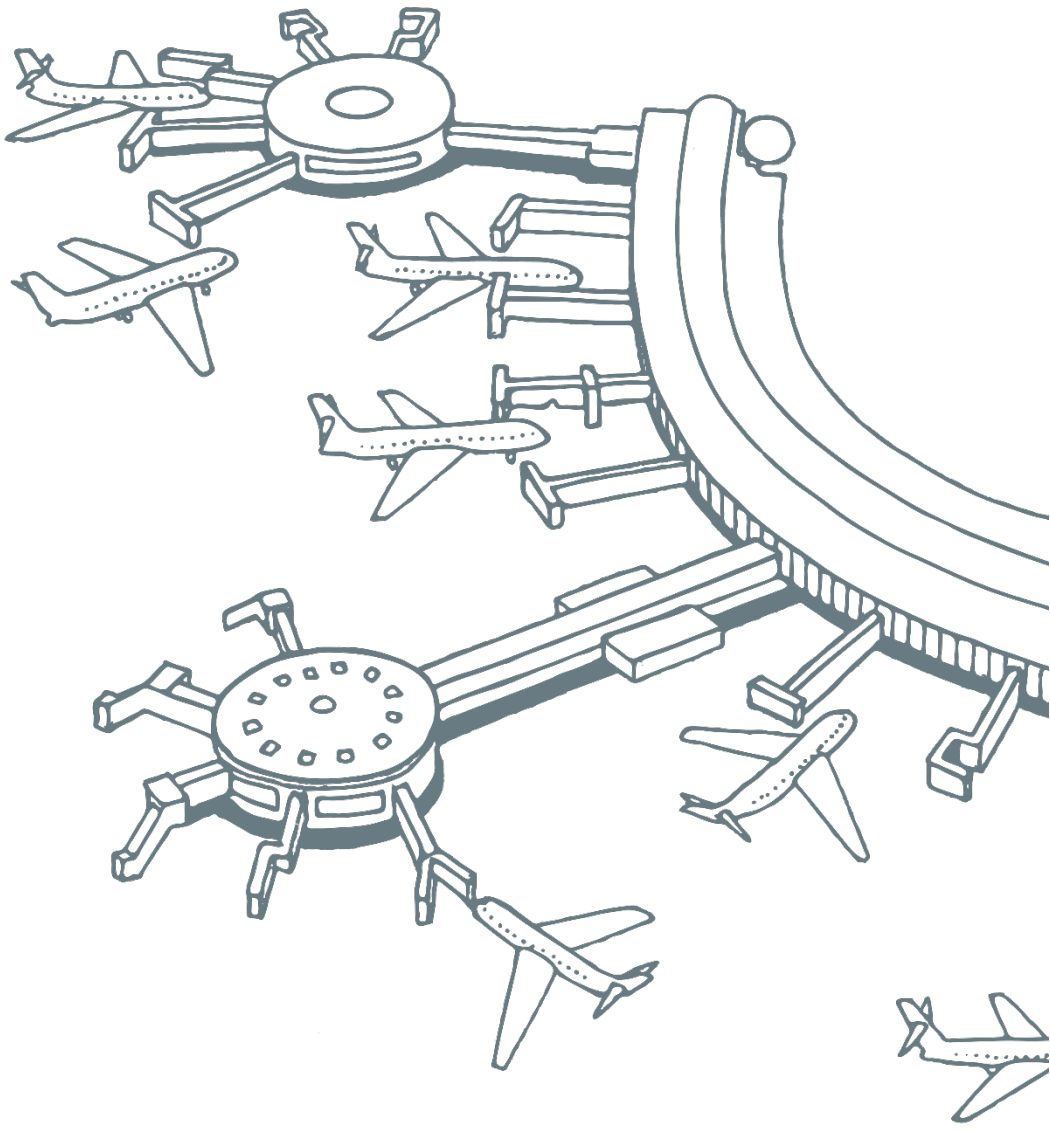
APPENDIX F
OPERATIONAL TRAFFIC – TECHNICAL MEMORANDUM



BNE Auto Mall

Operational Traffic Technical Memo

Brisbane Airport Corporation

Reference: 503043

Revision: 2

12 April 2019

aurecon

Bringing ideas to life

Document control record

Document prepared by:

Aurecon Australasia Pty Ltd
ABN 54 005 139 873
Ground Floor, 25 King Street
Bowen Hills QLD 4006
Locked Bag 331
Brisbane QLD 4001
Australia

T +61 7 3173 8000
F +61 7 3173 8001
E brisbane@aurecongroup.com
W aurecongroup.com

Document control						aurecon
Report title		Operational Traffic Technical Memo				
Document code			**Project number**		503043	
File path						
Client		Brisbane Airport Corporation				
Client contact		David Oatley	**Client reference**			
Rev	**Date**	**Revision details/status**	**Author**	**Reviewer**	**Verifier** (if required)	**Approver**
0	2019-03-28	Draft for BAC Review	Denise Wang	JDW	G Kerr	C Roderick
1	2019-04-05	Draft	Denise Wang	JDW	G Kerr	C Roderick
2	2019-04-10	Final	Denise Wang	JDW	G Kerr	C Roderick
Current revision		**2**				

Approval			
Author signature		Approver signature	
Name	Denise Wang	Name	Corey Roderick
Title	Transport Planner	Title	Principal, Environment and Planning

Contents

Figures

Tables

Glossary

Acronym	Meaning
AADT	Average Annual Daily Traffic
BAC	Brisbane Airport Corporation
GFA	Gross Floor Area
LoS	Level of Service: An index of the operational performance of traffic on a given roadway, traffic lane, approach, intersection, route or network, ‘A’ meaning good performance, ‘F’ meaning poor performance
LV	Light Vehicle
STREAMS	An integrated intelligent transport system used in Queensland
TIA	Traffic Impact Assessment
TMR	Queensland Department of Transport and Main Roads
EAR	Environmental Assessment Report

1 Introduction

1.1 Project background

Aurecon has been commissioned by Brisbane Airport Corporation (BAC) to prepare a technical memo for the BNE Auto Mall (the Project) operational traffic impacts as part of the BAC's Major Development Plan (MDP) application.

The BAC Auto Mall precinct is bordered by Moreton Drive, Airport Drive and Nancy Bird Way. The BAC Auto Mall is set to be Australia's benchmark automotive precinct designed for new and used car buyers, motoring enthusiasts and the public. The development will include a diverse mix of uses such as:

- A range of commercial uses including, but not limited to, automotive retail dealerships, retail showrooms, and retail tenancies.
- Dedicated manufacturers' brand experience centres.
- An automotive performance track, associated manoeuvring and handling courses, skidpan and 4WD testing circuit.
- Track operations and management centre.

1.2 Objectives

The objectives of this memo are to:

- Describe the operation of BAC Auto Mall's configuration with the current and future Brisbane Airport transport network.
- Examine the suitability of local access arrangements based upon local traffic modelling.
- Make recommendations in respect of parking provision.

1.3 Existing Transport Context

1.3.1 Staging of Development

The BAC Auto Mall is scheduled to officially open late 2021. The following table provides a snapshot of land use assumptions, expected timing of development and indicative lot area. The descriptions of land uses are as follows:

- Dealerships – generally contain a showroom, reception, visitor centre, administration area and café. The peak times of use are expected to be on the weekends.
- Brand Experience Centres – These are expected to provide a track car showroom, workshop and lobby on the ground floor and function rooms, lounge areas, office space and meeting rooms on the first and second floors.

Table 1 Land Use Assumptions

Indicative Lot	Indicative Lot Area (m^2)	Maximum Height (storeys)	Timing (Year)	Description
Stage 1				
1	24,000	3 storeys	2021	Dealership
2	12,000	3 storeys	2021	Dealership
3	7,000	3 storeys	2021	Dealership

Indicative Lot	Indicative Lot Area (m^2)	Maximum Height (storeys)	Timing (Year)	Description
4	6,000	3 storeys	2021	Dealership
5	5,000	3 storeys	2021	Dealership
6	6,000	3 storeys	2021	Dealership
7	6,000	3 storeys	2021	Brand Experience Centre
7A	5,000	3 storeys	2021	Brand Experience Centre
8	5,000	3 storeys	2021	Brand Experience Centre
9	5,000	3 storeys	2021	Brand Experience Centre
10	5,500	3 storeys	2021	Brand Experience Centre
11	5,000	3 storeys	2021	Dealership
12	8,000	3 storeys	2021	Dealership
13	8,000	3 storeys	2021	Dealership
14	7,000	3 storeys	2021	Dealership
15	11,000	3 storeys	2023	Dealership
Stage 2				
23	12,000	3 storeys	2026	Vacant lot
24	9,000	3 storeys	2026	Vacant lot
25	8,000	3 storeys	2026	Vacant lot
26	11,000	3 storeys	2026	Vacant lot
27	11,000	3 storeys	2026	Vacant lot
Stage 3				
16	8,000	3 storeys	2023	Dealership
17	6,000	3 storeys	2023	Dealership
18	6,000	3 storeys	2023	Dealership
19	6,000	3 storeys	2023	Dealership
20	7,000	3 storeys	2023	Dealership
21	20,000	3 storeys	2023	Vacant lot
22	19,000	3 storeys	2023	Vacant lot

1.3.2 Site Access

The Project site is enclosed by Moreton Drive, Airport Drive and Nancy Bird Way and located close to the International Terminal. A summary of traffic data received and used to support the traffic analysis in this report is shown below. Data included AM/PM peak directional volume and AWDT in all cases.

Table 2 summarises the key characteristics of each of these roads.

Table 2 Characteristics of surrounding roads

Road	Owner	Approx. length (km)	Cross section	AWDT (2017)	Peak Directional Volume (Hour)	Adjacent land use	Posted speed (km/h)
Airport Drive	BAC	5.2	Four-lane, two-way road Divided by a solid median (width of the median is >10 m) with appropriate shoulders	15,000[1]	500 Northbound 1,000 Southbound	Commercial and airport	70
Moreton Drive	BAC	4	Varies along the road, however near the project site it is an eight-lane, two-way road Divided by a solid median (width of the median is approximately 10 m) with appropriate shoulders and barriers	60,000[2]	3,200 Northbound 2,000 Southbound	Airport	90
Nancy Bird Way	BAC	0.5	Four-lane, two-way road Divided by a solid median (width of the median is approximately 2.5 m) with appropriate shoulders and barriers	15,000	850 Eastbound 300 Westbound	Airport	60

Table note: [1]Traffic volumes taken from Airport Drive, south of the intersection with Nancy Bird Way
[2]Traffic volumes taken from Moreton Drive, south of the intersection with Nancy Bird Way

Airport Drive

Airport Drive is approximately 5.2 km in length and connects to the Airport Link toll road to the west. It is a four-lane, two-way median divided road and controlled by BAC that road provides the primary access route to the Brisbane Airport, along with Moreton Drive.

BNE Auto Mall site access is currently obtained from Airport Drive as a left-in, left-out arrangement and this will be formalised for Stage 2 of the Auto Mall development. The nearby intersection for the International P2 Multi-Level Car Park (MLCP) on Airport Drive will be signalised and is planned to be commissioned in mid to late-2020.

The existing dual left in / left out access arrangements from Airport Drive will be utilised for construction traffic. The road access (into the Auto Mall) utilises the left inbound lane cordoned off by concrete median barriers with acceleration and deceleration tapers either end. A minimum 1.0 m shoulder has been maintained alongside the barriers for the through lane.

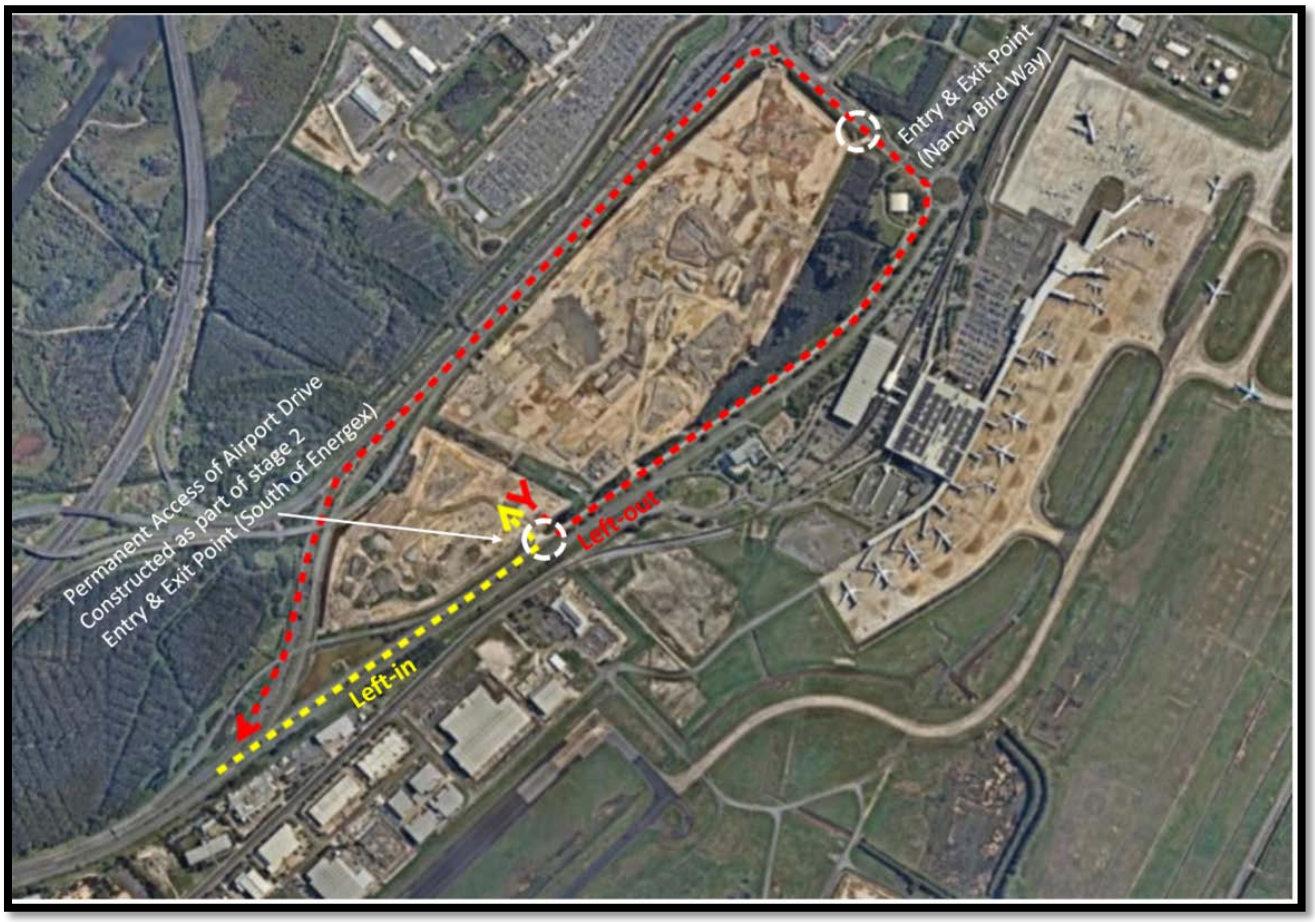


Figure 1 **Traffic from the west accessing the site from Airport Drive**

Moreton Drive

Moreton Drive travels west to east and is located to the north of the Project site. The road links to Airport Drive, west of the site and is the primary connection between the Gateway Motorway and Brisbane Airport. This is a BAC-controlled, four-lane, two-way median divided road. This road provides the main access to the Domestic Terminal and an alternative route to the International Terminal from the Gateway Motorway via Nancy Bird Way.

Nancy Bird Way

Nancy Bird Way is an approximately 500 m road that travels north to south linking Moreton Drive and Airport Drive. The road is located to the east of the project location and is a four-lane, two-way road controlled by BAC. This road provides access to the BNE Service Centre as well as to the Airpark precinct (the Central Parking Area offers budget, longer term parking as well as staff and valet overflow parking).

A permanent connection to the site will also be made from Nancy Bird Way in late 2020, which will be a left-in, left-out and right turn in, and will be operational from Stage 1. The optimal vehicles entry point on Nancy Bird Way is located at the road's midpoint, which would provide approximately 200 m upstream and 200 m downstream length.

Figure 2 **Traffic access the site via Nancy Bird Way entry and exit point**

1.3.3 Public Transport

Currently, there are no public bus services that serve the project site, but the closest public bus is route 590, which serves the Skygate precinct. Brisbane Airport operates complementary bus services between the nearby Centralised Parking Area (AIRPARK) and the Terminals, 24 hours a day, 7 days a week). The nearest railway station is the Airtrain Station at the International Terminal, which is located approximately 800 m east of the site. The Station is on the Airport line, connecting Brisbane International Airport with the Brisbane CBD. The service operates every 15 minutes in peak hours and every 30 minutes during the off peak. The rail and bus services that operate in the area are shown in Figure 3 with the project site represented as a green star.

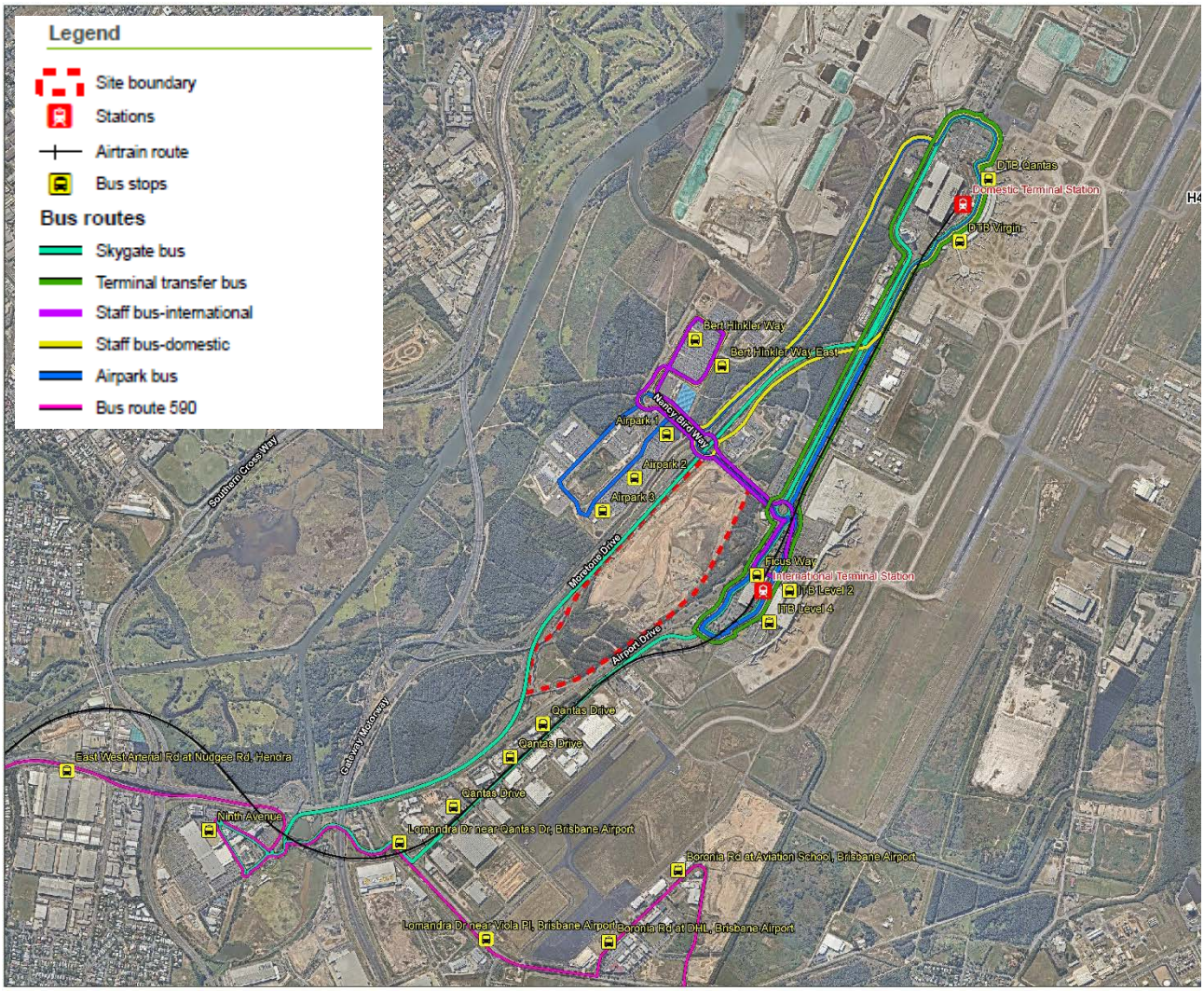


Figure 3 **Public transport routes through Brisbane Airport**

1.3.4 Walking and Cycling

Walking and cycling access to Brisbane Airport is provided by the Kedron Brook bikeway.

A dedicated pedestrian and cyclist pathway connects from Kedron Brook into Brisbane Airport's Skygate precinct with further on and off-road connections provided on Lakeside Drive, Qantas Drive and Airport Drive.

There is currently a one-way outbound cycle route on Airport Drive and cycling is prohibited on Moreton Drive.

The existing cycling access surrounding the project area is illustrated in Figure 4 with the project site represented as a green star.

The nearest shared pathways are provided from the International Terminal Building to the Kingsford Smith Memorial and around BNE Service Centre and Banksia carpark on Nancy Bird Way and Airport Drive.

Further expansion of the pedestrian and cycling infrastructure is likely to be required to enable safe, functional access to the BAC Auto Mall. This will include:

- Proposed off-road pathways connecting into Skygate North, Moreton Drive West and CPA precincts
- Proposed connections to the existing on-road cycle network along Airport Drive and Qantas Drive

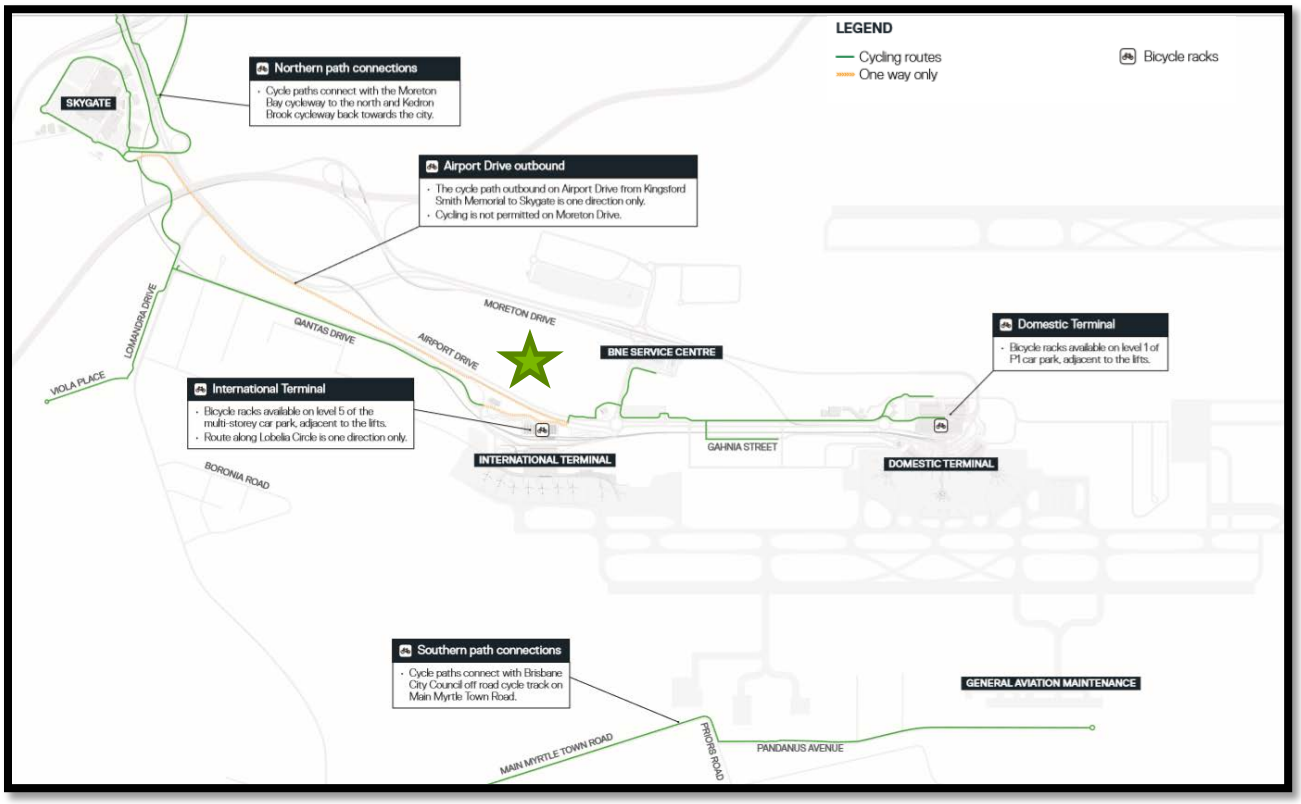


Figure 4 Brisbane Airport Existing Cycling Infrastructure

1.3.5 Crash analysis

The previous ten years' crash history of the surrounding road network was reviewed to determine if the Project would affect the existing crash risk. There were no fatal crashes recorded on the surrounding road network; however, several hospitalisations related to crashes were recorded, particularly on Airport Drive and at the Airport Drive/Nancy Bird Way roundabout (refer Figure 5). No trend was apparent as the types of crashes varied.

Queensland Globe excerpts of geospatial data for the hospitalisation crashes on the surrounding road networks are provided in Figure 5.

Figure 5 Crash Location History (Source: Queensland Globe)

1.4 References

The following reference documents informed Aurecon's technical review.

- Airport Drive West Precinct Traffic and Transport Study (WSP, 2018)
- Road Design for Heavy Vehicles (Austroads, 2015)
- Principle Cycle Network Plans (TMR, 2016)
- Standards and Tolerances Guide (Queensland Building and Construction Commission, 2016)
- Guideline to Traffic Impact Assessment (TMR, 2017)

2 Trip Generation and Mode Share

2.1 Traffic Generation

Based on the trips rates sourced from TMR, New South Wales Roads and Maritime Service (RMS) and the Institute of Transportation Engineers (ITE) (version 9) for “car dealerships”, the daily trip generation rate of 5.83 per 100 m^2 has been adopted for this assessment. The following table summarises the estimated traffic generation for each of the development stage including peak hours trip generation.

Table 3 Trip Generation (total vehicles)

STAGE	AM Peak (8AM-9PM)	PM Peak (4PM-5PM)	Daily	Daily Trips/100m^2 GFA	Weekend (11AM-12PM)
Stage 1	308	323	3,027	5.83	210
Stage 2	404	424	3,963	5.83	270
Stage 3	82	86	809	5.83	50
Total	**794**	**833**	**7,799**	**N.A**	**530**

2.2 Trip Generation Summary

Based on the above trip generation analysis, the total number of car trips expected to be generated by the proposed site is approximately 7,799, including sales staff, servicing staff, sales visitors, car servicing visitors and other operational activities. It is worth noting that staff members are also likely to arrive before visitors start coming and leave after visitors have departed. Thus, these trips are unlikely to add to the peak hour trips. Existing BAC airport shuttles (the complimentary bus services described above) may also be considered for employee transport, which could reduce the trip generation to the site.

2.3 Assessment Factor

The trip generation assessment has adopted the following factors:

- Self-containment factor of 30% for retail dealerships, servicing areas and brand experience centres (i.e. visitor trips between different dealerships).
- External linked trip factor of 30% for all retail dealerships, servicing areas and brand experience centres.

These factors are based on the industry guidelines published by ITE, TMR and RMS and have been adjusted to suit the unique nature of the Airport precinct.

2.4 Mode Share

As per the Ground Transport Plan (2014), the following modes of transport are currently used by employees and visitors to access the Airport precincts (other than the terminals):

- Private vehicle (73%)
- Commercial vehicle (18%)
- Public transport (9%)
- <1% by active transport

This mode split is represented in the graph below.

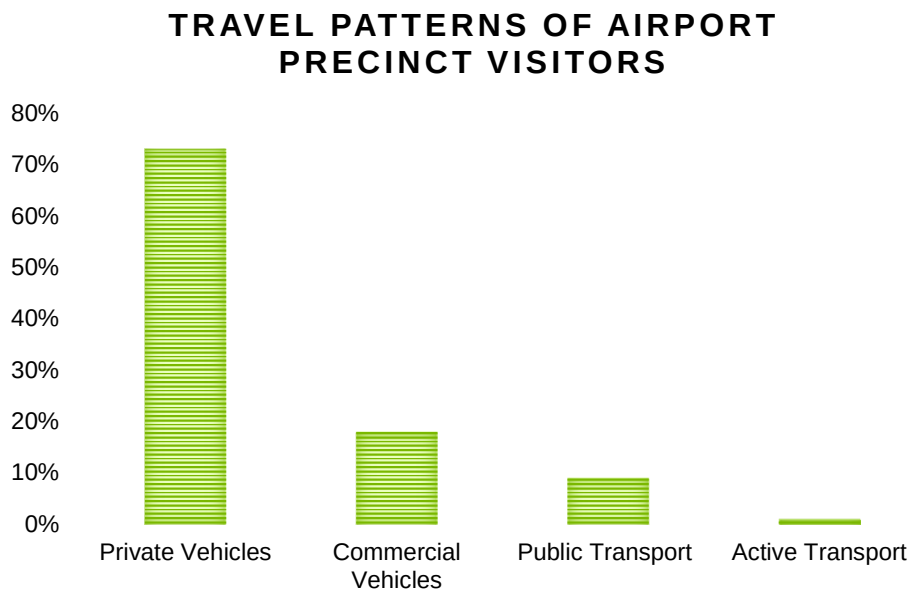


Figure 6 **Visitors' Mode of Travel to/from Brisbane Airport Precinct**

While development of the Auto Mall will potentially provide an uplift in public transport and active transport modes, the ongoing car-based nature of the precinct suggests that the above split in modes of transport can be adopted for this operational traffic assessment with respect to mode share.

Using the findings of Table 3 and applying it to the estimated 7,799 people who will visit BNE Auto Mall, detailed traffic generation is shown in Table 4 below.

Table 4 **Detailed Traffic Generation**

Mode	Mode %	Person Trips
Private Vehicle	73%	5,693
Commercial Vehicle	18%	1,404
Public Transport	9%	702
Active Transport and Multimodal Transport	<1%	<70
Total	**100%**	**7,799**

Therefore, a total of 5,693 private vehicle trips and 1,404 commercial vehicle trips are expected to be generated by private vehicles each day once the BNE Auto Mall becomes operational.

As the airport precinct continues developing, it is expected that active transport facilities will be more conveniently accessible to pedestrians and cyclists. Therefore, it is anticipated that more will walk or ride to the Auto Mall and the total number of private vehicle trips will decrease.

2.5 Trip Assignment

Assumed trip assignment patterns for traffic are indicated in Table 5.

Table 5 **BNE Auto Mall Trip Distribution**

Origin/Destination	Distribution	Additional Traffic
AM Peaks		
Moreton Drive	45%	357 *45% of the total additional traffic 794
Airport Drive	45%	357 *45% of the total additional traffic 794

Origin/Destination	Distribution	Additional Traffic
Nancy Bird Way	10%	79 *10% of the total additional traffic 794
PM Peaks		
Moreton Drive	45%	375 *45% of the total additional traffic 833
Airport Drive	45%	375 *45% of the total additional traffic 833
Nancy Bird Way	10%	83 *10% of the total additional traffic 833

3 Car Parking

The Auto Mall is intended to be an integrated destination. This is demonstrated by the anticipated levels of internalisation (trips that are contained) within the development. Combined with the desire for a strong design outcome for the area, it is important that the requirement for levels of parking provision does not drive behaviour in respect of the built environment.

Due to the unique proposition of the Auto Mall development, site specific car parking requirements have been developed. This is to ensure that formal car parking does not drive the design of developments (i.e. limiting gross floor area (GFA) to reduce the number of car parks). The relationship between number of employees and visitors to the type of uses planned in the Auto Mall is not directly related to the floor area of the built form. This is due to:

- Car showrooms being designed to best showcase the product and employee space being minimal (ancillary)
- The attractiveness of the brand experience generating visitation rather than the floor area.

To ensure that the requirement for formal car parking does not drive the design outcome, an approach has been adopted that relates car parking provision to the overall lot area that will accommodate automotive dealerships and the brand experience centres. From observation of auto showrooms within the wider Brisbane are, traditional car showrooms occupy approximately 20% of the overall lot area – the lot area is approximately 5 times the GFA.

Brisbane City Council's (BCC) Planning Scheme 6.31 Part 6 Car parking space standards (2014) has been used as a baseline guide to determine the number of parking spaces required for the Auto Mall development. The Council rates used for reference are 3 spaces per 100 m^2 for GFA. Using the conversion of lot area generally being 5 times the GFA for auto showrooms, the equivalent number of car parking spaces would be 0.6 spaces per 100 m^2 lot area.

However, given there is no on-street parking available at the BNE Auto Mall, a conservative minimum rate of **0.75 car parking spaces per 100 m^2 of lot area** is recommended for each lot. The spaces subject to this ratio will accommodate parking for visitors and staff only. Spaces used for operations (i.e. display areas, servicing, repairing, detailing, reconditioning etc.), will be considered separately, but will not encroach on or compromise the spaces that have been dedicated for visitors and staff.

It is assumed that the small pockets of the retail land use within the Auto Mall are likely to be mostly ancillary uses, and therefore will not generate a demand for car parking on their own. Furthermore, the parking rate adopted for the auto showroom and brand experience centres are conservative, hence sufficient additional parking will be provided should retail areas generate some requirement for parking.

The car parking rates apply to the provision of spaces for visitors and employees only. Areas for the storage and showing of vehicles are related to the design and layout of the auto showroom and not subject to development requirements.

The level of parking derived from the rates indicates the level of car parking required for the Auto Mall to function. BAC offers a number of parking products across the site and the opportunity exists to offset 'within precinct' parking by using space at other precincts and connecting to the Auto Mall via other modes.

Parking to be provided will be in accordance with the rates outlined in Table 6. The final lot areas will determine the level of parking to be provided and the design and layout of the facility will incorporate appropriate parking and movement. Each lot will need to demonstrate accordance with the required parking levels.

It is important to note that car parking rates have only been developed for normal operations and do not address the potential parking requirements for events held at the test track. Event parking can be accommodated offsite at the Central Parking Area and Banksia Place and temporary locations as illustrated in Figure 7 below.

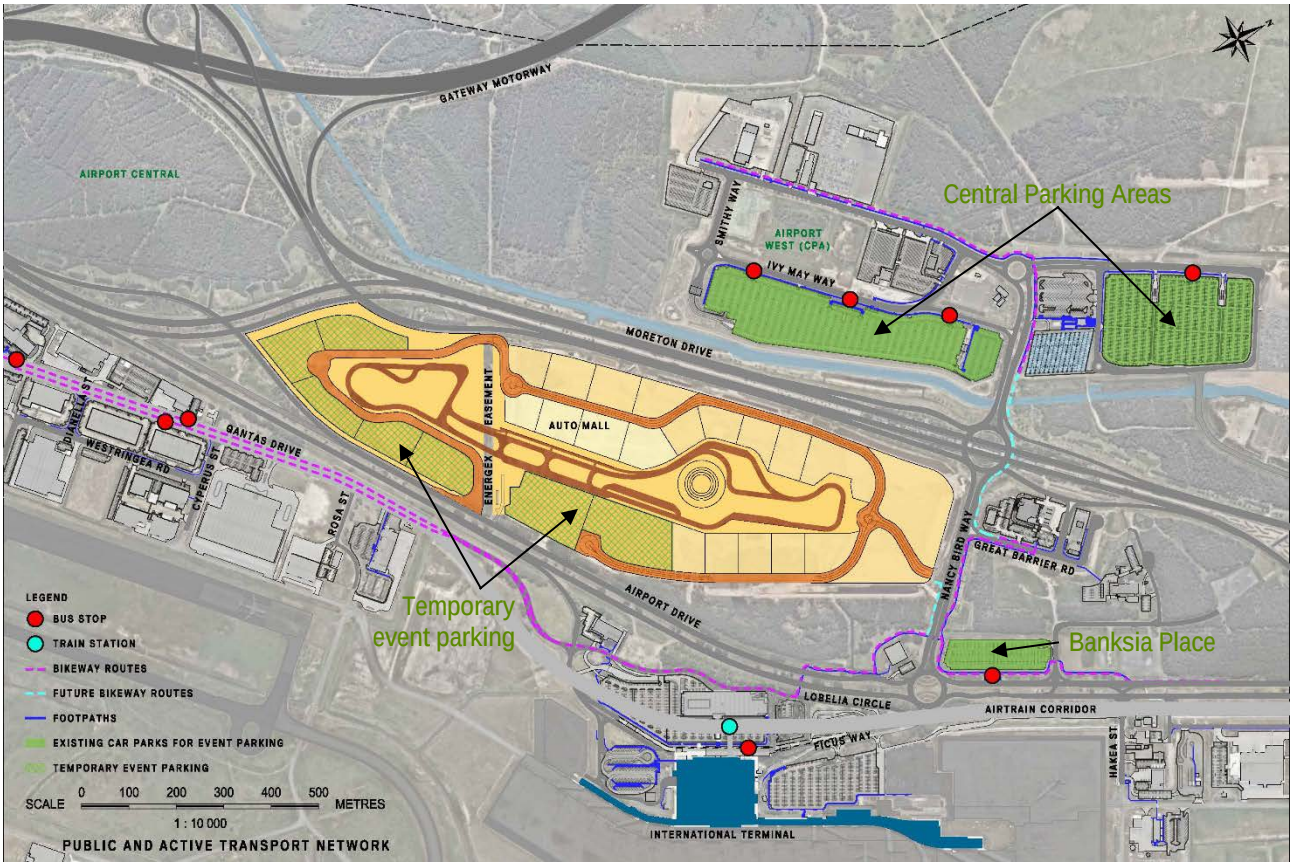


Figure 7 Event parking options

4 Traffic Impact Assessment

The purpose of the traffic impact assessment is to identify and assess impacts the BNE Auto Mall may have on the surrounding road network.

A review and summary of all available traffic data for the intersections (where available) was undertaken, to support SIDRA analysis. Performance has been assessed using SIDRA software for the AM peak (0800-0900) and PM Peak (1600-1700) for the year of full operation (2023). For this project, the following has been assessed:

- The impacts on Nancy Bird Way/Auto Mall Access
- The impacts on Airport Drive/Auto Mall Access

This assessment has carried forward assumptions made (by Jacobs) regarding the trip generation as a result of the new international P2 car park in that no additional traffic will be generated as a result. The assumption is premised on the fact that traffic increases based upon passenger demand rather than car park supply.

The assessment has been undertaken in accordance with the expected vehicle movements during the morning and evening peak periods after the BNE Auto Mall opening. All SIDRA calculations are appended to this report in Appendix A.

4.1 Impacts on road operations

4.1.1 Capacity constraints on road network

The main capacity constraints on a road network are on the intersections where traffic converges and intersects. The intersecting movements reduce the capacity of the traffic flow. Aurecon have sought to establish the operational impacts of the BNE Auto Mall on the intersections, noting that if these operate effectively, the road network will also function effectively.

4.1.2 SIDRA Intersection Analysis

SIDRA Intersection is a key piece of industry software used to analyse the performance of signalised and unsignalized intersections under different traffic loadings.

Key SIDRA parameters for measuring intersection performance, reported here, include the following:

- **Level of Service (LoS)** - An index of the operational performance of traffic on a given roadway, traffic lane, approach, intersection, route or network. This provides a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A to F scale, with LoS A representing the best operating conditions from the traveller's perspective and LoS F the worst.
- **Degree of Saturation (DoS)** - Also known as the volume to capacity ratio (v/c ratio) is the ratio of arrival (demand) flow rate to capacity during a given flow period. Up to 0.6 is excellent, 0.8 to 0.9 is fair, and above 1.0 represents very poor, congested conditions. The target DoS for unsignalized intersections is no more than 0.8. The maximum permissible DoS for priority intersections is 0.8 and 0.85 for roundabouts.
- **Average Delay** - The delay time, in seconds, which can be expected over all vehicles making a movement in the peak hour. More than 80 seconds of delay on a movement equates to a Level of Service of F and usually indicates severely congested conditions, while 20-50 seconds can be within acceptable limits.
- **95th Percentile Queue** - The maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour. The acceptability of this length varies according to site conditions but as a minimum it is important to at least achieve sight distance to the back of queue to avoid a safety risk, and to minimise queuing and therefore reduce congestion.

SIDRA has been used to assess intersection performance with and without the BNE Auto Mall project for each of the identified intersections for the AM and PM peak hours. Also, as agreed with BAC, the baseline analysis has utilised a 5% year on year growth until 2023.

The current layout at the Airport Drive/ BNE Auto Mall Intersection illustrated in the figure below.

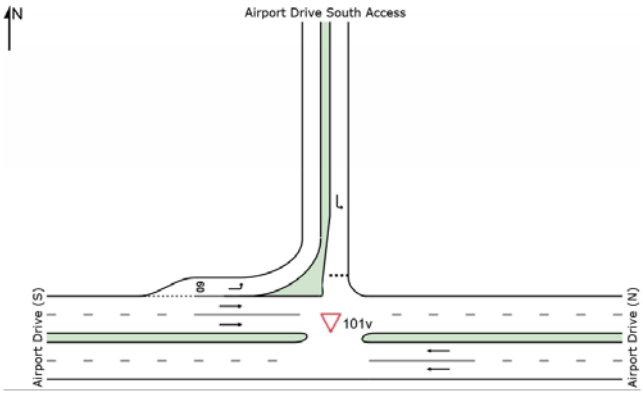


Table 6 Airport Drive/ BNE Auto Mall Performance Summary

Airport Drive/ BNE Auto Mall	With Project (2023)	
	AM Peak	PM Peak
DoS	0.384	0.384
Highest Average Delay (sec)	1.1	1.1
Queue length (m)	6.9	7.3

In 2023 with the BNE Auto Mall Project, this intersection operates with a DoS of 0.384 in the AM and PM peaks. There will be a highest average delay of one second or less with a maximum queue length of 7.3m in the morning and evening peak hours. These are within acceptable ranges for an intersection and as such, there will be no discernible impact on the access point from Airport Drive from operational traffic.

It is worth noting that the proposed new signalised intersection on Airport Drive for the International Terminal Building Multi-Level Car Park P2, together with strategically placed signage within the vicinity, will direct visitors along the Airport Drive therefore taking the pressure off the existing intersection at Airport Drive/Nancy Bird Way.

The current layout at the Nancy Bird Way/ BNE Auto Mall Intersection illustrated in the figure below.

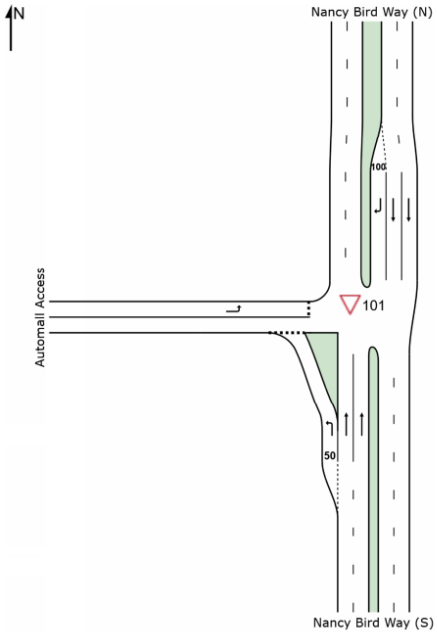


Table 7 Nancy Bird Way/ BNE Auto Mall Intersection Performance Summary

Nancy Bird Way/ BNE Auto Mall Intersection	With Project (2023)	
	AM Peak	PM Peak
DoS	0.326	0.326
Highest Average Delay (sec)	1.7	1.8
Queue length (m)	8.5	9.0

In 2023, with the BNE Auto Mall Project, the intersection operates with a DoS of 0.326 in the AM and PM peaks. There will be a highest average delay of less than two seconds with a maximum queue length of 8.5 m in the morning peak hour and 9.0 m in the evening peak hour. These are within acceptable ranges for an intersection and as such, there will be no discernible impact on the access point from Nancy Bird Way from operational traffic.

4.2 Conclusion

The current road network operates within its design capacity, and modelling for the project related traffic in 2023 confirms that expected project traffic has only negligible impacts on its continued performance. On this basis, it can be concluded that the introduction of additional traffic volume as a result of the operation of BNE Auto Mall will have a minimal impact on the operation of the current road network.

All SIDRA calculations are provided in Appendix A.

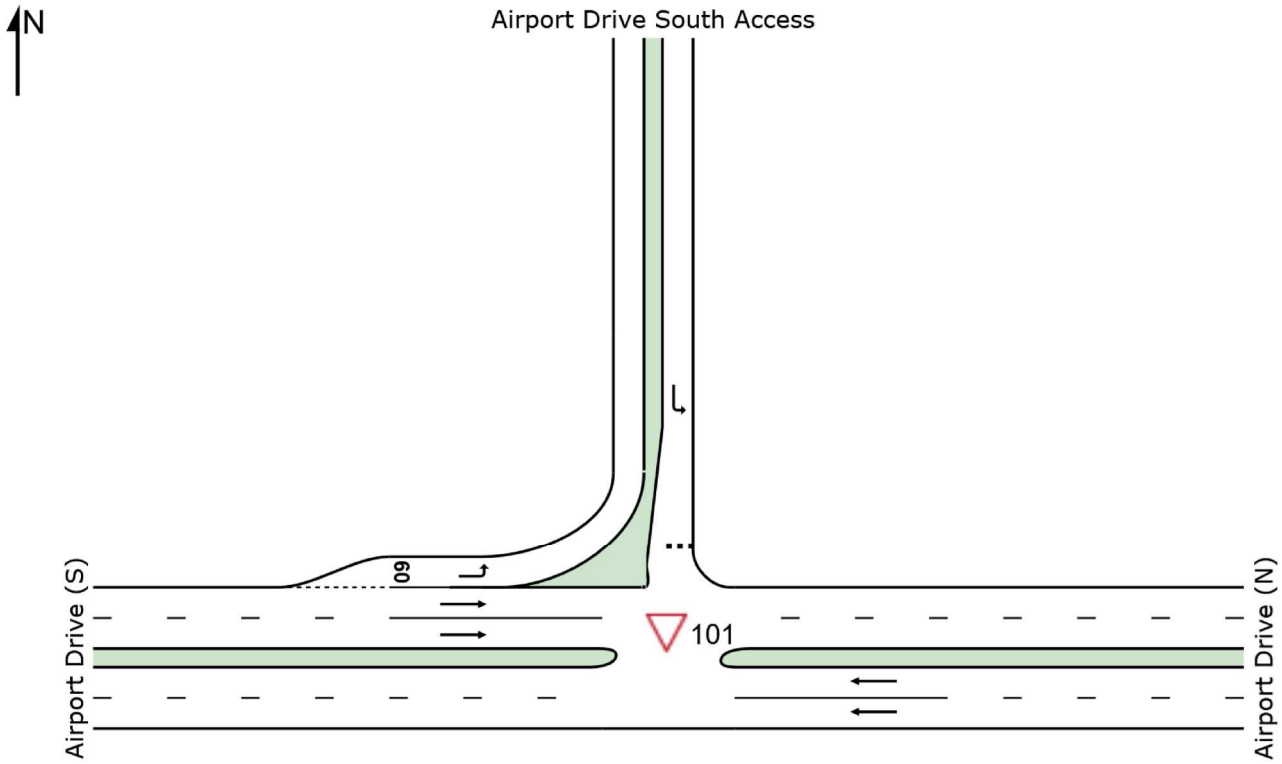
It should be noted that a new signalised intersection on Airport Drive is proposed for the International Terminal Building Multi-Level Car Park P2. The distance between this signalised intersection and the proposed access to the Auto Mall on Airport Drive is approximately 600 m. While some minor queuing may be experienced, particularly for vehicles turning right from Airport Drive (northbound) into the Multi-Level Car Park P2, a previous assessment on the signalised intersection suggests a queue length of only 49 m (in 2020), which was not considered to constitute a significant delay.

Appendix A
SIDRA Calculations

SITE LAYOUT

Site: 101 [Airport Drive/Auto Mall Access (2023 AM LILO)]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Airport Drive/Auto Mall Access (2023 AM LILO)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Airport Drive (N)											
5	T1	1340	18.0	0.384	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1340	18.0	0.384	0.1	NA	0.0	0.0	0.00	0.00	59.9
North: Airport Drive South Access											
7	L2	179	18.0	0.219	8.1	LOS A	0.9	6.9	0.47	0.71	51.1
Approach		179	18.0	0.219	8.1	LOS A	0.9	6.9	0.47	0.71	51.1
West: Airport Drive (S)											
10	L2	179	18.0	0.109	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
11	T1	670	18.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		849	18.0	0.192	1.2	NA	0.0	0.0	0.00	0.11	58.6
All Vehicles		2368	18.0	0.384	1.1	NA	0.9	6.9	0.04	0.09	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Airport Drive/Auto Mall Access (2023 PM LILO) - Copy]

New Site
Giveway / Yield (Two-Way)

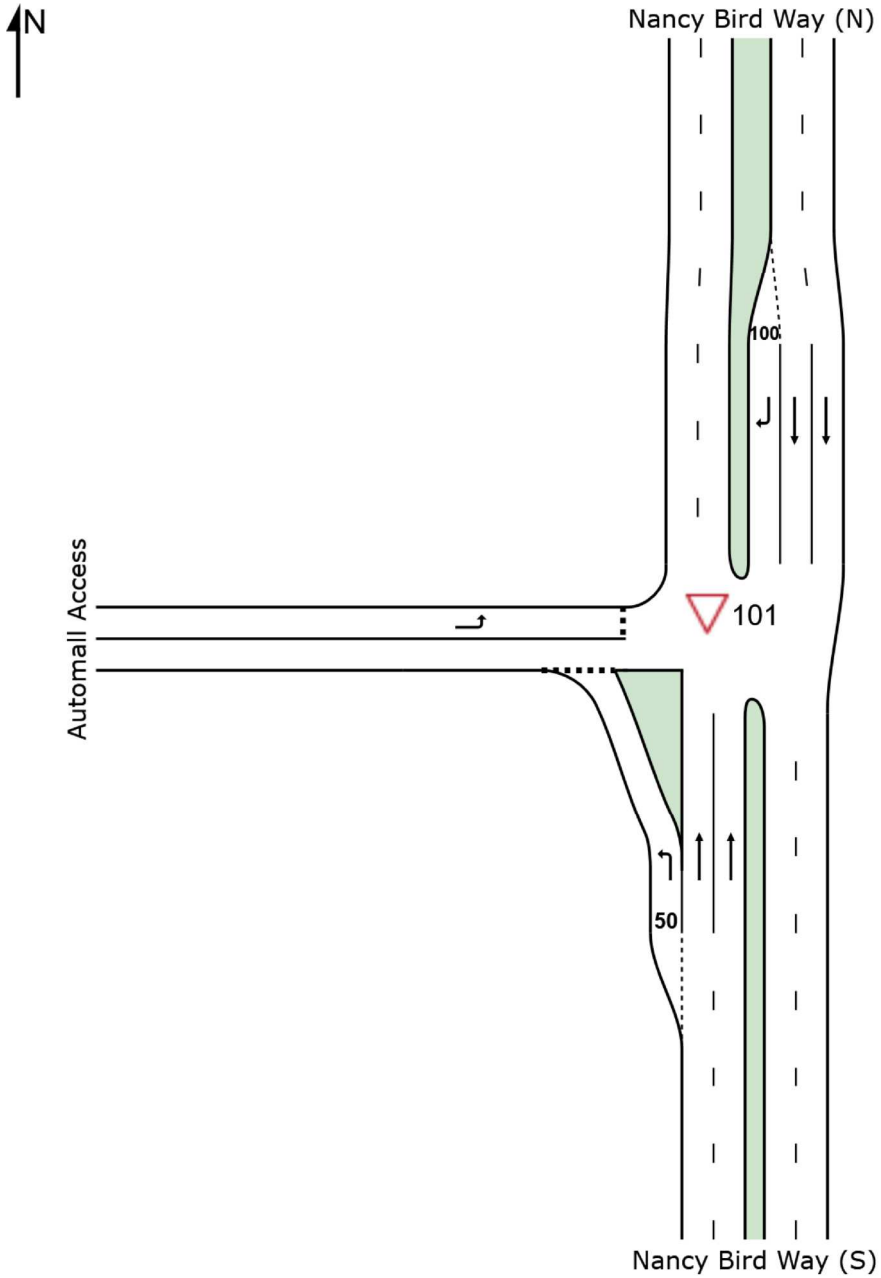
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: RoadName											
5	T1	1340	18.0	0.384	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1340	18.0	0.384	0.1	NA	0.0	0.0	0.00	0.00	59.9
North: RoadName											
7	L2	188	18.0	0.230	8.1	LOS A	0.9	7.3	0.47	0.71	51.1
Approach		188	18.0	0.230	8.1	LOS A	0.9	7.3	0.47	0.71	51.1
West: RoadName											
10	L2	188	18.0	0.114	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
11	T1	670	18.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		858	18.0	0.192	1.3	NA	0.0	0.0	0.00	0.11	58.6
All Vehicles		2386	18.0	0.384	1.1	NA	0.9	7.3	0.04	0.10	58.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [Nancy Bird Way/Auto Mall Access (2023 PM LIRILO) - Copy]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Nancy Bird Way/Auto Mall Access (2023 AM LIRILO)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nancy Bird Way (S)											
1	L2	40	18.0	0.033	6.6	LOS A	0.1	1.0	0.31	0.54	52.5
2	T1	402	18.0	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		442	18.0	0.115	0.6	LOS A	0.1	1.0	0.03	0.05	59.2
North: Nancy Bird Way (N)											
8	T1	1139	18.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
9	R2	199	18.0	0.244	8.5	LOS A	1.0	8.5	0.53	0.75	50.6
Approach		1338	18.0	0.326	1.3	NA	1.0	8.5	0.08	0.11	58.3
West: Automall Access											
10	L2	199	18.0	0.204	7.0	LOS A	0.8	6.7	0.36	0.62	51.8
Approach		199	18.0	0.204	7.0	LOS A	0.8	6.7	0.36	0.62	51.8
All Vehicles		1979	18.0	0.326	1.7	NA	1.0	8.5	0.10	0.15	57.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Nancy Bird Way/Auto Mall Access (2023 PM LIRILO) - Copy]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nancy Bird Way (S)											
1	L2	42	18.0	0.035	6.6	LOS A	0.1	1.1	0.32	0.55	52.5
2	T1	402	18.0	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		444	18.0	0.115	0.6	LOS A	0.1	1.1	0.03	0.05	59.2
North: Nancy Bird Way (N)											
8	T1	1139	18.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
9	R2	209	18.0	0.257	8.6	LOS A	1.1	9.0	0.53	0.75	50.5
Approach		1348	18.0	0.326	1.4	NA	1.1	9.0	0.08	0.12	58.2
West: Automall Access											
10	L2	209	18.0	0.215	7.0	LOS A	0.9	7.1	0.36	0.62	51.8
Approach		209	18.0	0.215	7.0	LOS A	0.9	7.1	0.36	0.62	51.8
All Vehicles		2001	18.0	0.326	1.8	NA	1.1	9.0	0.10	0.16	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Document prepared by

Aurecon Australasia Pty Ltd
ABN 54 005 139 873

Ground Floor, 25 King Street
Bowen Hills QLD 4006

Locked Bag 331
Brisbane QLD 4001
Australia

T +61 7 3173 8000
F +61 7 3173 8001
E brisbane@aurecongroup.com
W aurecongroup.com

aurecon

Bringing ideas to life