



MINISTERIAL BRIEF

Transport Canberra and City Services

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To: Minister for Roads and Active Travel

2019/3095

Date: 19/12/2019

From: Executive Group Manager, City Operations

Through Deputy Director-General, City Services

Subject: Adelaide Avenue / Cotter Road On-Ramp Options

Critical Date: 20/12/2019

Critical Reason: As agreed at the briefing held between TCCS and your office on 18 December 2019

Recommendations

That you:

1. That you consider the options for reducing congestion at the Adelaide Avenue and Cotter Road interchange by changing the lane configurations; and

Agreed / Not Agreed / Please Discuss

2. That you nominate ^{THE} your preferred option and delivery timeframes for the proposed changes to be implemented.

Signed / Not Signed / Please Discuss

Chris Steel MLA

20/12/19

Minister's Office Feedback

PLEASE PROVIDE TRAFFIC DATA ON COTTER ROAD TRAFFIC AND ADELAIDE AVENUE TRAFFIC AND ANY PROJECTIONS TO

ASSIST IN COMMUNICATIONS

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PLEASE ENSURE VIDEO WITH MODELS OF 2D IS READY FOR LAUNCH EXAMINE CHANGE.

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Background

1. Transport Canberra and City Services have been monitoring the Adelaide Avenue and Cotter Road intersection in an effort to relieve congestion.

Design Options Considered

2. When considering how to address the increasing congestion being experienced at the Adelaide Avenue and Cotter Road interchange in the AM peak period, the pinch point was identified as being the on-ramp merge at Adelaide Avenue. To address this, the following design options have been considered;
 - a) Widening of Adelaide Avenue to allow for the Cotter Road on-ramp as an added lane to replace the existing merge treatment. This option would retain northbound lanes on Adelaide Avenue (T2/Bus Lane + 2 General traffic lanes) then add a fourth lane from Cotter Road. – *Non-Preferred*.
 - b) Reallocation of the lanes on Adelaide Avenue to allow for Cotter Road as an added lane, thus removing the merge treatment by;
 - I. Relocation of the T2/Bus Lane to the left-hand side (Verge Side) of Adelaide Avenue, to allow the through lanes to continue. – *Non-Preferred*.
 - II. Introduce a Form One Lane treatment, by ending the T2/Bus Lane and Forming two lanes northbound lanes on Adelaide Avenue – **PREFERRED OPTION.**
 - III. Introduce a Form One Lane treatment for two northbound through lanes on Adelaide Avenue, continuing with the T2/Bus Lane – *Non-Preferred*.

Options Analysis

3. **Option 1** - Initial spatial assessment confirmed that Option 1, adding an additional lane northbound on Adelaide Avenue to accommodate the Cotter Road on ramp was not possible without impacting on the future light rail corridor. This option was not progressed to detailed traffic assessment. Even without the consideration of light rail, this option would be relatively expensive when compared with the other options that have been analysed. This option was not progressed to the detailed traffic assessment stage.
4. **Option 2a** – Relocating the existing T2/Bus Lane to the left-hand side (Verge Side) would best begin at the start of the facility just south of the Carruthers Street on ramp. The T2/Bus Lane would then need to end before the Cotter Road on ramp or make allowance for vehicles to cross the bus lane to access the exit and entry ramps at Hopetoun, Empire and State Circuits. This interface with multiple interchanges is not desirable from a road safety perspective as it would require large volumes of traffic crossing a dedicated T2/Bus Lane to access the general traffic lanes. This option was not progressed to detail traffic assessment stage.
5. **Option 2b** – Providing the added lane at Cotter Road by introducing a Form One Lane between the T2/Bus Lane and the middle through lane provides ample opportunity for the merging of traffic on Adelaide Avenue, with limited increased travel time

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impacts on buses of 3-5 seconds. This option reduces congestion on Cotter Road, with queuing only occurring at the Dudley Street traffic signals on a red light to allow vehicles to exit Dudley Street onto Cotter Road westbound. This option does increase congestion on Dudley Street as it is allowing more traffic to enter Dudley Street quicker than during the base case as a result of congestion on Cotter Road being removed. This impact on Dudley Street is temporary, as the introduction of traffic signals at the Kent/Novar Street interchange will reduce congestion with planned completion in 2021.

6. **Option 2c** – During consultation on these proposed changes in Option 2b, representatives from the TWU identified a risk to buses having to Form One Lane with the northbound centre lane on Adelaide Avenue, and the potential for cars to cut buses off. An option was tested to introduce the Form One Lane between the two through general traffic lanes on Adelaide Avenue, retaining the T2/Bus Lane northbound passed the Cotter Road on ramp. The modelling outputs of this scenario indicted increased and significant queuing and travel time impacts on general traffic on Adelaide Avenue, with queues reaching back to the Carruthers Street interchange.

Traffic Modelling

7. Detailed traffic assessments can be seen in the links to the videos below:

Model (morning peak)	Link
Existing - Base Case	https://www.useloom.com/share/2aa7acffa55547188c311a655750a2ac
Option 2b – Cotter Road on-ramp as an added continuous lane – T2/Bus Lane removed	https://www.useloom.com/share/8ef7369499524bc4b7b16462f3be1511
Option 2c – Cotter Road as an added continuous Lane – T2/Bus Lane retained	https://drive.google.com/file/d/1jdd-M8WCTrT00j4uIlZBo8-XOTNeUUZO/view

8. Base Case
 - The base case video is a validation of existing conditions using current traffic volumes and onsite inspections to confirm que lengths etc. The base case is used as the ‘do nothing’ reference for changes in performance of the network compared with the scenarios being tested.
 - Base case at 7:00 minutes into the video (represents 8:45am in the peak) shows the congestion on both Cotter Road and Adelaide Avenue due to the existing merge treatment.

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- Base Case at 8:00 minutes into the video shows the impacts on Cotter Road with queuing extending back to Lady Denman Drive at various times.

9. Option 2b

- This video reflects Option 2b with the centre lane of traffic merging with the T2/Bus Lane, with the verge side (slow lane) continuing through.
- At 30 seconds into the video you will notice vehicles merging with northbound buses as the T2 lane ends.
- At 3:30 minutes into the video you will notice no queuing on Cotter Road, No queuing on Adelaide Avenue (in the distance) and increased queuing on Dudley Street.
- At 6:00 minute into the video (8:45am peak) you will notice free flowing Cotter Road and Adelaide Avenue, with long queues on Dudley Street.
- At 9:00 minute into the video (9:00am in the peak) queuing on Dudley Street has reduced to normal conditions.

10. Option 2c

- This video reflects the Form One Lane between the two northbound general traffic lanes on Adelaide Avenue
- At 30 seconds into the video (8:20am peak) you will notice excessive congestion on Adelaide Avenue stretching back to Caruthers Street and impacting on the on-ramp traffic. Dudley Street is also heavily congested for similar reasons as Option 2b.
- At 2:30 minutes the video shows congestion at Caruthers Street and Yarra Glen and queuing backed up into Curtin.
- At 4:30 minutes the video indicates the queuing on Dudley Street extending back onto Cotter Road . This will be addressed with the traffic signal installation at Dudley Street and Novar Street.

Issues

Delivery Timeframes (Options)

11. The proposed changes to the lane arrangements on Adelaide Avenue will require the resurfacing of the northbound carriageway, to allow for new line marking and signage to be installed. The resurfacing is completed in two stages, with a bitumen seal (chip seal) being applied, followed by a smooth final asphalt surface approximately one month later. Line marking is installed following both stages to ensure safety and clarity of the arrangements.
12. Two recommended delivery timeframes are nominated below to minimise the impacts of these works and allow the initial stage to be delivered during the school holiday period.
 - a) Start the works in mid-late January with them being completed prior to the Monday 3 February when the 2020 school year begins. The second phase of

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resurfacing would then be completed in late February/Early March. – **PREFERRED TIMEFRAME**

b) Start the works after the 9 April (end of Term 1) with the second resurfacing stage being completed in early May.

Long Term Outcomes

13. Currently the Light Rail Stage 2 project assessment retains the T2/Bus Lane on Adelaide Avenue for all future scenarios it is testing. To encourage more sustainable transport options, TCCS would support the T2/Bus Lane being prioritised to encourage a mode shift aligned with the transport strategy.
14. An alternative view could be that once Light Rail is operating, the existing dedicated public transport lane could revert and become accessible to other vehicles, freeing up significant capacity along the corridor to allow for growth in the network. The section of Adelaide Avenue north of Cotter Road could be seen as the initial opportunity to offset network demand on the Tuggeranong Parkway and Parkes Way from increased populations in Molonglo and could be seen as deferring investment in these locations.

Financial Implications

15. Any changes will be accommodated within TCCS recurrent budget.

Consultation

Internal

16. To occur once option confirmed.

Cross Directorate

17. To occur once option confirmed.

External

18. See Communications section below.

Work Health and Safety

19. Not Applicable.

Communications, media and engagement implications

Suggested Key messages

20. Transport Canberra and City Services (TCCS) are making changes to the lane arrangements on Adelaide Avenue at the Cotter Road interchange to reduce congestion and travel times for all road users. (refer to Plan attached)
21. The changes will involve merging the centre lane of traffic with the T2/Bus Lane for a short distance (approximately 1km of the total 4.5km long T2/Bus Lane) to allow for the Cotter Road on ramp to be an added lane.

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22. The improvements will significantly reduce travel times and increased average vehicle speeds in this part of the road network as a result, significantly shortening bus journeys from Weston Creek and Molonglo to the city.
23. The changes will be monitored closely by TCCS to ensure the benefits to all users are achieved and congestion at this interchange is reduced.
24. Media and messaging for the proposed changed lane arrangements would begin two weeks prior to works beginning, (Monday 6 January 2020 for delivery option 1 below) and would include;
 - a) The use of VMS signs on the road network warning motorists of the works and subsequent lane changes.
 - b) The use of social media targeting road users from central and south Canberra.
 - c) Radio spots where a TCCS representative would be available for interviews regarding the changes.
 - d) Targeted consultation with key transport stakeholders explaining in detail the key benefits to all road users.
 - e) On board messaging on buses.

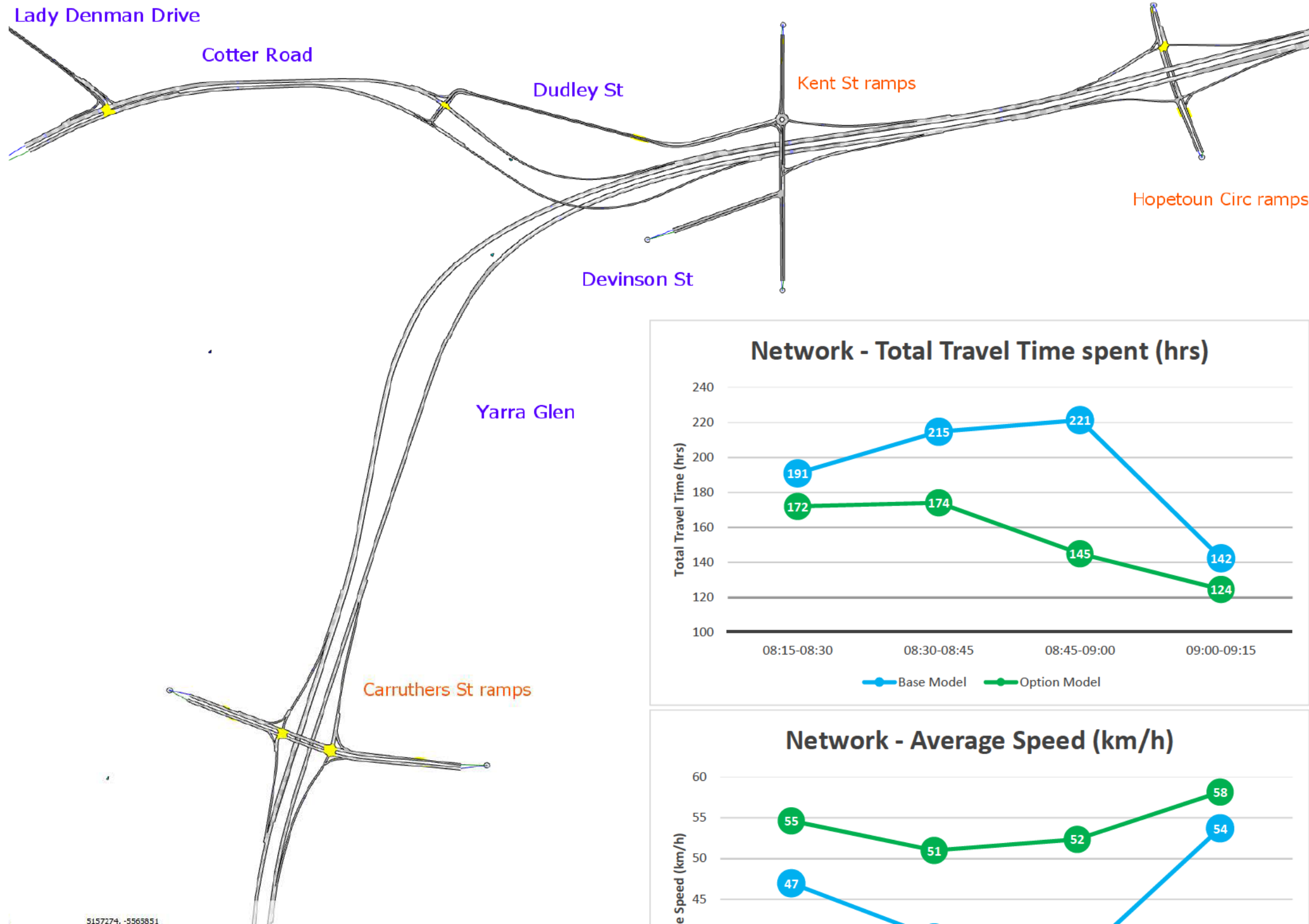
Signatory Name: Jim Corrigan, Deputy Director-
General Phone: X76233

Action Officer: Ben McHugh, Executive Group
Manager Phone: X76233

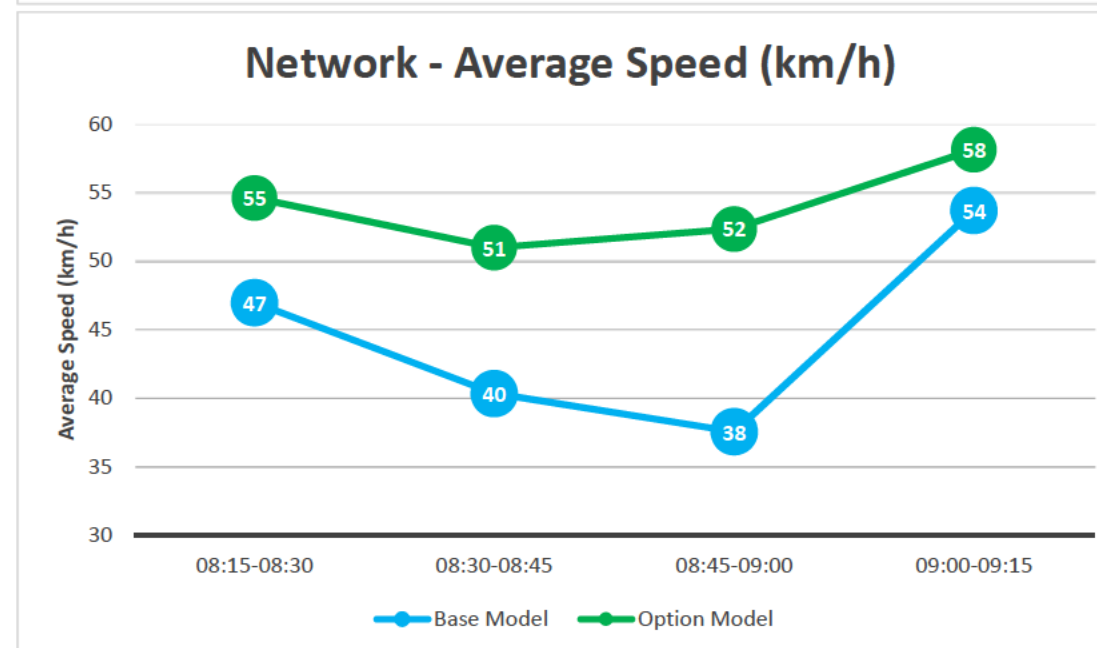
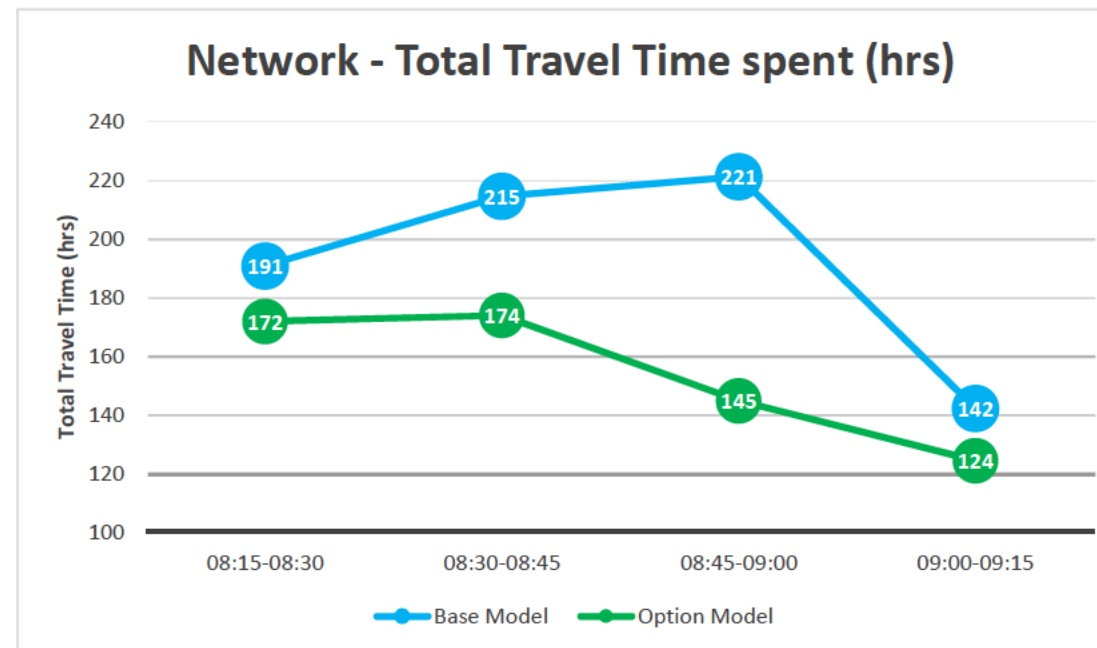
Attachments

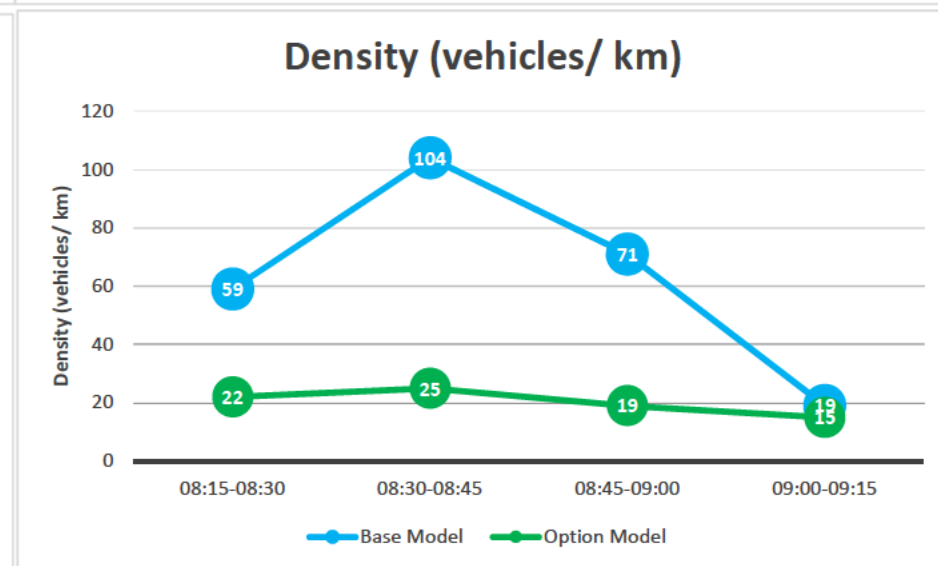
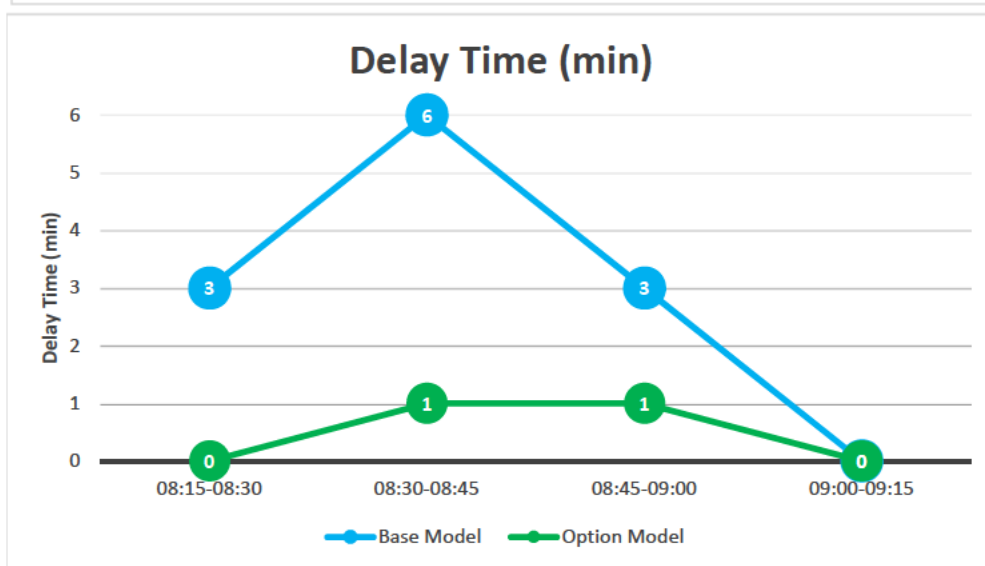
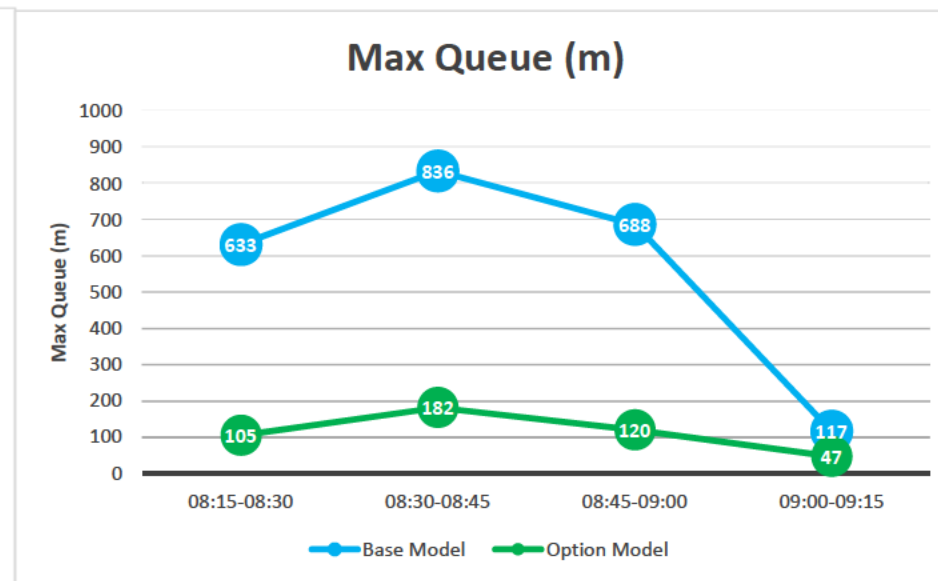
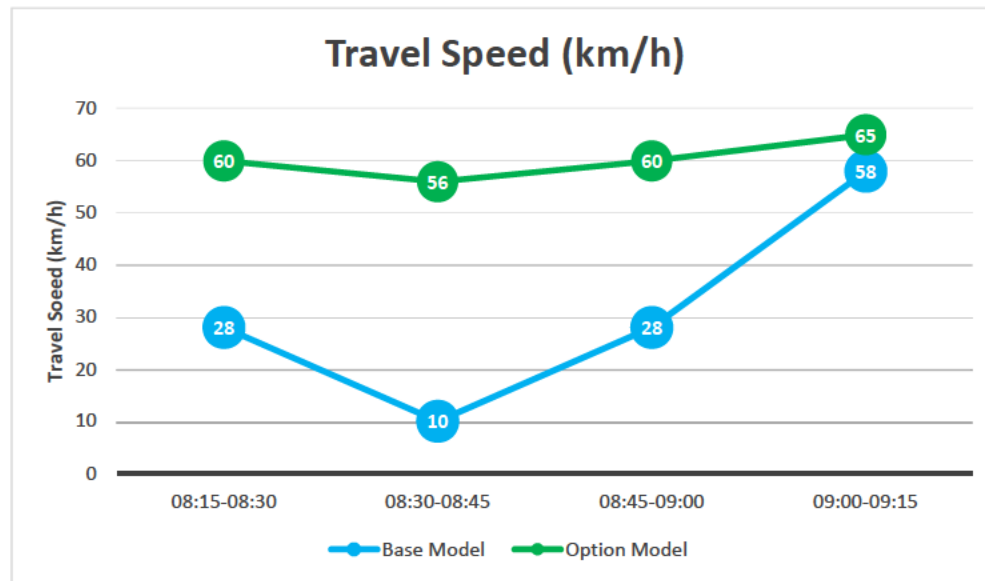
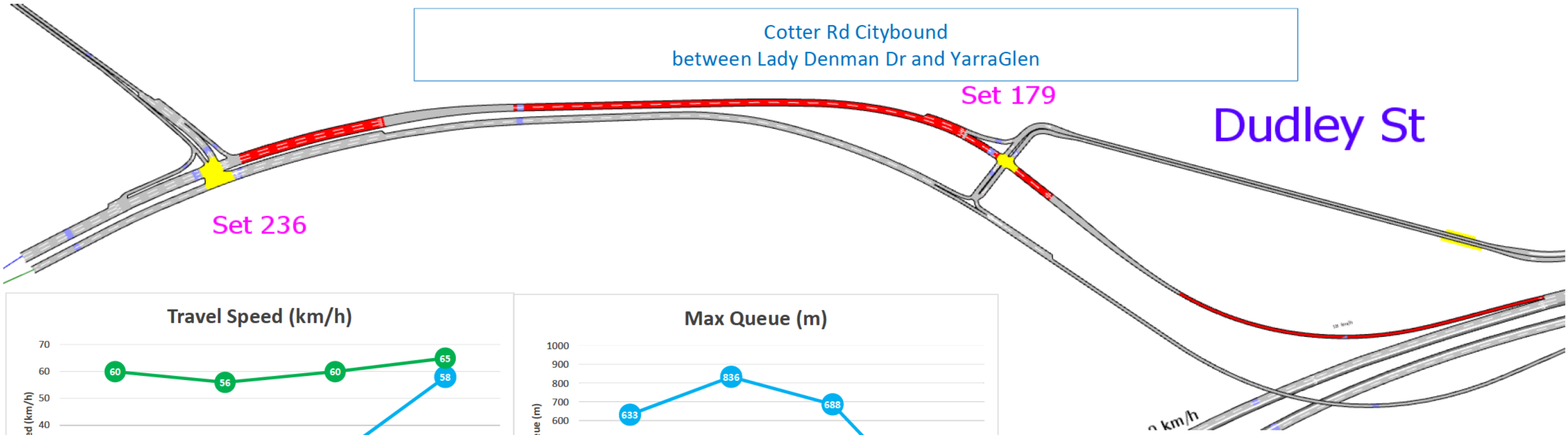
Attachment	Title
Attachment A	Cotter Road On-Ramp Option 2b (Traffic Operation Statistics)
Attachment B	Option 2b (Plan 1)
Attachment C	Option 2b (Plan 2)

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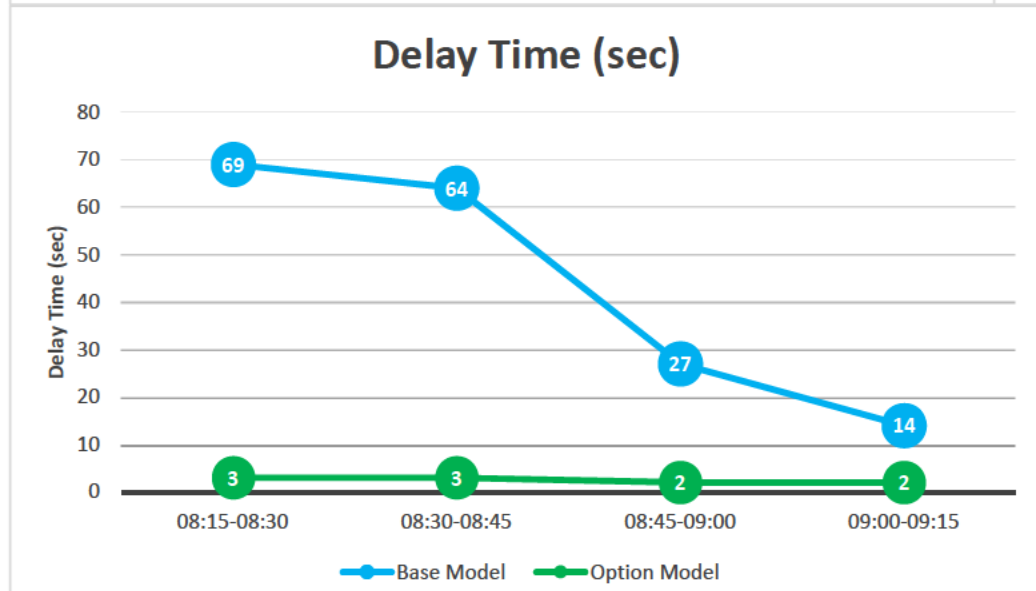
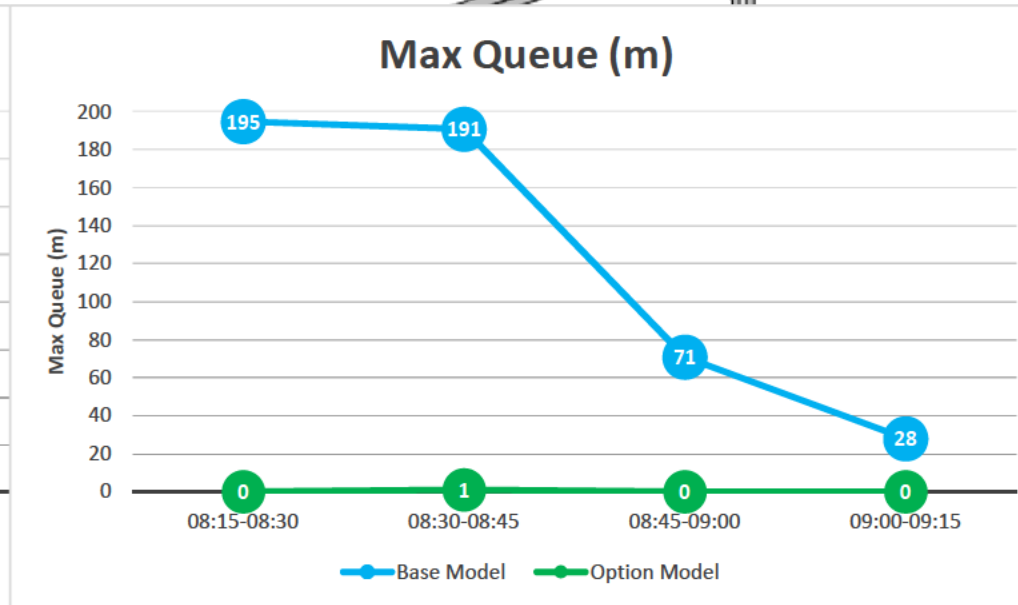
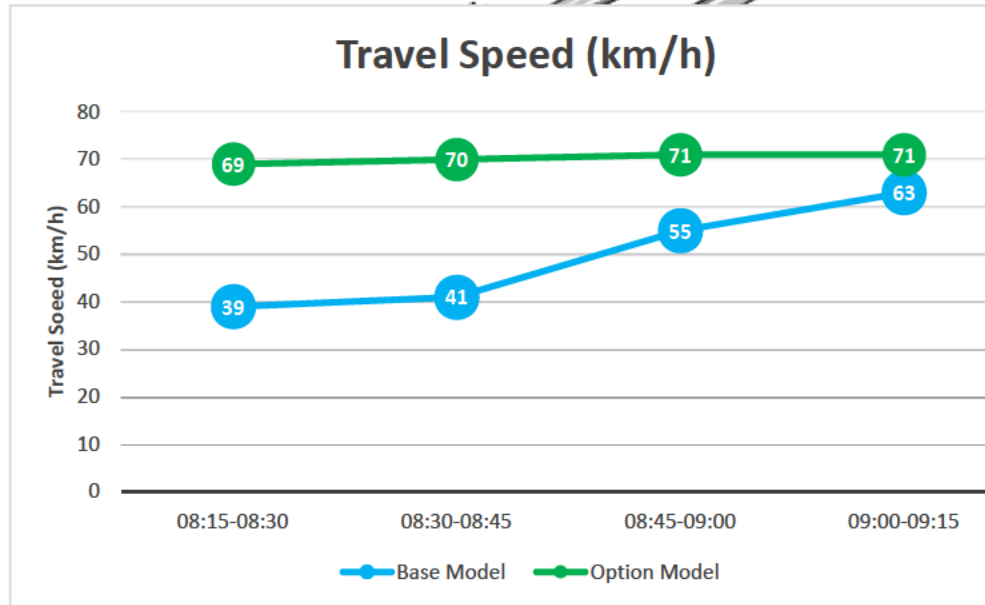
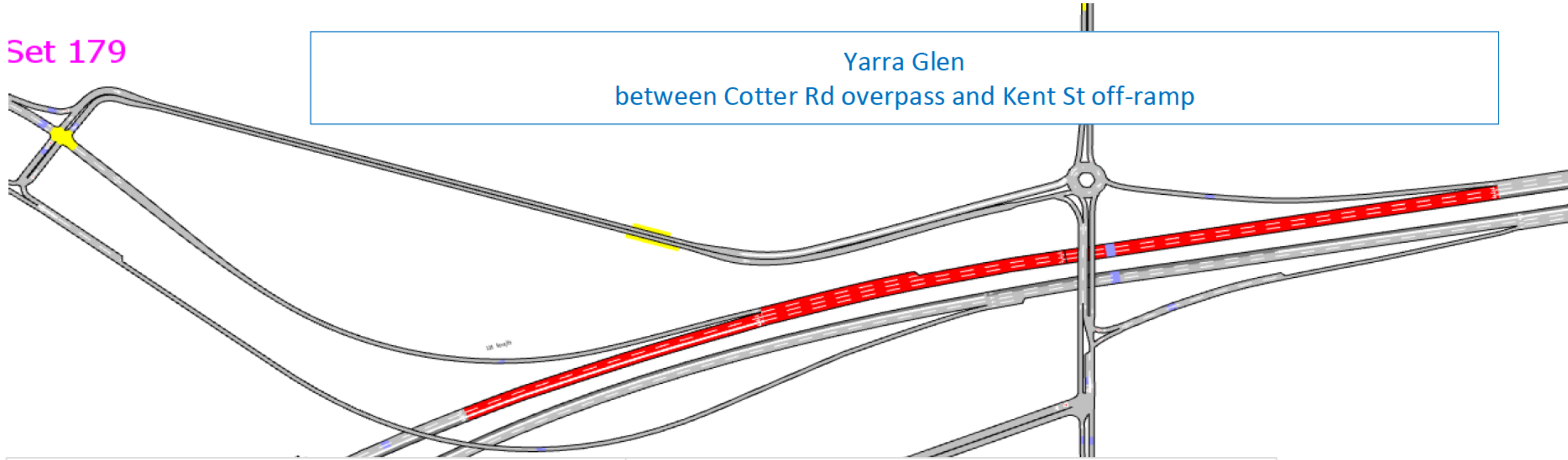
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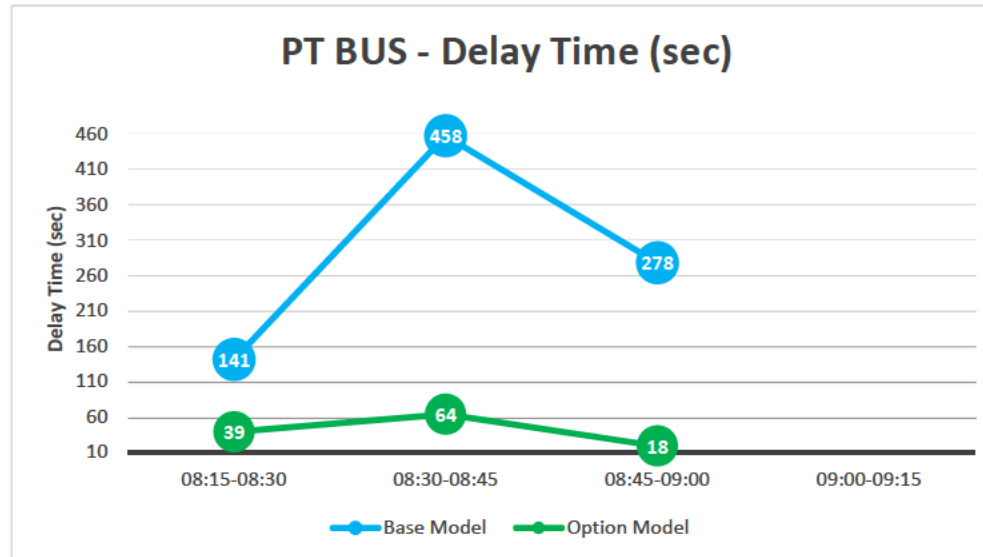
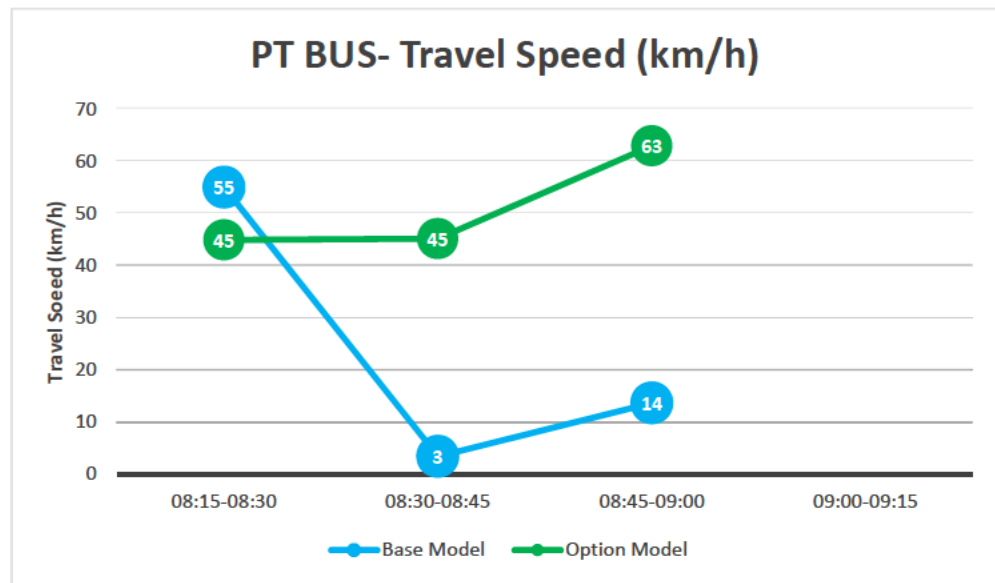
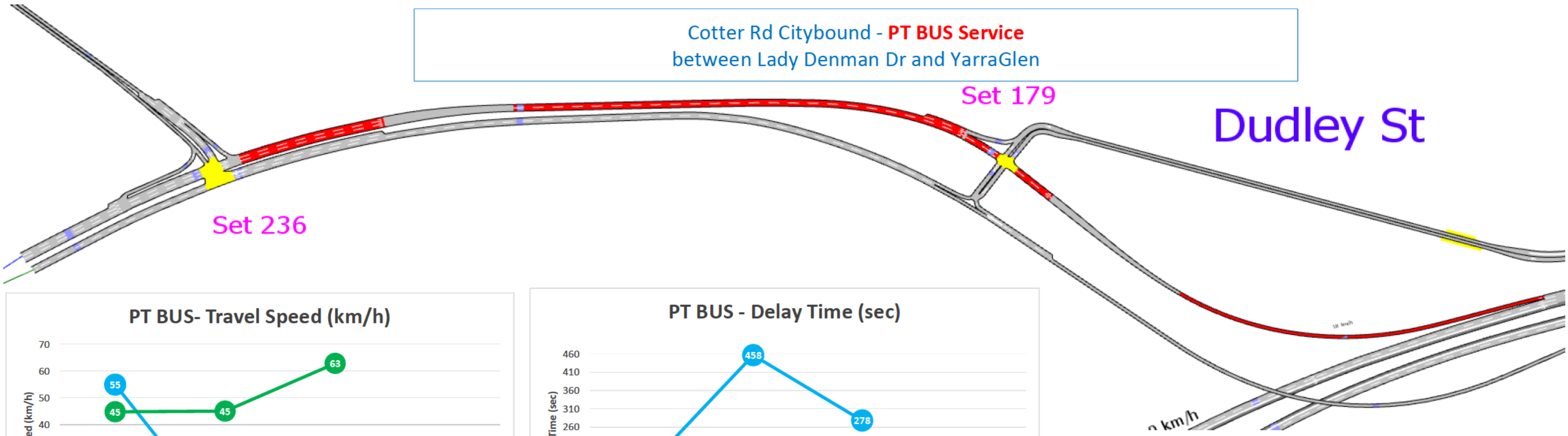


Set 179

Yarra Glen
 between Cotter Rd overpass and Kent St off-ramp

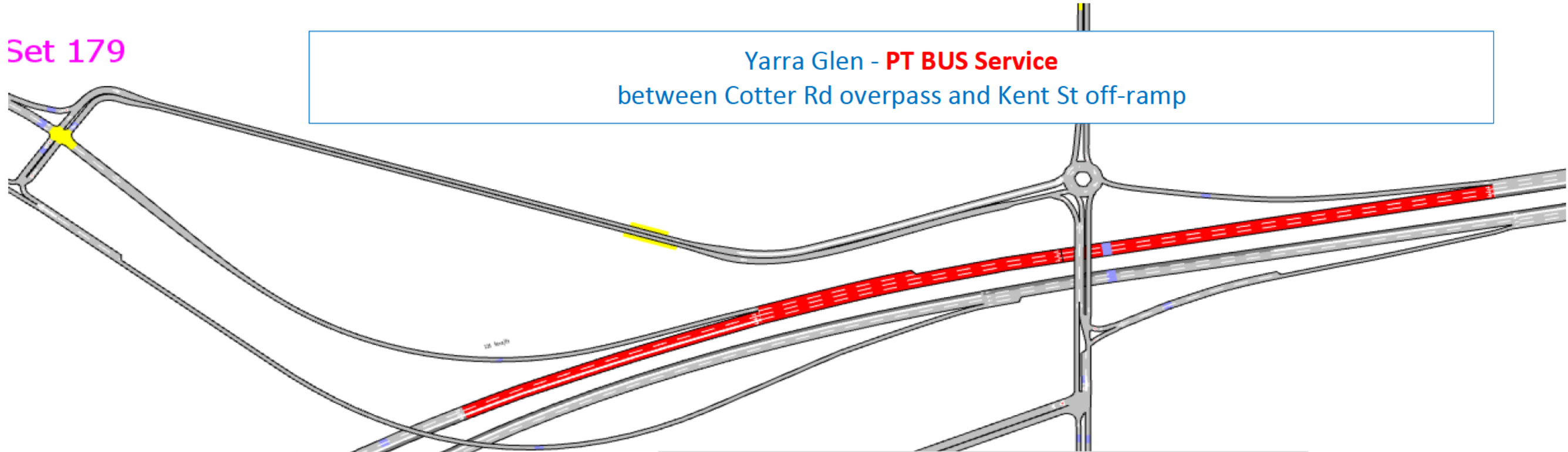


Cotter Rd Citybound - **PT BUS Service**
 between Lady Denman Dr and YarraGlen

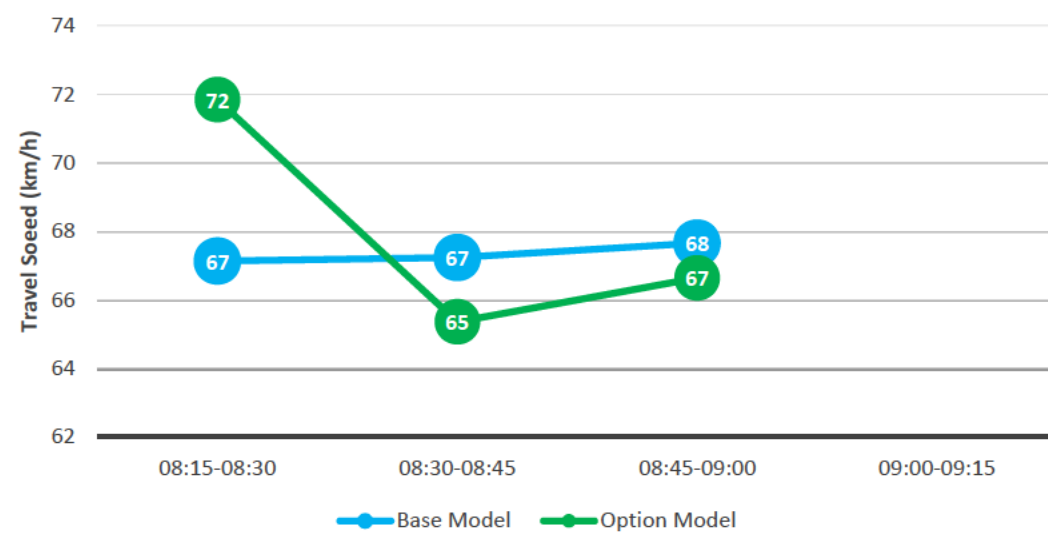


Set 179

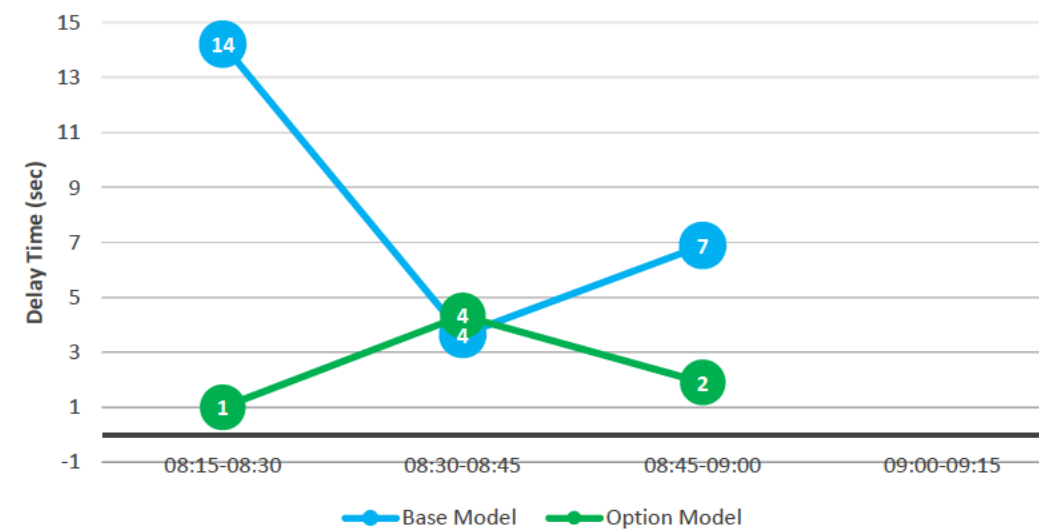
Yarra Glen - **PT BUS Service**
 between Cotter Rd overpass and Kent St off-ramp



PT BUS - Travel Speed (km/h)



PT BUS - Delay Time (sec)



From: [Mehta, Jayesh](#)
To: [Hubbard, Benjamin](#); [Ortiz, Gilbert](#)
Cc: [McHugh, Ben](#); [Day, Michael](#)
Subject: RE: Added Lane - Cotter Road to Adelaide AVenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]
Date: Monday, 9 July 2018 4:45:00 PM
Attachments: [Draft Sketch for Cotter Rd Adelaide Av Deakin.pdf](#)

Hi Ben,

Thanks for your email and sorry for my late respond.

As per our discussion and proposal I am going to prepare draft concept plan for this job as per attached pdf copy of sketch.

When drafting work will be completed for this job I will send you for your comments.

Once again thanks all for your help.

Kind Regards,
Jayesh Mehta

-----Original Message-----

From: Hubbard, Benjamin
Sent: Monday, 2 July 2018 8:54 AM
To: Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>; Mehta, Jayesh <Jayesh.Mehta@act.gov.au>
Cc: McHugh, Ben <Ben.McHugh@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>
Subject: FW: Added Lane - Cotter Road to Adelaide AVenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Gilbert, Jayesh

Can you arrange as a priority

Speak to Mike Day about how this might affect the operation of the traffic signals.

-----Original Message-----

From: McHugh, Ben
Sent: Monday, 2 July 2018 7:48 AM
To: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>
Cc: Day, Michael <Michael.Day@act.gov.au>
Subject: Added Lane - Cotter Road to Adelaide AVenue

Hi Ben,

Are you able to arrange for one of your drafters to sketch up a TCD that severs the Bus Lane northbound on Adelaide Avenue and provides the cotter road on ramp as an added lane.

Let me know if this is feasible and what the implications (apart from the obvious disadvantage for buses) might be.

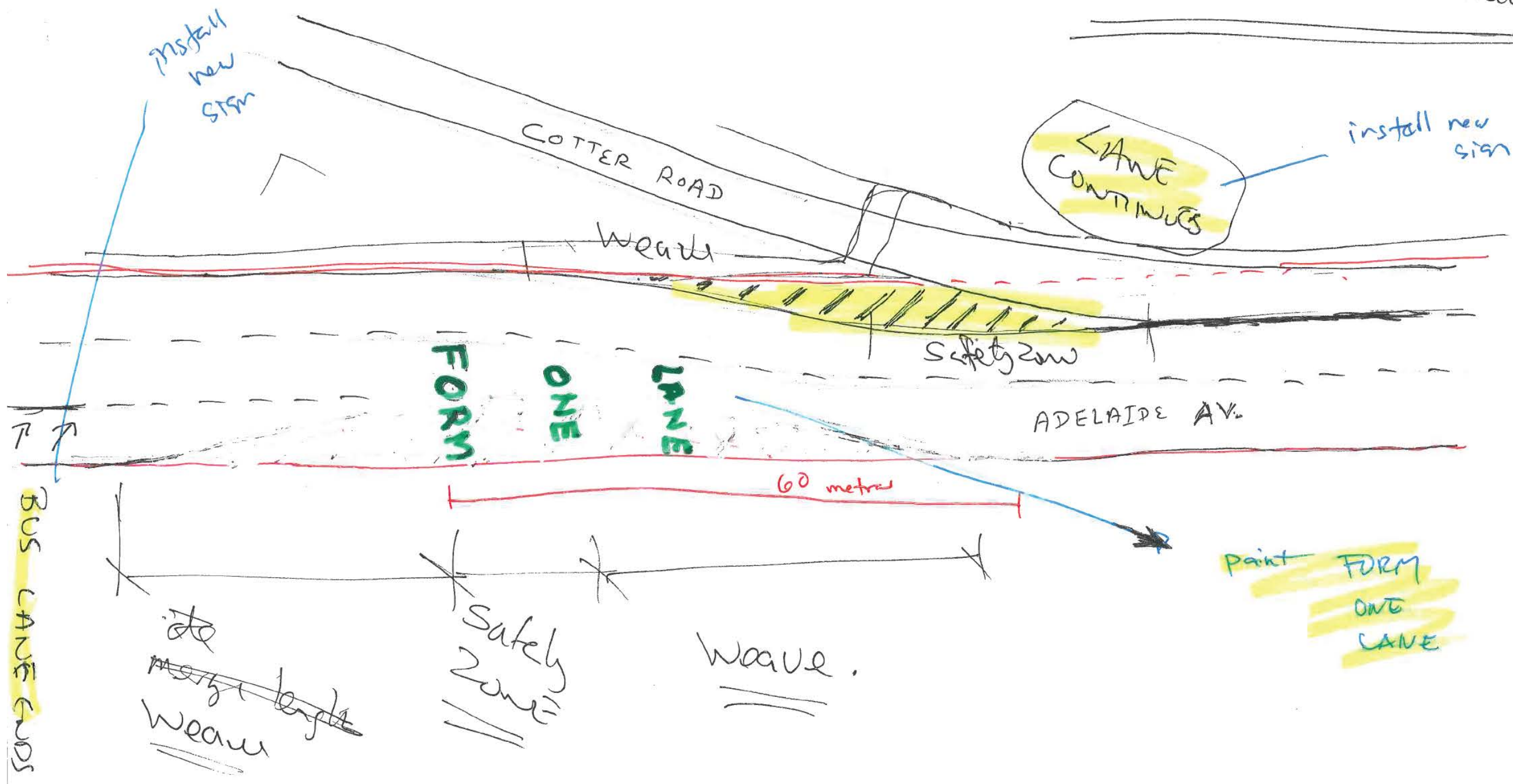
Thanks

Ben

Sent from my iPhone

MNW 1057555

Conceptually this is what
you need to do.
look up details in
AustRoads / RTA Guide to road design



BUS LANE ENDS

From: [Mehta, Jayesh](#)
To: [Ortiz, Gilbert](#)
Cc: [McHugh, Ben](#); [Hubbard, Benjamin](#); [Day, Michael](#)
Subject: Draft TCD(Concept Plan) Added Lane - Cotter Road to Adelaide AVenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]
Date: Tuesday, 17 July 2018 1:51:00 PM
Attachments: [TC-599878\(Draft\)-Layout1.pdf\(Concept Plan\).pdf](#)
[TC-599878\(Draft\)-Layout2.pdf\(Concept Plan\).pdf](#)
[Draft Sketch for Cotter Rd Adelaide Av Deakin.pdf](#)

Dear All,

Good Afternoon.

I am sending two PDF copies of Concept Plan(Draft) for Bus Lane and T2 Lane convert to normal lane at Cortter Rd to Adelaide Av in Deakin.

Please have a look and provide your comments this TCD is draft only.

Thanks all for your help.

Kind Regards,
Jayesh Mehta

-----Original Message-----

From: Mehta, Jayesh
Sent: Monday, 9 July 2018 4:46 PM
To: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>; Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>
Cc: McHugh, Ben <Ben.McHugh@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>
Subject: RE: Added Lane - Cotter Road to Adelaide AVenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi Ben,

Thanks for your email and sorry for my late respond.

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Once again thanks all for your help.

Kind Regards,
Jayesh Mehta

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To: Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>; Mehta, Jayesh <Jayesh.Mehta@act.gov.au>
Cc: McHugh, Ben <Ben.McHugh@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>
Subject: FW: Added Lane - Cotter Road to Adelaide AVenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Gilbert, Jayesh

Can you arrange as a priority

Speak to Mike Day about how this might affect the operation of the traffic signals.

-----Original Message-----

From: McHugh, Ben

Sent: Monday, 2 July 2018 7:48 AM

To: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>

Cc: Day, Michael <Michael.Day@act.gov.au>

Subject: Added Lane - Cotter Road to Adelaide AVenue

Hi Ben,

Are you able to arrange for one of your drafters to sketch up a TCD that severs the Bus Lane northbound on Adelaide Avenue and provides the cotter road on ramp as an added lane.

Let me know if this is feasible and what the implications (apart from the obvious disadvantage for buses) might be.

Thanks

Ben

Sent from my iPhone

From: [Mehta, Jayesh](#)
To: [McHugh, Ben](#); [Hubbard, Benjamin](#); [Day, Michael](#); [Ortiz, Gilbert](#)
Subject: FW: Draft TCD(Concept Plan) Added Lane - Cotter Road to Adelaide AVenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]
Date: Tuesday, 17 July 2018 3:27:00 PM
Attachments: [TC-599878\(Draft\)-Location Plan.pdf](#)

Hi Ben,

I can just fit in this scale please have a look and let me know this is fine for you or not?

Thanks for your help.

Kind Regards,
Jayesh

-----Original Message-----

From: Mehta, Jayesh
Sent: Tuesday, 17 July 2018 2:37 PM
To: McHugh, Ben <Ben.McHugh@act.gov.au>; Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>
Cc: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>
Subject: RE: Draft TCD(Concept Plan) Added Lane - Cotter Road to Adelaide AVenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi Ben,

Thanks for your comments.

I will try but bit hard because I have already connected 3 grids but will try and send it you guys.

Thanks for your help.

Kind Regards,

Jayesh

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To: Mehta, Jayesh <Jayesh.Mehta@act.gov.au>; Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>
Cc: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>
Subject: RE: Draft TCD(Concept Plan) Added Lane - Cotter Road to Adelaide AVenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Thanks Jayesh,

This is great and will allow me to present the concept to Emma.
Are you able to print me an A3 version which shows the full length of the changes on a single sheet?
No need for it to be at a particular scale for that conversation.

Thanks again

Ben

-----Original Message-----

From: Mehta, Jayesh

Sent: Tuesday, 17 July 2018 1:51 PM
To: Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>
Cc: McHugh, Ben <Ben.McHugh@act.gov.au>; Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>
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Subject: FW: Added Lane - Cotter Road to Adelaide AVenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Gilbert, Jayesh

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Sent: Monday, 2 July 2018 7:48 AM
To: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>
Cc: Day, Michael <Michael.Day@act.gov.au>
Subject: Added Lane - Cotter Road to Adelaide AVenue

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Let me know if this is feasible and what the implications (apart from the obvious disadvantage for buses) might be.

Thanks

Ben

Sent from my iPhone

From: [Paluri, Rama](#)
To: [McHugh, Ben](#); [Hubbard, Benjamin](#)
Cc: mike.day@act.gov.au
Subject: Added Lane - Cotter Road to Adelaide Avenue - Modelling [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]
Date: Thursday, 19 July 2018 2:37:00 PM
Attachments: [AimsunNetwork_1.png](#)
[AimsunNetwork_2.png](#)

Gentlemen,

Due to the tight time frames, I've already started this modelling. Accordingly, I have just finished 'Network coding' (Please see attached pics showing network 'with & without aerial background'). However, if you wish me to stop modelling, please advise.

The schools will be re-opened next week, So I'm planning to do site visits to observe and record data (travel time, travel speeds, queue lengths) at Cotter Rd off-ramps and Adelaide Ave. Also on the traffic data, we need survey counts at 6 locations. So if you happy for me to continue, I can speak to Ed to arrange them as soon as possible.

Below are the key milestones:

- Developing Base model
- Calibration/ Validation of base model (to ensure the model is replicating/ mimicking real-world traffic behaviour)
- Developing Option model which will include the proposed lane configuration;
- Compare the Base vs Option model performance
 - Travel time
 - Travel speed
 - Queue lengths
 - Overall network (Vehicles per km, Vehicles per hr, Avg Speed)
 - Public Transport – Bus
- Drafting Report
- Presentation (option)

For discussions, please let me know.

Regards

Rama

From: McHugh, Ben
Sent: Thursday, 19 July 2018 2:31 PM
To: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>
Cc: Paluri, Rama <Rama.Paluri@act.gov.au>
Subject: Re: Added Lane - Cotter Road to Adelaide Avenue - Modelling [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

No worries.

I'll be guided by your advice Ben.

Sent from my iPad

On 19 Jul 2018, at 2:30 pm, Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au> wrote:

I'll put that to Rama and Mike,

The benefit to doing it ourselves would be that we build some capacity, can respond quickly to changing scenarios.

This is, however, bread and butter work for consultants.

I'll get back to you

Cheers Ben

From: McHugh, Ben
Sent: Thursday, 19 July 2018 2:26 PM
To: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>
Subject: Re: Added Lane - Cotter Road to Adelaide Avenue - Modelling
[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi Ben,

Given the current pressures on workloads etc, would this be an inappropriate use of Rama's time? I can potentially get a consultant to do this also.

Regards

Ben

Sent from my iPad

On 19 Jul 2018, at 1:43 pm, Hubbard, Benjamin
<Benjamin.Hubbard@act.gov.au> wrote:

Ben,

Good afternoon

Rama can calculate the travel time / speeds using a micro-simulation model. Creating such a model will take about 3 weeks to collate data, code the networks, calibrate / validate the model. Is this timeframe ok with you.

Regards Ben

From: Paluri, Rama
Sent: Wednesday, 18 July 2018 10:26 AM
To: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>
Cc: McHugh, Ben <Ben.McHugh@act.gov.au>
Subject: Added Lane - Cotter Road to Adelaide Avenue - Modelling
[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]
Ben/ Mike,
Apologies for delay. I'm happy to undertake this modelling exercise. Please see attached figure to note the proposed network scope and additional traffic data required (apart from signals). I'm working with Ed to confirm whether he has any traffic survey counts. Based on that I will contact you again, to discuss further.
In terms of time lines, when are you expecting to complete testing?
Regards
Rama

From: Hubbard, Benjamin
Sent: Wednesday, 18 July 2018 9:29 AM
To: Paluri, Rama <Rama.Paluri@act.gov.au>
Cc: McHugh, Ben <Ben.McHugh@act.gov.au>
Subject: FW: Added Lane - Cotter Road to Adelaide Avenue
[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Rama,

How are your micro-sim skills? Could you model this section of road to work out travel time saving? What would you need in terms of

data / surveys

Cheers Ben

From: McHugh, Ben

Sent: Tuesday, 17 July 2018 7:49 PM

To: Marshall, Ken <Ken.Marshall@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>; Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>

Cc: Mehta, Jayesh <Jayesh.Mehta@act.gov.au>; Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>

Subject: Fwd: Added Lane - Cotter Road to Adelaide Avenue
[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi All,

Please see Emma's comments below.

Please let me know if we would be able to assess the potential average speed and travel time benefits from the proposed improvements for traffic on Cotter Road and Adelaide Avenue without using a consultant?

Thanks again for putting this together.

Regards

Ben

Sent from my iPhone

Begin forwarded message:

From: "Thomas, Emma"

<Emma.Thomas@act.gov.au>

Date: 17 July 2018 at 6:38:54 pm AEST

To: "McHugh, Ben" <Ben.McHugh@act.gov.au>

Cc: "Corrigan, Jim" <Jim.Corrigan@act.gov.au>

Subject: RE: Added Lane - Cotter Road to Adelaide Avenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi Ben,

I am supportive in concept - I would like to understand from the traffic modelling, what the overall benefit is to average speed along the corridor at peak and then what the impact will be on bus travel times. I am happy for you to start the conversation with TC to see if there are any other concerns with this approach.

With thanks,

Emma

-----Original Message-----

From: McHugh, Ben

Sent: Tuesday, 17 July 2018 3:39 PM

To: Thomas, Emma <Emma.Thomas@act.gov.au>

Cc: Corrigan, Jim <Jim.Corrigan@act.gov.au>

Subject: Added Lane - Cotter Road to Adelaide

Avenue [SEC=UNCLASSIFIED, DLM=For-
Official-Use-Only]

Hi Emma,

The attached sketch demonstrates how the existing Transit Lane (T2) on Adelaide Avenue could be converted to allow for the Cotter Road on ramp to be an added lane, which would significantly reduce the congestion currently experienced at this location. This arrangement could be achieved with linemarking and a few signs to introduce the form one lane at low cost.

The obvious sensitivity is the reduced length of dedicated Transit Lane (T2) required to accommodate this option, which would require support from Transport Canberra as it predominantly supports rapid bus movements on the Blue Rapid route. The T2 lane currently runs from just north of Yamba Drive near Woden through to Capital Circle. This proposal would reduce its length by approximately 1/3. There is a potential to reinstate the T2 lane for a short distance of a few hundred meters between the Hopeton Circuit interchange and Capital Circle, however the benefits would be limited and potentially confusing to motorists.

Please let me know if you would like this progressed for discussions with TC.

Thanks

Ben

<StudyNetwork & TrafficCounts.PNG>

08:55:14

Lady Denman Drive

Cotter Road

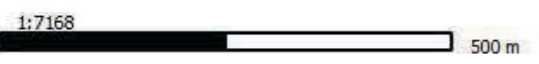
Kent St ramps

Hopetoun Circ ramps

Adelaide Avenue

Yarra Glen

Carruthers St ramps



5157452, -5565448



08:55:14 Lady Denman Drive



1:7168

500 m

5157452, -5565448

From: [Paluri, Rama](#)
To: [Meredith, Edward](#)
Cc: [Potapowicz, Pawel](#)
Subject: FW: Cotter Road off-ramps - Modelling [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]
Date: Monday, 23 July 2018 12:16 00 PM
Attachments: [image003.jpg](#)
[A63 MESO20 - Cotter Rd & Lady Denman Dr.xlsx](#)
[A63 MESO19 - Yarra Glen & Carruthers St - On&Off Ramps.xlsx](#)
[A63 Site 44 - Yarra Glen & Cotter Rd.xlsx](#)
[A63 Site 42 - Adelaide Ave & Hopetoun Circuit - On&Off Ramps.xlsx](#)
[A63 Site 43 - Dudley St & Novar St & Kent St & Adelaide Ave.xlsx](#)

Hi Ed,

Attached is the survey data from Arup, [REDACTED].

Regards

Rama

From: [REDACTED]@arup.com]

Sent: Monday, 23 July 2018 12:04 PM

To: Paluri, Rama <Rama.Paluri@act.gov.au>

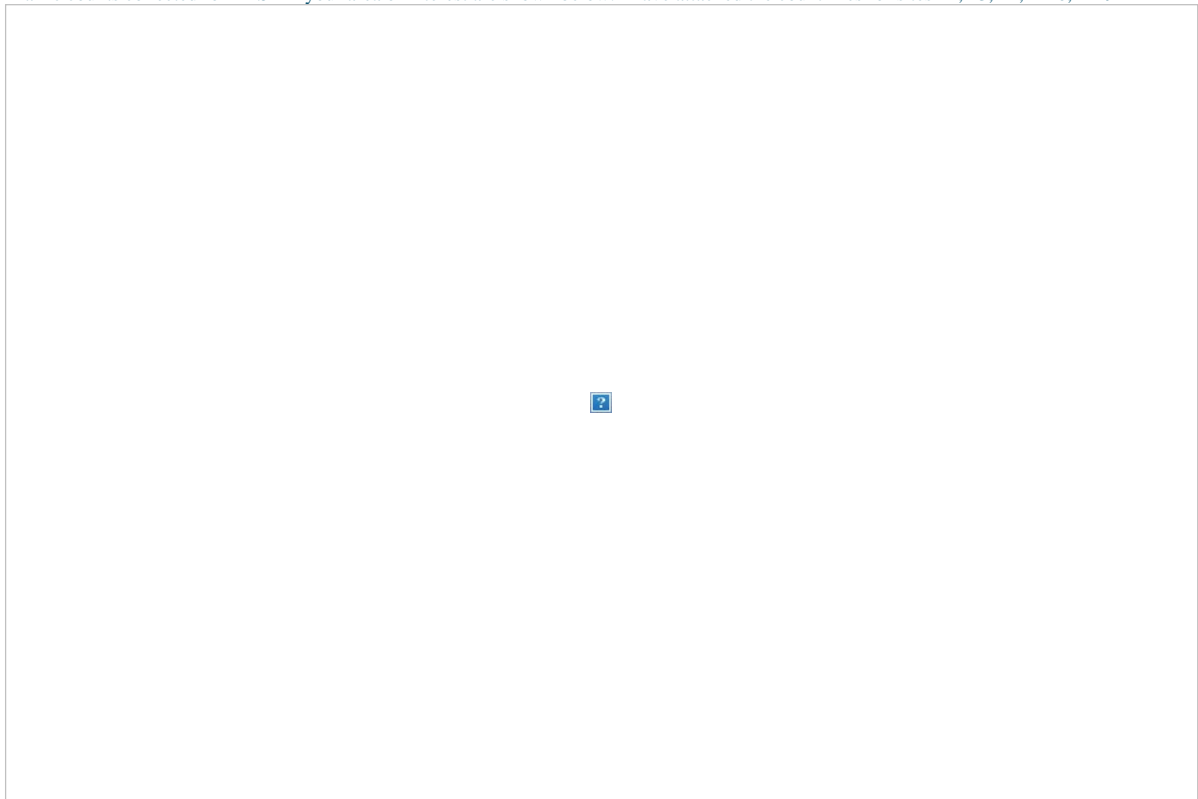
Cc: Day, Michael <Michael.Day@act.gov.au>; Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>; McHugh, Ben <Ben.McHugh@act.gov.au>; Kilfeather, Jim <Jim.Kilfeather@act.gov.au>; Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>

Subject: RE: Cotter Road off-ramps - Modelling [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi Rama,

Sorry I missed your call (I was on the phone with your colleagues from EPSDD).

Traffic counts collected for LRS2 in your area of interest are shown below. I have attached the count files for sites 42, 43, 44, M20, M19



[REDACTED]
Associate | Transport Planning & Traffic Engineering

d + 61 7 3023 6123

m +61 413 553 757

From: Paluri, Rama [<mailto:Rama.Paluri@act.gov.au>]

Sent: Monday, 23 July 2018 11:08 AM

To: [REDACTED]@arup.com>

Cc: Day, Michael <Michael.Day@act.gov.au>; Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>; McHugh, Ben <Ben.McHugh@act.gov.au>; Kilfeather, Jim <Jim.Kilfeather@act.gov.au>; Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>

Subject: [External] Cotter Road off-ramps - Modelling [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi [REDACTED],

We (Roads ACT) are undertaking a micro-simulation task (in-house) for the Capital Works, and so looking for traffic volumes data on Adelaide Ave/ Yarra Glen mid-block sections and associated ramps. Please see attached file and confirm the data availability.

Regards

Rama Paluri | Traffic Signals Engineer

Phone 02 6207 1420 | Email: Rama.Paluri@act.gov.au

Traffic Management and Safety | Transport Canberra and City Services Directorate | ACT Government

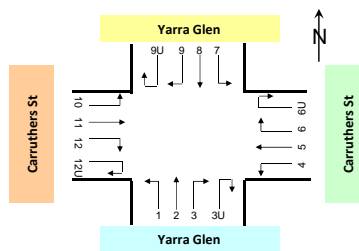
496 Northbourne Ave, Dickson | GPO Box 158 Canberra ACT 2602 | www.act.gov.au

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Electronic mail messages entering and leaving Arup business systems are scanned for viruses and acceptability of content

Peak Hr Summary

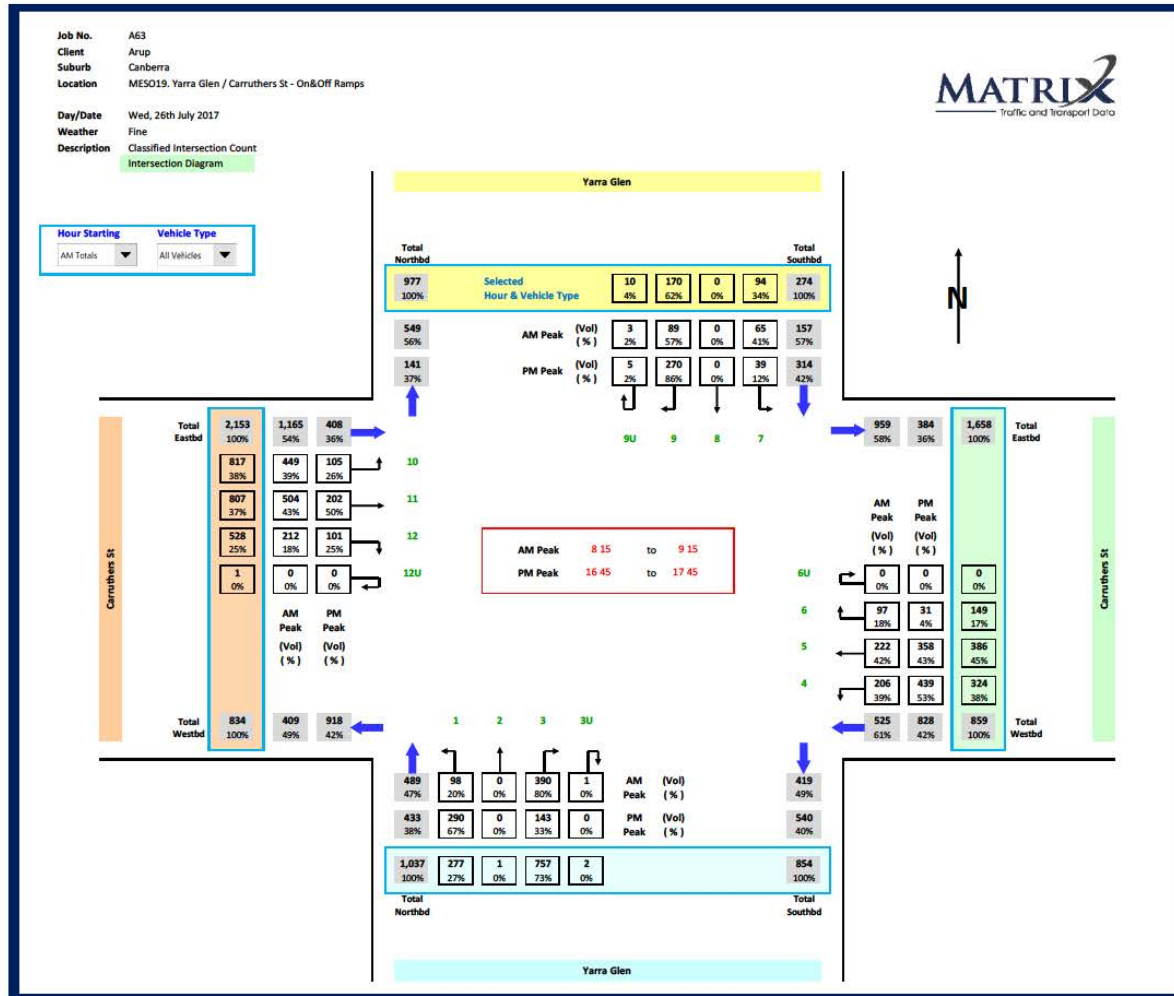
Job No. A63
Client Arup
Suburb Canberra
Location MESO19. Yarra Glen / Carruthers St - On&Off Ramps
Day/Date Wed, 26th July 2017
Weather Fine
Description Classified Intersection Count
Peak Hour Summary



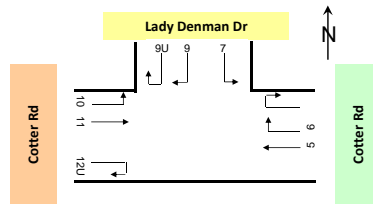
Approach	Yarra Glen						Carruthers St						Yarra Glen						Carruthers St						Grand Total
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	
AM 8:15 to 9:15	475	8	1	4	1	489	499	10	0	12	4	525	151	4	1	0	1	157	1137	10	0	13	5	1,165	2,336
PM 16:45 to 17:45	432	1	0	0	0	433	809	3	0	3	13	828	293	3	0	4	14	314	404	2	0	2	0	408	1,983

Approach	Yarra Glen						Carruthers St						Yarra Glen						Carruthers St						Grand Total
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	
6:30 to 7:30	157	5	0	0	2	164	81	4	0	3	2	90	36	0	0	0	1	37	277	6	1	3	10	297	588
6:45 to 7:45	208	9	0	0	1	218	109	4	0	4	2	119	39	0	1	1	1	42	359	5	1	3	9	377	756
7:00 to 8:00	262	10	0	0	1	273	136	5	0	4	5	150	56	0	1	1	1	59	436	7	1	3	3	450	932
7:15 to 8:15	340	11	0	0	1	352	176	6	0	5	7	194	62	0	1	2	0	65	587	5	1	3	4	600	1,211
7:30 to 8:30	356	9	1	2	1	369	247	8	0	7	7	269	88	1	1	2	0	92	766	8	1	6	1	782	1,512
7:45 to 8:45	408	7	1	2	2	420	314	10	0	8	9	341	117	1	0	1	1	120	977	11	1	10	3	1,002	1,883
8:00 to 9:00	468	7	1	4	1	481	411	12	0	12	7	442	140	3	0	1	1	145	1131	11	0	12	5	1,159	2,227
8:15 to 9:15	475	8	1	4	1	489	499	10	0	12	4	525	151	4	1	0	1	157	1137	10	0	13	5	1,165	2,336
8:30 to 9:30	495	6	0	2	1	504	478	7	0	10	5	500	140	3	1	0	1	145	1050	9	0	10	5	1,074	2,223
AM Totals	1,008	20	1	4	4	1,037	806	19	0	20	14	859	264	4	2	2	2	274	2,093	23	2	19	16	2,153	4,323
15:30 to 16:30	400	4	0	1	0	405	558	5	0	8	6	577	158	3	0	2	3	166	373	5	2	7	0	387	1,535
15:45 to 16:45	395	3	0	0	0	398	583	4	0	4	7	598	176	4	0	2	3	185	373	2	1	8	0	384	1,565
16:00 to 17:00	406	2	0	0	0	408	648	3	0	3	9	663	200	2	0	0	4	206	369	3	0	5	0	377	1,654
16:15 to 17:15	409	0	0	0	0	409	712	2	0	3	10	727	227	2	0	2	7	238	383	2	0	3	0	388	1,762
16:30 to 17:30	408	1	0	0	0	409	790	2	0	2	10	804	280	3	0	3	11	297	395	2	0	3	0	400	1,910
16:45 to 17:45	432	1	0	0	0	433	809	3	0	3	13	828	293	3	0	4	14	314	404	2	0	2	0	408	1,983
17:00 to 18:00	407	1	0	0	0	408	772	3	0	3	14	792	312	3	0	4	15	334	409	0	0	3	0	412	1,946
17:15 to 18:15	363	1	0	0	0	364	690	3	0	4	16	713	312	3	0	3	11	329	393	0	0	3	0	396	1,802
17:30 to 18:30	323	1	0	0	0	324	563	1	0	4	17	585	275	2	0	2	7	286	350	1	0	2	0	353	1,548
PM Totals	1,131	6	0	1	0	1,138	1,911	8	0	14	33	1,966	713	8	0	7	21	749	1,118	8	2	12	0	1,140	4,993

Intersection Diagram



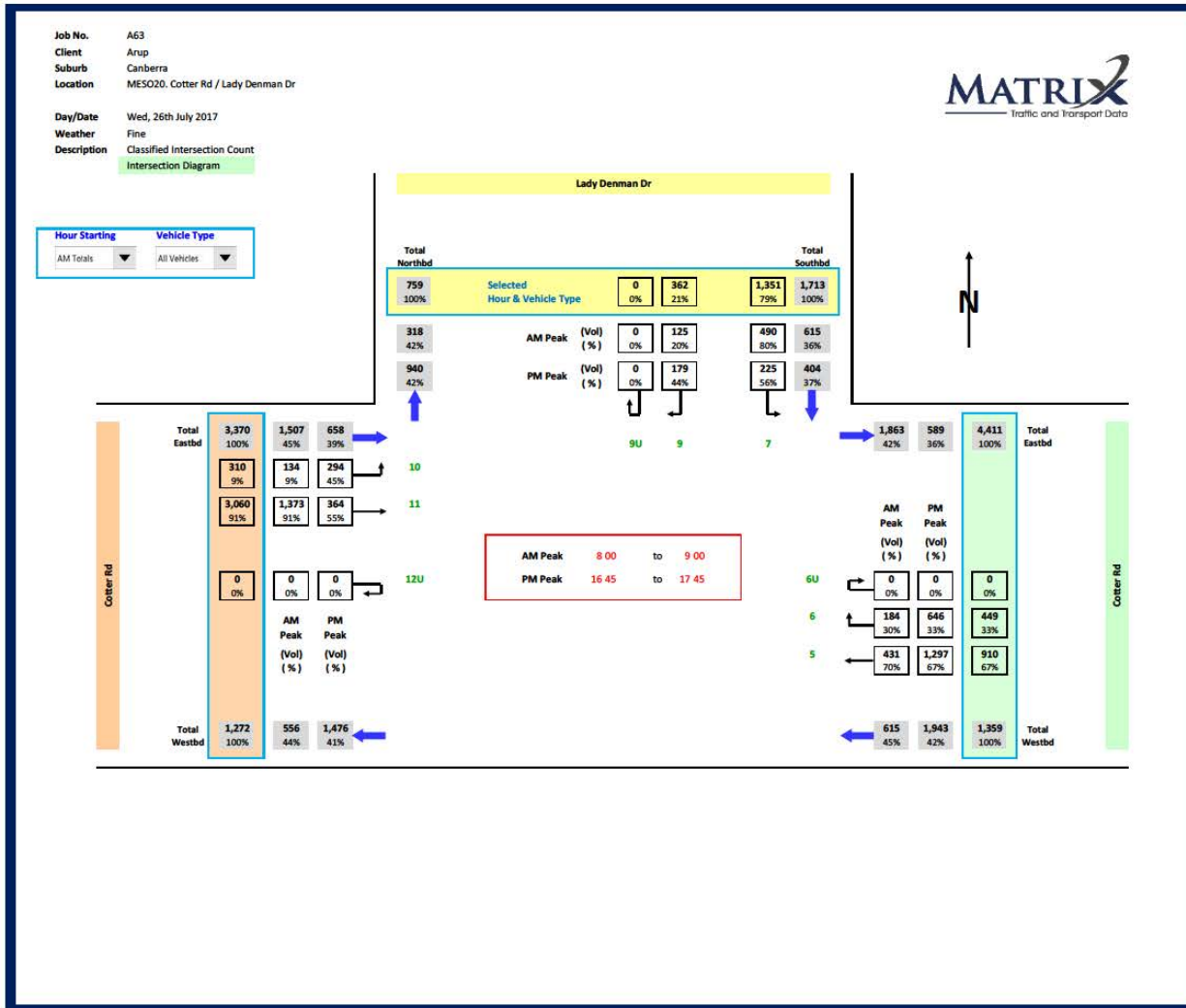
Job No. : A63
Client : Arup
Suburb : Canberra
Location : MESO20. Cotter Rd / Lady Denman Dr
Day/Date : Wed, 26th July 2017
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary



Approach	Cotter Rd						Lady Denman Dr						Cotter Rd						Grand Total
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	
AM 8:00 to 9:00	585	20	4	5	1	615	606	9	0	0	0	615	1 473	16	6	8	4	1 507	2 737
PM 16:45 to 17:45	1 926	4	1	11	1	1 943	402	2	0	0	0	404	644	7	3	4	0	658	3 005

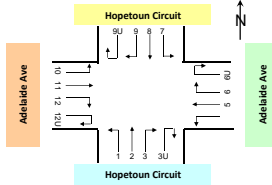
Approach	Cotter Rd						Lady Denman Dr						Cotter Rd						Grand Total
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	
6:30 to 7:30	205	18	3	1	2	229	400	12	3	1	0	416	583	16	7	3	3	612	1 257
6:45 to 7:45	258	21	5	1	2	287	487	17	3	0	0	507	760	22	7	4	2	795	1 589
7:00 to 8:00	316	12	5	4	2	339	566	15	2	0	0	583	970	21	7	7	3	1 008	1 930
7:15 to 8:15	379	13	5	3	3	403	625	13	0	0	0	638	1 235	20	7	7	2	1 271	2 312
7:30 to 8:30	472	16	4	3	1	496	618	12	0	0	0	630	1 375	19	6	8	1	1 409	2 535
7:45 to 8:45	551	17	4	5	1	578	608	8	0	0	0	616	1 499	16	5	10	5	1 535	2 729
8:00 to 9:00	585	20	4	5	1	615	606	9	0	0	0	615	1 473	16	6	8	4	1 507	2 737
8:15 to 9:15	605	22	3	6	0	636	621	7	0	0	0	628	1 414	20	5	9	4	1 452	2 716
8:30 to 9:30	600	23	4	6	1	634	657	10	0	0	0	667	1 308	26	4	7	4	1 349	2 650
AM Totals	1 277	57	11	10	4	1 359	1 675	34	3	1	0	1 713	3 266	61	17	18	8	3 370	6 442
15:30 to 16:30	1 286	5	1	6	0	1 298	358	3	1	1	0	363	513	11	3	5	1	533	2 194
15:45 to 16:45	1 384	3	1	7	3	1 398	331	3	1	1	0	336	531	9	3	4	1	548	2 282
16:00 to 17:00	1 482	4	0	7	3	1 496	336	1	1	1	0	339	561	11	2	5	1	580	2 415
16:15 to 17:15	1 692	4	0	8	3	1 707	371	3	0	1	0	375	596	7	1	6	1	611	2 693
16:30 to 17:30	1 868	5	0	11	4	1 888	378	3	0	0	0	381	621	8	3	5	1	638	2 907
16:45 to 17:45	1 926	4	1	11	1	1 943	402	2	0	0	0	404	644	7	3	4	0	658	3 005
17:00 to 18:00	1 937	3	2	10	1	1 953	426	2	0	0	0	428	607	5	3	3	0	618	2 999
17:15 to 18:15	1 755	1	2	8	2	1 768	402	0	0	0	0	402	576	5	3	2	0	586	2 756
17:30 to 18:30	1 475	0	2	5	3	1 485	357	0	0	0	1	358	523	4	0	2	0	529	2 372
PM Totals	4 629	10	3	22	7	4 671	1 093	6	1	1	1	1 102	1 657	23	6	12	2	1 700	7 473

Intersection Diagram



Job No. : A63
Client : Arup
Suburb : Canberra
Location : 42. Adelaide Ave / Hoptoun Circuit - On/Off ramps

Day/Date : Wed 26th July 2017
Weather : Fine
Description : Classified Intersection Count
Hourly Summary



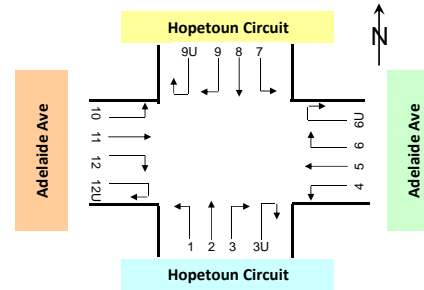
Approach	Hoptoun Circuit																								Adelaide Ave																													
	Direction 1 (Left Turn)						Direction 2 (Through)						Direct on 3 (Right Turn)						Direction 3U (U Turn)						Direct on 4 (Left Turn)						Direct on 5 (Through)						Direction 6 (Right Turn)						Direct on 6U (U Turn)											
	Lights	Mediums	Heavy	Buses	Cyclists	Total	Lights	Mediums	Heavy	Buses	Cyclists	Total	Lights	Mediums	Heavy	Buses	Cyclists	Total	Lights	Mediums	Heavy	Buses	Cyclists	Total	Lights	Mediums	Heavy	Buses	Cyclists	Total	Lights	Mediums	Heavy	Buses	Cyclists	Total	Lights	Mediums	Heavy	Buses	Cyclists	Total	Lights	Mediums	Heavy	Buses	Cyclists	Total						
6:30 to 7:30	85	1	1	0	2	89	48	0	0	3	43	94	70	2	0	0	1	73	1	0	0	0	0	1	40	0	0	0	0	0	11	3	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 to 7:45	112	1	2	0	1	116	60	0	0	2	42	104	94	0	0	0	1	95	1	0	0	0	0	1	53	0	0	0	0	0	0	14	4	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 to 8:00	142	2	2	0	0	146	75	0	0	3	5	83	112	2	1	0	1	116	1	0	0	0	0	1	68	0	0	0	0	0	0	15	4	0	1	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 to 8:15	170	3	2	0	0	175	84	3	0	3	6	96	141	3	1	0	2	147	0	0	0	0	0	0	91	0	0	0	0	0	0	20	5	0	1	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 to 8:30	225	5	1	0	0	231	108	3	0	2	6	119	183	3	1	0	3	190	0	0	0	0	0	0	114	1	0	0	0	1	22	4	0	1	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 to 8:45	261	6	0	0	0	267	129	3	0	3	3	138	214	3	1	0	3	221	0	0	0	0	0	0	133	1	0	0	0	1	36	3	0	1	0	40	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
8:00 to 9:00	295	6	0	1	0	302	176	3	0	2	4	185	253	1	0	0	3	257	0	0	0	0	0	0	152	2	0	0	0	2	45	2	0	0	0	47	0	0	0	0	0	0	1	1	1	1	1	1						
8:15 to 9:15	309	5	0	1	0	315	192	0	0	2	3	197	265	0	0	1	1	267	0	0	0	0	0	0	153	2	0	0	0	2	52	2	0	0	0	54	0	0	0	0	0	0	1	1	1	1	1	1						
8:30 to 9:30	276	3	2	1	0	282	177	1	0	4	3	185	245	3	0	1	0	249	0	0	0	0	0	0	146	1	0	0	0	1	55	1	0	0	0	56	0	0	0	0	0	0	1	1	1	1	1	1						
AM Totals	586	9	4	1	2	602	333	4	0	9	52	398	498	8	1	1	4	512	1	0	0	0	0	1	300	2	0	0	0	2	88	8	0	1	0	97	0	0	0	0	0	0	1	1	1	1	1	1						
15:30 to 16:30	342	4	1	2	0	349	124	1	0	6	1	132	106	1	1	0	0	108	0	0	0	0	0	0	127	1	0	1	1	1	54	1	0	0	1	56	0	0	0	0	0	0	0	0	0	0	0	0						
15:45 to 16:45	333	4	1	2	2	342	108	1	0	5	2	116	101	1	0	0	0	102	0	0	0	0	0	0	118	1	0	0	0	1	53	1	0	0	1	55	0	0	0	0	0	0	0	0	0	0	0	0						
16:00 to 17:00	353	3	0	0	2	358	125	1	0	3	2	131	113	0	1	0	0	114	0	0	0	0	0	0	133	0	0	0	0	1	55	0	0	0	1	56	0	0	0	0	0	0	0	0	0	0	0	0						
16:15 to 17:15	395	4	0	0	2	401	149	1	0	3	2	155	108	0	1	1	0	110	0	0	0	0	0	0	157	0	0	0	0	1	60	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0						
16:30 to 17:30	398	2	0	0	2	402	151	1	0	3	1	156	93	0	1	0	0	94	0	0	0	0	0	0	181	1	0	0	0	1	67	0	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0						
16:45 to 17:45	379	2	0	0	0	380	170	0	0	2	2	174	85	0	0	2	0	87	0	0	0	0	0	0	227	1	0	0	0	1	77	0	0	0	0	77	0	0	0	0	0	0	0	0	0	0	0	0						
17:00 to 18:00	952	1	0	0	1	954	180	0	0	3	2	185	81	0	0	2	0	83	0	0	0	0	0	0	232	0	0	0	0	0	85	1	0	0	0	86	0	0	0	0	0	0	0	0	0	0	0	0						
17:15 to 18:15	310	0	0	0	1	311	165	0	0	3	2	170	82	0	0	1	0	83	0	0	0	0	0	0	226	0	0	0	0	1	86	1	0	0	1	88	0	0	0	0	0	0	0	0	0	0	0	0						
17:30 to 18:30	268	0	0	0	1	269	146	0	0	3	2	151	97	0	0	1	0	98	0	0	0	0	0	0	200	0	0	0	2	202	0	0	0	0	0	0	85	1	0	0	1	87	0	0	0	0	0	0						
PM Totals	1,008	6	1	2	3	1,020	421	2	0	12	4	439	296	1	1	2	0	300	0	0	0	0	0	0	508	1	0	1	3	513	2	0	0	0	0	2	206	2	0	0	2	210	0	0	0	0	0	0						

Approach	Hoptoun Circuit																								Adelaide Ave																							
	Direction 7 (Left Turn)						Direction 8 (Through)						Direct on 9 (Right Turn)						Direction 9U (U Turn)						Direction 10 (Left Turn)						Direction 11 (Through)						Direction 12 (Right Turn)						Direct on 12U (U Turn)					
	Lights	Med ums	Heavy	Buses	Cyclists	Total	Lights	Med ums	Heavy	Buses	Cyclists	Total	Lights	Med ums	Heavy	Buses	Cyclists	Total	Lights	Med ums	Heavy	Buses	Cyclists	Total	Lights	Med ums	Heavy	Buses	Cyclists	Total	Lights	Med ums	Heavy	Buses	Cyclists	Total	Lights	Med ums	Heavy	Buses	Cyclists	Total						
6:30 to 7:30	37	0	0	0	0	37	52	0	0	3	9	64	24	0	0	0	1	25	0	0	0	0	0	0	32	0	0	0	0	34	0	0	0	0	0	150	2	3	0	13	178	0	0	0	0	0	0	
6:45 to 7:45	57	0	0	0	0	57	72	0	0	3	9	84	24	0	0	0	0	1	25	0	0	0	0	0	0	42	0	0	0	0	0	196	2	3	0	3	204	0	0	0	0	0	0					
7:00 to 8:00	89	1	0	0	0	90	99	1	0	4	3	107	37	0	0	0	0	1	38	0	0	0	0	0	0	53	0	0	0	0	0	227	2	2	0	3	234	0	0	0	0	0	0					
7:15 to 8:15	103	1	0	0	0	104	141	1	0	4	2	148	66	0	0	0	0	0	66	0	0	0	0	0	0	73	0	0	0	0	0	259	1	1	0	4	265	0	0	0	0	0	0					
7:30 to 8:30	155	1	0	0	0	156	229	1	0	3	1	234	82	2	0	0	0	0	84	0	0	0	0	0	0	102	1	0	0	0	1	241	1	1	0	1	244	0	0	0	0	0	0					
7:45 to 8:45	179	2	0	0	0	181	357	3	0	5	0	365	109	3	0	0	0	0	112	0	0	0	0	0	0	193	1	0	0	0	1	192	2	1	2	2	199	0	0	0	0	0	0					
8:00 to 9:00	179	1	0	0	0	180	431	2	0	4	0	437	134	3	1	0	0	0	138	0	0	0	0	0	0	243	1	0	0	1	2	149	2	3	2	2	158	0	0	0	0	0	0					
8:15 to 9:15	192	3	0	1	0	196	445	4	0	4	0	453	133	4	1	0	1	139	0	0	0	0	0	0	243	6	0	0	1	250	1	0	0	0	1	2	123	4	3	2	1	133	1	0	0	0	0	1
8:30 to 9:30	146	3	0	2	0	151	368	4	0	5	0	377	132	2	1	0	1	136	0	0	0	0	0	0	225	4	0	0	1	2	156	9	4	2	1	172	3	0	0	0	0	3						
AM Totals	338	4	0	2	0	344	649	5	0	11	10	675	238	4	1	0	2	245	0	0	0	0	0	0	353	10	2	0	1	366	2	0	0	0	1	3	557	12	8	2	15	594	3	0	0	0	0	3
15:30 to 16:30	65	1	0	0	0	66	127	1	0	5	2	135	79	1	0	1	1	82	0	0	0	0	0	0	62	1	0	0	0	1	197	2	0	1	0	200	2	0	0	0	0	2						
15:45 to 16:45	61	1	0	0	0	62	137	1	0	4	2	144	90	1	0	1	1	93	0	0	0	0	0	0	66	2	0	0	0	2	205	2	0	0	0	207	2	0	0	0	0	2						
16:00 to 17:00	55	1	0	0	0	56	142	1	0	3	2	148	90	1	0	0	1	92	0	0	0	0	0	0	66	0	0	0	0	2	214	2	0	0	0	216	3	0	0	0	0	3						
16:15 to 17:15																																																

Peak Hr Summary

Job No. : A63
Client : Arup
Suburb : Canberra
Location : 42. Adelaide Ave / Hopetoun Circuit - On/Off ramps

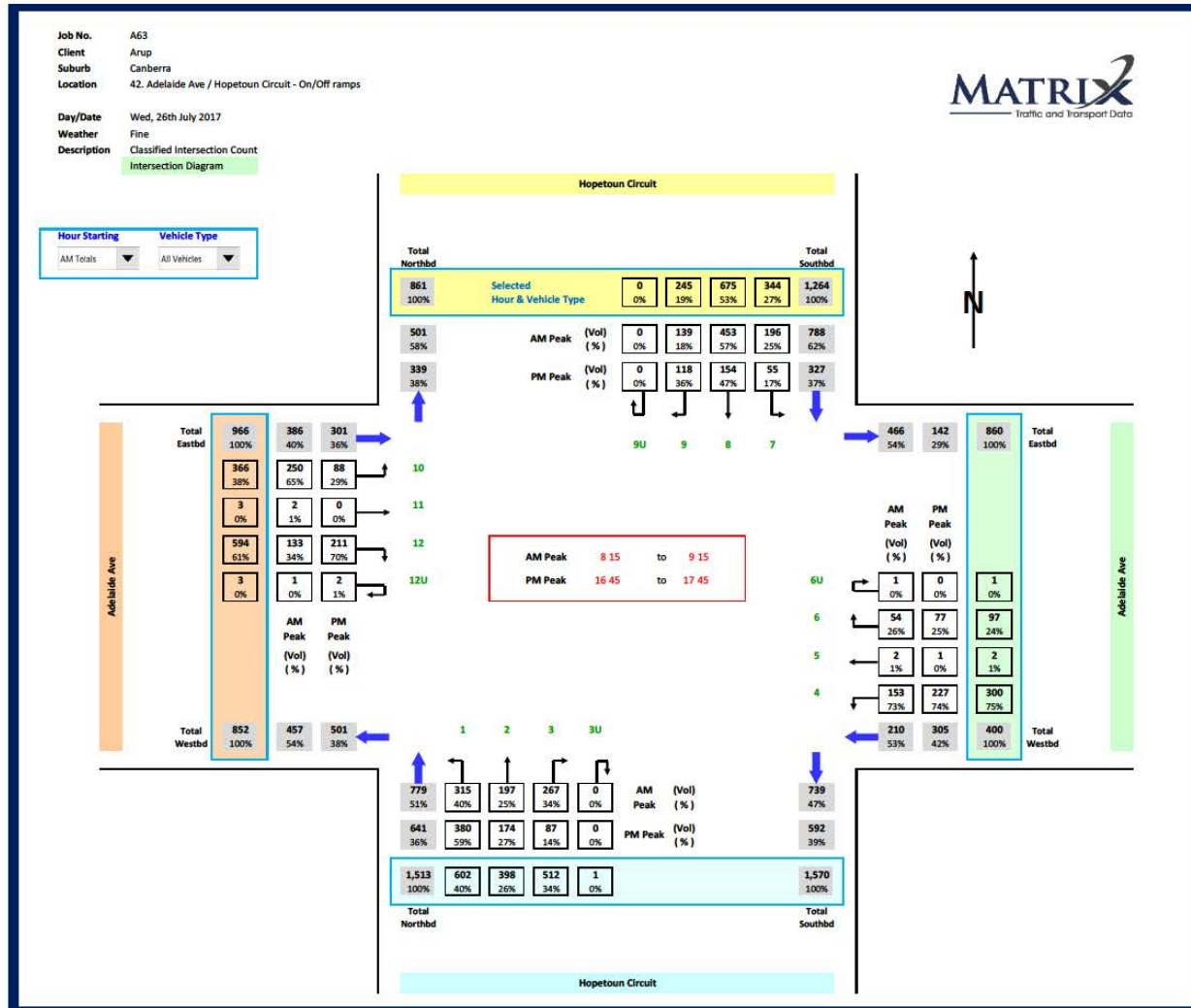
Day/Date : Wed, 26th July 2017
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary



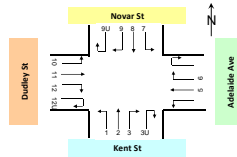
Approach	Hopetoun Circuit						Adelaide Ave						Hopetoun Circuit						Adelaide Ave						Grand Total
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	
AM 8:15 to 9:15	766	5	0	4	4	779	202	5	0	2	1	210	770	11	1	5	1	788	368	10	3	2	3	386	2,163
PM 16:45 to 17:45	634	1	0	4	2	641	305	0	0	0	0	305	322	1	0	3	1	327	299	2	0	0	0	301	1,574

Approach	Hopetoun Circuit						Adelaide Ave						Hopetoun Circuit						Adelaide Ave						Grand Total
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	
6:30 to 7:30	204	3	1	3	46	257	49	4	0	0	1	54	113	0	0	3	10	126	192	2	5	0	13	212	649
6:45 to 7:45	267	1	2	2	44	316	64	5	1	0	1	71	153	0	0	3	10	166	234	4	5	0	3	246	799
7:00 to 8:00	330	4	3	3	6	346	79	6	1	1	1	88	225	2	0	4	4	235	276	5	3	0	3	287	956
7:15 to 8:15	395	9	3	3	8	418	105	10	1	1	0	117	310	2	0	4	2	318	328	5	1	0	4	338	1,191
7:30 to 8:30	516	11	2	2	9	540	129	10	1	2	0	142	466	4	0	3	1	474	338	7	1	0	1	347	1,503
7:45 to 8:45	604	12	1	3	6	626	162	9	0	3	1	175	645	8	0	5	0	658	379	8	1	2	3	393	1,852
8:00 to 9:00	724	10	0	3	7	744	192	7	0	2	1	202	744	6	1	4	0	755	386	8	3	2	4	403	2,104
8:15 to 9:15	766	5	0	4	4	779	202	5	0	2	1	210	770	11	1	5	1	788	368	10	3	2	3	386	2,163
8:30 to 9:30	698	7	2	6	3	716	198	3	0	1	2	204	646	9	1	7	1	664	385	13	4	2	3	407	1,991
AM Totals	1,418	21	5	11	58	1,513	376	17	1	3	3	400	1,225	13	1	13	12	1,264	915	22	10	2	17	966	4,143
15:30 to 16:30	572	6	2	8	1	589	182	2	0	1	2	187	271	3	0	6	3	283	262	2	0	1	0	265	1,324
15:45 to 16:45	542	5	2	7	4	560	172	1	0	0	1	174	288	3	0	5	3	299	275	2	0	0	0	277	1,310
16:00 to 17:00	591	4	1	3	4	603	189	0	0	0	1	190	287	3	0	3	3	296	285	2	0	0	0	287	1,376
16:15 to 17:15	652	5	1	4	4	666	218	0	0	0	0	218	310	2	0	3	1	316	298	1	0	0	0	299	1,499
16:30 to 17:30	642	3	0	4	3	652	249	0	0	0	0	249	325	2	0	3	0	330	305	2	0	0	0	307	1,538
16:45 to 17:45	634	1	0	4	2	641	305	0	0	0	0	305	322	1	0	3	1	327	299	2	0	0	0	301	1,574
17:00 to 18:00	613	1	0	5	3	622	317	1	0	0	0	318	319	2	0	3	1	325	292	2	0	0	1	295	1,560
17:15 to 18:15	557	0	0	4	3	564	312	1	0	0	2	315	291	2	1	2	3	299	285	2	0	0	1	288	1,466
17:30 to 18:30	511	0	0	4	3	518	285	1	0	0	3	289	262	2	1	2	3	270	274	0	0	0	1	275	1,352
PM Totals	1,725	9	2	16	7	1,759	716	3	0	1	5	725	858	7	1	11	6	883	841	4	0	1	1	847	4,214

Intersection Diagram



Job No. A63
Client A up
Suburb Canbe a
Location 43. Dudley St / Nova St / Kent St / Adela de Ave
Day/Date Wed, 26th July 2017
Weather F ne
Description Class f ed Inte sect on Count
15 m rs Data



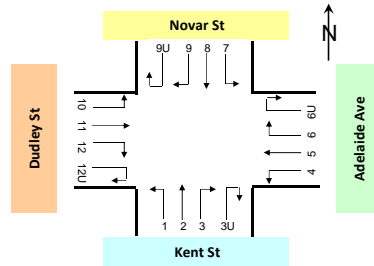
Classifications	Class 1	Class 2	Class 3	Class 4	Class 5
	Lghts	Med ums	Heaves	Busen	Cycl sts

Approach	Kent St												Adelaide Ave																						
	Direct on 1 (Left Turn)				Direction 2 (Through)				D rection 3 (R ght Turn)				D rection 3U U Turn				Direct on 4 (Left Turn)				Direct on 5 (Through)				Direction 6 (R ght Turn)				D rection 6U U Turn						
	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves
Time Per od	[Detailed traffic count data for various time intervals from 6:30 to 18:15]																																		
AM Totals	[Summary AM traffic counts]																																		
PM Totals	[Summary PM traffic counts]																																		

Approach	Novar St												Dudley St																						
	Direct on 7 (Left Turn)				Direction 8 (Through)				D rection 9 (R ght Turn)				D rection 9U U Turn				Direction 10 (Left Turn)				Direction 11 (Through)				D rection 12 (R ght Turn)				Direct on 12U U Turn						
	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves	Busen	Lghts	Med ums	Heaves
Time Per od	[Detailed traffic count data for various time intervals from 6:30 to 18:15]																																		
AM Totals	[Summary AM traffic counts]																																		
PM Totals	[Summary PM traffic counts]																																		

Job No. : A63
Client : Arup
Suburb : Canberra
Location : 43. Dudley St / Novar St / Kent St / Adelaide Ave

Day/Date : Wed, 26th July 2017
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary



Approach	Kent St						Adelaide Ave					Novar St					Dudley St					Grand Total			
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies		Buses	Cyclists	Total
AM 8:15 to 9:15	722	11	1	7	5	746	481	12	2	0	1	496	219	13	3	2	0	237	816	8	1	3	1	829	2,308
PM 17:00 to 18:00	998	0	3	4	1	1,006	411	0	1	1	0	413	382	6	0	4	1	393	299	0	0	0	0	299	2,111

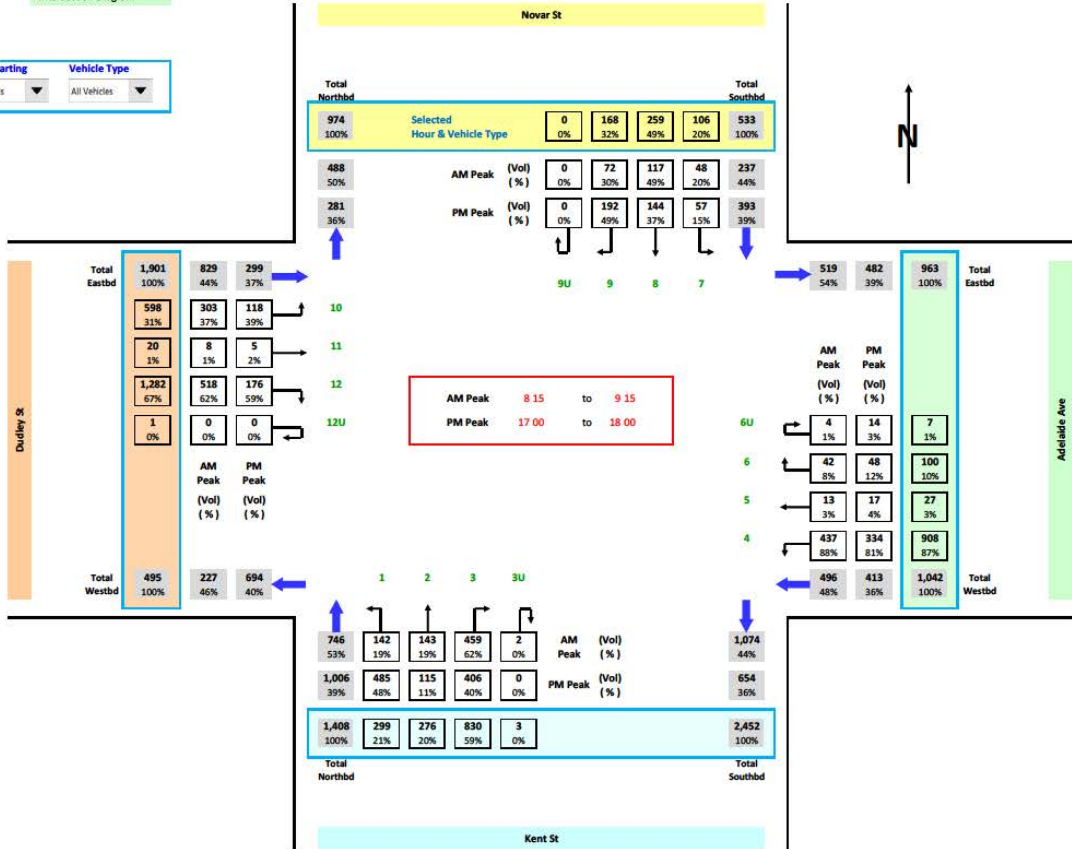
Approach	Kent St						Adelaide Ave					Novar St					Dudley St					Grand Total			
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies		Buses	Cyclists	Total
6:30 to 7:30	168	4	0	3	6	181	163	12	0	0	4	179	67	1	0	3	12	83	343	6	0	0	2	351	794
6:45 to 7:45	227	8	0	4	6	245	209	13	1	0	3	226	89	2	1	2	11	105	443	9	0	0	0	452	1,028
7:00 to 8:00	316	12	0	3	10	341	247	11	3	0	2	263	131	3	1	3	10	148	544	7	0	0	0	551	1,303
7:15 to 8:15	371	14	0	3	11	399	302	13	4	1	0	320	162	5	1	5	3	176	662	7	0	0	0	669	1,564
7:30 to 8:30	471	14	0	4	12	501	358	13	4	1	0	376	178	8	2	5	1	194	739	8	1	0	1	749	1,820
7:45 to 8:45	582	12	0	4	12	610	415	14	4	1	1	435	205	12	1	6	1	225	789	6	1	2	1	799	2,069
8:00 to 9:00	659	12	1	5	8	685	462	17	2	1	1	483	195	11	2	5	1	214	794	7	1	3	1	806	2,188
8:15 to 9:15	722	11	1	7	5	746	481	12	2	0	1	496	219	13	3	2	0	237	816	8	1	3	1	829	2,308
8:30 to 9:30	708	11	1	6	0	726	469	15	2	0	1	487	240	11	2	3	0	256	789	8	0	3	1	801	2,270
AM Totals	1,347	29	1	13	18	1,408	990	40	6	1	5	1,042	485	20	4	11	13	533	1,871	22	1	3	4	1,901	4,884
15:30 to 16:30	808	8	1	6	0	823	365	1	0	0	1	367	316	4	0	5	0	325	260	0	0	2	1	263	1,778
15:45 to 16:45	847	3	0	4	0	854	361	1	0	0	1	363	320	3	0	4	0	327	269	0	0	1	1	271	1,815
16:00 to 17:00	884	0	0	5	1	890	363	1	0	0	1	365	324	2	0	4	0	330	249	1	0	1	0	251	1,836
16:15 to 17:15	970	0	1	6	1	978	348	1	1	0	1	351	322	4	0	4	0	330	264	1	0	0	0	265	1,924
16:30 to 17:30	1,039	0	2	5	1	1,047	370	1	1	0	1	373	335	6	0	4	0	345	259	1	0	0	0	260	2,025
16:45 to 17:45	1,052	0	3	4	1	1,060	383	0	1	0	1	385	349	7	0	4	1	361	275	1	0	0	0	276	2,082
17:00 to 18:00	998	0	3	4	1	1,006	411	0	1	1	0	413	382	6	0	4	1	393	299	0	0	0	0	299	2,111
17:15 to 18:15	871	0	2	2	2	877	430	0	0	1	0	431	351	3	0	4	1	359	287	0	0	0	1	288	1,955
17:30 to 18:30	703	0	1	2	3	709	403	0	0	1	0	404	328	1	0	3	1	333	284	0	0	0	1	285	1,731
PM Totals	2,550	8	4	13	4	2,579	1,138	2	1	1	2	1,144	979	11	0	12	1	1,003	803	1	0	2	2	808	5,534

Job No. A63
 Client Arup
 Suburb Canberra
 Location 43. Dudley St / Novar St / Kent St / Adelaide Ave

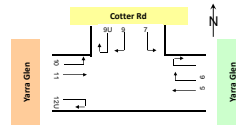
Day/Date Wed, 26th July 2017
 Weather Fine
 Description Classified Intersection Count
 Intersection Diagram



Hour Starting: AM Totals
 Vehicle Type: All Vehicles



Job No. A63
Client A up
Suburb Canbe a
Location 44, Ya a Glen / Cotte Rd
Day/Date Wed, 26th July 2017
Weather Fine
Description Class f ed Inte. sect on Count
15 m ns Data



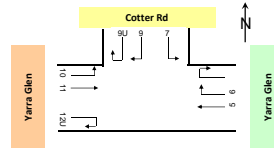
Classifications	Class 1	Class 2	Class 3	Class 4	Class 5
	Lights	Med ums	Heav es	Bus es	Cycl sts

Approach	Direct on	Yarra Glen																	
		Direct on 5 (Through)					Direction 6 (R ght Turn)					D rection 6U (U Turn)							
		Lights	Med ums	Heav es	Bus es	Cycl sts	Total	Lights	Med ums	Heav es	Bus es	Cycl sts	Total	Lights	Med ums	Heav es	Bus es	Cycl sts	Total
6:30 to 6:45		79	0	0	1	1	83	32	2	0	0	0	34	0	0	0	0	0	0
6:45 to 7:00		86	0	0	4	3	93	41	8	2	0	0	51	0	0	0	0	0	0
7:00 to 7:15		89	1	0	3	2	95	45	4	0	1	0	50	0	0	0	0	0	0
7:15 to 7:30		122	1	0	2	3	128	36	3	2	0	0	41	0	0	0	0	0	0
7:30 to 7:45		169	2	0	4	1	176	69	1	2	1	0	73	0	0	0	0	0	0
7:45 to 8:00		212	1	0	5	1	219	74	2	1	2	0	78	0	0	0	0	0	0
8:00 to 8:15		274	2	0	10	12	298	95	6	0	0	0	101	0	0	0	0	0	0
8:15 to 8:30		291	3	1	4	2	301	113	4	1	1	0	117	0	0	0	0	0	0
8:30 to 8:45		349	7	1	5	4	366	112	5	0	1	2	120	0	0	0	0	0	0
8:45 to 9:00		341	2	0	9	1	353	97	2	0	1	0	100	0	0	0	0	0	0
9:00 to 9:15		299	3	1	8	0	311	101	5	0	1	3	110	0	0	0	0	0	0
9:15 to 9:30		246	0	0	8	0	254	50	5	3	0	0	58	0	0	0	0	0	0
AM Totals		2 557	22	3	65	30	2 677	863	47	11	8	5	934	0	0	0	0	0	0
10:30 to 10:45		361	2	0	7	1	371	101	0	0	2	0	103	0	0	0	0	0	0
10:45 to 11:00		298	3	1	6	1	309	152	0	1	1	0	154	0	0	0	0	0	0
11:00 to 11:15		359	2	0	4	2	367	187	1	0	1	0	189	0	0	0	0	0	0
11:15 to 11:30		418	5	0	3	3	429	218	0	0	1	0	227	0	0	0	0	0	0
11:30 to 11:45		506	1	0	3	3	513	279	1	0	1	3	284	0	0	0	0	0	0
11:45 to 12:00		572	1	0	11	10	594	258	2	0	3	1	263	0	0	0	0	0	0
12:00 to 12:15		628	1	0	9	10	648	342	1	0	3	0	346	0	0	0	0	0	0
12:15 to 12:30		671	1	0	16	9	697	361	0	0	3	3	367	0	0	0	0	0	0
12:30 to 12:45		599	2	0	12	5	618	299	0	0	3	2	304	0	0	0	0	0	0
12:45 to 13:00		495	1	1	10	3	510	231	0	0	1	3	235	0	0	0	0	0	0
13:00 to 13:15		427	1	0	10	2	440	214	0	0	1	5	220	0	0	0	0	0	0
13:15 to 13:30		337	0	0	10	3	350	155	0	0	1	4	164	0	0	0	0	0	0
PM Totals		5 471	20	2	105	53	5 651	2 862	5	1	20	22	2 850	0	0	0	0	0	0

Approach	Direct on	Cotter Rd										Yarra Glen																			
		Direct on 7 (Left Turn)					D rection 9 (R ght Turn)					D rection 9U (U Turn)					Direction 10 (Left Turn)					Direction 11 (Through)					Direct on 12U (U Turn)				
		Lights	Med ums	Heav es	Bus es	Cycl sts	Total	Lights	Med ums	Heav es	Bus es	Cycl sts	Total	Lights	Med ums	Heav es	Bus es	Cycl sts	Total	Lights	Med ums	Heav es	Bus es	Cycl sts	Total	Lights	Med ums	Heav es	Bus es	Cycl sts	Total
6:30 to 6:45		92	0	2	0	1	95	0	0	0	0	0	0	0	0	0	0	0	0	173	1	0	5	3	182	0	0	0	0	0	0
6:45 to 7:00		106	1	3	0	1	111	0	0	0	0	0	0	0	0	0	0	0	0	222	3	2	3	3	231	0	0	0	0	0	0
7:00 to 7:15		202	4	2	1	2	211	0	0	0	0	0	0	0	0	0	0	0	0	193	0	1	7	5	206	0	0	0	0	0	0
7:15 to 7:30		235	3	1	2	3	243	0	0	0	0	0	0	0	0	0	0	0	0	340	2	0	8	12	362	0	0	0	0	0	0
7:30 to 7:45		247	4	1	1	1	253	0	0	0	0	2	0	0	0	0	0	0	0	440	2	2	7	4	453	0	0	0	0	0	0
7:45 to 8:00		282	2	2	3	2	291	0	0	0	0	0	0	0	0	0	0	0	0	611	2	3	9	13	664	0	0	0	0	0	0
8:00 to 8:15		279	2	1	1	2	285	0	0	0	0	0	0	0	0	0	0	0	0	726	2	1	10	14	753	0	0	0	0	0	0
8:15 to 8:30		276	3	0	3	1	283	0	0	0	0	0	0	0	0	0	0	0	0	776	3	0	11	12	802	0	0	0	0	0	0
8:30 to 8:45		283	2	1	1	3	290	0	0	0	0	0	0	0	0	0	0	0	0	851	3	1	9	12	876	0	0	0	0	0	0
8:45 to 9:00		274	4	1	0	0	279	0	0	0	0	0	0	0	0	0	0	0	0	681	7	0	8	5	701	0	0	0	0	0	0
9:00 to 9:15		235	8	1	2	0	246	0	0	0	0	0	0	0	0	0	0	0	0	534	4	0	4	4	546	0	0	0	0	0	0
9:15 to 9:30		189	4	1	1	0	195	0	0	0	0	0	0	0	0	0	0	0	0	368	4	0	5	1	379	0	0	0	0	0	0
AM Totals		2 660	37	16	15	14	2 692	0	0	0	0	0	0	0	0	0	0	0	0	5 958	33	10	66	96	6 161	0	0	0	0	0	0
10:30 to 10:45		76	1	0	1	0	78	0	0	0	0	0	0	0	0	0	0	0	0	220	2	0	3	2	227	0	0	0	0	0	0
10:45 to 11:00		58	3	1	1	0	63	0	0	0	0	0	0	0	0	0	0	0	0	211	0	1	4	1	217	0	0	0	0	0	0
11:00 to 11:15		41	2	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0	0	202	1	0	4	0	207	0	0	0	0	0	0
11:15 to 11:30		70	2	0	1	0	73	0	0	0	0	0	0	0	0	0	0	0	0	206	1	0	6	0	213	0	0	0	0	0	0
11:30 to 11:45		75	0	0	2	0	77	0	0	0	0	0	0	0	0	0	0	0	0	305	0	0	9	1	315	0	0	0	0	0	0
11:45 to 12:00		97	1	0	1	0	99	0	0	0	0	0	0	0	0	0	0	0	0	287	0	0	3	2	292	0	0	0	0	0	0
12:00 to 12:15		82	1	0	1	0	84	0	0	0	0	0	0	0	0	0	0	0	0	287	0	0	6	2	295	0	0	0	0	0	0
12:15 to 12:30		77	1	1	1	0	80	0	0	0	0	0	0	0	0	0	0	0	0	328	0	0	10	3	341	0	0	0	0	0	0
12:30 to 12:45		77	1	0	0	0	78	0	0	0	0	0	0	0	0	0	0	0	0	315	0	0	5	1	321	0	0	0	0	0	0
12:45 to 13:00		79	1	0	1	0	81	0	0	0	0	0	0	0	0	0	0	0	0	300	0	0	7	4	311	0	0	0	0	0	0
13:00 to 13:15		49	1	0	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0	222	1	0	4	1	228	0	0	0	0	0	0
13:15 to 13:30		82	1	0	0	0	83	0	0	0	0	0	0	0	0	0	0	0	0	212	0	0	3	1	216	0	0	0	0	0	0
PM Totals		883	15	2	9	0	909	0	0	0	0	0	0	0	0	0	0	0	0	3 183	5	1	66	20	3 275	0	0	0	0	0	0

Job No. : A63
 Client : Arup
 Suburb : Canberra
 Location : 44. Yarra Glen / Cotter Rd

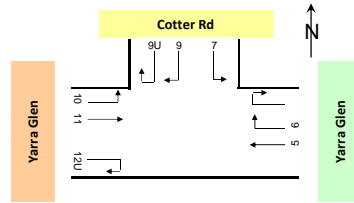
Day/Date : Wed 26th July 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Direction	Time Period	Yarra Glen																		
			Direct on 5 (Through)					Direction 6 (Right Turn)					Direct on 6U (U Turn)								
			lights	Mediums	Heavyes	Buses	Cyclists	lights	Mediums	Heavyes	Buses	Cyclists	lights	Mediums	Heavyes	Buses	Cyclists				
6:30 to 7:30			376	4	0	10	9	397	154	17	0	1	0	0	176	0	0	0	0	0	0
6:45 to 7:45			466	4	0	15	9	494	191	16	6	2	0	215	0	0	0	0	0	0	
7:00 to 8:00			592	5	0	16	7	620	224	10	5	4	0	243	0	0	0	0	0	0	
7:15 to 8:15			777	6	0	23	17	823	274	12	5	3	0	294	0	0	0	0	0	0	
7:30 to 8:30			946	8	1	25	16	996	349	13	4	4	0	370	0	0	0	0	0	0	
7:45 to 8:45			1,126	13	2	24	19	1,184	392	17	2	4	2	417	0	0	0	0	0	0	
8:00 to 9:00			1,255	14	2	28	19	1,318	415	17	1	3	2	438	0	0	0	0	0	0	
8:15 to 9:15			1,280	15	3	26	7	1,331	421	16	1	4	5	447	0	0	0	0	0	0	
8:30 to 9:30			1,235	12	2	30	5	1,284	360	17	3	3	5	388	0	0	0	0	0	0	
AM Totals			2,557	22	3	65	30	2,677	863	47	11	8	5	934	0	0	0	0	0	0	
15:30 to 16:30			1,436	12	1	22	7	1,478	658	1	1	4	1	665	0	0	0	0	0	0	
15:45 to 16:45			1,581	11	1	20	9	1,622	836	2	1	3	4	846	0	0	0	0	0	0	
16:00 to 17:00			1,855	9	0	25	18	1,907	943	4	0	5	5	957	0	0	0	0	0	0	
16:15 to 17:15			2,124	8	0	30	26	2,188	1,098	4	0	7	5	1,114	0	0	0	0	0	0	
16:30 to 17:30			2,377	4	0	41	32	2,454	1,241	4	0	10	7	1,262	0	0	0	0	0	0	
16:45 to 17:45			2,470	5	0	48	35	2,558	1,261	3	0	12	6	1,282	0	0	0	0	0	0	
17:00 to 18:00			2,393	5	1	47	28	2,474	1,233	1	0	10	8	1,252	0	0	0	0	0	0	
17:15 to 18:15			2,192	5	1	48	20	2,266	1,105	0	0	8	13	1,126	0	0	0	0	0	0	
17:30 to 18:30			1,858	4	1	42	14	1,919	901	0	0	6	14	923	0	0	0	0	0	0	
PM Totals			5,671	20	2	105	53	5,851	2,802	5	1	20	22	2,850	0	0	0	0	0	0	

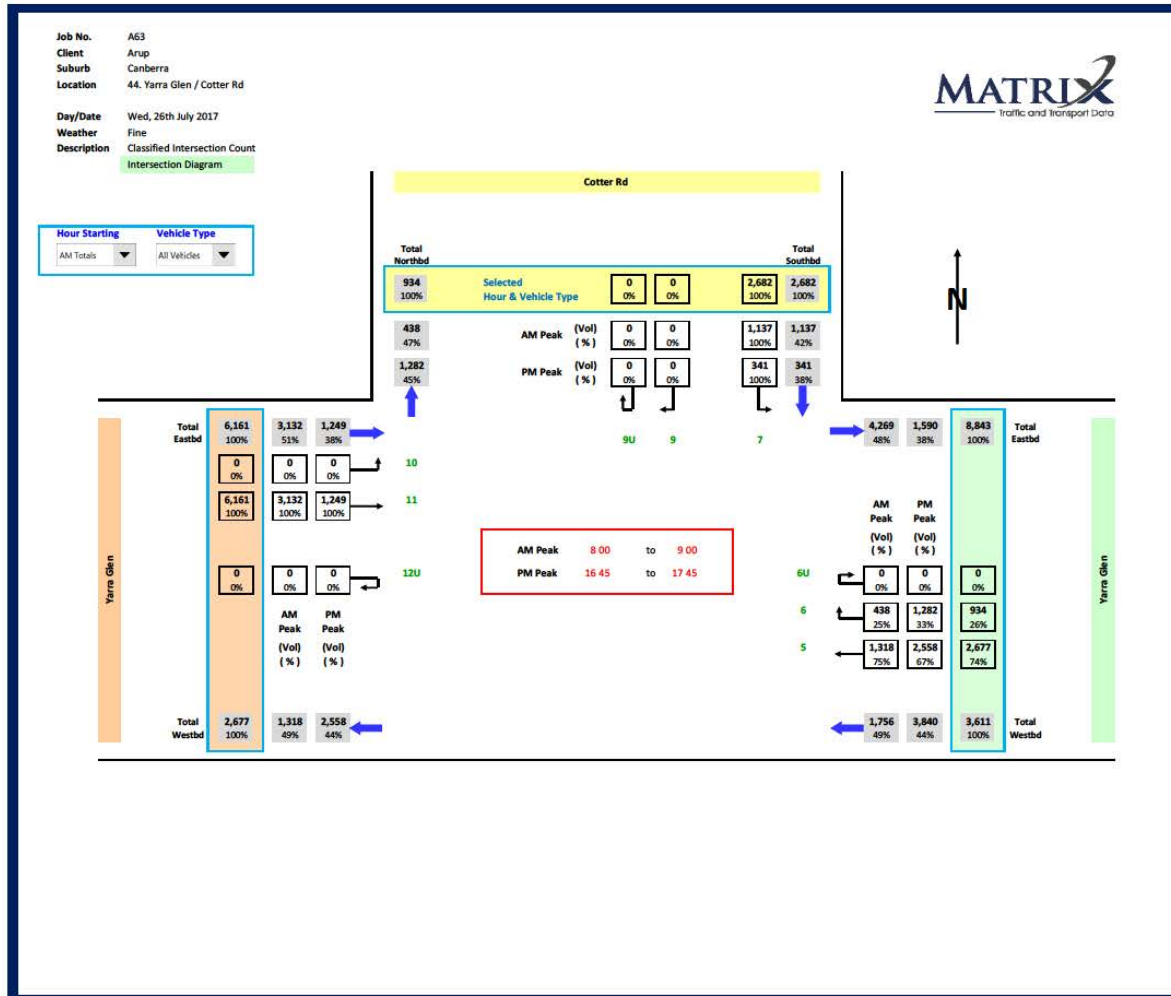
Approach	Direction	Time Period	Cotter Rd										Yarra Glen																					
			Direction 7 (Left Turn)					Direct on 9 (Right Turn)					Direction 9U (U Turn)					Direction 10 (Left Turn)					Direction 11 (Through)					Direct on 12U (U Turn)						
			lights	Mediums	Heavyes	Buses	Cyclists	lights	Mediums	Heavyes	Buses	Cyclists	lights	Mediums	Heavyes	Buses	Cyclists	lights	Mediums	Heavyes	Buses	Cyclists	lights	Mediums	Heavyes	Buses	Cyclists	lights	Mediums	Heavyes	Buses	Cyclists		
6:30 to 7:30			535	8	8	3	6	560	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	928	6	3	23	25	985	0	0	0	0	0
6:45 to 7:45			690	12	7	4	5	718	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,195	7	5	25	26	1,258	0	0	0	0	0
7:00 to 8:00			866	13	6	7	6	898	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,604	6	6	31	40	1,687	0	0	0	0	0
7:15 to 8:15			1,043	11	5	7	6	1,072	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,137	8	6	34	49	2,234	0	0	0	0	0
7:30 to 8:30			1,084	11	4	8	5	1,112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,573	9	6	37	49	2,674	0	0	0	0	0
7:45 to 8:45			1,120	9	4	8	8	1,149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,984	10	5	39	57	3,095	0	0	0	0	0
8:00 to 9:00			1,112	11	3	5	6	1,137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,034	15	2	38	43	3,132	0	0	0	0	0
8:15 to 9:15			1,068	17	3	6	4	1,098	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,842	17	1	32	33	2,925	0	0	0	0	0
8:30 to 9:30			981	18	4	4	3	1,010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,435	18	1	26	22	2,502	0	0	0	0	0
AM Totals			2,600	37	16	15	14	2,682	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,936	33	10	86	96	6,161	0	0	0	0	0
15:30 to 16:30			265	8	1	3	0	277	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	927	4	1	19	3	954	0	0	0	0	0
15:45 to 16:45			264	7	1	4	0	276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,012	2	1	25	2	1,042	0	0	0	0	0
16:00 to 17:00			303	5	0	4	0	312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,088	2	0	24	3	1,117	0	0	0	0	0
16:15 to 17:15			324	4	0	5	0	333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,145	1	0	24	5	1,175	0	0	0	0	0
16:30 to 17:30			331	3	1	5	0	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,207	0	0	28	8	1,243	0	0	0	0	0
16:45 to 17:45			333	4	1	3	0	341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,217	0	0	24	8	1,249	0	0	0	0	0
17:00 to 18:00			315	4	1	3	0	323	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,210	0	0	28	10	1,248	0	0	0	0	0
17:15 to 18:15			282	4	1	2	0	289	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,165	1	0	26	9	1,201	0	0	0	0	0
17:30 to 18:30			287	4	0	1	0	292	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,049	1	0	19	9	1,078	0	0	0	0	0
PM Totals			881	15	2	9	0	909	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,183	5	1	66	20	3,275	0	0	0	0	0

Job No. A63
Client Arup
Suburb Canberra
Location 44. Yarra Glen / Cotter Rd
Day/Date Wed, 26th July 2017
Weather Fine
Description Classified Intersection Count
Peak Hour Summary



Approach	Yarra Glen						Cotter Rd						Yarra Glen						Grand Total
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	
AM 8:00 to 9:00	1670	31	3	31	21	1,756	1,112	11	3	5	6	1,137	3,034	15	2	38	43	3,132	6,025
PM 16:45 to 17:45	3,731	8	0	60	41	3,840	333	4	1	3	0	341	1,217	0	0	24	8	1,249	5,430

Approach	Yarra Glen						Cotter Rd						Yarra Glen						Grand Total
	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	Lights	Mediums	Heavies	Buses	Cyclists	Total	
6:30 to 7:30	530	19	4	11	9	573	535	8	8	3	6	560	928	6	3	23	25	985	2,118
6:45 to 7:45	657	20	6	17	9	709	690	12	7	4	5	718	1,195	7	5	25	26	1,258	2,685
7:00 to 8:00	816	15	5	20	7	863	866	13	6	7	6	898	1,604	6	6	31	40	1,687	3,448
7:15 to 8:15	1,051	18	5	26	17	1,117	1,043	11	5	7	6	1,072	2,137	8	6	34	49	2,234	4,423
7:30 to 8:30	1,295	21	5	29	16	1,366	1,084	11	4	8	5	1,112	2,573	9	6	37	49	2,674	5,152
7:45 to 8:45	1,518	30	4	28	21	1,601	1,120	9	4	8	8	1,149	2,984	10	5	39	57	3,095	5,845
8:00 to 9:00	1,670	31	3	31	21	1,756	1,112	11	3	5	6	1,137	3,034	15	2	38	43	3,132	6,025
8:15 to 9:15	1,701	31	4	30	12	1,778	1,068	17	3	6	4	1,098	2,842	17	1	32	33	2,925	5,801
8:30 to 9:30	1,595	29	5	33	10	1,672	981	18	4	4	3	1,010	2,435	18	1	26	22	2,502	5,184
AM Totals	3,420	69	14	73	35	3,611	2,600	37	16	15	14	2,682	5,936	33	10	86	96	6,161	12,454
15:30 to 16:30	2,094	13	2	26	8	2,143	265	8	1	3	0	277	927	4	1	19	3	954	3,374
15:45 to 16:45	2,417	13	2	23	13	2,468	264	7	1	4	0	276	1,012	2	1	25	2	1,042	3,786
16:00 to 17:00	2,798	13	0	30	23	2,864	303	5	0	4	0	312	1,088	2	0	24	3	1,117	4,293
16:15 to 17:15	3,222	12	0	37	31	3,302	324	4	0	5	0	333	1,145	1	0	24	5	1,175	4,810
16:30 to 17:30	3,618	8	0	51	39	3,716	331	3	1	5	0	340	1,207	0	0	28	8	1,243	5,299
16:45 to 17:45	3,731	8	0	60	41	3,840	333	4	1	3	0	341	1,217	0	0	24	8	1,249	5,430
17:00 to 18:00	3,626	6	1	57	36	3,726	315	4	1	3	0	323	1,230	0	0	28	10	1,268	5,317
17:15 to 18:15	3,297	5	1	56	33	3,392	282	4	1	2	0	289	1,165	1	0	26	9	1,201	4,882
17:30 to 18:30	2,761	4	1	48	28	2,842	287	4	0	1	0	292	1,049	1	0	19	9	1,078	4,212
PM Totals	8,473	25	3	125	75	8,701	883	15	2	9	0	909	3,183	5	1	66	20	3,275	12,885



From: [Paluri, Rama](#)
To: [McHugh, Ben](#)
Cc: mike.day@act.gov.au; [Hubbard, Benjamin](#)
Subject: Cotter Road to Adelaide Avenue - Modelling - PT routes info [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]
Date: Tuesday, 7 August 2018 3:44:00 PM
Attachments: [Woden Bus network.pdf](#)
[PTdata.zip](#)

Ben,

Please see attached PT network map for Woden region and the summarised table below:

Road Section	Route description (if any)	Routes
Yarra Glen -> Adelaide Ave	Common Bus Route	61, 163, 161, 64, 71, 63, 164, 171
	Blue Rapid	300, 314, 316, 319, 313, 315, 318, 343
Cotter Rd (East of Lady Denman Dr)		182, 725, 726, 783

* Routes either not operated b/w 0800-0900 am, or not in citybound direction.

Also below are the service times for each PT route (citybound) either at Woden Bus terminal or Cotter Rd interchange. I have updated both base and option micro-simulation models with these details, and didn't notice any changes to the network operation. For further details on bus routes, please refer to the attached zip file.

Road Section	Route Description (if any)	Route	Arrival at
Yarra Glen (City bound)	Common Bus Route	61	08:23
		161	08:57
		163	08:06
		163	08:29
		163	08:52
		164	08:23
		64	08:49
		171	08:05
		171	08:25
		171	08:46
	Blue Rapid	318	07:59
		319	08:02
		343	08:06
		300	08:09
		313	08:12
		300	08:14
		318	08:16
		319	08:19
		343	08:22
		300	08:25
313	08:28		

		300	08:31
		300	08:34
		318	08:37
		319	08:40
		343	08:43
		313	08:47
		300	08:51
		319	08:56
		318	09:00
Total b/w 0800-0900 am		30	
Cotter Rd (East of Lady Denman Dr)		182	08:24
		182	08:54
		725	08:10
		726	08:46
Total b/w 0800-0900 am		4	

Regards

Rama

From: Paluri, Rama

Sent: Tuesday, 7 August 2018 10:09 AM

To: McHugh, Ben <Ben.McHugh@act.gov.au>

Subject: RE: Cotter Road to Adelaide Avenue - Modelling - Time for quick demo?

[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi Ben,

Thank you for the positive feedback. Much appreciated.

My apologies for the delay. I was sick yesterday. I will go through ACTION timetables, and should be able to provide by late afternoon.

Regards

Rama

From: McHugh, Ben

Sent: Monday, 6 August 2018 3:51 PM

To: Paluri, Rama <Rama.Paluri@act.gov.au>

Subject: Re: Cotter Road to Adelaide Avenue - Modelling - Time for quick demo?

[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi Rama,

This is a great piece of work. I really appreciate the time and effort you have put into this.

Where you able to find the bus numbers we discussed last week?

Thanks

Ben

Sent from my iPad

On 2 Aug 2018, at 3:50 pm, Paluri, Rama <Rama.Paluri@act.gov.au> wrote:

Thanks Ben. I will lock my calendar.

Regards

Rama

From: McHugh, Ben

Sent: Thursday, 2 August 2018 3:19 PM

To: Paluri, Rama <Rama.Paluri@act.gov.au>

Cc: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>

Subject: RE: Cotter Road to Adelaide Avenue - Modelling - Time for quick demo?
[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Thanks Rama,

How about 3pm tomorrow?

I'll pop over to you.

Regards

Ben

From: Paluri, Rama

Sent: Thursday, 2 August 2018 1:53 PM

To: McHugh, Ben <Ben.McHugh@act.gov.au>

Cc: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>

Subject: RE: Cotter Road to Adelaide Avenue - Modelling - Time for quick demo?
[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Ben,

I have completed the modelling and tested the option. So I am wondering whether you could spare few mins tomorrow for a quick demo.

On a quick update, with the proposed treatment:

- Merits
 - The queueing on Cotter Rd citybound lanes has diminished completely (see **Figures 1 & 2**).
 - The travel speed has increased from 10-25km/h to 70km/h.
 - Lady Denman Dr left turn flow has also improved significantly (At present, during the peak of peak periods (08:45-09:00am) this approach occasionally has extensive queueing) (see **Figures 1 & 2**)..
 - The flow on Yarra Glen Dr left lane has improved (At present, due to the off-ramp merging traffic the flows on this lane sometimes drops to 10-25 km/h).
- Demerits
 - Dudley St queuing: With the improved traffic flow on Cotter Rd (citybound), the left turn traffic into Dudley St is reaching quickly. As a result, Dudley St is filling quite quickly and occasionally spilling onto Cotter Rd (see **Figure 4**).

Happy to discuss further. Also, please advise on the report style(any specifics on charts, tables, etc).

Figure 1: Existing AM Model – Cotter Rd queuing at 08:45 am

<image001.jpg>

Figure 2: Option Testing AM Model – Cotter Rd queuing at 08:45 am

<image002.jpg>

Figure 3: Option Testing AM Model – Proposed treatment (Continuous lane added to Cotter Rd off-ramp, Eastbound lane merge)

<image003.jpg>

Figure 4: Option Testing AM Model – Left turn traffic into Dudley St –Queuing

<image004.jpg>

Regards

Rama

From: McHugh, Ben

Sent: Thursday, 19 July 2018 2:31 PM

To: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>

Cc: Paluri, Rama <Rama.Paluri@act.gov.au>

Subject: Re: Added Lane - Cotter Road to Adelaide Avenue - Modelling
[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

No worries.

I'll be guided by your advice Ben.

Sent from my iPad

On 19 Jul 2018, at 2:30 pm, Hubbard, Benjamin
<Benjamin.Hubbard@act.gov.au> wrote:

I'll put that to Rama and Mike,

The benefit to doing it ourselves would be that we build some capacity, can respond quickly to changing scenarios.

This is, however, bread and butter work for consultants.

I'll get back to you

Cheers Ben

From: McHugh, Ben

Sent: Thursday, 19 July 2018 2:26 PM

To: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>

Subject: Re: Added Lane - Cotter Road to Adelaide Avenue - Modelling
[SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi Ben,

Given the current pressures on workloads etc, would this be an inappropriate use of Rama's time? I can potentially get a consultant to do this also.

Regards

Ben

Sent from my iPad

On 19 Jul 2018, at 1:43 pm, Hubbard, Benjamin
<Benjamin.Hubbard@act.gov.au> wrote:

Ben,

Good afternoon

Rama can calculate the travel time / speeds using a micro-simulation model. Creating such a model will take about 3 weeks to collate data, code the networks, calibrate / validate the model. Is this timeframe ok with you.

Regards Ben

From: Paluri, Rama
Sent: Wednesday, 18 July 2018 10:26 AM
To: Hubbard, Benjamin
<Benjamin.Hubbard@act.gov.au>; Day, Michael
<Michael.Day@act.gov.au>
Cc: McHugh, Ben <Ben.McHugh@act.gov.au>
Subject: Added Lane - Cotter Road to Adelaide Avenue -
Modelling [SEC=UNCLASSIFIED, DLM=For-Official-Use-
Only]

Ben/ Mike,

Apologies for delay. I'm happy to undertake this modelling exercise.

Please see attached figure to note the proposed network scope and additional traffic data required (apart from signals). I'm working with Ed to confirm whether he has any traffic survey counts. Based on that I will contact you again, to discuss further.

In terms of time lines, when are you expecting to complete testing?

Regards

Rama

From: Hubbard, Benjamin
Sent: Wednesday, 18 July 2018 9:29 AM
To: Paluri, Rama <Rama.Paluri@act.gov.au>
Cc: McHugh, Ben <Ben.McHugh@act.gov.au>
Subject: FW: Added Lane - Cotter Road to Adelaide Avenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]
Rama,

How are your micro-sim skills ? Could you model this section of road to work out travel time saving ? What would you need in terms of data / surveys

Cheers Ben

From: McHugh, Ben
Sent: Tuesday, 17 July 2018 7:49 PM
To: Marshall, Ken <Ken.Marshall@act.gov.au>; Day, Michael <Michael.Day@act.gov.au>; Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>
Cc: Mehta, Jayesh <Jayesh.Mehta@act.gov.au>; Ortiz, Gilbert <Gilbert.Ortiz@act.gov.au>
Subject: Fwd: Added Lane - Cotter Road to Adelaide Avenue [SEC=UNCLASSIFIED, DLM=For-Official-Use-Only]

Hi All,

Please see Emma's comments below.

Please let me know if we would be able to assess the potential average speed and travel time benefits from the proposed improvements for traffic on Cotter Road and Adelaide Avenue without using a consultant?

Thanks again for putting this together.
Regards
Ben
Sent from my iPhone

Begin forwarded message:

From: "Thomas, Emma"
<Emma.Thomas@act.gov.au>
Date: 17 July 2018 at 6:38:54 pm AEST
To: "McHugh, Ben"
<Ben.McHugh@act.gov.au>
Cc: "Corrigan, Jim"
<Jim.Corrigan@act.gov.au>
Subject: RE: Added Lane - Cotter
Road to Adelaide Avenue
[SEC=UNCLASSIFIED, DLM=For-
Official-Use-Only]

Hi Ben,

I am supportive in concept - I would like to understand from the traffic modelling, what the overall benefit is to average speed along the corridor at peak and then what the impact will be on bus travel times. I am happy for you to start the conversation with TC to see if there are any other concerns with this approach.

With thanks,
Emma

-----Original Message-----

From: McHugh, Ben
Sent: Tuesday, 17 July 2018 3:39 PM
To: Thomas, Emma
<Emma.Thomas@act.gov.au>
Cc: Corrigan, Jim
<Jim.Corrigan@act.gov.au>
Subject: Added Lane - Cotter Road to
Adelaide Avenue
[SEC=UNCLASSIFIED, DLM=For-
Official-Use-Only]

Hi Emma,

The attached sketch demonstrates how the existing Transit Lane (T2) on Adelaide Avenue could be converted to allow for the Cotter Road on ramp to be an added lane, which would significantly reduce the congestion currently experienced at this location. This

arrangement could be achieved with linemarking and a few signs to introduce the form one lane at low cost.

The obvious sensitivity is the reduced length of dedicated Transit Lane (T2) required to accommodate this option, which would require support from Transport Canberra as it predominantly supports rapid bus movements on the Blue Rapid route. The T2 lane currently runs from just north of Yamba Drive near Woden through to Capital Circle. This proposal would reduce its length by approximately 1/3. There is a potential to reinstate the T2 lane for a short distance of a few hundred meters between the Hopeton Circuit interchange and Capital Circle, however the benefits would be limited and potentially confusing to motorists.

Please let me know if you would like this progressed for discussions with TC.

Thanks

Ben

<StudyNetwork & TrafficCounts.PNG>

Road Section	Route Description (if any)	Route	Woden Station Arrival at
Yarra Glen (City bound)	Common Bus Route	61	08:23
		161	08:57
		163	08:06
		163	08:29
		163	08:52
		164	08:23
		64	08:49
		171	08:05
		171	08:25
		171	08:46
	Blue Rapid	318	07:59
		319	08:02
		343	08:06
		300	08:09
		313	08:12
		300	08:14
		318	08:16
		319	08:19
		343	08:22
		300	08:25
		313	08:28
		300	08:31
		300	08:34
		318	08:37
		319	08:40
		343	08:43
		313	08:47
		300	08:51
		319	08:56
		318	09:00
Total b/w 0800-0900 am		30	
Cotter Rd (East of Lady Denman Dr)		182	08:24
		182	08:54
		725	08:10
		726	08:46
Total b/w 0800-0900 am		4	

From: Paluri, Rama
To: McHugh, Ben; Marshall, Ken; Hubbard, Benjamin
Cc: mike.day@act.gov.au
Subject: Cotter Road On Ramp - Simulation videos & Traffic Operation stats [SEC=UNCLASSIFIED]
Date: Wednesday, 22 August 2018 4:33:00 PM
Attachments: [mage001.jpg](#)
[mage002.jpg](#)
[mage003.jpg](#)
[mage004.jpg](#)
[CotterRd_OnRamp_Base_vs_Option_Traffic_Operat on Stats.pdf](#)

Gentlemen,

I have created simulation videos and traffic operation stats graphs (attached), for both (morning peak) existing and option testing models. Please access folder below to view them:

G:\RA\TMS\Traffic Signals\AimsunModelling\AdelaideAve_CotterRdEB_AdditionalLane_Testing_Modelling\Cotter Rd_NB_OnRamp_Testing_Videos & Stats

Alternatively, you can also view videos by accessing web links below:

Existing Model: <https://www.useloom.com/share/2aa7acffa55547188c311a655750a2ac>

Option Testing Model: <https://www.useloom.com/share/8ef7369499524bc4b7b16462f3be1511>

(Note: Web player also has speed, full screen, and download features)

If you need any further info, please let me know

Ben,

I have uploaded these files to my USB drive. So please let me know

Regards

Rama Paluri

From: Marshall, Ken

Sent: Wednesday, 22 August 2018 11:14 AM

To: Paluri, Rama <Rama.Paluri@act.gov.au>

Cc: Hubbard, Benjamin <Benjamin.Hubbard@act.gov.au>

Subject: FW: Cotter Road On Ramp - Traffic Model Outputs [SEC=UNCLASSIFIED]

Rama,

Ben Mc and I will present your finding to Stat Board tomorrow. I think Ben discussed putting a video representation of a thumb drive? Is that possible for tomorrow? Also, can we simply state the average benefit to general users vs the disbenefit to buses? Say, in terms of minutes by number of vehicles?

Ken Marshall | Director, Roads ACT

Phone 02 62 076588 | Email ken.marshall@act.gov.au

Roads and Infrastructure, Roads ACT | Transport Canberra and City Services Directorate | ACT Government

496 Northbourne Avenue, Dickson ACT 2602 | Locked Bag 2000, Civic Square ACT 2608 | www.act.gov.au

From: McHugh, Ben

Sent: Wednesday, 22 August 2018 11:06 AM

To: Willson, Helen (TCCS) <Helen.Willson@act.gov.au>

Cc: Neal, Colleen <Colleen.Neal@act.gov.au>; Marshall, Ken <Ken.Marshall@act.gov.au>

Subject: FW: Cotter Road On Ramp - Traffic Model Outputs [SEC=UNCLASSIFIED]

Hi Helen,

You can use the information below as papers for the Cotter Road on ramp discussion

Regards

Ben

Roads ACT have assessed the benefits and impacts of reducing the length of Transit (T2) lane on Adelaide Avenue just south of the on ramp from Cotter Road, to allow for the adjustment from a merge to an added lane for this movement

The basic findings are reported below;

- Benefits

- The queueing on Cotter Rd citybound lanes has diminished completely (see comparisons between **Figures 1 & 2**)
- The travel speed has increased from 10-25km/h to 70km/h for the on ramp
- Lady Denman Dr left turn flow has also improved significantly (At present, during the peak of peak periods (08:45-09:00am) this approach occasionally has extensive queueing) (see comparisons between **Figures 1 & 2**)
- The flow on Yarra Glen Dr left lane has drastically improved (At present, due to the off-ramp merging traffic the flows on this lane sometimes drops to 10-25 km/h)
- The 4 bus movements on Cotter Road during the morning peak period gain significant travel time benefits

- Impacts

- Dudley St queueing: With the improved traffic flow of traffic on Cotter Rd (city bound), the left turn traffic into Dudley St is reaching capacity more quickly. As a result, Dudley St is filling quite quickly and occasionally spilling onto Cotter Rd (see **Figure 4**). This could be addressed with improvements (signalisation) at the intersection of Dudley Street and Novar Street
- The 30 bus movements (a bus every 2 minutes) on Adelaide Avenue have their average speeds reduced by 5-10km/s per hour, but are still at approximately 70km/h. The travel time impacts for this slight average speed reduction over this short distance are minimal.

I will make the video files available for you to review. These have been prepared by the Roads ACT team who have built the model and tested the scenarios in house.

I have also had initial discussions with Transport Canberra (Ian McGlenn) regarding the potential impacts on bus operations, who is comfortable with this proposal on the basis consultation is undertaken with staff and the WHS delegates prior to a decision being finalised.

The proposal provides significant travel time savings to all users in the system who travel through this interchange, with limited impacts on the public transport system. In saying that, the decision needs to consider the existing policy framework that prioritises public transport on key rapid corridors. This change could potentially be seen as being in conflict with the policy framework.

Figure 1: Existing AM Model – Cotter Rd queueing

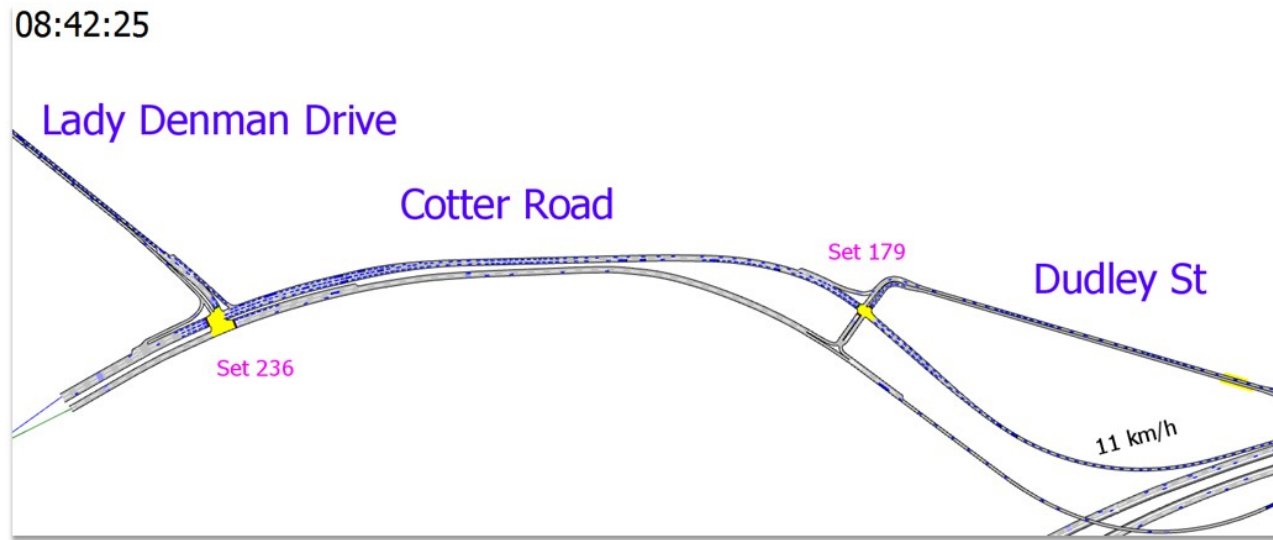


Figure 2: Changed arrangements on Adelaide Ave - AM Model – Cotter Rd no queuing

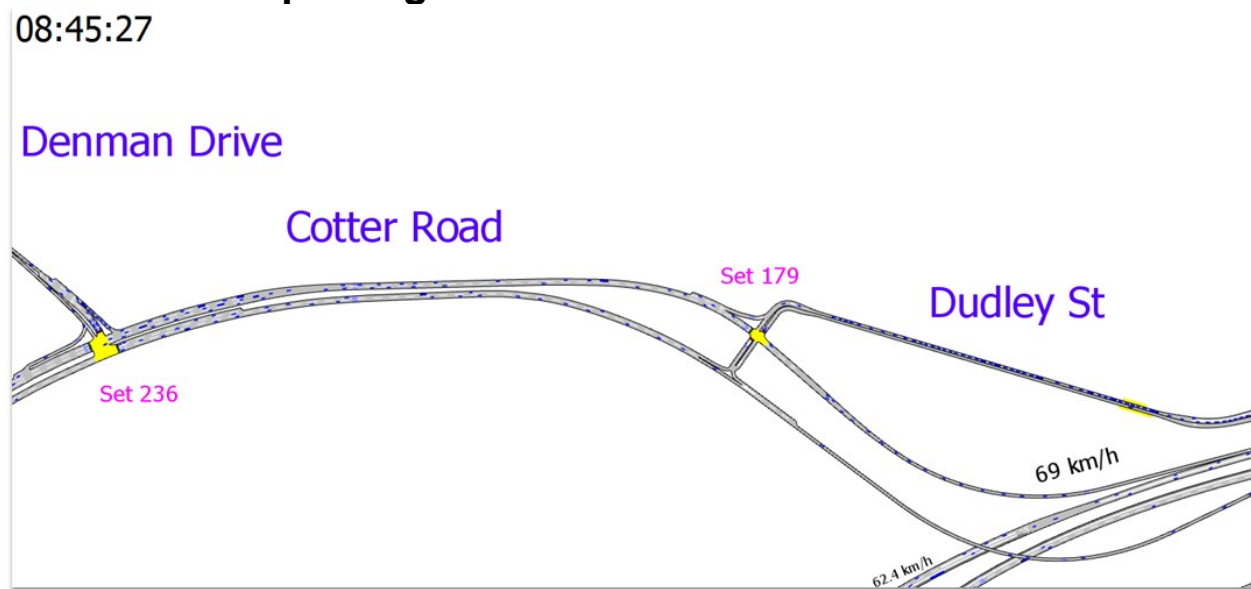


Figure 3: Changed arrangements on Adelaide Ave - Continuous lane added to Cotter Rd off-ramp

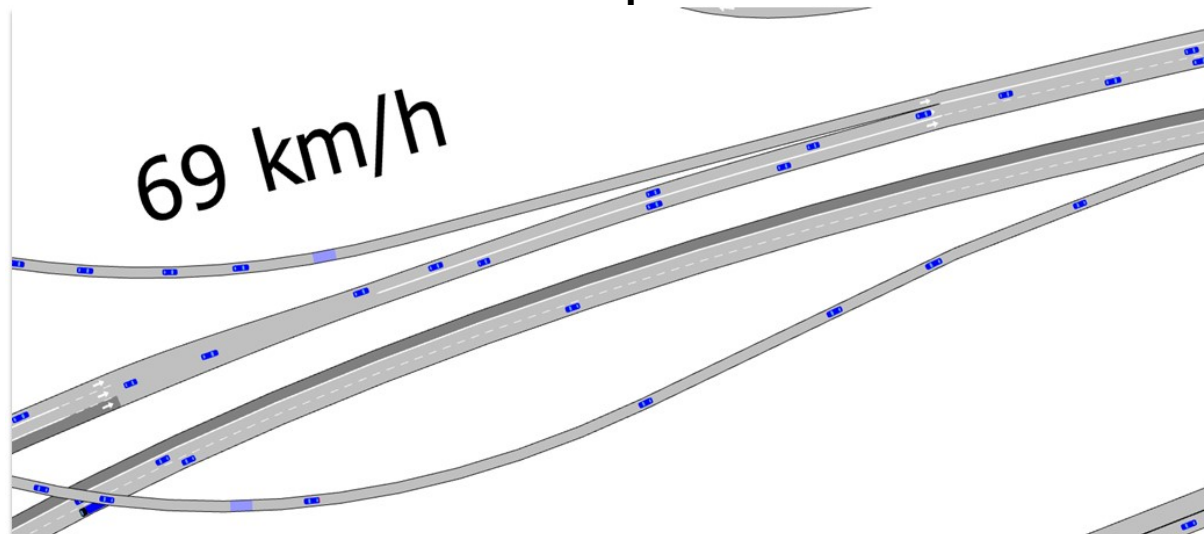


Figure 4: Changed arrangements on Adelaide Ave - AM Model – Left turn traffic into Dudley St –Queuing

