

Attachment B Additional Traffic Impact Assessment

Traffic Impact Assessment

Southern Area Works – Boggo Road

Cross River Rail Project – Tunnel, Stations and Development Package (TSD)

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1 Introduction

1.1 Background

The Southern Portal is located within the Southern Area of the Cross River Rail Project Tunnels and Stations Development (TSD). The Southern Portal is bound by the Princess Alexandra Hospital to the east and the existing Dutton Park Railway Station to the south. This area is a congested rail corridor with multiple commuter rail lines servicing the Gold Coast and Cleveland regions, with freight rail lines to the Port of Brisbane. The Boggo Road Busway also passes underneath, and a grade separated freight flyover crosses above the rail corridor. The Southern Portal is also bound and intersected by utilities (power, stormwater and sewer).

This Traffic Impact Assessment (TIA) has been prepared in accordance with the Department of Transport and Main Road's, Guide to Traffic Impact Assessment to assess the potential changes to traffic and transport impacts arising from the Request for Project Change #9 (RfPC#9). This TIA supplements the Cardno Traffic Impact Assessment (QTT20037) which assessed four (4) options for access to the Southern Area worksite via Boggo Road and following further consultation with Brisbane City Council, provides a detailed assessment of Option 3.

Under RfPC#9, the Southern Area works will include construction of a cut and cover structure through the entire rail corridor which will require direct access from the Boggo Road precinct. Access via Boggo Road in this scenario to support the program of works in the rail corridor is as outlined in the Request for Project Change 9, Changes to the Project and changes to the imposed conditions – Southern Portal Area Volume 1, Section 1.4, with Boggo Road replacing Peter Doherty Street as the access road.

Key traffic and transport considerations include the proposed increase in construction vehicle volumes and access to the Southern Area worksite 24 hours, 7 days via Boggo Road to support works within the rail corridor and extended rail track possessions. This is consistent with the access provisions for the Southern Portal worksite as documented within Table 1 of the Co-ordinator General's Project-wide Imposed Conditions.

The location of the Boggo Road worksite is shown below in Figure 1.

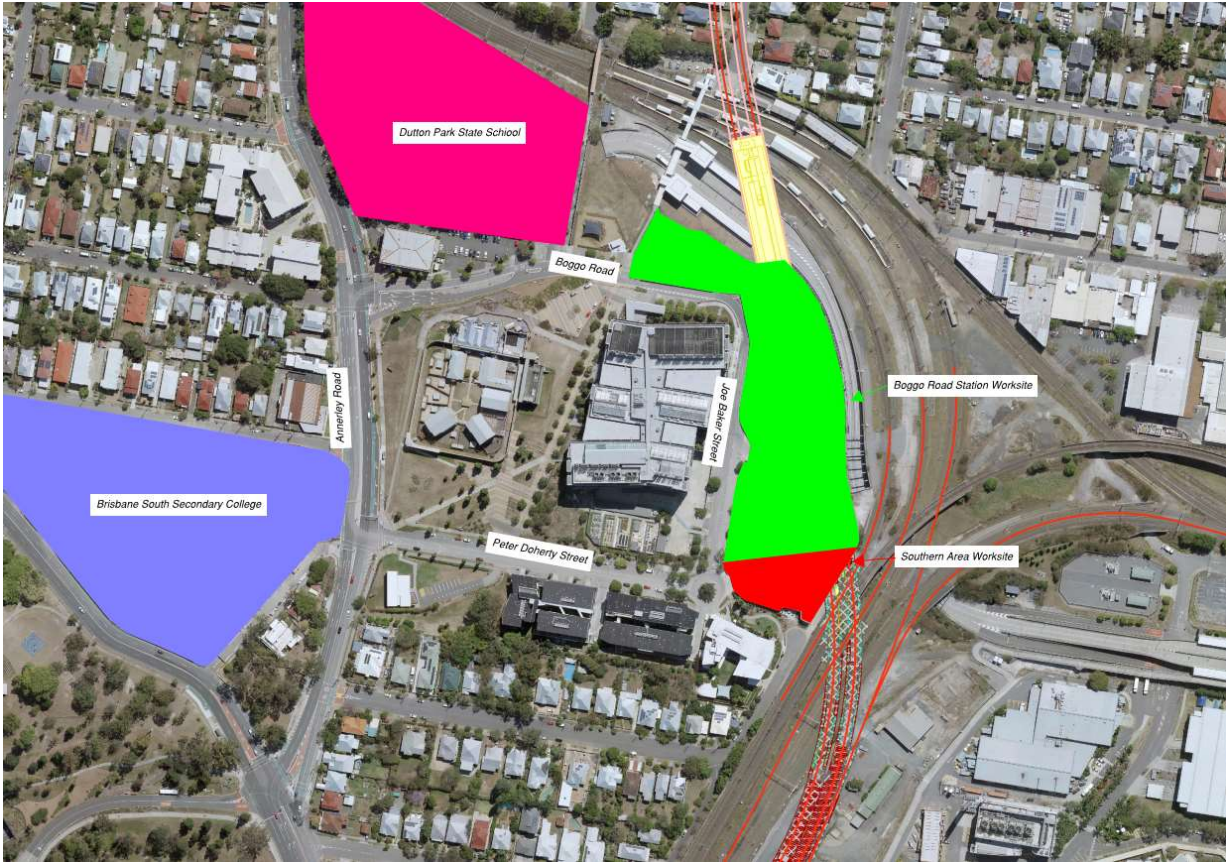


Figure 1: Locality Map

2 Existing Conditions

2.1 Surrounding Road Network

Details of the surrounding road network are shown in Table 1.

Table 1: Surrounding Road Network

Road Name	Jurisdiction	Hierarchy	Cross-Section	Speed Limit
Annerley Road	Brisbane City Council	Arterial road	4-5 lanes divided	60km/hr
Boggo Road	Brisbane City Council	Neighbourhood road	2 lanes median divided, 1-lane	40 – 60km/hr
Joe Baker Street	Brisbane City Council	Neighbourhood road	1-lane, 1 way	40km/hr
Peter Doherty Street	Brisbane City Council	Neighbourhood road	2 lanes undivided	40km/hr – 60km/hr

Table 2 provides an overview of the key intersections in proximate to the Boggo Road worksite considered to be within the area of influence.

Table 2: Key Intersections

Intersection Number	Intersection	Jurisdiction	Control
1	Annerley Road / Peter Doherty Street	Brisbane City Council	Traffic signals
2	Annerley Road / Boggo Road	Brisbane City Council	Traffic signals
3	Boggo Road / Dutton Park State School	Brisbane City Council	Priority-controlled



Figure 2: Key Intersections

3 Traffic Assessment

3.1 Background Traffic

3.1.1 Traffic Surveys

Background traffic volumes were obtained from 24-hour traffic surveys undertaken on Thursday 18th June 2020 and Thursday 16th July 2020 for the following intersections / areas:

- Annerley Road / Peter Doherty Street signalised intersection
- Annerley Road / Boggo Road signalised intersection
- Boggo Road / Dutton Park State School priority-controlled access

The weekday AM and PM peak periods for the surveyed intersections / areas was determined to be between 7:45am – 8:45am and 3:00pm – 4:00pm. Peak hour volumes are presented in the figures below.

A copy of the traffic survey data is provided in Appendix A.

With respect to the potential variations of traffic volumes of the key intersections due to the effect of COVID-19, Brisbane City Council were consulted and advised in an email received on the 24th June 2020, that a factor of 10% should be applied to recorded traffic volumes to better reflect 'normal traffic conditions.

Adjusted background traffic volumes incorporating this factor at key intersections are presented below.

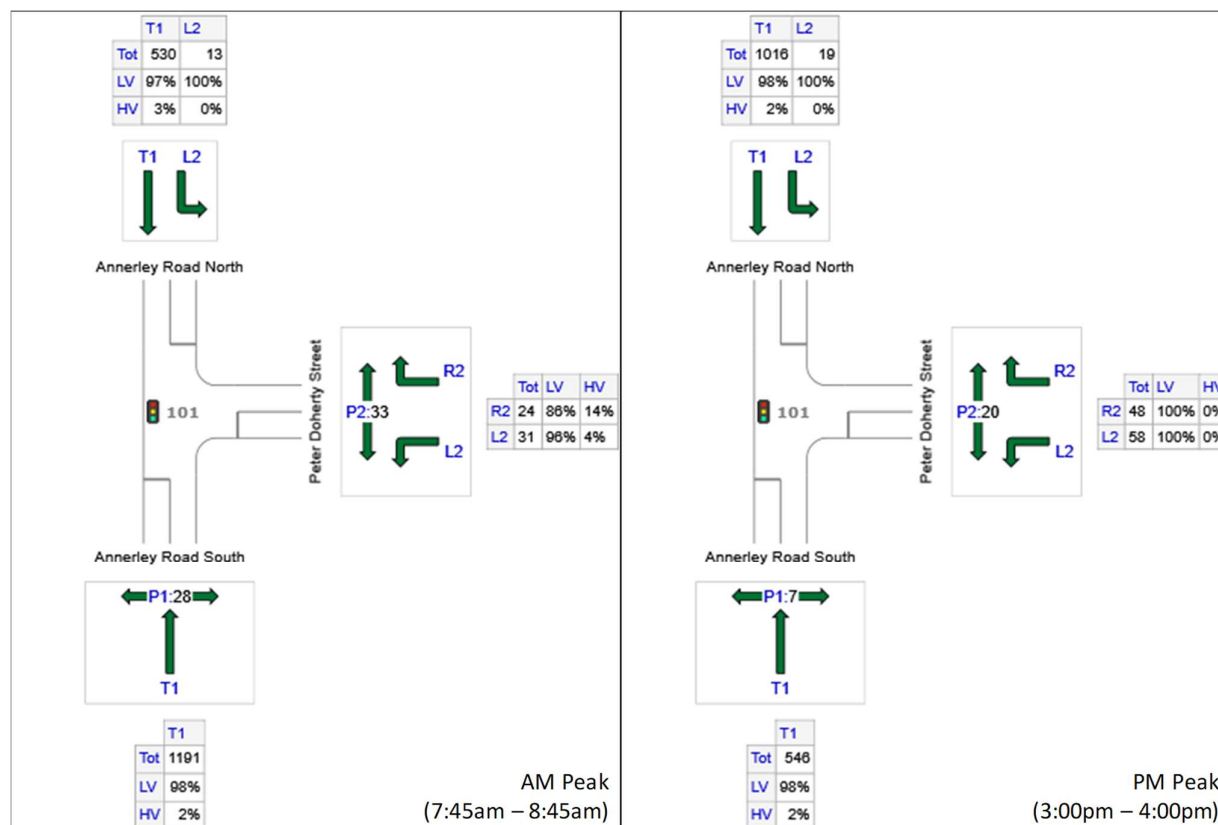


Figure 3: Annerley Road / Peter Doherty Street – Adjusted Background Peak Traffic Volumes

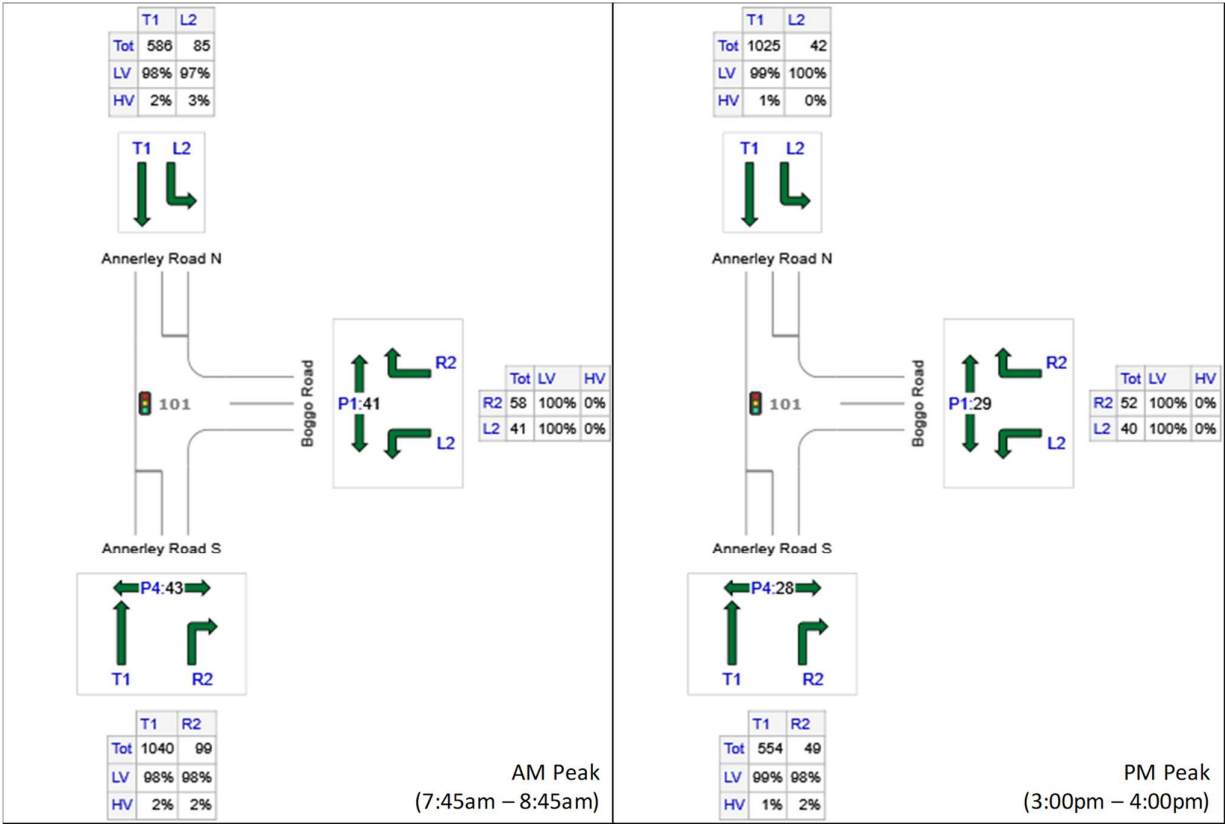


Figure 4: Annerley Road / Boggo Road – Adjusted Background Peak Traffic Volumes

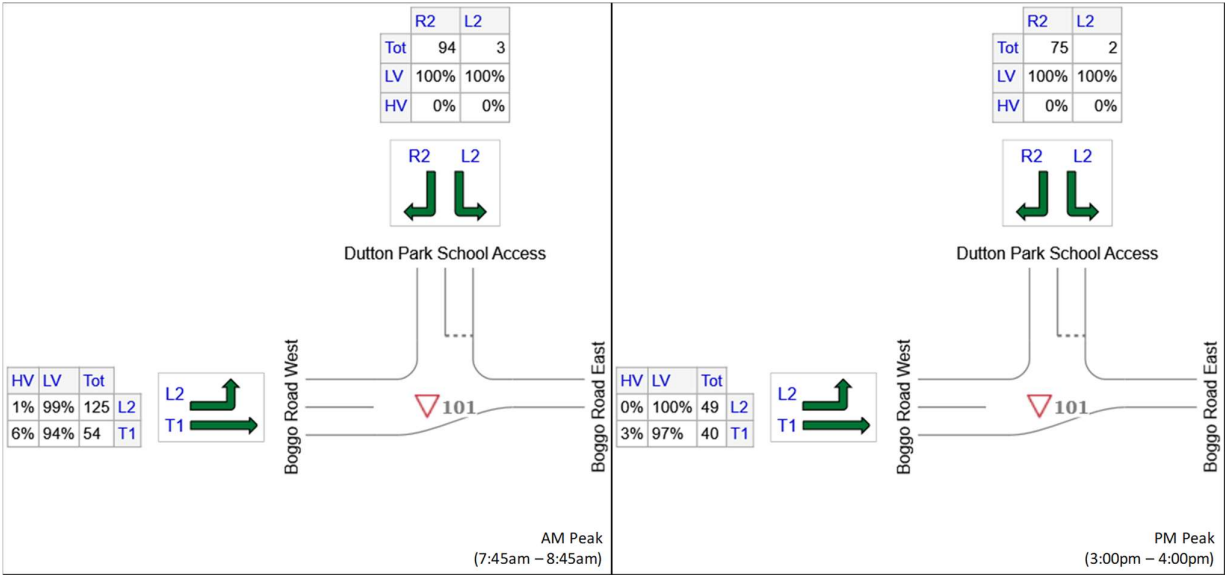


Figure 5: Boggo Road / Dutton Park School Access – Adjusted Background Peak Traffic Volumes

3.1.2 Traffic Growth

Annual average growth rates from Brisbane City Council's Community Profiles for the Fairfield – Dutton Park area indicates a growth rate of approximately 2.9% per annum between the years 2009 and 2019 and 2.5% between 2014 and 2019.

Considering this, a conservative growth rate of 3% per annum was adopted for this assessment and applied to the background peak hour traffic survey volumes to forecast background traffic during peak construction activities.

Forecast background traffic volumes incorporating this growth rate at key intersections are presented below.

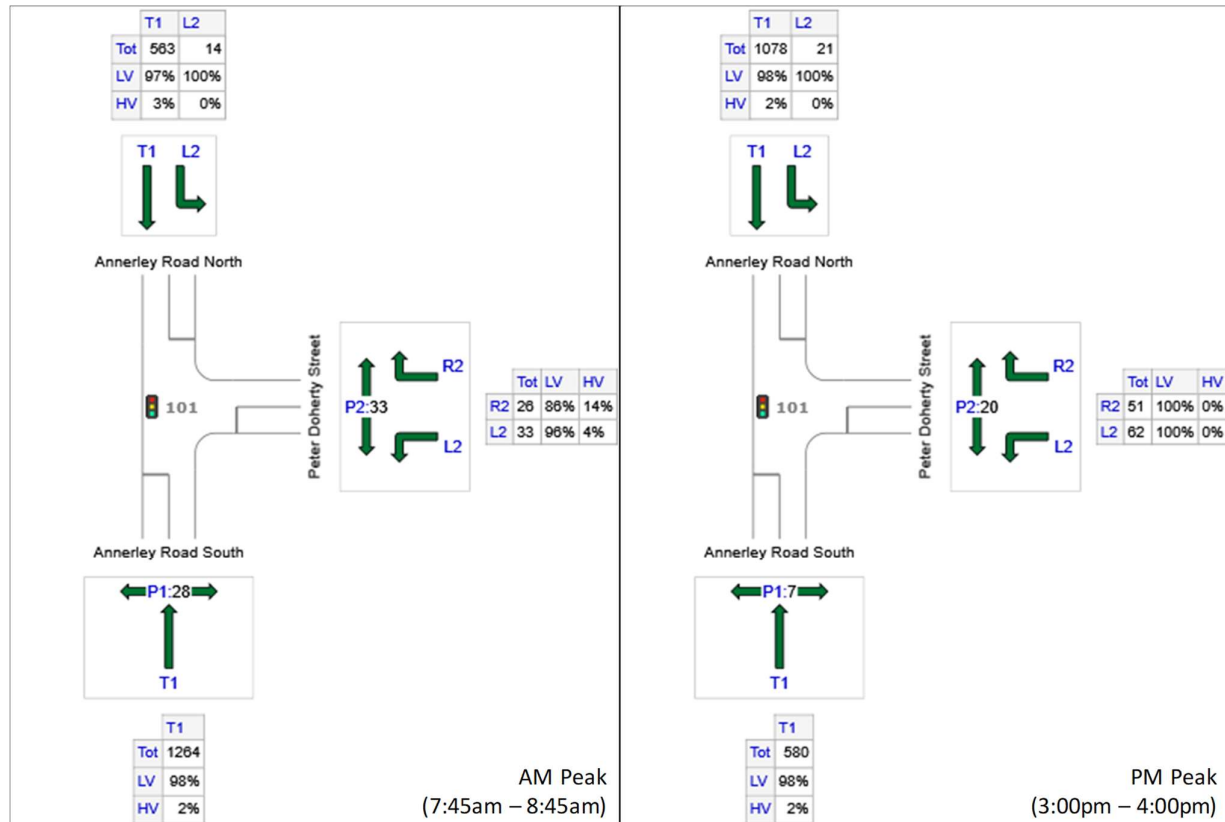


Figure 6: Annerley Road / Peter Doherty Street – Forecast (2022) Background Peak Traffic Volumes

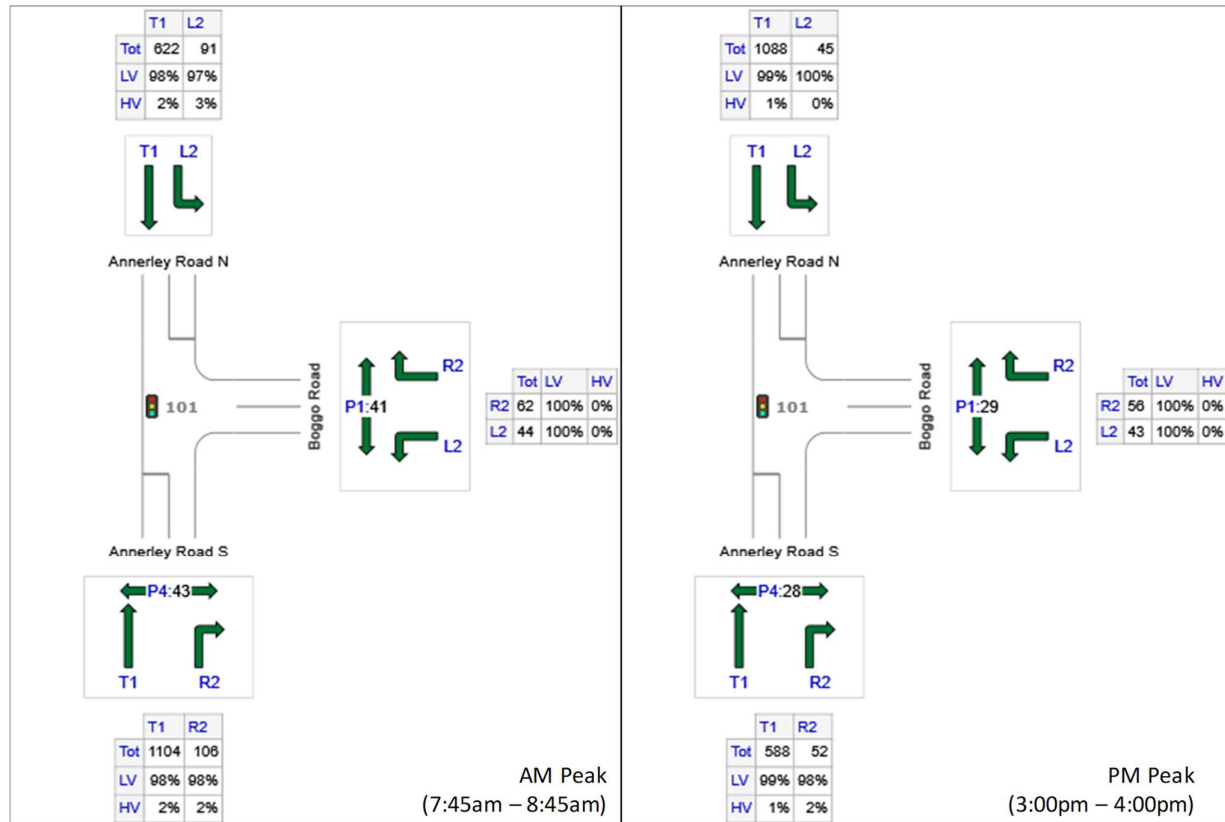


Figure 7: Annerley Road / Boggo Road – Forecast (2022) Background Peak Traffic Volumes

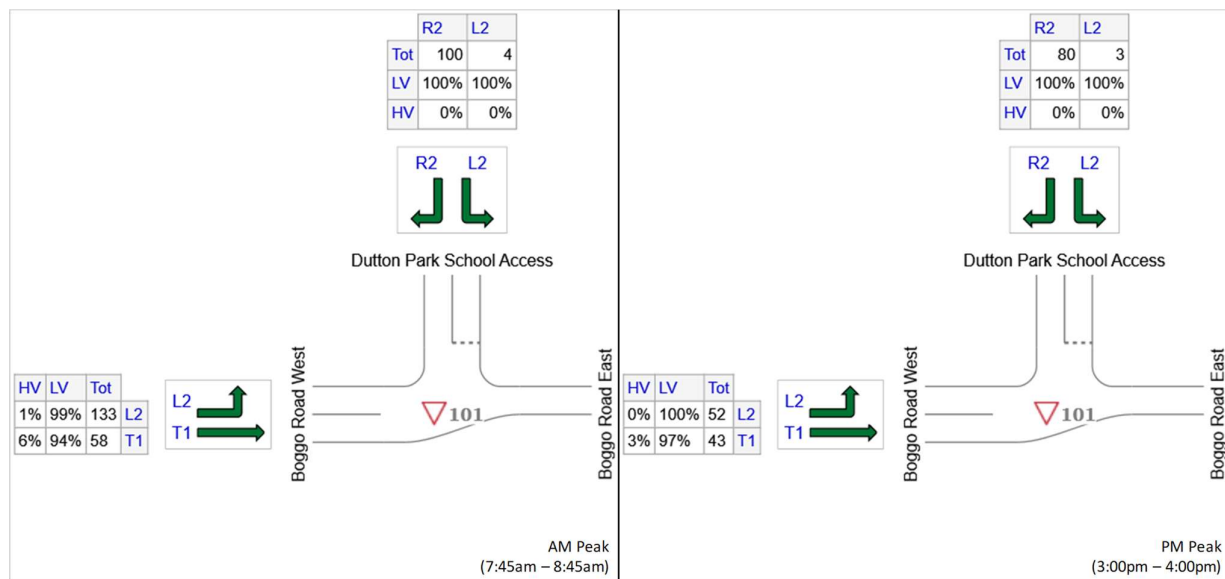


Figure 8: Boggo Road / Dutton Park School Access – Forecast (2022) Background Peak Traffic Volumes

3.2 Public Transport

3.2.1 Overview

The Southern Area worksite is located within close proximity to Park Road Station (train) and the Boggo Road Station (bus).

3.2.2 Park Road Station

Park Road Station is located approximately 170m (2 minutes walking distance) from the Boggo Road Station and Precinct.

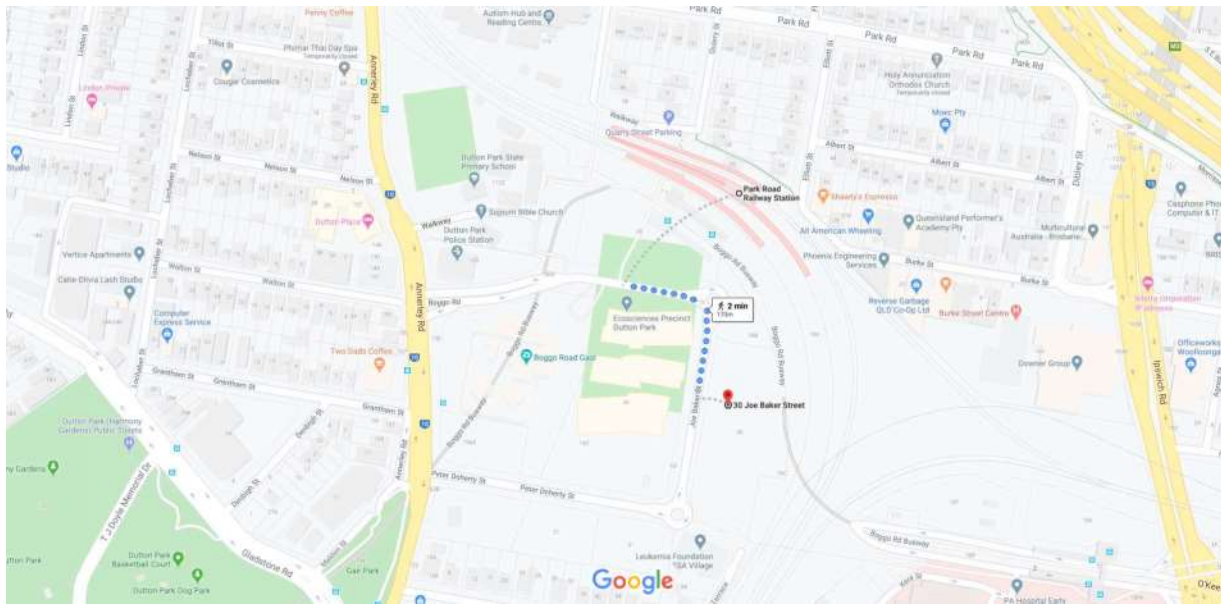


Figure 9: Park Road Station to Boggo Road Station Worksite

Train services operating through Park Road Station provide commuters with connections north (i.e. Ferny Grove), south (i.e. Gold Coast) and east (Cleveland). Details of routes servicing this station are summarised in Table 3.

Table 3: Park Road Station – Train Services

Route	Stops	Frequency	First Service	Last Service
Airport Train & Gold Coast Train	Varsity Lakes, Robina, Nerang, Helensvale, Coomera, Ormeau, Beenleigh, Loganlea, Altandi, Park Road, South Bank, South Brisbane, Roma Street, Central, Fortitude Valley, Bowen Hills, Albion, Woolloowin, Eagle Junction, International Airport and Domestic Airport	30 minutes	5:04am departing Domestic, 4:10am departing Varsity Lakes	10:04pm departing Domestic, 11:40pm departing Varsity Lakes
Beenleigh Train	Bowen Hills, Fortitude Valley, Central, Roma	15 to 30 minutes	3:58am departing Bowen Hills, 4:18am	12:28am departing Bowen Hills, 12:48am

	Street, South Brisbane, Southbank, Park Road, Dutton Park, Fairfield, Yeronga, Yeerongpilly, Moorooka, Rocklea, Salisbury, Coopers Plains, Banoon, Sunnybank, Altandi, Runcorn, Fruitgrove, Kuraby, Trinder Park, Woodridge, Kingston, Loganlea, Bethania, Edens Landing, Holmview, Beenleigh		departing Beenleigh	departing Beenleigh
Cleveland Train	Bowen Hills, Fortitude Valley, Central, Roma Street, South Brisbane, Southbank, Park Road, Buranda, Coorparoo, Norman Park, Morningside, Cannon Hill, Murarrie, Hemmant, Lindum, Wynnum North, Wynnum, Wynnum Central, Manly, Lota, Thorneside, Birkdale, Wellington point, Ormiston, Cleveland	15 to 30 minutes	4:11am departing Bowen Hills, 4:39am departing Cleveland	12:41am departing Bowen Hills, 12:39am departing Cleveland
Shorncliffe Train	Shorncliffe, Sandgate, Deagon, North Boondall, Boondall, Nudgee, Banyo, Bindha, Northgate, Nundah, Toombul, Eagle Junction, Woolloowin, Albion, Bowen Hills, Fortitude Valley, Central, Roma Street, South Brisbane, Southbank, Park Road, Buranda, Coorparoo, Norman Park, Morningside, Cannon Hill, Murarrie, Hemmant, Lindum, Wynnum North, Wynnum, Wynnum Central, Manly, Lota, Thorneside, Birkdale, Wellington point, Ormiston, Cleveland	15 to 30 minutes	5:09am departing Shorncliffe	12:39am departing Shorncliffe
Doomben Train	Park Road, Southbank, South Brisbane, Roma Street, Central, Fortitude Valley, Bowen Hills, Albion, Woolloowin, Eagle Junction, Clayfield, Hendra, Ascot, Doomben	15 to 30 minutes	7:09am departing Park Road, 5:58am departing Doomben	7:09pm departing Park Road, 7:58pm departing Doomben
Ferny Grove Train	Park Road, Southbank, South Brisbane,	15 to 30 minutes	4:42am departing Park Road, 5:02am departing Ferny Grove	12:42am departing Park Road, 12:32am departing Ferny Grove

3.2.3 Boggo Road Bus Station

The Boggo Road Bus Station is located approximately 350m (4 minutes walking distance) from the Boggo Road Station and Precinct.

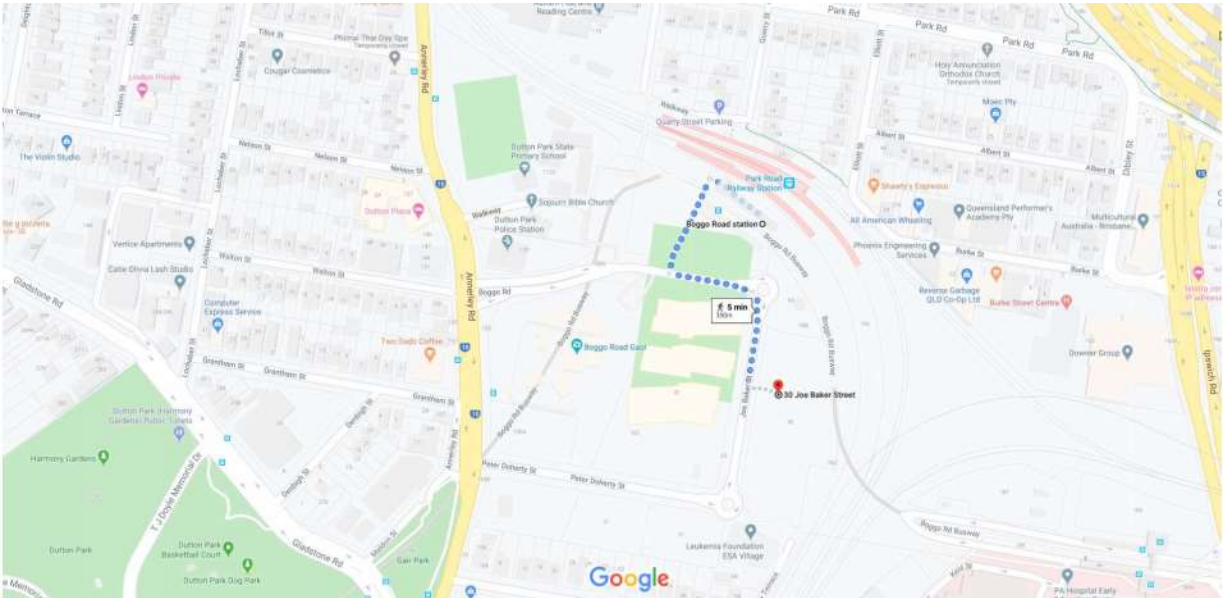


Figure 10: Boggo Road Bus Station to Boggo Road Station Worksite

Bus services operating through Boggo Road Bus Station provide commuters with connections north, south, east and west through two platforms (inbound and outbound). Details of routes servicing this station are summarised in Table 4.

Table 4: Boggo Road Bus Station – Bus Services

Route	Stops	Frequency	First Service	Last Service
28	Langlands Park, Stones Corner, Buranda, PA Hospital, Boggo Road, Dutton Park Place Drive, UQ Lakes	10 minutes	6:50am departing Langlands Park, 7:01am departing UQ Lakes	6:00pm departing Langlands Park, 6:11pm departing UQ Lakes
29	Woolloongabba, PA Hospital, Boggo Road, Dutton Park Place Drive, UQ Lakes	5 to 10 minutes	6:45am departing Woolloongabba, 6:56am departing UQ Lakes	7:15pm departing Woolloongabba, 7:26pm departing UQ Lakes
66	UQ Lakes, Dutton Park, Boggo Road, PA Hospital, Mater Hill, Southbank, Cultural Centre, King George Square, Roma Street, QUT Kelvin Grove, Herston, RBWH	5 to 10 minutes	6:00am departing UQ Lakes, 6:33am departing RBWH	10:30pm departing UQ Lakes, 11:03pm departing RBWH
104	Corinda, Sherwood, Graceville, Tennyson, Yeerongpilly, Yeronga, Fairfield, PA Hospital	30 to 60 minutes	6:09am departing Corinda, 6:44am departing PA Hospital	6:24pm departing Corinda, 6:18pm departing PA Hospital
105	Indooroopilly, Tennyson, Yeerongpilly, Yeronga,	60 to 120 minutes	5:45am departing Indooroopilly, 6:55am	5:55pm departing Indooroopilly, 7:15pm

	Fairfield, PA Hospital, City		departing City	departing City
107	Yeronga, Fairfield, PA Hospital, City	20 minutes	6:55am departing Yeronga, 4:10pm departing City	8:15am departing Yeronga, 6:10pm departing City
108	Indooroopilly, Tennyson, Yeerongpilly, Yeronga, Fairfield, PA Hospital, City	45 to 60 minutes	6:50am departing Indooroopilly, 4:05pm departing City	7:35am departing Indooroopilly, 5:35pm departing City
139	Sunnybank Hills, Sunnybank, Macgregor, Griffith University, Holland Park West, Greenslopes, Buranda, PA Hospital, Boggo Road, Dutton Park Place Drive, UQ Lakes	7 to 8 minutes	6:50am departing Sunnybank Hills, 10:02 departing UQ Lakes	5:38pm departing Sunnybank Hills, 6:21 departing UQ Lakes
169	Eight Mile Plains, upper Mount Gravatt, Griffith University, Holland Park West, Greenslopes, Buranda, PA Hospital, Boggo Road, Dutton Park Place Drive, UQ Lakes	15 minutes	5:45am departing Eight Mile Plains, 6:55am departing UQ Lakes	8:40pm departing Eight Mile Plains, 10:32pm departing UQ Lakes
209	Carindale, Carina, Camp Hill, Coorparoo, Langlands Park, Stones Corner, Buranda, PA Hospital, Boggo Road, Dutton Park Place Drive, UQ Lakes	15 minutes	6:35am departing Carindale, 9:53am departing UQ Lakes	6:09pm departing Carindale, 9:08pm departing UQ Lakes

It is noted that there are also two bus stops located on Annerley Road (approximately 380m walking distance from the worksite), serviced by routes:

- 107 – City to Indooroopilly
- 112 – City to Griffith University
- 116 – Spring Hill to Beaudesert
- 202 – City to Carindale.

3.3 Active Transport

3.3.1 Overview

The Southern Area worksite is proximate to key pedestrian and cyclists' generators and attractors including:

- Park Road Station
- Boggo Road Bus Station
- Ecosciences Precinct Dutton Park
- Dutton Park State School
- Brisbane South State Secondary College

- Woolloongabba Bikeway.

Pedestrian footpaths on Annerley Road, Boggo Road and Peter Doherty Street provide important connections for a wide range of active transport users (i.e. primary and secondary school children) between key local generators and attractors. On-road bicycle lane along Annerley Road, which is recognised as a Priority A/B route within the Department of Transport and Main Road's Principal Cycle Network Plan for South East Queensland, provide on-road connections to the greater surrounding suburbs including South Brisbane, West End, Highgate Hill, Dutton Park, St Lucia, Fairfield and Annerley for experienced commuters / long distance riders.

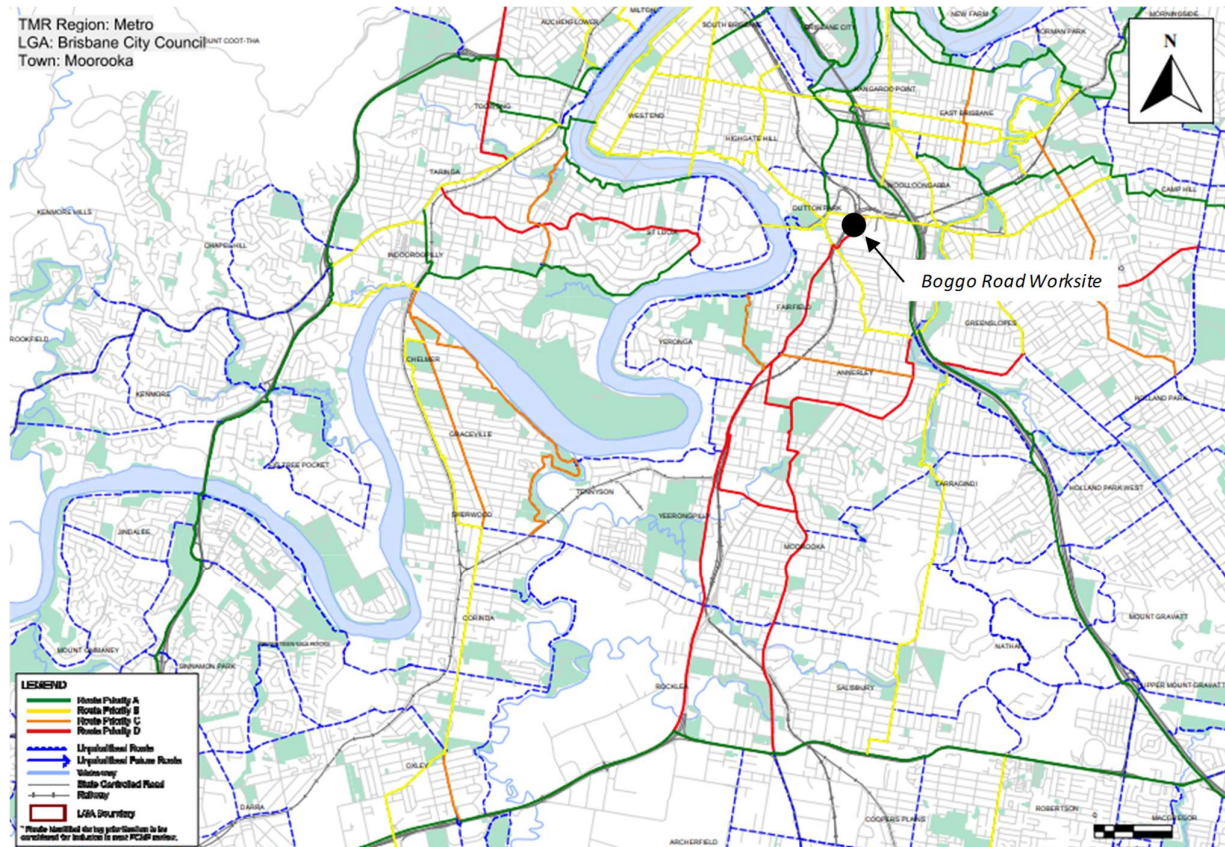


Figure 11: South East Queensland Priority Route Map – Moorooka

3.3.2 Pedestrians/ Cyclists

3.3.2.1 Annerley Road / Peter Doherty Street Intersection

Pedestrian footpaths are provided on both sides of Annerley Road and Peter Doherty Street at the Annerley Road / Peter Doherty Street intersection. Pedestrian crossing facilities, including kerb ramps and signalised crosswalks provide pedestrians / off-road cyclists with a controlled movement across Annerley Road and Peter Doherty Street.

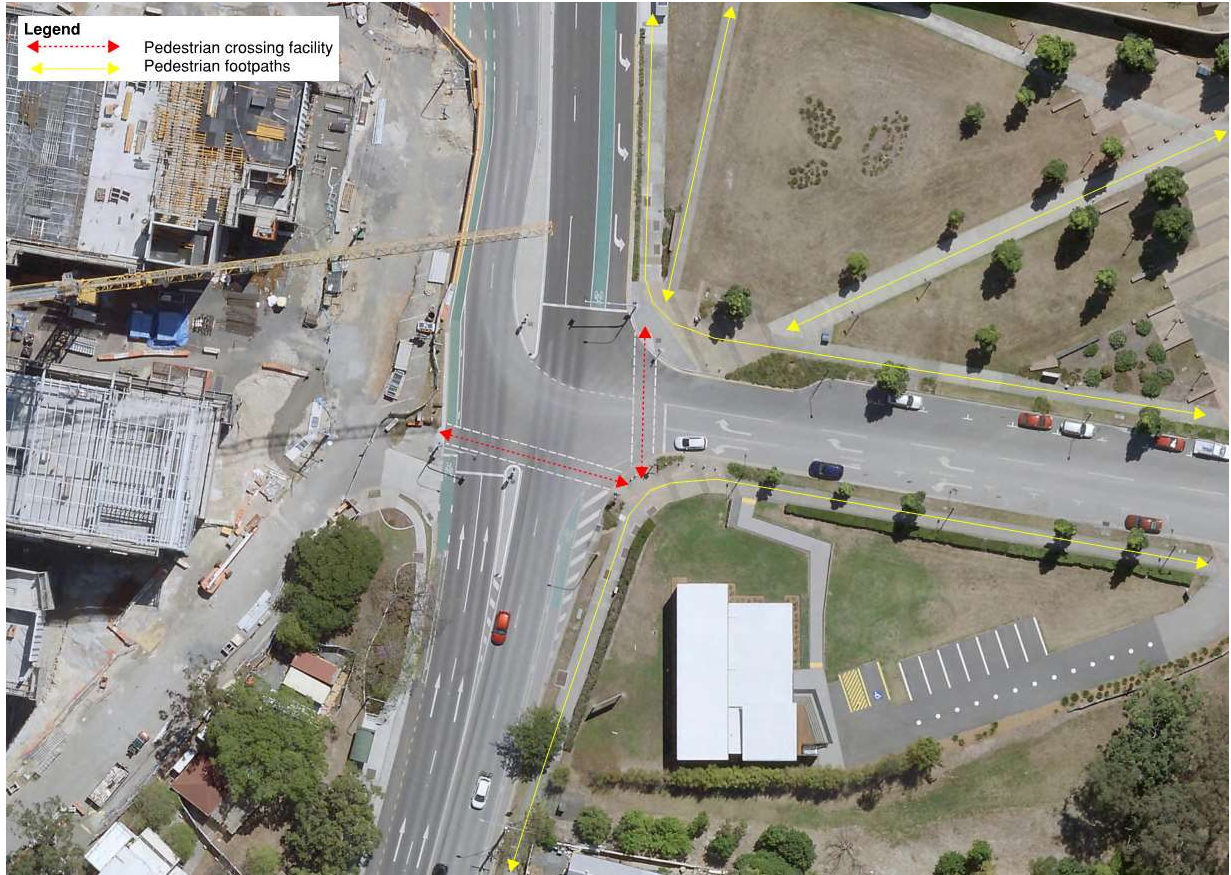


Figure 12: Annerley Road / Peter Doherty Street – Pedestrian Facilities

It is noted that as part of the ongoing construction of the Brisbane South State Secondary College adjacent to the Annerley Road / Peter Doherty Street intersection, the following upgrades are planned:

- New signalised pedestrian crosswalk across the northern leg of the intersection (Annerley Road)
- Realigned pedestrian crossing and kerb ramps across Peter Doherty Street
- Realigned stop lines on Peter Doherty Street.

A snapshot of the intersection upgrade plan is shown below in Figure 13.

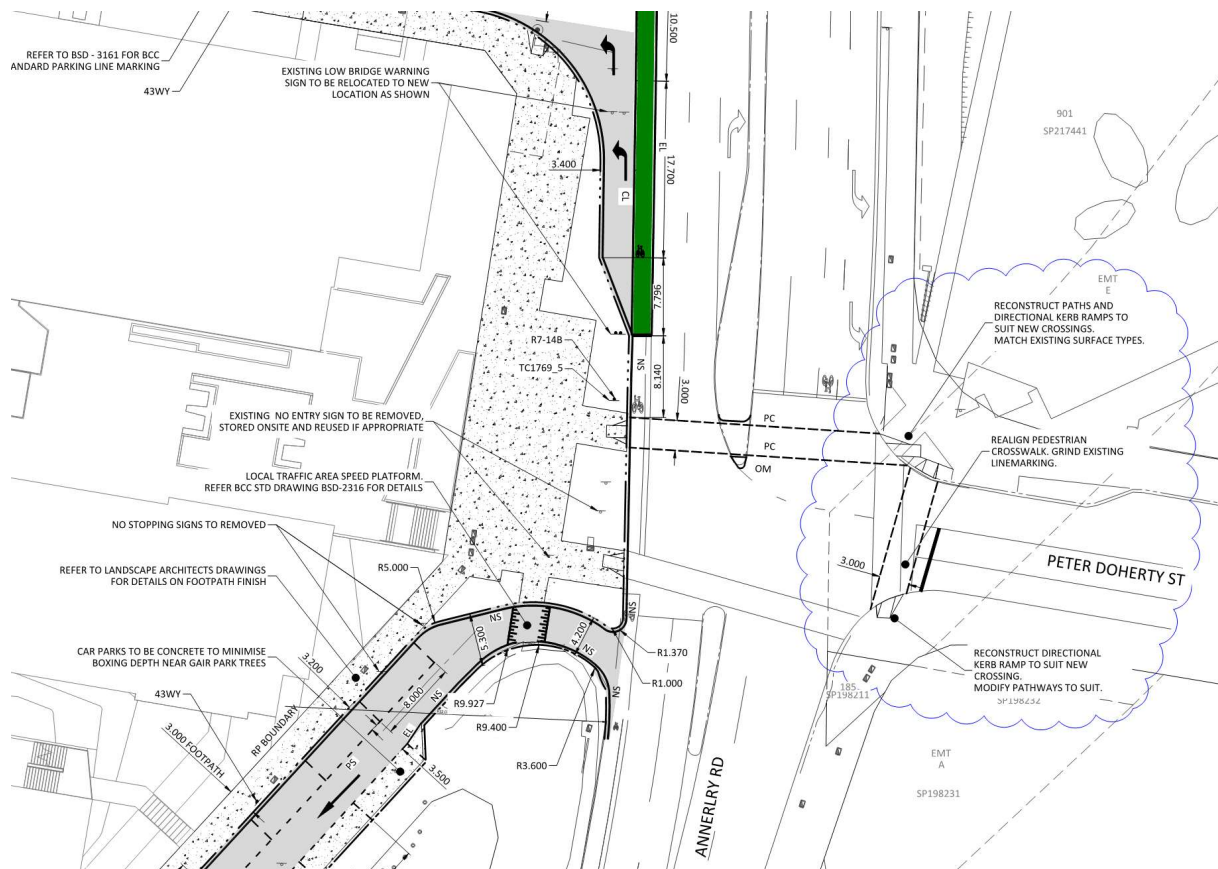
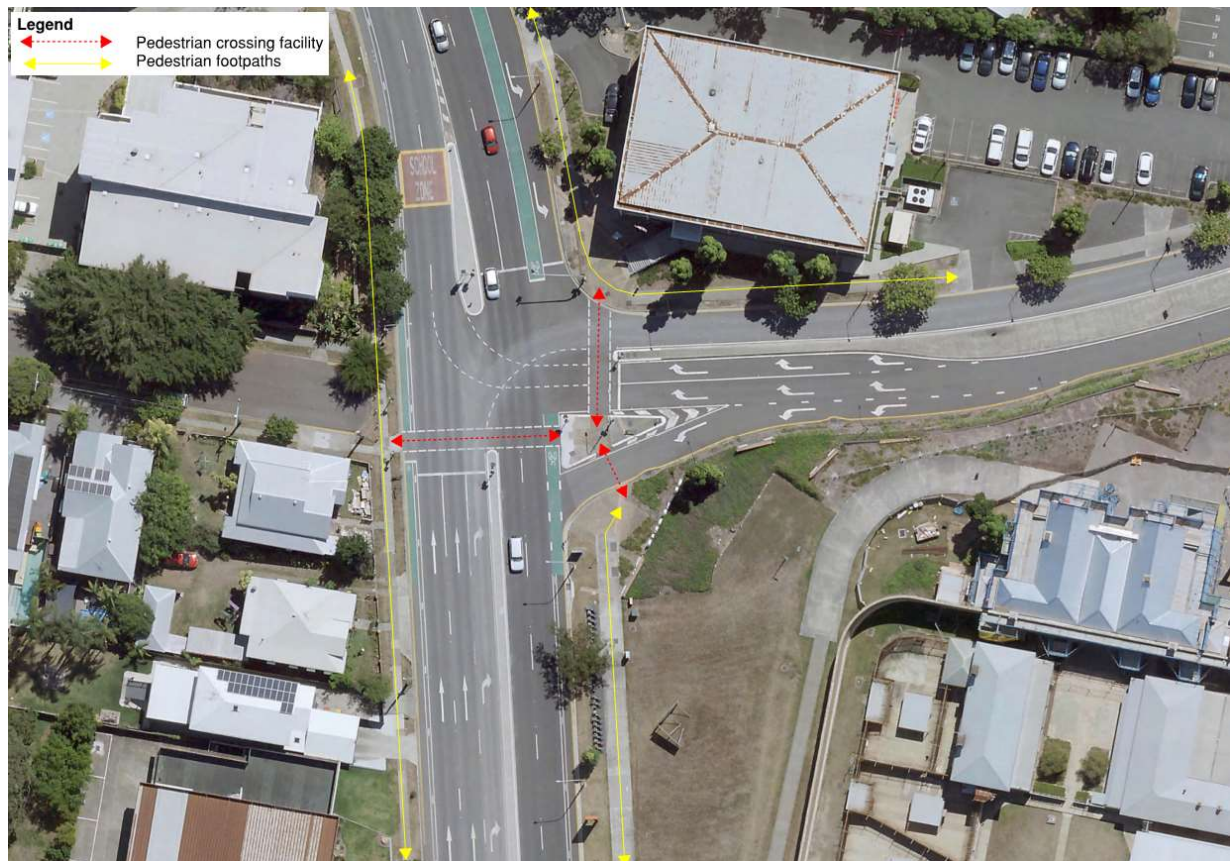


Figure 13: *BCC Approval Plan, prepared by Bomhurst + Ward*

3.3.2.2 Annerley Road / Boggo Road Intersection

Pedestrian footpaths are provided on both sides of Annerley Road and on the northern side of Boggo Road at the Annerley Road / Peter Doherty Street intersection. Pedestrian crossing facilities, including kerb ramps and signalised crosswalks provide pedestrians / off-road cyclists with a controlled movement across Annerley Road and Boggo Road.

On-road bicycle lanes provided on Annerley Road (both directions) at the Annerley Road / Boggo Road intersection provide on-road connections for cyclists between Gladstone Road and Stanley Street.



3.3.2.3 Boggo Road Pedestrian Crossing

An informal pedestrian crossing facility provides a connection between the Ecosciences Precinct and Dutton Park State School, Boggo Road Busway Station and Park Road Railway Station via a connection to the footpath along the northern side of Boggo Road.



Figure 14: Boggo Road Pedestrian Crossing

4 Impact Assessment

4.1 Construction Traffic

4.1.1 Current Construction Traffic Routes

Construction vehicles access the Boggo Road worksite from the south along Annerley Road and turn right onto Boggo Road at the Annerley Road / Boggo Road signalised intersection. Construction vehicles continue along Boggo Road / Joe Baker Street towards access gates B1 / J1 in order to access the Boggo Road worksite. Construction vehicles exit the Boggo Road worksite from Gate B2 on Boggo Road and Gate J2 at the Joe Baker Street / Peter Doherty Street intersection. Construction vehicles continue northbound along Peter Doherty Street towards the Annerley Road / Peter Doherty Street intersection and left onto Annerley Road.

4.1.2 Current Authorised Hours of Operation

Under the Evaluated Project (RfPC#8), the approved hours for access to the Boggo Road worksite for spoil haulage and materials / equipment delivery (excluding concrete deliveries) are Monday to Friday, 6:30am – 7:30am, 9:00am – 2:30pm and 4:30pm – 6:30pm and Saturday, 6:30am – 6:30pm.

Additionally, the approved hours for work during approved rail possessions (including spoil haulage, materials / equipment delivery to support extended hours activities) can be undertaken for up to 24 hours per day for the duration of the rail possession (i.e. 80 hours continuous work).

4.1.3 Current Construction Traffic Volumes

Under the Evaluated Project, peak construction traffic volumes generated by the Boggo Road worksite are in the order of 24 vehicles per hour. This volume includes the number of construction vehicles undertaking spoil haulage and/or material delivery but does not include the number of construction vehicles undertaking concrete deliveries or general workforce traffic.

In this regard, it is estimated that a maximum of 45 construction vehicles per hour currently travel along the approved routes described above during the authorised hours of operation towards the Boggo Road worksite, broken down as follows:

- 24 construction heavy vehicles (excluding concrete)
- 16 concrete trucks
- Five (5) workforce vehicles.

As noted in Section 4.1.2, concrete deliveries are not subject to restrictions applied to construction vehicles undertaking spoil haulage and/or materials /equipment deliveries relating to the authorised hours of operation. Therefore, the 16 concrete trucks per hour have been added to background traffic volumes as the 24 construction heavy vehicles are not permitted to access the worksite during the peak periods.

The assignment of this traffic to the network has been undertaken in accordance with the construction traffic routes detailed in Section 4.1.1.

4.1.4 Proposed Construction Traffic Routes

Under the option being assessed, all construction heavy vehicles will follow the current construction traffic routes used to access the Boggo Road worksite.

4.1.5 Proposed Hours of Operation

Access via Boggo Road to support the program of works in the rail corridor is as outlined in the Request for Project Change 9, Changes to the Project and changes to the imposed conditions – Southern Portal Area Volume 1, Section 1.4, with Boggo Road replacing Peter Doherty Street as the access road.

During this time, 24-hour, 7-day access is required through the Boggo Road precinct to deliver significant rail corridor works and support extended track possessions.

4.1.6 Proposed Construction Traffic Volumes

It is forecast that the peak volume of additional traffic generated by the Southern Area Works required to access the worksite via Boggo Road is in the order of 26 vehicles per hour, broken down as follows:

- 14 construction heavy vehicles (excluding concrete)
- Seven (7) concrete trucks
- Five (5) workforce vehicles.

Based on the current methodology and program, it is expected that peak construction traffic volumes will occur in September 2021.

4.2 Design Traffic

Design traffic volumes have been determined by adding the forecast background traffic volumes (refer to Section 3.1.2) to the construction traffic volumes outlined in Section 4.1.6.

It is noted that while peak construction traffic volumes are forecast to occur in September 2021, peak construction vehicles have been overlayed with 2022 forecast background traffic volumes in order to maintain a conservative assessment and provide an analysis of a 'worst-case' scenario for the program of the works.

Design traffic volumes are shown below.

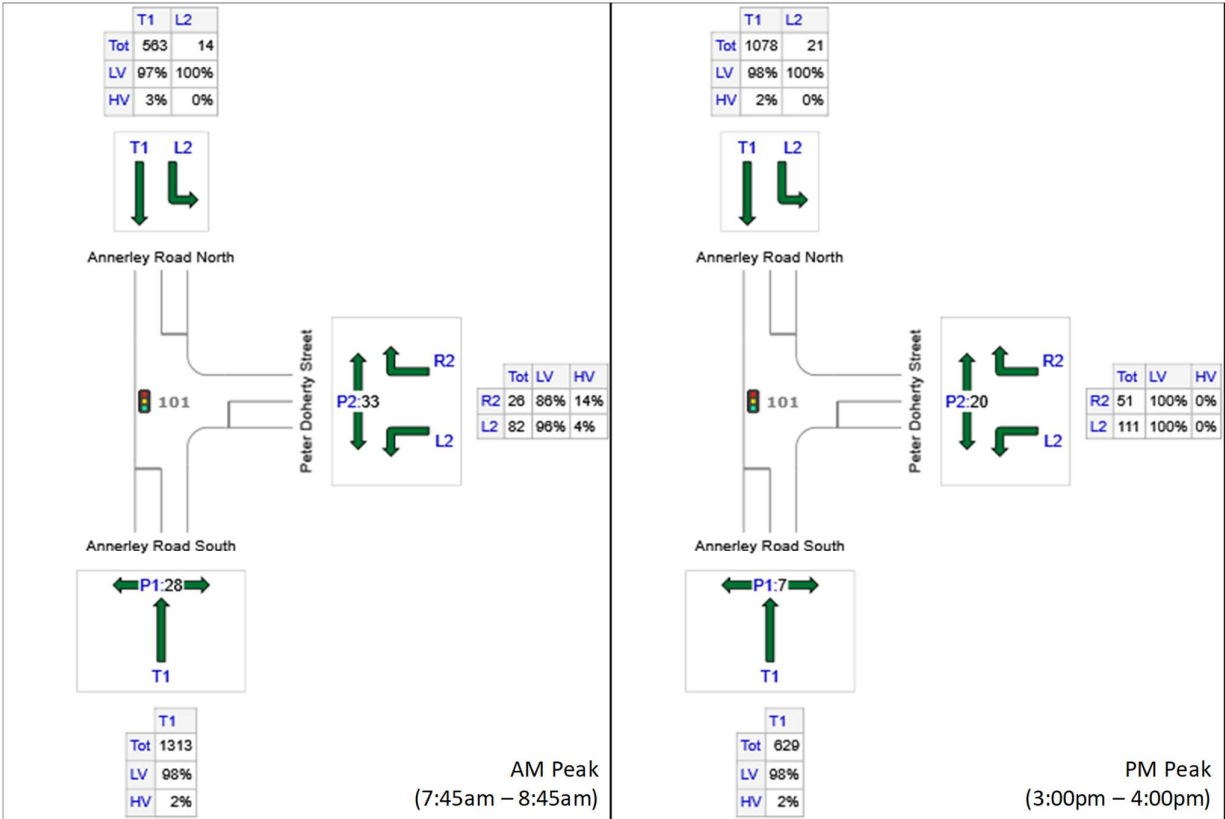


Figure 15: Annerley Road / Peter Doherty Street – Design Traffic Volumes

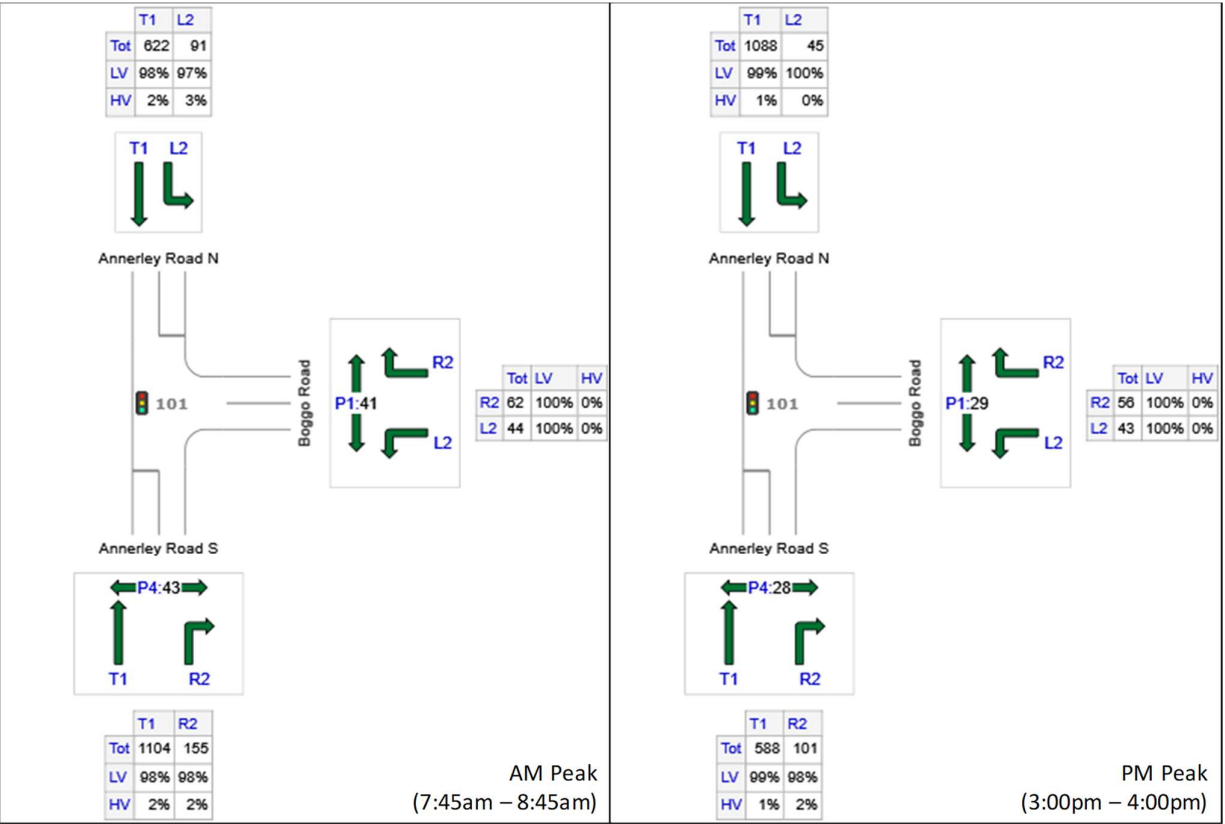


Figure 16: Annerley Road / Boggo Road – Design Traffic Volumes

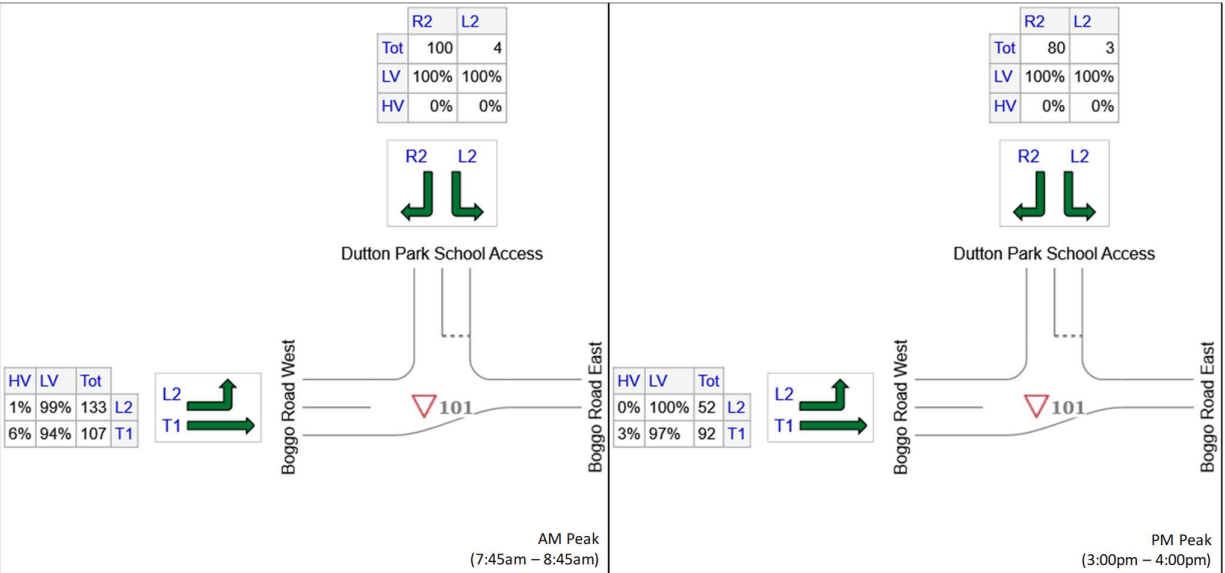


Figure 17: Boggo Road / Dutton Park School Access – Design Traffic Volumes

4.3 Traffic Impacts

4.3.1 Methodology

An assessment of the Annerley Road / Peter Doherty Street, Annerley Road / Boggo Road and Boggo Road / Dutton Park School Access intersections was undertaken in accordance with TMR's *Guide to Traffic Impact Assessment (GTIA, 2018)*. Fundamentally, the GTIA states:

- Detailed traffic analysis is required at locations where development traffic exceeds 5% of base traffic for any movement within the 'impact assessment area'
- Non-worsening delay mitigation is required to offset development impacts at locations where development traffic increases total intersection delay by more than 5%.

Where warranted through the GTIA, the performance of key intersections has been analysed using SIDRA Intersection (version 8). To quantify intersection performance during the peak hours, the following performance measures have been reported:

- Degree of Saturation (DOS (%)) – The ratio of arrival (demand) flow rate to capacity during a given flow period. Acceptable limits of operation for different intersection types are:
 - Signalised intersections – the intersection DOS should generally not exceed 0.90
 - Roundabouts – the DOS for any movement should not exceed 0.85
 - Priority-controlled – the DOS for any movement should exceed 0.80.
- Average delay (seconds) – The additional (excess) travel time experienced by a vehicle or pedestrian relative to a base travel time. The average delay considers all vehicles or pedestrians that are queued and not queued. In accordance with TMR's GTIA, average delay should not exceed 42 seconds for roundabouts or priority-controlled intersections.
- Level of Service (LOS) – An index of the operational performance of traffic on a given roadway, traffic lane, approach, intersection, route or network, based measures such as delay, degree of saturation, density, speed, congestion coefficient, speed efficiency or travel time index during a given flow period.
- 95th Percentile Queue (m) – The length of queue which 95 percent of all observed queue lengths fall, or 5 percent of all observed queue lengths exceed.

4.3.2 Traffic Volume Scoping Assessment

Table 5 below summarises the proportional increase to 2022 background traffic volumes during the AM and PM peak periods as a result of the proposed additional construction traffic volumes at the Annerley Road / Peter Doherty Street intersection.

Table 5: Annerley Road / Peter Doherty Street – Traffic Volume Scoping

Intersection Approach	Movement	Peak Period	Background Volume (vph)	Increase in Volume (vph)	Increase in Volume (%)
Annerley Road (South)	Through onto Annerley Road	Weekday AM	1285	26	2%
		Weekday PM	601	26	4%
Peter Doherty Street (East)	Left onto Annerley Road	Weekday AM	54	26	48%
		Weekday PM	83	26	31%
	Right onto Annerley Road	Weekday AM	26	0	0%

		Weekday PM	51	0	0%
Annerley Road (North)	Left onto Peter Doherty Street	Weekday AM	14	0	0%
		Weekday PM	21	0	0%
	Through onto Annerley Road	Weekday AM	563	0	0%
		Weekday PM	1078	0	0%

As shown, construction traffic is estimated to result in an increase of more than 5% of the year 2022 background traffic for the left turn movement from Peter Doherty Street onto Annerley Road during the AM peak (increase from 54 to 80, 48%) and PM peak (83 to 109, 31%). In accordance with TMR's GTIA, detailed traffic analysis is warranted and is provided in the following section(s).

Table 6 below summarises the proportional increase to 2022 background traffic volumes during the peak periods as a result of the proposed additional construction traffic volumes at the Annerley Road / Boggo Road intersection.

Table 6: Annerley Road / Boggo Road – Traffic Volume Scoping

Intersection Approach	Movement	Peak Period	Background Volume (vph)	Increase in Volume (vph)	Increase in Volume (%)
Annerley Road (South)	Through onto Annerley Road	Weekday AM	1104	0	0%
		Weekday PM	588	0	0%
	Right onto Boggo Road	Weekday AM	127	26	20%
		Weekday PM	73	26	36%
Boggo Road (East)	Left onto Annerley Road	Weekday AM	44	0	0%
		Weekday PM	43	0	0%
	Right onto Annerley Road	Weekday AM	62	0	0%
		Weekday PM	56	0	0%
Annerley Road (North)	Left onto Boggo Road	Weekday AM	91	0	0%
		Weekday PM	45	0	0%
	Through onto Annerley Road	Weekday AM	622	0	0%
		Weekday PM	1088	0	0%

As shown, construction traffic is estimated to result in an increase of more than 5% of the year 2022 background traffic for the right turn movement onto Boggo Road from Annerley Road during the AM peak (increase from 127 to 153, 20%) and PM peak (increase from 73 to 99, 36%). In accordance with TMR's GTIA, detailed traffic analysis is warranted and is provided in the following section(s).

Table 7 below summarises the proportional increase to 2022 background traffic volumes during the peak periods as a result of the proposed additional construction traffic volumes at the Boggo Road / Dutton Park School Access intersection.

Table 7: Boggo Road / Dutton Park School Access – Traffic Volume Scoping

Intersection Approach	Movement	Peak Period	Background Volume (vph)	Increase in Volume (vph)	Increase in Volume (%)
Boggo Road (East)	Through onto Boggo Road	Weekday AM	79	26	33%
		Weekday PM	64	26	41%
	Left onto Dutton Park School Access	Weekday AM	133	0	0%
		Weekday PM	52	0	0%
Dutton Park School Access (North)	Left onto Boggo Road	Weekday AM	4	0	0%
		Weekday PM	3	0	0%
	Right onto Boggo Road	Weekday AM	100	0	0%
		Weekday PM	80	0	0%

As shown, construction traffic is estimated to result in an increase of more than 5% of the year 2022 background traffic for the through movement onto Boggo Road from Boggo Road during the AM peak (increase from 79 to 105, 33%) and PM peak (increase from 64 to 90, 41%). In accordance with TMR's GTIA, detailed traffic analysis is warranted and is provided in the following section(s).

4.3.3 Annerley Road / Peter Doherty Street Intersection Assessment

The Annerley Road / Peter Doherty Street intersection was assessment using SIDRA Intersection (version 8) to determine construction impacts at year 2022 in accordance with TMR's GTIA.

The geometric layout of the intersection as modelled in SIDRA is illustrated in Figure 18 below.

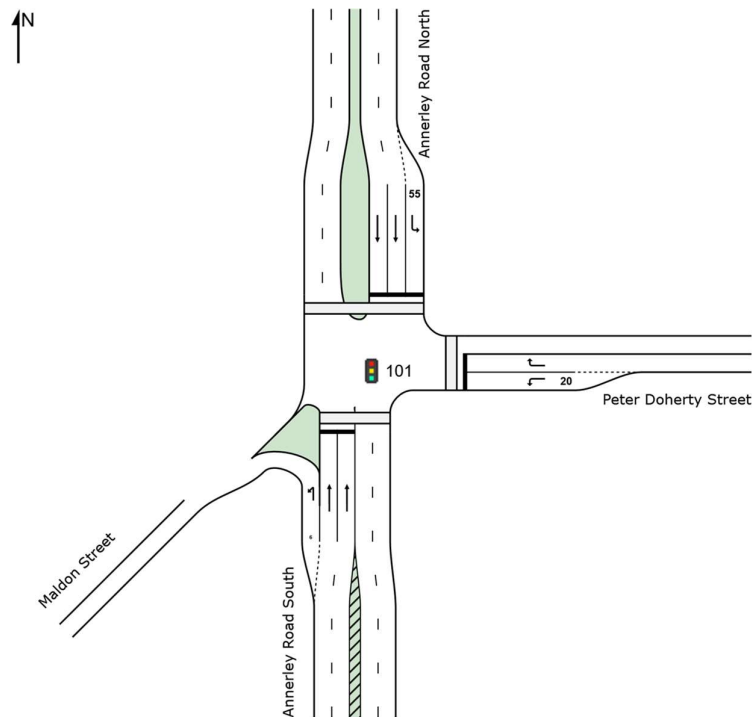


Figure 18: Annerley Road / Peter Doherty Street – SIDRA Geometric Layout

As shown in Figure 18, a signalised crosswalk across the northern leg of the intersection (Annerley Road) has been included within the model. With reference to Section 3.3.2.1, the crosswalk is not currently operational but, it is expected that the crosswalk will be operational prior to 2022 and has therefore been included within the model. A nominal volume of 100 pedestrians per hour has been assigned to be crossing movement across Annerley Road in lieu of actual data. Additionally, due to the timing of traffic surveys, volumes for the left turn movement from Annerley Road onto Maldon Street. A nominal volume of 120 vehicles per hour were assigned by the movement in lieu of actual data.

Information provided by Brisbane City Council indicates that the Annerley Road / Peter Doherty Street intersection operates under a 'three-phase' sequence. It is however noted that timing data for the intersection is currently unavailable. In lieu of this, a 'practical cycle time' with a maximum cycle time of 150 seconds was adopted for this assessment. Modelling for the intersection will be revised upon receipt of timing data for the intersection.

Phasing for the intersection is provided in Figure 19 below.

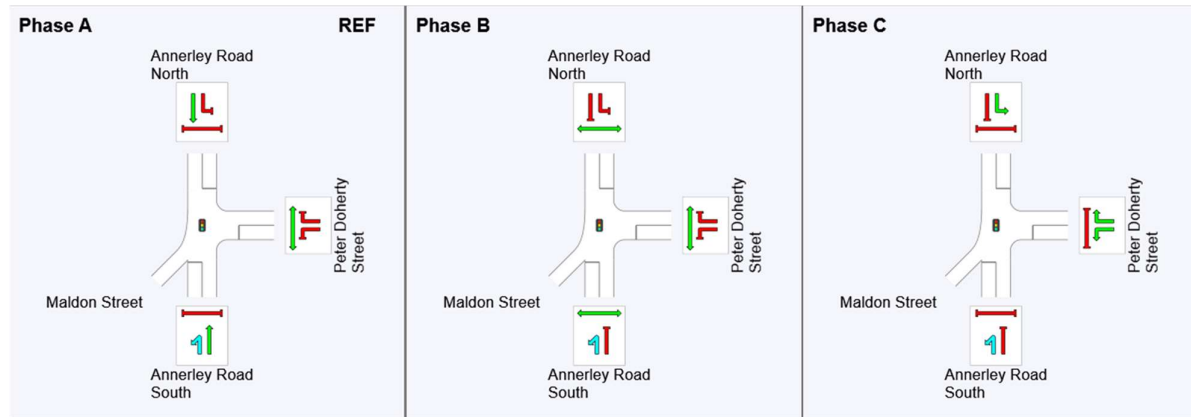


Figure 19: Annerley Road / Peter Doherty Street – Intersection Phasing

For the intersection, a 20% 'extra bunching' factor was applied to the Annerley Road southern and northern approaches to allow for the effect of upstream signalised intersections on Annerley Road.

A detailed summary of the performance of the intersection during weekday peak periods is provided in Table 8. SIDRA Movement Summary outputs for the network are provided in Appendix B.

Table 8: Annerley Road / Peter Doherty Street – SIDRA Results

Approach	Movement	DOS	Delay (s)	LOS	95 th Queue
2022 AM Peak – Background					
Annerley Road S	Left	0.078	6.8	LOS A	0.0
	Through	0.867	29.8	Los c	223.9
Peter Doherty Street	Left	0.398	46.8	LOS D	15.7
	Right	0.206	45.9	LOS D	8.1
Annerley Road N	Left	0.101	44.8	LOS D	3.8
	Through	0.326	15.3	LOS B	50.7
Intersection		0.867	25.3	LOS C	223.9
2022 AM Peak - Design					
Annerley Road S	Left	0.078	6.8	LOS A	0.0
	Through	0.883	32.2	LOS C	238.2
Peter Doherty Street	Left	0.589	47.7	LOS D	23.8
	Right	0.206	45.9	LOS D	8.1
Annerley Road N	Left	0.101	44.8	LOS D	3.8
	Through	0.326	15.3	LOS B	50.7
Intersection		0.883	27.2	LOS C	238.2
2022 PM Peak - Background					
Annerley Road S	Left	0.078	6.8	LOS A	0.0
	Through	0.503	17.3	LOS B	69.6
Peter Doherty Street	Left	0.521	41.3	LOS D	20.6
	Right	0.320	40.4	LOS D	12.3
Annerley Road N	Left	0.132	39.4	LOS D	4.9
	Through	0.732	21.1	LOS C	118.4
Intersection		0.732	20.5	LOS C	118.4
2022 PM Peak - Design					
Annerley Road S	Left	0.078	6.8	LOS A	0.0
	Through	0.523	17.5	LOS B	73.1
Peter Doherty Street	Left	0.685	42.9	LOS D	28.1

	Right	0.320	40.4	LOS D	12.3
Annerley Road N	Left	0.132	39.4	LOS D	4.9
	Through	0.732	21.1	LOS C	118.4
Intersection		0.732	20.9	LOS C	118.4

The above results indicate that the proposed change will result in minor impacts during the AM and PM peak hours at the Annerley Road / Peter Doherty Street intersection and will remain within acceptable operating parameters for a signalised intersection (DOS less than 0.9):

- AM peak: Increase in intersection DOS from 0.867 to 0.883
- PM peak: No change in intersection DOS (0.732)

The additional construction traffic introduced under the design scenario to the through movement on Annerley Road and the left turn movement onto Annerley Road from Peter Doherty Street are expected to increase average delays experienced at the intersection by 0.4 – 1.9 seconds and 95th percentile queue lengths by up to 14.3m during the peak hours when compared to the background scenario.

While the additional of construction traffic is not expected to adversely impact on the operation of the Annerley Road / Peter Doherty Street intersection during peak periods, it is noted that during peak times, queuing on Peter Doherty Street may result in larger vehicles being unable to access the left-turn lane. Therefore, in consultation with Brisbane City Council, it is recommended that consideration be given to the removal of two (2) car parking spaces on Peter Doherty Street to accommodate for queuing at the intersection.

4.3.4 Annerley Road / Boggo Road Intersection Assessment

The Annerley Road / Peter Doherty Street intersection was assessed using SIDRA Intersection (version 8) to determine construction impacts at year 2022 in accordance with TMR's GTIA.

The geometric layout of the intersection as modelled in SIDRA is illustrated in Figure 20 overleaf.

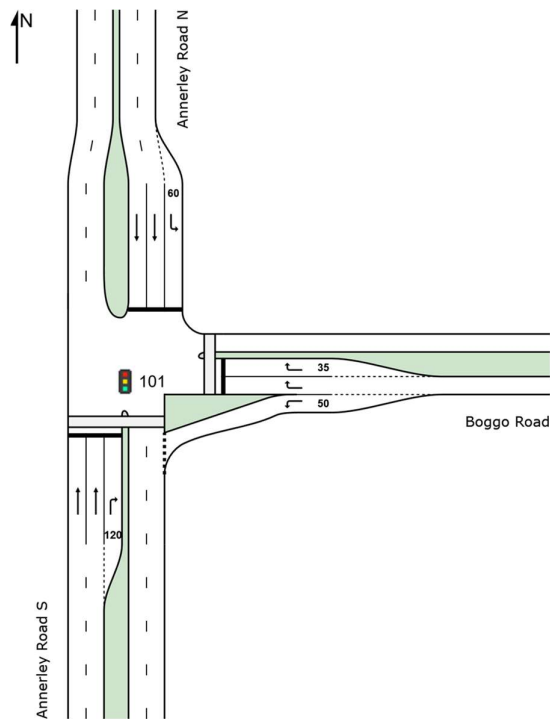


Figure 20: Annerley Road / Boggo Road– SIDRA Geometric Layout

Information provided by Brisbane City Council indicated that the Annerley Road / Boggo Road intersection operates under a ‘lagging right turn’ phase sequence on a maximum cycle time of 70 seconds during the morning peak periods and 85 seconds during the afternoon peak periods. Phasing for the intersection is provided in Figure 19 below.

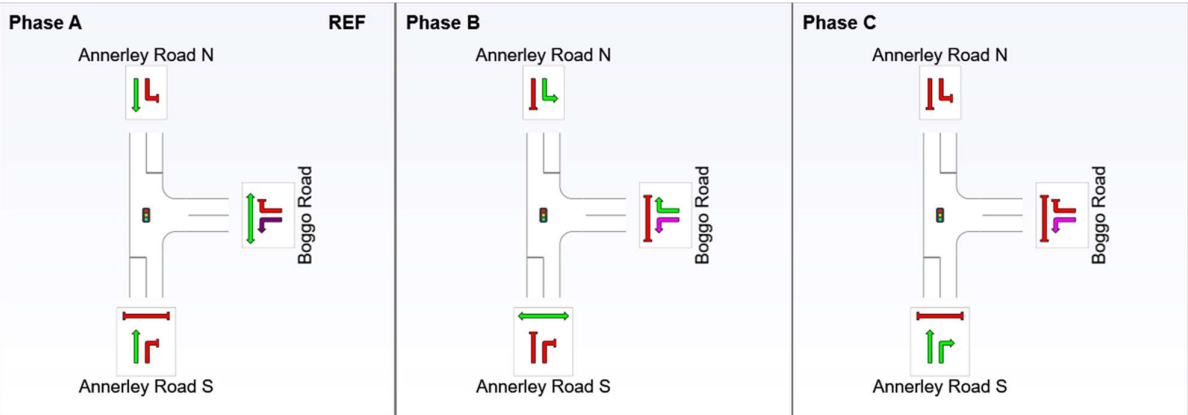


Figure 21: Annerley Road / Boggo Road – Intersection Phasing

For the intersection, a 20% ‘extra bunching’ factor was applied to the Annerley Road southern and northern approaches to allow for the effect of upstream signalised intersections on Annerley Road.

A detailed summary of the performance of the intersection during weekday peak periods is provided in Table 9. SIDRA Movement Summary outputs for the network are provided in Appendix B.

Table 9: Annerley Road / Boggo Road – SIDRA Results

Approach	Movement	DOS	Delay (s)	LOS	95 th Queue
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2022 AM Peak – Background					
Annerley Road S	Through	0.432	7.3	LOS A	60.4
	Right	0.394	37.7	LOS D	29.8
Boggo Road	Left	0.042	5.1	LOS A	2.4
	Right	0.137	33.8	LOS C	7.2
Annerley Road N	Left	0.409	35.4	LOS D	22.8
	Through	0.397	14.9	LOS B	55.3
Intersection		0.432	13.5	LOS B	60.4
2022 AM Peak - Design					
0.416	Through	0.432	7.3	LOS A	60.4
	Right	0.411	36.1	LOS D	35.0
Boggo Road	Left	0.042	5.1	LOS A	2.4
	Right	0.137	33.8	LOS C	7.2
Annerley Road N	Left	0.409	35.4	LOS D	22.8
	Through	0.426	16.5	LOS B	58.3
Intersection		0.432	14.1	LOS B	60.4
2022 PM Peak - Background					
Annerley Road S	Through	0.206	5.1	LOS A	23.6
	Right	0.447	51.4	LOS D	22.9
Boggo Road	Left	0.060	6.0	LOS A	3.3
	Right	0.193	44.8	LOS D	8.4
Annerley Road N	Left	0.310	45.5	LOS D	13.8
	Through	0.482	9.7	LOS A	91.2
Intersection		0.482	11.7	LOS B	91.2
2022 PM Peak - Design					
Annerley Road S	Through	0.206	5.1	LOS A	23.6
	Right	0.485	49.5	LOS D	30.4
Boggo Road	Left	0.058	6.2	LOS A	3.5
	Right	0.193	44.8	LOS D	8.4
Annerley Road N	Left	0.310	45.5	LOS D	13.8
	Through	0.501	10.9	LOS B	96.9
Intersection		0.501	12.8	LOS B	96.9

The above results indicate that the proposed change will result in minor impacts during the AM and PM peak hours at the Annerley Road / Peter Doherty Street intersection and that the intersection will remain within acceptable operating parameters for a signalised intersection (DOS < 0.9):

- AM peak: No change in intersection DOS (0.432)
- PM peak: Increase in intersection DOS from 0.482 to 0.501.

The additional construction traffic introduced under the design scenario to the right turn movement onto Boggo Road from Annerley Road are expected to increase average delays experienced at the intersection by 0.6 – 1.1 seconds and 95th percentile queue lengths by up to 5.7m during the peak hours when compared to the background scenario.

4.3.5 Boggo Road / Dutton Park School Access Intersection Assessment

The Boggo Road / Dutton Park School Access intersection was assessed using SIDRA Intersection (version 8) to determine construction impacts at year 2022 in accordance with TMR's GTIA.

The geometric layout of the network (i.e. Annerley Road / Cornwall Street and Cornwall Street / Kent Street intersections) as modelled in SIDRA is illustrated in Figure 22 below.

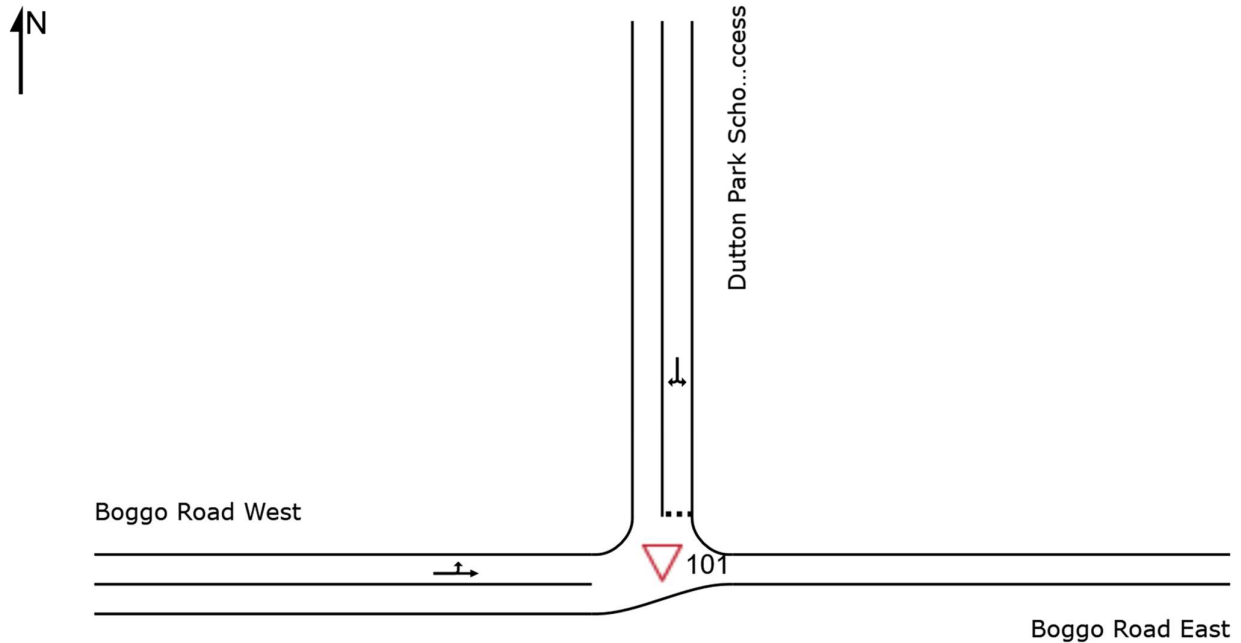


Figure 22: Boggo Road / Dutton Park School Access – SIDRA Geometric Layout

To replicate the concentrated arrival of traffic at the intersection (particularly school traffic), Peak Hour Factors (PHFs) were applied to each approach leg. PHFs were determined by dividing the peak hour volume for each movement by the peak 15-minute volume, multiplied by four.

A detailed summary of the performance of the intersection during weekday peak periods is provided in Table 10. SIDRA Movement Summary outputs for the network are provided in Appendix B.

Table 10: Boggo Road / Dutton Park School Access – SIDRA Results

Approach	Movement	DOS	Delay (s)	LOS	95 th Queue
2022 AM Peak – Background					
Dutton Park School Access	Left	0.216	4.3	LOS A	5.4
	Right	0.216	4.7	LOS A	5.4
Boggo Road	Left	0.217	5.5	LOS A	0.0
	Through	0.217	0.0	LOS A	0.0
2022 AM Peak - Design					
Dutton Park School Access	Left	0.222	4.4	LOS A	5.6
	Right	0.222	4.8	LOS A	5.6
Boggo Road	Left	0.234	5.5	LOS A	0.0
	Through	0.234	0.0	LOS A	0.0
2022 PM Peak - Background					
Dutton Park School Access	Left	0.151	4.2	LOS A	3.7
	Right	0.151	4.2	LOS A	3.7
Boggo Road	Left	0.103	5.5	LOS A	0.0
	Through	0.103	0.0	LOS A	0.0
2022 PM Peak - Design					
Dutton Park School	Left	0.155	4.3	LOS A	3.7

Access	Right	0.155	4.3	LOS A	3.7
Boggo Road	Left	0.121	5.5	LOS A	0.0
	Through	0.121	0.0	LOS A	0.0

The above results indicate that the Boggo Road / Dutton Park School Access intersection will remain within acceptable operating parameters for a priority-controlled intersection (i.e. DOS less than 0.8 / delay less than 42 seconds) during both the background and design scenarios. The addition of construction traffic to the through movement on Boggo Road is expected to have a negligible impact on DOS and queue lengths at the intersection during the peak periods.

While the above results indicate that queuing along Boggo Road is not expected, vehicles were observed to queue along Boggo Road during the morning and afternoon peak periods when attempting to access the Dutton Park State School's pick-up / drop-off facilities.

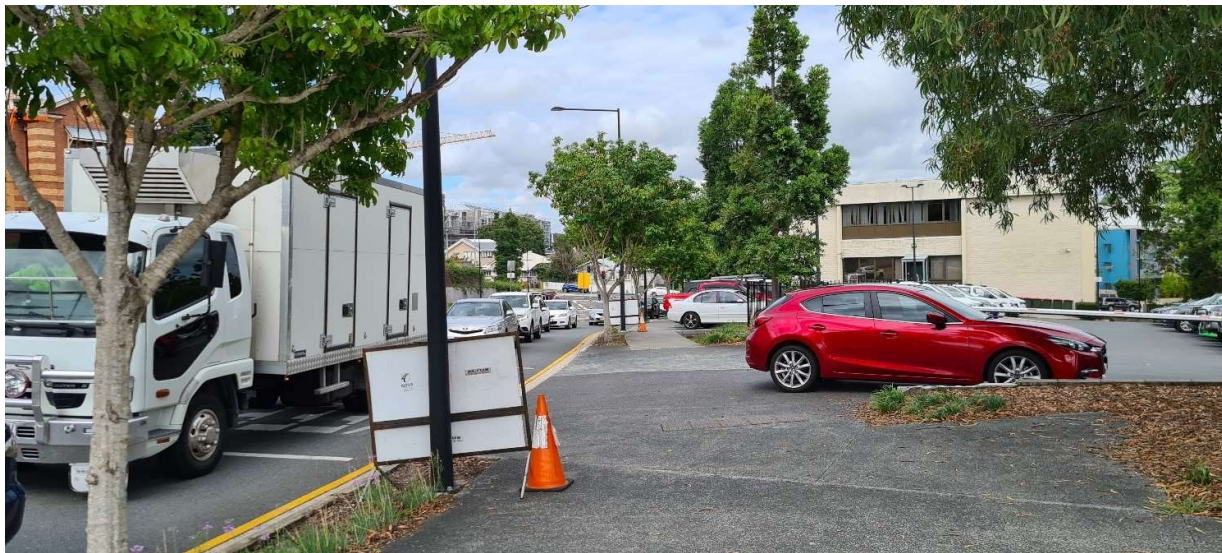


Figure 23: Boggo Road Queuing

While the additional of construction traffic is not expected to adversely impact on the operation of the Boggo Road / Dutton Park School Access intersection during peak periods, the focus should revolve around the safety of the operation of this intersection. In this regard and in consultation with Brisbane City Council and Dutton Park State School, consideration should be given to the following:

- Developing a solution that is able to provide sufficient kerbside queueing / storage area for vehicles while maintaining a through lane for construction vehicles on Boggo Road and/or
- Where practicable, limiting construction vehicle movements (excluding concrete deliveries) on Boggo Road to critical deliveries only during school peak times (i.e. 7:30am – 9:00am, 2:30pm – 4:30pm).

In relation to the latter, a further assessment of the Boggo Road / Dutton Park School Access intersection has been undertaken using first principles to analyse peak traffic volumes on Boggo Road during peak and off-peak times.

As noted in Section 3.1.1, traffic surveys were undertaken on 16th July 2020 at the Boggo Road / Dutton Park State School intersection. Based on the recorded volumes, Figure 24 shows the daily traffic profile by traffic movement. Movement definitions for traffic movements recorded at the intersection are provided in Table 11 for reference.

Table 11: Boggo Road / Dutton Park State School Intersection – Movement Definitions

Movement	Description
Movement 1	Right turn out of Dutton Park State School onto Boggo Road
Movement 2	Left turn out of Dutton park State School onto Boggo Road
Movement 3	Boggo Road (east) U-turn onto Boggo Road
Movement 4	Right turn from Boggo Road into Dutton Park State School
Movement 5	Boggo Road (east) straight towards Annerley Road
Movement 6	Boggo Road (west) U-turn onto Boggo Road
Movement 7	Boggo Road (west) straight towards Joe Baker Street
Movement 8	Left turn from Boggo Road into Dutton Park State School

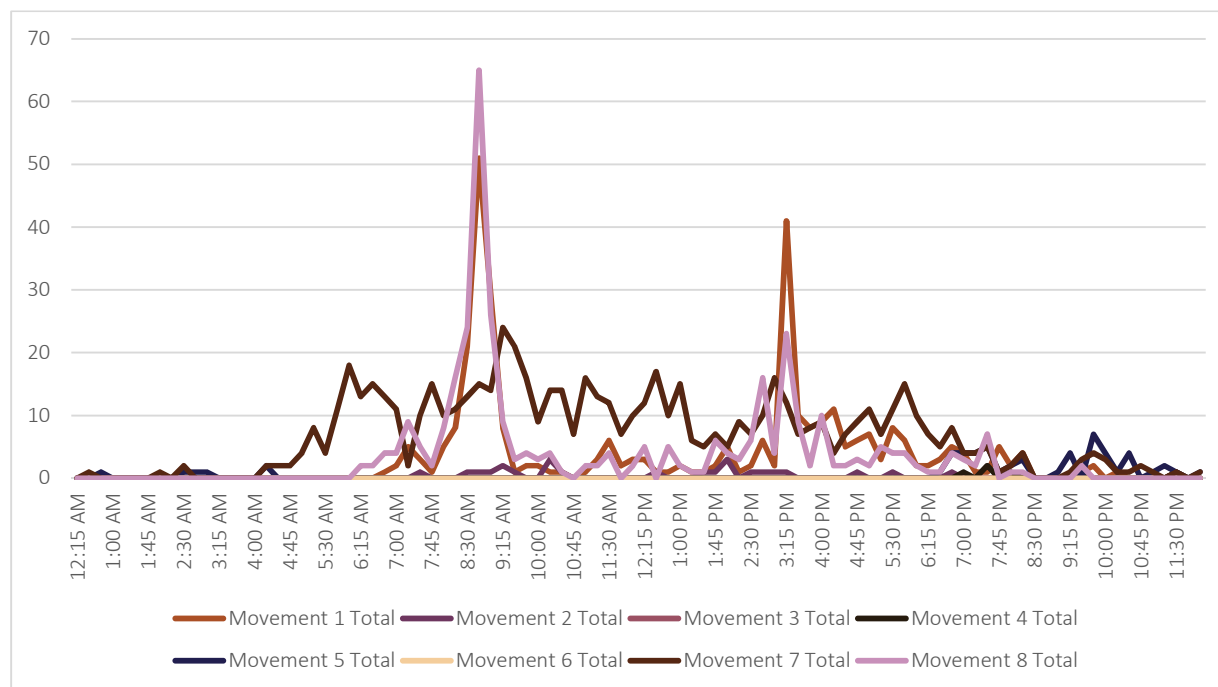


Figure 24: Boggo Road / Dutton Park School Access – Daily Movement Profile

Based on the daily profile presented in Figure 24, a daily profile for the total intersection traffic movements (i.e. sum of all recorded traffic movements) is shown below in Figure 25.

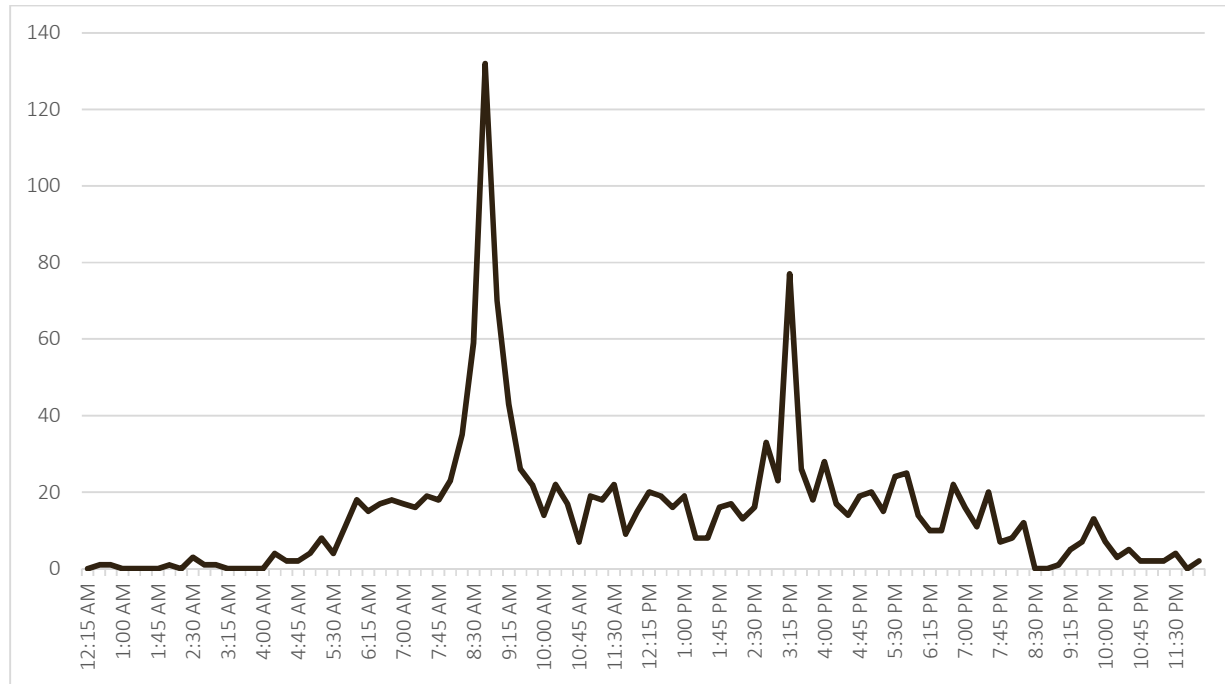


Figure 25: Boggo Road / Dutton Park State School Intersection – Total Intersection Traffic Volume Daily Profile

As shown by Figure 25, a peak of 132 vehicles were recorded during the 15-minute AM peak period between 8:30am – 8:45am. A peak of 77 vehicles were recorded during the 15-minute PM peak period between 3:00pm – 3:15pm. The timing of these recorded volumes coincides with modelled peak hours.

An analysis of the recorded volumes for Movement 7 (Boggo Road (west) straight towards Joe Baker Street) and Movement 8 (left turn from Boggo Road into Dutton Park State School) has also been undertaken considering the critical nature of this movement (i.e. vehicle queuing on Boggo Road). The daily profile for the sum of these movements is shown below in Figure 26.

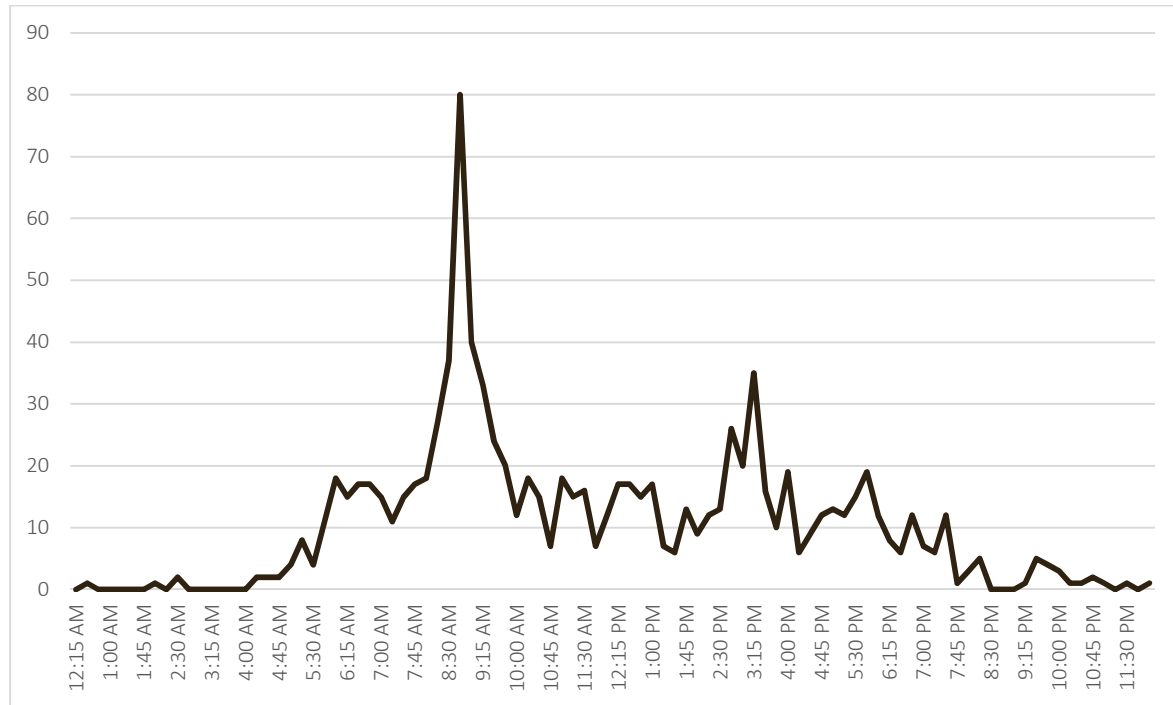


Figure 26: Boggo Road / Dutton Park State School Access Intersection – Movement 7 & 8 Daily Profile

As shown by Figure 26, a peak of 80 vehicles were recorded during the 15-minute AM peak period between 8:30am – 8:45am. A peak of 35 vehicles were recorded during the 15-minute PM peak period between 3:00pm – 3:15pm. Again, these volumes coincide with the modelled peak hours.

Outside of the school peak period (i.e. 7:30am – 9:00am, 2:30pm – 4:30pm), a peak of 33 vehicles were recorded during the 15-minute period between 9:00am – 9:15am. The timing of this recorded volume was observed to coincide with the clearing of queues on Boggo Road, specifically noting that school commences at 9:00am. Considering this, Table 12 below highlights periods during the school peak periods where volumes exceed 33 vehicles within a 15-minute period.

Table 12: Time of Day Analysis

Time period	Traffic Volume	Greater than 33
7:30am – 7:45am	17	No
7:45am – 8:00am	18	No
8:00am – 8:15am	27	No
8:15am – 8:30am	37	Yes
8:30am – 8:45am	80	Yes
8:45am – 9:00am	40	Yes
2:30pm – 2:45pm	13	No
2:45pm – 3:00pm	26	No
3:00pm – 3:15pm	20	No
3:15pm – 3:30pm	35	Yes
3:30pm – 3:45pm	16	No
3:45pm – 4:00pm	10	No
4:00pm – 4:15pm	19	No
4:15pm – 4:30pm	6	No

Based on the above analysis, consideration should be given to limiting the movement of construction vehicles along Boggo Road to critical deliveries only between 8:15am – 9:00am and 3:00pm – 3:15pm.

4.3.6 Intersection Delay Impact

Based on the above analysis, Table 13 summarises the GTIA delay impact assessment for year 2022 forecast background traffic and 2022 design, totalled across all intersections (i.e. Annerley Road / Peter Doherty Street, Annerley Road / Boggo Road and Boggo Road / Dutton Park School Access) and peak assessment periods.

Table 13: GTIA Impact Analysis

2022 Background Delay Impact (veh-sec)	2022 Design Delay Impact (veh-sec)	Net Change (%)
97,573.3	99,948.2	2.4%

As shown, the addition of construction traffic during the peak periods does not increase total intersection delay by more than 5%. Therefore, mitigation measures are not warranted by the GTIA process.

While mitigation measures are not warranted as a result of intersection delay, the focus should revolve around the safety in operation for all road users (i.e. vulnerable road users) as part of the change.

4.4 Public Transport Impacts

Construction traffic is not expected to adversely impact the operation of public transport services proximate to the Southern Area worksite.

4.5 Active Transport Impacts

4.5.1 Overview

The following sections provide an analysis of the impacts of construction traffic on active transport facilities / infrastructure. This analysis predominantly focuses on identified conflict points between pedestrians / cyclists and construction traffic.

4.5.2 Annerley Road / Peter Doherty Street Intersection

With consideration to the proposed construction traffic routes detailed in Section 4.1.4, the following locations have been identified as potential conflict points identified at the Annerley Road / Peter Doherty Street intersection:

- Pedestrian crosswalk across Annerley Road (south)
- Pedestrian crosswalk across Annerley Road (north)
- Pedestrian crosswalk across Peter Doherty Street

With respect to the above, it is noted that crossing movements across Annerley Road and Peter Doherty Street at the Annerley Road / Peter Doherty Street intersection are controlled (i.e. signalised). Furthermore, following the implementation of planned upgrades at the intersection and subsequent revised intersection phasing, all potential conflicts between vehicular traffic and pedestrians have been removed following the removal of the late start for the left turn movement from Peter Doherty Street onto Annerley Road.

Considering this, construction traffic associated with the Southern Area worksite is not expected to result in any reduction in safety at the intersection.

4.5.3 Annerley Road / Boggo Road Intersection

With consideration to the proposed construction traffic routes detailed in Section 4.1.4, the following locations have been identified as potential conflict points identified at the Annerley Road / Boggo Road intersection:

- Pedestrian crosswalk across Annerley Road (south)
- Pedestrian crosswalk across Boggo Road.

With respect to the above, it is noted that crossing movements across Annerley Road and Boggo Road at the Annerley Road / Boggo Road intersection are controlled (i.e. signalised). Furthermore, it is noted that under the current intersection phasing, signalised pedestrian movements across Annerley Road and Boggo Road are protected.

Considering this, construction traffic associated with the Southern Area worksite is not expected to result in any reduction in safety at the intersection.

4.5.4 Boggo Road Pedestrian Crossing

Pedestrian crossing volumes were obtained from 24-hour traffic surveys undertaken on Thursday 16th July 2020. The daily profile for total pedestrian crossing volumes is shown in Figure 27.

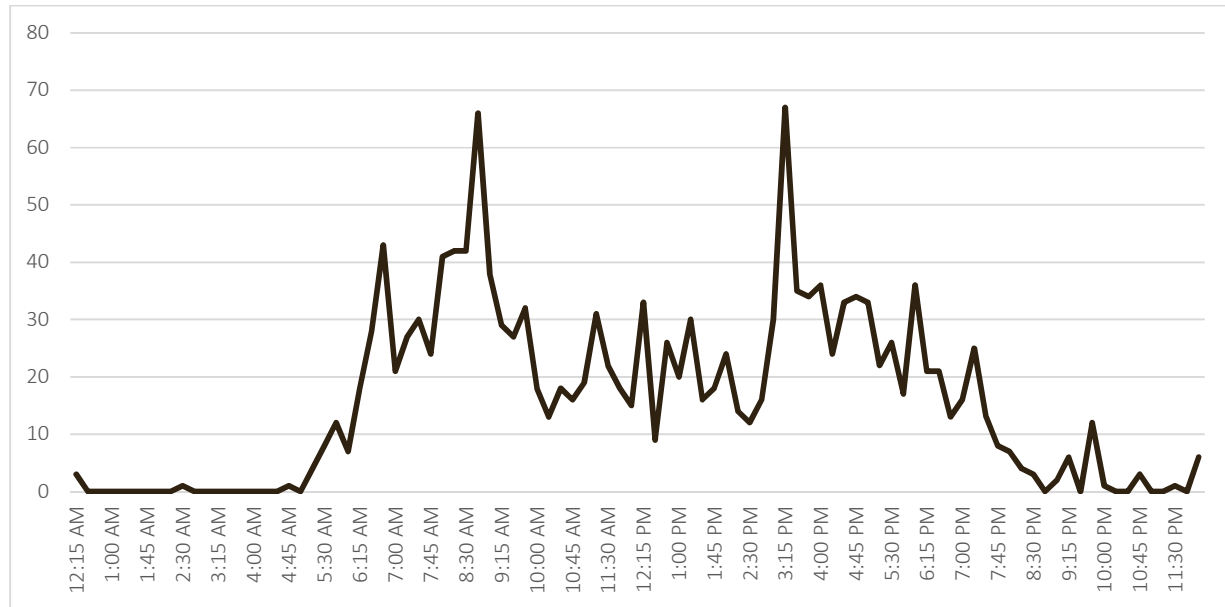


Figure 27: Boggo Road Pedestrian Crossing – Total Pedestrian Crossing Volumes Daily Profile

As shown, 66 pedestrians were recorded cross Boggo Road in the vicinity of the informal crossing facility during the 15-minute AM peak period between 8:30am – 8:45am. Similarly, 67 pedestrians were recorded during the 15-minute PM peak period between 3:00pm – 3:15pm. It is noted that these peak times coincide with the peak times observed for vehicle movements at the Boggo Road / Dutton Park State School intersection.

It is noted that during construction hours for the Boggo Road worksite the crossing facility is manned by a traffic controller. That is, the traffic controller controls eastbound traffic under hold and release traffic management allowing pedestrians to cross Boggo Road while traffic is stopped. During a site inspection undertaken on 1st February 2021, it was observed that while most pedestrians crossed at the designated crossing location, several pedestrians were observed cross Boggo Road at uncontrolled locations.



Figure 28:: Boggo Road Pedestrian Crossing – Pedestrian Desire Lines

In recognition of increased construction heavy vehicle volumes proposed on Boggo Road past the crossing, a review of potential arrangements / measures has been undertaken to ensure pedestrian (i.e. school children) and off-road cyclist safety at the crossing location is maintained.

One option considered was the provision of a formalised crossing facility (i.e. zebra) across Boggo Road. To determine the suitability for a zebra crossing, an assessment against the numerical warrants has been undertaken in accordance with the Roads and Maritime Services (RMS) *Austroads Guide Supplements, Austroads Guide to Traffic Management, Part 6: Intersections, Interchanges and Crossings* (2013).

In accordance with this guide, a zebra crossing is warranted where; in three separate one-hour periods in a typical day

- a. The pedestrian flow per hour (P) crossing the road is greater than or equal to 30 AND
- b. The vehicular flow per hour (V) through the site is greater than or equal to 500 AND
- c. The product PV is greater than or equal to 60,000.

While pedestrian flow per hour volumes across Boggo Road exceed the warrant requirement of 30 per hour, vehicular volumes on Boggo Road past the crossing facility does not meet the minimum requirements of the warrant. It is further noted that, *Austroads Guide to Traffic Management, Part 6: Intersections, Interchanges and Crossings* states that zebra crossings are not suitable for multi-lane roads. In this regard, Boggo Road is a multi-lane road (i.e. one lane for construction traffic, one lane for general traffic) proximate to the crossing location. As such, the provision of a zebra crossing is not considered appropriate or warranted.

A second option considered was the installation of a fence along both sides of Boggo Road as a measure to guide / redirect pedestrians and cyclist to the designated crossing point (i.e. staggered fence treatment). The design of the facility is shown in Appendix C.

Key elements of the design are as follows:

- Tubular handrail fencing to provide a barrier and restrict access outside of the designated path of travel
- 3.0m separation between the two fences
- Tactile Ground Surface Indicators (TGSIs) to direct

The installation of fencing at the crossing is planned for implementation mid-February 2021.

It is recommended that in consultation with Brisbane City Council, a review is undertaken on the effectiveness of current controls and pedestrian behaviours (i.e. pedestrian crossing at uncontrolled locations) at the crossing, and to ensure that the current arrangements are clear and easy to understand.

Any further mitigations or measures warranted following the review should be developed in close consultation with Brisbane City Council's Active Transport Division.

4.5.5 Joe Baker Street / Peter Doherty Street

With consideration to the proposed construction traffic routes detailed in Section 4.1.4, the following locations have been identified as potential conflict points identified at the Joe Baker Street / Peter Doherty Street roundabout:

- Pedestrian refuge on Peter Doherty Street

A review of available sight distance at the crossing facility has been undertaken in accordance with Austroads *Guide to Road Design, Part 4A: Signalised and Unsignalised Intersections* to ensure that a clear view between approaching traffic and pedestrians on or waiting to cross the roadway is available. This assessment is summarised in Table 14 below

Table 14: Joe Baker Street / Peter Doherty Street Intersection – Pedestrian Refuge Sight Distance

Sight Distance	AGRD Requirement	Compliant
Approach Sight Distance (ASD)	40m	Yes
Crossing Sight Distance	32m*	Yes

*Reduced requirement due to staged crossing

In addition to the above, during a site inspection undertaken on Monday 22nd February 2021, several pedestrians were observed to cross using driveways and the raised centre island of the roundabout as refuge rather than available footpaths and the pedestrian refuge provided on the Peter Doherty Street approach to the roundabout.



Figure 29: Joe Baker Street / Peter Doherty Street Roundabout – Pedestrian Movements

Again, in recognition of increased heavy vehicle volumes proposed along Joe Baker Street / Peter Doherty Street and potential interface with pedestrians and off-road cyclists, a review of potential arrangements / measures has been undertaken to ensure pedestrian and off-road cyclist safety at the intersection is maintained.

An option considered was the installation of fencing at locations along Joe Baker Street / Peter Doherty Street, supplemented with line marking across driveways as a measure to guide / direct pedestrians to the crossing facility. The design of this treatment is shown in Appendix E.

It is recommended that in consultation with Brisbane City Council, a review is undertaken on the effectiveness of current controls and pedestrian behaviours at the intersection, and to ensure that the current arrangements are clear and easy to understand. Any further mitigations or measures warranted following the review should be developed in close consultation with Brisbane City Council's Active Transport Division.

5 Access Assessment

5.1 Overview

Currently, there are (4) access points on Boggo Road / Joe Baker Street / Peter Doherty Street that provide access to the Boggo Road worksite:

- **Gate B1:** Left in access on Boggo Road
- **Gate B2:** Left out access on Boggo Road / Joe Baker Street
- **Gate J1:** Left in access on Joe Baker Street
- **Gate J2:** Left out access on Joe Baker Street / Peter Doherty Street.



Figure 30: Site Access Locations

5.2 Access Review

5.2.1 Gate B1

5.2.1.1 Overview

Located on Boggo Road, Gate B1 is an established access that provides access from Boggo Road to the northern extents of the Boggo Road worksite. A designated site access lane separates construction traffic entering Gate B1 from through traffic on Boggo Road. Construction vehicles entering from Boggo Road are required to follow implemented controls and procedures in accordance with the approved Construction Traffic Management Subplan (CTMP).

No changes are proposed to this access under the project change.

5.2.2 Gate B2

5.2.2.1 Overview

Located at the Boggo Road / Joe Baker Street intersection, Gate B2 is an established access that provides access from the northern extents of the Boggo Road worksite to Boggo Road / Joe Baker Street. Construction vehicles exiting onto Boggo Road / Joe Baker Street are required to follow implemented controls and procedures in accordance with the approved CTMP

No changes are proposed to this access as part of the project change.

5.2.3 Gate J1

5.2.3.1 Overview

Located on Joe Baker Street, Gate J1 is an established access that provides access from Joe Baker Street to the southern extents of the Boggo Road worksite. Currently, construction vehicles are only permitted to turn left from Joe Baker Street to enter the worksite.

Under the change, it is proposed that Gate J1 is changed to also permit left turn exit movements to Joe Baker Street.

5.2.3.2 Sight Distance

An assessment of available sight distance at the access has been undertaken in accordance with Austroads *Guide to Road Design, Part 4A: Signalised and Unsignalised Intersections*. This assessment is summarised below in Table 15.

Table 15: Sight Distance Assessment – Gate J1

Access	Direction	AGRDR Requirement	Compliant
J1	North	55m	See below

Based on the requirements stipulated in Austroads *Guide to Road Design, Part 4A: Signalised and Unsignalised Intersections*, the sight envelope for construction vehicles exiting Gate J1 is shown below in Figure 31.

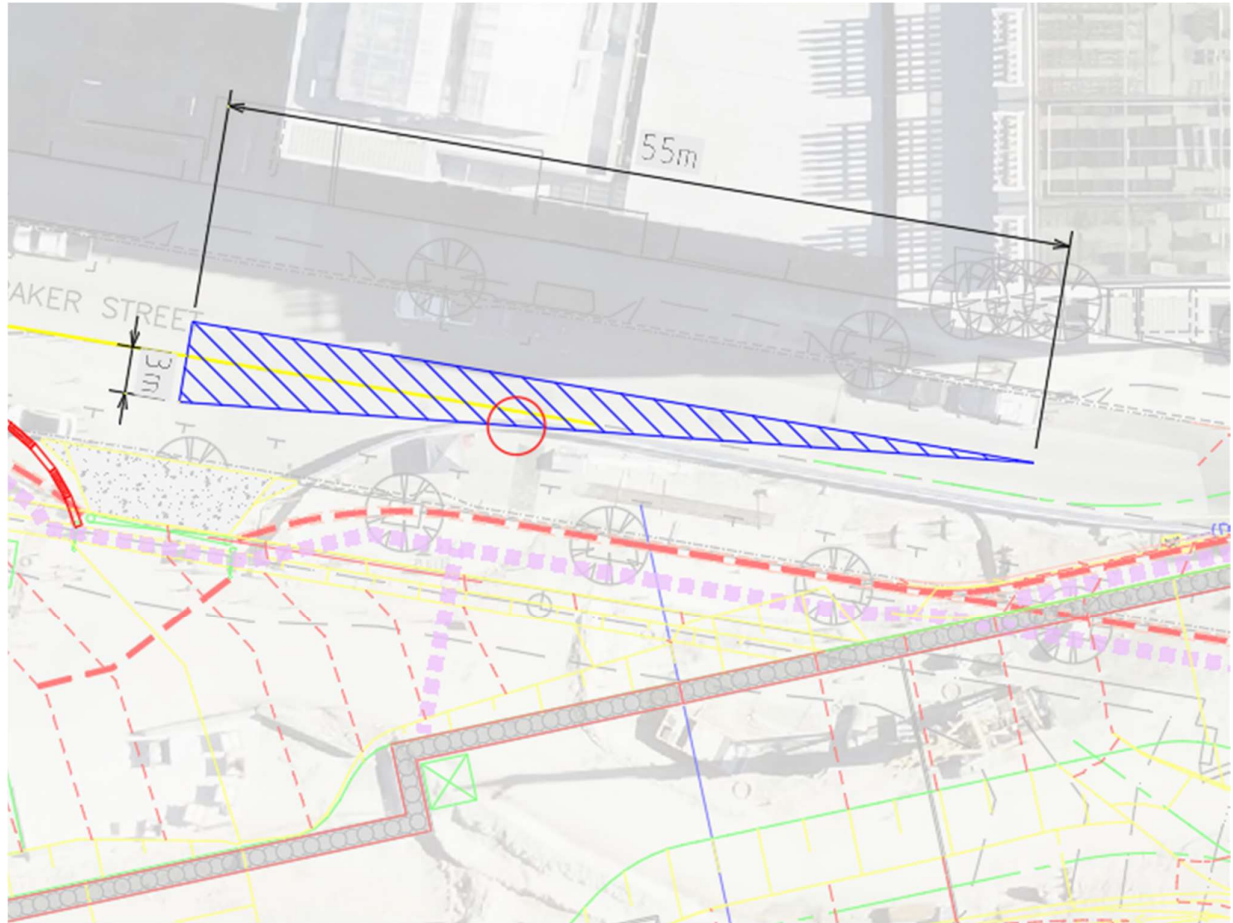


Figure 31: Sight Distance Envelope – Gate J1

As shown in Figure 31, the sight distance envelope for construction vehicles exiting Gate J1 onto Joe Baker Street appears to conflict with the existing line of hoarding. To ensure that unobstructed sight distance is provided to construction traffic existing Gate J1, consideration should be given to the following:

- Removing car parking from and realigning Joe Baker Street past the worksite to increase the separation between the line of hoarding and edge of the through lane.

5.2.3.3 Swept Path Analysis

Swept path diagrams using the expected largest design vehicle (i.e. 19.0m semi-trailer) were prepared for two (2) options for access to and from Gate J1 for consideration:

- Option 1: Independent entry and exit movements
- Option 2: Dependent entry and exit movements.

A copy of the swept path diagrams is provided in Appendix D.

Option 1 investigated independent entry and exit movements at the access (i.e. entry movements do no impact on exit movements). With this option, the swept path diagrams indicate that the kerbside parking along Joe Baker Street will need to be removed.

Option 2 investigated dependent entry and exit movements at the access (i.e. entry movements that impact on exit movements and vice versa). With this option, the swept path diagrams indicate that no changes are required to the site access or along Joe Baker Street.

Consistent with both above options, the swept path diagrams indicate that the raised central island of the Joe Baker Street / Peter Doherty Street roundabout will need to be removed to accommodate for the right turn movement from Joe Baker Street onto Peter Doherty Street. To accommodate for this movement, while maintaining a facility that manages the priorities of traffic on Joe Baker Street, Peter Doherty Street and nearby accesses (i.e. Gate J2 and the Leukemia Foundation driveway), consideration should be given to reducing the diameter of the raised central median and supplementing the design with line-marking.

A concept sketch for this arrangement is provided in Appendix E.

5.2.4 Gate J2

5.2.4.1 Overview

Located at the Joe Baker Street / Peter Doherty Street roundabout, Gate J2 is an established access that provides access to Peter Doherty Street from the southern extents of the Boggo Road worksite. Currently, construction vehicles continue straight through the roundabout when exiting the worksite to continue on Peter Doherty Street, towards Annerley Road.

Under the change, it is proposed that Gate J2 is changed to also permit entry movements from Joe Baker Street.

5.2.4.2 Swept Path Analysis

Swept path diagrams using the expected largest design vehicle (i.e. 19.0m semi-trailer) were prepared four (4) options for access to and from Gate J2 for consideration:

- Option 1: Independent entry and exit movements, existing road layout
- Option 2: Independent entry and exit movements, revised road layout
- Option 3: Dependent entry and exit movements, existing road layout
- Option 4: Dependent entry and exit movements, revised road layout.

A copy of the swept path diagrams is provided in Appendix D.

Option 1 investigated independent entry and exit movements at the access. With this option, swept path diagrams indicate that significant widening to the access will be required to accommodate the movements of construction vehicles.

Option 2 investigated maintaining independent entry and exit movements at the access but with the removal of the splitter island on the Joe Baker Street approach to the Joe Baker Street / Peter Doherty Street roundabout to provide additional manoeuvring area for construction vehicles. A concept sketch for this arrangement is provided in Appendix E. Similar to Option 1, swept path diagrams indicate that significant widening to the access will be required.

Option 3 investigated dependent entry and exit movements at the access. With this arrangement, swept path diagrams that only minor widening to the access will be required to accommodate the entry movement.

Option 4 investigated maintaining dependent entry and exit movements at the access but with the removal of the splitter island on the Joe Baker Street approach to the Joe Baker street / Peter Doherty Street roundabout to provide additional manoeuvring area for construction vehicles. With the arrangement, swept path diagrams indicate that construction vehicles will be able to manoeuvre from Joe Baker Street to Gate J2 without any modifications to the access gate.

5.2.5 Summary

Based on the above assessment and in consultation with Brisbane City Council, it is recommended that consideration is given to the following:

- Removal of car parking along Joe Baker Street
- Realignment of Joe Baker Street (i.e. utilise the area of the existing car parks)
- Reducing the diameter of the raised central island at the Joe Baker Street / Peter Doherty Street Intersection and installation of line marking to delineate the trafficable areas of the roundabout
- Removal of the raised splitter island(s) on the Joe Baker Street approach to the Joe Baker Street / Peter Doherty Street intersection and installation of line marking.

With respect to the above considerations, access to all surrounding developments (i.e. Ecosciences) will be maintained at all times. This will be further detailed with a CTMP-SP.

6 Road Safety Assessment

A road safety assessment was undertaken in accordance with the Department of Transport and Main Roads, Guide to Traffic Impact Assessment. This process involved the identification of any new or changed risks resulting from the additional construction heavy vehicles accessing the Southern Area worksite via Boggo Road. The key safety risks associated with the additional construction traffic on Boggo Road and connecting intersections relate to increasing right turning movements at the Annerley Road / Boggo Road intersection and the interaction between construction vehicles and other road users, including vehicles, cyclists and pedestrians.

Traffic safety risks have been identified and scored using the risk scoring matrix shown in Table 16. Scoring has been undertaken for both the background and design cases.

Table 16: Risk Scoring Matrix

		Potential consequence				
		Property only (1)	Minor injury (2)	Medical treatment (3)	Hospitalisation (4)	Fatality (5)
Potential likelihood	Almost certain (5)	M	M	H	H	H
	Likely (4)	M	M	M	H	H
	Moderate (3)	L	M	M	M	H
	Unlikely (2)	L	L	M	M	M
	Rare (1)	L	L	L	M	M

To determine appropriate scores for the identified risks, consideration has been given to the approximate available sight distances on approach to a hazard / risk, the volume of construction traffic being added and potential implications resulting from the introduction of construction vehicles.

Table 17: Road Safety Risk Assessment

Risk Item	Without construction			With construction			Mitigation Measures	With construction and mitigation		
	Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
Cyclists riding in lane (Annerley Road / Boggo Road / Joe Baker Street / Peter Doherty Street) conflicting with heavy vehicles; potential for conflicts with cyclists	1	5	M	1	5	M	No action	-	-	-
Right turn pocket of intersection at Annerley Road / Boggo Road queuing out into 60km/h traffic; potential for rear end crash	1	4	M	1	4	M	Queue lengths are expected to remain within the capacity of the right turn facility – refer to SIDRA outputs provided in Appendix E	-	-	-
Increased queue lengths at Boggo Road / Dutton Park School Access intersection;	4	2	M	4	2	M	Refer to Section 4.3.5	-	-	

potential for rear end crash										
Increased construction vehicle volumes travelling past / through pedestrian crossing on Boggo Road; potential for conflicts with pedestrians / off-road cyclists	1	4	M	1	4	M	Refer to Section 4.5.4			
Pedestrians crossing Boggo Road at uncontrolled locations; potential for conflicts with pedestrians / off-road cyclists	1	4	M	1	4	M	Refer to Section 4.5.4			
Vehicle pulling out of kerbside pick-up / drop-off zone of Boggo Road into travel lane; potential for rear-end / sideswipe crash	1	3	L	1	3	L	No action			
Queuing / congestion on Joe Baker Street / Boggo Road resulting from construction vehicle movements at site accesses; potential for rear end crashes due to unexpected queueing	1	3	L	1	3	L	No action			
Sight distance for left turns from Gate J1 onto Joe Baker Street; potential for left through crashes	1	4	M	2	4	M	Refer to Section 5.2.3.2	1	4	M
Construction vehicles exiting Gate J2; potential for left through crashes	1	4	M	2	4	M	Consideration should be given to restricting access to Boggo Road (east of the Boggo Road Gaol access) and Joe Baker Street to authorised vehicles only	1	4	M
Increased queue lengths on Peter Doherty Street approach to the Annerley Road / Peter Doherty Street intersection; potential for rear end crashes due to unexpected queueing	1	3	L	1	3	L	No action – refer to SIDRA outputs provided in Appendix E			

As documented above, mitigation measures will be developed, where required in consultation with Brisbane City Council and detailed within the CTMP.

Appendix A

Traffic Survey Data

Job No. : Q2691
 Client : CBGU JV
 Suburb : Annerley
 Location : 4. Annerley Rd / Peter Doherty St

Day/Date : Thu, 18th Jun 2020
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram

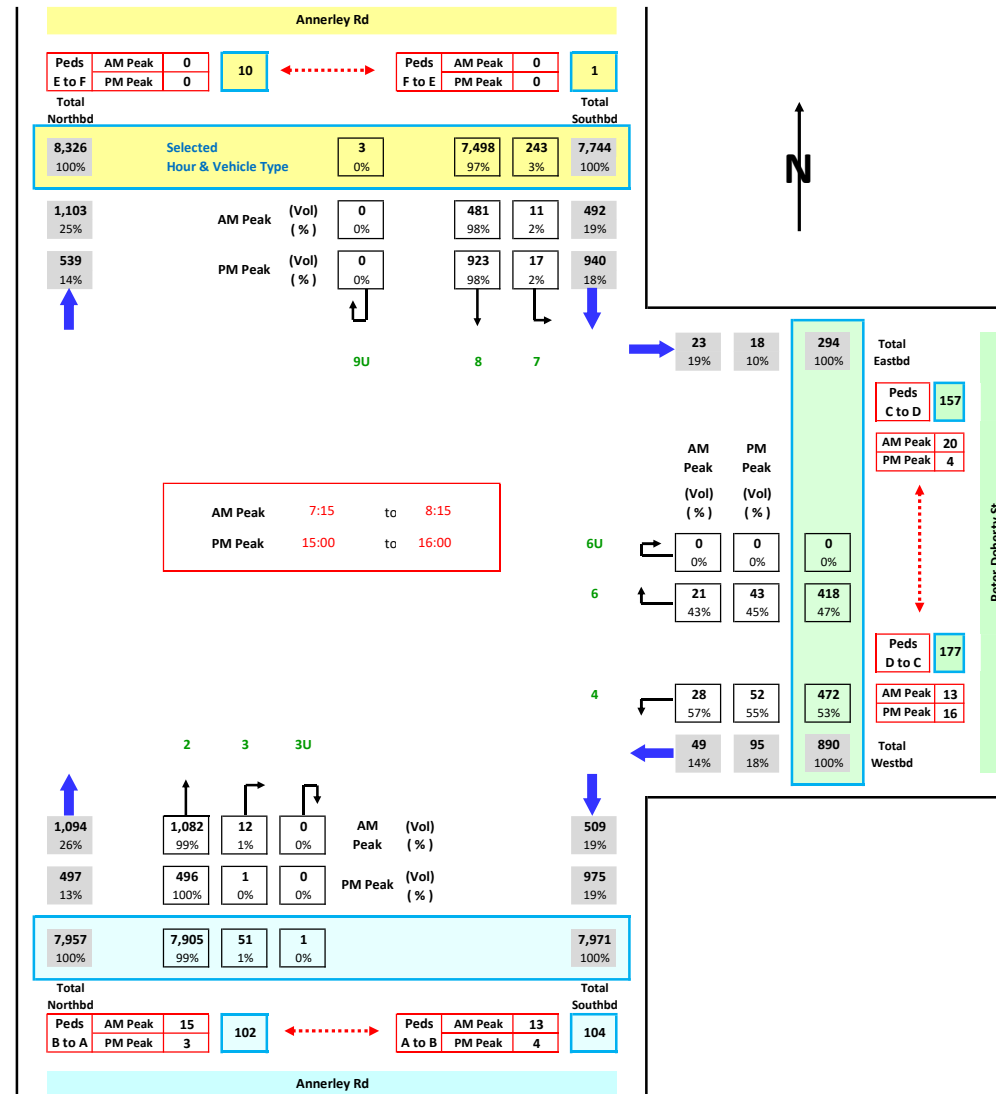


Hour Starting

Vehicle Type

24hr Totals

All Vehicles



AUSTRAFFIC VIDEO INTERSECTION COUNT



Site No.: 1 Weather: Fine

Location: Annerley Road/Boggo Road, Dutton Park

Day/Date: Thursday, 16 July 2020

Summary: 24 Hour Volumes : 12:00 AM to 12:00 AM

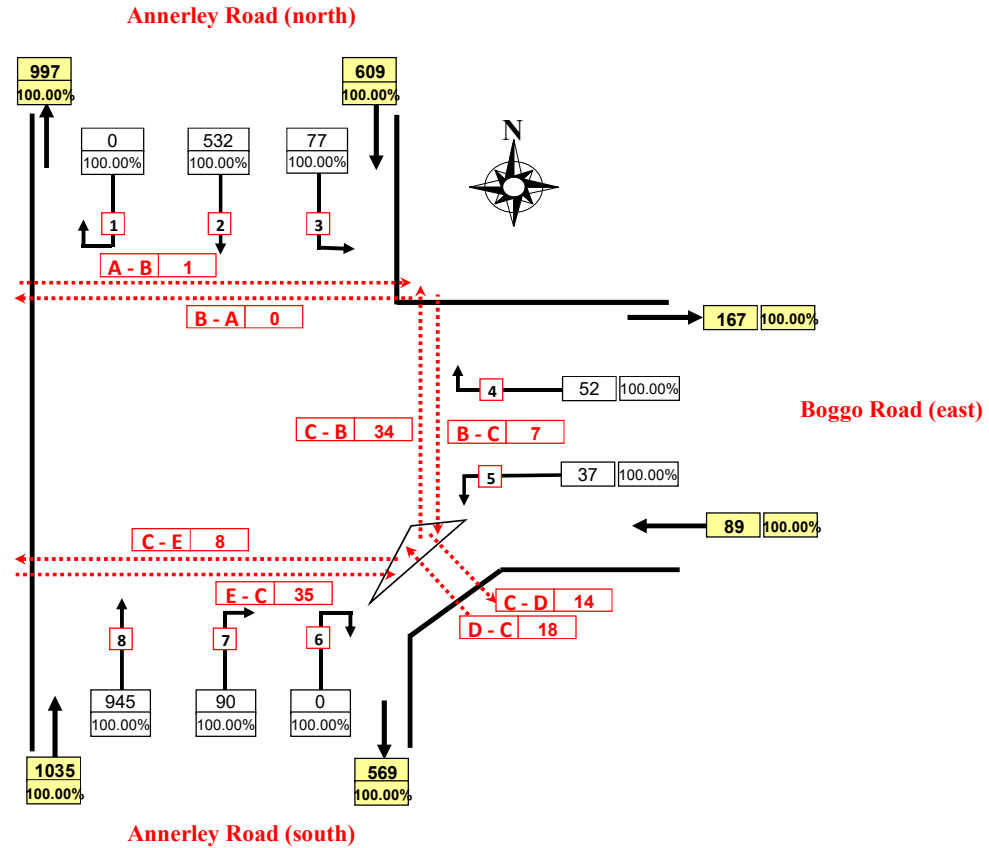
AM Peak : Hour ending - 8:45 AM

PM Peak : Hour ending - 4:00 PM

Hour Ending: 8:45 AM

On-road classification: Total Vehicles

Off-road classification: Total Ped & Cyclists



Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

AUSTRAFFIC VIDEO INTERSECTION COUNT



Site No.: 1 Weather: Fine

Location: Annerley Road/Boggo Road, Dutton Park

Day/Date: Thursday, 16 July 2020

Summary: 24 Hour Volumes : 12:00 AM to 12:00 AM

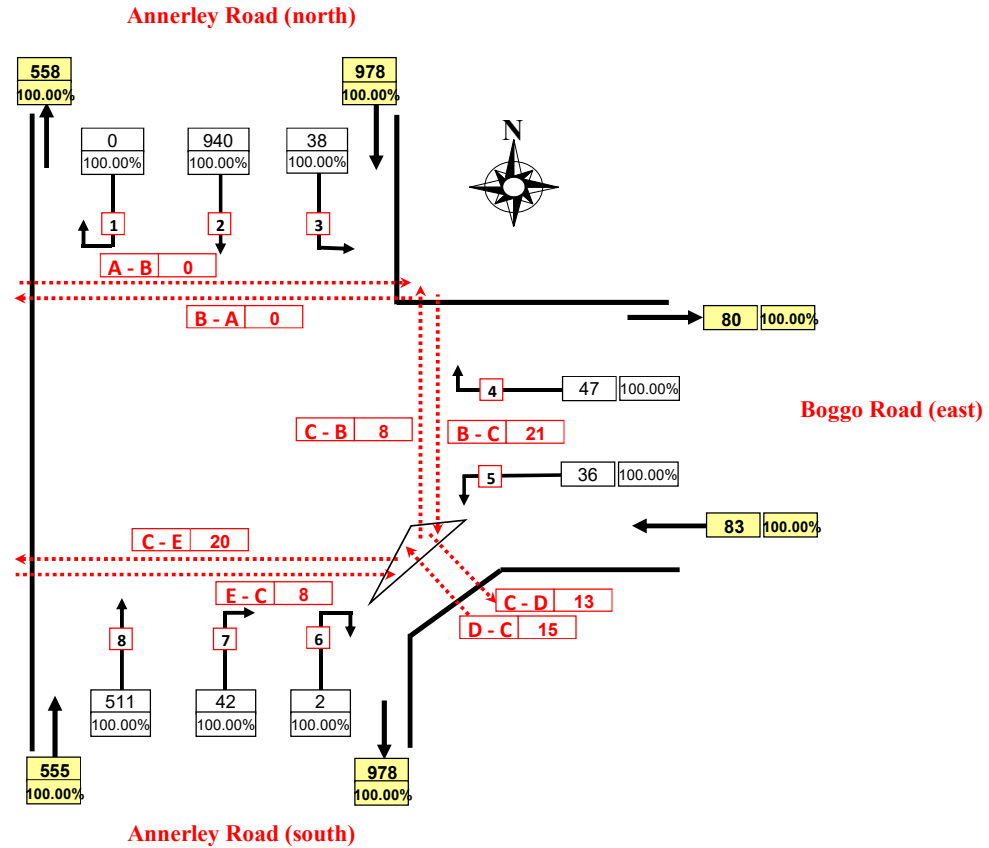
AM Peak : Hour ending - 8:45 AM

PM Peak : Hour ending - 4:00 PM

Hour Ending: 4:00 PM

On-road classification: Total Vehicles

Off-road classification: Total Ped & Cyclists



Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

AUSTRAFFIC VIDEO INTERSECTION COUNT



Site No.: 3 **Weather:** Fine

Location: Boggo Road/Dutton Park School, Dutton Park

Day/Date: Thursday, 16 July 2020

Summary: 24 Hour Volumes : 12:00 AM to 12:00 AM

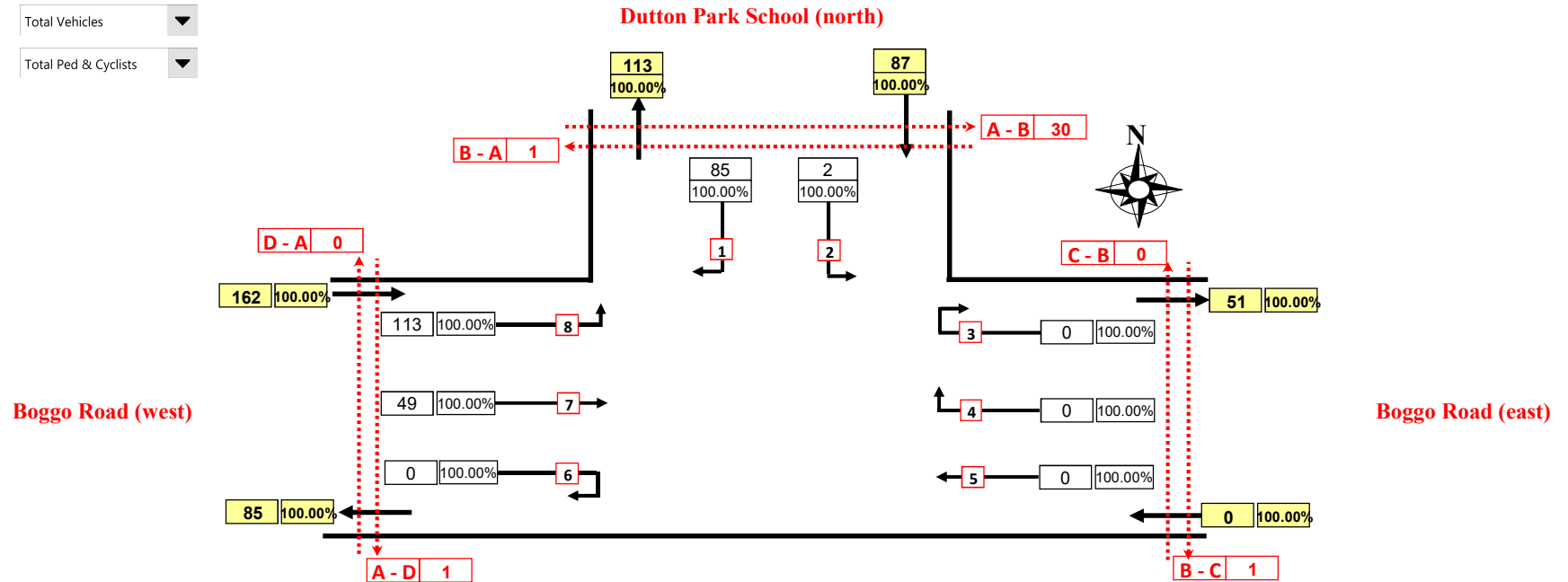
AM Peak : Hour ending - 9:15 AM

PM Peak : Hour ending - 3:30 PM

Hour Ending: 8:45 AM ▼

On-road classification: Total Vehicles ▼

Off-road classification: Total Ped & Cyclists ▼



Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

AUSTRAFFIC VIDEO INTERSECTION COUNT



Site No.: 3 **Weather:** Fine

Location: Boggo Road/Dutton Park School, Dutton Park

Day/Date: Thursday, 16 July 2020

Summary: 24 Hour Volumes : 12:00 AM to 12:00 AM

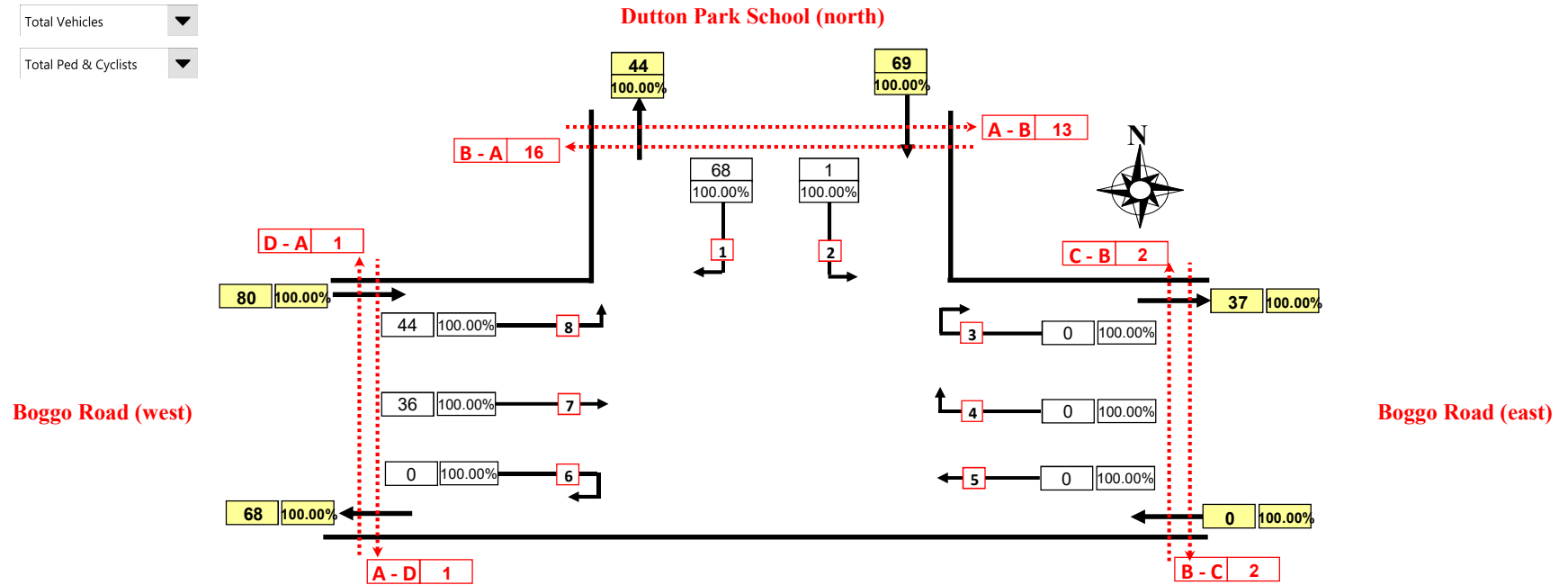
AM Peak : Hour ending - 9:15 AM

PM Peak : Hour ending - 3:30 PM

Hour Ending: 4:00 PM ▼

On-road classification: Total Vehicles ▼

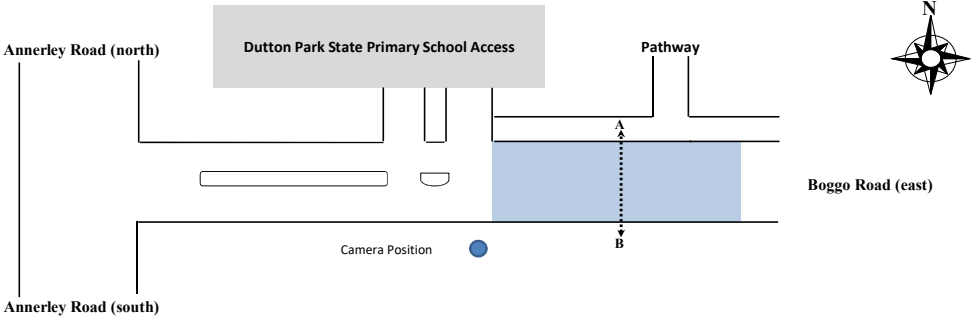
Off-road classification: Total Ped & Cyclists ▼



Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

AUSTRAFFIC VIDEO PEDESTRIAN COUNT

Site No.: 4 Weather: Fine
Location: Pedestrians crossing Boggo Road, Dutton Park
Day/Date: Thursday, 16 July 2020
AM Peak: Hour ending - 8:45 AM
PM Peak: Hour ending - 4:00 PM



TIME (1/4 hr end)	Pedestrian Movements								
	A - B			B - A			Total Crossing		
	<i>Pedestrians</i>	<i>Cyclists</i>	<i>Total</i>	<i>Pedestrians</i>	<i>Cyclists</i>	<i>Total</i>	<i>Pedestrians</i>	<i>Cyclists</i>	<i>Total</i>
12:15 AM	2	0	2	0	1	1	2	1	3
12:30 AM	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	1	0	1	1	0	1
2:45 AM	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	1	0	1	1	0	1
5:00 AM	0	0	0	0	0	0	0	0	0
5:15 AM	1	0	1	2	1	3	3	1	4
5:30 AM	2	0	2	6	0	6	8	0	8
5:45 AM	4	0	4	8	0	8	12	0	12
6:00 AM	5	0	5	2	0	2	7	0	7
6:15 AM	7	1	8	10	0	10	17	1	18
6:30 AM	10	2	12	16	0	16	26	2	28
6:45 AM	32	0	32	11	0	11	43	0	43
7:00 AM	12	1	13	8	0	8	20	1	21
7:15 AM	18	0	18	7	2	9	25	2	27
7:30 AM	22	0	22	8	0	8	30	0	30
7:45 AM	16	0	16	8	0	8	24	0	24
8:00 AM	28	0	28	13	0	13	41	0	41
8:15 AM	21	1	22	18	2	20	39	3	42
8:30 AM	22	1	23	18	1	19	40	2	42
8:45 AM	26	2	28	35	3	38	61	5	66
9:00 AM	25	0	25	13	0	13	38	0	38
9:15 AM	23	0	23	6	0	6	29	0	29
9:30 AM	17	0	17	9	1	10	26	1	27
9:45 AM	16	1	17	15	0	15	31	1	32
10:00 AM	11	0	11	7	0	7	18	0	18
10:15 AM	8	0	8	5	0	5	13	0	13
10:30 AM	8	0	8	10	0	10	18	0	18
10:45 AM	13	0	13	3	0	3	16	0	16
11:00 AM	6	0	6	13	0	13	19	0	19
11:15 AM	20	0	20	10	1	11	30	1	31
11:30 AM	10	0	10	12	0	12	22	0	22
11:45 AM	9	0	9	9	0	9	18	0	18
12:00 PM	7	0	7	8	0	8	15	0	15
12:15 PM	18	0	18	15	0	15	33	0	33
12:30 PM	1	0	1	8	0	8	9	0	9
12:45 PM	16	0	16	10	0	10	26	0	26
1:00 PM	6	0	6	14	0	14	20	0	20
1:15 PM	15	0	15	15	0	15	30	0	30
1:30 PM	7	0	7	8	1	9	15	1	16
1:45 PM	7	0	7	11	0	11	18	0	18
2:00 PM	13	0	13	11	0	11	24	0	24
2:15 PM	4	0	4	10	0	10	14	0	14
2:30 PM	5	0	5	7	0	7	12	0	12
2:45 PM	6	0	6	10	0	10	16	0	16
3:00 PM	1	0	1	29	0	29	30	0	30
3:15 PM	44	0	44	23	0	23	67	0	67
3:30 PM	29	0	29	5	1	6	34	1	35
3:45 PM	21	1	22	12	0	12	33	1	34
4:00 PM	14	0	14	20	2	22	34	2	36
4:15 PM	7	0	7	17	0	17	24	0	24
4:30 PM	10	0	10	21	2	23	31	2	33
4:45 PM	13	0	13	21	0	21	34	0	34
5:00 PM	11	0	11	20	2	22	31	2	33
5:15 PM	7	0	7	15	0	15	22	0	22
5:30 PM	8	0	8	15	3	18	23	3	26
5:45 PM	4	1	5	9	3	12	13	4	17
6:00 PM	16	2	18	17	1	18	33	3	36
6:15 PM	10	0	10	8	3	11	18	3	21
6:30 PM	11	1	12	8	1	9	19	2	21
6:45 PM	6	0	6	6	1	7	12	1	13
7:00 PM	10	0	10	6	0	6	16	0	16
7:15 PM	16	0	16	9	0	9	25	0	25
7:30 PM	11	0	11	2	0	2	13	0	13
7:45 PM	7	0	7	1	0	1	8	0	8
8:00 PM	3	1	4	2	1	3	5	2	7
8:15 PM	2	0	2	2	0	2	4	0	4
8:30 PM	2	0	2	1	0	1	3	0	3
8:45 PM	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	2	0	2	2	0	2
9:15 PM	1	0	1	5	0	5	6	0	6
9:30 PM	0	0	0	0	0	0	0	0	0
9:45 PM	2	1	3	9	0	9	11	1	12
10:00 PM	1	0	1	0	0	0	1	0	1
10:15 PM	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0
10:45 PM	3	0	3	0	0	0	3	0	3
11:00 PM	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	1	0	1	1	0	1
11:45 PM	0	0	0	0	0	0	0	0	0
12:00 AM	6	0	6	0	0	0	6	0	6
24 hr Total	775	16	791	687	33	730	1472	49	1521
AM Peak	97	4	101	84	6	90	181	10	191
PM Peak	108	1	109	60	3	63	168	4	172

Appendix B

SIDRA Results

MOVEMENT SUMMARY

 **Site: 101 [2022AM BG_ Annerley Road_Peter Doherty Street - RfPC#8]**

Annerley Road / Peter Doherty Street Signalised Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 80 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Annerley Road South												
1b	L3	126	0.0	0.078	6.8	LOS A	0.0	0.0	0.00	0.58	0.00	52.5
2	T1	1353	2.3	0.867	29.8	LOS C	31.4	223.9	0.92	0.98	1.12	22.8
Approach		1479	2.1	0.867	27.8	LOS C	31.4	223.9	0.85	0.94	1.03	25.3
East: Peter Doherty Street												
4	L2	54	3.6	0.398	46.6	LOS D	2.2	15.7	0.99	0.74	0.99	18.7
6	R2	26	14.3	0.206	45.9	LOS D	1.0	8.1	0.97	0.71	0.97	18.4
Approach		80	7.1	0.398	46.4	LOS D	2.2	15.7	0.98	0.73	0.98	18.6
North: Annerley Road North												
7	L2	14	0.0	0.101	44.8	LOS D	0.5	3.8	0.96	0.68	0.96	18.9
8	T1	563	2.7	0.326	15.3	LOS B	7.1	50.7	0.69	0.58	0.69	32.6
Approach		577	2.6	0.326	16.0	LOS B	7.1	50.7	0.69	0.59	0.69	32.0
All Vehicles		2136	2.5	0.867	25.3	LOS C	31.4	223.9	0.81	0.84	0.93	26.3

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.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	29	34.3	LOS D	0.1	0.1	0.93	0.93	
P2	East Full Crossing	35	34.3	LOS D	0.1	0.1	0.93	0.93	
P3	North Full Crossing	105	34.4	LOS D	0.2	0.2	0.93	0.93	
All Pedestrians		169	34.3	LOS D			0.93	0.93	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: 101 [2022PM BG_ Annerley Road_Peter Doherty Street - RfPC#8]**

Annerley Road / Peter Doherty Street Signalised Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Annerley Road South												
1b	L3	126	0.0	0.078	6.8	LOS A	0.0	0.0	0.00	0.58	0.00	52.5
2	T1	633	1.6	0.503	17.3	LOS B	9.8	69.6	0.79	0.67	0.79	30.7
Approach		759	1.3	0.503	15.6	LOS B	9.8	69.6	0.66	0.66	0.66	35.3
East: Peter Doherty Street												
4	L2	83	0.0	0.521	41.3	LOS D	2.9	20.6	1.00	0.77	1.01	20.3
6	R2	51	0.0	0.320	40.4	LOS D	1.8	12.3	0.98	0.74	0.98	20.2
Approach		134	0.0	0.521	41.0	LOS D	2.9	20.6	0.99	0.76	1.00	20.3
North: Annerley Road North												
7	L2	21	0.0	0.132	39.4	LOS D	0.7	4.9	0.95	0.70	0.95	20.5
8	T1	1078	1.8	0.732	21.1	LOS C	16.7	118.4	0.91	0.83	0.95	27.8
Approach		1099	1.8	0.732	21.4	LOS C	16.7	118.4	0.91	0.83	0.95	27.6
All Vehicles		1992	1.5	0.732	20.5	LOS C	16.7	118.4	0.82	0.76	0.84	29.5

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.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	7	29.3	LOS C	0.0	0.0	0.91	0.91	
P2	East Full Crossing	21	29.3	LOS C	0.0	0.0	0.92	0.92	
P3	North Full Crossing	105	29.4	LOS C	0.2	0.2	0.92	0.92	
All Pedestrians		134	29.4	LOS C			0.92	0.92	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: 101 [2022AM DES_ Annerley Road_Peter Doherty Street - RfPC#9]**

Annerley Road / Peter Doherty Street Signalised Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 80 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Annerley Road South												
1b	L3	126	0.0	0.078	6.8	LOS A	0.0	0.0	0.00	0.58	0.00	52.5
2	T1	1380	2.3	0.883	32.2	LOS C	33.4	238.2	0.94	1.02	1.17	21.6
Approach		1506	2.1	0.883	30.1	LOS C	33.4	238.2	0.86	0.98	1.07	24.1
East: Peter Doherty Street												
4	L2	80	3.6	0.589	47.7	LOS D	3.3	23.8	1.00	0.79	1.08	18.4
6	R2	26	14.3	0.206	45.9	LOS D	1.0	8.1	0.97	0.71	0.97	18.4
Approach		106	6.2	0.589	47.3	LOS D	3.3	23.8	0.99	0.77	1.05	18.4
North: Annerley Road North												
7	L2	14	0.0	0.101	44.8	LOS D	0.5	3.8	0.96	0.68	0.96	18.9
8	T1	563	2.7	0.326	15.3	LOS B	7.1	50.7	0.69	0.58	0.69	32.6
Approach		577	2.6	0.326	16.0	LOS B	7.1	50.7	0.69	0.59	0.69	32.0
All Vehicles		2189	2.5	0.883	27.2	LOS C	33.4	238.2	0.82	0.87	0.97	25.2

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.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	29	34.3	LOS D	0.1	0.1	0.93	0.93	
P2	East Full Crossing	35	34.3	LOS D	0.1	0.1	0.93	0.93	
P3	North Full Crossing	105	34.4	LOS D	0.2	0.2	0.93	0.93	
All Pedestrians		169	34.3	LOS D			0.93	0.93	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: 101 [2022PM DES_ Annerley Road_Peter Doherty Street - RfPC#9]**

Annerley Road / Peter Doherty Street Signalised Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Annerley Road South												
1b	L3	126	0.0	0.078	6.8	LOS A	0.0	0.0	0.00	0.58	0.00	52.5
2	T1	660	1.6	0.523	17.5	LOS B	10.3	73.1	0.80	0.68	0.80	30.6
Approach		786	1.4	0.523	15.8	LOS B	10.3	73.1	0.67	0.66	0.67	35.1
East: Peter Doherty Street												
4	L2	109	0.0	0.685	42.9	LOS D	4.0	28.1	1.00	0.84	1.18	19.8
6	R2	51	0.0	0.320	40.4	LOS D	1.8	12.3	0.98	0.74	0.98	20.2
Approach		160	0.0	0.685	42.1	LOS D	4.0	28.1	0.99	0.81	1.11	19.9
North: Annerley Road North												
7	L2	21	0.0	0.132	39.4	LOS D	0.7	4.9	0.95	0.70	0.95	20.5
8	T1	1078	1.8	0.732	21.1	LOS C	16.7	118.4	0.91	0.83	0.95	27.8
Approach		1099	1.8	0.732	21.4	LOS C	16.7	118.4	0.91	0.83	0.95	27.6
All Vehicles		2045	1.5	0.732	20.9	LOS C	16.7	118.4	0.83	0.76	0.86	29.3

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.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	7	29.3	LOS C	0.0	0.0	0.91	0.91	
P2	East Full Crossing	21	29.3	LOS C	0.0	0.0	0.92	0.92	
P3	North Full Crossing	105	29.4	LOS C	0.2	0.2	0.92	0.92	
All Pedestrians		134	29.4	LOS C			0.92	0.92	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: 101 [2022AM BG_Annerley Road_Boggo Road - RfPC#8]**

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Annerley Road S												
11	T1	1162	2.1	0.432	7.3	LOS A	8.5	60.4	0.46	0.60	0.46	36.4
12	R2	134	2.2	0.394	37.7	LOS D	4.2	29.8	0.92	0.80	0.92	11.1
Approach		1296	2.1	0.432	10.4	LOS B	8.5	60.4	0.51	0.62	0.51	29.8
East: Boggo Road												
1	L2	46	0.0	0.042	5.1	LOS A	0.3	2.4	0.31	0.52	0.31	37.2
3	R2	65	0.0	0.137	33.8	LOS C	1.0	7.2	0.92	0.71	0.92	16.4
Approach		112	0.0	0.137	21.9	LOS C	1.0	7.2	0.67	0.63	0.67	21.6
North: Annerley Road N												
4	L2	96	2.6	0.409	35.4	LOS D	3.2	22.8	0.96	0.76	0.96	15.9
5	T1	655	2.3	0.397	14.9	LOS B	7.8	55.3	0.73	0.63	0.73	28.3
Approach		751	2.3	0.409	17.5	LOS B	7.8	55.3	0.76	0.64	0.76	26.0
All Vehicles		2158	2.1	0.432	13.5	LOS B	8.5	60.4	0.61	0.63	0.61	27.9

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.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P4	South Full Crossing	45	29.3	LOS C	0.1	0.1	0.92	0.92	
P1	East Full Crossing	43	29.3	LOS C	0.1	0.1	0.92	0.92	
All Pedestrians		88	29.3	LOS C			0.92	0.92	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: 101 [2022PM BG_Annerley Road_Boggo Road - RfPC#8]**

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Annerley Road S												
11	T1	619	1.0	0.206	5.1	LOS A	3.3	23.6	0.28	0.50	0.28	39.4
12	R2	77	2.3	0.447	51.4	LOS D	3.2	22.9	0.99	0.77	0.99	9.6
Approach		696	1.1	0.447	10.2	LOS B	3.3	23.6	0.36	0.53	0.36	29.8
East: Boggo Road												
1	L2	45	0.0	0.060	6.0	LOS A	0.5	3.3	0.33	0.53	0.33	36.0
3	R2	59	0.0	0.193	44.8	LOS D	1.2	8.4	0.96	0.71	0.96	13.7
Approach		104	0.0	0.193	27.9	LOS C	1.2	8.4	0.69	0.63	0.69	19.0
North: Annerley Road N												
4	L2	47	0.0	0.310	45.5	LOS D	2.0	13.8	0.98	0.73	0.98	13.5
5	T1	1145	0.6	0.482	9.7	LOS A	13.0	91.2	0.59	0.53	0.59	33.2
Approach		1193	0.6	0.482	11.1	LOS B	13.0	91.2	0.61	0.54	0.61	31.5
All Vehicles		1993	0.8	0.482	11.7	LOS B	13.0	91.2	0.53	0.54	0.53	30.0

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.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P4	South Full Crossing	29	36.8	LOS D	0.1	0.1	0.93	0.93	
P1	East Full Crossing	31	36.8	LOS D	0.1	0.1	0.93	0.93	
All Pedestrians		60	36.8	LOS D			0.93	0.93	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: 101 [2022AM DES_Annerley Road_Boggo Road - RfPC#9]**

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Annerley Road S												
11	T1	1162	2.1	0.432	7.3	LOS A	8.5	60.4	0.46	0.60	0.46	36.4
12	R2	161	2.2	0.411	36.1	LOS D	4.9	35.0	0.91	0.81	0.91	11.3
Approach		1323	2.1	0.432	10.8	LOS B	8.5	60.4	0.52	0.63	0.52	29.0
East: Boggo Road												
1	L2	46	0.0	0.042	5.1	LOS A	0.3	2.4	0.31	0.52	0.31	37.2
3	R2	65	0.0	0.137	33.8	LOS C	1.0	7.2	0.92	0.71	0.92	16.4
Approach		112	0.0	0.137	21.9	LOS C	1.0	7.2	0.67	0.63	0.67	21.6
North: Annerley Road N												
4	L2	96	2.6	0.409	35.4	LOS D	3.2	22.8	0.96	0.76	0.96	15.9
5	T1	655	2.3	0.426	16.5	LOS B	8.2	58.3	0.77	0.66	0.77	27.1
Approach		751	2.3	0.426	18.9	LOS B	8.2	58.3	0.79	0.67	0.79	25.1
All Vehicles		2185	2.1	0.432	14.1	LOS B	8.5	60.4	0.62	0.64	0.62	27.1

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.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P4	South Full Crossing	45	29.3	LOS C	0.1	0.1	0.92	0.92	
P1	East Full Crossing	43	29.3	LOS C	0.1	0.1	0.92	0.92	
All Pedestrians		88	29.3	LOS C			0.92	0.92	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: 101 [2022PM DES_Annerley Road_Boggo Road - RfPC#9]**

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Annerley Road S												
11	T1	619	1.0	0.206	5.1	LOS A	3.3	23.6	0.28	0.50	0.28	39.4
12	R2	104	2.3	0.485	49.5	LOS D	4.3	30.4	0.98	0.78	0.98	9.8
Approach		723	1.2	0.485	11.5	LOS B	4.3	30.4	0.38	0.54	0.38	27.9
East: Boggo Road												
1	L2	45	0.0	0.058	6.2	LOS A	0.5	3.5	0.34	0.54	0.34	35.7
3	R2	59	0.0	0.193	44.8	LOS D	1.2	8.4	0.96	0.71	0.96	13.7
Approach		104	0.0	0.193	28.1	LOS C	1.2	8.4	0.69	0.64	0.69	18.9
North: Annerley Road N												
4	L2	47	0.0	0.310	45.5	LOS D	2.0	13.8	0.98	0.73	0.98	13.5
5	T1	1145	0.6	0.501	10.9	LOS B	13.8	96.9	0.63	0.56	0.63	31.9
Approach		1193	0.6	0.501	12.3	LOS B	13.8	96.9	0.64	0.57	0.64	30.4
All Vehicles		2020	0.8	0.501	12.8	LOS B	13.8	96.9	0.55	0.56	0.55	28.7

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.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P4	South Full Crossing	29	36.8	LOS D	0.1	0.1	0.93	0.93	
P1	East Full Crossing	31	36.8	LOS D	0.1	0.1	0.93	0.93	
All Pedestrians		60	36.8	LOS D			0.93	0.93	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

▽ Site: 101 [2022AM BG_Boggo Road_Dutton Park School Access - RfPC#8]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Dutton Park School Access												
7	L2	4	0.0	0.216	4.3	LOS A	0.8	5.4	0.31	0.61	0.31	50.5
9	R2	252	0.0	0.216	4.7	LOS A	0.8	5.4	0.31	0.61	0.31	35.5
Approach		256	0.0	0.216	4.6	LOS A	0.8	5.4	0.31	0.61	0.31	36.1
West: Boggo Road West												
10	L2	306	0.9	0.217	5.5	LOS A	0.0	0.0	0.00	0.44	0.00	13.3
11	T1	97	6.1	0.217	0.0	LOS A	0.0	0.0	0.00	0.44	0.00	53.8
Approach		402	2.1	0.217	4.2	NA	0.0	0.0	0.00	0.44	0.00	22.2
All Vehicles		659	1.3	0.217	4.4	NA	0.8	5.4	0.12	0.51	0.12	24.9

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.

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Project: C:\Users\jbunn\Desktop\Annerley Road_Boggo Road SIDRA Models.sip8

MOVEMENT SUMMARY

▽ Site: 101 [2022PM BG_Boggo Road_Dutton Park School Access - RfPC#8]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Dutton Park School Access												
7	L2	3	0.0	0.151	4.2	LOS A	0.5	3.7	0.21	0.56	0.21	50.8
9	R2	193	0.0	0.151	4.2	LOS A	0.5	3.7	0.21	0.56	0.21	36.1
Approach		196	0.0	0.151	4.2	LOS A	0.5	3.7	0.21	0.56	0.21	36.7
West: Boggo Road West												
10	L2	109	0.0	0.103	5.5	LOS A	0.0	0.0	0.00	0.33	0.00	13.6
11	T1	85	2.8	0.103	0.0	LOS A	0.0	0.0	0.00	0.33	0.00	55.3
Approach		194	1.2	0.103	3.1	NA	0.0	0.0	0.00	0.33	0.00	30.7
All Vehicles		390	0.6	0.151	3.7	NA	0.5	3.7	0.11	0.45	0.11	32.4

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.

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Project: C:\Users\jbunn\Desktop\Annerley Road_Boggo Road SIDRA Models.sip8

MOVEMENT SUMMARY

▽ Site: 101 [2022AM DES_Boggo Road_Dutton Park School Access - RfPC#9]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Dutton Park School Access												
7	L2	4	0.0	0.222	4.4	LOS A	0.8	5.6	0.34	0.63	0.34	50.3
9	R2	252	0.0	0.222	4.8	LOS A	0.8	5.6	0.34	0.63	0.34	35.3
Approach		256	0.0	0.222	4.8	LOS A	0.8	5.6	0.34	0.63	0.34	35.8
West: Boggo Road West												
10	L2	306	0.9	0.234	5.5	LOS A	0.0	0.0	0.00	0.41	0.00	13.4
11	T1	129	6.1	0.234	0.0	LOS A	0.0	0.0	0.00	0.41	0.00	54.2
Approach		434	2.4	0.234	3.9	NA	0.0	0.0	0.00	0.41	0.00	24.5
All Vehicles		690	1.5	0.234	4.2	NA	0.8	5.6	0.13	0.49	0.13	26.6

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.

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Project: C:\Users\jbunn\Desktop\Annerley Road_Boggo Road SIDRA Models.sip8

MOVEMENT SUMMARY

▽ Site: 101 [2022PM DES_Boggo Road_Dutton Park School Access - RfPC#9]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Dutton Park School Access												
7	L2	3	0.0	0.155	4.3	LOS A	0.5	3.7	0.24	0.58	0.24	50.7
9	R2	193	0.0	0.155	4.3	LOS A	0.5	3.7	0.24	0.58	0.24	35.9
Approach		196	0.0	0.155	4.3	LOS A	0.5	3.7	0.24	0.58	0.24	36.5
West: Boggo Road West												
10	L2	109	0.0	0.121	5.5	LOS A	0.0	0.0	0.00	0.28	0.00	13.7
11	T1	120	2.8	0.121	0.0	LOS A	0.0	0.0	0.00	0.28	0.00	56.0
Approach		229	1.5	0.121	2.6	NA	0.0	0.0	0.00	0.28	0.00	34.5
All Vehicles		425	0.8	0.155	3.4	NA	0.5	3.7	0.11	0.42	0.11	35.0

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.

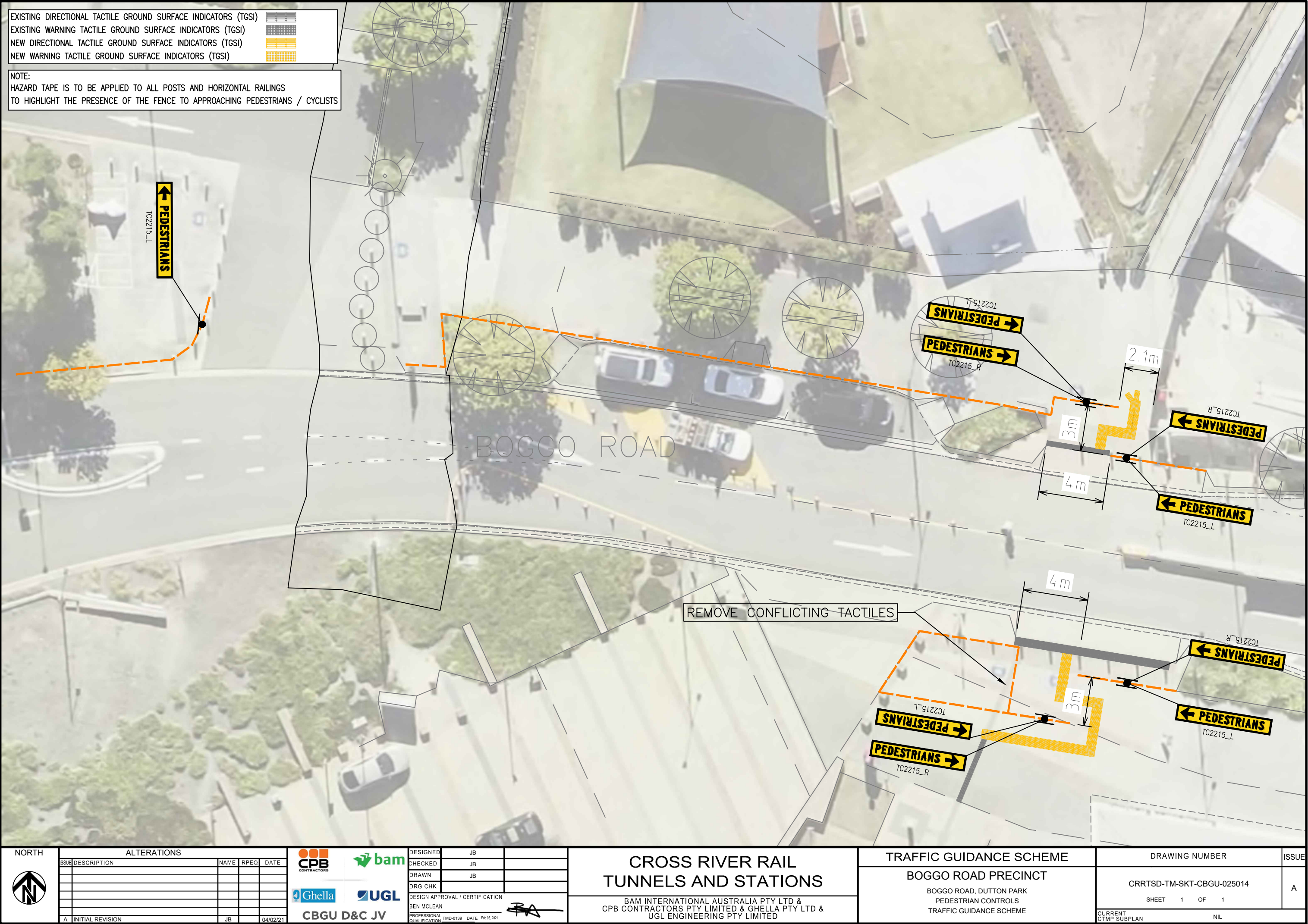
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Project: C:\Users\jbunn\Desktop\Annerley Road_Boggo Road SIDRA Models.sip8

Appendix C

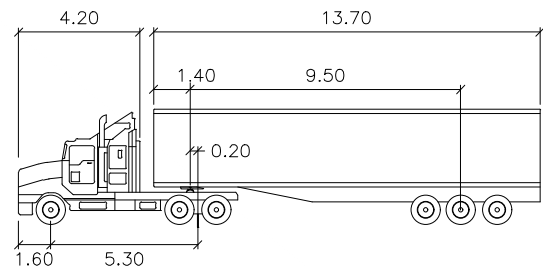
Boggo Road Crossing Pedestrian Fencing



Appendix D

Swept Path Diagrams

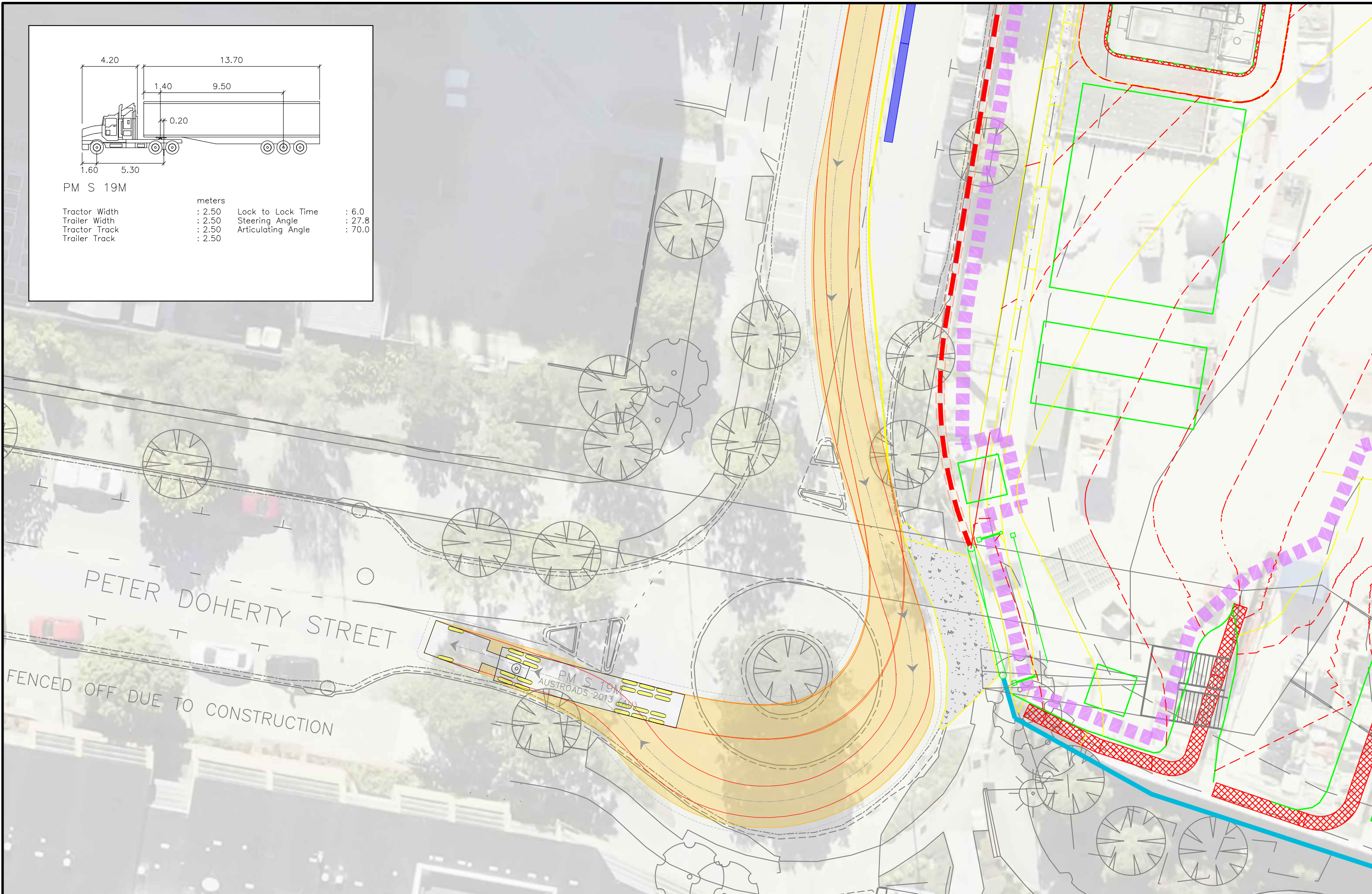
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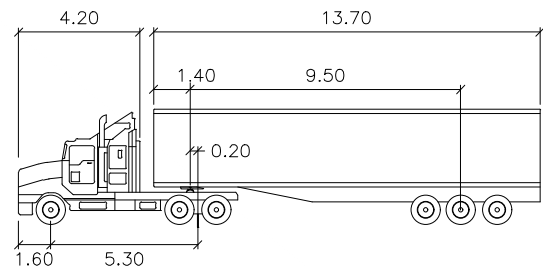
PM S 19M

Tractor Width	2.50	Lock to Lock Time	6.0
Trailer Width	2.50	Steering Angle	27.8
Tractor Track	2.50	Articulating Angle	70.0
Trailer Track	2.50		

meters



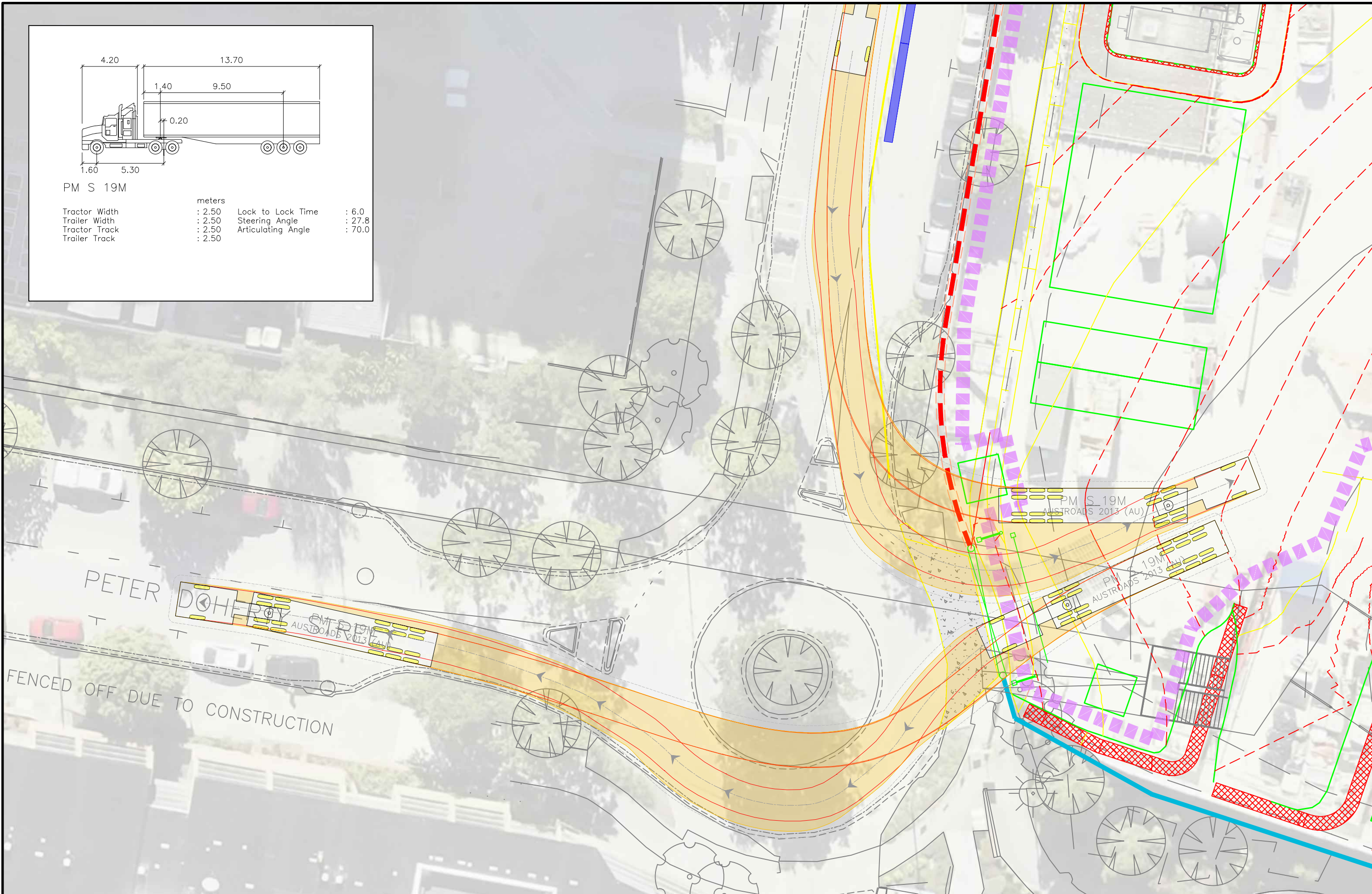
NORTH 	ALTERATIONS				 CBGU D&C JV	DESIGNED JB CHECKED JB DRAWN DRG CHK DESIGN APPROVAL / CERTIFICATION BEN MCLEAN <small>PROFESSIONAL TMD-0139 DATE Feb 15, 2021</small> 	CROSS RIVER RAIL TUNNELS AND STATIONS BAM INTERNATIONAL AUSTRALIA PTY LTD & CPB CONTRACTORS PTY LIMITED & GHELLA PTY LTD & UGL ENGINEERING PTY LIMITED	TRAFFIC GUIDANCE SCHEME BOGGO ROAD PRECINCT SOUTHERN AREA WORKS SWEEP PATH ANALYSIS GATE J1 - OPTION 2	DRAWING NUMBER	ISSUE
									CRRSD-TM-SKT-CBGU-025016	A
									SHEET 3 OF 7	
									CURRENT CTMP SUBPLAN	NIL



PM S 19M

Tractor Width	2.50	Lock to Lock Time	6.0
Trailer Width	2.50	Steering Angle	27.8
Tractor Track	2.50	Articulating Angle	70.0
Trailer Track	2.50		

meters



12.5m
10
7.5
5
2.5
0
1:250

NORTH



ALTERATIONS

ISSUE	DESCRIPTION	NAME	RPEQ	DATE
A	INITIAL REVISION	SS		15/02/21



CBGU D&C JV

DESIGNED	JB
CHECKED	JB
DRAWN	
DRG CHK	
DESIGN APPROVAL / CERTIFICATION	
BEN MCLEAN	
PROFESSIONAL QUALIFICATION	TMD-0139 DATE Feb 15, 2021

CROSS RIVER RAIL TUNNELS AND STATIONS

BAM INTERNATIONAL AUSTRALIA PTY LTD &
CPB CONTRACTORS PTY LIMITED & GHELLA PTY LTD &
UGL ENGINEERING PTY LIMITED

TRAFFIC GUIDANCE SCHEME

BOGGO ROAD PRECINCT

SOUTHERN AREA WORKS
SWEEP PATH ANALYSIS
GATE J2 - OPTION 1

DRAWING NUMBER

CRRTSD-TM-SKT-CBGU-025016

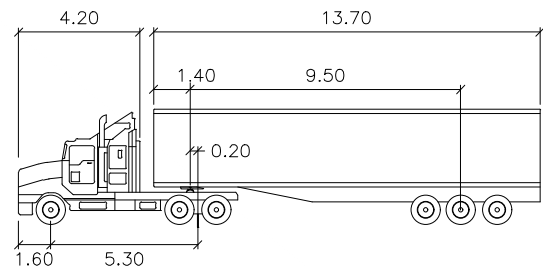
SHEET 4 OF 7

CURRENT
CTMP SUBPLAN

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ISSUE

A

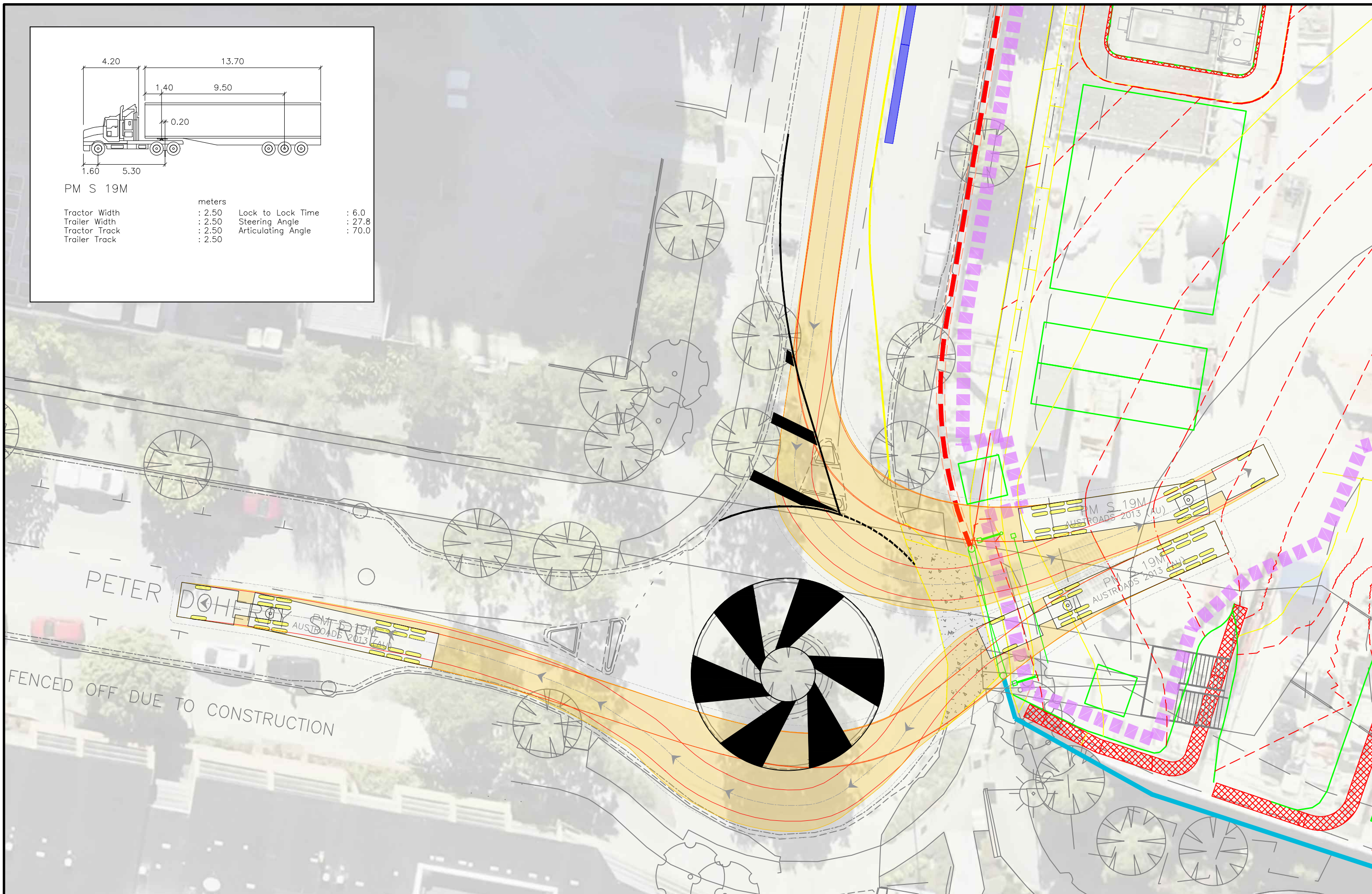


PM S 19M

Tractor Width	2.50	Lock to Lock Time	6.0
Trailer Width	2.50	Steering Angle	27.8
Tractor Track	2.50	Articulating Angle	70.0
Trailer Track	2.50		

meters

Lock to Lock Time	6.0
Steering Angle	27.8
Articulating Angle	70.0



12.5m
10
7.5
5
2.5
0
1:250

NORTH

ALTERATIONS				
ISSUE	DESCRIPTION	NAME	RPEQ	DATE
A	INITIAL REVISION	SS		15/02/21

CBGU D&C JV

DESIGNED	JB
CHECKED	JB
DRAWN	
DRG CHK	
DESIGN APPROVAL / CERTIFICATION	
BEN MCLEAN	
PROFESSIONAL TMD-0139 DATE Feb 15, 2021	

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UGL ENGINEERING PTY LIMITED

TRAFFIC GUIDANCE SCHEME

BOGGO ROAD PRECINCT

SOUTHERN AREA WORKS
SWEEP PATH ANALYSIS
GATE J2 - OPTION 2

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SHEET 5 OF 7	
CURRENT CTMP SUBPLAN	NIL

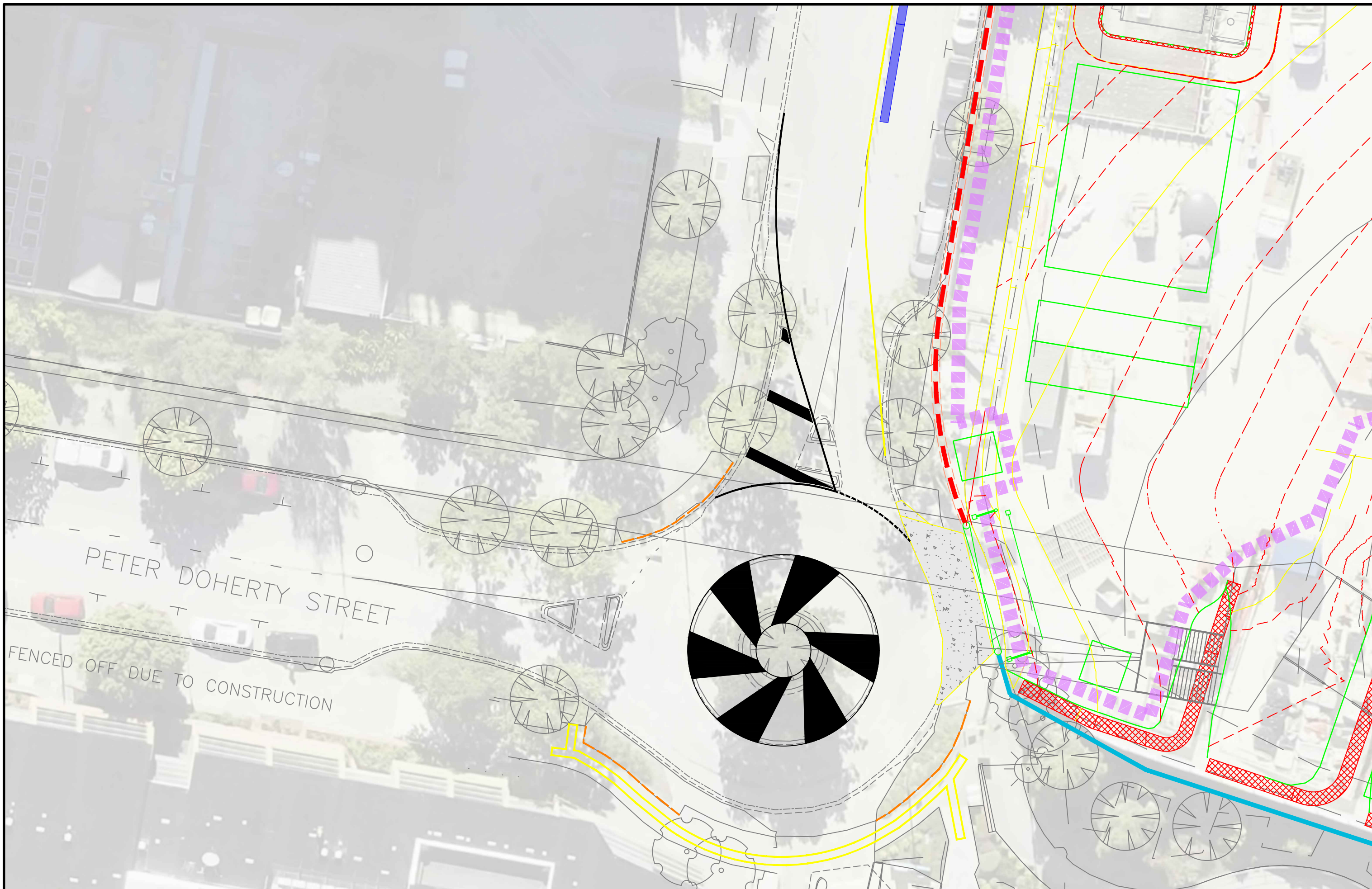
A

NIL

Appendix E

Joe Baker Street Concept

1:250 2.5 0 2.5 5 7.5 10 12.5m



NORTH

ALTERATIONS				
ISSUE	DESCRIPTION	NAME	RPEQ	DATE
B	REVISED PEDESTRIAN CONTROLS	JB		22/02/21
A	INITIAL REVISION	SS		15/02/21

CBGU D&C JV

DESIGNED	JB
CHECKED	JB
DRAWN	
DRG CHK	
DESIGN APPROVAL / CERTIFICATION	
BEN MCLEAN	
PROFESSIONAL TMD-0139 DATE Feb 22, 2021	

CROSS RIVER RAIL TUNNELS AND STATIONS

BAM INTERNATIONAL AUSTRALIA PTY LTD &
CPB CONTRACTORS PTY LIMITED & GHELLA PTY LTD &
UGL ENGINEERING PTY LIMITED

TRAFFIC GUIDANCE SCHEME BOGGO ROAD PRECINCT

SOUTHERN AREA WORKS
JOE BAKER STREET / PETER DOHERTY STREET INTERSECTION
CONCEPT DESIGN

DRAWING NUMBER	ISSUE
CRRTSD-TM-SKT-CBGU-025016	B
SHEET 1 OF 1	
CURRENT CTMP SUBPLAN	NIL