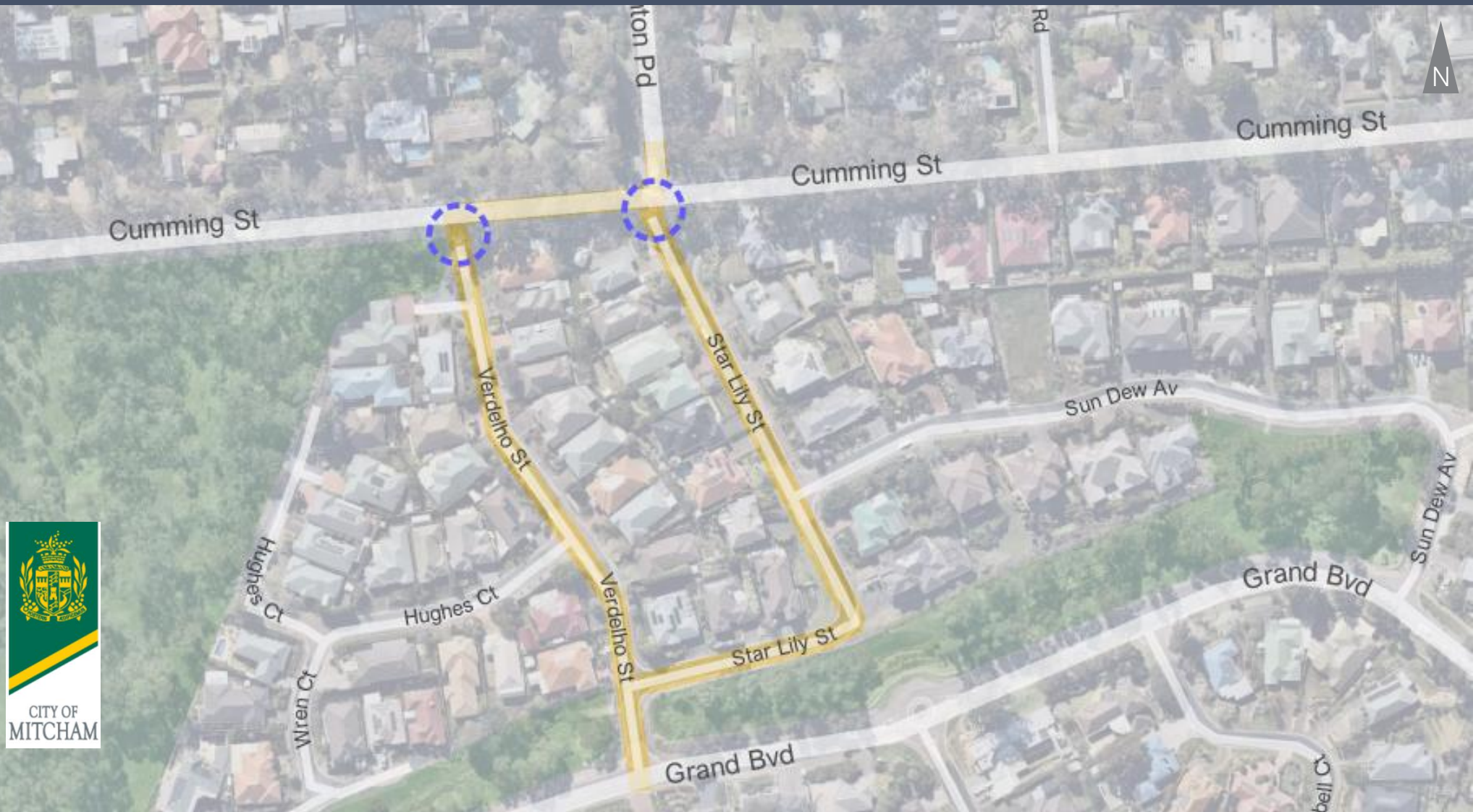


CRAIGBURN FARM EGRESS ROADS TRAFFIC ASSESSMENT



QUALITY RECORD

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	06/11/2020	Final Traffic Assessment	Joy Yu Sarah Hartland	David Kwong	John Devney	<i>John Devney</i>

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INTRODUCTION

01

BACKGROUND

Verdelho Street and Star Lily Street were nominated as egress road options for traffic access as a bushfire emergency route during the bushfire season, typically from 1 December to 30 April each year.

The traffic assessment for these bushfire access routes was prepared to address Decision 2 for the location of egress only access in the City of Mitcham Council meeting held on 25 August 2020. The purpose of the traffic assessment is to provide Council staff with a report that be included in a Council report and to provide the technical analysis to be used in the community consultation and engagement.

Opening Star Lily Street to vehicular traffic was part of the Option 3D in the recommendations of the 'Craigburn Farm Western Bypass Study' that was completed by GTA Consultants in July 2019.

STUDY PURPOSE

- Conduct the traffic reassignment analysis for the on a preferred option between the Verdelho Street or Star Lily Street proposed egress access point onto Cumming Street, Blackwood.
- Undertake a detailed traffic assessment to evaluate the impacts of both the Verdelho Street and Star Lily Street egress access point options on the area. This was based on recent traffic count data from 2018 to 2020 and updated traffic counts to be undertaken by the City of Mitcham. The 2016 census statistics were used to confirm the population and the number of households in the study area who may use either of the two emergency egress access options .
- Estimate the traffic generated from the local residential properties for both of these options that would have either Verdelho Street or Star Lily Street opened for permanently only during the declared bushfire season. (1 December to 30 April).

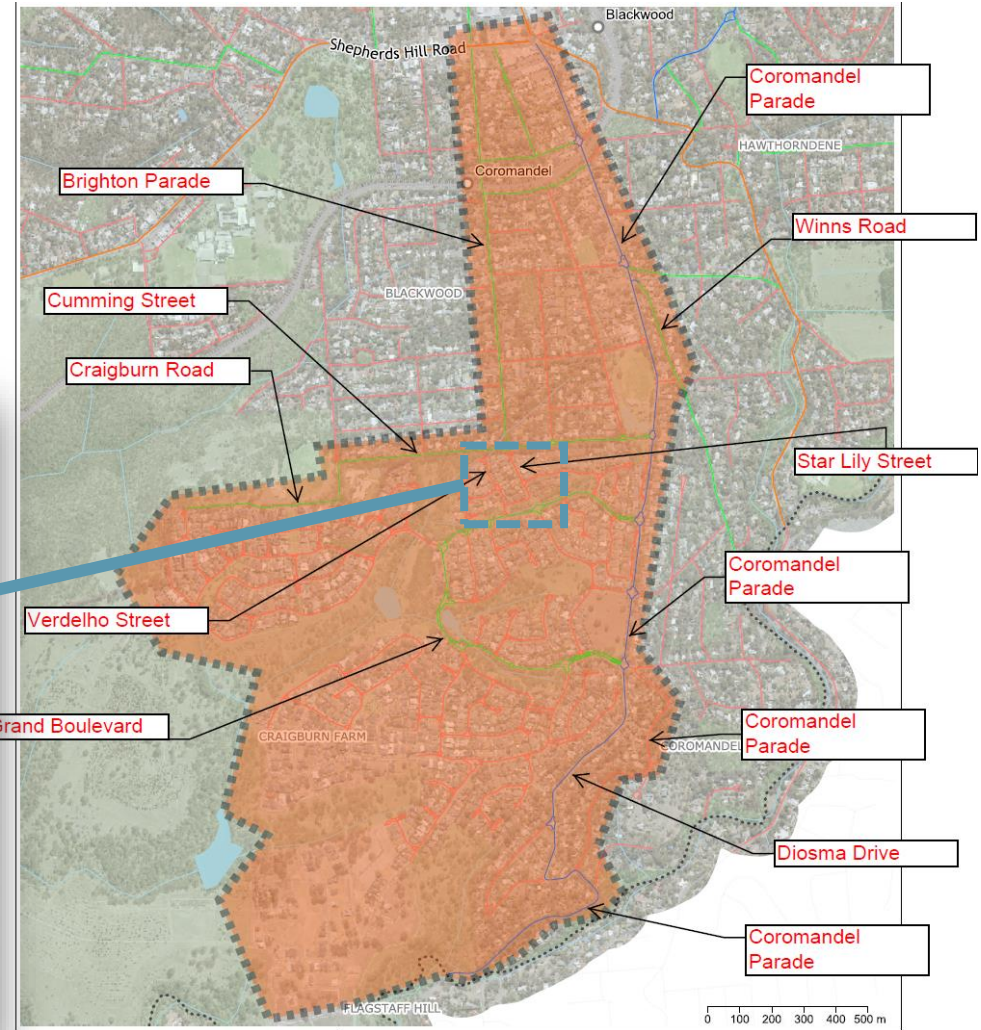
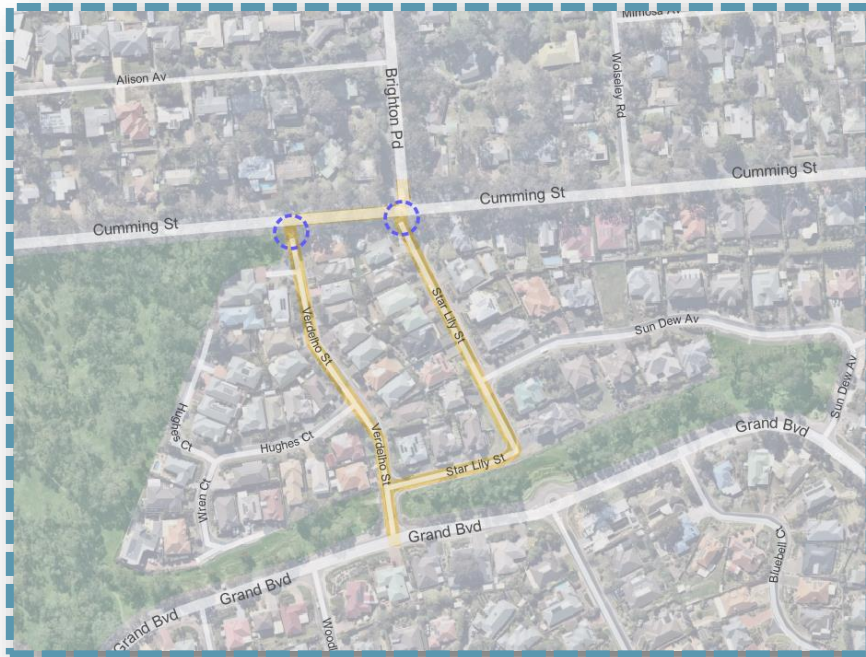
REPORT STRUCTURE

- **Section 1 Introduction** with the background and purpose
- **Section 2 Existing conditions** and existing traffic volumes.
- **Section 3 Traffic redistribution analysis** with the assumptions, traffic counts and results shown on map plans.
- **Section 4 Conclusions and Recommendations** with the key findings summarised, the recommended option explained and the next steps to progress this project.

STUDY AREA FOR THE CRAIGBURN FARM EGRESS ROADS TRAFFIC ASSESSMENT

The study area includes the entire suburb of Craigburn Farm and is bounded by:

- Shepherds Hill Road to the north
- Coromandel Parade to the east
- Black Road to the south
- Sturt Regional Recreation Park to the west



EXISTING CONDITIONS

02

EXISTING ROAD NETWORK HIERARCHY

The following roads within the study area functions as a Collector Road or higher.

Sub Arterial Road

Shepherds Hill Road

- Shepherds Hill Road is a sub-arterial road under the care and control of the Department for Infrastructure and Transport (DIT). It is configured with two lanes in each direction and has a posted speed of 50km/h and an estimated daily traffic of 26,600 vehicles.

Distributor

Coromandel Parade (Shepherds Hill Road to Grand Boulevard)

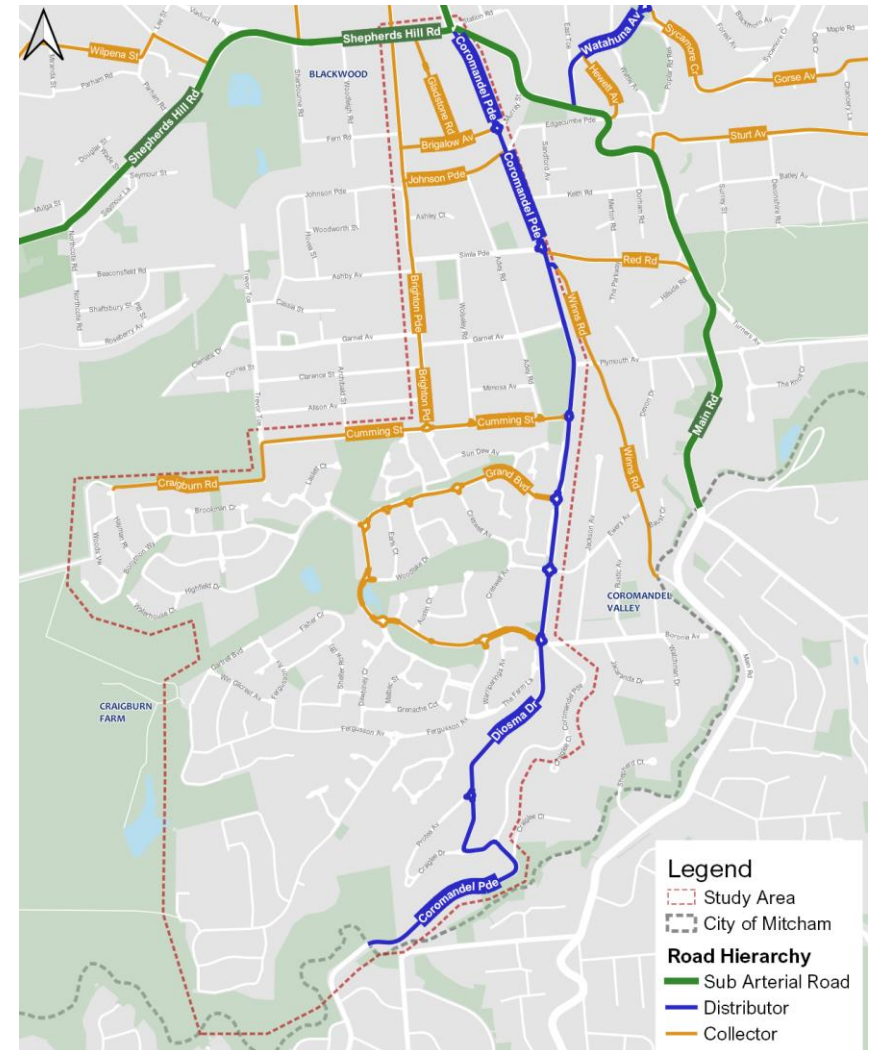
- Coromandel Parade has an urban default speed limit of 50km/h and has an estimated AADT of 13,500 vehicles per day between Brigalow Avenue and Simla Parade, and estimated AADT of 8,700 vehicles per day between Cumming Street and Ewers Avenue.

Diosma Drive

- Diosma Drive has an urban default speed limit of 50km/h and has an estimated AADT of 2,700 vehicles per day between Coromandel Parade and Protea Avenue.

Collector Roads

- Brighton Parade – 40 km/h area
- Gladstone Road – 40 km/h area
- Johnson Parade – 40 km/h area
- Brigalow Avenue – 40 km/h area
- Cumming Street – 40 km/h area
- Grand Boulevard – Default Urban Speed Limit of 50 km/h



DAILY TRAFFIC VOLUMES BY DIRECTION

The daily traffic volumes by direction are shown as follows:

Brighton Parade

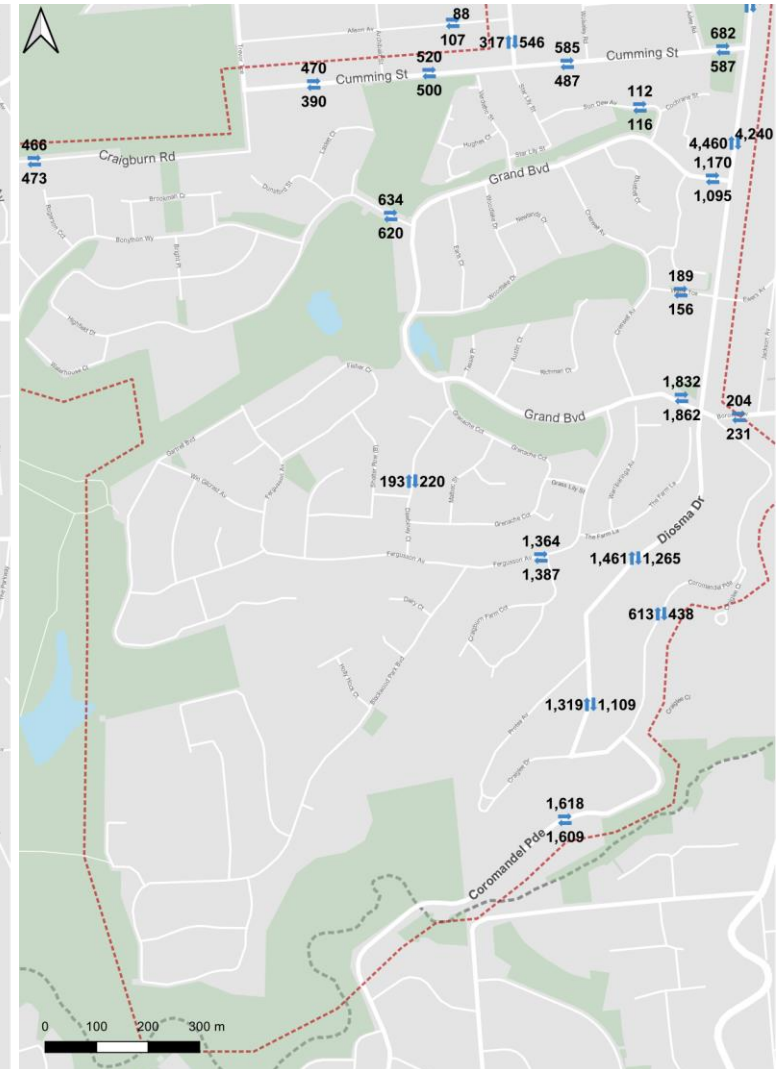
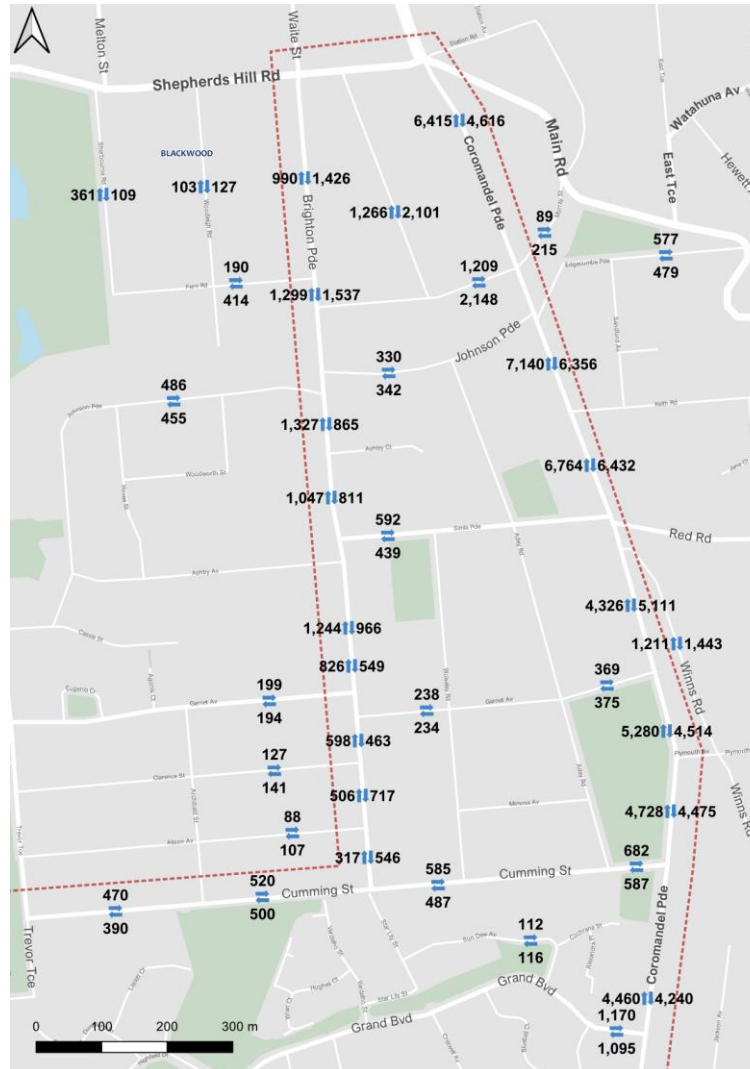
850 vehicles (southern end) to 2,800 vehicles (northern end) per day.

Cumming Street

850 vehicles (western end) to 1,300 vehicles (eastern end) per day.

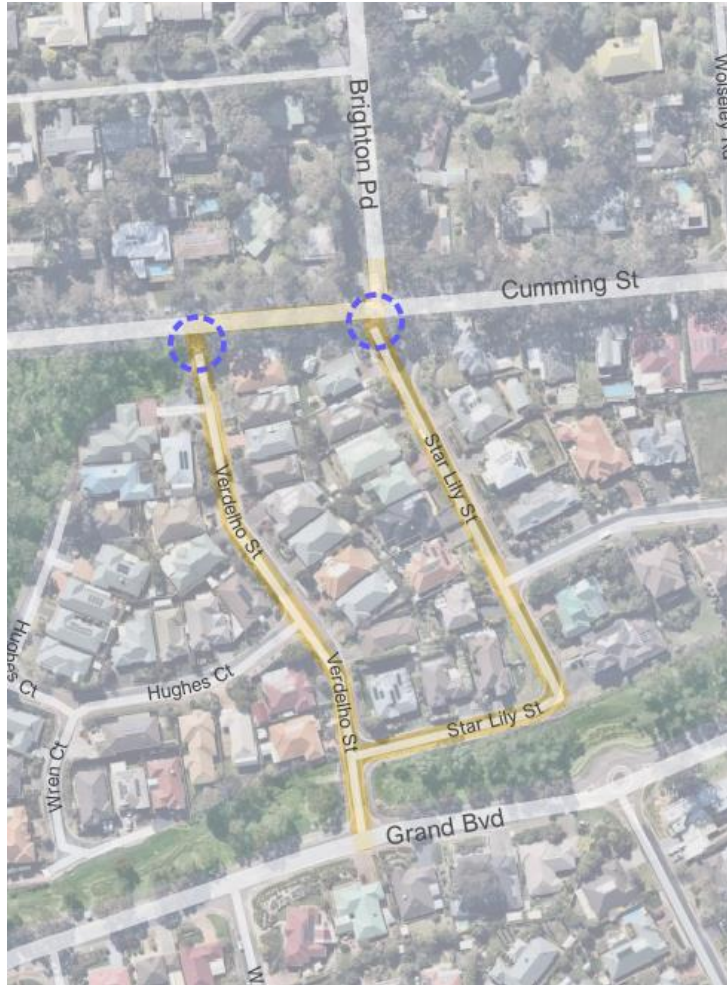
Grand Boulevard

2,300 vehicles (northern intersection with Coromandel Parade) to 3,700 vehicles (southern intersection at Coromandel Parade) per day.



*Traffic data obtained from City of Mitcham from various dates ranging from 2015 - 2020

EXISTING CONFIGURATIONS OF THE TWO OPTIONS



Verdelho Street



Verdelho Street and Star Lily Street are currently no-through roads at the Cumming Street end.

Verdelho Street has a boom gate installed at the north end to allow access only for emergency vehicles from Cumming Street. It connects directly with Grand Boulevard at the southern end.

Star Lily Street



The northern end of Star Lily Street is aligned with Brighton Parade at the T-junction of Brighton Parade and Cumming Street. Bollards were installed at the end of Star Lily Street to prevent vehicles from accessing Cumming Street/Brighton Parade.

Star Lily Street does not have a direct connection to Grand Boulevard. Vehicles will need to turn onto Verdelho Street before turning into Star Lily Street.

TRAFFIC IMPACT ASSESSMENT

03

DISTRIBUTION ASSIGNMENT

An assessment has been undertaken to determine the likely increase in traffic utilising Verdelho Street or Star Lily Street in the event that either one of the roads is opened and connected onto Cumming Street for egress movements only.

A critical factor is determining the likelihood of a vehicle undertaking utilising the proposed new route is the existing distribution of traffic within the catchment area. As such, the following assumptions have been made in regards to the direction of travel of vehicles on a typical morning peak period scenario based on existing available traffic data.

- **Northbound:** 60 per cent
- **Eastbound:** 10 per cent
- **Southbound:** 10 per cent
- **Westbound:** 20 per cent

The westbound movements will likely be travelling northbound prior to travelling westbound along Shepherds Hill Road. As such, for the purposes of this assessment, 80 per cent of all traffic in the catchment area is assumed to travel northbound.

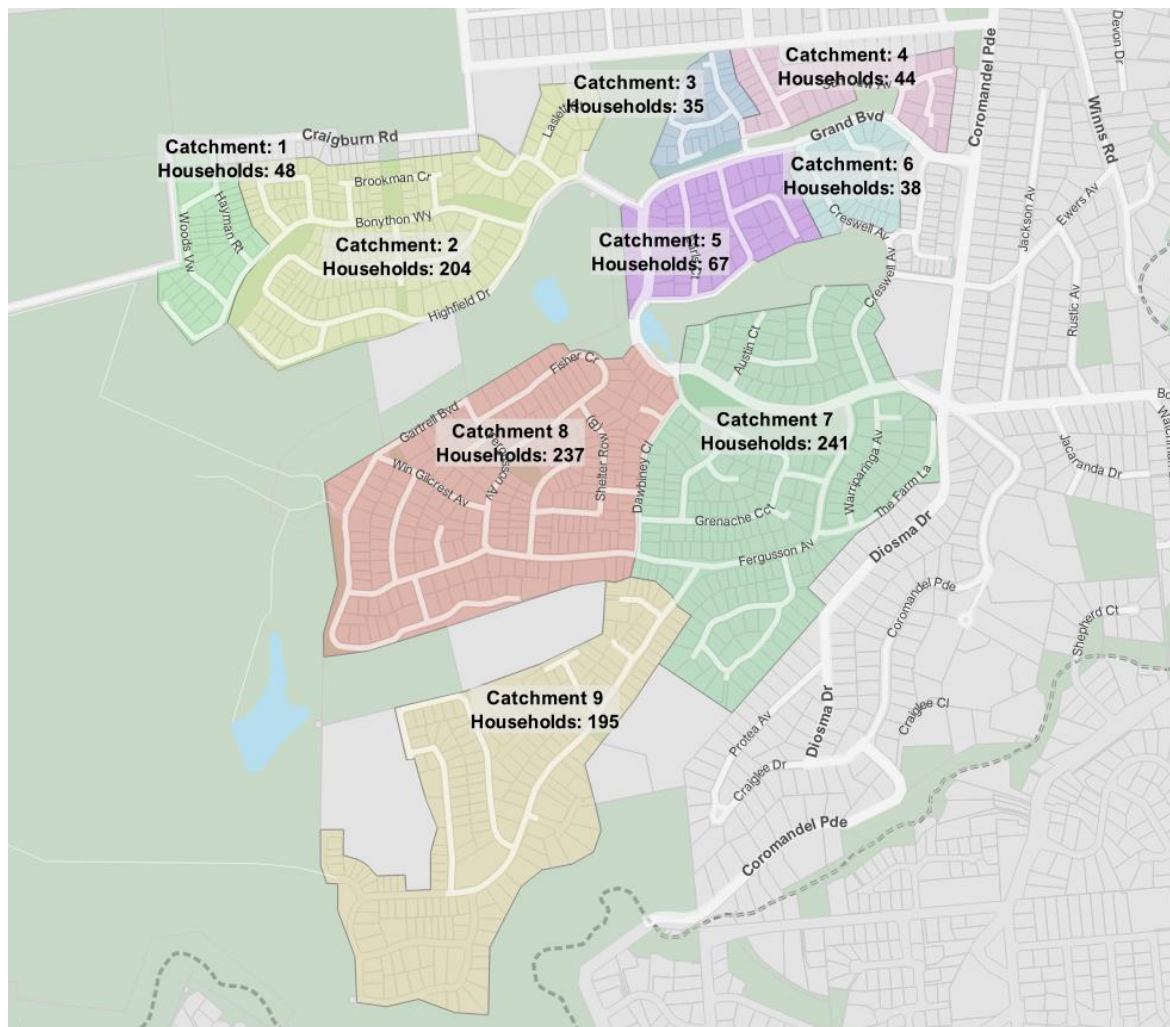
From the percentage of traffic likely to be travelling northbound, further analysis was undertaken to determine the percentage of vehicles that are likely to travel north via the newly proposed route.

The percentage breakdowns for each catchment area were determined by assessing the following factors:

- 1) Configuration of the arterial road network in the immediate vicinity of the catchment area
- 2) Existing operation of intersections providing access between the local and arterial road network
- 3) Surrounding employment centres, retail centres and schools in relation to the site.
- 4) Directness of the route to be taken (i.e. is the route anti-directional and is it the shortest route to reach the destination?)

UPDATED CATCHMENT AREA

The catchment areas and the number of households are shown as follows.



The percentages for the northbound traffic assumed to use the newly proposed route for each catchment as follows:

Option 1 Verdelho Street		Option 2 Star Lily Street	
Catchment 1	10%	Catchment 1	10%
Catchment 2	40%	Catchment 2	35%
Catchment 3	100%	Catchment 3	75%
Catchment 4	40%	Catchment 4	65%
Catchment 5	40%	Catchment 5	40%
Catchment 6	30%	Catchment 6	30%
Catchment 7	30%	Catchment 7	30%
Catchment 8	35%	Catchment 8	35%
Catchment 9	20%	Catchment 9	20%

TRAFFIC GENERATION ASSUMPTIONS

Traffic generation has been determined for the AM peak period as the proposed route options would be egress only. As such, the scenario with the highest use of these routes would be during the AM commuter peak period where the majority of vehicles would be travelling towards the Adelaide CBD.

No existing traffic volume information was available for either Verdelho Street or Star Lily Street. The existing traffic generation has been calculated based on the existing number of households likely to be utilising the street. Traffic generation rates have been used from the TNSW Guide (formerly the RTA Guide). As such the following traffic generation has been assumed to be representative of the existing conditions.

Verdelho Street

Number of Households: 35

Traffic Generation rate 0.95 trips per household or 10.7 daily trips

Total AM trips (Approx.): 33 or 375 daily trips

Star Lily Street

Number of Households: 16

Traffic Generation rate 0.95 trips per household or 10.7 daily trips

Total AM trips (Approx.): 15 or 175 daily trips

The following assumptions have been made to determine the traffic generation for each scenario.

Typical AM Scenario

- AM peak traffic generation rate has been based off rates provided in the TNSW Guide
- 80% of vehicle trips will be outbound.

Bushfire Event Scenario

- All vehicles will be travelling north towards the bushfire evacuation locations or north towards the metropolitan suburbs of Adelaide (assuming bushfire is from the south/east).
- Traffic generation has been based on the number of vehicles within the catchment area with discounts applied for the below factors.
- 85% of households would be occupied at the time of a bushfire event.
- 50% of households will evacuate using all of their vehicles.
- 100% of vehicle trips will be outbound

Bushfire Event Scenario 2036

- This scenario will be the same as the Bushfire Event Scenario however, the number of households within catchment 9 will be increased to account for current development works.
- The bushfire event was assumed to occur during the AM peak period to obtain a 'worst case' traffic scenario where the majority of movements would already be travelling in a northbound direction.

AM PEAK TRAFFIC GENERATION – VERDELHO STREET

The traffic generation for each catchment area is shown in the figure.
The approximate total peak trips (existing plus generated) generated for each scenario is as follows:

Existing AM Scenario

33 trips in Verdelho Street

Typical AM Scenario

220 trips in Verdelho Street

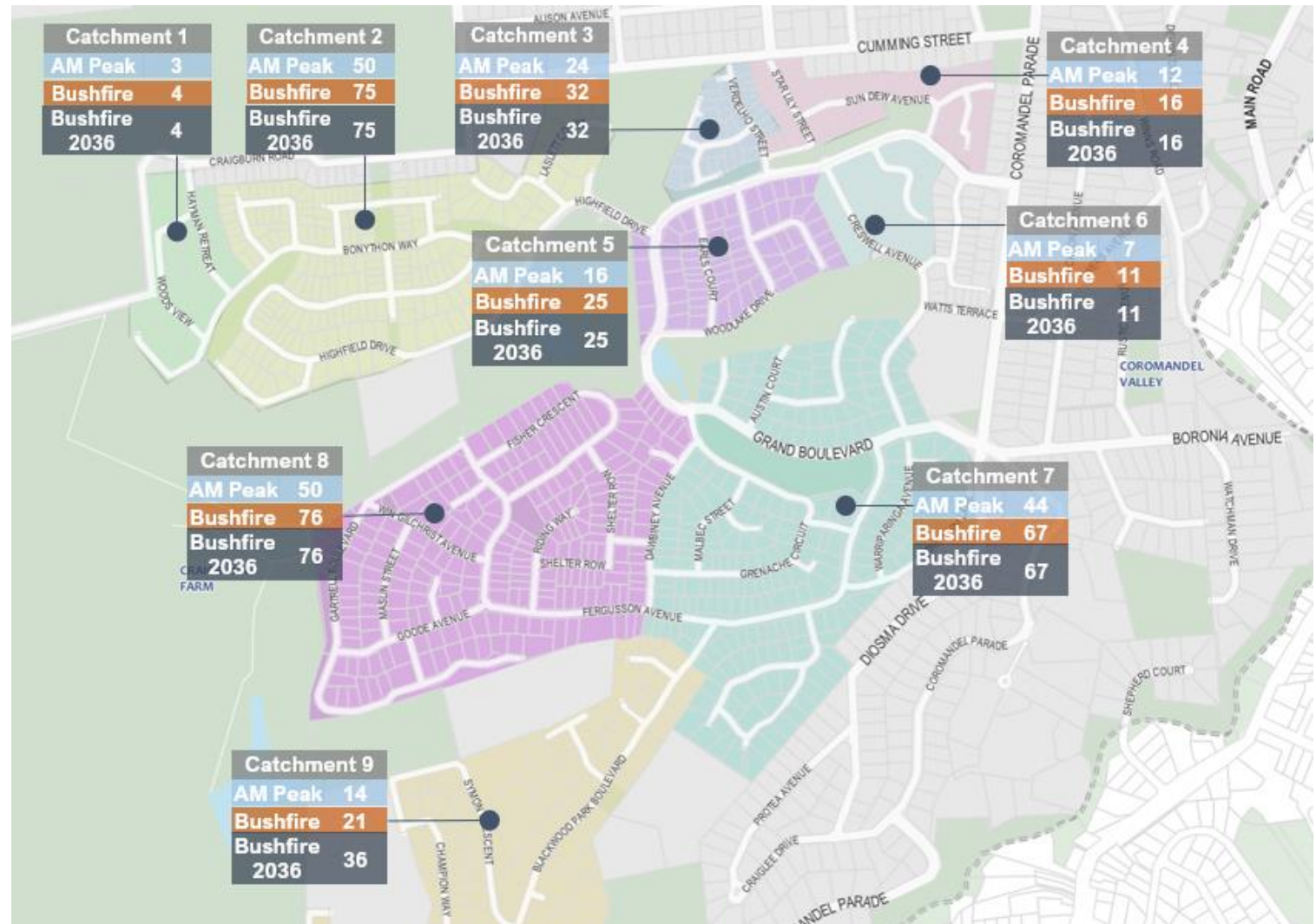
Bushfire Event Scenario

330 trips in Verdelho Street

Bushfire Event Scenario

2036

345 trips in Verdelho Street



AM PEAK TRAFFIC GENERATION – STAR LILY STREET

The traffic generation for each catchment area is shown in the figure.
The approximate total peak trips (existing plus generated) generated for each scenario is as follows:

Existing AM Scenario

15 trips in Star Lily Street

Typical AM Scenario

215 trips in Star Lily Street

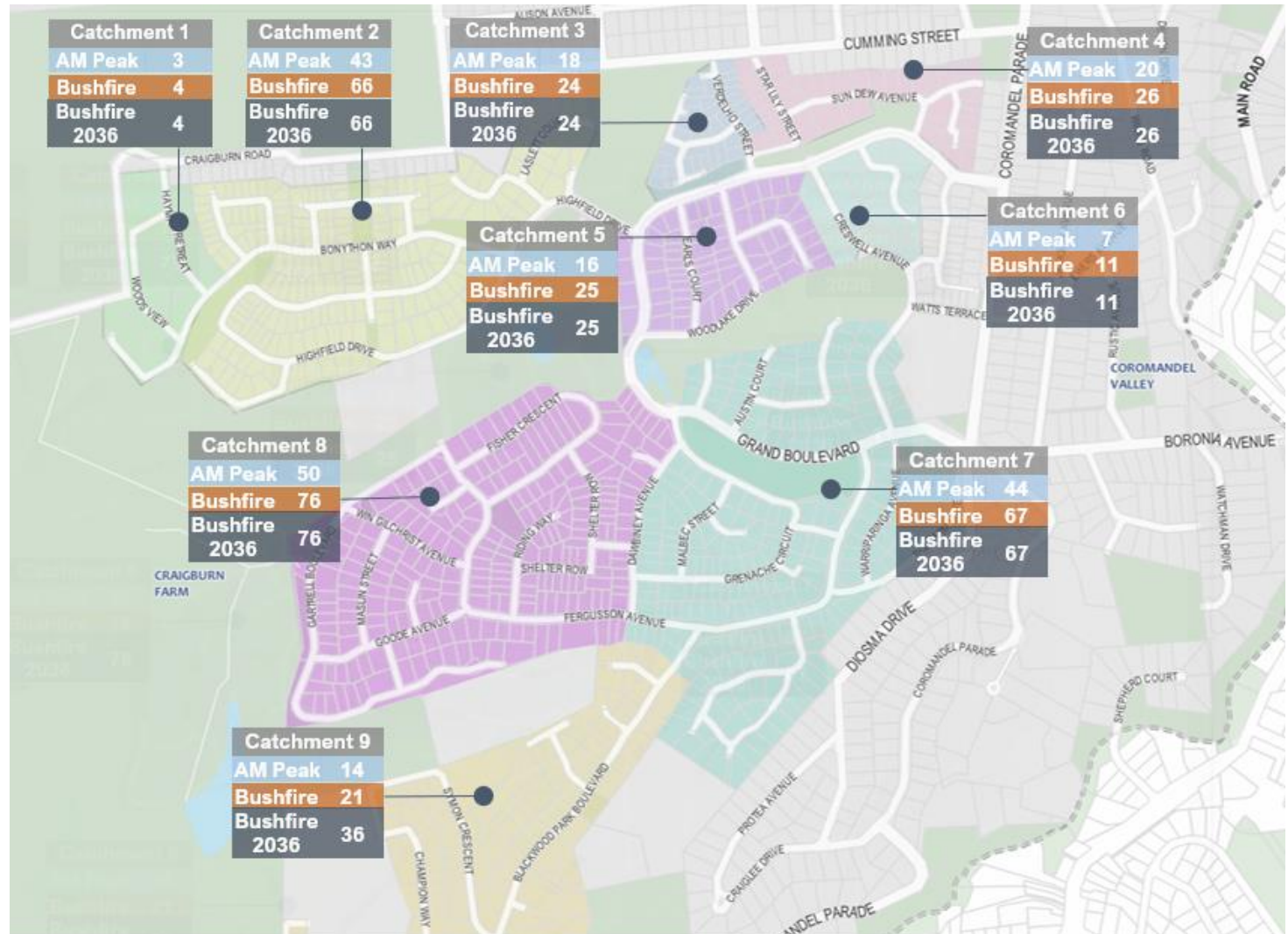
Bushfire Event Scenario

320 trips in Star Lily Street

Bushfire Event Scenario

2036

335 trips in Star Lily Street



TRAFFIC IMPACT

Based on the above assessment, the proposed options are likely to result in an increase of daily traffic on the subject roads. This is also likely to make Brighton Parade a more attractive option for commuters as it provides a more direct route to Shepherds Hill Road and into the Adelaide metropolitan suburbs and CBD.

The following approximate traffic increases would be expected for each option:

Scenario	Verdelho Street	Star Lily Street
Typical AM Scenario	+190	+200
Bushfire Event Scenario	+295	+305
Bushfire Event Scenario 2036	+310	+320

Based on this traffic analysis, the difference of additional traffic generation between the two options is negligible.

Traffic travelling on either Verdelho Street or Star Lily Street is expected to increase by 190 and 200 additional vehicle trips respectively, during the AM peak period totalling 220 and 200 vehicle trips. The estimated daily vehicle trips would be 1,576 and 1,541 vehicle trips per day respectively for each option based on an assumed inbound/outbound traffic split of 50%.

GTA Consultants has previously completed a study for the City of Mitcham in which the following **Road Hierarchy Classification Scheme** was adopted.

Road Classification	Definition	Typical AADT in Mitcham	Typical Speeds in Mitcham
Highway	Roads which provide for major regional and inter-regional traffic movement and ensure the continuity of the national or regional primary road system.	45,000 + vpd	60-100 km/h
Arterial	- Provides primary linkages for main districts, major centres or key towns of the urban area. - Provides access to major freight terminals, freight movement and access to major transport terminals. - Arterial roads form the primary road network for metropolitan traffic movements.	25,000 – 55,000 vpd	60 -70 km/h
Sub arterial	- Acts as a secondary arterial road and carries intra urban traffic and/or commercial and industrial traffic. - Provides connections to highways and arterial roads.	10,000* – 53,000 vpd	50-70 km/h
Distributor	Provides connections for traffic movement between sub-arterial and collector roads or local roads to distribute traffic to local street systems.	3,500* – 13,000 vpd	40-50 km/h
Collector	Provides connections to distributor and arterial roads from local streets within and through a local area, as well as provides property access.	1,500* – 4,200 vpd	40-50 km/h
Local	Provides property access. Includes service roads that may share the same name as higher order roads.	< 2,500 vpd	40-50 km/h

* The volumes on some roads in the category may fall below the typical traffic volume range. These roads are assigned the classification due to their functional importance.

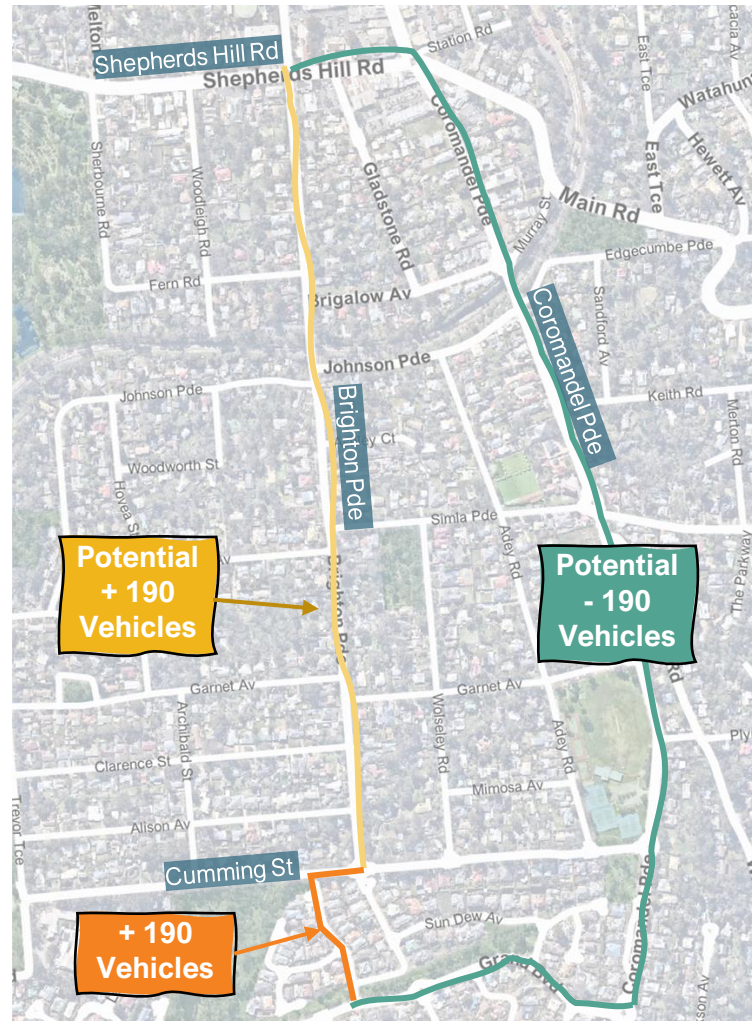
Both Verdelho Street and Star Lily Street currently would fall under the classification of a local road however, under the proposed arrangement with egress onto Cumming Street, the proposed route could potentially be reclassified as a Collector road due to the increase in traffic volumes and the change in function. As such, the proposed options would likely change the nature of use of the roads.

TRAFFIC IMPACT

As a worst-case scenario, all vehicles are assumed to continue north along Brighton Parade. However, the existing traffic volumes indicate that not all movements would continue up to Shepherds Hill Road. As such, Brighton Parade is assumed to carry up to an additional 190 to 200 vehicle trips during the AM peak hour prior to vehicles turning off to travel in other directions.

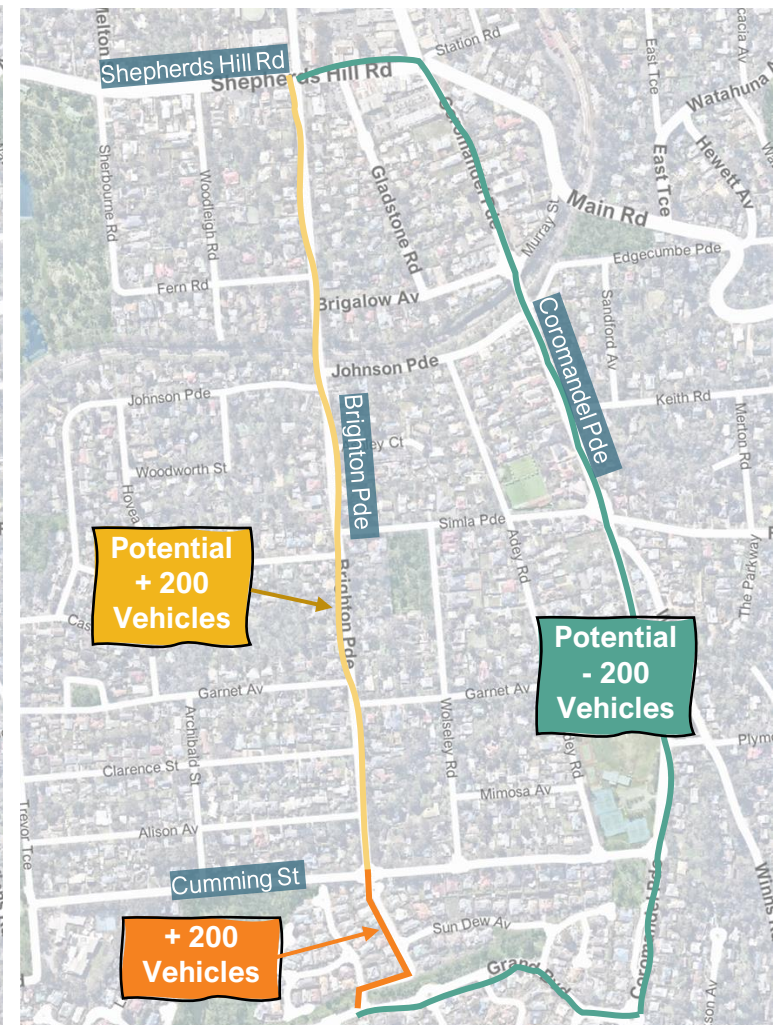
The adjacent maps shows the potential increase / decrease in vehicle trips over the affected network for both options.

Option 1 – Verdelho Street



Craigburn Farm Egress Roads Traffic Assessment
City of Mitcham

Option 2 – Star Lily Street



TRAFFIC IMPACT

An assessment was undertaken on the existing mid-block lane capacity based on methods in *Austrroads – Guide to Traffic Management Part 3* which is dependant on the number and type of traffic lanes. The typical mid-block capacity for urban roads with uninterrupted flow is shown as follows.

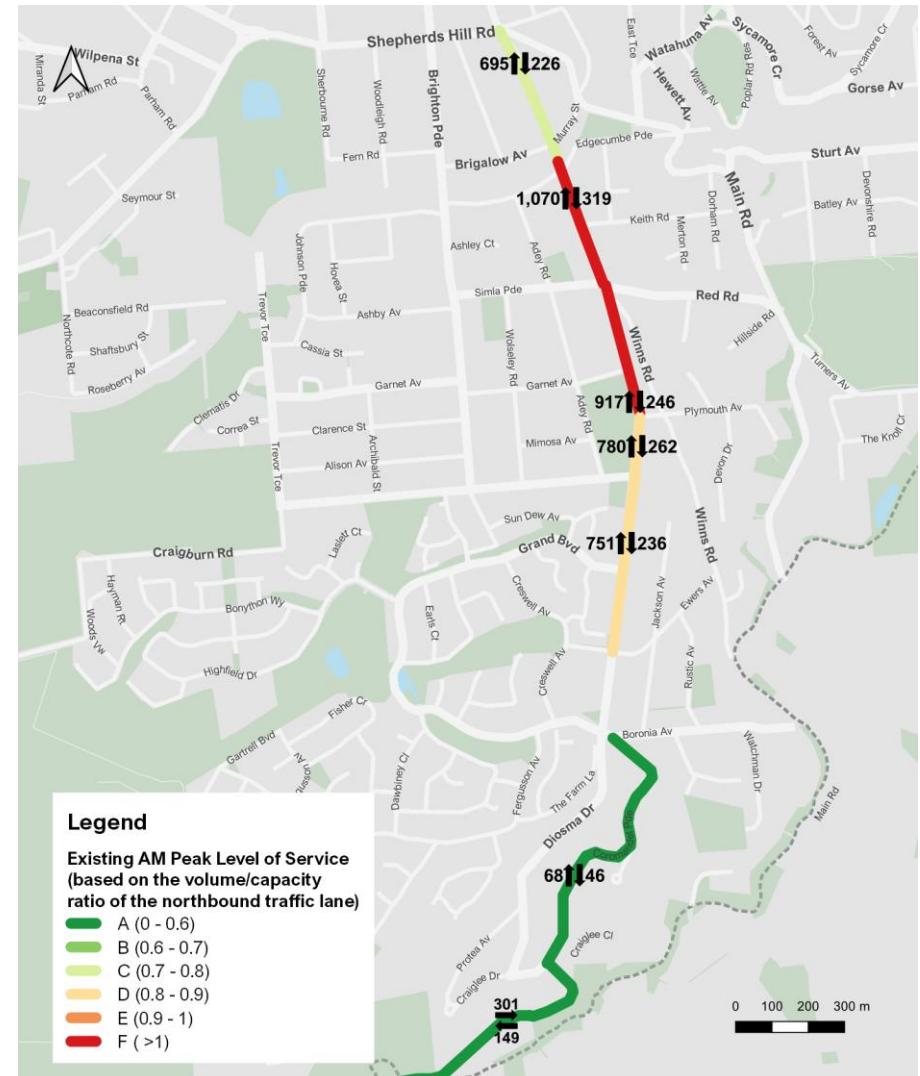
Type of Lane	One-way mid-block capacity (veh/h)
Kerb Lane	
Adjacent to parking lane	900
Occasional parked vehicles	600
Clearway conditions	900

Source: Table 5.1 in *Austrroads – Guide to Traffic Management Part 3: Traffic Studies and Analysis* (2017)

Existing available traffic data has been displayed on the adjacent map to identify the current level of service of the northbound lane on Coromandel Parade. The midblock level of service is determined based on the volume/capacity ratio, which is calculated by dividing the hourly volume by the hourly capacity for each road segment.

The proposed opening of either Verdelho Street or Star Lily Street for egress only onto Cumming Street is likely to ease congestion on Coromandel Parade during the AM peak however, some sections of the road will still be reaching capacity.

As this is a high-level assessment only, the actual traffic reduction as a result of the road opening at either Verdelho Street or Star Lily Street, cannot be definitively determined.



CONCLUSIONS AND RECOMMENDATIONS

04

CONCLUSIONS

Based on the analysis and discussions provided in this report, the following conclusions are made:

- The opening of either Verdelho Street or Star Lily Street for egress onto Cumming Street as part of a bushfire access route is likely to generate a daily increase for either option and adding traffic onto the adjacent road network. This includes Brighton Parade and the intersection of Brighton Parade and Shepherds Hill Road and other likely roads could include, Cumming Street, Fern Road, Simla Parade and Brigalow Avenue.
- The difference in the increase in traffic generation between the two options is negligible and therefore, either option is likely to have a similar overall impact on the surrounding road network and will also have similar accessibility as a bushfire emergency route.
- Based on typical traffic generation rates sourced from the TNSW Guide, a total of approximately **220 vehicle trips** during the AM peak period could potentially be re-distributed along the proposed route and continue up to Shepherds Hill Road via Brighton Parade. During a bushfire event this could potentially increase to **330 vehicle trips**.
- The opening of either Verdelho Street or Star Lily Street has the potential to increase the daily trips on the roads and the nature of use of the road which may result in the road classification changing to a collector type road.
- The increase in typical AM peak period traffic is likely to impact the intersection of Brighton Parade and Shepherds Hill Road. The full extent of these impacts should be assessed with the Department for Infrastructure and Transport via high level traffic modelling.
- Coromandel Parade is currently operating near capacity in some sections. The proposed options would likely reduce a portion of this traffic during the AM peak period however, it is unlikely to resolve existing capacity issues experienced on Coromandel Parade.

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