
Intervention Concept

1.1 Intervention concepts premise

This study seeks to identify two sites which can be used as a test concept for the impact of an intervention on micromobility usage on both pedestrians and micromobility users. In addition, a third trial concept has been identified to supplement knowledge of infrastructure provision for micromobility in future.

Micromobility users are VRUs. Our survey suggests that crashes are occurring both on footpaths and on roads, but the severity of injuries is greater for those incidents occurring on road.

There are also concerns for pedestrian safety, with evidence that collisions with micromobility may result in injury to the pedestrian, although our survey suggests that often perception of safety is as significant as real concerns since many incidents were near misses. Significantly, on Queen Street, there were only two injury accidents recorded involving pedestrians despite high pedestrian and e-scooter volumes (see **Error! Reference source not found.**). This may be due to the high pedestrian volumes forcing e-scooters to travel at slower speeds.

In terms of infrastructure the following conclusions have been drawn:

- Locations where there are high pedestrian volumes but wide footpaths appear to be of less concern to both pedestrians and micromobility users due to the high pedestrian volumes forcing micromobility to travel at slower speeds.
- Locations where there are high pedestrian volumes but narrow footpaths tend to force micromobility users into the roadway. Incidents occurring on the roadway are likely to result in more severe injuries.

As a result of our analysis, our conclusion is that mitigations which may help to facilitate safe travel are:

- Shared paths in locations of high pedestrian volume where micromobility users or cyclists can share the footpath and avoid the road, but are forced to travel at slow speeds.
- Separated facilities where footpaths are narrow and there are high pedestrian volumes which mean that pedestrians or micromobility would otherwise need to share a narrow roadway (or micromobility to use the road).

2. Shortlisted sites

A search was undertaken to identify a number of shortlisted sites. **Error! Reference source not found.** details the search and shortlisting process. As a result of this process two sites were further identified for potential interventions.

Purpose

The aim is to find locations to trial interventions to accommodate safe micromobility passage. The search is focused on areas that have high volumes of pedestrians, vehicles and micromobility.

2.1 Process of finding potential locations

Possible locations of interests will have some of the following aspects which discourage the use of micromobility modes:

- Narrow and uninviting footpaths
- Wide road (wide lanes or shoulders)
- Roadside parking
- Intimidating roadside environment
- High speed environment

- High traffic volumes
- High number of large vehicles

Locations to avoid will have the following aspects:

- Bus stops
- Loading spaces
- Areas with a high number of accessways
- Intersections
- High number of businesses/private properties directly affected by changes

2.2 Locations

To find the locations, personal knowledge was utilised first, exploring locations that people have noticed issues for regarding micromobility. These locations were based on the criteria as stated in Section 2. From the initial identified sites, further investigations were made with the use of google maps street view. This allowed the road environment to be seen in further detail, giving a better understanding of a site's potential for interventions.

Megamaps was utilised to help identify other potential site locations. Megamaps was filtered to find wide streets. This helped to find streets that have the potential space required for micromobility interventions. These locations were then assessed with google maps street view to see if the locations fulfil some of the criteria stated in Section 2.

Road Name	Suburb
Crowhurst Street	Newmarket
Broadway Drive	Newmarket
Davis Crescent	Newmarket
Hopetoun Street	Freemans Bay
Chivalry Road	Glenfield

Crowhurst Street, Newmarket

Crowhurst Street runs between Khyber Pass and Eden Street. It has two lanes in the northbound direction and one lane in the southbound direction. The street has parking on both sides of the road, which could potentially be used for a trial cycle lane. The footpaths are narrow and uninviting, with a width of approximately 1.8m measure from Geomaps.



Figure 2.1 Street view Crowhurst Street - Google Maps



Figure 2.2 Aerial of Crowhurst Street - Geomaps

Broadway Drive, Newmarket

Broadway Drive is the main road that runs through Newmarket. It has two lanes in each direction and parking on both sides of the road. This is a busy retail area, with the footpath having high pedestrian traffic. This presents conflicts for e-scooters sharing the footpath. The roadside parking provides the potential space for the implementation of temporary cycle lanes.



Figure 2.3 Street view of Broadway Drive - Google Maps

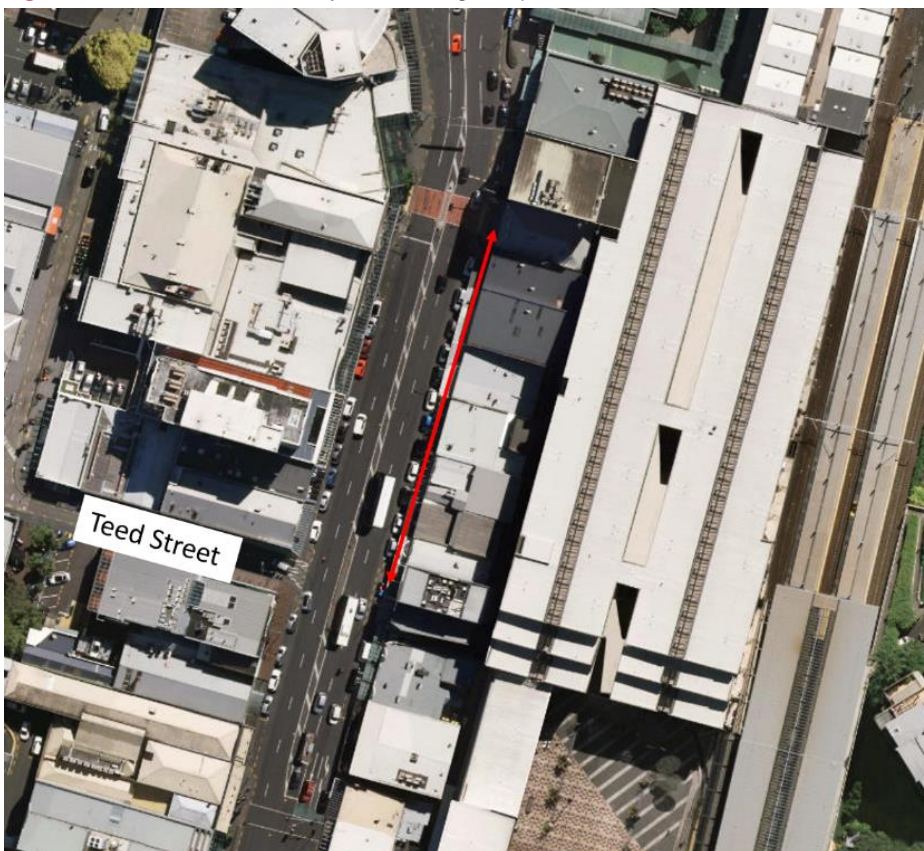


Figure 2.4 Aerial of Broadway Drive - Geomaps

Davis Crescent, Newmarket

Davis Crescent runs between Short Street and Broadway. It has two lanes in each direction, with parking on both sides of the road. There is limited retail frontage and high pedestrian traffic on the west side of the road which operates as a cut through for pedestrians, cyclists and micromobility from Lumsden Square to Carlton Gore Road. The footpath is narrow and uninviting, approximately 1.5m wide at the rail overpass, but narrowed by lighting poles to 1.2m in places. There is potential for a temporary cycle lane to be implemented where six roadside parking spaces currently reside on the western side of the road.



Figure 2.5 Street view of Davis Crescent - Google Maps



Figure 2.6 Aerial view of Davis Crescent - Geomaps

Hopetoun Street, Ponsonby

Hopetoun Street runs between Ponsonby Road and Pitt Street. It is a two-way two-lane road with a bridge which overpasses SH1. This bridge has very narrow footpaths on either side of the road, which is not very accommodating for scooter riders. The current road layout is not attractive or inviting to cyclists, with little space on the side of the lanes. The two lanes are approximately 8.2m wide, providing potential room for a flush extension to the footpath providing shared path facilities for pedestrians and micromobility to be implemented on one side of the road.



Figure 2.7 Street view of Hopetoun Street - Google Maps

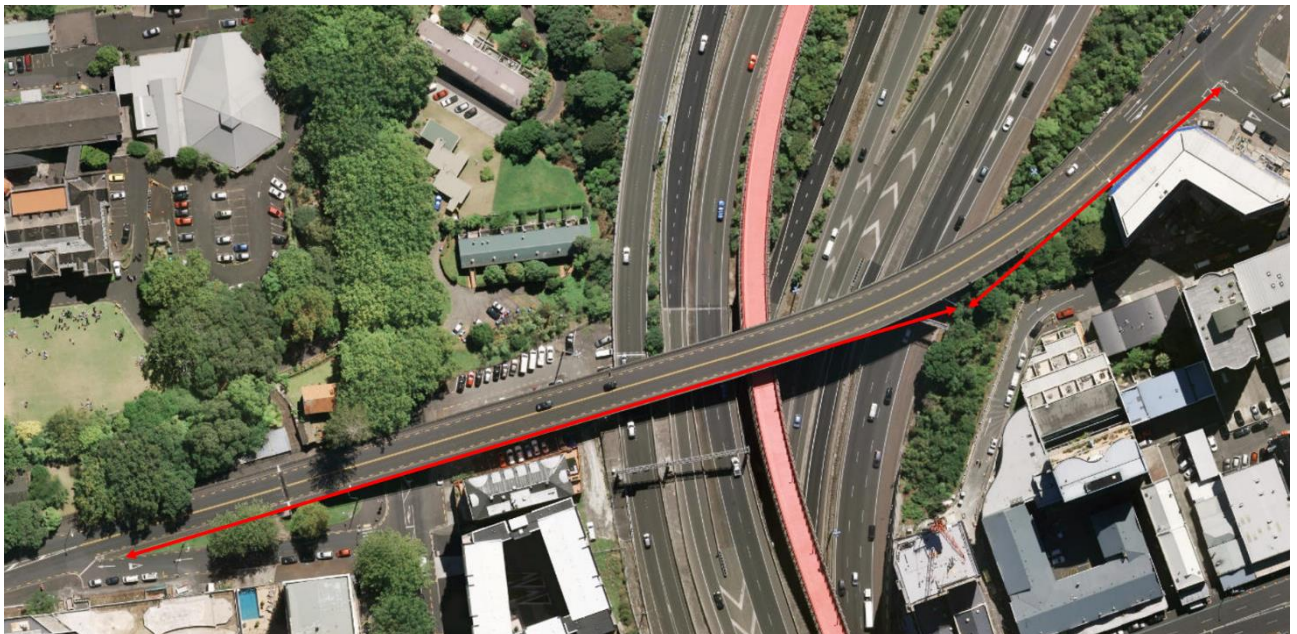


Figure 2.8 Aerial view of Hopetoun Street - Geomaps

Chivalry Road, North Shore

Chivalry Road runs between Glenfield Road and Archers Road. It is located close to Wairau Valley which has a high number of commercial and industrial premises. Glenfield Intermediate and Glenfield Primary school are located on this road. The road has two lanes in each direction and has car parking on both sides of the road. This provides room for the implementation of temporary cycle/micromobility lanes.



Figure 2.9 Street view of Chivalry Road - Google Maps



Figure 2.10 Aerial view of Chivalry Road - Geomaps

2.3 Site Evaluation

The five sites identified were compared and evaluated for the intervention's potential benefit to micromobility movement and/or pedestrians using a simplified multi-criteria assessment. Each of the criteria identified were given a score from 1 to 5, with 5 representing the greatest potential benefit to micromobility movement and 1 the lowest.

The results indicate that the best two sites are Hopetoun Street and Davis Crescent.

Table 2.1 Site Evaluation: Potential Micromobility Benefits from Interventions

Criterion	Crowhurst Street	Broadway	Davis Crescent	Hopetoun Street	Chivalry Street
Pedestrian Demand	Low – limited on street retail. No through route.	High – lots of retail along the street front.	Medium-High – cut-through from Newmarket to Carlton Gore Road.	Some – no shops, but connects Freemans Bay, Ponsonby, and Grey Lynn with Auckland CBD.	Low – not much active mode use in the area.
Score	2	5	4	4	2
Micromobility Demand	Low – limited demand.	High – some demand in the area with hired scooters and bikes available.	Medium-High – some demand as a through route from Newmarket to Carlton Gore Road.	Medium – commuters to the CBD from Freemans Bay, Ponsonby, and Grey Lynn.	Low – not much micromobility use in the area.
Score	2	5	4	3	1
Narrow/uninviting pedestrian environment	Yes – the footpaths are narrow for the area.	Somewhat – the foot paths are wide, but the area has high pedestrian foot traffic.	Yes – footpaths are narrow.	Yes – footpaths sufficient but constrained by bridge.	Yes, narrow footpaths.
Score	4	2	4	4	3
Intimidating road environment for micromobility	Wide road, limited by on-street parking.	Wide road, with limited room for micromobility.	Wide road, with on street parking on the north section of the road.	No designated area for micromobility, with average footpaths and wide road lanes.	Wide road with large shoulders with lots of parked cars. Narrow pavement.
Score	3	3	3	4	3
On-Street Parking Demand/Restrictions	Limited retail demand for parking. There are other parking options which are not on the street.	Broadway does have some roadside parking. However, Broadway has already been improved with kerb build outs, making temporary lane interventions impractical.	Some roadside parking. However significant off street parking available nearby.	None.	Roadside parking used for school pick up and drop off periods.
Score	3	1	4	5	4
Total	14/25	16/25	19/25	20/25	13/25

2.4 Davis Crescent

A spot survey was undertaken on Davis Crescent between 8.11 and 8.26am on Monday 19 April to analyse the prevalence of different types of active modes. The survey recorded pedestrians walking in either direction but identified which footpath they were using. In addition, it identified cyclists both on and off road and micromobility using the route.

	Swimming Pool (eastern) Side	Rail (western) Side	Total	Pedestrians crossing road mid block (east to west)	Pedestrians crossing road mid block (west to east)
Pedestrians on footpath	13	69	82		
Cyclists on road	4	8	12		
E Scooters on Road	1	1	2		
E Scooters on Footpath		4	4		
E bikes on road		1	1		
Total	18	83	81	6	0

It is clear from this short survey that Davis Crescent functions as a cut-through for pedestrians and cyclists. The majority of pedestrians (85%) use the rail (western) side of Davis Crescent due to the desire line between Carlton Gore Road and Lumsden Square. In addition, it was observed that a high proportion of those pedestrians using the swimming pool (eastern) side of Davis Crescent were exiting from a car parking building. An additional six pedestrians were recorded crossing Davis Crescent between the Davis Crescent spur and the Lumsden spur, all of whom crossed from east to west (from swimming pool side to rail side).

Observations

- The footpath on the western side of Davis Crescent as it crosses the rail bridge is 1.5m wide. This is below the standard width for a new footpath, and in places it is narrowed by street furniture (lamp poles and parking meter) to 1.2m. At times pedestrians were observed walking on the roadway due to pedestrian congestion and obstructions (parked e-scooters).
- There are six marked parking bays on the western side of the road, to the north of the rail bridge. These are pay and display spaces costing \$2 per hour to park during the hours of 9am-6pm. There are a few businesses fronting onto Davis Crescent on the western side, being a hairdresser, model shop and restaurant.
- It is observed that there is plentiful on-street parking in the vicinity of Davis Crescent and significant amounts of off-street parking immediately opposite (the Olympic car park).
- E scooters were observed both to be parking on and riding on the footway on the western side of Davis Crescent.
- Cyclists and motor vehicles are also observed using Davis Crescent as an alternative to Broadway. At times traffic can be observed to queue along Davis Crescent.
- The speed limit is 50km/h.

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Figure 2.1 Parked e-scooter - Davis Crescent (west)



Figure 2.1 Cyclist overtaking queuing cars on Davis Crescent



Figure 2.2 E scooters and pedestrians sharing footway, Davis Crescent



Figure 2.1 Davis Crescent – western Side, looking south.

On the eastern side of the road the footpath is narrower and commonly constrained by rubbish bins. It is significantly less used by both pedestrians and micromobility as it is not on the desire line.



Figure 2.2 Davis Crescent - eastern side, looking south

Proposed Temporary Infrastructure

It is proposed to install a one-way micromobility/cycle lane on the western side of Davis Crescent from a point opposite the Lumsden Square spur and Davis Crescent spur on the northern side of the rail bridge. The purpose of this lane is to provide additional roadspace for micromobility and cyclists to allow them to avoid conflicts with pedestrians on the footpath and to bypass queuing traffic on the roadway.

It is proposed to provide a narrow dividing feature on the road. This could either be a safe-hit post or some narrow planters depending on the space availability. A potential example from Federal Street is illustrated below in **Figure 2.3**.



Figure 2.3 Example narrow planter dividers, Federal Street

It will be necessary to remove six on-street parking spaces to accommodate this lane.

Figure 2.4 illustrates the concept.

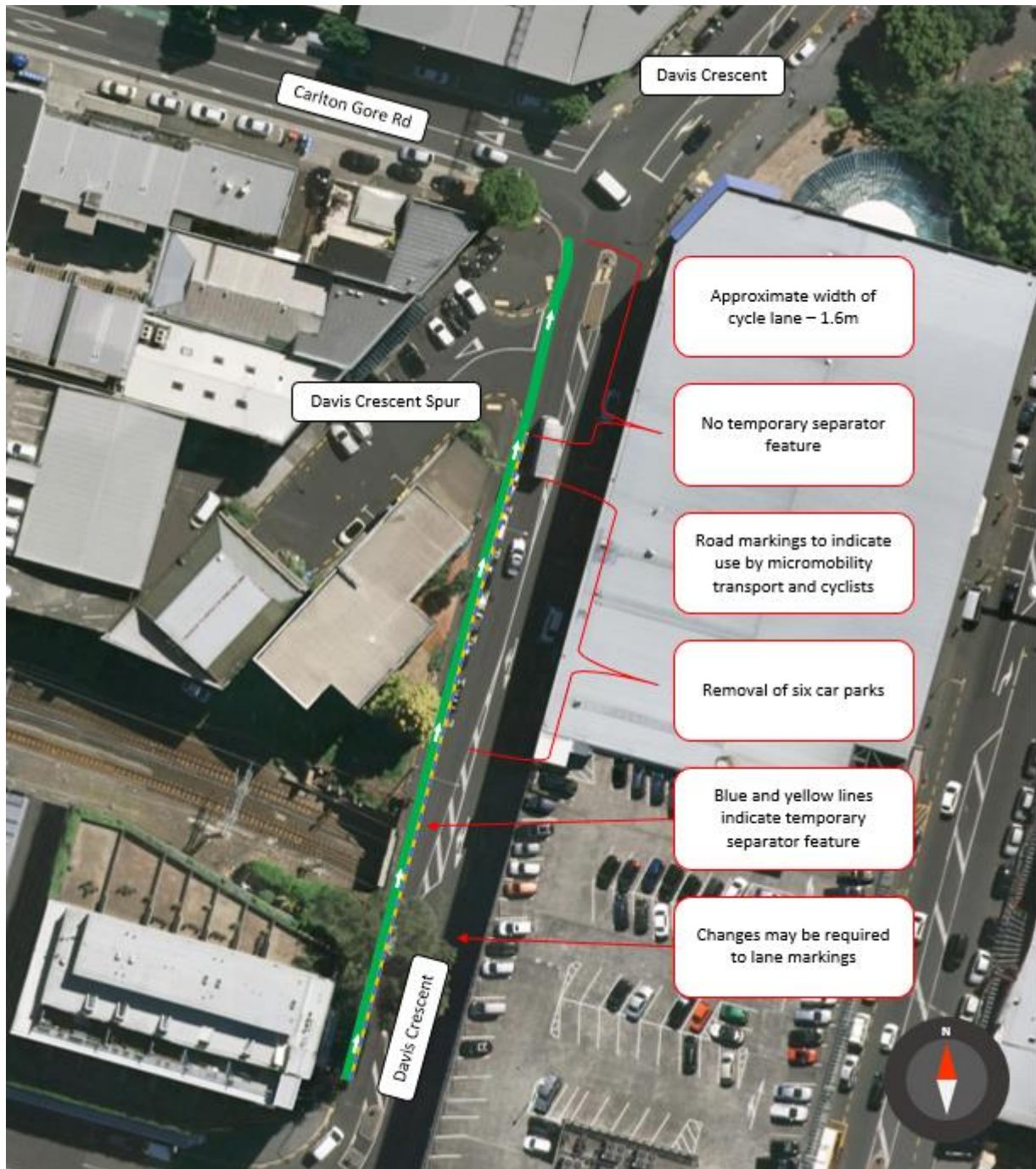


Figure 2.4 Intervention Concept - Davis Crescent

2.5 Hopetoun Street



A spot survey was undertaken on Hopetoun Street between 8.10 and 8.25am on Monday 19 April to analyse the prevalence of different types of active modes. The survey recorded pedestrians walking in either direction but identified which footpath they were using. In addition, it identified cyclists both on and off road and micromobility using the route.

Table 2.1 Spot Survey - Hopetoun Street

	Northwest Side	Southwest Side	Total
Pedestrians on footpath	39	12	51
Cyclists on road	7		7
Cyclists on footpath	2		2
E Scooters on Road		1	1
E Scooters on Footpath	5		5
E bikes on road	6		6
Total	59	13	73

It is clear from this short survey that the majority of pedestrians (76%) use the northwestern side of Hopetoun Street. Scooter riders overtaking pedestrians on the northwestern footpath were generally careful and pedestrians were sticking to the left of the footpath. Pedestrians may be used to e-scooters overtaking or responding to riders ringing their bells in advance. However the footpath width on this side of the road just allows two people to stand side by side and there is a risk of pedestrians or e-scooter riders falling onto the road.

Quarterly manual surveys are undertaken by Auckland Transport at screenlines capturing modal splits. This includes monitoring happening at Hopetoun Street where in November 2022 the following two day average usage was recorded. This indicates a similar trend to that recorded in our spot survey, indicating consistent demand on this route for

pedestrians, cyclists and scooters and peak vehicular city-bound demand of around 1000 vehicles (eg from the hour commencing 7.45am).

Table 2.1 Hopetoun Street Two Day Average City Bound Cordon Count (Nov 2020)

Time	Pedestrians	Cyclists	Scooters	HCV	Other Vehicles
6:00	2.5	1.5	0	1	43.5
6:15	5.5	2	0	1	53
6:30	8	1	1.5	0	87.5
6:45	10	4	0	0.5	122
7:00	9	4	0	3.5	159
7:15	16.5	3.5	2	2	214
7:30	12	7	1.5	2.5	213.5
7:45	25.5	10	2	1	236
8:00	37.5	6.5	1	2.5	257.5
8:15	36.5	13	3	2	277
8:30	21	8	0	4.5	256.5
8:45	22	6.5	1.5	5.5	269.5
9:00	8.5	3	1.5	6.5	201
9:15	11	6	0.5	7.5	192.5
9:30	9.5	0.5	0.5	3	138
9:45	7	0.5	0	6	156
Total	242	77	15	49	2876.5

Observations

- Most travel was northbound across all modes
- Scooter riders overtaking pedestrians on the footpath were generally careful and pedestrians were sticking to the left of the footpath. They may be used to e-scooters overtaking or responding to riders ringing their bells in advance. The footpath width on the left hand side only just allows two people to stand side by side.
- Around half of bicycles counted were assessed to be e-bikes (no exact count).
- Some pedestrians are accessing the right hand side of the bridge from stairs pictured below. There is no step-free access to the footpath on this side of the road, which could explain why no e-scooters were observed on this footpath.
- The speed limit is 50km/h.



Figure 2.5 Stair access to southern side of Hopetoun Street bridge

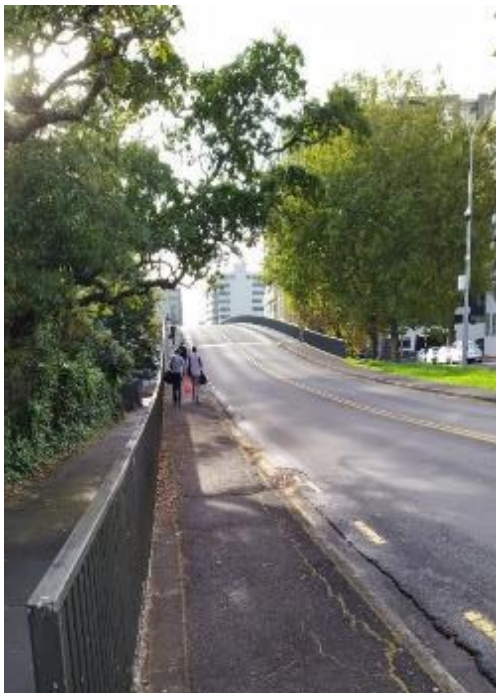


Figure 2.6 Hopetoun Street Bridge - looking west

Proposed Temporary Infrastructure

It is proposed to install a flush extension to the footway on Hopetoun Street Bridge between a point opposite the Beresford Square intersection and the Hopetoun Street slip road (between the points where the footpaths narrow). The flush extension could be similar to that installed on High Street, as illustrated in **Figure 2.7**.



Figure 2.7 Example flush footpath extension - High Street

The purpose of the footway is to provide sufficient space for the footway to operate as a shared use path for micromobility, cycles and pedestrians.

The path extension will result in a narrower roadway, although it is estimated that there will be sufficient roadway for two 3.3m lanes, sufficient for safe movement. It will also be necessary to realign road markings, including the no-overtaking lines on the centre of the bridge to re-centre these in the new lanes. **Figure 2.8** and **Figure 2.9** illustrate the length and detail of the proposal respectively.

Further consideration of the usage of the path will be required if this concept is progressed to seek an optimal balance between the width of a path for pedestrians and micromobility, and the potential use by cyclists.

It is noted that there are no overtaking markings on the bridge, although the current width of lanes potentially allow overtaking of cyclists within lane. Narrower lanes may mean that cyclists on road feel squeezed and/or pressured by drivers, while a very narrow lane would allow cyclists to 'own' the lane. A widened path offers the potential for cyclists to use this path, however, the width will need to be carefully considered to ensure safe use by all modes, noting that the gradient on the bridge may facilitate high speeds on footpaths. Accurate surveys of the roadway will be required to determine appropriate lane widths and design.

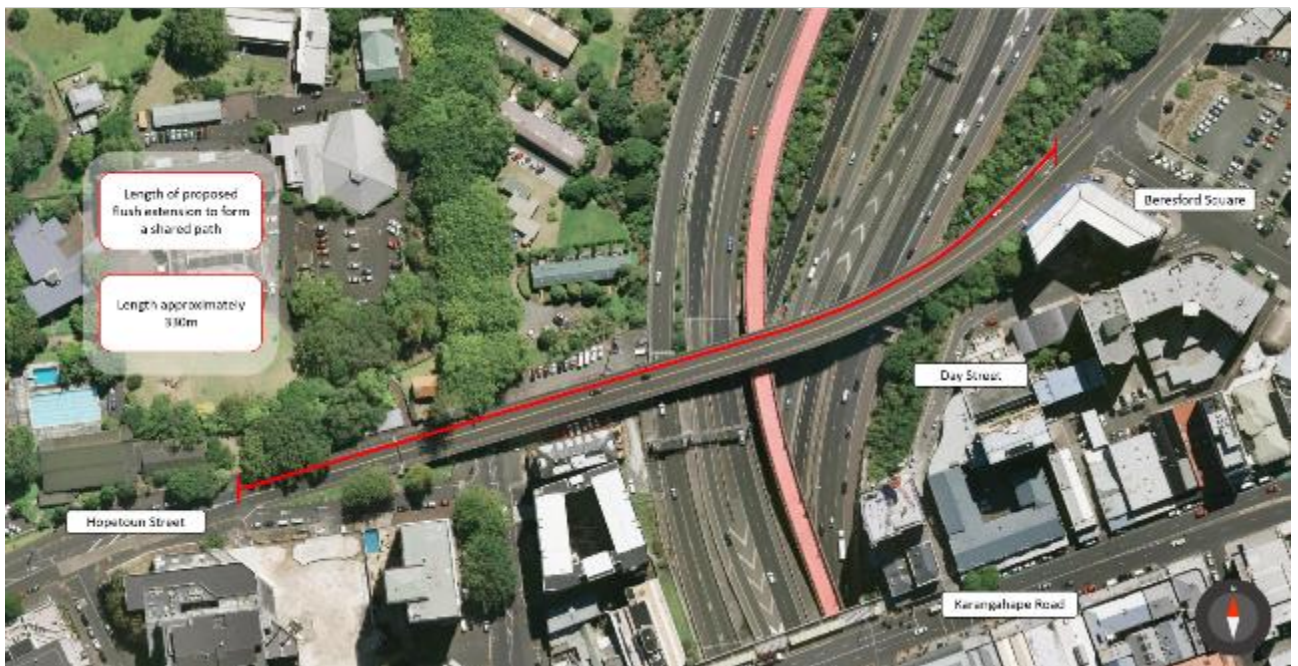


Figure 2.8 Intervention Concept: Hopetoun Street - length illustration



Figure 2.9 Intervention Concept: Hopetoun Street - detail illustration

2.6 Additional Intervention Concept: Footpath and Speed Trial

Another trial concept for consideration relates to the question of the relationship between footpath width and speed.

Our initial work has identified speed trends on footpaths and other facilities. However, limited data on footpath speeds was available due to the two sites with footpaths (Queen Street and Grafton Bridge having high volumes of pedestrians meaning a higher usage of roadway than in other locations by e-scooters, and all sites being subjected to the hired e-scooter speed restrictions. A proposal is to sample an additional ten sites around the city which have a variety of footpath widths, speed limits and which are unconstrained by hired e-scooter speed restrictions in order to provide a better picture of the following elements:

- Footpath usage by mode
- Speed (on road and on footpath) by mode
- Pedestrian volumes and relationship to speed and footpath usage
- Footpath width and its relationship to speed and footpath usage.

The sites would be identified to represent one variable each (ie, footpath width, pedestrian volumes, speed zone) were this trial to proceed, but would include a variety of arterial and local roads at different speed limits as well as a high quality cycle facility such as the North Western cycleway to determine unconstrained speeds of devices.

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