P3 Full	2	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
West: Beauchamp Rd										
P4 Full	1	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
All Pedestrians	5	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06

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

MOVEMENT SUMMARY

Site: 5PM [BEA_DRI_5_2024PM (Site Folder: PM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N102 [PM Base (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	738	10.7	738	10.7	0.418	0.0	LOS A	0.0	0.2	0.00	0.00	0.00	49.8
6	R2	All MCs	1	0.0	1	0.0	0.418	5.4	LOS A	0.0	0.2	0.00	0.00	0.00	47.7
Approach			739	10.7	739	10.7	0.418	0.0	NA	0.0	0.2	0.00	0.00	0.00	49.8
North: Driveway															
7	L2	All MCs	3	0.0	3	0.0	0.009	6.9	LOS A	0.0	0.2	0.62	0.63	0.62	44.2
9	R2	All MCs	1	0.0	1	0.0	0.009	23.5	LOS B	0.0	0.2	0.62	0.63	0.62	44.2
Approach			4	0.0	4	0.0	0.009	11.1	LOS A	0.0	0.2	0.62	0.63	0.62	44.2
West: Beauchamp Rd															
10	L2	All MCs	1	0.0	1	0.0	0.252	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	47.9
11	T1	All MCs	829	7.7	829	7.7	0.252	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			831	7.7	831	7.7	0.252	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.8
All Vehicles			1574	9.1	1574	9.1	0.418	0.1	NA	0.0	0.2	0.00	0.00	0.00	49.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 1PM [DEN_BEA_1_2024PM (Site Folder: PM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N102 [PM Base (Network Folder: General)]

TCS 1548 SS 24
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 84 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	353	10.4	353	10.4	0.521	9.1	LOS A	7.3	54.6	0.63	0.56	0.63	38.4
6b	R3	All MCs	113	4.7	113	4.7	* 0.521	24.6	LOS B	7.3	54.6	0.76	0.72	0.76	34.8
Approach			465	9.0	465	9.0	0.521	12.9	LOS A	7.3	54.6	0.66	0.60	0.66	37.5
NorthEast: Denison St															
24b	L3	All MCs	154	3.4	154	3.4	0.304	12.5	LOS A	3.1	22.4	0.65	0.75	0.65	46.9
26a	R1	All MCs	383	11.0	383	11.0	* 0.839	45.7	LOS D	15.0	114.6	0.95	0.93	1.16	31.9
Approach			537	8.8	537	8.8	0.839	36.2	LOS C	15.0	114.6	0.87	0.88	1.01	35.5
West: Beauchamp Rd															
10a	L1	All MCs	406	11.9	406	11.9	0.290	5.7	LOS A	3.8	29.7	0.25	0.60	0.25	24.9
11	T1	All MCs	423	3.7	423	3.7	* 0.462	14.7	LOS B	11.3	81.4	0.70	0.61	0.70	37.0
Approach			829	7.7	829	7.7	0.462	10.3	LOS A	11.3	81.4	0.48	0.61	0.48	35.0
All Vehicles			1832	8.4	1832	8.4	0.839	18.5	LOS B	15.0	114.6	0.64	0.69	0.68	35.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Beauchamp Rd											
P4	Full	2	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
All Pedestrians		2	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

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

MOVEMENT SUMMARY

Site: 6PM [DEN_IND_6_2024PM (Site Folder: PM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N102 [PM Base (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	8	12.5	8	12.5	0.151	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	57.1
2	T1	All MCs	531	8.7	531	8.7	0.151	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			539	8.8	539	8.8	0.151	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.7
North: Denison St															
8	T1	All MCs	539	8.6	539	8.6	0.245	0.3	LOS A	0.1	0.6	0.02	0.02	0.02	59.7
9	R2	All MCs	5	20.0	5	20.0	0.245	9.7	LOS A	0.1	0.6	0.02	0.02	0.02	53.0
Approach			544	8.7	544	8.7	0.245	0.4	NA	0.1	0.6	0.02	0.02	0.02	59.6
West: Industrial															
10	L2	All MCs	20	5.3	20	5.3	0.131	5.7	LOS A	0.4	3.2	0.66	0.77	0.66	37.1
12	R2	All MCs	28	0.0	28	0.0	0.131	18.2	LOS B	0.4	3.2	0.66	0.77	0.66	37.1
Approach			48	2.2	48	2.2	0.131	13.1	LOS A	0.4	3.2	0.66	0.77	0.66	37.1
All Vehicles			1132	8.5	1132	8.5	0.245	0.8	NA	0.4	3.2	0.04	0.05	0.04	58.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 3PM [WEN_DEN_3_2024PM (Site Folder: PM Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N102 [PM Base (Network Folder: General)]

TCS 1586 SS 1
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 129 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	566	9.1	566	9.1	* 0.539	8.4	LOS A	10.4	78.3	0.39	0.71	0.39	50.7
3	R2	All MCs	139	2.3	139	2.3	0.417	49.3	LOS D	7.4	52.8	0.88	0.80	0.88	32.7
Approach			705	7.8	705	7.8	0.539	16.4	LOS B	10.4	78.3	0.48	0.72	0.48	45.7
East: Wentworth Ave															
4	L2	All MCs	104	7.1	104	7.1	0.424	27.7	LOS B	9.2	66.6	0.61	0.61	0.61	33.6
5	T1	All MCs	702	1.6	702	1.6	* 0.424	22.0	LOS B	9.7	69.1	0.61	0.54	0.61	43.8
Approach			806	2.3	806	2.3	0.424	22.8	LOS B	9.7	69.1	0.61	0.55	0.61	42.9
North: Shop parking															
7	L2	All MCs	94	0.0	94	0.0	0.298	40.0	LOS C	8.1	57.0	0.80	0.71	0.80	31.4
8	T1	All MCs	79	0.0	79	0.0	0.298	34.2	LOS C	8.1	57.0	0.80	0.71	0.80	22.2
9	R2	All MCs	138	0.0	138	0.0	0.539	45.0	LOS D	7.5	52.2	0.88	0.80	0.88	29.5
Approach			311	0.0	311	0.0	0.539	40.7	LOS C	8.1	57.0	0.84	0.75	0.84	28.7
West: Wentworth Ave															
11	T1	All MCs	748	4.9	748	4.9	0.232	12.1	LOS A	4.3	31.1	0.29	0.25	0.29	53.8
12	R2	All MCs	458	9.4	458	9.4	* 0.898	64.9	LOS E	26.7	202.0	0.96	1.09	1.13	23.1
Approach			1206	6.6	1206	6.6	0.898	32.2	LOS C	26.7	202.0	0.55	0.57	0.61	36.4
All Vehicles			3028	5.1	3028	5.1	0.898	26.9	LOS B	26.7	202.0	0.58	0.62	0.60	39.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

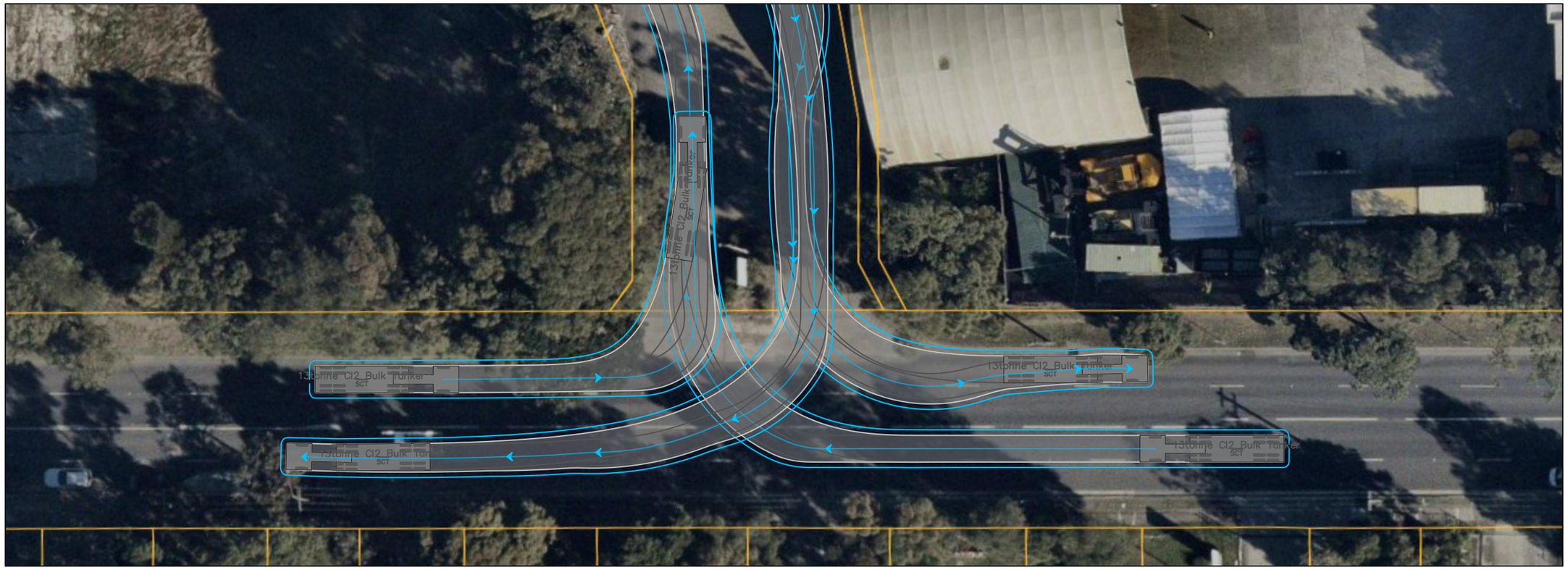
Pedestrian Movement Performance

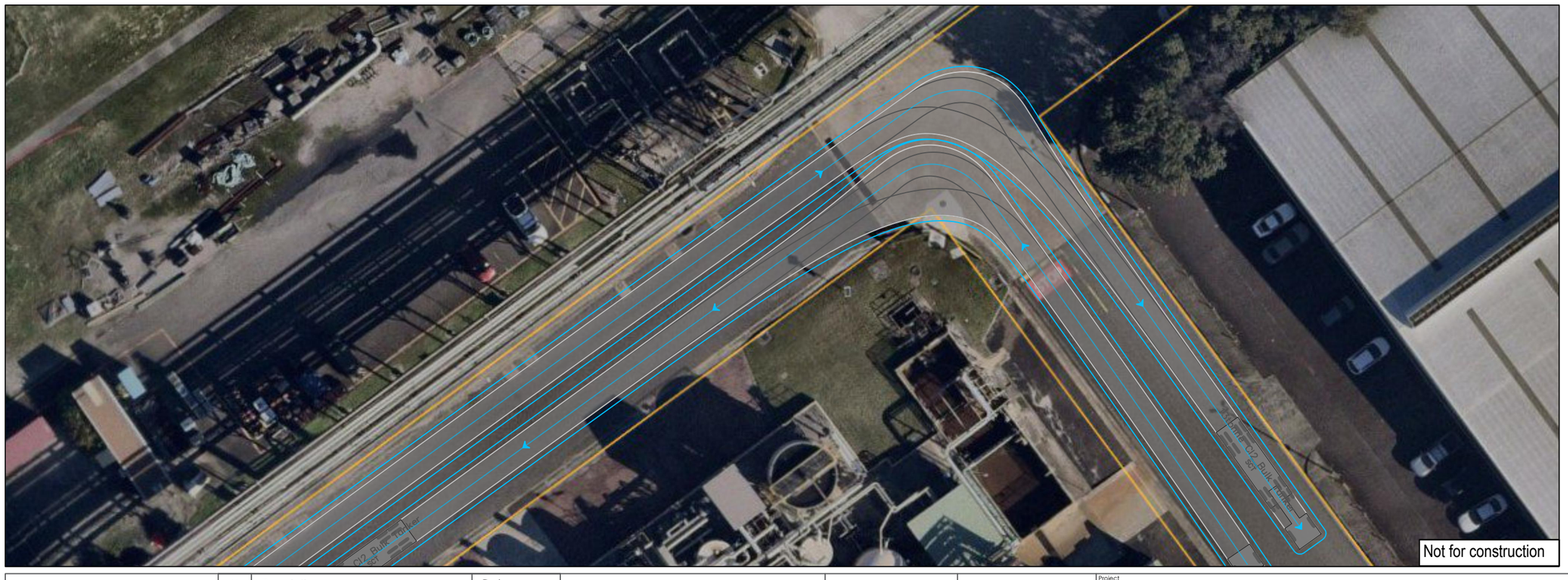
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Wentworth Ave											
P2	Full	48	58.8	LOS E	0.2	0.2	0.96	0.96	212.6	200.0	0.94
All Pedestrians		48	58.8	LOS E	0.2	0.2	0.96	0.96	212.6	200.0	0.94

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

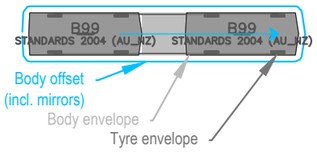
APPENDIX B

SWEPT PATH ANALYSIS



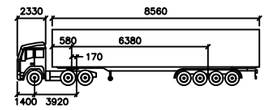


Legend



This swept path assessment is based on:

- 500mm body offset
- Vehicle speed of 5-10km/h
- Customised 13t tanker



13tonne Cl2 Bulk Tanker

mm

Tractor Width	: 2430	Lock to Lock Time	: 6.0
Trailer Width	: 2430	Steering Angle	: 37.6
Tractor Track	: 2430	Articulating Angle	: 70.0
Trailer Track	: 2430		

Not for construction

SCT Consulting

V	Description	Date
1.0	PRELIMINARY DRAFT	20/09/2024

Prepared for: IXOM

Quality information	
Date	09/24
Prepared	A.O
Reviewed	S.C
Authorised	N.B

Scale @ A3

0 5 10

Scale 1:400

Project: IXOM Matraville Liquid Chlorine Facility

Title: Swept path assessment - Gate 3 access road

Project Number: SCT_00630_01

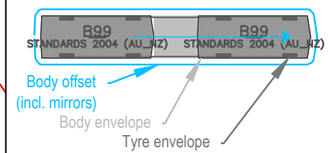
Sheet number: 01

A3

S:\Projects\SCT_00630_IXOM Matraville Liquid Chlorine Facility\4. Tech Work\5. Engineering\SCT_00630_IXOM Matraville Liquid Chlorine Facility_CAD_Swept Path Analysis_v1.0

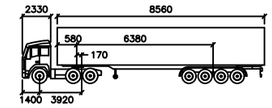
Sep 2024 | B201-17-05-105451 - BOTANY SITE PLAN IXOM OPERATIONAL AREAS | IXOM

Legend



This swept path assessment is based on:

- 500mm body offset
- Vehicle speed of 5-10km/h
- Customised 13t tanker



13tonne Cl2 Bulk Tanker

mm

Tractor Width	: 2430	Lock to Lock Time	: 6.0
Trailer Width	: 2430	Steering Angle	: 37.6
Tractor Track	: 2430	Articulating Angle	: 70.0
Trailer Track	: 2430		

Not for construction

SCT Consulting

V	Description	Date
1.0	PRELIMINARY DRAFT	20/09/2024

Prepared for: IXOM

Quality information	
Date	09/24
Prepared	A.O
Reviewed	S.C
Authorised	N.B

Scale @ A3

0 5 10

Scale 1:400

Project: IXOM Matraville Liquid Chlorine Facility

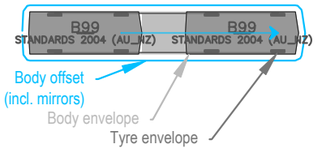
Title: Swept path assessment - Block Q

Project Number: SCT_00630_02

Sheet number: 02

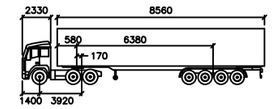
A3

Legend



This swept path assessment is based on:

- 500mm body offset
- Vehicle speed of 5-10km/h
- Customised 13t tanker



13tonne Cl2 Bulk Tanker

mm

Tractor Width	: 2430	Lock to Lock Time	: 6.0
Trailer Width	: 2430	Steering Angle	: 37.6
Tractor Track	: 2430	Articulating Angle	: 70.0
Trailer Track	: 2430		

Not for construction

V	Description	Date
1.0	PRELIMINARY DRAFT	20/09/2024

SCT Consulting

Prepared for: IXOM

Quality information	
Date	09/24
Prepared	A.O
Reviewed	S.C
Authorised	N.B

Scale @ A3

0 5 10

Scale 1:400

Project: IXOM Matraville Liquid Chlorine Facility

Title: Swept path assessment - Block L

Project Number: SCT_00630_03

Sheet number: 03

A3

APPENDIX C

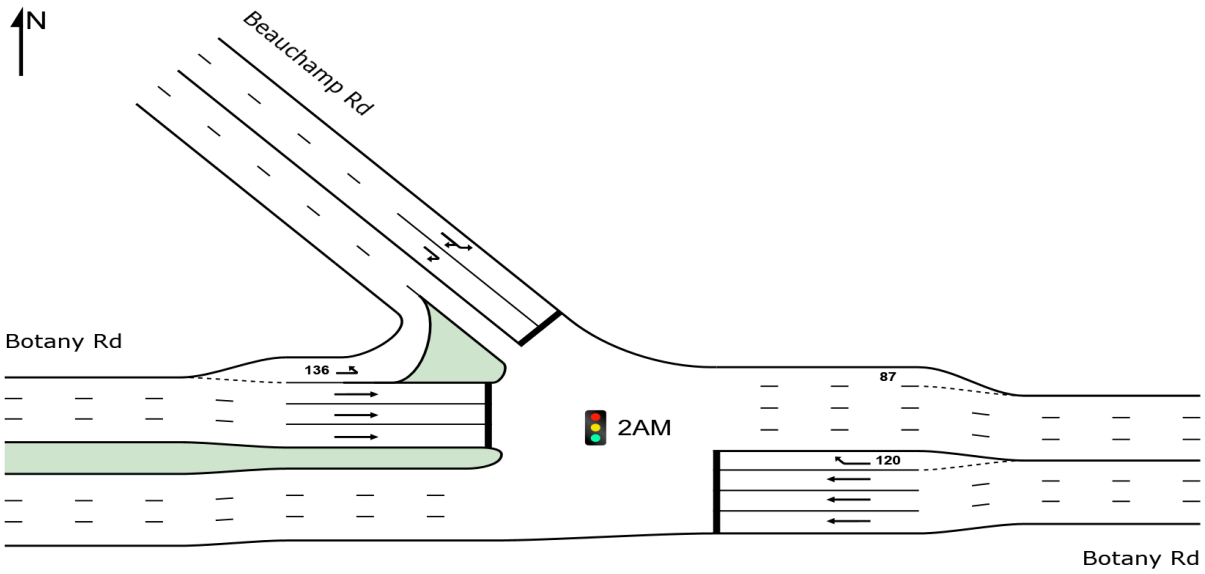
INTERSECTION PERFORMANCE RESULTS (WITH PROPOSED MODIFICATION)

SITE LAYOUT

Site: 2AM [BEA_BOT_2_2024AM (Site Folder: AM Base)]

TCS 1526 SS 8
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

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



MOVEMENT SUMMARY

Site: 2AM [BEA_BOT_2_2024AM_FS1 (Site Folder: AM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM FS1 (Network Folder: General)]

TCS 1526 SS 8
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Rd															
2	T1	All MCs	587	38.9	587	38.9	0.182	6.4	LOS A	2.5	23.0	0.35	0.30	0.35	62.4
6a	R1	All MCs	52	34.7	52	34.7	0.459	70.9	LOS F	2.0	18.5	1.00	0.76	1.00	19.3
Approach			639	38.6	639	38.6	0.459	11.6	LOS A	2.5	23.0	0.40	0.34	0.40	56.9
NorthWest: Beauchamp Rd															
27a	L1	All MCs	77	30.1	77	30.1	* 0.966	80.6	LOS F	15.9	126.8	1.00	1.14	1.44	22.6
29b	R3	All MCs	540	11.5	540	11.5	0.966	94.9	LOS F	15.9	126.8	1.00	1.13	1.44	22.5
Approach			617	13.8	617	13.8	0.966	93.1	LOS F	15.9	126.8	1.00	1.13	1.44	22.5
West: Botany Rd															
10b	L3	All MCs	865	11.4	865	11.4	0.574	8.3	LOS A	0.0	0.0	0.00	0.60	0.00	54.1
8	T1	All MCs	882	26.0	882	26.0	* 0.307	6.6	LOS A	3.2	27.0	0.30	0.26	0.30	62.1
Approach			1747	18.8	1747	18.8	0.574	7.5	LOS A	3.2	27.0	0.15	0.43	0.15	59.1
All Vehicles			3003	22.0	3003	22.0	0.966	25.9	LOS B	15.9	126.8	0.38	0.55	0.47	42.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

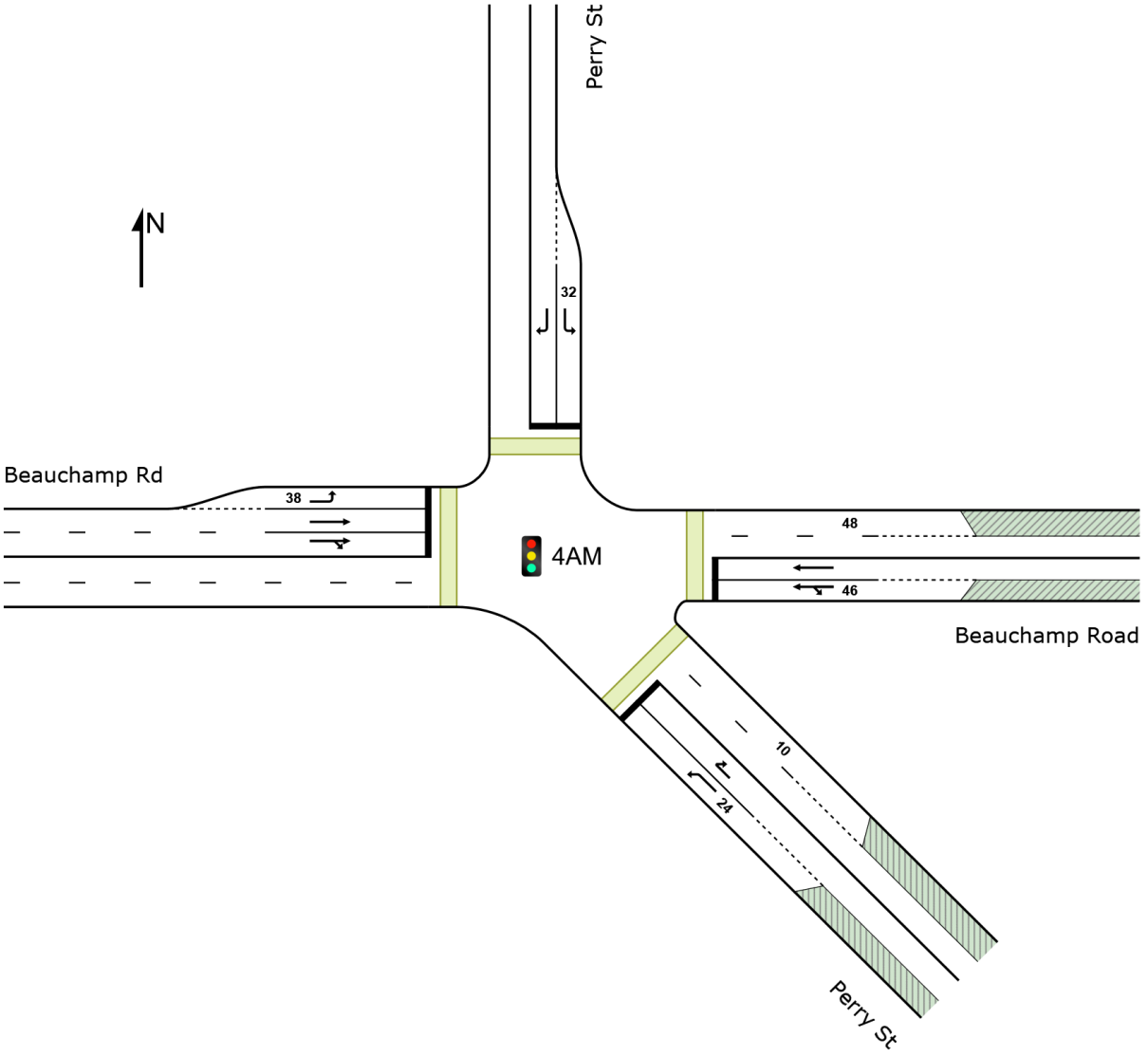
* Critical Movement (Signal Timing)

SITE LAYOUT

Site: 4AM [BEA_PER_4_2024AM (Site Folder: AM Base)]

TCS 1532 SS 22
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

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



MOVEMENT SUMMARY

Site: 4AM [BEA_PER_4_2024AM_FS1 (Site Folder: AM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM FS1 (Network Folder: General)]

TCS 1532 SS 22
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 84 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Perry St															
21a	L1	All MCs	187	5.6	187	5.6	0.592	45.7	LOS D	4.4	31.9	0.95	0.81	0.95	27.0
23b	R3	All MCs	206	8.2	206	8.2	* 0.765	52.9	LOS D	5.4	40.5	0.99	0.90	1.18	24.6
Approach			394	7.0	394	7.0	0.765	49.5	LOS D	5.4	40.5	0.97	0.85	1.07	23.0
East: Beauchamp Road															
4b	L3	All MCs	189	7.2	189	7.2	0.306	13.0	LOS A	3.4	26.2	0.48	0.60	0.48	43.1
5	T1	All MCs	458	15.2	458	15.2	0.306	7.1	LOS A	3.7	29.6	0.48	0.46	0.48	27.9
Approach			647	12.8	647	12.8	0.306	8.9	LOS A	3.7	29.6	0.48	0.51	0.48	36.3
North: Perry St															
7	L2	All MCs	7	100.0	7	100.0	0.032	36.1	LOS C	0.2	2.0	0.82	0.66	0.82	26.0
9	R2	All MCs	14	100.0	14	100.0	0.059	34.6	LOS C	0.3	3.7	0.82	0.68	0.82	25.9
Approach			21	100.0	21	100.0	0.059	35.1	LOS C	0.3	3.7	0.82	0.67	0.82	26.0
West: Beauchamp Rd															
10	L2	All MCs	23	95.5	23	95.5	0.034	10.9	LOS A	0.2	2.7	0.38	0.60	0.38	41.5
11	T1	All MCs	659	12.9	659	12.9	0.668	5.5	LOS A	6.9	52.6	0.38	0.37	0.38	42.7
12a	R1	All MCs	211	6.5	211	6.5	* 0.668	13.9	LOS A	6.9	52.6	0.58	0.60	0.58	46.0
Approach			893	13.6	893	13.6	0.668	7.6	LOS A	6.9	52.6	0.42	0.43	0.42	43.8
All Vehicles			1955	12.9	1955	12.9	0.765	16.8	LOS B	6.9	52.6	0.56	0.54	0.58	35.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Perry St											
P5	Full	1	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
East: Beauchamp Road											
P2	Full	9	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

North: Perry St										
P3 Full	2	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
West: Beauchamp Rd										
P4 Full	1	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
All Pedestrians	14	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

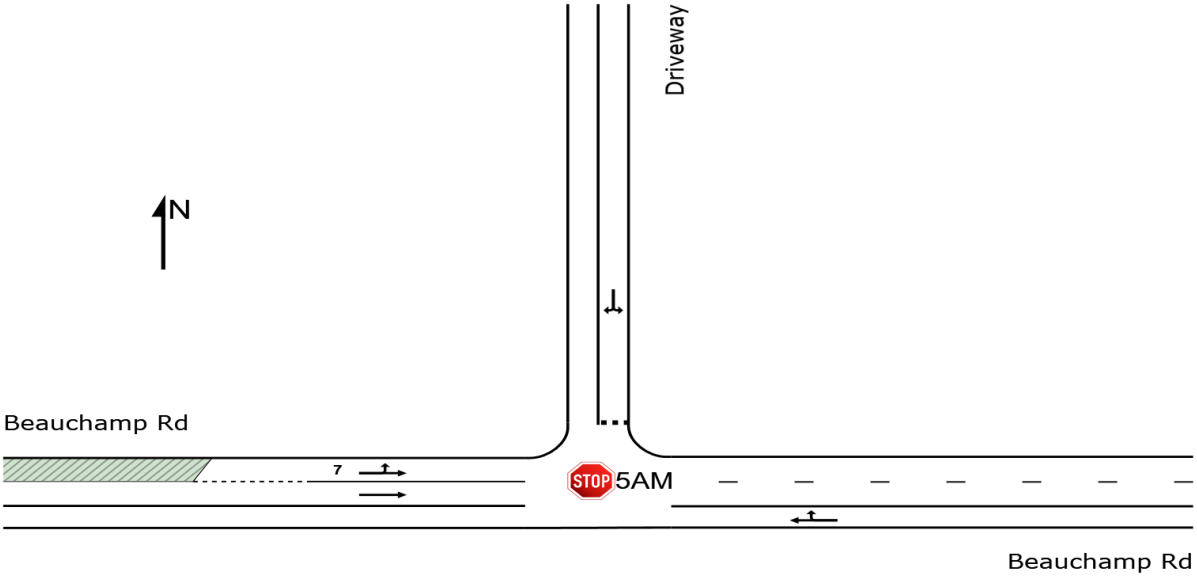
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SITE LAYOUT

Site: 5AM [BEA_DRI_5_2024AM (Site Folder: AM Base)]

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

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



MOVEMENT SUMMARY

Site: 5AM [BEA_DRI_5_2024AM_FS1 (Site Folder: AM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM FS1 (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	649	12.5	649	12.5	0.383	0.2	LOS A	0.1	0.5	0.03	0.03	0.03	47.4
6	R2	All MCs	7	0.0	7	0.0	0.383	11.0	LOS A	0.1	0.5	0.03	0.03	0.03	47.4
Approach			657	12.3	657	12.3	0.383	0.3	NA	0.1	0.5	0.03	0.03	0.03	47.4
North: Driveway															
7	L2	All MCs	1	0.0	1	0.0	0.006	6.9	LOS A	0.0	0.1	0.69	0.66	0.69	40.9
9	R2	All MCs	1	0.0	1	0.0	0.006	21.8	LOS B	0.0	0.1	0.69	0.66	0.69	40.9
Approach			2	0.0	2	0.0	0.006	14.4	LOS A	0.0	0.1	0.69	0.66	0.69	40.9
West: Beauchamp Rd															
10	L2	All MCs	2	0.0	2	0.0	0.249	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	47.9
11	T1	All MCs	867	12.7	867	12.7	0.249	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			869	12.7	869	12.7	0.249	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.8
All Vehicles			1528	12.5	1528	12.5	0.383	0.2	NA	0.1	0.5	0.01	0.02	0.01	49.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

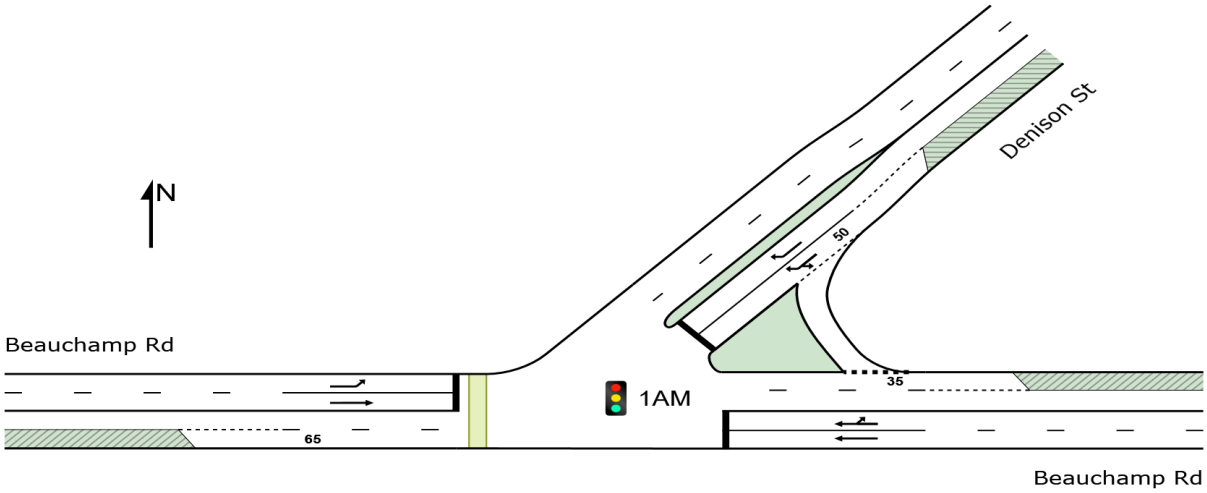
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 1AM [DEN_BEA_1_2024AM (Site Folder: AM Base)]

TCS 1548 SS 24
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



MOVEMENT SUMMARY

Site: 1AM [DEN_BEA_1_2024AM_FS1 (Site Folder: AM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM FS1 (Network Folder: General)]

TCS 1548 SS 24
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 87 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	347	10.0	347	10.0	* 0.505	6.7	LOS A	3.9	28.9	0.54	0.50	0.54	40.8
6b	R3	All MCs	128	1.6	128	1.6	* 0.505	18.7	LOS B	3.9	28.9	0.67	0.68	0.67	37.1
Approach			476	7.7	476	7.7	0.505	9.9	LOS A	3.9	28.9	0.58	0.55	0.58	39.8
NorthEast: Denison St															
24b	L3	All MCs	116	7.3	116	7.3	0.282	9.6	LOS A	1.9	14.4	0.70	0.75	0.70	45.5
26a	R1	All MCs	316	14.7	316	14.7	* 0.778	43.9	LOS D	7.4	58.2	0.96	0.89	1.09	31.9
Approach			432	12.7	432	12.7	0.778	34.7	LOS C	7.4	58.2	0.89	0.85	0.98	36.0
West: Beauchamp Rd															
10a	L1	All MCs	478	16.5	478	16.5	0.339	5.3	LOS A	2.6	20.6	0.23	0.60	0.23	25.8
11	T1	All MCs	393	8.0	393	8.0	0.383	10.8	LOS A	5.5	41.4	0.58	0.51	0.58	39.7
Approach			871	12.7	871	12.7	0.383	7.8	LOS A	5.5	41.4	0.39	0.56	0.39	36.9
All Vehicles			1778	11.4	1778	11.4	0.778	14.9	LOS B	7.4	58.2	0.56	0.63	0.58	37.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Beauchamp Rd											
P4	Full	1	37.7	LOS D	0.0	0.0	0.93	0.93	191.6	200.0	1.04
All Pedestrians		1	37.7	LOS D	0.0	0.0	0.93	0.93	191.6	200.0	1.04

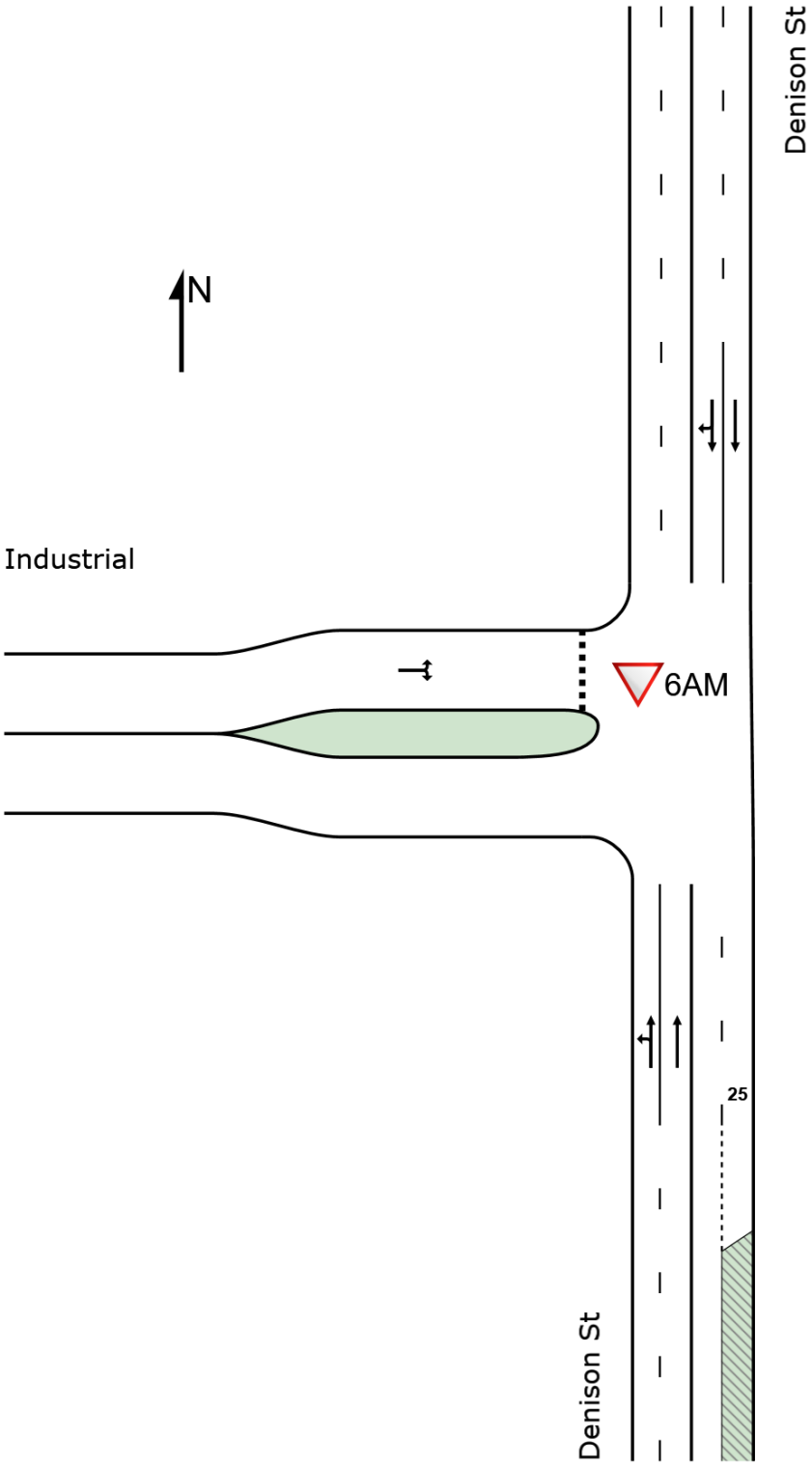
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SITE LAYOUT

Site: 6AM [DEN_IND_6_2024AM (Site Folder: AM Base)]

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

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



MOVEMENT SUMMARY

Site: 6AM [DEN_IND_6_2024AM_FS1 (Site Folder: AM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM FS1 (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	19	16.7	19	16.7	0.185	5.8	LOS A	0.0	0.0	0.00	0.04	0.00	56.7
2	T1	All MCs	628	12.2	628	12.2	0.185	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			647	12.4	647	12.4	0.185	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
North: Denison St															
8	T1	All MCs	449	11.2	449	11.2	0.222	0.2	LOS A	0.1	0.8	0.06	0.07	0.06	58.8
9	R2	All MCs	13	25.0	13	25.0	0.222	26.1	LOS B	0.1	0.8	0.07	0.09	0.07	52.4
Approach			462	11.6	462	11.6	0.222	0.9	NA	0.1	0.8	0.06	0.07	0.06	58.4
West: Industrial															
10	L2	All MCs	11	40.0	11	40.0	0.062	7.0	LOS A	0.1	0.7	0.63	0.74	0.63	36.5
12	R2	All MCs	9	11.1	9	11.1	0.062	22.1	LOS B	0.1	0.7	0.63	0.74	0.63	36.5
Approach			20	26.3	20	26.3	0.062	14.2	LOS A	0.1	0.7	0.63	0.74	0.63	36.5
All Vehicles			1129	12.3	1129	12.3	0.222	0.8	NA	0.1	0.8	0.03	0.05	0.03	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

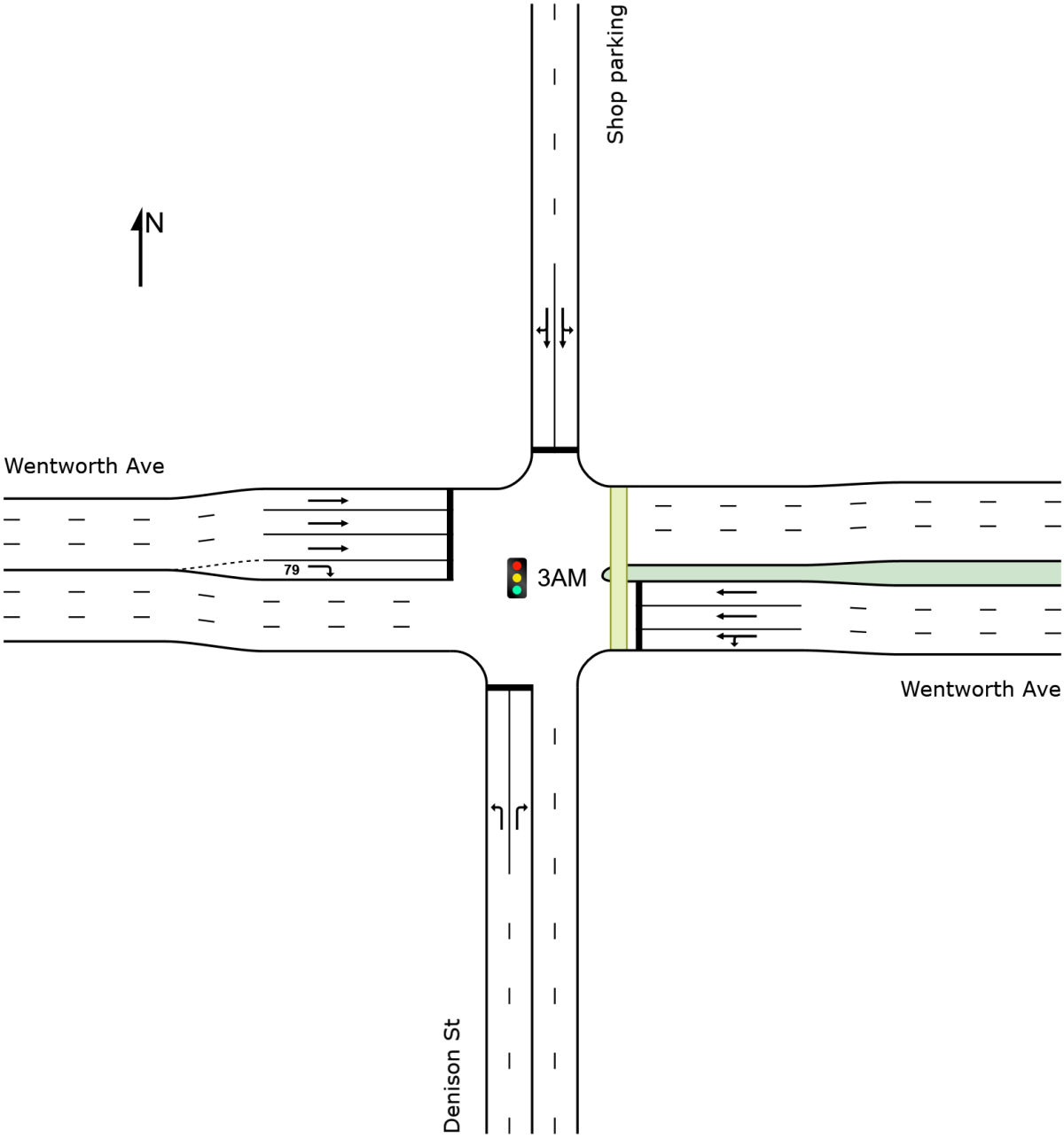
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3AM [WEN_DEN_3_2024AM (Site Folder: AM Base)]

TCS 1586 SS 1
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

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



MOVEMENT SUMMARY

Site: 3AM [WEN_DEN_3_2024AM_FS1 (Site Folder: AM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM FS1 (Network Folder: General)]

TCS 1586 SS 1
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 128 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	548	15.5	548	15.5	* 0.540	8.4	LOS A	6.1	48.7	0.39	0.71	0.39	50.5
3	R2	All MCs	143	5.9	143	5.9	0.344	43.0	LOS D	4.3	31.5	0.82	0.78	0.82	34.5
Approach			692	13.5	692	13.5	0.540	15.6	LOS B	6.1	48.7	0.48	0.72	0.48	46.1
East: Wentworth Ave															
4	L2	All MCs	105	4.0	105	4.0	0.428	28.1	LOS B	5.7	41.2	0.62	0.62	0.62	33.3
5	T1	All MCs	685	5.1	685	5.1	* 0.428	22.5	LOS B	5.9	43.0	0.62	0.55	0.62	43.5
Approach			791	4.9	791	4.9	0.428	23.3	LOS B	5.9	43.0	0.62	0.56	0.62	42.6
North: Shop parking															
7	L2	All MCs	26	0.0	26	0.0	0.093	36.9	LOS C	1.4	10.1	0.73	0.63	0.73	32.4
8	T1	All MCs	28	0.0	28	0.0	0.093	31.3	LOS C	1.4	10.1	0.73	0.63	0.73	23.2
9	R2	All MCs	38	0.0	38	0.0	0.147	38.9	LOS C	1.1	7.5	0.76	0.70	0.76	31.0
Approach			93	0.0	93	0.0	0.147	36.0	LOS C	1.4	10.1	0.75	0.66	0.75	29.6
West: Wentworth Ave															
11	T1	All MCs	678	9.9	678	9.9	0.218	12.8	LOS A	2.4	18.0	0.29	0.25	0.29	53.8
12	R2	All MCs	473	11.4	473	11.4	* 0.957	83.7	LOS F	19.5	150.1	1.00	1.17	1.31	19.0
Approach			1151	10.5	1151	10.5	0.957	41.9	LOS C	19.5	150.1	0.58	0.63	0.71	32.2
All Vehicles			2725	9.3	2725	9.3	0.957	29.6	LOS C	19.5	150.1	0.57	0.63	0.63	38.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Wentworth Ave											
P2	Full	57	58.3	LOS E	0.2	0.2	0.96	0.96	212.1	200.0	0.94
All Pedestrians		57	58.3	LOS E	0.2	0.2	0.96	0.96	212.1	200.0	0.94

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

MOVEMENT SUMMARY

Site: 2PM [BEA_BOT_2_2024PM_FS1 (Site Folder: PM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM FS1 (Network Folder: General)]

TCS 1526 SS 8
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 121 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Rd															
2	T1	All MCs	889	20.5	889	20.5	0.281	10.3	LOS A	4.7	38.7	0.47	0.41	0.47	58.4
6a	R1	All MCs	82	26.9	82	26.9	0.464	61.4	LOS E	2.9	24.9	0.98	0.78	0.98	21.4
Approach			972	21.0	972	21.0	0.464	14.6	LOS B	4.7	38.7	0.52	0.44	0.52	54.2
NorthWest: Beauchamp Rd															
27a	L1	All MCs	56	26.4	56	26.4	* 0.882	45.8	LOS D	15.2	116.4	1.00	1.00	1.22	27.9
29b	R3	All MCs	689	8.7	689	8.7	0.882	64.6	LOS E	15.2	116.4	1.00	1.00	1.22	27.8
Approach			745	10.0	745	10.0	0.882	63.2	LOS E	15.2	116.4	1.00	1.00	1.22	27.8
West: Botany Rd															
10b	L3	All MCs	708	5.3	708	5.3	0.453	8.2	LOS A	0.0	0.0	0.00	0.61	0.00	54.3
8	T1	All MCs	555	18.8	555	18.8	* 0.229	19.6	LOS B	3.9	31.7	0.62	0.52	0.62	50.9
Approach			1263	11.3	1263	11.3	0.453	13.2	LOS A	3.9	31.7	0.27	0.57	0.27	52.2
All Vehicles			2980	14.1	2980	14.1	0.882	26.2	LOS B	15.2	116.4	0.53	0.64	0.59	42.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

MOVEMENT SUMMARY

Site: 4PM [BEA_PER_4_2024PM_FS1 (Site Folder: PM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM FS1 (Network Folder: General)]

TCS 1532 SS 22
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 82 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Perry St															
21a	L1	All MCs	173	3.7	173	3.7	0.517	39.3	LOS C	3.9	28.2	0.94	0.80	0.94	27.0
23b	R3	All MCs	172	4.3	172	4.3	* 0.589	41.9	LOS C	4.0	28.9	0.96	0.81	0.96	26.2
Approach			344	4.0	344	4.0	0.589	40.6	LOS C	4.0	28.9	0.95	0.81	0.95	25.9
East: Beauchamp Road															
4b	L3	All MCs	193	2.7	193	2.7	0.336	12.4	LOS A	3.8	28.6	0.47	0.58	0.47	44.0
5	T1	All MCs	551	13.4	551	13.4	0.336	6.6	LOS A	4.1	32.0	0.47	0.46	0.47	28.8
Approach			743	10.6	743	10.6	0.336	8.1	LOS A	4.1	32.0	0.47	0.50	0.47	36.6
North: Perry St															
7	L2	All MCs	2	100.0	2	100.0	0.010	36.1	LOS C	0.0	0.6	0.83	0.62	0.83	25.9
9	R2	All MCs	1	0.0	1	0.0	0.003	32.9	LOS C	0.0	0.1	0.82	0.59	0.82	26.5
Approach			3	66.7	3	66.7	0.010	35.0	LOS C	0.0	0.6	0.82	0.61	0.82	26.1
West: Beauchamp Rd															
10	L2	All MCs	3	100.0	3	100.0	0.005	10.1	LOS A	0.0	0.3	0.35	0.56	0.35	41.5
11	T1	All MCs	659	8.5	659	8.5	0.640	4.5	LOS A	5.9	43.6	0.33	0.34	0.33	43.7
12a	R1	All MCs	193	3.8	193	3.8	* 0.640	12.5	LOS A	5.9	43.6	0.53	0.56	0.53	46.9
Approach			855	7.8	855	7.8	0.640	6.3	LOS A	5.9	43.6	0.38	0.39	0.38	44.8
All Vehicles			1945	8.3	1945	8.3	0.640	13.1	LOS A	5.9	43.6	0.52	0.50	0.52	37.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Perry St											
P5	Full	1	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
East: Beauchamp Road											
P2	Full	1	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
North: Perry St											

P3 Full	2	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
West: Beauchamp Rd										
P4 Full	1	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
All Pedestrians	5	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06

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

MOVEMENT SUMMARY

Site: 5PM [BEA_DRI_5_2024PM_FS1 (Site Folder: PM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM FS1 (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	739	10.8	739	10.8	0.419	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	49.8
6	R2	All MCs	1	0.0	1	0.0	0.419	5.4	LOS A	0.0	0.1	0.00	0.00	0.00	47.7
Approach			740	10.8	740	10.8	0.419	0.0	NA	0.0	0.1	0.00	0.00	0.00	49.8
North: Driveway															
7	L2	All MCs	3	0.0	3	0.0	0.009	6.9	LOS A	0.0	0.1	0.62	0.63	0.62	44.1
9	R2	All MCs	1	0.0	1	0.0	0.009	23.6	LOS B	0.0	0.1	0.62	0.63	0.62	44.1
Approach			4	0.0	4	0.0	0.009	11.1	LOS A	0.0	0.1	0.62	0.63	0.62	44.1
West: Beauchamp Rd															
10	L2	All MCs	1	0.0	1	0.0	0.253	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	47.9
11	T1	All MCs	831	7.9	831	7.9	0.253	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			832	7.8	832	7.8	0.253	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.8
All Vehicles			1576	9.2	1576	9.2	0.419	0.1	NA	0.0	0.1	0.00	0.00	0.00	49.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 1PM [DEN_BEA_1_2024PM_FS1 (Site Folder: PM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM FS1 (Network Folder: General)]

TCS 1548 SS 24
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 84 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	353	10.4	353	10.4	0.522	9.1	LOS A	4.5	33.4	0.63	0.56	0.63	38.4
6b	R3	All MCs	113	4.7	113	4.7	* 0.522	24.6	LOS B	4.5	33.4	0.76	0.72	0.76	34.8
Approach			465	9.0	465	9.0	0.522	12.9	LOS A	4.5	33.4	0.66	0.60	0.66	37.5
NorthEast: Denison St															
24b	L3	All MCs	154	3.4	154	3.4	0.306	12.6	LOS A	1.9	13.8	0.65	0.75	0.65	46.9
26a	R1	All MCs	384	11.2	384	11.2	* 0.845	46.3	LOS D	9.3	71.1	0.95	0.94	1.17	31.7
Approach			538	9.0	538	9.0	0.845	36.7	LOS C	9.3	71.1	0.87	0.89	1.02	35.3
West: Beauchamp Rd															
10a	L1	All MCs	407	12.1	407	12.1	0.291	5.7	LOS A	2.4	18.3	0.25	0.60	0.25	24.9
11	T1	All MCs	423	3.7	423	3.7	* 0.462	14.7	LOS B	6.9	49.9	0.70	0.61	0.70	37.0
Approach			831	7.9	831	7.9	0.462	10.3	LOS A	6.9	49.9	0.48	0.61	0.48	35.0
All Vehicles			1834	8.5	1834	8.5	0.845	18.7	LOS B	9.3	71.1	0.64	0.69	0.68	35.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Beauchamp Rd											
P4	Full	2	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
All Pedestrians		2	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

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

MOVEMENT SUMMARY

Site: 6PM [DEN_IND_6_2024PM_FS1 (Site Folder: PM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM FS1 (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	9	22.2	9	22.2	0.151	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	56.5
2	T1	All MCs	531	8.7	531	8.7	0.151	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			540	9.0	540	9.0	0.151	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.7
North: Denison St															
8	T1	All MCs	539	8.6	539	8.6	0.250	0.2	LOS A	0.1	0.4	0.03	0.03	0.03	59.5
9	R2	All MCs	7	42.9	7	42.9	0.250	24.6	LOS B	0.1	0.4	0.03	0.04	0.03	52.3
Approach			546	9.1	546	9.1	0.250	0.6	NA	0.1	0.4	0.03	0.03	0.03	59.2
West: Industrial															
10	L2	All MCs	22	14.3	22	14.3	0.149	6.0	LOS A	0.2	1.5	0.66	0.77	0.66	36.6
12	R2	All MCs	29	3.6	29	3.6	0.149	19.7	LOS B	0.2	1.5	0.66	0.77	0.66	36.6
Approach			52	8.2	52	8.2	0.149	13.8	LOS A	0.2	1.5	0.66	0.77	0.66	36.6
All Vehicles			1138	9.0	1138	9.0	0.250	1.0	NA	0.2	1.5	0.04	0.05	0.04	58.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 3PM [WEN_DEN_3_2024PM_FS1 (Site Folder: PM Future - Scenario 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [PM FS1 (Network Folder: General)]

TCS 1586 SS 1
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 129 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	568	9.4	568	9.4	* 0.542	8.4	LOS A	6.4	48.7	0.39	0.71	0.39	50.7
3	R2	All MCs	139	2.3	139	2.3	0.417	49.3	LOS D	4.5	32.3	0.88	0.80	0.88	32.7
Approach			707	8.0	707	8.0	0.542	16.4	LOS B	6.4	48.7	0.49	0.72	0.49	45.7
East: Wentworth Ave															
4	L2	All MCs	104	7.1	104	7.1	0.424	27.7	LOS B	5.6	40.8	0.61	0.61	0.61	33.6
5	T1	All MCs	702	1.6	702	1.6	* 0.424	22.0	LOS B	6.0	42.4	0.61	0.54	0.61	43.8
Approach			806	2.3	806	2.3	0.424	22.8	LOS B	6.0	42.4	0.61	0.55	0.61	42.9
North: Shop parking															
7	L2	All MCs	94	0.0	94	0.0	0.298	40.0	LOS C	5.0	34.9	0.80	0.71	0.80	31.4
8	T1	All MCs	79	0.0	79	0.0	0.298	34.2	LOS C	5.0	34.9	0.80	0.71	0.80	22.2
9	R2	All MCs	138	0.0	138	0.0	0.541	45.1	LOS D	4.6	32.0	0.88	0.80	0.88	29.5
Approach			311	0.0	311	0.0	0.541	40.8	LOS C	5.0	34.9	0.84	0.75	0.84	28.7
West: Wentworth Ave															
11	T1	All MCs	748	4.9	748	4.9	0.232	12.2	LOS A	2.6	19.1	0.29	0.25	0.29	53.8
12	R2	All MCs	460	9.8	460	9.8	* 0.905	66.7	LOS E	16.7	126.9	0.97	1.10	1.15	22.7
Approach			1208	6.8	1208	6.8	0.905	33.0	LOS C	16.7	126.9	0.55	0.57	0.62	36.0
All Vehicles			3033	5.2	3033	5.2	0.905	27.2	LOS B	16.7	126.9	0.58	0.62	0.61	38.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Wentworth Ave											
P2	Full	48	58.8	LOS E	0.2	0.2	0.96	0.96	212.6	200.0	0.94
All Pedestrians		48	58.8	LOS E	0.2	0.2	0.96	0.96	212.6	200.0	0.94

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

MOVEMENT SUMMARY

Site: 2AM [BEA_BOT_2_2024AM_FS2 (Site Folder: AM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM FS2 (Network Folder: General)]

TCS 1526 SS 8
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Rd															
2	T1	All MCs	587	38.9	587	38.9	0.182	6.4	LOS A	2.5	23.0	0.35	0.30	0.35	62.4
6a	R1	All MCs	52	34.7	52	34.7	0.459	70.9	LOS F	2.0	18.5	1.00	0.76	1.00	19.3
Approach			639	38.6	639	38.6	0.459	11.6	LOS A	2.5	23.0	0.40	0.34	0.40	56.9
NorthWest: Beauchamp Rd															
27a	L1	All MCs	77	30.1	77	30.1	* 0.973	83.7	LOS F	16.3	130.1	1.00	1.15	1.47	22.1
29b	R3	All MCs	543	12.0	543	12.0	0.973	98.0	LOS F	16.3	130.1	1.00	1.15	1.47	22.1
Approach			620	14.3	620	14.3	0.973	96.2	LOS F	16.3	130.1	1.00	1.15	1.47	22.1
West: Botany Rd															
10b	L3	All MCs	869	11.7	869	11.7	0.578	8.3	LOS A	0.0	0.0	0.00	0.60	0.00	54.1
8	T1	All MCs	882	26.0	882	26.0	* 0.307	6.6	LOS A	3.2	27.0	0.30	0.26	0.30	62.1
Approach			1752	18.9	1752	18.9	0.578	7.5	LOS A	3.2	27.0	0.15	0.43	0.15	59.1
All Vehicles			3011	22.1	3011	22.1	0.973	26.6	LOS B	16.3	130.1	0.38	0.56	0.47	42.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

MOVEMENT SUMMARY

Site: 4AM [BEA_PER_4_2024AM_FS2 (Site Folder: AM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM FS2 (Network Folder: General)]

TCS 1532 SS 22
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 84 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Perry St															
21a	L1	All MCs	187	5.6	187	5.6	0.592	45.7	LOS D	4.4	31.9	0.95	0.81	0.95	27.0
23b	R3	All MCs	206	8.2	206	8.2	* 0.765	52.9	LOS D	5.4	40.5	0.99	0.90	1.18	24.6
Approach			394	7.0	394	7.0	0.765	49.5	LOS D	5.4	40.5	0.97	0.85	1.07	25.7
East: Beauchamp Road															
4b	L3	All MCs	189	7.2	189	7.2	0.308	13.0	LOS A	3.5	26.4	0.48	0.60	0.48	43.1
5	T1	All MCs	461	15.8	461	15.8	0.308	7.1	LOS A	3.8	29.9	0.48	0.47	0.48	27.9
Approach			651	13.3	651	13.3	0.308	8.9	LOS A	3.8	29.9	0.48	0.51	0.48	36.2
North: Perry St															
7	L2	All MCs	7	100.0	7	100.0	0.032	36.1	LOS C	0.2	2.0	0.82	0.66	0.82	26.0
9	R2	All MCs	14	100.0	14	100.0	0.059	34.6	LOS C	0.3	3.7	0.82	0.68	0.82	25.9
Approach			21	100.0	21	100.0	0.059	35.1	LOS C	0.3	3.7	0.82	0.67	0.82	26.0
West: Beauchamp Rd															
10	L2	All MCs	23	95.5	23	95.5	0.034	10.9	LOS A	0.2	2.7	0.38	0.60	0.38	41.5
11	T1	All MCs	663	13.3	663	13.3	* 0.673	5.5	LOS A	7.0	53.2	0.38	0.37	0.38	42.7
12a	R1	All MCs	211	6.5	211	6.5	0.673	13.9	LOS A	7.0	53.2	0.58	0.60	0.58	46.0
Approach			897	13.8	897	13.8	0.673	7.6	LOS A	7.0	53.2	0.43	0.43	0.43	43.8
All Vehicles			1962	13.2	1962	13.2	0.765	16.7	LOS B	7.0	53.2	0.56	0.54	0.58	36.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Perry St											
P5	Full	1	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
East: Beauchamp Road											
P2	Full	9	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

North: Perry St										
P3 Full	2	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
West: Beauchamp Rd										
P4 Full	1	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
All Pedestrians	14	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

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

MOVEMENT SUMMARY

Site: 5AM [BEA_DRI_5_2024AM_FS2 (Site Folder: AM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM FS2 (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	678	16.1	678	16.1	0.409	0.0	LOS A	0.1	0.7	0.03	0.03	0.03	47.2
6	R2	All MCs	8	0.0	8	0.0	0.409	24.5	LOS B	0.1	0.7	0.03	0.03	0.03	47.3
Approach			686	16.0	686	16.0	0.409	0.3	NA	0.1	0.7	0.03	0.03	0.03	47.2
North: Driveway															
7	L2	All MCs	1	0.0	1	0.0	0.006	6.8	LOS A	0.0	0.1	0.69	0.66	0.69	40.7
9	R2	All MCs	1	0.0	1	0.0	0.006	22.4	LOS B	0.0	0.1	0.69	0.66	0.69	40.7
Approach			2	0.0	2	0.0	0.006	14.6	LOS B	0.0	0.1	0.69	0.66	0.69	40.7
West: Beauchamp Rd															
10	L2	All MCs	3	0.0	3	0.0	0.238	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	47.9
11	T1	All MCs	841	10.0	841	10.0	0.238	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			844	10.0	844	10.0	0.238	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.8
All Vehicles			1533	12.6	1533	12.6	0.409	0.2	NA	0.1	0.7	0.01	0.02	0.02	48.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 1AM [DEN_BEA_1_2024AM_FS2 (Site Folder: AM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM FS2 (Network Folder: General)]

TCS 1548 SS 24
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 87 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	347	10.0	347	10.0	* 0.506	6.7	LOS A	3.9	28.9	0.54	0.50	0.54	40.8
6b	R3	All MCs	128	1.6	128	1.6	* 0.506	18.7	LOS B	3.9	28.9	0.67	0.68	0.67	37.1
Approach			476	7.7	476	7.7	0.506	9.9	LOS A	3.9	28.9	0.58	0.55	0.58	39.8
NorthEast: Denison St															
24b	L3	All MCs	116	7.3	116	7.3	0.288	9.7	LOS A	1.9	14.6	0.70	0.75	0.70	45.5
26a	R1	All MCs	320	15.5	320	15.5	* 0.794	44.6	LOS D	7.6	60.0	0.96	0.90	1.11	31.7
Approach			436	13.3	436	13.3	0.794	35.4	LOS C	7.6	60.0	0.89	0.86	1.00	35.8
West: Beauchamp Rd															
10a	L1	All MCs	481	17.1	481	17.1	0.342	5.3	LOS A	2.6	20.9	0.23	0.60	0.23	25.8
11	T1	All MCs	393	8.0	393	8.0	0.383	10.8	LOS A	5.5	41.4	0.58	0.51	0.58	39.7
Approach			874	13.0	874	13.0	0.383	7.8	LOS A	5.5	41.4	0.39	0.56	0.39	36.9
All Vehicles			1785	11.7	1785	11.7	0.794	15.1	LOS B	7.6	60.0	0.56	0.63	0.59	37.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Beauchamp Rd											
P4	Full	1	37.7	LOS D	0.0	0.0	0.93	0.93	191.6	200.0	1.04
All Pedestrians		1	37.7	LOS D	0.0	0.0	0.93	0.93	191.6	200.0	1.04

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

MOVEMENT SUMMARY

Site: 6AM [DEN_IND_6_2024AM_FS2 (Site Folder: AM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM FS2 (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	22	28.6	22	28.6	0.187	5.9	LOS A	0.0	0.0	0.00	0.04	0.00	56.0
2	T1	All MCs	628	12.2	628	12.2	0.187	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			651	12.8	651	12.8	0.187	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.5
North: Denison St															
8	T1	All MCs	451	11.2	451	11.2	0.220	0.2	LOS A	0.1	0.7	0.05	0.06	0.05	58.9
9	R2	All MCs	12	18.2	12	18.2	0.220	24.2	LOS B	0.1	0.7	0.06	0.08	0.06	52.6
Approach			462	11.4	462	11.4	0.220	0.8	NA	0.1	0.7	0.05	0.06	0.05	58.6
West: Industrial															
10	L2	All MCs	11	40.0	11	40.0	0.091	7.0	LOS A	0.1	0.9	0.68	0.79	0.68	33.9
12	R2	All MCs	12	27.3	12	27.3	0.091	28.4	LOS B	0.1	0.9	0.68	0.79	0.68	33.9
Approach			22	33.3	22	33.3	0.091	18.2	LOS B	0.1	0.9	0.68	0.79	0.68	33.9
All Vehicles			1135	12.6	1135	12.6	0.220	0.8	NA	0.1	0.9	0.03	0.05	0.03	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 3AM [WEN_DEN_3_2024AM_FS2 (Site Folder: AM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM FS2 (Network Folder: General)]

TCS 1586 SS 1
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 128 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	548	15.5	548	15.5	* 0.540	8.4	LOS A	6.1	48.7	0.39	0.71	0.39	50.5
3	R2	All MCs	143	5.9	143	5.9	0.344	43.0	LOS D	4.3	31.5	0.82	0.78	0.82	34.5
Approach			692	13.5	692	13.5	0.540	15.6	LOS B	6.1	48.7	0.48	0.72	0.48	46.1
East: Wentworth Ave															
4	L2	All MCs	105	4.0	105	4.0	0.428	28.1	LOS B	5.7	41.2	0.62	0.62	0.62	33.3
5	T1	All MCs	685	5.1	685	5.1	* 0.428	22.5	LOS B	5.9	43.0	0.62	0.55	0.62	43.5
Approach			791	4.9	791	4.9	0.428	23.3	LOS B	5.9	43.0	0.62	0.56	0.62	42.6
North: Shop parking															
7	L2	All MCs	26	0.0	26	0.0	0.093	36.9	LOS C	1.4	10.1	0.73	0.63	0.73	32.4
8	T1	All MCs	28	0.0	28	0.0	0.093	31.3	LOS C	1.4	10.1	0.73	0.63	0.73	23.2
9	R2	All MCs	38	0.0	38	0.0	0.147	38.9	LOS C	1.1	7.5	0.76	0.70	0.76	31.0
Approach			93	0.0	93	0.0	0.147	36.0	LOS C	1.4	10.1	0.75	0.66	0.75	29.6
West: Wentworth Ave															
11	T1	All MCs	678	9.9	678	9.9	0.218	14.4	LOS A	2.4	18.0	0.29	0.25	0.29	53.8
12	R2	All MCs	474	11.3	474	11.3	* 0.959	89.3	LOS F	19.7	151.3	1.00	1.17	1.31	18.9
Approach			1152	10.5	1152	10.5	0.959	45.2	LOS D	19.7	151.3	0.58	0.63	0.71	36.2
All Vehicles			2726	9.3	2726	9.3	0.959	31.0	LOS C	19.7	151.3	0.57	0.63	0.63	40.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Wentworth Ave											
P2	Full	57	58.3	LOS E	0.2	0.2	0.96	0.96	212.1	200.0	0.94
All Pedestrians		57	58.3	LOS E	0.2	0.2	0.96	0.96	212.1	200.0	0.94

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

MOVEMENT SUMMARY

Site: 2PM [BEA_BOT_2_2024PM_FS2 (Site Folder: PM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM FS2 (Network Folder: General)]

TCS 1526 SS 8
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 121 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Botany Rd															
2	T1	All MCs	889	20.5	889	20.5	0.281	10.3	LOS A	4.7	38.7	0.47	0.41	0.47	58.4
6a	R1	All MCs	82	26.9	82	26.9	0.464	61.4	LOS E	2.9	24.9	0.98	0.78	0.98	21.4
Approach			972	21.0	972	21.0	0.464	14.6	LOS B	4.7	38.7	0.52	0.44	0.52	54.2
NorthWest: Beauchamp Rd															
27a	L1	All MCs	56	26.4	56	26.4	* 0.889	47.0	LOS D	15.4	118.9	1.00	1.01	1.23	27.6
29b	R3	All MCs	694	9.1	694	9.1	0.889	65.8	LOS E	15.4	118.9	1.00	1.01	1.23	27.6
Approach			749	10.4	749	10.4	0.889	64.4	LOS E	15.4	118.9	1.00	1.01	1.23	27.6
West: Botany Rd															
10b	L3	All MCs	712	5.8	712	5.8	0.456	8.2	LOS A	0.0	0.0	0.00	0.61	0.00	54.3
8	T1	All MCs	555	18.8	555	18.8	* 0.229	19.6	LOS B	3.9	31.7	0.62	0.52	0.62	50.9
Approach			1266	11.5	1266	11.5	0.456	13.2	LOS A	3.9	31.7	0.27	0.57	0.27	52.2
All Vehicles			2987	14.3	2987	14.3	0.889	26.5	LOS B	15.4	118.9	0.53	0.64	0.59	42.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

MOVEMENT SUMMARY

Site: 3PM [WEN_DEN_3_2024PM_FS2 (Site Folder: PM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM FS2 (Network Folder: General)]

TCS 1586 SS 1
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 129 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	569	9.4	569	9.4	* 0.543	8.4	LOS A	6.5	48.9	0.39	0.71	0.39	50.7
3	R2	All MCs	139	2.3	139	2.3	0.417	49.3	LOS D	4.5	32.3	0.88	0.80	0.88	32.7
Approach			708	8.0	708	8.0	0.543	16.4	LOS B	6.5	48.9	0.49	0.72	0.49	45.7
East: Wentworth Ave															
4	L2	All MCs	104	7.1	104	7.1	0.424	27.7	LOS B	5.6	40.8	0.61	0.61	0.61	33.6
5	T1	All MCs	702	1.6	702	1.6	* 0.424	22.0	LOS B	6.0	42.4	0.61	0.54	0.61	43.8
Approach			806	2.3	806	2.3	0.424	22.8	LOS B	6.0	42.4	0.61	0.55	0.61	42.9
North: Shop parking															
7	L2	All MCs	94	0.0	94	0.0	0.298	40.0	LOS C	5.0	34.9	0.80	0.71	0.80	31.4
8	T1	All MCs	79	0.0	79	0.0	0.298	34.2	LOS C	5.0	34.9	0.80	0.71	0.80	22.2
9	R2	All MCs	138	0.0	138	0.0	0.542	45.1	LOS D	4.6	32.1	0.89	0.80	0.89	29.5
Approach			311	0.0	311	0.0	0.542	40.8	LOS C	5.0	34.9	0.84	0.75	0.84	28.7
West: Wentworth Ave															
11	T1	All MCs	748	4.9	748	4.9	0.232	13.5	LOS A	2.6	19.1	0.29	0.25	0.29	53.8
12	R2	All MCs	460	9.8	460	9.8	* 0.905	70.5	LOS F	16.7	126.9	0.97	1.10	1.15	22.7
Approach			1208	6.8	1208	6.8	0.905	35.2	LOS C	16.7	126.9	0.55	0.57	0.62	40.6
All Vehicles			3034	5.2	3034	5.2	0.905	28.1	LOS B	16.7	126.9	0.58	0.62	0.61	40.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Wentworth Ave											
P2	Full	48	58.8	LOS E	0.2	0.2	0.96	0.96	212.6	200.0	0.94
All Pedestrians		48	58.8	LOS E	0.2	0.2	0.96	0.96	212.6	200.0	0.94

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

MOVEMENT SUMMARY

Site: 4PM [BEA_PER_4_2024PM_FS2 (Site Folder: PM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM FS2 (Network Folder: General)]

TCS 1532 SS 22
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 82 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Perry St															
21a	L1	All MCs	173	3.7	173	3.7	0.517	39.3	LOS C	3.9	28.2	0.94	0.80	0.94	27.0
23b	R3	All MCs	172	4.3	172	4.3	* 0.589	41.9	LOS C	4.0	28.9	0.96	0.81	0.96	26.2
Approach			344	4.0	344	4.0	0.589	40.6	LOS C	4.0	28.9	0.95	0.81	0.95	26.6
East: Beauchamp Road															
4b	L3	All MCs	193	2.7	193	2.7	0.339	12.4	LOS A	3.9	28.9	0.47	0.58	0.47	44.0
5	T1	All MCs	555	13.9	555	13.9	0.339	6.6	LOS A	4.1	32.3	0.47	0.47	0.47	28.8
Approach			747	11.0	747	11.0	0.339	8.1	LOS A	4.1	32.3	0.47	0.50	0.47	36.5
North: Perry St															
7	L2	All MCs	2	100.0	2	100.0	0.010	36.1	LOS C	0.0	0.6	0.83	0.62	0.83	25.9
9	R2	All MCs	1	0.0	1	0.0	0.003	32.9	LOS C	0.0	0.1	0.82	0.59	0.82	26.5
Approach			3	66.7	3	66.7	0.010	35.0	LOS C	0.0	0.6	0.82	0.61	0.82	26.1
West: Beauchamp Rd															
10	L2	All MCs	3	100.0	3	100.0	0.005	10.1	LOS A	0.0	0.3	0.35	0.56	0.35	41.5
11	T1	All MCs	662	8.9	662	8.9	* 0.646	4.7	LOS A	6.2	45.9	0.35	0.34	0.35	43.4
12a	R1	All MCs	193	3.8	193	3.8	0.646	13.6	LOS A	6.2	45.9	0.55	0.57	0.55	46.5
Approach			858	8.1	858	8.1	0.646	6.7	LOS A	6.2	45.9	0.39	0.40	0.39	44.5
All Vehicles			1953	8.6	1953	8.6	0.646	13.2	LOS A	6.2	45.9	0.52	0.51	0.52	37.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Perry St											
P5	Full	1	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
East: Beauchamp Road											
P2	Full	1	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
North: Perry St											

P3 Full	2	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
West: Beauchamp Rd										
P4 Full	1	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06
All Pedestrians	5	35.2	LOS D	0.0	0.0	0.93	0.93	189.1	200.0	1.06

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

MOVEMENT SUMMARY

Site: 5PM [BEA_DRI_5_2024PM_FS2 (Site Folder: PM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM FS2 (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	742	11.2	742	11.2	0.422	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	49.8
6	R2	All MCs	1	0.0	1	0.0	0.422	7.4	LOS A	0.0	0.1	0.00	0.00	0.00	47.7
Approach			743	11.2	743	11.2	0.422	0.0	NA	0.0	0.1	0.00	0.00	0.00	49.8
North: Driveway															
7	L2	All MCs	4	0.0	4	0.0	0.015	7.0	LOS A	0.0	0.1	0.66	0.68	0.66	42.6
9	R2	All MCs	2	0.0	2	0.0	0.015	24.0	LOS B	0.0	0.1	0.66	0.68	0.66	42.6
Approach			6	0.0	6	0.0	0.015	12.6	LOS A	0.0	0.1	0.66	0.68	0.66	42.6
West: Beauchamp Rd															
10	L2	All MCs	1	0.0	1	0.0	0.254	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	47.9
11	T1	All MCs	834	8.2	834	8.2	0.254	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach			835	8.2	835	8.2	0.254	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.8
All Vehicles			1584	9.6	1584	9.6	0.422	0.1	NA	0.0	0.1	0.00	0.00	0.00	49.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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: 1PM [DEN_BEA_1_2024PM_FS2 (Site Folder: PM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM FS2 (Network Folder: General)]

TCS 1548 SS 24
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 84 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Beauchamp Rd															
5	T1	All MCs	353	10.4	353	10.4	* 0.523	9.1	LOS A	4.5	33.4	0.63	0.56	0.63	38.4
6b	R3	All MCs	113	4.7	113	4.7	* 0.523	24.6	LOS B	4.5	33.4	0.76	0.72	0.76	34.8
Approach			465	9.0	465	9.0	0.523	12.9	LOS A	4.5	33.4	0.66	0.60	0.66	37.5
NorthEast: Denison St															
24b	L3	All MCs	154	3.4	154	3.4	0.313	16.1	LOS B	1.9	13.9	0.65	0.75	0.65	46.9
26a	R1	All MCs	387	12.0	387	12.0	* 0.865	48.8	LOS D	9.6	74.0	0.95	0.96	1.21	31.1
Approach			541	9.5	541	9.5	0.865	39.5	LOS C	9.6	74.0	0.87	0.90	1.05	36.0
West: Beauchamp Rd															
10a	L1	All MCs	412	12.8	412	12.8	0.295	5.7	LOS A	2.4	18.7	0.25	0.60	0.25	24.8
11	T1	All MCs	423	3.7	423	3.7	0.462	14.7	LOS B	6.9	49.9	0.70	0.61	0.70	37.0
Approach			835	8.2	835	8.2	0.462	10.2	LOS A	6.9	49.9	0.48	0.61	0.48	35.0
All Vehicles			1841	8.8	1841	8.8	0.865	19.5	LOS B	9.6	74.0	0.64	0.69	0.69	36.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Beauchamp Rd											
P4	Full	2	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05
All Pedestrians		2	36.2	LOS D	0.0	0.0	0.93	0.93	190.1	200.0	1.05

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

MOVEMENT SUMMARY

Site: 6PM [DEN_IND_6_2024PM_FS2 (Site Folder: PM Future - Scenario 2)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM FS2 (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Denison St															
1	L2	All MCs	13	41.7	13	41.7	0.153	6.0	LOS A	0.0	0.0	0.00	0.03	0.00	55.4
2	T1	All MCs	532	8.7	532	8.7	0.153	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			544	9.5	544	9.5	0.153	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.6
North: Denison St															
8	T1	All MCs	539	8.6	539	8.6	0.250	0.2	LOS A	0.1	0.5	0.03	0.03	0.03	59.4
9	R2	All MCs	7	42.9	7	42.9	0.250	25.0	LOS B	0.1	0.5	0.03	0.04	0.03	52.3
Approach			546	9.1	546	9.1	0.250	0.6	NA	0.1	0.5	0.03	0.03	0.03	59.2
West: Industrial															
10	L2	All MCs	22	14.3	22	14.3	0.190	6.1	LOS A	0.2	1.9	0.70	0.80	0.71	34.8
12	R2	All MCs	33	12.9	33	12.9	0.190	23.6	LOS B	0.2	1.9	0.70	0.80	0.71	34.8
Approach			55	13.5	55	13.5	0.190	16.5	LOS B	0.2	1.9	0.70	0.80	0.71	34.8
All Vehicles			1145	9.5	1145	9.5	0.250	1.2	NA	0.2	1.9	0.05	0.06	0.05	57.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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.

Thoughtful Transport Solutions

Suite 4.03, Level 4, 157 Walker Street, North Sydney NSW 2060
sctconsulting.com.au