

# Cycling Corridor Options Assessment Report for Melon Street

Braybrook

Maribyrnong City Council



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# 1. Introduction

# Introduction to the project

## Background

Maribyrnong City Council seeks a future where its residents regularly use bicycles as a safe and accessible means of transport. As such, Council is investing in the ongoing transformation of its roads and public places with the intention to achieve:

- Safe and improved conditions for cycling, including routes and areas separated from vehicles
- Safer vehicle speeds (e.g., 30km per hour)
- Fewer cars on the road

The Maribyrnong Bicycle Strategy 2020-2030 identifies the main barrier to riding a bicycle is safety: poor infrastructure stops people from using their bicycles to get around. The aim is to achieve more inviting, cycle-conducive environments.

Cycling infrastructure across Victoria is currently being influenced by the Department of Transport's Movement and Place Cycling Guide.

This project is primarily influenced by these two policies.

Other relevant background documents include:

- Victoria Planning Authority (VPA) Towards a Braybrook Urban Design Framework
- Maribyrnong Integrated Transport Strategy
- Braybrook South Traffic Management Plan
- North Braybrook Local Area Traffic Management Study





# Project objectives

## Aim

In the next five years Council will target the area of Braybrook and Tottenham Station, among other sites selected as part of their Major Projects 2020-2025. The goal for Braybrook and Tottenham Station is to *significantly increase the number of bicycle, bus passenger and pedestrian trips, south to Tottenham Station and north to three schools, the Braybrook shops and community centre*. Planned works include a protected north-south route along Melon Street.

## Outcome

This report presents an options assessment and development of concept designs for the Melon Street cycle path. The preferred design option will be used for community consultation and feedback will be incorporated into the final design for Melon Street's proposed cycling infrastructure.

## Limitations

While achieving protected cycle lanes across the municipality is central to Maribyrnong Bicycle Strategy, the design options in the report will also provide an alternative option for consideration. Site limitations are a real concern, and a place-based response must be taken.

In instances where designs may not adhere to the strategy, we will align them to the Movement and Place guidelines.



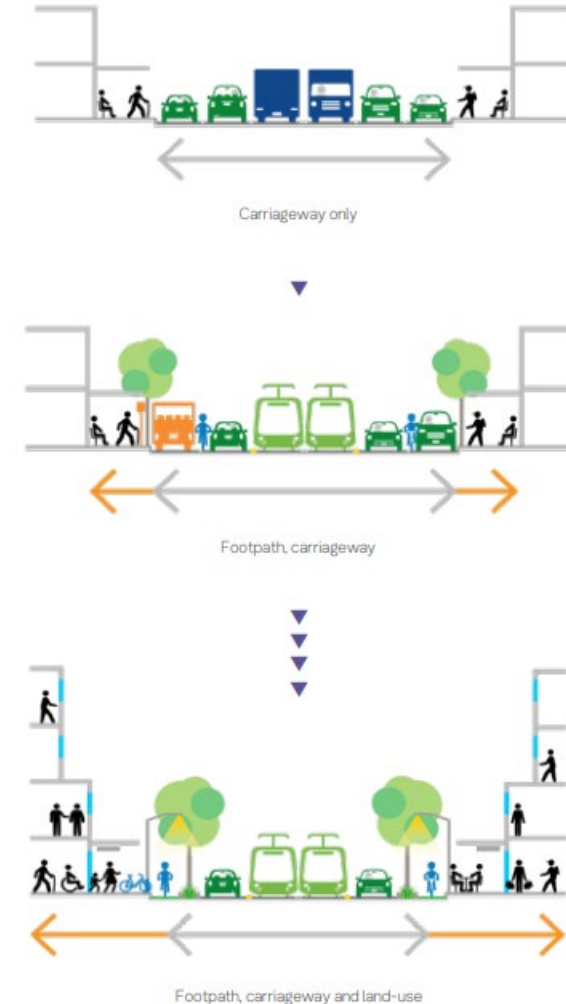
# Movement & Place Framework

Transport planning has undergone many evolutions over the years; expanding from focusing only on the movement of vehicles within the carriageway towards a more integrated approach. This means the interaction between the road reserve and adjacent land use and associated activities is considered, as depicted in images on the right.

The latest evolution is referred to as the Movement and Place Framework, which has been adopted by the Victorian State Government.

Streets that are or are proposed to be very active adjacent to key places are identified as a high place, and streets that are or are proposed to have larger volumes (regardless of mode) are identified as high movement streets in the framework.

Movement relates to all modes of transport, including walking, cycling, public transport and motor vehicles. A high movement street does not necessarily mean it is high movement for cars, for example Swanston Street in Melbourne CBD is classified as the highest movement level despite having no through-movement for cars.



Source: Movement and Place in Victoria, 2019.





## Study area

Melon Street in Braybrook runs north-south between Ballarat Road and South Road.

The street intersects Churchill Avenue.

The street runs through a residential area. An industrial area is located on the south end and a restaurant on the northern end.

The connection is one part of a wider strategy to connect different modes of transport across the local area.







# 2. Data Analysis



# Data analysis overview:



Site understanding



Traffic Survey



Parking



Tree Assessment



Future development considerations



# Site Understanding

A site visit was conducted by the team in March 2022. The visit gave us an opportunity to understand the local area, travelling on foot and by bike. Design parameters and options were identified, based on site limitations and possibilities. These are explored over the next pages.







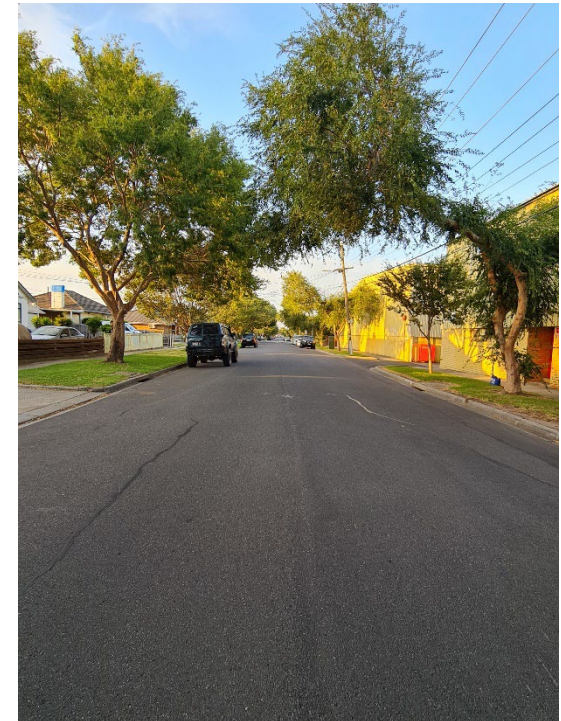
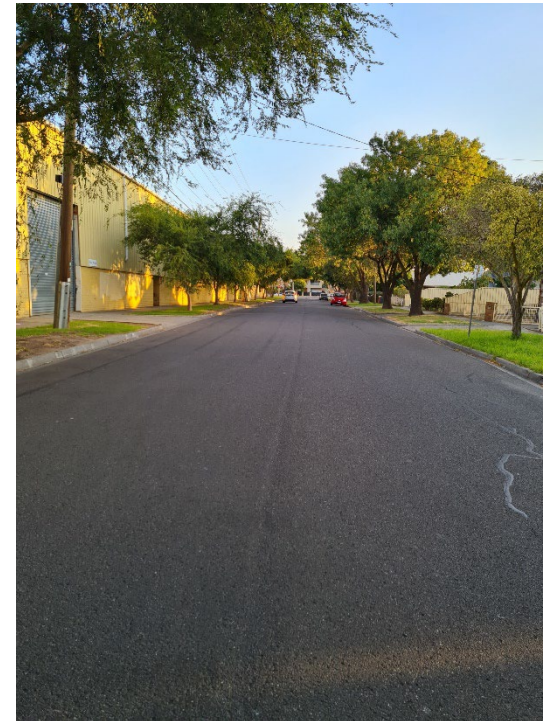
# Site observations - limitations

- On-street parking and managing community expectations for future parking arrangements.
- Trees located on nature strip make it difficult and costly to widen road and footpath.
- Power poles on the eastern side of Melon Street also make it difficult and costly to widen the footpath.
- Relocating drainage would come with a financial cost.
- Large volume of residential driveways interfacing the road carriageway (as shown in the table); regrading all driveways would be costly.
- Melon St intercepts with numerous side roads (as highlighted in the table).

| Section of Melon Street               | Western Side         |                     | Eastern Side         |                     |
|---------------------------------------|----------------------|---------------------|----------------------|---------------------|
|                                       | Number of side roads | Number of driveways | Number of side roads | Number of driveways |
| Between Ballarat Rd and Churchill Ave | 3                    | 22                  | 3                    | 21                  |
| Between Churchill Ave and South Rd    | 5                    | 26                  | 3                    | 23                  |

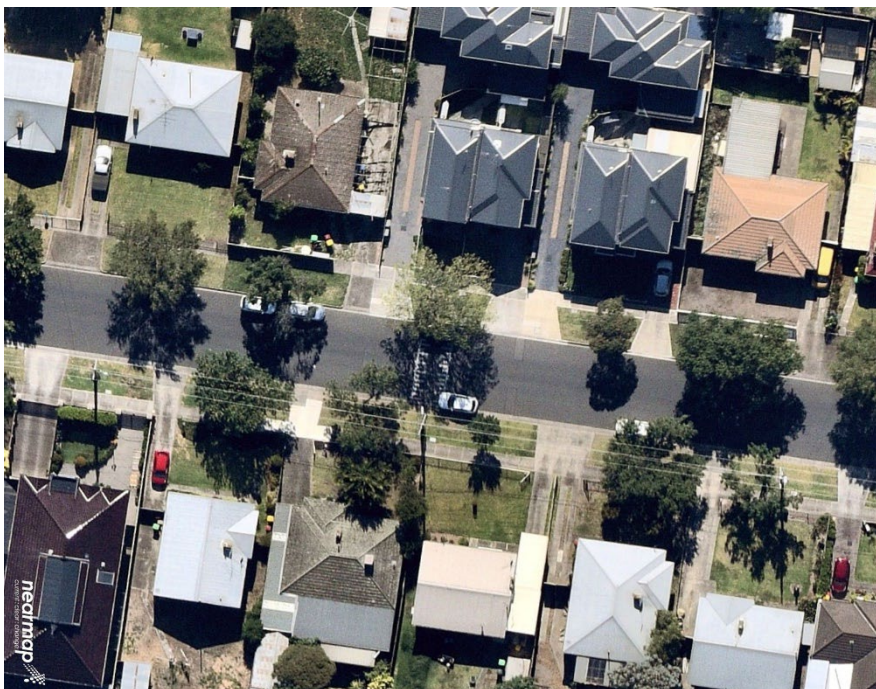
# Site observations - opportunities

- Wide carriageway
- Low levels of through traffic
- Parking on either side of the streets may be not be necessary
- Industrial site on southern section of Melon Street reduces need to accommodate for driveways



# Parking

Melon Street has unrestricted on-street car parking along most of the corridor. Most dwellings have driveways or off-street parking spaces.



On street parking, west facing – 24/12/2021 - 5:10PM. Source: Nearmap

Council provided the results of two recent car parking occupancy surveys on Melon Street. The surveys were undertaken across two weeks in November 2021 on Tuesday, Wednesday, Thursday, Saturday and Sunday. On weekdays, the car parking occupancy was counted at 8AM, 12PM and 6PM. On weekends the occupancy was counted at 10AM and 4PM.

Both weeks show similar results. The highest car parking occupancy was 26% on Saturday 20<sup>th</sup> of November at 4PM. The car parking occupancy on Melon Street lies between 21-26% on weekends and 17-22% on weekdays.



# Tree assessment report

The goal is to retain as much tree canopy as possible along Melon Street.

A Preliminary Arborist Report was undertaken in December 2021. The report concludes that most trees (140 in total) on Melon Street are in good health. Most trees have been assigned medium retention value.

The report advises that if a bike path is to be constructed on the eastern side of the street, a root investigation will be required for mature trees. Alternative kerb and channel design is required if the road is to be widened, and the kerb will be shifted closer to the trees. An elevated bike path is expected to have low impact on trees.



# Adjacent Strategic Projects

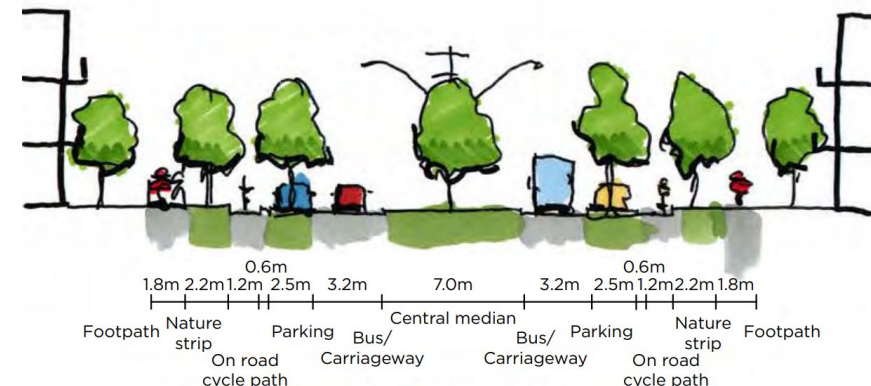
The Braybrook South Local Area Traffic Management Study and the Maribyrnong Bicycle Strategy 2020-2030 highlight the Melon Street/South Road intersection for a potential road closure as shown on the image on the right.

Similarly, there are works planned for the Churchill Ave roundabout (under the Asset Renewal project). Subject to DOT approval, the roundabout on Melon St/Churchill Ave could be upgraded to have priority crossings for walking and cycling.

The Melon Street designs also need to be cognisant of other proposed works in the area, such as the Churchill Avenue works outlined in the Towards a Braybrook Urban Design Framework.



Proposed road closure for South Road. Source: Maribyrnong Bicycle Strategy 2020-2030.



Proposed streetscape for Churchill Avenue. Source: VPA Towards a Braybrook Urban Design Framework, 2021.



# 3. Design Options





# Description of Options

Section 3 presents the different options proposed for Melon Street. Two options are proposed:

- Option 1: Protected cycle lane with reduced traffic
- Option 2: The same as Option 1 but retains two-way traffic.

The Options include a combination of designs for different sections of the road, including:

- South Road intersection
- Cremorne Street intersection
- Ballarat Road intersection
- Joy Street roundabout
- Churchill Avenue roundabout
- Melon Street cross-sections

Where multiple designs were considered, the preferred option is included in this section and secondary options have been provided in Appendix 1 and 2.

The proposed designs have been developed with the Movement and Place guidelines in mind. This is discussed in more detail over the next two pages.



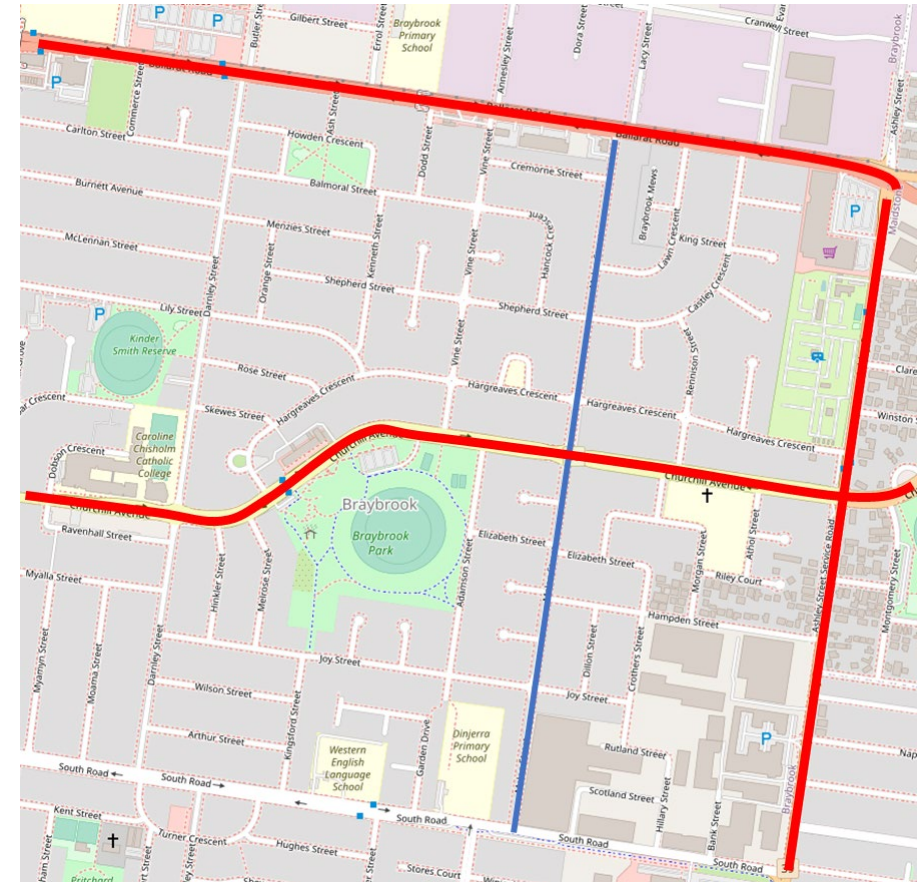
# Alignment with Movement and Place

Our proposed designs have been developed with the Movement and Place (M&P) Guidelines in mind. A full M&P assessment was out of scope for this report but could be explored in more detail at a later stage.

Through the M&P Framework, roads and streets across Victoria can be categorised based on their movement function (e.g., volume of traffic) and their place function (e.g., level of significance). An analysis of the two functions (movement and place) can help inform the role a street plays in the wider network.

When considering the local network in Braybrook, it is evident that there are movement corridors of greater significance than Melon Street. For example:

- Ashley Street (north-south across Braybrook) and Ballarat Road (east-west across much of Melbourne's west) are classified as significant movement corridors (M2). In comparison, Melon Street, which has much lower levels of traffic, is classified as a local movement corridor (M5 for most of its length, M4 for the section south of Joy Street).

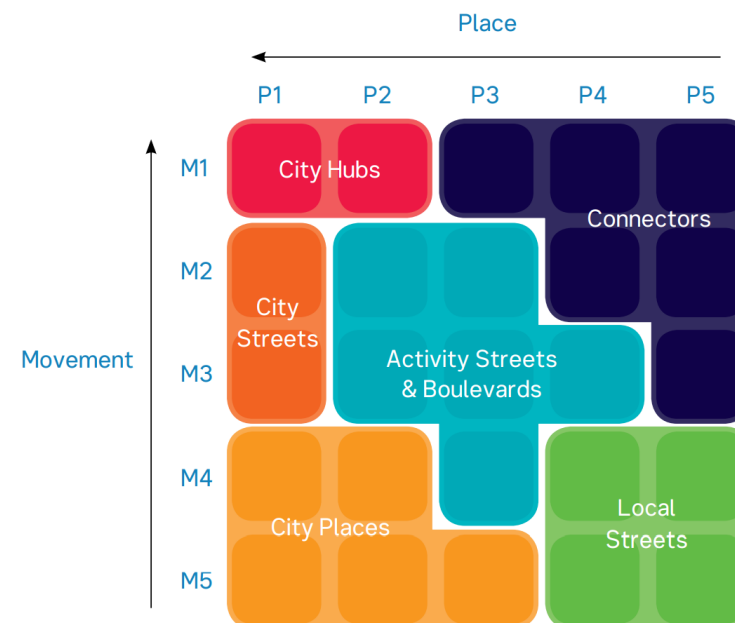


# Alignment with Movement and Place, cont.

Once a movement classification is determined, a street-level place understanding is required. For example:

- Ashley Street services the municipality through the local activity centre (P3 classification). Place classifications along Ballarat Road may vary as it spans across multiple municipalities (P4/P5). Melon Street services the local community by providing access to a school and dwellings. Melon Street is mostly a place of neighbourhood activity (P4), and south of Joy Street is a place of local activity (P5).

Based on this high-level analysis, Melon Street is classified as local street, servicing residential needs. We have considered this classification during the development of our designs.



Source: Movement and Place in Victoria, Department of Transport. pg. 20





## **3.1. Option 1: Protected cycle lane with reduced traffic**



# Protected cycle lane with reduced traffic



Option 1 is the implementation of a protected bi-directional bike lane along Melon Street. The proposed bike lane is located on the west side of Melon Street except between Cremorne Street and Ballarat Road.

The design proposes to make Melon Street a one-way street in southbound direction south of Elizabeth Street as well as a one-way northbound between Cremorne Street and Ballarat Road

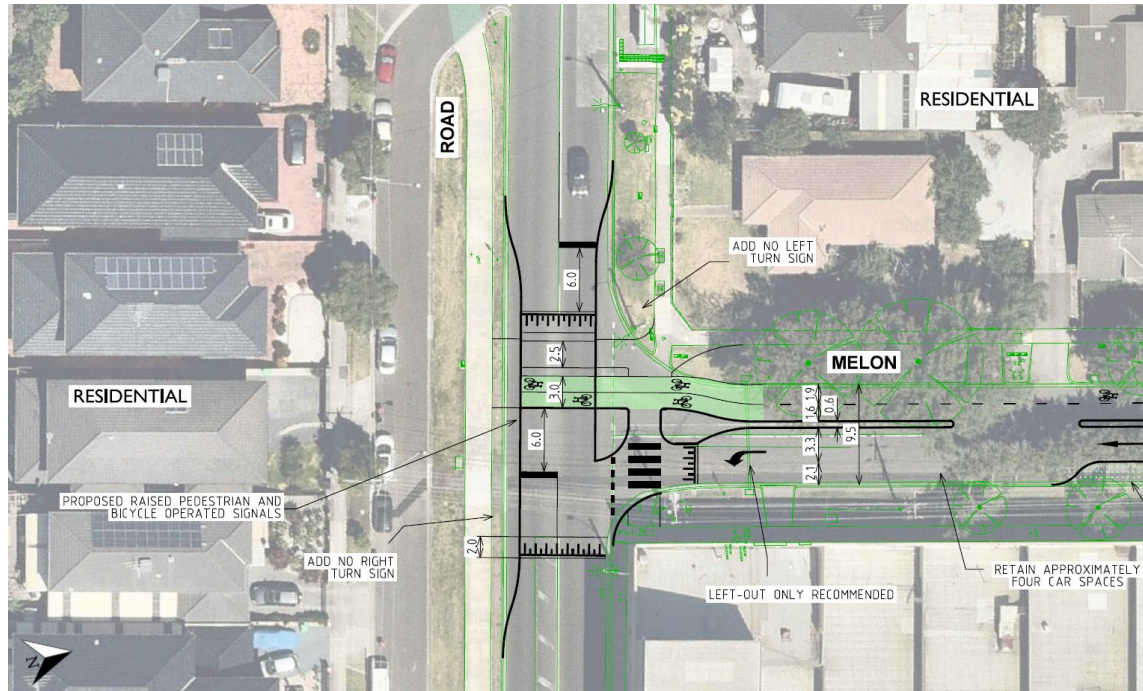
The designs are presented over the following pages, in the order outlined below and as reflected on the map to the left:

1. South Rd intersection
2. Joy St roundabout
3. Melon St cross-section (south)
4. Churchill Ave roundabout
5. Melon St cross section (north)
6. Cremorne St intersection
7. Ballarat Rd intersection



# 1. Melon Street & South Road

## Part Closure with exit only from Melon Street



The protected bi-directional bike lane starts on the west side of Melon Street and connects to the already existing separated bike lane on South Road.

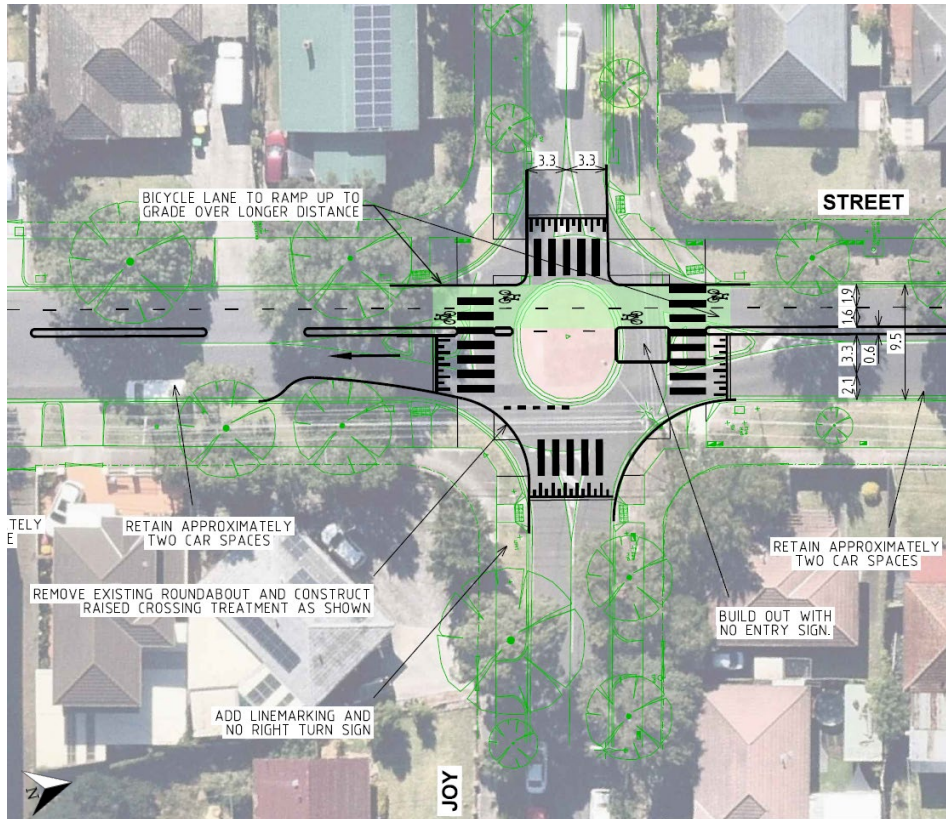
The entire intersection of Melon Street and South Road could be raised to slow traffic. This would create a safer crossing for pedestrians and cyclists which is important for this location as the Dinjerra Primary school is nearby. This option requires speed a reduction on South Road.

Option 1 also includes traffic calming treatments such as the exit only from Melon Street onto South Road. Without an alteration to South Road access, it would be difficult to establish a crossing point and any protected facility would need to start further north once turning vehicles have completed their turns.





## 2. Joy Street Roundabout

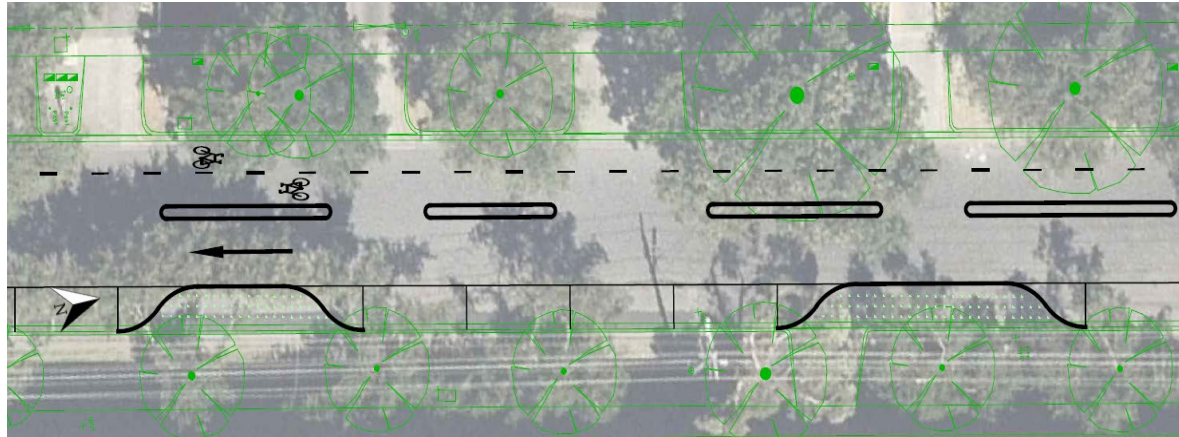


The design transforms the Joy Street roundabout into an intersection where vehicles can only travel southbound on Melon Street. The entire intersection is raised and zebra crossings are provided on all four legs. Existing islands and roundabout will be removed.

The bi-directional bike lane is partly protected on the intersection and the green surface treatment makes drivers aware that they are crossing a bike lane.



### 3. Melon Street cross-section (south)

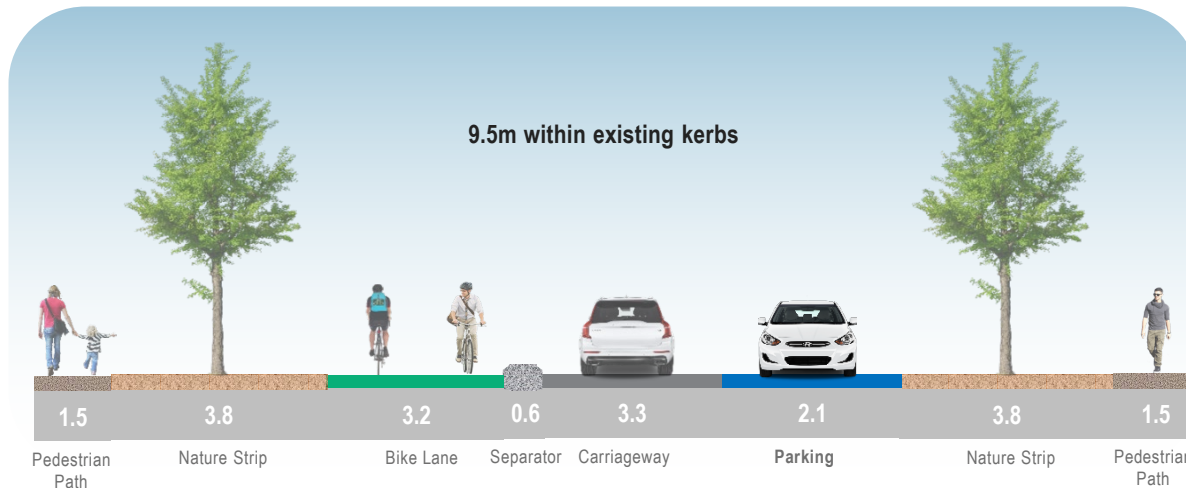


South of Elizabeth Street this option proposes a one-way one-lane southbound traffic flow. The road carriageway is reduced to 3.3m.

**On-street parking is retained at 2.1m** and kerb extensions with trees are introduced.

A 3.2m wide protected bi-directional cycle lane is proposed on the western side of the carriageway.

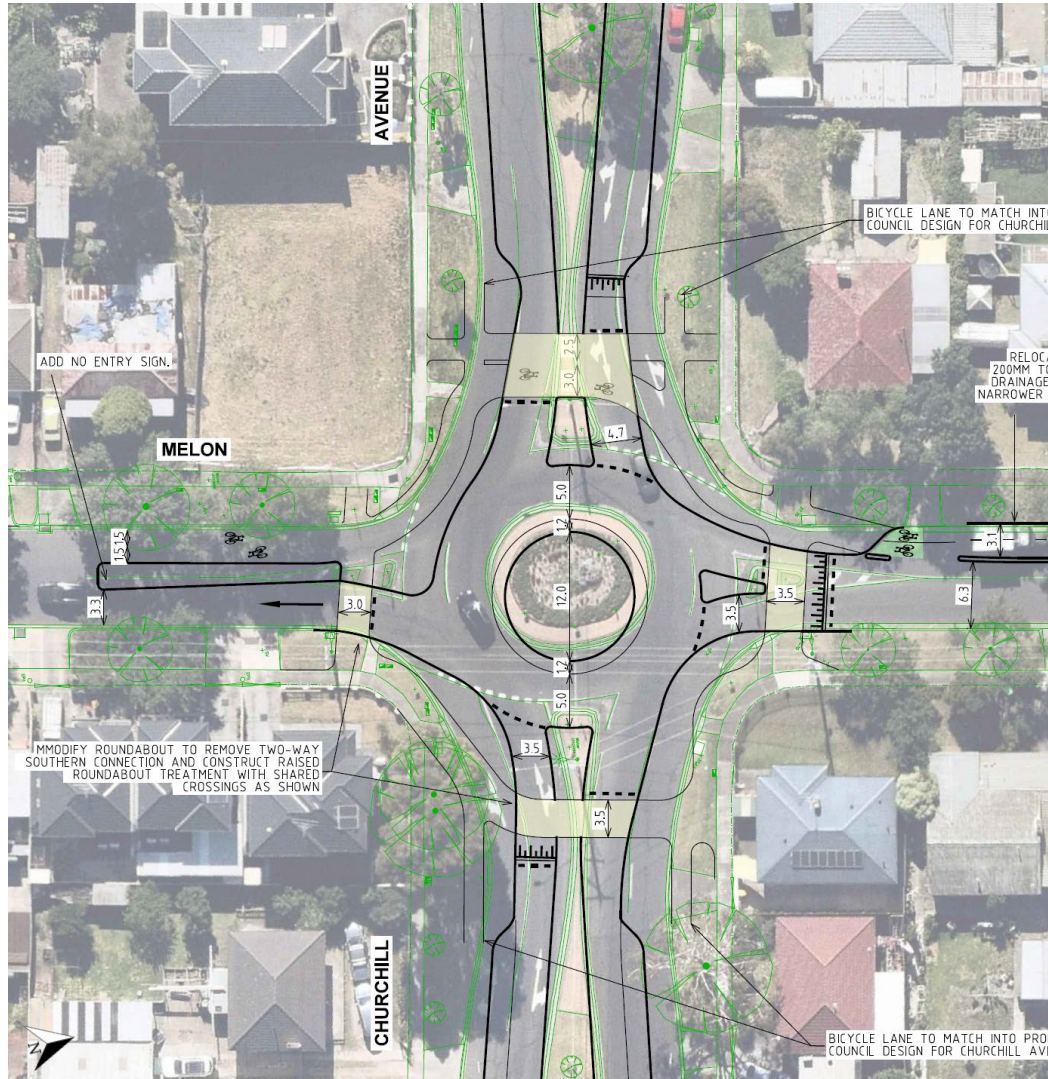
The gaps in protection still **allow residents to enter and exit their driveways.**







## 4. Churchill Avenue Roundabout



Cyclists cross Churchill Avenue on the west side of the roundabout. The design allows for one vehicle to store after the bike lane crossing and before the roundabout. The approach and exit sides on Churchill Avenue are reduced to one lane to make crossing safer. Drivers give way to pedestrians and cyclists on all four legs of the roundabout where raised shared crossings are in place.

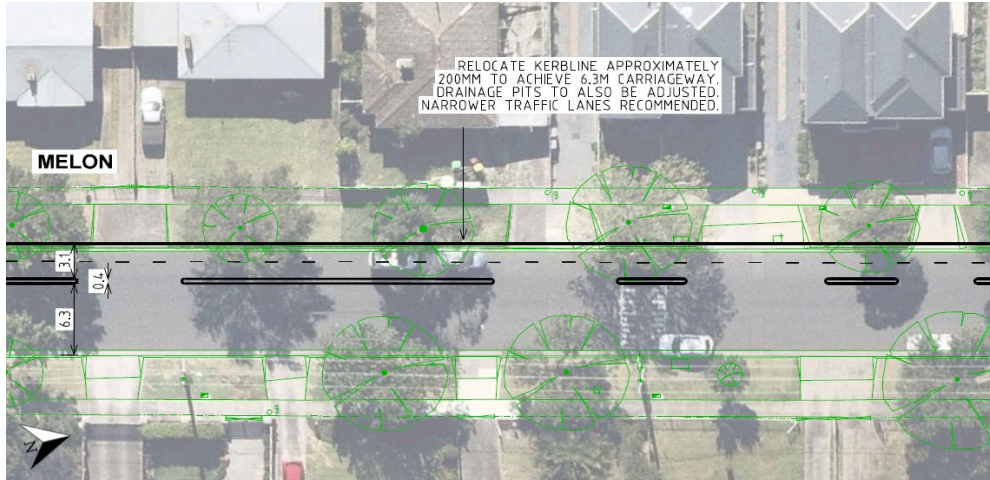
This proposed design is in line with the overall strategic thinking for Churchill Avenue.



Power poles on the east side of Melon Street vastly reduce the opportunity for crossing.



## 5. Melon Street- cross section (north)

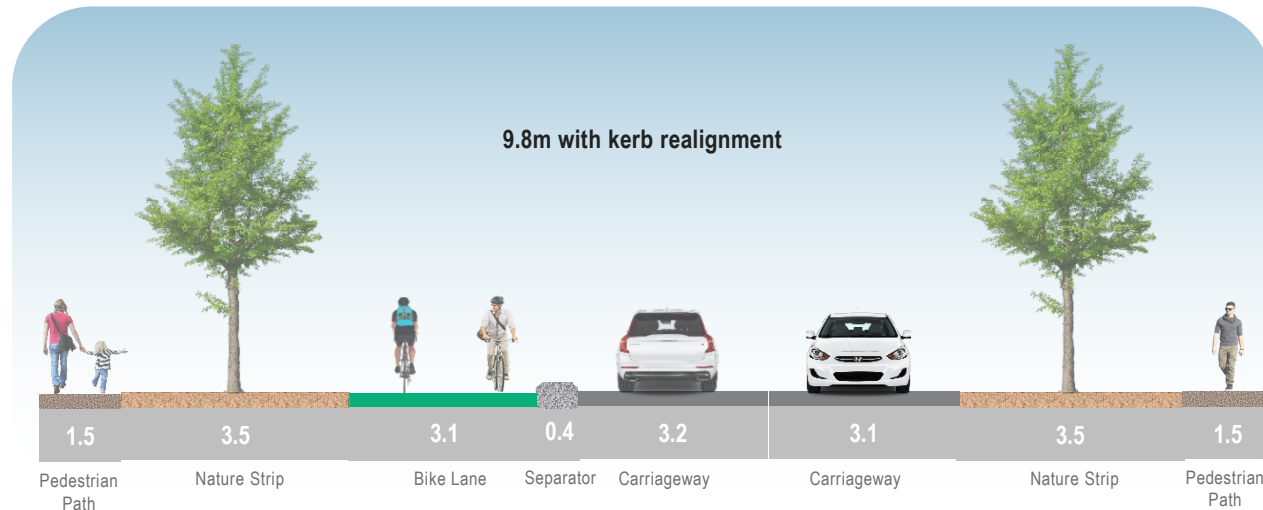


Between Churchill Avenue and Cremorne Street, Melon Street is proposed to be a two-way street with a 3.1m bi-directional bike lane on the west side of Melon Street.

This option is based on a 9.8m wide road space (kerb to kerb). The road carriageway will be reduced from 9m to 6.3m.

This option sees the removal of all on street parking.

Residents are still able to access their driveways.

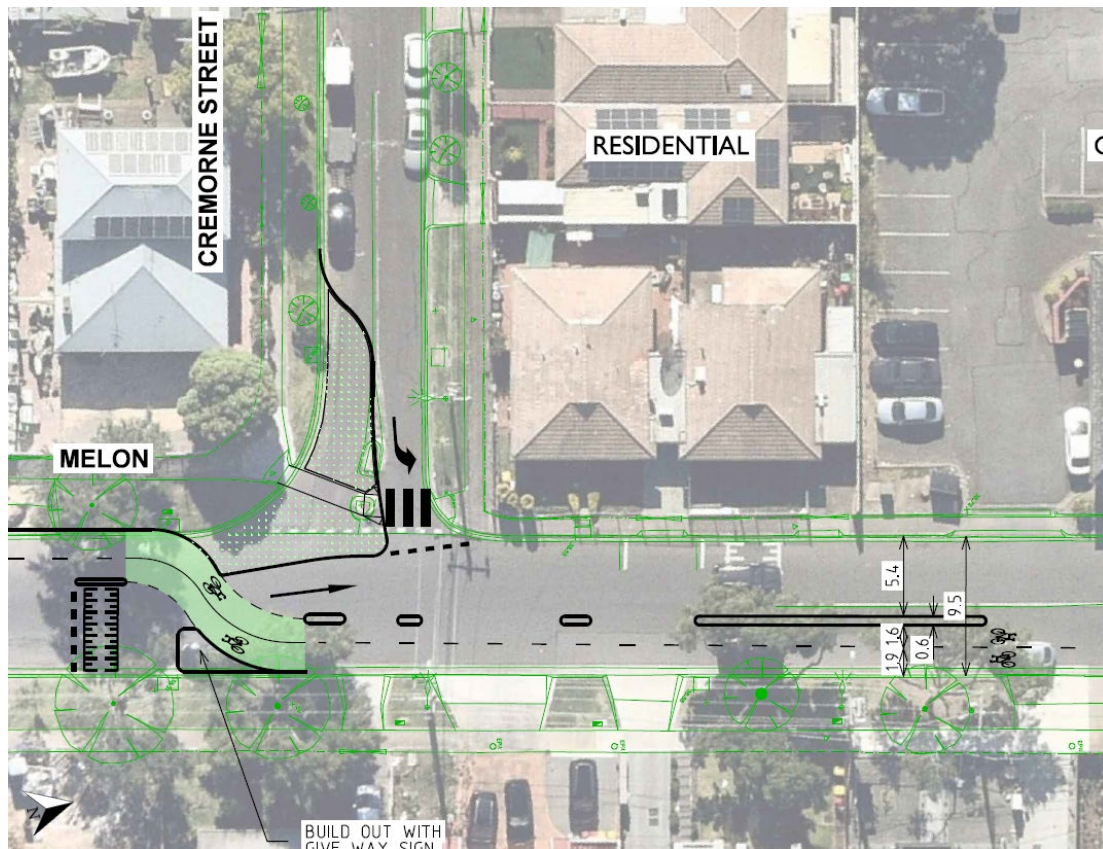






## 6. Melon Street & Cremorne Street

### Cycle track transition – left out from Cremorne Street



At the intersection of Melon Street and Cremorne Street, the bi-directional bike lane changes from the west side of Melon Street to the east side of Melon Street to connect with Ballarat Road. A speed hump makes drivers slow down before crossing the bike lane.

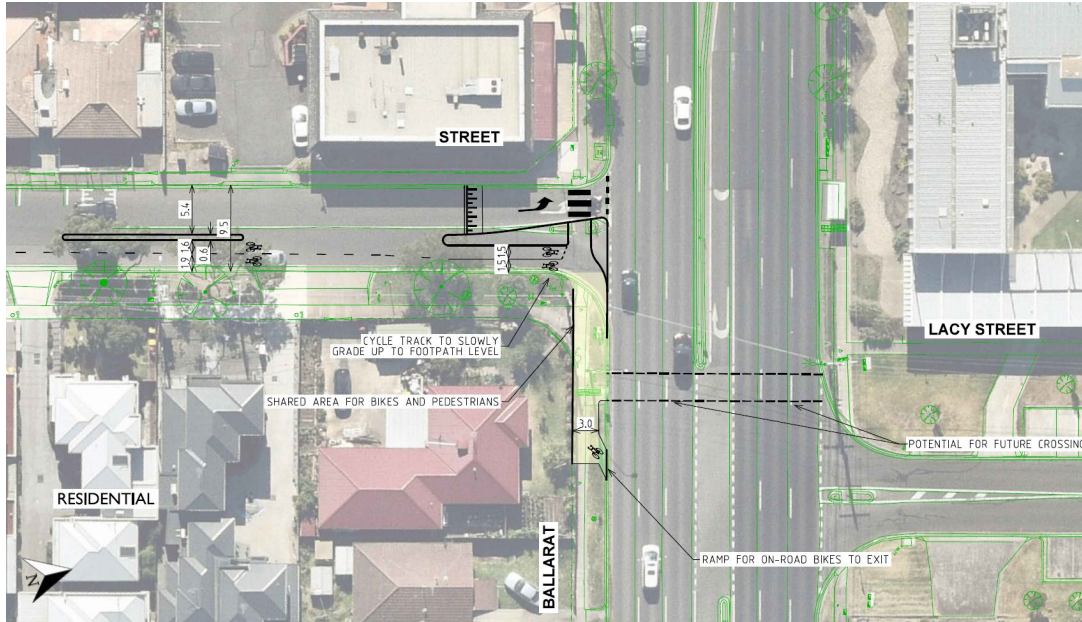
The proposed kerb build outs allow cars to only exit Cremorne Street with a left turn. Melon Street becomes a one-way northbound road between Cremorne Street and Ballarat Road.

Kerb build outs provide landscaping opportunities and shorten the crossing for pedestrians on Cremorne Street.



## 7. Melon Street & Ballarat Road

### Left out only



A left out only treatment on Melon Street is proposed for the intersection of Melon Street and Ballarat Road. This treatment reduces traffic volumes on Melon Street.

The bi-directional bike on the east side of Melon Street connects with a proposed shared path section on the south side of Ballarat Road. There is a future opportunity for a signalised bike and pedestrians crossing. A ramp is suggested to access Melon Street for westbound travelling cyclists on Ballarat Road.



#### Left Exit Only

A modal filter is installed on a side road that still allows all cycling movements, but only permits drivers to turn left out of the side road onto the main road. This improves the flow of traffic on the main road, makes cycling on the main road safer, and makes cycling more direct and faster compared to driving.

Image: Moor St and Nicholson St, Fitzroy





# Example of a future Melon Street with protected cycle track and one - way traffic.





# Option 1 Assessment

## Protected bike lane with reduced traffic



### Benefits:

- Physical protection from vehicles
- No impact on trees
- Lowers traffic volumes
- Improves walkability simultaneously

### Issues:

- Some residents affected by slightly less accessibility by car
- Kerb reconstruction required for this option
- Sections of car parking removal
- Commercial premises on Ballarat Road slightly less accessible

### Further opportunities:

- Raise cycle lanes across side roads
- Signalised shared crossing on Ballarat Road

Images: Drummond Street, Carlton (top); Kavanagh Street, Melbourne (bottom)



## **3.2. Option 2: Protected cycle lane with two-way traffic retained**

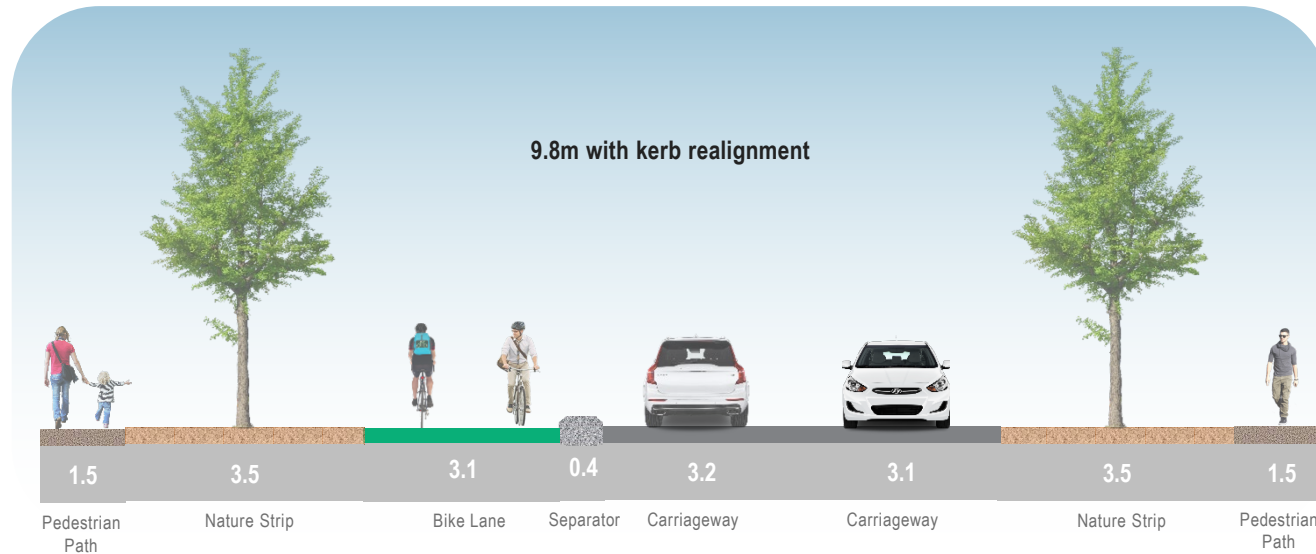




# Protected cycle lane with two-way traffic

The section option is similar to Option 1, however, retains two-way traffic along the entire length of Melon Street. In order to provide two-way traffic, a minimum carriageway width of 6.3m (kerb face to face) is required for Council's standards. To accommodate this, the kerb on one side of the road needs to be shifted 0.3 - 0.4m and driveways need to be regraded.

This option sees the removal of all on-street parking.







# Example of a future Melon Street with protected cycle track and two - way traffic.





# 4. Analysis of Designs



# Analysis of Design Options

We have conducted a high-level analysis of the two options. Traffic data and site constraints observed during a site visit have informed the designs and this concluding analysis.

It is advised to lower the speed limit on Melon Street to 30km/h\*. A pedestrian hit by a motor vehicle is twice as likely to survive if the vehicle is travelling at 30km/h rather than 40km/h\*\*.

In both designs we have ensured that bikes and pedestrians are travelling in a safe environment. Each concept design has different trade-offs such as car parking removal, construction costs and impact on car traffic.

\*Subject to DoT approval

\*\*Source: Monash University Accident Research Centre



Image: Establishing a safe and enjoyable cycling environment. College Crescent, Parkville

# Assessment summary

|                              | Option 1  | Option 2  |               |
|------------------------------|-----------|-----------|---------------|
| Physical separation cyclists | 3         | 3         |               |
| Pedestrian safety            | 3         | 3         |               |
| Retain car parking           | 2         | 1         |               |
| Cost to construct            | 1         | 1         |               |
| Traffic volume reduction     | 2         | 1         |               |
| Accessibility by car         | 2         | 3         |               |
| <b>Total</b>                 | <b>15</b> | <b>14</b> |               |
|                              |           |           | Score         |
|                              |           |           | 3 – Good      |
|                              |           |           | 2 - Medium    |
|                              |           |           | 1- Low / poor |

The two design options have been compared to each other based on the above criteria.

# Assessment results conclusion

The assessment shows Option 1 is favourable to Option 2. Option 1 reduces the volume of traffic travelling along Melon Street and retains more on-street parking compared to Option 2.

Lowering traffic volumes makes the street more inviting and safer not only for cycling but also walking. A decrease in motor vehicles and an increase in active travel results in a street that is targeted towards people and community spaces. If all measures are implemented in Option 1, flow-on benefits may occur, for example, the street may become safe enough for children to play on.

Retaining on-street parking ensures residents still have access to car spaces along the street. This option is seen as a win-win as new bicycle infrastructure is introduced whilst maintaining space for car drivers. Due to the new distribution of road-space allocation, cars and bikes can co-exist safely along Melon Street.

Option 1 scored lower than Option 2 in terms of accessibility by car, due to the proposal of one-way streets along Melon Street. However, the impact on travel time for residents due to one-way treatments is expected to be minimal due to good connectivity via surrounding streets. This is explored in more detail in Section 5 (Traffic Analysis).





# 5. Traffic Analysis

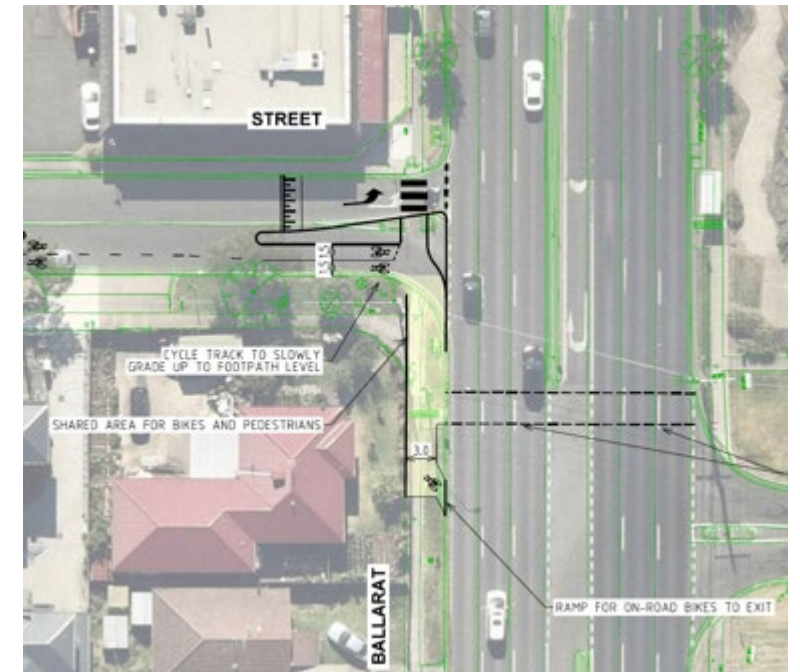
# Impact on local traffic

The following is a high level analysis of the existing traffic movements based on data collected in March 2022.

## Ballarat Road - Left Out Only (Applies to Option 1 & 2)

The data shows that on top of the vehicles turning left from Ballarat Road there is at times up to 40% more vehicles joining Melon Street from other side roads before arriving at Churchill Avenue Roundabout. It appears that at the busiest time 30% of this additional traffic is joining Melon Street from Hargreaves Avenue.

If the left turn ban from Ballarat Road to Melon Street was implemented it is assumed that additional traffic may use Lawn Crescent or Castley Crescent. Looking at the data this could approximately be up to two additional vehicles per minute in the peak hour. It should be noted that this number may be split between the two streets.



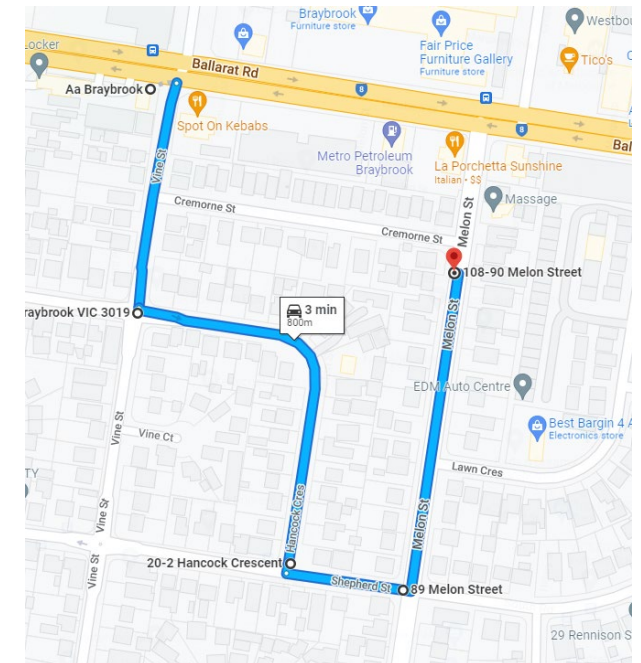
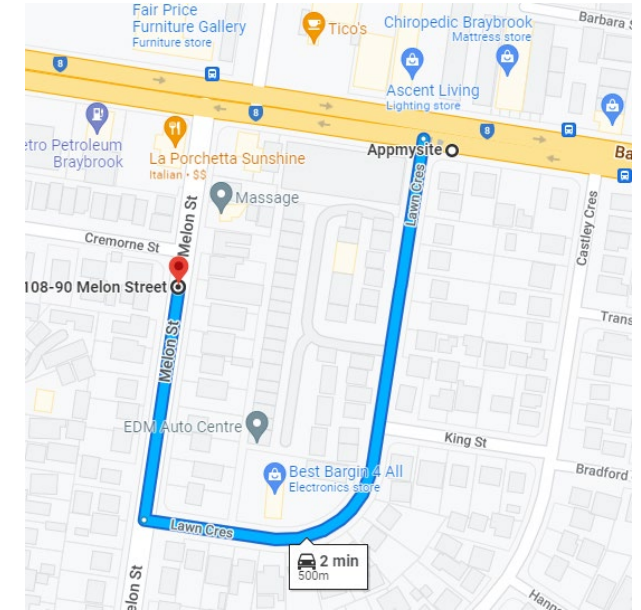


# Impact on local traffic

## Journey times (Applies to Option 1 & 2)

For residents at the northern end of Melon Street there would be an increased journey of approximately 250m for them to access their properties if travelling from Ballarat Road. This would equate to up to 1 minute additional journey time from Lawn Crescent.

Residents entering the area from Vine Street would see an increased journey of approximately 450m due to the left turn only treatment at Cremorne Street. This would equate to 2-3 minutes of additional journey time.





# Impact on local traffic

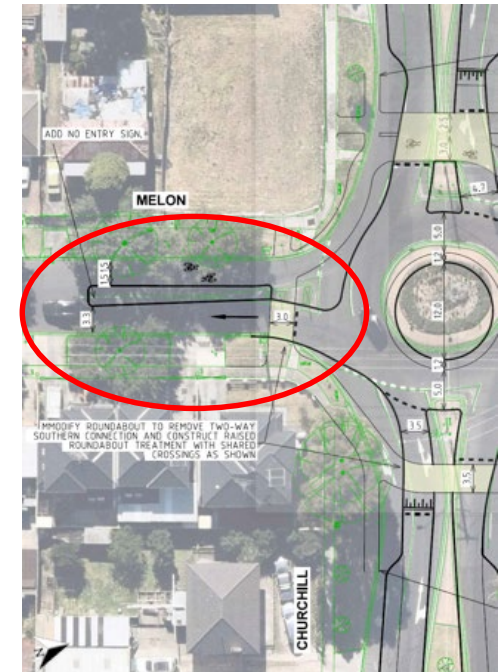
## Churchill Roundabout- Southbound only (Applies to Option 1 only)

The data shows that on top of the vehicles turning onto Melon Street from South Road there is approximately 10% more vehicles joining Melon Street from other side roads before arriving at the Churchill Avenue Roundabout.

At the roundabout about 50% of traffic that is generated between South Road and Churchill Avenue wish to carry on travelling north. There is a fairly even split of traffic wishing to turn left or right at the roundabout.

The data suggests that those turning onto Melon Street but leaving at Churchill may be doing so to avoid intersections on Ashley Street. By closing the northern approach to the roundabout an increase of up to 168 vehicles in the peak hour may use Ashley Street and Darnley Street to continue their journey.

It is assumed that some of vehicles would still access Melon Street from Churchill Avenue although as this is closer to Ballarat Road there would not be the same perceived advantage that exists today.



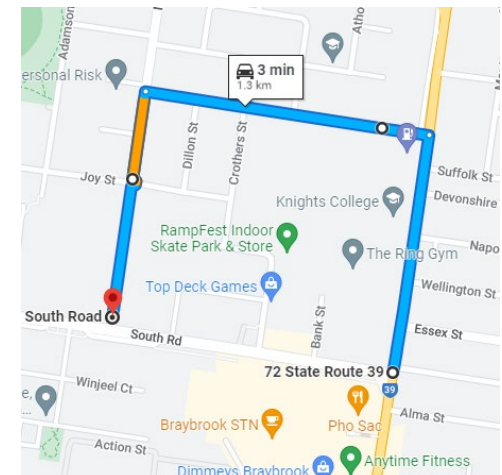
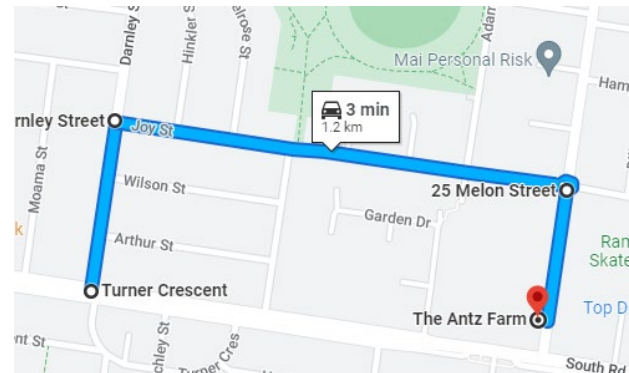
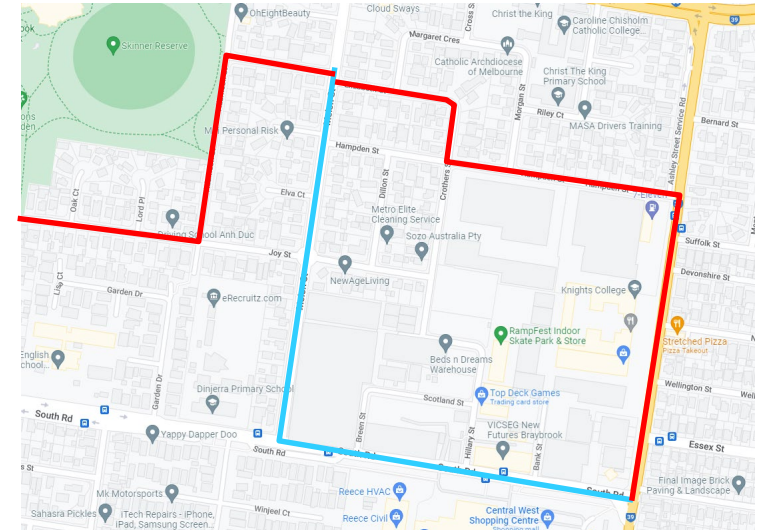


# Impact on local traffic

## Journey times (Applies to Option 1 only)

Residents near Elizabeth Street who may be coming from the east or west do not have any additional distance to travel to their properties although the journey may be slightly longer depending on Ashley Street traffic.

Residents at the southern end of Melon Street would have an additional distance of approximately 700m to access their properties. This would equate to up to 2 mins additional journey time.





# Traffic Volume Comparison (Turning into Melon Street)

The data used in the analysis was conducted over two weekdays with the peak hours identified as 8-9am and 4-5pm.

The table below shows the comparison of traffic turning **into** Melon Street from other streets on:

- Day 1: Thurs 17<sup>th</sup> of March 2022
- Day 2: Tues 22<sup>nd</sup> of March 2022

The figures highlighted in yellow represent notable differences in traffic from one day to another.

| Turning From                     | Traffic Volume (7 am to 10 am) |       |            | Traffic Volume (3 pm to 6 pm) |       |            |
|----------------------------------|--------------------------------|-------|------------|-------------------------------|-------|------------|
|                                  | Day 1                          | Day 2 | Difference | Day 1                         | Day 2 | Difference |
| Ballarat Road                    | 177                            | 116   | -34%       | 226                           | 132   | -42%       |
| Hargreaves Cres (Turning North)  | 17                             | 14    | -18%       | 35                            | 26    | -26%       |
| Hargreaves Cres (Turning South)  | 42                             | 41    | -2%        | 17                            | 25    | 47%        |
| Churchill Avenue (Turning North) | 118                            | 110   | -7%        | 189                           | 168   | -11%       |
| Churchill Avenue (Turning South) | 155                            | 175   | 13%        | 214                           | 204   | -5%        |
| Hampden (Turning North)          | 32                             | 47    | 47%        | 65                            | 66    | 2%         |
| Hampden (Turning South)          | 34                             | 29    | -15%       | 42                            | 30    | -29%       |
| South Road                       | 181                            | 217   | 20%        | 425                           | 392   | -8%        |





# Traffic Volume Comparison (Turning from Melon Street)

The table below shows the comparison of traffic turning **from** Melon Street into other streets on the same two days. The figures highlighted in yellow represent notable differences in traffic from one day to another.

| Turning From<br>Melon Street Into  | Traffic Volume (7 am to 10 am) |       |            | Traffic Volume (3 pm to 6 pm) |       |            |
|------------------------------------|--------------------------------|-------|------------|-------------------------------|-------|------------|
|                                    | Day 1                          | Day 2 | Difference | Day 1                         | Day 2 | Difference |
| Ballarat Road                      | 110                            | 178   | 62%        | 123                           | 219   | 78%        |
| Hargreaves Cres<br>(Turning East)  | 16                             | 18    | 13%        | 32                            | 35    | 9%         |
| Hargreaves Cres<br>(Turning West)  | 23                             | 22    | -4%        | 49                            | 45    | -8%        |
| Churchill Avenue<br>(Turning East) | 175                            | 182   | 4%         | 184                           | 167   | -9%        |
| Churchill Avenue<br>(Turning West) | 85                             | 96    | 13%        | 192                           | 182   | -5%        |
| Hampden (Turning<br>East)          | 83                             | 91    | 10%        | 97                            | 70    | -28%       |
| South Road (Turning<br>East)       | 229                            | 202   | -12%       | 201                           | 176   | -12%       |
| South Road (Turning<br>West)       | 44                             | 59    | 34%        | 55                            | 46    | -16%       |



# 6. Other Considerations

# Connections to broader cycling network



The results of the project may contribute to future works in the area, such as a crossing development at the intersection of Ballart. This will create increased benefit to the wider cycling network and link to the Maribyrnong River Trail.

The crossing may take shape in a variety of ways; the adjacent is just one example that could be investigated.

Access to Melon Street and Lacy Street from Ballarat Road can easily be achieved from nearby side roads.

The initial design scope will end by providing access to the southern side of the carriageway but further works to develop the crossing can evolve as part of future works.





# Stantec

**Attention: Maribyrnong City Council**

**Date: 11 May 2022**

**Prepared by: Clare Huggins & Evi Janse de Jonge**

**Reviewed by: James Laing**