

**ROCKHAMPTON REGIONAL COUNCIL**  
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**Dated: 18 May 2020**

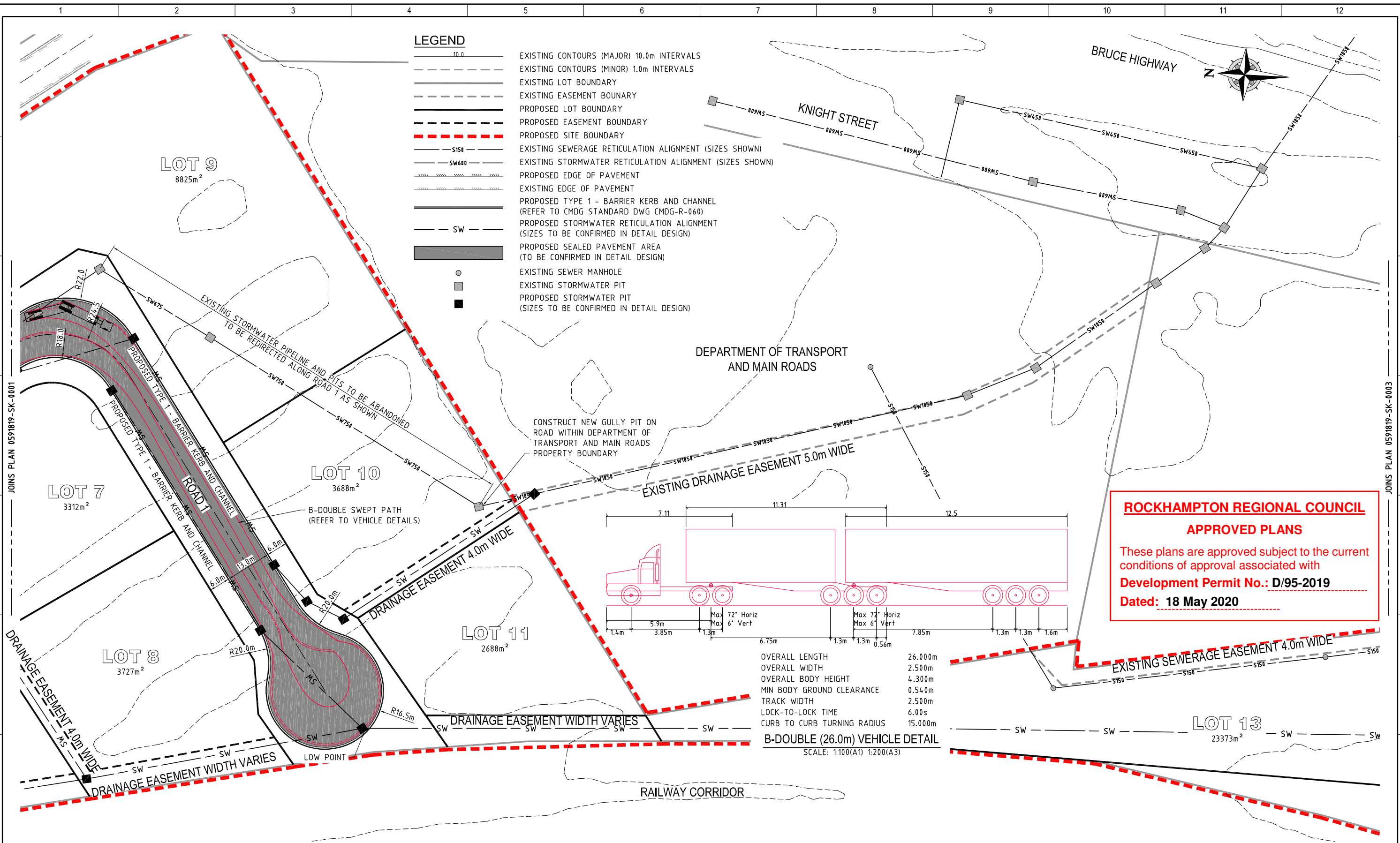
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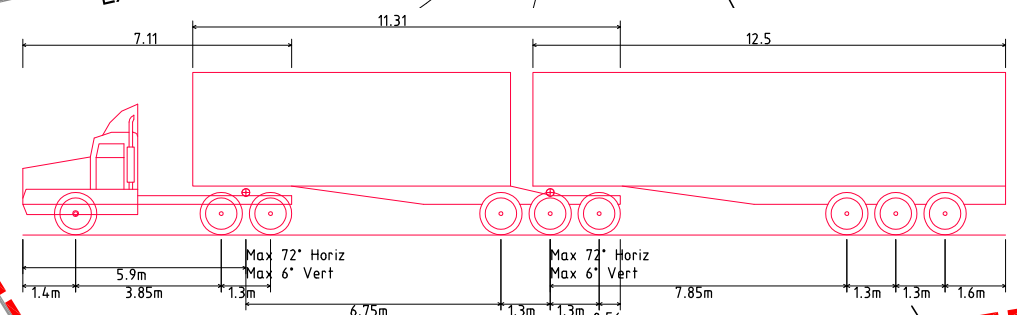
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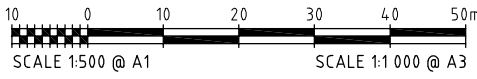
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  - EXISTING EASEMENT BOUNDARY
  - PROPOSED LOT BOUNDARY
  - PROPOSED EASEMENT BOUNDARY
  - PROPOSED SITE BOUNDARY
  - S150— EXISTING SEWERAGE RETICULATION ALIGNMENT (SIZES SHOWN)
  - SW600— EXISTING STORMWATER RETICULATION ALIGNMENT (SIZES SHOWN)
  - PROPOSED EDGE OF PAVEMENT
  - EXISTING EDGE OF PAVEMENT
  - PROPOSED TYPE 1 - BARRIER KERB AND CHANNEL (REFER TO CMDG STANDARD DWG CMDG-R-060)
  - PROPOSED STORMWATER RETICULATION ALIGNMENT (SIZES TO BE CONFIRMED IN DETAIL DESIGN)
  - PROPOSED SEALED PAVEMENT AREA (TO BE CONFIRMED IN DETAIL DESIGN)
  - EXISTING SEWER MANHOLE
  - EXISTING STORMWATER PIT
  - PROPOSED STORMWATER PIT (SIZES TO BE CONFIRMED IN DETAIL DESIGN)



OVERALL LENGTH 26.000m  
 OVERALL WIDTH 2.500m  
 OVERALL BODY HEIGHT 4.300m  
 MIN BODY GROUND CLEARANCE 0.540m  
 TRACK WIDTH 2.500m  
 LOCK-TO-LOCK TIME 6.00s  
 CURB TO CURB TURNING RADIUS 15.000m

**B-DOUBLE (26.0m) VEHICLE DETAIL**  
 SCALE: 1:100(A1) 1:200(A3)

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REV				RPEQ No:				McMurtrie & Associates Pty Ltd		Phone: (07) 4921 1780 Mobile: 0407 631 066 Fax: (07) 4921 1790		DRAWING NUMBER A1 0591819-SK-0002	
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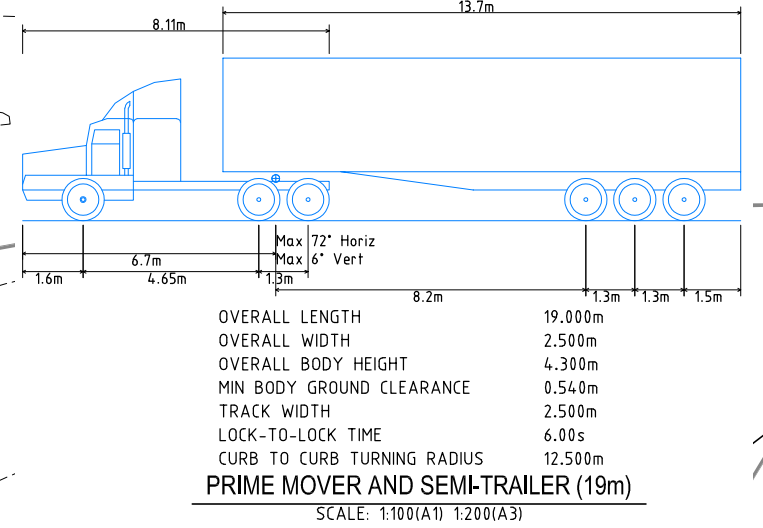
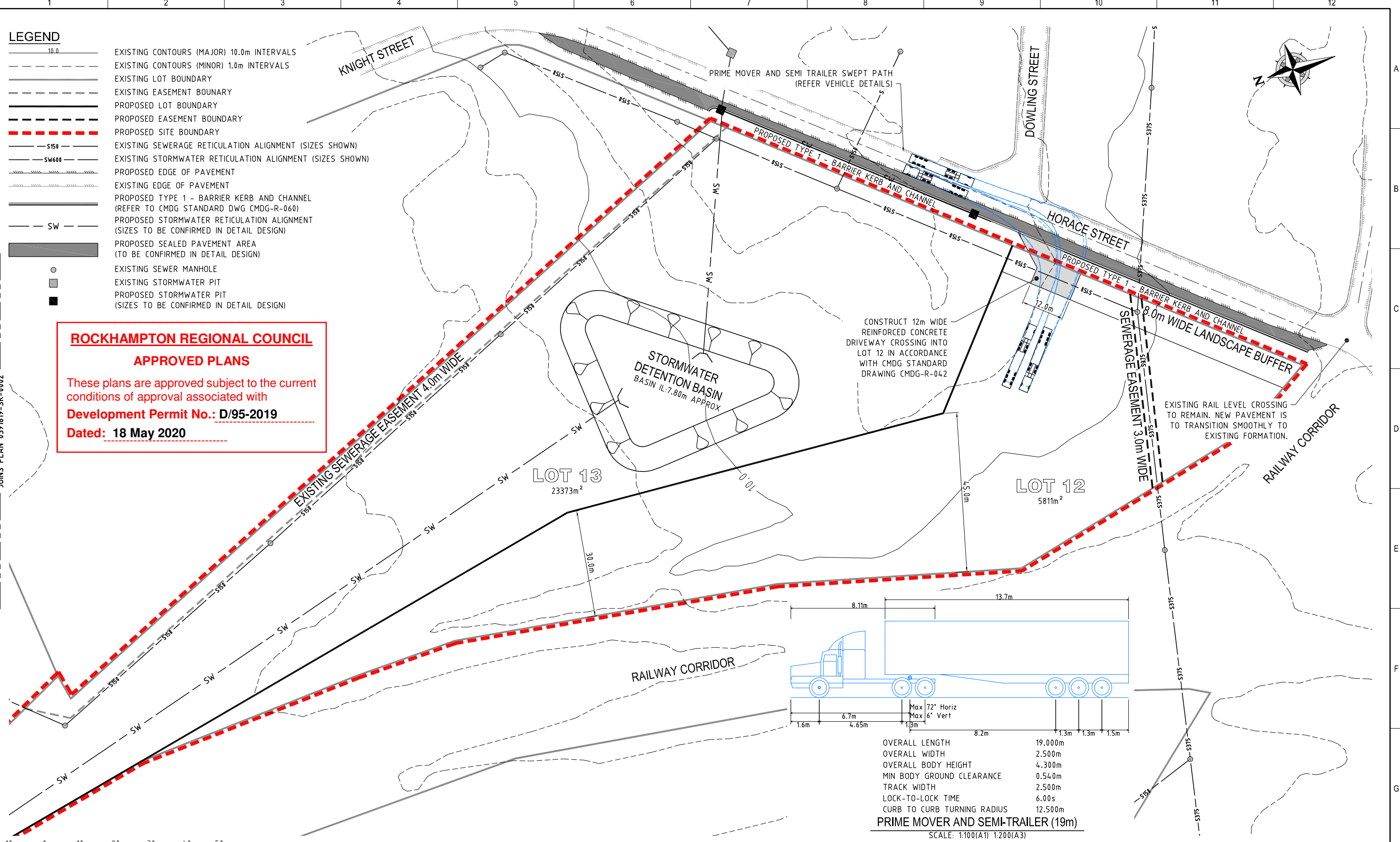
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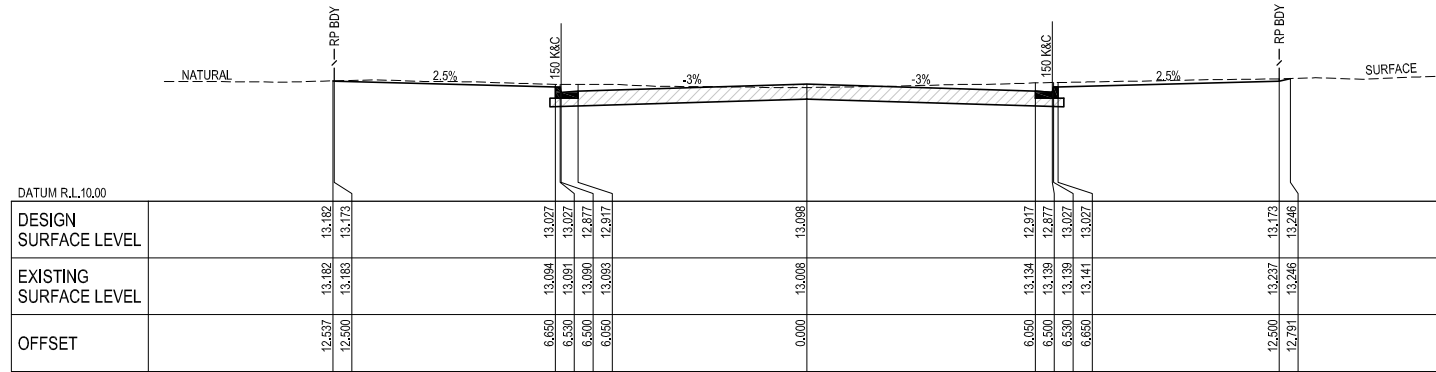
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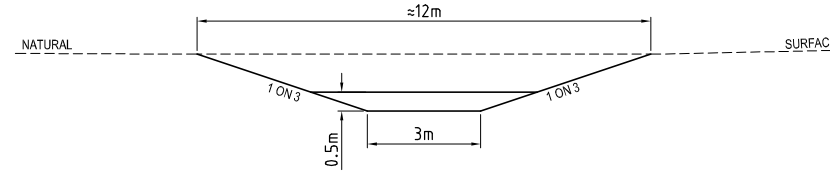
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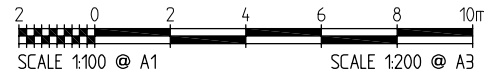
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**TYPICAL SECTION - OPEN CHANNEL**

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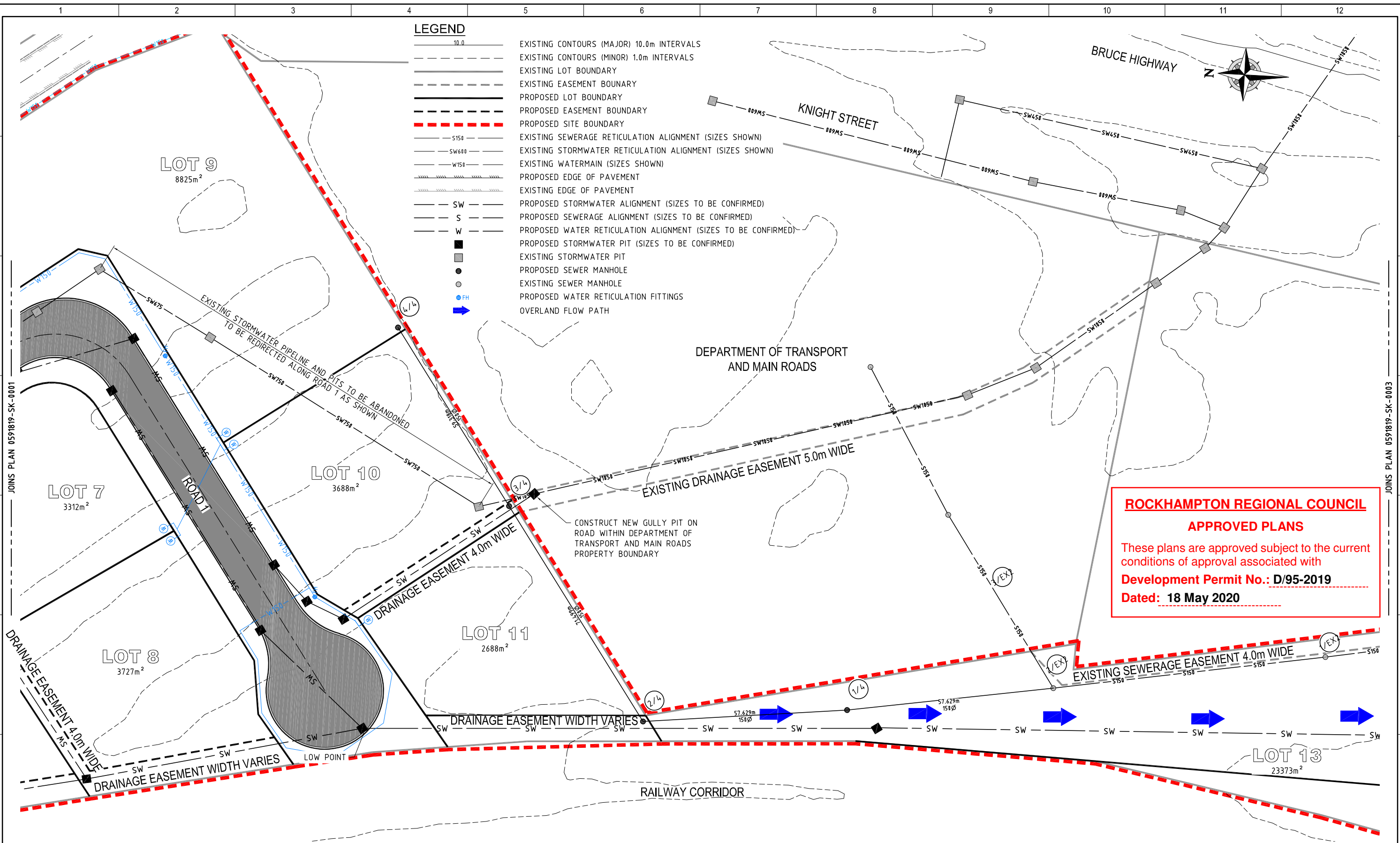
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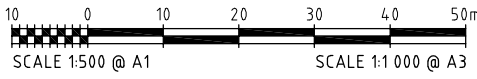
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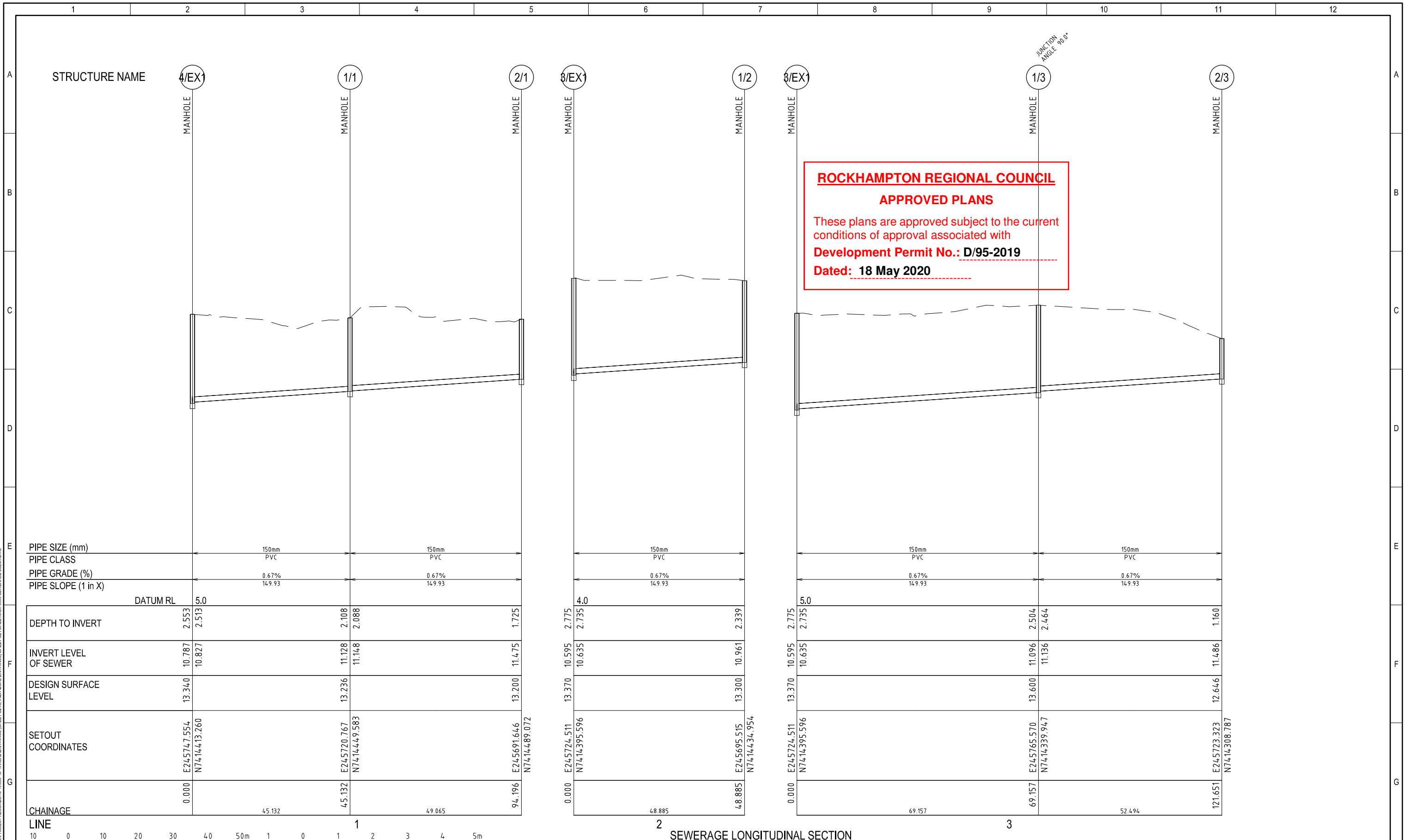
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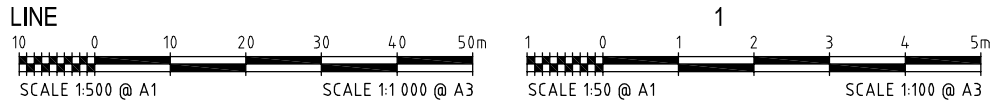




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**SEWERAGE LONGITUDINAL SECTION**

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**mcmurtrie**  
CONSULTING ENGINEERS

# Traffic Impact Assessment Report

*Proposed Industrial Subdivision*

*33-53 Knight Street (Lots 2 and 3 RP611882 and Lot 4 SP13479), Park Avenue,  
QLD*

**ROCKHAMPTON REGIONAL COUNCIL**

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**Dated: 18 May 2020**

*Prepared For: Aurizon Property Pty Ltd*

Job No. 059-18-19

October 2019

Revision B

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# Traffic Impact Assessment Report

Rev.	Description	Signature	Date
B	Final	-	15.10.19
A	Draft for Client Comment	-	15.10.19

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# Traffic Impact Assessment Report

*Industrial Subdivision, 33-53 Knight Street (Lot 4 SP134379), Park Avenue QLD*

## 1.0 INTRODUCTION

---

### 1.1. PROJECT BACKGROUND

The applicant (Aurizon Property Pty Ltd) proposes the subdivision of the property at 33 – 53 Knight Street, Park Avenue (Lots 2 and 3 RP611882 and Lot 4 SP134379) from three (3) into 12 lots and one (1) reserve lot. The proposed lots, which vary in size from 1952m<sup>2</sup> to 2 hectares, are ultimately intended to be used for industrial uses with the exception of the reserve lot (Lot 13) which is 9444m<sup>2</sup> in area and will accommodate a stormwater basin.

### 1.2. SCOPE AND STUDY AREA

McMurtrie Consulting Engineers (MCE) has been commissioned by the applicant (Aurizon Property Pty Ltd) to undertake a Traffic Impact Assessment (TIA) for the proposed subdivision of the land at 33 – 53 Knight Street, Park Avenue (Lots 2 and 3 RP611882 and Lot 4 SP134379) from three (3) into 12 lots and one (1) reserve lot.

This Traffic Impact Assessment (TIA) was carried out to determine the level of potential impacts of the Project on the operation of the surrounding road network. The outcomes of the TIA will be used in support of the Development Application which will be assessed by Department of Transport and Main Roads (TMR) and Rockhampton Regional Council (RRC).

The assessment methodology adopted for this TIA is summarised in the key tasks listed below.

- Broadly identify the existing transport infrastructure which is of relevance to the Project.
- Estimate traffic generation associated with the construction and operational phases of the Project and the distribution of this development traffic on the identified road network.
- Assess the potential impact of the Project on the surrounding transport infrastructure.
- Identify potential mitigation and management strategies to be implemented to offset the impact of the proposed Project (if required).

As outlined above, the adopted methodology centres **on establishing a background, “without development” traffic scenario** for the identified transport routes and comparing this with a scenario including the Project-generated traffic, **i.e. the “with development” scenario.**

The process allows for the assessment of the traffic impacts of the Project in terms of road safety, access requirements, intersection operations, road link capacity, pavement and other transport infrastructure. Following this, if required, potential mitigation and/or management measures were determined to address the potential traffic impacts caused by the proposed Project.

#### 1.2.1 STUDY AREA

As previously identified, the subject land is located at 33 – 53 Knight Street, Park Avenue. It is comprised of three (3) land parcels including Lots 2 and 3 RP611882 and Lot 4 SP134379, and currently has a total area of 8.1894 hectares.

The site is located just over the Fitzroy River from the city centre via the Bruce Highway, approximately 2.2km to the north of the centre of the CBD. **Figure 1** over page shows the subject site, and the local road network in proximity to the site.



Figure 1 Study Area and Key Intersections – 33-53 Knight Street, Park Avenue

[Source: Old Globe]

### 1.3. PRE LODGEMENT MEETING MINUTES

A pre lodgement meeting was held on 8 May 2019 in respect of the application. The minutes of this meeting are included for reference as **Appendix A**.

### 1.4. DATA SOURCES

The following sources of data have been used for the purpose of this assessment:

- Queensland Globe (<https://qldglobe.information.qld.gov.au>), for crash data in the vicinity of the site.
- Queensland Government Traffic Generation Data—2006–2018 (<https://data.qld.gov.au/dataset/traffic-generation-data-2006-2018>), for development trip generation.
- Intersection turning movement counts undertaken at the following intersections (as identified in **Figure 1** above) on Thursday 19 September 2019:
  - The Park Street / Knight Street intersection;
  - The Knight Street (east-west) / Knight Street (south) intersection;
  - The Bruce Highway / Knight Street intersection;
  - The Horace Street / Dowling Street intersection.

The results of these turning movement counts are included for reference as **Appendix B**.

- An intersection turning movement count supplied by TMR for the Bruce Highway / Knight Street intersection which was undertaken on Thursday 28 February 2013, and which is included for reference as **Appendix C**;
- A 2018 Queensland Government AADT Segment Report (from 1.409km to 4.340km) for Road Section 10F Bruce Highway (Rockhampton – St Lawrence) which is included for reference as **Appendix D**; and
- The traffic signal installation plan supplied by TMR for the Bruce Highway / Knight Street intersection which is included for reference as **Appendix E**.



## 2.0 EXISTING CONDITIONS

### 2.1. LAND USE AND ZONING

As shown in **Figure 2** below, the subject land parcels (Lots 2 and 3 RP611882 and Lot 4 SP134379) are currently identified as low impact industry zoning under Rockhampton Regional Council's **Planning Scheme (2015)**.

The subject site is comprised of two (2) main sections, being the northern section (with an eastern frontage to Knight Street) and the southern section (with a southern frontage to Horace Street). The northern section currently accommodates the Aurizon Glenmore Depot, which comprises a number of industrial buildings. It is estimated that the total GFA of these buildings is approximately 7,500m<sup>2</sup>.

This northern section of the subject site is currently accessed via three (3) crossovers onto the public road network, including one (1) onto Park Street on the northern site boundary, and two (2) onto Knight Street on the eastern site boundary approximately 70m and 190m to the south of the Knight Street / Park Street intersection respectively. These access driveways all currently operate as all-movements crossovers.

The southern section of the subject site is currently vacant / undeveloped, with no vehicular access provided to this portion of the site.

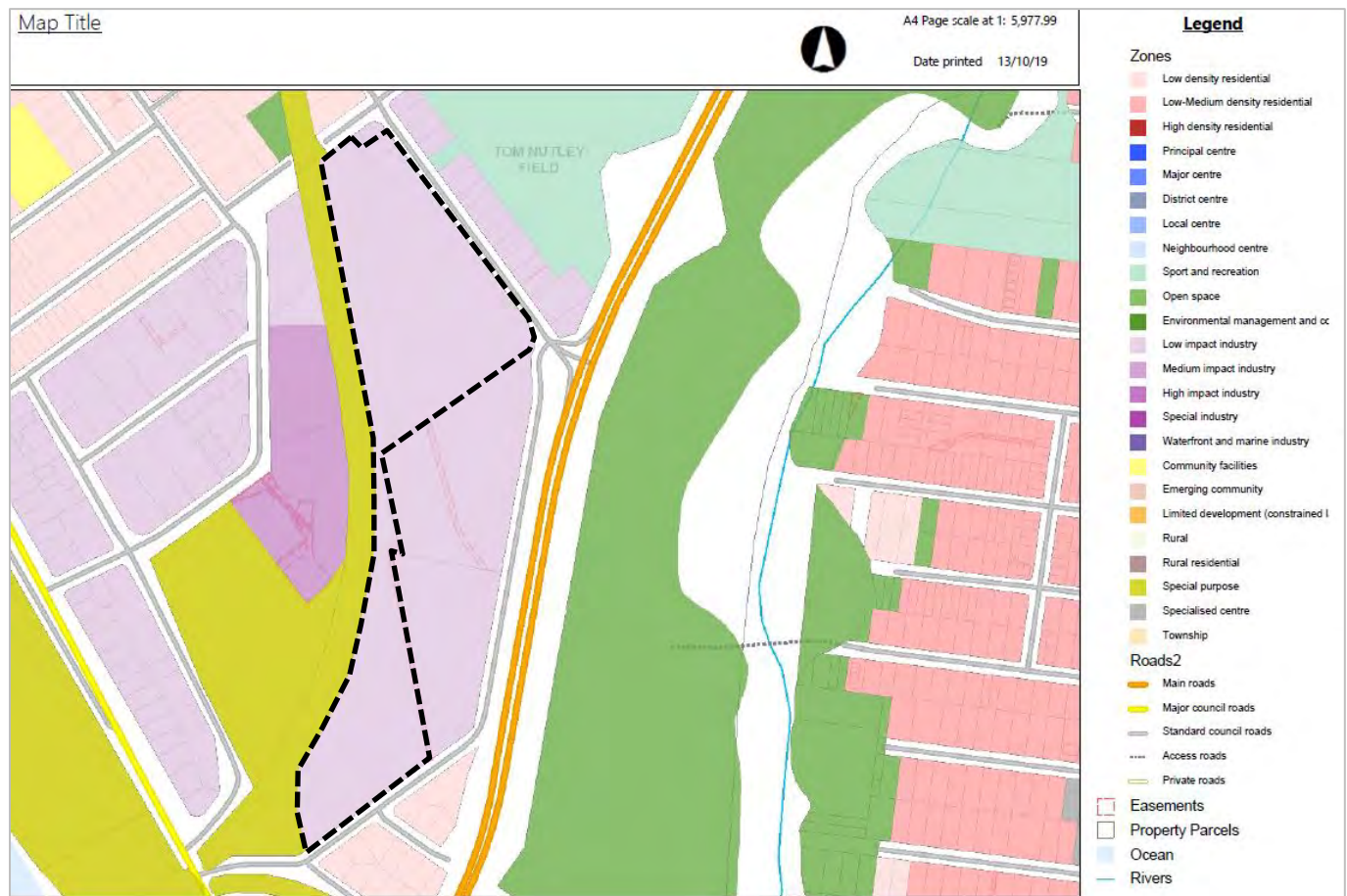


Figure 2 Land Use Zoning – 33-53 Knight Street, Park Avenue

[Source: RRC Online Mapping]

### 2.2. ADJACENT LAND USE / APPROVALS

As shown in **Figure 2** above, the subject site is bounded by special purpose land to the west (i.e. the North Coast Railway Line), low density residential land to the north and south, and primarily low impact industry land to the east.

No development approvals are understood to be currently held over adjacent lots that would be relevant to the subject development.

## 2.3. SURROUNDING ROAD NETWORK DETAILS

### 2.3.1 ROAD LINKS

#### Bruce Highway (Rockhampton – St Lawrence) – 10F

The Bruce Highway is part of the National Highway Network and joins Brisbane in the south to Cairns in the north. Travelling a distance of approximately 1,700 km, this road is the primary road transport route for both passenger and road freight vehicles along the east coast of Queensland.

The section of the Bruce Highway relevant to the Project is Section 10F, which extends from Rockhampton to St Lawrence. The segment of this section of road which extends past the subject site (from 1,409km to 4.340km) carries approximately 32,800vpd. It has a four-lane divided cross-section with a posted speed limit of 70kn/hr.

In the vicinity of the proposed development site, the Bruce Highway is currently an approved 23m and 25m B-Double route as shown on the TMR Multi Combination Vehicle (MCV) mapping (see extract provided as Figure 3 below).

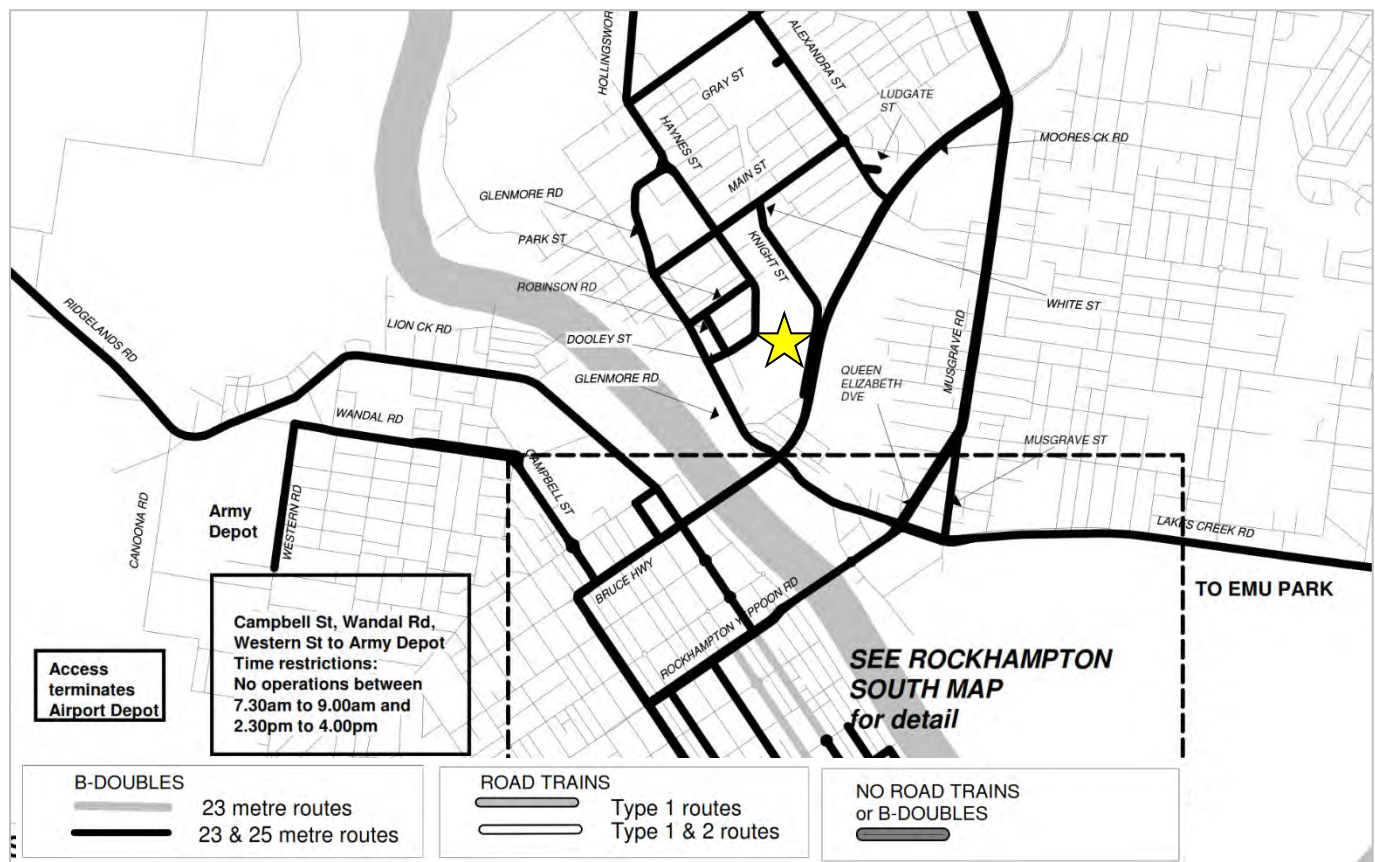


Figure 3 Approved Multi Combination Vehicle Routes

[Source: TMR MCV Mapping]

#### Knight Street

Knight Street is classified as a minor urban collector in **the Road Hierarchy overlay of Council’s Planning Scheme**. It has a two-way, two-lane undivided cross-section, with a pavement width of approximately 13m. Knight Street is posted at 50km/hr in proximity to the site, and is currently an approved 23m and 25m B-Double route as shown on the TMR Multi Combination Vehicle (MCV) mapping (see extract provided as Figure 3 above).

#### Park Street

Park Street is classified as an urban access place to the west of Knight Street (along the northern boundary of the site) **in the Road Hierarchy overlay of Council’s Planning Scheme**. The section fronting the site, which extends from Knight Street and terminates at the North Coast Railway Line, has a two-way, two-lane undivided cross-section with a pavement width of approximately 9.5m. Kerbside parking is generally permitted clear of intersections and property access driveways in accordance with Queensland Road Rules. As a local street in a built-up area, a speed limit of 50km/hr applies on Park Street along the northern frontage of the site.



### Horace Street

Horace Street extends from Knight Street to Welch Street along the southern boundary of the site, and is classified as **an urban access street in the Road Hierarchy overlay of Council’s Planning Scheme**. Horace Street has a two-way, two-lane undivided cross-section with a pavement width which varies from approximately 7.0m to 10.0m along its length. As a local street in a built-up area, a speed limit of 50km/hr applies on Horace Street.

There is an open level rail crossing on Horace Street at the Welch Street intersection where the North Coast Railway crosses the street. As shown in **Figure 4** below, this is a stop-controlled open level crossing.



Figure 4 Open Level Crossing (Horace Street at Welch Street Intersection)

[Source: Google Street View]

### Dowling Street

Dowling Street **is classified as an urban access street in the Road Hierarchy overlay of Council’s Planning Scheme**. It is divided into two (2) sections (i.e. north and south) by the Bruce Highway. The section which is relevant to the Project is the northern section, which has a two-way, two-lane undivided cross-section with a pavement width of approximately 8.5m, and terminates at a cul de sac of approximately 14m diameter. As a local street in a built-up area, a speed limit of 50km/hr applies on Dowling Street.



### 2.3.2 INTERSECTIONS

#### Park Street / Knight Street Intersection

The Park Street / Knight Street Intersection is a four-way priority (give-way) controlled intersection, as shown in Figure 5 below. It is a basic standard intersection, with no auxiliary turn lanes provided on any approaches.



Figure 5 Park Street / Knight Street Intersection

[Source: Qld Globe]

#### Knight Street (east-west) / Knight Street (south) intersection

The Knight Street (east-west) / Knight Street (south) intersection is a priority (give-way) controlled intersection, as shown in Figure 6 below. It is a T-intersection with the Knight Street (south) approach forming the minor approach, but has a property access which effectively forms a fourth (northern) approach to this intersection.



Figure 6 Knight Street (east-west) / Knight Street (south) Intersection

[Source: Qld Globe]



### Bruce Highway / Knight Street Intersection

The Bruce Highway / Knight Street Intersection is a signalised four-way intersection as shown in **Figure 6** below. The Bruce Highway forms the northern and southern approaches, with the western approach being Knight Street and the eastern approach the access to Kershaw Gardens, which is a 50 hectare area of parkland.

Northbound and southbound auxiliary right turn lanes are provided on the Bruce Highway (55m and 100m in length including taper respectively), and northbound and southbound auxiliary left turn lanes are also provided (170m and 70m in length including taper respectively), with left turn slip lane treatments on all four (4) approaches. The western approach (Knight Street) has two (2) intersection approach lanes and one (1) departure lane, and the eastern approach (Kershaw Gardens access) has one (1) approach lane and one (1) departure lane. A pedestrian crossing is provided on the northern intersection approach only.



Figure 6 Bruce Highway / Knight Street Intersection

[Source: Old Globe]

### Horace Street / Dowling Street Intersection

The Horace Street / Dowling Street Intersection is a priority (give-way) controlled T-intersection, as shown in **Figure 7** below. No auxiliary turn lanes are provided at this intersection.



Figure 7 Bruce Highway / Knight Street Intersection

[Source: Old Globe]

## 2.4. TRAFFIC VOLUMES

### 2.4.1 ROAD LINK VOLUMES

The background traffic volumes for the relevant section of the state-controlled road network were established using the available 2018 AADT segment traffic count data provided by TMR (refer **Appendix D**).

Using these established traffic volumes, the current (2019) daily traffic volumes on the network were established assuming a conservative 1% background traffic growth rate on the link (actual average 10 year growth rate was identified to be -0.08%).

A summary of the forecast background traffic volumes for the current year (2019) is provided in **Table 1**.

**Table 1 Forecast Future Background AADT Traffic Volumes**

Site ID	AADT Segment		Base Data Year	Base Year (2018) AADT				10 Yr. GR %	Background AADT (2019)			
	Start (km)	End (km)		Gaz	% HV	A-Gaz	% HV		Gaz		A-Gaz	
									Total	HV	Total	HV
Bruce Highway (Rockhampton – St Lawrence) – 10F												
60017	1.409	4.340	2018	17,400	11.02	15,358	8.71	1.00#	17,574	1,937	15,512	1,351

# Assumed growth rate of 1.0% has been adopted for purpose of analysis

### 2.4.2 INTERSECTION VOLUMES

Existing intersection volumes were established through the completion of intersection turning movement counts at the following intersections on Thursday 19 September 2019:

- The Park Street / Knight Street intersection;
- The Knight Street (east-west) / Knight Street (south) intersection;
- The Bruce Highway / Knight Street intersection;
- The Horace Street / Dowling Street intersection.

The detailed results these counts are included as **Appendix B**, with the recorded turning movement volumes during the morning and afternoon peak hours as shown in **Figure 8** to **Figure 15** following.

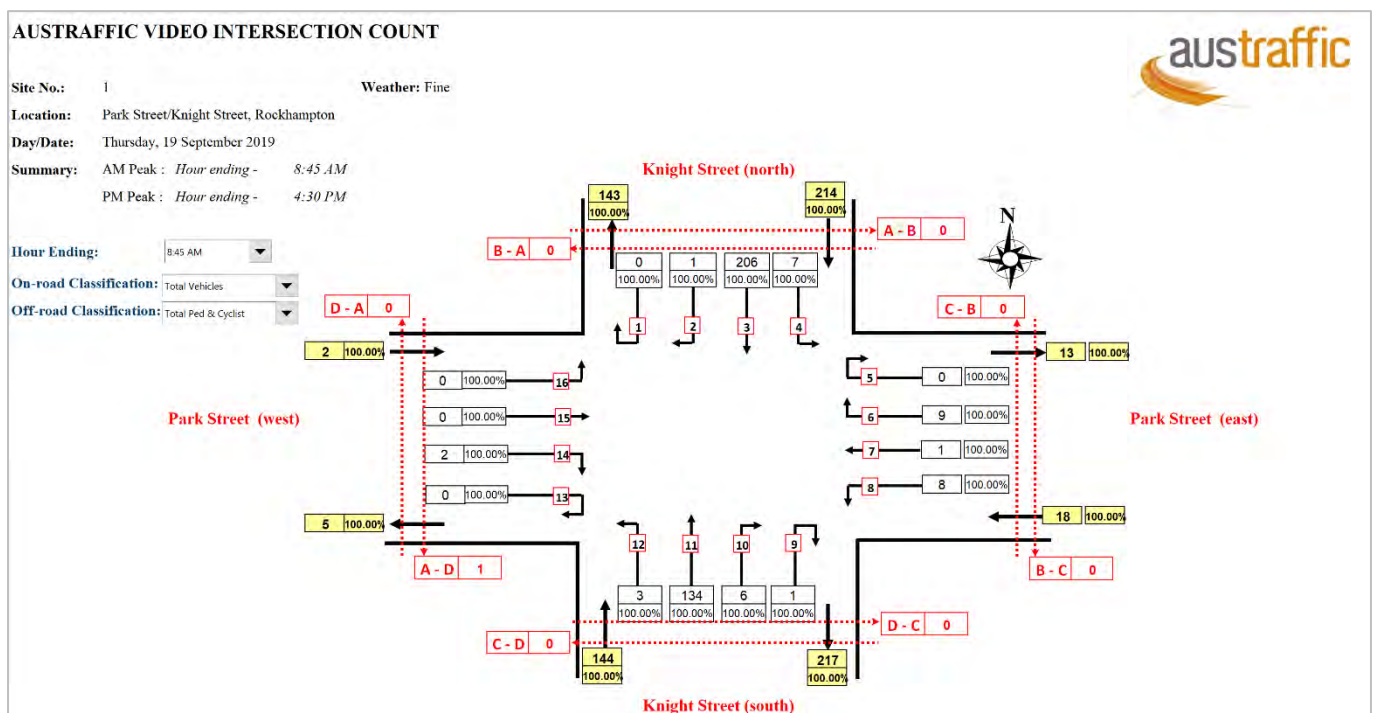


Figure 8 Park Street / Knight Street Intersection Volumes (AM Peak)

[Source: Austraffic]



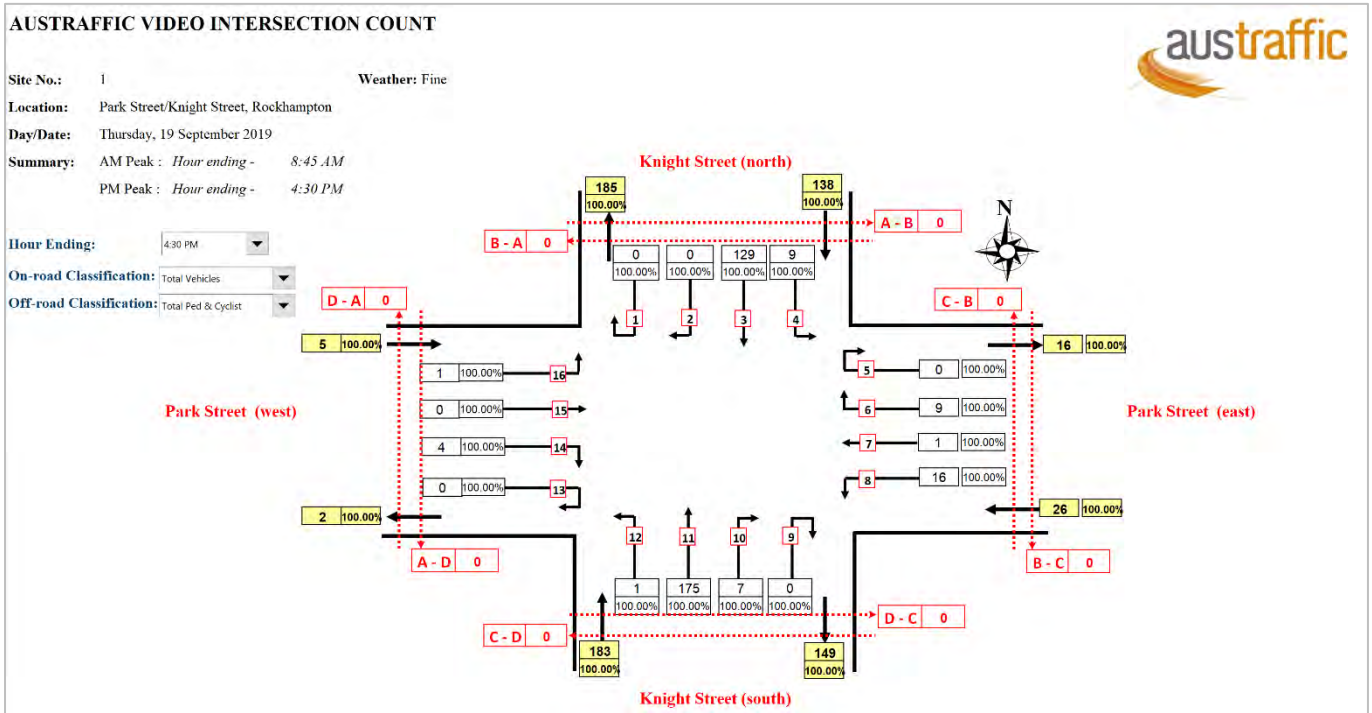


Figure 9 Park Street / Knight Street Intersection Volumes (PM Peak)

[Source: Austraffic]

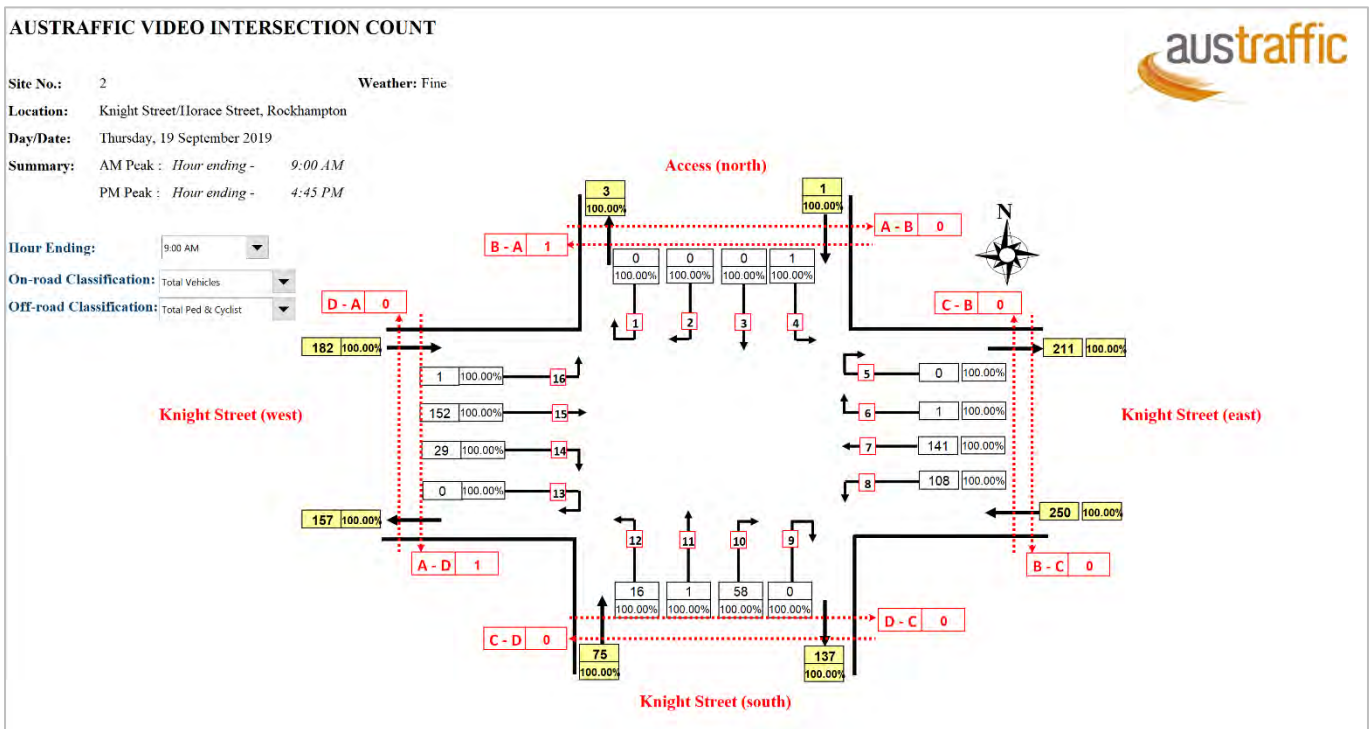


Figure 10 Knight Street (east-west) / Knight Street (south) Intersection Volumes (AM Peak)

[Source: Austraffic]

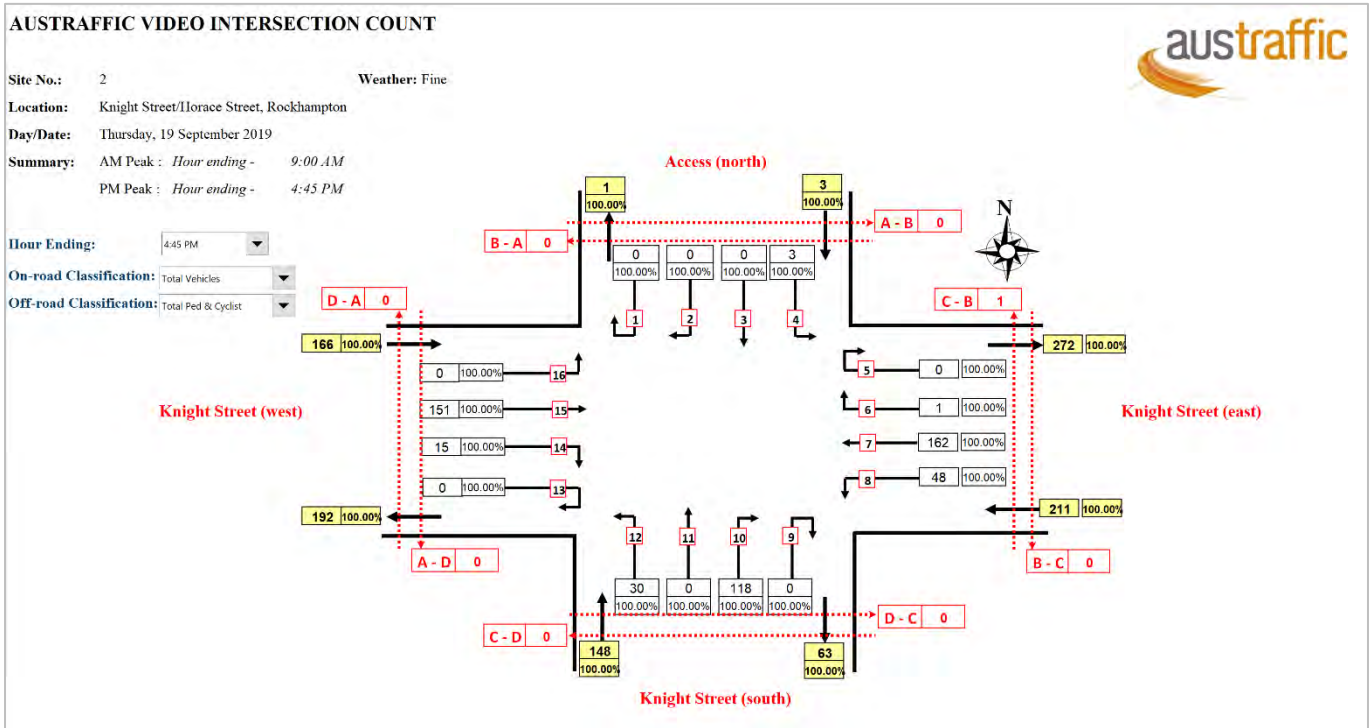


Figure 11 Knight Street (east-west) / Knight Street (south) Intersection Volumes (PM Peak) [Source: Austraffic]

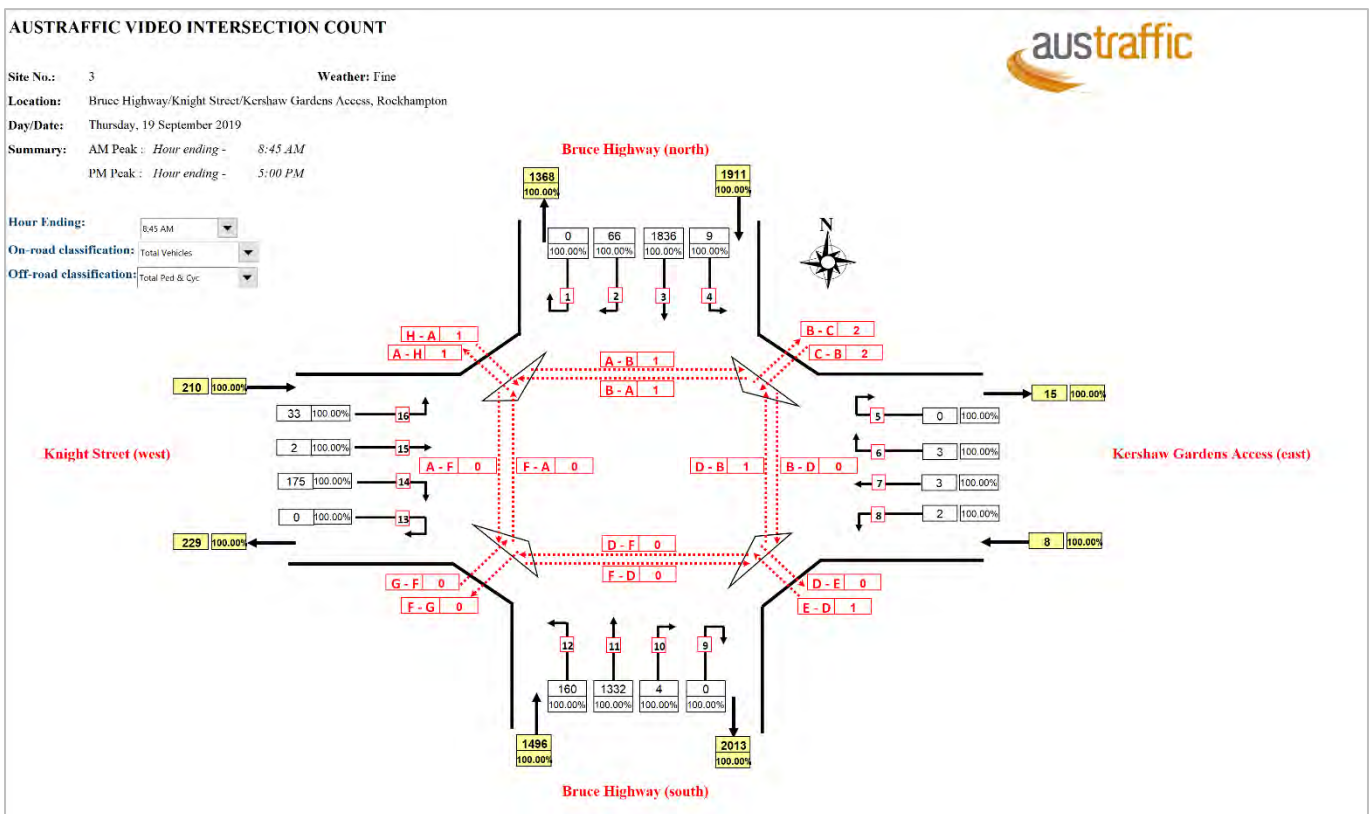


Figure 12 Bruce Highway / Knight Street Intersection Volumes (AM Peak) [Source: Austraffic]



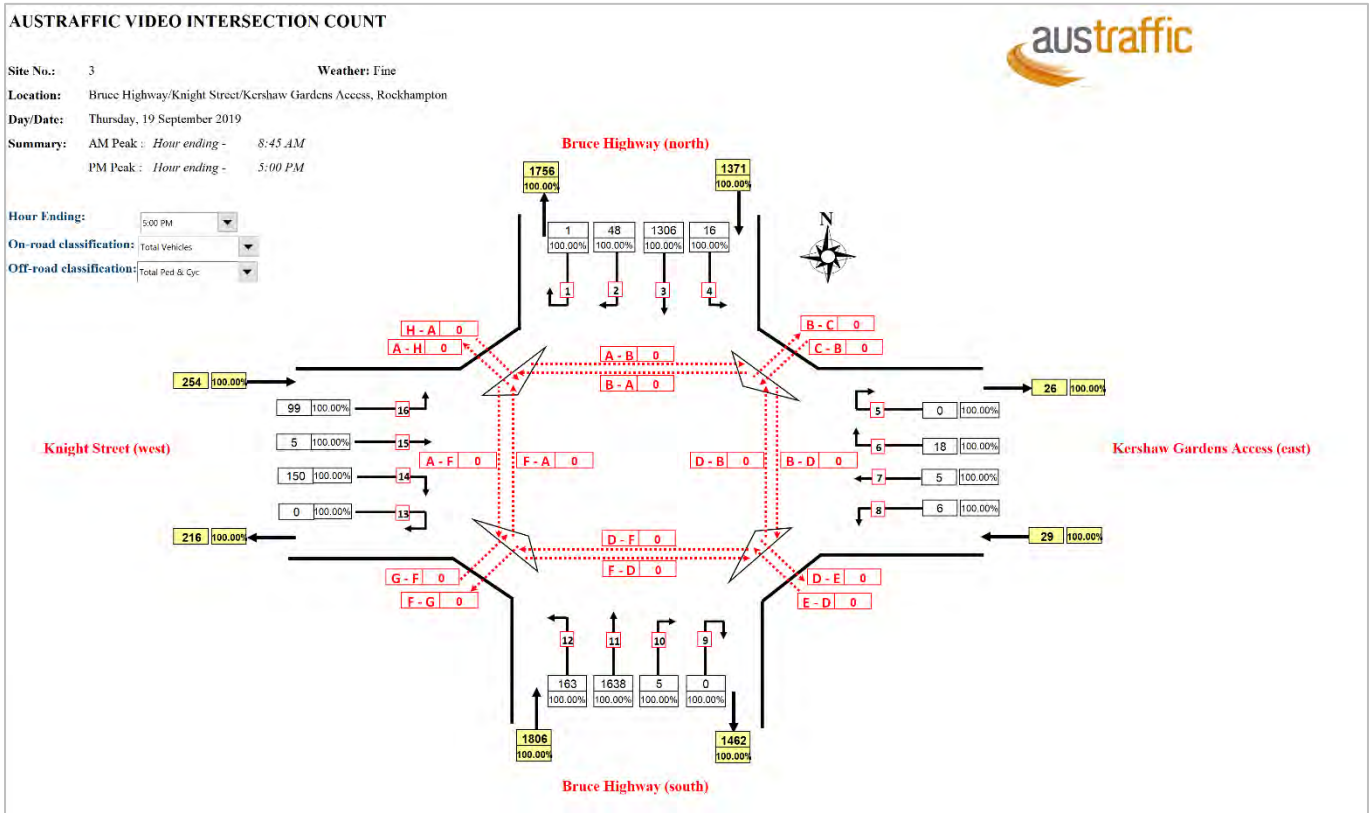


Figure 13 Bruce Highway / Knight Street Intersection Volumes (PM Peak)

[Source: Austraffic]

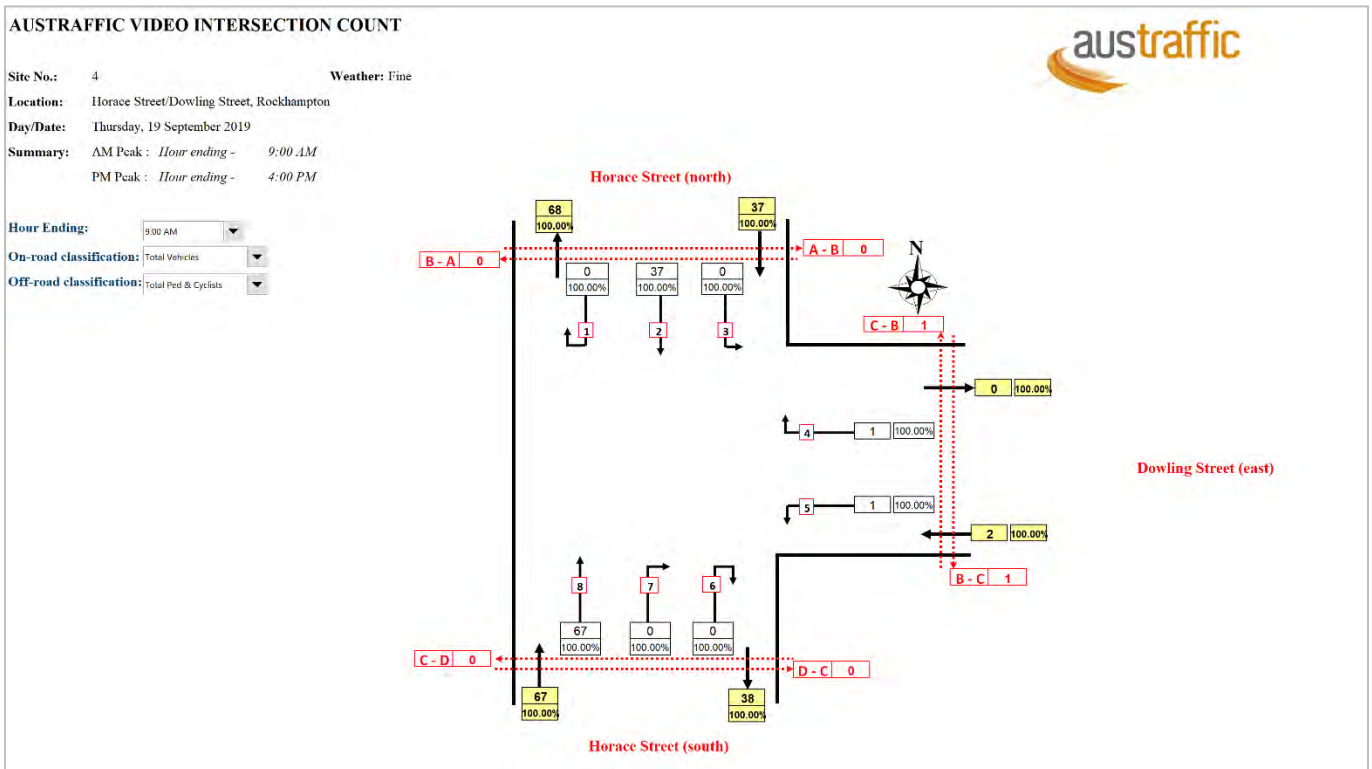


Figure 14 Horace Street / Dowling Street Intersection Volumes (AM Peak)

[Source: Austraffic]

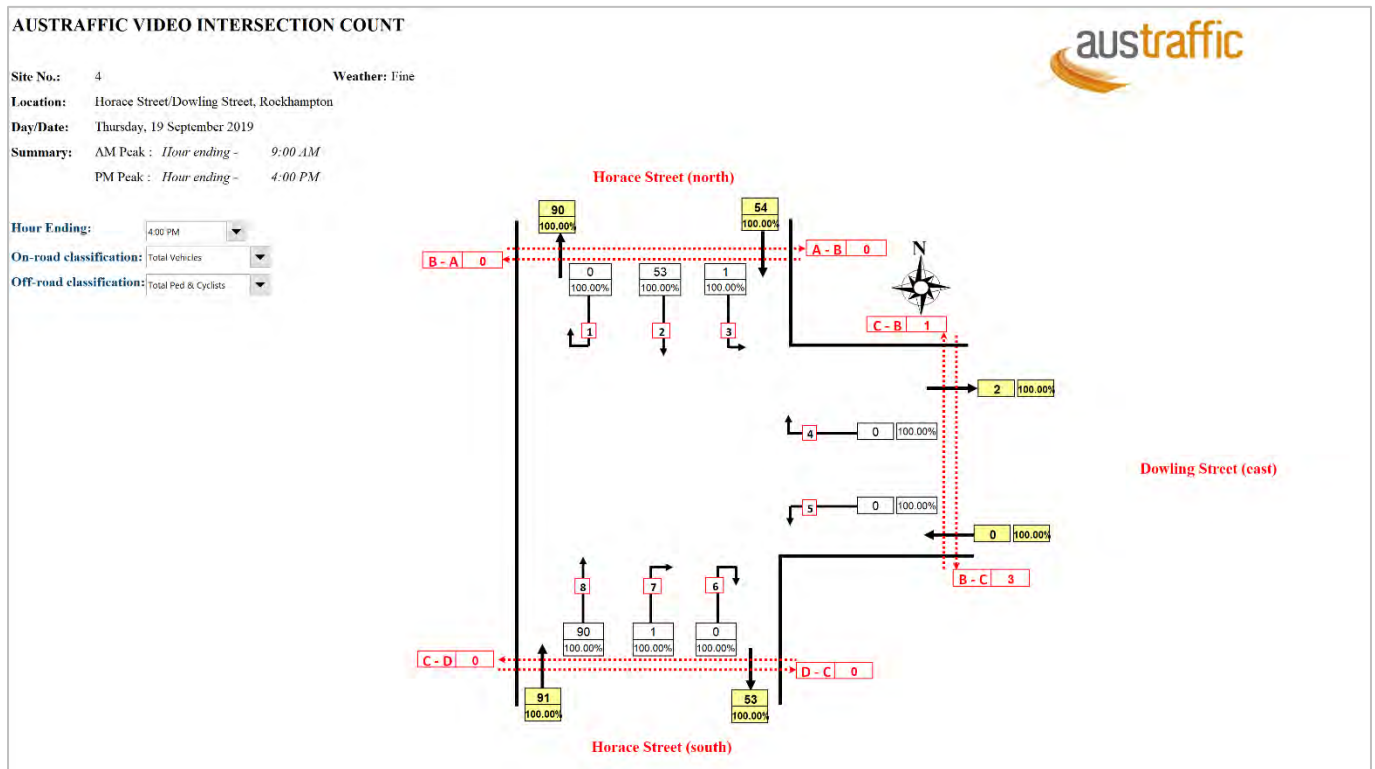


Figure 15 Horace Street / Dowling Street Intersection Volumes (PM Peak)

[Source: Austraffic]

## 2.5. INTERSECTION AND NETWORK PERFORMANCE

### 2.5.1 INTERSECTIONS

The recorded 2019 background traffic volumes outlined in Section 2.4.2 above were utilised to undertake a preliminary analysis (using SIDRA software) to establish the operational performance of the current configurations of the subject intersections under current (2019) traffic conditions. A summary of the results of the analysis undertaken is provided in Table 2 below, with the detailed results included for reference in Appendix F.

Table 2 SIDRA Results – Pre Development (Existing Conditions)

Analysis Scenario	Intersection Degree of Saturation	Level of Service	Intersection Average Delay (sec)	Maximum 95 <sup>th</sup> Percentile Back of Queue Length (m)
<b>Intersection 1: Park Street / Knight Street intersection</b>				
2019 AM Peak	10.8%	LOS A*	0.6	0.5
2019 PM Peak	9.0%	LOS A*	0.8	0.6
<b>Intersection 2: Knight Street (east-west) / Knight Street (south) intersection</b>				
2019 AM Peak	12.3%	LOS A*	2.4	2.9
2019 PM Peak	20.4%	LOS A*	2.7	6.0
<b>Intersection 3: Bruce Highway / Knight Street intersection</b>				
2019 AM Peak	81.0%	LOS B#	14.8	225.2
2019 PM Peak	95.7%	LOS A#	13.9	167.5
<b>Intersection 4: Horace Street / Dowling Street intersection</b>				
2019 AM Peak	3.4%	LOS A*	0.2	0.0
2019 PM Peak	4.6%	LOS A*	0.1	0.0

\* Unsignalised Intersection: LOS value identified is for worst movement at the intersection, not the overall intersection.

# Signalised Intersection: LOS value identified is for the overall intersection.

The results summarised in the table above indicate that:

- The priority-controlled (local) intersections analysed (Intersections 1, 2, and 4) are all operating well within acceptable capacity limits at level of service A, and with limited queuing and delay; and
- The existing configuration of the Bruce Highway / Knight Street intersection (Intersection 3) is operating satisfactorily under the current (2019) traffic conditions, demonstrated by all values for DOS, LOS, and average delay being within acceptable limits of operation for a signalised intersection.

### 2.5.4 ROAD LINKS

Based on the daily and/or peak hour traffic volumes identified in the sections above, it is concluded that all relevant sections of the Bruce Highway and the local access roads are currently operating satisfactorily and within capacity.

## 2.6. ROAD SAFETY ISSUES

### 2.6.1 EXISTING CONDITIONS

Consideration has been given to the existing traffic conditions on the relevant public road network, as discussed in the following sections:

#### 1) Intersection configurations

The existing configurations of the priority-controlled (local) intersections analysed (Intersections 1, 2, and 4) are such that whilst wider lanes are generally provided on the major intersection approaches (i.e. Knight Street and Horace Street), auxiliary turn lanes from the major intersection approaches to the minor approaches are generally not provided. The exception is the Knight Street (east – west) / Knight Street (south) intersection, where there is provision for a short right turn pocket from the western to the southern approach (although this is effectively the end of the right turn pocket which extends back from the Bruce Highway intersection as shown in **Figure 16** below.

The through volumes and turning movement volumes at these intersections are low however, therefore it has been observed that the current intersection configurations operate acceptably, without any notable safety or capacity issues.

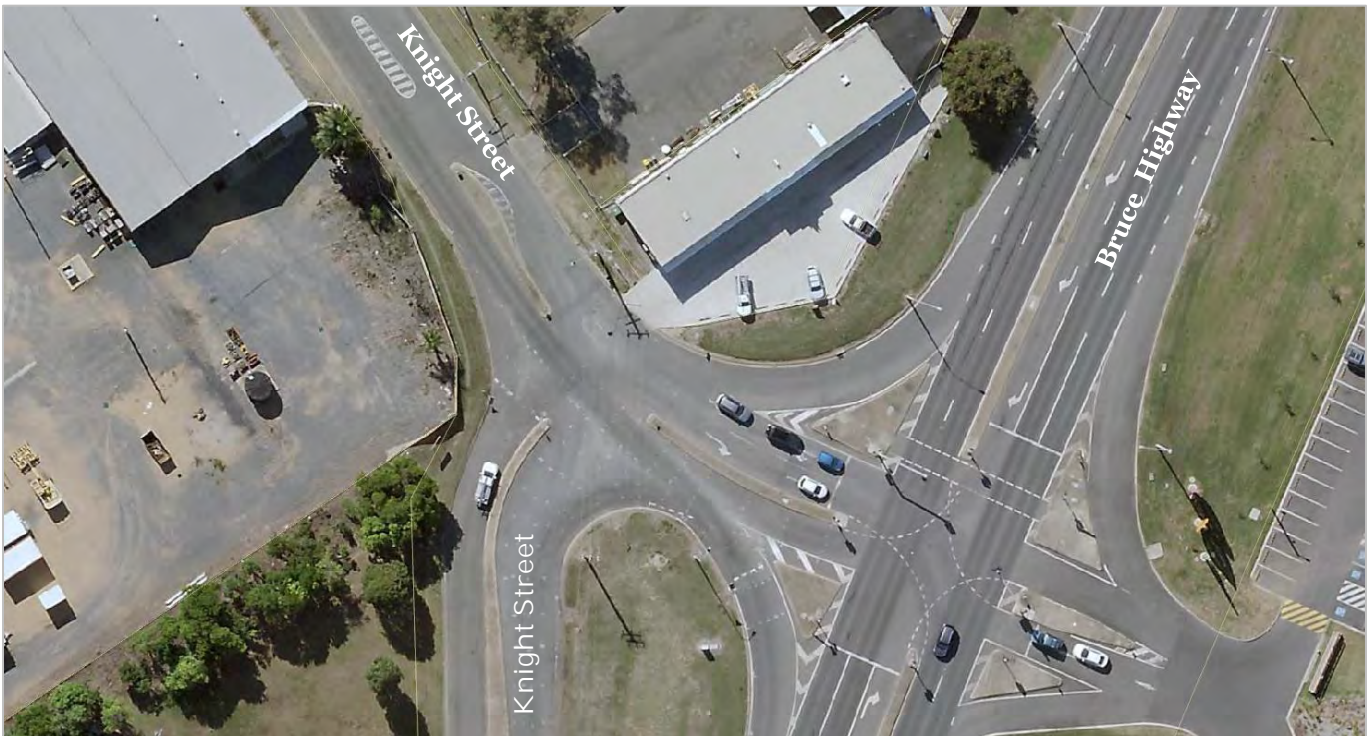


Figure 16 Knight Street (east – west) / Knight Street (south) intersection

[Source: Queensland Globe]



## 2) Sight distances

Given the vertical and horizontal alignment of Park Street, Knight Street, Horace Street and Dowling Street in the vicinity of the subject intersections, sight distances along these roads (from existing and proposed site access points and at the subject intersections) are generally unrestricted and/or adequate, as shown in the figures below. It is however recommended that the trees on the both sides of Knight Street to the north of Park Street be monitored and trimmed as required, to ensure that visibility for traffic exiting Park Street (east and west) to the north is not compromised.



Figure 17 Knight Street looking Northbound from Park Street

[Source: Google Street View]



Figure 18 Knight Street looking Southbound from Park Street

[Source: Google Street View]





Figure 19 Horace Street looking Westbound from Site Frontage

[Source: Google Street View]



Figure 20 Horace Street looking Eastbound from Site Frontage

[Source: Google Street View]

### 3) Intersection Separation (Intersections 2 and 3)

The separation between subject intersections 2 and 3 (i.e. the Knight Street (east – west) / Knight Street (south) intersection and the Knight Street / Bruce Highway intersection) is limited, at approximately 50m only (measured from the centre of the intersections). However given the relatively low turning movement volumes at these intersections, any safety or capacity risks as a result of this limited separation are considered to be minimal.



## 2.6.2 ROAD CRASH HISTORY REVIEW

A review of the road crash history of the public roads and intersections in proximity to the site was undertaken using the road crash data available from the Queensland Globe database. Consistent with standard practice, the assessment focuses on the most recent 5 years of crash data available (i.e. 2014 – 2018 inclusive).

The results of this assessment identified 3 crashes in the nominated extents within this timeframe, with the approximate location of the recorded crashes shown in the figures below, while a summary of the details of the road crash data is provided in Table 3.



Figure 21 Road Crash Locations (Knight Street North)

[Source: QLD Globe]



Figure 22 Road Crash Locations (Bruce Highway / Knight Street Intersection)

[Source: QLD Globe]





Figure 23 Road Crash Locations (Horace Street along Site Frontage)

[Source: QLD Globe]

Table 3 Summary of Road Crash History (2014-2018)

Crash Ref. No.	Crash Year	Crash Severity	Crash Type	Location	Crash DCA	Crash Description
292737	2016	Hospitalisation	Multi-Vehicle	Knight Street, 220m north-west of Bruce Highway	201	Veh'S Opposite Approach: Head On
285412	2015	Hospitalisation	Multi-Vehicle	Bruce Highway / Knight Street Intersection	104	Veh'S Adjacent Approach: Thru-Right
307147	2017	Medical Treatment	Multi-Vehicle	Bruce Highway / Knight Street Intersection	301	Veh'S Same Direction: Rear End

The results above indicate that no one traffic movement can be considered a specific safety risk, with only three (3) crashes recorded along the site frontage roads and the subject intersections over the last 5 years (2014-2018), and no more than one (1) crash of a specific type.

## 2.7. SITE ACCESS

As previously identified, the subject site is comprised of two (2) main sections, being the northern section (with an eastern frontage to Knight Street) and the southern section (with a southern frontage to Horace Street).

The northern section currently accommodates the Aurizon Glenmore Depot, which comprises a number of industrial buildings. It is estimated that the total GFA of these buildings is approximately 7,500m<sup>2</sup>. This northern section of the subject site is currently accessed via three (3) crossovers onto the public road network, including one (1) onto Park Street on the northern site boundary, and two (2) onto Knight Street on the eastern site boundary approximately 70m and 190m to the south of the Knight Street / Park Street intersection respectively. These access driveways all currently operate as all-movements crossovers.

The southern section of the subject site is currently vacant / undeveloped, with no vehicular access provided to this portion of the site.



### 3.0 PROPOSED DEVELOPMENT DETAILS

#### 3.1. OPERATIONAL DETAILS

The application is for the subdivision of the property at 33 – 53 Knight Street, Park Avenue (Lots 2 and 3 RP611882 and Lot 4 SP134379) from three (3) into 12 lots and one (1) reserve lot. The proposed lots, which vary in size from 1952m<sup>2</sup> to 2 hectares are ultimately intended to be used for industrial uses, with the exception of the reserve lot (Lot 13) which is 9444m<sup>2</sup> in area and will accommodate a stormwater basin.

As previously identified, the subject site is comprised of two (2) main sections, being the northern section (with an eastern frontage to Knight Street) and the southern section (with a southern frontage to Horace Street). The northern section will have a total lot area of 39,915m<sup>2</sup>, and we are advised that the southern section will have a usable lot area (i.e. flood free area) of approximately 5,650m<sup>2</sup>.

The plans included as Appendix G show the proposed lot layout, and the extracts from these plans provided as Figure 24 and Figure 25 show the proposed lot layout for the northern and southern sections of the site respectively.

The traffic elements of the proposed development are discussed further in the following sections.

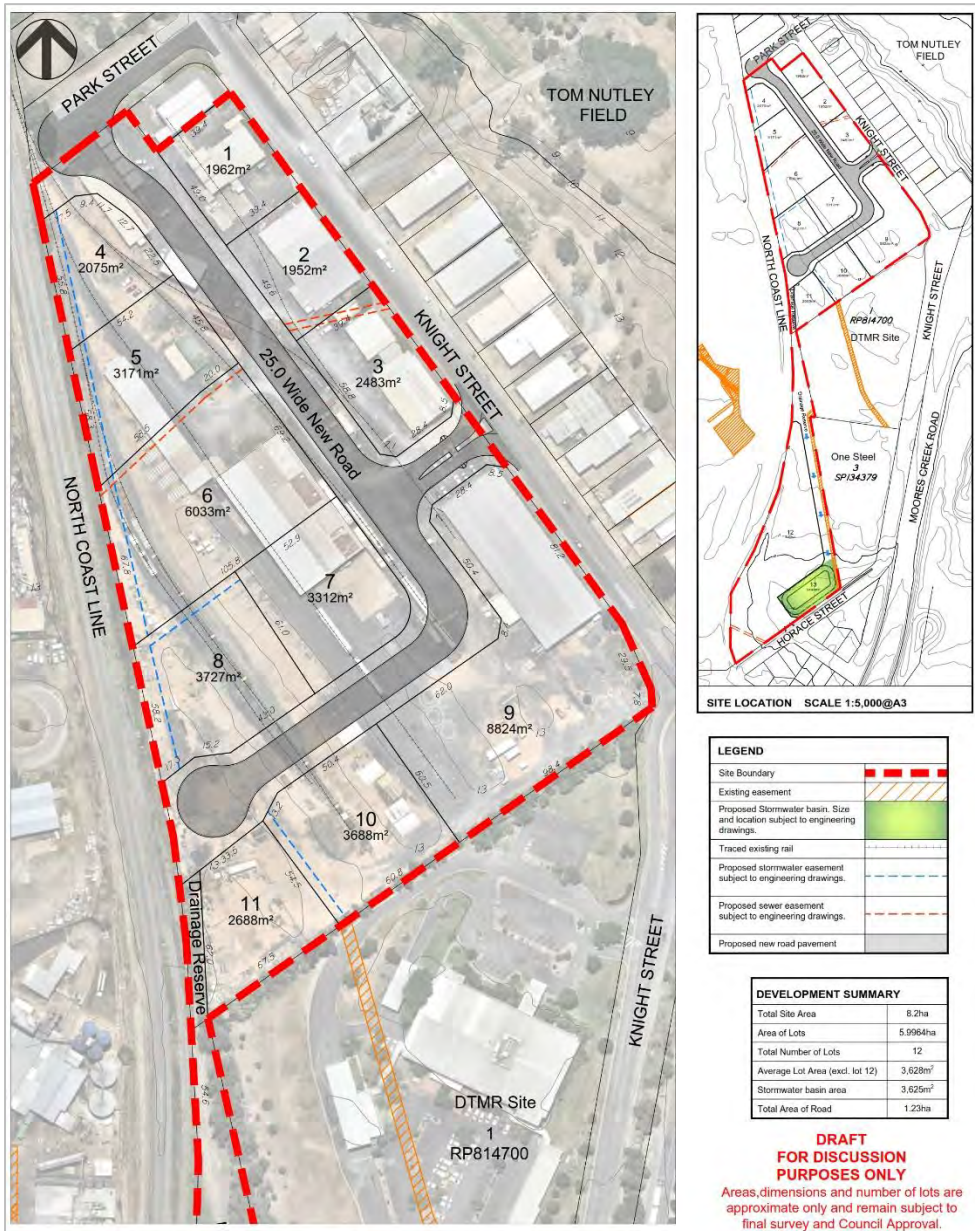


Figure 24 Proposed Subdivision Layout (North) [Source: Veris Australia Pty Ltd]



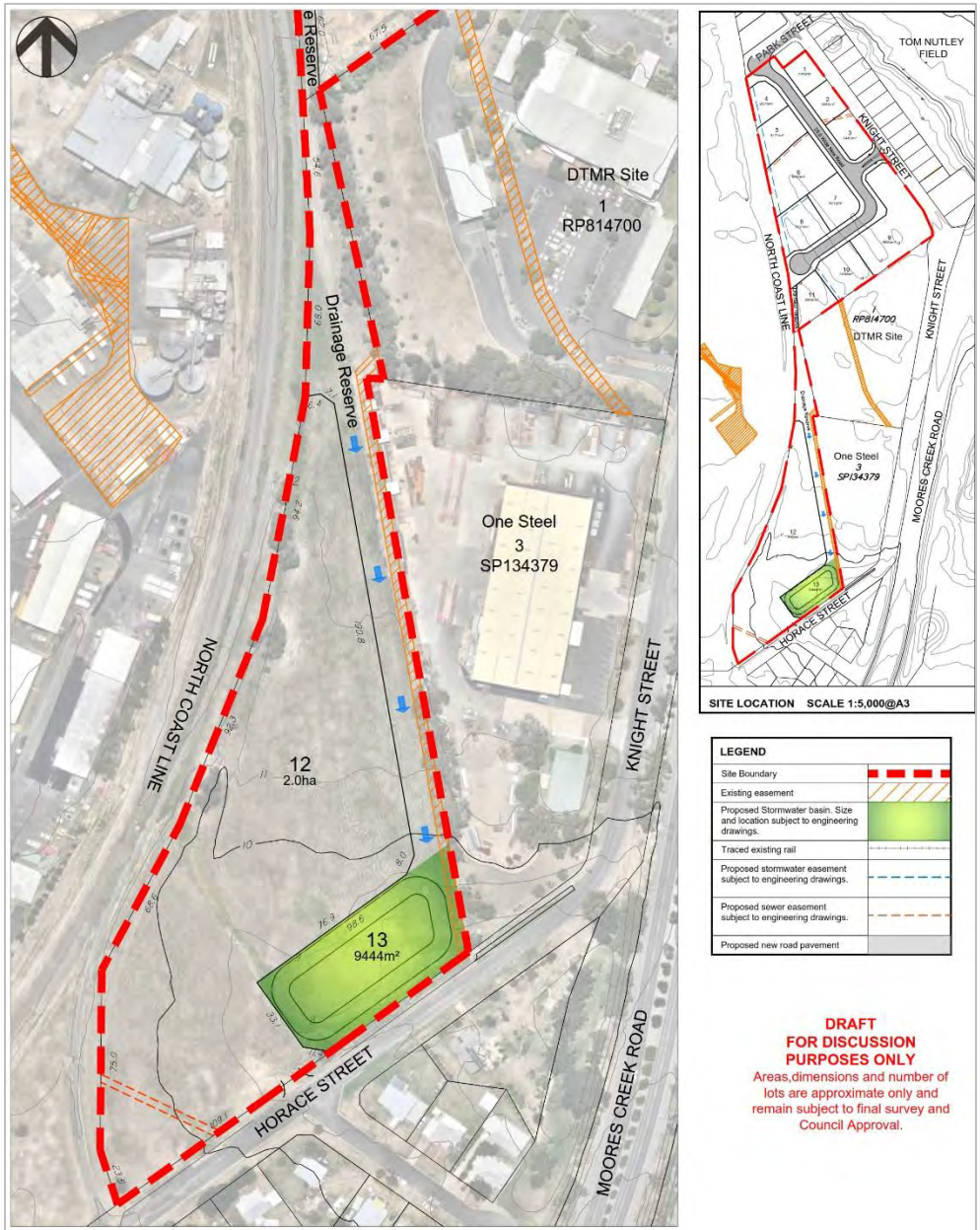


Figure 25 Proposed Subdivision Layout (South) [Source: Veris Australia Pty Ltd]

### 3.2. PROPOSED ACCESS AND PARKING

#### 3.2.1. SITE ACCESS AND INTERNAL ROAD NETWORK

Access to the site and the proposed lots within the subdivision is proposed as follows:

##### Northern Section

1. Via a left-in, left-out access intersection onto Knight Street approximately 160m to the north-west of the Bruce Highway and 185m to the south of the Park Street intersection; and
2. Via the extension of Park Street to the south, to connect to the proposed internal road network.

##### Southern Section

3. Via an all movements driveway along the southern boundary of the site, the location of which is to be determined as part of a future development application over this land parcel.

No vehicular connection is proposed to be provided between the northern and southern sections of the site.

The proposed internal road within the northern section of the site has a road reserve width of 25m with a nominal carriageway width of 13m, in accordance with Table D1.06.11 (Industrial Access – Deemed to Comply Requirements) **in the Capricorn Municipal Development Guidelines, which is referenced in Council’s Planning Scheme.**

A turning head is proposed at the western end of Park Street to allow vehicles to turn around without needing to enter the subdivision (if necessary), and a cul de sac is proposed at the south-western corner of the site where the proposed internal road terminates. Both of these cul de sacs have a diameter of approximately 30m, which is adequate to accommodate the u-turn manoeuvre of large multi-combination vehicles.

### 3.2.2 INTERNAL SITE FACILITIES

The subject proposal is for the subdivision of the subject site, with the proposed lots ultimately intended to be used for industrial uses. Future development applications will necessarily be lodged prior to the development of the proposed lots, and the detail of car parking arrangements, queuing and vehicle circulation, and service vehicle access, circulation and loading would be developed and addressed as part of these future applications over each individual proposed lot.

## 4.0 DEVELOPMENT TRAFFIC

### 4.1. TRAFFIC GENERATION

In order to determine the traffic generation of the proposed service development, reference has been made to the Traffic Generation Data—2006–2017 recently published on the Queensland Government website (<https://data.qld.gov.au/dataset/traffic-generation-data-2006-2018>) which includes the recorded weekday trip generation rates for several industrial estates throughout Queensland.

A summary of the relevant data is provided in Table 4 below, which reveals the following average trip generation rates:

- Daily (weekday) trip generation: 5.55 trips / 100m<sup>2</sup> floor area
- Peak hour trip generation: 0.46 trips / 100m<sup>2</sup> floor area

Table 4: Summary of Trip Generation Data (Industrial Estates)

Year	Land use	Suburb	Local Government Area	Variable Units	Variable Value	Average Weekday Volume	Weekday trips / 100m2	Weekday Peak Hour Start	Weekday Peak Hour End	Weekday Peak Volume	Weekday Peak Hour trips / 100m2
2008	Industrial Estate	WILLAWONG	Brisbane City	Floor Area	27369	1357	4.96	7:45:00	8:45:00	112	0.41
2008	Industrial Estate	WILLAWONG	Brisbane City	Floor Area	51873	1231	2.37	14:15:00	15:15:00	89	0.17
2008	Industrial Estate	ACACIA RIDGE	Brisbane City	Floor Area	38739	1018	2.63	7:30:00	8:30:00	85	0.22
2008	Industrial Estate	ACACIA RIDGE	Brisbane City	Floor Area	74517	1506	2.02	7:30:00	8:30:00	160	0.21
2008	Industrial Estate	HEMMANT	Brisbane City	Floor Area	42219	1423	3.37	14:45:00	15:45:00	83	0.20
2008	Industrial Estate	ACACIA RIDGE	Brisbane City	Floor Area	28089	2070	7.37	13:15:00	14:15:00	167	0.59
2008	Industrial Estate	ACACIA RIDGE	Brisbane City	Floor Area	51235	3055	5.96	16:30:00	17:30:00	171	0.33
2008	Industrial Estate	ACACIA RIDGE	Brisbane City	Floor Area	64099	2054	3.20	11:45:00	12:45:00	130	0.20
2008	Industrial Estate	ACACIA RIDGE	Brisbane City	Floor Area	58009	2338	4.03	13:15:00	14:15:00	163	0.28
2008	Industrial Estate	ROCKLEA	Brisbane City	Floor Area	8806	804	9.13	15:45:00	16:45:00	50	0.57
2008	Industrial Estate	RICHLANDS	Brisbane City	Floor Area	55383	1958	3.54	7:45:00	8:45:00	184	0.33
2008	Industrial Estate	WACOL	Brisbane City	Floor Area	17771	1021	5.75	15:30:00	16:30:00	91	0.51
2008	Industrial Estate	BANYO	Brisbane City	Floor Area	18339	869	4.74	15:15:00	16:15:00	79	0.43
2008	Industrial Estate	LARAPINTA	Brisbane City	Floor Area	83588	4101	4.91	13:00:00	14:00:00	378	0.45
2008	Industrial Estate	HILLCREST	Logan City	Floor Area	23855	2777	11.64	15:45:00	16:45:00	290	1.22
2008	Industrial Estate	EAGLE FARM	Brisbane City	Floor Area	38659	1699	4.39	7:45:00	8:45:00	175	0.45
2008	Industrial Estate	LOGANHOLME	Logan City	Floor Area	13234	1055	7.97	6:45:00	7:45:00	89	0.67
2008	Industrial Estate	LOGANHOLME	Logan City	Floor Area	13834	565	4.08	15:15:00	16:15:00	56	0.40
2008	Industrial Estate	CRESTMead	Logan City	Floor Area	415293	12212	2.94	15:00:00	16:00:00	1021	0.25
2009	Industrial Estate	TINGALPA	Brisbane City	Floor Area	24917	1395	5.60	12:15:00	13:15:00	138	0.55
2009	Industrial Estate	BRENDALE	Moreton Bay Regional	Floor Area	28004	1454	5.19	11:45:00	12:45:00	128	0.46
2009	Industrial Estate	TINGALPA	Brisbane City	Floor Area	28603	2591	9.06	16:15:00	17:15:00	238	0.83
2009	Industrial Estate	HEMMANT	Brisbane City	Floor Area	11173	845	7.56	15:00:00	16:00:00	64	0.57
2009	Industrial Estate	SLACKS CREEK	Logan City	Floor Area	17654	870	4.93	11:45:00	12:45:00	79	0.45
2009	Industrial Estate	MEADOWBROOK	Logan City	Floor Area	67597	3810	5.64	7:45:00	8:45:00	323	0.48
2009	Industrial Estate	YATALA	Gold Coast City	Floor Area	24846	1030	4.15	14:15:00	15:15:00	75	0.30
2009	Industrial Estate	SALISBURY	Brisbane City	Floor Area	15780	1304	8.26	15:45:00	16:45:00	92	0.58
2009	Industrial Estate	SLACKS CREEK	Logan City	Floor Area	13867	1403	10.12	15:15:00	16:15:00	112	0.81
						<b>AVERAGE</b>	<b>5.55</b>			<b>AVERAGE</b>	<b>0.46</b>

Source: <https://data.qld.gov.au/dataset/traffic-generation-data-2006-2018/resource/73079dc1-c34e-44cf-9e9a-8acb13591c1b>

As previously noted, the subject proposal is for the subdivision of the subject site, with the proposed lots ultimately intended to be used for industrial uses. Future development applications will necessarily be lodged prior to the development of the proposed lots, and the proposed floor area for each lot would be determined as part of these future applications over each individual proposed lot.

Notwithstanding this, a high level assessment of the potential traffic generation of the site has been undertaken, assuming a plot ratio of 45% which is recommended as a guide in Chapter 3 of the Department of Main Roads' Road Planning and Design Manual – 1<sup>st</sup> Edition, noting that “considerable space has to be devoted to parking, servicing and manoeuvring” within industrial developments.

As previously noted, the northern section will have a total lot area of 39,915m<sup>2</sup>, and we are advised that the southern section will have a usable lot area (i.e. flood free area) of approximately 5,650m<sup>2</sup>. This results in the following trip generation forecasts:

- Northern Section (proposed development):
  - 39,915m<sup>2</sup> x 0.45 (plot ratio) x 5.55 trips / day / 100m<sup>2</sup> = 997 trips per day
  - 39,915m<sup>2</sup> x 0.45 (plot ratio) x 0.46 trips / hour / 100m<sup>2</sup> = 83 trips per hour (peak hour)
- Southern Section (proposed development):
  - 5,650m<sup>2</sup> x 0.45 (plot ratio) x 5.55 trips / day / 100m<sup>2</sup> = 141 trips per day
  - 5,650m<sup>2</sup> x 0.45 (plot ratio) x 0.46 trips / hour / 100m<sup>2</sup> = 12 trips per hour (peak hour)



However, it is important to note that the northern portion of the subject site currently accommodates the Aurizon Glenmore Depot, which comprises a number of industrial buildings. Based upon aerial imagery, it is estimated that the total GFA of these buildings is approximately 7,500m<sup>2</sup>. Applying the trip generation rates previously outlined, the estimated trip generation of the existing use on the subject site is therefore as follows:

- Northern Section (existing use)
  - 7,500m<sup>2</sup> x 5.55 trips / day / 100m<sup>2</sup> = 416 trips per day
  - 7,500m<sup>2</sup> x 0.46 trips / hour / 100m<sup>2</sup> = 35 trips per hour (peak hour)

The net forecast trip generation volumes for the northern and southern portions of the proposed development are therefore as follows:

- Northern Section (net traffic generation of proposal):
  - 581 trips per day
  - 48 trips per hour (peak hour)
- Southern Section (net traffic generation of proposal):
  - 141 trips per day
  - 12 trips per hour (peak hour)
- Total net traffic generation of proposal:
  - 722 trips per day
  - 60 trips per hour (peak hour)

The net traffic generation of the development (i.e. 60 trips in the peak hour or one (1) additional vehicle trip per minute, on average, during the peak hours) is low, and once distributed onto the surrounding road network is unlikely to have any material impact upon the performance of the road network from a safety or a capacity perspective.

Notwithstanding this, detailed analyses of the subject intersections have been undertaken in order to assess the impact of the Project on the surrounding road network. The assumptions applied to complete these analyses, and the results of the analyses, are outlined in the following sections.

## 4.2. TRAFFIC DISTRIBUTION

A summary of the estimated distribution of traffic from the development provided in **Table 5** below.

**Table 5 Proposed Development Traffic Distribution**

AM PEAK	PM PEAK
<b>ARRIVAL / DEPARTURE SPLIT</b>	
<ul style="list-style-type: none"> <li>• 70% traffic inbound to development; and</li> <li>• 30% traffic outbound from development.</li> </ul>	<ul style="list-style-type: none"> <li>• 30% traffic inbound to development; and</li> <li>• 70% traffic outbound from development.</li> </ul>
<b>TRIP DISTRIBUTION</b>	
<ul style="list-style-type: none"> <li>• 20% via Knight Street (north), with 10% using Park Street intersection and 10% using proposed site access intersection</li> <li>• 30% via Bruce Highway (north)</li> <li>• 40% via Bruce Highway (south)</li> <li>• 10% via Horace Street (south-west)</li> </ul>	<ul style="list-style-type: none"> <li>• 20% via Knight Street (north), with 10% using Park Street intersection and 10% using proposed site access intersection</li> <li>• 30% via Bruce Highway (north)</li> <li>• 40% via Bruce Highway (south)</li> <li>• 10% via Horace Street (south-west)</li> </ul>

## 4.3. DEVELOPMENT TRAFFIC VOLUMES ON THE NETWORK

Based on the information outlined above and the assumptions applied, an estimate of the additional development traffic volumes at the subject intersections has been prepared, with a summary of the resultant forecast AM and PM peak hour development traffic volumes provided in **Figure 26** and **Figure 27** over page.

As shown in these diagrams, the additional turning movement volumes forecast to be generated on the surrounding road network as a result of the proposal are very low, and unlikely to have any notable impact upon the performance of these intersections from either a safety or a capacity perspective. Notwithstanding this, further assessment of these intersections has been undertaken, with the results summarised in the following section.

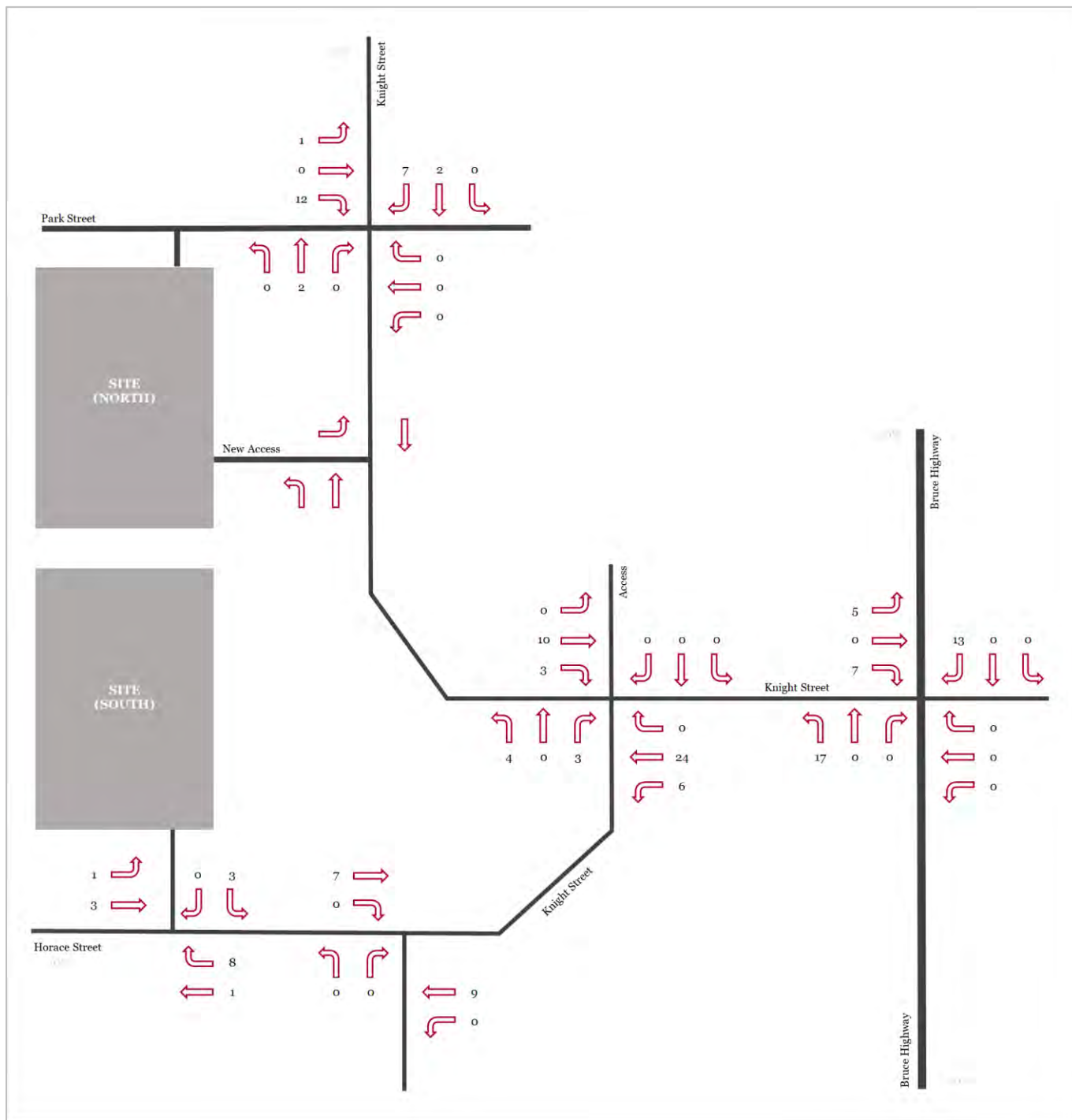


Figure 26 Forecast Development Turning Movement Volumes (AM Peak Hour)

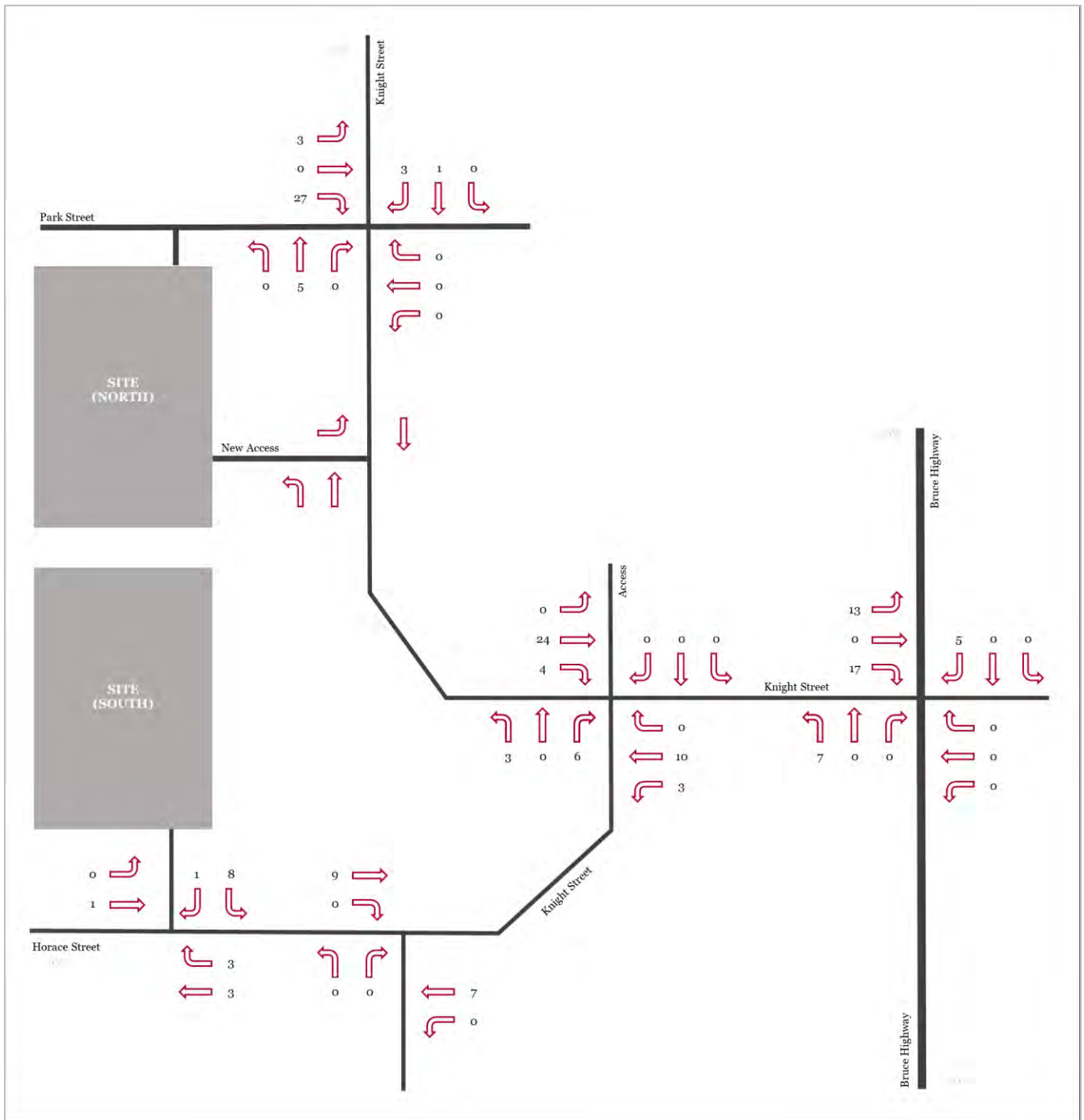


Figure 27 Forecast Development Turning Movement Volumes (PM Peak Hour)



## 5.0 IMPACT ASSESSMENT AND MITIGATION

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### 5.1. WITH AND WITHOUT DEVELOPMENT TRAFFIC VOLUMES

#### 5.1.1 ROAD LINK VOLUMES

As previously noted, the total forecast net traffic generation of the proposal (once all lots are developed) is as follows:

- 722 trips per day
- 60 trips per hour (peak hour)

Once distributed onto the local road network (which is currently operating within acceptable limits), the impact of the proposed development upon existing road link volumes is anticipated to be negligible.

#### 5.1.2 INTERSECTION VOLUMES

For the purpose of this assessment, it has been assumed that the year of completion of the proposed development is 2022, and the 10 year design horizon is therefore 2032.

In order to forecast future background turning movement volumes at the subject intersections, a 1% per annum compound growth factor has been applied (noting that the actual average 10 year growth rate on the Bruce Highway was identified to be -0.08%, therefore this is a conservative assumption).

The post development traffic volumes at the subject intersections were established by combining the forecast background traffic volumes with the calculated development traffic volumes identified in **Section 4.3**, with the resultant volumes shown in **Figure 28** to **Figure 31** below.

In accordance with standard practice, the local intersections (i.e. Intersections 1, 2, and 4) have been assessed for the forecast 10 year design horizon (i.e. 2032), and the State-controlled intersection (i.e. Intersection 3) has been assessed for the **forecast year of completion of the development as recommended in TMR's Guide to Traffic Impact Assessment**, December 2018 (i.e. 2022).

The results of these analyses are outlined in the following sections.

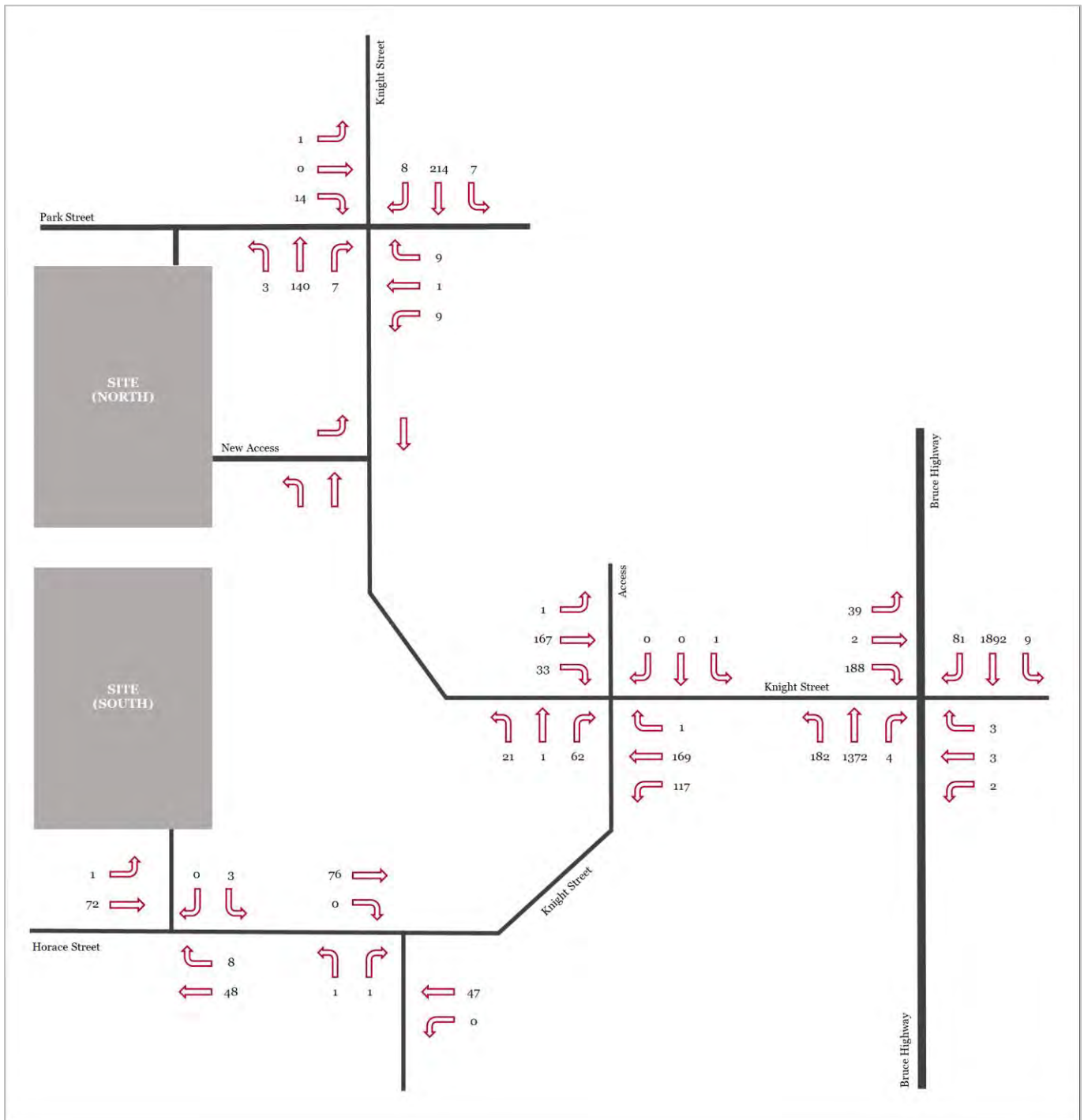


Figure 28 Forecast Post Development Turning Movement Volumes (2022 AM Peak Hour)

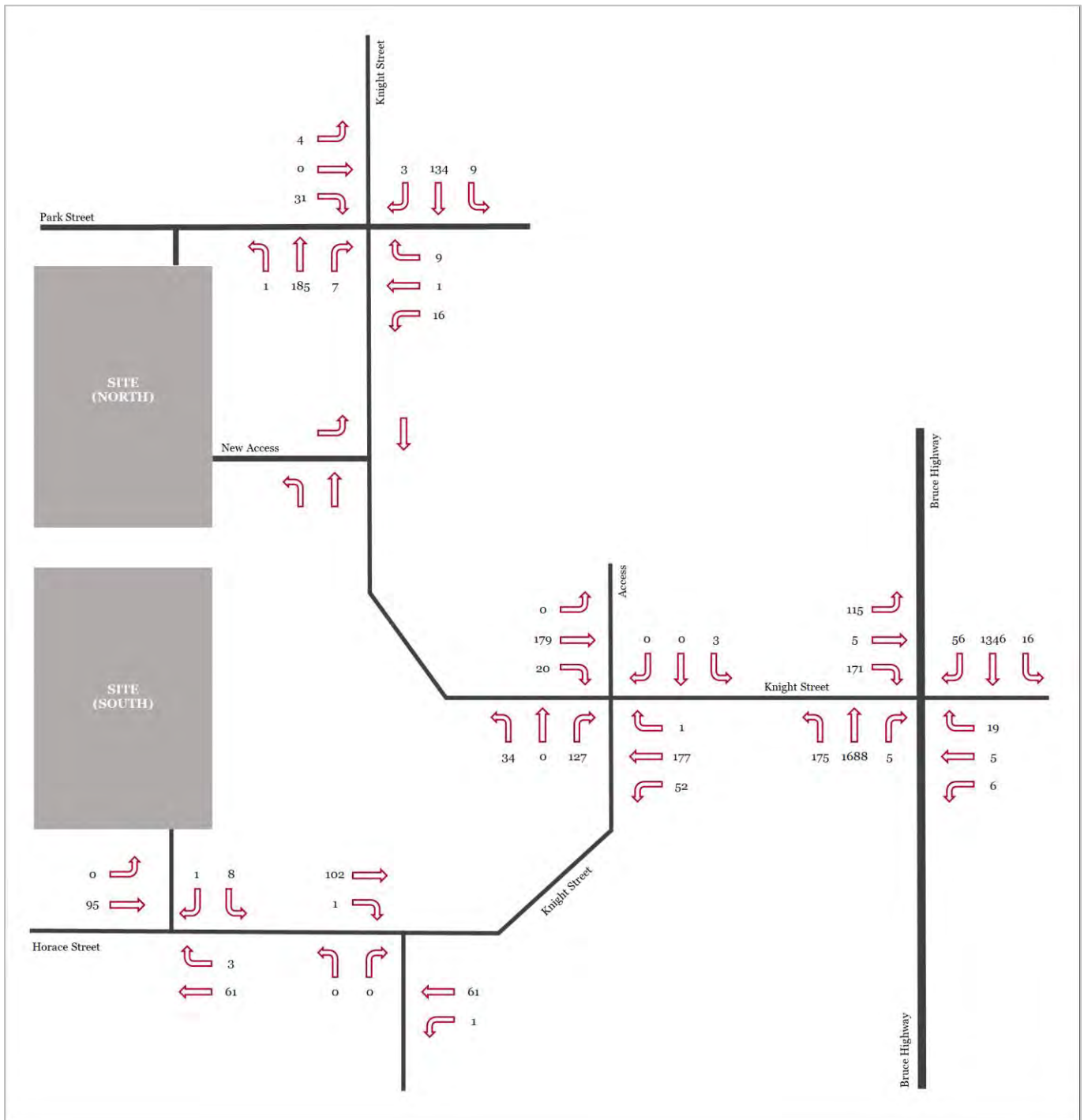


Figure 29 Forecast Post Development Turning Movement Volumes (2022 PM Peak Hour)



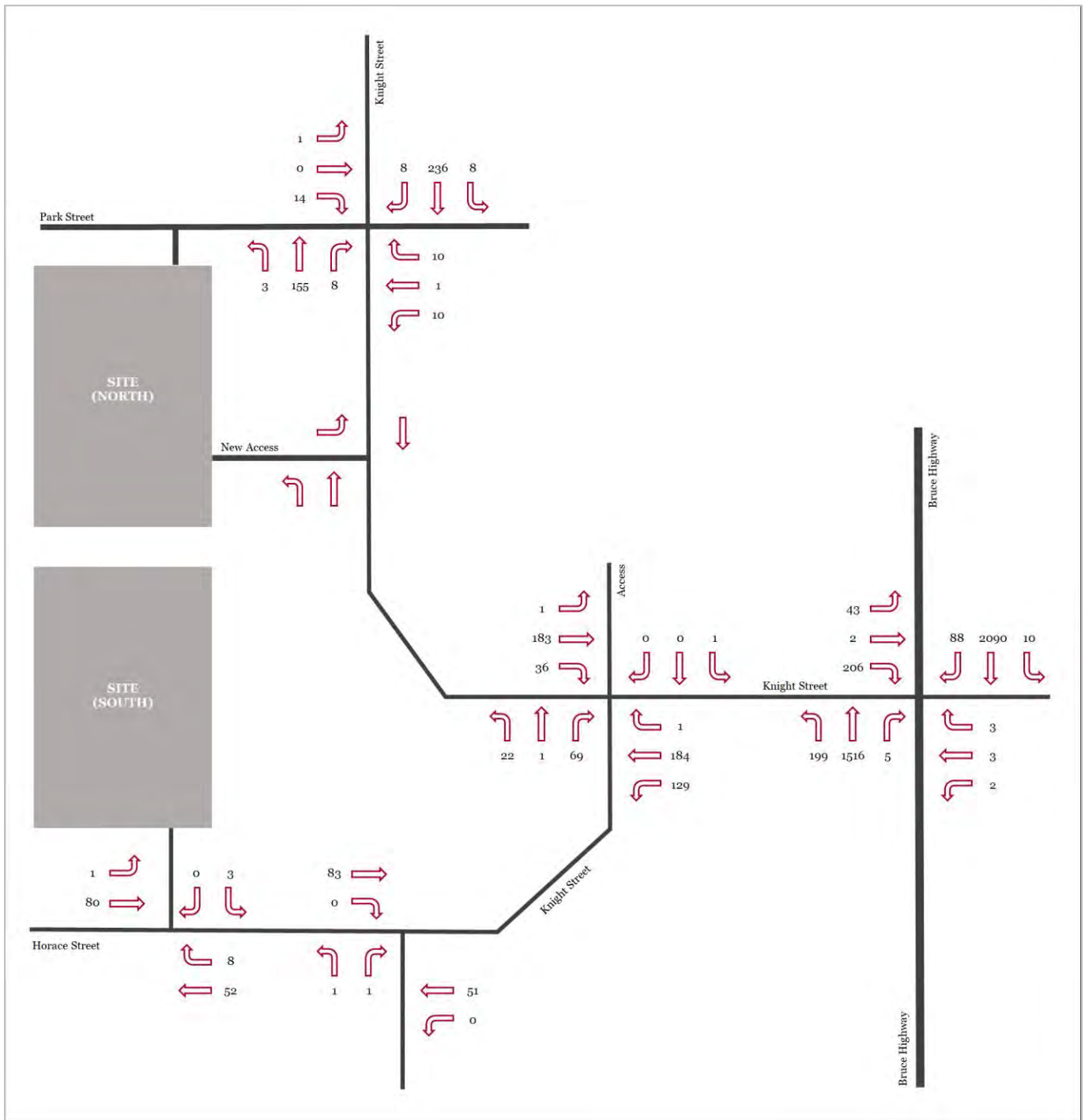


Figure 30 Forecast Post Development Turning Movement Volumes (2032 AM Peak Hour)

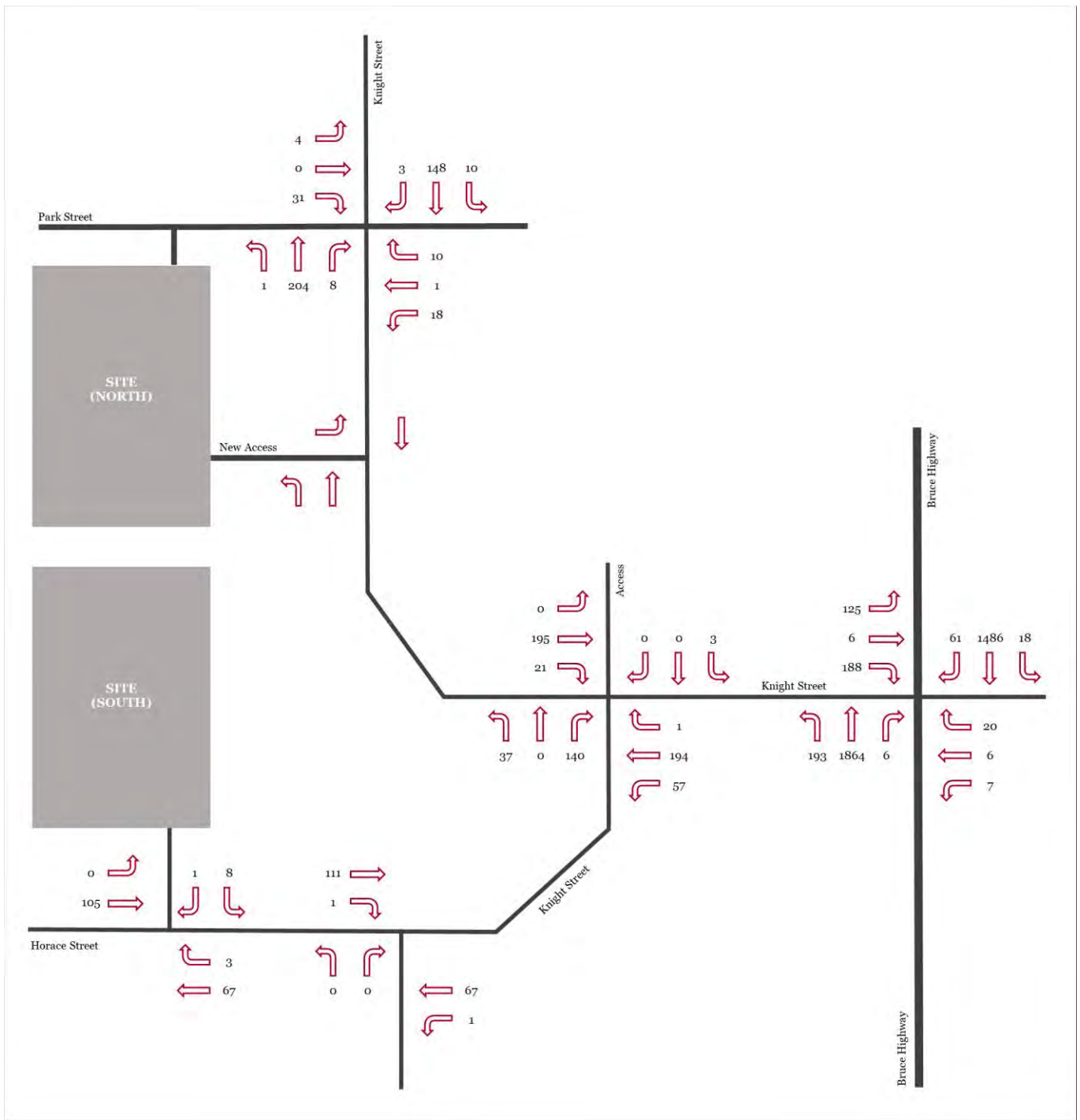


Figure 31 Forecast Post Development Turning Movement Volumes (2032 PM Peak Hour)

## 5.2. ROAD SAFETY IMPACT ASSESSMENT AND MITIGATION

Based on the traffic volumes and speeds on the relevant sections of the surrounding road network, it was determined that the completion of a lower order road safety assessment would be sufficient to establish the existing and post development road safety risks relevant to the Project, in accordance with Section 9.3.3 of TMR’s Guide to Traffic Impact Assessment (GTIA), December 2018.

To establish the level of risk regarding the road safety considerations identified in Section 2.6.1, the safety risk score matrix from TMR’s GTIA as shown in Figure 32 was utilised, with the results of the road safety risk assessment summarised in Table 6.

**Figure 9.3.2(a) – Safety risk score 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

L: Low risk  
M: Medium risk  
H: High risk

Figure 32 Adopted Risk Score Matrix

[Source: TMR GTIA]

Table 6 Road Safety Assessment

Risk Item	Existing / Pre-Development			Post Development			Mitigation Measure	Post Development & Mitigation		
	Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
The existing configurations of the priority-controlled (local) intersections analysed (Intersections 1, 2, and 4) are such that whilst wider lanes are generally provided on the major intersection approaches (i.e. Knight Street and Horace Street), auxiliary turn lanes from the major intersection approaches to the minor approaches are generally not provided. This could result in nose-to-tail accidents.	Unlikely	Medical Treatment	Medium	Unlikely	Medical Treatment	Medium	NA. The through volumes and turning movement volumes at these intersections are low, and it has been observed that the current intersection configurations operate acceptably, without any notable safety or capacity issues. The additional traffic volumes generated by the proposed development are very low, therefore no mitigation measure is considered to be required to support the proposed development.	Unlikely	Medical Treatment	Medium



<p>Sight distances to the north of the Park Street intersection on Knight Street may be impeded by trees on both sides of Knight Street. This could result in an angle multi-vehicle accident.</p>	<p>Unlikely</p>	<p>Hospitalisation</p>	<p>Medium</p>	<p>Unlikely</p>	<p>Hospitalisation</p>	<p>Medium</p>	<p>NA. It is recommended that the trees on the both sides of Knight Street to the north of Park Street be monitored and trimmed as required by Council, to ensure that visibility for traffic exiting Park Street (east and west) to the north is not compromised.</p>	<p>Unlikely</p>	<p>Hospitalisation</p>	<p>Medium</p>
<p>The separation between subject intersections 2 and 3 (i.e. the Knight Street (east – west) / Knight Street (south) intersection and the Knight Street / Bruce Highway intersection) is limited, at approximately 50m only (measured from the centre of the intersections). This could result in conflict between turning movements at these intersections.</p>	<p>Unlikely</p>	<p>Hospitalisation</p>	<p>Medium</p>	<p>Unlikely</p>	<p>Hospitalisation</p>	<p>Medium</p>	<p>NA. Given the relatively low turning movement volumes at these intersections, any safety or capacity risks as a result of this limited separation are considered to be minimal. The additional traffic volumes generated by the proposed development are very low, therefore no mitigation measure is considered to be required to support the proposed development.</p>	<p>Unlikely</p>	<p>Hospitalisation</p>	<p>Medium</p>
<p>Veh'S Opposite Approach: Head On on Knight Street (Recorded Crash 292737)</p>	<p>Rare</p>	<p>Hospitalisation</p>	<p>Medium</p>	<p>Rare</p>	<p>Hospitalisation</p>	<p>Medium</p>	<p>NA. There has only been one (1) crash of this type recorded in the past 5 years (2014 – 2018). The additional traffic volumes generated by the proposed development are very low, therefore this risk is not expected to be affected by the proposed development, and no mitigation works are considered to be required.</p>	<p>Rare</p>	<p>Hospitalisation</p>	<p>Medium</p>
<p>Veh'S Adjacent Approach: Thru-Right at Bruce Highway / Knight Street Intersection</p>	<p>Rare</p>	<p>Hospitalisation</p>	<p>Medium</p>	<p>Rare</p>	<p>Hospitalisation</p>	<p>Medium</p>	<p>NA. There has only been one (1) crash of this type recorded in the past 5 years (2014 – 2018). The additional traffic volumes generated by the proposed development are very low, therefore this risk is not expected to be affected by the proposed development, and no mitigation works are considered to be required.</p>	<p>Rare</p>	<p>Hospitalisation</p>	<p>Medium</p>
<p>Veh'S Same Direction: Rear End at Bruce Highway / Knight Street Intersection</p>	<p>Rare</p>	<p>Medical Treatment</p>	<p>Low</p>	<p>Rare</p>	<p>Medical Treatment</p>	<p>Low</p>	<p>NA. There has only been one (1) crash of this type recorded in the past 5 years (2014 – 2018). The additional traffic volumes generated by the proposed development are very low, therefore this risk is not expected to be affected by the proposed development, and no mitigation works are considered to be required.</p>	<p>Rare</p>	<p>Medical Treatment</p>	<p>Low</p>

The results above indicate that the proposed development will have no notable impact upon the existing safety risks on the local road network, with all risk scores remaining at low or medium.

### 5.3. ACCESS AND FRONTAGE IMPACT ASSESSMENT AND MITIGATION

As previously noted, access to the site and the proposed lots within the subdivision will be as follows:

#### Northern Section

1. Via a left-in, left-out access intersection onto Knight Street approximately 160m to the north-west of the Bruce Highway and 185m to the south of the Park Street intersection; and
2. Via the extension of Park Street to the south, to connect to the proposed internal road network.

#### Southern Section

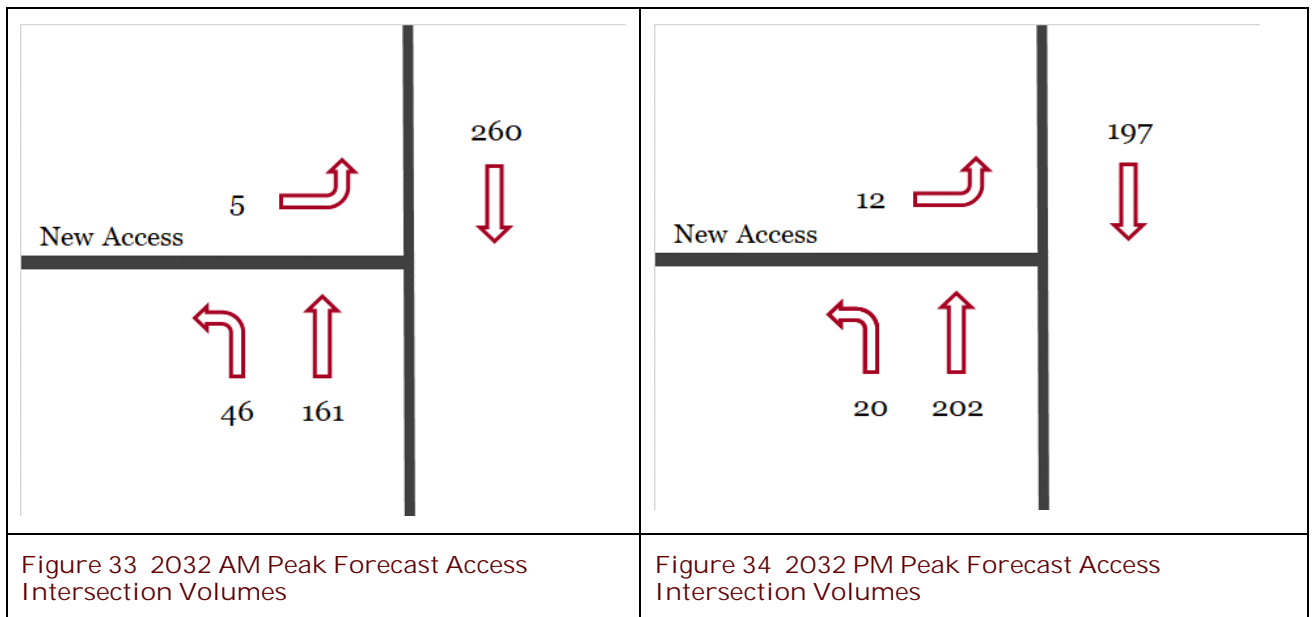
3. Via an all movements driveway along the southern boundary of the site, the location of which is to be determined as part of a future development application over this land parcel.

No vehicular connection is proposed to be provided between the northern and southern sections of the site.

In relation to each of these accesses, the following points are made:

1. The traffic volumes forecast to use the proposed new left-in, left-out access intersection onto Knight Street are very low, as shown in the figures below. **Figure 33** and **Figure 34** below show the forecast turning movement volumes at this intersection at the 2032 design horizon, based upon the aforementioned traffic generation and distribution assumptions. Given the movements at this intersection will be restricted to left-in and left-out only, and the forecast turning movement volumes are very low, no auxiliary turn lane treatments are considered to be required on Knight Street at this new access intersection.

As previously noted, sightlines on Knight Street in proximity to the proposed access intersection location are essentially unrestricted. Adequacy of sightlines would be confirmed as part of the detailed design of the proposed access intersection, which would be undertaken at Operational Works stage.



2. Given the movement restrictions at the proposed new access intersection onto Knight Street, a reasonable proportion of the traffic generated by the northern section of the development would use the proposed extension of Park Street and the Knight Street / Park Street intersection to access to broader road network.

Accordingly, a turn warrants assessment has been undertaken of this intersection for the 2032 design horizon (critical AM peak period), based upon the aforementioned traffic generation and distribution assumptions.

The results of this assessment are shown in **Figure 35** over page, and reveal that the forecast turning movement volumes fall well within the threshold for basic turn treatments from Knight Street into Park Street (west). However given the very low traffic volumes turning to/from Park Street (west), and the limited through volumes on Knight Street, the existing intersection configuration is considered to be satisfactory to cater for the forecast traffic volumes with the development traffic at the 10 year design horizon.

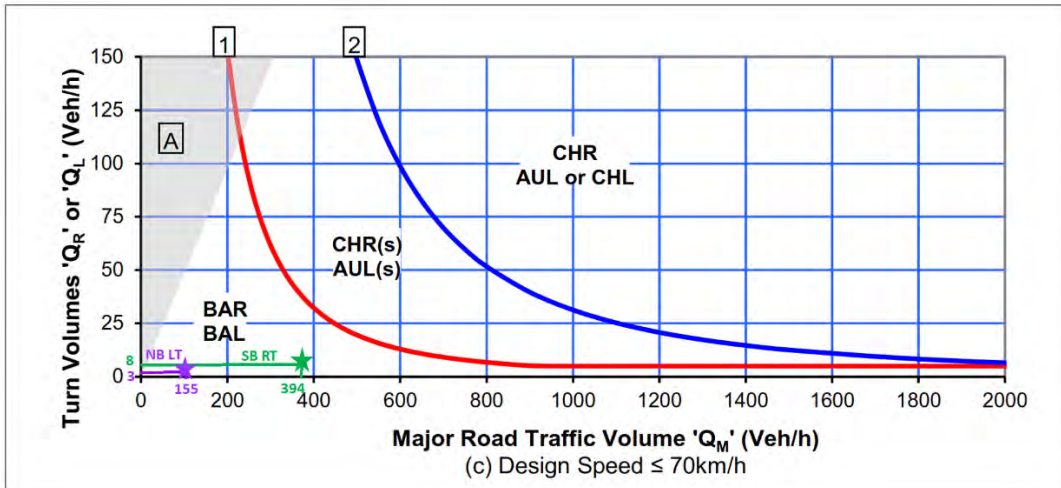


Figure 35 Results of Turn Warrants Assessment (Knight Street into Park Street (west))

- The southern portion of the site will be accessed via an all movements driveway along the southern boundary of the site onto Horace Street, the location of which is to be determined as part of a future development application over this land parcel. As shown in the traffic volume diagrams provided as Figure 28 to Figure 31, the forecast turning movement volumes to/from the site, and the through volumes on Horace Street, are very low. Accordingly, a standard crossover will more than adequately accommodate the traffic accessing this southern portion of the development.

The detail of this access driveway, including its location, configuration, and sight distances, would be addressed at development application stage for any future development on this lot.

#### 5.4. INTERSECTION DELAY IMPACT ASSESSMENT AND MITIGATION

The estimated post development traffic volumes were utilised to undertake detailed intersection analysis (using SIDRA software) to establish the operational performance of the subject intersections in proximity to the site, both without and with the development traffic.

A summary of the results of the analysis of the post development traffic conditions at the intersection is provided in Table 7 below, with further detailed results included for reference in Appendix H.

In accordance with standard practice, the local intersections (i.e. Intersections 1, 2, and 4) have been assessed for the forecast 10 year design horizon (i.e. 2032), and the State-controlled intersection (i.e. Intersection 3) has been assessed for the forecast year of completion of the development as recommended in TMR’s Guide to Traffic Impact Assessment, December 2018 (i.e. 2022), in order to assess the increase in aggregate delays at this intersection attributable to the proposed development traffic.

The results of this assessment (as summarised in Table 7 below) reveal that the proposed development will have a negligible impact upon the performance of the four (4) intersections assessed, and all intersections (under their existing configuration) are predicted to be operating within acceptable limits of operation with the additional traffic expected to be generated by the proposed development.

The results summarised in Table 8 (and shown in Figure 36 to Figure 39 following) reveal that the modelled increase in aggregate delays at the Bruce Highway / Knight Street intersection as a result of the proposed development at the forecast year of opening is 4.9%. This is below the 5% threshold defined in the GTIA, therefore considered to be negligible from a transport planning perspective.

In light of the above, the provision of upgrade treatments is not considered to be warranted as part of this subdivision application.



**Table 7 SIDRA Results – Pre and Post Development**

Analysis Scenario		Intersection Degree of Saturation	Level of Service	Intersection Average Delay (sec)	Maximum 95 <sup>th</sup> Percentile Back of Queue Length (m)
<b>Intersection 1: Park Street / Knight Street intersection</b>					
2032 AM Peak	Pre Development	12.3%	LOS A*	0.6	0.5
	Post Development	12.8%	LOS A*	0.9	0.5
2032 PM Peak	Pre Development	10.3%	LOS A*	0.8	0.7
	Post Development	10.5%	LOS A*	1.2	1.1
<b>Intersection 2: Knight Street (east-west) / Knight Street (south) intersection</b>					
2032 AM Peak	Pre Development	13.9%	LOS A*	2.5	3.6
	Post Development	15.4%	LOS A*	2.5	4.0
2032 PM Peak	Pre Development	24.7%	LOS A*	2.9	7.4
	Post Development	27.3*	LOS A*	3.0	8.4
<b>Intersection 3: Bruce Highway / Knight Street intersection</b>					
2022 AM Peak	Pre Development	83.3%	LOS B <sup>#</sup>	15.1	239.1
	Post Development	82.0%	LOS B <sup>#</sup>	16.4	261.9
2022 PM Peak	Pre Development	72.2%	LOS A <sup>#</sup>	14.2	186.2
	Post Development	75.5%	LOS B <sup>#</sup>	14.8	186.6
<b>Intersection 4: Horace Street / Dowling Street intersection</b>					
2032 AM Peak	Pre Development	3.9%	LOS A*	0.2	0.0
	Post Development	4.2%	LOS A*	0.1	0.0
2032 PM Peak	Pre Development	5.2%	LOS A*	0.1	0.0
	Post Development	5.6%	LOS A*	0.1	0.0

\* Unsignalised Intersection: LOS value identified is for worst movement at the intersection, not the overall intersection.

# Signalised Intersection: LOS value identified is for the overall intersection.

**Table 5 Summary of Aggregate Delays**

	Pre Development	Post Development	% Increase
2022 AM Peak Hour	943.3	1006.0	
2022 PM Peak Hour	841.9	867.0	
<b>TOTAL</b>	<b>1785.2</b>	<b>1873.0</b>	<b>4.9%</b>

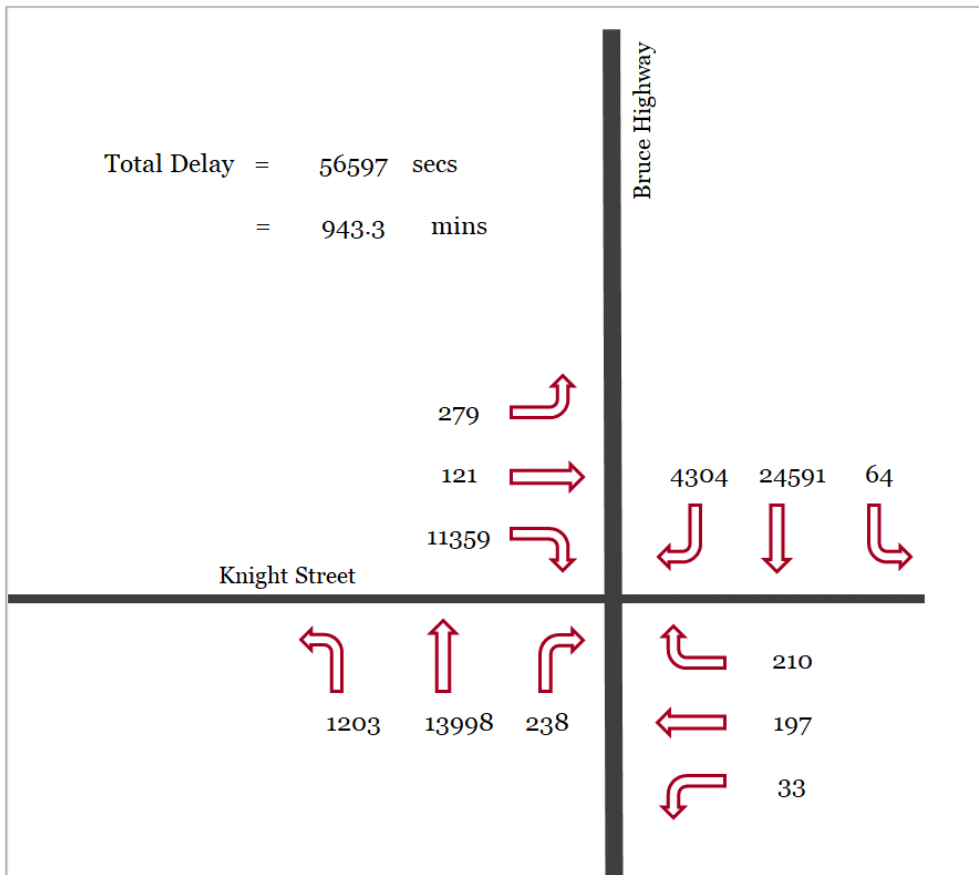


Figure 36 Summary of Aggregate Delays (2022 AM Peak – Without Development)

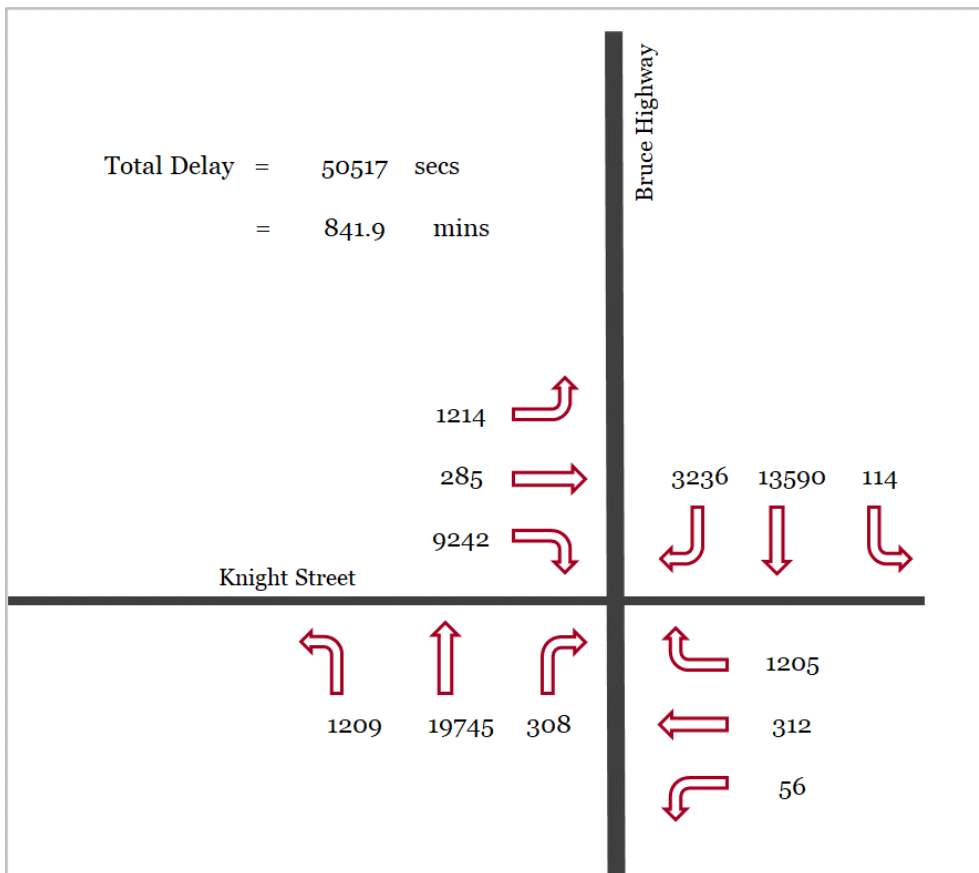


Figure 37 Summary of Aggregate Delays (2022 PM Peak – Without Development)

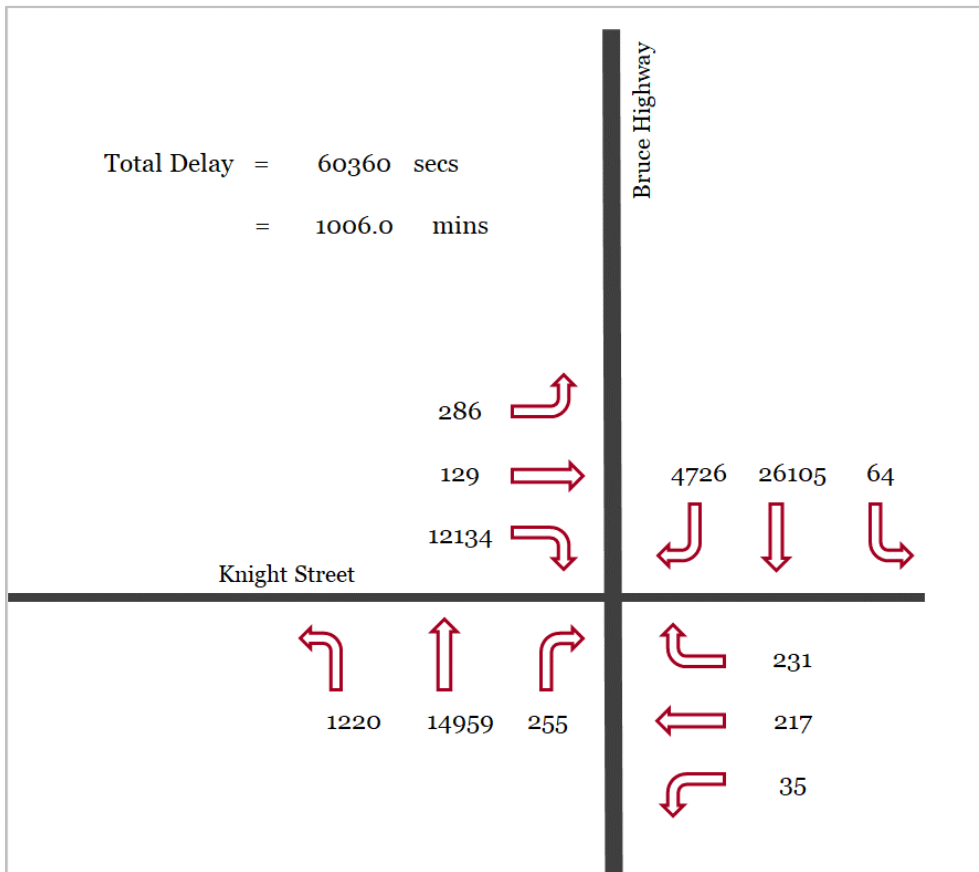


Figure 38 Summary of Aggregate Delays (2022 AM Peak – With Development)

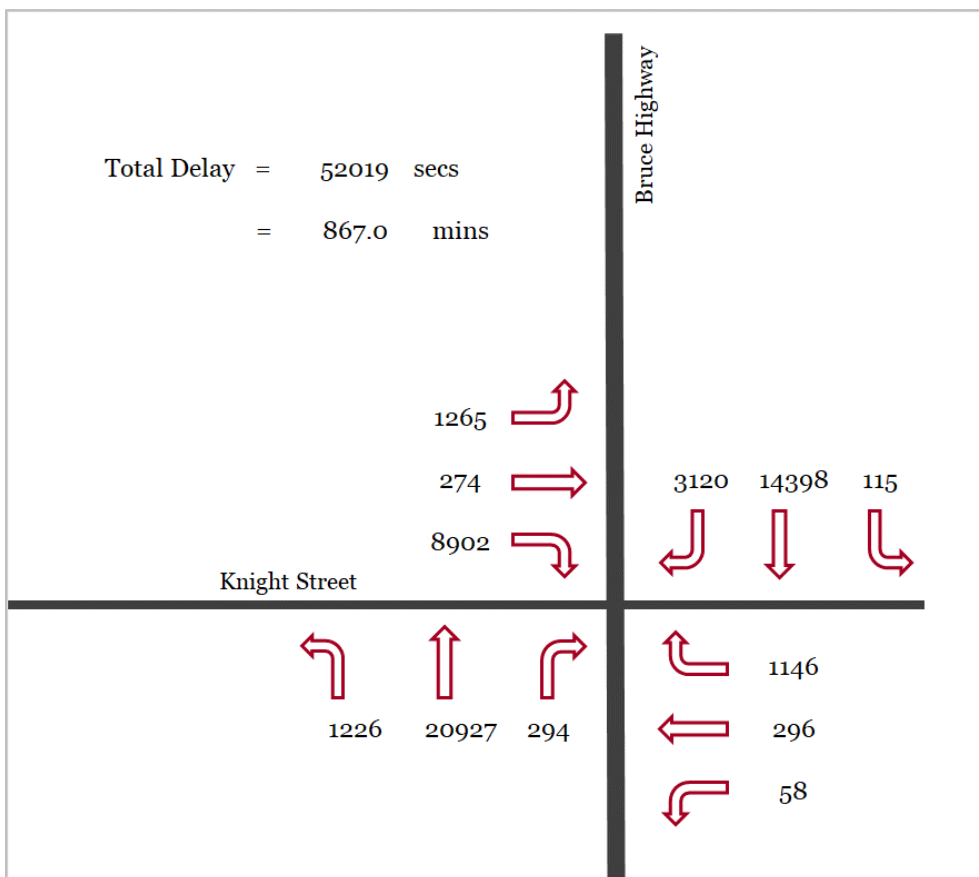


Figure 39 Summary of Aggregate Delays (2022 PM Peak – With Development)



## 5.5. ROAD LINK CAPACITY ASSESSMENT AND MITIGATION

As previously noted, the total forecast net traffic generation of the proposal (once all lots are developed) is as follows:

- 722 trips per day
- 60 trips per hour (peak hour)

Once distributed onto the local road network (which is currently operating within acceptable limits), the impact of the proposed development upon existing road link volumes is anticipated to be negligible, therefore no mitigation measures are required to the road links which comprise the local road network to support the proposed development.

## 5.6. PAVEMENT IMPACT ASSESSMENT AND MITIGATION

The subject proposal is for the subdivision of the subject site, with the proposed lots ultimately intended to be used for industrial uses. Future development applications will necessarily be lodged prior to the development of the proposed lots, and a detailed pavement impact assessment (if required) would be undertaken as part of these future applications.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

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### 6.1. SUMMARY OF IMPACTS AND MITIGATION MEASURES PROPOSED

#### 6.1.1. SITE ACCESS AND INTERNAL ROAD NETWORK

Access to the site and the proposed lots within the subdivision is proposed as follows:

##### Northern Section

1. Via a left-in, left-out access intersection onto Knight Street approximately 160m to the north-west of the Bruce Highway and 185m to the south of the Park Street intersection; and
2. Via the extension of Park Street to the south, to connect to the proposed internal road network.

##### Southern Section

3. Via an all movements driveway along the southern boundary of the site, the location of which is to be determined as part of a future development application over this land parcel.

No vehicular connection is proposed to be provided between the northern and southern sections of the site.

The proposed internal road within the northern section of the site has a road reserve width of 25m with a nominal carriageway width of 13m, in accordance with Table D1.06.11 (Industrial Access – Deemed to Comply Requirements) **in the Capricorn Municipal Development Guidelines, which is referenced in Council's Planning Scheme.**

A turning head is proposed at the western end of Park Street to allow vehicles to turn around without needing to enter the subdivision (if necessary), and a cul de sac is proposed at the south-western corner of the site where the proposed internal road terminates. Both of these cul de sacs have a diameter of approximately 30m, which is adequate to accommodate the u-turn manoeuvre of large multi-combination vehicles.

#### 6.2.2 INTERNAL SITE FACILITIES

The subject proposal is for the subdivision of the subject site, with the proposed lots ultimately intended to be used for industrial uses. Future development applications will necessarily be lodged prior to the development of the proposed lots, and the detail of car parking arrangements, queuing and vehicle circulation, and service vehicle access, circulation and loading would be developed and addressed as part of these future applications over each individual proposed lot.

#### 6.2.3 TRAFFIC IMPACTS

The traffic analyses undertaken consider the operation of the following intersections in proximity to the site, both without, and with the traffic expected to be generated by future development on the lots proposed to be created under this application:

- The Park Street / Knight Street intersection;
- The Knight Street (east-west) / Knight Street (south) intersection;
- The Bruce Highway / Knight Street intersection;
- The Horace Street / Dowling Street intersection.

The results of the analyses reveal that the proposed development will have a negligible impact upon the performance of the four (4) intersections assessed, and all intersections (under their existing configuration) are predicted to be operating within acceptable limits of operation with the additional traffic expected to be generated by the proposed development.

Further, the results of the analyses reveal that the modelled increase in aggregate delays at the Bruce Highway / Knight Street intersection as a result of the proposed development at the forecast year of opening is 4.9%. This is below the 5% threshold defined in the GTIA, therefore considered to be negligible from a transport planning perspective.

In light of the above, the provision of upgrade treatments is not considered to be warranted as part of this subdivision application.

#### 6.2.4 RECOMMENDATIONS

In light of the information provided above, it is concluded that the proposal will have a minor impact on the adjacent road network and can therefore be recommended to be approved from a traffic engineering perspective.

## 6.2. CERTIFICATION STATEMENT AND AUTHORISATION

A copy of the RPEQ certification and authorisation statement covering this assessment is included for reference as **Appendix I**.



## APPENDIX A

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### Pre Lodgement Meeting Minutes



## PRELODGEEMENT MEETING

### MINUTES OF MEETING

#### MEETING DETAILS

**Date of Meeting:** Wednesday, 8<sup>th</sup> May 2019 – 11.00am

#### Council Attendees:

- Thomas Gardiner – Senior Planning Officer, Development Assessment
- Rod Lindsay – Development Engineer, Regional Services
- Rick Palmer – Senior Executive Industry Engagement - Advance Rockhampton
- Kristy Stenhouse – Development Support Officer, Development Assessment

#### Applicant Attendees:

- Andrew Batts – Aurizon
- Simon Daly – Aurizon

#### PROPOSAL:

**Address:** 33-53 Knight Street, Park Avenue

**Real Property Description:** Lots 2 & 3 on RP611882 and Lot 4 on SP134379

**Details of Proposal:** Reconfiguring a Lot (3 lots into 13 lots, new road and land for park purposes)

#### Issues identified by the Applicant for discussion:

- Level of assessment
- Suitability of proposed stormwater management concept
- Suitability of proposed parkland
- Suitability of proposed cul-de-sac and carriageway width
- Technical information required to support application

#### Supporting information/documentation provided by Applicant:

- Proposed plan
- Details of proposal

#### MINUTES

#### PLANNING ASSESSMENT:

**Defined Use:** Reconfiguring a Lot (one lot into thirteen lots)

**Planning Area/Zone:** Low Impact Industry Zone

**Type of Application Required:** Reconfiguration of Lot

**Level of Assessment:** Impact Assessable

## DEVELOPMENT ASSESSMENT:

- The proposal will trigger impact-assessment as the site is affected by the Creek Catchment Overlay (Planning Area 1). Public notification will be required and a final decision on the proposal is likely to be made at a full Council meeting.
- Referral to the Department of Transport and Main Roads will also be triggered due to proximity to the railway corridor and state-controlled road intersection.
- There may be difficulties with entering and exiting onto roads and it may be difficult for large vehicles to manoeuvre around on site. It was noted that some of the proposed lots have dual access which may be an option, however, consideration needs to be given to the amount of entry and exit points on a road and their proximity to other road intersections. A Traffic Impact Assessment report may be required to demonstrate safety with respect to vehicle movements.
- The applicant was asked to consider redesigning the proposal. While the proposed lots comply with the area and dimensional requirements in the planning scheme, practically, it may not work in regards to vehicular movements (i.e. trucks) internal to the site. Consideration should be given towards potentially reducing the lot yield to create wide allotments.
- Council is not likely to support the proposed parkland after brief consultation with the Parks Department. There are several existing parklands located in proximity to the subject site and surrounding urban areas which questions whether there is a planning need for another local park. The applicant was asked to consider any other potential uses for this allotment. Notwithstanding, Council can facilitate further consultation with the Parks Department if this is the only feasible use of the site.

## DEVELOPMENT ENGINEERING UNIT:

### Roadworks:

- Unsure of the need for the cul-de-sac road – the lots that it services can be accessed via other roads and are large enough to turn a vehicle around on site. It is acknowledged that there will need to be a maintenance access for the bio-retention basin. If cul-de-sac is to remain, you would need to demonstrate via swept paths that the narrower reserve could work safely and efficiently. Preference is to maintain CMDG Standards (Industrial Access – 13m carriageway in 25m reserve), however given the short length, if it could be demonstrated that there will be minimal traffic using this portion of road, Council may allow a slightly narrower reserve.
- Cul-de-sac would need to be minimum 15m radius to accommodate 19m semi-trailer.
- Knight Street is a B-Double route so ideally, the development (and swept paths) should cater to this.
- A Traffic Impact Assessment (TIA) is likely to be required as there may be a need to apply intersection treatments to the Knight Street intersections. Main concern is access / egress.
- May need to restrict the access from Knight Street to a left-in, left-out arrangement given the proximity of the intersection with the State-controlled Road. Also may depend on volumes and types of vehicles accessing the site. Park Street intersection could be all movements.

### Stormwater Drainage / Flooding:

- The proposed stormwater regime appears reasonable however an easement that encompasses the Q100 inundation area would be required for the overland flow path to ensure no filling or other construction occurred. Suitable calculations and cross sections of overland flow path demonstrating freeboard etc. would need to be submitted as part of a Stormwater Management Plan. Piping of the stormwater through the southern portion would also be an option.
- Electronic copy of MUSIC file required for stormwater quality.
- Council's current publically-available flood mapping shows the majority of the southern portion of the site being inundated during a Q100 local event. Council's most recent mapping shows that



this is not the case and that it is only the overland flowpath and the area around the upstream side of the culvert under Horace Street that is inundated. As such, there may be other options available for the southern portion of the lot.

- Council's Parks Department has advised that they are unlikely to accept the southern portion as park.
- Unsure of the reason for the existing easement from the south-western corner of the TMR site to the Horace Street culvert. This does not appear to follow the existing overland flowpath and Council's mapping system does not show any privately-owned stormwater pipes within this easement. May need to check with TMR.

**General:**

- Lot sizes should be able to accommodate a semi-trailer (or B-Double) entering and exiting in a forward gear. It is unlikely that the 1,000 m<sup>2</sup> lots will facilitate this however, as discussed in the meeting, two road frontages may allow for a delivery vehicle to drive through the site. Need to be mindful of creating too many accesses onto Knight Street. Another alternative would be to create a body corporate type arrangement so loading and unloading can occur within the roadway without Council being responsible for the safety aspects. The bio-retention basin would also be the Developer's responsibility under this arrangement.

**Infrastructure Charges (not including actual charges)**

The Adopted Infrastructure Charges are available to view on Council's Website. These are located in the Fees and Charges Section. Please see the link below.

<http://www.rockhamptonregion.qld.gov.au/Planning-and-Building/Infrastructure-Charges>

**OUTCOME SUMMARY:**

The applicant has been asked to review the layout and design of the proposed reconfiguration. While compliance is demonstrated with the applicable codes, Council has concerns about the practicality of the lot design in relation to vehicle movements and safety.

**ADVISORY NOTE:**

These notes have been provided as informal and non binding comments and are intended for use as a guide only in providing feedback on the proposal presented to the Unit. These discussions do not bind or fetter the Council in any way in exercising its statutory responsibilities in assessing any development application which might be made to the Council.

Link to DA Forms

<https://planning.dilgp.qld.gov.au/planning/resources>

Link to Planning Schemes

<http://www.rockhamptonregion.qld.gov.au/Planning-and-Building/Planning-Schemes-and-Studies>

Link to Development Assessment Fees

<http://www.rockhamptonregion.qld.gov.au/About-Council/Finance-Rates-and-Budget/Fees-and-Charges>

Development Incentives

<http://www.rockhamptonregion.qld.gov.au/Planning-and-Building/Development-Incentives>

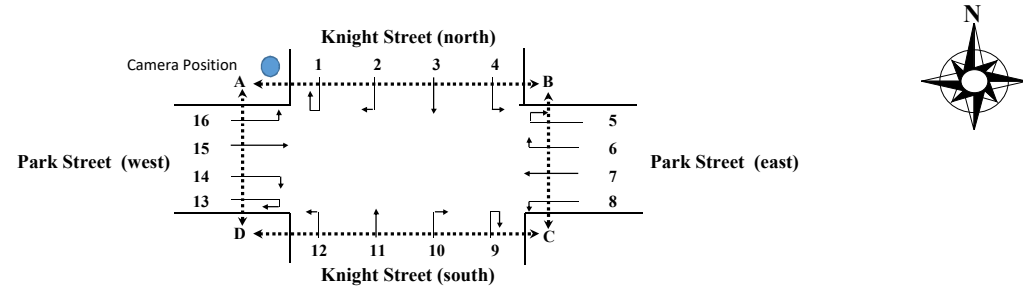
## APPENDIX B

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### Results of Intersection Counts

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 1 Weather: Fine  
 Location: Park Street/Knight Street, Rockhampton  
 Day/Date: Thursday, 19 September 2019  
 AM Peak: Hour ending - 8:45 AM  
 PM Peak: Hour ending - 4:30 PM



TIME (1/4 hr end)	Movement 1				Movement 2				Movement 3				Movement 4				Movement 5				Movement 6				Movement 7				Movement 8			
	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists
6:15 AM	0	0	0	0	0	0	0	0	14	0	14	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	
6:30 AM	0	0	0	0	0	0	0	0	13	2	15	0	1	0	1	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	25	1	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	
7:00 AM	0	0	0	0	0	0	0	0	24	3	27	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	
7:15 AM	0	0	0	0	0	0	0	0	16	2	18	0	0	1	1	0	0	0	0	0	0	1	0	1	0	1	0	2	0	2	0	
7:30 AM	0	0	0	0	0	0	0	0	22	1	23	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	4	1	5	0		
7:45 AM	0	0	0	0	0	0	0	0	35	0	35	0	0	1	1	0	0	0	0	0	2	0	2	0	1	0	2	0	2	0		
8:00 AM	0	0	0	0	1	0	1	0	46	3	49	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	2	0	2	0		
8:15 AM	0	0	0	0	0	0	0	0	53	2	55	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0		
8:30 AM	0	0	0	0	0	0	0	0	56	1	57	2	1	2	3	0	0	0	0	0	6	0	6	0	0	0	2	0	2	0		
8:45 AM	0	0	0	0	0	0	0	0	43	2	45	0	1	1	2	0	0	0	0	2	0	2	0	1	0	2	0	2	0	0		
9:00 AM	0	0	0	0	0	0	0	0	27	3	30	0	0	1	1	0	0	0	0	1	1	2	0	0	0	1	0	1	0	0		
3 hr Total	0	0	0	0	1	0	1	0	374	20	394	2	3	11	14	0	0	0	0	14	1	15	0	5	0	5	0	20	1	21	0	
AM Peak	0	0	0	0	1	0	1	0	198	8	206	2	2	5	7	0	0	0	0	9	0	9	0	1	0	1	0	8	0	8	0	

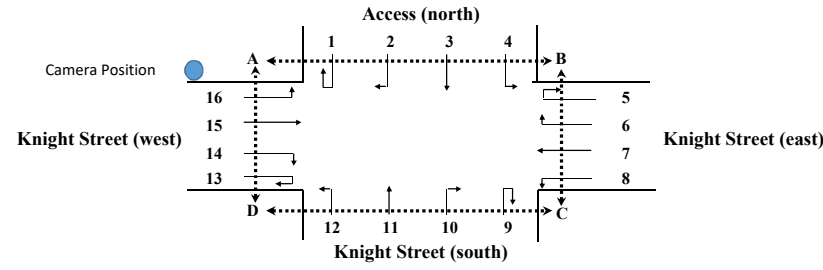
TIME (1/4 hr end)	Movement 1				Movement 2				Movement 3				Movement 4				Movement 5				Movement 6				Movement 7				Movement 8			
	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists
3:15 PM	0	0	0	0	0	0	0	0	30	0	30	0	2	0	2	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	
3:30 PM	1	0	1	0	0	0	0	0	36	2	38	0	2	2	4	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	0	
3:45 PM	0	0	0	0	0	0	0	0	24	2	26	0	2	2	4	0	0	0	0	3	0	3	0	1	0	0	5	0	5	1		
4:00 PM	0	0	0	0	0	0	0	0	30	1	31	0	2	0	2	0	0	0	2	0	2	0	0	0	0	0	3	1	4	0		
4:15 PM	0	0	0	0	0	0	0	0	29	0	29	0	0	1	1	0	0	0	2	0	2	0	0	0	0	0	2	0	2	0		
4:30 PM	0	0	0	0	0	0	0	0	43	0	43	0	2	0	2	0	0	0	2	0	2	0	0	0	0	0	4	1	5	0		
4:45 PM	0	0	0	0	0	0	0	0	22	1	23	0	3	0	3	0	0	0	1	0	1	0	0	0	0	0	3	0	3	0		
5:00 PM	0	0	0	0	0	0	0	0	20	1	21	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	7	0	7	0		
5:15 PM	0	0	0	0	0	0	0	0	29	1	30	1	1	0	1	0	0	0	3	0	3	0	0	0	0	0	1	0	1	0		
5:30 PM	0	0	0	0	0	0	0	0	28	1	29	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	1	1	2	0		
5:45 PM	0	0	0	0	0	0	0	0	23	0	23	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0		
6:00 PM	0	0	0	0	0	0	0	0	17	0	17	0	1	0	1	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	
3 hr Total	1	0	1	0	0	0	0	0	331	9	340	1	17	5	22	0	0	0	21	0	21	0	1	0	1	0	29	3	32	1		
PM Peak	0	0	0	0	0	0	0	0	126	3	129	0	6	3	9	0	0	0	9	0	9	0	1	0	1	0	14	2	16	1		





AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 2 Weather: Fine  
 Location: Knight Street/Horace Street, Rockhampton  
 Day/Date: Thursday, 19 September 2019  
 AM Peak: Hour ending - 9:00 AM  
 PM Peak: Hour ending - 4:45 PM



TIME (1/4 hr end)	Movement 1				Movement 2				Movement 3				Movement 4				Movement 5				Movement 6				Movement 7				Movement 8			
	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists				
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	11	0	10	0	10	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	1	15	0	6	0	6	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	4	21	0	8	1	9	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	3	19	0	15	2	17	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	13	0	17	0	17	0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	2	25	1	17	0	17	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	27	1	28	0	18	0	18	0	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	33	1	34	0	12	1	13	0	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	23	2	25	1	25	0	25	0	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	4	38	0	28	0	28	0	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	0	39	0	25	0	25	0	
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	1	39	0	30	0	30	0	
3 hr Total	0	0	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	0	0	4	0	288	19	307	2	211	4	215	0		
AM Peak	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	134	7	141	1	108	0	108	0			

TIME (1/4 hr end)	Movement 1				Movement 2				Movement 3				Movement 4				Movement 5				Movement 6				Movement 7				Movement 8			
	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists				
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	7	44	0	7	0	7	0		
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	3	42	0	17	0	17	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	1	35	1	18	0	18	0	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	3	33	0	16	0	16	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	42	0	42	0	12	1	13	0	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	0	36	0	10	0	10	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	0	0	50	1	51	0	9	0	9	0	
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	0	49	0	5	0	5	0	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	42	1	43	0	8	0	8	0	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	2	35	0	6	0	6	0	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	1	29	0	3	1	4	0	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	38	0	38	0	4	0	4	0	
3 hr Total	0	0	0	0	0	0	0	0	0	0	4	0	4	0	1	0	1	0	0	1	0	458	19	477	1	115	2	117	0			
PM Peak	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	1	0	158	4	162	0	47	1	48	0			

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 2 Weather: Fine
Location: Knight Street/Horace Street, Rockhampton
Day/Date: Thursday, 19 September 2019
AM Peak: Hour ending - 9:00 AM
PM Peak: Hour ending - 4:45 PM

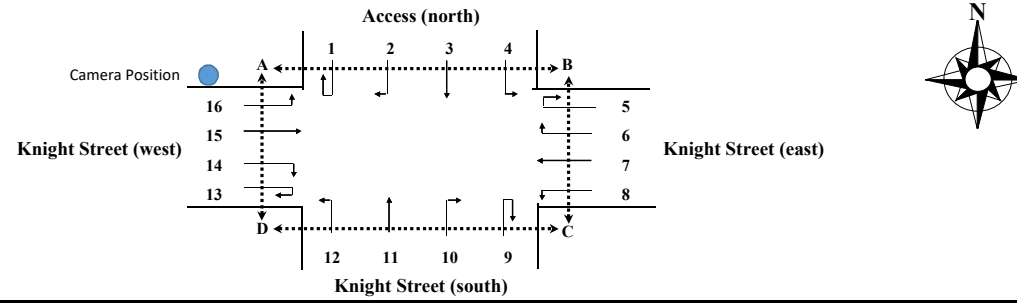


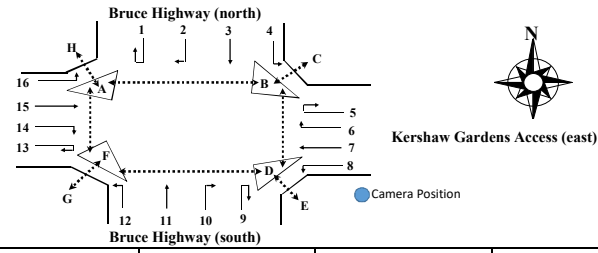
Table with columns for TIME (1/4 hr end), Movement 9-16, and Pedestrian Movements (A-B, B-A, B-C, C-B, C-D, D-C, D-A, A-D). Rows include hourly data from 6:15 AM to 9:00 AM, 3 hr Total, and AM Peak.

Table with columns for TIME (1/4 hr end), Movement 9-16, and Pedestrian Movements (A-B, B-A, B-C, C-B, C-D, D-C, D-A, A-D). Rows include hourly data from 3:15 PM to 6:00 PM, 3 hr Total, and PM Peak.

AUSTRALIA VIDEO INTERSECTION COUNT

Site No.: 3 Weather: Fine  
 Location: Bruce Highway/Knight Street/Kershaw Gardens Access, Rockhampton  
 Day/Date: Thursday, 19 September 2019  
 AM Peak: Hour ending - 8:45 AM  
 PM Peak: Hour ending - 5:00 PM

Knight Street (west)



TIME (1/4 hr end)	Movement 1				Movement 2				Movement 3				Movement 4				Movement 5				Movement 6				Movement 7				Movement 8			
	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists				
6:15 AM	0	0	0	0	2	0	2	0	123	25	148	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
6:30 AM	0	0	0	0	5	0	5	0	154	17	171	1	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0				
6:45 AM	0	0	0	0	1	0	1	0	184	20	204	1	2	0	2	0	0	0	0	0	0	0	2	0	2	0	0	0				
7:00 AM	0	0	0	0	14	2	16	0	229	14	243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0				
7:15 AM	0	0	0	0	15	0	15	0	202	19	221	1	2	0	2	0	0	0	0	0	0	0	2	0	2	0	1	0				
7:30 AM	0	0	0	0	11	1	12	0	259	18	277	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:45 AM	0	0	0	0	11	0	11	0	428	10	438	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0				
8:00 AM	0	0	0	0	9	0	9	0	460	16	476	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:15 AM	0	0	0	0	18	0	18	0	491	15	506	0	3	0	3	0	0	0	0	0	1	0	1	0	1	0	0	0				
8:30 AM	0	0	0	0	19	0	19	0	445	19	464	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	1	0				
8:45 AM	0	0	0	0	20	0	20	0	373	17	390	0	3	0	3	0	0	0	0	0	1	0	1	0	2	0	1	0				
9:00 AM	0	0	0	0	21	0	21	0	328	17	345	0	7	0	7	0	0	0	0	0	2	0	2	0	0	0	1	0				
3 hr Total	0	0	0	0	146	3	149	0	3676	207	3883	5	23	0	23	0	0	0	0	0	9	0	9	0	4	0	4	0				
AM Peak	0	0	0	0	66	0	66	0	1769	67	1836	0	9	0	9	0	0	0	0	0	3	0	3	0	3	0	2	0				

TIME (1/4 hr end)	Movement 1				Movement 2				Movement 3				Movement 4				Movement 5				Movement 6				Movement 7				Movement 8			
	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists	Light Vehicles	Heavy Vehicles	Total	Cyclists				
3:15 PM	0	0	0	0	7	2	9	0	353	17	370	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	1	0				
3:30 PM	1	0	1	0	15	0	15	0	333	19	352	0	4	0	4	0	0	0	0	0	1	0	1	0	1	0	1	0				
3:45 PM	0	0	0	0	9	0	9	0	307	14	321	1	4	0	4	0	0	0	0	0	1	0	1	0	0	0	3	0				
4:00 PM	0	0	0	0	8	1	9	0	287	12	299	0	6	0	6	0	0	0	0	0	8	0	8	0	0	0	2	0				
4:15 PM	0	0	0	0	10	1	11	0	334	23	357	0	5	0	5	0	0	0	0	0	5	0	5	0	1	0	1	0				
4:30 PM	1	0	1	0	14	0	14	0	318	15	333	0	4	0	4	0	0	0	0	0	3	0	3	0	0	0	1	0				
4:45 PM	0	0	0	0	8	0	8	0	272	19	291	0	3	0	3	0	0	0	0	0	5	0	5	0	1	0	1	0				
5:00 PM	0	0	0	0	15	0	15	0	306	19	325	0	4	0	4	0	0	0	0	0	5	0	5	0	3	0	3	0				
5:15 PM	0	0	0	0	8	0	8	0	288	12	300	1	5	1	6	0	0	0	0	0	6	0	6	0	0	0	1	0				
5:30 PM	0	0	0	0	4	1	5	0	260	13	273	0	5	0	5	0	0	0	0	0	4	1	5	0	2	0	2	0				
5:45 PM	0	0	0	0	4	0	4	0	279	13	292	0	4	0	4	0	0	0	0	0	4	0	4	0	1	0	3	0				
6:00 PM	0	0	0	0	8	0	8	0	253	11	264	0	6	0	6	0	0	0	0	0	6	1	7	0	0	0	6	0				
3 hr Total	2	0	2	0	110	5	115	0	3590	187	3777	4	54	0	54	0	0	0	0	0	48	0	48	0	10	0	10	0				
PM Peak	1	0	1	0	47	1	48	0	1230	76	1306	0	16	0	16	0	0	0	0	0	18	0	18	0	5	0	5	0				







## APPENDIX C

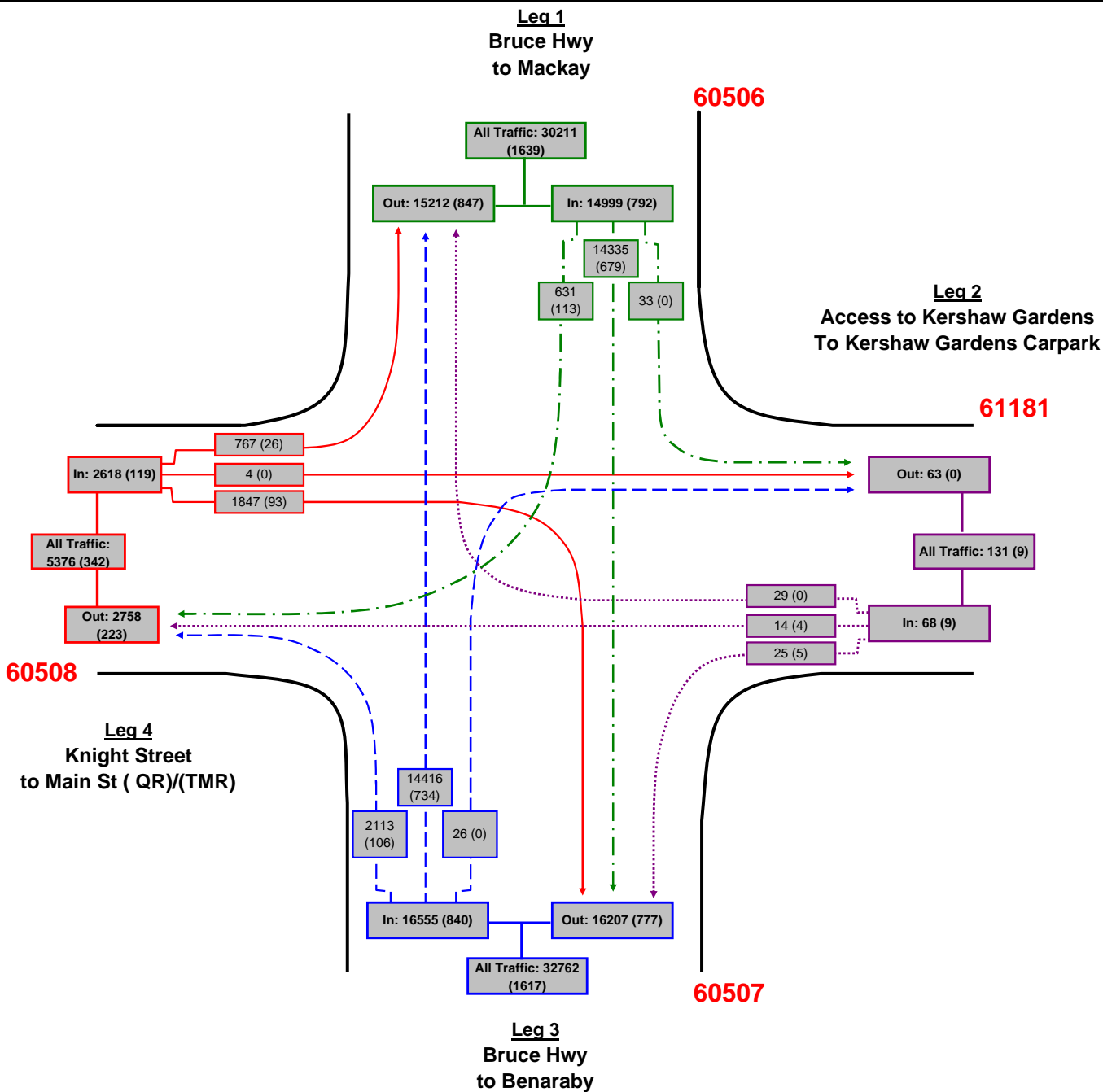
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Bruce Highway / Knight Street intersection count (provided by TMR)

Count Tally Sheet



LOCATION: Moores Ck Rd(Bruce Hwy) & Knight St/Kershaw Gardens  
 ROAD No: 10F ( Int 572 @ Tdist 2.871km)  
 DATE: Thu, 28/02/13  
 TIME: 06:00 - 18:00





### Count Tally Sheet

Int Moores Ck Rd(Bruce Hwy and Knight St/Kershaw Gardens  
10F(Int 572 @ Tdist 2.871km) 28 Feb 2013



Time	Leg 1								Leg Total	Leg 2								Leg Total
	Left		Thru		Right		U-turn	Left		Thru		Right		U-turn				
	2	2H	3	3H	4	4H		3		3H	4	4H	1	1H				
	<i>Light</i>	<i>Heavy</i>	<i>Light</i>	<i>Heavy</i>	<i>Light</i>	<i>Heavy</i>	<i>All</i>	<i>Light</i>		<i>Heavy</i>	<i>Light</i>	<i>Heavy</i>	<i>Light</i>	<i>Heavy</i>	<i>All</i>			
6:00 - 6:15	1	0	148	9	0	1		159	1	0	0	0	0	0		1		
6:15 - 6:30	0	0	149	11	7	0		167	1	0	0	0	0	0		1		
6:30 - 6:45	1	0	243	11	8	0		263	1	0	1	0	1	0		3		
6:45 - 7:00	1	0	200	6	12	0		219	0	0	0	0	0	0		0		
7:00 - 7:15	0	0	212	9	3	1		225	0	0	0	0	0	0		0		
7:15 - 7:30	0	0	276	16	7	0		299	0	0	0	0	0	0		0		
7:30 - 7:45	0	0	460	11	2	0		473	0	0	1	0	0	0		1		
7:45 - 8:00	0	0	520	21	12	1		554	1	0	0	0	0	0		1		
8:00 - 8:15	1	0	486	22	17	0		526	1	0	0	0	0	0		1		
8:15 - 8:30	2	0	453	21	21	0		497	1	0	0	0	1	0		2		
8:30 - 8:45	1	0	377	16	19	0		413	0	0	0	1	1	0		2		
8:45 - 9:00	0	0	346	15	19	1		381	2	1	1	0	4	0		8		
9:00 - 9:15	1	0	236	14	13	0		264	0	0	0	0	0	0		0		
9:15 - 9:30	1	0	212	30	12	0		255	1	0	1	0	2	0		4		
9:30 - 9:45	0	0	227	12	17	1		257	0	0	0	0	0	0		0		
9:45 - 10:00	0	0	226	12	11	1		250	0	0	0	0	0	0		0		
10:00 - 10:15	0	0	231	12	10	11		264	0	2	0	0	0	0		2		
10:15 - 10:30	0	0	240	12	0	14		266	1	0	0	0	0	0		1		
10:30 - 10:45	0	0	281	9	0	16		306	0	0	0	0	0	0		0		
10:45 - 11:00	0	0	244	13	4	0		261	0	0	0	0	0	0		0		
11:00 - 11:15	2	0	248	11	8	0		269	0	1	0	0	0	0		1		
11:15 - 11:30	0	0	291	13	14	0		318	1	0	0	0	0	0		1		
11:30 - 11:45	0	0	224	15	12	0		251	0	0	0	0	4	0		4		
11:45 - 12:00	0	0	275	21	20	0		316	0	0	0	0	0	0		0		

### Count Tally Sheet

Int Moores Ck Rd(Bruce Hwy and Knight St/Kershaw Gardens  
10F(Int 572 @ Tdist 2.871km) 28 Feb 2013



Time	Leg 1								Leg Total	Leg 2								Leg Total
	Left		Thru		Right		U-turn	Left		Thru		Right		U-turn				
	2	2H	3	3H	4	4H		3		3H	4	4H	1	1H				
	Light	Heavy	Light	Heavy	Light	Heavy	All	Light		Heavy	Light	Heavy	Light	Heavy	All			
12:00 - 12:15	1	0	218	20	9	4		252	1	1	6	3	1	0		12		
12:15 - 12:30	2	0	312	11	3	19		347	0	0	0	0	0	0		0		
12:30 - 12:45	0	0	316	15	0	25		356	0	0	0	0	4	0		4		
12:45 - 13:00	0	0	291	25	0	11		327	0	0	0	0	1	0		1		
13:00 - 13:15	1	0	258	9	11	1		280	1	0	0	0	0	0		1		
13:15 - 13:30	0	0	248	11	20	1		280	0	0	0	0	0	0		0		
13:30 - 13:45	1	0	240	17	9	0		267	1	0	0	0	0	0		1		
13:45 - 14:00	1	0	237	11	41	1		291	0	0	0	0	1	0		1		
14:00 - 14:15	3	0	235	15	13	0		266	1	0	0	0	0	0		1		
14:15 - 14:30	0	0	266	19	10	0		295	1	0	0	0	0	0		1		
14:30 - 14:45	0	0	271	17	15	1		304	0	0	0	0	1	0		1		
14:45 - 15:00	0	0	296	21	15	1		333	0	0	0	0	0	0		0		
15:00 - 15:15	1	0	338	15	12	1		367	0	0	0	0	0	0		0		
15:15 - 15:30	0	0	341	19	12	0		372	0	0	0	0	0	0		0		
15:30 - 15:45	5	0	309	13	19	1		347	1	0	0	0	2	0		3		
15:45 - 16:00	1	0	295	21	13	0		330	1	0	0	0	2	0		3		
16:00 - 16:15	0	0	348	16	12	0		376	0	0	0	0	0	0		0		
16:15 - 16:30	0	0	311	16	11	0		338	2	0	0	0	0	0		2		
16:30 - 16:45	0	0	307	9	13	0		329	0	0	0	0	0	0		0		
16:45 - 17:00	1	0	308	4	10	0		323	0	0	0	0	0	0		0		
17:00 - 17:15	2	0	321	11	7	0		341	0	0	0	0	0	0		0		
17:15 - 17:30	1	0	272	7	6	0		286	0	0	0	0	0	0		0		
17:30 - 17:45	1	0	282	9	5	0		297	0	0	0	0	0	0		0		
17:45 - 18:00	1	0	231	6	4	0		242	0	0	0	0	4	0		4		
<b>Total:</b>	<b>33</b>	<b>0</b>	<b>13656</b>	<b>679</b>	<b>518</b>	<b>113</b>	<b>0</b>	<b>14999</b>	<b>20</b>	<b>5</b>	<b>10</b>	<b>4</b>	<b>29</b>	<b>0</b>	<b>0</b>	<b>68</b>		
<b>Peak Count:</b>	<b>7</b>		<b>1994</b>		<b>85</b>		<b>0</b>	<b>2050</b>	<b>5</b>		<b>9</b>		<b>7</b>		<b>0</b>	<b>17</b>		
<b>Peak Hour:</b>	15:00 to 16:00		07:30 to 08:30		13:15 to 14:15		06:00 to 07:00	07:30 to 08:30	08:00 to 09:00		11:15 to 12:15		08:30 to 09:30		06:00 to 07:00	11:15 to 12:15		

### Count Tally Sheet

Int Moores Ck Rd(Bruce Hwy and Knight St/Kershaw Gardens  
10F(Int 572 @ Tdist 2.871km) 28 Feb 2013



Time	Leg 3								Leg 4							
	Left		Thru		Right		U-turn	Leg Total	Left		Thru		Right		U-turn	Leg Total
	4	4H	1	1H	2	2H			1	1H	2	2H	3	3H		
	Light	Heavy	Light	Heavy	Light	Heavy	All	Light	Heavy	Light	Heavy	Light	Heavy	All		
6:00 - 6:15	9	1	82	9	0	0		101	1	0	0	0	12	1		14
6:15 - 6:30	30	3	85	8	0	0		126	1	0	0	0	18	1		20
6:30 - 6:45	31	2	104	12	0	0		149	2	0	1	0	21	2		26
6:45 - 7:00	42	3	146	10	0	0		201	3	1	0	0	24	1		29
7:00 - 7:15	29	1	131	14	1	0		176	2	0	0	0	18	2		22
7:15 - 7:30	40	0	187	6	2	0		235	2	1	0	0	30	1		34
7:30 - 7:45	29	1	241	10	0	0		281	7	0	0	0	43	2		52
7:45 - 8:00	41	2	295	21	0	0		359	6	1	0	0	70	3		80
8:00 - 8:15	44	3	315	14	0	0		376	9	2	0	0	74	6		91
8:15 - 8:30	55	2	363	12	1	0		433	11	2	0	0	64	4		81
8:30 - 8:45	45	1	334	24	0	0		404	16	2	0	0	70	2		90
8:45 - 9:00	44	1	314	16	1	0		376	15	0	0	0	45	5		65
9:00 - 9:15	49	1	263	21	0	0		334	11	0	0	0	31	3		45
9:15 - 9:30	39	2	221	14	0	0		276	18	0	0	0	33	2		53
9:30 - 9:45	31	0	266	23	0	0		320	23	0	0	0	33	1		57
9:45 - 10:00	33	6	260	21	0	0		320	15	1	0	0	25	1		42
10:00 - 10:15	40	2	230	10	0	0		282	22	1	0	0	28	4		55
10:15 - 10:30	23	0	204	16	0	0		243	17	3	0	0	21	0		41
10:30 - 10:45	24	2	219	13	0	0		258	3	1	0	0	38	3		45
10:45 - 11:00	49	3	265	20	0	0		337	13	0	0	0	22	1		36
11:00 - 11:15	29	3	254	17	0	0		303	11	1	0	0	28	1		41
11:15 - 11:30	28	2	275	14	0	0		319	10	0	0	0	26	4		40
11:30 - 11:45	37	2	224	23	0	0		286	16	1	0	0	43	1		61
11:45 - 12:00	32	4	252	14	0	0		302	20	1	1	0	32	3		57

### Count Tally Sheet

Int Moores Ck Rd(Bruce Hwy and Knight St/Kershaw Gardens  
10F(Int 572 @ Tdist 2.871km) 28 Feb 2013



Time	Leg 3								Leg 4							
	Left		Thru		Right		U-turn	Leg Total	Left		Thru		Right		U-turn	Leg Total
	4	4H	1	1H	2	2H			1	1H	2	2H	3	3H		
	Light	Heavy	Light	Heavy	Light	Heavy	All	Light	Heavy	Light	Heavy	Light	Heavy	All		
12:00 - 12:15	49	6	231	13	4	0		303	23	0	0	0	32	1		56
12:15 - 12:30	36	2	257	25	1	0		321	21	0	0	0	32	3		56
12:30 - 12:45	20	2	234	11	0	0		267	21	0	0	0	16	1		38
12:45 - 13:00	42	2	244	26	0	0		314	9	0	0	0	34	1		44
13:00 - 13:15	44	0	239	20	0	0		303	17	1	0	0	43	2		63
13:15 - 13:30	58	4	244	19	3	0		328	17	1	0	0	35	3		56
13:30 - 13:45	53	3	225	14	0	0		295	20	0	0	0	34	3		57
13:45 - 14:00	38	3	235	21	1	0		298	18	0	0	0	26	1		45
14:00 - 14:15	43	1	266	18	0	0		328	16	1	0	0	41	3		61
14:15 - 14:30	35	2	301	18	1	0		357	13	0	0	0	21	2		36
14:30 - 14:45	42	5	303	23	0	0		373	23	1	0	0	51	0		75
14:45 - 15:00	53	2	290	21	4	0		370	16	2	0	0	34	0		52
15:00 - 15:15	47	4	331	15	0	0		397	32	0	0	0	49	3		84
15:15 - 15:30	57	4	478	16	0	0		555	32	1	0	0	41	5		79
15:30 - 15:45	59	1	441	19	2	0		522	18	0	0	0	58	2		78
15:45 - 16:00	46	3	357	12	0	0		418	21	0	0	0	34	4		59
16:00 - 16:15	70	1	415	8	0	0		494	38	1	0	0	52	1		92
16:15 - 16:30	46	4	435	13	2	0		500	15	0	0	0	41	0		56
16:30 - 16:45	54	1	429	12	0	0		496	23	0	0	0	48	3		74
16:45 - 17:00	60	2	461	13	1	0		537	28	0	0	0	38	1		67
17:00 - 17:15	67	2	518	12	1	0		600	23	0	1	0	47	0		71
17:15 - 17:30	61	3	505	8	1	0		578	19	0	0	0	37	0		56
17:30 - 17:45	42	2	403	8	0	0		455	13	0	1	0	35	0		49
17:45 - 18:00	32	0	310	7	0	0		349	11	0	0	0	26	0		37
<b>Total:</b>	<b>2007</b>	<b>106</b>	<b>13682</b>	<b>734</b>	<b>26</b>	<b>0</b>	<b>0</b>	<b>16555</b>	<b>741</b>	<b>26</b>	<b>4</b>	<b>0</b>	<b>1754</b>	<b>93</b>	<b>0</b>	<b>2618</b>
<b>Peak Count:</b>	250		1958		6		0	2211	111		2		293		0	342
<b>Peak Hour:</b>	16:30 to 17:30		16:30 to 17:30		14:45 to 15:45		06:00 to 07:00	16:30 to 17:30	15:15 to 16:15		16:45 to 17:45		07:45 to 08:45		06:00 to 07:00	07:45 to 08:45



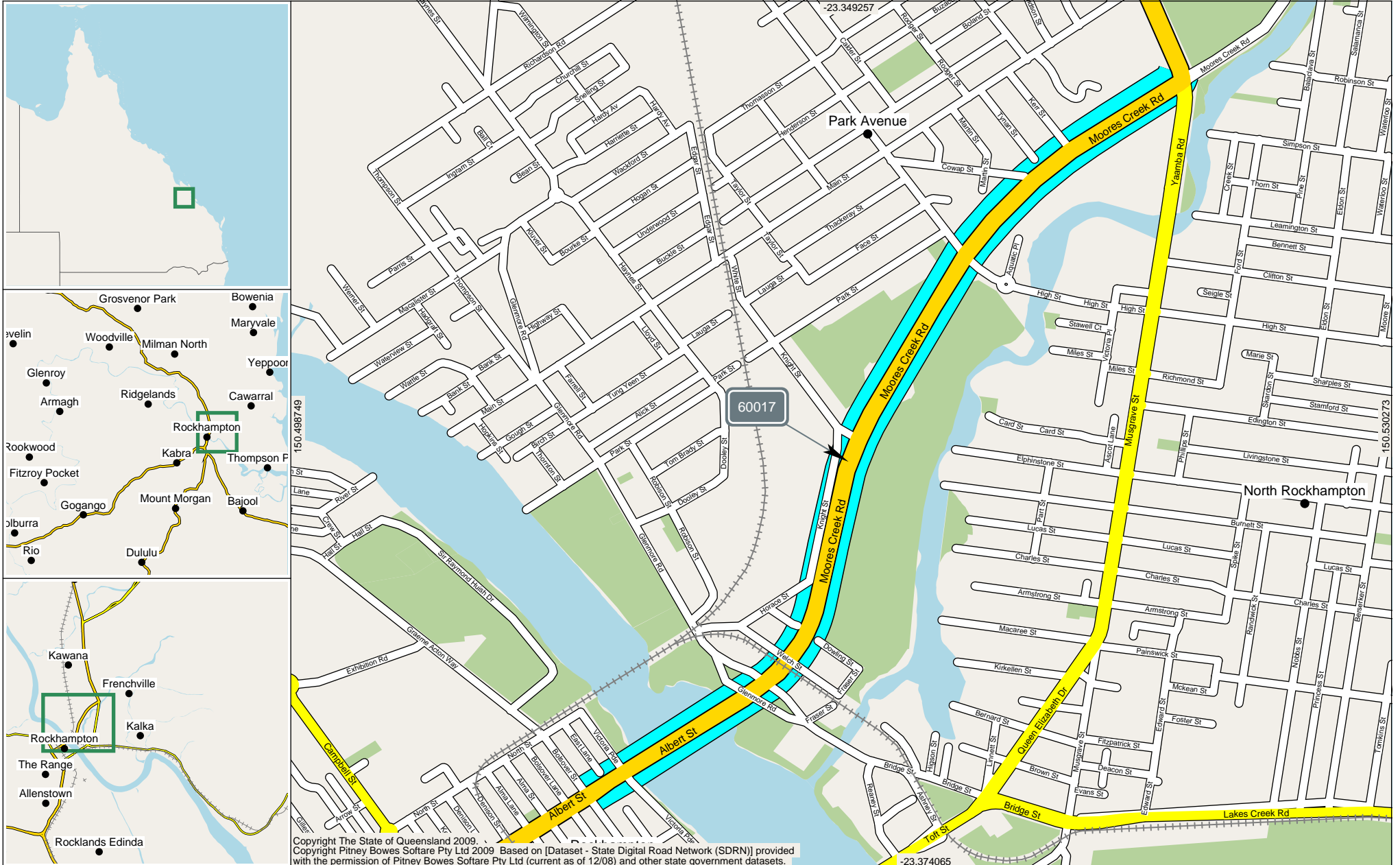
## APPENDIX D

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Queensland Government AADT Segment Report (from 1.409km to 4.340km) for Road Section 10F  
Bruce Highway (Rockhampton – St Lawrence)

**AADT Segment Report**

Area 404 - Fitzroy District Road Section 10F - BRUCE HIGHWAY (ROCKHAMPTON-ST LAWRENCE)  
Road Segment from 1.409km to 4.340km Segment Site 60017 Traffic Year 2018 Data Collection Year 2018

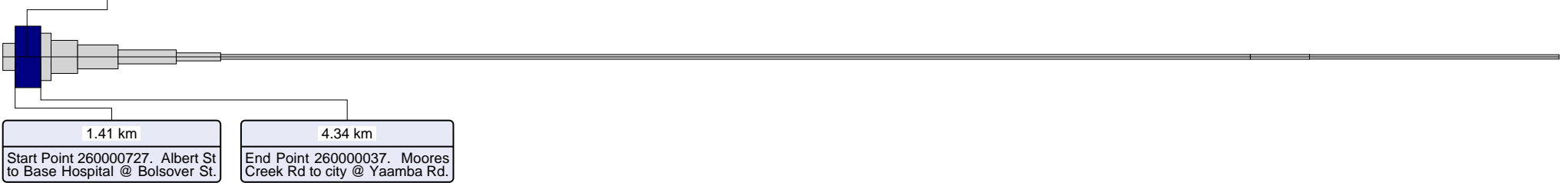


**AADT Segment Report**

Area 404 - Fitzroy District Road Section 10F - BRUCE HIGHWAY (ROCKHAMPTON-ST LAWRENCE)  
 Road Segment from 1.409km to 4.340km Segment Site 60017 Traffic Year 2018 Data Collection Year 2018

Site 60017. Point 260000035.  
 Bruce Hwy 100m Sth Knight St.  
 2.77 km

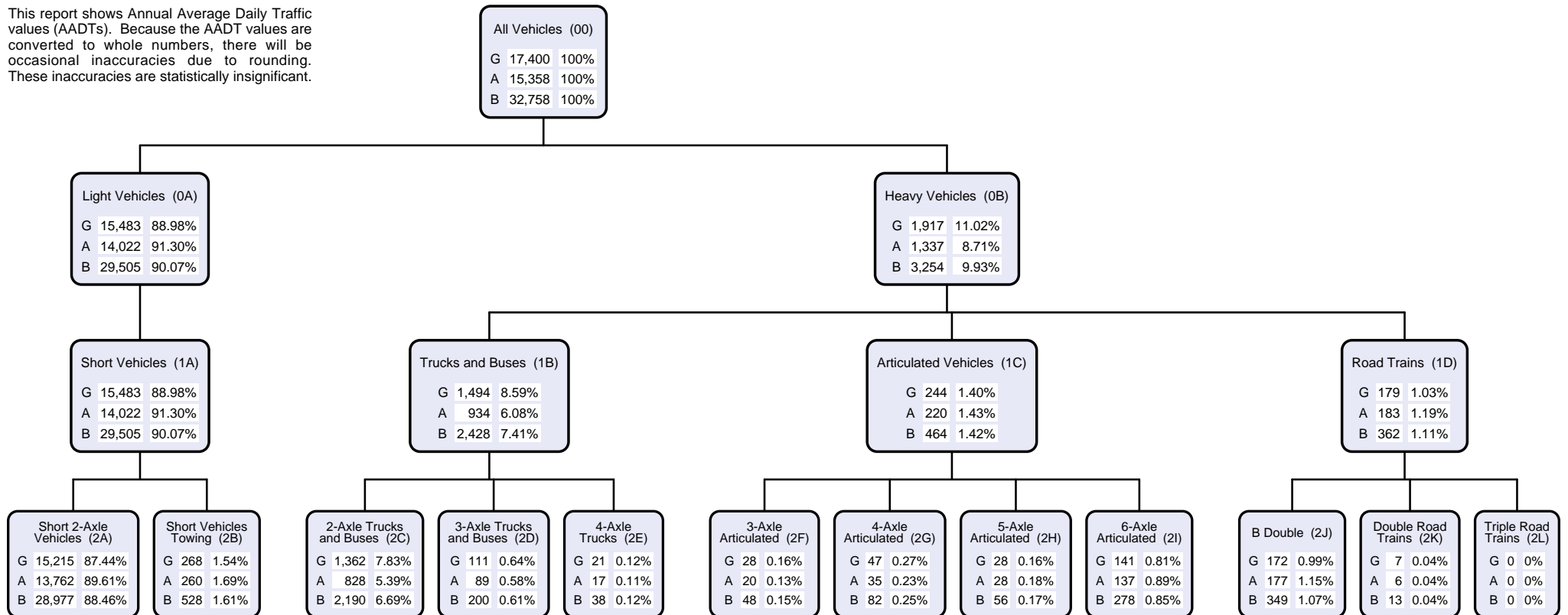
The width of each Road Segment is proportional to its AADT.



1.41 km  
 Start Point 260000727. Albert St to Base Hospital @ Bolsover St.

4.34 km  
 End Point 260000037. Moores Creek Rd to city @ Yaamba Rd.

This report shows Annual Average Daily Traffic values (AADTs). Because the AADT values are converted to whole numbers, there will be occasional inaccuracies due to rounding. These inaccuracies are statistically insignificant.



## AADT Segment Annual Volume Report

Provides summary data for the selected AADT Segment of a Road Section. Summary data is presented as both directional information and a combined bi-directional figure. The data is then broken down by Traffic Class, when available. The report also includes maps displaying the location of both the AADT Segment and the traffic count site.

## Annual Average Daily Traffic (AADT)

Annual Average Daily Traffic (AADT) is the number of vehicles passing a point on a road in a 24 hour period, averaged over a calendar year.

## AADT Segments

The State declared road network is broken into Road Sections and then further broken down into AADT Segments. An AADT Segment is a sub-section of the declared road network where traffic volume is similar along the entire AADT Segment.

## Area

For administration purposes the Department of Transport and Main Roads has divided Queensland into 12 Districts. The Area field in TSDM reports displays the District Name and Number.

District Name	District
Central West District	401
Darling Downs District	402
Far North District	403
Fitzroy District	404
Mackay/Whitsunday District	405
Metropolitan District	406
North Coast District	407
North West District	409
Northern District	408
South Coast District	410
South West District	411
Wide Bay/Burnett District	412

## AADT Values

AADT values are displayed by direction of travel as:

- G Traffic flow in gazettal direction
- A Traffic flow against gazettal direction
- B Traffic flow in both directions

## Data Collection Year

Is the most recent year that data was collected at the data collection site.

### Please Note:

Due to location and/or departmental policy, some sites are not counted every year.

## Gazettal Direction

Is the direction of the traffic flow. It can be easily recognised by referring to the name of the road eg. Road Section: 10A Brisbane - Gympie denotes that the gazettal direction is from Brisbane to Gympie.

## Maps

Display the selected location from a range of viewing levels, the start and end position details for the AADT Segment and the location of the traffic count site.

## Road Section

Is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in Gazettal Direction. Larger roads are broken down into sections and identified by an ID code with a suffix for easier data collection and reporting (eg. 10A, 10B, 10C). Road Sections are then broken into AADT Segments which are determined by traffic volume.

## Segment Site

Is the unique identifier for the traffic count site representing the traffic flow within the AADT Segment.

## Site

The physical location of a traffic counting device. Sites are located at a specified Through Distance along a Road Section.

## Site Description

The description of the physical location of the traffic counting device.

## Start and End Point

The unique identifier for the Through Distance along a Road Section.

## Vehicle Class

Traffic is categorised as per the Austroads Vehicle Classification scheme. Traffic classes are in the following hierarchical format:

### Volume or All Vehicles

00 = 0A + 0B

### Light Vehicles

0A = 1A

1A = 2A + 2B

### Heavy Vehicles

0B = 1B + 1C + 1D

1B = 2C + 2D + 2E

1C = 2F + 2G + 2H + 2I

1D = 2J + 2K + 2L

The following classes are the categories for which data can be captured:

### Volume

00 All vehicles

### 2-Bin

0A Light vehicles

0B Heavy vehicles

### 4-Bin

1A Short vehicles

1B Truck or bus

1C Articulated vehicles

1D Road train

### 12-Bin

2A Short 2 axle vehicles

2B Short vehicles towing

2C 2 axle truck or bus

2D 3 axle truck or bus

2E 4 axle truck

2F 3 axle articulated vehicle

2G 4 axle articulated vehicle

2H 5 axle articulated vehicle

2I 6 axle articulated vehicle

2J B double

2K Double road train

2L Triple road train

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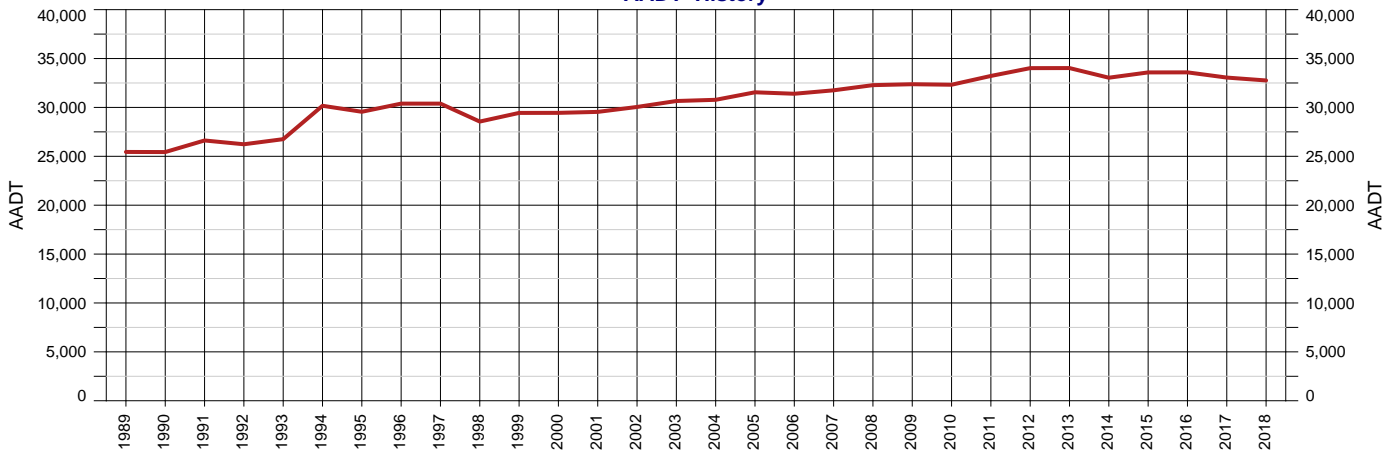




Area 404 - Fitzroy District  
 Road Section 10F - BRUCE HIGHWAY (ROCKHAMPTON-ST LAWRENCE)  
 Site 60017 - Bruce Hwy 100m Sth Knight St  
 Thru Dist 2.77  
 Type P - Permanent  
 Stream TB - Bi-directional traffic flow

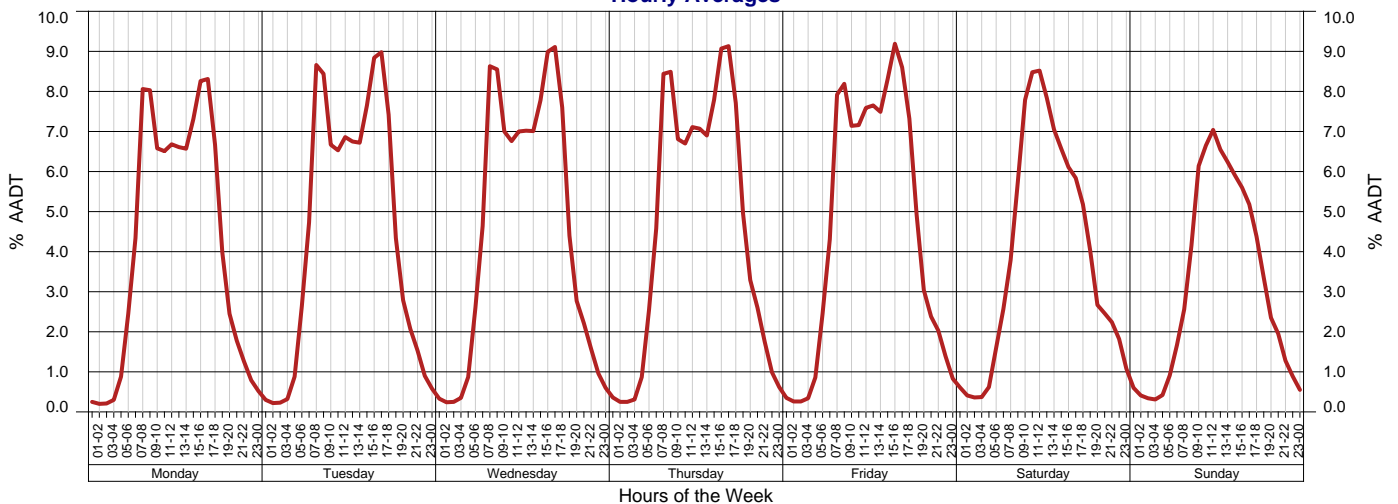
Year 2018 Growth last Year -0.89%  
 AADT 32,758 Growth last 5 Yrs -0.65%  
 Avg Week Day 34,395 Growth last 10 Yrs -0.08%  
 Avg Weekend Day 27,516

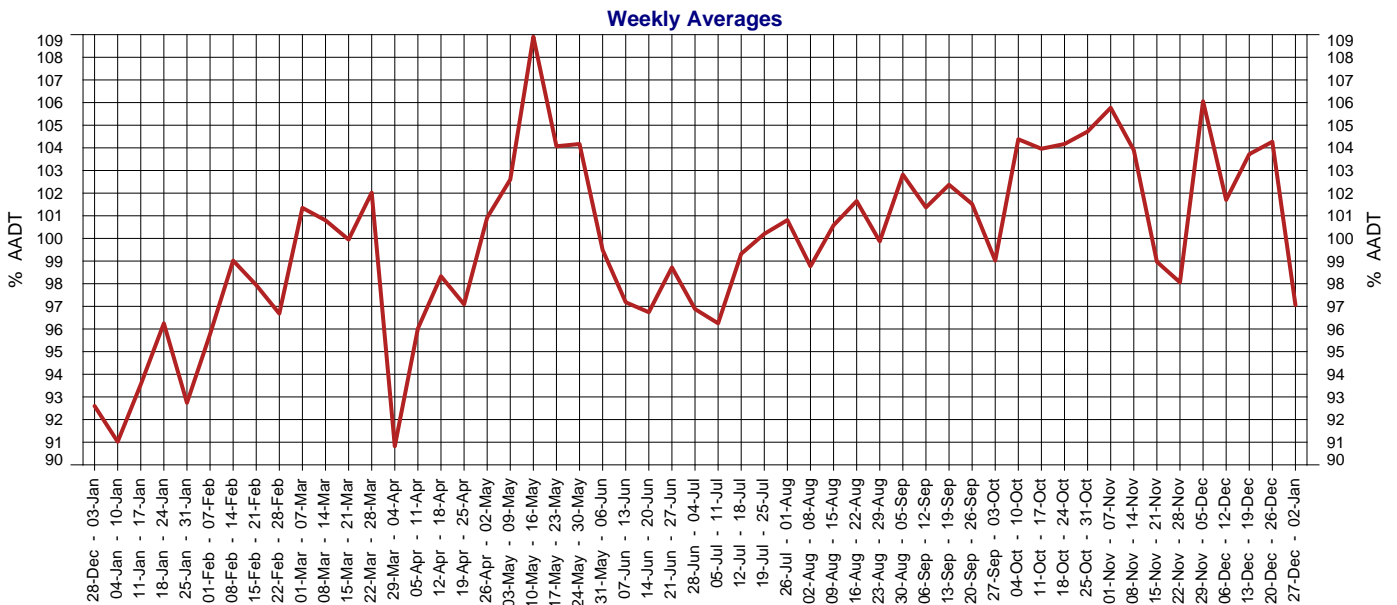
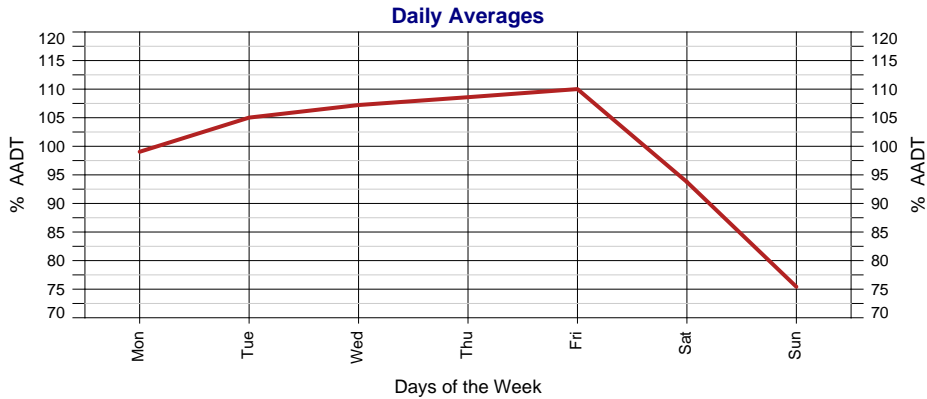
AADT History



Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2018	32,758	-0.89%	-0.65%	-0.08%
2017	33,053	-1.59%	-0.56%	0.16%
2016	33,586	0.02%	0.00%	0.52%
2015	33,580	1.64%	0.34%	0.61%
2014	33,039	-2.90%	0.16%	0.53%
2013	34,025	0.02%	1.22%	1.09%
2012	34,018	2.40%	1.52%	1.26%
2011	33,220	2.78%	1.15%	1.09%
2010	32,320	-0.16%	0.53%	0.86%
2009	32,373	0.29%	0.89%	1.01%
2008	32,279	1.67%	1.08%	1.16%
2007	31,750	1.12%	0.97%	0.91%
2006	31,398	-0.47%	1.07%	0.73%
2005	31,547	2.50%	1.53%	0.84%
2004	30,779	0.40%	1.05%	0.46%
2003	30,656	2.02%	1.34%	0.69%
2002	30,048	1.71%	0.49%	0.70%
2001	29,543	0.34%	-0.26%	0.68%
2000	29,444	0.02%	-0.32%	0.95%
1999	29,438	3.10%	-0.48%	1.23%
1998	28,554	-6.04%	-0.33%	1.13%
1997	30,388	0.00%	2.43%	2.57%
1996	30,389	2.82%	3.09%	3.05%
1995	29,555	-2.03%	3.15%	3.08%
1994	30,168	12.76%	4.29%	3.79%
1993	26,753	1.99%	1.53%	
1992	26,231	-1.46%	2.22%	
1991	26,620	4.66%	3.64%	
1990	25,435	-0.04%	3.20%	
1989	25,446	4.18%	3.94%	

Hourly Averages





### 2018 Calendar

January							February							March							April						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
1	2	3	4	5	6	7				1	2	3	4				1	2	3	4	30						1
8	9	10	11	12	13	14	5	6	7	8	9	10	11	5	6	7	8	9	10	11	2	3	4	5	6	7	8
15	16	17	18	19	20	21	12	13	14	15	16	17	18	12	13	14	15	16	17	18	9	10	11	12	13	14	15
22	23	24	25	26	27	28	19	20	21	22	23	24	25	19	20	21	22	23	24	25	16	17	18	19	20	21	22
29	30	31					26	27	28					26	27	28	29	30	31	23	24	25	26	27	28	29	

May							June							July							August							
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	
	1	2	3	4	5	6					1	2	3	30	31					1				1	2	3	4	5
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12	
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19	
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26	
28	29	30	31				25	26	27	28	29	30	23	24	25	26	27	28	29	27	28	29	30	31				

September							October							November							December						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
					1	2	1	2	3	4	5	6	7				1	2	3	4	31					1	2
3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9
10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18	10	11	12	13	14	15	16
17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23
24	25	26	27	28	29	30	29	30	31					26	27	28	29	30	24	25	26	27	28	29	30		

Days on which traffic data was collected.

## Annual Volume Report

Displays AADT history with hourly, daily and weekly patterns by Stream in addition to annual data for AADT figures with 1 year, 5 year and 10 year growth rates.

## Annual Average Daily Traffic (AADT)

Annual Average Daily Traffic (AADT) is the number of vehicles passing a point on a road in a 24 hour period, averaged over a calendar year.

## AADT History

Displays the years when traffic data was collected at this count site.

## Area

For administration purposes the Department of Transport and Main Roads has divided Queensland into 12 Districts. The Area field in TSDM reports displays the District Name and Number.

District Name	District
Central West District	401
Darling Downs District	402
Far North District	403
Fitzroy District	404
Mackay/Whitsunday District	405
Metropolitan District	406
North Coast District	407
North West District	409
Northern District	408
South Coast District	410
South West District	411
Wide Bay/Burnett District	412

## Avg Week Day

Average daily traffic volume during the week days, Monday to Friday.

## Avg Weekend Day

Average daily traffic volume during the weekend, Saturday and Sunday.

## Calendar

Days on which traffic data was collected are highlighted in green.

## Gazettal Direction

The Gazettal Direction is the direction of the traffic flow. It can be easily recognised by referring to the name of the road eg. Road Section: 10A Brisbane - Gympie denotes that the gazettal direction is from Brisbane to Gympie.

- G Traffic flowing in Gazettal Direction
- A Traffic flowing against Gazettal Direction
- B The combined traffic flow in both Directions

## Growth Percentage

Represents the increase or decrease in AADT, using a exponential fit over the previous 1, 5 or 10 year period.

## Hour, Day & Week Averages

The amount of traffic on the road network will vary depending on the time of day, the day of the week and the week of the year. The ebb and flow of traffic travelling through a site over a period of time forms a pattern. The Hour, Day and Week Averages are then used in the calculation of AADT.

## Road Section

Is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in Gazettal Direction. Larger roads are broken down into sections and identified by an ID code with a suffix for easier data collection and reporting (eg. 10A, 10B, 10C). Road Sections are then broken into AADT Segments which are determined by traffic volume.

## Site

The unique identifier and description of the physical location of a traffic counting device. Sites are located at a Through Distance along a Road Section.

## Stream

The lane in which the traffic is travelling in. This report provides data for the combined flow of traffic in both directions.

## Thru Dist or TDist

The distance from the beginning of the Road Section, in kilometres.

## Type

There are two types of traffic counting sites, Permanent and Coverage. Permanent means the traffic counting device is in place 24/7. Coverage means the traffic counting device is in place for a specified period of time.

## Year

Is the current year for the report. Where an AADT Year record is missing a traffic count has not been conducted, for that year.

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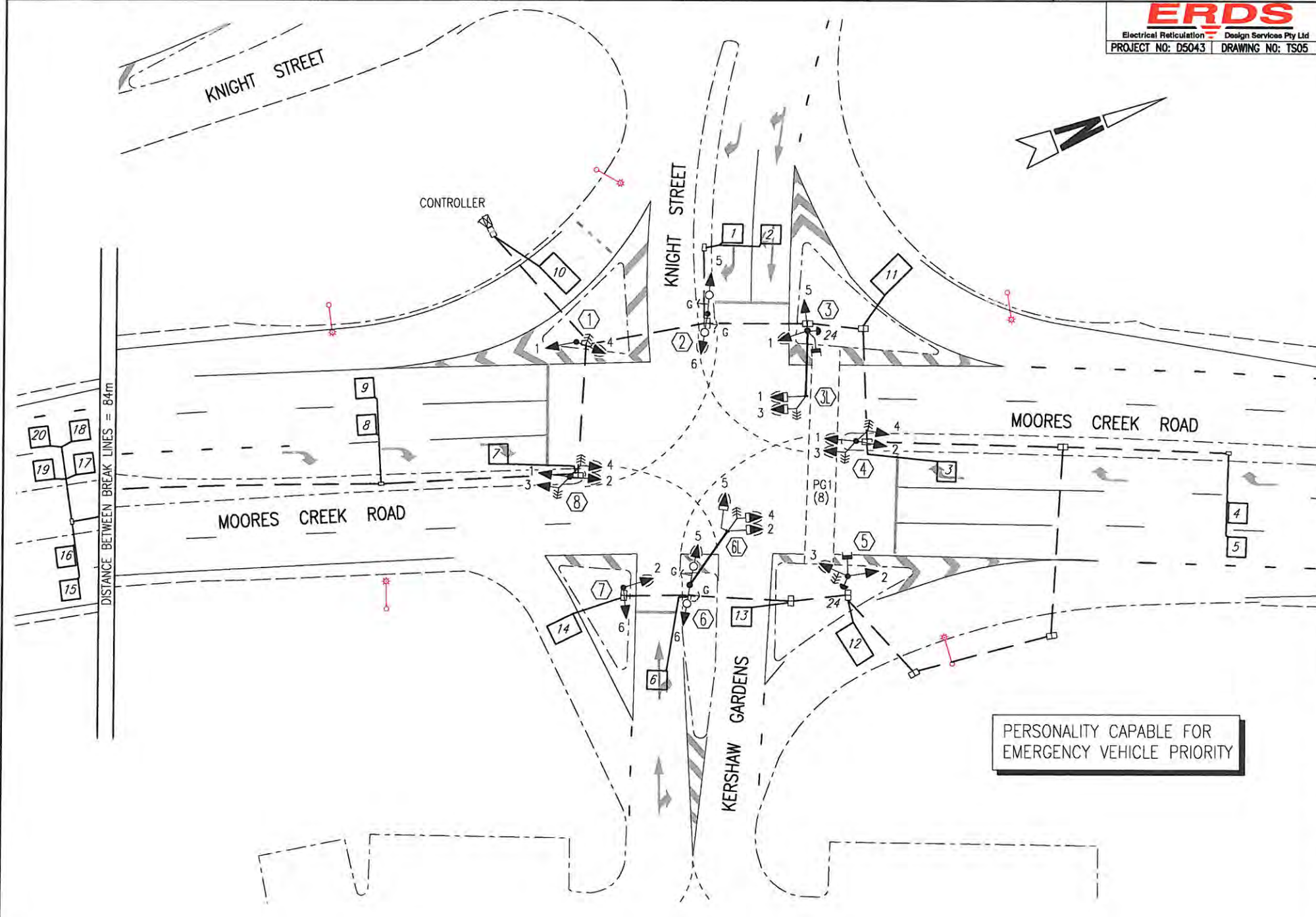
## APPENDIX E

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Traffic Signal Plan - Bruce Highway / Knight Street intersection



PHASE DIAGRAMS	A PHASE		B PHASE		C PHASE		D PHASE		E PHASE		F PHASE		F1 PHASE		F2 PHASE	
	1	2	1	3	2	4	5	8	6	3	4	1	3	2	4	
SIGNAL GROUPS	1	2	1	3	2	4	5	8	6	3	4	1	3	2	4	
VEHICLE/PED GROUPS	VG1	VG2	VG1	VG3	VG2	VG4	VG5	PG1	VG6	VG3	VG4	VG1	VG3	VG2	VG4	
LOGICAL INPUT	8,9	4,5	7		3		1,2	24	6	7	3	7		3		
CALL	X	X					X	X	X	X	X					
EXTEND	X	X	X				X		X	X		X		X		
INCREMENT	X	X														
SPECIAL CONDITIONS	INTRODUCE B PHASE ON STREAMS REQUEST & LOOP DEMAND				INTRODUCE C PHASE ON STREAMS REQUEST & LOOP DEMAND				F PHASE TO F1 OR F2 PHASES PERMITTED. F1 PHASE TO F2 PHASE OR F2 PHASE TO F1 PHASE NOT PERMITTED.							



**ERDS**  
Electrical Reticulation Design Services Pty Ltd  
PROJECT NO: D5043 DRAWING NO: TS05

CONFLICT TABLE  
(X - INDICATES CONFLICT)

VEHICLE GROUPS	VEHICLE GROUPS												PED GROUPS			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
1				X	X	X							X			
2		X		X	X								X			
3		X		X	X								X			
4	X			X	X								X			
5	X	X		X	X								X			
6	X	X		X	X								X			
7																
8																
9																
10																
11																
12																
13																
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31																
32																

LDM416 DETECTOR TABLE

PHYSICAL LABEL	CONTROLLER TERMINAL	LOGICAL INPUT	LOOP/PB CONFIGURATION	DIST TO STOP LINE
LOOP 1	P1	1	STOP LINE	6m
LOOP 2	P2	2	STOP LINE	6m
LOOP 3	P3	3	STOP LINE	4m
LOOP 4	P4	4	ADVANCE	33m
LOOP 5	P5	5	ADVANCE	33m
LOOP 6	P6	6	STOP LINE	6m
LOOP 7	P7	7	STOP LINE	4m
LOOP 8	P8	8	ADVANCE	17m
LOOP 9	P9	9	ADVANCE	17m
LOOP 10	Q10	10	COUNT	-
LOOP 11	Q11	11	COUNT	-
LOOP 12	Q12	12	COUNT	-
LOOP 13	Q13	13	COUNT	-
LOOP 14	Q14	14	COUNT	-
LOOP 15	Q15	15	COUNT	-
LOOP 16	Q16	16	COUNT	-
LOOP 17	R17	17	SPEED/COUNT	APP 130m
LOOP 18	R18	18	SPEED/COUNT	APP 130m
LOOP 19	R19	19	SPEED/COUNT	APP 130m
LOOP 20	R20	20	SPEED/COUNT	APP 130m
EXT 1 DET 24	E5			25
230V	A2	26		26
DET COMMON	E3	27	GY	27
NEUTRAL	ALB1	NL	BK	NL
	CLB1	NL	BK	BK
SPARE CORES TO EARTH		13-25		21-24
CABLE SIZE		29		29 19 19
CONTROLLER TYPE:	EC1-62-8			LANTERN TYPE: LED

G	Associated Job Nos	Survey Data		Scales	ROCKHAMPTON REGIONAL COUNCIL	TRAFFIC SIGNAL INSTALLATION OPERATIONS & ELECTRICAL	Site Number <b>4524</b> MAP 6 G9	
		Datum						
F	Auxiliary Drg Nos	Horiz. Grid		0 2 4 6 8 10m	BRUCE HIGHWAY (ROCKHAMPTON - ST LAWRENCE)	ENGINEERING CERTIFICATION (RPEQ)	Drawn: RG SMITH Designed: RG SMITH	ENG. AREA: ELECTRICAL NAME: _____ SIGNATURE: _____ NO.: _____ DATE: _____
E		272530-272531	Height Origin					
D	Revisions/Descriptions	Certification	Date	Microfiled	MOORES CREEK RD, KNIGHT ST & KERSHAW GARDENS	Drawn: RG SMITH Designed: RG SMITH	Job No.: _____ Contract No.: 272531 B Drawing No.: _____ Series Number: 2 of 2 MRT_Detail (06/13)	
C								Original Issue A3
B	EC1 CONTROLLER, LED LANTERNS & STD TRAFF		11/30/14					
A	Original Issue A3							

Dimensions shown in metres except where shown otherwise

Through Chainage from

Last Modified: Oct 1, 2015 - 10:03 AM



## APPENDIX F

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### Pre-Development (2019) SIDRA Analysis Results

# MOVEMENT SUMMARY

Site: [Int 1: 2019 AM Background]

Knight Street / Park Street  
 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 Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	3	0.0	0.072	5.1	LOS A	0.1	0.4	0.04	0.04	0.04	49.2
2	T1	134	7.5	0.072	0.1	LOS A	0.1	0.4	0.04	0.04	0.04	49.6
3	R2	7	0.0	0.072	5.3	LOS A	0.1	0.4	0.04	0.04	0.04	49.2
Approach		144	6.9	0.072	0.4	NA	0.1	0.4	0.04	0.04	0.04	49.6
East: Park Street												
4	L2	9	0.0	0.019	5.2	LOS A	0.1	0.5	0.33	0.55	0.33	45.9
5	T1	1	0.0	0.019	5.2	LOS A	0.1	0.5	0.33	0.55	0.33	46.2
6	R2	9	0.0	0.019	6.4	LOS A	0.1	0.5	0.33	0.55	0.33	45.7
Approach		19	0.0	0.019	5.8	LOS A	0.1	0.5	0.33	0.55	0.33	45.8
North: Knight Street												
7	L2	7	71.4	0.108	5.2	LOS A	0.0	0.1	0.00	0.02	0.00	48.3
8	T1	206	3.9	0.108	0.0	LOS A	0.0	0.1	0.00	0.02	0.00	49.9
9	R2	1	0.0	0.108	5.0	LOS A	0.0	0.1	0.00	0.02	0.00	49.4
Approach		214	6.1	0.108	0.2	NA	0.0	0.1	0.00	0.02	0.00	49.9
West: Park Street												
10	L2	1	0.0	0.004	4.9	LOS A	0.0	0.1	0.32	0.51	0.32	46.0
11	T1	1	0.0	0.004	5.1	LOS A	0.0	0.1	0.32	0.51	0.32	46.3
12	R2	2	0.0	0.004	6.4	LOS A	0.0	0.1	0.32	0.51	0.32	46.2
Approach		4	0.0	0.004	5.7	LOS A	0.0	0.1	0.32	0.51	0.32	46.2
All Vehicles		381	6.0	0.108	0.6	NA	0.1	0.5	0.04	0.06	0.04	49.5

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



# MOVEMENT SUMMARY

Site: [Int 1: 2019 PM Background]

Knight Street / Park Street  
 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 Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	1	0.0	0.090	5.1	LOS A	0.1	0.5	0.03	0.02	0.03	49.3
2	T1	175	2.3	0.090	0.0	LOS A	0.1	0.5	0.03	0.02	0.03	49.8
3	R2	7	28.6	0.090	5.4	LOS A	0.1	0.5	0.03	0.02	0.03	48.9
Approach		183	3.3	0.090	0.3	NA	0.1	0.5	0.03	0.02	0.03	49.8
East: Park Street												
4	L2	16	12.5	0.024	5.1	LOS A	0.1	0.6	0.25	0.53	0.25	45.9
5	T1	1	0.0	0.024	5.0	LOS A	0.1	0.6	0.25	0.53	0.25	46.4
6	R2	9	0.0	0.024	6.2	LOS A	0.1	0.6	0.25	0.53	0.25	45.9
Approach		26	7.7	0.024	5.5	LOS A	0.1	0.6	0.25	0.53	0.25	45.9
North: Knight Street												
7	L2	9	33.3	0.070	4.9	LOS A	0.0	0.1	0.01	0.04	0.01	48.8
8	T1	129	2.3	0.070	0.0	LOS A	0.0	0.1	0.01	0.04	0.01	49.8
9	R2	1	0.0	0.070	5.1	LOS A	0.0	0.1	0.01	0.04	0.01	49.2
Approach		139	4.3	0.070	0.4	NA	0.0	0.1	0.01	0.04	0.01	49.7
West: Park Street												
10	L2	1	0.0	0.007	5.1	LOS A	0.0	0.2	0.34	0.52	0.34	45.9
11	T1	1	0.0	0.007	4.9	LOS A	0.0	0.2	0.34	0.52	0.34	46.2
12	R2	4	0.0	0.007	6.2	LOS A	0.0	0.2	0.34	0.52	0.34	46.1
Approach		6	0.0	0.007	5.8	LOS A	0.0	0.2	0.34	0.52	0.34	46.1
All Vehicles		354	4.0	0.090	0.8	NA	0.1	0.6	0.04	0.07	0.04	49.4

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

# MOVEMENT SUMMARY

Site: [Int 2: 2019 AM Background]

Knight Street (east-west) / Knight Street (south) Intersection  
 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 Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	16	6.3	0.105	5.1	LOS A	0.4	2.9	0.42	0.62	0.42	45.0
2	T1	1	0.0	0.105	6.5	LOS A	0.4	2.9	0.42	0.62	0.42	45.5
3	R2	58	1.7	0.105	7.9	LOS A	0.4	2.9	0.42	0.62	0.42	45.5
Approach		75	2.7	0.105	7.3	LOS A	0.4	2.9	0.42	0.62	0.42	45.4
East: Knight Street												
4	L2	108	0.0	0.123	4.6	LOS A	0.0	0.1	0.00	0.24	0.00	48.2
5	T1	141	5.0	0.123	0.0	LOS A	0.0	0.1	0.00	0.24	0.00	48.6
6	R2	1	0.0	0.123	5.1	LOS A	0.0	0.1	0.00	0.24	0.00	48.0
Approach		250	2.8	0.123	2.0	NA	0.0	0.1	0.00	0.24	0.00	48.4
North: Property Access												
7	L2	1	0.0	0.004	5.0	LOS A	0.0	0.1	0.37	0.51	0.37	45.7
8	T1	1	0.0	0.004	6.6	LOS A	0.0	0.1	0.37	0.51	0.37	46.1
9	R2	1	0.0	0.004	7.1	LOS A	0.0	0.1	0.37	0.51	0.37	45.6
Approach		3	0.0	0.004	6.2	LOS A	0.0	0.1	0.37	0.51	0.37	45.8
West: Knight Street												
10	L2	1	0.0	0.080	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
11	T1	152	4.0	0.080	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	29	6.9	0.021	5.4	LOS A	0.1	0.7	0.35	0.52	0.35	45.9
Approach		182	4.4	0.080	0.9	NA	0.1	0.7	0.06	0.09	0.06	49.3
All Vehicles		510	3.3	0.123	2.4	NA	0.4	2.9	0.09	0.24	0.09	48.2

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

# MOVEMENT SUMMARY

Site: [Int 2: 2019 PM Background]

Knight Street (east-west) / Knight Street (south) Intersection  
 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 Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	30	0.0	0.204	5.1	LOS A	0.9	6.0	0.45	0.65	0.45	45.1
2	T1	1	0.0	0.204	6.5	LOS A	0.9	6.0	0.45	0.65	0.45	45.5
3	R2	118	1.7	0.204	7.9	LOS A	0.9	6.0	0.45	0.65	0.45	45.5
Approach		149	1.3	0.204	7.4	LOS A	0.9	6.0	0.45	0.65	0.45	45.4
East: Knight Street												
4	L2	48	2.1	0.102	4.6	LOS A	0.0	0.1	0.00	0.13	0.00	48.8
5	T1	162	2.5	0.102	0.0	LOS A	0.0	0.1	0.00	0.13	0.00	49.3
6	R2	1	0.0	0.102	5.1	LOS A	0.0	0.1	0.00	0.13	0.00	48.7
Approach		211	2.4	0.102	1.1	NA	0.0	0.1	0.00	0.13	0.00	49.2
North: Property Access												
7	L2	3	0.0	0.005	5.0	LOS A	0.0	0.1	0.30	0.50	0.30	46.0
8	T1	1	0.0	0.005	6.2	LOS A	0.0	0.1	0.30	0.50	0.30	46.4
9	R2	1	0.0	0.005	7.2	LOS A	0.0	0.1	0.30	0.50	0.30	45.9
Approach		5	0.0	0.005	5.7	LOS A	0.0	0.1	0.30	0.50	0.30	46.0
West: Knight Street												
10	L2	1	0.0	0.080	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
11	T1	151	4.0	0.080	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	15	0.0	0.010	5.2	LOS A	0.0	0.3	0.31	0.49	0.31	46.1
Approach		167	3.6	0.080	0.5	NA	0.0	0.3	0.03	0.05	0.03	49.6
All Vehicles		532	2.4	0.204	2.7	NA	0.9	6.0	0.14	0.25	0.14	48.1

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

# MOVEMENT SUMMARY

 **Site: [Int 3: 2019 AM Background]**

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

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: Bruce Highway												
1	L2	160	5.0	0.096	7.3	LOS A	0.8	5.9	0.17	0.62	0.17	52.5
2	T1	1332	4.7	0.543	10.0	LOS A	17.4	126.6	0.58	0.53	0.58	58.8
3	R2	4	0.0	0.043	57.8	LOS E	0.2	1.4	0.97	0.63	0.97	30.4
Approach		1496	4.7	0.543	9.9	LOS A	17.4	126.6	0.54	0.54	0.54	57.9
East: Kershaw Gardens Access												
4	L2	2	0.0	0.002	14.9	LOS B	0.0	0.3	0.51	0.57	0.51	46.0
5	T1	3	0.0	0.290	63.6	LOS E	0.3	2.4	1.00	0.63	1.00	26.4
6	R2	3	0.0	0.290	68.1	LOS E	0.3	2.4	1.00	0.63	1.00	28.2
Approach		8	0.0	0.290	53.1	LOS D	0.3	2.4	0.88	0.61	0.88	30.4
North: Bruce Highway												
7	L2	9	0.0	0.005	6.9	LOS A	0.0	0.2	0.12	0.60	0.12	52.8
8	T1	1836	3.7	0.761	12.6	LOS A	31.2	225.2	0.73	0.68	0.73	56.5
9	R2	66	0.0	0.711	62.9	LOS E	3.5	24.7	1.00	0.82	1.23	29.3
Approach		1911	3.5	0.761	14.3	LOS A	31.2	225.2	0.74	0.68	0.75	54.7
West: Knight Street												
10	L2	33	0.0	0.050	8.2	LOS A	0.4	2.9	0.34	0.59	0.34	50.1
11	T1	2	0.0	0.810	57.6	LOS E	4.8	35.3	1.00	0.94	1.39	27.2
12	R2	175	5.1	0.810	62.1	LOS E	4.8	35.3	1.00	0.94	1.39	28.7
Approach		210	4.3	0.810	53.6	LOS D	4.8	35.3	0.90	0.88	1.22	30.7
All Vehicles		3625	4.1	0.810	14.8	LOS B	31.2	225.2	0.67	0.64	0.69	53.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	
P3	North Full Crossing	5	44.2	LOS E	0.0	0.0	0.94	0.94	
All Pedestrians		5	44.2	LOS E			0.94	0.94	

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

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

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



# PHASING SUMMARY

 **Site: [Int 3: 2019 AM Background]**

Bruce Highway / Knight Street Intersection  
 Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)  
 Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Green Split Priority has been specified

Phase Sequence: TMR Phasing

Reference Phase: Phase A

Input Phase Sequence: A, D, E, F\*, F1\*, F2\*

Output Phase Sequence: A, D, E, F\*

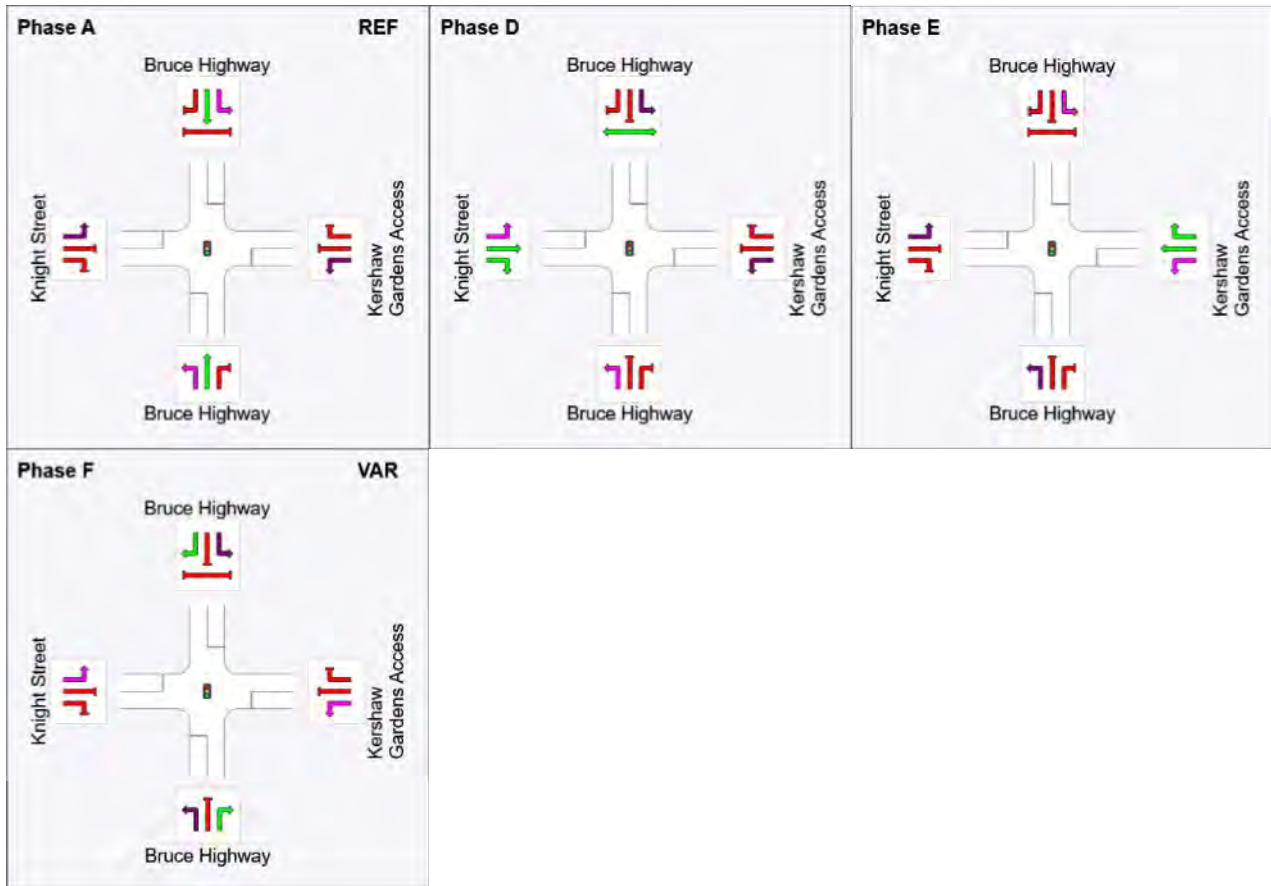
(\* Variable Phase)

## Phase Timing Summary

Phase	A	D	E	F
Phase Change Time (sec)	0	71	83	90
Green Time (sec)	65	6	1	5
Phase Time (sec)	71	12	6	11
Phase Split	71%	12%	6%	11%

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

## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase



# MOVEMENT SUMMARY

 **Site: [Int 3: 2019 PM Background]**

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

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	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bruce Highway												
1	L2	163	0.6	0.096	7.3	LOS A	0.7	5.2	0.19	0.63	0.19	52.5
2	T1	1638	4.0	0.706	12.0	LOS A	23.1	167.5	0.74	0.67	0.74	57.0
3	R2	5	0.0	0.057	51.2	LOS D	0.2	1.5	0.98	0.64	0.98	32.2
Approach		1806	3.7	0.706	11.7	LOS A	23.1	167.5	0.69	0.67	0.69	56.4
East: Kershaw Gardens Access												
4	L2	6	0.0	0.006	8.9	LOS A	0.1	0.5	0.39	0.57	0.39	49.6
5	T1	5	0.0	0.957	63.9	LOS E	1.3	8.8	1.00	1.02	2.64	26.1
6	R2	18	0.0	0.957	68.4	LOS E	1.3	8.8	1.00	1.02	2.64	27.8
Approach		29	0.0	0.957	55.3	LOS D	1.3	8.8	0.87	0.92	2.18	30.2
North: Bruce Highway												
7	L2	16	0.0	0.009	7.0	LOS A	0.0	0.3	0.15	0.61	0.15	52.7
8	T1	1306	5.8	0.569	10.5	LOS A	16.0	117.9	0.64	0.58	0.64	58.4
9	R2	49	2.1	0.569	54.3	LOS D	2.2	15.8	1.00	0.76	1.10	31.5
Approach		1371	5.6	0.569	12.0	LOS A	16.0	117.9	0.65	0.59	0.65	56.6
West: Knight Street												
10	L2	99	1.0	0.161	11.7	LOS A	1.7	12.0	0.51	0.66	0.51	47.7
11	T1	5	0.0	0.595	45.0	LOS D	3.4	24.5	1.00	0.79	1.08	30.0
12	R2	150	3.3	0.595	49.5	LOS D	3.4	24.5	1.00	0.80	1.08	31.9
Approach		254	2.4	0.595	34.7	LOS C	3.4	24.5	0.81	0.74	0.86	36.6
All Vehicles		3460	4.3	0.957	13.9	LOS A	23.1	167.5	0.68	0.64	0.70	53.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	
P3	North Full Crossing	5	36.7	LOS D	0.0	0.0	0.93	0.93	
All Pedestrians		5	36.7	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.

# PHASING SUMMARY

 **Site:** [Int 3: 2019 PM Background]

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Green Split Priority has been specified

Phase Sequence: TMR Phasing

Reference Phase: Phase A

Input Phase Sequence: A, D, E, F\*, F1\*, F2\*

Output Phase Sequence: A, D, E, F\*

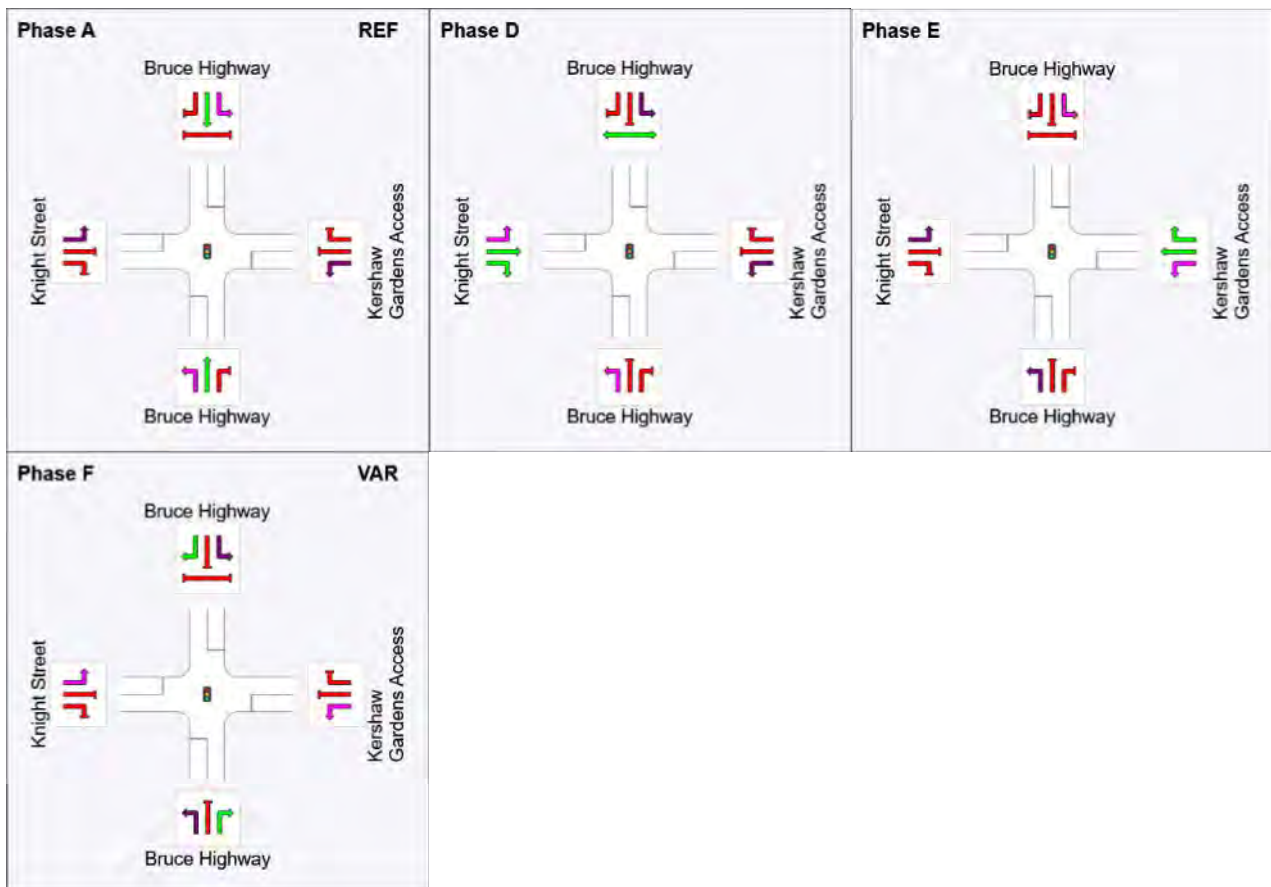
(\* Variable Phase)

## Phase Timing Summary

Phase	A	D	E	F
Phase Change Time (sec)	0	58	70	77
Green Time (sec)	52	6	1	4
Phase Time (sec)	58	12	5	10
Phase Split	68%	14%	6%	12%

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

## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

 Normal Movement

 Permitted/Opposed

# MOVEMENT SUMMARY

Site: [Int 4: 2019 AM Background]

Horace Street / Dowling Street  
 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	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Horace Street												
2	T1	67	6.0	0.034	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
3	R2	1	0.0	0.034	4.7	LOS A	0.0	0.0	0.00	0.01	0.00	49.2
Approach		68	5.9	0.034	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
East: Dowling Street												
4	L2	1	0.0	0.001	4.7	LOS A	0.0	0.0	0.11	0.50	0.11	46.4
6	R2	1	0.0	0.001	4.9	LOS A	0.0	0.0	0.11	0.50	0.11	46.1
Approach		2	0.0	0.001	4.8	LOS A	0.0	0.0	0.11	0.50	0.11	46.2
North: Horace Street												
7	L2	1	0.0	0.020	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
8	T1	37	8.1	0.020	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		38	7.9	0.020	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		108	6.5	0.034	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

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

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



# MOVEMENT SUMMARY

Site: [Int 4: 2019 PM Background]

Horace Street / Dowling Street  
 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 Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Horace Street												
2	T1	90	6.7	0.046	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	50.0
3	R2	1	0.0	0.046	4.7	LOS A	0.0	0.0	0.00	0.01	0.00	49.3
Approach		91	6.6	0.046	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
East: Dowling Street												
4	L2	1	0.0	0.002	4.7	LOS A	0.0	0.0	0.14	0.50	0.14	46.3
6	R2	1	0.0	0.002	5.0	LOS A	0.0	0.0	0.14	0.50	0.14	46.1
Approach		2	0.0	0.002	4.9	LOS A	0.0	0.0	0.14	0.50	0.14	46.2
North: Horace Street												
7	L2	1	0.0	0.027	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
8	T1	53	3.8	0.027	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		54	3.7	0.027	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		147	5.4	0.046	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9

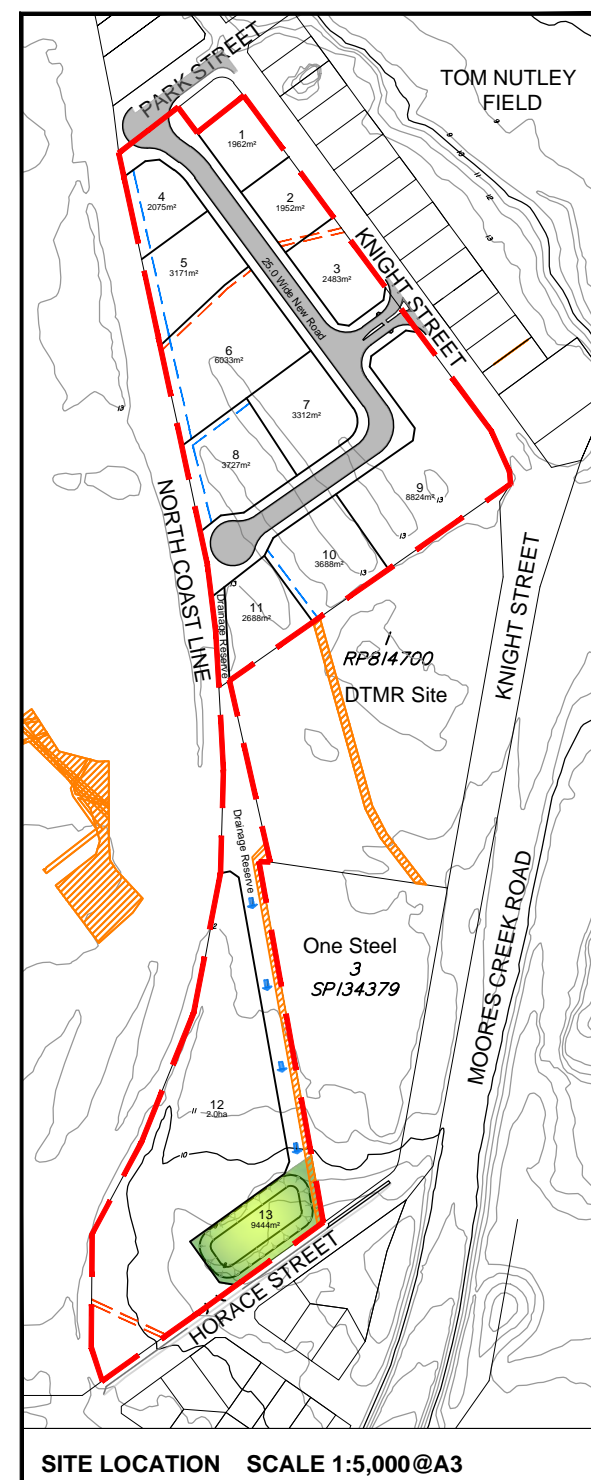
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
 Vehicle movement LOS values are based on average delay per movement.  
 Minor Road Approach LOS values are based on average delay for all vehicle movements.  
 NA: Intersection 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.

## APPENDIX G

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### Project Site Layout Plans





**SITE LOCATION SCALE 1:5,000@A3**

LEGEND	
Site Boundary	
Existing easement	
Proposed Stormwater basin. Size and location subject to engineering drawings.	
Traced existing rail	
Proposed stormwater easement subject to engineering drawings.	
Proposed sewer easement subject to engineering drawings.	
Proposed new road pavement	

DEVELOPMENT SUMMARY	
Total Site Area	8.2ha
Area of Lots	5.9964ha
Total Number of Lots	12
Average Lot Area (excl. lot 12)	3,628m <sup>2</sup>
Stormwater basin area	3,625m <sup>2</sup>
Total Area of Road	1.23ha

**DRAFT  
FOR DISCUSSION  
PURPOSES ONLY**

Areas, dimensions and number of lots are approximate only and remain subject to final survey and Council Approval.



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**IMPORTANT NOTES:**  
This plan is prepared for Preliminary evaluation of the land situated at Rockhampton. This plan is intended for discussion purposes only and should not be used for any other purposes. No investigations have been undertaken by Veris Australia Pty Ltd over this area of land other than to sight the registered plan and topographical map. The Contours, boundaries, creek line, flood lines, building locations have all been scaled and should not have any reliance based on them as they are only intended as a general guide. Any comments contained on this plan should be confirmed by the relevant authorities. The dimensions, areas and total number of lots shown hereon are subject to field survey and also to the requirements of Council and any other authority which may have requirements under any relevant legislation. In particular, no reliance should be placed on the information on this plan for any financial dealings involving the land.

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Data Sources			
Cadastral Boundaries	400217-006-CP06-D		
Engineering Drawings by McMurtrie	0581819-SK-0001-B		
	0581819-SK-0002-B		
	0581819-SK-0003-B		
Contours / Topographic	QSC		
Aerial Images	Nearmap		

Locality:	Rockhampton
Local Authority:	RRC
Scale:	1:1,500@A3
Designed:	SI
Drawn:	SI
Checked:	MF
Plot Date:	15 Jul, 2019
Computer File Ref:	400217-006-CP06-E.dwg

**AURIZON**

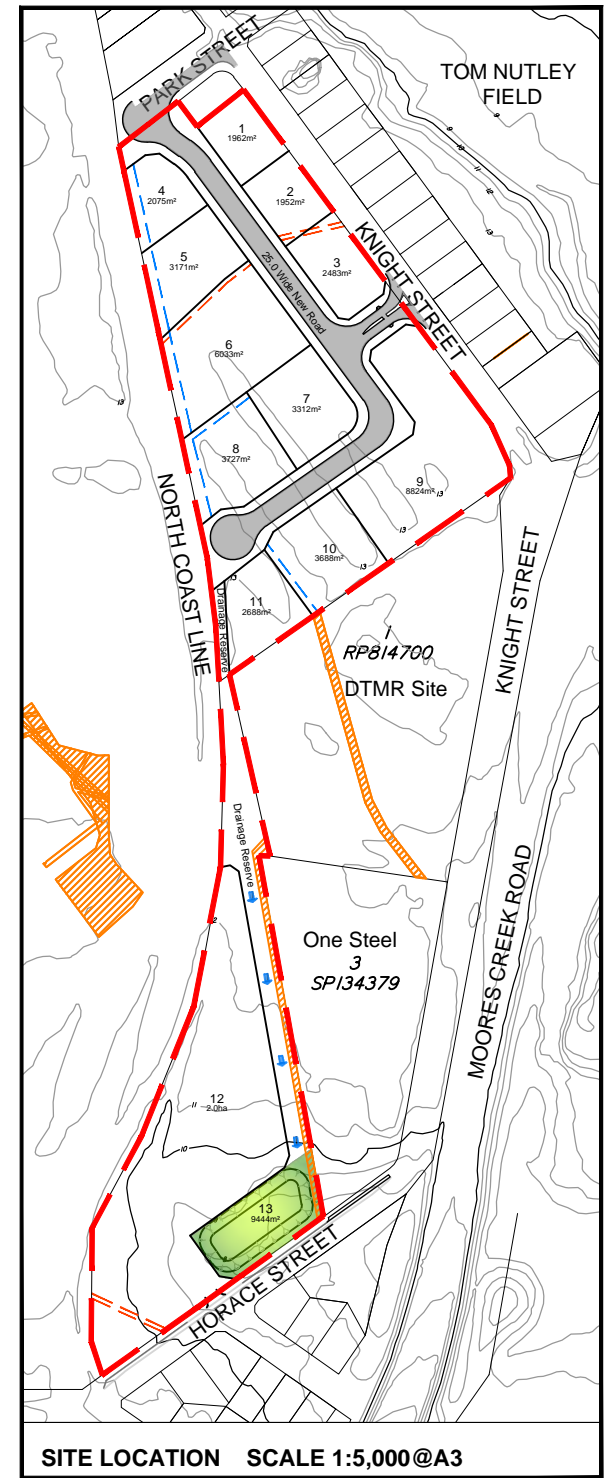
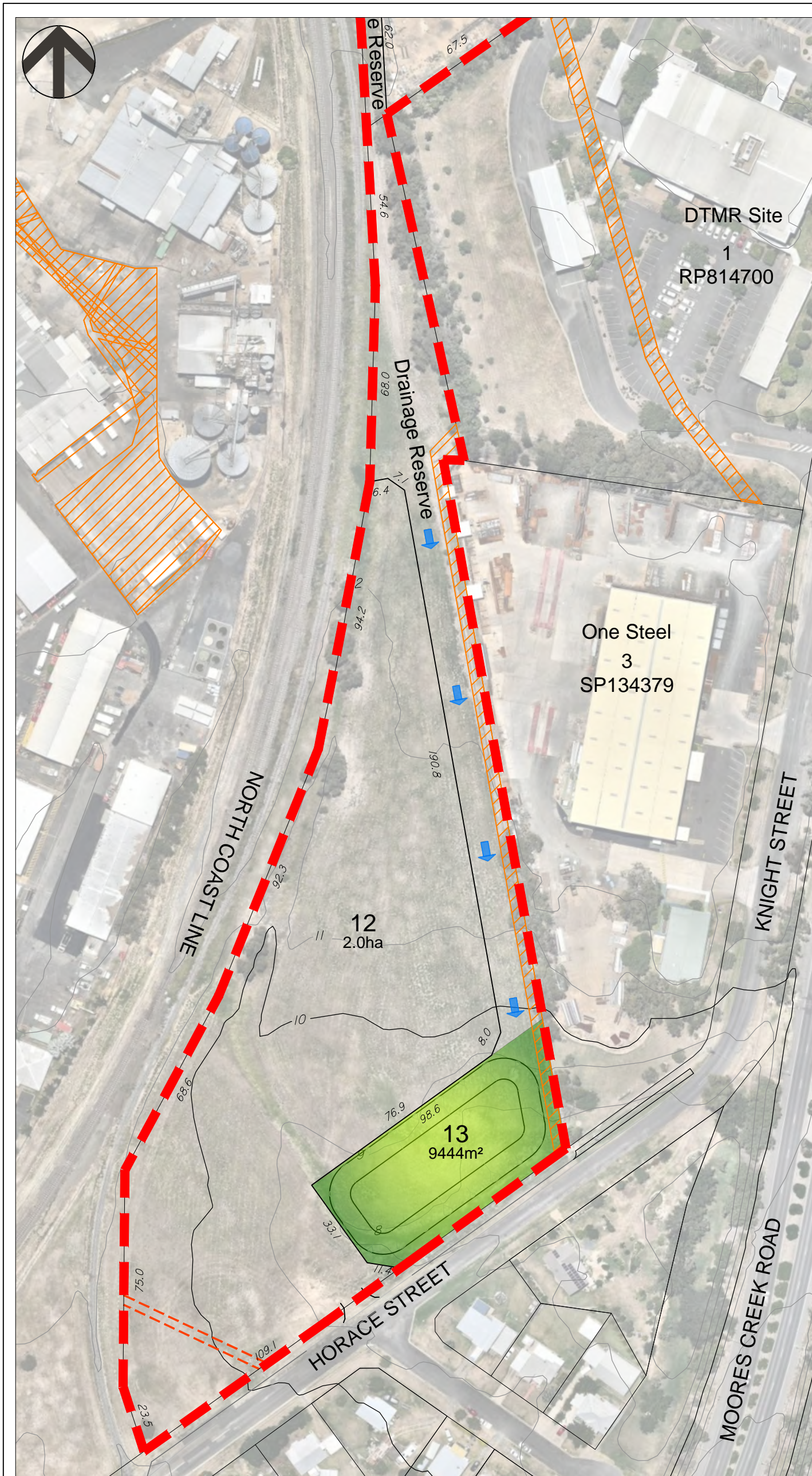
**Industrial Subdivision**  
One (1) Lot into Twelve (12) Lots and One (1) Reserve Lot over Lot 4 on SP134379, 33-53 Knight Street, Park Avenue

**BRISBANE** (07) 3666 4700  
**WHITSUNDAYS** (07) 4945 1722  
**MACKAY** (07) 4951 2911  
**CAIRNS** (07) 4051 6722

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ACN 615 735 727  
Veris Australia Pty Ltd

Drawing No: 400217-006-CP06 (Sheet 1 of 2) Issue E





SITE LOCATION SCALE 1:5,000@A3

LEGEND	
Site Boundary	
Existing easement	
Proposed Stormwater basin. Size and location subject to engineering drawings.	
Traced existing rail	
Proposed stormwater easement subject to engineering drawings.	
Proposed sewer easement subject to engineering drawings.	
Proposed new road pavement	

**DRAFT FOR DISCUSSION PURPOSES ONLY**  
 Areas, dimensions and number of lots are approximate only and remain subject to final survey and Council Approval.



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Data Sources			
Cadastral Boundaries	400217-006-CP06-D		
Engineering Drawings by McMurtrie	0581819-SK-0001-B 0581819-SK-0002-B 0581819-SK-0003-B		
Contours / Topographic	QSC		
Aerial Images	Nearmap		
E	Show southern part of site in detail on sheet No 2	15.10.2019.	SI
D	Amend lot layout	11.10.2019.	SI
C	Add note	12.04.2019.	SI
B	Amend lot layout	08.04.2019.	SI
A	Original	28.03.2019.	SI
Issue	Revisions	Date	Drawn

Locality: Rockhampton  
 Local Authority: RRC  
 Scale: 1:1,500@A3  
 Designed: SI  
 Drawn: MF  
 Checked: MF  
 Plot Date: 15 Jul, 2019  
 Computer File Ref: 400217-006-CP06-E.dwg

**AURIZON**

Industrial Subdivision  
 One (1) Lot into Twelve (12) Lots and One (1) Reserve Lot over Lot 4 on SP134379,  
 33-53 Knight Street, Park Avenue

**veris**

BRISBANE (07) 3666 4700    WHITSUNDAYS (07) 4945 1722  
 MACKAY (07) 4951 2911    CAIRNS (07) 4051 6722

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Drawing No: 400217-006-CP06 (Sheet 2 of 2)    Issue: E



## APPENDIX H

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SIDRA Analysis Results (Pre and Post Development, 2022 and 2032)

# MOVEMENT SUMMARY

Site: [Int 1: 2032 AM Background]

Knight Street / Park Street  
 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 Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	3	0.0	0.083	5.3	LOS A	0.1	0.5	0.05	0.04	0.05	49.2
2	T1	153	7.5	0.083	0.1	LOS A	0.1	0.5	0.05	0.04	0.05	49.6
3	R2	8	0.0	0.083	5.4	LOS A	0.1	0.5	0.05	0.04	0.05	49.2
Approach		164	7.0	0.083	0.4	NA	0.1	0.5	0.05	0.04	0.05	49.6
East: Park Street												
4	L2	10	0.0	0.022	5.3	LOS A	0.1	0.5	0.36	0.57	0.36	45.8
5	T1	1	0.0	0.022	5.4	LOS A	0.1	0.5	0.36	0.57	0.36	46.1
6	R2	10	0.0	0.022	6.8	LOS A	0.1	0.5	0.36	0.57	0.36	45.6
Approach		21	0.0	0.022	6.0	LOS A	0.1	0.5	0.36	0.57	0.36	45.7
North: Knight Street												
7	L2	8	71.4	0.123	5.2	LOS A	0.0	0.1	0.00	0.02	0.00	48.3
8	T1	234	3.9	0.123	0.0	LOS A	0.0	0.1	0.00	0.02	0.00	49.9
9	R2	1	0.0	0.123	5.1	LOS A	0.0	0.1	0.00	0.02	0.00	49.4
Approach		243	6.1	0.123	0.2	NA	0.0	0.1	0.00	0.02	0.00	49.9
West: Park Street												
10	L2	1	0.0	0.005	5.0	LOS A	0.0	0.1	0.34	0.52	0.34	45.8
11	T1	1	0.0	0.005	5.4	LOS A	0.0	0.1	0.34	0.52	0.34	46.2
12	R2	2	0.0	0.005	6.7	LOS A	0.0	0.1	0.34	0.52	0.34	46.0
Approach		4	0.0	0.005	5.9	LOS A	0.0	0.1	0.34	0.52	0.34	46.0
All Vehicles		432	6.1	0.123	0.6	NA	0.1	0.5	0.04	0.06	0.04	49.5

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

# MOVEMENT SUMMARY

Site: [Int 1: 2032 PM Background]

Knight Street / Park Street  
 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 Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	1	0.0	0.103	5.2	LOS A	0.1	0.6	0.03	0.02	0.03	49.3
2	T1	199	2.3	0.103	0.0	LOS A	0.1	0.6	0.03	0.02	0.03	49.8
3	R2	8	28.6	0.103	5.5	LOS A	0.1	0.6	0.03	0.02	0.03	48.9
Approach		208	3.3	0.103	0.3	NA	0.1	0.6	0.03	0.02	0.03	49.8
East: Park Street												
4	L2	18	12.5	0.028	5.2	LOS A	0.1	0.7	0.27	0.54	0.27	45.8
5	T1	1	0.0	0.028	5.2	LOS A	0.1	0.7	0.27	0.54	0.27	46.4
6	R2	10	0.0	0.028	6.5	LOS A	0.1	0.7	0.27	0.54	0.27	45.8
Approach		29	7.8	0.028	5.6	LOS A	0.1	0.7	0.27	0.54	0.27	45.8
North: Knight Street												
7	L2	10	33.3	0.079	4.9	LOS A	0.0	0.1	0.01	0.04	0.01	48.8
8	T1	147	2.3	0.079	0.0	LOS A	0.0	0.1	0.01	0.04	0.01	49.8
9	R2	1	0.0	0.079	5.2	LOS A	0.0	0.1	0.01	0.04	0.01	49.2
Approach		158	4.3	0.079	0.3	NA	0.0	0.1	0.01	0.04	0.01	49.8
West: Park Street												
10	L2	1	0.0	0.008	5.1	LOS A	0.0	0.2	0.37	0.54	0.37	45.7
11	T1	1	0.0	0.008	5.2	LOS A	0.0	0.2	0.37	0.54	0.37	46.1
12	R2	5	0.0	0.008	6.5	LOS A	0.0	0.2	0.37	0.54	0.37	46.0
Approach		7	0.0	0.008	6.1	LOS A	0.0	0.2	0.37	0.54	0.37	45.9
All Vehicles		402	3.9	0.103	0.8	NA	0.1	0.7	0.04	0.07	0.04	49.4

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

# MOVEMENT SUMMARY

Site: [Int 1: 2032 AM With Development]

Knight Street / Park Street  
 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
South: Knight Street												
1	L2	3	0.0	0.084	5.3	LOS A	0.1	0.5	0.05	0.04	0.05	49.2
2	T1	155	7.5	0.084	0.1	LOS A	0.1	0.5	0.05	0.04	0.05	49.6
3	R2	8	0.0	0.084	5.4	LOS A	0.1	0.5	0.05	0.04	0.05	49.2
Approach		166	7.0	0.084	0.4	NA	0.1	0.5	0.05	0.04	0.05	49.6
East: Park Street												
4	L2	10	0.0	0.023	5.3	LOS A	0.1	0.5	0.36	0.57	0.36	45.8
5	T1	1	0.0	0.023	5.5	LOS A	0.1	0.5	0.36	0.57	0.36	46.1
6	R2	10	0.0	0.023	6.9	LOS A	0.1	0.5	0.36	0.57	0.36	45.6
Approach		21	0.0	0.023	6.0	LOS A	0.1	0.5	0.36	0.57	0.36	45.7
North: Knight Street												
7	L2	8	71.4	0.128	5.4	LOS A	0.1	0.5	0.03	0.03	0.03	48.2
8	T1	236	3.9	0.128	0.0	LOS A	0.1	0.5	0.03	0.03	0.03	49.8
9	R2	8	0.0	0.128	5.1	LOS A	0.1	0.5	0.03	0.03	0.03	49.2
Approach		252	5.9	0.128	0.4	NA	0.1	0.5	0.03	0.03	0.03	49.7
West: Park Street												
10	L2	1	0.0	0.022	5.0	LOS A	0.1	0.5	0.41	0.59	0.41	45.4
11	T1	1	0.0	0.022	5.5	LOS A	0.1	0.5	0.41	0.59	0.41	45.8
12	R2	14	0.0	0.022	6.9	LOS A	0.1	0.5	0.41	0.59	0.41	45.6
Approach		16	0.0	0.022	6.7	LOS A	0.1	0.5	0.41	0.59	0.41	45.6
All Vehicles		455	5.8	0.128	0.9	NA	0.1	0.5	0.06	0.08	0.06	49.3

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



# MOVEMENT SUMMARY

Site: [Int 1: 2032 PM With Development]

Knight Street / Park Street  
 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 Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	1	0.0	0.105	5.2	LOS A	0.1	0.6	0.03	0.02	0.03	49.3
2	T1	204	2.3	0.105	0.0	LOS A	0.1	0.6	0.03	0.02	0.03	49.8
3	R2	8	28.6	0.105	5.5	LOS A	0.1	0.6	0.03	0.02	0.03	48.9
Approach		213	3.3	0.105	0.3	NA	0.1	0.6	0.03	0.02	0.03	49.8
East: Park Street												
4	L2	18	12.5	0.028	5.2	LOS A	0.1	0.7	0.27	0.54	0.27	45.8
5	T1	1	0.0	0.028	5.2	LOS A	0.1	0.7	0.27	0.54	0.27	46.3
6	R2	10	0.0	0.028	6.6	LOS A	0.1	0.7	0.27	0.54	0.27	45.8
Approach		29	7.8	0.028	5.6	LOS A	0.1	0.7	0.27	0.54	0.27	45.8
North: Knight Street												
7	L2	10	33.3	0.081	5.0	LOS A	0.0	0.2	0.02	0.04	0.02	48.7
8	T1	148	2.3	0.081	0.0	LOS A	0.0	0.2	0.02	0.04	0.02	49.7
9	R2	3	0.0	0.081	5.2	LOS A	0.0	0.2	0.02	0.04	0.02	49.2
Approach		161	4.2	0.081	0.4	NA	0.0	0.2	0.02	0.04	0.02	49.7
West: Park Street												
10	L2	4	0.0	0.045	5.2	LOS A	0.2	1.1	0.39	0.60	0.39	45.6
11	T1	1	0.0	0.045	5.3	LOS A	0.2	1.1	0.39	0.60	0.39	45.9
12	R2	31	0.0	0.045	6.6	LOS A	0.2	1.1	0.39	0.60	0.39	45.8
Approach		36	0.0	0.045	6.4	LOS A	0.2	1.1	0.39	0.60	0.39	45.7
All Vehicles		439	3.6	0.105	1.2	NA	0.2	1.1	0.07	0.11	0.07	49.1

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

# MOVEMENT SUMMARY

Site: [Int 2: 2032 AM Background]

Knight Street (east-west) / Knight Street (south) Intersection  
 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 Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	18	6.3	0.128	5.2	LOS A	0.5	3.6	0.46	0.65	0.46	44.7
2	T1	1	0.0	0.128	7.1	LOS A	0.5	3.6	0.46	0.65	0.46	45.2
3	R2	66	1.7	0.128	8.6	LOS A	0.5	3.6	0.46	0.65	0.46	45.2
Approach		85	2.7	0.128	7.8	LOS A	0.5	3.6	0.46	0.65	0.46	45.1
East: Knight Street												
4	L2	123	0.0	0.139	4.6	LOS A	0.0	0.1	0.00	0.24	0.00	48.2
5	T1	160	5.0	0.139	0.0	LOS A	0.0	0.1	0.00	0.24	0.00	48.6
6	R2	1	0.0	0.139	5.2	LOS A	0.0	0.1	0.00	0.24	0.00	48.0
Approach		284	2.8	0.139	2.0	NA	0.0	0.1	0.00	0.24	0.00	48.4
North: Property Access												
7	L2	1	0.0	0.004	5.0	LOS A	0.0	0.1	0.40	0.52	0.40	45.5
8	T1	1	0.0	0.004	7.2	LOS A	0.0	0.1	0.40	0.52	0.40	45.9
9	R2	1	0.0	0.004	7.5	LOS A	0.0	0.1	0.40	0.52	0.40	45.4
Approach		3	0.0	0.004	6.6	LOS A	0.0	0.1	0.40	0.52	0.40	45.6
West: Knight Street												
10	L2	1	0.0	0.091	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
11	T1	173	4.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	33	6.9	0.025	5.6	LOS A	0.1	0.8	0.37	0.53	0.37	45.9
Approach		207	4.4	0.091	0.9	NA	0.1	0.8	0.06	0.09	0.06	49.3
All Vehicles		579	3.3	0.139	2.5	NA	0.5	3.6	0.09	0.25	0.09	48.2

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

# MOVEMENT SUMMARY

Site: [Int 2: 2032 PM Background]

Knight Street (east-west) / Knight Street (south) Intersection  
 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 Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	34	0.0	0.247	5.2	LOS A	1.0	7.4	0.50	0.69	0.50	44.7
2	T1	1	0.0	0.247	7.1	LOS A	1.0	7.4	0.50	0.69	0.50	45.1
3	R2	134	1.7	0.247	8.7	LOS A	1.0	7.4	0.50	0.69	0.50	45.1
Approach		169	1.3	0.247	8.0	LOS A	1.0	7.4	0.50	0.69	0.50	45.0
East: Knight Street												
4	L2	55	2.1	0.116	4.6	LOS A	0.0	0.1	0.00	0.13	0.00	48.8
5	T1	184	2.5	0.116	0.0	LOS A	0.0	0.1	0.00	0.13	0.00	49.3
6	R2	1	0.0	0.116	5.2	LOS A	0.0	0.1	0.00	0.13	0.00	48.7
Approach		240	2.4	0.116	1.1	NA	0.0	0.1	0.00	0.13	0.00	49.1
North: Property Access												
7	L2	3	0.0	0.005	5.0	LOS A	0.0	0.1	0.33	0.51	0.33	45.8
8	T1	1	0.0	0.005	6.6	LOS A	0.0	0.1	0.33	0.51	0.33	46.3
9	R2	1	0.0	0.005	7.7	LOS A	0.0	0.1	0.33	0.51	0.33	45.8
Approach		5	0.0	0.005	5.9	LOS A	0.0	0.1	0.33	0.51	0.33	45.9
West: Knight Street												
10	L2	1	0.0	0.091	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
11	T1	172	4.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	17	0.0	0.012	5.3	LOS A	0.1	0.4	0.33	0.50	0.33	46.1
Approach		190	3.6	0.091	0.5	NA	0.1	0.4	0.03	0.05	0.03	49.6
All Vehicles		604	2.4	0.247	2.9	NA	1.0	7.4	0.15	0.26	0.15	48.0

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

# MOVEMENT SUMMARY

Site: [Int 2: 2032 AM With Development]

Knight Street (east-west) / Knight Street (south) Intersection  
 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 Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	22	6.3	0.144	5.3	LOS A	0.6	4.0	0.48	0.68	0.48	44.5
2	T1	1	0.0	0.144	7.5	LOS A	0.6	4.0	0.48	0.68	0.48	45.0
3	R2	69	1.7	0.144	9.2	LOS A	0.6	4.0	0.48	0.68	0.48	45.0
Approach		92	2.8	0.144	8.2	LOS A	0.6	4.0	0.48	0.68	0.48	44.9
East: Knight Street												
4	L2	129	0.0	0.154	4.6	LOS A	0.0	0.1	0.00	0.22	0.00	48.2
5	T1	184	5.0	0.154	0.0	LOS A	0.0	0.1	0.00	0.22	0.00	48.7
6	R2	1	0.0	0.154	5.2	LOS A	0.0	0.1	0.00	0.22	0.00	48.1
Approach		314	2.9	0.154	1.9	NA	0.0	0.1	0.00	0.22	0.00	48.5
North: Property Access												
7	L2	1	0.0	0.004	5.1	LOS A	0.0	0.1	0.42	0.53	0.42	45.3
8	T1	1	0.0	0.004	7.6	LOS A	0.0	0.1	0.42	0.53	0.42	45.7
9	R2	1	0.0	0.004	7.9	LOS A	0.0	0.1	0.42	0.53	0.42	45.2
Approach		3	0.0	0.004	6.9	LOS A	0.0	0.1	0.42	0.53	0.42	45.4
West: Knight Street												
10	L2	1	0.0	0.097	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
11	T1	183	4.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	36	6.9	0.028	5.7	LOS A	0.1	0.9	0.40	0.54	0.40	45.8
Approach		220	4.4	0.097	1.0	NA	0.1	0.9	0.06	0.09	0.06	49.2
All Vehicles		629	3.4	0.154	2.5	NA	0.6	4.0	0.10	0.24	0.10	48.2

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



# MOVEMENT SUMMARY

Site: [Int 2: 2032 PM With Development]

Knight Street (east-west) / Knight Street (south) Intersection  
 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 Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Knight Street												
1	L2	37	0.0	0.273	5.4	LOS A	1.2	8.4	0.52	0.72	0.54	44.4
2	T1	1	0.0	0.273	7.6	LOS A	1.2	8.4	0.52	0.72	0.54	44.8
3	R2	140	1.7	0.273	9.3	LOS A	1.2	8.4	0.52	0.72	0.54	44.8
Approach		178	1.3	0.273	8.5	LOS A	1.2	8.4	0.52	0.72	0.54	44.7
East: Knight Street												
4	L2	57	2.1	0.122	4.6	LOS A	0.0	0.1	0.00	0.12	0.00	48.8
5	T1	194	2.5	0.122	0.0	LOS A	0.0	0.1	0.00	0.12	0.00	49.3
6	R2	1	0.0	0.122	5.3	LOS A	0.0	0.1	0.00	0.12	0.00	48.7
Approach		252	2.4	0.122	1.1	NA	0.0	0.1	0.00	0.12	0.00	49.2
North: Property Access												
7	L2	3	0.0	0.005	5.1	LOS A	0.0	0.1	0.36	0.51	0.36	45.7
8	T1	1	0.0	0.005	7.0	LOS A	0.0	0.1	0.36	0.51	0.36	46.2
9	R2	1	0.0	0.005	8.2	LOS A	0.0	0.1	0.36	0.51	0.36	45.7
Approach		5	0.0	0.005	6.1	LOS A	0.0	0.1	0.36	0.51	0.36	45.8
West: Knight Street												
10	L2	1	0.0	0.103	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
11	T1	195	4.0	0.103	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	21	0.0	0.015	5.3	LOS A	0.1	0.4	0.34	0.51	0.34	46.0
Approach		217	3.6	0.103	0.5	NA	0.1	0.4	0.03	0.05	0.03	49.6
All Vehicles		652	2.5	0.273	3.0	NA	1.2	8.4	0.16	0.27	0.16	48.0

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

# MOVEMENT SUMMARY

 **Site: [Int 3: 2022 AM Background]**

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

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	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bruce Highway												
1	L2	165	5.0	0.099	7.3	LOS A	0.8	6.1	0.17	0.63	0.17	52.5
2	T1	1372	4.7	0.559	10.2	LOS A	18.2	132.6	0.59	0.54	0.59	58.6
3	R2	4	0.0	0.043	57.8	LOS E	0.2	1.4	0.97	0.63	0.97	30.4
Approach		1541	4.7	0.559	10.0	LOS A	18.2	132.6	0.55	0.55	0.55	57.8
East: Kershaw Gardens Access												
4	L2	2	0.0	0.002	15.8	LOS B	0.0	0.3	0.53	0.57	0.53	45.4
5	T1	3	0.0	0.290	63.6	LOS E	0.3	2.4	1.00	0.63	1.00	26.4
6	R2	3	0.0	0.290	68.1	LOS E	0.3	2.4	1.00	0.63	1.00	28.2
Approach		8	0.0	0.290	53.3	LOS D	0.3	2.4	0.88	0.61	0.88	30.3
North: Bruce Highway												
7	L2	9	0.0	0.005	6.9	LOS A	0.0	0.2	0.12	0.60	0.12	52.8
8	T1	1892	3.7	0.785	13.0	LOS A	33.1	239.1	0.76	0.70	0.76	56.2
9	R2	68	0.0	0.732	63.3	LOS E	3.7	25.6	1.00	0.83	1.26	29.3
Approach		1969	3.5	0.785	14.7	LOS B	33.1	239.1	0.76	0.70	0.77	54.4
West: Knight Street												
10	L2	34	0.0	0.052	8.2	LOS A	0.4	3.0	0.34	0.59	0.34	50.1
11	T1	2	0.0	0.833	58.5	LOS E	5.0	36.6	1.00	0.96	1.45	27.0
12	R2	180	5.1	0.833	63.0	LOS E	5.0	36.6	1.00	0.96	1.45	28.5
Approach		216	4.3	0.833	54.4	LOS D	5.0	36.6	0.90	0.90	1.27	30.5
All Vehicles		3734	4.1	0.833	15.1	LOS B	33.1	239.1	0.68	0.65	0.71	53.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	
P3	North Full Crossing	5	44.2	LOS E	0.0	0.0	0.94	0.94	
All Pedestrians		5	44.2	LOS E			0.94	0.94	

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

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

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

# PHASING SUMMARY

 **Site: [Int 3: 2022 AM Background]**

Bruce Highway / Knight Street Intersection  
 Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)  
 Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Green Split Priority has been specified

Phase Sequence: TMR Phasing

Reference Phase: Phase A

Input Phase Sequence: A, D, E, F\*, F1\*, F2\*

Output Phase Sequence: A, D, E, F\*

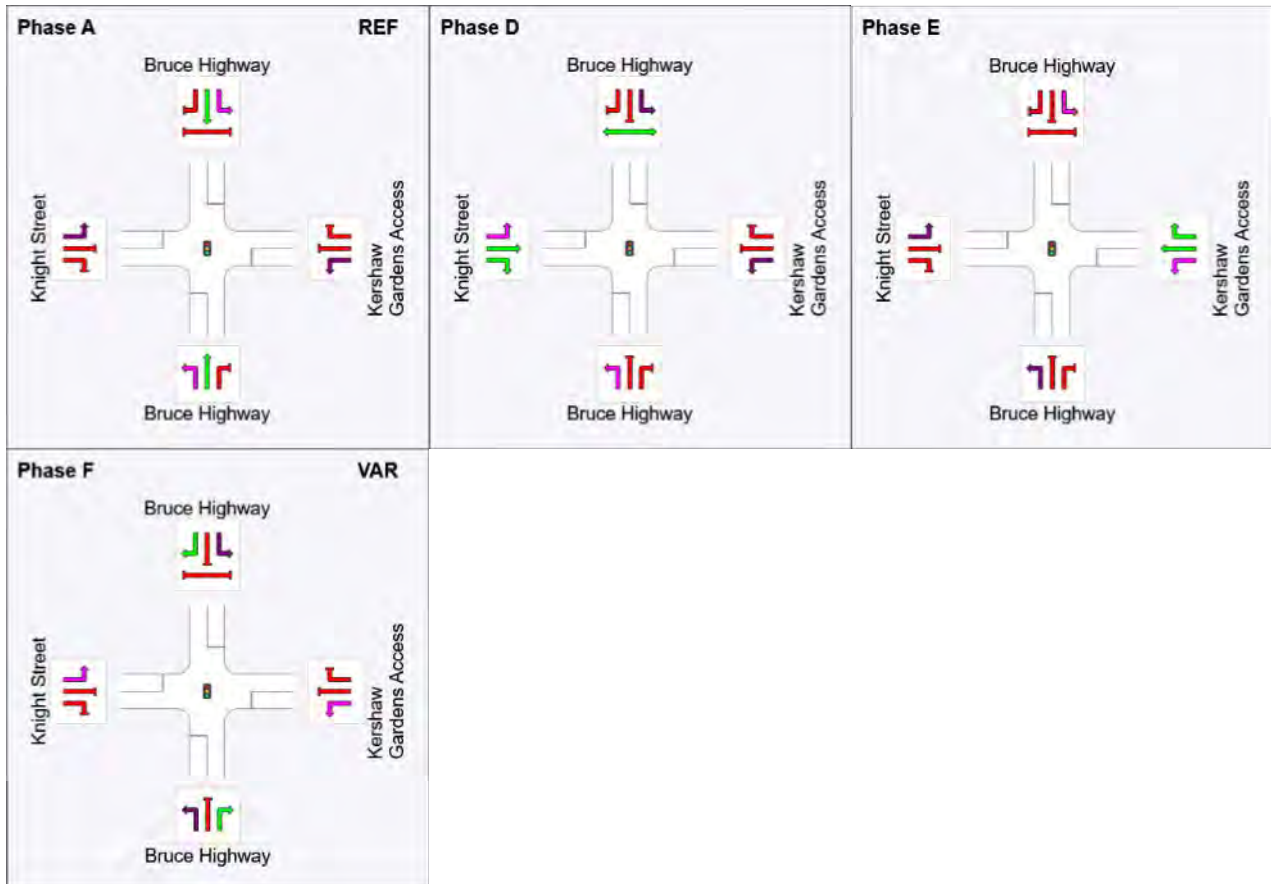
(\* Variable Phase)

## Phase Timing Summary

Phase	A	D	E	F
Phase Change Time (sec)	0	71	83	90
Green Time (sec)	65	6	1	5
Phase Time (sec)	71	12	6	11
Phase Split	71%	12%	6%	11%

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

## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase



# MOVEMENT SUMMARY

 **Site: [Int 3: 2022 PM Background]**

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

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: Bruce Highway												
1	L2	168	0.6	0.097	7.2	LOS A	0.8	5.3	0.16	0.62	0.16	52.6
2	T1	1688	4.0	0.685	11.7	LOS A	25.7	186.2	0.68	0.63	0.68	57.3
3	R2	5	0.0	0.067	59.8	LOS E	0.3	1.8	0.98	0.64	0.98	29.9
Approach		1861	3.7	0.685	11.4	LOS A	25.7	186.2	0.64	0.63	0.64	56.7
East: Kershaw Gardens Access												
4	L2	6	0.0	0.005	9.1	LOS A	0.1	0.6	0.36	0.56	0.36	49.5
5	T1	5	0.0	0.588	60.6	LOS E	1.3	9.4	1.00	0.74	1.17	26.8
6	R2	19	0.0	0.588	65.0	LOS E	1.3	9.4	1.00	0.74	1.17	28.5
Approach		30	0.0	0.588	53.1	LOS D	1.3	9.4	0.87	0.70	1.01	30.8
North: Bruce Highway												
7	L2	16	0.0	0.009	6.9	LOS A	0.0	0.3	0.13	0.60	0.13	52.7
8	T1	1346	5.8	0.552	10.1	LOS A	17.7	130.3	0.59	0.54	0.59	58.7
9	R2	50	2.1	0.683	64.1	LOS E	2.7	19.3	1.00	0.80	1.22	29.1
Approach		1412	5.6	0.683	12.0	LOS A	17.7	130.3	0.60	0.55	0.61	56.6
West: Knight Street												
10	L2	102	1.0	0.182	11.9	LOS A	2.0	13.9	0.48	0.65	0.48	47.5
11	T1	5	0.0	0.722	55.3	LOS D	4.3	30.5	1.00	0.86	1.22	27.7
12	R2	155	3.3	0.722	59.8	LOS E	4.3	30.5	1.00	0.86	1.22	29.3
Approach		262	2.4	0.722	41.1	LOS C	4.3	30.5	0.80	0.78	0.93	34.4
All Vehicles		3565	4.3	0.722	14.2	LOS A	25.7	186.2	0.64	0.61	0.65	53.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	
P3	North Full Crossing	5	44.2	LOS E	0.0	0.0	0.94	0.94	
All Pedestrians		5	44.2	LOS E			0.94	0.94	


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

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

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



# PHASING SUMMARY

 **Site:** [Int 3: 2022 PM Background]

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Green Split Priority has been specified

Phase Sequence: TMR Phasing

Reference Phase: Phase A

Input Phase Sequence: A, D, E, F\*, F1\*, F2\*

Output Phase Sequence: A, D, E, F\*

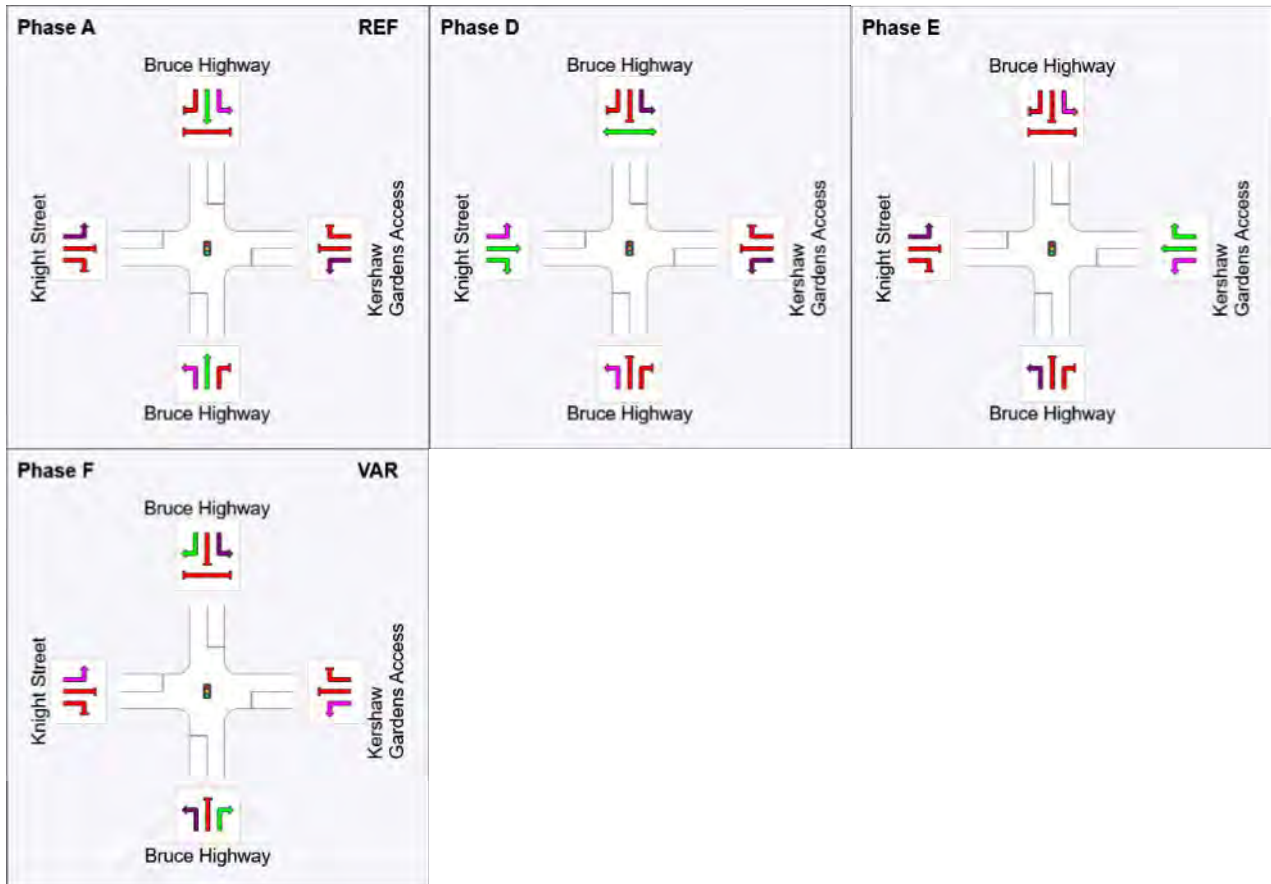
(\* Variable Phase)

## Phase Timing Summary

Phase	A	D	E	F
Phase Change Time (sec)	0	71	83	91
Green Time (sec)	65	6	2	4
Phase Time (sec)	71	12	7	10
Phase Split	71%	12%	7%	10%

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

## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase



# MOVEMENT SUMMARY

 **Site: [Int 3: 2022 AM With Development]**

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

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	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bruce Highway												
1	L2	182	5.0	0.109	7.4	LOS A	1.0	7.5	0.17	0.63	0.17	52.5
2	T1	1372	4.7	0.555	10.9	LOS A	19.7	143.5	0.59	0.53	0.59	58.0
3	R2	4	0.0	0.039	61.8	LOS E	0.2	1.5	0.97	0.64	0.97	29.5
Approach		1558	4.7	0.555	10.6	LOS A	19.7	143.5	0.54	0.55	0.54	57.1
East: Kershaw Gardens Access												
4	L2	2	0.0	0.002	17.1	LOS B	0.0	0.3	0.53	0.57	0.53	44.7
5	T1	3	0.0	0.319	70.1	LOS E	0.4	2.7	1.00	0.63	1.00	25.3
6	R2	3	0.0	0.319	74.6	LOS F	0.4	2.7	1.00	0.63	1.00	26.8
Approach		8	0.0	0.319	58.5	LOS E	0.4	2.7	0.88	0.61	0.88	29.1
North: Bruce Highway												
7	L2	9	0.0	0.005	6.9	LOS A	0.0	0.2	0.11	0.60	0.11	52.8
8	T1	1892	3.7	0.784	13.8	LOS A	36.3	261.9	0.75	0.69	0.75	55.4
9	R2	81	0.0	0.800	69.5	LOS E	4.8	33.7	1.00	0.88	1.35	27.9
Approach		1982	3.5	0.800	16.1	LOS B	36.3	261.9	0.75	0.70	0.77	53.2
West: Knight Street												
10	L2	39	0.0	0.059	8.4	LOS A	0.5	3.8	0.33	0.59	0.33	50.0
11	T1	2	0.0	0.820	62.8	LOS E	5.7	41.4	1.00	0.95	1.37	26.2
12	R2	188	5.1	0.820	67.3	LOS E	5.7	41.4	1.00	0.95	1.37	27.6
Approach		229	4.2	0.820	57.2	LOS E	5.7	41.4	0.89	0.89	1.20	29.8
All Vehicles		3777	4.0	0.820	16.4	LOS B	36.3	261.9	0.67	0.65	0.70	52.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	
P3	North Full Crossing	5	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		5	49.2	LOS E			0.95	0.95	

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.

# PHASING SUMMARY

 **Site: [Int 3: 2022 AM With Development]**

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Green Split Priority has been specified

Phase Sequence: TMR Phasing

Reference Phase: Phase A

Input Phase Sequence: A, D, E, F\*, F1\*, F2\*

Output Phase Sequence: A, D, E, F\*

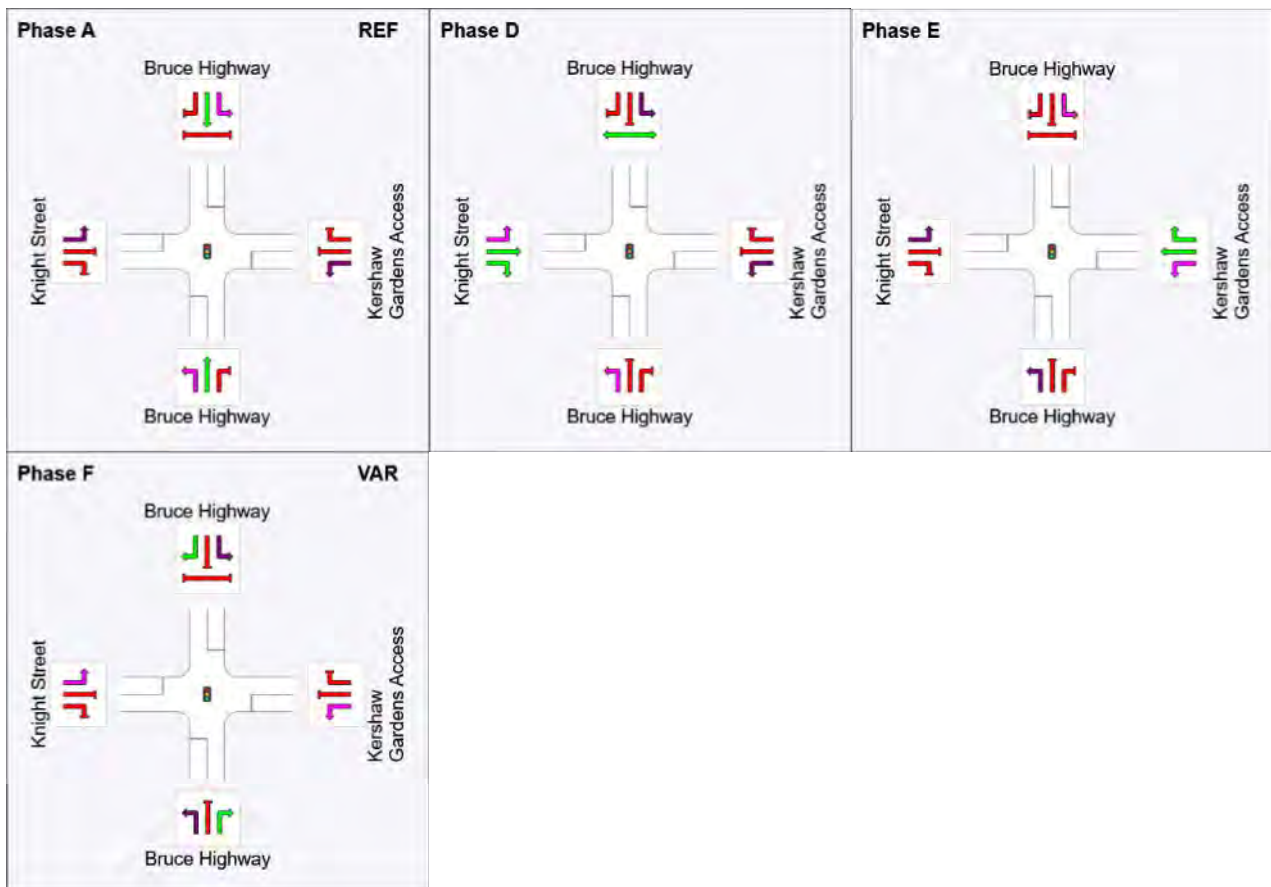
(\* Variable Phase)

## Phase Timing Summary

Phase	A	D	E	F
Phase Change Time (sec)	0	78	91	98
Green Time (sec)	72	7	1	6
Phase Time (sec)	78	13	7	12
Phase Split	71%	12%	6%	11%

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

## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

 Normal Movement

 Permitted/Opposed

# MOVEMENT SUMMARY

 **Site: [Int 3: 2022 PM With Development]**

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 95 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

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	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bruce Highway												
1	L2	175	0.6	0.102	7.3	LOS A	0.9	6.2	0.18	0.63	0.18	52.5
2	T1	1688	4.0	0.705	12.4	LOS A	25.8	186.6	0.72	0.66	0.72	56.7
3	R2	5	0.0	0.064	57.0	LOS E	0.2	1.7	0.98	0.64	0.98	30.7
Approach		1868	3.6	0.705	12.0	LOS A	25.8	186.6	0.67	0.66	0.67	56.1
East: Kershaw Gardens Access												
4	L2	6	0.0	0.006	9.4	LOS A	0.1	0.6	0.38	0.57	0.38	49.3
5	T1	5	0.0	0.558	57.4	LOS E	1.3	8.9	1.00	0.73	1.14	27.4
6	R2	19	0.0	0.558	61.8	LOS E	1.3	8.9	1.00	0.73	1.14	29.3
Approach		30	0.0	0.558	50.6	LOS D	1.3	8.9	0.88	0.70	0.99	31.5
North: Bruce Highway												
7	L2	16	0.0	0.009	7.0	LOS A	0.0	0.3	0.13	0.61	0.13	52.7
8	T1	1346	5.8	0.568	10.7	LOS A	17.8	130.6	0.62	0.56	0.62	58.2
9	R2	56	2.1	0.727	61.8	LOS E	2.9	20.7	1.00	0.82	1.29	29.6
Approach		1418	5.6	0.727	12.7	LOS A	17.8	130.6	0.63	0.57	0.64	56.0
West: Knight Street												
10	L2	115	1.0	0.198	12.4	LOS A	2.2	15.8	0.51	0.66	0.51	47.2
11	T1	5	0.0	0.755	53.1	LOS D	4.5	32.2	1.00	0.89	1.27	28.2
12	R2	171	3.3	0.755	57.6	LOS E	4.5	32.2	1.00	0.89	1.27	29.9
Approach		291	2.4	0.755	39.7	LOS C	4.5	32.2	0.80	0.80	0.97	34.9
All Vehicles		3607	4.3	0.755	14.8	LOS B	25.8	186.6	0.67	0.64	0.68	53.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	
P3	North Full Crossing	5	41.7	LOS E	0.0	0.0	0.94	0.94	
All Pedestrians		5	41.7	LOS E			0.94	0.94	

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

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

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



# PHASING SUMMARY

 **Site: [Int 3: 2022 PM With Development]**

Bruce Highway / Knight Street Intersection

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 95 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Green Split Priority has been specified

Phase Sequence: TMR Phasing

Reference Phase: Phase A

Input Phase Sequence: A, D, E, F\*, F1\*, F2\*

Output Phase Sequence: A, D, E, F\*

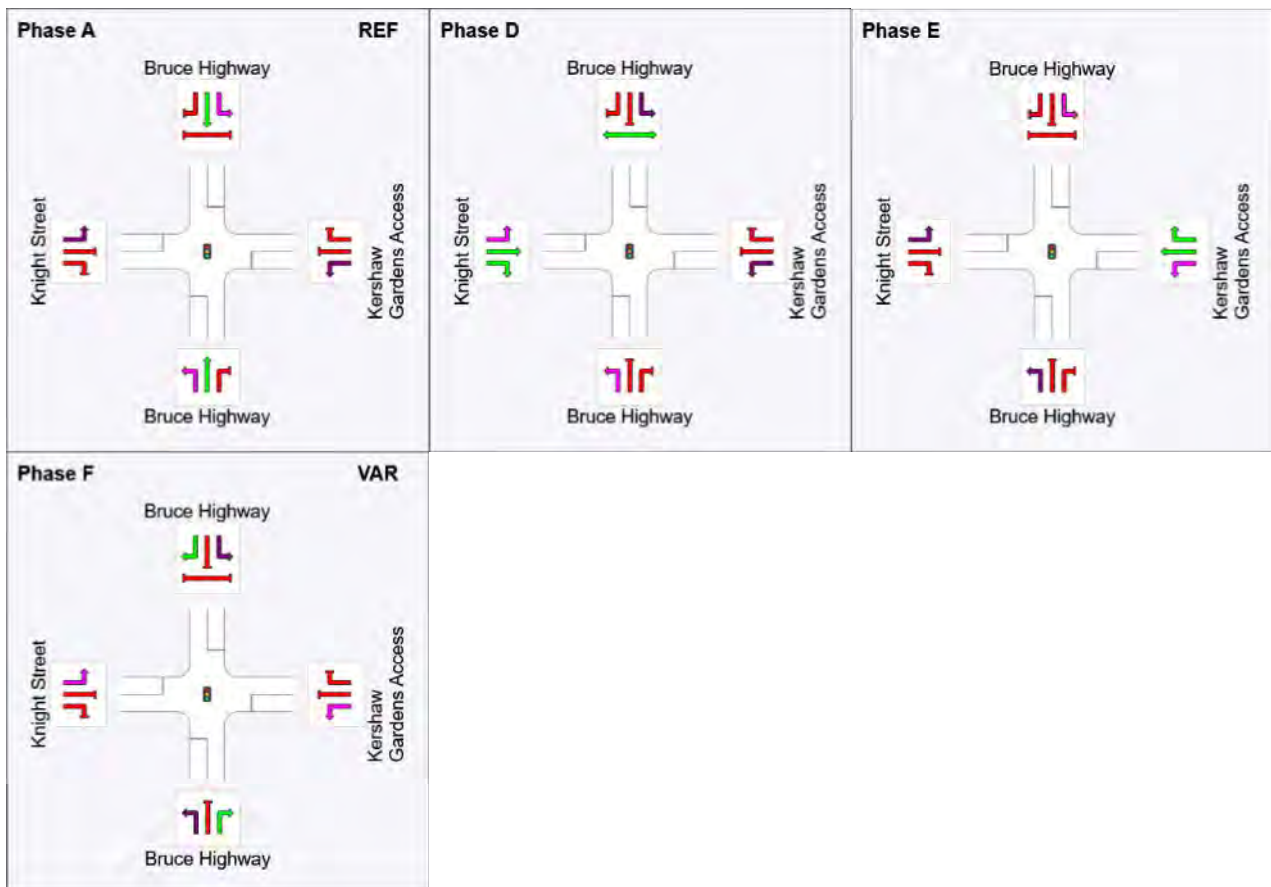
(\* Variable Phase)

## Phase Timing Summary

Phase	A	D	E	F
Phase Change Time (sec)	0	66	78	86
Green Time (sec)	60	6	2	4
Phase Time (sec)	66	12	7	10
Phase Split	69%	13%	7%	11%

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

## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

 Normal Movement

 Permitted/Opposed

# MOVEMENT SUMMARY

Site: [Int 4: 2032 AM Background]

Horace Street / Dowling Street  
 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 Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Horace Street												
2	T1	76	6.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
3	R2	1	0.0	0.039	4.7	LOS A	0.0	0.0	0.00	0.01	0.00	49.3
Approach		77	5.9	0.039	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
East: Dowling Street												
4	L2	1	0.0	0.001	4.7	LOS A	0.0	0.0	0.12	0.50	0.12	46.3
6	R2	1	0.0	0.001	4.9	LOS A	0.0	0.0	0.12	0.50	0.12	46.1
Approach		2	0.0	0.001	4.8	LOS A	0.0	0.0	0.12	0.50	0.12	46.2
North: Horace Street												
7	L2	1	0.0	0.022	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
8	T1	42	8.1	0.022	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		43	7.9	0.022	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		122	6.5	0.039	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

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

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

# MOVEMENT SUMMARY

Site: [Int 4: 2032 PM Background]

Horace Street / Dowling Street  
 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 Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Horace Street												
2	T1	102	6.7	0.052	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	50.0
3	R2	1	0.0	0.052	4.7	LOS A	0.0	0.0	0.00	0.01	0.00	49.3
Approach		103	6.6	0.052	0.0	NA	0.0	0.0	0.00	0.01	0.00	50.0
East: Dowling Street												
4	L2	1	0.0	0.002	4.7	LOS A	0.0	0.0	0.15	0.50	0.15	46.3
6	R2	1	0.0	0.002	5.1	LOS A	0.0	0.0	0.15	0.50	0.15	46.0
Approach		2	0.0	0.002	4.9	LOS A	0.0	0.0	0.15	0.50	0.15	46.2
North: Horace Street												
7	L2	1	0.0	0.031	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.5
8	T1	60	3.8	0.031	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		61	3.7	0.031	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		166	5.5	0.052	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

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

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

# MOVEMENT SUMMARY

Site: [Int 4: 2032 AM With Development]

Horace Street / Dowling Street  
 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 Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Horace Street												
2	T1	83	6.0	0.042	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
3	R2	1	0.0	0.042	4.7	LOS A	0.0	0.0	0.00	0.01	0.00	49.3
Approach		84	5.9	0.042	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
East: Dowling Street												
4	L2	1	0.0	0.002	4.7	LOS A	0.0	0.0	0.14	0.50	0.14	46.3
6	R2	1	0.0	0.002	5.0	LOS A	0.0	0.0	0.14	0.50	0.14	46.1
Approach		2	0.0	0.002	4.8	LOS A	0.0	0.0	0.14	0.50	0.14	46.2
North: Horace Street												
7	L2	1	0.0	0.027	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
8	T1	51	8.1	0.027	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		52	8.0	0.027	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		138	6.6	0.042	0.1	NA	0.0	0.0	0.00	0.02	0.00	49.9

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

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

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

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



# MOVEMENT SUMMARY

Site: [Int 4: 2032 PM With Development]

Horace Street / Dowling Street  
 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	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Horace Street												
2	T1	111	6.7	0.056	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	1	0.0	0.056	4.8	LOS A	0.0	0.0	0.00	0.00	0.00	49.3
Approach		112	6.6	0.056	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
East: Dowling Street												
4	L2	1	0.0	0.002	4.7	LOS A	0.0	0.0	0.16	0.50	0.16	46.3
6	R2	1	0.0	0.002	5.1	LOS A	0.0	0.0	0.16	0.50	0.16	46.0
Approach		2	0.0	0.002	4.9	LOS A	0.0	0.0	0.16	0.50	0.16	46.1
North: Horace Street												
7	L2	1	0.0	0.034	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.5
8	T1	67	3.8	0.034	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		68	3.7	0.034	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles		182	5.5	0.056	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

## APPENDIX I

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### RPEQ Certification

049-18-19

## Certification of Traffic Impact Assessment Report

### Registered Professional Engineer Queensland

for


Project Title:	Industrial Subdivision – 33-53 Knight Street, Park Avenue
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As a professional engineer registered by the Board of Professional Engineers of Queensland pursuant to the *Professional Engineers Act 2002* as competent in my areas of nominated expertise, I understand and recognise:

- the significant role of engineering as a profession, and that
- the community has a legitimate expectation that my certification affixed to this engineering work can be trusted, and that
- I am responsible for ensuring its preparation has satisfied all necessary standards, conduct and contemporary practice.

As the responsible RPEQ, I certify:

- i) I am satisfied that all submitted components comprising this traffic impact assessment, listed in the following table, have been completed in accordance with the *Guide to Traffic Impact Assessment* published by the Queensland Department of Transport and Main Roads and using sound engineering principles, and
- ii) where specialised areas of work have not been under my direct supervision, I have reviewed the outcomes of the work and consider the work and its outcomes as suitable for the purposes of this traffic impact assessment, and that
- iii) the outcomes of this traffic impact assessment are a true reflection of results of assessment, and that
- iv) I believe the strategies recommended for mitigating impacts by this traffic impact assessment,
- v) embrace contemporary practice initiatives and will deliver the desired outcomes.

Name:	Andrew Barrie	RPEQ No:	12801
RPEQ Competencies:	Civil		
Signature:		Date:	15 October 2019
Postal Address:	PO Box 2149 Wandal QLD 4700		
Email:	andrew@mcmengineers.com		

049-18-19

Traffic impact assessment components to which this certification applies	✓
<b>1. Introduction</b>	
Background	✓
Scope and study area	✓
Pre-lodgement meeting notes	✓
<b>2. Existing Conditions</b>	
Land use and zoning	✓
Adjacent land uses / approvals	✓
Surrounding road network details	✓
Traffic volumes	✓
Intersection and network performance	✓
Road safety issues	✓
Site access	✓
Public transport (if applicable)	N/A
Active transport (if applicable)	N/A
Parking (if applicable)	N/A
Pavement (if applicable)	N/A
Transport infrastructure (if applicable)	N/A
<b>3. Proposed Development Details</b>	
Development site plan	✓
Operational details (including year of opening of each stage and any relevant catchment / market analysis)	✓
Proposed access and parking	N/A
<b>4. Development Traffic</b>	
Traffic generation (by development stage if relevant and considering light and heavy vehicle trips)	✓
Trip distribution	✓
Development traffic volumes on the network	✓
<b>5. Impact Assessment and Mitigation</b>	
With and without development traffic volumes	✓
Construction traffic impact assessment and mitigation (if applicable)	N/A
Road safety impact assessment and mitigation	✓
Access and frontage impact assessment and mitigation	✓
Intersection delay impact assessment and mitigation	✓
Road link capacity assessment and mitigation	✓
Pavement impact assessment and mitigation	N/A
Transport infrastructure impact assessment and mitigation	N/A
Other impacts assessment relevant to the specific development type / location (if applicable)	N/A
<b>6. Conclusions and Recommendations</b>	
Summary of impacts and mitigation measures proposed	✓
Certification statement and authorisation	✓