ACT Government
Transport Canberra and City Services

FREEDOM OF INFORMATION COVERSHEET

The following information is provided pursuant to section 28 of the *Freedom of Information Act 2016*.

FOI reference: 24-117

Information to be published	Status
1. Access application	Published
2. Decision notice	Published
3. Schedule	Published
4. Documents	Not applicable
5. Additional information identified	Not applicable
6. Fees	Not applicable
7. Processing time (in working days)	50 days
8. Decision made by Ombudsman	Not applicable
9. Additional information identified by Ombudsman	Not applicable
10. Decision made by ACAT	Not applicable
11. Additional information identified by ACAT	Not applicable

From: [redacted]
To: TCCS_FreedomOfInformation
Subject: Re: Regarding your FOI request to Transport Canberra and City Services
Date: Monday, 12 August 2024 7:29:25 PM

Hi Sam

Thanks for your email - the outline of the scope below covers my area of interest.

I confirm I am comfortable with the extension.

Thanks
[redacted]

On Mon, 12 Aug 2024 at 11:28, TCCS_FreedomOfInformation <TCCS.FOI@act.gov.au> wrote:

> Hi [redacted],
>
> Thank you for your quick reply and advice.
>
> Can you please advise if my understanding of your application is correct, and the following scope is inclusive of all the information you wish to seek under FOI for this application?
>
> > "A. Any analysis that was undertaken of impacts to traffic flows prior to approving and installing new traffic lights at the corner of Limestone Ave and Treloar Cres. This would include, but not limited to, any analysis that considered estimated impact to travel times on Limestone Ave, estimated number of vehicles passing through the intersection.
> >
> > B. A copy of the Euree Street/ Limestone Avenue/ Treloar Crescent, Reid Black Spot Feasibility Study (pages 36 – 63 of FOI 23-028)".
> >
> > For context:
> >
> > The FOI 23-028 doesn't contain any information on traffic flow considerations along Limestone, which I am very interested in. The analysis on public record only talks about the time that cars attempting to turn onto Limestone have to wait (approx. 120 seconds). Given that travel times on Limestone have increased significantly since the installation of these lights.
> >
> > The analysis on cost benefit in FOI 23-028 has been redacted. At the time, this was based on the fact that the intersection was going to tender. Given this has now occurred, I will be interested if the same documents are provided under my

request but without redaction.

Once confirmed, our team will provide you with a formal acknowledgement. Due to our error, the 10 business days to provide you with an acknowledgement has been exceeded, I again apologise for this.

With regard to timeframes for a decision, our error in misreading your email as an application has resulted in delays in the processing. Under the *Freedom of Information Act 2016* TCCS has 30 business days to respond with a decision, which would be 14 August 2024. Can you please advise whether you are agreeable to an extension 28 business days, being Monday, 23 September 2024 or another timeframe?

Please note that should you wish to refuse an extension, a response needs to be provided to us within 7 business days or the extension request is assumed to be agreed under the FOI Act.

If you would like to discuss my email or if I can be of further assistance, you can contact me directly on (02) 6207 9242.

Kind regards,

Sam

Samantha Irons | Director

Phone: 02 6207 9242 | Email: TCCS.FOI@act.gov.au

Information Access | Procurement, Legal and Information Access | Transport Canberra and City Services Directorate | ACT Government

480 Northbourne Avenue, Dickson 2602 | GPO Box 158 Canberra ACT 2601 | www.act.gov.au

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From: [redacted]>
Sent: Sunday, August 11, 2024 7:35 PM
To: TCCS_FreedomOfInformation <TCCS.FOI@act.gov.au>
Subject: Re: Regarding your FOI request to Transport Canberra and City Services

Hi Samatha

Thanks for your email, and also referring me to the published records (FOI 23-028).

I would like to keep my request for information, namely:

> “any analysis that was undertaken of impacts to traffic flows prior to approving and installing new traffic lights at the corner of Limestone Ave and Treloar Cres. This would include, but not limited to, any analysis that considered estimated impact to travel times on Limestone Ave, estimated number of vehicles passing through the intersection.”

The FOI 23-028 doesn't contain any information on traffic flow considerations along Limestone, which I am very interested in. The analysis on public record only talks about the time that cars attempting to turn onto Limestone have to wait (approx. 120 seconds). Given that travel times on Limestone have increased significantly since the installation of these lights, I would like to retain my FOI to understand what information the ACT Government has regarding this and whether it considered the issue prior to proceeding.

I would also like to keep my FOI request as some of the information containing the analysis on cost benefit in FOI 23-028 has been redacted. At the time, this was based on the fact that the intersection was going to tender. Given this has now occurred, I will be interested if the same documents are provided under my request but without redaction.

Thanks

[redacted]

On Fri, Aug 9, 2024 at 2:59 PM TCCS_FreedomOfInformation <TCCS.FOI@act.gov.au> wrote:

> OFFICIAL

Dear [redacted]

I am writing to you in relation to a request to access information held by Transport Canberra and City Services. In reviewing our records, I can see that you made two request to TCCS on the same day. One of these applications has been acknowledged with reference 24-101, seeking:

> "any analysis that was undertaken of impacts to traffic flows after installing new traffic lights at the corner of Limestone Ave and Treloar Cres, including what date the analysis was undertaken. This would include, but not limited to, any analysis that considered any changes in the travel times on Limestone Ave since installation, any changes in the number of vehicles passing through the intersection, and any information on the effectiveness and efficiency of the traffic lights."

However, it appears we have made an administrative error in accidently identifying your second email as an application. Instead, we mistakenly interpreted it to be a duplicate email. At this time we had a government wide ICT issue, where we were receiving duplicate emails. I sincerely apologise for this mistake.

Can you please advise whether you still wish to access the following information?

> "any analysis that was undertaken of impacts to traffic flows prior to approving and installing new traffic lights at the corner of Limestone Ave and Treloar Cres. This would include, but not limited to, any analysis that considered estimated impact to travel times on Limestone Ave, estimated number of vehicles passing through the intersection."

We have previously released information on the Black Spot Program records which relate to the decision to signalise this intersection. The records are published here (FOI 23-028).

Kind regards,

Samantha | Director

Phone: 6207 2987 | Email: TCCS.FOI@act.gov.au

Information Access | Procurement, Legal and Information Access | Transport Canberra and City Services Directorate | ACT Government

480 Northbourne Avenue, Dickson 2602 | GPO Box 158 Canberra ACT 2601 | www.act.gov.au

ACT Government
Transport Canberra and City Services

[redacted]

Dear [redacted]

Freedom of Information Request - Reference 24-117

I refer to your application made to Transport Canberra and City Services Directorate (TCCS) under the *Freedom of Information Act 2016* (the Act) on 2 July 2024. In your application you are seeking access to the following government information:

> *"A. Any analysis that was undertaken of impacts to traffic flows prior to approving and installing new traffic lights at the corner of Limestone Ave and Treloar Cres. This would include, but not limited to, any analysis that considered estimated impact to travel times on Limestone Ave, estimated number of vehicles passing through the intersection*
>
> *B. A copy of the Euree Street/ Limestone Avenue/ Treloar Crescent, Reid Black Spot Feasibility Study (pages 36 – 63 of FOI 23-028)".*
> *For context:*
> *The FOI 23-028 doesn't contain any information on traffic flow considerations along Limestone, which I am very interested in. The analysis on public record only talks about the time that cars attempting to turn onto Limestone have to wait (approx. 120 seconds). Given that travel times on Limestone have increased significantly since the installation of these lights. The analysis on cost benefit in FOI 23-028 has been redacted. At the time, this was based on the fact that the intersection was going to tender. Given this has now occurred, I will be interested if the same documents are provided under my request but without redaction.*

Timeframes
A decision on your access application was due on 14 August 2024. I thank you for granting an extension until 23 September 2024.

Authority
I am an Information Officer appointed by the Director-General under section 18 of the Act to deal with access applications made under Part 5 of the Act.

Decision on access
A search of records held by TCCS has been completed and no information relevant to part A of your request has been identified. This is further confirmed in the feasibility report on page 11, under 2.12 - Future Traffic Volumes - where it outlines the reasons that it was difficult to predict changes to traffic volumes on Limestone Avenue. I am satisfied that all appropriate searches were completed. Pursuant to section 35(1)(b) of the Act, I have determined that the information that you have requested is not held by TCCS.

As you are aware, the feasibility report relevant to part B of your application has previously been published on the TCCS disclosure log under FOI reference number 23-028. As the construction of the project has now been completed, I have considered how the passage of time has affected the public interest. In applying the public interest test under section 17 of the FOI Act, I have found it in the public

interest to provide you with partial access. My decision is detailed further in the following statement of reasons. A copy of the report is enclosed at Attachment A with deletions applied to information which is contrary to the public interest to disclose.

Statement of Reasons
In reaching my access decision, I have taken the following into account:

- the Act;
- the content of the documents that fall within the scope of your request; and
- the *Humans Rights Act 2004.*

The FOI Act has a pro disclosure bias, which requires information to be disclosed unless doing so would be contrary to the public interest. As an Information Officer, I must decide where, on balance, public interest lies in the disclosure of government information. Section 17(1) of the Act sets out the steps for completing the public interest test. As part of this process, I must identify all relevant factors in schedule 1 of the FOI Act. If no factor in schedule 1 is found relevant, I must then consider the factors listed in schedule 2 of the FOI Act and determine, on balance, where the public interest lies.

Schedule 1:
No relevant sections identified.

Schedule 2:
Factors favouring disclosure in the public interest (Schedule 2.1)

- Schedule 2.1(a)(i) - promote open discussion of public affairs and enhance the government's accountability;
- Schedule 2.1(a)(ii) - contribute to positive and informed debate on important issues or matters of public interest;
- Schedule 2.1(a)(iv) - ensure effective oversight of expenditure of public funds;
- Schedule 2.1(a)(viii) - reveal the reason for a government decision and any background or contextual information that informed the decision.

Factors favouring non-disclosure (Schedule 2.2)

- Schedule 2.2(a)(ii) - prejudice the protection of an individual's right to privacy or any other right under the Human Rights Act 2016;
- Schedule 2.2(a)(viii) prejudice the economy of the Territory.

In reviewing the information in scope of your application, I have identified that the relevant report contains information which provides context to a government decision, including financial decisions. I also consider that the report relates to government infrastructure which impacts the ACT community, and disclosure is likely to promote an open discussion of public affairs, contribute to positive and informed debate and enhance the government's accountability. I also acknowledge that the pro-disclosure bias requires the public interest test to be approached on the basis that there are not simply empty scales in equilibrium, waiting for arguments to be put on each side. Rather, the scales are loaded in favour of disclosure.

In my review, I have also identified the personal information of third parties was identified. I consider that this information is not readily available to the public and has not otherwise been disclosed by TCCS. I further consider that this information has come to be held by TCCS with the expectation that it is handled in accordance with the *Information Privacy Act 2014*. I find that the protection of an individual's right to privacy under the *Human Rights Act 2004* carries significant weight. In this instance, I find the disclosure of third-party personal information to be, on balance, contrary to the public interest.

Furthermore, I have identified some financial figures and formulas relating to Human Capital Costs and Willingness-to-Pay options. I find that the disclosure of this information is likely to prejudice the economy of the Territory as the figures relate to deliberative processes beyond the scope of the report, including considerations in the handling of claims for compensation. I have attributed significant weight to this factor, and find that the disclosure of the information is, on balance, contrary to the public interest.

I find that the factors favouring disclosure can be met with the deletion of information that I have found to be, on balance, contrary to the public interest.

Charges
No fee is applicable to this application as the number of pages being released are within the fee-free threshold.

Online publishing – disclosure log
Under section 28 of the Act, TCCS maintains an online record of access applications called a disclosure log. Your original access application, my decision and documents will be published in the TCCS disclosure log between 3 – 10 business days from the date of this decision. Your personal contact details will not be published. You may view the TCCS' disclosure log here.

Ombudsman review
My decision on your access request is a reviewable decision as identified in Schedule 3 of the Act. You have the right to seek an Ombudsman review of this outcome under section 73 of the Act within 20 working days from the day that my decision is published in TCCS' disclosure log, or a longer period allowed by the Ombudsman. If you wish to request a review of my decision, you may write to the Ombudsman at:

ACT Ombudsman
GPO Box 442
CANBERRA ACT 2601
Via email: actfoi@ombudsman.gov.au

ACT Civil and Administrative Tribunal (ACAT) review
Under section 84 of the Act, if a decision is made under section 82 on an Ombudsman review, you may apply to the ACAT for review of the Ombudsman decision. Further information may be obtained from ACAT at:

ACT Civil and Administrative Tribunal
GPO Box 370
CANBERRA CITY ACT 2601
Telephone: (02) 6207 1740
www.acat.act.gov.au

If you have any queries concerning the directorate's processing of your request, or would like further information, please contact the TCCS FOI team on (02) 6207 2987 or email to tccs.foi@act.gov.au.

Yours sincerely

Lisa Johnson
Information Officer

10 September 2024

ACT Government
Transport Canberra and City Services

EUREE STREET/ LIMESTONE AVENUE/ TRELOAR CRESCENT, REID

BLACK SPOT FEASIBILITY STUDY

ROADS ACT

FINAL

RG 19038-3/ 1

22 NOVEMBER 2019

Consulting Engineers

EUREE STREET/ LIMESTONE AVENUE/ TRELOAR CRESCENT, REID

BLACK SPOT FEASIBILITY STUDY

Prepared for Roads ACT

Document Register

Revision	Date	Details	Author	Verifier	Approver
Draft	12/11/19	Draft report	[redacted]		
1	22/11/19	Final			

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Macquarie ACT 2614
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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOS

1. INTRODUCTION

1.1 Objective

R D Gossip (RDG) was commissioned by Roads ACT to undertake a Black Spot Feasibility study of the intersection of Euree Street, Limestone Avenue and Treloar Crescent, Reid, to assist in the assessment process for improvements under the Federal Black Spot Program.

1.2 The Brief

Specifically, the scope of the brief is to undertake the following:

- Produce a collision diagram of the crash data for the last five (5) years, with consideration of individual traffic lanes.
- Assess the traffic conditions and the extent that road conditions may be contributing to crashes. Day and night road safety audit checks of the surrounding environment are required.
- Document any deficiencies with current layouts for the volume of traffic passing through the site. Undertake an assessment in the short and medium term of traffic growth at each location, or other planning issues which may have a traffic impact.
- Develop practical options to address the deficiencies identified. While no detailed survey is required, service requirements or pavement defects should be identified and assessed. Options are to consider safe systems philosophy and specific needs of all road users including public transport, commercial vehicles, emergency vehicles, pedestrians, on-road cyclists and motorcyclists. If changes to the traffic signal phasing are one of the proposed options for improvement, SIDRA analysis will be required.
- Prepare a cost estimate for each option including preliminaries and contingencies (at least 30%). Treatments that have no chance of being implemented under the Black Spot budget (due to likely financial limitations) should be still be considered and recommended for implementation under future Capital Works programs.
- Prepare the economic analysis (Benefit to Cost Ratio) for the agreed option using the base case as the "do nothing" situation. The analysis should consider the benefits and dis-benefits over the life of the improvement works, which can be assumed to be 10 years and Nett Present Value (NPV) @ 7% as per Roads ACT ratio matrix. The average costs of crashes by accident type are to be used in estimating the benefits which result from crash reductions.
- Works are to be undertaken in accordance with the latest versions of the following:
  - ACT Design Standards and specifications.
  - Relevant Austroads Guidelines.
  - Relevant current Australian Standards.

1.3 The Project Team

The client is Roads ACT. The Project Officer is Marguerite Aziz.

The RDG project team is:

[redacted] Project Manager and Senior Traffic Engineer, Lead Level 3 Road Safety Auditor

[redacted] Senior Designer and Level 2 Road Safety Auditor

[redacted] Senior Draftsperson

1.4 Locality Plan

Note that ACTMAPi has been used for all aerial photography used in this report.

Figure 1-1 Locality Plan

2. EXISTING SITE CONDITIONS

2.1 Road Hierarchy

Limestone Avenue is classified as an Arterial road providing a link within North Canberra between Fairbairn Avenue and Wakefield Avenue. There are property accesses on the road in the vicinity of the intersection, however, parking is not permitted within the intersection. The road speed is signed at 60 km/h.

Photo 2-1 Limestone Avenue (northbound view south of the intersection)

Photo 2-2 Limestone Avenue (southbound view north of the intersection)

Treloar Crescent is classified as a Minor Collector road in the ACT road network. It provides access to the Australian War Memorial, Campbell High School and a small section of the Campbell residential area. There are no accesses in the vicinity of the intersection with parking restricted during school hours. Treloar Crescent has a default speed limit of 50 km/h with a 40 km/h school zone east of the intersection.

Photo 2-3 Treloar Crescent (westbound view east of the intersection)

Euree Street is classified as a local access street in the ACT road network. It provides access to Reid Oval and residential properties. There are multiple accesses in the vicinity of the intersection with parking restricted during the weekdays. Euree Street has a default speed limit of 50 km/h.

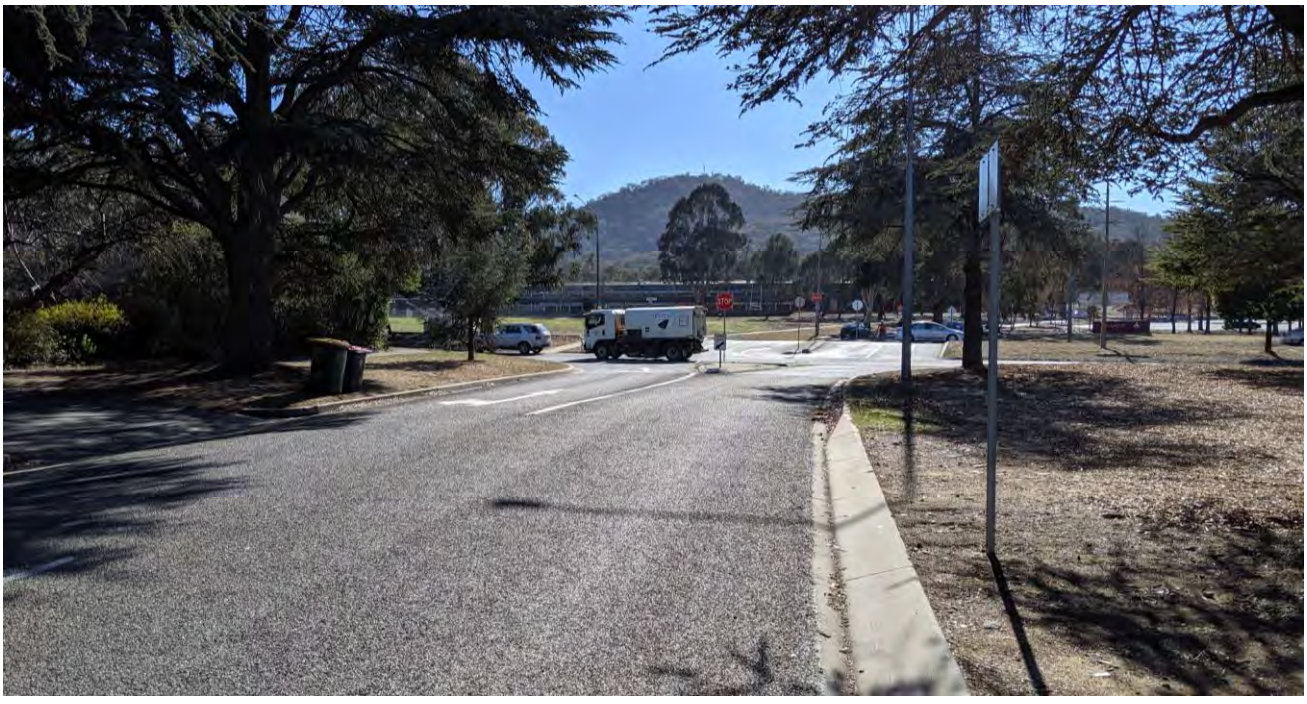


Photo 2-4 Euree Street (westbound view east of the intersection)

Limestone Avenue is classified as a Main On-road Cycle route by the ACTive Travel Infrastructure Practitioner Tool. The northern side Euree Street and Treloar Crescent are classified as local community routes. A local community route is intended for the western side of Limestone Avenue. There are signalised pedestrian crossings circa 80 m north of the intersection adjacent to Campbell High School and circa 300 m south of the intersection adjacent to the Australian War Memorial.

2.2 Geometric Layout

2.2.1 Road Layout

Limestone Avenue is a divided four-lane two-way road. The median is vegetated and circa 12 m wide (as shown in Photos 2-1 and 2-2).

Treloar Crescent and Euree Street are undivided two-lane two-way roads. Concrete splitter islands are provided at the intersection (as shown in Photos 2-3 and 2-4).

2.2.2 Intersection Layout

The intersection of Limestone Avenue, Treloar Crescent and Euree Street is a priority controlled four-way intersection with storage in the median (i.e.provides a staged crossing). The intersection is controlled by “STOP” (R1-1) signs, including the vehicles stopped within the median.

Vehicles turning into, or crossing, Limestone Avenue are required to store in the median. There are single lanes entering the intersection from Treloar Crescent and Euree Street (shared through and left turn lanes) with two lanes (through and right turn) provided in both directions in the median.

The intersection layout is shown in Figure 2-1.

Figure 2-1 Intersection layout

2.3 Traffic Volumes

Traffic data was collected at the intersection on Wednesday 19 June 2019 from 7 am to 10 am and 4 pm to 7 pm. The data identified the following characteristics:

- The weekday peak periods were between 8:00 am and 9:00 am during the morning and 4:45 pm and 5:45 pm during the afternoon/ evening;
- Traffic volumes on Treloar Crescent and Euree Street are relatively consistent throughout the peak periods with Treloar Crescent and Euree Street consisting of circa 3% and 1% respectively of the peak period traffic volumes;
- The Limestone Avenue volumes indicate that the traffic volumes are tidal, with a higher southbound peak period traffic flow on Limestone Avenue in the AM peak, switching to a higher northbound peak period traffic flow on Limestone Avenue in the PM peak, and
- Pedestrian volumes were also collected as part of the survey. The data indicated that there were minimal pedestrian movements crossing the road at the intersection, with the pedestrian peak period offset from the vehicular peak period.

The intersection traffic turning volumes are shown in Figure 2-2.

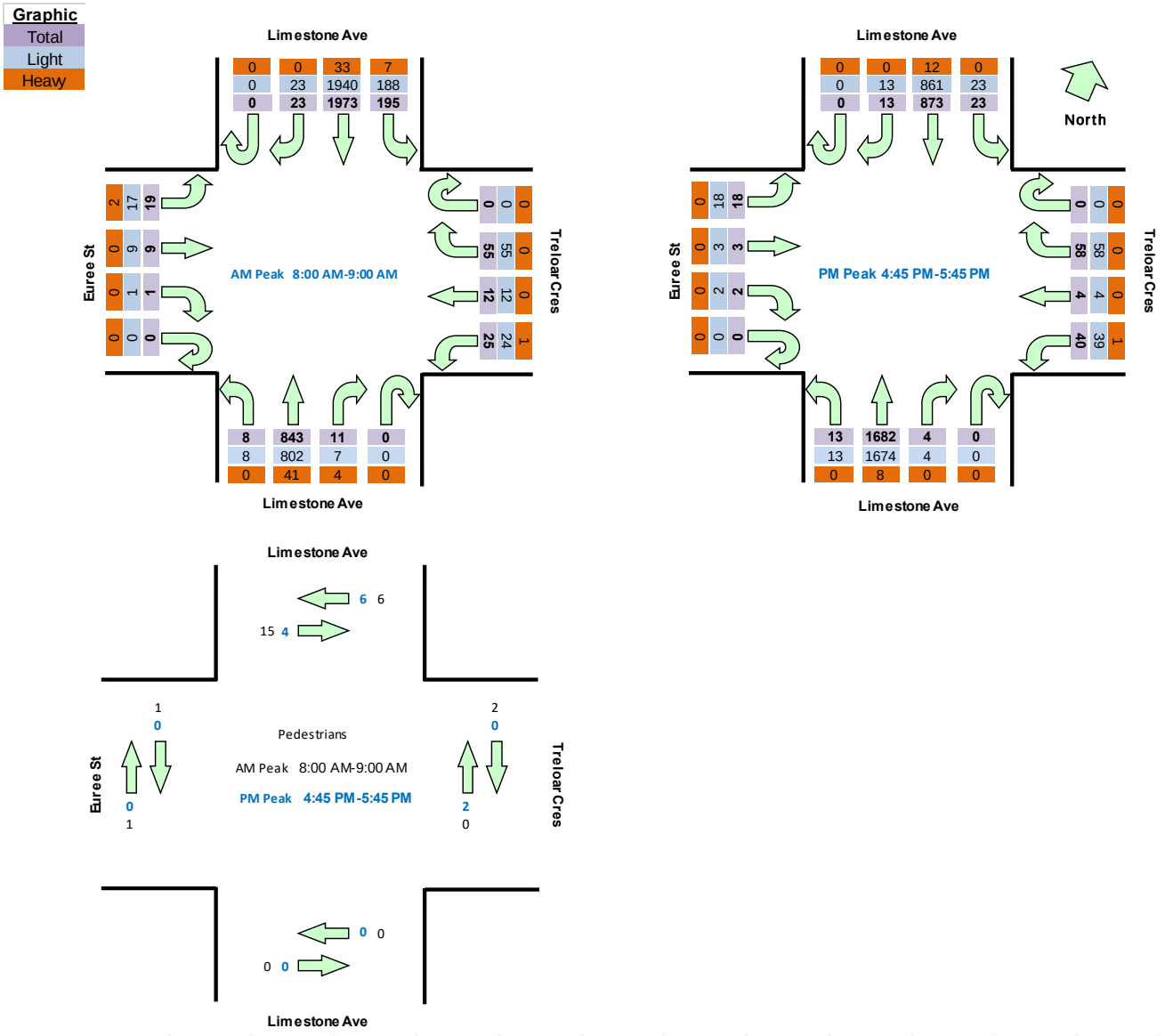


Figure 2-2 Intersection traffic turning volumes

2.4 Collision Statistics

A total of 25 collisions occurred in the five year period from 1 January 2013 to 31 December 2017 inclusive. These included seven injury collisions (two admitted to hospital and five received medical treatment).

A rough guide to the performance of this intersection compared to the average for the ACT in 2016 can be obtained from the following approximate percentages for the ACT as a whole:

- approximately 14.45% of collisions occur in wet weather;
- approximately 23.97% occur in the peak hours, taken as 8.00-9.00 and 17.00-18.00.
- approximately 22.98% occur in the hours of darkness.

The collision history identified that:

- 3 collision (12%) occurred in wet weather, marginally below the average.
- 6 collisions (24%) occurred in the peak periods, circa average.

- 3 collision (12%) occurred in hours of darkness, well below the average.

Observations made during the inspection during peak periods indicate that turning and through movements experienced long delays (delays observed up to 120 seconds).

The highest collision statistic at the intersection over the five year period was 15 cross traffic through collisions at the intersection (RUM Code 101) that included 5 collisions that resulted in injuries. There were an additional 5 collisions involving vehicles turning at the intersection (RUM Code 102, 107 and 202) that included 1 collision that resulted in injuries.

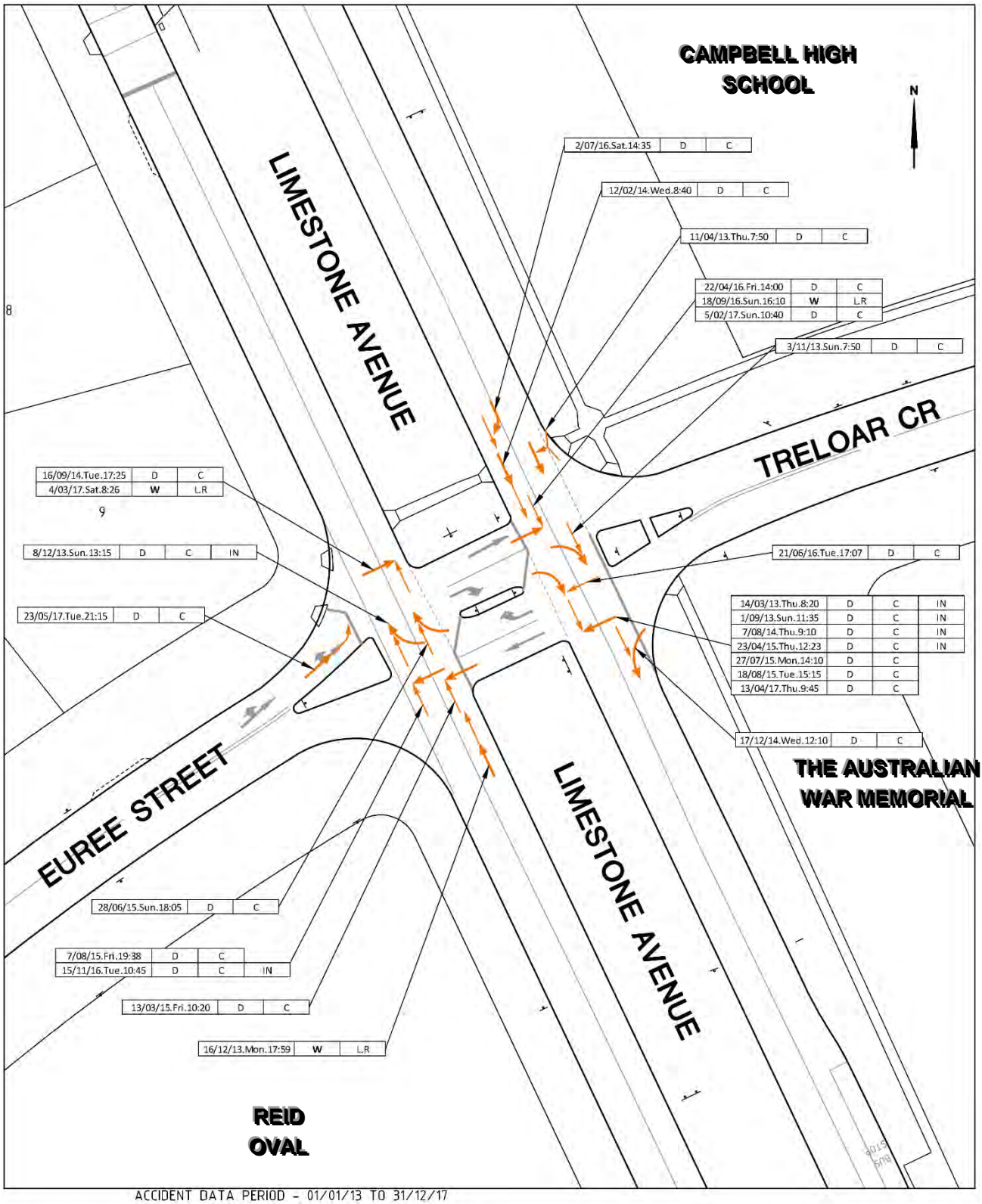
There were no other collision types that resulted in an injury.

There were no collisions involving pedestrians or cyclists.

Table 2-1 provides a collision factor matrix used to highlight particular recurring features of the collision history with a collision diagram provided in Figure 2-3.

Table 2-1 Crash Factor Matrix

DCA CODE Accident-type (Dominant ones first)	KEY DIRECTION (To)	NUMBER OF ACCIDENTS EACH YEAR					TOTAL for this combination of DCA Code & Key Direction	DIRECTION OF OTHER VEHICLE				SURFACE		Day			PERIOD				SEVERITY			
		2013	2014	2015	2016	2017		To North	To East	To South	To West	Dry	Wet	Weekday	Saturday	Sunday	Nigh time	AM Peak	Daytime	PM Peak	Fatality	Major Injury (admitted to hospital)	Minor Injury (received medical treatment)	Property Damage
101	EB		1		2	2	5	2		3		3	2	2	1	2			4	1				5
	WB	2	1	5	1	1	10	3	1	7		10		9		1	1	2	7			3	2	5
102	EB	1					1			1		1				1			1					1
	WB	1		1			2	2				2				2	1		1			1		1
107	WB		1				1			1		1		1					1					1
202	EB				1		1				1	1		1						1				1
301	NB	1					1	1					1	1						1				1
	SB		1				1			1		1		1				1						1
302	EB					1	1		1			1		1			1							1
306	SB				1		1			1		1			1				1					1
408	SB	1					1			1		1		1					1					1
TOTALS		6	4	6	5	4	25	8	2	15	1	22	3	17	2	6	3	3	16	3	0	4	2	19



ACCIDENT DATA PERIOD – 01/01/13 TO 31/12/17

ABBREVIATION AND SYMBOL SCHEDULE

DAY	ROAD SURFACE	WEATHER	SEVERITY
MO : Monday	D : Dry	C : Clear	IN : Injury
TU : Tuesday	W : Wet	O.C : Cloudy or Overcast	F : Fatal
WE : Wednesday	LS : LOOSE	H.R : Heavy Rain	
TH : Thursday		L.R : Light Rain	
FR : Friday		FOG : FOG	
SA : Saturday			
SU : Sunday			

Figure 2-3 Collision diagram

2.5 Pedestrians

Paths are provided on the northern and eastern side of the road at the intersection. There is a path on the western side of the road north of the intersection, however, the formal path is not continued on the southern side of the intersection.

The Australian War Memorial, Campbell High School and Reid Park create pedestrian attractions/ generators, however, limited parking provisions result in minor movements at the intersection. Additionally, there are a signalised pedestrian crossings circa 80 m north and 300 south of the intersection.

There were no collisions involving pedestrians.

2.6 Cyclists

There are no on-road cycle lanes provided at the intersection. The circa 4.3 m wide traffic lanes on Limestone Avenue support shared on road cycling.

There were no collisions involving cyclists.

2.7 Motorcyclists

There were no collisions involving motorcycles at this intersection.

2.8 Public Transport

Transport Canberra has one weekday peak service bus route (Route 54) that travels through the intersection on Limestone Avenue. Bus stops are provided on both sides of the road circa 100 m south of the intersection.

School buses were observed turning right from Limestone Avenue into Treloar Crescent, with one bus stopped in the northbound right lane of Limestone Avenue while a bus was stopped within the median opening.

It was advised by Transport Canberra that no difficulties have been reported using the intersection.

2.9 Lateral Clearance Issues

The clear zone for a 60 km/h speed limit or less with traffic over 6,000 vehicles per day is 5 m for a flat verge and 3.5 m for a flat verge in a 60 km/h (or less) speed zone with 750 to 1,500 vehicle per day.

There are trees, power poles and light columns located within the clear zone.

An onsite assessment of available sight distance (123 m Safe Intersection Sight Distance (SISD) for 60 km/h speed limit on Limestone Avenue) identified that the SISD is achieved in both directions depending on the drivers' position at the intersection. Vegetation in the median and the verge on both sides of the intersection restrict the visibility of drivers on Treloar Crescent and Euree Street.

2.10 Pavement

Generally, the pavement condition through the intersection is of an acceptable standard. Sections of pavement on Limestone Avenue is heavily cracked in both directions. However, this does not impact on the friction for stopping/ slowing vehicles.

Treloar Crescent has been recently resealed.

2.11 Traffic Control Devices

Linemarking appears to be in a reasonable condition. “KEEP LEFT” (R2-3) signs are missing from the Treloar Crescent splitter island and the concrete median. A guide sign for the “City Centre” for vehicles exiting Treloar Crescent has the potential to direct vehicles turning right into the southbound carriage.

2.12 Future Traffic Volumes

It is difficult to predict changes to traffic volumes in Limestone Avenue as it is an arterial road connecting North Canberra and is used as an alternative route to Northbourne Avenue. Some local developments (i.e. Founders Lane on Cooyong Street, development of the CSIRO site adjacent to Campbell High School) are expected to increase traffic volumes in the short term. An increase of peak traffic volume on Limestone Avenue would increase the queue length and delay associated with turning movements at this intersections and possibly lead to future collisions.

The expansion of the Australian War Memorial has the potential to increase traffic movements at the Limestone Avenue/ Treloar Crescent/ Euree Street intersection. This would most likely occur during construction and when large exhibitions are held. Traffic generated due to the expansion would be expected to be minimal during peak periods and have no adverse traffic impacts to the existing operation of the Limestone Avenue/ Treloar Crescent/ Euree Street intersection.

3. DISCUSSION AND POSSIBLE IMPROVEMENTS

3.1 General Overview

The collisions being experienced at this location meet the criteria set by the Commonwealth Department of Infrastructure for consideration within the Black Spot Program of a minimum of three injury collisions within a 5 year period.

The collision frequency at this intersection is around 0.46 Collisions per Million Entering Vehicles (C/MEV). This rate is considered low to medium for a four-way intersection.

3.2 Predominant Conflicts and Collisions

The collision data identifies that the most common class of collision involved vehicles colliding within the intersection (RUM Code ground 10 and 20) at 80% (20 of 25), with 15 through - through collisions (RUM code 101).

There are a number of issues that could have contributed to a number of these cross traffic collisions. These could be as follows;

- Sight distance restrictions due to obstructions within the intersection (i.e. trees) and vehicles stopped in one of the two traffic lanes.
- Delays experienced by road users (including the queuing of vehicles) contributing to some road users accepting insufficient gaps in the traffic.
- The low volume of traffic using the intersection and the likely unexpected movements of vehicles.
- Right turning vehicles are crossing two lanes of unopposed traffic travelling in one direction.
- Road users not stopping in the median when travelling through or turning right at the intersection.
- Vehicles storing in the median protruding into the traffic lane.
- Large number of interstate and international visitors visiting the Australian War Memorial.

It was observed during various site inspections of the intersection that some road users would turn at the intersection without hesitation relating to the traffic approaching the intersection. Some drivers observed during peak periods were also observed taking risks due to delay (whether associated with opposing traffic movements or driver hesitation) and would turn at the intersection when there was insufficient gap in traffic, resulting in the approaching vehicles to slow.

3.3 Opportunities for Reduction of Historical Collisions

The focus of the proposed improvements are aimed at reducing the common collisions that occur at this intersection. The two identified options that would assist in the reduction of these collisions are listed below.

Option 1 – Signalise the intersection. This option would remove the majority of the collisions associated with movements through the intersection.

Signalising this intersection has the potential to increase the number of rear end collisions that occur at the intersection and could also increase the delay to road users outside of peak periods. There is a signalised pedestrian crossing to the north of the intersection that could be removed with pedestrian crossing phases incorporated into the intersection upgrade, however, this would need to be confirmed with Campbell High School. Alternatively, the pedestrian crossings can be synchronised the signalised intersection.

Preliminary SIDRA analysis has been undertaken of this option to determine whether the signal operation would be feasible and whether the turn lanes would be required for the right turn movements. Based on the analysis, storage for right turning vehicles is required. Due to the current volume on Limestone Avenue, the intersection would be at capacity during the AM peak period and near capacity during the PM peak period. however, this is currently experienced.

Option 2 – Convert the intersection to Left-in/ Left out. This option would remove the majority of the collisions at this intersection. However, the closure would result in transferring the traffic to other intersections with the potential to cause additional collisions elsewhere on the road network.

The following are alternative routes for road users turning right at the intersection:

- Right turn from Treloar Crescent into Limestone Avenue – turn left and use the roundabout with Anzac Parade and Fairbairn Avenue to perform a U-turn;
- Right turn from Limestone Avenue into Treloar Crescent – road users would be travelling northbound and would currently be using the roundabout with Anzac Parade and Fairbairn Avenue. Rather than turning onto Limestone Avenue, turn right onto Fairbarin Avenue and use the roundabout at Fairbarin Avenue and Treloar Crescent;
- Right turn from Euree Street into Limestone Avenue – depending on the origin, use Currong Street South to access Anzac Parade or Gooreen Street to access Limestone Avenue via Ainslie Avenue, and
- Right turn from Limestone Avenue into Euree Street – turn right into Ainslie Avenue and then left into Gooreen Street.

The restricted turns will require extensive community and stakeholder consultation due to the vast impact that it would have on residents, events and emergency vehicles. However, due to the low traffic volumes associated with these side streets, in particular the right turn movements, it is anticipated that the impact would be minimal.

Option 3 – Reduce median storage to one lane. This option was not considered viable as large vehicles require the existing full median width to manoeuvre. Additionally, other road users are likely to store side by side even if one lane is provided due to the width required for large vehicles.

4. PROPOSED IMPROVEMENTS

4.1 Option 1 – Signalise the intersection

This option has the potential to reduce the number of collisions from adjacent approaches and opposing turns that are occurring. However, the cost of the option would be significant. Traffic signals can be expected to reduce adjacent approach collisions by 70% and collisions from opposing turns by 45% (based on Austroads Guide to Road Safety Part 8 Treatment of Crash Locations, Appendix F).

A preliminary assessment of the economic worth of installing traffic signals has been undertaken using assumptions detailed in the following section.

A preliminary estimate of the cost of traffic signals (including site works, 20% consultancy fees and 30% contingency) is $1,154,448 excluding GST. This assumes the removal of the existing signalised pedestrians crossing 80 m north of the intersection.

A sketch of the option is provided in Figure 4-1 and the cost estimate is provided in Appendix 1.

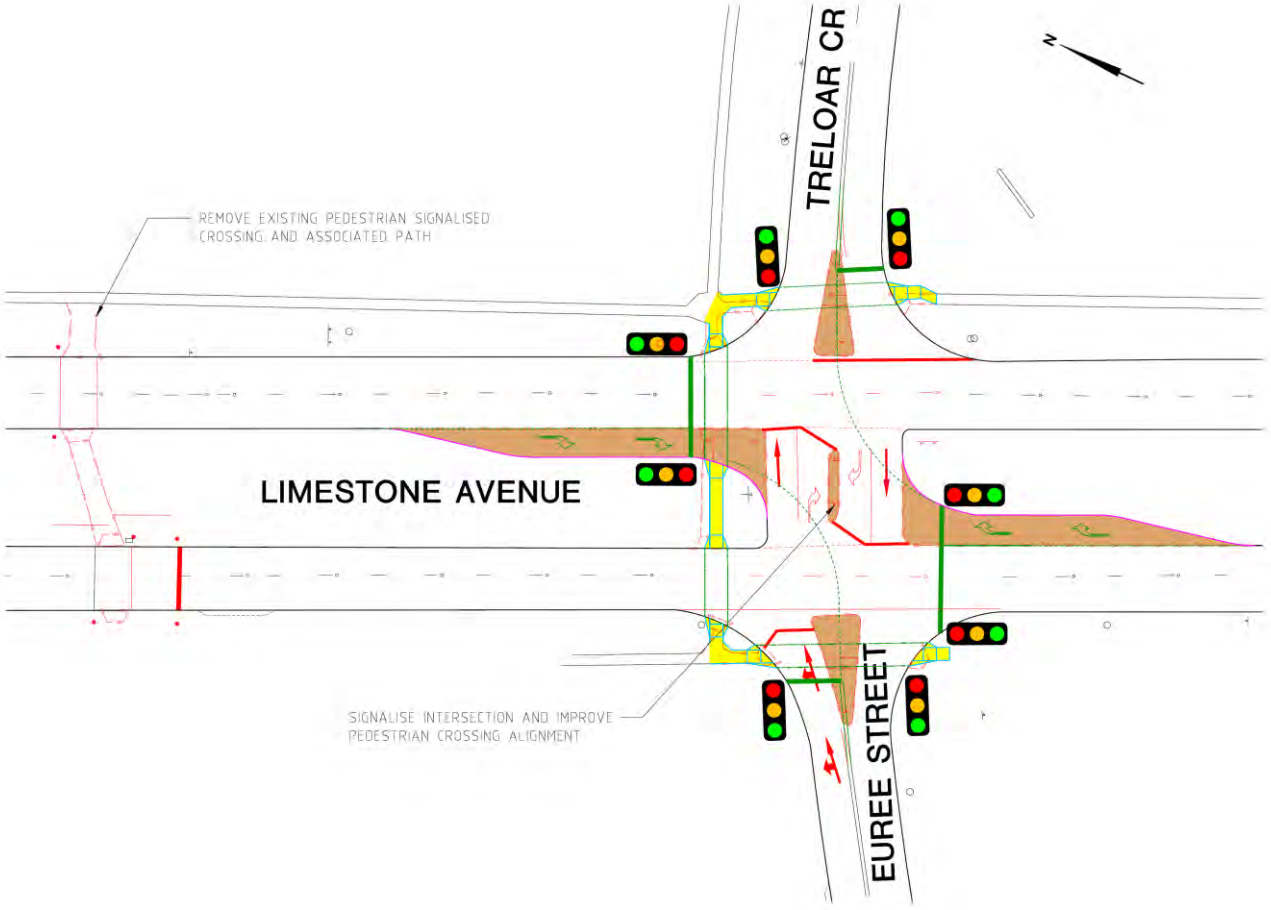


Figure 4-1 Option 1 – Signalise the intersection

4.2 Option 2 – Convert the intersection to Left-in/ Left out

This option would remove the majority of the collisions at this intersection. This option has the potential to remove collisions from adjacent approaches (except the through - left turn collision) and opposing turns (based on Austroads Guide to Road Safety Part 8 Treatment of Crash Locations, Appendix F). However, this option could result in additional collisions elsewhere on the road network in the vicinity of the intersection.

A preliminary assessment of the economic worth of closing the median and converting the intersection to left-in/ left out has been undertaken using assumptions detailed in the following section.

A preliminary estimate of the cost closing the median (including site works, consultancy fees and 30% contingency) is $109,294 excluding GST.

A sketch of the option is provided in Figure 4-2 and the cost estimate is provided in Appendix 1.

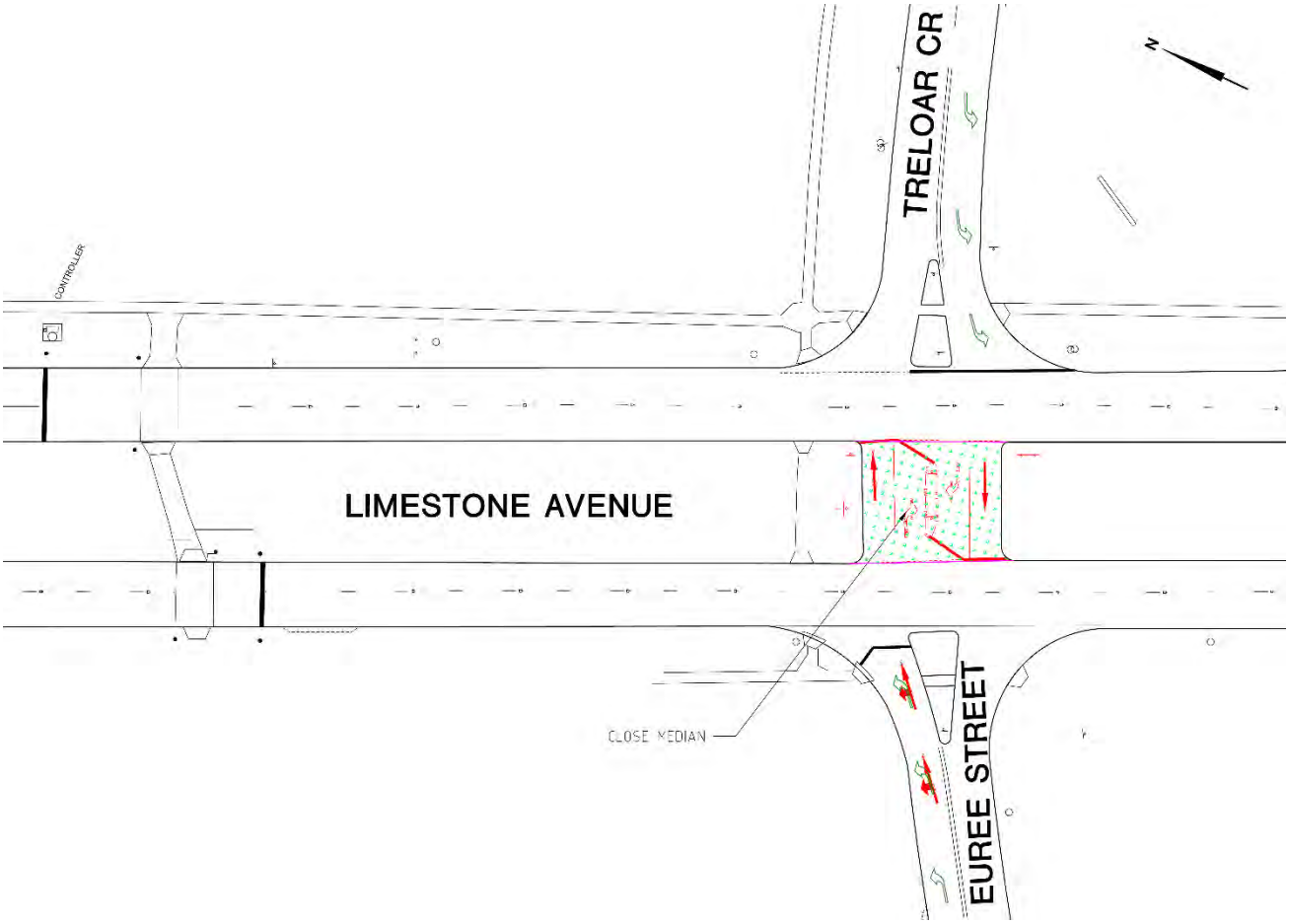


Figure 4-2 Option 2 – Convert the intersection to Left-in/ Left out

4.3 BCR Assessment

The following details the financial assessment of the costs and benefits of undertaking these modifications based on the projected extent of the reduction in accidents due to the modifications. Assumptions used in our assessments and in particular for the potential benefits for the Euree Street/ Limestone Avenue/ Treloar Crescent intersection are detailed below.

Roads ACT has provided the following summary data in relation to the cost of various types of collisions in the ACT.

Table 4-1 2015 Crash Cost Estimates for Different Crash Type Codes

Crash Type Code	ACT Equivalent Crash Types	Description	Costs ($)	
			HC[1]	WTP[2]
001-009	10,16	Vehicle Hits Pedestrian	[redacted]	
101-109	2	Adjacent Approaches		
201	4,5	Head On		
202	1	Opposing Turns		
203-207	9	Hit Parked / Parking Vehicle		
301-304	6	Rear End		
305-309	3,9	Lane Change		
401-403	9	Hit Parked / Parking Vehicle		
404	8,9,17	Loss of Control - L or R turns		
405	9,19	Loss of Control - L or R turns		
406-408	9,12,13,19	Hit Parked / Parking Vehicle		
501-506	9,13,15,17,19,20,21	Overtaking		
601,602,604	7	Hit Parked / Parking Vehicle		
603	9	Hit Parked / Parking Vehicle		
605-607	12,15	On path, hit object		
609	11	Struck Animal		
610	9,15	Loss of Control - L or R turns		
701-708	9,13,14,15,16,17,19,20,21	Loss of Control - L or R turns		
801-805,808	9,13,14,15,17,19,20,21	Loss of Control - L or R turns		
901	14,15	Fell from moving vehicle		
902-907	7,9,10,16,17,19	Loss of Control - L or R turns		
Misc	4,5,8,19	Miscellaneous		

Table 4-2 2015 Average crash costs by crash severity

Costs by crash type	Costs ($)	
	HC[1]	WTP[2]
Fatal crashes	[redacted]	
Serious injury crashes		
Minor injury crashes		

Costs by crash type	Costs ($)	
	HC[1]	WTP[2]
Property Damage Only crashes	[redacted]	

Note: 1 – Human Capital (HC), 2 – Willingness-to-pay (WTP)

The above costs are calculated using accident records for the Period of 2011-2015. In the calculation of BCR the Willingness-to-pay costs are used, with the Human Capital cost provided for comparison.

Assumptions of the effectiveness of countermeasures in reducing recorded accidents were taken from the Austroads publication Guide to Road Safety Part 8 Treatment of Crash Locations, Appendix F. In situations where particular circumstances are not detailed in the Austroads Guidelines, engineering judgement has been applied.

The assessment of the value of collision reductions due to improvement treatments at the intersection is summarised in the table below:

Accident Type	Number Recorded in 5 years	Annual Accident Cost		Proportion Reduction	Annual Benefit	
		HC	WTP		HC	WTP
Option 1 – Signalise the intersection						
101 Adjacent approaches	12	[redacted]		0.7	[redacted]	
102 Adjacent approaches	2			0.7		
107 Adjacent approaches	1			0.7		
202 Opposing turns	1			0.45		
Injury Crashes						
101 Adjacent approaches	3			0.7		
102 Adjacent approaches	1			0.7		
				TOTAL		
Option 2 – Convert the intersection to Left-in/ Left out						
101 Adjacent approaches	12	[redacted]		1	[redacted]	
102 Adjacent approaches	2			1		
202 Opposing turns	1			1		
Injury Crashes						
101 Adjacent approaches	3	[redacted]		1	[redacted]	
102 Adjacent approaches	1			1		
				TOTAL		

The analysis indicated the following BCR and net present value (at 7% over 10 years) for the treatments with both Human Capital costs and Willingness-to-Pay.

Treatment	Approach	Estimated Costs	NPV	NPV/Capital Cost	BCR
Option 1 – Signalise the intersection	HC	[redacted]			
	WTP				
Option 2 – Convert the intersection to Left-in/ Left out	HC				
	WTP				

The analysis indicates that there would be benefit gained from each of the proposed options. Note that BCR values have been provided for both HC and WTP approaches for comparison. However, as the WTP approach is adopted for the Black Spot Program these values are further commented on below.

The BCR calculations are provided in Appendix 2.

4.4 Audit related modifications

A guide sign for the “City Centre” for vehicles exiting Treloar Crescent has the potential to direct vehicles to turn right into the southbound carriage. Should the intersection remain open this sign should be relocated to the opposite side of the intersection.

5. RECOMMENDATIONS

5.1 Modifications Addressing Historical collisions.

The analysis indicates that both Option 1 and Option 2 would result in adequate benefit gained, with the closure of the intersection (Option 2) obtaining the highest BCR.

It is recommended that the community and stakeholder consultation is undertaken to determine the social impact of removing the right turns at the intersection by closing the median. However, due to the low traffic volumes associated with these side streets, in particular the right turn movements, it is anticipated that the impact would be minimal.

Based on the price difference and the benefit gained from Option 2, the closure of the median and converting the intersection to left in/ left out is the preferred option.

5.2 Modifications Addressing Potential Collisions

The options provided in this feasibility study has addressed the identified audit finding at the intersection.

APPENDIX 1 ESTIMATED COSTS

Option 1 – Signalise the intersection

		Excl. GST
0	General	$65,600
1	Provision for Traffic	$45,000
2	Earthworks	$77,796
3	Underground Services	$27,900
4	Flexible Pavement Construction	$188,220
6	Concrete Kerbs, Footpaths and Minor Works	$52,360
8	Incidental Works	$3,650
9	Landscape	$9,320
10	Road Signs	$1,710
11	Pavement Marking	$17,175
13	Traffic Signals	$241,800
14	Street Lighting	$9,500
	Total (Excluding GST)	$740,031
	Add Design & Superintendence Fees (+20%)	$148,006
	Add Contingency (+30%)	$222,009
	TOTAL (Excluding GST)	**$1,154,448**

Option 2 – Convert the intersection to Left-in/ Left out

		Excl. GST
0	General	$29,600
1	Provision for Traffic	$10,000
2	Earthworks	$2,100
3	Underground Services	$2,500
4	Flexible Pavement Construction	$0
6	Concrete Kerbs, Footpaths and Minor Works	$9,080
8	Incidental Works	$3,000
9	Landscape	$7,200
10	Road Signs	$3,000
11	Pavement Marking	$3,580
13	Traffic Signals	$0
14	Street Lighting	$0
	Total (Excluding GST)	$70,060
	Add Design & Superintendence Fees (+20%)	$14,012
	Add Contingency (+30%)	$25,222
	TOTAL (Excluding GST)	**$109,294**

Note: Costings are based on the sketch design. Service providers have not been contacted in relation to the type and location of services in the area. Potholing has not been undertaken to identify specific location and depth of services. Design and construction costs may vary depending on the Service provider requirements to relocate or protect the service where required.

APPENDIX 2 FINANCIAL ANALYSES

Note: Benefit Cost Analysis has only been provided for the WTP approach.

BENEFIT COST ANALYSIS USING DISCOUNTED CASH FLOWS

LOCATION Option 1 – Signalise the intersection

BENEFIT COST ANALYSIS USING DISCOUNTED CASH FLOWS