4.4 REPORTING

In accordance with the scope of works, WSP will prepare a report detailing the investigation methodology, findings of the site setting and historic document review and site inspections for the site. Any identified AECs and associated contaminants of potential concern (COPC) will be documented within the report, along with a statement regarding site suitability for proposed land use from a contamination perspective. The contamination investigation works will be undertaken in accordance with relevant regulatory guidance including, the "*National Environment Protection (Assessment of Site Contamination) Measure As amended 2013 (ASC NEPM)"* and the *"ACT Environment Protection Authority (EPA) Information Sheet 7 – Guidance for undertaking preliminary contamination investigations for development/lease variation purposes*". The report is to be reviewed and endorsed by the ACT Environment Protection Authority (EPA).

Depending upon the outcome of the assessment, WSP will provided advice on further investigation or remediation (if required).

5. FEE STRUCTURE

Our lump sum fee to carry out the above scope of works including all consultants and technical office time, instrumentation and disbursements would be [redacted] plus 10% GST. A cost breakdown is provided below in Table 5.1

Table 5.1 Cost Breakdown

DISBURSEMENT	COST (EXCL. GST)
Desktop Site Setting and Historic Material Review	[redacted]
Site Inspection	
Reporting	
Total Excl. GST	[redacted]

Table 5.2 Personnel Rates

PERSONNEL	RATE/HOUR (EXCL. GST)
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

5.1 CONDITIONS OF QUOTATION

Please note, that the costs are based on the following assumptions and limitations:

- No allowance has been made for regulatory liaison with the EPA or other regulatory bodies (if required) or for consolidation of comments on review of the deliverable;
- No allowance has been made for report review by a Contaminated Sites Auditor;
- Site access for selected property is granted at the time WSP requests it, and there are no delays to site access. No allowance has been made for site-specific inductions. It is assumed that site access is granted for half day;
- The works will not be interrupted or delayed due to unforeseen/unusual conditions;
- No sub-surface investigations, sampling or analysis have been costed for as part of this proposal;

- All works have been costed to take place during standard WSP working hours (i.e. between 7 am and 6 pm Monday to Friday, excluding public holidays). If necessary, works can be undertaken outside of these hours (if permitted under local regulations). Where 'out of hours' work is required, a variation may be sought;
- The fee proposal is valid for 30 days after submission;
- WSP will invoice the Client 100% of the contract on delivery of the draft report; and
- Works will be completed as a variation to established purchase order 10169_110 between WSP and Education Directorate.

6. CLOSURE

We trust that we have addressed your requirements correctly and look forward to receiving your instruction in due course. Thank you for the opportunity of submitting this proposal. Should you have any questions, please do not hesitate to contact the undersigned.

Yours sincerely

@wsp.com

From: Ayyar-Biddle, Aarthi
To: Klein, Liz
Subject: FW: 1658 Fraser Draft Report invoice 1658-01
Date: Friday, 9 April 2021 3:58:42 PM
Attachments: 1658-01.pdf
image002.png

OFFICIAL

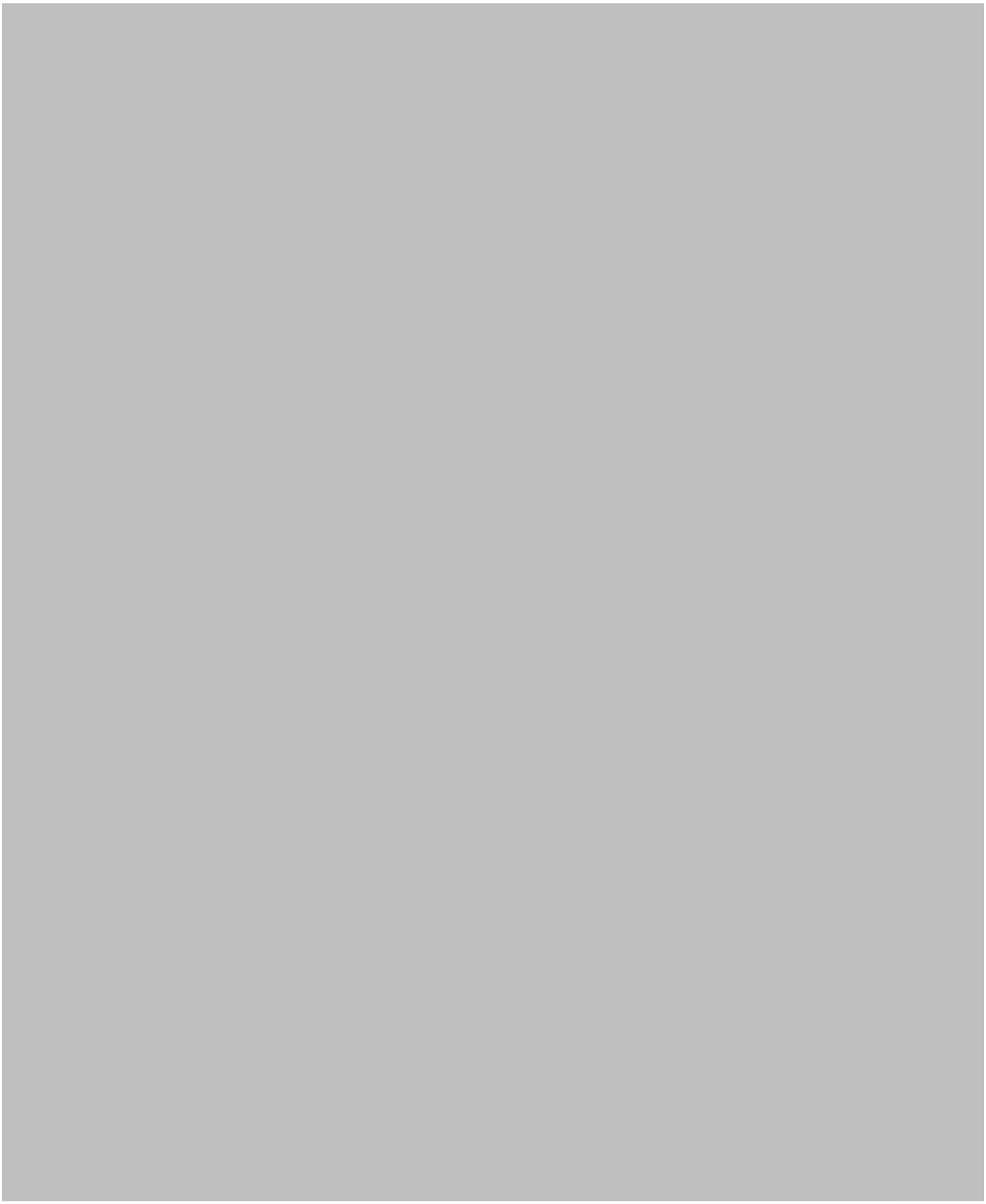
Hi Liz,
Also forwarding you the invoice for the draft tree assessment report,
Aarthi

From: [redacted]@redboxdesigngroup.com.au>
Sent: Wednesday, 7 April 2021 11:18 AM
To: Ayyar-Biddle, Aarthi <Aarthi.Ayyar-Biddle@act.gov.au>
Subject: 1658 Fraser Draft Report invoice 1658-01

CAUTION: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Aarthi,
Please find attached invoice for the draft tree assessment report
Kind regards

[redacted]
[redacted] 02 6280 4949 (tel)
(mob)
35 Kennedy Street, Kingston ACT 2604



ABN: 19 929 122 782

Klein, Liz

From: Ayyar-Biddle, Aarthi
Sent: Monday, 19 April 2021 5:18 PM
To: [redacted]
Cc: [redacted]; Klein, Liz
Subject: RE: 7974 Fraser Primary School TIA - Proposed Variation - New entrance
Attachments: Letter-of-Variation_10171_110.docx

OFFICIAL

Good Afternoon [redacted]

Please find attached a Letter of Variation for Indesco's traffic modelling services for the Fraser Primary School expansion.
We have prepared the letter based on [redacted] advice on the additional fee proposal and [redacted] email below regarding the additional work to be completed. If you are happy with the document, then as the Contract Officer on the original Purchase Order please sign and return at your earliest convenience. Please note it also needs to be co-signed by another officer at Indesco (first half of Page 3). We will then sign and execute the letter and the Territory will promptly return a fully executed copy to you.

Please do not hesitate to contact me if you have any questions.

Kind Regards,
Aarthi

Aarthi Ayyar-Biddle | Assistant Director, Schools Planning
02 6207 4673| aarthi.ayyar-biddle@act.gov.au
System Policy and Reform Division | Education | ACT Government
GPO Box 158 Canberra ACT 2601
www.education.act.gov.au

From: [redacted]@indesco.com.au>
Sent: Wednesday, 14 April 2021 4:44 PM
To: Ayyar-Biddle, Aarthi <Aarthi.Ayyar-Biddle@act.gov.au>
Cc: [redacted]@indesco.com.au>; Klein, Liz <Liz.Klein@act.gov.au>; [redacted]@indesco.com.au>
Subject: RE: 7974 Fraser Primary School TIA - Proposed Variation - New entrance

Hi Aarthi,

Hope you are having a great time.

Please find the attached locality plan as per your request.

It is worth mentioning that the traffic survey of two additional intersections will be undertaken during the same timeframes as previously, and the variation will include a review of the Tillyard Drive road reserve since the new drop-off, and pick-up area is needed.

If you have any queries please feel free to contact me.

Kind regards,

[redacted]
P: (02) 6285 1022

www.indesco.com.au

CANBERRA | SYDNEY | WOLLONGONG | MELBOURNE

From: Ayyar-Biddle, Aarthi <Aarthi.Ayyar-Biddle@act.gov.au>
Sent: Tuesday, 6 April 2021 2:29 PM
To: [redacted]@indesco.com.au>
Cc: [redacted]@indesco.com.au>; [redacted]@indesco.com.au>; Klein, Liz <Liz.Klein@act.gov.au>
Subject: RE: 7974 Fraser Primary School TIA - Proposed Variation - New entrance

OFFICIAL

Good Afternoon [redacted]

Thank you for providing a fee proposal for the variation to the traffic impact assessment for Fraser primary.
To enable us to complete our letter of variation, I was wondering if you could provide some additional details on the variation fee, namely:

- The two additional intersections that will be surveyed, and whether this will occur during the same timeframes as previously;
- Whether the variation will include a review of the Tillyard Drive road reserve (e.g. with respect to on-street parking / access points);
- If you can provide an edited version of the aerial map below (from the initial proposal) that describes what the variation will cover, that would be very much appreciated.

Please feel free to get in contact if you have any questions.

Kind Regards,
Aarthi

Aarthi Ayyar-Biddle | Assistant Director, Schools Planning
02 6207 4673| aarthi.ayyar-biddle@act.gov.au
System Policy and Reform Division | Education | ACT Government
GPO Box 158 Canberra ACT 2601
www.education.act.gov.au

From [redacted]@indesco.com.au>
Sent: Thursday, 1 April 2021 7:59 AM
To: Klein, Liz <Liz.Klein@act.gov.au>
Cc: Ayyar-Biddle, Aarthi <Aarthi.Ayyar-Biddle@act.gov.au>; [redacted]@indesco.com.au>; [redacted]@indesco.com.au>
Subject: 7974 Fraser Primary School TIA - Proposed Variation - New entrance

Hi Liz,

As per our brief discussion, our proposed variation for the new site boundary on the TIA is included as summarised below.

The scope of works will be changed to extend the school boundary and second access to the north of the school site. As a result we will update the base survey information and model two additional intersections compared to the previous scope of work. The TIA will also include discussion about possible and restricted access locations.

We can complete the report within 2-3 weeks of approval to proceed.

Item	Required time	Fee
Traffic Survey	[redacted]	
Traffic Modelling (SIDRA)		
Reporting		
	Sub-Total	$4,200
	GST	$420
	Total	$4,620

Kind regards,

[redacted]

P: (02) 6285 1022
[redacted]

INDESC
www.indesco.com.au

CANBERRA | SYDNEY | WOLLONGONG | MELBOURNE

ACT Government

19/04/2021

Indesco

[redacted]

Civic Quarter, Level 5, 68 Northbourne Avenue Canberra City ACT 2601

REF: Purchase Order No. 10171_110

Contract Name:	Preparation of a Traffic Impact Assessment to support the Territory Plan Variation to rezone part Block 6 Section 64 Fraser from Hills, Ridges and Buffer (NUZ3) to Community Facilities Zone (CFZ).
Contract Number:	10171_110

AGREEMENT TO VARY CONTRACT

Dear [redacted],

We write in relation to the contract for the Preparation of a Traffic Impact Assessment to support the Territory Plan Variation to rezone part Block 6 Section 64 Fraser from Hills, Ridges and Buffer (NUZ3) to Community Facilities Zone (CFZ) between the AUSTRALIAN CAPITAL TERRITORY, represented by the Education Directorate and Indesco Pty Ltd, ABN 008 581 066, dated 23/02/21.

Clause 11 of the Contract allows the parties to vary the Contract by the written agreement of the parties prior to the expiration of the Contract.

The Territory proposes to vary the Contract, with the variation taking effect from 24/04/21.

The variation is as set out below.

Variation/s:

The scope of works will be changed to extend the school boundary and second access to the north of the school site. As a result the consultant will update the base survey information and model two additional intersections compared to the previous scope of work, as outlined in Image 1 below. The TIA will also include discussion about possible and restricted access locations.

Image 1. Additional intersections to be modelled under Variation to contract:

The traffic survey of two additional intersections will be undertaken during the same timeframes as previously, and the variation will include a review of the Tillyard Drive road reserve since the new drop-off, and pick-up area is needed.

LINE 1 Contract Price and Payment is deleted and replaced with $15,620. This includes the original contract Price of $11,000 and Variation of $4,620.

In order for these amendment/s to take effect, please indicate your agreement by signing and returning a scanned copy of this letter to the Territory by no later than 24/4/21 at the following email address:

aarthi.ayyar-biddle@act.gov.au

Upon executing the letter, the Territory will promptly return a fully executed copy to you.

Please note that there will be no legally enforceable change in relationship between the parties or additional payments made until the execution of this letter by a duly authorised officer of the Territory. Please also note that the party who signs the letter last is the party that dates the letter; **do not** date the letter when signing.

If you have any queries in relation to this variation please contact your Territory Contract Manager.

Yours sincerely

_____

Territory Contract Manager

_____

Date

The Contractor agrees to the variation/s described in this letter:

SIGNED for and on the behalf of Indesco Pty Ltd,
ABN 008 581 066

.....
Signature of director/authorised officer/individual

.....
Print name

in the presence of:

.....
Signature of director/secretary/witness

.....
Signature of second authorised officer*

.....
Print name

.....
Print name and position

SIGNED AS A CONTRACT ON.....

SIGNED for on behalf of the
AUSTRALIAN CAPITAL TERRITORY

.....
Signature of Territory delegate

in the presence of:

.....
Print name

.....
Signature of witness

.....
Print name

ACT Government

19/04/2021

Indesco

[redacted]

Civic Quarter, Level 5, 68 Northbourne Avenue Canberra City ACT 2601

REF: Purchase Order No. 10171_110

Contract Name:	Preparation of a Traffic Impact Assessment to support the Territory Plan Variation to rezone part Block 6 Section 64 Fraser from Hills, Ridges and Buffer (NUZ3) to Community Facilities Zone (CFZ).
Contract Number:	10171_110

AGREEMENT TO VARY CONTRACT

Dear [redacted]

We write in relation to the contract for the Preparation of a Traffic Impact Assessment to support the Territory Plan Variation to rezone part Block 6 Section 64 Fraser from Hills, Ridges and Buffer (NUZ3) to Community Facilities Zone (CFZ) between the AUSTRALIAN CAPITAL TERRITORY, represented by the Education Directorate and Indesco Pty Ltd, ABN 008 581 066, dated 23/02/21.

Clause 11 of the Contract allows the parties to vary the Contract by the written agreement of the parties prior to the expiration of the Contract.

The Territory proposes to vary the Contract, with the variation taking effect from 24/04/21.

The variation is as set out below.

Variation/s:

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Image 1. Additional intersections to be modelled under Variation to contract:

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LINE 1 Contract Price and Payment is deleted and replaced with $15,620. This includes the original contract Price of $11,000 and Variation of $4,620.

In order for these amendment/s to take effect, please indicate your agreement by signing and returning a scanned copy of this letter to the Territory by no later than 24/4/21 at the following email address:

aarthi.ayyar-biddle@act.gov.au

Upon executing the letter, the Territory will promptly return a fully executed copy to you.

Please note that there will be no legally enforceable change in relationship between the parties or additional payments made until the execution of this letter by a duly authorised officer of the Territory. Please also note that the party who signs the letter last is the party that dates the letter; **do not** date the letter when signing.

If you have any queries in relation to this variation please contact your Territory Contract Manager.

Yours sincerely

_____

Territory Contract Manager

_____

Date

Buying Goods and Services

The Contractor agrees to the variation/s described in this letter:

SIGNED for and on the behalf of Indesco Pty Ltd,
ABN 008 581 066

[redacted]

.....

Signature of ~~director~~/authorised officer/~~individual~~

[redacted]

.....

Print name

in the presence of:

[redacted]

.....

Signature of ~~director~~/~~secretary~~/witness

Signature of second authorised officer*

[redacted]

.....

Print name

Print name and position

SIGNED AS A CONTRACT ON.....

SIGNED for on behalf of the
AUSTRALIAN CAPITAL TERRITORY
in the presence of:

.....

Signature of Territory delegate

.....

Print name

.....

Signature of witness

.....

Print name

Our ref: PS124049-ECO-PRP-001 RevB - Copy

By email
liz.klein@act.gov.au; aarthi.ayyar-biddle@act.gov.au

28 April 2021

Liz Klein and Aarthi Ayyar-Biddle
Schools Planning
Education, ACT Government
GPO Box 158
Canberra ACT 2601

Dear Liz and Aarthi

Fraser School Expansion - Preliminary Biodiversity Assessment

1. PROJECT BACKGROUND / UNDERSTANDING

The ACT Government Education Directorate (Education) seeking to rezone part of Block 6 Section 64 Fraser to support a Territory Plan Variation that will enable the expansion of Fraser Primary School. Fraser Primary School is looking to expand the site to better accommodate the current schooling population. In order to provide a functioning primary school site in Fraser that can accommodate current demand, the current school site available area would need to double in size.

A preliminary biodiversity assessment of the area is required to identify biodiversity constraints within the proposed site (Figure 1.1). Initial site visits to the area identified potential biodiversity constraints including:

- nesting Superb Parrots (*Polytelis swainsonii*) (Vulnerable under the EPBC Act and NC Act) – recorded nearby
- White Box-Yellow Box Blakely's Red Gum Woodland and Derived Grassland ecological community (Critically Endangered under EPBC Act and NC Act) and associated threatened flora and fauna
- Natural Temperate Grassland of South Eastern Highlands ecological community (Critically Endangered under the EPBC Act and the NC Act) and associated threatened flora and fauna
- potential habitat for Golden Sun Moth (*Synemon plana*) (Critically Endangered under EPBC Act and Endangered under NC Act).

Level 1, 121 Marcus Clarke Street
Canberra ACT 2601
PO Box 1551
Canberra ACT 2600

Tel: +61 2 6201 9600
Fax: +61 2 6201 9666
www.wsp.com

Figure 1.1 Study area

2. PROPOSED APPROACH

2.1 SCOPE

The scope of works for the biodiversity assessment is as follows:

- describe and identify the biodiversity values of the site through desktop review and biodiversity field survey
- prepare a Preliminary Ecological Assessment Report to:
  - present the methods and results of the desktop assessment and biodiversity field survey
  - provide advice on the ecological constraints to the proposal to guide design and planning approval pathway.

2.2 DESKTOP ASSESSMENT

A desktop ecological assessment would be completed to inform field surveys and the preparation of the Preliminary Ecological Assessment Report.

The desktop review would include, but not be limited to, the following sources:

- our existing knowledge and experience of the project and region
- literature review previous onsite ecological studies
- review of broad-scale regional vegetation mapping projects
- ACT threatened species list (ACT Government 2021)
- ACTmapi – Significant Species, Vegetation Communities & Registered Trees mapping tool (ACT Government 2021)
- Commonwealth Protected Matters Search Tool – Department of the Environment and Energy (Department of Agriculture Water and the Environment 2021)
- Canberra Nature Map (Canberra Nature Map 2021)
- topographic maps and aerial photographs.

This desktop assessment will identify known biodiversity values of the site and locality and provide a list of threatened species, populations and ecological communities with potential to occur.

2.3 BIODIVERSITY FIELD SURVEY

Prior to any site visit being undertaken a detailed health, environment and safety plan (HESP) will be prepared. The HESP will identify hazards and assess risk mitigation measures to manage risks to an acceptable level.

Biodiversity surveys will include the following:

- flora and fauna habitat assessments determining likelihood of threatened species (species known or predicted within the locality from the literature and database review) to occur in the site
- validation of existing broad-scale vegetation mapping and assessment of condition of vegetation through plot-based survey (up to four vegetation plots)
- fauna assessment would be based on assessment of habitats on site and surveys including:
  - diurnal bird surveys
  - mapping of hollow-bearing trees and habitat suitability assessment for Superb Parrots
  - opportunistic observations of animals and signs of animal activity (e.g. feeding signs, scats).

2.4 PRELIMINARY ECOLOGICAL CONSTRAINTS MEMO

A brief preliminary ecological constraints memo will be prepared to present the following:

- identify biodiversity opportunities and constraints for the project within the site
  - native vegetation – identifying, describing and illustrating the vegetation communities recorded within the site and whether any of these are representative of any threatened ecological community
  - likelihood of occurrence of threatened species listed under the NC Act and/or the EPBC Act
  - identification of significant fauna habitat.
- provide recommendations for further assessment, including seasonal targeted surveys (if required).

3. FEES

WSP can complete the work for a total fee of **exc. GST).**

Table 3.1 Overall costs

TASK	FEE (EXC. GST)
Desktop assessment, project management and consultation	
Field survey	
Preliminary ecological constraints memo	
Disbursements (vehicle, field equipment)	
Total	

Table 3.2 Personnel rates

PERSONNEL	RATE/HOUR (EXC. GST)

The following assumptions have been made in the preparation of this fee proposal:

- No targeted seasonal threatened species survey or fauna trapping is included as part of this proposal, should it be considered that targeted seasonal surveys may be required following results of the site inspection. this will be discussed including options moving forward.
- No aquatic ecology survey is included.
- Unrestricted access will be available; no land access negotiations have been allowed for.
- No site-specific inductions have been allowed for.
- Our fee proposal allows for one round of consolidated comments on the draft memo.
- The fee does not include the preparation of any additional investigations which may be required (such as natural conservation values assessment to support an environmental significance opinion, Environmental Impact Statement, offsets assessment, EPBC Act significance assessments or referral).
- Allowance has been made for one consultation with the Conservator to confirm scope of survey and assessment requirements. Additional consultation would be undertaken at hourly rates.

Please do not hesitate to contact us if you have any questions about our proposal.

Yours sincerely

From: Klein, Liz
To: Attridge, Vanessa
Cc: Ayyar-Biddle, Aarthi
Subject: FYI - Budget for Fraser Primary School boundary expansion site studies
Date: Friday, 30 April 2021 3:22:00 PM

OFFICIAL

Hi Nessa

FYI I have now approved a variation to the contract with WSP.

The previous allocation from ICW's general site investigations budget for all Fraser studies was $58,850 (which included a small variation to the Indesco traffic study contract).
I have approved a variation of $19,020 for additional contamination and ecological assessments. This brings the total budget drawdown to **$77,870 inc GST**. This should now cover off on all the required site investigations to support the TPV.

Dylan has confirmed that this budget is available and MPC has marked it against their records.

Regards, Liz

Liz Klein | Senior Director, Schools Planning
Mob: 0406 526 292 | Email: liz.klein@act.gov.au
System Policy and Reform Division | Education | ACT Government
GPO Box 158 Canberra ACT 2601
www.education.act.gov.au

ACT Government

RECORD 48

30/04/2021

WSP Australia

[redacted]

Level 1, 121 Marcus Clarke St Canberra ACT 2610

REF: Purchase Order No. 10169_110

Contract Name:	Preparation of a planning report and associated consultation to support a Territory Plan Variation to rezone part Block 6 Section 64 Fraser from Hills, Ridges and Buffer (NUZ3) to Community Facilities Zone (CFZ).
Contract Number:	10169_110

AGREEMENT TO VARY CONTRACT

Dear [redacted]

We write in relation to the contract for the Preparation of a Planning Report to support the Territory Plan Variation to rezone part Block 6 Section 64 Fraser from Hills, Ridges and Buffer (NUZ3) to Community Facilities Zone (CFZ) between the AUSTRALIAN CAPITAL TERRITORY, represented by the Education Directorate and WSP Australia Pty Ltd, ABN 80 078 004 798, dated 23/02/21.

Clause 11 of the Contract allows the parties to vary the Contract by the written agreement of the parties prior to the expiration of the Contract.

The Territory proposes to vary the Contract, with the variation taking effect from 05/05/21.

The variation is as set out below.

Variation/s:

The scope of works will be changed to add:

1. **PS124049-ECO-PRP-001 RevC Fraser School Expansion – Preliminary Biodiversity Assessment, 28/4/21:**
   - A Preliminary Biodiversity Assessment of the area to identify biodiversity constraints within the proposed site (Image 1). These will include:
     - A desktop assessment and biodiversity field survey
     - The preparation of a Preliminary Ecological Assessment Report to present the methods and results of the desktop assessment and field survey, and
     - Provide advice on the ecological constraints to the proposal to guide design and planning approval pathway;

2. **PS124049-CLM-VAR-001 Fraser School Expansion Preliminary Site Investigation Contaminated Land, 6/4/21:**
   - A Preliminary Site Investigation (PSI), including:
     - A site setting desktop review
     - A site history material review, including actual or potential contamination.

RECORD 48

Image 1. Site area to be investigated in Preliminary Biodiversity Assessment and Site Investigation Reports:

LINE 1 Contract Price and Payment is deleted and replaced with [redacted] **inc 10% GST**. This includes the original contract Price of [redacted] and Variation of [redacted]

In order for these amendment/s to take effect, please indicate your agreement by signing and returning a scanned copy of this letter to the Territory by no later than 04/05/21 at the following email address:

aarthi.ayyar-biddle@act.gov.au

Upon executing the letter, the Territory will promptly return a fully executed copy to you.

Please note that there will be no legally enforceable change in relationship between the parties or additional payments made until the execution of this letter by a duly authorised officer of the Territory. Please also note that the party who signs the letter last is the party that dates the letter; **do not** date the letter when signing.

If you have any queries in relation to this variation please contact your Territory Contract Manager.

Yours sincerely

[redacted]

Territory Contract Manager

11-5-2021

Date

Buying Goods and Services

The Contractor agrees to the variation/s described in this letter:

SIGNED for and on the behalf of WSP Australia Pty Ltd, ABN 80 078 004 798

[redacted]

Signature of director/authorised officer/individual

[redacted]

Print name

in the presence of:

[redacted]

Signature of director/secretary/witness

[redacted]

Signature of second authorised officer*

[redacted]

Print name

[redacted]

Print name and position

SIGNED AS A CONTRACT ON..... 11 May 2021 .....

SIGNED for on behalf of the
AUSTRALIAN CAPITAL TERRITORY

[redacted]

Signature of Territory delegate

in the presence of:

ELIZABETH KLEIN

Print name

[redacted]

Signature of witness

[redacted]

Print name

FRASER PRIMARY SCHOOL
TRANSPORT IMPACT ASSESSMENT REPORT

PROJECT NO: 7974
ACT EDUCATION DIRECTORATE

MAY 2021

CANBERRA
CQ1, Level 5,
68 Northbourne Avenue
Canberra City ACT 2601
Phone: (02) 6285 1022

SYDNEY
Suite 2.03 Level 2
4 Parramatta Square, 12 Darcy Street
PARRAMATTA NSW 2150
Phone: (02) 9633 2273

WOLLONGONG
Retail 17 (G04)
129 Corrimal Street
WOLLONGONG NSW 2500
Phone: (02) 4288 4401

www.indesco.com.au

PROJECT TITLE: *Fraser Primary School – Transport Impact Assessment*

PROJECT NUMBER: 7974

Prepared by:		Date: 10 May 2021
Reviewed by:		Date: 13 May 2021
Approved by:		Date: 14 May 2021

Base Template:	Version B June 2020

External Issue

Revision Control Register			
Version No:	**Issue Date:**	**Issued To:**	**Name:**
Transport Impact Assessment Report		ACT Education Directorate	Aarthi Ayyar-Biddle

EXECUTIVE SUMMARY

Indesco was engaged by the ACT Education Directorate to prepare a transport impact assessment (TIA) for an expansion of Fraser Primary School in Fraser Section 64 Block 6. This report assesses the proposed development in the nominated site. The following provides an executive summary of the report. The report sets out an assessment of the anticipated transport implications of the planning proposal, including consideration of the:

1. Existing traffic and parking conditions surrounding the site
2. Traffic management and safety around school
3. The traffic generation of the development and its impact on the surrounding road network
4. Suitability of parking in terms of supply
5. Pedestrian and bicycle requirements
6. Public transport connections
7. Service vehicle requirements

Traffic Impact

The proposed development is expected to generate a total of 334 and 274 trips in AM and PM school peak hour respectively.

The SIDRA modelling was undertaken to assess the impact on key external intersections.

1. Kerrigan Street / Shakespeare Crescent
2. Tillyard Drive / Kerrigan Street
3. Tillyard Drive / Daley Crescent (South)
4. Tillyard Drive / Daley Crescent (North)

Based on the SIDRA simulation results, the development will have a negligible effect on intersections traffic performance and all nominated intersections will perform with the level of service A.

The current school zone needs to be extended till the end of the school boundary on the north side along Tillyard Drive in design of the school expansion.

Parking

The future school expansion with an upper limit capacity of 885 students has a parking requirement of 71 spaces; however, considering the number of 79 existing car park provision within the existing school area, no additional parking is required for expansion area.

The future school has a motorcycle parking requirement of 3 spaces.

Based on the ACTPLA Parking and Vehicular Access General Code, future school with 885 students has a pick-up parking requirement of 36 spaces; however, considering the number of 16 pick-up parking provision within the existing school area, and observed set-down/pick-up parking demand during school peak hour, which is the cause of queue and congestion in the school driveway and Tillyard Drive, it is recommended to provide the maximum possible number of set-down/pick-up parking in Tillyard Drive. It is also recommended to allocate a part of Shakespeare Crescent as set-down/pick-up parking.

The future school expansion has a bicycle parking requirement of 4 spaces for staff and 59 spaces for students.

Active Travel

The following improvement works are recommended to be undertaken as part of the proposed development to further support walking and cycling:

- A new Children's Crossing to be considered in Tillyard Drive in front of the expansion area
- Upgrade the footpath in open space area to provide a shared path with 3 meters width for mixed pedestrian and bicycle usage

- Construct a shared path with 3 meters width along the Tillyard Drive in both sides from Daley Crescent South to Daley Crescent North intersection to provide shared path for mixed pedestrian and bicycle usage

Public Transport Services

Public transport is not expected to be impacted significantly by the proposed expansion; however, in future design, the school bus stop needs to be located away from crossings and with good visibility and one new school bus should be provided as a part of the expansion plan.

Service Vehicles

Any loading / waste collection activities should occur on-site, and away from trunk pedestrian areas. On this basis, the physical design of the vehicle access points should consider heavy vehicles to accommodate service activities with forward entry-forward exit movements in compliance with the Development Control Code for Best Practice Waste Management in the ACT 2019.

TABLE OF CONTENTS

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1. INTRODUCTION

1.1 INTRODUCTION

Indesco was engaged by the ACT Education Directorate to prepare a transport impact assessment (TIA) for expansion of Fraser Primary School in Fraser Section 64 Block 6. This report has been prepared to support the proposed school expansion through the analysis and assessment of traffic, parking requirements, public transport and active travel infrastructure.

1.2 PURPOSE OF THIS REPORT

This report sets out an assessment of the anticipated transport implications of the planning proposal, including consideration of the:

1. Existing traffic and parking conditions surrounding the site
2. Traffic management and safety around school
3. The traffic generation of the development and its impact on the surrounding road network
4. Suitability of parking in terms of supply
5. Pedestrian and bicycle requirements
6. Public transport connections
7. Service vehicle requirements

1.3 PROPONENT

The development is proposed to be undertaken by the ACT Education Directorate.

2. PROPOSED DEVELOPMENT

Fraser Primary School is located in Fraser, Section 2, Block 40 with 26,133 m^2 area. The 2021 enrolment numbers for Fraser Primary School is as follows:

- 85 preschool students
- 529 K-6 students, with the class breakdown as below

Table 1: Enrolment (2021)

Student level	Number of Students
Kindergarten	72
Year 1	83
Year 2	75
Year 3	84
Year 4	76
Year 5	71
Year 6	68
Total	**529**

For the purposes of this project, it is assumed that a hypothetical expansion of the student capacity of the school of up to 800 K-6 students. The assumed maximum student capacity is aimed to ensure that the scope of the traffic study in particular is as wide as possible to consider the maximum potential impact.

Within the assumption of an 885 student population with the school expansion, the traffic assessment is seeking to assess the impact of 271 additional students in the future scenario.

The planning proposal suggested the expansion area of to the north side of the school as Figure 1.

Figure 1: Proposed Expansion Area

3. EXISTING CONDITIONS

3.1 SUBJECT SITE

The subject site is Block 6, Section 64, located in Fraser, ACT. The site is bounded by Tillyard Drive to the east, residential area to the north and the subject school to the south. It is a part of an urban approved block. The site area can be seen in Figure 2.

Figure 2: Subject Site Location

Table 2 outlines the key existing features of the development site.

Table 2: Existing Features of Subject Site

Site Feature	Detail
Existing Use	Nature Reserve, Public Land
Zoning & Overlays	Suburban (RZ1), Urban Open Space (PRZ1) and Hills, Ridges and Buffer Areas (NUZ3)
Existing On-Site Car Parking	N/A
On-Street Car Parking	There is 100m of on-street parking alone the West-side of Tillyard Drive adjacent to the school.

3.2 ROAD NETWORK

Tillyard Drive is a major collector road that extends from Ginninderra Drive in the South to Kuringa Drive in the North.

Tillyard Drive provides a two (2) lane, two-way undivided carriageway.

An extension provides limited parking on the West side of the road adjacent to Fraser Primary School.

The sign posted speed limit is 60 km/h outside of the school zone.

Shakespeare Crescent is a minor collector road connected to Kerrington Street at both ends extending North.

Shakespeare Crescent provides a two (2) lane, two-way undivided carriageway.

The sign posted speed limit is 50 km/h outside of the school zone.

Kerrigan Street is a major collector road extending from Lance Hill Avenue in the West to Tillyard Drive in the East.

Kerrigan Street provides a two (2) lane, two-way undivided carriageway.

The sign posted speed limit is 60 km/h.

3.3 PRIORITY ENROLMENT AREAS (PEA)

The Priority Enrolment Areas (PEA) of the Fraser Primary School is as follows:

- Charnwood - except south of Bettington Circuit, south of Bloxham Street and continuing from the corner of Kerrigan and Dunnett Streets
- Dunlop - north of Kerrigan Street
- Fraser

Figure 3 Shows the PEA of the Fraser primary school.

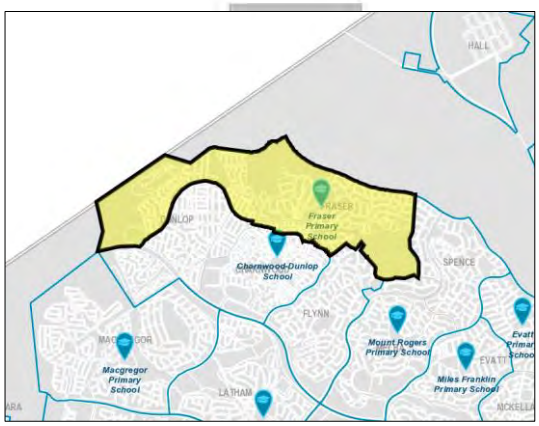

Figure 3: Priority Enrolment Areas (PEA) Map

3.4 SPEED REDUCTION & SCHOOL ZONE

The speed reduction and speed zone include following roads:

- Tillyard Drive, from the south of the intersection with Kerrigan Street to the north of the school
- Shakespeare Crescent from the Kerrigan Street in south for 300m to the north
- Kerrigan Street from intersection with Shakespeare Crescent to the intersection with Tillyard Drive

Figure 4 shows the nominated speed reduction and school zone.

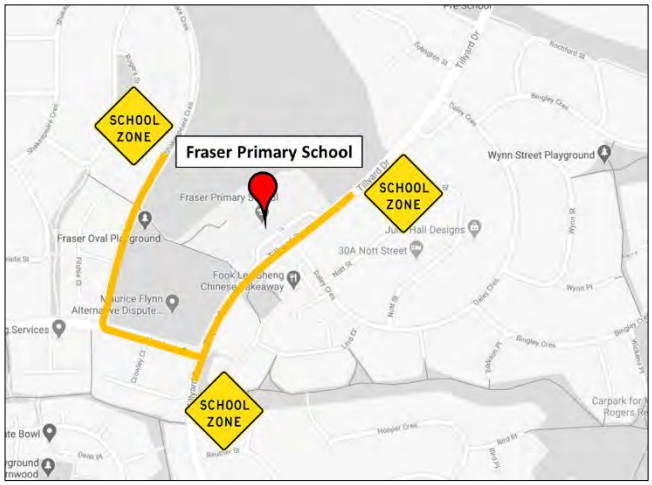

Figure 4: Existing School Zone

Figure 5 shows the existing school zone signs within the study area.

Tillyard Drive, North

Tillyard Drive, South

Kerrigan Street

Shakespeare Crescent

Figure 5: Existing School Zone Signs

3.5 ROAD CROSSING

Existing road crossing infrastructure is available at the following locations:

- An underpass crossing Tillyard Drive in south of the subject site
- A children's crossing in Shakespeare Crescent

Figure 6 shows the location of the nominated crossings.

Figure 6: Road Crossings

Despite the existing under path crossing Tillyard Drive, jaywalking was observed in that area.

3.6 PARKING

Parking spaces are located in several locations around school provided access through Tillyard Drive. The number of parking spaces are as follows:

- 77 car park spaces
- 2 disabled car park spaces
- One bus stop space

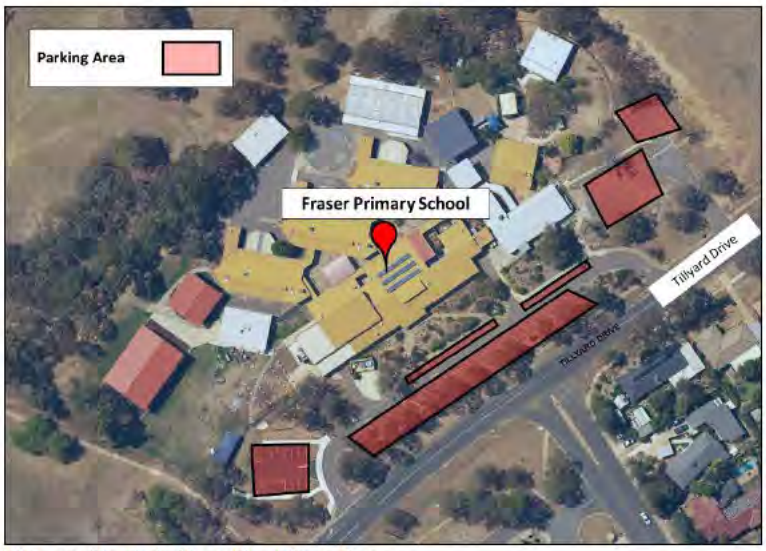

Figure 7: Existing Parking Areas

3.7 DROP-OFF & PICK-UP AREAS

The number of 16 kerbside park have been provided as drop-off and pick-up area in the west of the Tillyard Drive; however, this number of spaces are not sufficient to cover the existing the demand. Given the traffic survey undertaken on 3rd of March 2021, the following are observed:

- Parked vehicles in school driveway which blocked the driveway
- Vehicle queue in Tillyard Drive before the school's entrance
- Using shopping centre parking in east of the Tillyard Drive as a pick-up area
- Using Shakespeare Crescent verge as a pick-up area

Figure 8: Vehicle queue in Tillyard Drive

Figure 9: Using shopping centre parking as a pick-up area

Figure 10: Using Shakespeare Crescent verge as a pick-up area

3.8 WALKING & CYCLING FACILITIES

The subject site is served by an existing pedestrian path network that provides active travel connections to the subject site. The footpaths are including, a 1.2m width pedestrian path in the east side of the school along with Tillyard Drive, a 2m path from Shakespeare Crescent in to Tillyard Drive and an underpass crossing the Tillyard Drive in the south side of the school.

Strategically, the Active Infrastructure Practitioner Tool shows that continuous links are present through Sutherland Crescent. These links include, community routes, on-road cycling routes and CBR cycling road which can be seen in the below Figures.

Figure 11: Community Routes

Figure 12: On-Road Cycling Routes

Figure 13: CBR Cycling Route

3.9 BUS FACILITIES

The Fraser Primary School bus stop is stationed within the school's main entrance driveway, parallel and adjacent to Tillyard Drive.

As seen in Figure 14 and Figure 15 , route 42 travels along Tillyard Drive such that two bus stops are within 200m of either side of the school. Another Route 42 stop is within 100m of the school, along Daley Crescent.

Figure 14: Bus Stops in the Study Area

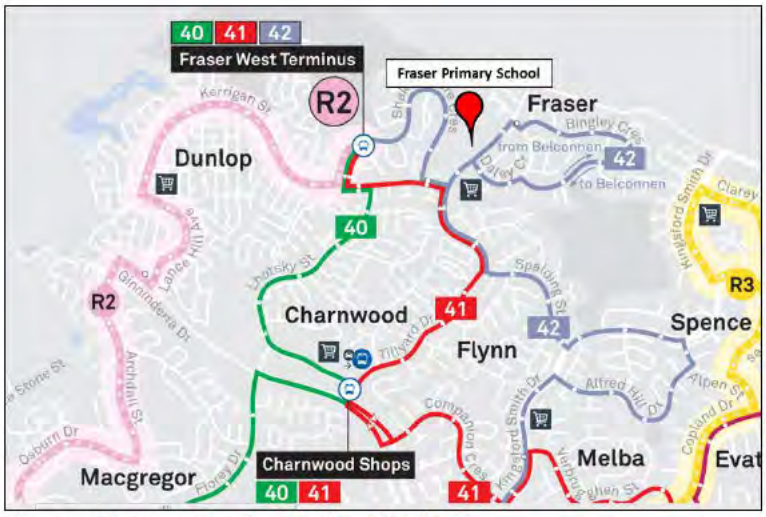

Figure 15: Bus Routes in the Study Area

The school has a bus stop in the school driveway. Figure 16 shows the school bus stop.

Figure 16: School's bus stop

3.10 HISTORICAL CRASH DATA

Historical crash data has been reviewed for the sections of Shakespeare Crescent-Kerrigan Street-Tillyard Drive-Daley Crescent. This data listed the type, location, severity and other details of all reported crashes in this section of the road network that occurred in the five years from 2015 to 2019.

The crash data showed a total of 27 crashes. Table 3 shows the details of crashes during the five year period.

Table 3: Details of Crash Data

Location Type	Location Description	Number of Property Damage Crashes	Number of Injury Crashes	Total Number of Crashes
Intersection	Kerrigan/Tillyard	3	0	3
Mid Block	Tillyard (Kerrigan->Daley)	7	1	8
Intersection	Daley/Tillyard	3	3	6
Mid Block	Tillyard (Daley->Tillyard Service Rd)	3	1	4
Mid Block	Tillyard (Tillyard->Daley)	1	0	1
Intersection	Daley/Tillyard	2	1	3
Intersection	Kerrigan/Shakespeare	1	0	1
Mid Block	Kerrigan Street (Shakespeare -> Mckid)	1	0	1
Total		**21**	**6**	**27**

The three most prevalent crash types at the study area were as follows:

- Rear-end crashes (RUM Code 301) which accounted for 30% of all crashes
- Right rear end collisions (RUM code 303) which accounted for 22% of all crashes
- Parked collisions (RUM code 601) which accounted for 11% of all crashes

As the data shows most of the crashes are common crashes with the total number of recorded injuries being 6.

3.11 TRAFFIC SURVEY

The peak traffic survey has been undertaken by Trans Traffic Survey during the AM period (7:30am-9:30am) and PM period (2:30pm-7:00pm). A summary of the data utilised for each intersection is as follows:

- Kerrigan Street / Shakespeare Crescent
- Tillyard Drive/Kerrigan Street
- Tillyard Drive /Daley Crescent (South)
- Tillyard Drive /Daley Crescent (North)

A summary of the existing movements during each peak hour at both intersections are presented in Figure 17 and Figure 18, with the full data provided in Appendix A.

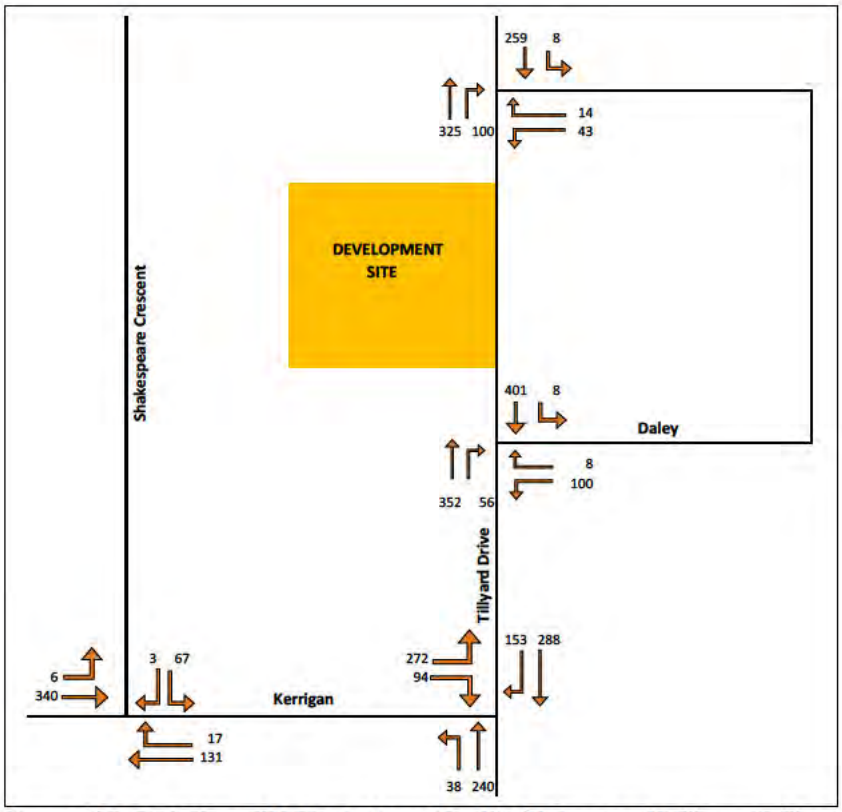

Figure 17: Existing AM Peak Hour Traffic Volumes (8:00am-9:00am)

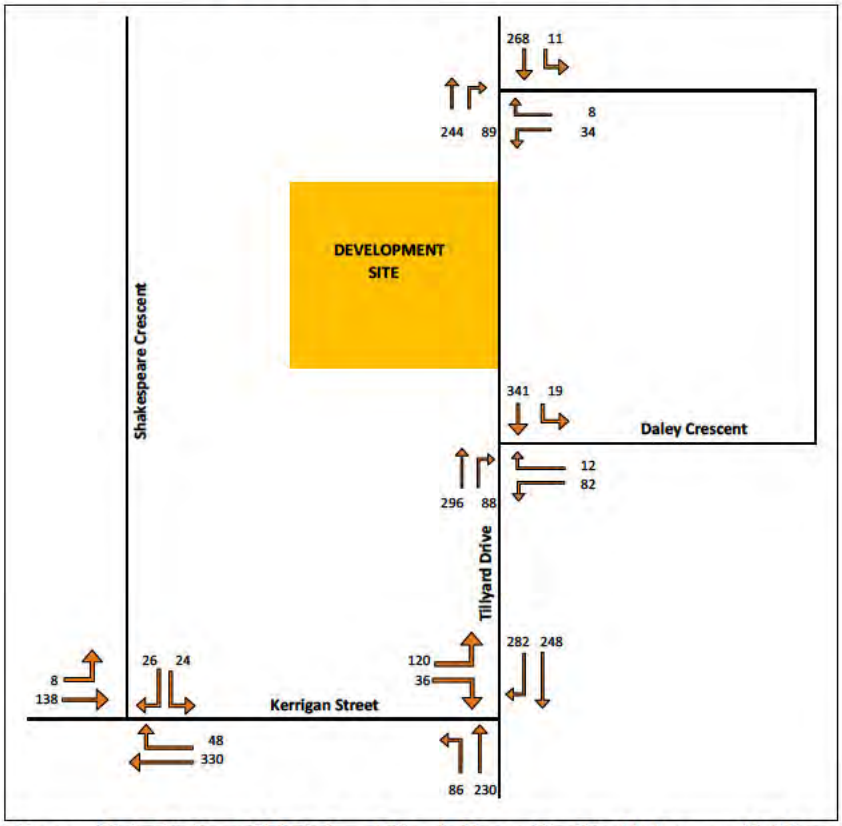

Figure 18: Existing PM School Peak Hour Traffic Volumes (2:30pm-3:30pm)

3.12 INTERSECTION PERFORMANCE

The performance of the key intersections and the site access have been assessed using SIDRA INTERSECTION 9.0 analytical traffic modelling software. SIDRA analysis defines intersection performance based on the following four key parameters:

- Degree of saturation (DOS), which represents the ratio of traffic demand to theoretical intersection capacity
- Average delay (in seconds) experienced by vehicles undertaking each movement at the intersection
- Level of Service (LOS), which converts the average delay to a letter grade that reflects the average driver's perception of the traffic conditions
- 95th percentile queue lengths, which reflect the length of queuing (in metres), on each approach lane at the intersection that has a 5% (or 1-in-20) chance of being exceeded

The *RMS* Traffic Modelling Guidelines identify the maximum practical DOS for various intersection controls as presented in the Table 4.

Table 4: Maximum Practical DOS for Various Intersection Controls

Intersection Control	Maximum Practical DOS
Traffic Signals	0.90
Roundabout (incl. Metered)	0.85
Priority-Controlled	0.80

The RMS Traffic Modelling Guidelines also identify LOS criteria for intersections as shown in the Table 5.

Table 5: LOS Criteria for Intersection

LOS	Average delay per vehicle
A	≤ 14s
B	15s – 28s
C	29s – 42s
D	43s – 56s
E	57s – 70s
F	> 70s

95th percentile queue lengths have been assessed against the available storage length within each respective lane.

Table 6 summarises the performance of Intersections' existing condition. Further details of the SIDRA analysis are provided at Appendix C.

Table 6: Intersection Performance Summary - Existing Conditions (AM & PM Peak Hours)

Intersection	Intersection Arrangement	AM Peak Hour				PM Peak Hour			
		DOS	Delay	LOS	Queue	DOS	Delay	LOS	Queue
Kerrigan St /Shakespeare Cr	Give-way Intersection	0.195	0.8	A	1.5	0.218	0.8	A	2.9
Tillyard Dr /Kerrigan St	Give-way Intersection	0.253	2.4	A	8.2	0.314	2.6	A	13.6
Tillyard Dr /Daley Cr (South)	Give-way Intersection	0.235	1	A	3.9	0.223	1.3	A	5.4
Tillyard Dr /Daley Cr (North)	Give-way Intersection	0.241	1.4	A	5.7	0.19	14	A	4.7

The SIDRA simulation results show that nominated intersections operate with acceptable performance (LOS A) in AM and PM peak hours.

4. TRAFFIC ASSESSMENT

4.1 TRAFFIC GENERATION

The schools' trip generation survey undertaken by GTA Consultant in NSW provides guidance on traffic generation rates for school. Given the location of subject school, the traffic generation rate is as follows:

AM school peak: 1.23 vehicle trip per student

PM school peak: 1.01 vehicle trip per student

Table 7 summarises the traffic generation for the proposed development for the additional 271 students.

Table 7: Traffic Generation

Land Use	Number of Students	AM Volumes		School PM Volumes	
		Rate	No	Rate	No
School	271	1.23 vehicle trip per student	334	1.01 vehicle trip per student	274
Total			**334**		**274**

4.2 SITE ACCESS

The proposal seeks to provide one vehicle access point (driveway) via Tillyard Drive at the east of the subject site. In addition, it is anticipated that the access will operate all service/waste vehicles.

4.3 TRAFFIC DISTRIBUTION

Traffic volumes generated by the school have been distributed in the surrounding road network via two key routes. The percentage allocation of traffic to each route is calculated based on the total number of students and the expectation of using car based on the vicinity to school in the PEA. Table 8 shows the calculation of the number of students using car as transport in each suburb.

Table 8: Calculation of The Number of Students Using Car as Transport

Suburbs	Fraser	Dunlop
Population	2026	7197
Number of pre and pri-school Students	234	1001
Area (Km^2)	2.5	3.6
PEA Area (Km^2)	2.5	1
Affected students	234	278
The expectation of using car based on the vicinity to school	80%	100%
Number of students using car as transport	187	278
Percentage of students using car as transport	40%	60%

Given the location of the school in the centre of Fraser suburb, it is assumed that the traffic going to Fraser will be equally distributed between the north and west route.

A summary of the adopted allocations is provided in Table 9, whilst a summary diagram of the three key distribution routes through the local road network are provided in Figure 19.

Table 9: Traffic Distribution

Route	Streets	Allocation
North	Tillyard Drive north, Daley Crescent	20%
West	Tillyard Drive south, Kerrigan Street west	80%
Total		**100%**

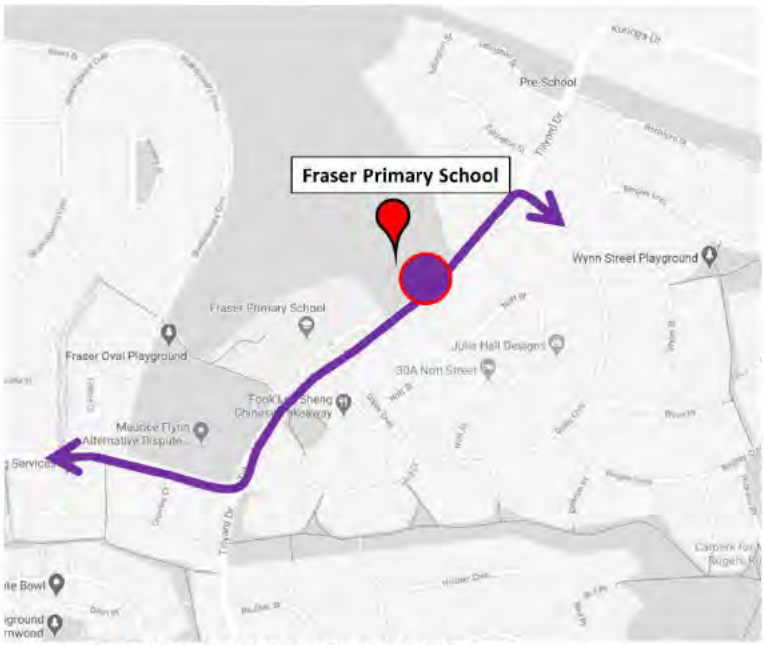

Figure 19: Traffic Distribution Routes

The inbound/outbound splits for the trip distribution based on the schools' trip generation survey undertaken by GTA Consultant in NSW is as the Table 10.

Table 10: Inbound and Outbound Splits

Land Use	Peak	Inbound	Outbound
School	AM	51%	49%
	PM	49%	51%

4.4 PEAK HOUR TRAFFIC VOLUME ANALYSIS

4.4.1 Development Peak Hour Volumes

The turning movements generated by the development on the road network are shown in Figure 20 and Figure 21.

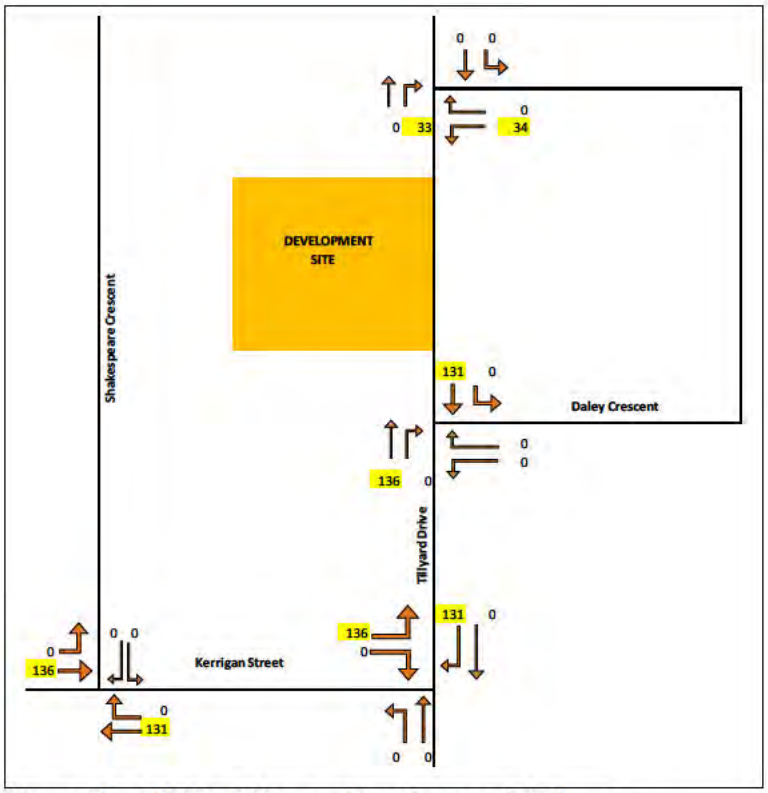

Figure 20: AM Peak Hour – Development Volumes

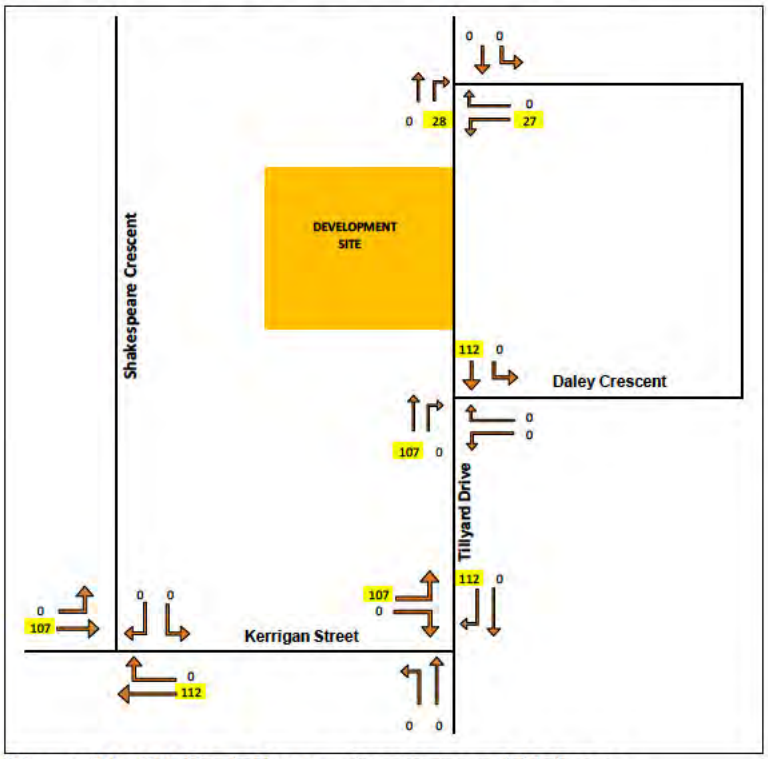

Figure 21: PM Peak Hour – Development Volumes

4.4.2 Future Scenario Non-Development Traffic Volumes

A 'future' traffic volume data set has also been developed by applying annual growth rate of 1.5% (derived from CSTM Data) to all traffic movement in the network. A growth factor of 1.5% p.a. (linear) has been adopted for analysis, applied over a 10-year period.

The future scenario volumes are shown in Figure 22 and Figure 23.

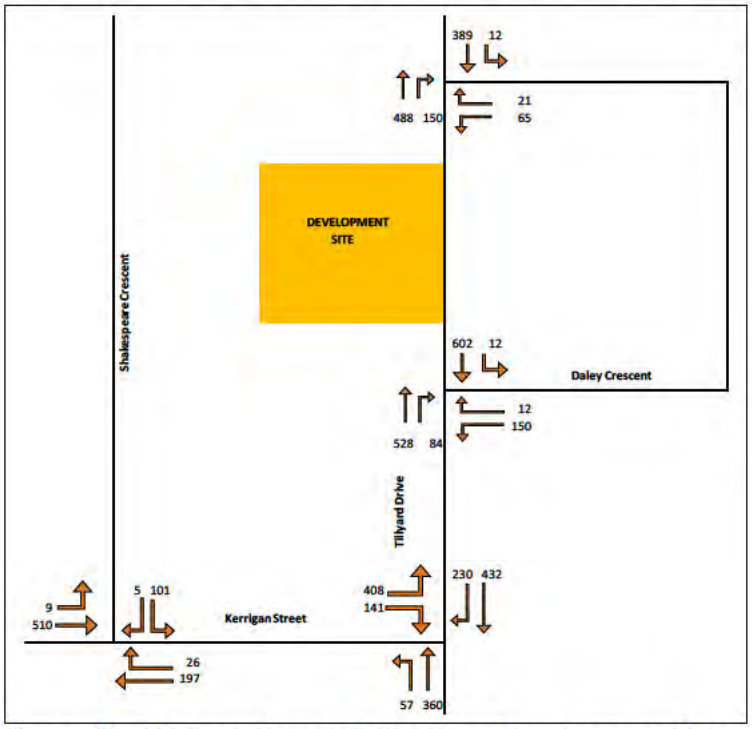

Figure 22: AM Peak Hour – Future Non-Development Volumes

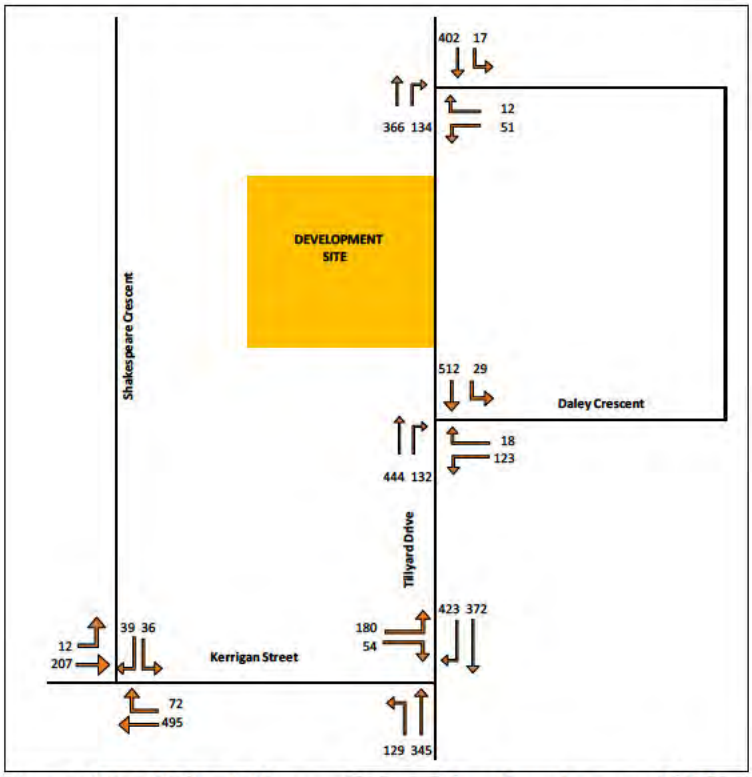

Figure 23: PM Peak Hour – Future Non-Development Volumes

4.4.3 Future Scenario Post-Development Traffic Volumes

Future traffic volumes with considering development's traffic generation are shown in Figure 24 and Figure 25.

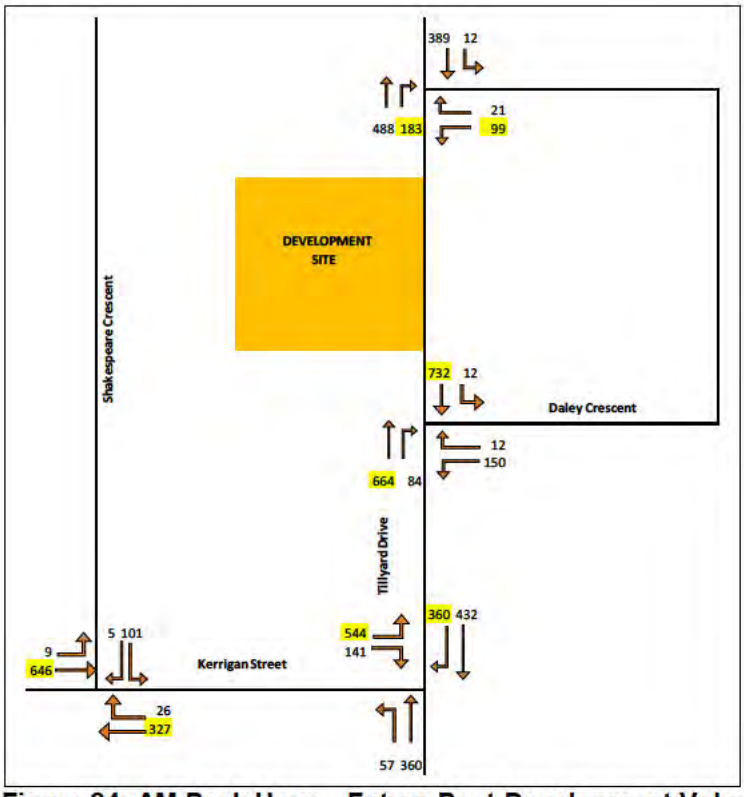

Figure 24: AM Peak Hour – Future Post-Development Volumes

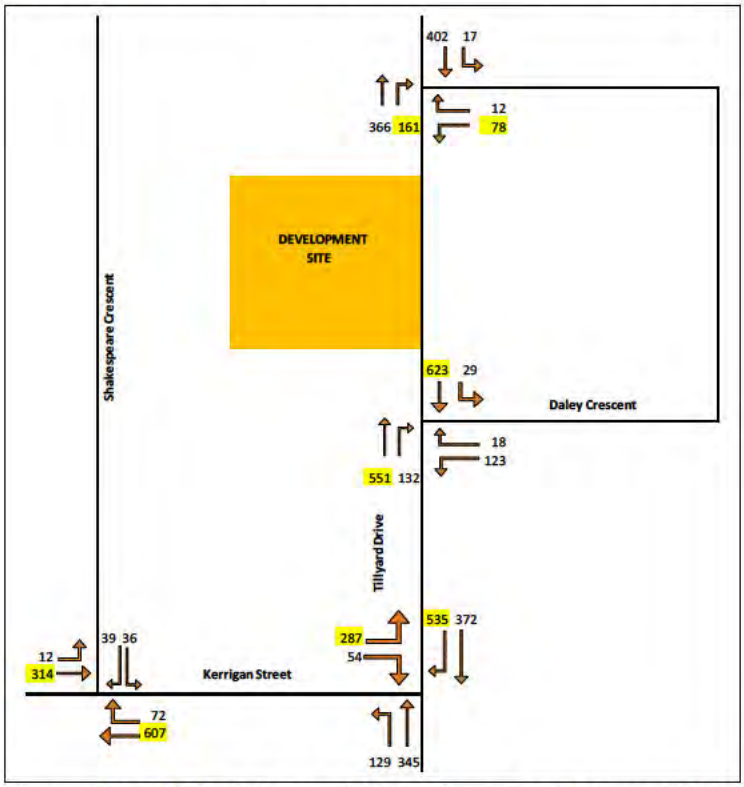

Figure 25: PM Peak Hour – Future Post-Development Volumes

4.4.4 Intersection Capacity Analysis – Post Development & Future

SIDRA modelling has been undertaken for the future traffic volumes scenario. A summary of the SIDRA model outputs for each intersection in 2031 Non-development scenario is shown in Table 11. Further details of the SIDRA analysis are provided in Appendix E.

Table 11: Intersection Performance Summary – Future Non-Development

Intersection	Intersection Arrangement	AM Peak Hour				PM Peak Hour			
		DOS	Delay	LOS	Queue	DOS	Delay	LOS	Queue
Kerrigan St /Shakespeare Cr	Give-way Intersection	0.29	1	A	2.8	0.332	0.9	A	5.4
Tillyard Dr /Kerrigan St	Give-way Intersection	0.402	3.1	A	19	0.522	3.8	A	40.9
Tillyard Dr /Daley Cr (South)	Give-way Intersection	0.371	1.6	A	10.4	0.356	1.8	A	12.9
Tillyard Dr /Daley Cr (North)	Give-way Intersection	0.376	1.8	A	12.2	0.298	1.7	A	9

A summary of the SIDRA model outputs for each intersection in 2031 post development scenario (Future) is shown in Table 12. Further details of the SIDRA analysis are provided in Appendix F.

Table 12: Intersection Performance Summary – Future Post-Development

Intersection	Intersection Arrangement	AM Peak Hour				PM Peak Hour			
		DOS	Delay	LOS	Queue	DOS	Delay	LOS	Queue
Kerrigan St /Shakespeare Cr	Give-way Intersection	0.365	1	A	3.4	0.401	1	A	7.9
Tillyard Dr /Kerrigan St	Give-way Intersection	0.496	3.9	A	34.1	0.605	4.5	A	57.7
Tillyard Dr /Daley Cr (South)	Give-way Intersection	0.463	1.8	A	15.8	0.433	2.1	A	18.8
Tillyard Dr /Daley Cr (North)	Give-way Intersection	0.398	2.2	A	15.6	0.317	2	A	10.7

The SIDRA simulation results show that nominated intersections operate with acceptable performance (LOS A) in future post-development scenario. Therefore, the traffic impact of the propose expansion is negligible and the operation of the road network will operate at an acceptable level of performance.

5. CAR PARKING ASSESSMENT

5.1 CAR PARKING REQUIREMENTS

With the addition of 271 kindergarten-year 6 students, the site will now have to accommodate for a total of 885 students.

The ACTPLA Parking and Vehicular Access General Code provides car parking requirements for developments.

In this case, the subject site is defined as a community facility zone and the development classifies under Pre-school, primary & high schools. As such, the two parking requirements are as follows:

- 0.8 spaces per 10 students
- 0.4 set-down/pick-up spaces per 10 students

Based on the above rates, the car parking requirements for the proposed development are shown in Table 13.

Table 13: Car Parking Assessment

Land Use	Type	Number / Size	Car parking Rate	Parking Requirement (space)
Community Facility Zone (Pre-school)	Regular (staff)	885 Students	0.8 Spaces/10 Students	71
	Set-down / Pick-up	885 Students	0.4 spaces/10 students	36
Total				**107**

Considering the number of 79 existing carpark provision within the existing school area, no additional parking is required for expansion area.

Given the number of 16 existing set-down/pick-up parking, a number of 20 additional set-down/pick-up parking is required in the expansion area. However, considering the existing set-down/pick-up parking demand during school peak hour, which is the cause of queue and congestion in the school driveway and Tillyard Drive, it is recommended to provide the maximum possible number of set-down/pick-up parking in Tillyard Drive. It is also recommended to allocate a part of Shakespeare Crescent as set-down/pick-up parking.

5.2 CAR PARKING LOCATION

The ACTPLA Parking and Vehicular Access General Code also provides guidance in relation to the location of car parking.

For the land use of the site, the following requirements apply:

- Pick-up (short term) – On-site or within 100m
- Staff Parking (long term) – Within 200m

In view of the above, the parking spaces associated with set-down/pick-up are required to be provided on-site or within 100m of the school entrance(s).

The parking spaces associated with staff (long term) should be provided on-site or within 200m.

5.3 DROP-OFF & PICK-UP AREAS REQUIREMENTS

Section 5.7 of the ACT's Traffic Management and Safety Guide indicates that "No Parking" and pick-up areas on the same side of the road as the school may be used as pick-up/drop-off areas as long as parents/guardians are able to do so within a two minute timeframe and remain in control of the vehicle while doing so. These areas should be located within 100m of the school.

Section 5.8 of the same guideline state that the drop-off points can be located 500m – 1km away from the school is a good way to reduce traffic around the school gate and enable children to have a short walk before school. Schools can identify safe drop off points a short distance from school and encourage parents to drop their children off to walk the rest of the way on their own or walk with them. Ideally schools can nominate a time that families can meet at the drop off points so students can walk together in a group.

5.4 BUS STOP REQUIREMENTS

Section 5.4 of the ACT's Traffic Management and Safety Guide specifies that, wherever possible, bus stops should be located away from crossings and with good visibility. Crossings to and from the bus stop should also have good visibility. Vehicles should not stop within 20m of the rear and 10m of the front of the bus. Bus zone signs should be used in the case of multiple buses. Bus stops should also avoid preventing other vehicles from circulating, especially when stationed for longer timeframes. Given the increase in the number of students in future plan, a new school bus should be provided as a part of the expansion plan.

5.5 DISABLED CAR PARKING

The ACTPLA Parking and Vehicular Access General Code requires that a minimum of 3% of all parking spaces be disabled parking spaces. Therefore, a minimum of three (3) disabled parking spaces are required for regular parking and none for pick-up parking.

5.6 MOTORCYCLE PARKING

The ACTPLA Parking and Vehicular Access General Code requires that a minimum of three (3) dedicated motorcycle parking spaces per 100 long term parking spaces. As such, three (3) motorcycle parking spaces are required to be within 200m of the site.

5.7 BICYCLE PARKING

The provision of bicycle parking is set out in the ACTPLA Bicycle Parking General Code.

For primary schools, the code requires 1 space per 200 students after the first 200 students and 1 student parking space per 15 students. A summary of the bicycle parking requirements is provided in Table 14.

Table 14: Bicycle Parking Assessment

Land Use	Number of Students	User Type	Bicycle Parking Rate	Bicycle Parking Requirement (space)
Primary School	885	Staff	1 space/200 students after first 200	4
		Students	1 space per 15 students	59
Total				**63**

For student bicycle parking the code acknowledges that cages or compounds containing installations such as metal hoops and rails should be used to securely lock the bikes. Therefore, it is recommended that storage lockers can accommodate bicycle parking as follows:

- Secure area for students/staff
- The storage area contains the installations mentioned above
- Meet the Section 4 requirements of the Bicycle Parking General Code

The space should be located conveniently to access the surrounding bicycle facilities and the proposed development.

6. ACTIVE TRAVEL ASSESSMENT

Whilst the existing network provides good walking and cycling linkages to the existing school boundary, given that the future expansion area which is far from the existing underpass crossing in south of the existing school, the following improvement works are recommended as part of the proposed development to continue to support walking and cycling modes of travel:

- A new Children's Crossing to be considered in Tillyard Drive in front of the expansion area
- Upgrade the footpath in open space area to provide a shared path with 3 meters width for mixed pedestrian and bicycle usage
- Construct a shared path with 3 meters width along the Tillyard Drive in both sides from Daley Crescent South to Daley Crescent North intersection to provide shared path for mixed pedestrian and bicycle usage

Section 5.3.1 of the ACT's Traffic Management and Safety Guide indicates that the Children's crossings are appropriate when the minimum number of students crossing per peak half hour is 20 and the minimum number of vehicles passing in the same half hour is 50. Crossing movements should be contained within a 30m section of road.

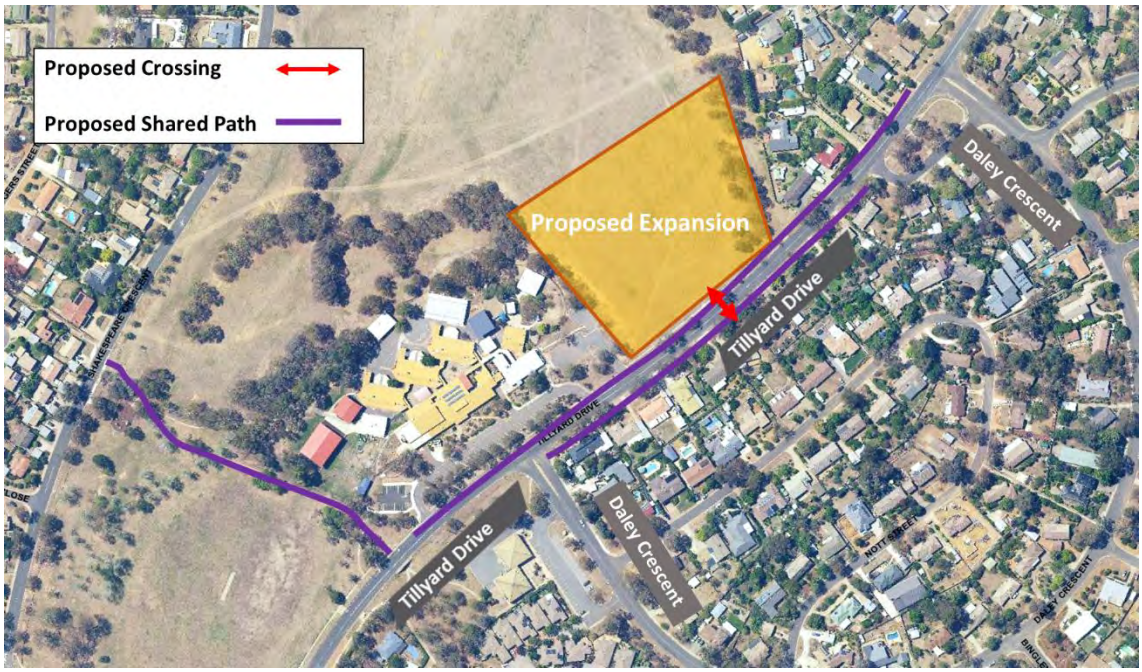

Figure 26: Proposed Active Travel Improvement

7. SERVICE VEHICLES

Any loading / waste collection activities should occur on-site. On this basis, the physical design of the vehicle access points should consider heavy vehicles to accommodate service activities with forward entry-forward exit movements in compliance with the Development Control Code for Best Practice Waste Management in the ACT 2019. Waste collection points and waste truck routes should be arranged in a way to avoid conflict with pedestrian and students access points and paths.

8. CONSTRUCTION CONSIDERATIONS

Construction vehicles will be subject to individual and specific traffic management plans. Separation of construction access and general school and public travel is essential. It is recommended to minimise the construction activities, and truck movements along Tillyard Drive during AM and PM school peak.

9. CONCLUSION

Indesco was engaged by the ACT Education Directorate to prepare a transport impact assessment (TIA) for expansion of Fraser primary school in Fraser Section 64 Block 6.

For the purposes of this project, it is assumed that an upper limit expansion of the student capacity of the school of up to 800 K-6 students plus 85 preschool students.

SIDRA modelling was undertaken to assess the impact on key external intersections.

1. Kerrigan Street / Shakespeare Crescent
2. Tillyard Drive / Kerrigan Street
3. Tillyard Drive / Daley Crescent (South)
4. Tillyard Drive / Daley Crescent (North)

The analysis and relevant discussion in this report led to the following conclusions:

1. The proposed development is expected to generate 334 and 274 trips in AM and PM school peak hour respectively.
2. Based on the SIDRA simulation results, the development will have a negligible effect on intersections traffic performance and all nominated intersections will perform with the level of service A.
3. The future school with 885 students has a parking requirement of 71 spaces; however, considering the number of 79 existing car park provision within the existing school area, no additional parking is required for expansion area.
4. The future school has a motorcycle parking requirement of 3 spaces.
5. Based on the ACTPLA Parking and Vehicular Access General Code, future school with 885 students has a pick-up parking requirement of 36 spaces; however, considering the number of 16 pick-up parking provision within the existing school area, and observed set-down/pick-up parking demand during school peak hour, which is the cause of queue and congestion in the school driveway and Tillyard Drive, it is recommended to provide the maximum possible number of set-down/pick-up parking in Tillyard Drive. It is also recommended to allocate a part of Shakespeare Crescent as set-down/pick-up parking.
6. The future school has a bicycle parking requirement of 4 spaces for staff and 59 spaces for students.
7. The following improvement works are recommended to be undertaken as part of the proposed development to further support walking and cycling:
   - A new Children's Crossing to be considered in Tillyard Drive in front of the expansion area
   - Upgrade the footpath in open space area to provide a shared path with 3 meters width for mixed pedestrian and bicycle usage
   - Construct a shared path with 3 meters width along the Tillyard Drive in both sides from Daley Crescent South to Daley Crescent North intersection to provide shared path for mixed pedestrian and bicycle usage
8. The current school zone needs to be extended till the end of the school boundary on the north side along Tillyard Drive in future design.
9. Public transport is not expected to be impacted significantly by the proposed expansion; however, in future design, the school bus stop needs to be located away from crossings and with good visibility and one new school bus should be provided as a part of the expansion plan.
10. The final design of the site access arrangements should allow for the trucks associated with service and loading on the subject site.

Appendix A: Peak Hour Traffic Counts

TRANS TRAFFIC SURVEY

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TURNING MOVEMENT SURVEY

Intersection of Tillyard Drive and Delay Crescent (North), Fraser

GPS *-35.189794, 149.046715*

Date:	Tue 27/04/21
Weather:	Fine
Suburban:	Fraser
Customer:	Indesco

North East:	Tillyard Drive
South East:	Delay Crescent (North)
South West:	Tillyard Drive
West:	N/A

Survey Period	AM:	7:30 AM-10:30 AM
	PM:	3:30 PM-3:30 PM
Traffic Peak	AM:	8:15 AM-9:15 AM
	PM-SCH	2:30 PM-3:30 PM
	PM:	4:45 PM-5:45 PM

All Vehicles

Time		North Approach Tillyard Drive			East Approach Delay Crescent (North)			South Approach Tillyard Drive			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:30	7:45	0	46	2	0	4	10	0	4	68	595	
7:45	8:00	0	48	0	0	13	7	0	0	71	630	
8:00	8:15	0	56	5	0	8	3	0	5	90	715	
8:15	8:30	0	60	3	0	5	9	0	0	78	749	Peak
8:30	8:45	0	63	1	0	5	5	0	13	82	709	
8:45	9:00	0	75	4	0	1	17	0	37	90		
9:00	9:15	0	61	0	0	3	12	0	50	75		
9:15	9:30	0	41	1	0	2	4	0	9	58		
14:30	14:45	0	53	2	0	4	5	0	5	52	654	Peak
14:45	15:00	0	67	4	0	0	11	0	6	54		
15:00	15:15	0	67	4	0	1	7	0	48	53		
15:15	15:30	0	81	1	0	3	11	0	30	85		
15:30	15:45	0	91	3	0	3	10	0	4	51	703	
15:45	16:00	0	94	1	0	1	8	0	5	70	709	
16:00	16:15	0	80	2	0	3	5	0	7	75	734	
16:15	16:30	0	96	2	0	1	7	0	9	75	793	
16:30	16:45	0	77	4	0	2	9	0	8	68	855	
16:45	17:00	0	109	4	0	0	11	0	9	71	893	Peak
17:00	17:15	0	111	5	0	3	4	0	10	98	855	
17:15	17:30	0	107	4	0	3	11	0	14	113	791	
17:30	17:45	0	95	4	0	2	9	0	13	83	683	
17:45	18:00	0	78	1	0	0	4	0	11	72		
18:00	18:15	0	63	3	0	4	5	0	11	81		
18:15	18:30	0	73	3	0	0	6	0	10	52		

Peak Time		North Approach Tillyard Drive			East Approach Delay Crescent (North)			South Approach Tillyard Drive			Peak total
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	
8:15	9:15	0	259	8	0	14	43	0	100	325	749
14:30	15:30	0	268	11	0	8	34	0	89	244	654
16:45	17:45	0	422	17	0	8	35	0	46	365	893

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Tillyard Drive and Delay Crescent (South), Fraser

GPS *-35.192144, 149.043685*

Date:	Tue 27/04/21
Weather:	Fine
Suburban:	Fraser
Customer:	Indesco

North East:	Tillyard Drive
South East:	Delay Crescent (South)
South West:	Tillyard Drive
West:	N/A

Survey Period	AM:	7:30 AM-10:30 AM
	PM:	3:30 PM-3:30 PM
Traffic Peak	AM:	8:15 AM-9:15 AM
	PM-SCH:	2:30 PM-3:30 PM
	PM:	4:45 PM-5:45 PM

All Vehicles

Time		North Approach Tillyard Drive			East Approach Delay Crescent (South)			South Approach Tillyard Drive			Hourly Total	
Period Start	**Period End**	**U**	**SB**	**L**	**U**	**R**	**L**	**U**	**R**	**NB**	**Hour**	**Peak**
7:30	7:45	0	60	0	0	3	8	0	9	68	650	
7:45	8:00	0	60	1	0	0	16	0	4	67	711	
8:00	8:15	0	61	2	0	1	21	0	2	94	849	
8:15	8:30	0	76	2	0	2	17	0	4	72	925	Peak
8:30	8:45	0	74	1	0	2	26	0	14	92	888	
8:45	9:00	0	122	3	0	2	30	0	22	107		
9:00	9:15	0	129	2	0	2	27	0	16	81		
9:15	9:30	0	51	1	0	4	15	0	7	58		
14:30	14:45	0	55	4	0	1	10	0	14	61	838	Peak
14:45	15:00	0	66	8	0	4	13	0	19	74		
15 00	15:15	0	102	4	0	3	37	0	27	70		
15:15	15:30	0	118	3	0	4	22	0	28	91		
15:30	15:45	0	100	3	0	2	14	0	12	52	806	
15:45	16:00	0	105	4	0	3	9	0	12	71	821	
16 00	16:15	0	88	1	0	1	10	0	17	80	848	
16:15	16:30	0	107	3	0	2	11	0	16	83	922	
16:30	16:45	0	86	4	0	3	11	0	18	76	980	
16:45	17:00	0	127	1	0	2	12	0	21	68	1030	Peak
17 00	17:15	0	124	7	0	1	16	0	13	110	1003	
17:15	17:30	0	130	3	0	7	8	0	22	110	912	
17:30	17:45	0	118	3	0	3	13	0	19	92	805	
17:45	18:00	0	90	3	0	1	16	0	14	80		
18 00	18:15	0	65	5	0	0	7	0	19	84		
18:15	18:30	0	81	3	0	1	15	0	16	57		

Peak Time		North Approach Tillyard Drive			East Approach Delay Crescent (South)			South Approach Tillyard Drive			Peak total
Period Start	**Period End**	U	WB	L	U	R	L	U	R	EB	
8:15	9:15	0	401	8	0	8	100	0	56	352	925
14:30	15:30	0	341	19	0	12	82	0	88	296	838
16:45	17:45	0	499	14	0	13	49	0	75	380	1030

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Kerrigan St and Shakespeare Cr, Fraser

GPS *-35.193604, 149.039727*

Date:	Wed 03/03/21
Weather:	Overcast
Suburban:	Fraser
Customer:	Indesco

North:	Shakespeare Cr
East:	Kerrigan St
South:	N/A
West:	Kerrigan St

Survey Period	AM:	7:30 AM-9:30 AM
	PM:	2:30 PM-6:30 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM-SCH	2:30 PM-3:30 PM
	PM:	4:15 PM-5:15 PM

All Vehicles

Time		North Approach Shakespeare Cr			East Approach Kerrigan St			West Approach Kerrigan St			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
7:30	7:45	0	0	11	0	3	14	0	68	0	443	
7:45	8:00	0	0	8	0	5	30	0	72	1	493	
8:00	8:15	0	1	11	0	4	20	0	79	2	564	Peak
8:15	8:30	0	0	19	0	4	25	0	65	1	562	
8:30	8:45	0	2	23	0	4	34	0	82	1	536	
8:45	9:00	0	0	14	0	5	52	0	114	2		
9:00	9:15	0	2	13	0	7	53	0	40	0		
9:15	9:30	0	6	13	0	8	30	0	30	1		
14:30	14:45	0	5	5	0	10	84	0	47	3	574	
14:45	15:00	0	8	7	0	14	81	0	22	1	549	
15:00	15:15	0	5	5	0	10	84	0	47	3	553	
15:15	15:30	0	8	7	0	14	81	0	22	1	511	
15:30	15:45	0	3	7	0	14	65	0	40	0	522	
15:45	16:00	0	1	10	0	19	63	0	44	0	538	
16:00	16:15	0	0	7	0	15	50	0	40	0	556	
16:15	16:30	0	2	8	0	11	80	0	43	0	584	
16:30	16:45	0	1	4	0	10	76	0	54	0	606	
16:45	17:00	0	0	5	0	12	86	0	50	2	610	Peak
17:00	17:15	0	1	5	0	9	69	0	55	1	610	Peak
17:15	17:30	0	1	6	0	10	100	0	49	0	600	
17:30	17:45	0	1	7	0	10	87	0	44	0	588	
17:45	18:00	0	2	6	0	14	84	0	47	2	559	
18:00	18:15	0	0	3	0	6	80	0	40	1	507	
18:15	18:30	0	1	7	0	23	73	0	49	1		
18:30	18:45	0	2	6	0	15	57	0	40	0		
18:45	19:00	0	0	0	0	8	57	0	38	0		

Peak Time		North Approach Shakespeare Cr			East Approach Kerrigan St			West Approach Kerrigan St			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
8:00	9:00	0	3	67	0	17	131	0	340	6	564
14:30	15:30	0	26	24	0	48	330	0	138	8	574
16:15	17:15	0	3	23	0	41	342	0	198	3	610

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Kerrigan St and Tillyard Dr, Fraser

GPS *-35.194101, 149.041756*

Date:	Wed 03/03/21
Weather:	Overcast
Suburban:	Fraser
Customer:	Indesco

North:	Tillyard Dr
East:	N/A
South:	Tillyard Dr
West:	Kerrigan St

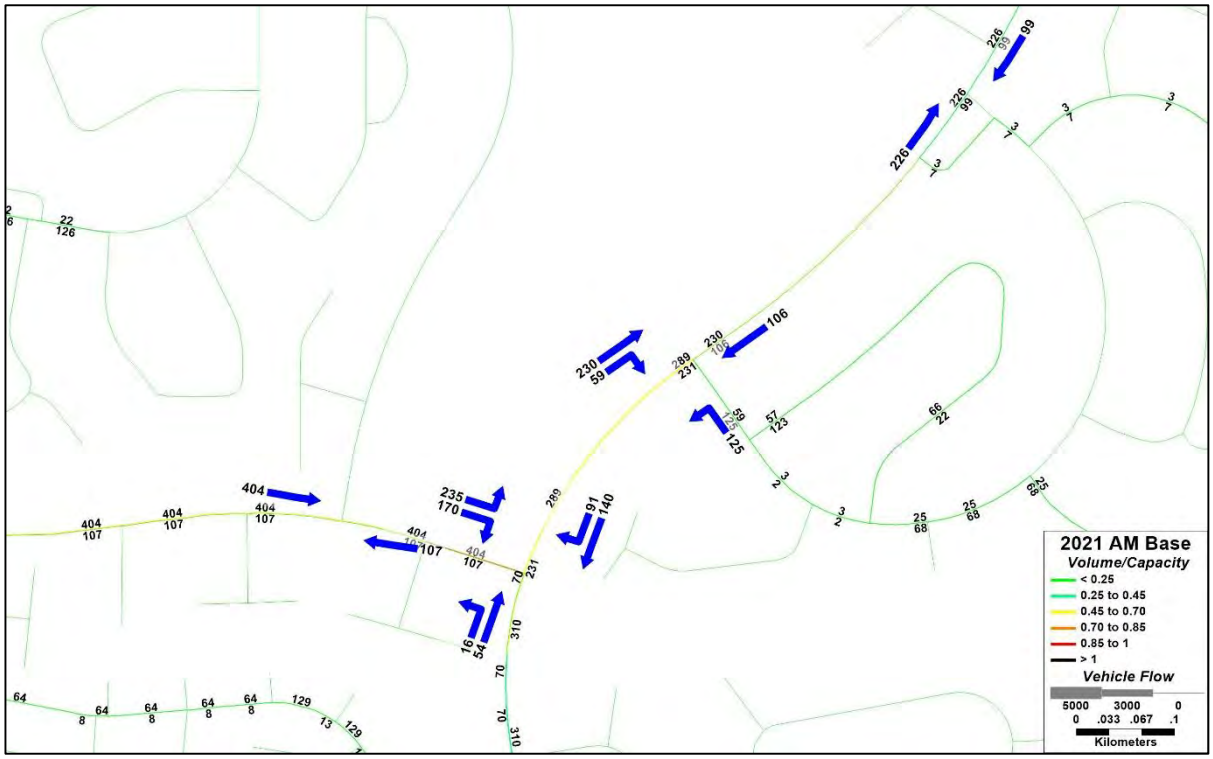
Survey Period	AM:	7:30 AM-9:30 AM
	PM:	2:30 PM-6:30 PM
Traffic Peak	AM:	8:15 AM-9:15 AM
	PM-SCH:	2:30 AM-3:30 PM
	PM:	4:15 PM-5:15 PM

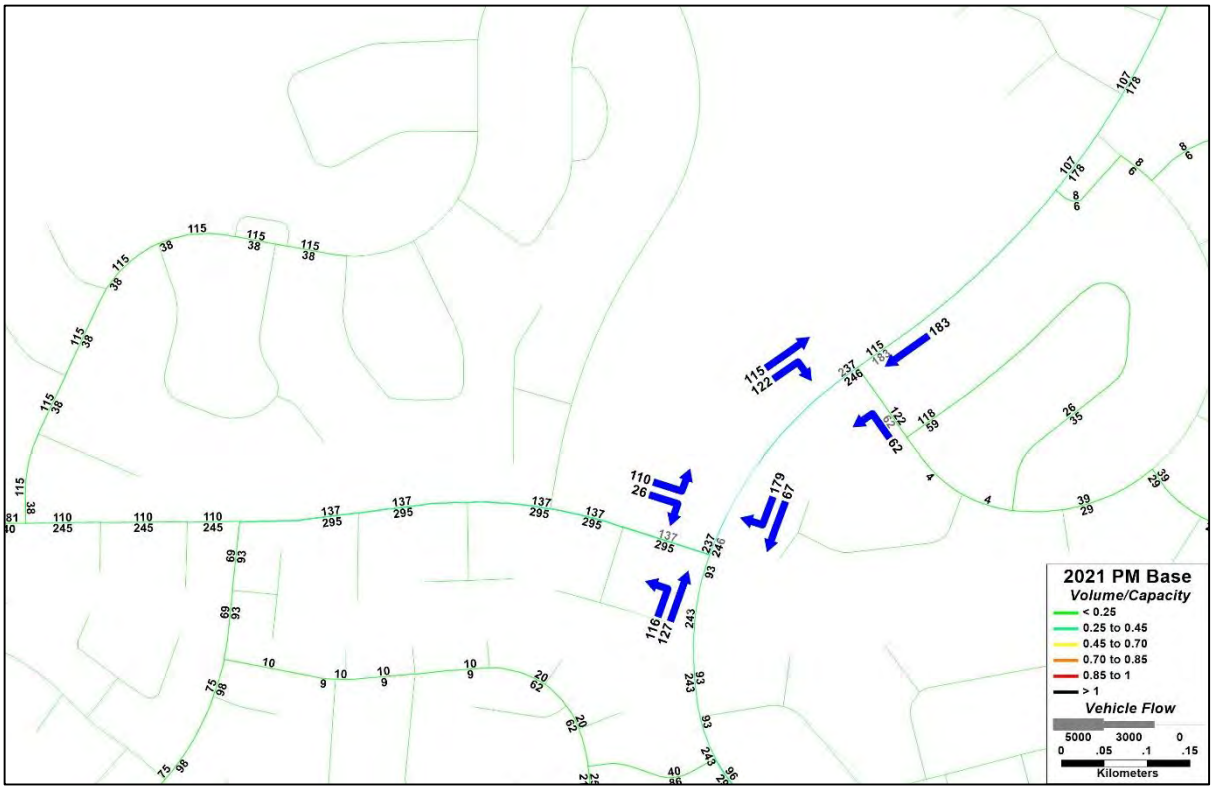
All Vehicles

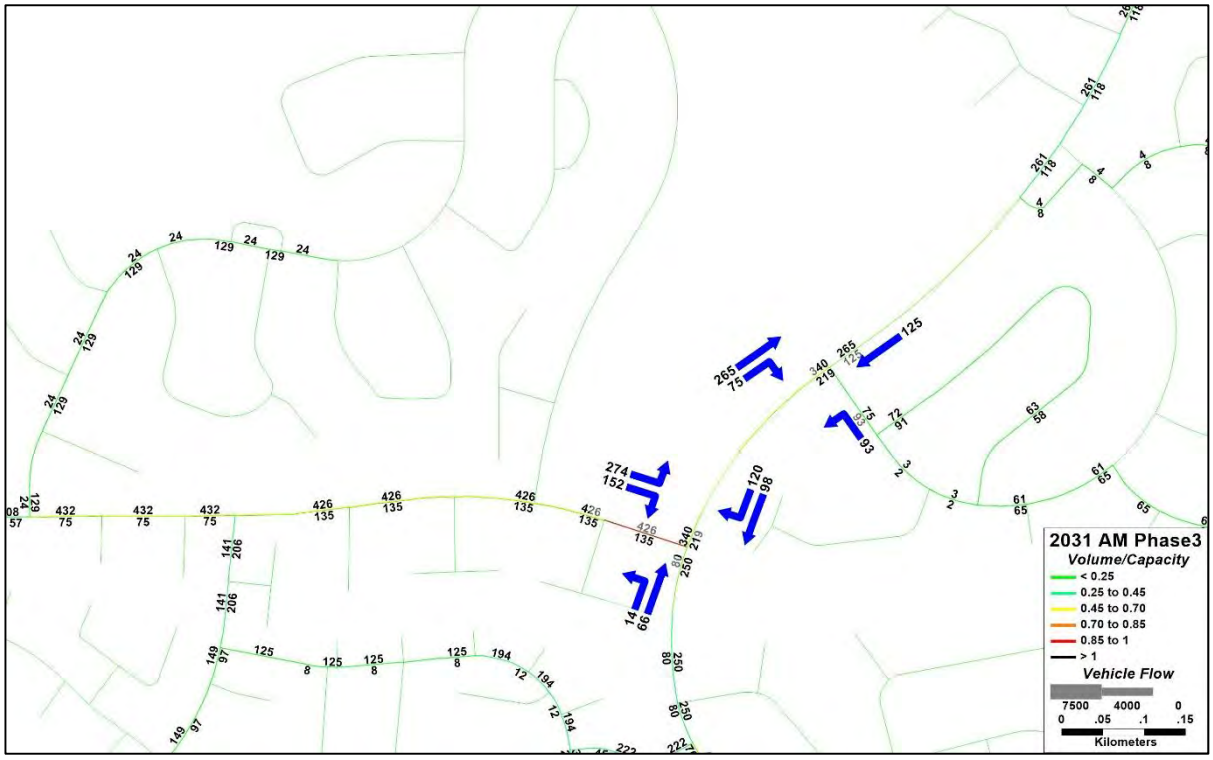
Time		North Approach Tillyard Dr			South Approach Tillyard Dr			West Approach Kerrigan St			Hourly Total	
Period Start	**Period End**	**U**	**R**	**SB**	**U**	**NB**	**L**	**U**	**R**	**L**	**Hour**	**Peak**
7:30	7:45	0	13	39	0	39	4	0	28	52	835	
7:45	8:00	0	22	65	0	33	10	0	28	52	941	
8:00	8:15	0	15	65	0	51	6	0	35	59	1076	
8:15	8:30	0	26	58	0	49	5	0	32	49	1085	Peak
8:30	8:45	0	32	62	0	69	9	0	26	83	1033	
8:45	9:00	0	45	87	0	71	13	0	21	108		
9:00	9:15	0	50	81	0	51	11	0	15	32		
9:15	9:30	0	27	42	0	42	13	0	14	29		
14:30	14:45	0	69	62	0	67	22	0	6	44	1002	
14:45	15:00	0	72	62	0	48	21	0	12	16	945	
15:00	15:15	0	69	62	0	67	22	0	6	44	945	
15:15	15:30	0	72	62	0	48	21	0	12	16	887	
15:30	15:45	0	48	34	0	51	29	0	15	36	919	
15:45	16:00	0	59	52	0	43	24	0	23	30	977	
16:00	16:15	0	46	56	0	43	21	0	13	33	1033	
16:15	16:30	0	74	55	0	65	18	0	14	37	1099	
16:30	16:45	0	55	51	0	73	30	0	18	44	1144	
16:45	17:00	0	67	59	0	73	34	0	15	39	1161	Peak
17:00	17:15	0	50	53	0	81	31	0	12	51	1123	
17:15	17:30	0	72	62	0	82	40	0	13	39	1066	
17:30	17:45	0	63	58	0	81	36	0	12	38	1040	
17:45	18:00	0	63	39	0	65	33	0	13	36	949	
18:00	18:15	0	58	38	0	55	27	0	13	30	878	
18:15	18:30	0	62	50	0	79	37	0	19	35		
18:30	18:45	0	43	36	0	40	32	0	15	31		
18:45	19:00	0	37	37	0	37	27	0	13	27		

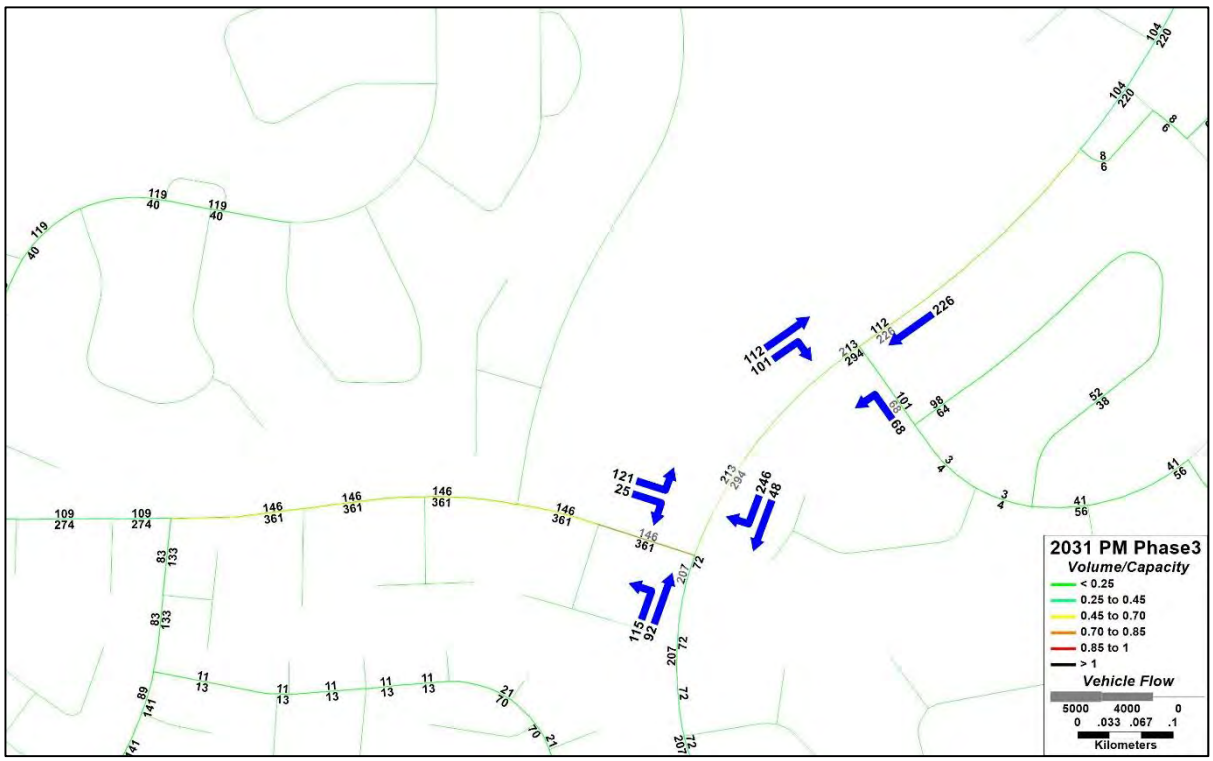
Peak Time		North Approach Tillyard Dr			South Approach Tillyard Dr			West Approach Kerrigan St			Peak
Period Start	**Period End**	U	R	SB	U	NB	L	U	R	L	**total**
8:15	9:15	0	153	288	0	240	38	0	94	272	1085
14:30	15:30	0	282	248	0	230	86	0	36	120	1002
16:15	17:15	0	252	232	0	317	141	0	52	167	1161

Appendix B: CSTM Data


2021 AM Base
Volume/Capacity
< 0.25
0.25 to 0.45
0.45 to 0.70
0.70 to 0.85
0.85 to 1
> 1
Vehicle Flow
5000 3000 0
0 .033 .067 .1
Kilometers


2021 PM Base
Volume/Capacity
< 0.25
0.25 to 0.45
0.45 to 0.70
0.70 to 0.85
0.85 to 1
> 1
Vehicle Flow
5000 3000 0
0 .05 .1 .15
Kilometers


2031 AM Phase3
Volume/Capacity
< 0.25
0.25 to 0.45
0.45 to 0.70
0.70 to 0.85
0.85 to 1
> 1
Vehicle Flow
7500 4000 0
0 .05 .1 .15
Kilometers


2031 PM Phase3
Volume/Capacity
< 0.25
0.25 to 0.45
0.45 to 0.70
0.70 to 0.85
0.85 to 1
> 1
Vehicle Flow
5000 4000 0
0 .033 .067 .1
Kilometers

Appendix C: Crash Data

STREET REPORT
History Location: TILLYARD DRIVE - showing Intersections and Midblocks
Report Date Range: 01/01/2015 12:00:00 AM -> 31/12/2019 11:59:59 PM

Location Type Intersection
Location Unique 1561
Location Description REUTHER/TILLYARD

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code

Crashes = 0

Location Type Mid Block
Location Unique 1828
Location Description TILLYARD DRIVE (REUTHER -> KERRIGAN)

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code

Crashes = 0

Location Type Intersection
Location Unique 1421
Location Description KERRIGAN/TILLYARD

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code
KERRIGAN/TILLYARD	2015-1153099	17/05/2015 19:40	Property Damage Only			6	0	2 Good dry surface	Fine	301
	Vehicle 1	East bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
	Vehicle 2	East bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				
KERRIGAN/TILLYARD	2016-1100653	7/06/2016 17:15	Property Damage Only			2	0	2 Good dry surface	Cloudy or	104
	Vehicle 1	East bound	1st (kerb or left) lane	Within intersection	Right turn	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				
KERRIGAN/TILLYARD	2016-1174218	16/06/2016 17:15	Property Damage Only			2	0	2 Good dry surface	Fine	104
	Vehicle 1	North bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				
	Vehicle 2	East bound	1st (kerb or left) lane	Within intersection	Right turn	Not obstructed				

Crashes = 3

Location Type Mid Block
Location Unique 1669
Location Description TILLYARD DRIVE (KERRIGAN -> DALEY)

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code
TILLYARD DRIVE (KERRIGAN -	2016-1112434	25/11/2016 17:20	Property Damage Only			6	0	2 Good dry surface	Fine	301
	Vehicle 1	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
	Vehicle 2	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
TILLYARD DRIVE (KERRIGAN -	2017-2198176	30/01/2017 15:00	Property Damage Only			7	0	2 Good dry surface	Fine	601
	Vehicle 1	North bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
	Vehicle 2	North bound	3rd lane	Not related to intersection	Parked	Not obstructed				
TILLYARD DRIVE (KERRIGAN -	2018-1215300	2/08/2018 17:15	Property Damage Only			6	0	4 Good dry surface	Fine	303
	Vehicle 1	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
	Vehicle 2	South bound	1st (kerb or left) lane	Into driveway	Right turn	Not obstructed				
	Vehicle 3	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
	Vehicle 4	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
TILLYARD DRIVE (KERRIGAN -	2018-2125306	16/10/2018 13:40	Injury	Received medical treatm		5	3	2 Good dry surface	Fine	201
	Vehicle 1	South bound	On wrong side of road	Not related to intersection	Straight ahead	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
TILLYARD DRIVE (KERRIGAN -	2018-1200716	8/11/2018 20:15	Property Damage Only			6	0	2 Good dry surface	Fine	301
	Vehicle 1	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
	Vehicle 2	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not known				
TILLYARD DRIVE (KERRIGAN -	2018-1153033	13/12/2018 14:45	Property Damage Only			9	0	2 Wet surface	Light rain	403
	Vehicle 1	North bound	1st (kerb or left) lane	Not related to intersection	Backing	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Not related to intersection	Parked	Not obstructed				
TILLYARD DRIVE (KERRIGAN -	2019-2167419	22/01/2019 13:30	Property Damage Only			19	0	1 Good dry surface	Fine	708
	Vehicle 1	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
TILLYARD DRIVE (KERRIGAN -	2019-2105964	18/12/2019 8:00	Property Damage Only			19	0	1 Good dry surface	Fine	703
	Vehicle 1	North bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				

Crashes = 8

Location Type Intersection
Location Unique 1274
Location Description DALEY/TILLYARD (SW)

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code
DALEY/TILLYARD (SW)	2015-1178279	20/03/2015 16:40	Property Damage Only			6	0	2 Good dry surface	Fine	301
	Vehicle 1	North bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
DALEY/TILLYARD (SW)	2016-2231192	9/05/2016 14:30	Injury	Received medical treatm		13	1	1 Wet surface	Heavy rai	707
	Vehicle 1	East bound	1st (kerb or left) lane	Within intersection	Right turn	Not obstructed				
DALEY/TILLYARD (SW)	2016-1177511	19/11/2016 14:30	Property Damage Only			6	0	2 Good dry surface	Fine	303
	Vehicle 1	North bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Within intersection	Right turn	Not obstructed				
DALEY/TILLYARD (SW)	2018-2082510	28/06/2018 17:50	Injury	Received medical treatm		6	1	2 Good dry surface	Fine	303
	Vehicle 1	North bound	1st (kerb or left) lane	Within intersection	Right turn	Not known				
	Vehicle 2	North bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not known				
DALEY/TILLYARD (SW)	2018-1127800	5/08/2018 8:40	Property Damage Only			6	0	2 Good dry surface	Fine	301
	Vehicle 1	North bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
DALEY/TILLYARD (SW)	2019-2062642	13/07/2019 21:54	Injury	Received medical treatm		2	1	2 Good dry surface	Fine	104
	Vehicle 1	West bound	1st (kerb or left) lane	Within intersection	Right turn	Not obstructed				
	Vehicle 2	South bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				

Crashes = 6

Location Type Mid Block
Location Unique 1508
Location Description TILLYARD DRIVE (DALEY -> TILLYARD SERVICE RD)

Location : Chainage	Police Reference	Date/Time	Severity	Injury Type	Crash Type	Number of Casualties	Number of Vehicles	Road Surface	Weather	Rum Code
		Direction	Lane	Position	Movement	Visibility				
TILLYARD DRIVE (DALEY -> TI	2015-2163661	16/12/2015 15:15	Injury	Received medical treatm		9	1	4 Wet surface	Light rain	406
	Vehicle 1	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
	Vehicle 2	East bound	Other	Out of driveway	Left turn	Not obstructed				
	Vehicle 3	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
	Vehicle 4	North bound	1st (kerb or left) lane	Not related to intersection	Parked	Not obstructed				
TILLYARD DRIVE (DALEY -> TI	2017-1193744	25/11/2017 19:25	Property Damage Only			11	0	1 Wet surface	Light rain	609
	Vehicle 1	North bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
TILLYARD DRIVE (DALEY -> TI	2018-1085089	3/11/2018 17:30	Property Damage Only			7	0	2 Good dry surface	Fine	601
	Vehicle 1	South bound	1st (kerb or left) lane	Not related to intersection	Parked	Not obstructed				
	Vehicle 2	South bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
TILLYARD DRIVE (DALEY -> TI	2019-1216785	26/08/2019 15:20	Property Damage Only			7	0	2 Good dry surface	Fine	601
	Vehicle 1	North bound	1st (kerb or left) lane	Not related to intersection	Parked	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				

Crashes = 4

Location Type Intersection
Location Unique 1165
Location Description TILLYARD/TILLYARD SRV RD

Location : Chainage	Police Reference	Date/Time	Severity	Injury Type	Crash Type	Number of Casualties	Number of Vehicles	Road Surface	Weather	Rum Code
		Direction	Lane	Position	Movement	Visibility				

Crashes = 0

Location Type Mid Block
Location Unique 1377
Location Description TILLYARD DRIVE (TILLYARD -> DALEY)

Location : Chainage	Police Reference	Date/Time	Severity	Injury Type	Crash Type	Number of Casualties	Number of Vehicles	Road Surface	Weather	Rum Code
		Direction	Lane	Position	Movement	Visibility				
TILLYARD DRIVE (TILLYARD ->	2017-1217715	28/11/2017 18:15	Property Damage Only			6	0	2 Good dry surface	Fine	301
	Vehicle 1	North bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Not related to intersection	Straight ahead	Not obstructed				

Crashes = 1

Location Type Intersection
Location Unique 1129
Location Description DALEY/TILLYARD

Location : Chainage	Police Reference	Date/Time	Severity	Injury Type	Crash Type	Number of Casualties	Number of Vehicles	Road Surface	Weather	Rum Code
		Direction	Lane	Position	Movement	Visibility				
DALEY/TILLYARD	2015-1107691	14/08/2015 15:35	Property Damage Only			6	0	2 Good dry surface	Fine	303
	Vehicle 1	North bound	1st (kerb or left) lane	Within intersection	Right turn	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
DALEY/TILLYARD	2016-2107309	17/12/2016 13:45	Injury	Received medical treatm		6	2	2 Good dry surface	Fine	303
	Vehicle 1	North bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Within intersection	Right turn	Not obstructed				
DALEY/TILLYARD	2019-2015233	11/11/2019 17:30	Property Damage Only			6	0	2 Good dry surface	Fine	303
	Vehicle 1	North bound	1st (kerb or left) lane	Within intersection	Right turn	Not known				
	Vehicle 2	North bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not known				

Crashes = 3

STREET REPORT
History Location: KERRIGAN STREET - showing Intersections and Midblocks
Report Date Range: 01/01/2015 12:00:00 AM -> 31/12/2019 11:59:59 PM

Location Type Intersection
Location Unique 1421
Location Description KERRIGAN/TILLYARD

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code
KERRIGAN/TILLYARD	2015-1153099	17/05/2015 19:40	Property Damage Only			6	0	2 Good dry surface	Fine	301
	Vehicle 1	East bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
	Vehicle 2	East bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				
KERRIGAN/TILLYARD	2016-1100653	7/06/2016 17:15	Property Damage Only			2	0	2 Good dry surface	Cloudy or	104
	Vehicle 1	East bound	1st (kerb or left) lane	Within intersection	Right turn	Not obstructed				
	Vehicle 2	North bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				
KERRIGAN/TILLYARD	2016-1174218	16/06/2016 17:15	Property Damage Only			2	0	2 Good dry surface	Fine	104
	Vehicle 1	North bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				
	Vehicle 2	East bound	1st (kerb or left) lane	Within intersection	Right turn	Not obstructed				

Crashes = 3

Location Type Mid Block
Location Unique 1670
Location Description KERRIGAN STREET (TILLYARD -> CROWLEY)

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code

Crashes = 0

Location Type Intersection
Location Unique 1398
Location Description CROWLEY/KERRIGAN

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code

Crashes = 0

Location Type Mid Block
Location Unique 1640
Location Description KERRIGAN STREET (CROWLEY -> SHAKESPEARE)

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code

Crashes = 0

Location Type Intersection
Location Unique 1379
Location Description KERRIGAN/SHAKESPEARE

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code
KERRIGAN/SHAKESPEARE	2015-1204886	16/06/2015 18:00	Property Damage Only			6	0	2 Wet surface	Light rain	301
	Vehicle 1	West bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
	Vehicle 2	West bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				

Crashes = 1

Location Type Mid Block
Location Unique 1617
Location Description KERRIGAN STREET (SHAKESPEARE -> MCKID)

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code
KERRIGAN STREET (SHAKESF	2017-1096181	5/08/2017 21:00	Property Damage Only			7	0	2 Wet surface	Light rain	601
	Vehicle 1	West bound	1st (kerb or left) lane	Not related to intersection	Parked	Not obstructed				
	Vehicle 2	West bound	1st (kerb or left) lane	Not related to intersection	Straight ahead					

Crashes = 1

Location Type Intersection
Location Unique 1372
Location Description KERRIGAN/MCKID

Location : Chainage	Police Reference	Date/Time / Direction	Severity / Lane	Injury Type / Position	Crash Type / Movement	Number of Casualties / Visibility	Number of Vehicles	Road Surface	Weather	Rum Code

Crashes = 0

STREET REPORT
History Location: SHAKESPEARE CRESCENT - showing Intersections and Midblocks
Report Date Range: 01/01/2015 12:00:00 AM -> 31/12/2019 11:59:59 PM

Location Type Intersection
Location Unique 1044
Location Description ROGERS/SHAKESPEARE

Location : Chainage	Police Reference	Date/Time	Severity	Injury Type	Crash Type	Number of Casualties	Number of Vehicles	Road Surface	Weather	Rum Code
		Direction	Lane	Position	Movement	Visibility				

Crashes = 0

Location Type Mid Block
Location Unique 1527
Location Description SHAKESPEARE CRESCENT (ROGERS -> FILSHIE)

Location : Chainage	Police Reference	Date/Time	Severity	Injury Type	Crash Type	Number of Casualties	Number of Vehicles	Road Surface	Weather	Rum Code
		Direction	Lane	Position	Movement	Visibility				

Crashes = 0

Location Type Intersection
Location Unique 1295
Location Description FILSHIE/SHAKESPEARE

Location : Chainage	Police Reference	Date/Time	Severity	Injury Type	Crash Type	Number of Casualties	Number of Vehicles	Road Surface	Weather	Rum Code
		Direction	Lane	Position	Movement	Visibility				

Crashes = 0

Location Type Mid Block
Location Unique 1616
Location Description SHAKESPEARE CRESCENT (FILSHIE -> KERRIGAN)

Location : Chainage	Police Reference	Date/Time	Severity	Injury Type	Crash Type	Number of Casualties	Number of Vehicles	Road Surface	Weather	Rum Code
		Direction	Lane	Position	Movement	Visibility				

Crashes = 0

Location Type Intersection
Location Unique 1379
Location Description KERRIGAN/SHAKESPEARE

Location : Chainage	Police Reference	Date/Time	Severity	Injury Type	Crash Type	Number of Casualties	Number of Vehicles	Road Surface	Weather	Rum Code
		Direction	Lane	Position	Movement	Visibility				
KERRIGAN/SHAKESPEARE	2015-1204886	16/06/2015 18:00	Property Damage Only			6	0	2 Wet surface	Light rain	301
	Vehicle 1	West bound	1st (kerb or left) lane	Approaching intersection	Straight ahead	Not obstructed				
	Vehicle 2	West bound	1st (kerb or left) lane	Within intersection	Straight ahead	Not obstructed				

Crashes = 1

Total Crashes = 1

Appendix D: SIDRA Outputs - Existing

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2021 AM (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
1	L2	38	5.0	40	5.0	0.156	3.4	LOS A	0.0	0.0	0.00	0.06	0.00	39.7
2	T1	240	5.0	253	5.0	0.156	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	39.3
Approach		278	5.0	293	5.0	0.156	0.5	NA	0.0	0.0	0.00	0.06	0.00	39.4
North: Tillyard Dr - N														
8	T1	288	5.0	303	5.0	0.253	0.5	LOS A	1.1	8.2	0.33	0.19	0.33	36.8
9	R2	153	5.0	161	5.0	0.253	4.6	LOS A	1.1	8.2	0.33	0.19	0.33	36.2
Approach		441	5.0	464	5.0	0.253	2.0	NA	1.1	8.2	0.33	0.19	0.33	36.5
West: Kerrigan St - W														
10	L2	272	5.0	286	5.0	0.223	4.2	LOS A	1.1	7.7	0.36	0.54	0.36	34.4
12	R2	94	5.0	99	5.0	0.223	4.4	LOS A	1.1	7.7	0.36	0.54	0.36	33.6
Approach		366	5.0	385	5.0	0.223	4.3	LOS A	1.1	7.7	0.36	0.54	0.36	34.2
All Vehicles		1085	5.0	1142	5.0	0.253	2.4	NA	1.1	8.2	0.25	0.28	0.25	36.4

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2021 AM (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	293	5.0	1875	0.156	100	0.5	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	293	5.0		0.156		0.5	NA	0.0	0.0				
North: Tillyard Dr - N													
Lane 1	464	5.0	1836	0.253	100	2.0	LOS A	1.1	8.2	Full	150	0.0	0.0
Approach	464	5.0		0.253		2.0	NA	1.1	8.2				
West: Kerrigan St - W													
Lane 1	385	5.0	1728	0.223	100	4.3	LOS A	1.1	7.7	Full	150	0.0	0.0
Approach	385	5.0		0.223		4.3	LOS A	1.1	7.7				
Intersection	1142	5.0		0.253		2.4	NA	1.1	8.2				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2021 PM - School (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
1	L2	86	5.0	91	5.0	0.179	3.4	LOS A	0.0	0.0	0.00	0.13	0.00	39.1
2	T1	230	5.0	242	5.0	0.179	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	38.7
Approach		316	5.0	333	5.0	0.179	1.0	NA	0.0	0.0	0.00	0.13	0.00	38.8
North: Tillyard Dr - N														
8	T1	248	5.0	261	5.0	0.314	1.0	LOS A	1.9	13.6	0.47	0.32	0.47	35.4
9	R2	282	5.0	297	5.0	0.314	4.8	LOS A	1.9	13.6	0.47	0.32	0.47	34.8
Approach		530	5.0	558	5.0	0.314	3.0	NA	1.9	13.6	0.47	0.32	0.47	35.1
West: Kerrigan St - W														
10	L2	120	5.0	126	5.0	0.096	4.1	LOS A	0.4	3.0	0.32	0.51	0.32	34.6
12	R2	36	5.0	38	5.0	0.096	4.4	LOS A	0.4	3.0	0.32	0.51	0.32	33.8
Approach		156	5.0	164	5.0	0.096	4.2	LOS A	0.4	3.0	0.32	0.51	0.32	34.4
All Vehicles		1002	5.0	1055	5.0	0.314	2.6	NA	1.9	13.6	0.30	0.29	0.30	36.1

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2021 PM - School (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	333	5.0	1862	0.179	100	1.0	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	333	5.0		0.179		1.0	NA	0.0	0.0				
North: Tillyard Dr - N													
Lane 1	558	5.0	1779	0.314	100	3.0	LOS A	1.9	13.6	Full	150	0.0	0.0
Approach	558	5.0		0.314		3.0	NA	1.9	13.6				
West: Kerrigan St - W													
Lane 1	164	5.0	1712	0.096	100	4.2	LOS A	0.4	3.0	Full	150	0.0	0.0
Approach	164	5.0		0.096		4.2	LOS A	0.4	3.0				
Intersection	1055	5.0		0.314		2.6	NA	1.9	13.6				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2021 AM (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kerrigan St - E														
5	T1	131	5.0	138	5.0	0.088	0.3	LOS A	0.2	1.2	0.13	0.06	0.13	38.7
6	R2	17	5.0	18	5.0	0.088	5.0	LOS A	0.2	1.2	0.13	0.06	0.13	38.1
Approach		148	5.0	156	5.0	0.088	0.8	NA	0.2	1.2	0.13	0.06	0.13	38.7
North: Shakespeare Cr - N														
7	L2	67	5.0	71	5.0	0.048	4.4	LOS A	0.2	1.5	0.41	0.52	0.41	34.3
9	R2	3	5.0	3	5.0	0.048	4.0	LOS A	0.2	1.5	0.41	0.52	0.41	33.4
Approach		70	5.0	74	5.0	0.048	4.4	LOS A	0.2	1.5	0.41	0.52	0.41	34.2
West: Kerrigan St - W														
10	L2	6	5.0	6	5.0	0.193	3.4	LOS A	0.0	0.0	0.00	0.01	0.00	40.3
11	T1	340	5.0	358	5.0	0.193	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	39.9
Approach		346	5.0	364	5.0	0.193	0.1	NA	0.0	0.0	0.00	0.01	0.00	39.9
All Vehicles		564	5.0	594	5.0	0.193	0.8	NA	0.2	1.5	0.08	0.09	0.08	38.7

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.
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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2021 AM (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kerrigan St - E													
Lane 1	156	5.0	1766	0.088	100	0.8	LOS A	0.2	1.2	Full	150	0.0	0.0
Approach	156	5.0		0.088		0.8	NA	0.2	1.2				
North: Shakespeare Cr - N													
Lane 1	74	5.0	1524	0.048	100	4.4	LOS A	0.2	1.5	Full	150	0.0	0.0
Approach	74	5.0		0.048		4.4	LOS A	0.2	1.5				
West: Kerrigan St - W													
Lane 1	364	5.0	1887	0.193	100	0.1	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	364	5.0		0.193		0.1	NA	0.0	0.0				
Intersection	594	5.0		0.193		0.8	NA	0.2	1.5				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2021 PM School (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kerrigan St - E														
5	T1	330	5.0	347	5.0	0.218	0.1	LOS A	0.4	2.9	0.09	0.06	0.09	38.9
6	R2	48	5.0	51	5.0	0.218	4.2	LOS A	0.4	2.9	0.09	0.06	0.09	38.2
Approach		378	5.0	398	5.0	0.218	0.6	NA	0.4	2.9	0.09	0.06	0.09	38.8
North: Shakespeare Cr - N														
7	L2	24	5.0	25	5.0	0.027	3.8	LOS A	0.1	0.7	0.22	0.48	0.22	35.0
9	R2	26	5.0	27	5.0	0.027	4.0	LOS A	0.1	0.7	0.22	0.48	0.22	34.1
Approach		50	5.0	53	5.0	0.027	3.9	LOS A	0.1	0.7	0.22	0.48	0.22	34.5
West: Kerrigan St - W														
10	L2	8	5.0	8	5.0	0.082	3.4	LOS A	0.0	0.0	0.00	0.03	0.00	40.1
11	T1	138	5.0	145	5.0	0.082	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	39.7
Approach		146	5.0	154	5.0	0.082	0.2	NA	0.0	0.0	0.00	0.03	0.00	39.7
All Vehicles		574	5.0	604	5.0	0.218	0.8	NA	0.4	2.9	0.08	0.09	0.08	38.6

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2021 PM School (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kerrigan St - E													
Lane 1	398	5.0	1822	0.218	100	0.6	LOS A	0.4	2.9	Full	150	0.0	0.0
Approach	398	5.0		0.218		0.6	NA	0.4	2.9				
North: Shakespeare Cr - N													
Lane 1	53	5.0	1977	0.027	100	3.9	LOS A	0.1	0.7	Full	150	0.0	0.0
Approach	53	5.0		0.027		3.9	LOS A	0.1	0.7				
West: Kerrigan St - W													
Lane 1	154	5.0	1883	0.082	100	0.2	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	154	5.0		0.082		0.2	NA	0.0	0.0				
Intersection	604	5.0		0.218		0.8	NA	0.4	2.9				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South) - 2021 AM (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	352	5.0	371	5.0	0.235	0.4	LOS A	0.5	3.9	0.18	0.08	0.18	39.0
3	R2	56	5.0	59	5.0	0.235	5.2	LOS A	0.5	3.9	0.18	0.08	0.18	38.6
Approach		408	5.0	429	5.0	0.235	1.0	NA	0.5	3.9	0.18	0.08	0.18	38.9
East: Daley Cr - E														
4	L2	100	5.0	105	5.0	0.079	4.7	LOS A	0.3	2.5	0.45	0.57	0.45	36.2
6	R2	8	5.0	8	5.0	0.079	4.4	LOS A	0.3	2.5	0.45	0.57	0.45	35.6
Approach		108	5.0	114	5.0	0.079	4.7	LOS A	0.3	2.5	0.45	0.57	0.45	36.1
North: Tillyard Dr - N														
7	L2	8	5.0	8	5.0	0.228	3.5	LOS A	0.0	0.0	0.00	0.01	0.00	40.1
8	T1	401	5.0	422	5.0	0.228	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	39.9
Approach		409	5.0	431	5.0	0.228	0.1	NA	0.0	0.0	0.00	0.01	0.00	39.9
All Vehicles		925	5.0	974	5.0	0.235	1.0	NA	0.5	3.9	0.13	0.10	0.13	39.0

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South) - 2021 AM (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	429	5.0	1824	0.235	100	1.0	LOS A	0.5	3.9	Full	250	0.0	0.0
Approach	429	5.0		0.235		1.0	NA	0.5	3.9				
East: Daley Cr - E													
Lane 1	114	5.0	1431	0.079	100	4.7	LOS A	0.3	2.5	Full	250	0.0	0.0
Approach	114	5.0		0.079		4.7	LOS A	0.3	2.5				
North: Tillyard Dr - N													
Lane 1	431	5.0	1887	0.228	100	0.1	LOS A	0.0	0.0	Full	250	0.0	0.0
Approach	431	5.0		0.228		0.1	NA	0.0	0.0				
Intersection	974	5.0		0.235		1.0	NA	0.5	3.9				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South)- 2021 PM School (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	296	5.0	312	5.0	0.223	0.5	LOS A	0.7	5.4	0.27	0.13	0.27	38.5
3	R2	88	5.0	93	5.0	0.223	4.9	LOS A	0.7	5.4	0.27	0.13	0.27	38.1
Approach		384	5.0	404	5.0	0.223	1.5	NA	0.7	5.4	0.27	0.13	0.27	38.4
East: Daley Cr - E														
4	L2	82	5.0	86	5.0	0.064	4.5	LOS A	0.3	2.0	0.40	0.54	0.40	36.3
6	R2	12	5.0	13	5.0	0.064	4.3	LOS A	0.3	2.0	0.40	0.54	0.40	35.7
Approach		94	5.0	99	5.0	0.064	4.4	LOS A	0.3	2.0	0.40	0.54	0.40	36.2
North: Tillyard Dr - N														
7	L2	19	5.0	20	5.0	0.201	3.5	LOS A	0.0	0.0	0.00	0.02	0.00	40.0
8	T1	341	5.0	359	5.0	0.201	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	39.8
Approach		360	5.0	379	5.0	0.201	0.2	NA	0.0	0.0	0.00	0.02	0.00	39.8
All Vehicles		838	5.0	882	5.0	0.223	1.3	NA	0.7	5.4	0.17	0.13	0.17	38.7

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.
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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South)- 2021 PM School (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	404	5.0	1811	0.223	100	1.5	LOS A	0.7	5.4	Full	250	0.0	0.0
Approach	404	5.0		0.223		1.5	NA	0.7	5.4				
East: Daley Cr - E													
Lane 1	99	5.0	1545	0.064	100	4.4	LOS A	0.3	2.0	Full	250	0.0	0.0
Approach	99	5.0		0.064		4.4	LOS A	0.3	2.0				
North: Tillyard Dr - N													
Lane 1	379	5.0	1883	0.201	100	0.2	LOS A	0.0	0.0	Full	250	0.0	0.0
Approach	379	5.0		0.201		0.2	NA	0.0	0.0				
Intersection	882	5.0		0.223		1.3	NA	0.7	5.4				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2021 AM (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	325	5.0	342	5.0	0.241	0.3	LOS A	0.8	5.7	0.23	0.14	0.23	48.6
3	R2	100	5.0	105	5.0	0.241	6.1	LOS A	0.8	5.7	0.23	0.14	0.23	41.1
Approach		425	5.0	447	5.0	0.241	1.7	NA	0.8	5.7	0.23	0.14	0.23	46.4
East: Daley Cr - E														
4	L2	43	5.0	45	5.0	0.043	5.3	LOS A	0.2	1.2	0.32	0.57	0.32	31.1
6	R2	14	5.0	15	5.0	0.043	6.1	LOS A	0.2	1.2	0.32	0.57	0.32	28.9
Approach		57	5.0	60	5.0	0.043	5.5	LOS A	0.2	1.2	0.32	0.57	0.32	30.6
North: Tillyard Dr - N														
7	L2	8	5.0	8	5.0	0.149	4.3	LOS A	0.0	0.0	0.00	0.02	0.00	32.3
8	T1	259	5.0	273	5.0	0.149	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.1
Approach		267	5.0	281	5.0	0.149	0.1	NA	0.0	0.0	0.00	0.02	0.00	57.6
All Vehicles		749	5.0	788	5.0	0.241	1.4	NA	0.8	5.7	0.16	0.13	0.16	47.6

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2021 AM (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	447	5.0	1855	0.241	100	1.7	LOS A	0.8	5.7	Full	80	0.0	0.0
Approach	447	5.0		0.241		1.7	NA	0.8	5.7				
East: Daley Cr - E													
Lane 1	60	5.0	1406	0.043	100	5.5	LOS A	0.2	1.2	Full	80	0.0	0.0
Approach	60	5.0		0.043		5.5	LOS A	0.2	1.2				
North: Tillyard Dr - N													
Lane 1	281	5.0	1886	0.149	100	0.1	LOS A	0.0	0.0	Full	60	0.0	0.0
Approach	281	5.0		0.149		0.1	NA	0.0	0.0				
Intersection	788	5.0		0.241		1.4	NA	0.8	5.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2021 PM School (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	244	5.0	257	5.0	0.190	0.4	LOS A	0.6	4.7	0.25	0.16	0.25	47.6
3	R2	89	5.0	94	5.0	0.190	6.1	LOS A	0.6	4.7	0.25	0.16	0.25	40.5
Approach		333	5.0	351	5.0	0.190	1.9	NA	0.6	4.7	0.25	0.16	0.25	45.3
East: Daley Cr - E														
4	L2	34	5.0	36	5.0	0.030	5.3	LOS A	0.1	0.9	0.33	0.55	0.33	31.0
6	R2	8	5.0	8	5.0	0.030	5.8	LOS A	0.1	0.9	0.33	0.55	0.33	28.9
Approach		42	5.0	44	5.0	0.030	5.4	LOS A	0.1	0.9	0.33	0.55	0.33	30.6
North: Tillyard Dr - N														
7	L2	11	5.0	12	5.0	0.156	4.3	LOS A	0.0	0.0	0.00	0.02	0.00	32.3
8	T1	268	5.0	282	5.0	0.156	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.8
Approach		279	5.0	294	5.0	0.156	0.2	NA	0.0	0.0	0.00	0.02	0.00	57.0
All Vehicles		654	5.0	688	5.0	0.190	1.4	NA	0.6	4.7	0.15	0.13	0.15	47.7

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.
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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2021 PM School (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	351	5.0	1845	0.190	100	1.9	LOS A	0.6	4.7	Full	80	0.0	0.0
Approach	351	5.0		0.190		1.9	NA	0.6	4.7				
East: Daley Cr - E													
Lane 1	44	5.0	1470	0.030	100	5.4	LOS A	0.1	0.9	Full	80	0.0	0.0
Approach	44	5.0		0.030		5.4	LOS A	0.1	0.9				
North: Tillyard Dr - N													
Lane 1	294	5.0	1885	0.156	100	0.2	LOS A	0.0	0.0	Full	60	0.0	0.0
Approach	294	5.0		0.156		0.2	NA	0.0	0.0				
Intersection	688	5.0		0.190		1.4	NA	0.6	4.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix E: SIDRA Outputs - Future – Non-Development

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2031 AM (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
1	L2	57	5.0	60	5.0	0.234	3.5	LOS A	0.0	0.0	0.00	0.06	0.00	39.7
2	T1	360	5.0	379	5.0	0.234	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	39.3
Approach		417	5.0	439	5.0	0.234	0.5	NA	0.0	0.0	0.00	0.06	0.00	39.3
North: Tillyard Dr - N														
8	T1	432	5.0	455	5.0	0.402	1.3	LOS A	2.6	19.0	0.47	0.24	0.54	36.1
9	R2	230	5.0	242	5.0	0.402	5.8	LOS A	2.6	19.0	0.47	0.24	0.54	35.5
Approach		662	5.0	697	5.0	0.402	2.9	NA	2.6	19.0	0.47	0.24	0.54	35.9
West: Kerrigan St - W														
10	L2	408	5.0	429	5.0	0.388	5.2	LOS A	2.3	16.7	0.49	0.69	0.57	33.9
12	R2	141	5.0	148	5.0	0.388	5.5	LOS A	2.3	16.7	0.49	0.69	0.57	33.1
Approach		549	5.0	578	5.0	0.388	5.3	LOS A	2.3	16.7	0.49	0.69	0.57	33.7
All Vehicles		1628	5.0	1714	5.0	0.402	3.1	NA	2.6	19.0	0.36	0.35	0.41	35.9

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2031 AM (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	439	5.0	1875	0.234	100	0.5	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	439	5.0		0.234		0.5	NA	0.0	0.0				
North: Tillyard Dr - N													
Lane 1	697	5.0	1733	0.402	100	2.9	LOS A	2.6	19.0	Full	150	0.0	0.0
Approach	697	5.0		0.402		2.9	NA	2.6	19.0				
West: Kerrigan St - W													
Lane 1	578	5.0	1490	0.388	100	5.3	LOS A	2.3	16.7	Full	150	0.0	0.0
Approach	578	5.0		0.388		5.3	LOS A	2.3	16.7				
Intersection	1714	5.0		0.402		3.1	NA	2.6	19.0				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2031 PM - School (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
1	L2	129	5.0	136	5.0	0.268	3.5	LOS A	0.0	0.0	0.00	0.13	0.00	39.1
2	T1	345	5.0	363	5.0	0.268	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	38.6
Approach		474	5.0	499	5.0	0.268	1.0	NA	0.0	0.0	0.00	0.13	0.00	38.8
North: Tillyard Dr - N														
8	T1	372	5.0	392	5.0	0.522	3.1	LOS A	5.6	40.9	0.68	0.49	0.97	33.7
9	R2	423	5.0	445	5.0	0.522	7.1	LOS A	5.6	40.9	0.68	0.49	0.97	33.2
Approach		795	5.0	837	5.0	0.522	5.2	NA	5.6	40.9	0.68	0.49	0.97	33.4
West: Kerrigan St - W														
10	L2	180	5.0	189	5.0	0.168	4.6	LOS A	0.7	5.3	0.42	0.59	0.42	34.2
12	R2	54	5.0	57	5.0	0.168	5.3	LOS A	0.7	5.3	0.42	0.59	0.42	33.4
Approach		234	5.0	246	5.0	0.168	4.7	LOS A	0.7	5.3	0.42	0.59	0.42	34.0
All Vehicles		1503	5.0	1582	5.0	0.522	3.8	NA	5.6	40.9	0.42	0.39	0.58	35.0

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2031 PM - School (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	499	5.0	1862	0.268	100	1.0	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	499	5.0		0.268		1.0	NA	0.0	0.0				
North: Tillyard Dr - N													
Lane 1	837	5.0	1602	0.522	100	5.2	LOS A	5.6	40.9	Full	150	0.0	0.0
Approach	837	5.0		0.522		5.2	NA	5.6	40.9				
West: Kerrigan St - W													
Lane 1	246	5.0	1464	0.168	100	4.7	LOS A	0.7	5.3	Full	150	0.0	0.0
Approach	246	5.0		0.168		4.7	LOS A	0.7	5.3				
Intersection	1582	5.0		0.522		3.8	NA	5.6	40.9				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2031 AM (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kerrigan St - E														
5	T1	197	5.0	207	5.0	0.139	0.6	LOS A	0.3	2.4	0.18	0.07	0.18	38.3
6	R2	26	5.0	27	5.0	0.139	6.4	LOS A	0.3	2.4	0.18	0.07	0.18	37.6
Approach		223	5.0	235	5.0	0.139	1.3	NA	0.3	2.4	0.18	0.07	0.18	38.2
North: Shakespeare Cr - N														
7	L2	101	5.0	106	5.0	0.089	5.2	LOS A	0.4	2.8	0.51	0.63	0.51	33.8
9	R2	5	5.0	5	5.0	0.089	4.3	LOS A	0.4	2.8	0.51	0.63	0.51	33.0
Approach		106	5.0	112	5.0	0.089	5.2	LOS A	0.4	2.8	0.51	0.63	0.51	33.8
West: Kerrigan St - W														
10	L2	9	5.0	9	5.0	0.290	3.5	LOS A	0.0	0.0	0.00	0.01	0.00	40.3
11	T1	510	5.0	537	5.0	0.290	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	39.8
Approach		519	5.0	546	5.0	0.290	0.1	NA	0.0	0.0	0.00	0.01	0.00	39.8
All Vehicles		848	5.0	893	5.0	0.290	1.0	NA	0.4	2.8	0.11	0.10	0.11	38.5

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2031 AM (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kerrigan St - E													
Lane 1	235	5.0	1689	0.139	100	1.3	LOS A	0.3	2.4	Full	150	0.0	0.0
Approach	235	5.0		0.139		1.3	NA	0.3	2.4				
North: Shakespeare Cr - N													
Lane 1	112	5.0	1256	0.089	100	5.2	LOS A	0.4	2.8	Full	150	0.0	0.0
Approach	112	5.0		0.089		5.2	LOS A	0.4	2.8				
West: Kerrigan St - W													
Lane 1	546	5.0	1887	0.290	100	0.1	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	546	5.0		0.290		0.1	NA	0.0	0.0				
Intersection	893	5.0		0.290		1.0	NA	0.4	2.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2031 PM School (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kerrigan St - E														
5	T1	495	5.0	521	5.0	0.332	0.2	LOS A	0.7	5.4	0.13	0.07	0.13	38.7
6	R2	72	5.0	76	5.0	0.332	4.8	LOS A	0.7	5.4	0.13	0.07	0.13	38.0
Approach		567	5.0	597	5.0	0.332	0.8	NA	0.7	5.4	0.13	0.07	0.13	38.6
North: Shakespeare Cr - N														
7	L2	36	5.0	38	5.0	0.044	4.0	LOS A	0.2	1.2	0.29	0.52	0.29	34.7
9	R2	39	5.0	41	5.0	0.044	4.3	LOS A	0.2	1.2	0.29	0.52	0.29	33.9
Approach		75	5.0	79	5.0	0.044	4.2	LOS A	0.2	1.2	0.29	0.52	0.29	34.3
West: Kerrigan St - W														
10	L2	12	5.0	13	5.0	0.122	3.4	LOS A	0.0	0.0	0.00	0.03	0.00	40.1
11	T1	207	5.0	218	5.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	39.7
Approach		219	5.0	231	5.0	0.122	0.2	NA	0.0	0.0	0.00	0.03	0.00	39.7
All Vehicles		861	5.0	906	5.0	0.332	0.9	NA	0.7	5.4	0.11	0.10	0.11	38.4

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2031 PM School (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kerrigan St - E													
Lane 1	597	5.0	1800	0.332	100	0.8	LOS A	0.7	5.4	Full	150	0.0	0.0
Approach	597	5.0		0.332		0.8	NA	0.7	5.4				
North: Shakespeare Cr - N													
Lane 1	79	5.0	1778	0.044	100	4.2	LOS A	0.2	1.2	Full	150	0.0	0.0
Approach	79	5.0		0.044		4.2	LOS A	0.2	1.2				
West: Kerrigan St - W													
Lane 1	231	5.0	1883	0.122	100	0.2	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	231	5.0		0.122		0.2	NA	0.0	0.0				
Intersection	906	5.0		0.332		0.9	NA	0.7	5.4				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South) - 2031 AM (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	528	5.0	556	5.0	0.371	1.0	LOS A	1.4	10.4	0.27	0.09	0.34	38.4
3	R2	84	5.0	88	5.0	0.371	7.3	LOS A	1.4	10.4	0.27	0.09	0.34	38.0
Approach		612	5.0	644	5.0	0.371	1.9	NA	1.4	10.4	0.27	0.09	0.34	38.4
East: Daley Cr - E														
4	L2	150	5.0	158	5.0	0.153	5.9	LOS A	0.6	4.7	0.57	0.71	0.57	35.8
6	R2	12	5.0	13	5.0	0.153	5.2	LOS A	0.6	4.7	0.57	0.71	0.57	35.2
Approach		162	5.0	171	5.0	0.153	5.8	LOS A	0.6	4.7	0.57	0.71	0.57	35.7
North: Tillyard Dr - N														
7	L2	12	5.0	13	5.0	0.343	3.5	LOS A	0.0	0.0	0.00	0.01	0.00	40.1
8	T1	602	5.0	634	5.0	0.343	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	39.8
Approach		614	5.0	646	5.0	0.343	0.1	NA	0.0	0.0	0.00	0.01	0.00	39.8
All Vehicles		1388	5.0	1461	5.0	0.371	1.6	NA	1.4	10.4	0.19	0.13	0.22	38.7

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.
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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South) - 2031 AM (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	644	5.0	1739	0.371	100	1.9	LOS A	1.4	10.4	Full	250	0.0	0.0
Approach	644	5.0		0.371		1.9	NA	1.4	10.4				
East: Daley Cr - E													
Lane 1	171	5.0	1112	0.153	100	5.8	LOS A	0.6	4.7	Full	250	0.0	0.0
Approach	171	5.0		0.153		5.8	LOS A	0.6	4.7				
North: Tillyard Dr - N													
Lane 1	646	5.0	1887	0.343	100	0.1	LOS A	0.0	0.0	Full	250	0.0	0.0
Approach	646	5.0		0.343		0.1	NA	0.0	0.0				
Intersection	1461	5.0		0.371		1.6	NA	1.4	10.4				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South)- 2031 PM School (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	444	5.0	467	5.0	0.356	1.2	LOS A	1.8	12.9	0.38	0.16	0.44	38.0
3	R2	132	5.0	139	5.0	0.356	6.6	LOS A	1.8	12.9	0.38	0.16	0.44	37.6
Approach		576	5.0	606	5.0	0.356	2.5	NA	1.8	12.9	0.38	0.16	0.44	37.9
East: Daley Cr - E														
4	L2	123	5.0	129	5.0	0.118	5.3	LOS A	0.5	3.6	0.51	0.65	0.51	36.0
6	R2	18	5.0	19	5.0	0.118	4.9	LOS A	0.5	3.6	0.51	0.65	0.51	35.4
Approach		141	5.0	148	5.0	0.118	5.2	LOS A	0.5	3.6	0.51	0.65	0.51	35.9
North: Tillyard Dr - N														
7	L2	29	5.0	31	5.0	0.302	3.5	LOS A	0.0	0.0	0.00	0.02	0.00	40.0
8	T1	512	5.0	539	5.0	0.302	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	39.7
Approach		541	5.0	569	5.0	0.302	0.2	NA	0.0	0.0	0.00	0.02	0.00	39.8
All Vehicles		1258	5.0	1324	5.0	0.356	1.8	NA	1.8	12.9	0.23	0.16	0.26	38.4

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South)- 2031 PM School (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	606	5.0	1705	0.356	100	2.5	LOS A	1.8	12.9	Full	250	0.0	0.0
Approach	606	5.0		0.356		2.5	NA	1.8	12.9				
East: Daley Cr - E													
Lane 1	148	5.0	1262	0.118	100	5.2	LOS A	0.5	3.6	Full	250	0.0	0.0
Approach	148	5.0		0.118		5.2	LOS A	0.5	3.6				
North: Tillyard Dr - N													
Lane 1	569	5.0	1883	0.302	100	0.2	LOS A	0.0	0.0	Full	250	0.0	0.0
Approach	569	5.0		0.302		0.2	NA	0.0	0.0				
Intersection	1324	5.0		0.356		1.8	NA	1.8	12.9				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2031 AM (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	488	5.0	514	5.0	0.376	0.8	LOS A	1.7	12.2	0.33	0.16	0.36	46.9
3	R2	150	5.0	158	5.0	0.376	7.1	LOS A	1.7	12.2	0.33	0.16	0.36	40.0
Approach		638	5.0	672	5.0	0.376	2.3	NA	1.7	12.2	0.33	0.16	0.36	44.9
East: Daley Cr - E														
4	L2	65	5.0	68	5.0	0.079	5.8	LOS A	0.3	2.1	0.43	0.63	0.43	30.4
6	R2	21	5.0	22	5.0	0.079	7.6	LOS A	0.3	2.1	0.43	0.63	0.43	28.3
Approach		86	5.0	91	5.0	0.079	6.2	LOS A	0.3	2.1	0.43	0.63	0.43	29.9
North: Tillyard Dr - N														
7	L2	12	5.0	13	5.0	0.224	4.3	LOS A	0.0	0.0	0.00	0.02	0.00	32.3
8	T1	389	5.0	409	5.0	0.224	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.0
Approach		401	5.0	422	5.0	0.224	0.1	NA	0.0	0.0	0.00	0.02	0.00	57.6
All Vehicles		1125	5.0	1184	5.0	0.376	1.8	NA	1.7	12.2	0.22	0.15	0.24	46.5

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2031 AM (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	672	5.0	1787	0.376	100	2.3	LOS A	1.7	12.2	Full	80	0.0	0.0
Approach	672	5.0		0.376		2.3	NA	1.7	12.2				
East: Daley Cr - E													
Lane 1	91	5.0	1149	0.079	100	6.2	LOS A	0.3	2.1	Full	80	0.0	0.0
Approach	91	5.0		0.079		6.2	LOS A	0.3	2.1				
North: Tillyard Dr - N													
Lane 1	422	5.0	1886	0.224	100	0.1	LOS A	0.0	0.0	Full	60	0.0	0.0
Approach	422	5.0		0.224		0.1	NA	0.0	0.0				
Intersection	1184	5.0		0.376		1.8	NA	1.7	12.2				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2031 PM School (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	366	5.0	385	5.0	0.298	0.8	LOS A	1.2	9.0	0.35	0.18	0.35	46.0
3	R2	134	5.0	141	5.0	0.298	6.9	LOS A	1.2	9.0	0.35	0.18	0.35	39.4
Approach		500	5.0	526	5.0	0.298	2.4	NA	1.2	9.0	0.35	0.18	0.35	43.9
East: Daley Cr - E														
4	L2	51	5.0	54	5.0	0.054	5.8	LOS A	0.2	1.5	0.43	0.62	0.43	30.4
6	R2	12	5.0	13	5.0	0.054	6.9	LOS A	0.2	1.5	0.43	0.62	0.43	28.3
Approach		63	5.0	66	5.0	0.054	6.0	LOS A	0.2	1.5	0.43	0.62	0.43	30.1
North: Tillyard Dr - N														
7	L2	17	5.0	18	5.0	0.234	4.3	LOS A	0.0	0.0	0.00	0.02	0.00	32.2
8	T1	402	5.0	423	5.0	0.234	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.7
Approach		419	5.0	441	5.0	0.234	0.2	NA	0.0	0.0	0.00	0.02	0.00	56.8
All Vehicles		982	5.0	1034	5.0	0.298	1.7	NA	1.2	9.0	0.21	0.14	0.21	46.8

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2031 PM School (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	526	5.0	1763	0.298	100	2.4	LOS A	1.2	9.0	Full	80	0.0	0.0
Approach	526	5.0		0.298		2.4	NA	1.2	9.0				
East: Daley Cr - E													
Lane 1	66	5.0	1237	0.054	100	6.0	LOS A	0.2	1.5	Full	80	0.0	0.0
Approach	66	5.0		0.054		6.0	LOS A	0.2	1.5				
North: Tillyard Dr - N													
Lane 1	441	5.0	1885	0.234	100	0.2	LOS A	0.0	0.0	Full	60	0.0	0.0
Approach	441	5.0		0.234		0.2	NA	0.0	0.0				
Intersection	1034	5.0		0.298		1.7	NA	1.2	9.0				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix F: SIDRA Outputs - Future – Post-Development

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2031 AM - Dev (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
1	L2	57	5.0	60	5.0	0.234	3.5	LOS A	0.0	0.0	0.00	0.06	0.00	39.7
2	T1	360	5.0	379	5.0	0.234	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	39.3
Approach		417	5.0	439	5.0	0.234	0.5	NA	0.0	0.0	0.00	0.06	0.00	39.3
North: Tillyard Dr - N														
8	T1	432	5.0	455	5.0	0.492	2.2	LOS A	4.7	34.1	0.59	0.37	0.77	34.9
9	R2	360	5.0	379	5.0	0.492	6.4	LOS A	4.7	34.1	0.59	0.37	0.77	34.3
Approach		792	5.0	834	5.0	0.492	4.1	NA	4.7	34.1	0.59	0.37	0.77	34.6
West: Kerrigan St - W														
10	L2	544	5.0	573	5.0	0.496	5.7	LOS A	3.7	26.9	0.53	0.76	0.71	33.5
12	R2	141	5.0	148	5.0	0.496	6.5	LOS A	3.7	26.9	0.53	0.76	0.71	32.7
Approach		685	5.0	721	5.0	0.496	5.9	LOS A	3.7	26.9	0.53	0.76	0.71	33.3
All Vehicles		1894	5.0	1994	5.0	0.496	3.9	NA	4.7	34.1	0.44	0.44	0.58	35.0

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2031 AM - Dev (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	439	5.0	1875	0.234	100	0.5	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	439	5.0		0.234		0.5	NA	0.0	0.0				
North: Tillyard Dr - N													
Lane 1	834	5.0	1694	0.492	100	4.1	LOS A	4.7	34.1	Full	150	0.0	0.0
Approach	834	5.0		0.492		4.1	NA	4.7	34.1				
West: Kerrigan St - W													
Lane 1	721	5.0	1455	0.496	100	5.9	LOS A	3.7	26.9	Full	150	0.0	0.0
Approach	721	5.0		0.496		5.9	LOS A	3.7	26.9				
Intersection	1994	5.0		0.496		3.9	NA	4.7	34.1				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2031 PM - School - Dev (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
1	L2	129	5.0	136	5.0	0.268	3.5	LOS A	0.0	0.0	0.00	0.13	0.00	39.1
2	T1	345	5.0	363	5.0	0.268	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	38.6
Approach		474	5.0	499	5.0	0.268	1.0	NA	0.0	0.0	0.00	0.13	0.00	38.8
North: Tillyard Dr - N														
8	T1	372	5.0	392	5.0	0.605	3.9	LOS A	7.9	57.7	0.75	0.62	1.19	32.7
9	R2	535	5.0	563	5.0	0.605	7.9	LOS A	7.9	57.7	0.75	0.62	1.19	32.2
Approach		907	5.0	955	5.0	0.605	6.3	NA	7.9	57.7	0.75	0.62	1.19	32.4
West: Kerrigan St - W														
10	L2	287	5.0	302	5.0	0.248	4.7	LOS A	1.2	8.4	0.44	0.60	0.44	34.1
12	R2	54	5.0	57	5.0	0.248	5.8	LOS A	1.2	8.4	0.44	0.60	0.44	33.3
Approach		341	5.0	359	5.0	0.248	4.8	LOS A	1.2	8.4	0.44	0.60	0.44	34.0
All Vehicles		1722	5.0	1813	5.0	0.605	4.5	NA	7.9	57.7	0.48	0.48	0.71	34.3

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Kerrigan St Int - 2031 PM - School - Dev (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	499	5.0	1862	0.268	100	1.0	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	499	5.0		0.268		1.0	NA	0.0	0.0				
North: Tillyard Dr - N													
Lane 1	955	5.0	1579	0.605	100	6.3	LOS A	7.9	57.7	Full	150	0.0	0.0
Approach	955	5.0		0.605		6.3	NA	7.9	57.7				
West: Kerrigan St - W													
Lane 1	359	5.0	1447	0.248	100	4.8	LOS A	1.2	8.4	Full	150	0.0	0.0
Approach	359	5.0		0.248		4.8	LOS A	1.2	8.4				
Intersection	1813	5.0		0.605		4.5	NA	7.9	57.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2031 AM-Dev (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kerrigan St - E														
5	T1	327	5.0	344	5.0	0.218	0.7	LOS A	0.5	3.4	0.15	0.04	0.15	38.3
6	R2	26	5.0	27	5.0	0.218	8.2	LOS A	0.5	3.4	0.15	0.04	0.15	37.6
Approach		353	5.0	372	5.0	0.218	1.3	NA	0.5	3.4	0.15	0.04	0.15	38.2
North: Shakespeare Cr - N														
7	L2	101	5.0	106	5.0	0.107	6.0	LOS A	0.4	3.2	0.58	0.71	0.58	33.4
9	R2	5	5.0	5	5.0	0.107	4.7	LOS A	0.4	3.2	0.58	0.71	0.58	32.6
Approach		106	5.0	112	5.0	0.107	6.0	LOS A	0.4	3.2	0.58	0.71	0.58	33.3
West: Kerrigan St - W														
10	L2	9	5.0	9	5.0	0.365	3.5	LOS A	0.0	0.0	0.00	0.01	0.00	40.2
11	T1	646	5.0	680	5.0	0.365	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	39.8
Approach		655	5.0	689	5.0	0.365	0.1	NA	0.0	0.0	0.00	0.01	0.00	39.8
All Vehicles		1114	5.0	1173	5.0	0.365	1.0	NA	0.5	3.4	0.10	0.08	0.10	38.6

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2031 AM-Dev (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kerrigan St - E													
Lane 1	372	5.0	1702	0.218	100	1.3	LOS A	0.5	3.4	Full	150	0.0	0.0
Approach	372	5.0		0.218		1.3	NA	0.5	3.4				
North: Shakespeare Cr - N													
Lane 1	112	5.0	1045	0.107	100	6.0	LOS A	0.4	3.2	Full	150	0.0	0.0
Approach	112	5.0		0.107		6.0	LOS A	0.4	3.2				
West: Kerrigan St - W													
Lane 1	689	5.0	1887	0.365	100	0.1	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	689	5.0		0.365		0.1	NA	0.0	0.0				
Intersection	1173	5.0		0.365		1.0	NA	0.5	3.4				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2031 PM School - Dev (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Kerrigan St - E														
5	T1	607	5.0	639	5.0	0.401	0.4	LOS A	1.1	7.9	0.15	0.06	0.17	38.6
6	R2	72	5.0	76	5.0	0.401	5.8	LOS A	1.1	7.9	0.15	0.06	0.17	38.0
Approach		679	5.0	715	5.0	0.401	1.0	NA	1.1	7.9	0.15	0.06	0.17	38.6
North: Shakespeare Cr - N														
7	L2	36	5.0	38	5.0	0.050	4.3	LOS A	0.2	1.3	0.37	0.57	0.37	34.4
9	R2	39	5.0	41	5.0	0.050	4.7	LOS A	0.2	1.3	0.37	0.57	0.37	33.6
Approach		75	5.0	79	5.0	0.050	4.5	LOS A	0.2	1.3	0.37	0.57	0.37	34.0
West: Kerrigan St - W														
10	L2	12	5.0	13	5.0	0.182	3.4	LOS A	0.0	0.0	0.00	0.02	0.00	40.2
11	T1	314	5.0	331	5.0	0.182	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	39.8
Approach		326	5.0	343	5.0	0.182	0.1	NA	0.0	0.0	0.00	0.02	0.00	39.8
All Vehicles		1080	5.0	1137	5.0	0.401	1.0	NA	1.1	7.9	0.12	0.08	0.13	38.5

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Kerrigan St / Shakespeare Cr Int - 2031 PM School - Dev (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
East: Kerrigan St - E													
Lane 1	715	5.0	1782	0.401	100	1.0	LOS A	1.1	7.9	Full	150	0.0	0.0
Approach	715	5.0		0.401		1.0	NA	1.1	7.9				
North: Shakespeare Cr - N													
Lane 1	79	5.0	1570	0.050	100	4.5	LOS A	0.2	1.3	Full	150	0.0	0.0
Approach	79	5.0		0.050		4.5	LOS A	0.2	1.3				
West: Kerrigan St - W													
Lane 1	343	5.0	1885	0.182	100	0.1	LOS A	0.0	0.0	Full	150	0.0	0.0
Approach	343	5.0		0.182		0.1	NA	0.0	0.0				
Intersection	1137	5.0		0.401		1.0	NA	1.1	7.9				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South) - 2031 AM - Dev (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	664	5.0	699	5.0	0.463	1.5	LOS A	2.2	15.8	0.30	0.08	0.44	38.0
3	R2	84	5.0	88	5.0	0.463	9.6	LOS A	2.2	15.8	0.30	0.08	0.44	37.6
Approach		748	5.0	787	5.0	0.463	2.4	NA	2.2	15.8	0.30	0.08	0.44	37.9
East: Daley Cr - E														
4	L2	150	5.0	158	5.0	0.186	6.8	LOS A	0.8	5.5	0.62	0.79	0.62	35.1
6	R2	12	5.0	13	5.0	0.186	5.9	LOS A	0.8	5.5	0.62	0.79	0.62	34.6
Approach		162	5.0	171	5.0	0.186	6.8	LOS A	0.8	5.5	0.62	0.79	0.62	35.1
North: Tillyard Dr - N														
7	L2	12	5.0	13	5.0	0.415	3.5	LOS A	0.0	0.0	0.00	0.01	0.00	40.1
8	T1	732	5.0	771	5.0	0.415	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	39.8
Approach		744	5.0	783	5.0	0.415	0.2	NA	0.0	0.0	0.00	0.01	0.00	39.8
All Vehicles		1654	5.0	1741	5.0	0.463	1.8	NA	2.2	15.8	0.20	0.12	0.26	38.4

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South) - 2031 AM - Dev (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	787	5.0	1701	0.463	100	2.4	LOS A	2.2	15.8	Full	250	0.0	0.0
Approach	787	5.0		0.463		2.4	NA	2.2	15.8				
East: Daley Cr - E													
Lane 1	171	5.0	915	0.186	100	6.8	LOS A	0.8	5.5	Full	250	0.0	0.0
Approach	171	5.0		0.186		6.8	LOS A	0.8	5.5				
North: Tillyard Dr - N													
Lane 1	783	5.0	1887	0.415	100	0.2	LOS A	0.0	0.0	Full	250	0.0	0.0
Approach	783	5.0		0.415		0.2	NA	0.0	0.0				
Intersection	1741	5.0		0.463		1.8	NA	2.2	15.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South)- 2031 PM School - Dev (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	551	5.0	580	5.0	0.433	1.8	LOS A	2.6	18.8	0.40	0.15	0.56	37.5
3	R2	132	5.0	139	5.0	0.433	8.1	LOS A	2.6	18.8	0.40	0.15	0.56	37.1
Approach		683	5.0	719	5.0	0.433	3.0	NA	2.6	18.8	0.40	0.15	0.56	37.5
East: Daley Cr - E														
4	L2	123	5.0	129	5.0	0.137	5.9	LOS A	0.6	4.1	0.57	0.72	0.57	35.7
6	R2	18	5.0	19	5.0	0.137	5.4	LOS A	0.6	4.1	0.57	0.72	0.57	35.2
Approach		141	5.0	148	5.0	0.137	5.9	LOS A	0.6	4.1	0.57	0.72	0.57	35.7
North: Tillyard Dr - N														
7	L2	29	5.0	31	5.0	0.364	3.5	LOS A	0.0	0.0	0.00	0.02	0.00	40.0
8	T1	623	5.0	656	5.0	0.364	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	39.7
Approach		652	5.0	686	5.0	0.364	0.2	NA	0.0	0.0	0.00	0.02	0.00	39.7
All Vehicles		1476	5.0	1554	5.0	0.433	2.1	NA	2.6	18.8	0.24	0.15	0.31	38.2

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (South)- 2031 PM School - Dev (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	719	5.0	1659	0.433	100	3.0	LOS A	2.6	18.8	Full	250	0.0	0.0
Approach	719	5.0		0.433		3.0	NA	2.6	18.8				
East: Daley Cr - E													
Lane 1	148	5.0	1087	0.137	100	5.9	LOS A	0.6	4.1	Full	250	0.0	0.0
Approach	148	5.0		0.137		5.9	LOS A	0.6	4.1				
North: Tillyard Dr - N													
Lane 1	686	5.0	1884	0.364	100	0.2	LOS A	0.0	0.0	Full	250	0.0	0.0
Approach	686	5.0		0.364		0.2	NA	0.0	0.0				
Intersection	1554	5.0		0.433		2.1	NA	2.6	18.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2031 AM - Dev (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	488	5.0	514	5.0	0.398	1.0	LOS A	2.1	15.6	0.38	0.19	0.43	45.4
3	R2	183	5.0	193	5.0	0.398	7.2	LOS A	2.1	15.6	0.38	0.19	0.43	39.0
Approach		671	5.0	706	5.0	0.398	2.7	NA	2.1	15.6	0.38	0.19	0.43	43.3
East: Daley Cr - E														
4	L2	99	5.0	104	5.0	0.105	5.8	LOS A	0.4	3.0	0.43	0.63	0.43	30.4
6	R2	21	5.0	22	5.0	0.105	7.8	LOS A	0.4	3.0	0.43	0.63	0.43	28.3
Approach		120	5.0	126	5.0	0.105	6.2	LOS A	0.4	3.0	0.43	0.63	0.43	30.0
North: Tillyard Dr - N														
7	L2	12	5.0	13	5.0	0.224	4.3	LOS A	0.0	0.0	0.00	0.02	0.00	32.3
8	T1	389	5.0	409	5.0	0.224	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.0
Approach		401	5.0	422	5.0	0.224	0.1	NA	0.0	0.0	0.00	0.02	0.00	57.6
All Vehicles		1192	5.0	1255	5.0	0.398	2.2	NA	2.1	15.6	0.26	0.18	0.29	44.7

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.
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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2031 AM - Dev (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	706	5.0	1773	0.398	100	2.7	LOS A	2.1	15.6	Full	80	0.0	0.0
Approach	706	5.0		0.398		2.7	NA	2.1	15.6				
East: Daley Cr - E													
Lane 1	126	5.0	1202	0.105	100	6.2	LOS A	0.4	3.0	Full	80	0.0	0.0
Approach	126	5.0		0.105		6.2	LOS A	0.4	3.0				
North: Tillyard Dr - N													
Lane 1	422	5.0	1886	0.224	100	0.1	LOS A	0.0	0.0	Full	60	0.0	0.0
Approach	422	5.0		0.224		0.1	NA	0.0	0.0				
Intersection	1255	5.0		0.398		2.2	NA	2.1	15.6				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2031 PM School - Dev (Site Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Tillyard Dr - S														
2	T1	366	5.0	385	5.0	0.317	0.9	LOS A	1.5	10.7	0.40	0.21	0.40	44.7
3	R2	161	5.0	169	5.0	0.317	7.0	LOS A	1.5	10.7	0.40	0.21	0.40	38.6
Approach		527	5.0	555	5.0	0.317	2.8	NA	1.5	10.7	0.40	0.21	0.40	42.5
East: Daley Cr - E														
4	L2	78	5.0	82	5.0	0.074	5.9	LOS A	0.3	2.2	0.44	0.62	0.44	30.4
6	R2	12	5.0	13	5.0	0.074	7.0	LOS A	0.3	2.2	0.44	0.62	0.44	28.3
Approach		90	5.0	95	5.0	0.074	6.0	LOS A	0.3	2.2	0.44	0.62	0.44	30.1
North: Tillyard Dr - N														
7	L2	17	5.0	18	5.0	0.234	4.3	LOS A	0.0	0.0	0.00	0.02	0.00	32.2
8	T1	402	5.0	423	5.0	0.234	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	58.7
Approach		419	5.0	441	5.0	0.234	0.2	NA	0.0	0.0	0.00	0.02	0.00	56.8
All Vehicles		1036	5.0	1091	5.0	0.317	2.0	NA	1.5	10.7	0.24	0.17	0.24	45.1

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

▽ Site: 101 [Tillyard Dr / Daley Cr Int (North) - 2031 PM School - Dev (Site Folder: General)]

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

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Tillyard Dr - S													
Lane 1	555	5.0	1748	0.317	100	2.8	LOS A	1.5	10.7	Full	80	0.0	0.0
Approach	555	5.0		0.317		2.8	NA	1.5	10.7				
East: Daley Cr - E													
Lane 1	95	5.0	1275	0.074	100	6.0	LOS A	0.3	2.2	Full	80	0.0	0.0
Approach	95	5.0		0.074		6.0	LOS A	0.3	2.2				
North: Tillyard Dr - N													
Lane 1	441	5.0	1885	0.234	100	0.2	LOS A	0.0	0.0	Full	60	0.0	0.0
Approach	441	5.0		0.234		0.2	NA	0.0	0.0				
Intersection	1091	5.0		0.317		2.0	NA	1.5	10.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INDESCO

Transport Impact Assessment

Fraser Primary School Expansion

INDESCO

- Introduction
- Proposed Development
- Existing Condition
- Traffic Assessment
- Parking Requirements
- Active Travel
- Service Vehicles
- Construction Consideration
- Conclusion

Introduction

Indesco was engaged by the ACT Education Directorate to prepare a transport impact assessment (TIA) for expansion of Fraser Primary School in Fraser Section 64 Block 6.

Purpose of the study is to assess:

1. Existing traffic and parking conditions surrounding the site
2. Traffic management and safety around school
3. The traffic generation of the development and its impact on the surrounding road network
4. Suitability of parking in terms of supply
5. Pedestrian and bicycle requirements
6. Public transport connections
7. Service vehicle requirements

Proposed Development

Preschool students.

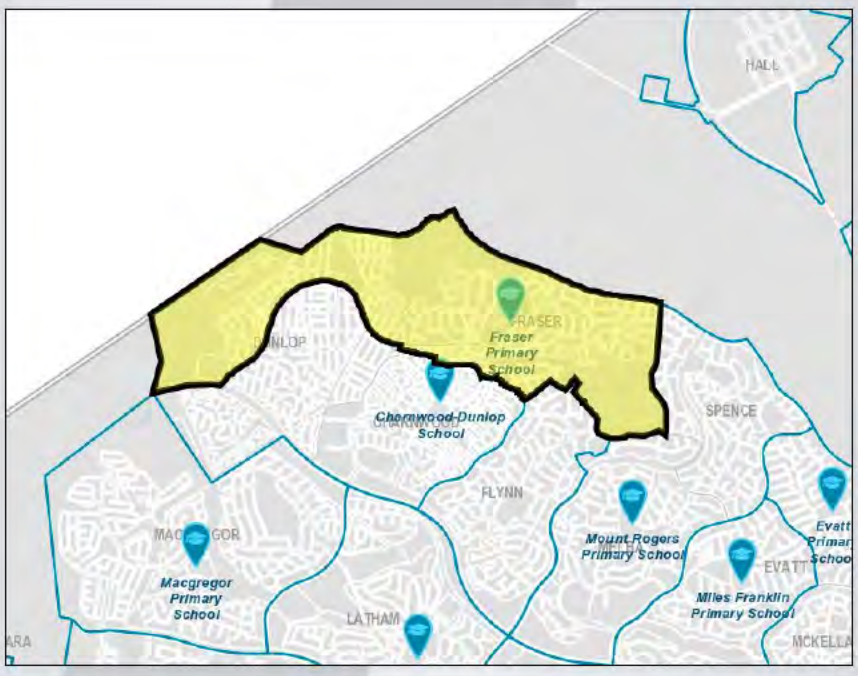
K-6 students

	Preschool students.	K-6 students	Total	New Students
Current number	85	529	614	**271**
Future Number	85	800	885	

Existing Condition

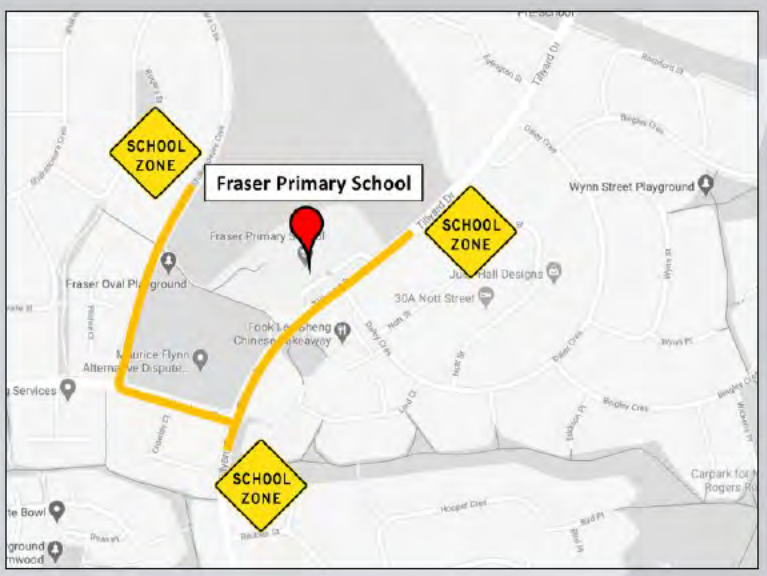
Priority Enrolment Areas (PEA)

- Charnwood - except south of Bettington Circuit, south of Bloxham Street and continuing from the corner of Kerrigan and Dunnett Streets
- Dunlop - north of Kerrigan Street
- Fraser



Existing Condition

Speed reduction and school zone



Tillyard Drive, North

Tillyard Drive, South

Kerrigan Street

Shakespeare Crescent

Existing Condition

Road Crossing

Existing road crossing infrastructure is available at the following locations:

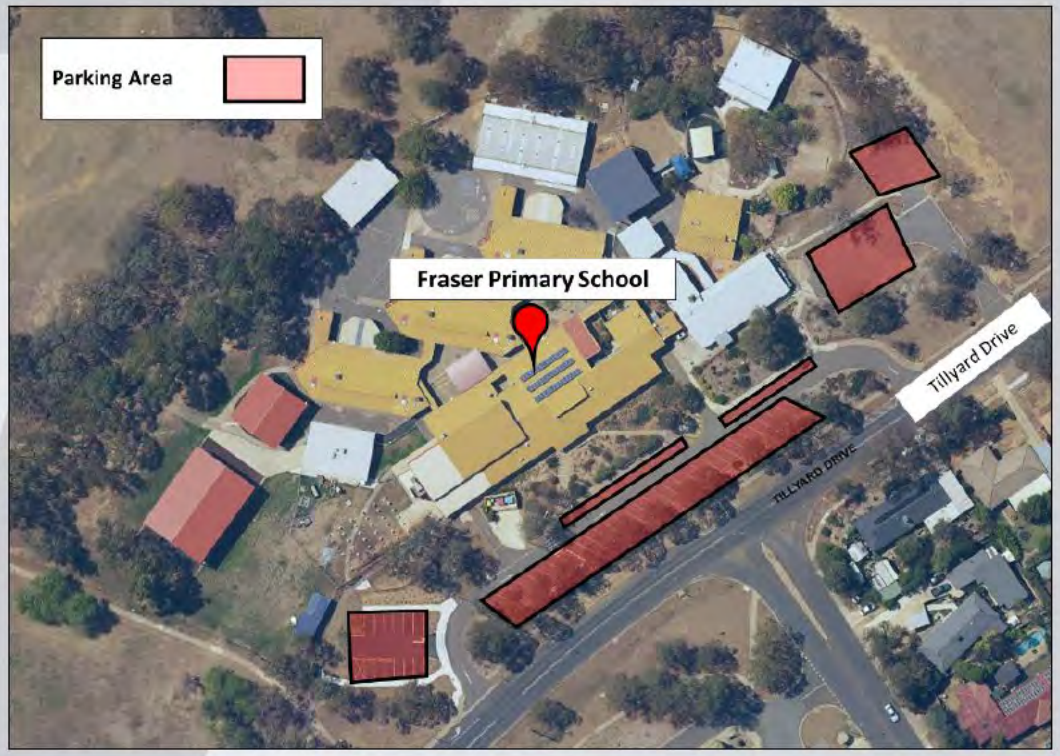
- An underpass crossing Tillyard Drive in south of the subject site
- A children's crossing in Shakespeare Crescent

Existing Condition

Parking

The number of parking spaces are as follows:

- 77 car park spaces
- 2 disabled car park spaces
- One bus stop space



Existing Condition

Drop off and pick up area

The number of 16 kerbside park have been provided as drop-off and pick-up area in the west of the Tillyard Drive; however, this number of spaces are not sufficient to cover the existing demand. Given the traffic survey undertaken on 3rd of March 2021, the following are observed:

- Parked vehicles in school driveway which blocked the driveway
- Vehicle queue in Tillyard Drive before the school's entrance
- Using shopping centre parking in east of the Tillyard Drive as a pick-up area
- Using Shakespeare Crescent verge as a pick-up area

Existing Condition

Drop off and pick up area

Using shopping centre parking as a pick-up area

Vehicle queue in Tillyard Drive

Using Shakespeare Crescent verge as a pick-up area

Existing Condition

Walking and Cycling Facility

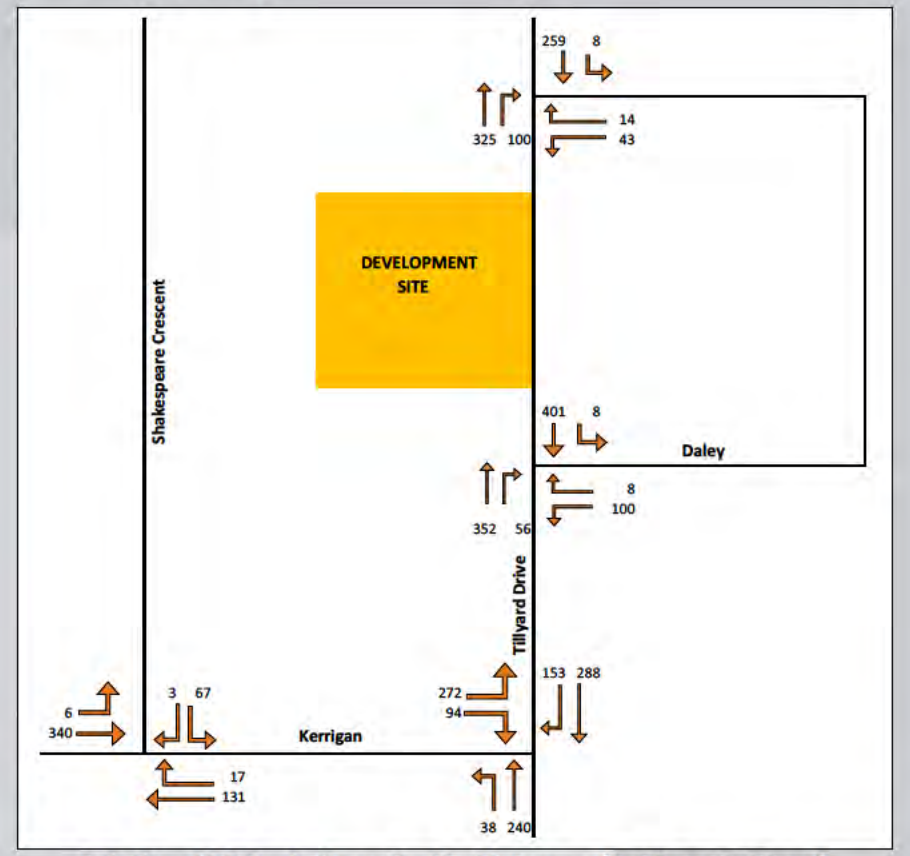
Existing Condition

Bus Facilities

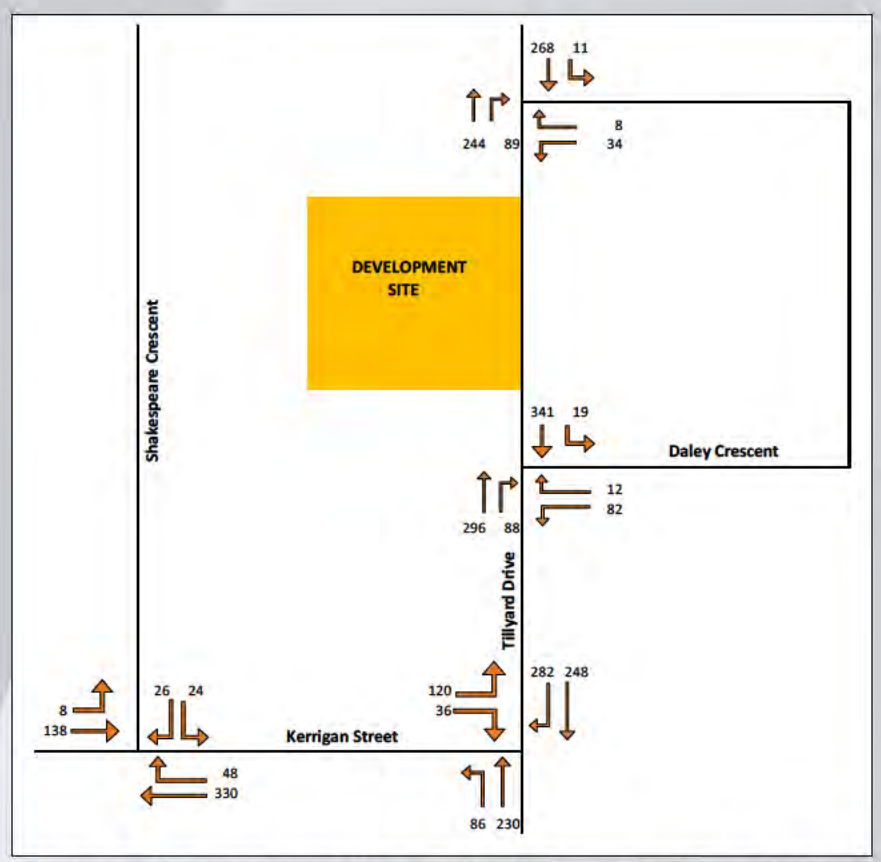
School's bus stop

Existing Condition

Traffic Survey



Existing AM Peak Hour Traffic Volumes (8:00am-9:00am)



Existing PM School Peak Hour Traffic Volumes (2:30pm-3:30pm)

Existing Condition

Intersection Performance

Intersection Performance Summary - Existing Conditions (AM & PM Peak Hours)

Intersection	Intersection Arrangement	AM Peak Hour				PM Peak Hour			
		DOS	Delay	LOS	Queue	DOS	Delay	LOS	Queue
Kerrigan St /Shakespeare Cr	Give-way Intersection	0.195	0.8	A	1.5	0.218	0.8	A	2.9
Tillyard Dr /Kerrigan St	Give-way Intersection	0.253	2.4	A	8.2	0.314	2.6	A	13.6
Tillyard Dr /Daley Cr (South)	Give-way Intersection	0.235	1	A	3.9	0.223	1.3	A	5.4
Tillyard Dr /Daley Cr (North)	Give-way Intersection	0.241	1.4	A	5.7	0.19	14	A	4.7

Traffic Assessment

Traffic Generation

Land Use	Number of Students	AM Volumes		School PM Volumes	
		Rate	No	Rate	No
School	271	1.23 vehicle trip per student	334	1.01 vehicle trip per student	274
Total			**334**		**274**

Traffic Distribution

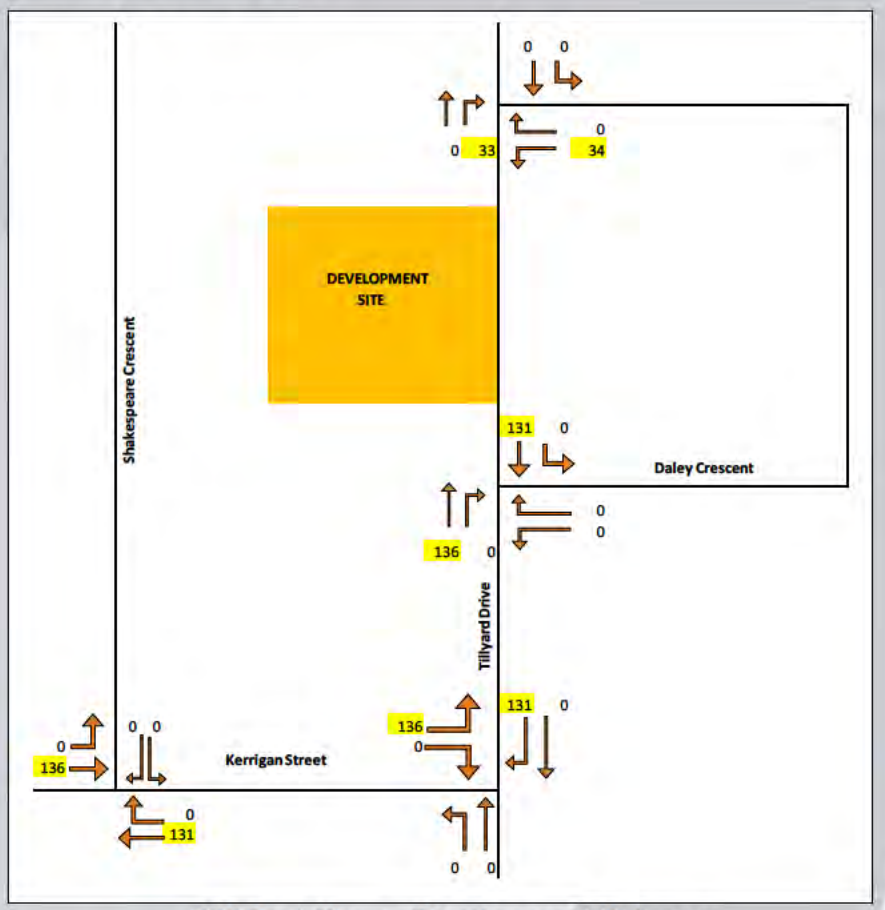
Route	Streets	Allocation
North	Tillyard Drive north, Daley Crescent	20%
West	Tillyard Drive south, Kerrigan Street west	80%
Total		**100%**

Inbound/Outbound splits

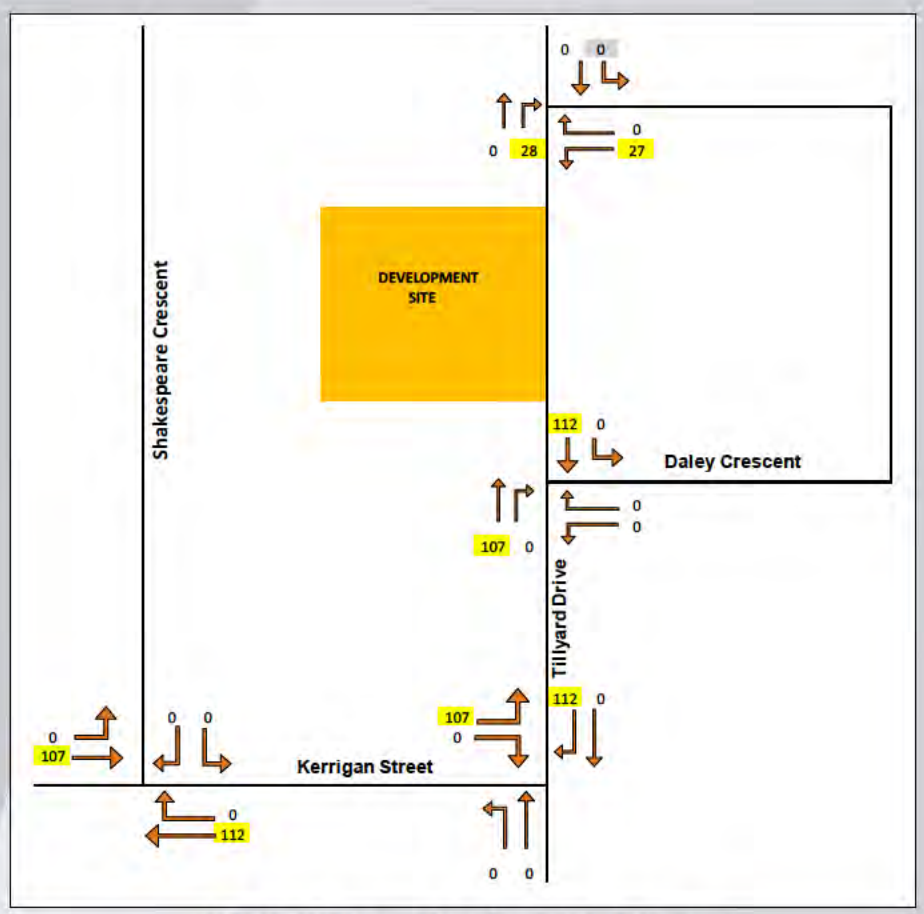
Land Use	Peak	Inbound	Outbound
School	AM	51%	49%
	PM	49%	51%

Traffic Assessment

Traffic Generation



AM Peak Hour – Development Volumes

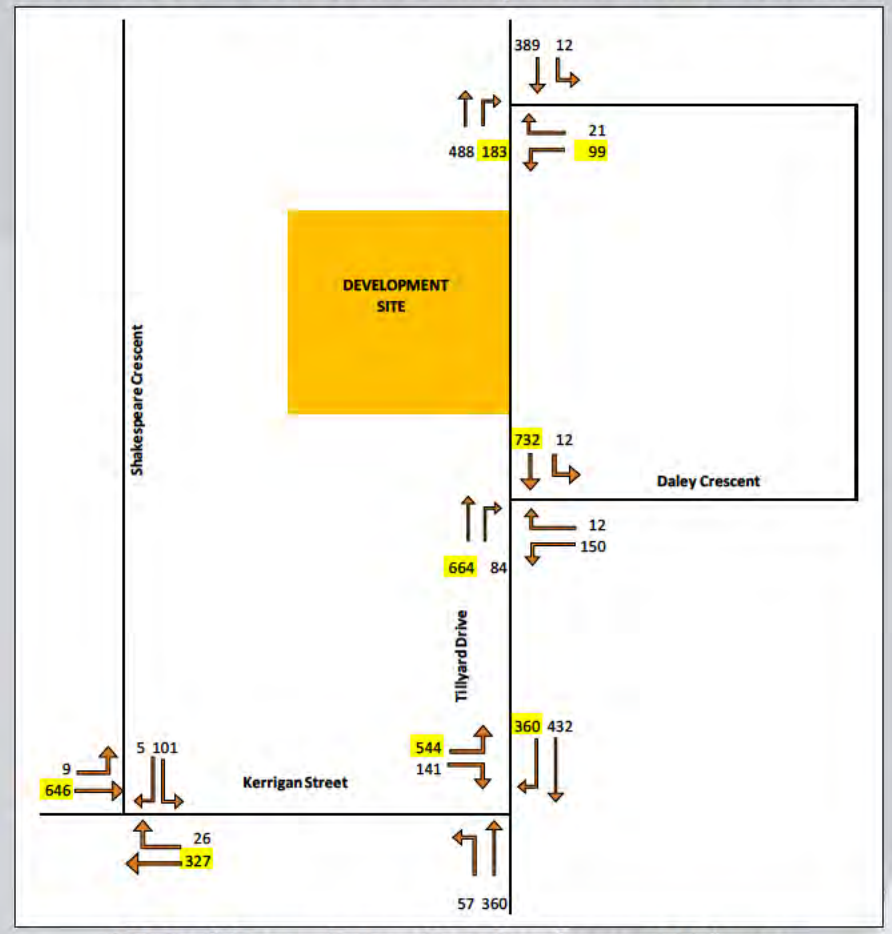


PM Peak Hour – Development Volumes

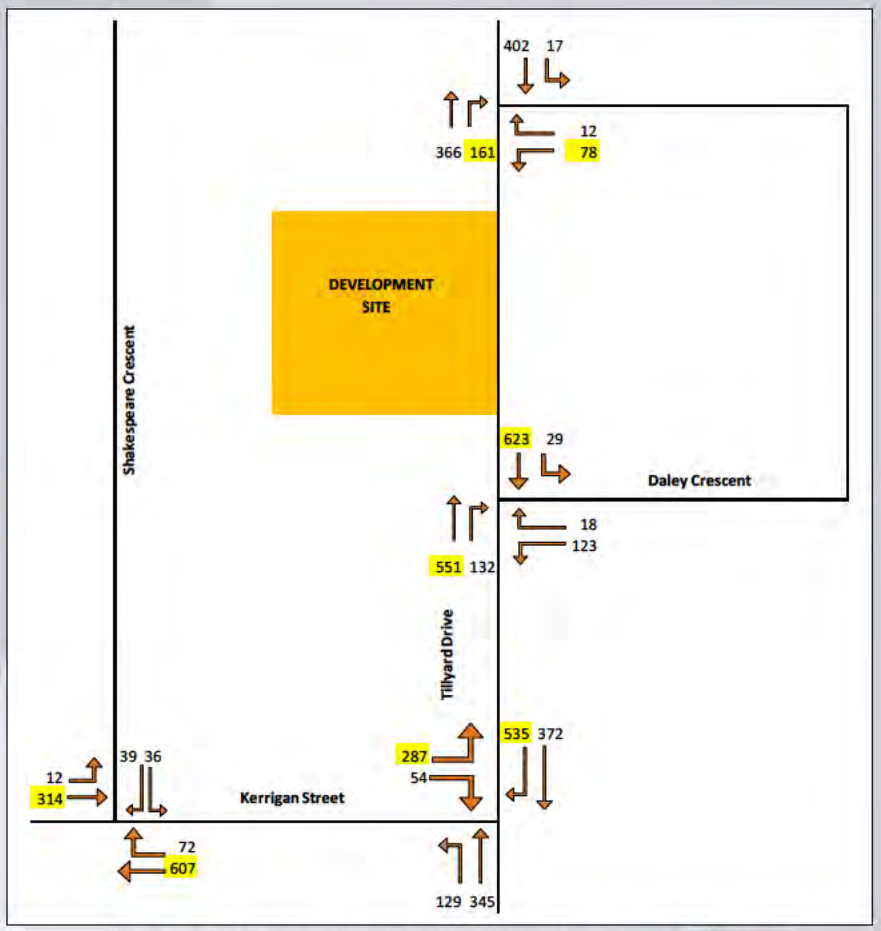
INDESCO

Traffic Assessment

Future Scenario Post-Development Traffic Volumes



AM Peak Hour – Future Post-Development Volumes



PM Peak Hour – Future Post-Development Volumes

Traffic Assessment

Intersection Performance (Future Post-Development)

Intersection	Intersection Arrangement	AM Peak Hour				PM Peak Hour			
		DOS	Delay	LOS	Queue	DOS	Delay	LOS	Queue
Kerrigan St /Shakespeare Cr	Give-way Intersection	0.365	1	A	3.4	0.401	1	A	7.9
Tillyard Dr /Kerrigan St	Give-way Intersection	0.496	3.9	A	34.1	0.605	4.5	A	57.7
Tillyard Dr /Daley Cr (South)	Give-way Intersection	0.463	1.8	A	15.8	0.433	2.1	A	18.8
Tillyard Dr /Daley Cr (North)	Give-way Intersection	0.398	2.2	A	15.6	0.317	2	A	10.7

Parking Requirements

Car Parking Requirements

Land Use	Type	Number / Size	Car parking Rate	Parking Requirement (space)
Community Facility Zone (Pre-school)	Regular (staff)	885 Students	0.8 Spaces/10 Students	71
	Set-down / Pick-up	885 Students	0.4 spaces/10 students	36
Total				107

Considering the number of 79 existing carpark provision within the existing school area, no additional parking is required for expansion area.

Given the number of 16 existing set-down/pick-up parking, a number of 20 additional set-down/pick-up parking is required in the expansion area. However, considering the existing set-down/pick-up parking demand during school peak hour, which is the cause of queue and congestion in the school driveway and Tillyard Drive, it is recommended to provide the maximum possible number of set-down/pick-up parking in Tillyard Drive. It is also recommended to allocate a part of Shakespeare Crescent as set-down/pick-up parking.

INDESCO

Parking Requirements

Bicycle Parking Requirements

Land Use	Number of Students	User Type	Bicycle Parking Rate	Bicycle Parking Requirement (space)
Primary School	885	Staff	1 space/200 students after first 200	4
		Students	1 space per 15 students	59
Total				**63**

Existing Bicycle Parking

Table 3 – Types of Bicycle Parking Facilities

Type	Description	Physical security	Long/ short stay	Class	Suitable for
Bicycle Locker	Fully enclosed individual lockers	High	Long	1	• Apartment residents • Bike and ride commuters at public transport interchanges • Guests at motels, serviced apartments
Bicycle Enclosure	Locked cages or compounds containing Bicycle Rail installations as described below. Communal access using duplicated keys or electronic swipe cards	Medium	Long	2	• Apartment residents • Regular employees or students • Guests at motels, serviced apartments
Bicycle Rail	Installations such as metal hoops and rails which support the bicycle and to which the bicycle frame and both wheels can be locked	Low	Short	3	• Shoppers • Visitors to offices and apartments
Supervised Parking Station	High capacity facilities with constant security supervision, typically available to the public.	High	Both	All	• All users

Parking Requirements

Bicycle Parking Requirements

Figure 1 – Example of an Acceptable Bicycle Enclosure

Existing Bicycle Parking

Active Travel

Whilst the existing network provides good walking and cycling linkages to the existing school boundary, given that the future expansion area which is far from the existing underpass crossing in south of the existing school, the following improvement works are recommended as part of the proposed development to continue to support walking and cycling modes of travel:

- A new Children's Crossing to be considered in Tillyard Drive in front of the expansion area
- Upgrade the footpath in open space area to provide a shared path with 3 meters width for mixed pedestrian and bicycle usage
- Construct a shared path with 3 meters width along the Tillyard Drive in both sides from Daley Crescent South to Daley Crescent North intersection to provide shared path for mixed pedestrian and bicycle usage

Service Vehicles

Any loading / waste collection activities should occur on-site. On this basis, the physical design of the vehicle access points should consider heavy vehicles to accommodate service activities with forward entry-forward exit movements in compliance with the Development Control Code for Best Practice Waste Management in the ACT 2019. Waste collection points and waste truck routes should be arranged in a way to avoid conflict with pedestrian and students access points and paths.

Construction Consideration

Construction vehicles will be subject to individual and specific traffic management plans. Separation of construction access and general school and public travel is essential. It is recommended to minimise the construction activities, and truck movements along Tillyard Drive during AM and PM school peak.

Conclusion

Conclusion

1. The proposed development is expected to generate 334 and 274 trips in AM and PM school peak hour respectively.
2. Based on the SIDRA simulation results, the development will have a negligible effect on intersections traffic performance and all nominated intersections will perform with the level of service A.
3. The future school with 885 students has a parking requirement of 71 spaces; however, considering the number of 79 existing car park provision within the existing school area, no additional parking is required for expansion area.
4. The future school has a motorcycle parking requirement of 3 spaces.
5. Based on the ACTPLA Parking and Vehicular Access General Code, future school with 885 students has a pick-up parking requirement of 36 spaces; however, considering the number of 16 pick-up parking provision within the existing school area, and observed set-down/pick-up parking demand during school peak hour, which is the cause of queue and congestion in the school driveway and Tillyard Drive, it is recommended to provide the maximum possible number of set-down/pick-up parking in Tillyard Drive. It is also recommended to allocate a part of Shakespeare Crescent as set-down/pick-up parking.
6. The future school has a bicycle parking requirement of 4 spaces for staff and 59 spaces for students.

Conclusion

7. The following improvement works are recommended to be undertaken as part of the proposed development to further support walking and cycling:

- A new Children's Crossing to be considered in Tillyard Drive in front of the expansion area
- Upgrade the footpath in open space area to provide a shared path with 3 meters width for mixed pedestrian and bicycle usage
- Construct a shared path with 3 meters width along the Tillyard Drive in both sides from Daley Crescent South to Daley Crescent North intersection to provide shared path for mixed pedestrian and bicycle usage

8. The current school zone needs to be extended till the end of the school boundary on the north side along Tillyard Drive in future design.
9. Public transport is not expected to be impacted significantly by the proposed expansion; however, in future design, the school bus stop needs to be located away from crossings and with good visibility and one new school bus should be provided as a part of the expansion plan.
10. The final design of the site access arrangements should allow for the trucks associated with service and loading on the subject site.

Thank you

redboxdesigngroup

Fraser Primary Tree Assessment

Revision 02 – FINAL

07.06.2021

Prepared for.

ACT Government
Environment and Planning

Prepared by.

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Contents

1. Tree Assessment Report

Introduction

This tree assessment evaluates Trees within part Block 6 Section 64 and Block 2 Section 40, Fraser.

This report has been prepared for the ACT Government for the purposes of reviewing options for the expansion of the Fraser Primary School.

The inspection method used is a Visual Tree Assessment which involves inspecting the tree from ground level.

The base plan information is on aerial imagery. Survey information has not informed tree locations / positions – these are estimated only and should be verified by survey for future development purposes. Particulary trees that are on the boundary between the Primary School and the adjacent open space to the North west and north east.

Trees were assessed individually or in groups.

It is noted that the school boundary fence to the north west and north east does not align with the site boundary.

The field work was carried out during mid March 2021.

Figure 1. Site area for Tree Assessment

Site Description

Land Custodianship

The trees assessed for this report are across two blocks

- Part of Block 6 Section 64 – TCCS custodianship
- Part of Block 2 Section 40 – Education Directorate custodianship

Figure 2. **Land Custodianship (extract – ACTMapi)**

Site Description

Trees across the assessment site are predominantly Eucalyptus species, which is consistent for much of the plantings within the Belconnen District.

Trees to the north and east of Block 2 Section 40 (the school block) are mature groupings within a large flat area and are likely to have been planted at the time of the development of the suburb in the late 1970s. The species are consistent of a range of eucalyptus known to grow well in Canberra.

- *Eucalyptus polyanthemos,*
- *Eucalyptus melliodora,*
- *Eucalyptus sideroxylon,*
- *Eucalyptus mannifera,*

- *Eucalyptus viminalis,*
- *Eucalyptus albens,*
- *Eucalyptus cinerea,*
- *Eucalyptus bicostata,*
- *Eucalyptus viridis,*
- *Eucalyptus maidenii.*

This area of open space is likely to have high soil moisture levels during wet periods. Many of the tree groups were planted on mounds with Blue Gums (*E.bicostata*) on the high side to take up some of the moisture. The arrangement has been a success as the trees are now generally in good condition despite being quite closely planted. However, the Blue Gums are at a stage when they require regular inspections, particularly those close to the school perimeter fence.

The structure of the canopy and the range of species combined with some tall trees is an attractive arrangement for birdlife. A number of active hollows were noted at the time of the assessment.

The trees groups have an overall high quality rating due to their general good health and contribution to the overall character and of the site. Even though individually some of the trees within the group are not good specimens.

Verge trees on Shakespeare Crescent are exotic deciduous Ash (*Fraxinus oxycarpa 'Raywoodii'*) in varying condition. Many are noted as low quality, but only due to their small stature. A number of trees are likely to have perished, as there are a few gaps in the generally regular spacing along the street. Subject to reasonable ongoing climatic conditions these trees will continue to grow and form a street character

Trees within the school site fenced area are mostly Eucalypt species. The exception is the northern play area that is dominated by exotic deciduous.

Within the perimeter one tree, number 66 (*E. maidenii*), is identified as a dangerous species and should be removed as it poses a safety risk in a very high use area with small children playing many times every school day.

Whist not included in the study area, trees that are on the Tillyard Drive side of the school were noted as providing a buffer to the front of the school. The row of *E. nicholii* between the road and the car park at the front of the school should be monitored regularly as the species is prone to shed branches as it matures. There are also many bird boxes that should be inspected as the ties are starting to compromise the bark in some cases.

These trees form an attractive leafy buffer along the road edge and should be managed to not compromise this aesthetic.

Tree Assessment Inventory

The following is a description of the criteria used to assess individual trees within the study area and adjacent verges.

Note tree locations are estimated only, based on aerial imagery. Topographical survey is required to confirm accurate location.

TREE No: Individual trees are given a unique number shown on attached Tree Assessment Plans.

BOTANICAL NAME: Identification of trees on site by species.

TREE HEIGHT: The height of the tree (in metres) as estimated on site.

TRUNK CIRCUMFERENCE: The circumference (in millimetres) of the tree is measured on site at approximately 1 metre above ground level. Where there is more than one trunk, the sum of the trunks is used.

CANOPY DIAMETER: The estimated canopy diameter (in metres) as measured on site. This is based on the largest extending limb.

GENERAL HEALTH: Condition is based on the present health of the tree as indicated by particular visible characteristics including leaf health and leafiness, dieback, structural health of trunk and major branches, presence of pests and diseases. It also assesses the structural integrity of the tree in terms of its hazard potential. A tree may present a hazard due to defects in the trunk or major limbs.

- Excellent (E): Extremely healthy tree in exceptional condition.
- Good (G): Major trunks, branches and leafiness indicate good health with healthy new shoot growth over whole canopy.
- Fair (F): Trees appears in reasonable health, though may have some characteristics as poor. Fair condition with reasonable shoot growth over whole canopy.
- Poor (P): Trees of poor health and vigour exhibiting characteristics such as a large amount of growth, extensive dieback, trunk rot/defects or poor leafiness with little new shoot growth over whole canopy.
- Dead (D) – Trees that are dead

STRUCTURAL DEFECTS / DECAY (Y-Yes / N- No): A record of any structural defects or decay apparent in the trunk or major branches

PAST DAMAGE / DISTURBANCE (Y-Yes / N- No): Visual evidence of past damage or disturbance to the tree in major trunk and branches

DISEASE / INFESTATION (Y-Yes / N- No): Visual evidence of any disease or infestation with is present in the tree

TREE QUALITY: An overall assessment of the quality of the tree and its relative importance for retention within an urban context. Based on ACT Tree Protection ACT 2005 (Guidelines for Tree Management)

Exceptional (E), is a tree or group of trees that:
- Has natural or cultural heritage importance; or
- Has high aesthetic value and will have a major contribution to the surrounding landscape; or
- Is of outstanding form and condition and is an excellent example of the species; or
- Has significant scientific value, including ecological importance.

High (H), is a tree that:
- Is of good form, structure and health;
- Is without significant defect; and which has potential to make a significant contribution to the landscape

Medium (M), is a tree that:
- Is of reasonable form, structure and health; and whose presence contributes to the landscape but not as significantly as high / exceptional quality trees

Low (L), is a tree that:
- Is of poor, structure or health, is in decline; and which has limited potential to contribute to the landscape

PROTECTED TREES:
A Protected Tree is a tree that is provided protection under the tree Protection Act 2005. The Act defines two types of Protected Tree: Registered Tree and Regulated Tree.

A Registered Tree is a tree that has been identified as being exceptional for it's:

(a) Natural or cultural heritage value;
(b) Landscape and aesthetic value; and
(c) Scientific or ecological value

A Regulated Tree is a tree that is located on leased Territory Land in an area declared as a Tree Management Precinct and is either:

(a) 12m or more in height; or
(b) greater than 1.5m in circumference 9approx. 0.5m in diameter) or more at 1m above natural ground level; or
(c) with two or more trunks and the total circumference of all trunks, 1m above natural ground level, is 1.5m or more; or
(d) 12m in crown width or more

REGISTERED STATUS: Where applicable registered trees are noted. There are no Registered trees on this site.

REGULATED STATUS: A regulated tree is a living tree (other than a registered tree or a palm tree) with one or more of the criteria as noted above.

A tree is not a regulated tree if it is a pest plant under the Pest Plants and Animals Act 2005.

TCCS: A tree that is on public land and is protected, regardless of its physical size or characteristics

COMMENTS: Any arboriculture or other comments / notes relating to the tree or its location. Registered tree numbers are indicted and copies of the relevant sections of the ACT Tree Register are within the appendix of this report where applicable.

NOTES/DISCLAIMER

This report is to be utilised in its entirety only. Any written or verbal submission, report or representation that includes statements taken from the findings, discussions, conclusions or recommendations made by this report, may only be used where the whole of the original report (or a copy) is referenced in and directly attached to that submission, report or representation.

Unless stated otherwise:

- The information contained in this report covers only the trees that were examined and reflects the conditions of those trees at the time of inspections
- Inspections were limited to visual examination of the subject trees from ground level, without dissection, excavation, probing or coring.
- There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.
- The findings of this report may not necessarily agree with reports prepared by others, including the Government Conservator of Trees or TCCS.

Appendix A – Tree Photo Sheets

Photo Sheets are provided for trees within the study boundary only.

TREE No. 1

Species Name	*Fraxinus oxycarpa* 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	700mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	3
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 2

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	3
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 3

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	10m
Species Code	FRo	Trunk circumference (mm)	1000mm
Tree Quality	Low	Canopy diameter (m)	9m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Large dead branches		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 4

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	6m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Moderate	Canopy diameter (m)	5m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 5

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 6

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	6m
Species Code	FRo	Trunk circumference (mm)	700mm
Tree Quality	Low	Canopy diameter (m)	5m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree – small scar at 1.5m		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 7

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 8

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No.

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	800mm
Tree Quality	Low	Canopy diameter (m)	5m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 10

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	4m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree – scar 1.3-1.5m		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 11

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	4m
Species Code	FRo	Trunk circumference (mm)	500mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 12

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	4m
Species Code	FRo	Trunk circumference (mm)	500mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 13

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	10m
Species Code	FRo	Trunk circumference (mm)	1100mm
Tree Quality	Low	Canopy diameter (m)	8m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 14

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	8m
Species Code	FRo	Trunk circumference (mm)	900mm
Tree Quality	Low	Canopy diameter (m)	10m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 15

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	9m
Species Code	FRo	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 16

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	6m
Species Code	FRo	Trunk circumference (mm)	900mm
Tree Quality	Low	Canopy diameter (m)	8m
Regulated Status	TCCS	No. of trunks	1
Health	Poor	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree – poor canopy and dead wood		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 17

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	6m
Species Code	FRo	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	8m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 18

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	4m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	3m
Regulated Status	TCCS	No. of trunks	1
Health	Fari	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 19

Species Name	Eucalyptus viridis	Tree Height (m)	8m
Species Code	Evo	Trunk circumference (mm)	1000mm
Tree Quality	Low	Canopy diameter (m)	9m
Regulated Status	TCCS	No. of trunks	1
Health	Poor	Structural Defects / Decay	Yes
Past damage disturbance	Yes	Disease / Pest infestation	No
Comments	Very poor tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 20

Species Name	Eucalyptus melliodora	Tree Height (m)	13m
Species Code	Eme	Trunk circumference (mm)	1300mm
Tree Quality	Medium	Canopy diameter (m)	11m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 21

Species Name	Eucalyptus melliodora	Tree Height (m)	13m
Species Code	Eme	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	11m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 22

Species Name	Eucalyptus bicostata	Tree Height (m)	23m
Species Code	Eub	Trunk circumference (mm)	2400mm
Tree Quality	High	Canopy diameter (m)	13m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Active hollow at 5m		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 23

Species Name	Eucalyptus bicostata	Tree Height (m)	15m
Species Code	Eub	Trunk circumference (mm)	1300mm
Tree Quality	Medium	Canopy diameter (m)	10m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No.

Species Name	Eucalyptus maidenii	Tree Height (m)	15m
Species Code	Eub	Trunk circumference (mm)	2800mm
Tree Quality	Low	Canopy diameter (m)	14m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Poor union at 1.4m		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 25

Species Name	Eucalyptus polyanthemos	Tree Height (m)	8m
Species Code	EUp	Trunk circumference (mm)	1000mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	2
Health	Poor	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 26

Species Name	Casuarina cunninghamiana	Tree Height (m)	8m
Species Code	Ccu	Trunk circumference (mm)	700mm
Tree Quality	Medium	Canopy diameter (m)	5m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 27

Species Name	Eucalyptus polyanthemos	Tree Height (m)	11m
Species Code	EUp	Trunk circumference (mm)	1900mm
Tree Quality	Medium	Canopy diameter (m)	13m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 28

Species Name	Casuarina cunninghamiana	Tree Height (m)	5m
Species Code	Ccu	Trunk circumference (mm)	4000mm
Tree Quality	Poor	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 29

Species Name	Eucalyptus polyanthemos	Tree Height (m)	12m
Species Code	EUp	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	9m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 30

Species Name	Casuarina cunninghamiana	Tree Height (m)	8m
Species Code	Ccu	Trunk circumference (mm)	800mm
Tree Quality	Poor	Canopy diameter (m)	6m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 31

Species Name	Eucalyptus polyanthemos	Tree Height (m)	9m
Species Code	EUp	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 32

Species Name	Casuarina cunninghamiana	Tree Height (m)	10m
Species Code	Ccu	Trunk circumference (mm)	800mm
Tree Quality	Medium	Canopy diameter (m)	8m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 33

Species Name	Eucalyptus mannifera	Tree Height (m)	12m
Species Code	Ema	Trunk circumference (mm)	2100mm
Tree Quality	Low	Canopy diameter (m)	9m
Regulated Status	TCCS	No. of trunks	1
Health	Poor	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Fungal fruiting bodies at 1-2m		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 34

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 35

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Part of group on fenceline		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 36

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Part of group on fenceline		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 37

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Part of group on fenceline		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 38

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Part of group on fenceline		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 39

Species Name	Euclapytus mannifera	Tree Height (m)	7m
Species Code	Ema	Trunk circumference (mm)	1300mm
Tree Quality	Low	Canopy diameter (m)	5m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Fair	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Dieback		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 40

Species Name	Eucalyptus mannifera	Tree Height (m)	10m
Species Code	Ema	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Dieback		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 41

Species Name	Eucalyptus mannifera	Tree Height (m)	11m
Species Code	Ema	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	8m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Dieback		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 42

Species Name	Eucalyptus mannifera	Tree Height (m)	10m
Species Code	Ema	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Dieback		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 62

Species Name	Eucalyptus mannifera	Tree Height (m)	14m
Species Code	Ema	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	9m
Regulated Status	Yes	No. of trunks	1
Health	good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 63

Species Name	Eucalyptus mannifera	Tree Height (m)	14m
Species Code	Ema	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	9m
Regulated Status	Yes	No. of trunks	1
Health	good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 64

Species Name	Eucalyptus mannifera	Tree Height (m)	6m
Species Code	Ema	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	8m
Regulated Status	No	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 65

Species Name	Eucalyptus mannifera	Tree Height (m)	8m
Species Code	Ema	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	No	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 66

Species Name	Eucalyptus maidenii	Tree Height (m)	18m
Species Code	EUm	Trunk circumference (mm)	1900mm
Tree Quality	Medium	Canopy diameter (m)	12m
Regulated Status	Yes	No. of trunks	1
Health	Good	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Poor union at 6m, active hollow. Remove as a safety hazard in this situation – prone to limb drop at union.		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 67

Species Name	Eucalyptus mannifera	Tree Height (m)	12m
Species Code	Ema	Trunk circumference (mm)	1400mm
Tree Quality	Medium	Canopy diameter (m)	10m
Regulated Status	Yes	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 68

Species Name	Eucalyptus mannifera	Tree Height (m)	13m
Species Code	Ema	Trunk circumference (mm)	2200mm
Tree Quality	Medium	Canopy diameter (m)	16m
Regulated Status	Yes	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 69

Species Name	Eucalyptus cinerea	Tree Height (m)	9m
Species Code	EUc	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	No	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	Ni	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 70

Species Name	Eucalyptus cinerea	Tree Height (m)	5m
Species Code	EUc	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	No	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 71

Species Name	Eucalyptus bicostata	Tree Height (m)	9m
Species Code	EUb	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	No	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 72

Species Name	Eucalyptus nicholii	Tree Height (m)	11m
Species Code	Eni	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	9m
Regulated Status	No	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Asymmetrical canopy. Species can be prone to limb drop		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 73

Species Name	Eucalyptus maidenii	Tree Height (m)	16m
Species Code	EUm	Trunk circumference (mm)	2300mm
Tree Quality	Low	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Fair	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Poor union at 1.6m, leaning		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 74

Species Name	Eucalyptus maidenii	Tree Height (m)	17m
Species Code	EUm	Trunk circumference (mm)	2100mm
Tree Quality	Low	Canopy diameter (m)	11m
Regulated Status	Yes	No. of trunks	1
Health	Fair	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Poor union at 2m		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 75

Species Name	Eucalyptus maidenii	Tree Height (m)	10m
Species Code	EUm	Trunk circumference (mm)	1600mm
Tree Quality	Medium	Canopy diameter (m)	13m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE No. 76

Species Name	Callistemon citrinus	Tree Height (m)	4m
Species Code	CAc	Trunk circumference (mm)	300mm
Tree Quality	Low	Canopy diameter (m)	2m
Regulated Status	No	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021