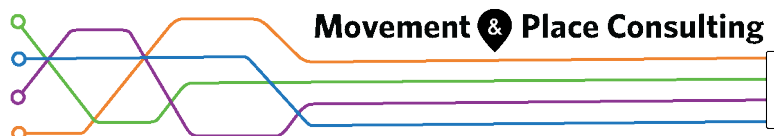


Heidelberg Activity Centre: Movement and Place Options Plan





Document Revision History

VERSION	DATE	DOCUMENT TYPE
Version 1	19/02/2020	Draft Report
Version 2	9/03/2020	Interim Report
Version 3	15/04/2021	Final Report

Document Control Panel

	NAME	DATE	SIGNATURE
Prepared by	Hesara Weliwitiya & Daniel Maher	15 February 2021	
Reviewed by	Knowles Tivendale	9 March 2021	
Approved by	Knowles Tivendale	15 April 2021	

Addressee:

Attn:
Fae Ballingall
1 Flintoff Street
GREENSBOROUGH VIC 3088
AUSTRALIA

Another Project By:

Movement & Place Pty Ltd
ACN: 625 377 595

Trading As:

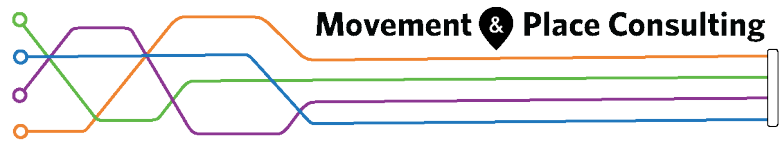
Movement & Place Consulting

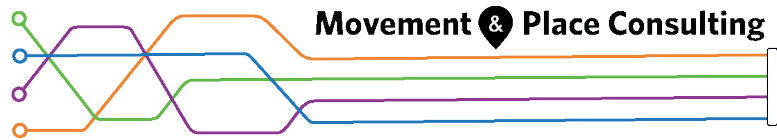
ABN: 85 375 284 892
PO BOX 8101, DANDENONG VIC 3175
info@movementandplace.com.au
www.movementandplace.com.au

This document may contain confidential and legally privileged information, neither of which are intended to be waived, and must be used only for its intended purpose. Any unauthorised copying, dissemination or use in any form or by any means other than by the addressee, is strictly prohibited. If you have received this document in error or by any means other than as authorised addressee, please notify us immediately and we will arrange for its return to us.

Movement & Place Consulting does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

Movement & Place Consulting acknowledges the traditional custodians of the land on which we work including the Bunurong and Wurundjeri and people of the Kulin Nation. The Bolin Bolin Meeting Place attracted Kulin clans for thousands of years, many arriving via Heidelberg. The land always was and always will be, cared for by indigenous custodians.





EXECUTIVE SUMMARY

Heidelberg is a key economic hub located within the La Trobe National Employment and Innovation Cluster. The Activity Centre supports a major hospital precinct, commercial and retail activity, and an increasing population.

As Heidelberg intensifies, effective management of the limited public space will be critical given the impact this has on liveability and mobility outcomes. As with most urban centres, a large portion of the public space is locked away in the road reserve.

To improve balanced allocation of road space, the Victorian Department of Transport (DoT) has developed the Movement and Place Framework (M&PF) to integrate transport and land use outcomes. Council has decided to use the M&PF to assess the performance of the transport network to better meet community expectations.

The M&PF aims to balance the competing *movement* and *place* functions. It enables *place* and *modal* priorities to be defined for each link of the transport network. The M&PF is applied through four modules, including:

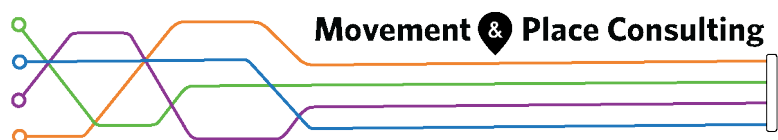
- Module 1: defining the aspirational *movement* and *place* classification for each transport link
- Module 2: examining the *movement* and *place* performance gap between the current operations and the operations resulting from the aspirational classification
- Module 3: develop intervention options to bridge the gap identified between the current network performance and aspirational network performance
- Module 4: assess the impact of the various intervention options

Council's aspirational *movement* and *place* classification was defined through several workshops. In comparison to DoT's aspirational classification, Council's aspirations have greater emphasis on place (local economic activity) and greater alignment with adopted strategic network plans for each mode (particularly bicycle and bus networks).

For example, Burgundy Street was classified by Council as a highest order place, whereas the DoT aspiration is for the place to be a secondary level place (one level below Council's aspiration). Similarly, Council has a higher aspirational classification for bicycle riders along Studley Road, than DoT (a Primary route instead of a lower order Main route).

The key performance gaps between the current classification and Council's aspirations (considering all modes) related to bicycle and pedestrian facilities. The need to enhance how roads cater for these movements generated more than 50% of the performance shortfall across all modes and networks. The need to improve the sense of place followed and made up almost 20% of the performance shortfall indicating a clear need to maximise the safety, comfort and amenity of public realm.

In contrast the performance shortfall for general traffic and freight movement were minimal, accounting for less than 1%. This indicates that while traffic congestion in the network is



highly visible, the current priority and facilities provided to these modes are in line with Council's aspirations.

Improvement options to address key gaps in the Heidelberg network were developed. These key gaps tended to be located on Bell Street, Banksia Street, Burgundy Street, Studley Road, Yarra Street and Jika/Dora Street. Each option was assessed using the Movement and Place Framework. The greatest network improvements resulted from infrastructure that facilitates:

- Low stress bicycle riding (separated bicycle paths)
- Pedestrian permeability (zebra crossings or pedestrian operated signals) or
- Bus priority (queue jumping lanes).

Next steps in the overarching project include liaising with DoT to better align State aspirations with Council's aspirations for each place and mode. Following that, more detailed design of the key improvement options, on the specific road links that most need them, can be completed.

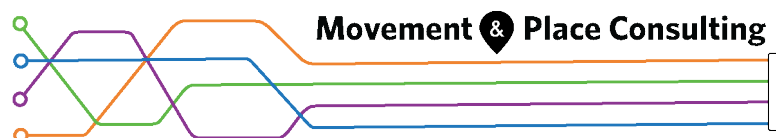


TABLE OF CONTENTS

EXECUTIVE SUMMARY	iii
1 INTRODUCTION	1
2 BACKGROUND	2
3 MOVEMENT AND PLACE ASSESSMENT	7
Network Classification (Module 1)	7
Network Evaluation (Module 2)	16
Options Development and Assessment (Module 3 & 4).....	20
4 CONCLUSION	39
APPENDIX A – CURRENT NETWORK CLASSIFICATIONS	40
APPENDIX B – NETWORK PERFORMANCE INDICATOR ASSUMPTIONS	46

TABLE OF FIGURES

Figure 2-1: Heidelberg Study Area	2
Figure 2-2: The role of the M&PF.....	4
Figure 3-1: Movement and Place matrix & modes	7
Figure 3-2: Aspirational Movement Classifications	8
Figure 3-3: Aspirational Walking Classifications	9
Figure 3-4: Aspirational Cycling Classifications	10
Figure 3-5: Aspirational Bus Classifications.....	11
Figure 3-6: Aspirational Freight Classifications	12
Figure 3-7: Aspirational General Traffic Classifications	12
Figure 3-8: Aspirational Place Classifications	14
Figure 3-9: Network Performance Indicators	16
Figure 3-10: Network-wide Strategic Focus Scores	17
Figure 3-11: SFS on key roads	18
Figure 3-12: Bell Street Options Assessment	22
Figure 3-13: Burgundy Street (east) Options Assessment	24
Figure 3-14: Burgundy Street (west) Options Assessment	25
Figure 3-15: Upper Heidelberg Road Options Assessment.....	26
Figure 3-16: Banksia Street (east) Options Assessment	27
Figure 3-17: Banksia Street (west) Options Assessment	28
Figure 3-18: Rosanna/Lower Heidelberg Road Options Assessment	29
Figure 3-19: Jika/Dora Street Options Assessment.....	30
Figure 3-20: Oriel Road Options Assessment.....	31

Figure 3-21:	Edwin Street Options Assessment	32
Figure 3-22:	Yarra Street Options Assessment	33
Figure 3-23:	Waterdale Road Options Assessment	34
Figure 3-24:	Studley Road Options Assessment	35
Figure 3-25:	Hawdon Street Options Assessment	36
Figure 3-26:	Cape Street Options Assessment	37
Figure 3-27:	Summary of the Proposed Bicycle Options	37
Figure 3-28:	Summary of the Proposed Pedestrian Options	38
Figure 0-1:	Walking Classification	40
Figure 0-2:	Cycling Classification	41
Figure 0-3:	Bus Classification	42
Figure 0-4:	Freight Classification	42
Figure 0-5:	General Traffic Classification	43
Figure 0-6:	Overall Movement Classification	44
Figure 0-7:	Place Classification	45

TABLE OF TABLES

Table 2-1:	Four modules of the M&PF	5
Table 2-2:	Strategic Document Review	5
Table 3-1:	Network classification summary of key streets	15

1 INTRODUCTION

Heidelberg is a growing economic hub within the La Trobe National Employment and Innovation Cluster. Heidelberg has a metropolitan level hospital precinct, commercial and retail activity, and key transport nodes and links. The population is increasing and placing pressure on the public realm to deliver greater community value.

The State Government has invested in major transport infrastructure projects including the Suburban Rail Loop (SRL) and North East Link (NEL). This will support growth and enhance accessibility to and from Heidelberg. This is also expected to have a material impact on the role the Activity Centre plays in the region and the role of the transport network in the centre.

Public road reserves provide public realm across the whole area. They provide for movement and also provide spaces for people to recreate and linger. The place function of road reserves is essential to local economic activity. Banyule City Council have therefore commissioned Movement and Place Consulting (M&PC) to undertake an assessment of how well the road reserves are meeting community expectations. This assessment uses the State Government's Movement and Place Framework which is a tool that helps to understand the potential role of each road segment and how to improve its performance in that role. The outcomes of this assessment are intended to inform and advise Banyule City Council in their Heidelberg activity centre structure plan.

The Movement and Place Framework helps to understand the balance that is being sought when considering the competing *movement* and *place* functions of each road. There are four modules to follow when applying the M&PF.

- Module 1 sets the aspirational classification or level of priority for the various transport modes and the road as a place
- Module 2 evaluates the level of service (LoS) aspiration that results from Module 1 and compares that to the current LoS being provided. The greater the difference, between the two LoS, the larger the 'gap' between the current and aspirational roles
- Module 3 develops improvement options that help meet LoS targets
- Module 4 assesses the suite of options and summarises how effective they will be in addressing the network performance gaps.

The remainder of this report is structured as follows:

- Chapter 2 provides a summary of the background to the project
- Chapter 3 outlines the Movement and Place Framework modules, how they were completed and what insights were generated. It summarises the improvement options and details the effectiveness of each option
- Chapter 4 provides a conclusion to the study including next steps to liaise with DoT to better align State and local aspirations for Heidelberg and determine priorities for improving outcomes across the Heidelberg area.

Appendices provide additional detail regarding aspirational targets for each road segment by various modes and why these aspirations are important.

2 BACKGROUND

This section of the report details the site context, transport network, overview of the Movement and Place framework and a review of key strategic documents.

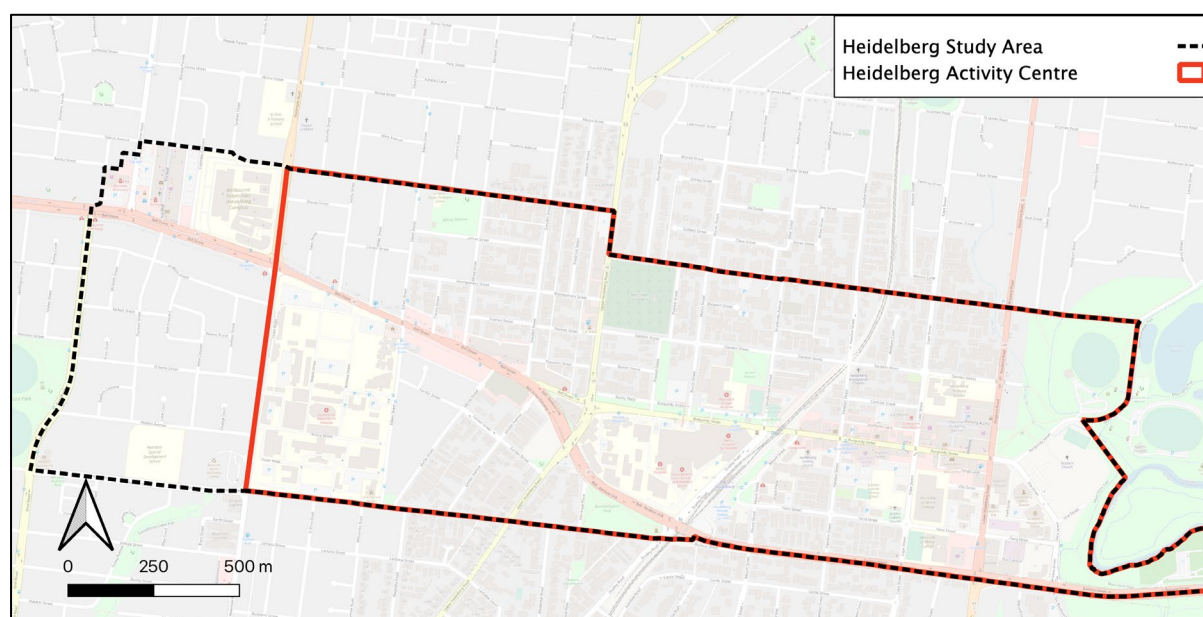
Site Context

The Heidelberg Activity Centre is a key health and employment node within the La Trobe National Employment and Innovation Cluster (NEIC). The Activity Centre includes three distinct land use and activity generation areas:

- The eastern segment of Heidelberg Activity Centre supports a retail and commercial precinct including a well-established shopping strip along Burgundy Street and Warringal Shopping Centre. The area also includes several schools with activity often spilling over into the retail precinct during school drop-off and pick-up periods;
- The central segment is the medical precinct including Austin Hospital, Warringal Private Hospital and many allied health businesses. There are some transport challenges due to the steep terrain and the low permeability across the hospitals; and
- The western segment, referred to as Heidelberg Heights, is a mixed-use area, with many low-density activities such as car sales yards currently being replaced with multi-storey apartment buildings. Council has approved planning permits for several apartment buildings in this area (totalling around 1,000 additional dwellings).

The study area also includes the immediate area west of the Activity Centre boundary including Melbourne Polytechnic's Heidelberg campus and the Bell Street Mall shopping centre as shown in Figure 2-1 below.

Figure 2-1: Heidelberg Study Area



Transport Network

The road network within the Heidelberg study area is extensive, consisting of multiple arterial roads and an internal grid of local streets. Key arterial roads including Bell Street and Banksia Street provide crucial east-west connections to neighbouring areas including Preston and Bulleen. North-south movements are supported by Oriel Road, Lower Heidelberg Road-Rosanna Road and Upper Heidelberg Road.

Several local streets including Cape Street and Hawdon Street provide access to the retail core of the Activity Centre. This enables a high level of accessibility for people travelling to, from and within the Activity Centre by private vehicle.

Heidelberg Station provides connectivity to suburbs on the Hurstbridge train line such as Greensborough, Eltham, Clifton Hill and the CBD. Bus Routes 513, 546, 551 & 903 use Burgundy Street to access Heidelberg Station. Bus Routes 350, 549, 250 & 955 (night bus) operate along Oriel Road (the western boundary of the study area).

Heidelberg is connected to local and regional bicycle networks. The Main Yarra Trail provides a key off-road bicycle path connecting various suburbs along the trail. End of trip facilities are provided including bicycle racks and secure bicycle parking at the station. However, on-road bicycle infrastructure is sparse and not well connected – particularly through intersections (which are key conflict points that lack safety). A lack of connected bicycle infrastructure, providing meaningful access to key activity generators limits the use of bicycles for transport and reduces overall network efficiency (particularly when locals who would prefer to ride a bicycle feel forced to drive).

The pedestrian network provides extensive coverage with footpaths on both sides of most streets. However, some locations are not accessible for people with a disability due to the poor surface conditions, lack of tactile indicators at intersections or steep terrain.

The extensive connectivity of the road network, in part, has resulted in most people travelling to the Heidelberg Activity Centre by private vehicle for all purposes including work, shopping and hospital visits.¹ Banyule City Council has identified the need to encourage mode shift behaviour and increase the transport choices available for residents and visitors.

Accessibility is expected to improve in the future with the proposed North East Link (NEL), Suburban Rail Loop (SRL) and rail capacity increases resulting from the duplication of the Hurstbridge line. These projects will increase the catchment area, allowing a greater number of visitors easier access to Heidelberg, as well as providing Heidelberg residents with better access to suburbs along these transport routes.

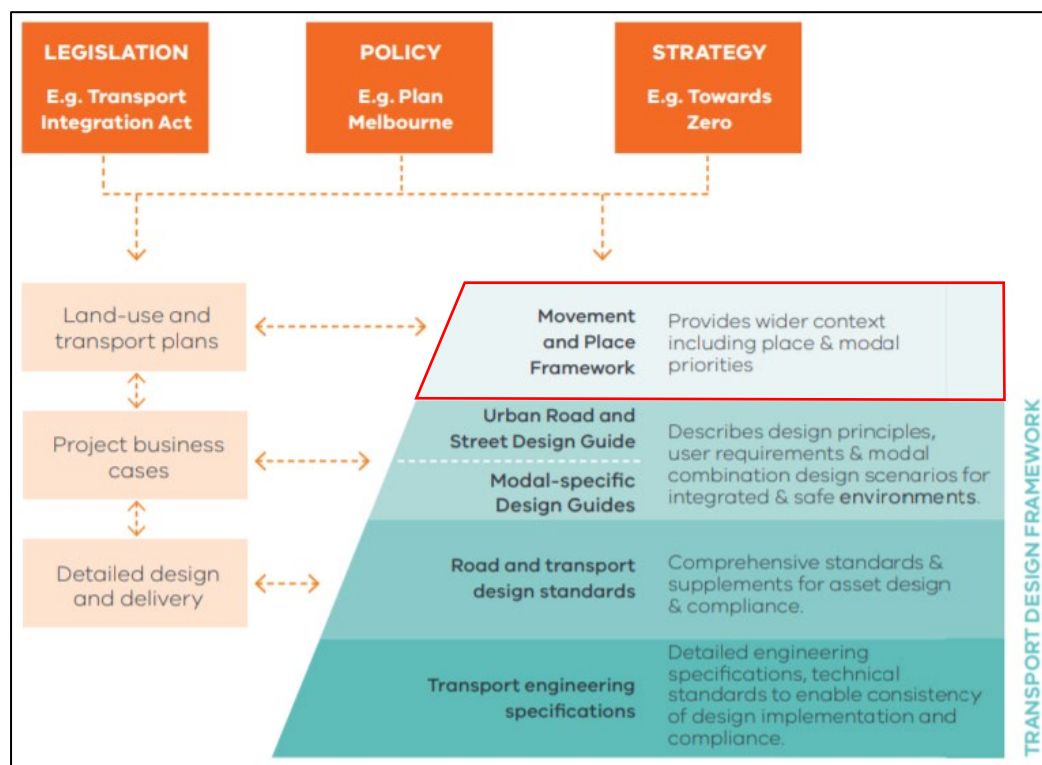
Overview of the Movement and Place Framework

The Movement and Place Framework (M&PF) is a tool to translate the broad transport outcomes envisioned by overarching state-level strategies, legislation, and policies into actionable changes to improve movement and place performances for communities.

¹ Heidelberg Structure Plan 2007 (updated 2010)

The M&PF is the first element of the Transport Design Framework (TDF) and provides high-level guidance on place and modal priorities.² This in effect informs the technical specifications of how the transport network is designed. The role of the M&PF within the wider strategic planning hierarchy is illustrated in Figure 2-2 below.

Figure 2-2: The role of the M&PF



Source: Movement and Place – Urban Road and Street Design Guide

At its core, the M&PF recognises that streets perform multiple functions. This includes the traditional consideration roads are used for the *movement* of goods and people but also considers transport links as key *places* and destinations.

Often these two functions have competing demands. Not all streets can be popular destinations, just as not all streets can prioritise movement. It is important to balance these functions to ensure an integrated transport and land use outcome.

The M&PF addresses this by aiming to balance the competing needs more equitably. This ensures a more holistic approach can be taken when planning out how best to allocate the limited public space for various uses. Applying the M&PF, the aim is to enhance transport outcomes, but also create vibrant and safe dwelling spots which enrich the lives of the people around it.

Through four modules, the framework organises the transport links by their *movement* and *place* roles. A set of priority uses, performance measures and potential interventions are then developed for each road and street. The scope for each module is detailed in Table 2-1 overleaf.

² The TDF defines the mechanism of how transport infrastructure is designed and built to meet required standards and specifications as well as wider transport objectives.

Table 2-1: Four modules of the M&PF

Overview of the M&PF	The focus of each module
<p>Source: Department of Transport</p>	<p>Module 1: The aspirational <i>movement</i> and <i>place</i> function is defined for each individual transport link. The movement classification is broken down further to the function each mode plays on each link. Often these functions can change several times along a road's length.</p>
	<p>Module 2: The current performance (level of service) is analysed for the themes of movement, place, road safety and environment. This is benchmarked against the aspirational level of service for each theme. The 'gap' between aspirational and existing, also known as the strategic focus score (SFS), informs Module 3.</p>
	<p>Module 3: This module turns strategic aspirations into action. The level of service 'gap' informs the development of different intervention options.</p>
	<p>Module 4: Each option is assessed based on the improvement to the level of service.</p>

Strategic Document Review

As part of the movement and place analysis, and to gain some context into the challenges, goals, and future plans of the Heidelberg activity centre, M&PC have undertaken a strategic document review of relevant plans and strategies for the Heidelberg area. Table 2-2 outlines a summary of the insights gained from the review.

Table 2-2: Strategic Document Review

Document	Key Insights
Heidelberg Structure Plan (2007)	<ul style="list-style-type: none"> Private Vehicle is the predominate mode of transport. This produces traffic congestion and conflicts with pedestrian and cyclist movements. Also leads to a poor quality built environment The plan advocates for reduced reliance on vehicles. Focus is also placed on demand reduction measures for parking through improved parking management controls.
Banyule Integrated Transport Plan 2015 – 2035 (2015)	<ul style="list-style-type: none"> Favours connectivity and diversity in mode share to reduce car dependency Activity centres should prioritise pedestrian and public transport modes and reduce the construction of new or wider roads Challenges when assessing changes to the network were: population growth, congestion, freight movement, sedentary lifestyles, ageing population, social inclusion, parking, environmental issues and safety.

Document	Key Insights
Banyule Walking Strategy (2018)	<ul style="list-style-type: none"> Identified the need to provide a high quality, integrated, safe walking network that connects people of all abilities to activity centres, parks, transport and schools Solutions identified were developing and promoting accessible walking circuits, identifying missing walking links in activity centres, as well as consideration of cyclist-pedestrian conflicts on shared paths.
Heidelberg Liveability Study (2020) by PlaceScore	<ul style="list-style-type: none"> Heidelberg's liveability score (63) is lower than the national average (66) People were choosing non-active transport due to fear of safety and poor walking conditions Best Performing Attributes include (1) Local Businesses that provide for daily needs (2) Access to neighbourhood amenities (3) Social Inclusion Worst Performing Attributes: Things to do in the evening (48), Sustainable Urban Design (49) and Ease of driving and parking (50).
Heidelberg Major Activity Centre Economic Review (2020) by Charter Keck Cramer	<ul style="list-style-type: none"> Identified the centres health precinct as the most significant medical node in the Victorian health care network Outlined the economic effect of COVID on businesses, as well as the potential permanent changes to travel, work, and spending patterns North east link and suburban rail loop identified as possible sources of commercial investment due to improved accessibility.
Heidelberg Activity Centre Public Realm Strategy (2019) by SJB	<ul style="list-style-type: none"> Calls for a need to prioritise pedestrian movement at intersections, on streets and near high density development Highlights Burgundy Street, Cape Street, Bell Street and Heidelberg Road as key corridors for future focus.

3 MOVEMENT AND PLACE ASSESSMENT

A Movement and Place Assessment of the Heidelberg Study Area was undertaken by applying the four modules of the M&PF. This section outlines the key insights for each module.

Network Classification (Module 1)

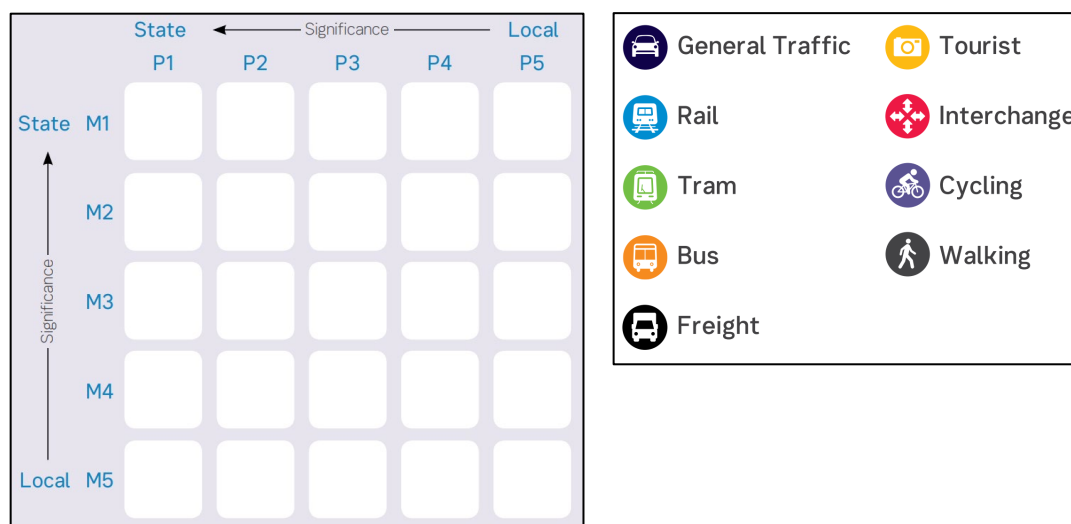
The first module focuses on the aspirational classification of the network links.

Through several workshops Council's aspirational classifications for the walking, cycling, freight, bus, rail and general traffic networks were determined. Council's aspirational place function of the study area was also defined. The process for determining Council's aspirational classifications started with a base using DoT's aspirational network classifications to maximise alignment where possible.

In comparison to the DoT's aspirational vision for Heidelberg, Council, in general, championed for an enhanced priority for walking and bicycle riding as well as to foster a greater sense of place.

For each road link, the aspirational *movement* classification was defined based on a M1 to M5 scale. Similarly, the aspirational *place* classification was defined based on a P1 to P5 scales. Each of these scales represent the link's significance at a state (1), regional (2), municipal (3), neighbourhood (4) or local (5) level. Figure 3-1 outlines the matrix used to determine the mix and balance of the transport function and the character of the place.

Figure 3-1: Movement and Place matrix & modes



Source: Department of Transport, Movement and Place Framework

The Movement function is examined future by mode. This enables the sub-movement types to be defined in a hierarchy, ensuring certain modes are given priority at certain links. A similar approach to the movement and place classification is adopted to classify each mode. This includes general traffic (GT1 to GT5), rail (R1), bus (B1 to B5), freight (F1 to F3), walking (W1 to W5), cycling (C1 to C4) and interchanges (I1 to I5). Tourist routes are yet to be defined in the M&PF and therefore, are not included in this analysis.

Applying Module 1 - Aspirational Classification

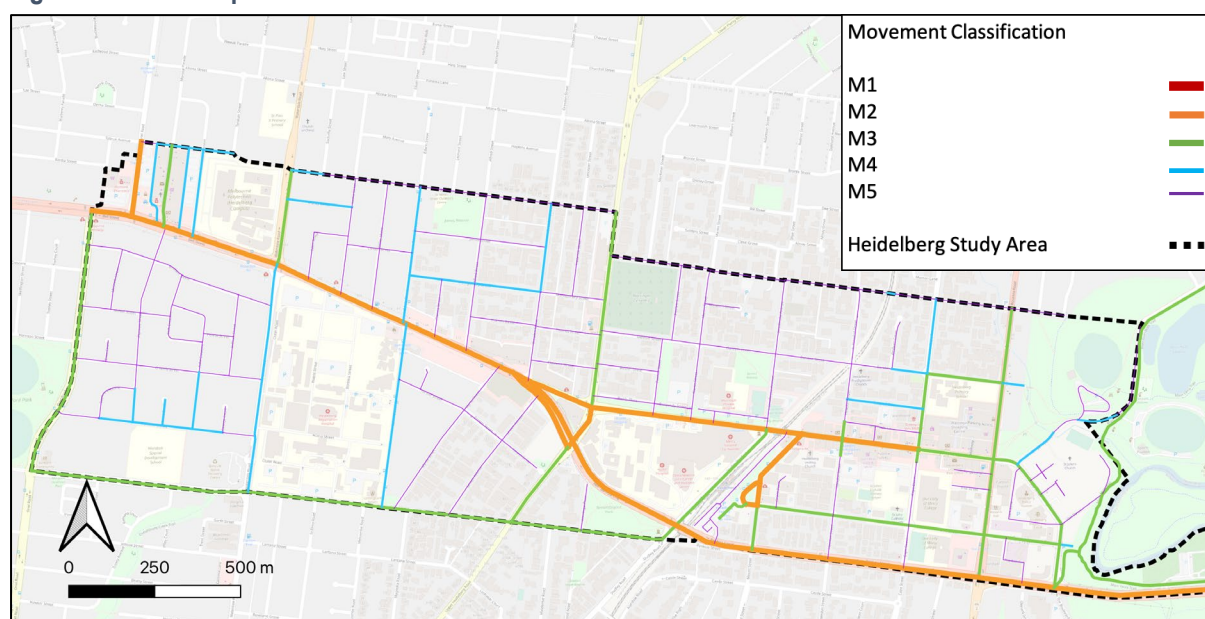
Council's aspirational movement and place classifications of the road network was determined with the future growth of Heidelberg in mind. This included consideration of the land use intensification resulting from the development of increased high density dwellings and the delivery and impact of key transport infrastructure projects such as the North East Link. The classifications outlined below were extensively workshopped with Council and reflect Council's strategic vision for Heidelberg.

It is important to note that DoT has their own aspirational classification for every street in Victoria. A process subsequent to this project will be required to align the differences between the two aspirational classifications developed by DoT and Council.

Overall Movement Classification

The aspirational movement classification for the Heidelberg Study Area is outlined in Figure 3-2 below. The highest movement classifications are located predominantly on key arterial roads including Bell Street, Banksia Street (east of Bell Street), Bell-Banksia Link, Oriel Road (north of Bell Street) and parts of Burgundy Street. Mount Street has also been assigned an M2 classification. Each of these links supports significant movement of people and or goods. Some have a regional level of importance as they support high frequency bus movements.

Figure 3-2: Aspirational Movement Classifications



Oriel Road (south of Bell Street), Banksia Street (west of Studley Road), Upper Heidelberg Road, Lower Heidelberg Road/Rosanna Road, Jika/Dora Street and Yarra Street were classified as a M3. These support moderate movement of people and goods. These links have been assigned a municipal level of importance (M3) as they largely support primary bicycle riding routes.

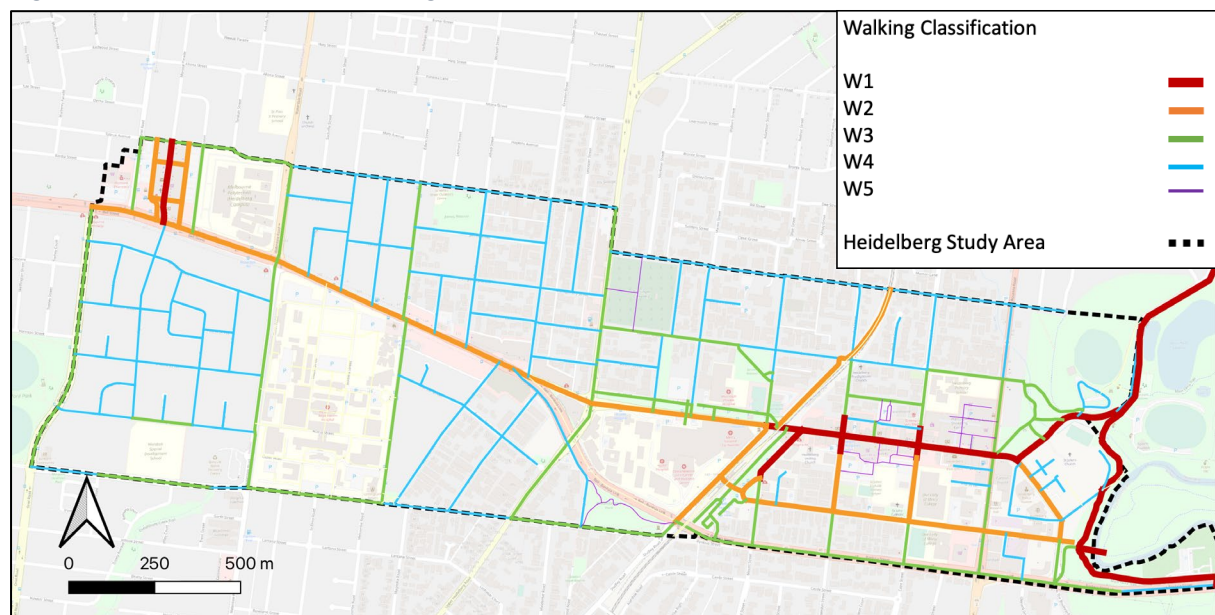
Walking Classification

Pedestrian amenity and priority should be focused on W1 assigned links including Burgundy Street. Burgundy Street is a key pedestrian link providing access to the main shopping strip in Heidelberg, the train station and the Main Yarra River Trail. Mount Street is also classified as a W1 in order to facilitate pedestrian connections from Heidelberg Station to Burgundy Street. A W1 classification indicates Council's aspiration for State significant walking, supported by population growth and key transport projects such as the Suburban Rail Link.

Aspirations for Bell Street are classified as W2, given the need for this link to support increased dwelling densities and mixed land uses. Studley Road, the rail trail, the station underpass, and Yarra Street are also assigned a W2 classification as they provide critical access to other key locations within Heidelberg's core. Improvements will be needed along key W1 and W2 corridors to ensure walking as a mode of transport is viable and encouraged.

Council's aspirations across the whole area are shown in Figure 3-3 below. It should be noted that in many cases Council's aspirations for walking classifications are lower than DoT's established classifications (most notably the DoT aspirations have many more W2 settings on arterial roads including the Bell-Banksia Link). This may be due to the fact that DoT took a high level approach to the walking classification, based on land use zoning, whereas Council has taken a more fine grained approach based on a site visit.

Figure 3-3: Aspirational Walking Classifications



Bicycle Classification

Council's aspirations for the bicycle network include four C1 corridors proposed to provide north-south connectivity through Heidelberg:

- Oriel Road
- Edwin Street/Montgomery Street/Dresden Street
- Studley Road/the proposed rail trail

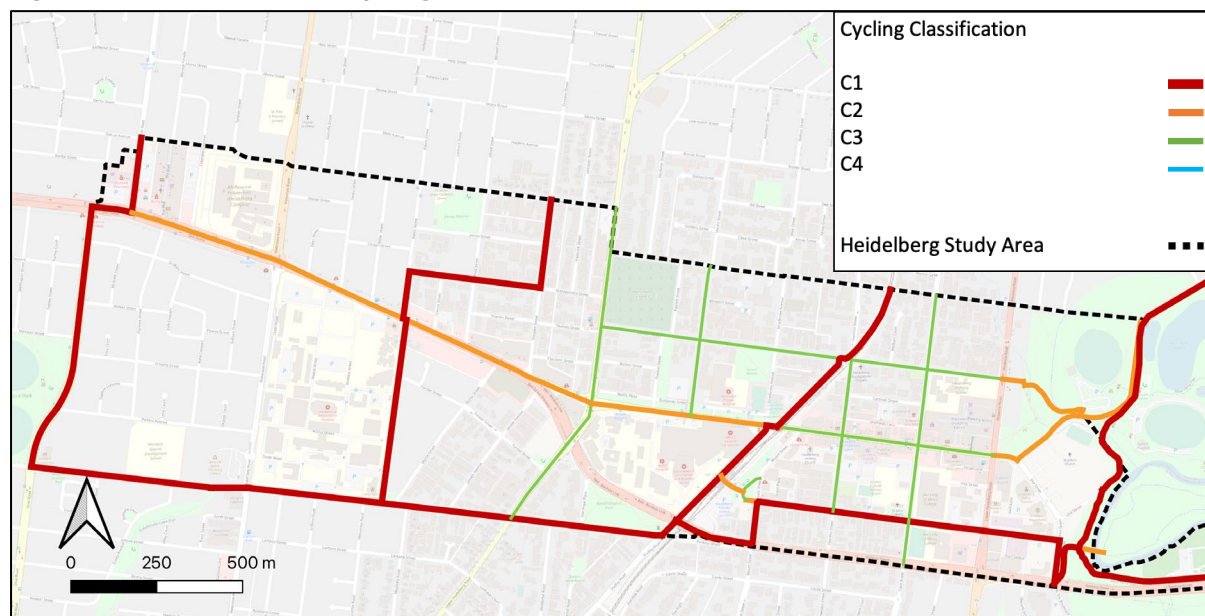
- Main Yarra Trail.

A C1 classification denotes a primary route which forms a core network of bicycle riding corridors to areas of state significance. Within these corridors, bicycle infrastructure improvements will be needed to create a safe environment for bicycle riders and priority for them at intersections. Yarra Street and Banksia Street (west of Studley Road) is also marked as a C1. These links provide critical east-west connection within the Heidelberg Study Area.

The C2 and C3 cycling links are strategically placed to provide access to the C1 links and provide connection to key activity generators within Heidelberg. This includes C2 links on Bell Street and C3 links on Hawdon Street, Cape Street and Darebin Street.

Council's aspirations for the bicycle network are shown in Figure 3-4 below. It should be noted that in many instances Council's aspirations for the bicycle network are higher than DoT aspirations. For instance, the DoT aspiration for the Main Yarra Trail is classification C2, whereas Council as an aspiration that it be a C1 (of highest State significance).

Figure 3-4: Aspirational Cycling Classifications



Bus Classification

Bus network aspirations typically reflect the existing bus network with some minor tweaks. Council's aspiration for the bus network includes B1 classifications for:

- Oriel Road (north of Bell Street)
- Burgundy Street
- Mount Street.

The B1 classification is the highest classification, representing 25 or more bus services in the peak hour. In these instances Council's aspirations for the bus network are higher than DoT aspirations, however this could be due to errors in the DoT data. For instance the DoT aspiration for bus movements on Burgundy Street is classification B2 (despite there currently being more than 25 bus movements in the peak hour). By contrast, Council's aspiration is for

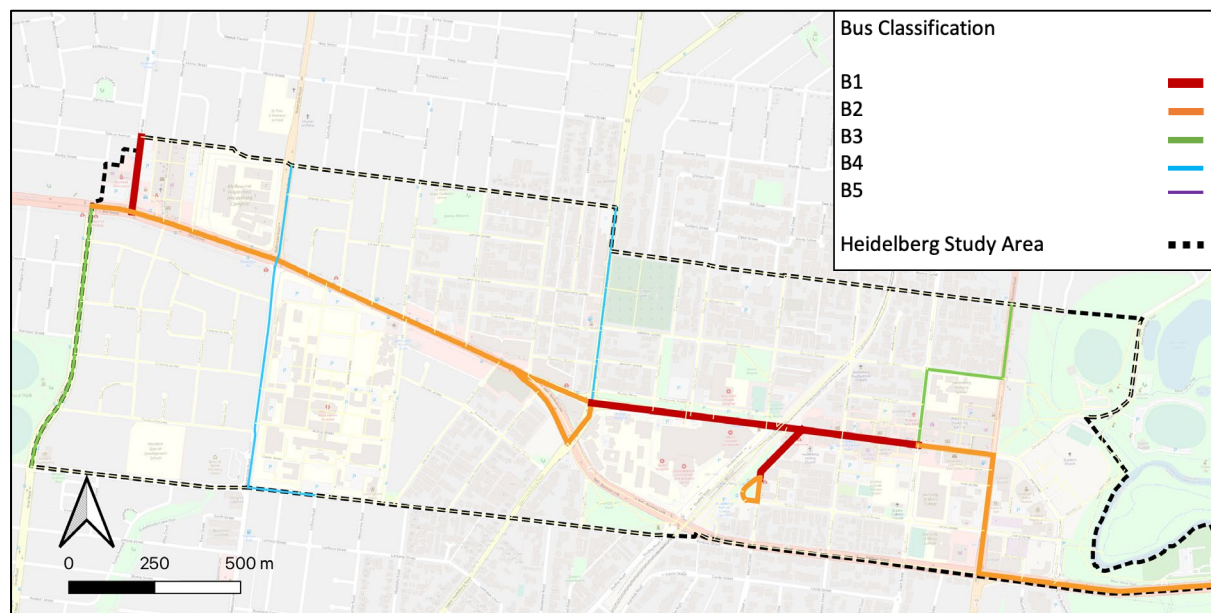
Burgundy Street to be classified as B1 (simply because it currently caters for the number of bus movements that a B1 classification represents).

A B2 classification applies to other corridors leading to the B1 segments, as they represent the next highest frequency bus services.

It is also worth noting that Council's aspiration is to have a bus route on Waterdale Road to serve the Melbourne Polytechnic site and the western edge of the Repatriation Hospital site. A B4 classification is proposed for Waterdale Road (currently no bus service operates on Waterdale Road within the study area). This could be served by realigning Route 548. This is proposed to increase operational efficiency of the bus network while removing the conflict between buses and bicycle riders in Edwin street which is classified as the highest quality (C1) type of bicycle corridor.

Council's aspirations for the bus network are shown in Figure 3-5 below.

Figure 3-5: Aspirational Bus Classifications



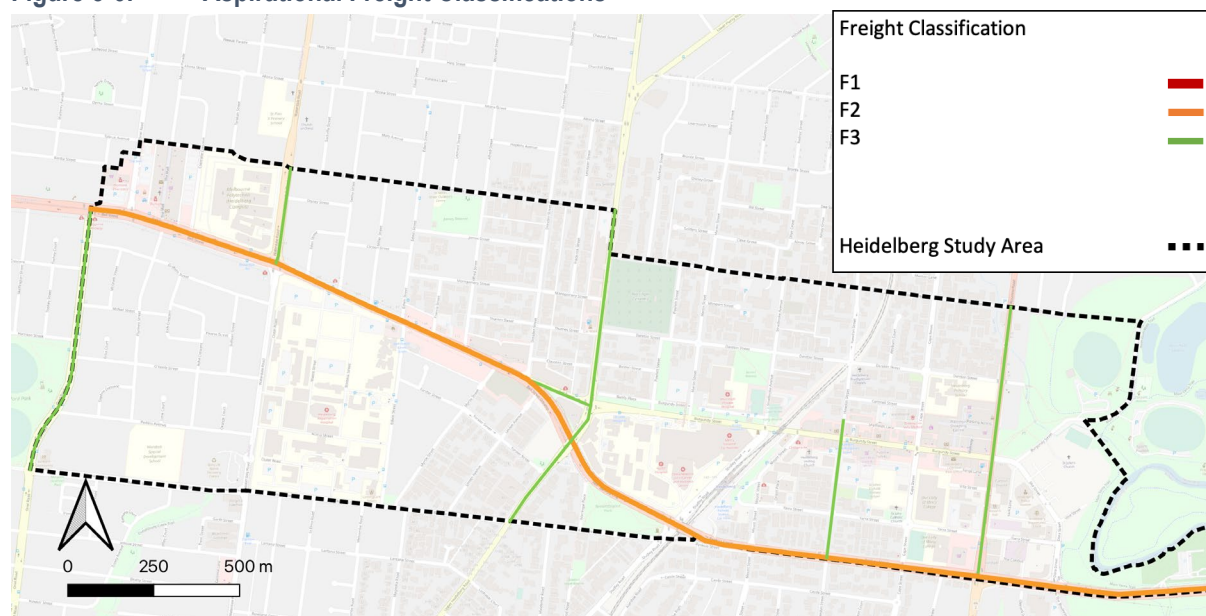
Freight Classification

Council's aspiration for the freight network reflects the role that North East Link will play, specifically relieving Rosanna Road of its current role in the Principal Freight Network (PFN). This results in Council's aspirational for Rosanna Road being classification F3. This classification represents a freight access route although their movement is not a priority. Likewise, NEL should enable Burgundy Street to be removed from the PFN, to reduce the number of heavy vehicles passing through the town centre.

Council's aspiration is that Hawdon Street remain an access route for the delivery of goods to the activity centre.

Bell Street and Banksia Street are expected to remain as preferred freight priority routes and Council's aspirational classification is F2 (the same as DoT). Council's aspirations for the freight network are shown in Figure 3-6 overleaf.

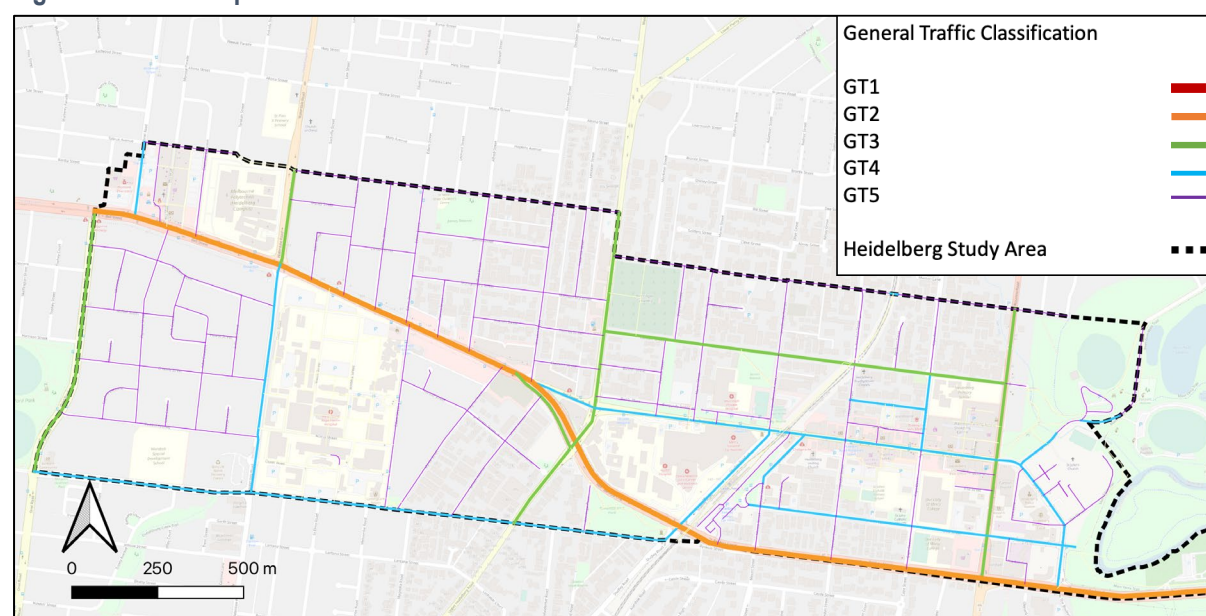
Figure 3-6: Aspirational Freight Classifications



General Traffic

Council's aspiration for the General Traffic network typically aligns with the DoT aspirational classifications. As a result of NEL, an increase in east-west vehicle movement is expected. Council's aspiration is to encourage this movement on Bell Street and Banksia Street which have been assigned a GT2. An exception was Burgundy Street which Council aspires to perform with a GT4 classification to reduce through traffic and focus on vehicles that are doing business in Heidelberg's core area. To cater for traffic circulation needs around the centre, Council's aspiration is to deviate traffic onto Darebin Street which has elevated to a GT3 classification. Council's aspirational classifications for the general traffic network are shown in Figure 3-7 below.

Figure 3-7: Aspirational General Traffic Classifications



Note that like other aspirational classifications, the aspiration can exist without a need for any road network changes. Improvements are only considered where a gap arises between the aspirational performance of a link and that link's actual performance.

Place Classifications

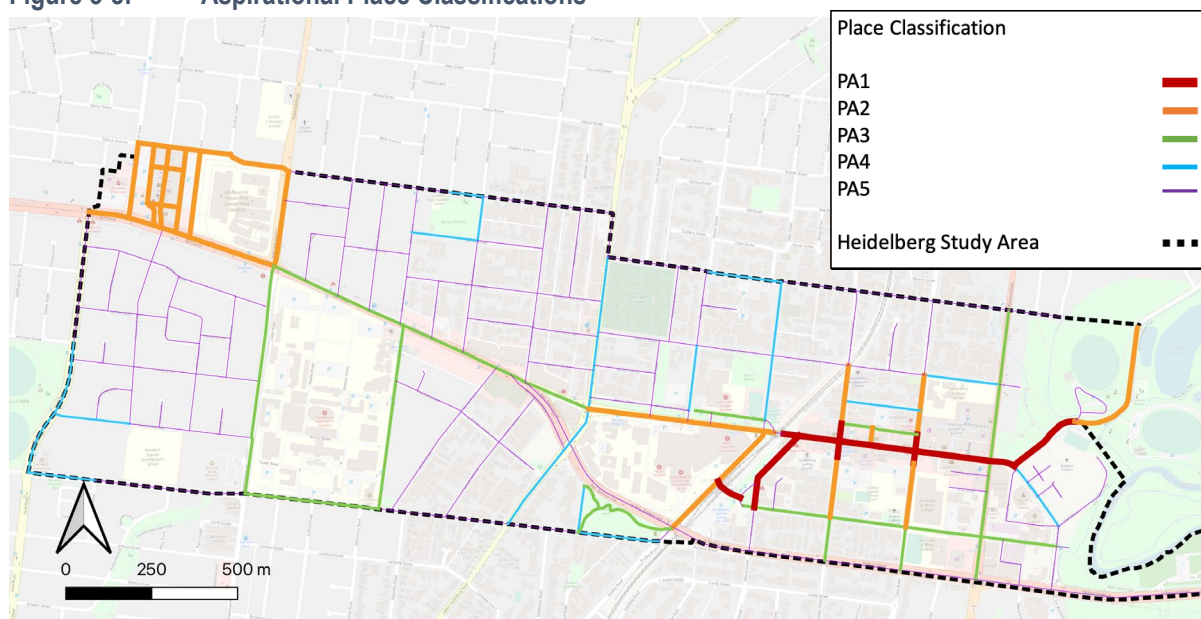
Heidelberg, located in the La Trobe NEIC, is forecast to grow. This growth is already observed through an increase in residential development on Upper Heidelberg Road and along Bell Street. Major transport projects such as the Suburban Rail Loop and the North East Link will also make Heidelberg more accessible. This will likely increase the amount of activity in Heidelberg. In order to ensure mobility, liveability and economic outcomes are maintained, a focus will need to be placed on the amenity of the local area.

As the focal point of the retail core, Burgundy Street (east of the train tracks) is a key location of State significance (particularly with the hospitals, access to internationally renowned cultural institutions such as Heidi MOMA and a key transport hub at Heidelberg Station). Council's aspiration is to see Burgundy Street fulfil its state level role, reflected in an aspirational PA1 classification. Maximising the place function in Burgundy Street is about ensuring a vibrant activity centre where locals and people from a wide ranging catchment are encouraged to visit and spend time and money in the local area. Activity is also encouraged along the side streets intersecting Burgundy Street including Hawdon, Mount and Cape Streets (also classified as a PA1).

Given the significance of the Bell St Mall from a regional community, rich heritage and ongoing anchor for significant State investment in nearby public housing assets, this link was increased to a PA2. To support Council's vision of it being a high functioning place, the surrounding access links, including the car park, were also classified as PA2. Increased development along Bell Street has led to a PA3 classification. This reflects the Council's aspiration to see active building frontages developed along the Bell Street corridor in future.

Council's aspirations for areas surrounding the healthcare precinct, including Burgundy Street (west of the train tracks) and Studley Road see them classified as a PA2. This supports the vision of creating a place for train users, hospital employees and patients to congregate and dwell. The place ratings also reflect the evolving importance of the hospital precinct in the Activity Centre. Currently a master plan is being developed for all hospitals in the Activity Centre noting the need to enhance pedestrian accessibility, emergency vehicle access and the sense of place. Council's aspirational place classifications align with aspirations of the health precinct stakeholders and are shown in Figure 3-8 below.

Figure 3-8: Aspirational Place Classifications



Network classification summary of key streets

Council's aspirational classification of key streets within the study area are summarised in Table 3-1 below.

Table 3-1: Network classification summary of key streets

Segment	Summary
Bell Street	Bell Street is an important general traffic and freight corridor. However, this needs to be balanced with a focus on maximising the place function and enhancing bicycle riding and walking movements.
Burgundy Street (east of the train tracks)	Burgundy Street is the main shopping strip in Heidelberg. The aim is to enhance the place function while reducing the priority given to through traffic and freight. A focus is also placed on enhancing the movement by bus, walking and bicycle riding.
Burgundy Street (west of the train tracks)	Closer towards the hospital precinct, Burgundy Street has been identified as a PA2, reflecting its role in providing for emergency and non-emergency access to the hospitals. There is a need to maximise the sense of place along this link. Priority is also given to bicycle riding, bus movements and walking (through pedestrian links to the hospital).
Banksia Street (east of Studley Road)	Banksia Street is an important general traffic and freight corridor. Further east beyond Lower Heidelberg Road, bus movements will also need to be prioritised.
Banksia Street (west of Studley Road)	Banksia Street is a key bicycle riding corridor. A C1 classification has been assigned. Walking movements are also prioritised on some segments of Banksia Street. Through traffic on Banksia Street is not encouraged.
Upper Heidelberg Road	Upper Heidelberg Road has an aspirational place function as a neighbourhood place of significance (serving people with activities that attract people from the immediate areas). From a movement perspective, this link is envisioned as a municipal access route for walking, bicycle riding, general traffic and freight (M3).
Rosanna Road/ Lower Heidelberg Road	Freight movements on Rosanna Road should reduce significantly once North East Link has been completed. This is reflected in a classification of F3, indicating that freight will still use the link but it is not a priority movement. Bus movement needs to be prioritised given the B2 classification while a vision for the place function to be maximised.
Bell Street Mall	Bell St Mall is envisioned as a focal point for Heidelberg West. The aspirational classification aims to enhance the <i>place</i> function and prioritising pedestrian movement.
Edwin Street	Edwin Street is an aspirational primary bicycle riding corridor and is classified as a C1. Edwin Street also has a GT5 classification denoting the desire to reduce through traffic and rat-running on this narrow street.
Yarra Street	Due to the connection between the station and the Main Yarra Trail, Yarra Street is part of the primary bicycle riding corridor (C1). The sense of place is also a focal point, given the proximity to Burgundy Street. A PA2 classification has been assigned. Walking is also a key priority for Yarra Street with a W2 classification.
Waterdale Road	Waterdale Road has a primary designation on the PPN, meaning that walking is a high priority and therefore has been assigned a W3. The place function is another priority for Waterdale Road. Bus Route 548 is proposed to operate along Waterdale Road reflecting its B4 classification.
Hawdon Street & Cape Street	Both Hawdon Street and Cape Street prioritise walking and bicycle riding movements. The sense of place is also a focal point given the close proximity to Burgundy Street. The focus is on fostering a regionally significant place of activity. Hawdon Street, is envisioned as a freight route for the shops and services in the retail core as freight is not actively encouraged on Burgundy Street. A F3 classification has therefore been assigned.

Network Evaluation (Module 2)

The second module of the framework focuses on analysing the **current** and **aspirational** performance of the network. Performance is measured across four broad themes, including:

- Movement: Transportation of people and goods
- Place: Accessibility and amount of activity available
- Safety: Considered for the safety of every user of the network
- Environment: Built and natural environment.

For each theme, there are a number of performance indicators as shown in Figure 3-9 below.

Figure 3-9: Network Performance Indicators

Theme	Indicator	Description of Level of Service
Movement	Travel Speed	A-E score considering operating speed and signed speed. Scores are reported for General Traffic, Buses, Trams and Freight.
	Cycling	A-E score based on level of traffic stress faced by cyclists as determined by infrastructure and speed limits.
	Walking	A-E score based on the likely delays faced by pedestrians at crossings.
Place	Accessibility	A-E score measuring distance of segment from public transport.
	Safety and Comfort	A-E score measuring whether the environment supports on street activity through the sense of safety and comfort it offers pedestrians.
Road Safety	Crash History	A-E score based on the number of crashes occurring on the segment relative to other segments.
Environment	Greenhouse Gas Emissions	A-E score considering whether vehicles (generally traffic and heavy vehicles) on the road are operating at the speeds at which they are most energy efficient.
	Noise	A-E score based on estimated noise emitted by traffic.

Source: Department of Transport, Movement and Place Technical Appendix

Network performance indicators were used for this project as opposed to Project performance indicators which require the collection of more fine grain local data. The use of Network performance indicators ensures:

- Focus is on the wider network and informs strategic directions
- Key locations on the network are identified to target interventions or investment
- Issues relevant to a project scope area are identified to assist in business case development.

For each of the performance indicators, the **current level of service** (LoS) was calculated in accordance with the Movement and Place Technical Appendix³. The **aspirational** performance of the network is influenced by the network classifications specified in

³ Refer to APPENDIX B – NETWORK PERFORMANCE INDICATOR ASSUMPTIONS and the Movement and Place Technical Appendix for additional insights on calculating LoS

Module 1. Based on the various classifications, a *minimum level of service* is defined for each performance indicator.

Across the wider study area, the key gaps between the current and aspirational classification related to bicycle riding and walking priority and the need to enhance the sense of place. This analysis was also conducted at a finer grain level on a street by street basis. This provided insights into the gaps present at key streets within the study area.

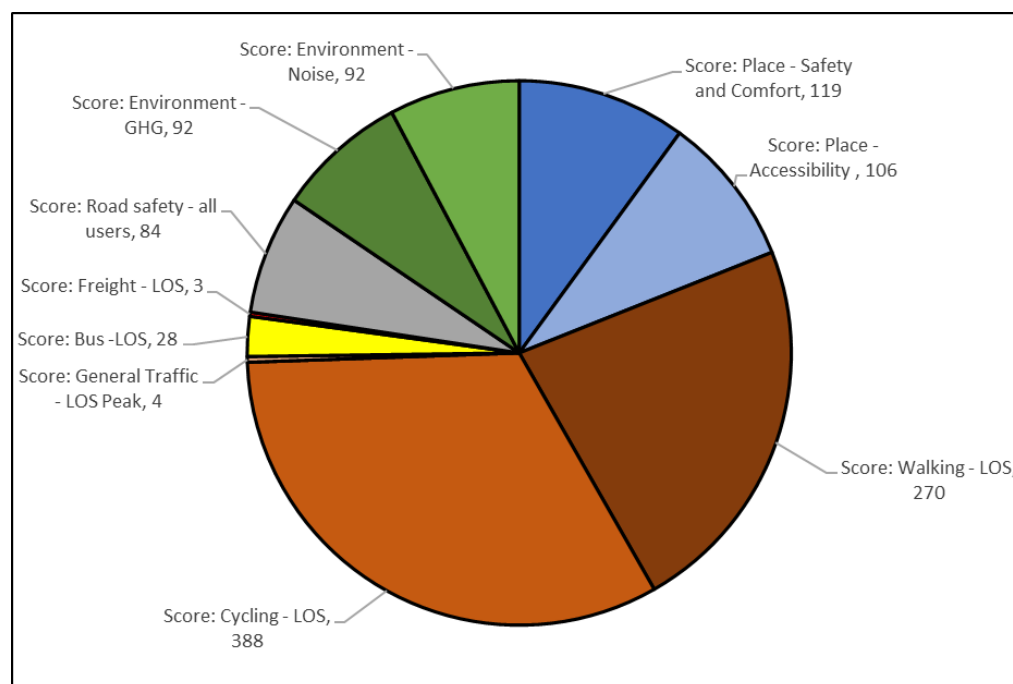
Strategic Focus Score

Using the *minimum level of service* (LoS A-E) and the *current level of service* (LoS A-E), a Strategic Focus Score (SFS) is calculated for every indicator for each network link. This process converts the qualitative A to E LoS into a numerical value⁴. The SFS is calculated with the numerical representation of the *current level of service* being subtracted from the numerical representation of the *minimum level of service* for each road link.

The SFS provides a clear indication of the themes and indicators underperforming at a network level and at a street-by-street level. The larger the SFS, the greater the 'gap' between the current performance and the aspirational performance. The aim of the M&PF is to identify these shortfalls and remedy them through appropriate infrastructure interventions.

At a network level, the critical issues relate to the lack of bicycle riding and walking priority. These two modes make up over 50% of the shortfall. This indicates there is a clear need to prioritise walking and bicycle riding within the Heidelberg study area. In contrast, the shortfall for general traffic and freight are substantially lower. The network wide SFS outcomes are shown in Figure 3-10 below.

Figure 3-10: Network-wide Strategic Focus Scores



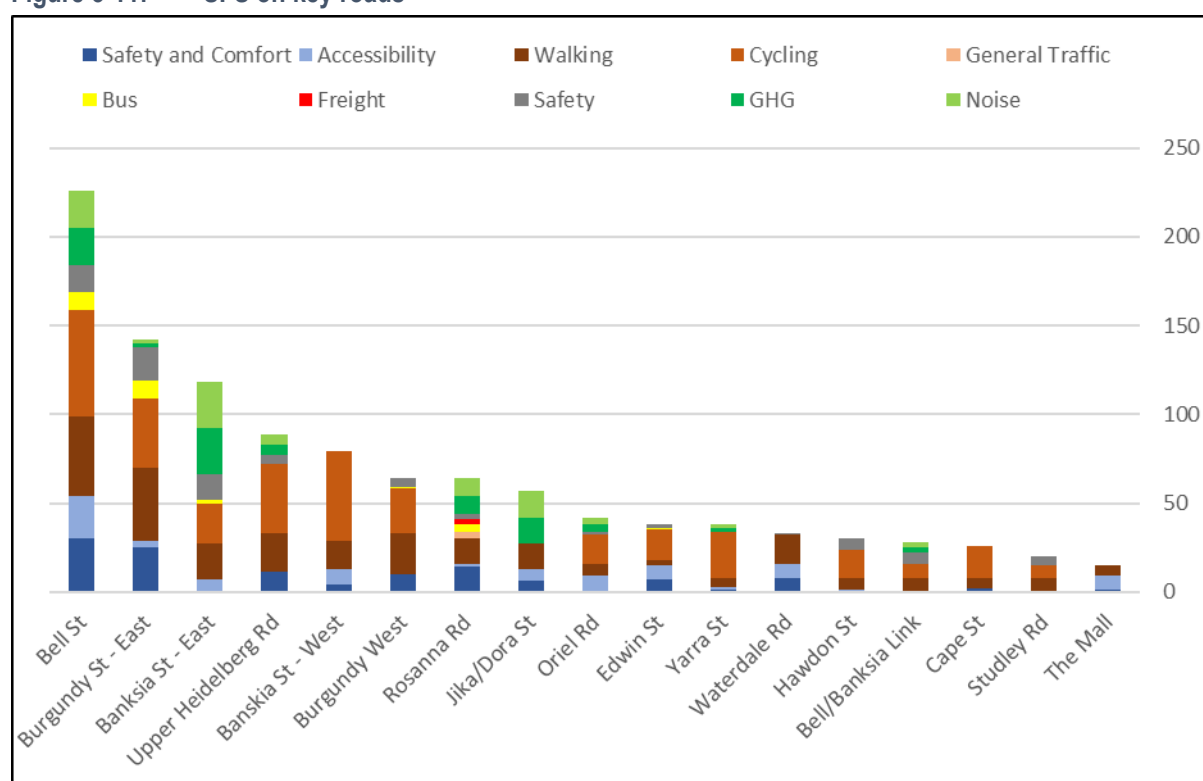
⁴ LoS A = 0, LoS B = 1, LoS C = 2, LoS D = 3 & LoS E = 4

The network-wide SFS also indicate there is a need to enhance the local sense of place. Interventions should focus on creating an environment which supports on street activity by maximising safety and comfort it offers pedestrians in addition to improving public transport accessibility.

The environmental impact of the transport network is another theme which has a large shortfall. Measures should be taken to reduce the impact of the green house gas emissions and noise pollution. Such improvements can be made by encouraging greater levels of mode shift.

The M&PF also enables the network level issues to be broken down further on a road by road basis. This enables any infrastructure interventions to be targetted, along specific roads, so as to address the shortfall. Figure 3-11 outlines the SFS for key roads within the Heidelberg study area.

Figure 3-11: SFS on key roads



The magnitude of the *total* shortfall for each of the roads is almost irrelevant. The total magnitude of the shortfall is based on the summation of the individual SFS for all links which make up a specific road. The more links a specific road has, the more likely it will have a higher *total* shortfall. For example, Bell Street has more links than the Mall, as such, the *total* shortfall will likely be greater. The *total* magnitude of the shortfall can, however, inform the priority list, of which roads to target interventions first.

The most important insight from Figure 3-11 are the *relative* magnitudes of the individual indicator shortfalls specific to each street independently. For example when examining Bell Street, the critical issues relate to bicycle riding and walking which make up almost 50% of

the road's entire shortfall. This is followed by a need to improve the sense of place along Bell Street as safety, comfort and accessibility shortfalls make up about 20%.

As seen in Figure 3-11, each road has different gaps in performance specific to the community aspirations and infrastructure provided. Banksia Street (west of Studley Road) has a large shortfall in bicycle facilities, whereas Jika/Dora Street has a large environmental shortfall. The intervention options developed as part of Module 3 are largely informed by the Strategic Focus Scores at a network and road segment level.

Options Development and Assessment (Module 3 & 4)

The SFS identified the key indicators and themes which need to be addressed for the road's aspirational performance to be realised. This understanding informed the intervention options developed for the Heidelberg study area. The infrastructure options were developed in consultation with Council and the Department of Transport.

The developed options include a number of overarching **initiatives** to improve specific elements of the network. For each **initiative**, multiple **options** may be proposed. Various **options** were packaged up, as a **suite**, to ensure a robust set of infrastructure interventions were developed to address the shortfall resulting from multiple indicators (Module 3).

At this stage, several infrastructure interventions were proposed for the study area. This primarily related to improved bicycle rider and pedestrian facilities along Bell Street, Banksia Street, Burgundy Street, Oriel Road, Studley Road, Lower Heidelberg Road and Jika/Dora Streets.

Each **suite** of options was evaluated as part of Module 4. The evaluation process involved calculating the LoS (for each indicator specified in Module 2) resulting from the application of the interventions detailed in each **suite**. The LoS improvements resulting from the interventions will reduce the shortfall. The assessment of options involved examining the degree of reduction in shortfall. The greater the reduction in shortfall, the more effective the **suite** is at bridging the LoS gap.

In total 24 **suites** were specified and assessed. The investigation was completed on a street-by-street basis for the key streets in the study area including:

- Bell Street
- Burgundy Street (east of the railway bridge)
- Burgundy Street (west of the railway bridge)
- Banksia Street (east of Studley Road)
- Banksia Street (west of Studley Road)
- Upper Heidelberg Road
- Rosanna Road/Lower Heidelberg Road
- Jika/Dora Street
- Oriel Road
- Edwin Street
- Yarra Street
- Waterdale Road
- Studley Road
- Hawdon Street
- Cape Street.

A similar approach to Module 2 was taken, where the level of service resulting from applying the suites of options were assessed against the current condition. The smaller the 'gap' the closer the network performs to its aspirational function resulting from the interventions.

The outcome of this assessment is summarised by road in the section that follows. For ease of reading the road segments are discussed in priority order based on the magnitude of the SFS gap. The roads with the most significant gap appear first and roads with the smallest SFS gaps appear last.

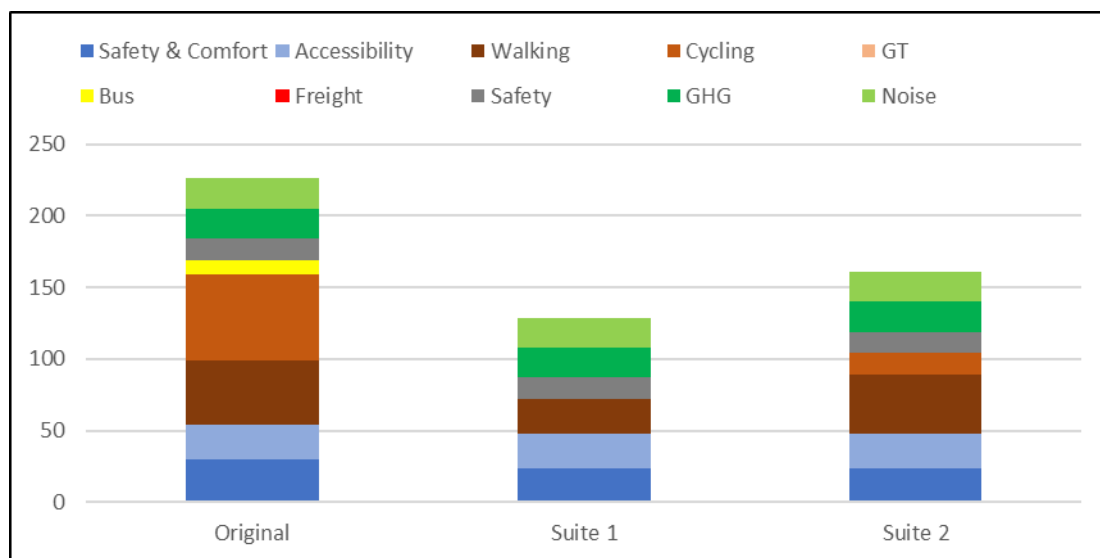
Bell Street

On Bell Street, the key issues identified were the lack of safety and comfort, low bicycle rider and bus priority, and an impaired road safety performance. The infrastructure initiatives listed below aim to address these issues.

Infrastructure initiatives and options
<p>Initiative 1: Improve the Cycling LoS on Bell Street by facilitating a low stress bicycle rider environment. Two options are suggested to achieve this initiative:</p> <ul style="list-style-type: none"> A. Provide a grade separated bi-directional bike path on the southern side of Bell Street, with the infrastructure crossing over to the northern side near Alfred Street (traffic signals would provide for a protected bicycle and pedestrian crossing). B. Provide an on-road painted bicycle lane on the southern side of Bell Street and a grade separated top of kerb bicycle facility on the northern side via a kerb extension. <p>Initiative 2: Improve the Walking LoS on Bell Street. For this initiative there is one option:</p> <ul style="list-style-type: none"> A. Provide an additional pedestrian operated signal to the west of the Bell Street/Alfred Street intersection. <p><i>Note: This infrastructure option will also be used in Initiative 1A to allow cyclists to cross Bell Street</i></p> <p>Initiative 3: Utilise the available carriageway space more efficiently. For this initiative there are two options:</p> <ul style="list-style-type: none"> A. Use the middle lane to enable protected right turn movements at specific locations. Where not required for turns the median would be planted with canopy trees. B. Use the middle lane as a contra flow lane (flow direction to change based on demand). C. Provide queue jump lanes for buses on Bell Street at the intersections with Oriel Road, Waterdale Road and Edwin Street. <p>Initiative 4: Improve safety along Bell St. For this initiative there is one option:</p> <ul style="list-style-type: none"> A. Reduce the speed limit to 40km/h from Edwin Street to Upper Heidelberg Road.
Suites
<p>Suite 1 will consist of initiatives 1A, 2A, 3A, 3C and 4A.</p> <p>Suite 2 will consist of initiatives 1B, 2A, 3B, 3C and 4A.</p>

The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-12. Suite 1 ensures the largest reduction in shortfall addressing safety, comfort, walking, bicycle rider and bus priority.

Figure 3-12: Bell Street Options Assessment



From this analysis it is clear that a significant part of the aspirational gap can be addressed through implementing the Suite 1 options. Given that Bell Street also has one of the most significant overall SFS gap scores and the significant population growth that is occurring right now, these options should progress to a project evaluation and design phase.

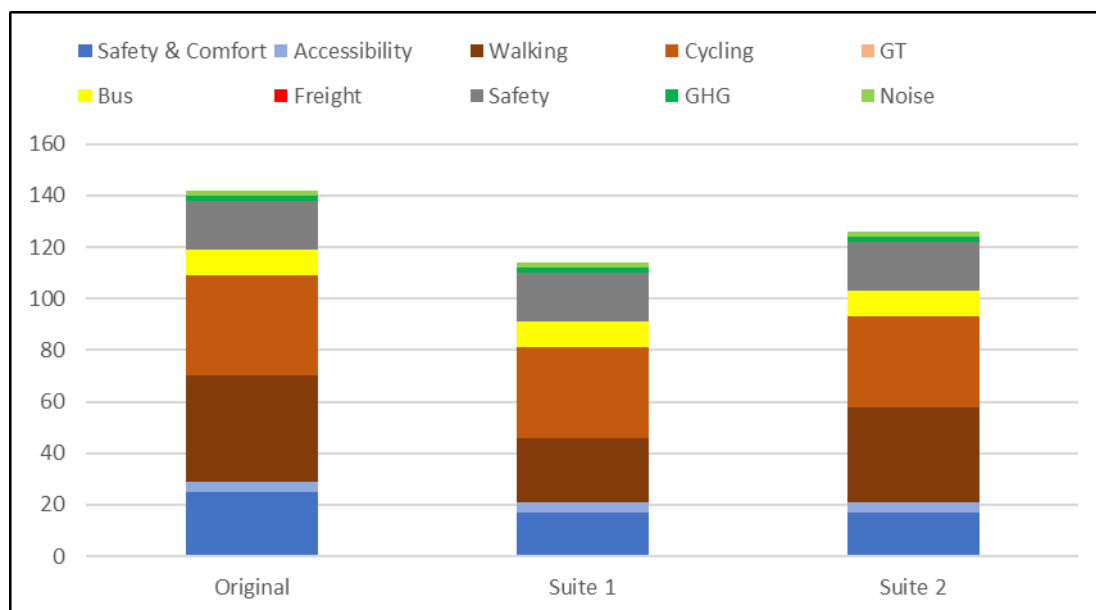
Burgundy Street (east of train tracks)

The key issues identified on Burgundy Street, east of the train tracks, were the lack of safety and comfort, reduced walking and bicycle rider priority, and impaired road safety performance. The infrastructure initiatives listed below aim to address these issues.

Infrastructure initiatives and options
<p>Initiative 5: Improve the Cycling LoS on Bell Street by facilitating a low stress bicycle riding environment. For this initiative there is one option:</p> <ul style="list-style-type: none">A. Provide Bike Boxes at the intersections of Burgundy Street & Hawdon Street and Burgundy Street & Cape Street, Burgundy Street & Rosanna Road, and Burgundy Street & Mount Street. <p>Initiative 6: Prioritise pedestrian movement and permeability through Burgundy Street. For this initiative, there are two options:</p> <ul style="list-style-type: none">A. Reduce the speed limit to 30km/h.B. Introduce kerb outstands on Burgundy Street at the intersections of Hawdon Street and Cape Street. <p><i>Note: These options are not mutually exclusive.</i></p> <p>Initiative 7: Increase crossing opportunities near Warringal Shopping Centre. For this initiative, there are two options:</p> <ul style="list-style-type: none">A. Introduce a zebra crossing in front of Warringal Shopping Centre.B. Introduce a pedestrian operated signal in front of Warringal Shopping Centre.
Suites
<p>Suite 1 will consist of initiatives 5A, 6A, 6B and 7A.</p> <p>Suite 2 will consist of initiatives 5A, 6A, 6B and 7B.</p>

The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-13 overleaf. Suite 1 ensures the largest reduction in shortfall addressing safety and comfort, walking and bicycle priority.

Figure 3-13: Burgundy Street (east) Options Assessment



From this analysis it is clear that a significant part of the aspirational gap can be addressed through implementing the Suite 1 options. Given that Burgundy Street (east) also has one of the most significant overall SFS gap scores, these options should progress to a project evaluation and design phase.

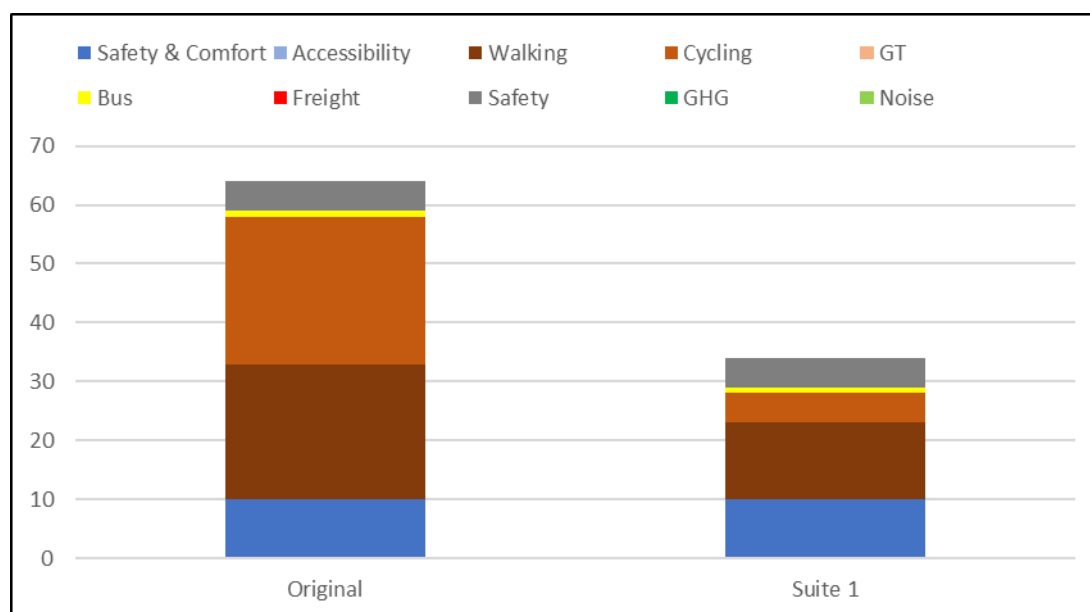
Burgundy Street (west of the railway bridge)

The key issues identified on Burgundy Street, west of the railway bridge, were the lack of walking and bicycle riding priority. The infrastructure initiatives listed below aim to address these issues.

Infrastructure initiatives and options
<p>Initiative 8: Improve the Cycling LoS on Bell Street by facilitating a low stress bicycle riding environment. This initiative has one option:</p> <p>A. Build a bi-directional top of kerb bicycle path that extends and connects with the Bell Street bicycle path. This will be on the northern end of Burgundy Street.</p> <p>Initiative 9: Prioritise pedestrian movement and permeability through Burgundy Street. This initiative has one option:</p> <p>A. Slightly alter the design of the intersection at Burgundy Street and Studley Road to ensure the pedestrian crossing better aligns the rail trail and footpath west of the station.</p>
Suites
<p>Suite 1 will consist of initiatives 8A and 9A</p>

The reduction in SFS shortfall resulting from the infrastructure intervention is highlighted in Figure 3-14 below. Suite 1 ensures a reduction in shortfall by addressing bicycle priority.

Figure 3-14: Burgundy Street (west) Options Assessment



This analysis shows that almost half of the aspirational gap can be addressed through implementing the Suite 1 options.

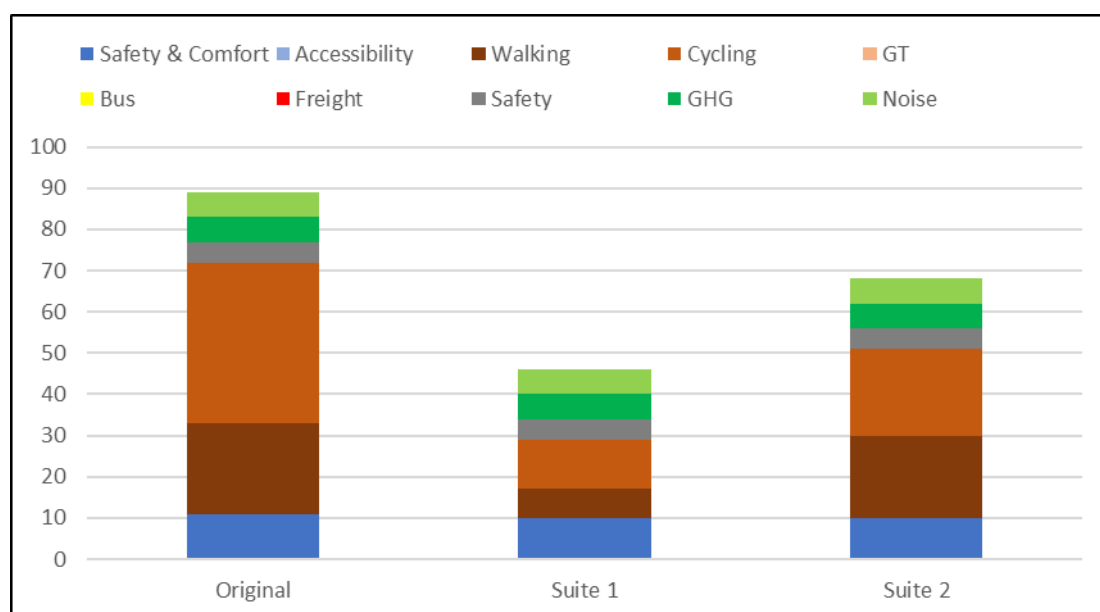
Upper Heidelberg Road

The key issues identified on Upper Heidelberg Road were lack of bicycle and walking priority. The infrastructure initiatives listed below aim to address these issues.

Infrastructure initiatives and options
<p>Initiative 11: Improve the Cycling LoS by facilitating a low stress bicycle riding environment. This initiative has two options:</p> <ul style="list-style-type: none"> A. Extend the eastern kerb and build a bi-directional top of kerb bike path. B. Introduce painted on-road bicycle lanes on both sides of the road. <p>Initiative 12: Improve the walkability of the area. This initiative has one option:</p> <ul style="list-style-type: none"> A. Install a pedestrian operated signal at the intersection of Upper Heidelberg Road and Thames Street. B. Install traffic signals to fully control the intersection of Upper Heidelberg Road, Darebin Street and Thames Street
Suites
<p>Suite 1 consists of initiatives 11A and 12A</p> <p>Suite 2 consists of initiatives 11B and 12B</p>

The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-15 below. Suite 1 ensures the largest reduction in shortfall through prioritising bicycle movement and enhancing pedestrian permeability.

Figure 3-15: Upper Heidelberg Road Options Assessment



The analysis shows that almost half the SFS gap can be addressed through implementing the Suite 1 options. As a relatively important location that facilitates movement between the east and west of the centre it is recommended that the Suite 1 options progress to project evaluation and detailed design stage.

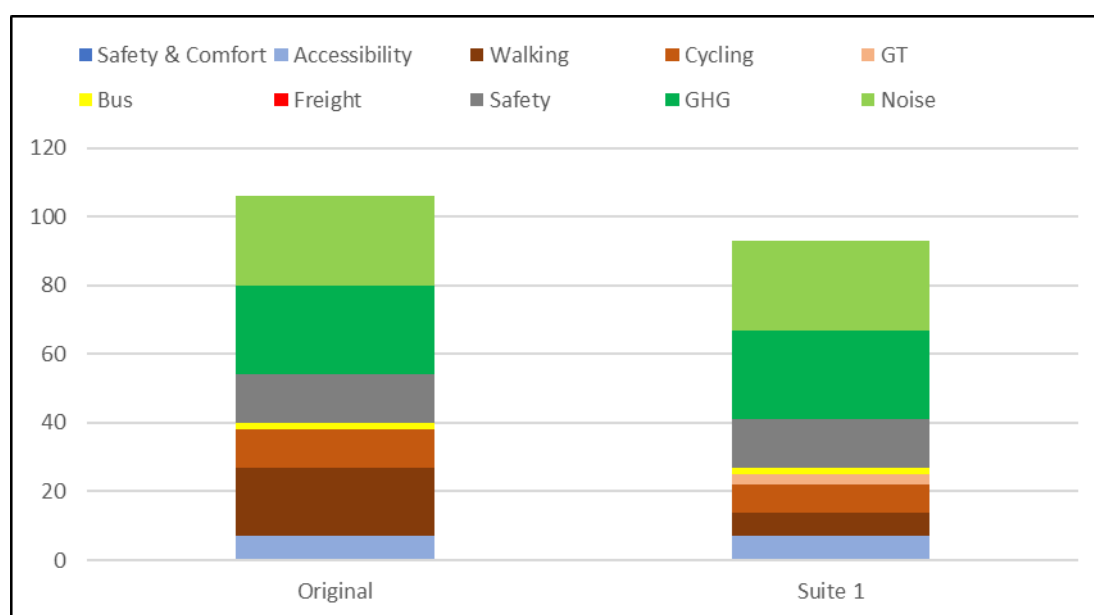
Banksia Street (east of Studley Road)

The key issues identified on Banksia Street (east of Studley Road) were the lack of walking priority and the high level of greenhouse gas emissions, and noise pollution. The infrastructure initiatives listed below aim to address these issues.

Infrastructure initiatives and options
<p>Initiative 10: Improve the pedestrian permeability along the Banksia Street (east of Studley Road). This initiative has 1 option:</p> <p>A. Install a set of pedestrian operated signals at the intersection of Banksia Street and Hawdon Street.</p>
Suites
<p>Suite 1 consists of initiatives 10A</p>

The reduction in shortfall resulting from the infrastructure intervention is outlined in Figure 3-16. Suite 1 ensures a reduction in shortfall by enhancing pedestrian permeability at the expense of a slight increase in the general traffic shortfall.

Figure 3-16: Banksia Street (east) Options Assessment



The analysis shows that only a small part of the aspirational gap can be addressed through implementing the Suite 1 options. It is more likely that the key issues of emissions and noise are more likely to be addressed by reduced traffic volumes that should arise from North East

Link. The pedestrian signals would significantly improve pedestrian outcomes using the Movement and Place Framework, but overarching issues would remain.

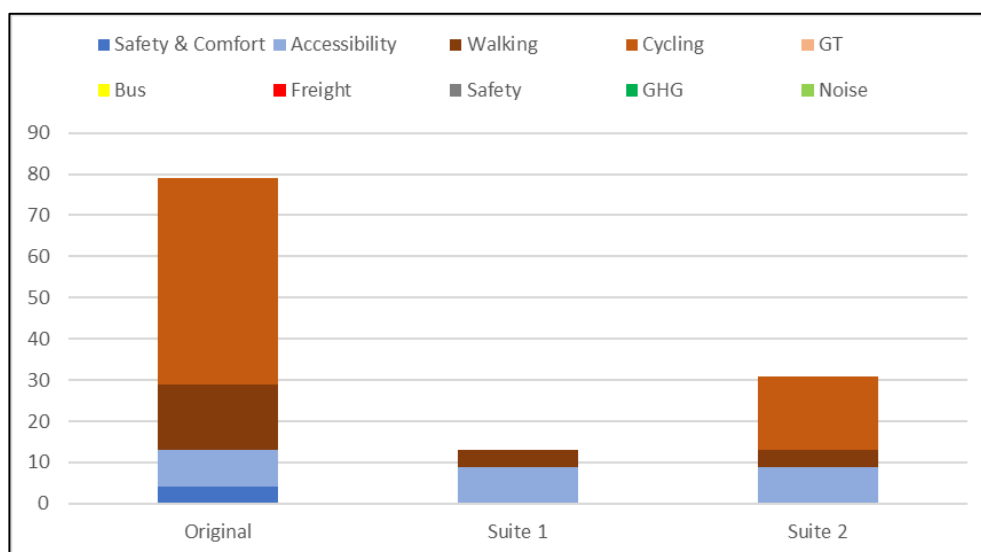
Banksia Street (west of Studley Road)

The key issues identified along Banksia Street (west of Studley Road) were the lack of bicycle and walking priority. The infrastructure initiatives listed below aim to address these issues.

Infrastructure initiatives and options
<p>Initiative 13: Improve the Cycling LoS by facilitating a low stress bicycle riding environment. This initiative has two options:</p> <ul style="list-style-type: none"> A. Extend the kerb on the north side of Banksia Street and build a top of kerb bi-directional bike path. B. Provide Copenhagen bicycle lanes on both side of Banksia Street <p>Initiative 14: Enhance pedestrian permeability by providing crossings at Waratah Special Development School, Heidelberg Repatriation Hospital and 140 Banksia Street. This initiative has two options:</p> <ul style="list-style-type: none"> A. Build zebra crossings at listed locations. B. Build pedestrian operated signals at listed locations.
Suites
<p>Suite 1 consists of initiatives 13A and 14A</p> <p>Suite 2 consists of initiatives 13B and 14B</p>

The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-17 below. Suite 1 ensures the largest reduction in shortfall by prioritising low stress bicycle riding environment and enhancing pedestrian permeability.

Figure 3-17: Banksia Street (west) Options Assessment



As a designated Strategic Cycling Corridor of high importance, with a supporting land use setting on the northern side of Banksia Street, the Suite 1 improvement options should progress to a project evaluation and detailed design stage.

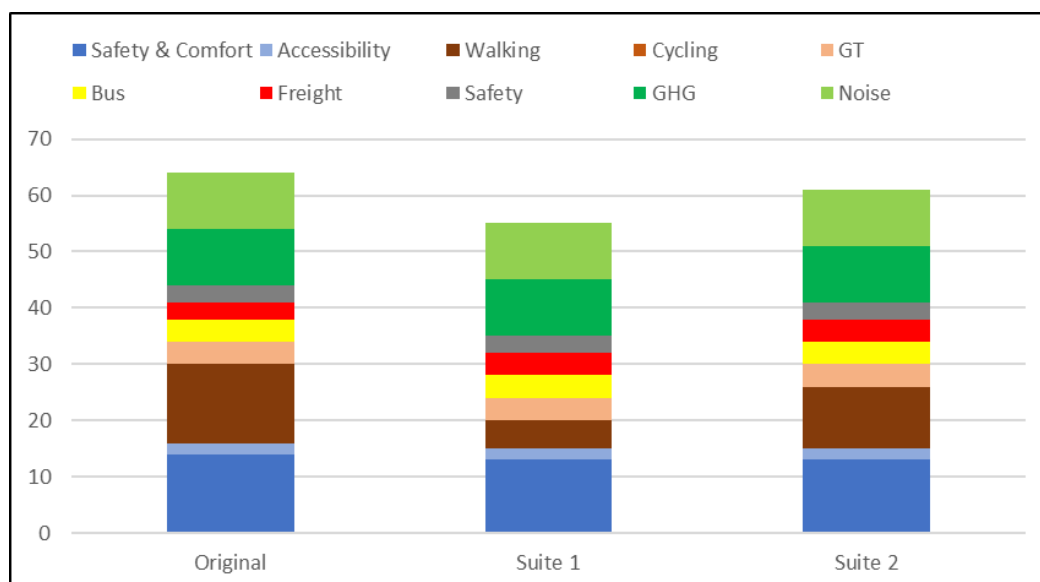
Rosanna Road/Lower Heidelberg Road

The key issues identified along Rosanna Road/Lower Heidelberg Road was the lack of pedestrian permeability and priority. There is also a need to enhance the sense of place along this link. The infrastructure initiative listed below aims to enhance pedestrian priority.

Infrastructure initiatives and options
<p>Initiative 15: Enhance pedestrian permeability by providing crossing opportunities at the intersection of Yarra Street and Rosanna Road (northern end along Yarra Street). This Initiative has two options:</p> <ul style="list-style-type: none"> A. Provide a pedestrian operated signal. B. Reduce the traffic signal cycle time to increase crossing opportunities.
Suites
<p>Suite 1 consists of initiatives 15A</p> <p>Suite 2 consists of initiatives 15B</p>

The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-18 below.

Figure 3-18: Rosanna/Lower Heidelberg Road Options Assessment



Suite 1 ensures the largest reduction in shortfall by prioritising pedestrian crossing movements, however the improvement in SFS is not significant in the overall context. In this case it is recommended that Council work with the North East Link Authority to determine an optimal cross section of Rosanna Road that could be installed just after NEL opening day.

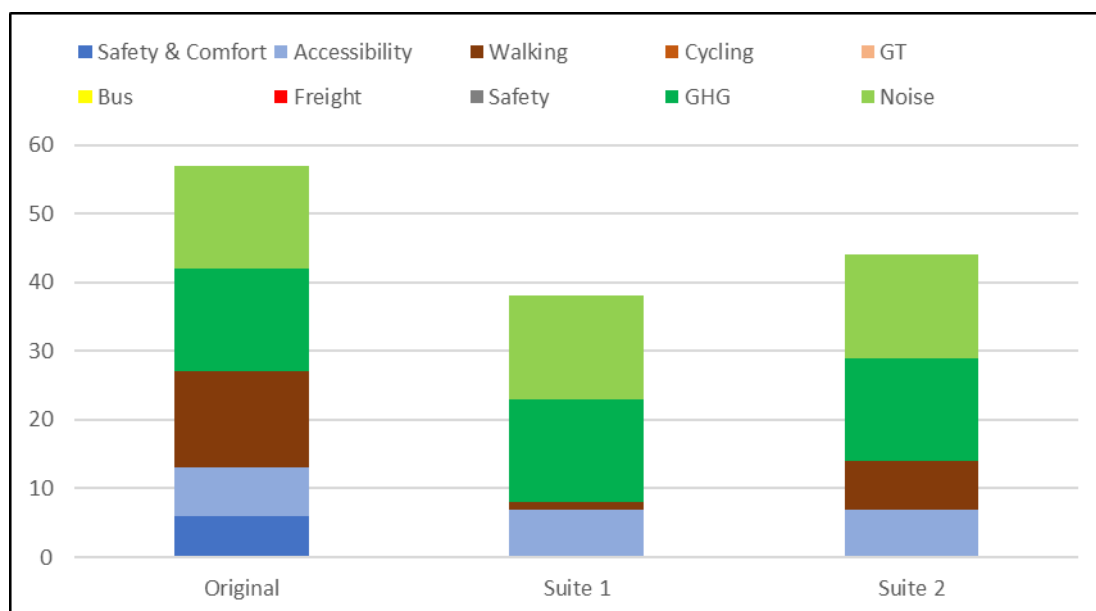
Jika/Dora Street

The key issues identified along Jika Street and Dora Street (Jika/Dora Street) relate to the lack of pedestrian priority, excessive greenhouse gas emissions and noise pollution. The infrastructure initiative listed below primarily aims to address the lack of pedestrian priority.

Infrastructure initiatives and options
<p>Initiative 16: Enhance pedestrian permeability and priority by improving the crossing opportunities at the Courthouse, southern end of the Jika/Yarra Street intersection (aligned with the proposed bicycle riding infrastructure). This initiative has two options:</p> <ul style="list-style-type: none"> A. Zebra crossings at the listed locations. B. Pedestrian operated signals at the listed locations.
Suites
<p>Suite 1 consists of initiative 16A</p> <p>Suite 2 consists of initiative 16B</p>

The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-19. Suite 1 ensures the largest reduction in shortfall by prioritising pedestrian crossing movements.

Figure 3-19: Jika/Dora Street Options Assessment



In this case a modest improvement can be achieved and should be investigated along with the Rosanna Road improvements for implementation immediately after NEL opening day.

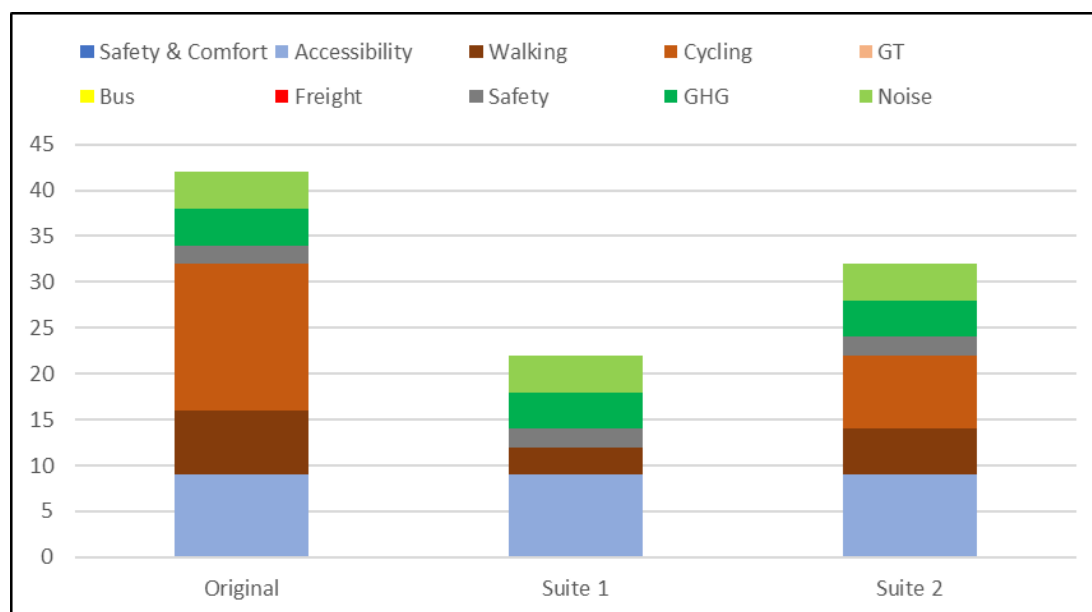
Oriel Road

The key issue identified along Oriel Road was the lack of bicycle priority. The infrastructure initiative listed below aims to address this issue.

Infrastructure initiatives and options
<p>Initiative 17: Improve the Cycling LoS by facilitating a low stress bicycle riding environment along the full length of Oriel Road (including at the intersection of Bell Street). This initiative has two options:</p> <ul style="list-style-type: none"> A. Provide a bi-directional top of kerb bike path on the eastern side of Oriel Road B. Copenhagen lanes on both sides of Oriel Road.
Suites
<p>Suite 1 consists of initiatives 17A</p> <p>Suite 2 consists of initiatives 17B</p>

The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-20 below. Suite 1 ensures the largest reduction in shortfall by prioritising a low stress bicycle riding environment.

Figure 3-20: Oriel Road Options Assessment



As a designated Strategic Cycling Corridor of high importance, with a supporting land use setting on the western side of Oriel Road, the Suite 1 improvement options should progress to a project evaluation and detailed design stage.

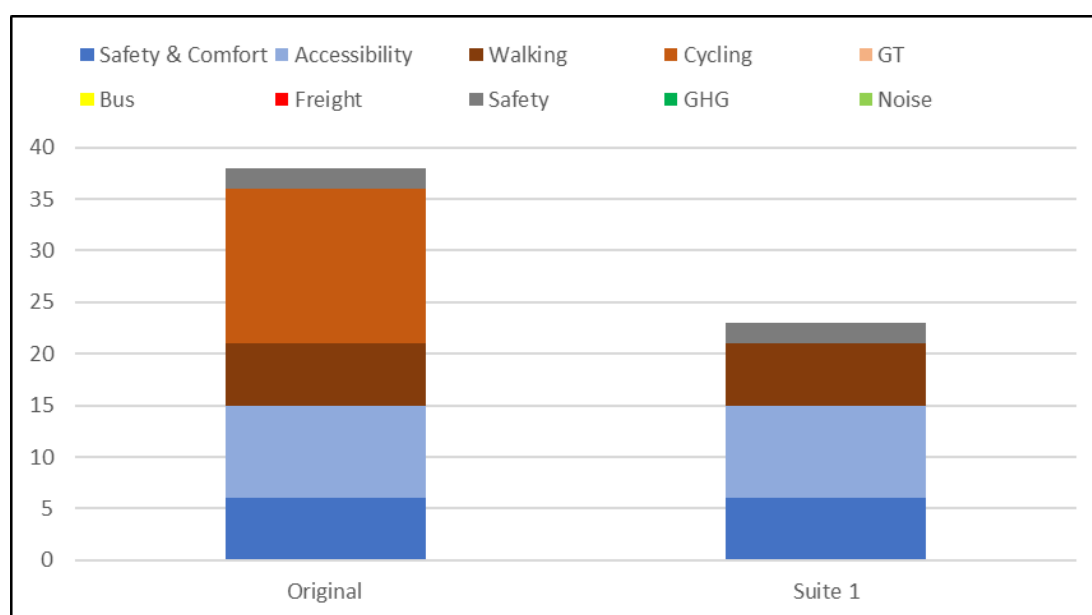
Edwin Street

The key issues identified along Edwin Street was the lack of bicycle priority and bus operational reliability. The infrastructure initiatives listed below aim to address these issues.

Infrastructure initiatives and options
<p>Initiative 18: Improve Cycling LoS by facilitating a low stress bicycle riding environment along Edwin Street. This initiative has one option:</p> <p>A. Build a bi-directional top of kerb bike path on the western side of Edwin Street. For this option there are two methods:</p> <ol style="list-style-type: none"> 1. Build the bike path on the western side of the fence line of Heidelberg Repatriation Hospital. 2. Build a kerb-extension on the western side of the road. <p>Initiative 19: Relocating Route 548 to Waterdale Road. This initiative has one option:</p> <p>A. Relocate Route 548 from Edwin Street to Waterdale Road.</p>
Suites
<p>Suite 1 consists of initiatives 18A and 19A</p>

The reduction in shortfall resulting from the infrastructure intervention is outlined in Figure 3-21. Suite 1 ensures a reduction in shortfall by prioritising a low stress bicycle riding environment and relocating Route 548 to Waterdale Road.

Figure 3-21: Edwin Street Options Assessment



As a designated Strategic Cycling Corridor of high importance, with a supporting land use setting on the western side of Edwin Street, the Suite 1 improvement options should progress to a project evaluation and detailed design stage.

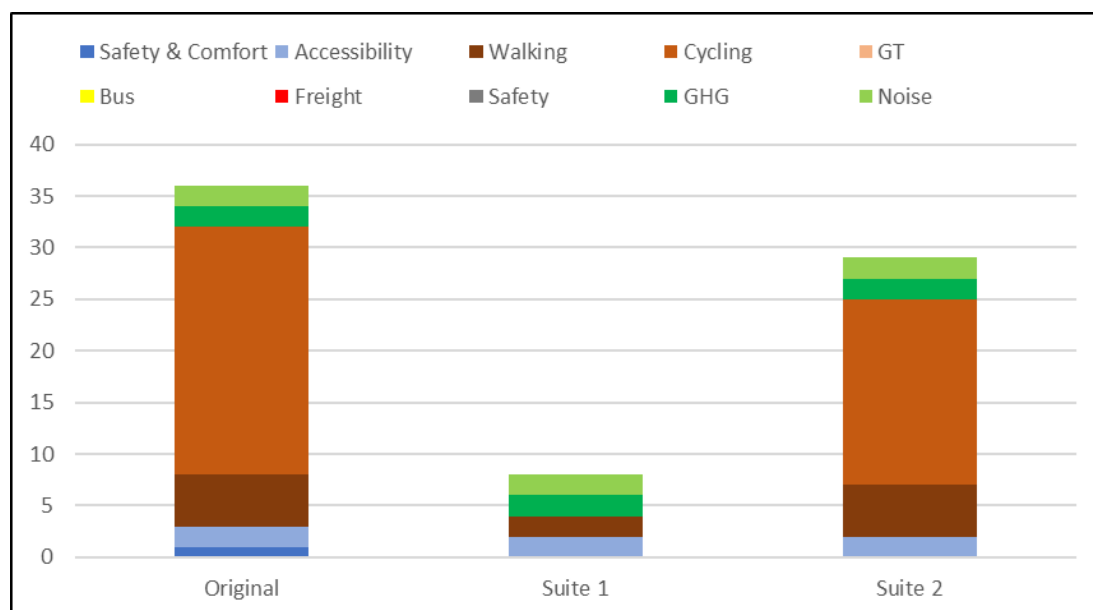
Yarra Street

The key issues identified along Yarra Street was the lack of bicycle and walking priority. The infrastructure initiatives listed below aim to address these issues.

Infrastructure initiatives and options
<p>Initiative 20: Improve Cycling LoS by facilitating a low stress bicycle riding environment along Yarra Street. This initiative has two options:</p> <ul style="list-style-type: none"> A. Build a bi-directional top of kerb bike path on the northern side of Yarra Street. B. On-road painted bicycle lanes on both sides of Yarra Street. <p>Initiative 21: Improve pedestrian and bicycle permeability along Yarra Street at the Mount Street intersection, enhancing accessibility to Heidelberg Station. This initiative has one option.</p> <ul style="list-style-type: none"> A. Widen footpaths on Yarra Street near Mount Street, extend the wombat crossing near the intersection of Yarra/Mount Street allowing cyclists to also cross Mount Street easily, and allow bicycle and pedestrian movement in the station underpass.
Suites
<p>Suite 1 consists of initiatives 20A and 21A</p> <p>Suite 2 consists of initiatives 20B and 21A</p>

The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-22 below. Suite 1 ensures the largest reduction in shortfall by prioritising pedestrian crossing movement and enhancing bicycle priority.

Figure 3-22: Yarra Street Options Assessment



As a designated Strategic Cycling Corridor of high importance, with supporting land use settings on either side of the road, the Suite 1 improvement options should progress to a project evaluation and detailed design phase.

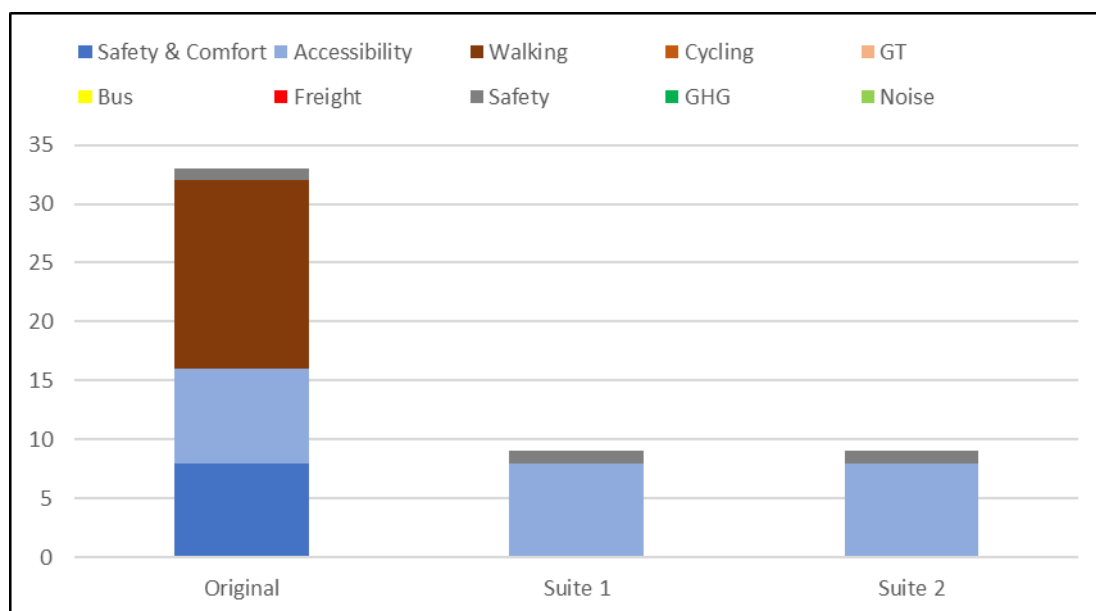
Waterdale Road

The key Issue identified along Waterdale Road was the lack of pedestrian permeability and priority. The infrastructure initiative listed below aims to address this issue.

Infrastructure initiatives and options
<p>Initiative 22: Improve the pedestrian permeability and priority on Waterdale Road by providing crossing opportunities at the intersections of Disney Street (south side) and O’Keefe Road (north side). This initiative has two options:</p> <ul style="list-style-type: none"> A. Zebra crossings at the listed locations. B. Pedestrian operated signal at the listed locations.
Suites
<p>Suite 1 consists of initiative 22A</p> <p>Suite 2 consists of initiative 22B</p>

The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-23. Both suites of options generate a significant reduction in shortfall by prioritising pedestrian crossing movements.

Figure 3-23: Waterdale Road Options Assessment



As a location of high importance, providing access to Bell Street West Mall and Melbourne Polytechnic, the Suite 1 and 2 improvement options should progress to a project evaluation and detailed design phase.

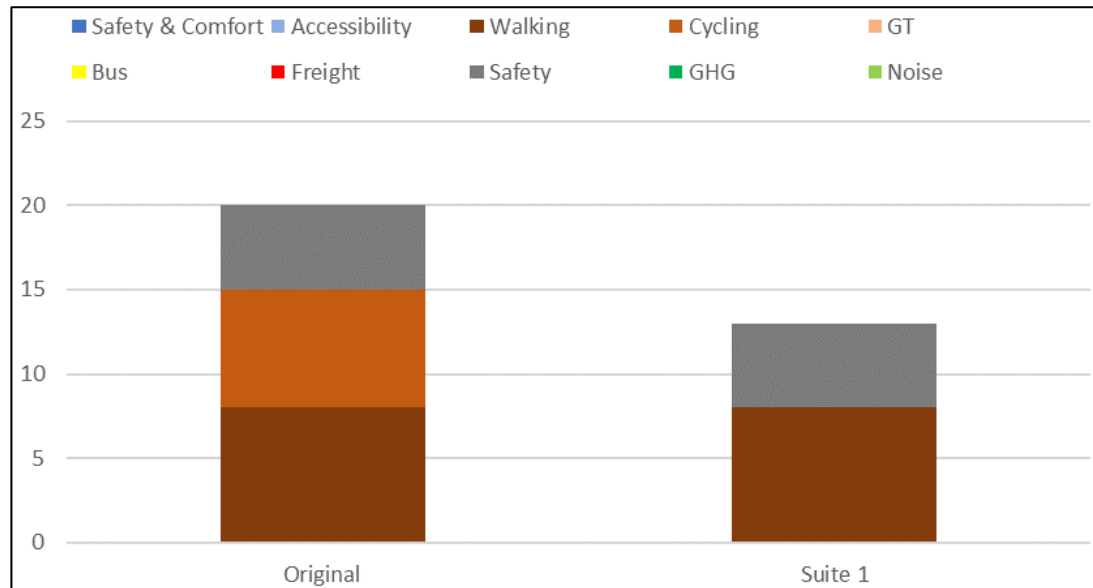
Studley Road

The key issues identified along Studley Road was the lack of bicycle and walking priority. The infrastructure initiatives listed below aim to address these issues.

Infrastructure initiatives and options
<p>Initiative 23: Improve the Cycling LoS by facilitating a low stress bicycle riding environment along Studley Road. This initiative has one option:</p> <p>A. Build a bi-directional top of kerb bike path on the eastern side of Studley Road.</p> <p>Initiative 24: Enhance cyclist and pedestrian priority and permeability at the intersection of Banksia Street (west of Studley Road) and Studley Road. This initiative has one option:</p> <p>A. Widen eastern footpath and make this into a shared path. Provide a direct crossing opportunity to Banksia Street.</p>
Suites
<p>Suite 1 consists of initiatives 23A and 24A</p>

The reduction in shortfall resulting from the infrastructure intervention is outlined in Figure 3-24. Suite 1 ensures a reduction in shortfall by enhancing bicycle priority.

Figure 3-24: Studley Road Options Assessment



As a designated Strategic Cycling Corridor of high importance, with key destinations on either side of the road, the Suite 1 improvement options should progress to a project evaluation and detailed design phase.

Council is also aware of the potential future impacts on Studley Road, resulting from:

- Strategic planning of the Austin Hospital (potential for an overpass to the station)
- Changes to the Heidelberg public transport interchange as part of the SRL

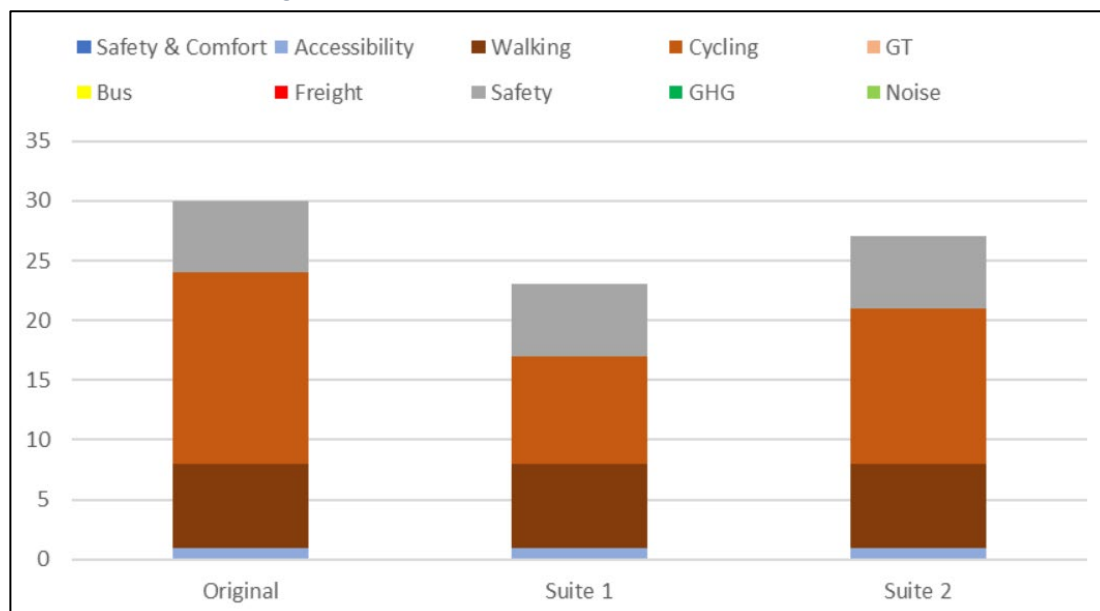
Hawdon and Cape Street

The key issue identified on both Hawdon and Cape Street was the lack of bicycle priority. The circumstances of the two streets are very similar, so the initiatives are grouped. The infrastructure initiative listed below aims to address this issue.

Infrastructure initiatives and options
<p>Initiative 25: Improve Cycling LoS by facilitating a low stress bicycle riding environment along both streets. For this initiative there are two options:</p> <ul style="list-style-type: none"> A. Provide a painted on-road bicycle lane along the length of both roads with protected roundabouts (where applicable). B. Bike boxes at all intersections along both roads and provide an early phase for Cyclists at all signalled intersections along both roads.
Suites
<p>Suite 1 consists of initiative 25A</p> <p>Suite 2 consists of initiative 25B</p>

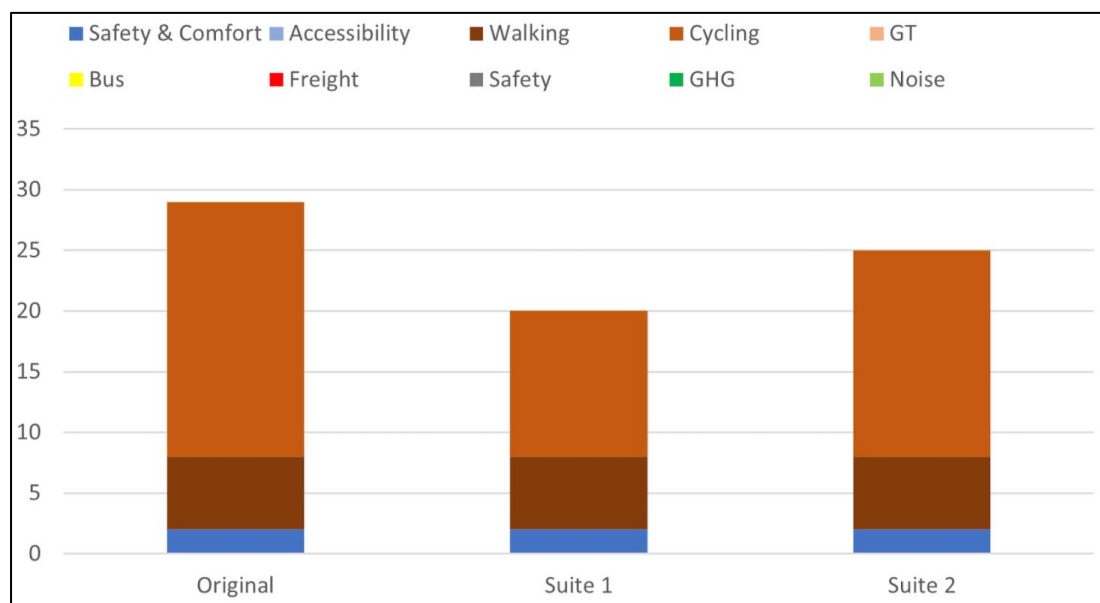
The reduction in shortfall resulting from the infrastructure interventions from both suites are outlined in Figure 3-25 and Figure 3-26 overleaf.

Figure 3-25: Hawdon Street Options Assessment



Given the simplicity and low cost of the improvement options and the positive impact they have on the SFS, the Suite 1 improvement options should progress to a project evaluation and detailed design phase.

Figure 3-26: Cape Street Options Assessment

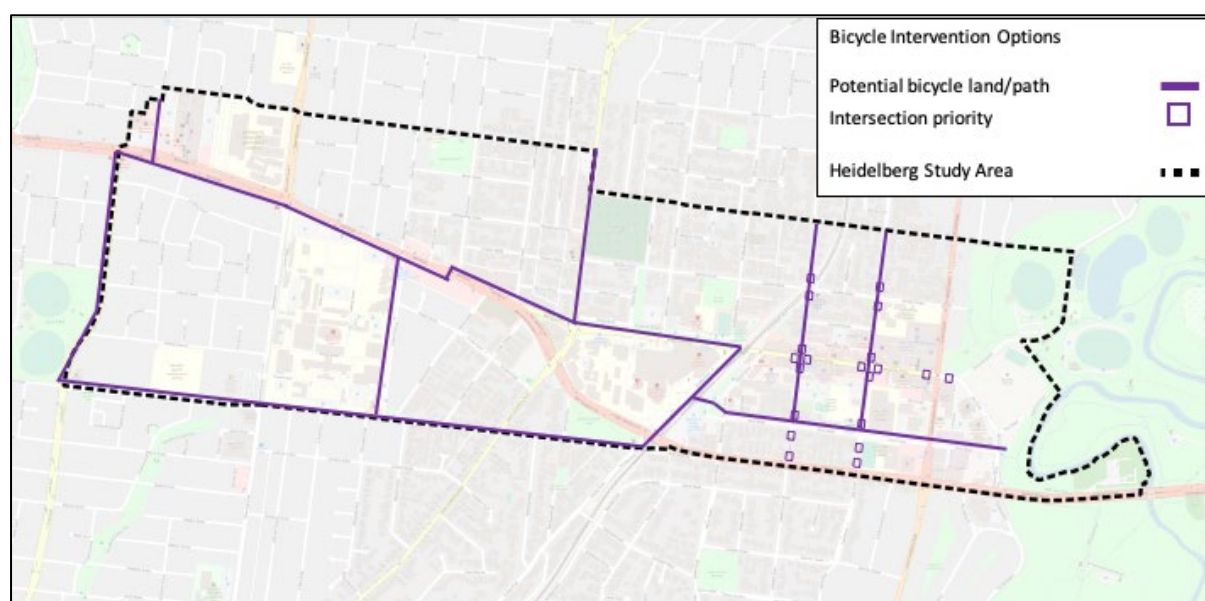


Given the simplicity and low cost of the improvement options and the positive impact they have on the SFS, the Suite 2 improvement options for Cape Street should progress to a project evaluation and detailed design phase.

Summary of the proposed bicycle and pedestrian interventions

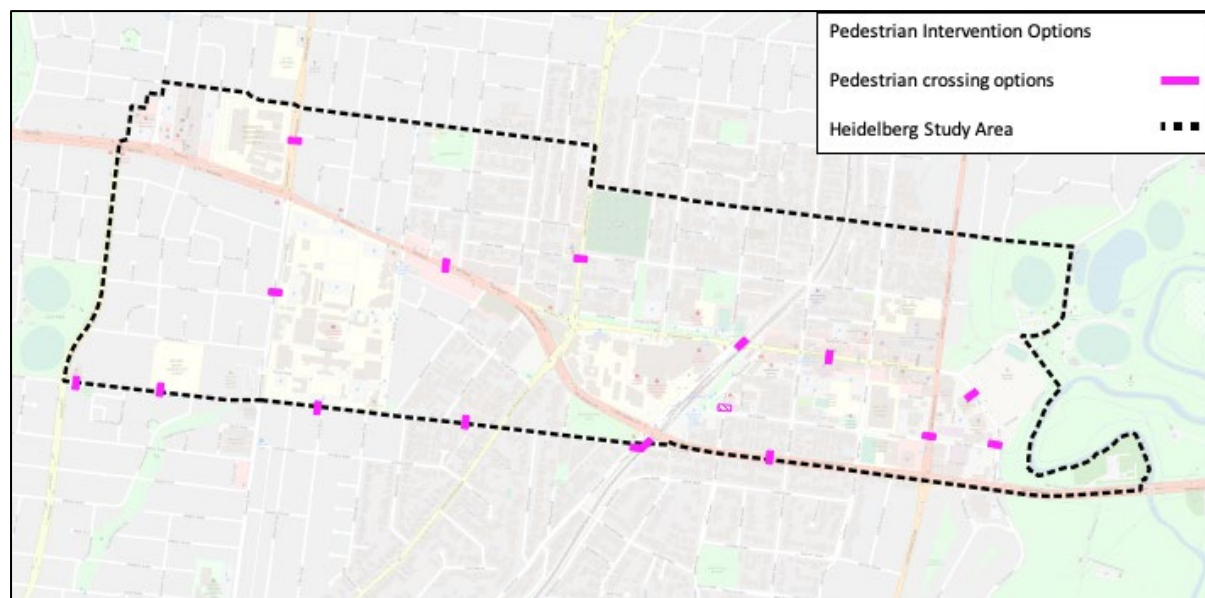
The aim of providing the bicycle infrastructure interventions were to enhance cyclist priority as well as to provide a connected network providing access to key activity generators. The locations of the bicycle riding infrastructure interventions are outlined in Figure 3-27 below.

Figure 3-27: Summary of the Proposed Bicycle Options



The pedestrian crossing intervention sites are summarised in Figure 3-28. The dispersed need for pedestrian crossing within the study areas indicate the lack of priority offered for pedestrians.

Figure 3-28: Summary of the Proposed Pedestrian Options



4 CONCLUSION

The Department of Transport's Movement and Place Framework was applied to complete an assessment of aspirations and improvement options for the Heidelberg Activity Area (including the road network bounded by Oriel Road).

This involved defining the aspirational role of each road reserve in how it provides for movement and how it contributes to a sense of place in Heidelberg. Priority for walking, bicycle riding, bus, rail, freight, general traffic was specified for each link within the study area. A similar process was applied to define the priority of the place function.

The network performance was then analysed to see how well the current network performed in comparison to the aspirational function. The Strategic Focus Score was identified for each link and specified the performance 'gap'.

At a network level, the critical gaps relate to the lack of bicycle riding and walking priority. These two modes make up over 50% of the shortfall. There is a clear need to improve the walking and bicycle riding networks within the Heidelberg study area. In contrast, the shortfall for general traffic and freight were substantially lower.

The network-wide SFS also indicate there is a need to enhance the local sense of place. Interventions should focus on creating an environment which supports on-street activity by maximising safety and comfort. There is also a need to improve the pedestrian accessibility from public transport services. The shortfalls were also examined at a street by street level.

Based on the shortfalls, infrastructure intervention options were proposed to reduce this gap. Through a workshop with Council and DoT, several infrastructure intervention suites were formulated.

These options were assessed with the extent of the SFS reductions identified for each suite of options. The biggest benefits arising from low-stress bicycle riding infrastructure and improved pedestrian permeability.

The next steps for Council are to work with DoT to align their aspirational classifications to meet community needs.

Following broad agreement on the aspirational classifications, Council should then refine the improvement options with concept design, project evaluation and detailed design before seeking funding.

APPENDIX A – CURRENT NETWORK CLASSIFICATIONS

Current Classifications

Through a site visit, the current network classification of the walking, cycling, rail, bus, freight, general traffic, and the place function was assessed (similar to Module 1). This information supplements the M&PF, informing Council about the current state of priority for the various movement functions and place function.

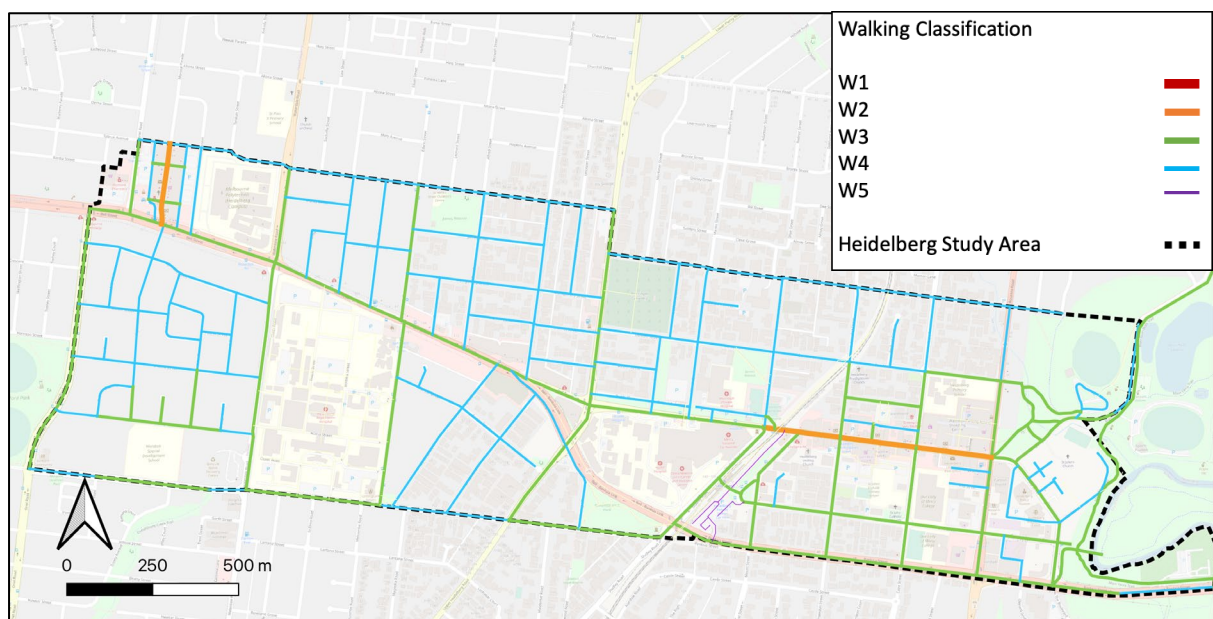
Walking

For the walking movement, there are two areas of specific focus: Bell Street Mall and Burgundy Street. These areas received the second most significant ranking for two reasons:

- They experience significant foot traffic on a daily basis
- They are significant links in close proximity to key activity generators.

Other W3 classifications were justified as the links were neighbouring health or education centres, or they connected public transport corridors to activity strips.

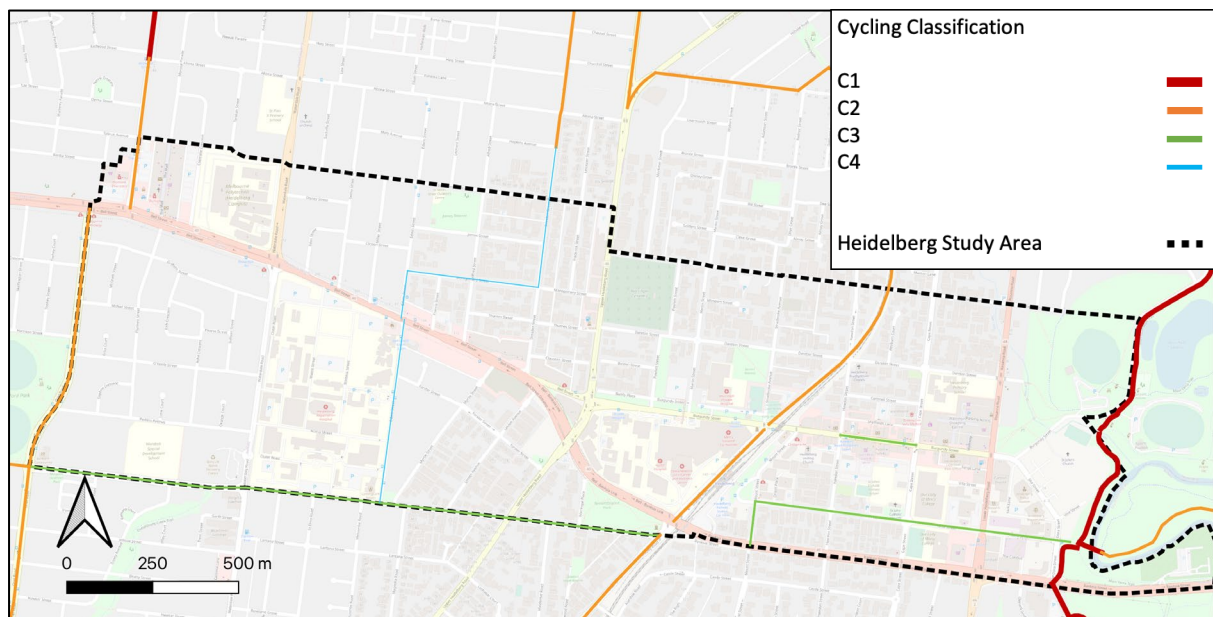
Figure 0-1: Walking Classification



Cycling

In the cycling classification, M&PC deduced that only the Main Yarra Trail was C1, as it is part of the core network that connects Heidelberg, and other Municipalities, to the city. Oriel Road and the trail running alongside the train line were given C2 rankings, as they connect Heidelberg to the neighbouring suburbs. Other C3s were ranked as such due to their connections and use alongside the main bicycle riding corridors. The route along Edwin Street was assigned C4 due to the pre-existing infrastructure, however there is no indication that it receives significant use as anything other than a local connecting bicycle riding corridor.

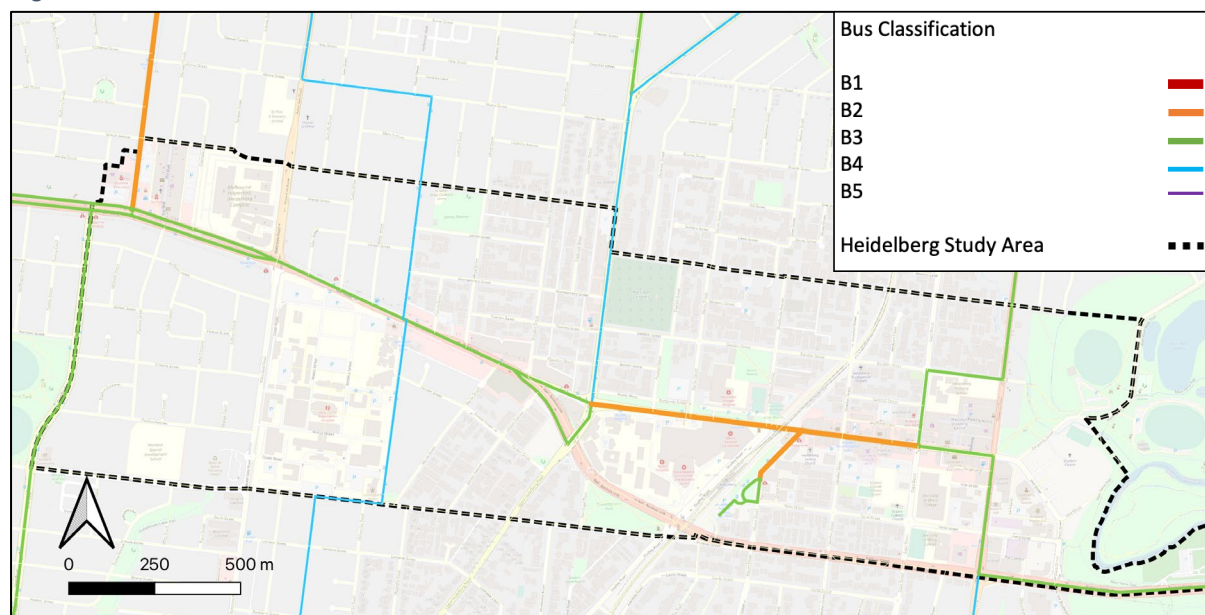
Figure 0-2: Cycling Classification



Bus

The bus movement classifications are purely capacity and fleet based. They were provided by the Department of Transport. As can be seen, Burgundy Street is the most significant link on the bus route.

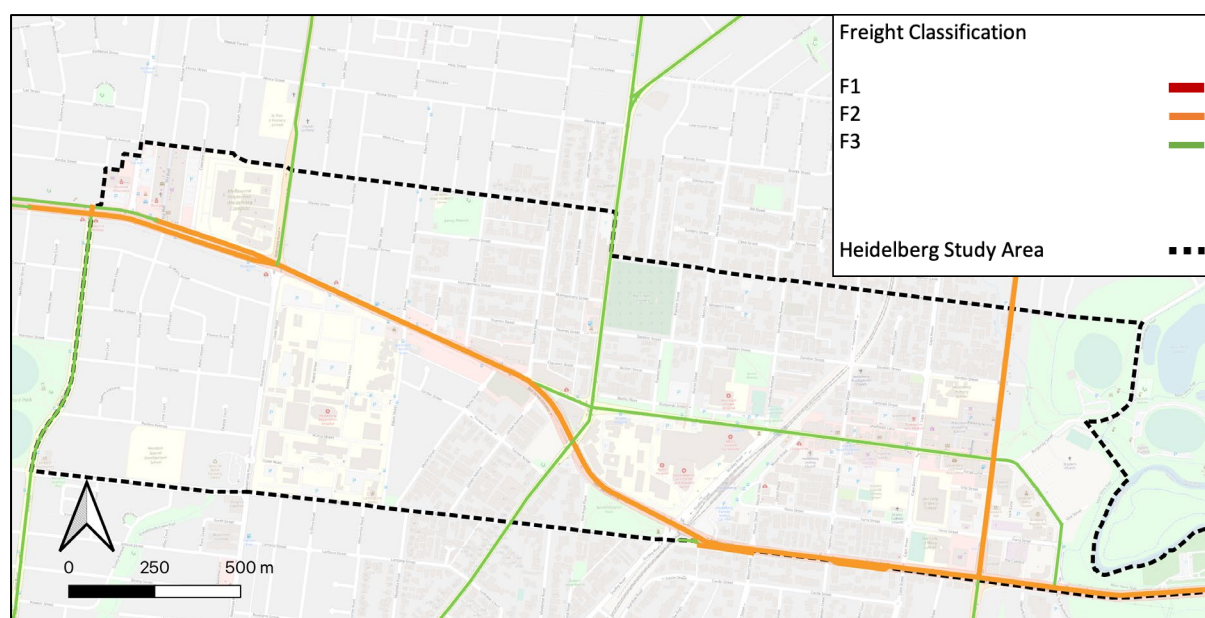
Figure 0-3: Bus Classification



Freight

Freight measurements are, again, provided by the department of transport. Bell-Banksia Link is an arterial road which transports a large amount of goods, resulting in an F2 classification. Rosanna Road is also an arterial on the principal freight network, meaning it also receives an F2 classification.

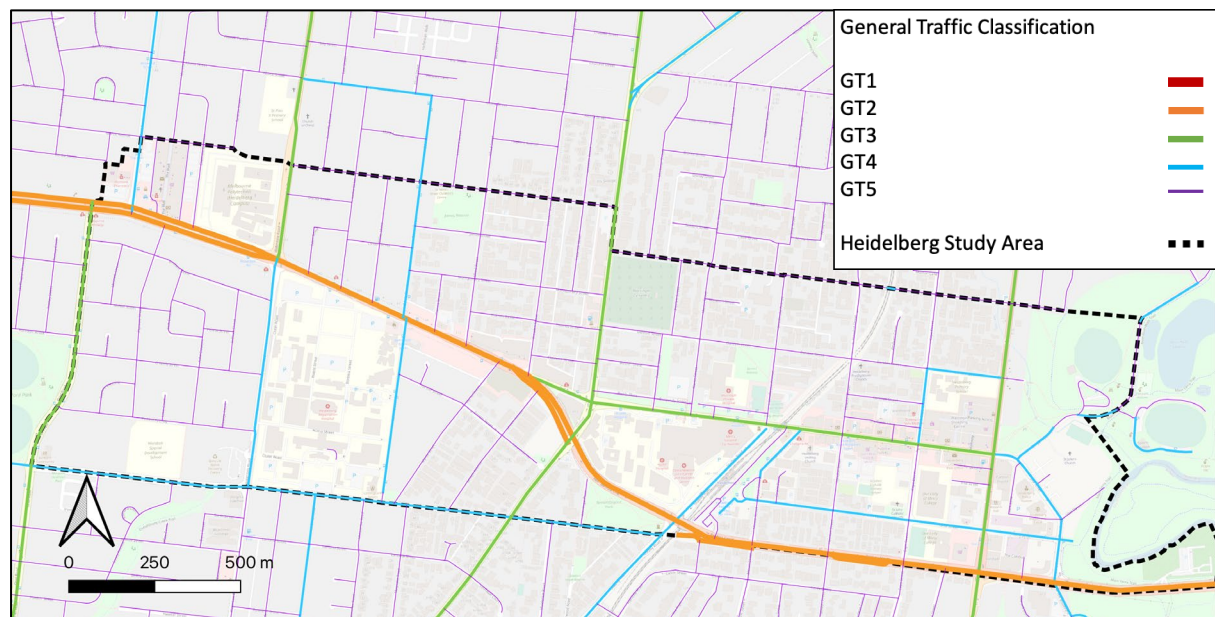
Figure 0-4: Freight Classification



General Traffic

Bell and Banksia street are again the most significant links in terms of general traffic movement. This is expected as mass freight and civilian movement is often carried out on the same pathways. A GT1 ranking is not assigned as this is typically reserved for Highways and Freeways. All GT3 classifications are remaining arterial roads, not a part of the preferred traffic routes. GT4 is mostly collector roads, and roads transporting people within the Heidelberg area.

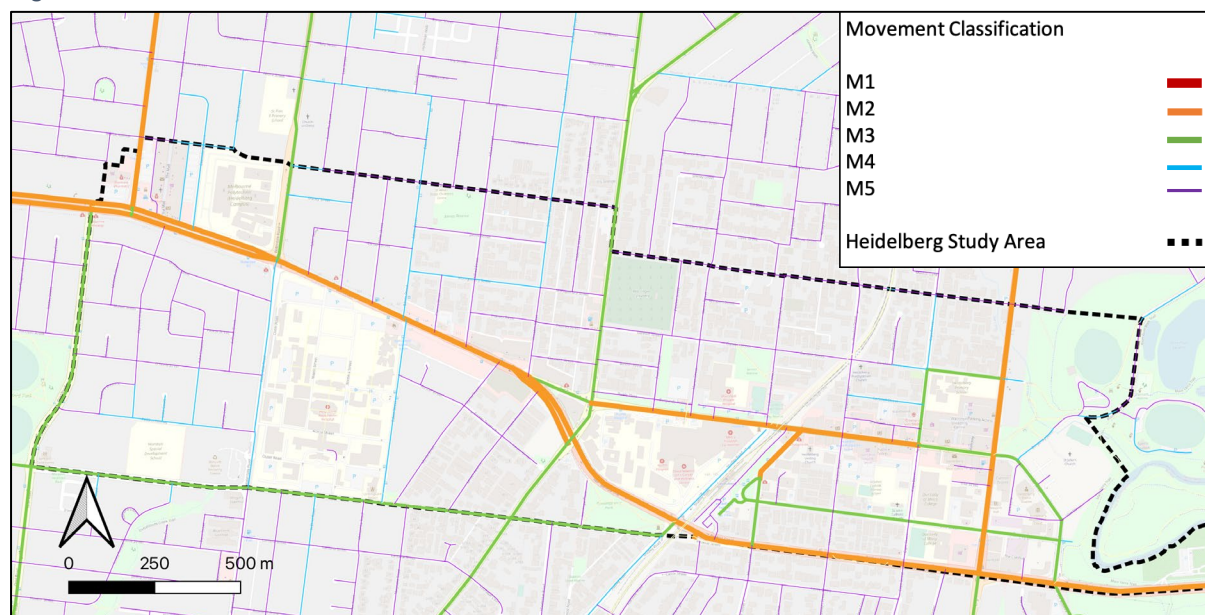
Figure 0-5: General Traffic Classification



Movement

Using the previous classifications, a general movement score for the Heidelberg transport network links can be summarised. While not providing much in terms of the movement and place framework analysis, this classification, along with the place classification of each road, allows us to provide an explicit definition for the use of the road (collector, arterial, activity boulevard), which assists in the development of role-specific options to increase the level of service of the individual network links.

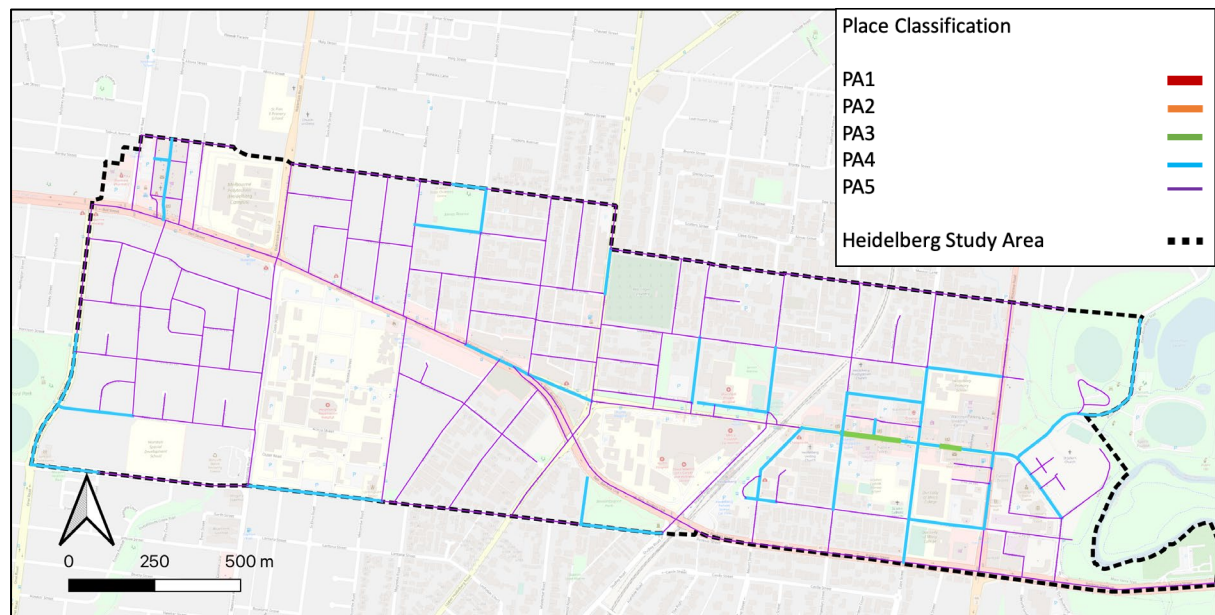
Figure 0-6: Overall Movement Classification



Place

Next, the place score must be found for each link. Unlike movement, the place score is solely consistent of the PA (place activity) score of the link. Again, dissimilar to movement, the place score does not have set guidelines for classification, therefore the process was more complex. The classification is determined by multiple considerations; Activity on the street, diversity of land uses, presence of alfresco dining, space allocated to public, and the amenity of the area. An initial site visit was undertaken by movement and place, and preliminary values were assigned. These values were then workshopped with Council officers until agreed upon by both parties.

Figure 0-7: Place Classification



The main place of activity is Burgundy Street, and this should be considered for any future planning/options development for the network. Other significant PA4 rankings are Bell St Mall, areas neighbouring parks, and Beverly road, due to it being in close vicinity to the Main Yarra Trail.

APPENDIX B – NETWORK PERFORMANCE INDICATOR ASSUMPTIONS

Place:

Safety and Comfort

Sufficient data was available to follow the DoT Technical Appendix. The following assumptions were used to support the data:

- Where volume data is not listed (e.g. Local Roads), AADT is assumed <8,000
- Where Volume data is not listed, AADT of Trucks is assumed <360
- 'Low_SPD_AMP' is assumed to represent the signed speed limit.

Accessibility

Sufficient data was available to follow the DoT Technical Appendix.

Movement

Walking

Sufficient data was not available to follow the DoT Technical Appendix. Therefore, M&PC used the following assumptions as a proxy to calculate 'Walking' Level of service:

- At large intersections and major arterial roads, pedestrians were subject to wait times of >120s when waiting to cross, making those sections have a LoS of E
- For the smallest local roads, we assumed that pedestrians were able to cross at ease, resulting in no crossing delay, and a LoS of A
- Links that featured pedestrian operated signals were assumed to have a delay of 30s, resulting in a LoS of C
- For other links, such as links with unmarked crossings, or links connecting local roads to collector and arterial roads, qualitative judgement was used to assign appropriate values
- Segments neighbouring pedestrian crossings or pedestrian operated signals were rated in regards to their distance to the crossing opportunities available.

Cycling

Sufficient data was not available to follow the DoT Technical Appendix. Therefore, M&PC used the following assumptions as a proxy to calculate 'Cycling' Level of service:

- Only bicycle riding paths that were grade separated from traffic could achieve a LoS of A (e.g. Main Yarra Trail)
- Segments with existing bicycle riding Infrastructure were assigned at least a C, depending on the relative traffic stress. Local streets were also assigned C, due to low traffic stress
- Large arterials with no infrastructure were assigned 'E'
- For intermediate classifications, qualitative judgment was used based on traffic stress experienced by the 'Interested but Concerned' Bicycle riding group.

Bus

Sufficient data was not available to follow the DoT Technical Appendix. Therefore, M&PC used the following assumptions as a proxy to calculate 'Bus' Level of service:

- Only Segments with dedicated bus Lanes were assigned a LoS of A (None in activity area)
- For other LoS, the classification was based on peak hour delay, found from PTV timetable data
- Traffic volumes and road infrastructure were also used on a qualitative basis to inform decisions on the level of service.

Freight

Sufficient data was available to follow the DoT Technical Appendix.

General Traffic

Sufficient data was not available to follow the DoT Technical Appendix. Therefore, M&PC used the following assumptions as a proxy to calculate 'General traffic' Level of service:

- Where speed data was available, the technical appendix was followed
- Where not available, a peak hour factor of 0.14 (averaged from available data), was used to find the vehicle per minute volumes of each segment. This value was used on a qualitative basis to inform M&PC of the level of service the segment was operating at
- 7.5 Vehicles per minute was considered low, resulting in a LoS of A
- Where local roads met with large arterials, general traffic was considered to experience an intersection delay. This segment typically received a classification 1 or 2 levels lower than the rest of the local road.

Safety

Sufficient data was available to follow the DoT Technical Appendix.

Environment

Sufficient data was not available to follow the DoT Technical Appendix. Therefore, M&PC used the following assumptions as a proxy to calculate 'GHG and Noise' Level of services:

- As neither 'formula' referenced in the technical appendix was provided by the DoT, M&PC assumed our own guidelines for both Noise and GHG level of services.

LoS	A	B	C	D	E
Cars	<1,000*	>1,000	>4,000	>10,000	>20,000
Trucks	0*	>0	>0	>500	>1,000

*0 = No recorded Volume Data – Typically local roads

It was assumed that this score was applicable for both environmental categories (GHG and Noise).