



Safe Cycling Corridor Pilot

# Corridor Assessment Report

September 2019



Keeping Glen Eira Moving




GLEN EIRA CITY COUNCIL

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# 1. Context

An aerial photograph of a residential neighborhood, showing houses, streets, and green spaces. A large teal semi-transparent rectangle is overlaid on the center of the image, containing white text. The text describes the implementation of a Safe Cycling Corridor Pilot Project, mentioning a comprehensive analysis of potential corridors connecting the Caulfield Station Precinct and the St Kilda Road Corridor.

**As part of the implementation of the Safe Cycling Corridor Pilot Project, comprehensive analysis of potential corridors to provide a connection between the Caulfield Station Precinct and the St Kilda Road Corridor have been explored.**

# 1. Introduction and Council resolution

## Council resolution

Following the first stage of community engagement, at the Ordinary Council Meeting of 19 March 2019, Council requested that *“Officers prepare a report which analyses alternative protected bicycle corridors to the Inkerman Road protected bicycle corridor.”*

During a subsequent Council meeting on 30 April 2019, Council agreed on the following:

1. *Notes the preliminary, high level, analysis covering both the opportunities and constraints of the alternative corridors to Inkerman Road.*
2. *Acknowledges that the State Government, through the Department of Transport, has foreshadowed a Strategic Cycling Route through Glen Eira, linking the CBD to Dandenong. This draft proposed corridor passes through Inkerman Road, Orrong Crescent and Alma Road.*
3. *Expedites discussions between Glen Eira City Council, the Department of Transport and neighbouring councils, in order to identify the most feasible possible corridor.*
4. *Notes that a further report will be presented containing a comprehensive analysis of each alternative corridor, including the outcome of discussions between Glen Eira City Council, the Department of Transport and neighbouring councils.*

As requested by Council (point 4), this report aims to provide a comprehensive analysis of corridor options to identify the best link between the Caulfield Station Precinct and the St Kilda Road corridor.

# 1. Introduction and Council resolution

## Road management responsibilities

This document has been prepared by Glen Eira City Council to inform its decision on the proposed safe cycling corridor.

It is worth noting that Glen Eira City Council can only make road and traffic changes to roads that it manages and is the authority for:

### Glen Eira City Council is the road management authority for:

- Inkerman Road between Normanby Road and Hotham Street (noting that the section between Orrong Road and Hotham Street is a shared boundary with the City of Port Phillip)
- Alma Road between Dandenong Road and Orrong Road
- Orrong Crescent
- Normanby Road

In order to provide a thorough understanding of the full corridor, this corridor assessment includes roads managed by Port Phillip City Council and the Department of Transport.

### Port Phillip City Council is the road management authority for:

- Inkerman Street (noting that the section between Orrong Road and Hotham Street is a shared boundary with the City of Glen Eira)
- Alma Road, west of Orrong Road

### The Department of Transport is the road management authority for:

- Dandenong Road

## Cycling corridor priorities for each road authority

Glen Eira City Council has resolved to explore the four routes as outlined in this report. This report will inform a Council decision anticipated in December 2019.

This report will also be provided to both Port Phillip City Council and the Department of Transport to seek input and a co-ordinated outcome.

The current positions of these authorities are outlined below:

- Port Phillip City Council has an adopted position through its Integrated Transport Strategy that Inkerman Street is part of the proposed bicycle riding network improvements.
- In correspondence received by Council officers on 13 August 2019, the Department of Transport (DoT) has outlined the following:

#### *1. The Department of Transport (DoT) notes that:*

- a. Dandenong Road is a State arterial managed by VicRoads serving important transport movement functions including traffic, freight and trams.*
- b. Inkerman Road, Inkerman Street, Orrong Crescent and Alma Road are all local municipal roads (managed by the respective municipal Council).*

#### *2. The DoT does not support the Dandenong Road option as a feasible Strategic Cycling Corridor.*

#### *3. The DoT currently considers either the Inkerman Road/Inkerman Street (both directions) or Inkerman Road/Orrong Crescent/Alma Road (both directions) options as potentially feasible Strategic Cycling Corridor options.*

*The DoT notes that Glen Eira Council intends to release a detailed report assessing alignment options for this Strategic Cycling Corridor, as a basis for community consultation. The above advice may be subject to further review upon a formal Council request when the assessment report is released.*

## 1. The corridors

As part of the implementation of the Safe Cycling Corridor Pilot Project, Council has conducted a comprehensive analysis of potential corridors to connect the Caulfield Station Precinct and the St Kilda Road Corridor. This report looks at the following alignments:

**Dandenong Road**

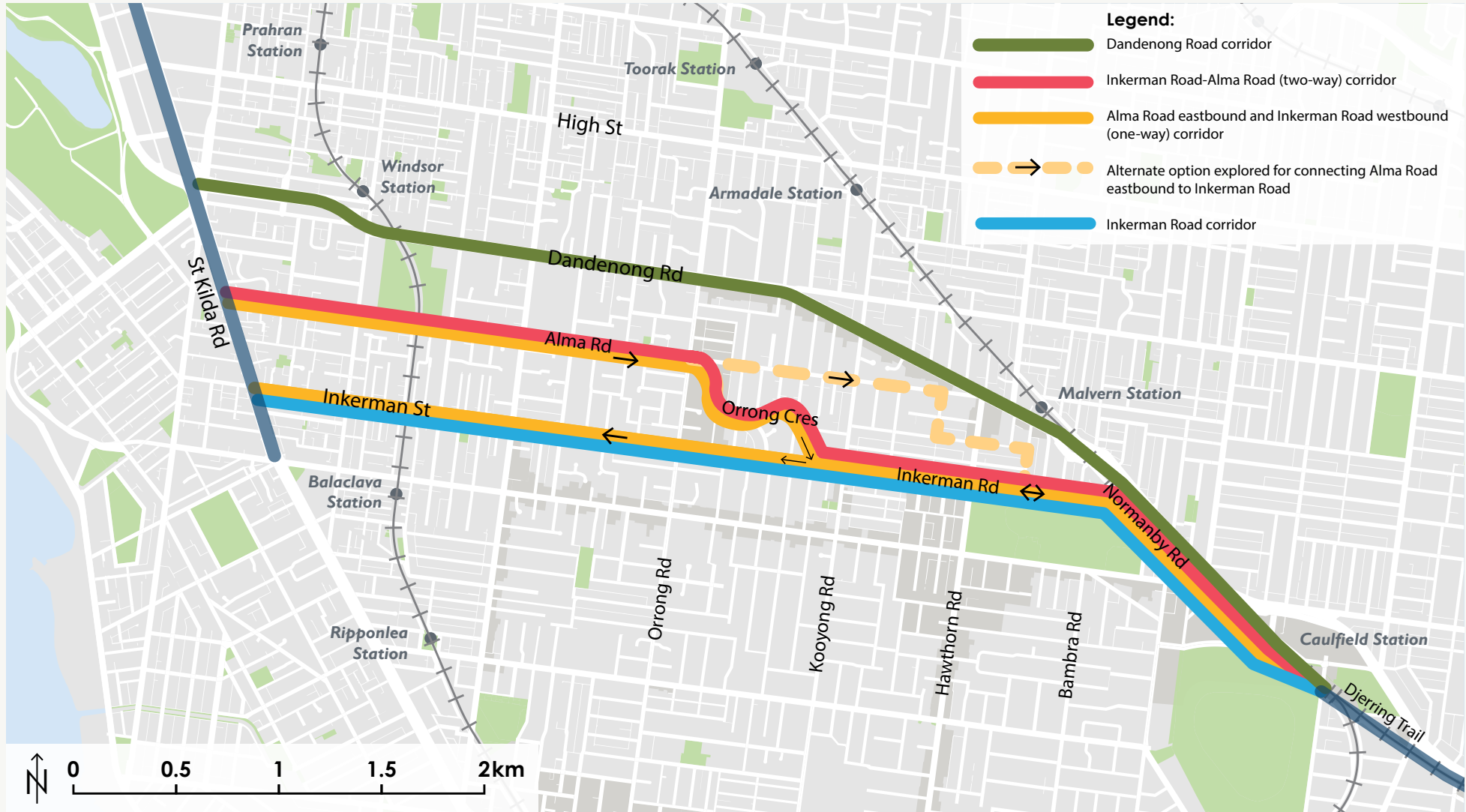
**Inkerman Road–Alma Road (two-way)**

**Alma Road eastbound and Inkerman Road westbound (one-way)**

**Inkerman Road**



# 1. The corridors



## 1. Broader links

### Exploration of safe cycling corridors is an action of Council's *Integrated Transport Strategy 2018-2031*. The *Strategy* sets out a vision for transport, to guide Council in responding to critical *challenges* facing Glen Eira.

#### What are these challenges?

Glen Eira is experiencing significant population growth, in common with Greater Melbourne. By 2031, an additional 1.65 million residents are expected to be living in Greater Melbourne. Employment is also predicted to grow significantly over the same period, with an additional 400,000 workers expected, increasing the number of daily trips to work in metropolitan Melbourne to just over two million.

Glen Eira, along with all other inner Melbourne Council areas, is required by State Government policy to accept a share of this growth. This means around 30,260 new residents, 14,020 new homes and 9,502 additional jobs.

It could also mean more than 22,432 additional cars on the roads in Glen Eira alone if the ways we currently travel continue. This is in addition to an estimated 3.5 million extra trips daily across Melbourne's transport network, contributing to rising congestion on local roads and exacerbating residents' travel and parking frustrations.

#### How does the *Integrated Transport Strategy* respond?

Council's *Integrated Transport Strategy* recognises that many of us rely on cars and on public parking being available. But it also recognises that these conveniences will be increasingly difficult to sustain as the population grows.

The *Strategy* guides action on initiatives that aim to make it easier for those residents who can, and want to, consider alternative transport methods, such as walking, cycling, and public transport.

The right infrastructure can make a difference to community travel patterns. We can see this already in some Glen Eira suburbs where public and active transport use is higher.

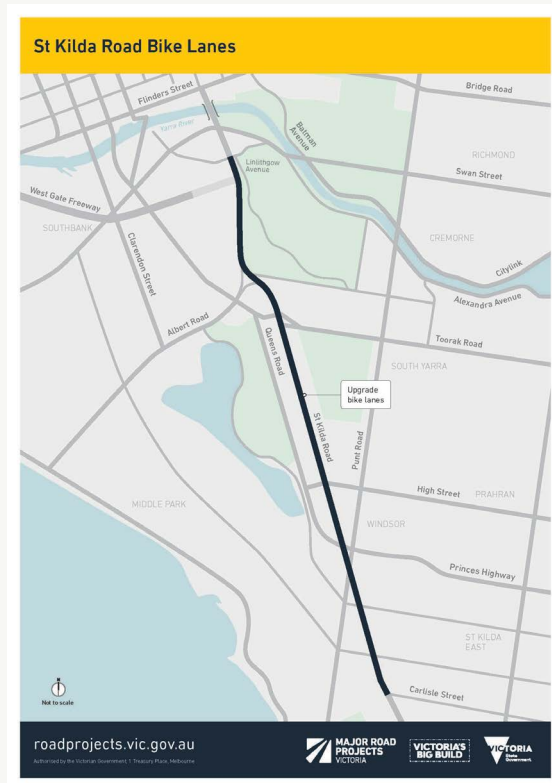
Our approach aims for a balance to increase the options available to the community, and preserve the amenity of neighbourhoods while seeking to shift our overall transport direction so that we can meet the challenges of population growth.

For further information, the *Integrated Transport Strategy*, including background information on Council's website at [www.gleneira.vic.gov.au/transport](http://www.gleneira.vic.gov.au/transport)

# 1. Broader links

## St Kilda Road Corridor

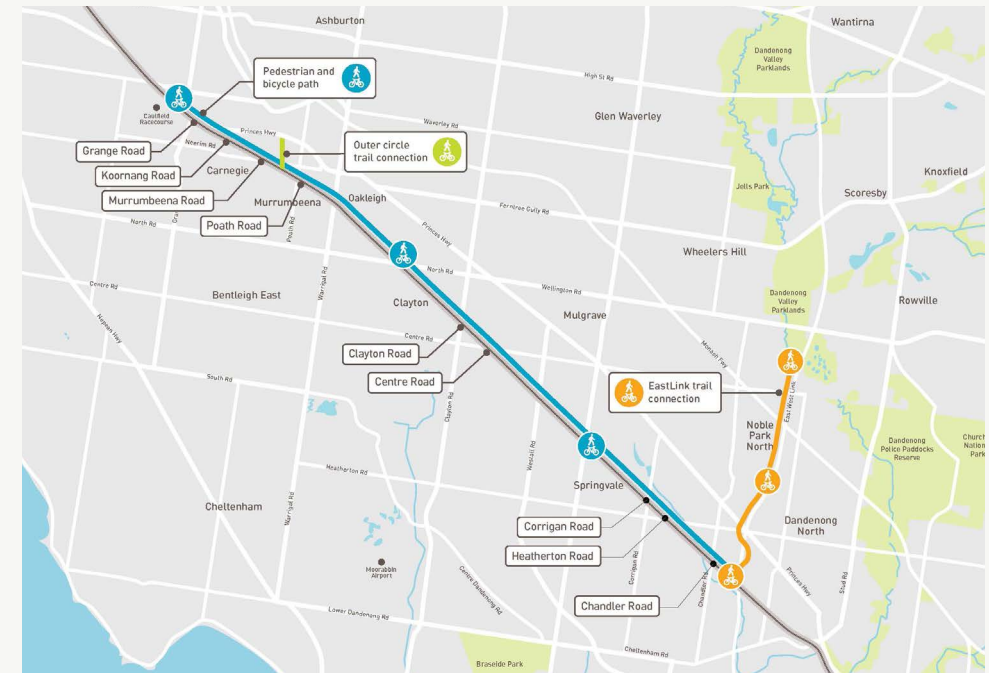
The State Government has announced and fully funded a premium cycling corridor along St Kilda Road, to be delivered by 2022–23. This will provide a protected bicycle lane along the central lanes of St Kilda Road from St Kilda Junction to the CBD and a 'Copenhagen style' separated bicycle lane south of the Junction to Carlisle Street.



## Djerring Trail shared path

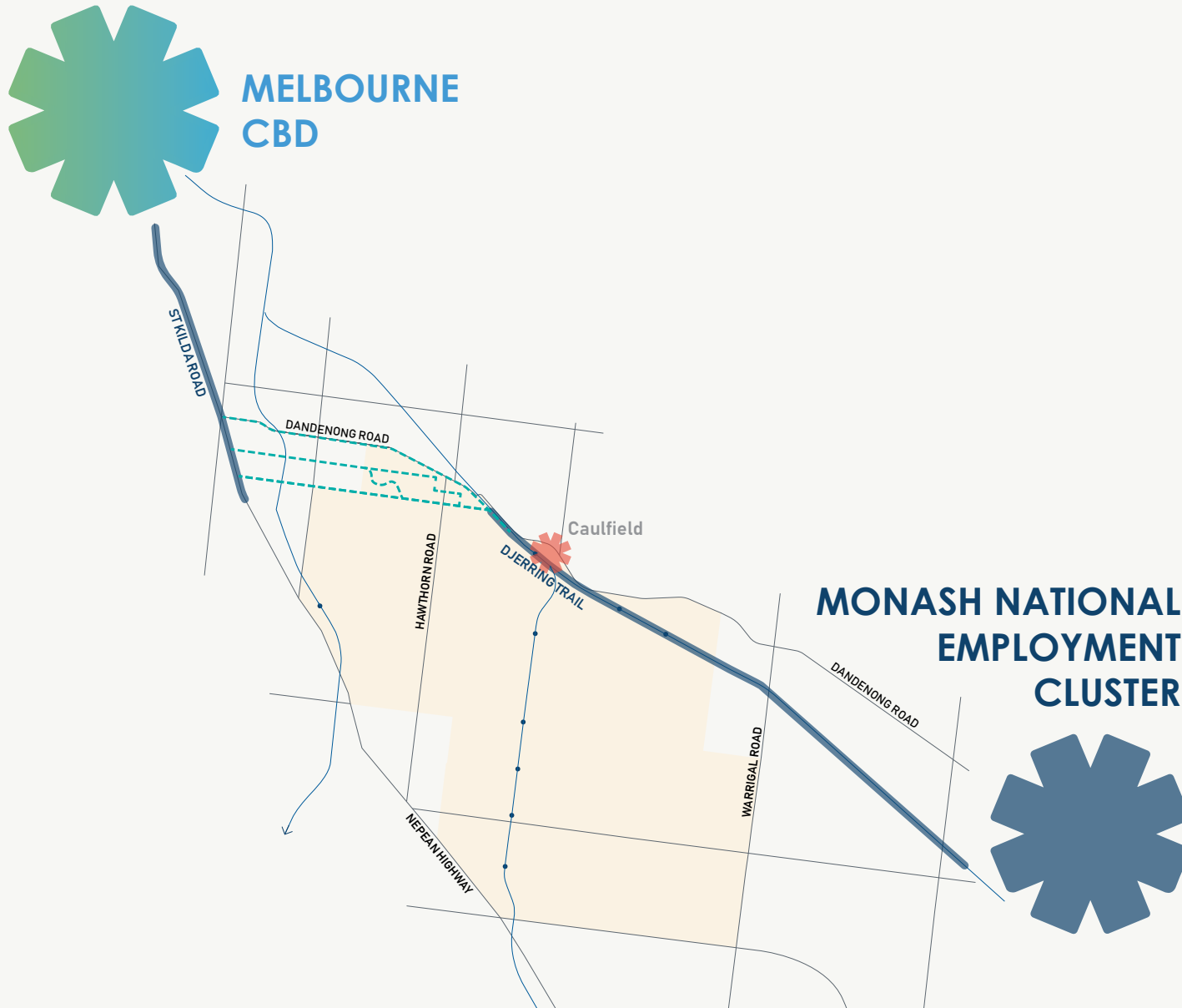
The Djerring Trail was recently completed as part of the Level Crossing Removal Program. This trail provides a high-quality cycling connection between Caulfield and Dandenong.

For this reason, the provision of an east-west link connecting the Djerring Trail and the St Kilda Road corridor will not only provide a safer environment for people cycling in Glen Eira, but also enhances wider connectivity to key destinations like Melbourne's CBD and the Monash Employment and Innovation Cluster.



Djerring Trail shared path - Source: Level Crossing Removal Authority, Caulfield To Dandenong Open Space, <https://your.levelcrossings.vic.gov.au/public-open-space>

# 1. Broader links



# 1. Broader links

## Road authority stakeholders

Implementing a fully connected cycling corridor between Caulfield Station and St Kilda Road will require agreement and funding from a number of key road authority stakeholders.

These stakeholders differ depending on which of the four corridors is being considered, as outlined below:

### **Inkerman Road — road authority stakeholders:**

- Port Phillip City Council
- Department of Transport

### **Alma Road–Inkerman Road (two-way) — road authority stakeholders:**

- Port Phillip City Council
- Department of Transport

### **Alma Road–Inkerman Road (one-way) — road authority stakeholders:**

- Port Phillip City Council
- Department of Transport

### **Dandenong Road — road authority stakeholders:**

- Port Phillip City Council
- Department of Transport
- Stonnington City Council

To put it simply, a new safe cycling corridor between Caulfield Station and St Kilda Road can only work if integrated within the wider strategic cycling network and agreed upon by the essential stakeholders.

## **Department of Transport — Strategic Cycling Corridors**

The Department of Transport has shared its draft Strategic Cycling Corridors to seek further feedback from councils.

To provide an east-west alignment that links the CBD via St Kilda Road with the Caulfield Station Precinct, the draft Strategic Cycling Corridor identifies the preferred alignment along Normanby Road, Inkerman Road, Orrong Crescent and Alma Road.

The Department has provided this draft alternative alignment in order to seek further feedback and discussions with both Glen Eira and Port Phillip councils (the proposed section of Alma Road is located within the City of Port Phillip).

## **Stonnington City Council**

Stonnington City Council has identified a number of aspirational bicycle corridors in their Cycling Strategy. No east-west connection linking Caulfield Station and St Kilda Road, including via Dandenong Road has been identified.

## **Port Phillip City Council**

Port Phillip City Council has identified a number of proposed bicycle corridors within their Integrated Transport Strategy (Move, Connect, Live). In regards to an eastwest connection linking Caulfield Station and St Kilda Road, Inkerman Street has been identified.

Port Phillip's Integrated Transport Strategy can be accessed via their website: [www.portphillip.vic.gov.au](http://www.portphillip.vic.gov.au)

## 1. Travel options

**Council has a role to manage the road network and balance the needs of the existing diverse community, while planning for the needs and challenges of the future.**

The choice we make on how to make a particular trip can depend on countless combinations of scenarios, including but not limited to; the length of trip, time of day, our age, the weather, transport options available, the purpose of the trip such as grocery shopping or going to meet a friend, etc. Put simply, how we choose to make a trip is complex, we are all different and we have different needs at different times.

The travel modes we choose are not usually limited to one type, there are days where we will need to use a car, while other days it will be easier or more convenient to use public transport, cycle or walk. People cannot be defined as a single 'mode' of transport. Community members have differing needs and wants when it comes to how they travel, now and into the future. They need the freedom to choose from a range of options to meet their daily travel needs.

### Travel options in inner Melbourne

The mix of transport options is one of the reasons why Melbourne is one of the most liveable places in the world. Melbourne's tram network is the envy of most cities, the train network is receiving significant investment, and more of those living within a comfortable cycling distance to work are increasingly choosing/opting to cycle.

### Travel options in Caulfield

Caulfield is transport rich. The accessibility the suburb provides to tram, train and bus services enables multiple travel choices along with the option to drive.

Mature trees, footpaths and pedestrian crossings help to provide a rich pedestrian network ensuring that walking in Caulfield is safe and attractive. This is one of the reasons that Caulfield is such a sought after place to live.

However, Caulfield will experience thousands more local and 'through trips' on our local streets. As there are very few opportunities to significantly increase road capacity, we need to look at how we encourage alternatives to driving. Public transport, cycling and walking must take its share of the growth in travel demand and public transport infrastructure and services are receiving comprehensive investment to enable this. However, with the exclusion of the fixed train network, the local streets of Caulfield will need to continue to accommodate this mix of transport needs while accommodating future growth in trips. Tram and bus stops, parking spaces for various needs, and cycling paths will make up some of the most challenging decisions we face in managing transport when trying to balance different uses of the road network.

## 1. Travel options

### Riding to work from Caulfield

Most of Caulfield North is in the Tram Precinct as identified in Council's *Integrated Transport Strategy*. Neighbourhoods in the Tram Precinct have good access to public transport but are not located within walking distance to a train station. Caulfield East and a small part of Caulfield North are in the Train and Tram Precinct, with excellent access to all three tiers of public transport — train, tram and bus.

While cycling as a mode of transport is relatively low across the municipality, the Tram Precinct presents the highest figures, with 1.69 per cent of residents cycling to work. This figure is even higher for Caulfield North, where 1.9 per cent of people living in the area cycle to work.

At 1.34 cars per household, car ownership rates in Caulfield North/Caulfield East are about the same as those across Glen Eira. However, a greater number of households do not own a car at all: 10.2 per cent in Caulfield North/Caulfield East, compared with 8.9 per cent for households across Glen Eira.

Most workers commute by car (58 per cent), followed by 22 per cent on public transport and 2.3 per cent on foot. These rates are on par with Glen Eira overall.

Due to redevelopment around Caulfield Station, the population of Caulfield North/Caulfield East is anticipated to increase by more than 43 per cent by 2036. If current car ownership and commuting rates were to continue, it is estimated there will be an additional 2,042 car commuters from Caulfield North/Caulfield East alone.

**58 per cent of workers in Caulfield North commute by car.**

Method of travel to work	Caulfield North	Tram Precinct	Glen Eira	Greater Melbourne
Bicycle	1.9%	1.69%	1.5%	1.4%
Private vehicle	58.2%	58.8%	58.1%	64.1%

# 1. Travel options

## Travel time to CBD by mode

The main location of work for Caulfield North/East residents is the CBD, with 26 per cent of residents working there and seven per cent working in the Monash National Employment and Innovation Cluster (NEIC).

The CBD is less than 10km away from the centre of Caulfield North/East, while the Monash NEIC is 12.5km away. As outlined in the following tables, Caulfield is located at a unique threshold where cycling times are either better or at least comparable to peak hour driving or public transport commuting times.

As population growth continues and the growth of cars and congestion continues, cycling will become more and more attractive as a pragmatic and fast travel option.

Estimated times were recorded using Google Maps to compare travel time from different points of all corridors to the CBD (Federation Square) by different modes of transport. These were taken on a typical weekday at 8am (Wednesday 24 July).

## Inkerman Road travel times

Location	Commuting time (8am)		
	Car	Public transport	Bicycle
Inkerman St/ St Kilda Rd	28min	23min	21min
Inkerman Sr/ Chapel St	30min	26min	24min
Inkerman St/ Hotham St	35min	32min	26min
Inkerman Rd/ Orrong Rd	37min	31min	29min
Inkerman Rd/ Kooyong Rd	40min	28min	32min



# 1. Travel options

## Alma Road travel times

Location	Commuting time (8am)		
	Car	Public transport	Bicycle
Alma Rd/ St Kilda Rd	24min	23min	19min
Alma Rd/Chapel St	25min	26min	22min
Alma Rd/ Hotham St	33min	31min	25min
Alma Rd/ Orrong Rd	35min	35min	28min
Alma Rd/ Kooyong Rd	37min	28min	30min

## Dandenong Road travel times

Location	Commuting time (8am)		
	Car	Public transport	Bicycle
Dandenong Rd/ St Kilda Rd	22min	23min	17min
Dandenong Rd/ Chapel St	23min	15min	20min
Dandenong Rd/ Hotham St	30min	26min	22min
Dandenong Rd/ Orrong Rd	33min	35min	25min
Dandenong Rd/ Kooyong Rd	35min	28min	26min

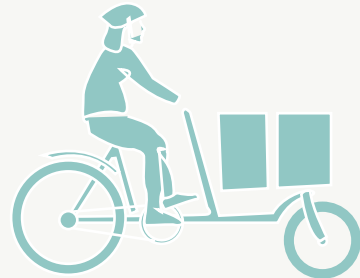
# 1. Travel by bicycle

## Different types of bicycle uses

A safe cycling corridor is a road or street that aims to enable cycling as a legitimate transport mode choice. These streets foster a safe environment for people of all abilities to cycle safely between destinations. When planning for the delivery of safe cycling corridor, it is critical to consider all the potential uses of the cycling infrastructure.



road bicycle



cargo bicycle



hire bicycle



folding bicycle



handcycle



leisure bicycle



bicycle with child seat



commuting bicycle



electric bicycle

# 1. Travel by bicycle

## Factors affecting a decision to cycle

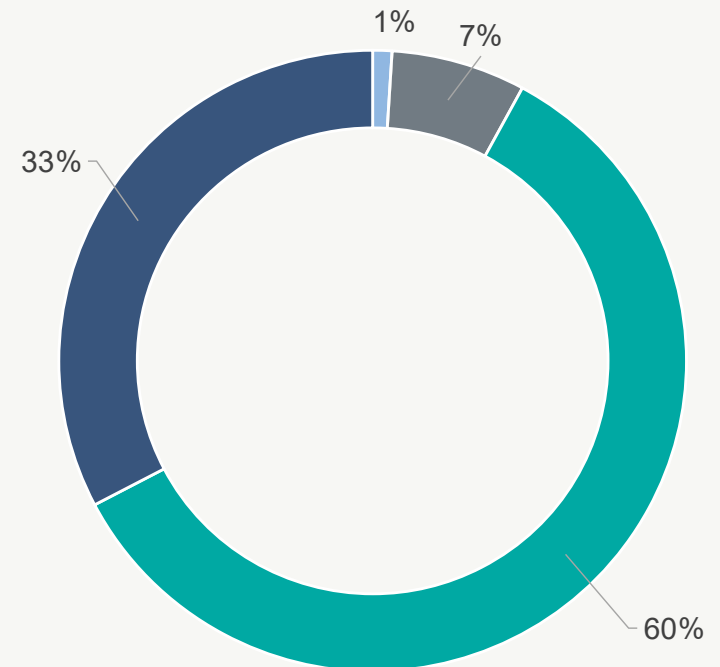
Existing research has identified that different factors affect people's decision to cycle. These commonly include travel distance, cycling infrastructure, cycling comfort, access and safety.

Concerns about safety are a major deterrent in people choosing to cycle as a mode of transport. As outlined in the *Victorian Cycling Strategy*, commonly 60 per cent of people are interested in cycling but somehow concerned about safety. This is the largest group, and they vary in age and cycling ability. They are curious about cycling and like to ride but are afraid to do so and put off by the need to ride close to motor vehicles and pedestrians, especially on higher-speed, higher-volume roads or where conflicts are more likely. This tells us that in order to encourage interested but concerned people to cycle, investment in cycling infrastructure to make it safer and lower-stress is worthwhile. This investment will also help the enthused and confident cyclists who are already riding, but could ride more if their riding experience could be improved.

Of the other two types:

- 'Strong and fearless cyclists' will cycle regardless of road conditions and are ready to mix with traffic.
- 'No way, no how' people will not cycle because they can't, because the terrain is unsuitable or because they have no interest whatsoever in it.

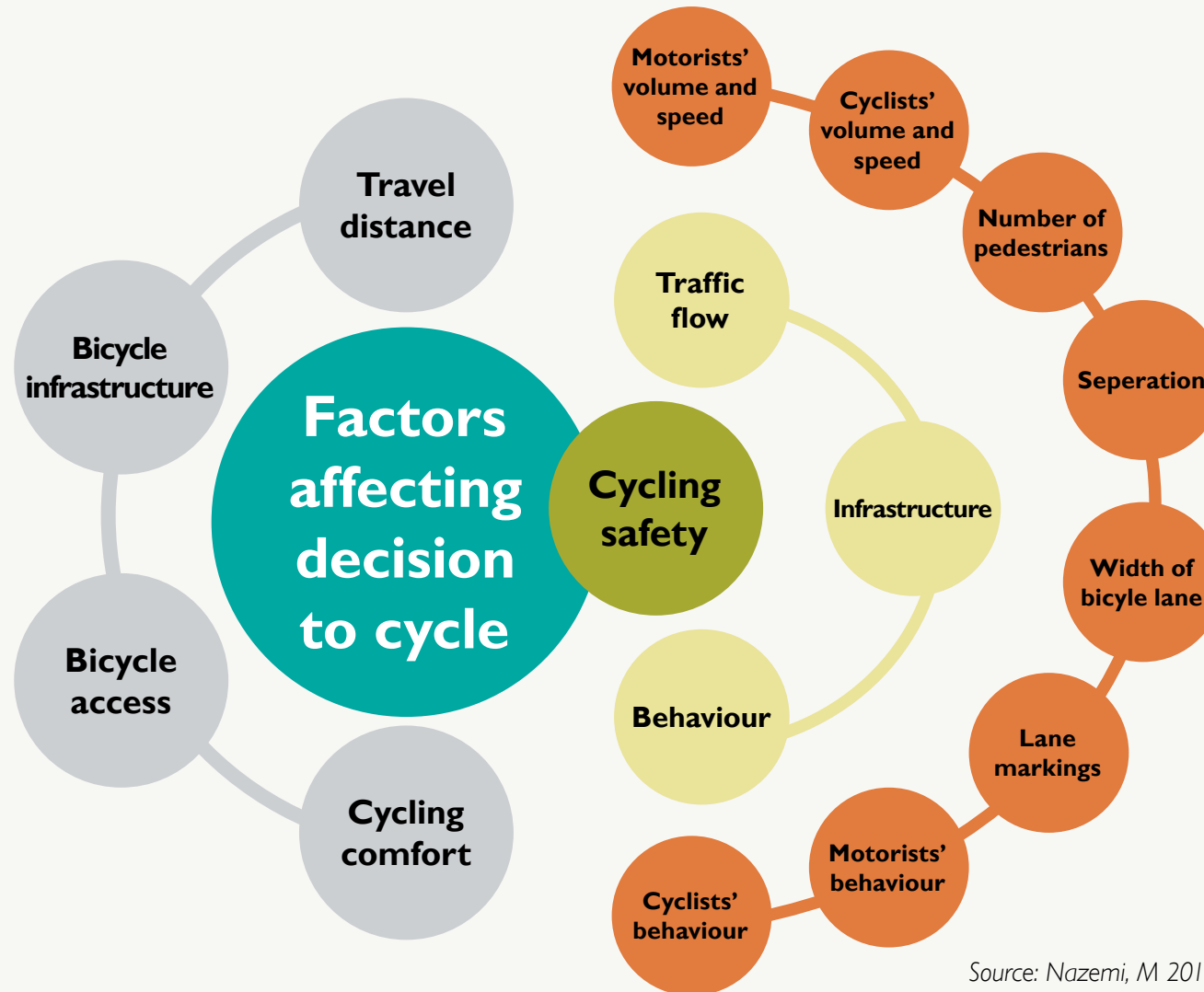
Investment in cycling infrastructure will have little to no impact on these two groups' decision to cycle.



- Strong and fearless
- Enthused and confident
- Interested but concerned
- No way, no how

Source: *The Victorian Cycling Strategy 2018–28*

# 1. Travel by bicycle



Source: Nazemi, M 2017, *Cyclists' perceived safety and its impact on bicycle mode choice*, ETH Zurich.

# 1. Travel by bicycle

## Supporting cyclists of all abilities

People will identify differently to these four types based on their life situations at any given time. Age, ability, type of work, location of work, time of year, caring responsibilities, ability to undertake various tasks in one trip, all have an impact on the willingness and ability to ride.

While it is clear that the provision of cycling infrastructure plays a critical role in encouraging more people to ride, the quality of provision is equally as important.

The following table outlines research findings of people's attitudes towards cycling when considering different types of infrastructure.

	Research conducted in the US (Source NACTO)	Research conducted by the City of Melbourne
Proportion of people confident to ride on mixed traffic — painted bicycle lanes	6-10%	22%
People aiming to ride if a protected bicycle lane is provided	81%	83%

# 1. Travel by bicycle

## Level of comfort

Best practice suggests that high-quality cycling infrastructure also plays a critical role in increasing cycling comfort, as shown in the following diagram.



Source: *Transport Design Guidelines: All ages and abilities cycling routes* (City of Vancouver, 2017)



## 1. How might this affect you?

### Local resident — Julia

- Julia is a working mum whose partner travels a lot for work.
- Lives in Caulfield North.
- Primary age children go to Malvern Primary School.
- Works full time outside Glen Eira.

After school the kids go to her mum's just around the corner until Julia picks them up.

Julia is concerned about her children walking/riding to school safely so she chooses to drive them to school everyday before going to work. She could catch public transport to work but because she is already part way there by driving the kids to school it is more convenient to continue on in the car. Also, she sometimes does supermarket shopping on the way home from work.

Julia would like to ride her bicycle to the closest train station, but doesn't feel safe enough due to cars driving too fast and having no separation from them. She used to ride a bicycle when she was younger, but now feels more cautious.

If we could make it safer for Julia could ride with her kids to school then she could ride to the train station and catch the train to work instead, not every day but perhaps several days a week.

### Benefits:

Her travel time is reduced. Her commute is less stressful (no traffic or parking). Her children get more exercise, and build riding skills and confidence

One less car near the school at drop off time (safety for other kids, efficiency for other parents doing drop off). One less car on the road (congestion for other drivers reduced).

Think about what may happen in 2031 when Julia's kids turn 18 and have finished high school? Imagine if:

- Riding is a safe and convenient for them to get to work or university.
- More job opportunities have been created in Glen Eira so they don't have to travel as far to get to work.
- They had already developed their confidence and experience by riding to school every day.
- They had more public transport choices because we had successfully advocated for more services from early morning to late at night.
- There was always a share car nearby they could use when necessary because we had helped establish more share car infrastructure.

Julia's children had grown up with the example of their mother using public transport. They never feel the need to have their own cars. This could mean:

- Two less cars on the road.
- Less traffic congestion for those who need to use cars.
- More parking spaces available for those who need them.
- More money in their pockets (due to not having a car to maintain).



## 1. How might this affect you?

### What about Julia's mum?

Julia's mother has lived in Caulfield North most of her life.

She goes to the synagogue locally, visits the library and knows her local shopkeepers.

Her mobility has decreased as she has got older.

Now she can only walk about 50 metres with the assistance of a walking frame, but can still drive.

Julia's mum enjoys doing her own shopping but prefers to go to local shops where she knows everyone rather than big shopping centres.

It also enables her to combine a social experience with shopping by going to the library nearby or catching up with friends for a coffee in one of the local cafes.

Current parking congestion has meant an increasing number of abandoned trips when she can't get a park close enough to her destination and is forced to return home.

On those occasions, Julia has to shop for her mother, which puts increasing pressure on her already busy life.

Abandoned trips also means Julia's mother doesn't benefit from her normal level of social interaction and has to spend more time on her own at home.

Reducing the number of cars used on local roads by encouraging able-bodied people to cycle or walk will help alleviate parking congestion at local shopping strips and ensure older people like Julia's mother can continue to maintain a better quality of life.

Reviewing the type of parking provision Council provides to better respond to community needs, by providing senior, disability and parent parking, means that parking can be provided in the right places for those who need it most, such as Julia's mum,

At home, where parking restrictions are applied, permits are proposed to be provided especially for carers of seniors or those with a disability.

# 1. Community consultation

## Consultation

Council sought initial community feedback from February to June 2019. A range of engagement activities were undertaken, to invite community views on the project.



## What was asked

Council asked the community for their experiences of cycling, driving and parking along and around Inkerman Road, to help us understand more about how the route is used. We also asked community members for their ideas on which elements of a corridor should be prioritised by presenting a list of options and asking respondents to rank these in order of importance.

Council also sought views on issues and opportunities the community thought relevant to consider on how to separate bicycles, people and traffic along the route. An online forum provided the community a further opportunity to offer general feedback.

## What was heard

A diverse mix of residents, and property owners, visitors, local business owners and employees as well as other interested community members engaged with Council in this initial phase. Council also received a petition from Port Phillip residents that totalled more than 100 signatures.

Thoughts provided can be grouped into a set of seven key themes.

## What was done

In response to the feedback received, Council committed to expanding our exploration of route options. Council's assessment of alternative corridor routes is presented in this document.

# 1. Community consultation

## Seven key themes heard

### 1. Parking

Transport by car was identified as a core mode of transport for residents and visitors. Community members were concerned that there would be negative impacts arising from the loss of parking along the route, should parking places be removed. Concerns included worries about loss of customers, impacts on vulnerable people, inconvenience for residents receiving services, congestion on surrounding roads and increased difficulty finding parking spaces.

### 2. Movement, traffic and congestion

Feedback from the community highlighted the fact that people require multiple options to move throughout the municipality. Many participants agreed that alternatives to driving should be supported and some participants welcomed the Safe Cycling Corridor Project as an exciting new alternative to driving. Other participants thought that the suggested corridor did not provide a good enough alternative option. Some community members thought that the corridor would increase congestion. Some thought that the number of cyclists likely to use the corridor would not be sufficient to reduce congestion in the area.

### 3. Safety

Community members reflected on the poor existing safety conditions for cyclists and some provided comments on how the project could make cycling safer. Other participants, while agreeing it was currently unsafe to cycle felt that the potential for dangerous conflict between vehicles and bicycles would not be solved by the corridor. Feedback highlighted strong expectations that the safety of all community members be considered in any further development of the project.

### 4. Community benefit

Community members noted the benefits of cycling for wellbeing and many positive comments were received about the project creating access and improving linkages to other bicycle paths and community facilities such as shops and schools. Significant feedback was received about the importance of equitable use of public space, with some people of the view that the corridor would disproportionately benefit cyclists over other community members.

# 1. Community consultation

## 5. Location and planning

Community members felt that a future safe cycling corridor should be considered as part of a wider planning and infrastructure program, and many enquired about the consideration of alternative route options, including Dandenong Road and Alma Road. Those in favour of alternative routes were of the view that a corridor should be on a street with limited traffic and on-street parking, that has fewer driveways and intersections.

## 6. Design ideas

Many community members provided Council with considered and detailed suggestions for how a future safe cycling corridor could be designed. Ideas for separating cyclists, cars, and pedestrians were diverse and mixed views were put forward on whether cyclists should be completely separated from all forms of transport or whether they should share space with pedestrians or vehicles.

## 7. Project intent and consultation

Community members expressed the expectation that Council undertake more extensive engagement, including providing more detailed information to residents. Some community members were unclear on the intention of the project and felt that Council had already decided on the corridor alignment prior to the engagement.



## 2. Assessment methodology

An aerial photograph of a residential neighborhood, showing a mix of houses, a school with a blue and red basketball court, and a multi-lane road. A large, semi-transparent teal rectangle is overlaid on the center of the image, containing white text. The text describes a framework for assessing corridors, mentioning best practice principles, guidelines, and community feedback.

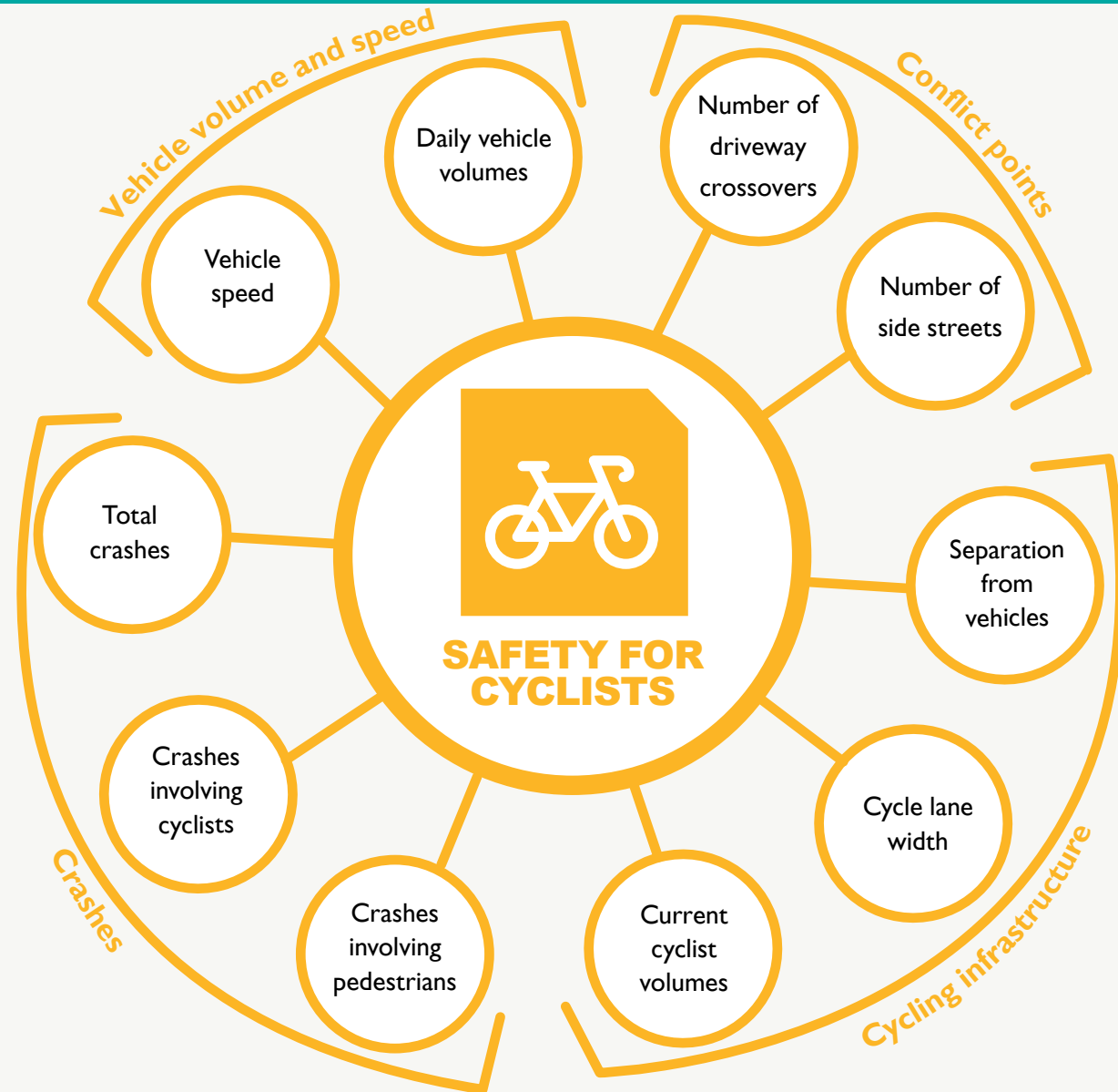
**A framework was developed to assess each corridor. The framework considers best practice principles and guidelines as well as feedback received from the community.**

## 2. Assessment framework

The assessment framework used to assess each corridor was developed by considering best practice principles and guidelines, as well as the feedback received from the community during the initial stage of consultation.

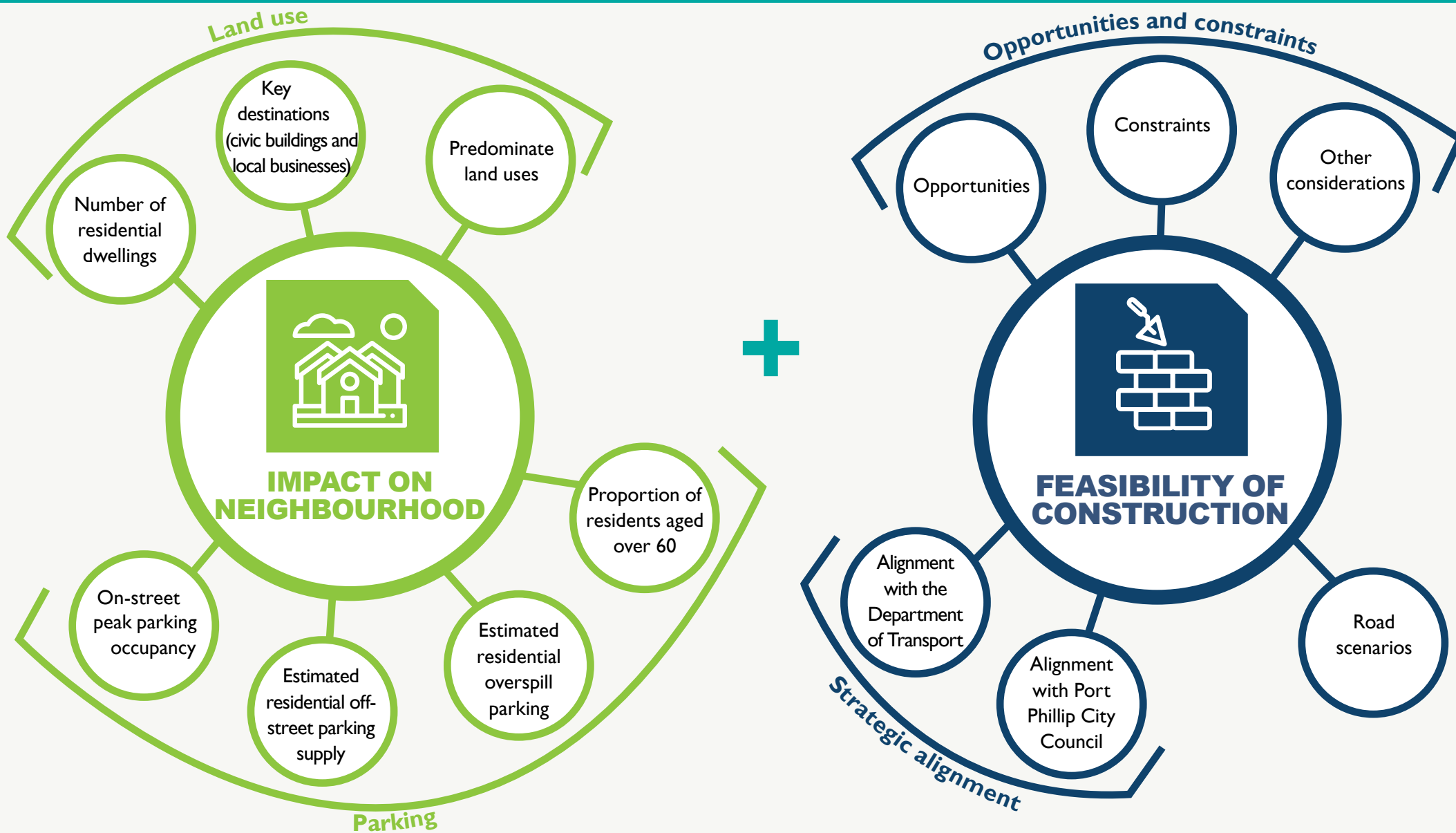
The framework considers the following criteria:

- Safety for cyclists
- Impact on neighbourhood
- Feasibility of construction





## 2. Assessment framework



## 2. Safety for cyclists



### Sub-criteria

#### Conflict points:

1. Number of side streets
2. Number of driveway crossovers

#### Vehicle volume and speed:

3. Daily vehicle volumes
4. Vehicle speed

#### Crashes:

5. Total crashes
6. Crashes involving cyclists
7. Crashes involving pedestrians

#### Cycling infrastructure:

8. Current cyclist volumes
9. Cycle lane width
10. Separation from vehicles

### Safety for cyclists criteria

The criteria used to assess cyclist safety are related to best practice principles and guidelines including VicRoads and Austroads standards.

These elements are oriented to provide the elements of a safe cycling corridor outlined in the *Integrated Transport Strategy*, which aims to foster a safe environment for people of all abilities to cycle safely between destinations.

The following guidelines, standards and best practice were used to inform this report:

- VicRoads: Design guidance for strategically important cycling corridors  
[www.vicroads.vic.gov.au/traffic-and-road-use/cycling/bicycle-infrastructure-design](http://www.vicroads.vic.gov.au/traffic-and-road-use/cycling/bicycle-infrastructure-design)
- VicRoads: Guidance on treating bicycle car dooring collisions  
[www.vicroads.vic.gov.au/traffic-and-road-use/cycling/bicycle-infrastructure-design](http://www.vicroads.vic.gov.au/traffic-and-road-use/cycling/bicycle-infrastructure-design)
- Austroads: Cycling aspects of Austroads guides (2017)  
<https://austroads.com.au/publications/traffic-management/ap-g88-17>
- NACTO: Designing for all ages and abilities, contextual guidance for high-comfort bicycle facilities  
[https://nacto.org/wp-content/uploads/2017/12/NACTO\\_Designing-for-All-Ages-Abilities.pdf](https://nacto.org/wp-content/uploads/2017/12/NACTO_Designing-for-All-Ages-Abilities.pdf)

## 2. Safety for cyclists



### Conflict points 1. Number of side streets

#### Data collected

The following data was collected to identify the number of side streets:

- All side streets intersecting the corridors were identified and mapped.
- Week-long traffic counts were conducted on side streets to identify average daily vehicle volumes.

Vehicles volumes on side streets were classified according into four categories:

- Up to 1,000 vehicles per day
- 1,001–2,000 vehicles per day
- 2,001–3,000 vehicles per day
- More than 3,000 vehicles per day

#### Commentary

Side streets are the cause of significant conflict points for cyclists.

All side streets have been mapped and counted, with the exception of dead-end streets.

According to the *Glen Eira Planning Scheme*, the following thresholds apply to 'access streets':

- Access street — level 1: 1,000–2,000 vehicles per day
- Access street — level 2: 2,000–3,000 vehicles per day

For this reason, roads presenting average volumes more than 2,000 vehicles per day were identified as moderate to high volumes.

According to Austroads and VicRoads guidelines, the provision of separated bicycle lanes (kerb separated or protected) is preferable when there are limited conflict points (including intersections).

#### Rules for design

Potential conflict points with side streets with high vehicle volumes will need to be addressed.

## 2. Safety for cyclists



### Conflict points 2. Number of driveway crossovers

#### Data collected

All driveway crossovers along corridors were identified and mapped using GIS software and aerial photography.

#### Commentary

According to Austroads and VicRoads guidelines, the provision of separated bicycle lanes (kerb separated or protected) is preferable when there are limited driveways. This is a potential conflict point that will need to be managed.

Independent traffic experts GTA recommend a general approach of a four metre clearance between existing driveways and parked cars, however a more tailored, site-responsive solution would be required at detailed design stage for each situation.

Cars are legally required to park 10 metres away from intersections, including side streets.

#### Rules for design

Ideally where possible, conflicts with driveway crossovers would be minimised through either route selection or corridor design. However, this is not always possible in a predominately residential municipality like Glen Eira.

## 2. Safety for cyclists



### Vehicle volume and speed 3. Daily vehicle volume

#### Data collected

Week-long traffic tube counts were undertaken starting on Friday 24 May 2019.

The average weekday vehicle volumes were obtained for vehicles travelling along all corridors in both directions.

#### Commentry

According to Austroads guidelines, the following elements should be considered when designing cycling infrastructure:

- Road sharing (no separation from traffic): this facility is preferred on-roads with low vehicle volumes (ie. up to 4,500 vehicles per day).
- Separated bicycle lanes: these are recommended for streets carrying medium to very high volumes (ie. 4,500–12,000 vehicles per day).
- Off-road paths: for roads with very high vehicle volumes (more than 12,000 vehicles per day).

\*The vehicle volumes described above are indicative only, and need to be considered in conjunction with vehicle speed.

#### Rules for design

Vehicle volumes are a critical element to consider when choosing the best corridor alignment and cycling infrastructure.

## 2. Safety for cyclists



### Vehicle volume and speed 4. Vehicle speed

#### Data collected

Vehicle speed was identified by installing tube counts over one week starting on Friday 24 May 2019.

The speed considered during the analysis (85<sup>th</sup> percentile), is the speed at which 85 per cent of all vehicles were observed to travel at or below, which is the standard traffic engineering measurement.

#### Commentary

According to Austroads guidelines, the following elements should be considered when designing cycling infrastructure:

- Road sharing (no separation from traffic): this facility is preferred on-roads with low vehicle speeds (ie. up to 30 km/h).
- Separated bicycle lanes: are recommended in speed environments between 40–60 km/h.
- Off-road paths: for roads with speeds over 60km/h.

\*The vehicle speeds described above are indicative only and need to be considered in conjunction with vehicle volumes.

#### Rules for design

According to AustRoads, if an off-road facility cannot be provided, it is important to avoid high-speed roads to provide a safe cycling environment.

Vehicle speed is a critical element to consider when choosing the best corridor alignment and cycling infrastructure.

## 2. Safety for cyclists



Crashes

### 5. Total crashes

#### Data collected

The number of all crashes reported to VicRoads over the last five years were mapped and counted.

The total number of crashes includes:

- All crashes involving cyclists.
- All crashes involving pedestrians.
- All crashes involving vehicles and motorcycles.

#### Commentry

VicRoads guidelines note that corridors with lower exposure rating for crashes are preferred.

For this reason, the assessment considers the history of crashes in the last five years along each corridor.

#### Rules for design

A tailored, site-responsive solution would be required at the detailed design stage.

This should include identifying any common crash types and incorporating design solutions to address them.

## 2. Safety for cyclists



Crashes

### 6. Crashes involving cyclists

#### Data collected

The total number of crashes that have involved cyclists as reported to VicRoads over the last five years were mapped and counted.

#### Commentary

The historical trend of crashes may not directly relate to the route not being suitable for a cycling corridor, as cyclists crashes are often linked to the existing number of cyclists using that route and the environmental conditions including vehicle speed, cycling priority and protection.

However, it does have a direct link to the level of intervention required if the route was selected for a safe cycling corridor.

#### Rules for design

A tailored, site responsive solution would be required at the detailed design stage.

This should include identifying any common crash types and incorporating design solutions to address them.



## 2. Safety for cyclists



Crashes

### 7. Crashes involving pedestrians

#### Data collected

The total number of crashes that have involved pedestrians as reported to VicRoads over the last five years were mapped and counted.

#### Commentry

The implementation of a safe cycling corridor aims to provide a safer environment for all road users.

For this reason, it is important to identify locations with high number of crashes involving pedestrians, which will need to be addressed.

#### Rules for design

A tailored, site-responsive solution would be required at the detailed design stage.

This should include identifying any common crash types and incorporating design solutions to address them.

## 2. Safety for cyclists



### Cycling infrastructure 8. Current cyclist volume

#### Data collected

Cameras were installed to identify the number of cyclists on key sections of the corridors on Saturday 25 May and Tuesday 28 May 2019.

The average weekday cyclist number has been mapped and counted for all corridors.

#### Commentary

Cyclist counts were undertaken to have a 'baseline' of current cycling conditions along each corridor.

The number of existing cyclists can also help to identify preferred and known routes.

#### Rules for design

The Safe Cycling Corridor will be designed for future growth and to cater for a higher number of cyclists.

## 2. Safety for cyclists



### Cycling infrastructure 9. Cycle lane width

#### Data collected

VicRoads and Austroads guidelines were reviewed to identify appropriate cycle lane width.

This has been applied to all road scenarios considered.

#### Commentary

Cycle lane width is an important parameter for a bicycle facility design, which directly affects lane capacity and safety.

According to VicRoads an absolute minimum of 1.5 metres is to be provided for separated bicycle lanes and three metres for bi-directional bicycle lane.

Austroads latest guidelines suggest at least two meters for separated bicycle lanes to provide enough space for cyclists to overtake when cycling in a separated environment. This width may need to be widened if there are vertical obstructions close by such as poles, trees, furniture and fences.

#### Rules for design

To achieve a high quality Safe Cycling Corridor, as envisaged in the *Integrated Transport Strategy*, a one-way facility would ideally need to be at least two metres.

For a bi-directional bicycle lane, three metres would be the desired minimum width.

There may be examples across Melbourne where narrower widths have been provided. However, given the aspirations of cyclist safety for this project, the widths outlined above are the minimum that will be considered.

## 2. Safety for cyclists



### Cycling infrastructure 10. Separation from vehicles

#### Data collected

Dooring is just one of the many hazards cyclists need to watch out for when riding on Australian roads. Also known as cyclist-vehicle door opening crashes, dooring refers to a cyclist being struck by a car door being opened into their path.

VicRoads and Austroads guidelines were reviewed to identify the minimum separation requirements for moving and parked vehicles.

This has been applied to all road scenarios considered.

#### Commentary

Between 2011 and 2016, there were 771 recorded dooring accidents in Melbourne alone, with a vast majority of these occurring in the CBD or inner suburbs. Of these, two were fatalities and almost 200 involved serious injuries. It is important to achieve sufficient separation between any parked cars and the safe cycling corridor in order to reduce or ideally remove conflict with car doors.

The side of the vehicle will also determine the importance of separation with a majority of collisions between cyclists and car doors occurring on the driver side (75 per cent).

VicRoads guidelines recommend that a one-metre clearance is provided between vehicles (parked or moving) and a cycle lane.

Independent traffic experts GTA recommend a minimum separation width of 800mm from parked vehicles.

#### Rules for design

To achieve separation from parked vehicles, a minimum 800mm buffer should be provided on the driver side.



## 2. Impact on neighbourhood



### Sub-criteria

#### Land use

1. Predominate land uses
2. Key destinations (civic buildings and local businesses)
3. Number of residential dwellings

### Impact on neighbourhood criteria

As part of the first stage of community engagement for the Safe Cycling Corridor, a variety of feedback was received in relation to the potential impacts on street amenity by the implementation of the project. This initial community feedback was in relation to Inkerman Road; however, it is considered that the key themes which have emerged through feedback can be applied to all routes currently being explored.

This section describes the key elements to consider when assessing corridors based on the feedback received by the community.

#### Parking

4. On-street peak parking occupancy
5. Estimated residential off-street parking supply
6. Estimated residential overspill parking
7. Proportion of residents aged over 60

## 2. Impact on neighbourhood



### Land use

#### 1. Predominate land uses

##### Data collected

An analysis of current land use provision along each corridor was undertaken to differentiate land uses of each corridor.

GIS software was used to identify and map the different planning zones for properties fronting each corridor.

Land uses are presented using the following codes:

- GRZ: General Residential Zone
- NRZ: Neighbourhood Residential Zone
- CZ: Commercial Zone
- PPRZ: Public Park and Recreation Zone
- MUZ: Mixed Use Zone
- PUZ: Public Use Zone

##### Commentry

The predominate land use has been mapped through an analysis of the planning zones.

This indicates current use and the extent of change through future development.

##### Rules for design

The Draft Parking Policy Discussion Paper (For Corridors) outlines how Council plans to manage the supply and provision of parking along each *Integrated Transport Strategy* corridor, which include permits for eligible residents, permits for carers and tradespeople.

Provision of permit parking in residential areas may be limited to residents living on the corridor to ensure parking is provided to those who require it most.

Provision of parking for commercial, educational and cultural land uses will need to be carefully managed to reflect their particular needs.

## 2. Impact on neighbourhood



Land use

### 2. Key destinations (civic buildings and local businesses)

#### Data collected

Key destinations along or adjacent to the corridors were identified by using the Planning Zones, Google Maps and site visits.

#### Commentary

Civic buildings (educational and cultural) and local businesses rely on convenient access to on-street parking and often require high vehicle drop-off and pick-ups, but also high pedestrian and cycling demand.

#### Rules for design

A future cycle corridor ideally serves as many key destinations as possible.  
The particular parking needs for key destinations (including commercial, cultural, and educational) will need to be considered to reflect their particular needs.



## 2. Impact on neighbourhood



Land use

### 3. Number of residential dwellings

#### Data collected

The number of residential dwellings have been mapped and counted using the Housing Development Data (2016) prepared by the State Government.

The number of dwellings in a property was classified into three categories:

- Properties with one dwelling were considered as 'house'.
- Properties with two to seven dwellings per property were considered as 'townhouse'.
- Properties with eight dwellings or more were considered as 'apartment'.

#### Commentry

Parking and driveway mapping are outlined elsewhere. However, the number of dwellings provides a good indicator of other issues such as the number of garbage bins to be collected, and the number of vehicles entering and exiting a driveway.

#### Rules for design

The dwelling structure will be considered to address specific requirements along the different sections of all corridors.

## 2. Impact on neighbourhood



### Parking

#### 4. On-street peak parking occupancy

##### Data collected

Parking surveys were conducted on Friday 24, Saturday 25, and Tuesday 28 May 2019, between 6am and 12am (midnight) during one-hour intervals.

Peak parking occupancy has been counted as a percentage of all parking spaces available on each side of the street.

The time and day of the peak demand is also noted.

##### Commentary

From the survey conducted during the first stage of community engagement, it was identified that the top priority for local residents is maintaining the appropriate supply of on-street parking.

For this reason, on-street parking surveys were undertaken to have a better understanding of the current supply and demand of on-street parking along the corridors.

##### Rules for design

No design will be explored where parking on both sides of the street will be lost.

This excludes limited locations where parking cannot occur such as near intersections and pedestrian crossings.

## 2. Impact on neighbourhood



### Parking

#### 5. Estimated residential off-street parking supply

##### Data collected

The number of residential off-street parking available to properties fronting each corridor has been mapped and counted.

For each property with a driveway, it has been assumed that one off-street car space is available for each dwelling in the property.

For residential properties with no driveway, it is assumed that no off-street car space is available.

##### Commentary

From the survey conducted during the first stage of community engagement, a common concern raised was the lack of access to off-street car parking, particularly for residents living in older apartments.

For this reason, an off-street parking assessment was undertaken, to identify constrained sections of the corridor where on-street parking is more heavily relied upon.

##### Rules for design

The availability of off-street car parking will be considered to identify constrained sections of the corridor where on-street parking is more heavily relied upon.

## 2. Impact on neighbourhood



### Parking

#### 6. Estimated residential overspill parking

##### Data collected

A comprehensive analysis was undertaken to understand an estimated parking demand along corridors by considering the availability of off-street car parking.

The analysis was based on the following assumptions:

- Estimated off street parking supply as outlined in the previous section.
- The number of dwellings per property.
- The type of dwelling (house, townhouse or apartment).
- The average car ownership (from ABS Census data).

##### Commentary

This analysis aims to establish the level 'overspill parking' required for each block based on the average car ownership number compared to the number of off-street parking for each dwelling.

This 'overspill parking' number can then be compared to the level of current on-street parking demand (recorded from traffic surveys) to determine thresholds of parking to be provided for in the design of the selected corridor.

It is important to note that this analysis only reflects residential parking needs. However, the on-street parking demand reflects current parking requirements, including visitor, commuter and commercial parking.

##### Rules for design

The minimum on-street parking provided should be no lower than the calculated 'overspill parking' for each block.

## 2. Impact on neighbourhood



Parking

### 7. Proportion of residents aged over 60

#### Data collected

Ten year age groups were obtained from the 2016 ABS Census Data.

This data was obtained at the SAI level. The proportion of residents aged over 60 was obtained by estimating the average of all SAIs contained in every corridor section.

#### Commentry

Community engagement has highlighted the particular needs of older residents residents. Many older residents residents may host larger family events which require on-street parking. For those who require greater care, on-street parking may be needed for family or carers.

#### Rules for design

The demographic make-up and particular parking requirements will be considered for all corridors.

## 2. Feasibility of construction



### Sub-criteria

#### 1. Road scenarios

#### Opportunities and constraints

2. Opportunities
3. Constraints
4. Other considerations

#### Strategic alignment

5. Alignment with the Department of Transport
6. Alignment with Port Phillip City Council

### Feasibility of construction criteria

The focus of this report is the consideration of a new safe cycling corridor between Caulfield Station and St Kilda Road. To achieve this, it is important that it is done in the context of a broader integrated cycling network.

Two considerations are central to this analysis:

- Feasibility — responsible provision of funding for Council.
- Strategic alignment — aligning with neighbouring and state authorities to deliver the corridor in full.

These two considerations will ensure that the corridor can firstly be realistically built and funded and secondly does not finish at a dead-end at Council's boundary.

## 2. Feasibility of construction



### I. Road scenarios

#### Data collected

A variety of scenarios were developed to visualise the potential road space reallocation by the implementation of a safe cycling corridor.

#### Commentary

The road scenarios were developed considering the section of narrowest width on all corridors.

This measurement was taken within the existing carriageway (distance between kerb to kerb), with the exemption of Dandenong Road, where the central median was also considered. According to Austroads, the provision of a bike path in a central median needs to consider a lateral clearance of at least one metre between the edge of the path and any obstacle that represents a risk for cyclists (ie. trees, tram, power poles).

#### Rules for design

Road scenarios that require significant intrusion into a narrow nature strip or the removal of significant trees will not be considered.

The provision of a bike path on the central median of Dandenong Road needs to consider a one-metre clearance from trees and existing infrastructure.

Road scenarios that require the removal of 100 per cent of existing on-street parking will not be considered.

## 2. Feasibility of construction



### Opportunities and constraints 2. Opportunities

#### Data collected

From the data review, desktop analysis and site visits, key opportunities for the corridor as a whole are outlined, particularly those that are not clearly described through the data collected.

#### Commentary

Some examples of opportunities include corridor sections free of driveways crossovers or side streets (ie. Caulfield Park, Alma Park, St Kilda Cemetery) or sections with a wider road configuration.

#### Rules for design

Opportunities for each corridor are to be considered when comparing the different alignments and road scenarios.



## 2. Feasibility of construction



Opportunities and constraints  
**3. Constraints**

### Data collected

From the data review, desktop analysis and site visits, key constraints for the corridor as a whole are outlined, particularly those that are not clearly described through the data collected.

### Commentry

Some examples of constraints include narrow road sections of a corridor, sections with a large number of driveway crossovers, or specific locations where high vehicle volume is identified on side streets.

### Rules for design

The preferred corridor will need to consider constraints for each corridor when comparing the different alignments and road scenarios. These will also need to be addressed at the detailed design stage.

## 2. Feasibility of construction



### Opportunities and constraints 4. Other considerations

#### Data collected

From the data review, desktop analysis and site visits, other considerations for the corridor as a whole are outlined, particularly those that are not clearly described through the data collected.

#### Commentary

Other considerations include the elevation profile along the entire corridor.

#### Rules for design

Other considerations are to be considered when comparing the different alignment and road scenarios.

## 2. Feasibility of construction



Strategic alignment

### 5. Alignment with the Department of Transport

#### Data collected

The Draft Strategic Cycling Corridors map provided by the Department of Transport seeking Council's feedback was reviewed to identify the priority link between the St Kilda Road corridor and the Caulfield Station Precinct.

#### Commentary

The Department of Transport is currently developing a Strategic Cycling Corridor (SCC) network. SCCs are corridors developed to improve cycling to and around major activity centres in metropolitan Melbourne.

They will typically be selected on the basis of providing links to a National Employment Cluster or a major activity centre and are routes that cater for the highest, or potentially highest, cycling volumes. SCCs are identified in *Plan Melbourne* as the key, direct cycling links across metropolitan Melbourne.

#### Rules for design

The selected corridor should need to be consistent with the Strategic Cycling Corridors to provide a safe and seamless connection between the Caulfield Station Precinct and the St Kilda Road corridor, as well as the broader network.

## 2. Feasibility of construction



Strategic alignment

### 6. Alignment with Port Phillip City Council

#### Data collected

Port Phillip's Integrated Transport Strategy was reviewed to identify priority cycling corridors.

#### Commentary

The bicycle riding network improvements map was reviewed, which identifies Inkerman Street as the priority route to provide an east-west link between the St Kilda Road Corridor and Glen Eira.

#### Rules for design

The selected corridor should need to be consistent with Port Phillip's priorities, to provide seamless connections to broader cycling networks.

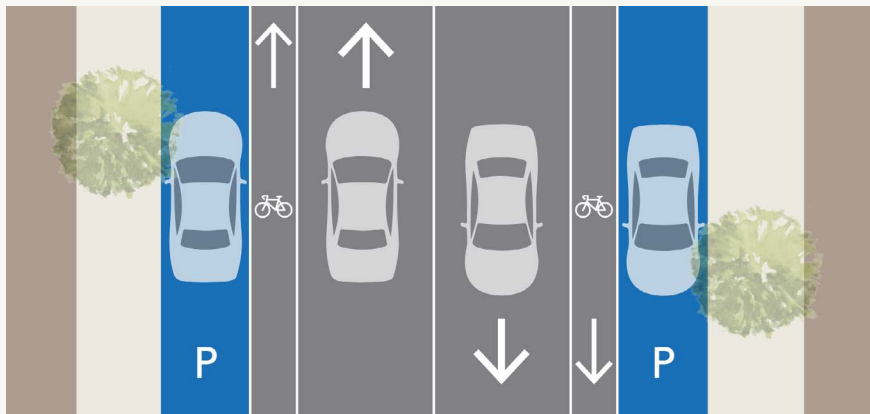


# 3. Road scenarios

An aerial photograph showing a residential neighborhood on the left and a golf course on the right. A large teal semi-transparent banner is overlaid across the center of the image, containing white text. The banner has a subtle geometric pattern of triangles.

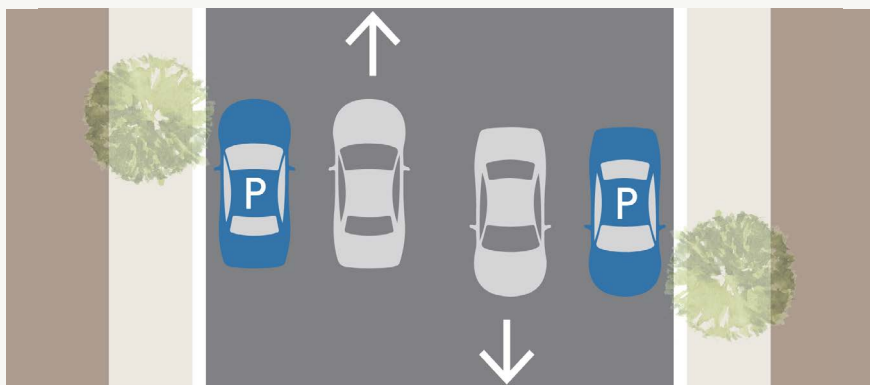
**Council will not explore a road scenario that removes all on-road parking spaces.**

### 3. Existing road layouts



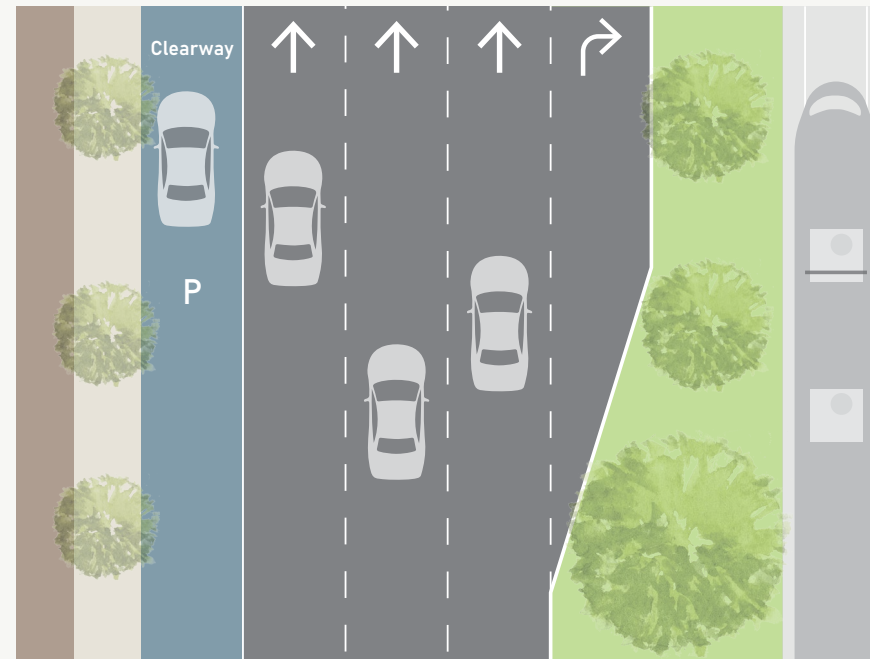
#### Inkerman Road and Alma Road

A general overview of the existing road layouts for both Inkerman Road and Alma Road.



#### Orrong Crescent

A general overview of the existing road layout for Orrong Crescent.



#### Dandenong Road

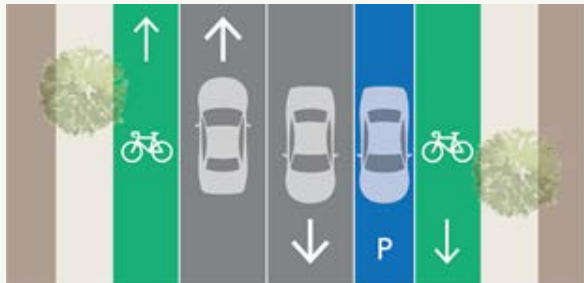
A general overview of the existing road layout for Dandenong Road.



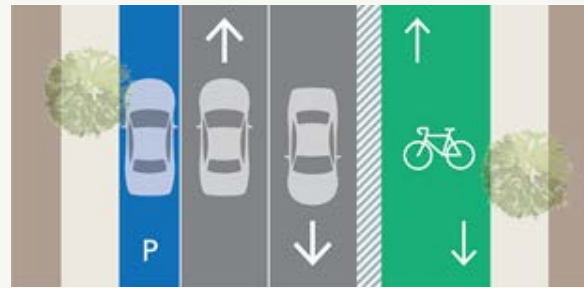


### 3. Road scenarios to consider

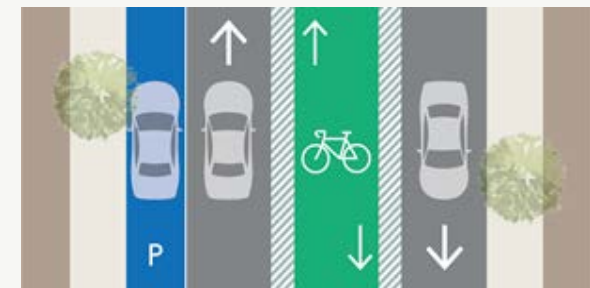
#### SCENARIOS TO CONSIDER



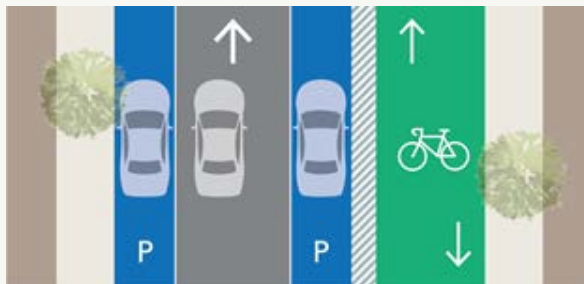
**Scenario 1.** Raised cycle track to half footpath level on one side and protected by parking on the other side.



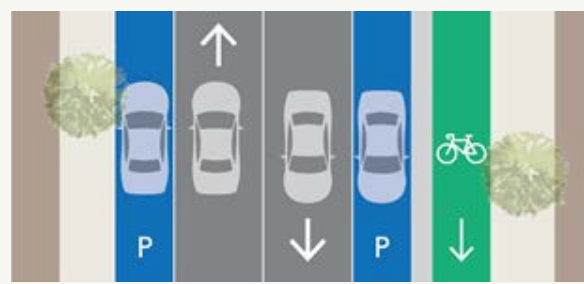
**Scenario 2.** Protected bicycle lane (bi-directional) and parking retained on one side.



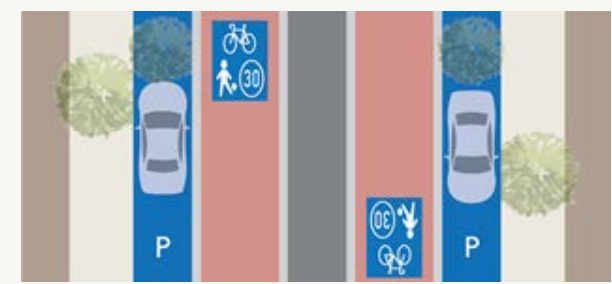
**Scenario 3.** Protected bicycle lane (bi-directional) in centre of road and parking retained on one side.



**Scenario 4.** One-way traffic and protected bicycle lane (bi-directional). Parking retained on both sides.



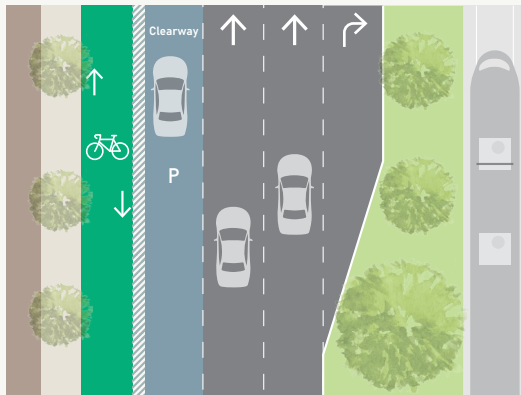
**Scenario 5.** Protected bicycle lane one-way (westbound or eastbound) and parking retained on both sides.



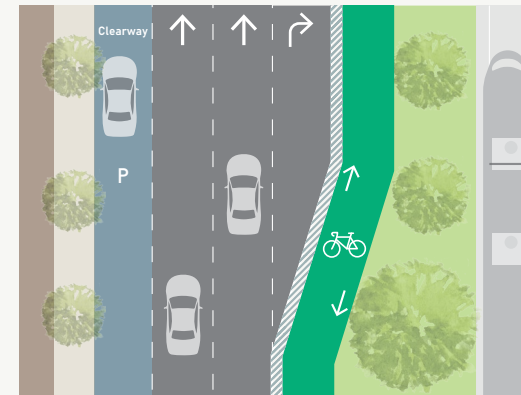
**Scenario 6.** Bicycle boulevard — traffic calming and low speed environment.

### 3. Road scenarios to consider

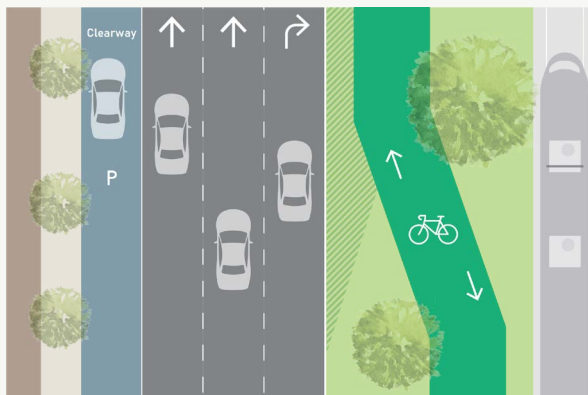
#### SCENARIOS TO CONSIDER



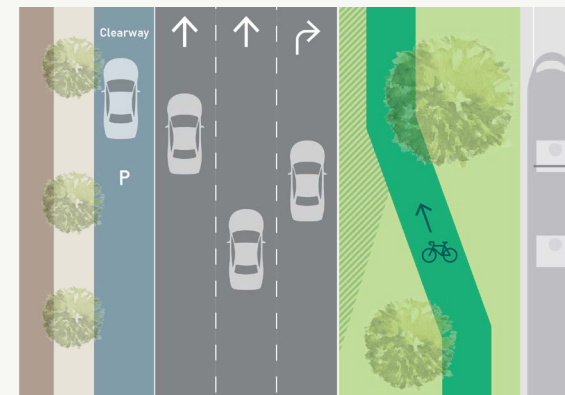
**Scenario 7.** A kerbside bi-directional protected bicycle lane, in the outer lane of the south side of Dandenong Road.



**Scenario 8.** A kerbside bi-directional protected bicycle lane, in the inner lane of the south side of Dandenong Road.



**Scenario 9.** A bi-directional bicycle path on the south side of the central median.

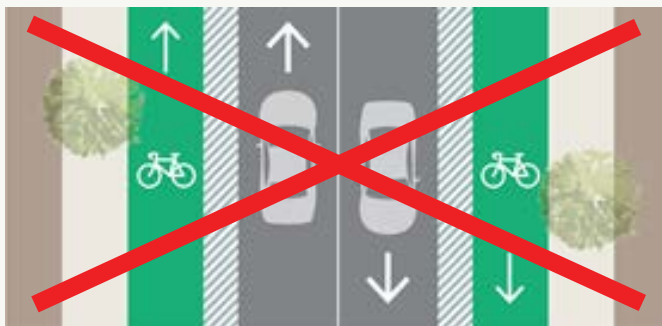


**Scenario 10.** A one-way bicycle path on either side of the tram reserve, within the central median.

### 3. Road scenarios not to consider

A variety of scenarios to provide a safe cycling corridor were explored. Taking into account feedback from the community and the feasibility of construction, the scenarios that require the removal of all parking or impacts on existing nature strip, are not considered.

#### NO SCENARIO WILL REMOVE ALL ON-STREET PARKING OR ESTABLISHED TREES



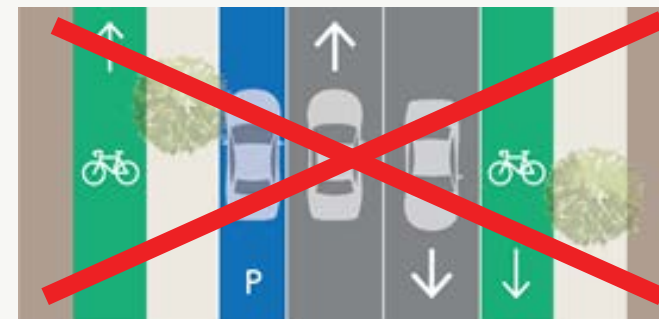
Protected bicycle lane on each side of the road.  
No parking retained.



Protected bicycle lane on each side of the road and  
flush median strip in carriageway. No parking retained.



Protected bicycle lane by nature strip in the middle of  
the road (bi-directional). No parking retained.



Bicycle path on existing nature strip on north side, and  
bicycle lane raised on-road on south side.  
Parking retained on one side.



# 4. DANDENONG ROAD

## CORRIDOR ASSESSMENT



## 4. Dandenong Road

### Corridor summary

This alignment aims to provide an east-west link between St Kilda Road and Normanby Road. Access to the Caulfield Station Precinct can be achieved by continuing the cycling corridor along Normanby Road.

This corridor is 5.9km in length between Caulfield Station and St Kilda Road. 3.4 km is located within Glen Eira.

Dandenong Road is a Department of Transport managed and maintained road (including the central median and tram reserve). Glen Eira has no capability to construct any cycling facility on Dandenong Road. Any desired outcome would need to be taken up via advocacy.

Four potential location scenarios have been considered for Dandenong Road. These are:

#### Centre median scenarios:

- Scenario 1 — A bi-directional bicycle path on the south side of the central median.
- Scenario 2 — A one-way bicycle path on either side of the tram reserve, within the central median.

#### On-road scenarios:

- Scenario 3 — A kerbside bi-directional protected bicycle lane, in the outer lane of the south side of Dandenong Road.
- Scenario 4 — A kerbside bi-directional protected bicycle lane, in the inner lane of the south side of Dandenong Road.

### Assessment framework key findings



## SAFETY FOR CYCLISTS

- Average vehicles volumes during weekdays range between 64,000–68,000 vehicles per day travelling in both directions. The highest volumes are in the section between Chapel Street and St Kilda Road, and the lowest between Normanby Road and Hawthorn Road.
- The majority of vehicles were travelling below the posted speed limit of 70km/h on all sections of the corridor.
- High numbers of driveway crossovers are located in the sections between Hawthorn Road to Kooyong Road, and Kooyong Road to Orrong Road.
- Vehicles volumes on side streets intersecting with Dandenong Road are relatively low (below 200 vehicles during peak hour) in most sections of the corridor, with the exception of the section between Hotham Street to Chapel Street.

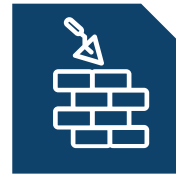


## 4. Dandenong Road



### IMPACT ON NEIGHBOURHOOD

- Peak on-street car parking demand ranges between 42 to 73 per cent. The most in demand on-street parking sections are Normanby Road to Hawthorn Road, and Hotham Street to Chapel Street.
- Parking overspill is low to moderate along the corridor. The highest parking overspill (63 per cent) is located between Normanby and Hawthorn Road.



### FEASIBILITY OF CONSTRUCTION

- This corridor is managed and maintained by the State Government. The Department of Transport is responsible for the planning, design and implementation of any cycling corridor on Dandenong Road.
- The Department of Transport does not support the Dandenong Road option as a feasible Strategic Cycling Corridor.
- Dandenong Road is not identified as a cycling corridor in Port Phillip's Integrated Transport Strategy.
- Glen Eira City Council's role would be limited to advocacy.

## 4. Dandenong Road



### Safety for cyclists — data

Side of road	Normanby Rd– Hawthorn Rd		Hawthorn Rd– Kooyong Rd		Kooyong Rd– Orrong Rd		Orrong Rd– Hotham St		Hotham St– Chapel St		Chapel St– St Kilda Rd	
	North	South	North	South	North	South	North	South	North	South	North	South
Corridor ID	DANIA	DAN1B	DAN2A	DAN2B	DAN3A	DAN3B	DAN4A	DAN4B	DAN5A	DAN5B	DAN6A	DAN6B
Number of side streets	NA	3	NA	1	NA	4	NA	4	NA	2	NA	2
Number side streets with moderate-high volumes (>2,000)	NA	0	NA	0	NA	0	NA	0	NA	1	NA	0
Number of driveway crossovers	NA	5	NA	25	NA	30	NA	14	NA	10	NA	NA
Daily vehicle volumes (average weekdays)	31,879	32,730	33,212	33,601	33,631	33,794	33,877	34,030	32,982	33,719	33,738	34,624
Vehicle speed (85 <sup>th</sup> percentile)	60.6	63.5	59.4	62.3	60.6	59.4	64.7	63.7	59.2	62.4	58	60.7
Cyclist volumes (daily-weekday)	15	14	13	5	35	26	56	37	30	36	64	37
Total crashes	42						36					
Crashes involving cyclists	3						4					
Crashes involving pedestrians	2						7					

\* Since road scenarios are proposed either on the central median or the south side of Dandenong Road, the analysis is only focused on the south side of the road. However, vehicle volumes, speed, cyclist counts and crash statistics are provided to have a better understanding of current conditions on this road.

## 4. Dandenong Road



### Impact on neighbourhood — data

Side of road	Normanby Rd– Hawthorn Rd		Hawthorn Rd– Kooyong Rd		Kooyong Rd– Orrong Rd		Orrong Rd– Hotham St		Hotham St– Chapel St		Chapel St– St Kilda Rd	
	North	South	North	South	North	South	North	South	North	South	North	South
Corridor ID	DAN1A	DAN1B	DAN2A	DAN2B	DAN3A	DAN3B	DAN4A	DAN4B	DAN5A	DAN5B	DAN6A	DAN6B
Predominant Land use	NA	NRZ1	NA	GRZ2	NA	GRZ2	NA	GRZ1	NA	GRZ1	NA	MUZ
Secondary Land Use	NA	GRZ2 CIZ	NA		NA		NA	PUZ5	NA	PPRZ	NA	
Number of residential dwellings	NA	45	NA	126	NA	225	NA	216	NA	166	NA	NA
Estimated number of dwellings with off-street parking	NA	45	NA	126	NA	225	NA	215	NA	166	NA	NA
On-street peak parking occupancy	NA	73%	NA	50%	NA	61%	NA	42%	NA	71%	NA	NA
Day and time of peak occupancy	NA	Saturday 9am	NA	Saturday 6pm	NA	Saturday 7pm and 8pm	NA	Saturday 6pm	NA	Saturday 12pm	NA	NA
Overspill parking (number of spaces)	NA	7	NA	12	NA	16	NA	-15	NA	-17	NA	NA
Overspill parking demand (%)	NA	63%	NA	24%	NA	26%	NA	-17%	NA	-25%	NA	NA
Number of trees on central median	18	26	45	49	46	73	36	45	24	34	NA	NA
Proportion of residents aged over 60 (%)	NA	28%	NA	23%	NA	19%	NA	10%	NA	16%	NA	10%
People aged over 60 by suburb (%)	Caulfield North: 24%						St Kilda East: 13%					

\* Since road scenarios are proposed either on the central median or the south side of Dandenong Road, the analysis is only focused on the south side of the road.

## 4. Dandenong Road



### Impact on neighbourhood — data

It is worth noting that the 'overspill parking' assessment is only an indicative figure for residential parking. This measure does not consider other parking demand such as commercial or visitor parking. Negative values for overspill parking are related to areas with low numbers of dwellings, and therefore the residential parking demand is low.

For this reason, it is critical to acknowledge that non-residential destinations along the corridor might have specific parking requirements that need to be considered.

Further, an analysis of age groups from the Census 2016 was undertaken to identify older residents along the corridor, which might specify requirements in terms of visitor parking.

It is worth noting that a higher proportion of residents aged over 60 is found in the following sections of Dandenong Road:

- **Normanby Road to Hawthorn Road: 28%**
- **Hawthorn Road to Kooyong Road: 23%**

From the analysis, key locations were identified along or adjacent to Dandenong Road (south side of the road). These have been grouped into 'local businesses' and 'education and cultural'.

LGA	Local businesses	Precinct
Glen Eira	The Anne McDonald Centre	DANI-B
	Emmy Monash Aged Care	DANI-B
	Manhattan Apartments Caulfield North	DAN2-B
	Caulfield Veterinary Clinic	DAN3-B
Port Phillip	Launch Housing East St Kilda	DAN4-B
	CBD Drive School	DAN4-B
	CIC Finance	DAN4-B
	Osteopathy Clinical Pilates	DAN4-B
	Wise Guys Pizzeria	DAN5-B
	Windsor Laundry and Dry Cleaning	DAN5-B
	Bright Hand Car Wash and Detailing Centre	DAN5-B
	Chapel Fitness	DAN5-B

LGA	Education and cultural	Precinct
Glen Eira	St Paul's Anglican Church	DANI-B
	Gymbaroo Malvern	DANI-B
	Praise Centre Church	DAN2-B
Port Phillip	St Kilda Cemetery	DAN4-B
	St Mary's Church	DAN5-B
	St Mary's Primary School	DAN5-B
	Red Stitch Actors Theatre	DAN5-B
	Astor Theatre	DAN 6-B

# 4. Dandenong Road



## Feasibility of construction — scenarios

Scenario description		Normanby Rd– Hawthorn Rd	Hawthorn Road– Kooyong Road	Kooyong Rd– Orrong Rd
<p><b>Scenario 7.</b> A kerbside bi-directional protected bicycle lane in the outer lane of the south side of Dandenong Road.</p>		✓	✓	✓
<p><b>Scenario 8.</b> A kerbside bi-directional protected bicycle lane, in the inner lane of the south side of Dandenong Road.</p>		✓	✓	✓
<p><b>Scenario 9.</b> A bi-directional bicycle path on the south side of the central median.</p>		✓	✓	✓
<p><b>Scenario 10.</b> A one-way bicycle path on either side of the tram reserve, within the central median.</p>		✓	✓	✓

# DANDENONG ROAD GENERAL

## 4. Dandenong Road



### Feasibility of construction — opportunities and constraints

#### Opportunities

- Dandenong Road provides a wider street configuration.
- The current road configuration provides the opportunity to explore the implementation of a bicycle path along the central median of Dandenong Road.
- Dandenong Road provides a direct link to the Chapel Street precinct and facilitates access to Windsor Station, and a potential link to Malvern Station.



Existing road configuration in front of Alma Park.

#### Constraints

- The State Government manages this corridor. The Department of Transport is responsible for the planning, design and implementation of any cycling corridor on Dandenong Road. Any desired outcome would need to be taken up via advocacy.
- Currently, Dandenong Road provides an environment with high vehicle volumes and speed.
- The presence of an underpass on Dandenong Road makes it difficult to create a connection to the St Kilda Road corridor. For this reason, alternative connections between Chapel Street and St Kilda Road would need to be considered.
- Alternatively, innovative engineering solutions would need to be sought to provide a seamless connection to the St Kilda Road Corridor.



Existing road configuration connecting to St Kilda Road.

## 4. Dandenong Road



### Feasibility of construction — strategic alignment

#### Department of Transport

This corridor is not identified as a Strategic Cycling Corridor. According to the Movement and Place Framework, this corridor aims to prioritise vehicle and public transport movements.

The DoT does not support the Dandenong Road option as a feasible Strategic Cycling Corridor.

#### Port Phillip City Council

Port Phillip's Integrated Transport Strategy does not identify Dandenong Road as part of the proposed bicycle riding network improvements.





# DANDENONG CENTRAL MEDIAN SCENARIOS

**Scenario 1 — A bi-directional bicycle path on the south side of the central median**

**Scenario 2 — A one-way bicycle path on either side of the tram reserve, within the central median**

## 4. Dandenong Road

### Bicycle path in the central median

The presence of a central median and tram reserve within Dandenong Road (from Glenferrie Road to Chapel Street) has raised questions regarding the ability to provide a separated cycling corridor within this location.

Dandenong Road (including the central median and tram reserve) is a Department of Transport managed and maintained road, so any decision to provide a cycling corridor within the central median will require its approval. However, to gauge the feasibility to provide a separated cycling corridor within the central median, this report considers the relevant standards and requirements to achieve this outcome. Two options have been considered:

- **Scenario 1.** A bi-directional bicycle path on the south side of the central median.
- **Scenario 2.** A one-way bicycle path on either side of the tram reserve, within the central median.

### Relevant Standards

According to Austroads, the provision of bicycle path in the central median will need to consider the following:

- A lateral clearance of at least one metre between the edge of the path and any obstacle that represents a risk for cyclists (ie. trees, tram, power poles).
- For a bi-directional bicycle path, a three metre facility is required.
- For a one-way bicycle path, a two metre facility is preferred.
- At least one metre clearance from moving traffic.

This means that a minimum clear width of five metres needs to be provided to achieve a bi-directional cycling corridor on one side of the central median. A minimum clear width of four metres is required to achieve a one-way cycling corridor in each direction.

## 4. Dandenong Road

The following table provides a summary of the average width of the central median on Dandenong Road:

	Normanby Rd– Hawthorn Rd		Hawthorn Rd– Kooyong Rd		Kooyong Rd– Orrong Rd		Orrong Rd– Hotham St		Hotham St– Chapel St		Chapel St– St Kilda Rd	
Side of road	South	North	South	North	South	North	South	North	South	North	South	North
Corridor ID	DAN1B	DAN1A	DAN2B	DAN2A	DAN3B	DAN3A	DAN4B	DAN4A	DAN5B	DAN5A	DAN6B	DAN6A
Average median width*	6.7m	4.8m	6.7m	6.7m	6.7m	6.7m	6.7m	5m	7.5m	5m	N/A	N/A
Heritage infrastructure	NA		Shelter and ornamental overhead poles.		Ornamental overhead poles.		Ornamental overhead poles.		Ornamental overhead poles (Hotham St- Alma Park).		NA	

\*The average median width is taken from the tram clearance line (700mm from the edge of the track). Measurements of the median preclude narrow sections (such as at intersections) and don't include obstacles that represent a risk for cyclists (ie. trees, tram, power poles).

## 4. Dandenong Road



### Feasibility of construction — opportunities and constraints

#### Opportunities

##### Bicycle path in central median general

The following opportunities are general to all cycling corridor scenarios within the central median:

- Potential reduction of parking loss, through the provision of cycling corridor along the central median.
- The provision of a safe cycling corridor in or next to the central median of Dandenong Road eliminates conflict points between cyclists and vehicles entering or exiting driveways or side streets.
- Cycle priority at intersections can be provided by benefiting from priority tram signals.



Example of the potential space in the central median along sections of Dandenong Road.

#### Constraints

##### Bicycle path in central median general

The following constraints are general to all cycling corridor scenarios within the central median:

- For bicycle path options next or along the central median, cyclists will need to cross Dandenong Road to access the cycling corridor. Adequate infrastructure will need to be provided to ensure safety.
- Constrained sections of the central median exist at major intersections and tram stops. In these sections, the cycle corridor will need to move to the existing inner traffic lane.



Example of constrained sections of the central median (Dandenong Road and Hawthorn Road tram stop).

## 4. Dandenong Road



### Feasibility of construction — opportunities and constraints

#### Constraints

#### Bicycle path in central median general

- Tram heritage infrastructure (such as a waiting shelter and ornamental overhead tramway poles) exists within the central median.
- The presence of a large number of established trees needs to be considered when implementing a cycling corridor along the central median. In many sections removal of trees will be required to ensure the appropriate path width and separation standards are met.
- Further, some sections of the central median (Orrong to Kooyong Roads) present a substantial gradient that will need to be considered during the construction of a cycle corridor in the central median.



Tram heritage infrastructure (corner of Dandenong Road and Hawthorn Road).



Constrained section at the intersection of Dandenong Road and Chapel Street.



Established trees found along the majority length of the median, and gradient constraints in certain sections.

## 4. Dandenong Road



### Feasibility of construction — opportunities and constraints

#### Constraints

##### Curving the bicycle path around existing obstacles

In order to reduce significant tree loss the option to curve the bicycle path around existing obstacles (including trees, tram stops, power poles) was explored.

After conducting site visits, it was observed that this can be achieved in sections of the corridor with very few obstacles (in particular established trees).

However, this is difficult to achieve in areas with high density planting, especially when the trees are located towards the centre of the central median as show in the following photo:



Established trees located next to each other complicates curving the cycling corridor to avoid them.

##### Impact at major intersections

Regardless of the cycling corridor option within the central median on Dandenong Road, be it bi-directional or one-way on each side of the median, the sections within the central median at intersections are constrained. These sections will require the removal of existing infrastructure (power poles, trams stops) or the use of the inner right turning lane or inner vehicle lane to avoid any conflict points.



## 4. Dandenong Road



### Feasibility of construction — opportunities and constraints

#### Opportunities

##### Scenario I — A bi-directional bicycle path on the south side of the central median

The following opportunities are in addition to the general opportunities presented by cycling corridor scenarios within the central median, as presented previously.

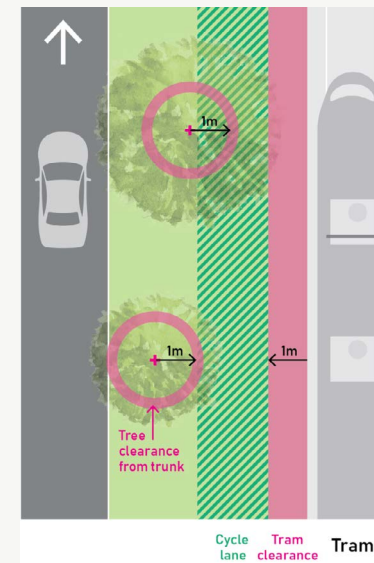
- Minimises loss of trees and the impact on infrastructure (such as power poles and lights) on one side of the central median.

#### Constraints

##### Scenario I — A bi-directional bicycle path on the south side of the central median

The following constraints are in addition to the general constraints presented by cycling corridor scenarios within the central median, as presented previously.

- A minimum clear width of five metres needs to be provided to achieve a bi-directional cycling corridor. This five metres includes all clearance from obstacles (such as trees, trams and power poles). Therefore, any existing obstacle located in the middle of the median will likely need to be removed to provide for the clearance requirements as shown below:





## 4. Dandenong Road

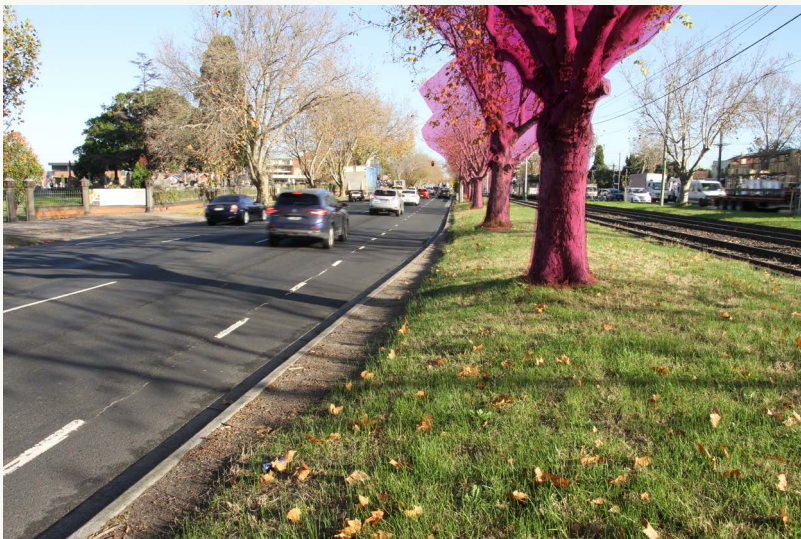


### Feasibility of construction — opportunities and constraints

#### Constraints

#### Scenario I — A bi-directional bicycle path on the south side of the central median

- To avoid the substantial loss of established trees and achieve the clearance requirements, it is likely that any bi-directional cycling corridor will need to use inner vehicle lane of Dandenong Road.



Section in front of St Kilda Cemetery.

## 4. Dandenong Road



### Feasibility of construction — opportunities and constraints

#### Opportunities

##### Scenario 2 — A one-way cycle path on either side of the tram reserve, within the central median

The following opportunities are in addition to the general opportunities of cycling corridor scenarios within the central median, as presented previously.

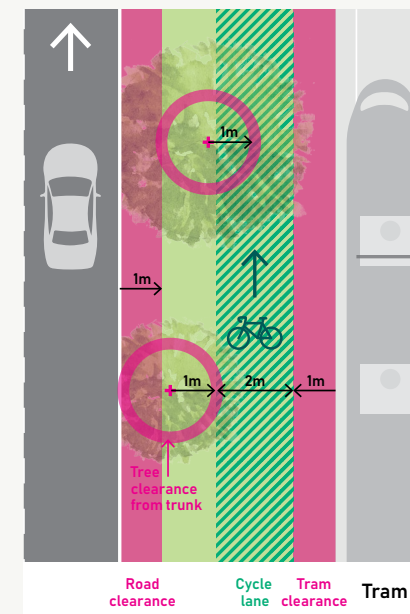
- Requires less minimum clearance width from obstacles to provide a one-way cycling facility.

#### Constraints

##### Scenario 2 — A one-way bicycle path on either side of the tram reserve, within the central median

The following constraints are in addition to the general constraints of cycling corridor scenarios within the central median, as presented previously.

- A minimum clear width of four metres needs to be provided to achieve a one-way cycling corridor on each side of the central median. This four metres includes all clearance from obstacles (such as trees, trams and power poles). Therefore any existing obstacle located in the middle of the median will likely need to be removed to provide the separation requirements as shown below:



## 4. Dandenong Road

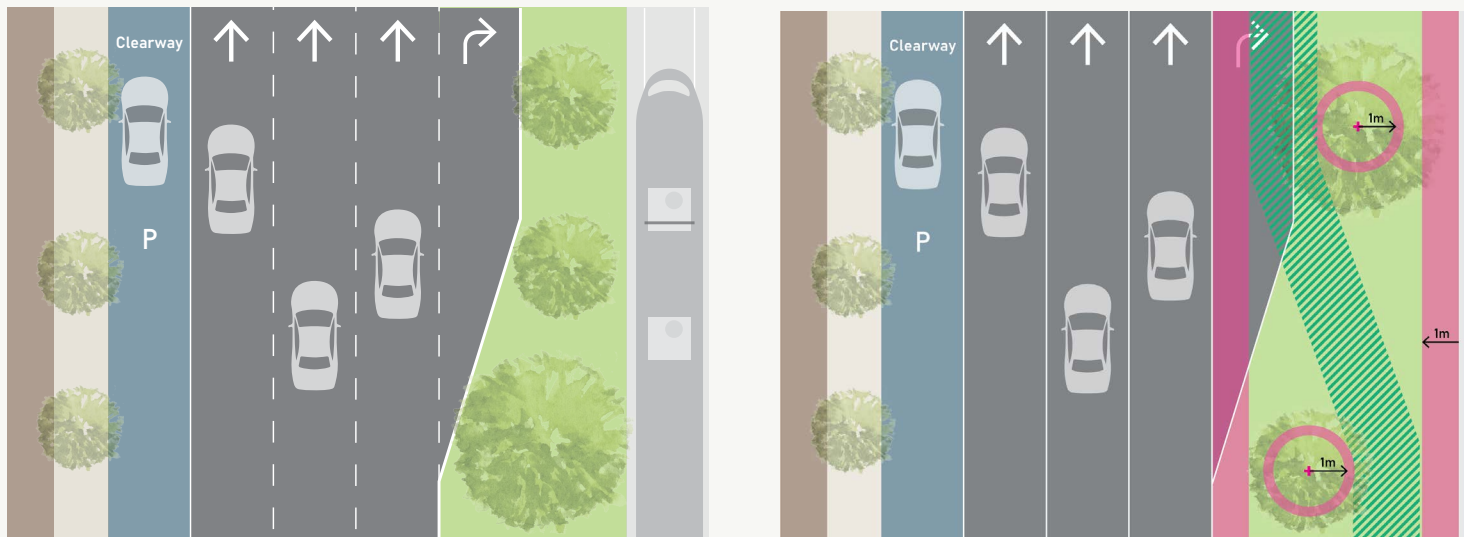


### Feasibility of construction — opportunities and constraints

#### Constraints

#### Scenario 2 — A one-way cycle path on either side of the tram reserve, within the central median

- Due to the high number of trees located within both sides of the central median, this option will require the removal of a substantial number of established trees, particularly in the narrower sections of the Dandenong Road central median, such as between Normanby Road to Hawthorn Road and Orrong Road to Hotham Street. To avoid the substantial loss of established trees and achieve this clearance, any one-way cycling corridor will need to use the inner vehicle lane (including the right turning lane) on both sides of Dandenong Road.



Current and potential road configuration

# DANDENONG ON-ROAD SCENARIOS

**Scenario 3 — Kerbside bi-directional protected bicycle lane, in the outer lane south side of Dandenong Road**

**Scenario 4 — Kerbside bi-directional protected bicycle lane, in the inner lane of the south side of Dandenong Road**

## 4. Dandenong Road



### Feasibility of construction — opportunities and constraints

#### Opportunities

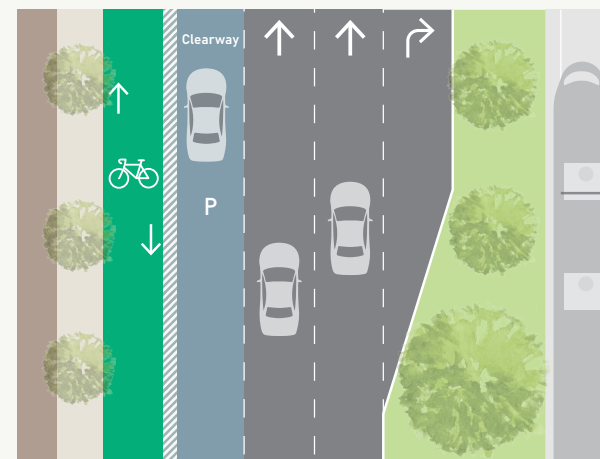
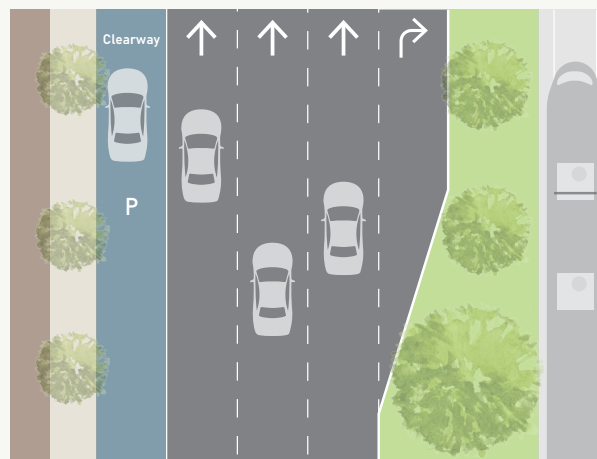
##### Scenario 3 — Kerbside bi-directional protected bicycle lane, in the outer lane south side of Dandenong Road

- Takes advantage of Alma Park and the St Kilda Cemetery (in the City of Port Phillip), on Dandenong Road westbound, which offer large distances free of side streets and driveways.
- Reduces the need for cyclist to cross Dandenong Road to access the central median.

#### Constraints

##### Scenario 3 — Kerbside bi-directional protected bicycle lane, in the inner lane of the south side of Dandenong Road

- A protected bicycle lane next to the kerbside will require the removal or reallocation of the clearway and/or parking lane. Since Dandenong Road is currently managed by the Department of Transport, this change will require the approval of this agency.
- There are a large number of driveway crossovers, in particular in the sections between Hawthorn Road to Kooyong Road, and Kooyong Road to Orrong Road, which will create conflict points between cyclists and vehicles.



Current and potential road configuration

## 4. Dandenong Road



### Feasibility of construction — opportunities and constraints

#### Opportunities

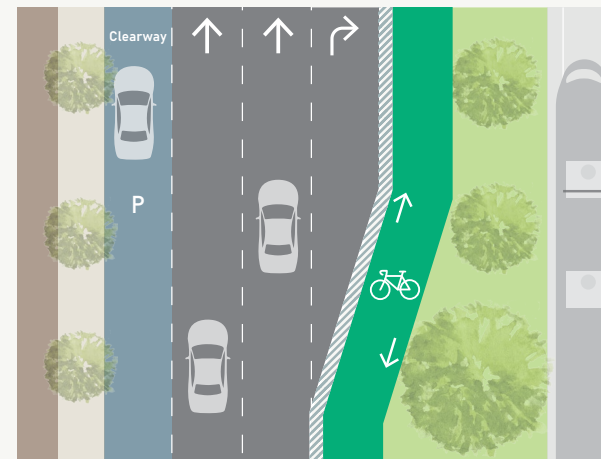
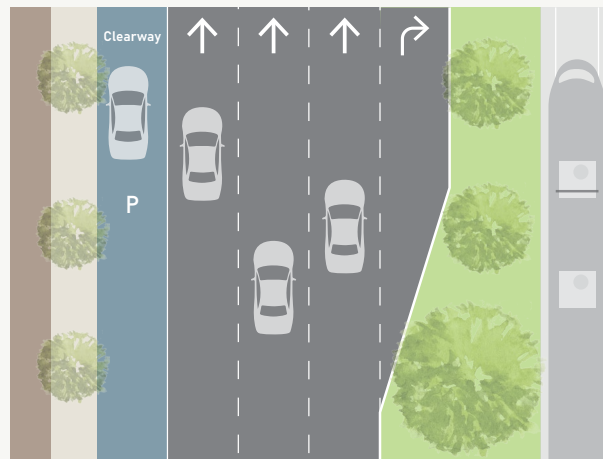
##### Scenario 4 — Kerbside bi-directional protected bicycle lane, in the inner lane of the south side of Dandenong Road

- Locating the cycling path in the outer lane of the south side of Dandenong Road avoids conflict points with side streets and driveways.
- This scenario has the ability to retain the existing parking on Dandenong Road outside of clearway times.

#### Constraints

##### Scenario 4 — Kerbside bi-directional protected bicycle lane, in the inner lane of the south side of Dandenong Road

- A protected cycling corridor next to the kerbside will require the removal of one traffic lane. Since Dandenong Road is currently managed by the Department of Transport, this change will require its approval.
- While separated from traffic, due to the higher speeds of vehicles traveling on Dandenong Road (70km/h speed limit) cyclists may feel uncomfortable being located directly adjacent to this traffic.
- Cyclists will need to cross Dandenong Road to access the cycling corridor. Adequate infrastructure will need to be provided to ensure safety.



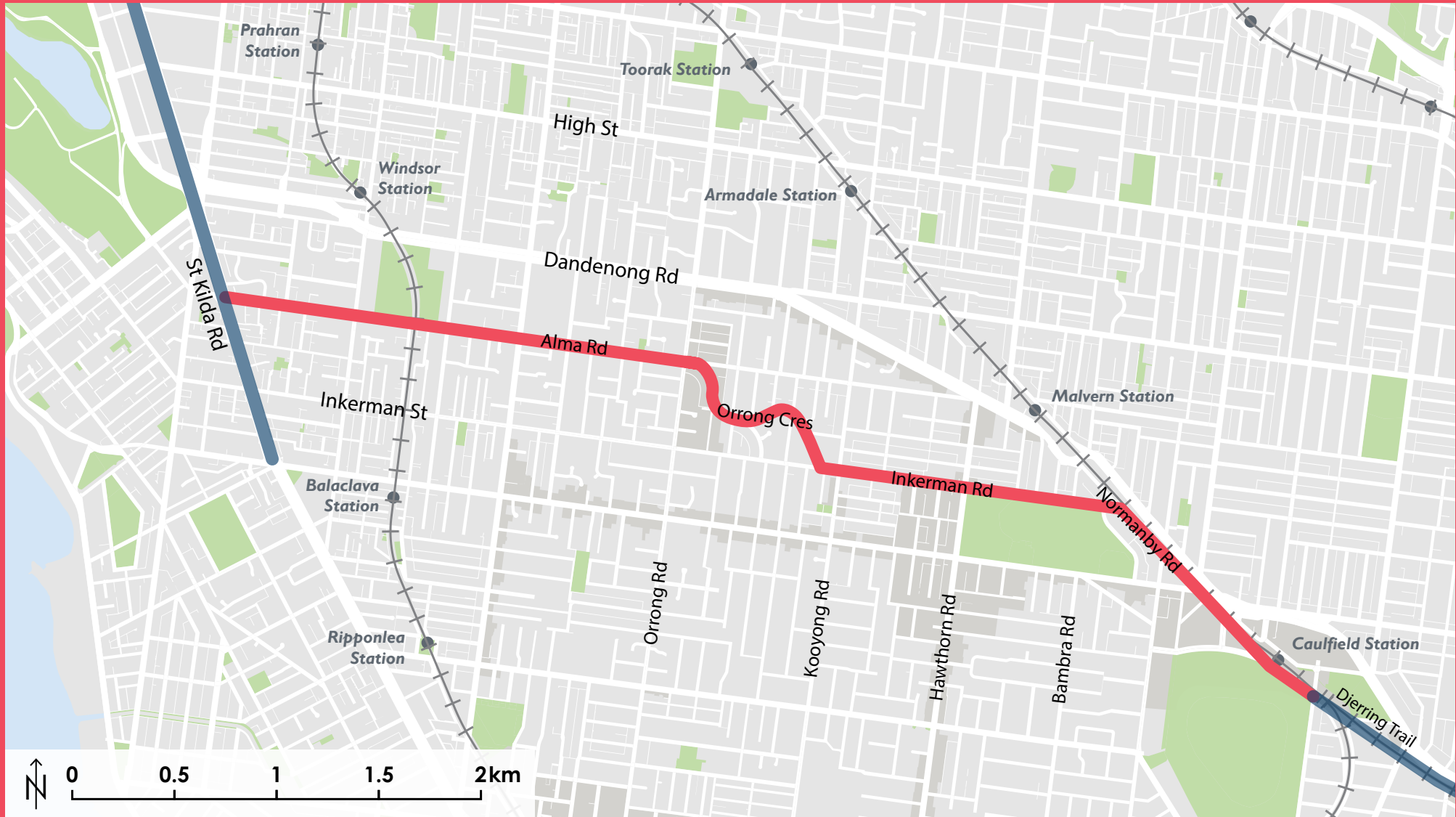
Current and potential road configuration



**5. INKERMAN ROAD  
–ALMA ROAD  
(two-way)**

**CORRIDOR ASSESSMENT**





## 5. Inkerman Road–Alma Road (two-way)

### Corridor summary

This alignment aims to provide an east-west link between St Kilda Road and Normanby Road. Access to the Caulfield Station Precinct can be achieved by continuing the cycling corridor along Normanby Road.

This corridor comprises a distance of 5.7km between Caulfield Station and St Kilda Road. 3.4km of this corridor is located within Glen Eira (Caulfield Station to Alma Road, via Orrong Crescent).

This alignment takes advantage of low vehicle volumes along Orrong Crescent. Further, the presence of Caulfield Park (Inkerman Road), the St Kilda Cemetery and Alma Park (Alma Road) provide large distances free of side streets and driveway crossovers.

### Assessment framework key findings



## SAFETY FOR CYCLISTS

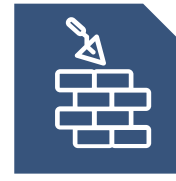
- Vehicle volumes on the Inkerman Road section (Normanby Road to Kooyong Road) range between 8,000–10,000 vehicles per day.
- Alma Road presents higher volumes of between 10,400–11,300 vehicles per day (Orrong Road to St Kilda Road).
- Vehicle volumes are relatively low in Orrong Crescent (below 1,500 vehicles per day), consistent with local street volumes.
- The majority of vehicles were travelling below speed limits in both Inkerman Road and Orrong Crescent.
- Speeding was an identified issue on Alma Road with vehicles travelling over the posted limit of 50km/h (the only exception was the westbound movement between Hotham Street and Chapel Street).
- High numbers of driveway crossovers are located on Inkerman Road between Hawthorn Road and Kooyong Road, and Alma Road between Orrong Road and Hotham Street, and Hotham Street and Chapel Street.
- Vehicle volumes on intersecting side streets are relatively low (below 200 during peak hour) in most sections of the corridor, with the exception of Alma Road between Hotham Street to Chapel Street, and Chapel Street to St Kilda Road.

## 5. Inkerman Road–Alma Road (two-way)



### IMPACT ON NEIGHBOURHOOD

- On-street car parking demand is high in some sections of the corridor, reaching around 90 per cent peak occupancy on Inkerman Road (between Hawthorn to Kooyong), and between 70 to 92 per cent peak occupancy on Alma Road.
- Parking overspill is low to moderate along the corridor. The highest parking overspill values are located on Inkerman Road between Hawthorn Road and Kooyong Road (37 to 64 per cent) and Orrong Crescent between Inkerman Road and George Street (49 to 81 per cent).



### FEASIBILITY OF CONSTRUCTION

- Alma Road has an average width of between 13.8m to 14.7m. The average width on Inkerman is 12.4m to 12.8m, while Orrong Crescent has an average width of 10.8m.
- This alignment is not identified as a cycling corridor in Port Phillip's Integrated Transport Strategy.
- The Department of Transport has identified this corridor alignment as a Strategic Cycling Corridor.

## 5. Inkerman Road–Alma Road (two-way)



### Safety for cyclists — data

	INKERMAN ROAD				ORRONG CRESCENT						ALMA ROAD					
	Normanby Rd– Hawthorn Rd		Hawthorn Rd– Kooyong Rd		Inkerman Rd– Marlborough St		Marlborough St– George St		George St– Alma Rd		Orrong Rd– Hotham St		Hotham St– Chapel St		Chapel St– St Kilda Rd	
Side of the road	North	South	North	South	North	South	North	South	North	South	North	South	North	South	North	South
Corridor ID	INK1A	INK1B	INK2A	INK2B	OC1A	OC1B	OC2A	OC2B	OC3A	OC3B	ALM3A	ALM3B	ALM4A	ALM4B	ALM5A	ALM5B
Number of side streets	4	1	2	3	3	1	2	3	0	0	2	5	3	6	2	3
Number side streets with moderate–high volumes (>2,000)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0
Number of driveway crossovers	24	4	29	33	21	21	11	19	8	4	29	40	17	32	20	19
Daily vehicle volume (average weekdays)	3,642	4,273	5,433	5,334	595	610	1,161	909	918	1,214	4,921	6,451	5,163	5,578	4,956	5,451
Vehicle speed (85th percentile)	57.4	59.4	54.1	57.7	49.2	49.5	49	41.3	46.5	45.6	58.7	57.5	51.5	48.5	50.4	59.8
Cyclist volume (daily–weekday)	84	58	78	67	19	19	-	-	25	29	71	105	202	251	139	183
Total crashes	14 - Glen Eira										25 - Port Phillip					
Crashes involving cyclists	6 - Glen Eira										11 - Port Phillip					
Crashes involving pedestrians	4 - Glen Eira										3 - Port Phillip					

## 5. Inkerman Road–Alma Road (two-way)



### Impact on neighbourhood — data

	INKERMAN ROAD				ORRONG CRESCENT						ALMA ROAD					
	Normanby Rd– Hawthorn Rd		Hawthorn Rd– Kooyong Rd		Inkerman Rd– Marlborough St		Marlborough St– George St		George St– Alma Rd		Orrong Rd– Hotham St		Hotham St– Chapel St		Chapel St– St Kilda Rd	
Side of the road	North	South	North	South	North	South	North	South	North	South	North	South	North	South	North	South
Corridor ID	INKIA	INKIB	INK2A	INK2B	OCIA	OCIB	OC2A	OC2B	OC3A	OC3B	ALM3A	ALM3B	ALM4A	ALM4B	ALM5A	ALM5B
Predominant land use	NRZI	PPRZ	NRZI	NRZI	NRZI	NRZI	NRZI	NRZI	GRZ2	GRZI	GRZI	NRZ5	GRZI	GRZI	GRZI	GRZI
Secondary land use	CIZ	-	CIZ	GRZI	-	CIZ	-	-	MUZ	CIZ	NRZ5, PUZ5	-	PPRZ	-	MUZ, CIZ	CIZ
Number of residential dwellings	57	1	140	112	26	32	48	24	33	29	146	132	194	270	171	297
Estimated number of dwellings with off-street parking	48	1	138	104	25	31	47	24	32	27	146	128	194	270	144	288
On-street peak parking occupancy	67%	48%	98%	93%	71%	52%	75%	63%	62%	86%	70%	85%	89%	71%	79%	92%
Day and time of peak occupancy	Friday 8am	Friday 12pm	Friday 6pm– 8pm Saturday 12pm	Tuesday 10pm and 11pm	Saturday 10am– 1pm	Tuesday 8am Friday 7pm Saturday 11pm	Saturday 11am and 12pm	Saturday 11am– 1pm	Friday 5pm	Saturday 11am	Friday 3pm	Saturday 5pm and 6pm	Saturday 1pm	Saturday 11am	Friday 3pm	Saturday 2pm
Overspill parking (number of spaces)	27	1	19	27	15	18	8	13	3	8	-3	19	-16	-8	17	-22
Overspill parking demand (%)	42%	1%	37%	64%	49%	59%	52%	81%	11%	28%	-3%	31%	-19%	-14%	30%	-45%
Proportion of residents aged over 60 (%)	28%	-	19%	16%	26%	21%	19%	26%	19%	31%	11%	11%	19%	12%	10%	11%
People aged over 60 by suburb (%)	Caulfield North: 24%										St Kilda East: 13%					

## 5. Inkerman Road–Alma Road (two-way)



### Impact on neighbourhood — data

It is worth noting that the 'overspill parking' assessment is only an indicative figure for residential parking. However, this element does not consider other parking demand such as commercial or visitor parking. Negative values for overspill parking are related to areas with low numbers of dwellings, and therefore the residential parking demand is low.

For this reason, it is critical to acknowledge that non-residential destinations along the corridor might have specific parking requirements that need to be considered.

Further, an analysis of group ages was undertaken to identify group ages for residents along this corridor. From the analysis, it is worth noting that a higher proportion of residents aged over 60 was found in the following sections:

- **Inkerman Road between Normanby Road and Hawthorn Road (north side): 28%**
- **Orrong Crescent: 19–31%**
- **Alma Road between Hotham Street to Chapel Street: 19%**

From the analysis, key locations were identified along or adjacent to this corridor. These have been grouped into 'local businesses' and 'education and cultural'.

LGA	Local businesses	Precinct
Glen Eira	Inkerman Car Wash	INK-1A
	Mitre 10 Caulfield	INK-1B
	Milk Bar	INK-1A
	The Potsticker	INK-2A
	Millenium Optical	INK-2B
	Oomph Hairology	INK-2A
	Baby Made	INK-2A
	Lenny's	INK-3A
	Functional Fitness Solutions	OC-3B
	David Mond and Associates	OC-3B
	Espresso Etc	ALM-2B
	One Fish Two Fish	ALM-2B
	Frank and Ginger Café	ALM-2B
	Brite Drycleaners	ALM-2B
Common Room Co	ALM-2A	
The Chicken Specialist	ALM-2A	
Port Phillip	Commercial area near the intersection of St Kilda and Alma Roads	ALM5-A/B
LGA	Education and cultural	Precinct
Port Phillip	Jewish Museum	ALM5-A
	Victorian Union for Progressive Judaism	ALM5-A
	Temple Beth Israel	ALM5-A
	St Kilda Cemetery	ALM3-A
	Alma Road Neighbourhood House	ALM3B

## 5. Inkerman Road–Alma Road (two-way)



### Feasibility of construction — scenarios

The following scenarios take into consideration the most constrained sections of the corridor in Glen Eira. It is worth noting that Port Phillip's sections is wider and alternative scenarios might be explored.

Scenario description		INKERMAN ROAD		ORRONG CRESCENT		
		Normanby Rd–Hawthorn Rd	Hawthorn Rd–Kooyong Rd	Inkerman Rd–Marlborough St	Marlborough St–George St	George St–Alma Rd
<b>Scenario 1.</b> Raised cycle track to half footpath level on one side and protected by parking on other side.		✗	✓	✗	✗	✗
<b>Scenario 2.</b> Protected bicycle lane (bi-directional) and parking retained in one side.		✓	✓	✗	✗	✗
<b>Scenario 3.</b> Protected bicycle lane (bi-directional) in centre of road and parking retained in one side.		✗	✓	✗	✗	✗
<b>Scenario 4.</b> One-way traffic and protected bicycle lane (bi-directional). Parking retained in both sides.		✓	✗	✓	✓	✓
<b>Scenario 6.</b> Bicycle boulevard — traffic calming and low speed environment.		✓	✗	✓	✓	✓

## 5. Inkerman Road–Alma Road (two-way)



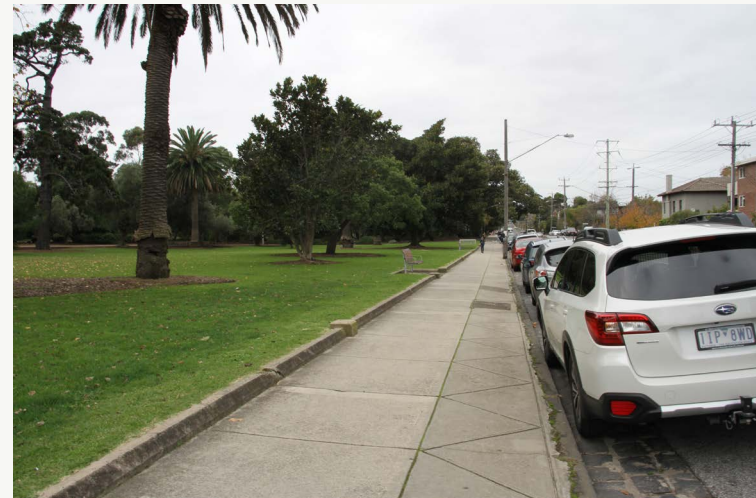
### Feasibility of construction — opportunities and constraints

#### Opportunities

- This corridor takes advantage of Caulfield Park (670m), Alma Park (314m) and the St Kilda Cemetery (225m), which offer sections free of side streets, driveways, and residential facing on-street car parking.
- Access to the Caulfield Station Precinct is facilitated by a direct transition to Normanby Road from Inkerman Road.
- Low vehicle volumes on side streets were recorded with the exception of Westbury Street and Crimea Street (along Alma Road).
- The width on Alma Road is broader than other sections of the corridor (Inkerman Road and Orrong Crescent). The average width ranges between 13.8m to 14.7m (Port Phillip's section). The wider sections are located closer to St Kilda Road.
- Low vehicle volumes and speeds on Orrong Crescent allow an exploration of the implementation of a bicycle boulevard, reducing potential impacts to on-street car parking.



St Kilda Cemetery (Alma Road).



Alma Park (Alma Road).



## 5. Inkerman Road–Alma Road (two-way)



### Feasibility of construction — opportunities and constraints

#### Constraints

- Large number of crossovers that create potential interactions between cyclists and vehicles entering or exiting driveways.
- Potential impacts to residential facing on-street parking with exception of the Caulfield Park, Alma Park, and St Kilda Cemetery sections.
- Orrong Road presents three roundabouts that will need to be redesigned to enhance cyclist safety.
- Commercial uses are located on Alma Road closer to Orrong Crescent and St Kilda Road. However, potential impacts to on-street commercial facing parking close to St Kilda Road may be reduced due to the increased width in this section (average 14.7m).
- Some young trees (16) are located in the centre of the road on Alma Road in the sections between Hotham Street and St Kilda Road.



Existing trees on Alma Road central median.

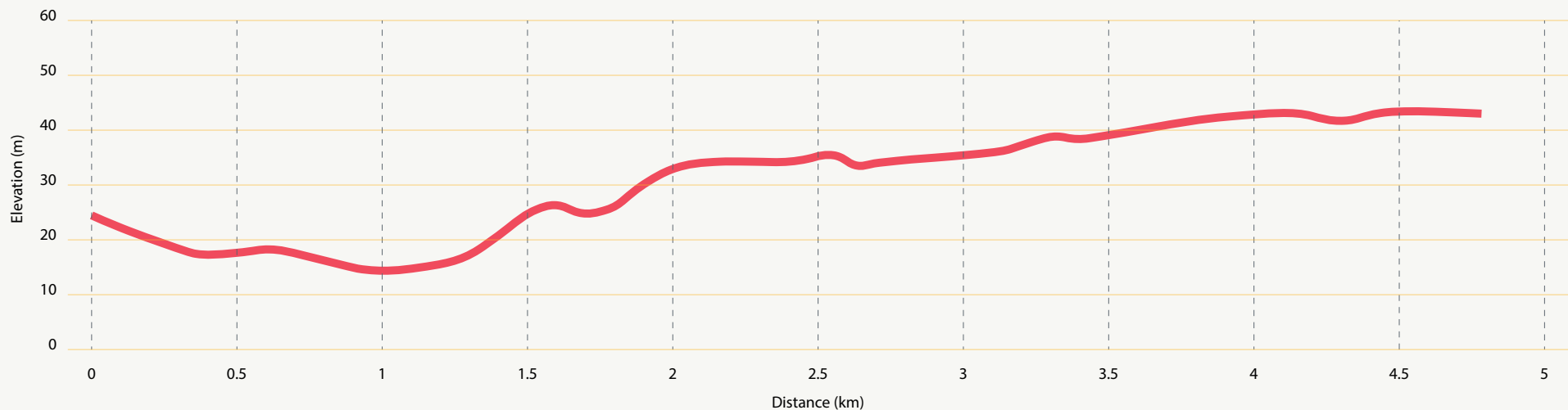
## 5. Inkerman Road–Alma Road (two-way)



### Feasibility of construction — other considerations

#### Other considerations

- The corridor width on Inkerman Road within Glen Eira (between Normanby Road and Orrong Crescent) is narrower than the Port Phillip section (between Orrong Crescent and St Kilda Road). The most constrained sections are:
  - > Inkerman Road: An average width of 12.8m between Normanby Road and Hawthorn Road, and an average width of 12.4m between Hawthorn Road and Kooyong Road.
  - > Orrong Crescent: An average width of 10.8 metres.
- According to the elevation profile, significant changes in the terrain occur on Alma Road (shown in the chart up to km 2.3). Orrong Crescent presents minor changes (km 2.3 –km 3.3), and continues with minor changes along Inkerman Road (from km 3.3).



Elevation profile Alma Road, Orrong Crescent and Inkerman Road. Measured from St Kilda Road (Alma Road) to Normanby Road (Inkerman Road)(Source: Google Earth)

## 5. Inkerman Road–Alma Road (two-way)



### Feasibility of construction — strategic alignment

#### Department of Transport

The Department of Transport (DoT) has shared its draft Strategic Cycling Corridors to seek further feedback from councils.

To provide an east-west alignment that links the CBD via St Kilda Road with the Caulfield Station precinct, the draft Strategic Cycling Corridor identifies a preferred alignment along Normanby Road, Inkerman Road, Orrong Crescent and Alma Road.

The DoT currently considers either the Inkerman Road/Inkerman Street (both directions) or Inkerman Road/Orrong Crescent/Alma Road (both directions) options as potentially feasible Strategic Cycling Corridor options.

#### Port Phillip City Council

Alma Road is not recognised as a bicycle riding network improvements corridor within Port Phillip's Integrated Transport Strategy.

**6. ALMA ROAD EASTBOUND AND  
INKERMAN ROAD WESTBOUND  
(one-way)**

**CORRIDOR ASSESSMENT**



## 6. Alma Road eastbound and Inkerman Road westbound (one-way)

### Corridor summary

This alignment aims to minimise the potential impact of on-street car parking loss by providing safe cycling infrastructure going one-way along Alma Road and the other way along Inkerman Road. The combination of the two one-way facilities aims to provide an east-west link between St Kilda Road and Normanby Road. Access to the Caulfield Station Precinct can be achieved by continuing the cycling corridor along Normanby Road.

The preferred direction for the provision of a one-way protected cycling facility is Alma Road eastbound and Inkerman Road westbound. The choice of direction takes advantage of Alma Park and the St Kilda Cemetery (on Alma Road eastbound) which offers large distances free of side streets and driveways.

### Connection between Inkerman and Alma Roads

Two options were considered to provide a link between Alma Road and Inkerman Road:

- **Option 1 — Orrong Crescent**
- **Option 2 — Bella Vista Road onto Wanda Road, crossing Hawthorn Road onto Arthur Street and then turning right onto Carnarvon Road.**

A determination has been made that the best connection between these two alignments is option 1 — Orrong Crescent. Option 2 has complexities crossing Hawthorn Road which would require the installation of new traffic signals to create a safe passage for cyclists, impacts to tram movements along Hawthorn Road, and the cost associated with these treatments compared to option 1.

### Assessment framework key findings



## SAFETY FOR CYCLISTS

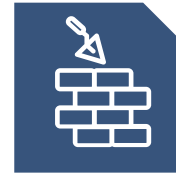
- Average weekday vehicles volumes on Inkerman Road are between 4,273 to 7,194 vehicles per day (westbound travel only).
- Alma Road presents volumes around 5,000 vehicle per day (eastbound traffic only).
- Vehicle volumes are relatively low in Orrong Crescent (below 1,500 vehicles per day), consistent with local street volumes.
- The majority of vehicles were travelling below speed limits in both Inkerman Road and Orrong Crescent.
- Speeding was an identified issue on Alma Road with vehicles travelling over the posted limit of 50km/h.
- High numbers of driveway crossovers are located on Inkerman Road in the sections of Hawthorn Road to Kooyong Road, Kooyong Road to Orrong Road, and Orrong Road to Hawthorn Road, and on Alma Road between Orrong Road to Hotham Street.
- Vehicle volumes on intersecting side streets are relatively low (below 200 during peak hour) in most sections of the corridor, with the exception of Inkerman Road between Hotham Street to Chapel Street, and Alma Road between Hotham Street to Chapel Street, and Chapel Street to St Kilda Road.
- Cyclists travelling on the unprotected side of the corridor (westbound on Alma Road or eastbound on Inkerman Road) will be mixed with general traffic.

## 6. Alma Road eastbound and Inkerman Road westbound (one-way)



### IMPACT ON NEIGHBOURHOOD

- By providing safe cycling infrastructure going one-way along Alma Road and the other way along Inkerman Road, this corridor alignment aims to minimise the loss of on-street car parking.



### FEASIBILITY OF CONSTRUCTION

- This alignment is not identified as a cycling corridor in Port Phillip's Integrated Transport Strategy.
- The route alignment is consistent with the draft Strategic Cycling Corridor proposed by the Department of Transport. However, Strategic Cycling Corridors seek to provide protection for cyclists traveling in each direction within the same road corridor.

## 6. Alma Road eastbound and Inkerman Road westbound (one-way)



### Safety for cyclists — data

	INKERMAN ROAD						ORRONG CRESCENT						ALMA ROAD		
	Normanby Rd–Hawthorn Rd	Hawthorn Rd–Kooyong Rd	Kooyong Rd–Orrong Rd	Orrong Rd–Hotham St	Hotham St–Chapel St	Chapel St–St Kilda Rd	Inkerman Rd–Marlborough St		Marlborough St–George St		George St–Alma Rd		Orrong Rd–Hotham St	Hotham St–Chapel St	Chapel St–St Kilda Rd
Side of the road	South	South	South	South	South	South	North	South	North	South	North	South	North	North	North
Corridor ID	INK1B	INK2B	INK3B	INK4B	INK5B	INK6B	OC1A	OC1B	OC2A	OC2B	OC3A	OC3B	ALM3A	ALM4A	ALM5A
Number of side streets	1	3	6	5	8	0	3	1	2	3	0	0	2	3	2
Number side streets with moderate–high volumes (>2,000)	0	0	0	0	3	0	0	0	0	0	0	0	0	1	1
Number of driveway crossovers	4	33	36	28	16	19	21	21	11	19	8	4	29	17	20
Daily vehicle volumes (average weekdays)	4,273	5,334	6,229	5,956	7,194	6,580	595	610	1,161	909	918	1,214	4,921	5,163	4,956
Vehicle speed (85th percentile)	59.4	57.7	60.2	53	48.1	48	49.2	49.5	49	41.3	46.5	45.6	58.7	51.5	50.4
Cyclist volumes (daily–weekday)	58	67	89	94	162	152	19	19	-	-	25	29	71	202	139
Total crashes	29 – Glen Eira			19 – Port Phillip			2 – Glen Eira						25 – Port Phillip		
Crashes involving cyclists	15 – Glen Eira			8 – Port Phillip			0 – Glen Eira						11 – Port Phillip		
Crashes involving pedestrians	6 – Glen Eira			5 – Port Phillip			0 – Glen Eira						3 – Port Phillip		



## 6. Alma Road eastbound and Inkerman Road westbound (one-way)



### Impact on neighbourhood — data

	INKERMAN ROAD						ORRONG CRESCENT						ALMA ROAD		
	Normanby Rd– Hawthorn Rd	Hawthorn Rd– Kooyong Rd	Kooyong Rd– Orrong Rd	Orrong Rd– Hotham St	Hotham St– Chapel St	Chapel St– St Kilda Rd	Inkerman Rd– Marlborough St		Marlborough St– George St		George St– Alma Rd		Orrong Rd– Hotham St	Hotham St– Chapel St	Chapel St– St Kilda Rd
Side of the road	South	South	South	South	South	South	North	South	North	South	North	South	North	North	North
Corridor ID	INK1B	INK2B	INK3B	INK4B	INK5B	INK6B	OC1A	OC1B	OC2A	OC2B	OC3A	OC3B	ALM3A	ALM4A	ALM5A
Predominant land use	PPRZ	NRZ1	NRZ1	NRZ1	GRZ1	GRZ1	NRZ1	NRZ1	NRZ1	NRZ1	GRZ2	GRZ1	GRZ1	GRZ1	GRZ1
Secondary land use	-	GRZ1	-	-	NRZ1, CIZ	MUZ, CIZ	-	CIZ	-	-	MUZ	CIZ	NRZ5, PUZ5	PPRZ	MUZ, CIZ
Number of residential dwellings	1	112	70	83	128	253	26	32	48	24	33	29	146	194	171
Estimated number of dwellings with off-street parking	1	104	69	83	109	252	25	31	47	24	32	27	146	194	144
On-street peak parking occupancy	48%	93%	65%	72%	77%	84%	71%	52%	75%	63%	62%	86%	70%	89%	79%
Day and time of peak occupancy	Friday 12pm	Tuesday 10pm and 11pm	Saturday 1pm and 2pm	Saturday 12pm	Friday 11am	Tuesday 1pm	Saturday 10am–1pm	Tues 8am Fri 7pm Sat 11pm	Saturday 11am and 12pm	Saturday 11am–1pm	Friday 5pm	Saturday 11am	Friday 3pm	Saturday 1pm	Friday 3pm
Overspill parking (number of spaces)	1	27	28	18	35	-30	15	18	8	13	3	8	-3	-16	17
Overspill parking demand (%)	1%	64%	54%	27%	55%	-70%	49%	59%	52%	81%	11%	28%	-3%	-19%	30%
Proportion of residents over 60 years (%)	-	16%	28%	19%	13%	4%	26%	21%	19%	26%	19%	31%	11%	19%	10%
People over 60 years by suburb (%)	Caulfield North: 24%											St Kilda East: 13%			

## 6. Alma Road eastbound and Inkerman Road westbound (one-way)



### Impact on neighbourhood — data

It is worth noting that the 'overspill parking' assessment is only an indicative figure for residential parking. However, this element does not consider other parking demand such as commercial or visitor parking. Negative values for overspill parking are related to areas with low numbers of dwellings, and therefore the residential parking demand is low.

For this reason, it is critical to acknowledge that non-residential destinations along the corridor might have specific parking requirements that need to be considered.

Further, an analysis of group ages was undertaken to identify group ages for residents along this corridor. From the analysis, it is worth noting that a higher proportion of residents aged over 60 was found in the following sections:

- **Inkerman Road between Kooyong Road to Orrong Road: 28%**
- **Orrong Crescent: 19–31%**
- **Alma Road between Hotham Street to Chapel Street: 19%**

From the analysis, key locations were identified along or adjacent to this corridor. These have been grouped into 'local businesses' and 'education and cultural'.

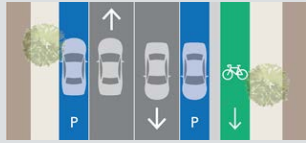

LGA	Local Businesses	Precinct
Glen Eira	Mitre 10 Caulfield	INK-1B
	Millenium Optical	INK-2B
	Lenny's	INK-3A
	Functional Fitness Solutions	OC-3B
	David Mond and Associates	OC-3B
	Espresso Etc	ALM-2B
	One Fish Two Fish	ALM-2B
	Frank and Ginger Café	ALM-2B
	Common Room Co	ALM-2A
	The Chicken Specialist	ALM-2A
Port Phillip	Kimberly Gardens Function Centre	INK-4B
	393-355 Inkerman Street commercial area	INK-5B
	Commercial area near Chapel and Inkerman Streets intersection	INK-5B and INK-6B
	ALDI St Kilda (and specialty shops)	INK-6B
	Commercial area near the intersection of St Kilda and Alma Roads	ALM5-A
LGA	Education and Cultural	Precinct
Glen Eira	Chabad House of Caulfield	INK-4B
	St Kilda Steiner Kindergarten	INK-4B
	St Kilda PCYC	INK-6B
	The Melbourne Chevra Kadisha	INK-6B
Port Phillip	Jewish Museum	ALM5-A
	Victorian Union for Progressive Judaism	ALM5-A
	Temple Beth Israel	ALM5-A
	St Kilda Cemetery	ALM3-A
	Alma Road Neighbourhood House	ALM3B

## 6. Alma Road eastbound and Inkerman Road westbound (one-way)



### Feasibility of construction — scenarios

The following scenarios take into consideration the most constrained sections of the corridor in Glen Eira. It is worth noting that Port Phillip's section is wider and alternative scenarios might be explored.

		INKERMAN ROAD	ORRONG CRESCENT	ALMA ROAD
Scenario description		Normanby Rd– St Kilda Rd	Inkerman Rd– Alma Rd	St Kilda Rd– Orrong Cr
<p><b>Scenario 5 (a).</b> Protected bicycle lane one-way (eastbound) and parking retained in both sides.</p> 		✗	✗	✓
<p><b>Scenario 5 (b).</b> Protected bicycle lane one-way (westbound) and parking retained in both sides.</p>		✓	✗	✗
<p><b>Scenario 6.</b> Bicycle boulevard — traffic calming and low speed environment.</p> 		✗	✓	✗

## 6. Alma Road eastbound and Inkerman Road westbound (one-way)



### Feasibility of construction — opportunities and constraints

#### Opportunities

- This corridor option provides a protected bicycle lane in one side of the road (Alma Road — eastbound), and a similar alignment in a parallel road (Inkerman Road — westbound), which minimises the loss of on-street car parking in most sections of the corridor.
- This corridor takes advantage of Caulfield Park (670m), Alma Park (314m) and St Kilda Cemetery (225m), which offer sections free of side streets, driveways, and residential on-street car parking.
- Low vehicle volumes and speeds on Orrong Crescent allows the exploration of the implementation of a bicycle boulevard, reducing the potential impacts on residential car parking.

#### Constraints

- Cyclists travelling on the unprotected side of the corridor (westbound on Alma Road or Eastbound on Inkerman Road) will be mixed with general traffic. This is a reduced level of service from the existing painted bicycle lanes, as these will be removed to retain on-street parking.
- One-way protected cycling corridor alignments are not a common cycling treatment within Melbourne, or Australia. This may lead to uncertainty and confusion from cyclists unfamiliar with this arrangement.
- The distance between Inkerman Road and Alma Road is an average of 430m. This creates potential accessibility and catchment issues for cyclists who wish to use a protected bicycle lane but may need to travel out of their way to access the protected direction.
- The section of Inkerman Road between Orrong Crescent and Normanby Road will need to provide a two-way protected cycling corridor. As the best connection between one-way corridors is achieved via Orrong Crescent, the section of Inkerman Road between Orrong Crescent and Normanby Road will need to cater for cyclists traveling in both directions. The same findings outlined in the Inkerman Road — Alma Road alignment (section 5) will apply to this section of Inkerman Road.
- Orrong Road presents three roundabouts that will need to be redesigned to enhance cyclist safety.

## 6. Alma Road eastbound and Inkerman Road westbound (one-way)



### Feasibility of construction — strategic alignment

#### Department of Transport

The route alignment is consistent with the draft Strategic Cycling Corridor proposed by the Department of Transport. However, Strategic Cycling Corridors seek to provide protection for cyclists traveling in each direction within the same road corridor.

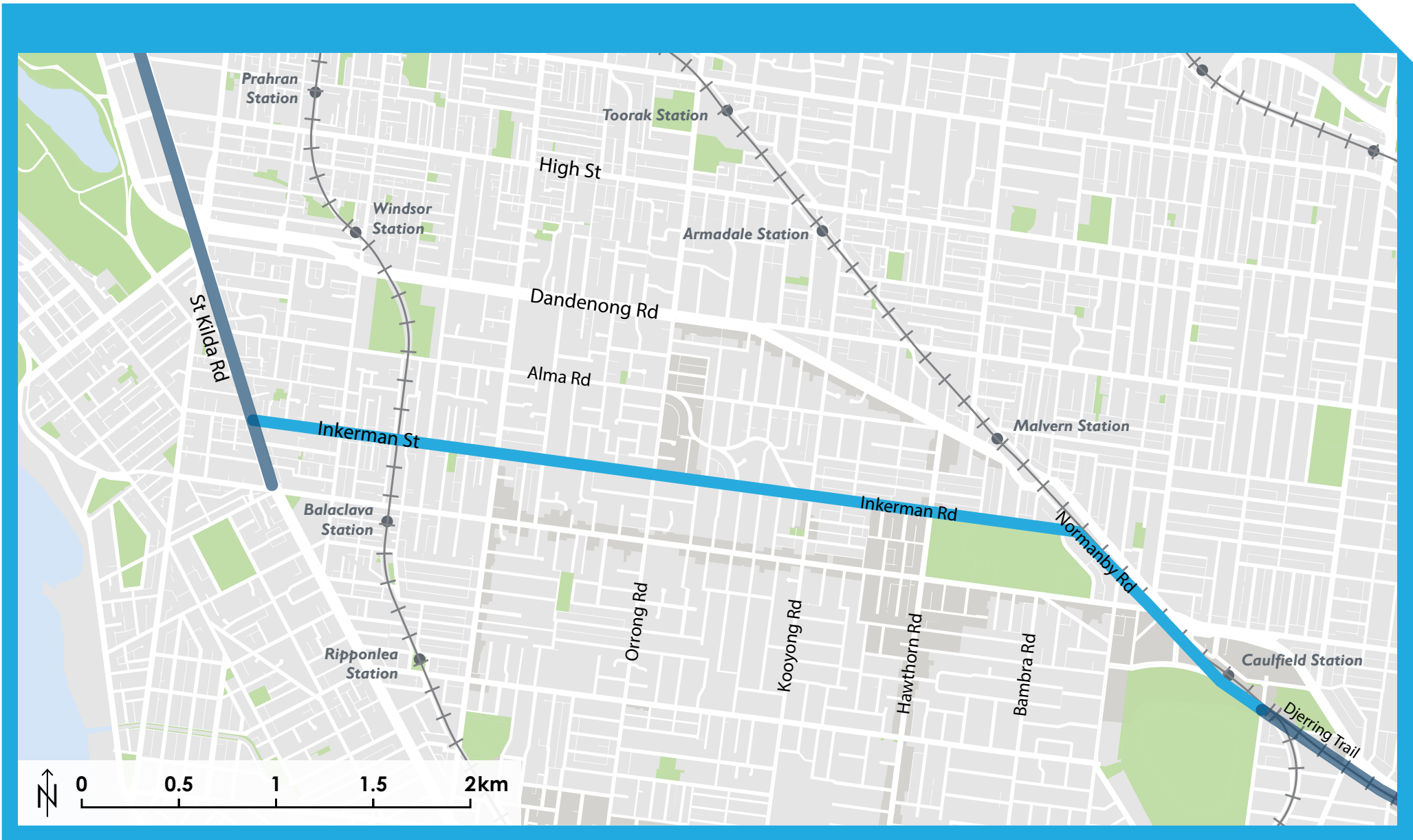
The DoT currently considers either the Inkerman Road/Inkerman Street (both directions) or Inkerman Road/Orrong Crescent/Alma Road (both directions) options as potentially feasible Strategic Cycling Corridor options.

#### Port Phillip City Council

Alma Road is not recognised as a bicycle riding network improvements corridor within Port Phillip's Integrated Transport Strategy. One-way protected cycling corridor alignments are not presented as a bicycle riding network improvement corridor within Port Phillip's Integrated Transport Strategy.

# 7. INKERMAN ROAD

## CORRIDOR ASSESSMENT



## 7. Inkerman Road

### Corridor summary

This alignment aims to provide an east-west link between St Kilda Road and Normanby Road. Access to the Caulfield Station Precinct can be achieved by continuing the cycling corridor along Normanby Road.

One key feature of this corridor is the presence of Caulfield Park on the south side of the corridor (between Hawthorn Road and Park Crescent) which offers sections free of driveways and/or side streets.

The corridor comprises a distance of 5.3km between Caulfield Station and St Kilda Road. Four kilometres of this route is located within Glen Eira (in full or part responsibility). The municipal boundary of Glen Eira and Port Phillip runs along the centre line of Inkerman Street between Orrong Road and Hotham Street.

### Assessment framework key findings



## SAFETY FOR CYCLISTS

- Average weekday vehicles volumes on Inkerman Road (between Normanby Road and Hotham Street) range between 7,000–12,000 vehicles per day.
- Average weekday vehicles volume on Inkerman Road (between Hotham Street and St Kilda Road) increases to 12,000–14,000 vehicles per day.
- It was found that the majority of vehicles were travelling below the 60km/h speed limit in Glen Eira (between Normanby Road and Hotham Street) and 50km/h speed limit in Port Phillip (between Hotham Street and St Kilda Road).
- A high number of driveway crossovers are located in the sections between Hawthorn to Kooyong Road, Kooyong to Orrong Road and Orrong Road to Hotham Street.
- Vehicle volume on intersecting side streets is relatively low (below 200 during peak hour) in most parts of the corridor, with the exception of the section between Hotham to Chapel Street.

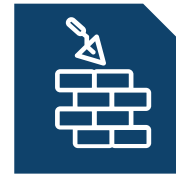


## 7. Inkerman Road



### IMPACT ON NEIGHBOURHOOD

- On-street car parking demand is high, reaching more than 90 per cent peak occupancy in some sections. The least occupied section of the corridor is Caulfield Park.
- Parking overspill is low to moderate along the corridor. The higher parking overspill (between 50 to 60 per cent) sections of the corridor are found between Hawthorn to Kooyong Road, Kooyong to Orrong Road, and Hotham to Chapel Street.



### FEASIBILITY OF CONSTRUCTION

- The corridor width in Glen Eira is narrower than Port Phillip's section. The most constrained sections are Normanby Road to Hawthorn Road (average 12.8m) and Hawthorn Road to Kooyong Road (average 12.4m). The corridor width in Port Phillip is wider and reaches an average width of 14.5 metres in the section between Hotham Street and Chapel Street and 14.1 metres between Chapel Street and St Kilda Road.
- Port Phillip's Integrated Transport Strategy identifies Inkerman Street as part of their Bicycle Riding Network Improvement Corridors.
- One section of this corridor is currently identified by the State Government as a draft Strategic Cycling Corridor (between Normanby Road and Orrong Crescent).
- The Department of Transport currently considers either the Inkerman Road/Inkerman Street (both directions) or Inkerman Road/Orrong Crescent/Alma Road (both directions) options as potentially feasible Strategic Cycling Corridor options.

## 7. Inkerman Road



### Safety for cyclists — data

	Normanby Rd– Hawthorn Rd		Hawthorn Rd– Kooyong Rd		Kooyong Rd– Orrong Rd		Orrong Rd– Hotham St		Hotham St– Chapel St		Chapel St– St Kilda Rd	
Side of the road	North	South	North	South	North	South	North	South	North	South	North	South
Corridor ID	INK1A	INK1B	INK2A	INK2B	INK3A	INK3B	INK4A	INK4B	INK5A	INK5B	INK6A	INK6B
Number of side streets	4	1	2	3	6	6	5	5	11	8	4	0
Number side streets with moderate-high volumes (>2,000)	0	0	0	0	0	0	0	0	1	3	0	0
Number of driveway crossovers	24	4	29	33	29	36	39	28	19	16	8	19
Daily vehicle volumes (average weekdays)	3,642	4,273	5,433	5,334	6,006	6,229	6,230	5,956	6,991	7,194	6,128	6,580
Vehicle speed (85th percentile)	57.4	59.4	54.1	57.7	55.2	60.2	55.2	53	48.3	48.1	47.2	48
Cyclist volumes (daily-weekday)	84	58	78	67	75	89	105	94	141	162	146	152
Total crashes	29 – Glen Eira*						19 – Port Phillip*					
Crashes involving cyclists	15 – Glen Eira*						8 – Port Phillip*					
Crashes involving pedestrians	6 – Glen Eira*						5 – Port Phillip*					

\* The boundary between Glen Eira and Port Phillip is located in the centre of the road between Orrong Road and Hotham Street, where the north side of the road corresponds to Port Phillip and the south side to Glen Eira.

## 7. Inkerman Road



### Impact on neighbourhood — data

	Normanby Rd– Hawthorn Rd		Hawthorn Rd– Kooyong Rd		Kooyong Rd– Orrong Rd		Orrong Rd– Hotham St		Hotham St– Chapel St		Chapel St– St Kilda Rd	
Side of the road	North	South	North	South	North	South	North	South	North	South	North	South
Corridor ID	INK1A	INK1B	INK2A	INK2B	INK3A	INK3B	INK4A	INK4B	INK5A	INK5B	INK6A	INK6B
Predominant land use	NRZI	PPRZ	NRZI	NRZI	NRZI	NRZI	NRZ5	NRZI	GRZI	GRZI	GRZI	GRZI
Secondary land use	CIZ	-	CIZ	GRZI	GRZI, CIZ	-	GRZI	-	NRZI, CIZ	NRZI, CIZ	RGZI, CIZ	MUZ, CIZ
Number of residential dwellings	57	1	140	112	103	70	227	83	122	128	344	253
Estimated number of dwellings with off-street parking	48	1	138	104	100	69	216	83	112	109	305	252
On-street peak parking occupancy	67%	48%	98%	93%	90%	65%	89%	72%	80%	77%	94%	84%
Day and time of peak occupancy	Friday 8am	Friday 12pm	Friday 6-8pm Saturday 12pm	Tuesday 10pm and 11pm	Saturday 6pm	Saturday 1pm and 2pm	Saturday 8pm and 9pm	Saturday 12pm	Saturday 8pm and 10pm	Friday 11am	Tuesday 11am- 1pm and Friday 12pm	Tuesday 1pm
Overspill parking (number of spaces)	27	1	19	27	29	28	18	18	21	35	3	-30
Overspill parking demand (%)	42%	1%	37%	64%	60%	54%	29%	27%	47%	55%	9%	-70%
Proportion of residents aged over 60 (%)	28%	-	19%	16%	26%	28%	9%	19%	13%	13%	23%	4%
People aged over 60 by suburb (%)	Caulfield North: 24%						St Kilda East: 13%					

## 7. Inkerman Road



### Impact on neighbourhood — data

It is worth noting that the 'overspill parking' assessment is only an indicative figure for residential parking. However, this element does not consider other parking demand such as commercial or visitor parking. Negative values for overspill parking are related to areas with low numbers of dwellings, and therefore the residential parking demand is low.

For this reason it is critical to acknowledge that non-residential destinations along the corridor might have specific parking requirements that need to be considered.

Further, an analysis of age groups from the Census 2016 was undertaken to identify older residents along the corridor, who might have specific requirements in terms of visitor parking.

It is worth noting that a higher proportion of residents aged over 60 is found in the following sections of Inkerman Road:

- Normanby to Hawthorn Rd (north side): 28%
- Kooyong Rd to Orrong Rd: 26–28%
- Orrong Rd to Hotham St (south side): 19%
- Chapel St to St Kilda Rd (north side): 23%

From the analysis, key locations were identified along or adjacent to this corridor. These have been grouped into 'local businesses' and 'education and cultural'.

LGA	Local businesses	Precinct
Glen Eira	Inkerman Car Wash	INK-1A
	Mitre 10 Caulfield	INK-1B
	Milk Bar	INK-1A
	The Potsticker	INK-2A
	Millenium Optical	INK-2B
	Oomph Hairology	INK-2A
	Baby Made	INK-2A
	Lenny's	INK-3A
	Flex Personal Training	INK-3A
	Kimberley Gardens Function Centre	INK-4B
Port Phillip	280-240 Inkerman Street commercial area	INK-5A
	393-355 Inkerman Street commercial area	INK-5B
	Commercial area near Chapel Street and Inkerman Street intersection	INK-5A/B and INK-6A/B
	ALDI St Kilda (and specialty shops)	INK-6B

LGA	Education and cultural	Precinct
Glen Eira	Caulfield Hebrew Congregation	INK-3A
	Chabad House of Caulfield	INK-4B
	St Kilda Steiner Kindergarten	INK-4B
Port Phillip	Holy Trinity St Nicholas Church	INK-4A
	Hashomer Hatzair Australia	INK-5A
	St Kilda PCYC	INK-6B
	The Melbourne Chevra Kadisha	INK-6B

## 7. Inkerman Road



### Feasibility of construction — scenarios

The following scenarios take into consideration the most constrained sections of the corridor in Glen Eira (12m). It is worth noting that Port Phillip's sections is wider and alternative scenarios might be explored.

Scenario description		Normanby Rd– Hawthorn Rd	Hawthorn Rd– Kooyong Rd	Kooyong Rd– Orrong Rd	Orrong Rd– Hotham St
<b>Scenario 1.</b> Raised cycle track to half footpath level on one side and protected by parking on the other side.		✗	✓	✓	✓
<b>Scenario 2.</b> Protected bicycle lane (bi-directional) and parking retained in one side.		✓	✓	✓	✓
<b>Scenario 3.</b> Protected bicycle lane (bi-directional) in centre of road and parking retained in one side.		✗	✓	✓	✓
<b>Scenario 4.</b> One-way traffic and protected bicycle lane (bi-directional). Parking retained in both sides.		✓	✗	✗	✗
<b>Scenario 6.</b> Bicycle boulevard – traffic calming and low speed environment.		✓	✗	✗	✗

## 7. Inkerman Road



### Feasibility of construction — opportunities and constraints

#### Opportunities

- This corridor takes advantage of Caulfield Park, which offers 670 metres free of side streets, driveways, and residential facing on-street car parking.
- Access to the Caulfield Station Precinct is facilitated by a direct transition to Normanby Road.
- A limited number of local businesses (ten in total) are located within Glen Eira's section of Inkerman Road. This reduces the potential conflicts of car parking loss in front of commercial land uses.
- The corridor runs within a catchment distance from Balaclava Station (400 metres).
- Vehicle volumes on intersecting side streets are relatively low (below 200 during peak hour) in most sections of the corridor, with the exception of the section between Hotham to Chapel Street.
- The corridor in the Port Phillip section of Inkerman Road is wider reaching an average width of 14.5 metres in the section between Hotham Street and Chapel Street, and 14.1 metres between Chapel Street and St Kilda Road.



Caulfield Park section.

## 7. Inkerman Road



### Feasibility of construction — opportunities and constraints

#### Constraints

- Large numbers of crossovers that create potential interactions between cyclists and vehicles entering and exiting driveways.
- Potential impacts to residential facing on-street parking in most sections of the corridor with the exception of the Caulfield Park section.
- A significant number of commercial uses are located in Port Phillip's section. However, potential impacts to on-street commercial facing parking may be reduced due to the increased width of this section of the corridor (average width of 14.1m-14.5m).
- A constrained 'pinch point' section of the corridor exists due to a pedestrian crossing near Orrong Grove (nine metres of width). This pedestrian crossing would remain in its current location.



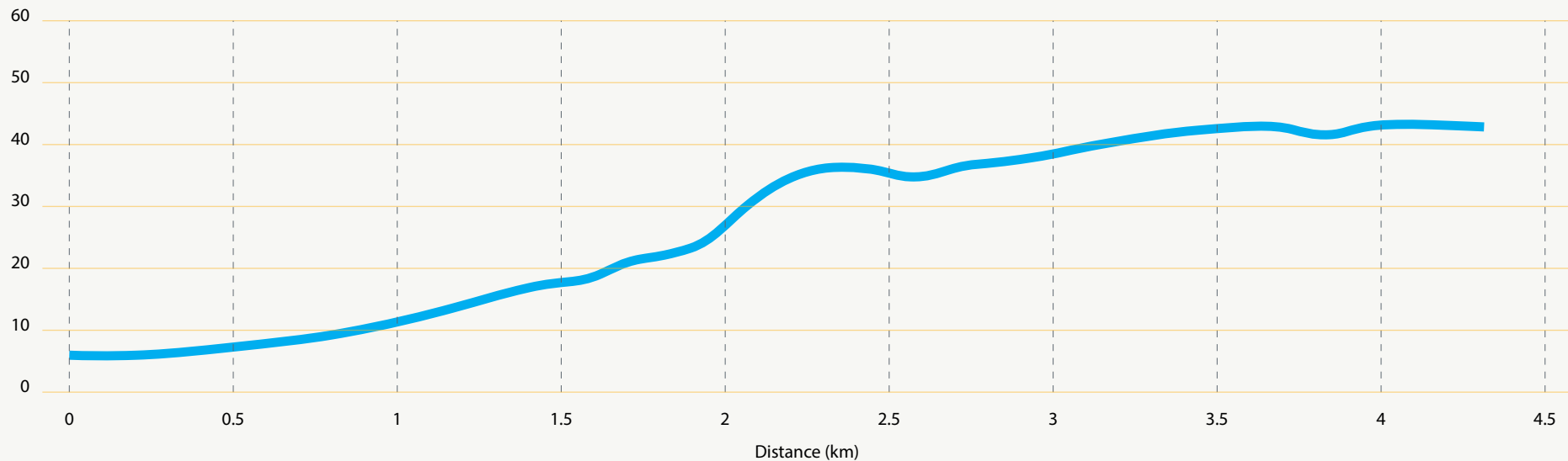
## 7. Inkerman Road



### Feasibility of construction — opportunities and constraints

#### Other considerations

- The corridor width in Glen Eira is narrower than Port Phillip's section. The most constrained sections are Normanby Road to Hawthorn Road (average 12.8m) and Hawthorn Road to Kooyong Road (average 12.4m).
- According to the elevation profile, significant changes in the terrain occur in the section between Hotham Street and Orrong Road.



Elevation profile Inkerman Road. Measured from St Kilda Road to Normanby Road (Source: Google Earth)



## 7. Inkerman Road



### Feasibility of construction — opportunities and constraints

#### Department of Transport

One section of this corridor is currently identified as a draft Strategic Cycling Corridor (between Normanby Road and Orrong Crescent).

This facilitates potential funding from the State Government in the form of a targeted investment plan.

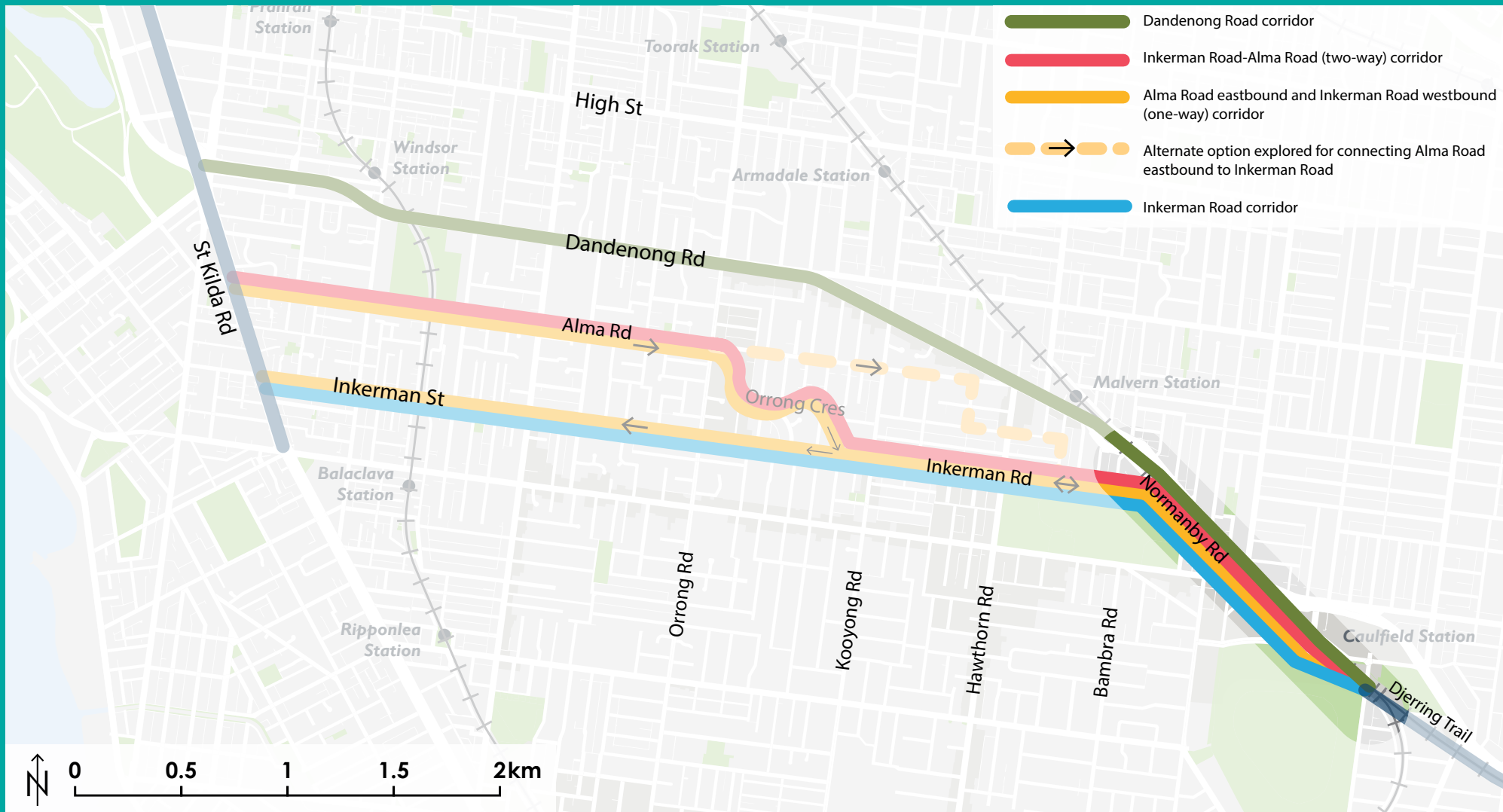
The DoT currently considers either the Inkerman Road/Inkerman Street (both directions) or Inkerman Road/Orrong Crescent/Alma Road (both directions) options as potentially feasible Strategic Cycling Corridor options.

#### Port Phillip City Council

Port Phillip's Integrated Transport Strategy identifies Inkerman Street as part of the Bicycle Riding Network Improvement Corridors.

# 8. Link to Caulfield Station Precinct: Normanby Road

## CORRIDOR ASSESSMENT



## 8. Link to Caulfield Station Precinct: Normanby Road

### Corridor summary

Normanby Road is the most appropriate route to provide a link between all the corridors and the Caulfield Station Precinct.

### Assessment framework key findings



### SAFETY FOR CYCLISTS

- Average daily vehicle volumes are around 3,000 (each direction) in the section between Normanby Road and Inkerman Road. These volumes significantly increase between Inkerman and Balaclava roads to 4,426 southbound and 6,923 northbound.
- The majority of vehicles were travelling below the posted speed limit of 60km/h.
- The east side of Normanby Road has no driveway crossovers due to the presence of the rail line. A moderate number of driveway crossovers are found in the west side of the road (10–15).

## 8. Link to Caulfield Station Precinct: Normanby Road



### IMPACT ON NEIGHBOURHOOD

- Peak on-street car parking demand is mostly below 40 per cent. The only exception is the section between Dandenong and Inkerman Roads (northbound) with a peak demand of 70 per cent.
- Since the east side of this corridor directly faces the railway line, the estimated car parking overspill was only calculated for the west side, which indicated a moderate parking overspill demand of 46 per cent (Dandenong to Inkerman Road) and 58 per cent (Inkerman to Balaclava Road).



### FEASIBILITY OF CONSTRUCTION

- The width of the corridor ranges between 11.3m (Dandenong Road to Inkerman Road) and 11.5m (Inkerman Road to Balaclava Street).
- Normanby Road is identified by the Department of Transport as a part of the Strategic Cycling Corridor linking the Djerring Trail and the St Kilda Road Corridor.

## 8. Link to Caulfield Station Precinct: Normanby Road



### Safety for cyclists — data

Side of the road	Dandenong Rd– Inkerman Rd		Inkerman Rd– Balaclava Rd	
	East	West	East	West
Corridor ID	NORIA	NORIB	NOR2A	NOR2B
Number of side streets	1	1	0	0
Number of driveway crossovers	0	10	0	15
Daily vehicle volumes (average weekdays)	2,819	3,049	4,426	6,923
Vehicle speed (85th percentile)	54.9	57.2	54.1	54.1
Cyclist volumes (daily–weekday)	8	12	27	32
Total crashes	6			
Crashes involving cyclists	1			
Crashes involving pedestrians	0			

## 8. Link to Caulfield Station Precinct: Normanby Road



### Impact on neighbourhood — data

	Dandenong Rd–Inkerman Rd		Inkerman Rd–Balaclava Rd	
Side of the road	East	West	East	West
Corridor ID	NORIA	NORIB	NOR2A	NOR2B
Predominant land use	Train line	NRZI	Train line	NRZI
Number of residential dwellings	0	14	0	44
Estimated number of dwellings with off-street parking	0	11	0	29
On-street peak parking occupancy	41%	70%	36%	37%
Day and time of peak occupancy	Friday 8pm, 10pm and 11pm Saturday 11pm and 12am	Friday 11am	Friday 10am and 2pm	Saturday 11am and 12pm
Overspill parking (number of spaces)	0	11	0	28
Overspill parking demand (%)	0	46%	0	58%
Proportion of residents aged over 60 (%)	-	16%	-	12%
People aged over 60 by suburb (%)	Caulfield North: 24%			

## 8. Link to Caulfield Station Precinct: Normanby Road



### Impact on neighbourhood — data

It is worth noting that the 'overspill parking' assessment is only an indicative figure for residential parking. However, this element does not consider other parking demand such as commercial or visitor parking. Negative values for overspill parking are related to areas with low numbers of dwellings, and therefore the residential parking demand is low.

For this reason, it is critical to acknowledge that non-residential destinations along the corridor might have specific parking requirements that need to be considered.

Further, an analysis of age groups from the Census 2016 was undertaken to identify older residents along the corridor, which might have specific requirements in terms of visitor parking.

It is worth noting that the proportion of people aged over 60 in this area is below the average of Caulfield North.

From the analysis, key locations were identified along or adjacent to Normanby Road.

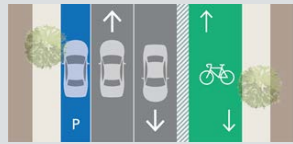
LGA	Local Businesses	Precinct
Glen Eira	Inkerman Car Wash	NOR-IB
	Mitre 10 Caulfield	NO2-B



## 8. Link to Caulfield Station Precinct: Normanby Road



### Feasibility of construction — scenarios

Scenario description	Dandenong Rd -Inkerman Rd	Inkerman Rd- Balaclava Rd
<p><b>Scenario 2 (a).</b> Bi-directional protected bicycle lane and parking retained in one side (east side of road/southbound).</p>		<p style="text-align: center;">✓</p>
<p><b>Scenario 2 (b).</b> Bi-directional protected bicycle lane and parking retained in one side (west side of road/northbound).</p>	<p style="text-align: center;">✓</p>	<p style="text-align: center;">✓</p>

## 8. Link to Caulfield Station Precinct: Normanby Road



### Feasibility of construction — opportunities and constraints

#### Opportunities

- The east side of Normanby Road is adjacent to the railway line, which provides sections free of driveway crossovers and side streets.
- The provision of a safe cycling corridor on the west side of Normanby Road (bi-directional) towards the Caulfield Station Precinct offers a seamless connection from Inkerman Road.

#### Constraints

- Indented parking is provided in some section on the east side of Normanby Road, which needs to be considered during the design of a safe cycling corridor.
- The lack of a central median on Dandenong Road at the intersection with Normanby Road makes it necessary to design a safe and seamless connection at this point.
- The width of the corridor is constrained in particular closer to the intersection with Dandenong Road.

## 8. Link to Caulfield Station Precinct: Normanby Road



### Feasibility of construction — strategic alignment

Department of Transport

Normanby Road is identified by the Department of Transport as part of the Strategic Cycling Corridor linking the Djerring Trail and the St Kilda Road Corridor.

# 9. Data snapshot

Corridors		Dandenong Road **	Inkerman Road Alma Road (two-way)	Alma Road eastbound and Inkerman Road westbound (one-way)***	Inkerman Road/ Street	Normanby Road
Safety for cyclists	Number of side streets	16	40	39	55	2
	Number of driveway crossovers	85	331	286	284	25
	Average daily Vehicle volumes (average weekdays)	66,970	7,076	4,668	11,666	8,609
	Average vehicle speed (85 <sup>th</sup> percentile)	61	52	52	54	55
	Average cyclist volumes (Daily-weekday)	61	190	83	209	65
	Total crashes	78	39	75	48	6
	Crashes involving cyclists	7	17	34	23	1
	Crashes involving pedestrians	9	7	14	11	0
Impact on neighbourhood	On-street peak parking occupancy: Friday 24 May *	18%	62%	65%	73%	32%
	Peak Parking Occupancy: Saturday 25 May *	18%	71%	68%	72%	37%
	Peak parking occupancy: Tuesday 28 May *	56%	59%	59%	71%	30%
	Number of residential dwellings	778	1,712	1,350	1,640	58
	Estimated number of dwelling with off- street parking	777	1,647	1,288	1,537	40
	Overspill parking (number of spaces)	35	155	85	222	39
	Overspill parking demand (%)	13%	19%	12%	33%	36%
	Average proportion of residents over 60 years	17.6%	18.6%	18.7%	18%	14%

\* On-street parking occupancy in this table considers the peak occupancy on each section of the corridor. This reflects the maximum occupancy registered at different times in all the different sections of each corridor.

\*\* Dandenong Road results reflect the analysis on the south side of the Road. However, vehicle volumes, speed, cyclist counts, and crash statistics reflect the current conditions in both sides of this road.

\*\*\* Notes on Alma Road eastbound and Inkerman Road westbound (one-way).

1. The numbers in this corridor include only cyclists and vehicle volumes eastbound on Alma Road and westbound on Inkerman Road.

2. The crash statistics for this corridor take into account the following:

- The entire length of Inkerman Road/Street between Normanby Road and St Kilda Road
- Orrong Crescent (between Alma Road and Inkerman Road)
- Alma Road between Orrong Road and St Kilda Road

Since crash statistics are shown in the centre of the road, it is not possible to differentiate the side of the road where the crash was recorded. For this reason, this corridor is recording a higher number of crashes (almost double) in comparison to other corridors, and it can be assumed that around half of these crashes are representative of the current conditions.



**GLEN EIRA**  
CITY COUNCIL

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