

WCC Transitional Cycleway Parking Management Plan Part 2

Aro Valley Connection

31 October 2022



**Absolutely Positively
Wellington City Council**

Me Heke Ki Pōneke



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1 Introduction

The Transitional Programme, led by Wellington City Council (WCC) alongside Let's Get Wellington Moving (LGWM) is swift action to implement a rapid change of pace to the installation of cycleways under the Paneke Pōneke – Bike network plan. The program aims to install interim cycleways using lower-cost and adaptable materials. This will allow for initial community engagement and feedback in real-time to help inform future permanent changes.

As part of the Transitional Programme, the Aro Valley Transitional Cycleway is intended to be implemented. The route and extent of the proposed bike route is shown in Figure 1.

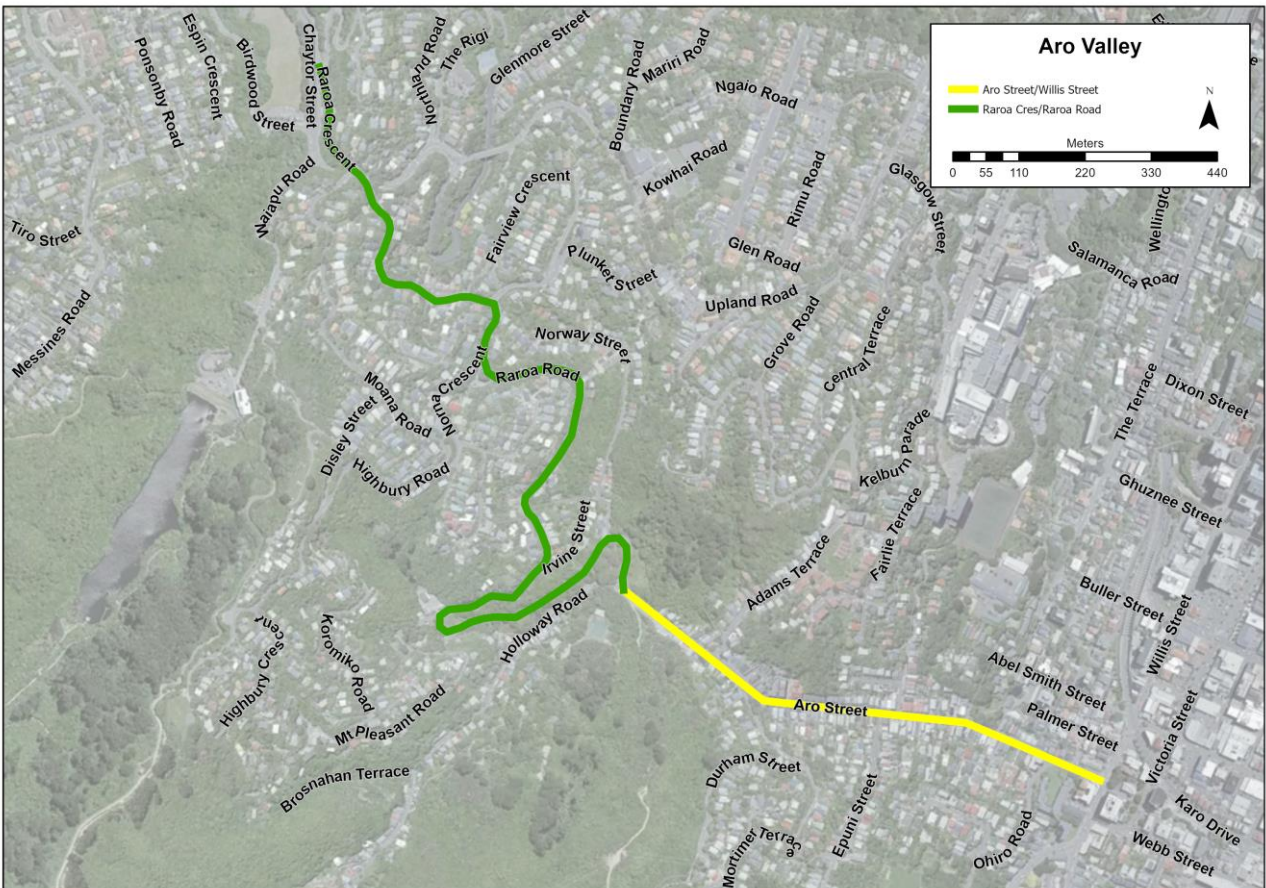


Figure 1 Aro Valley Transitional Cycleway extent

1.1 Proposed Stage Approach for Aro Street

Due to the unique business centre and residential district of Aro Valley, the outcomes WCC are seeking cannot be achieved in one step without significant disruption.

To address this, WCC proposes to create the right conditions for mode shift over a three-year shift period. The approach aims to provide better opportunities for reduced car ownership through car share alternatives first, then the installation of cycleways, which will require moving residential parks from Aro Street into side streets. There will also be attention to improving road safety by slowing traffic through the village centre and installing a short section of cycleway on a dangerous corner. Figure 2 shows locations of each cycleway installation stage.

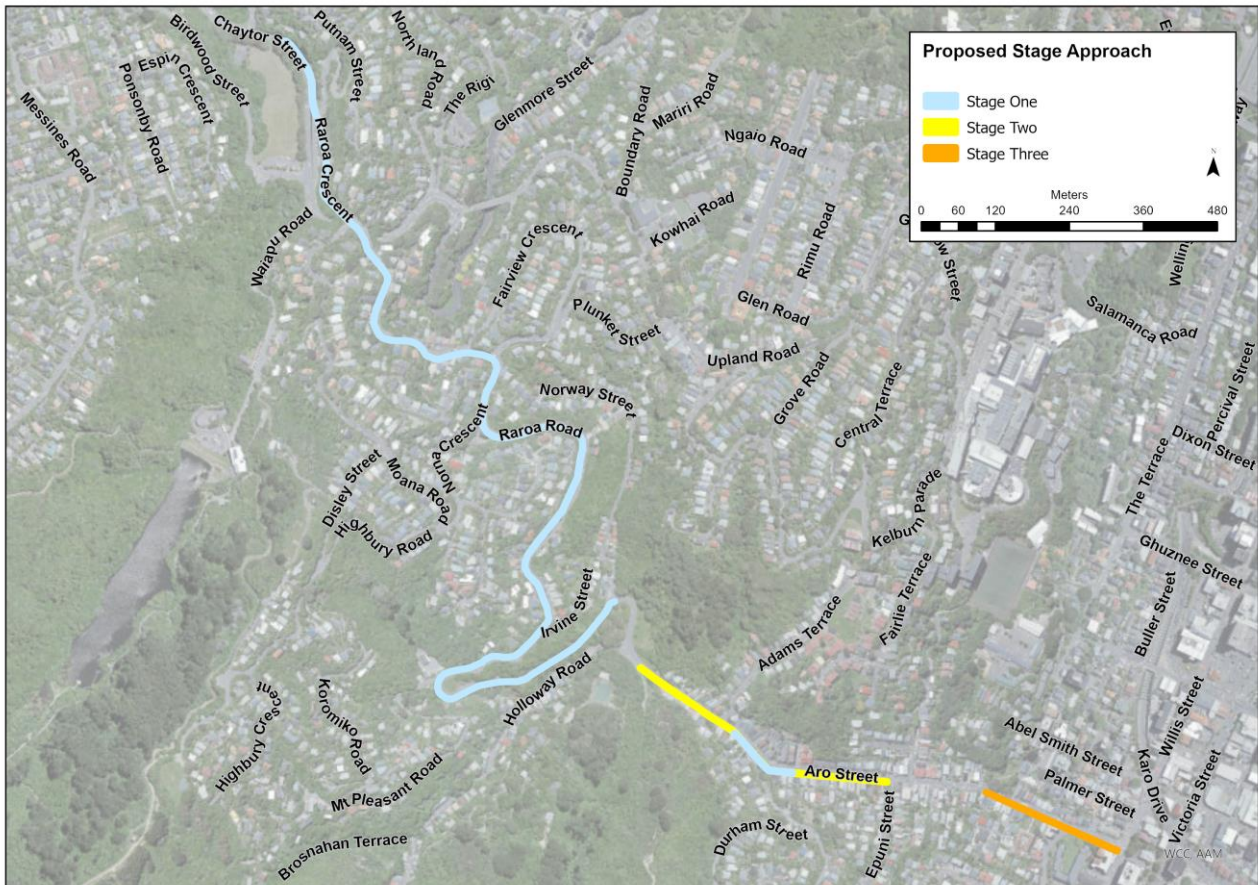


Figure 2 Map of Proposed Stage Approach locations

1.1.1 Proposed Stage 1 (2023 February to July)

1. Sharrows (on green blocks)
2. Transverse markings on the road.
3. Raised platform crossings for pedestrians and speed cushions to slow traffic.
4. Remove 3-4 carparks and install 110 metres of uphill cycleway/lane near Durham Street
5. Install car share carparking spaces at the bottom of side streets in Aro Valley
6. Introduce Residential Carparking in Holloway Road (and possibly Adams Tce) and approximately twenty P120 carparks at the bottom of Holloway Road.
7. Install bike parks
8. Widen the shared path through Aro Park.
9. Potentially extend the 30kph zone down to Willis Street.
10. Removal of all uphill car parks in the away from CBD direction and install 1.7km of uphill cycleway on Raroa Road/Crescent

Other works:

- LGWM upgrade of Willis/Aro intersection
- Brooklyn Hill Cycleway.

1.1.2 Proposed Stage 2 (2024 January/ February)

1. Before university starts, extend uphill cycleway from the shops to Waimapihi Reserve (460 metres). Requires removing approximately 48 car parks.
2. Introduce more residential parking in side streets and more car share parks as required.
3. Install more bike parks

4. Install parklet outside one or two businesses (this could also happen in Stage 1 or 3 if a business was keen).

Other works:

- LGWM City Streets changes begin along Willis Street
- Connection to Brooklyn Hill cycleway.

1.1.3 Proposed Stage 3 (Before March 2025 January/ February)

1. Install cycleway from Willis Street to Aro Park (268 metres). Requires removing approximately 22 carparks.
2. Install more bike parking as required.

Other works:

- LGWM City Streets changes on Willis Street.

1.2 Purpose

The purpose of this Parking Management Plan (PMP) is to develop an understanding and review of parking demand and behaviour along the route to coincide with the Wellington Parking Policy 2020. Part 1 of the Aro Valley Transitional Cycleway PMP prepared by Stantec in May 2022 aimed to highlight:

- identifying current parking management (including on and off-street availability),
- identifying existing parking data,
- and identifying parking data requirements.

Part 2 aims to:

- gauge an understanding of current parking usage and behaviour within the area,
- consider impact of the proposed cycleway upgrades on car park availability,
- recommend mitigation of impact.

2 Wellington Parking Policy 2020

Within June 2019, the city of Wellington declared a climate emergency as a reflection of many Wellingtonians concerns about climate change.

Road transport accounts for a significant 34% of Wellington City's emissions. Therefore, addressing how we move around the city plays a key role to help meet the city's goal in becoming a carbon net zero capital by 2050.

Wellington City Councils vision for the city is built around people and the community, where people and goods can easily move through the city based upon a transport system that can accommodate for moving more people using fewer vehicles to help reach the carbon net zero goal.

The city adopted and updated a Parking Policy in August 2020. The parking policy sets the objectives and principles for the management of council-controlled on-street and off-street parking. The parking policy acknowledges that Wellington needs a more efficient transport system that makes better use of our limited road space.

Achieving the vision for Wellington will mean removing some on-street parking spaces on key transport routes, relocating on-street road space to support active and public transport, and re-prioritising the remaining on-street space.

Within the Parking Policy 2020, a parking space hierarchy is established. The parking space hierarchy supports transport priorities to guide making parking provision decisions and allocating

parking spaces. Essentially, the parking space hierarchy describes which types of parking have the highest and lowest priorities within classified areas; the priority level does not mean the amount of parking spaces.

The hierarchy for City Fringe and Inner-City Suburbs applies for the Aro Valley Transitional Cycleway project and is shown in Table 1.

Table 1 Parking Policy 2020 Hierarchy

Priority	City Fringe and inner-City Suburbs
Highest Priority	Safe and efficient movement of people and goods
High Priority	Bus stops Urban design features Residents Bicycle/micro-mobility Car share
Medium Priority	Electric vehicle charging Mobility Short stay (car & motorcycle)
Low Priority	Loading zones Coach and bus (short stay)
Lower Priority	SPSV*/taxi stands Commuter (car & motorcycle) Coach and bus (long stay)
Lowest Priority	Long stay parking of private non-motorised vehicles

2.1 Measuring Parking Impact

This report considers the impact of the proposed Transitional Cycleway on the number of car parks available and the ability of users to access local destinations using these parks, both before and after mitigation. The six-point scale shown in Table 2, defines and assesses impact.

Table 2 Six-point scale is used to assess the level of impact

Level of Impact	Definition
Very High	Removal of parking spaces has a very high impact on the ability of users to find a parking space and visit the area. Alternative parking spaces of the same type are not available within walking distance.
High	Removal of parking spaces has a high impact on the ability of users to find a parking space and visit the area. Alternative parking spaces of the same type are available within a 10-minute walking distance.

Moderate	Removal of parking spaces has a moderate impact on the ability of users to find a parking space and visit the area. Alternative parking spaces of the same type are available within a 5-minute walking distance.
Low	Removal of parking spaces has a low impact on the ability of users to find a parking space and visit the area. Alternative parking spaces of the same type are available within a 3-minute walking distance
Very Low	Removal of parking spaces has a very low impact on the ability of users to find a parking space and visit the area. Alternative parking spaces of the same type are available within a 1-minute walking distance.
None or N/A	No impact on the ability of users to park and access local destinations or not applicable because this type of parking is not present.

2.2 Ideal Occupancy Threshold

The figure of 85% represents a parking occupancy above which traffic circulation will be high as motorists search for an available car park and may not be able to find an available car park space. Non-compliant parking may also be widespread and illegal parking can be common in situations where high occupancy is occurring. The occupancy of 85% is discussed in “Parking Pricing Implementation Guidelines” (T. Litman, Victoria Transport Policy Institute, 2010). The occupancy of 85% is considered to be a threshold value in the Wellington City Council Parking Policy (2020). It is further noted that if peak parking occupancies are well below this threshold there is inefficient use of the road space allocated exclusively for parking.

2.3 Best Practice at the Time

At the time of this reports preparation, the Parking Policy 2020 is the most up to date document regarding the parking hierarchy, parking impact measure and occupancy threshold (85%). Methods developed for collating data in the study area are also recognized as up-to-date practices at the time.

3 Background

3.1 Area

The area along the Aro Valley transitional cycleway route is located on the southern end of the Wellington CBD and an approximately 10 to 20-minute walking distance from the city centre. The arterial route is a mixture of residential buildings and commercial shops/cafés.

The route topography along Aro Street on the Eastern end of the proposed cycleway route is within the flattest area of the region. Along the route, areas of interest are the School of Practical Philosophy, Aro Preschool, Lychgate Funeral Home and Aro Park. Aro Street is also where the main commercial shops/cafes centre/village is concentrated with a Mini Mart, beauty salons, St Vincent de Paul Society Wellington, various food stores and cafés as well as Garage Project Brewery. Through the commercial centre the speed limit is 30 km/h, beyond the boundaries of the commercial centre and intersecting streets, the speed is limited to 50 km/h.

The route along Rarora Road and Raroa Crescent on the western end of the proposed cycleway route is a meandering road with a steep increase in topography. Land usage throughout this area is predominantly residential. The sides of the route are also generally steep slopes.

The Waimapahi Polhill Reserve and Pukehīnau Kiwifoot Reserve are also accessible from the intersecting streets along the cycle route for recreational use.

3.2 Future Context of the Aro Valley Region

Coinciding with the timing of the Aro Valley Transitional Cycleway, there will be future upgrades and projects being implemented in the area as well. Significant projects are the resurfacing and replacement of existing 33kV cables. There is also an identified desire for bike racks to be installed within the main commercial region from businesses, residents and council.

3.2.1 Resurfacing (2022 – 2023)

Resurfacing along intersecting side streets along the cycle way route is planned to occur between October 2022 to April 2023 by WCC. Aro St is deferred from this plan due to the installation of the cycleway.

3.2.2 Cable Replacement (2025)

The existing 33kV cables running alongside Aro Street from Willis Street to Adams Terrace. The replacement is necessary to ensure ongoing security of supply to facilitate growth in the Kelburn, Northland, Karori and Brooklyn areas. This work is planned for 2025 by Wellington Electricity.

4 Summary of Survey

Multiple surveys were conducted within the Aro Valley region along and intersecting with the proposed cycleway route. The purpose of the surveys is to capture occupancy and duration of stay data in order to gauge an understanding of parking usage and behaviour within the area to identify potential impacts of the proposed cycleway.

4.1 Methodology

Full and partial surveys was completed between the 12th to 22nd of May and between the 27th of July and 30th August by WCC. Surveys are conducted on a Weekday (commuter, residential parking behaviour) and a Weekend (recreational, residential and commercial visitor parking behaviour).

Full surveys were conducted along Aro Street and intersecting streets (Entrance Street, Holloway Road, Adams Terrace, Durham Street, Devon Street, Essex Street, Epuni Street and Ohiro Road). The surveys required a surveyor to record data over a period of 7:30 hours between the times of 9:00am to 4:30pm in half hourly and hourly time periods. Full surveys recorded duration of stay and occupancy by recording the first four characters of vehicle license plates parked on-street.

Partial surveys were conducted along Raroa Road/Cres and intersecting streets (Mt Pleasant Road, Norna Crescent, Plunkett Street, Fairview Crescent, Moana Road and Northland tunnel Road). The surveys required a surveyor to record snapshots occupancy at 9:00am (understand morning occupancy) and 4:00pm (understand afternoon occupancy).

Overnight surveys were also conducted outside of working hours (6:30pm - 6:30am) along Aro Street and intersecting streets between 19th June to 16th July, to understand parking occupancy after work to gauge an idea of commuter behaviour.

Off-street data is provided by WCC last updated in 2022.

This assessment has been broken down into five areas:

- Aro St residential West (includes Aro Street section of the cycleway between Epuni Street and Entrance Street),
- Aro Street Commercial Centre (includes Aro Street section of the cycleway between Boston Terrace to Epuni Street),
- Aro Street Residential East (includes Aro Street section of the cycleway between Willis Street and Alameda Terrace),
- Raroa Road/Crescent North (includes Rarora Road and Raroa Crescent section of cycleway between Chaytor Street and Plunkett Street),
- Raroa Road South (includes Rarora Road section of cycleway between Fairview Crescent and Entrance Street).

These sections are shown in Figure 5. Areas are sectioned by land use and parking restriction along the route allowing for an assessment of mitigation to be prioritised against a hierarchy that reflects their respective primary land use.

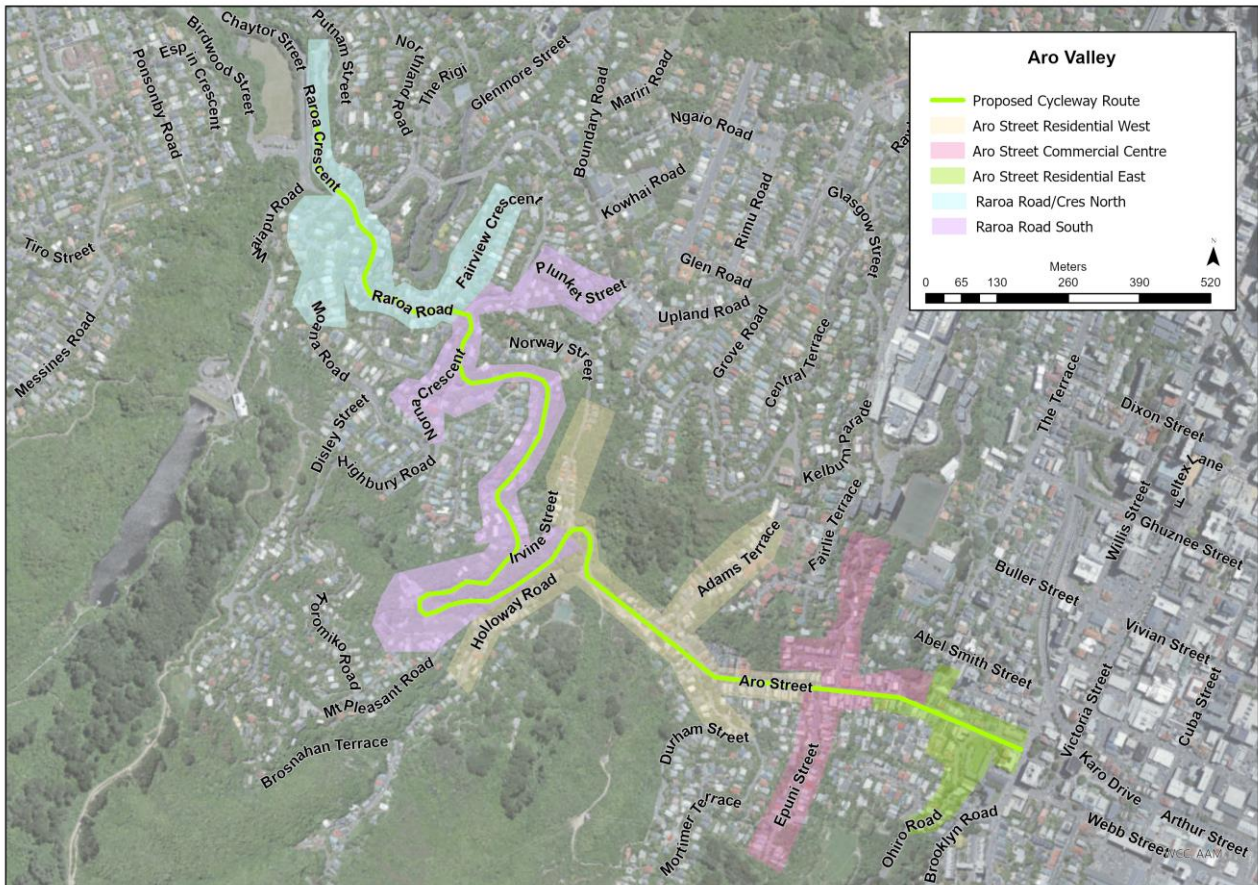


Figure 3 Sections analysed in this report (with proposed cycleway route shown)

4.1.1 Parking Inventory

For this report, the parking inventory quoted is the number of parking spaces available; typically on-street. Within majority of the parking spaces in the area, parking bays are not delineated space by space. Therefore, an assumption based on the length of the kerb is divided by a standard length judged by the current parking behaviour to determine capacity. A parking length of six metres was implemented.

Parking on the proposed route through Raroa Road and Raroa Crescent predominantly consists of unmarked on-street parking. There are no parking restrictions applied to any parking on the route currently. No-stopping at all time edge lines are provided intermittently over the road.

Due to narrow widths on sections of the route, the traffic flow is reduced to one-way when vehicles are parked both sides of the road. Typically the lane widths are between 5.6m to 8m wide. Vehicles have been observed to generally park where the road width exceeds 7m and vehicles parked on narrower are observed to be mounting the footpath.

Therefore, as there are sections along the route where vehicles do not park but legally can, using the following criteria areas have been excluded for analysis:

- Carriageway widths are less than 6.9 metres, or;
- On tight radii curves where a parked vehicle would force a vehicle over the centreline with insufficient forward visibility; and
- There are minimal/no nearby parking demand generators (close access to dwellings); and
- Legal parking (i.e. not including vehicles parked over the footpath) was not observed during site investigations.

These assumptions were developed based on site observations, and WCC's document: *Standard Operating Procedure – Parking Issues*.

Measurements were taken using aerial imagery from Land Information New Zealand. A sketch showing which areas of legal parking have been included or excluded in the inventory estimation is provided in Appendix E.

4.2 Impact of Covid-19

During the time of the survey occurring, New Zealand was in the orange traffic light setting of the COVID-19 protection framework. The largest impact this setting has on the survey results is that people are encouraged to work from home where possible. Therefore, it is expected that there is less commuter demand into the city, and the demand for parking by residents may be higher than anticipated as there are more people working from home. This effect is difficult to quantify, so the data obtained has not been modified to account for this.

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5 Aro Street Residential West

5.1 About the Area

The Aro Street Residential West section is predominantly a residential land use space. This section includes the Holloway Road Playground, Aro Valley war Memorial and entrances to the Waimapihi Polhill Reserve and Pukehīnau Kiwifoot Reserve. This area is shown in Figure 4.

The Transitional cycleway route is proposed to run along Aro Street (from Epuni Street to Holloway Road) and Raroa Road (from Holloway Road to Entrance Street) within this section.

At the northern end of this section, construction of new residential development was occurring during the parking survey. Cones were placed to restrict parking only for construction workers; this may impact understanding of coupon parking use in this space (refer to Appendix A for map of construction impacted parking spaces).



Figure 4 Aro Street Residential West Section with key interest locations shown

5.2 Current Parking Usage

This section predominantly consists of coupon and unrestricted on-street parking. Entrance Street and Holloway Road's parking is all unrestricted on-street parking. Adams Terrace and Durham Street are all coupon parking with small sections of residential parking in Adams Terrace.

Table 3 shows the parking inventory for this section. The parking restrictions in this section are shown in Appendix B of parking inventory maps.

Table 3 Aro Street Residential West Parking Inventory

Restriction Type	Overall Inventory (parks)	Spaces on the cycleway in towards CBD direction	Spaces on the cycleway in away from CBD direction
Coupon	175	23	50
Residential	14	0	0
EV	2	0	0
NL	136	0	0
Total	327	23	50

5.3 Occupancy

Figure 5 shows the occupancy in this section as well as on the proposed cycleway route throughout the day on both the weekday and weekend survey.

Key observations:

- Both survey days the entire section is below the ideal occupancy threshold (85%) and are relatively consistent between 50% to 60% occupancy for the whole survey period.
- On the route, weekday survey is below the 85% threshold and is relatively consistent around between 60% to 70% occupancy for the whole survey period.
- Consistent occupancy throughout the survey period is likely driven by significant residential parking usage and behaviour within the section.
- On the route, weekend survey occupancy peaks above the 85% threshold at 10:00am till around 11:00am.
- The driver of higher occupancy values on the route during the weekend survey is likely due to a combination of more residents at home and more visitors to the section accessing the shops and recreation facilities. Coupon parking in this section also becomes unrestricted on weekends.

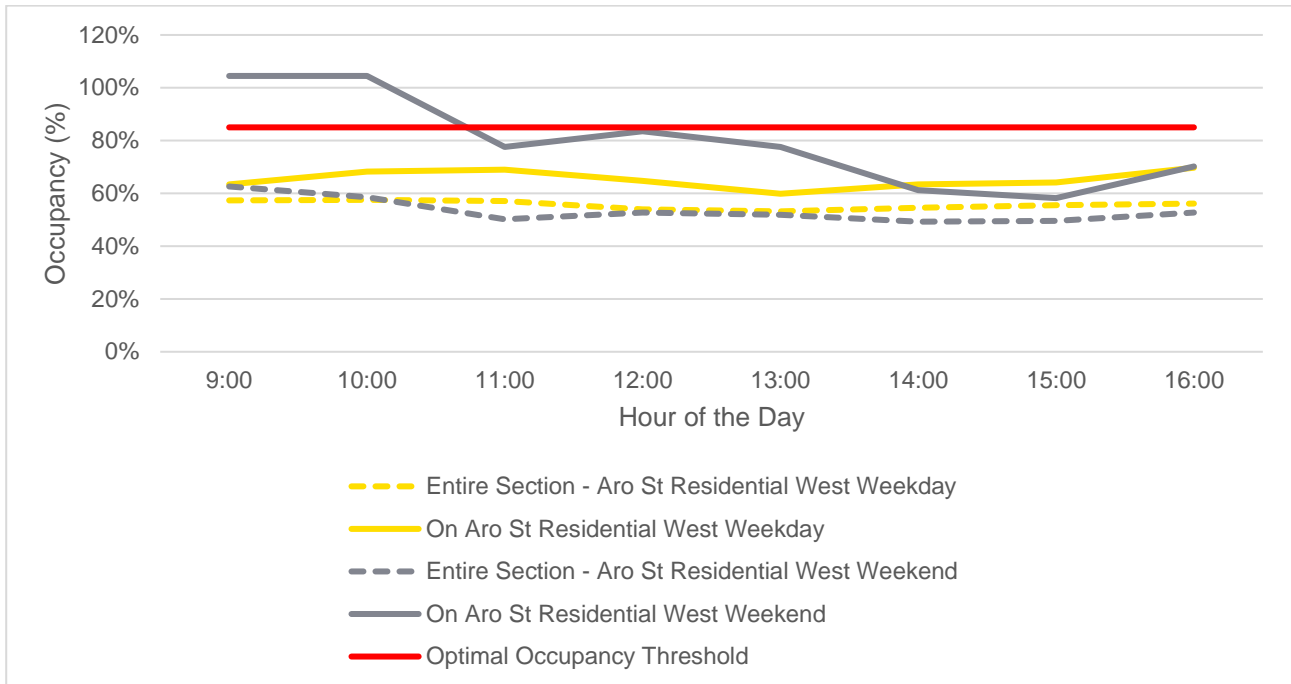


Figure 5 Aro Street Residential West Section occupancy profile from both survey days

Figure 6 and Figure 7 show the peak occupancy per street in this section on each survey day irrespective of time of day.

Key observations:

- Overall occupancy on Entrance/Norway Street and Adams Terrace are between 41% to 60%.
- On the weekday survey, Holloway Road has a high occupancy around the 85% ideal occupancy threshold and a significant drop in occupancy below 80% during the weekend survey.
- Due to all parking on Holloway Road being unrestricted, the driver for a higher occupancy on the weekday is likely due to commuters taking advantage of the unrestricted spaces.
- Only on the weekend survey, Aro Street had a high occupancy around the 85% threshold. Likely driven by visitors to the section for shopping and recreational purposes as well as more residents being at home.

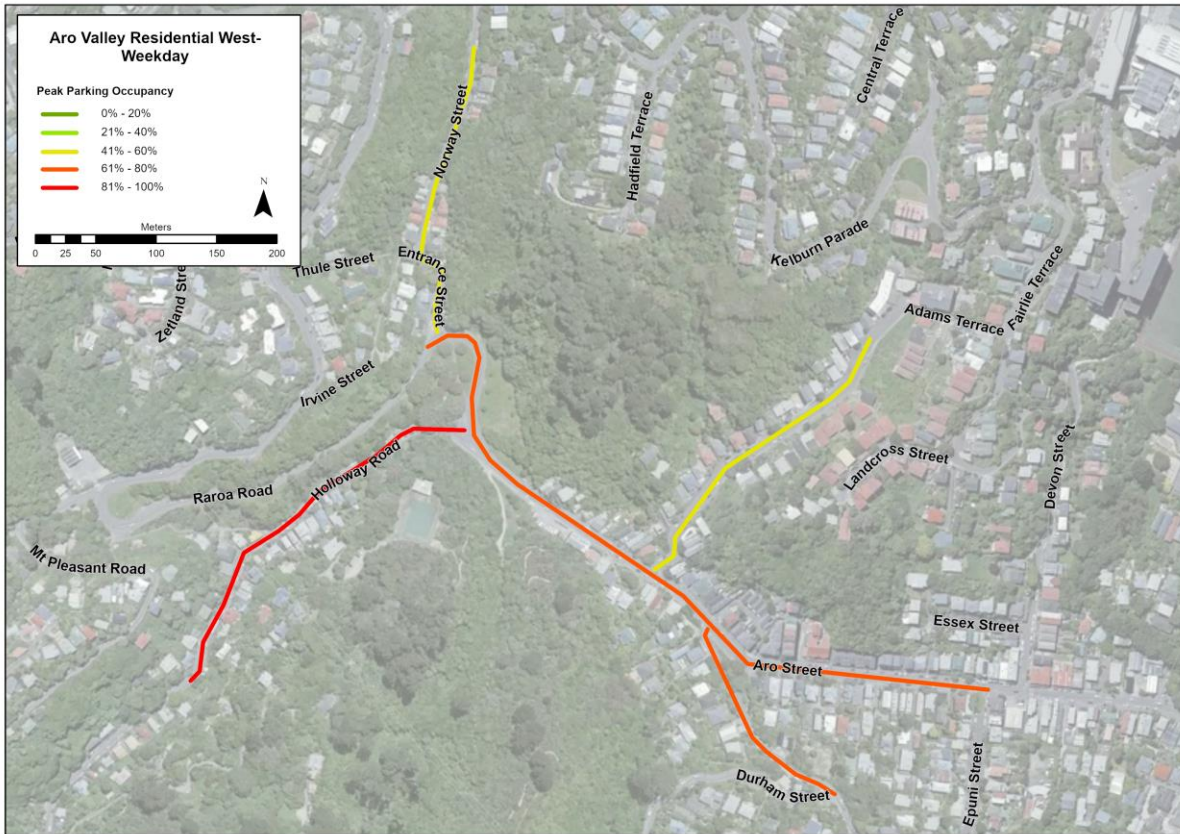


Figure 6 Aro Street Residential West parking occupancy (Weekday)

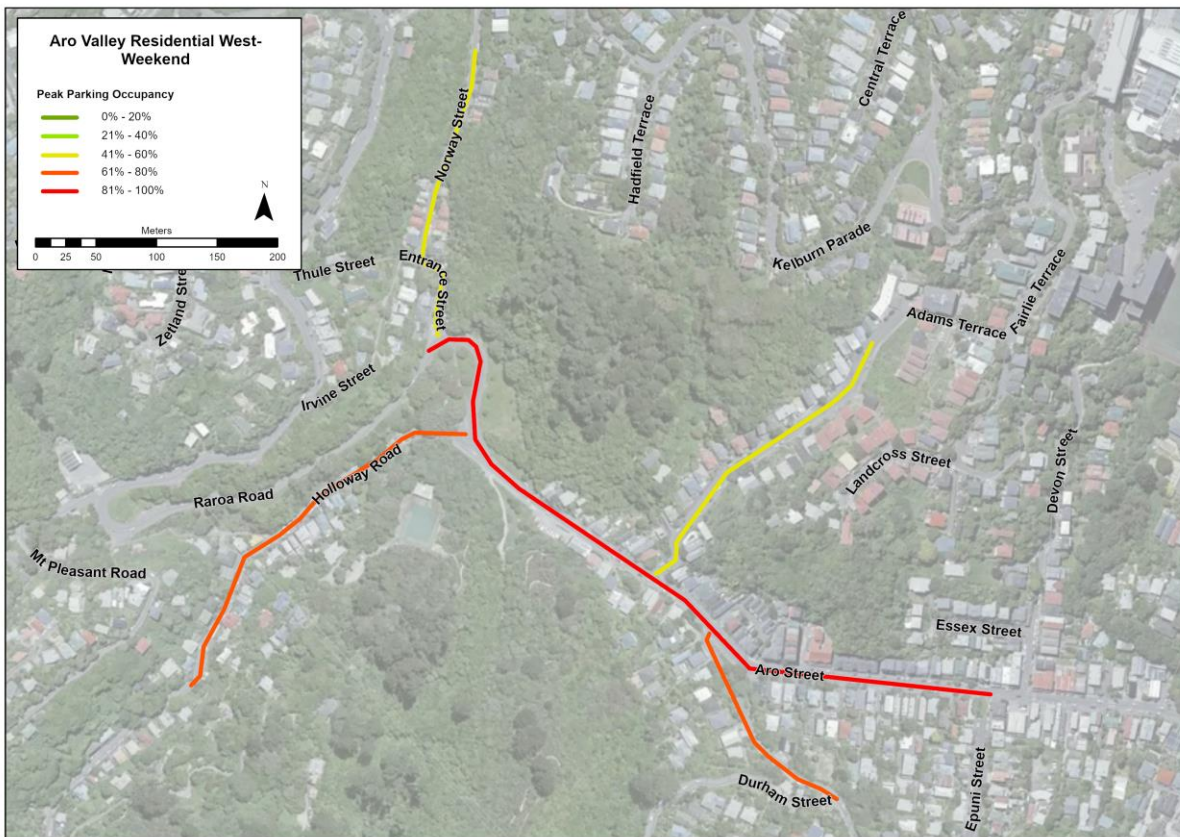


Figure 7 Aro Valley Residential West parking occupancy (Weekend)

5.4 Duration of Stay

Duration of stay data can be used to determine the turnover behaviour of the parking in this section. Figure 8 shows the weekday duration of stay profile for the Aro Street Residential West section, whilst Figure 9 shows the weekend profile.

Key observations:

- Coupon parking on the weekday survey has a higher proportion of short-stay parking (less than two hours) at 51% compared to 42% on the weekend.
- On both survey days, short stay residential parking is significantly higher than long-stay parkers (four plus hours). Short-stay residential parking being 67% and 56% on the weekday and weekend respectively, long-stay parking residential parking being 28% and 31% on the weekday and weekend respectively.
- Due to the observed and reported regular absence of parking wardens within this section, illegal parking in these spaces could likely be the driver for a higher proportion of short-stay usage within residential spaces.
- Unrestricted short-stay parkers are of a higher proportion on weekdays at 48% compared to long stay parkers at 44%. However, on the weekend there is a significantly higher proportion of unrestricted long-stay parkers at 55% compared to short-stay parkers at 32%.
- The driver of a higher proportion of long-stay parkers on the weekend is likely driven by more residents at home during the weekend.



Figure 8 Aro Street Residential West section duration of stay from the weekday survey

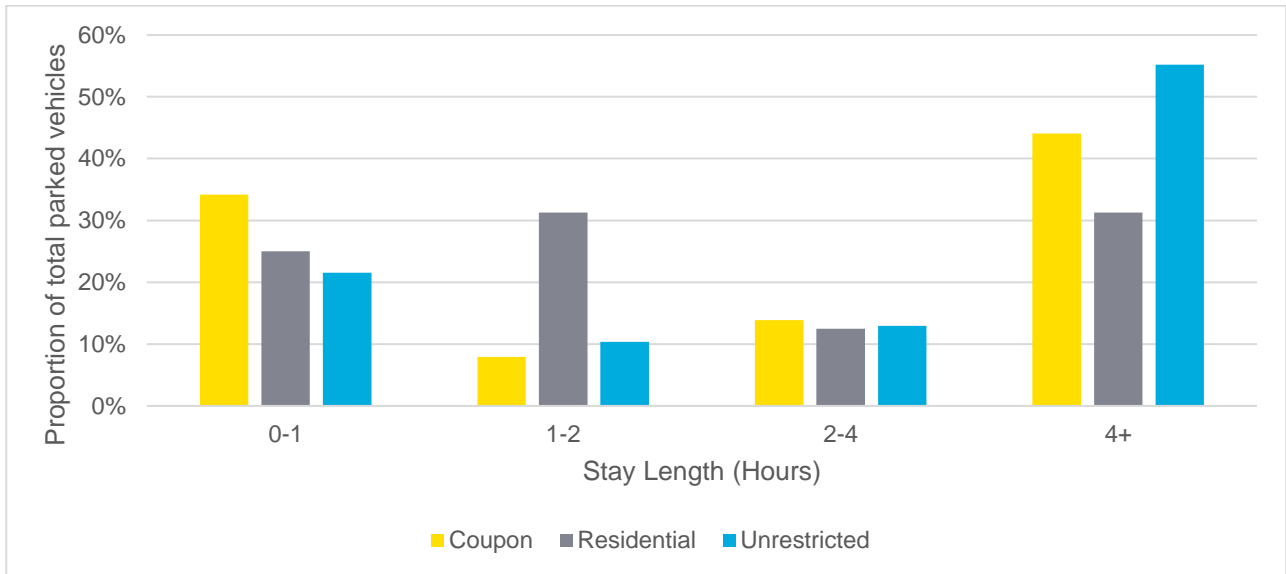


Figure 9 Aro Street Residential West section duration of stay from the weekend survey

5.5 Overnight Parking

A one-off occupancy survey on a weekday and weekend night were undertaken. This assesses the demand for on-street parking overnight. Figure 10 shows the overnight occupancy per street in the Aro Street Residential West section on the weekday, and Figure 11 shows the overnight occupancy on the weekend.

When compared, Aro street and Durham Street have a relatively high occupancy than other streets in the section on both days. Holloway Road notably has a relatively higher occupancy on weeknights than on the weekend. This is likely driven by more residents staying at home on the weeknight than on the weekend in this street.

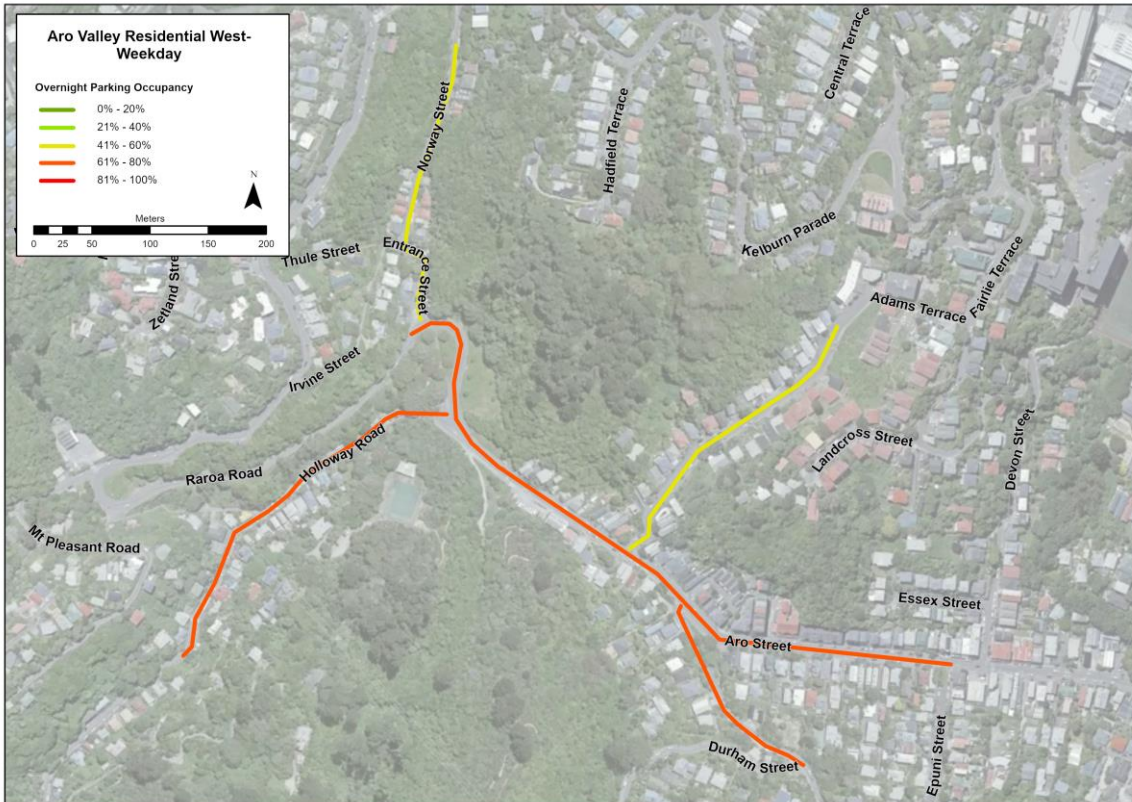


Figure 10 Aro Street Residential West section overnight parking (Weekday)

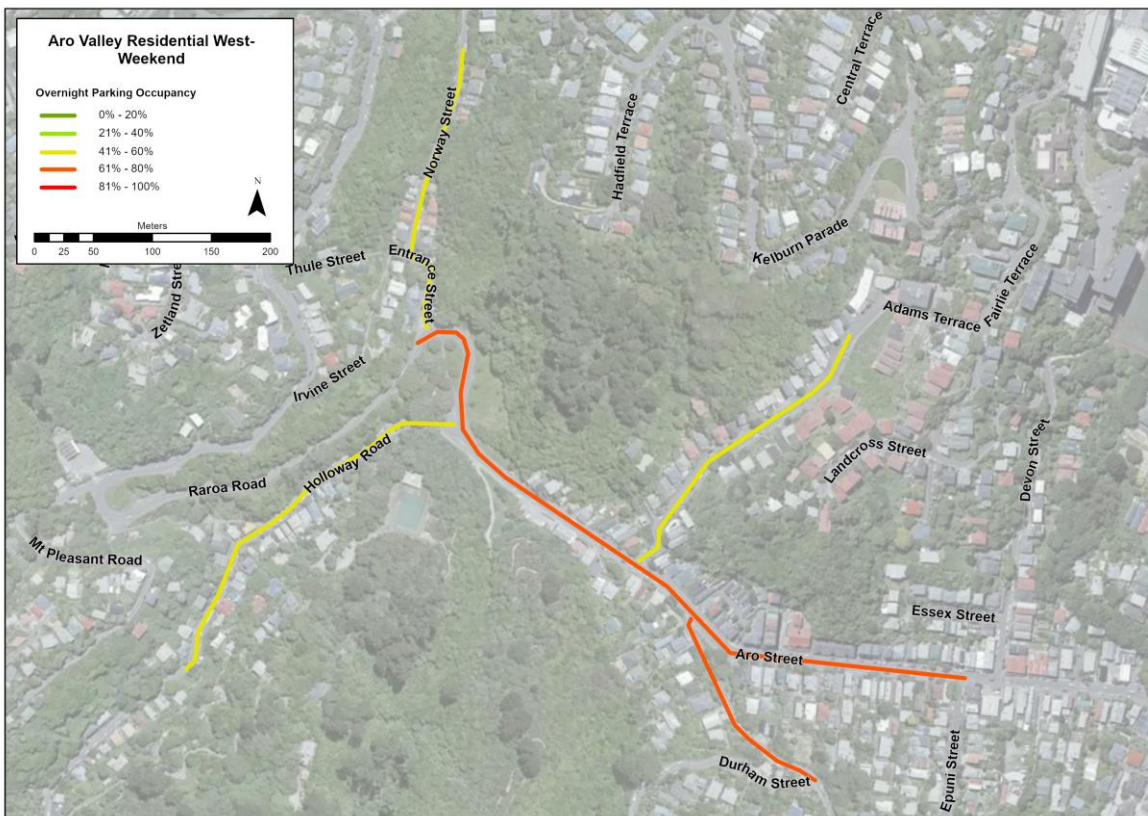


Figure 11 Aro Street Residential West section overnight parking (Weekend)

5.6 Off-Street

Majority of buildings within the Aro Residential West section do not have off-street parking. However, a moderate proportion of buildings in this section have off-street parking on the proposed cycleway route at 53%. All off-street parking in this section is residential.

Table 4 shows off-street parking inventory in this section and on the proposed cycleway route. Buildings included in the inventory are shown in Appendix C.

Table 4 Aro Street Residential West off-street parking inventory

Land use	Overall Off-street parking	Overall Off-street parking on proposed Cycleway Route	Off-street parking on proposed cycleway route away from CBD	Off-street parking on proposed cycleway route towards CBD
Residential	46%	53%	47%	58%
Commercial	0%	0%	0%	0%
Other	0%	0%	0%	0%
Without Off-street Parking	54%	47%	53%	42%

5.7 Impacts of Proposed Aro Valley Transitional Cycleway Stage One on Parking

5.7.1 Inventory impact on current parking in the Aro Residential West section due to Stage One installation of the Transitional Cycleway (refer to Appendix D for map or parking removed/changed):

- Net loss of 3 to 4 parking spaces on the proposed route
 - Currently all coupon parking spaces
- Approximately 68 parking space restriction type changes
 - Currently all unrestricted spaces
- There are no high priority parking types (Bus Stops, Car Share) being removed in the Stage One installation.

5.7.2 Impact on current parking occupancy within Aro Residential West section after the installation of Stage One of the Transitional Cycleway:

Table 5 shows the impact on occupancy expected after the removal of the 3 to 4 coupon spaces on the proposed route after Stage One installation (current average occupancy taken from higher weekend survey). Users of the coupon spaces are to be directed to side street coupon spaces on Durham Street and Adams Terrace. The expected occupancy value assumes the streets take on a maximum of the 4 spaces each after installation.

All expected occupancies are significantly lower than the 85% ideal occupancy threshold standardised within the Wellington City Parking Policy 2020. Therefore, coupon parking users within this section is expected to easily find a park on the main route or on the side streets after Stage One Installation.

Table 5 Impact of the 3 to 4 spaces removed on the proposed route

Street	Average Current Occupancy (%)	Average Expected Occupancy (%)
Aro Street	75%	79% (assumption of all 4 spaces occupied)
Durham Street (coupon parking)	58%	67% (assumption of all 4 spaces occupied)
Adams Terrace (coupon parking)	48%	51% (assumption of all 4 spaces occupied)

At the end of Holloway Road, 33 current unrestricted parking spaces are proposed to be changed to Resident/P120s to facilitate recreational parking for Waimapihi Reserve. There is also 35 current unrestricted parking spaces in Holloway Road proposed to be converted to resident spaces to prioritise the space for resident users.

Table 6 shows the average current occupancy for long stay users (residents/commuter) and short stay users (visitors).

Short stay users average expected occupancy isn't expected to change significantly as they will still be able to use either the Resident/P120 or extra unrestricted spaces to meet demand.

Table 6 Impact of the proposed 20 unrestricted parking changes on Holloway Road

Types of parking users on Holloway Road	Average Current Occupancy (%)
Long Stay Users (resident/commuter)	42% (~30 spaces)
Short Stay Users (visitor behaviour)	28% (~20 spaces)

5.8 Mitigation of Parking Impact

The parking being removed in this section is coupon parking that applies Monday to Friday from 9am to 8pm; outside of this time the spaces are unrestricted parking. Parking spaces being changed are unrestricted in this section. Table 7 shows the proposed measures to mitigate the impact of parking loss and change.

Table 7 Mitigation measures for Aro Street Residential West section Stage One

Parking type	Proposed mitigation	Level of impact after
Coupon	Encourage commuters to use other modes where possible. Direct resident and commuter users to surrounding Durham Street and Adams Terrace.	Moderate
Unrestricted	Encourage commuters to use other modes where possible.	Low
	Convert 33 spaces within Holloway Road survey scope to Resident/P120 spaces.	Low
	The introduced Resident/P120 spaces apply between 9am to 6pm. Resident parking out of time period.	Low

Table 8 shows the inventory for the area currently, after the upgrades and after the mitigation measures are implemented. This also shows the expected occupancy of each parking type after mitigation (based on the higher weekend survey).

Table 8 Comparison of Aro Street Residential West section parking inventory Stage One

Parking type	Current inventory	Inventory after upgrades	Inventory after mitigation	Net changes	Current Occupancy	Average expected occupancy
Coupon	193	189	189	No change	53%	54%
Residential	14	44	44	No change	47%	47%
EV	2	2	2	No change	50%	50%
NL	136	112	112	No change	53%	64%

5.8.1 Stage One impacts and mitigation on each parking type user in the Aro Street Residential

West section

Table 9 describes the impact and mitigation in place for each parking user type after Stage One installation in the Aro Street Residential West section.

Table 9 Impacts and mitigation on parking user types

Parking user type	Proposed mitigation	Level of impact after
Visitor (short stay)	The conversion of 33 P120 spaces in Holloway Road will allow sufficient spaces for visitors. Further redirect short stay visitors to coupon parking on Aro Street and unrestricted parking on Holloway Road or Entrance Street.	Low Visitors for recreational or other purposes are expected to easily find a space within the converted Resident/P120 spaces or be directed to coupon spaces on Aro street or unrestricted spaces in Holloway Road and Entrance Street.
	Short stay visitors to the commercial centre can use coupon parking on the route. Further direct to Durham Street or Adams Terrace within a 2 min walking distance from the commercial centre if main route is occupied.	Low Visitors to the commercial centre expected be able to easily find a parking space on the main route.
Commuter	Encourage commuters to use other modes of transport where possible. Direct commuters to unrestricted spaces on Holloway Road, Entrance Street or Raroa Rd (out of survey scope).	Moderate Commuters may find it harder to find an unrestricted space during the day on Holloway Road due to the implementation of 35 Resident parking spaces on Holloway Road.
Resident	Conversion of 35 unrestricted spaces on Holloway Road will provide sufficient spaces for residents. P120 spaces becoming resident park after 6pm will allow for sufficient overnight spaces for residents.	Low Residents on Holloway Road are expected to find a resident parking space or unrestricted space to park in during the day and night.

5.9 Impacts of Proposed Aro Valley Transitional Cycleway Stage Two on Parking

5.9.1 Inventory impact on current parking in the Aro Street Residential West section due to the Stage Two installation of the Transitional Cycleway (refer to Appendix D for map of parking removed):

- Net loss of 48 parking spaces on the proposed route
 - Currently all coupon parking spaces
- There are no high priority parking types (Bus Stops, Car Share) being removed in the Stage Two installation.

5.9.2 Impact on current occupancy within Aro Residential West section after the installation of Stage Two of the Transitional Cycleway:

After Stage Two installation, the average overall occupancy of the section is expected to be around 58% and around 79% on the proposed route (derived from higher weekend survey). Due to the proposed removal of 48 parking spaces and no relocation, occupancy on the proposed route is expected to rise to over 100%. The removal of 48 spaces will reduce on-street parking on the route by 68%, leaving approximately 23 spaces on Aro street within this section.

Table 10 Impacts of the removal of 48 parking spaces on the proposed route within the Aro Street Residential West section

Street	Average Occupancy (%)	Average Expected Occupancy (%)
Aro Street	79%	100%

5.10 Mitigation of Parking Impact

The parking being removed in this section is coupon parking that applies Monday to Friday from 9am to 8pm; outside of this time the spaces are unrestricted parking. Table 11 shows the proposed measures to mitigate the impact of parking loss.

Table 11 Mitigation measures for Aro Street Residential West section Stage Two

Parking Type	Proposed mitigation	Level of impact after
Coupon	Encourage commuters to use other modes where possible. Direct residents and commuters to surrounding Durham Street and Adams Terrace or to resident and unrestricted parking on Holloway Road and Entrance Street.	Moderate
	Encourage short-stay visitors to use other modes where possible. Direct visitors to Durham Street and Adams Terrace coupon parking or resident/P120s on Holloway Road.	High

5.10.1 Prioritising the mitigation strategies for resident usage

Resident parking is of high priority compared to short stay (medium priority) and commuter (low priority) parking according to WCC Parking Policy parking space hierarchy shown in Table 1. Therefore, determining resident parking demand to inform mitigation is top priority.

Determined by duration of stay data for Aro Street in this section, of the expected average 80% (higher weekend survey) occupancy on the route, about 32% (~21 parking spaces) of the proportion of parkers are long-stay users (residents/commuters). The overnight night data, however, shows an occupancy of 75% (~50 parking spaces, after Stage One and derived from higher weekday occupancy) on Aro Street.

Meeting resident demand during the day:

- With respect to the 85% ideal occupancy threshold, there is a limit of about 20 parking spaces on the proposed route of the 23 spaces left after Stage Two installation.
- To meet net demand of resident/commuter parking spaces on the proposed route during the day (minimum 21), the extra approximately 1 space is to be redirected to similar coupon parking spaces on Durham Street and Adams Terrace (within 1 - 2min walk).
- Durham Street after Stage One installation occupancy is an expected 67% (derived from higher weekend survey).
- Adams Terrace after Stage One installation occupancy is an expected 51% (derived from higher weekend survey).
- For occupancy to remain below the 85% threshold, Durham Street will have approximately 7 vacant coupon spaces and Adams Terrace will have approximately 29 vacant coupon spaces.
- Therefore, overall, both side streets are expected to be able to facilitate demand of long-stay resident/commuter parkers during the day below the 85% occupancy threshold.

Meeting resident demand overnight:

- Overnight to meet net demand of resident parking spaces on the proposed route overnight (50 spaces), the extra approximately 30 spaces is to be redirected to similar coupon parking spaces on Durham Street and Adams Terrace (within 1 – 2min walk).
- Durham street has an overnight occupancy of about 73% (derived from higher weekend survey).
- Adams Terrace has an overnight occupancy of about 50% (derived from higher weekend survey).
- For occupancy to remain below the 85% threshold, Durham Street will have approximately 6 vacant coupon spaces and about 30 vacant spaces on Adams Terrace.
- Therefore, overall, both side streets are expected to be able to facilitate for minimum demand of overnight resident parking below the 85% occupancy threshold alongside unchanged spaces on the proposed route.

Consideration of short-stay users on the proposed route:

- Short stay users before Stage One installation are 54% (~38 spaces) on the proposed route.
- Short stay parkers in this section are likely visitors to the commercial centre or to residential homes.
- Short-stay parkers will be directed to Durham Street and Adams Terrace within this section.
- At peak capacity of long-stay and short-stay usage, the occupancy of these side streets will be around the 85% ideal occupancy threshold.

- Short-stay will then also be redirected to park in the installed Resident/P120 spaces on Holloway Road or extra unrestricted spaces in Entrance Street (2 – 5 min walk from the commercial centre).
- Therefore, short-stay visitors to the commercial centre may struggle to find parking within this section after Stage Two installation within a 2-minute walking distance from the commercial centre.

Table 12 shows the inventory for the area currently, after the upgrades and mitigation measures are implemented. This also shows the expected occupancy of each parking type after mitigation (based on the higher weekend survey).

Table 12 Comparison of Aro Street Residential West section parking inventory Stage Two

Parking type	Current inventory	Inventory after upgrades	Inventory after mitigation	Net changes	Current Occupancy	Average expected occupancy
Coupon	189	141	141	No change	54%	73%
Residential	44	44	44	No change	47%	47%
EV	2	2	2	No change	50%	50%
NL	112	112	112	No change	64%	64%

5.10.2 Stage Two impacts and mitigation on each parking user type

Table 12 describes the impact and mitigation in place for each parking user type after Stage Two installation in the Aro Street Residential West section

Table 13 Impacts and mitigation on parking user types

Parking user type	Proposed mitigation	Level of impact after
Visitor (short stay)	Short stay visitors to the commercial centre within this section will be redirected to coupon spaces on Durham Street and Adams Terrace or to P120s on Holloway Road (5-10+min walk).	High Short stay visitors may struggle to find parking on Durham Street and Adams Terrace at peak residential and commuter occupancy. Holloway Road parking becomes an inconvenient walk to centre.
	Short stay visitors for recreation will be directed to resident/P120 spaces on Holloway Road.	Low Short stay recreational users are expected to be able to easily find a park after stage two installation.
Commuter	Encourage commuters to use other modes of transport where possible.	High Commuters may find it harder to find an unrestricted space during the day on Holloway Road due to the demand for long stay user space expected to increase.
Resident	Resident users on Aro Street directed to coupon and resident parking on Adams Terrace and Durham Street.	Moderate A maximum of 36 residents who currently utilise parking on Aro Street are expected to find a park between Adams Terrace and Durham Terrace during the day and night easily.

Figure 13 shows the walking time basins from the centre of the Transitional Cycleway in the Aro Street Resident West section. This shows that all side streets from the proposed route are within a 1 – 2 min walk. Unrestricted parking on Norway Street is the only parking that falls into the 5-minute walking basin.

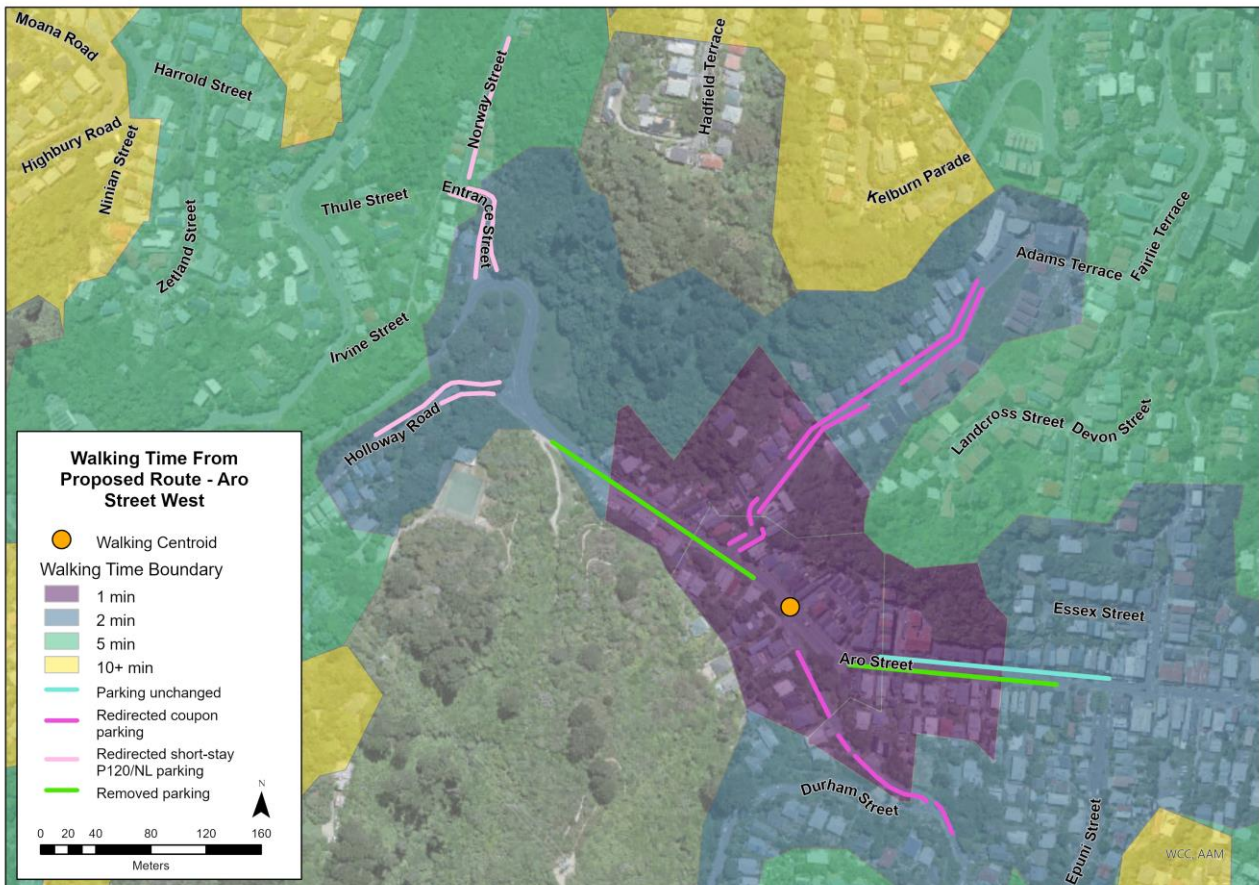


Figure 12 Aro Street Residential West walking time map

6 Aro Street Commercial Centre

6.1 About the Area

This area is a primarily commercial section which contains St Vincent de Paul Society Wellington, Mini Mart, multiple food stores and cafes, Garage Project Brewery and Aro Park. The proposed transitional cycleway flows through Aro Street (from Epuni St to Boston Terrace) in this section. Shown in Figure 14.

The northern end of Devon Street connects to the Victoria University of Wellington campus and the Southern end of Epuni Street connects to the city to sea walkway.

There was no construction in this section during survey days.

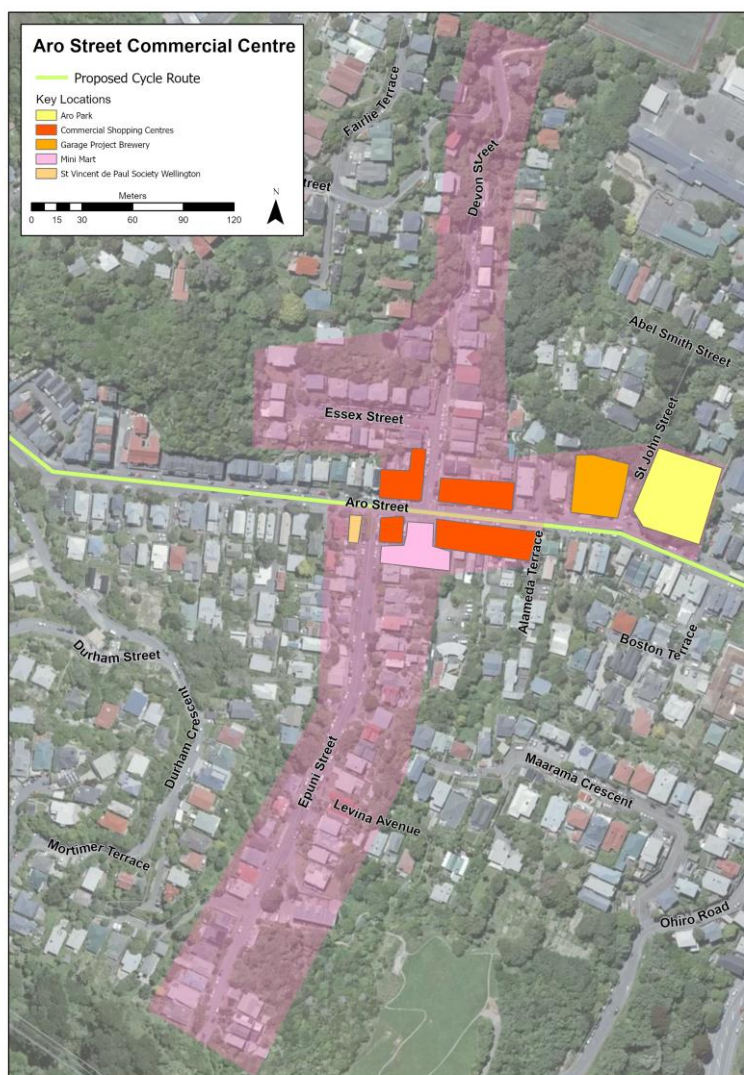


Figure 13 Aro Street Commercial Centre section with key locations shown

6.2 Current Parking and Usage

Most of the parking in this section is coupon on-street parking. There are small sections of residential parking on Epuni Street and Devon Street. All parking on the route except for two loading zones is P20 time restricted.

Figure 14 Aro Street Commercial Centre section with key locations shown

Table 13 shows the parking inventory in this section. The parking restrictions are shown in Appendix B.

Table 14 Aro Street Commercial Centre section on-street parking inventory

Restriction Type	Overall Inventory (parks)	Spaces on the cycleway in towards CBD direction	Spaces on the cycleway in away from CBD direction
Coupon	107	0	0
Residential	29	0	0
P20	22	13	9
EV	2	0	0
NL	9	0	0
Loading Zone	2	2	0
Total	156	15	9

Figure 16 shows the occupancy in this section as well as on the streets with the proposed cycleway route throughout the day on both the weekday and weekend survey.

Key observations:

- For the entire section on both survey days occupancy is relatively consistent and is below the 85% ideal occupancy threshold for the entire survey period only on the weekday survey.
- The consistent occupancy is an indication of relatively heavy residential behaviour in the section and the higher overall occupancy on the weekend is likely driven by a higher residential and visitor presence.
- On the route, occupancy is below the ideal occupancy threshold on both survey days.
- During the weekday survey on the route, occupancy is consistently below 50% on the weekday and notably drops to 20% around 1:00pm before rising again after 3:00pm.
- A driver for the relatively low occupancy at 1:00pm before a rise again after 3:00pm is likely a reflection of multiple cafes closing time occurring around noon and the 3:00pm opening hours of other restaurants and food stores in the section.
- During the weekend survey, occupancy peaks around 70% at 10:00am and 1:00pm on the route.
- The driver of the occupancy peaks on the weekend is likely due to visitors using the food/café facilities for brunch and then later for lunch in the day.

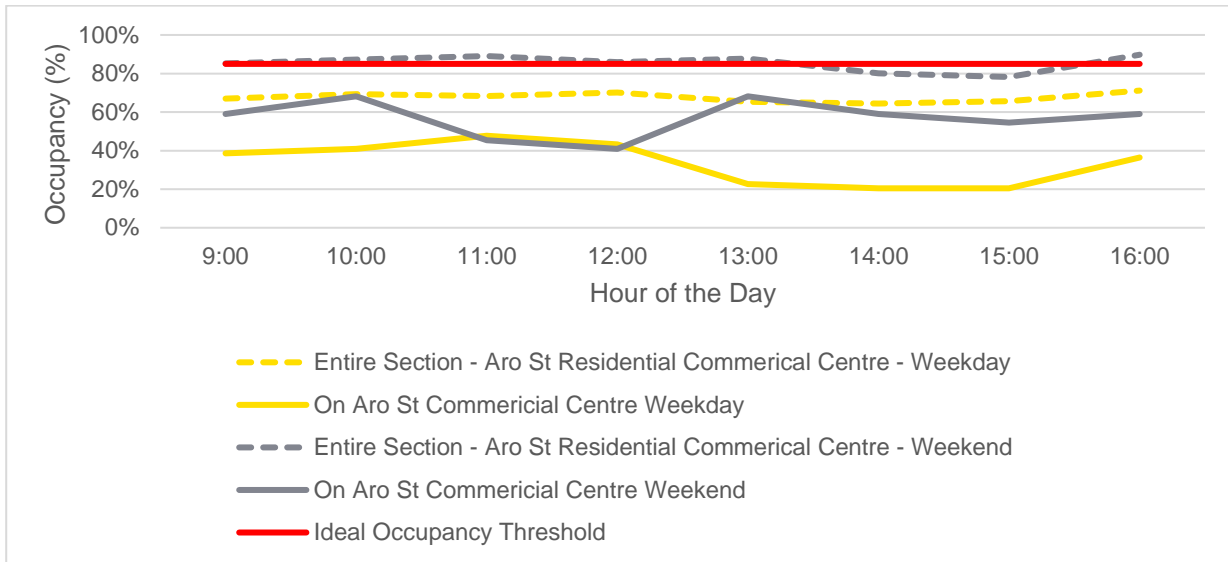


Figure 15 Occupancy profile from both survey days for the Aro Street Commercial Street section

Figure 17 and Figure 18 show the peak occupancy of on-street parking on each street within the section on both survey days.

Key observations:

- Overall occupancy of each street increases significantly on the weekend compared to the weekday.
- Only on the weekend all side streets (Epuni St, Devon St and Essex St) are around the 85% ideal occupancy threshold.
- Therefore, on weekends due to lower capacity, users may struggle more to find a park.

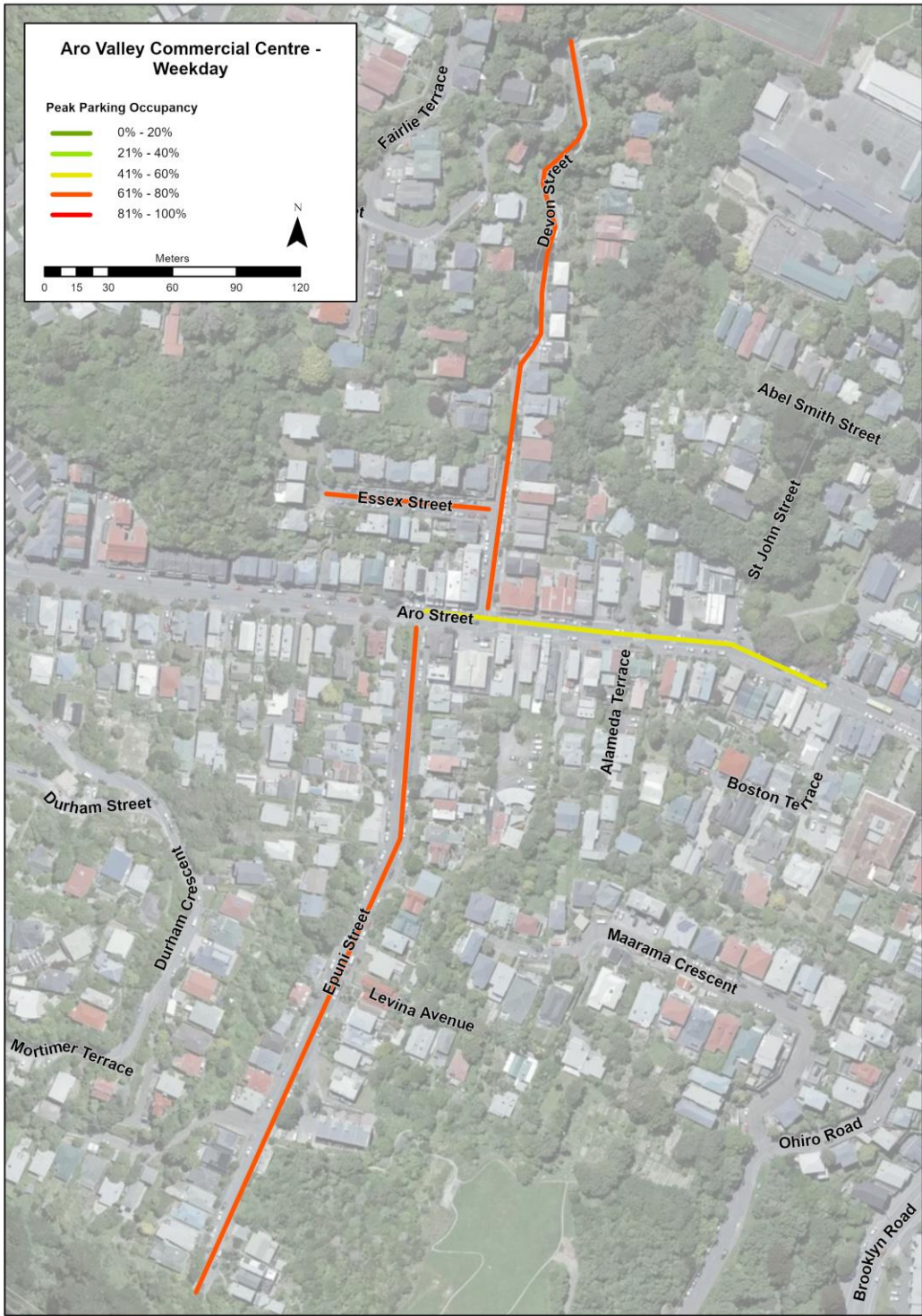


Figure 16 Peak parking occupancy per street from the weekday survey

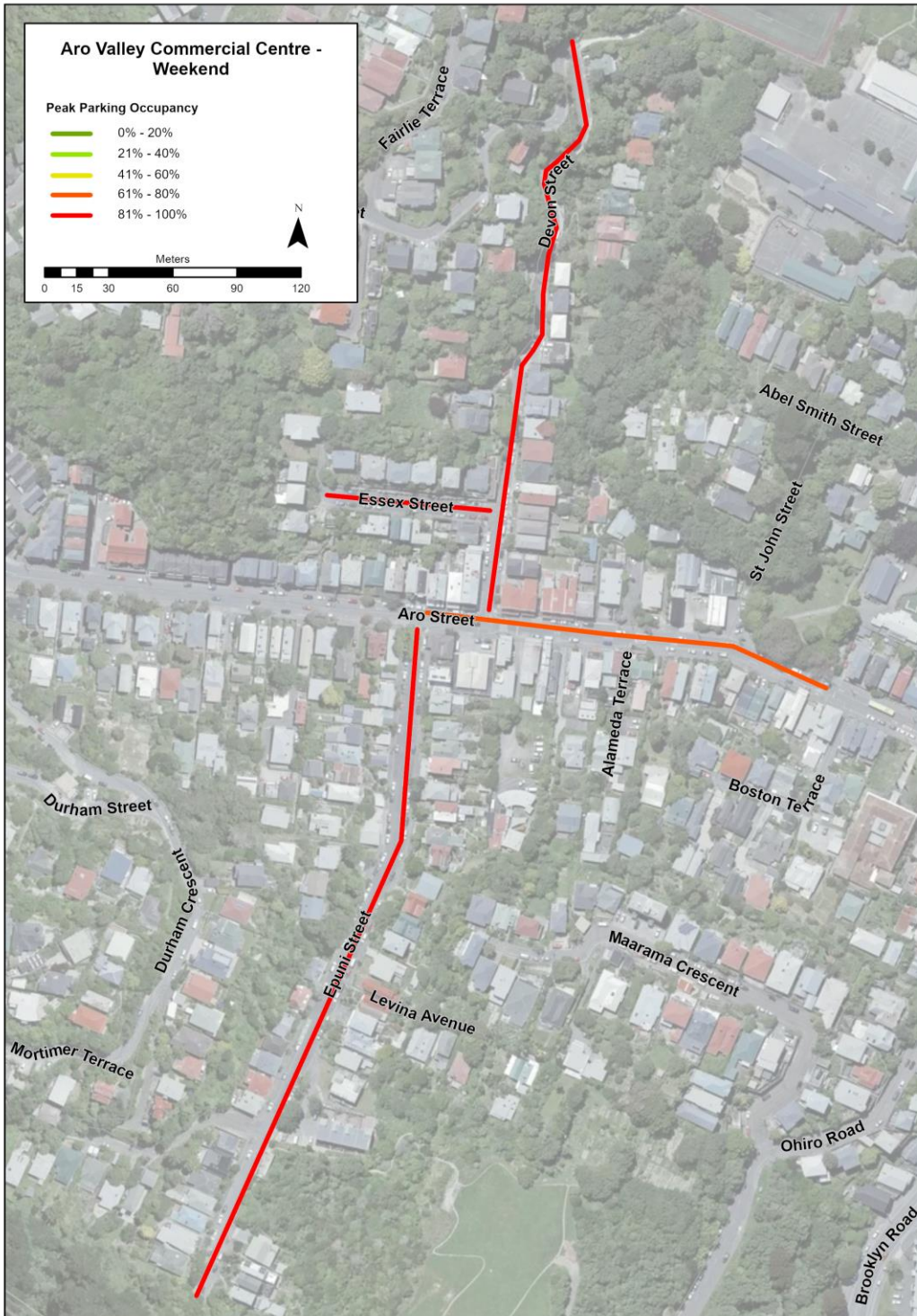


Figure 17 Peak parking occupancy per street from the weekday survey

6.3 Duration of Stay

Duration of stay data can be used to determine the turnover behaviour of parking in this section. Figure 19 shows the duration of stay profile for the weekday survey, while Figure 20 shows the duration of stay profile of the weekend survey.

Key observations:

- On weekday survey, long-stay coupon users have a higher proportion at 48% than short-stay coupon users at 42%.

- On the weekend survey, the proportion of long-stay coupon parkers (longer than 4 hours) is significantly low at 28% compared to the proportion of short-stay coupon users at 55%.
- The higher amount of short-stay coupon users on the weekday indicates a significant commuter presence in the section and the higher proportion of long-stay coupon users on the weekend is indication of a significant visitor presence.
- On both survey days the proportion of residential short-stay parkers is higher than long-stay residential parkers. Notably significant on the weekday with the proportion of residential short-stay parkers being 65% and residential long-stay at 32%.
- The significant residential short-stay behaviour is potentially a reflection of illegal parking in the area by visitors to the commercial centre.

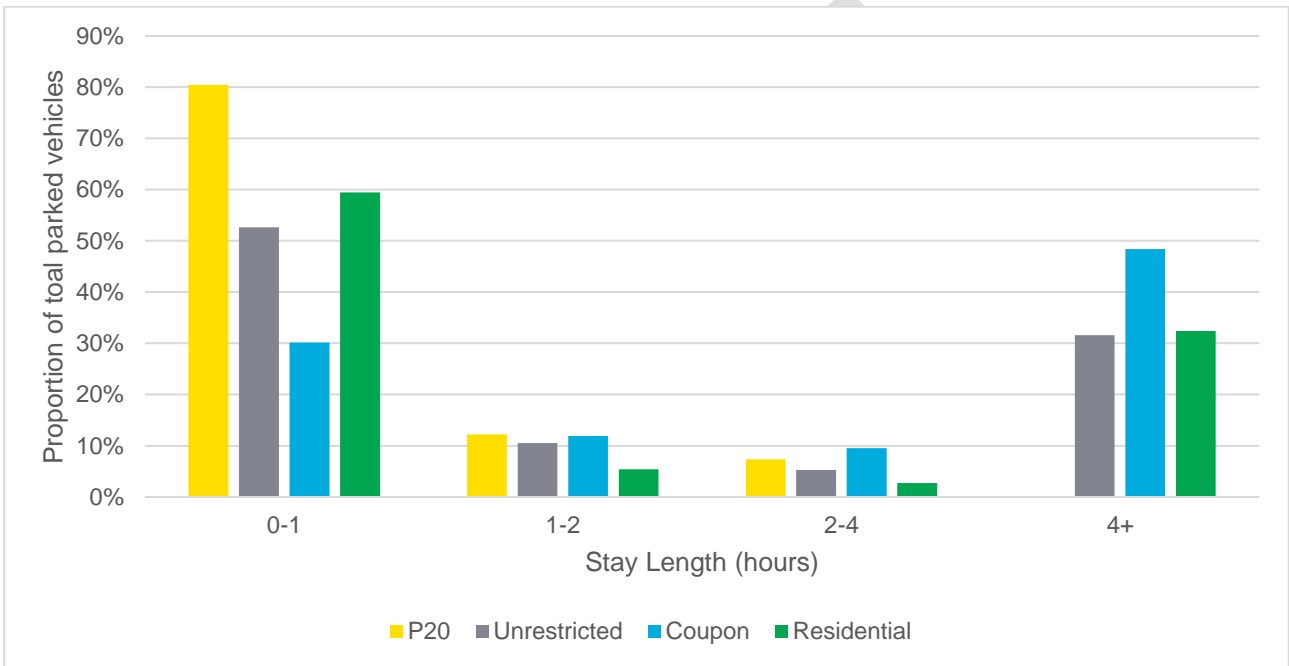


Figure 18 Aro Street Commercial Centre section duration of stay data from weekday survey

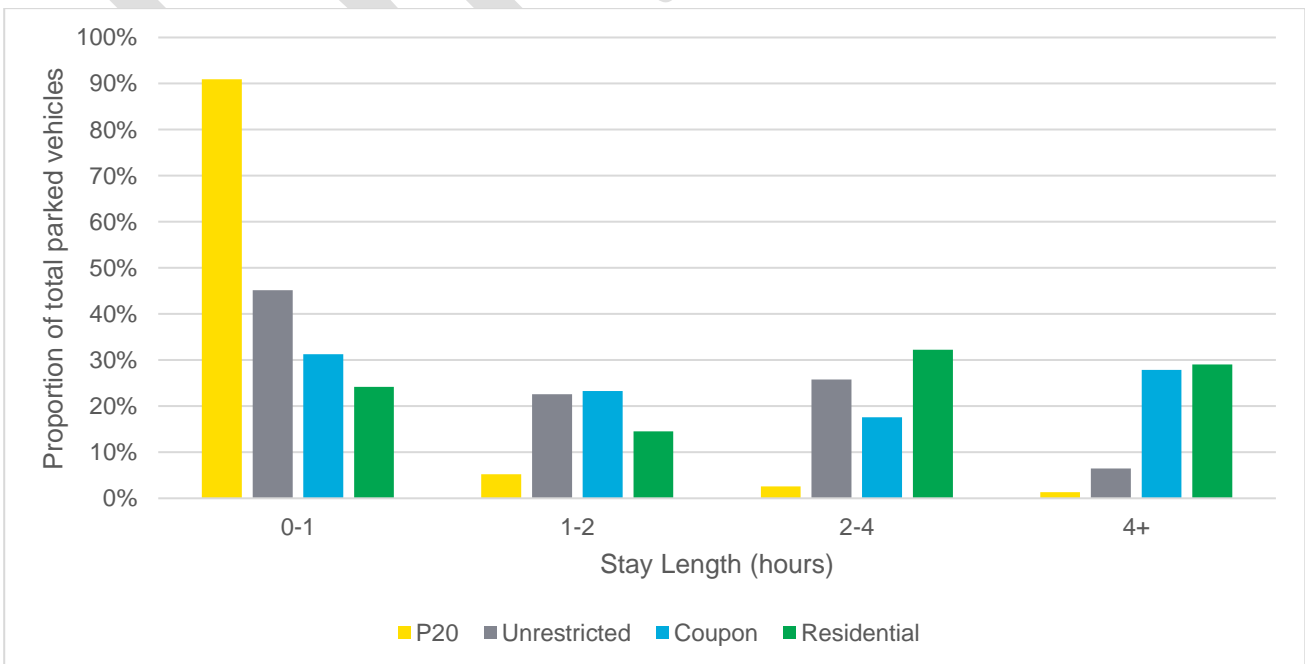


Figure 19 Aro Street Commercial Centre section duration of stay data from weekend survey

6.4 Overnight

A one-off occupancy survey on a weeknight and a weekend night were undertaken. This assesses the demand for on-street parking overnight. Figure 21 shows the overnight occupancy per street in the Aro Street Commercial Centre section on the weekday, and Figure 22 shows the overnight occupancy on the weekend.

Key Observations:

- Essex Street is around the 85% ideal occupancy threshold on both survey days.
- Epuni Street is only around the threshold on the weekday survey.
- Devon Street is only around the threshold on the weekend survey.
- Aro Street also has a higher occupancy on weekends, likely driven by more visitors to the commercial centre and more residents at home.

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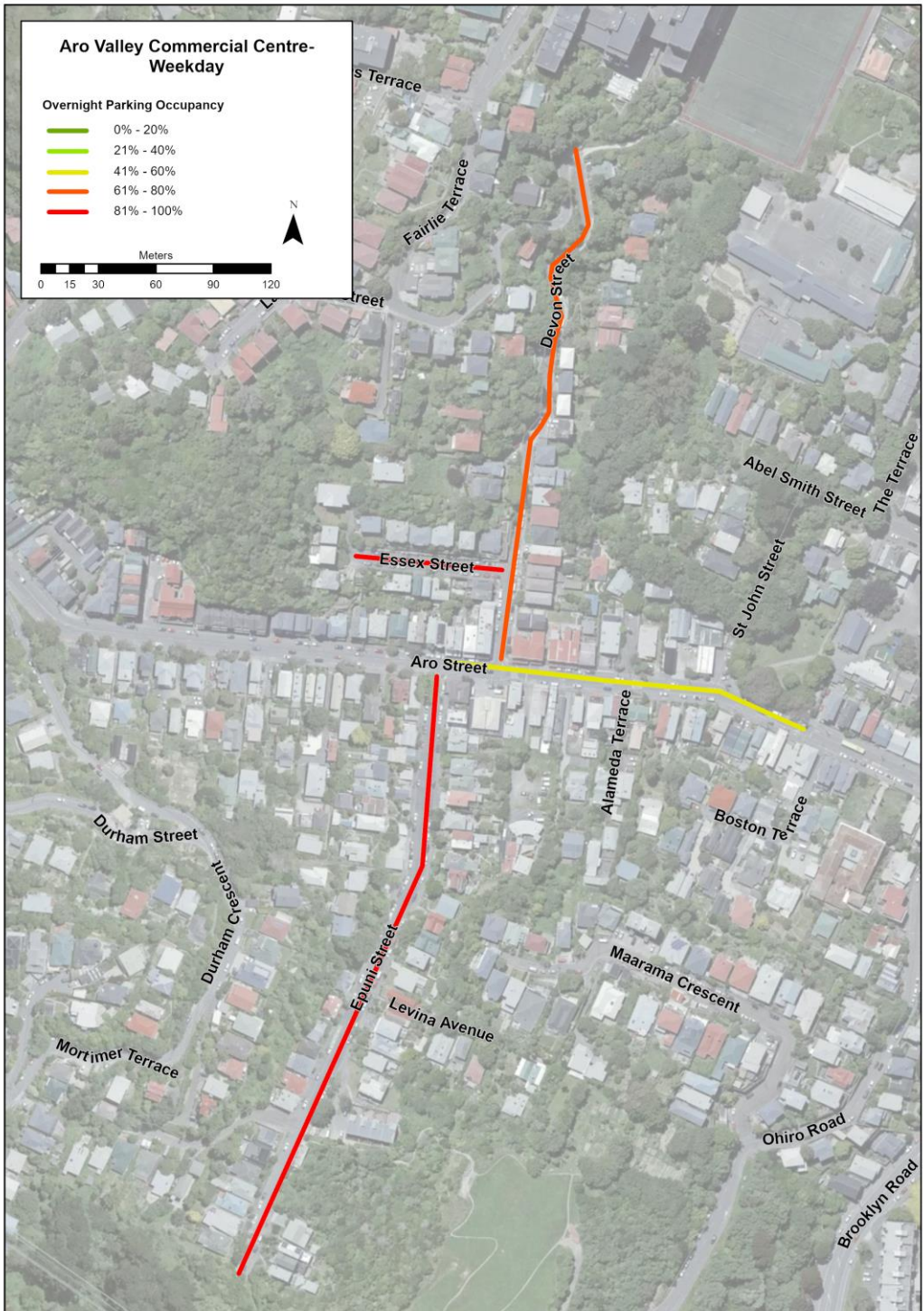


Figure 20 Aro Street Commercial Centre section overnight parking occupancy (Weekday)

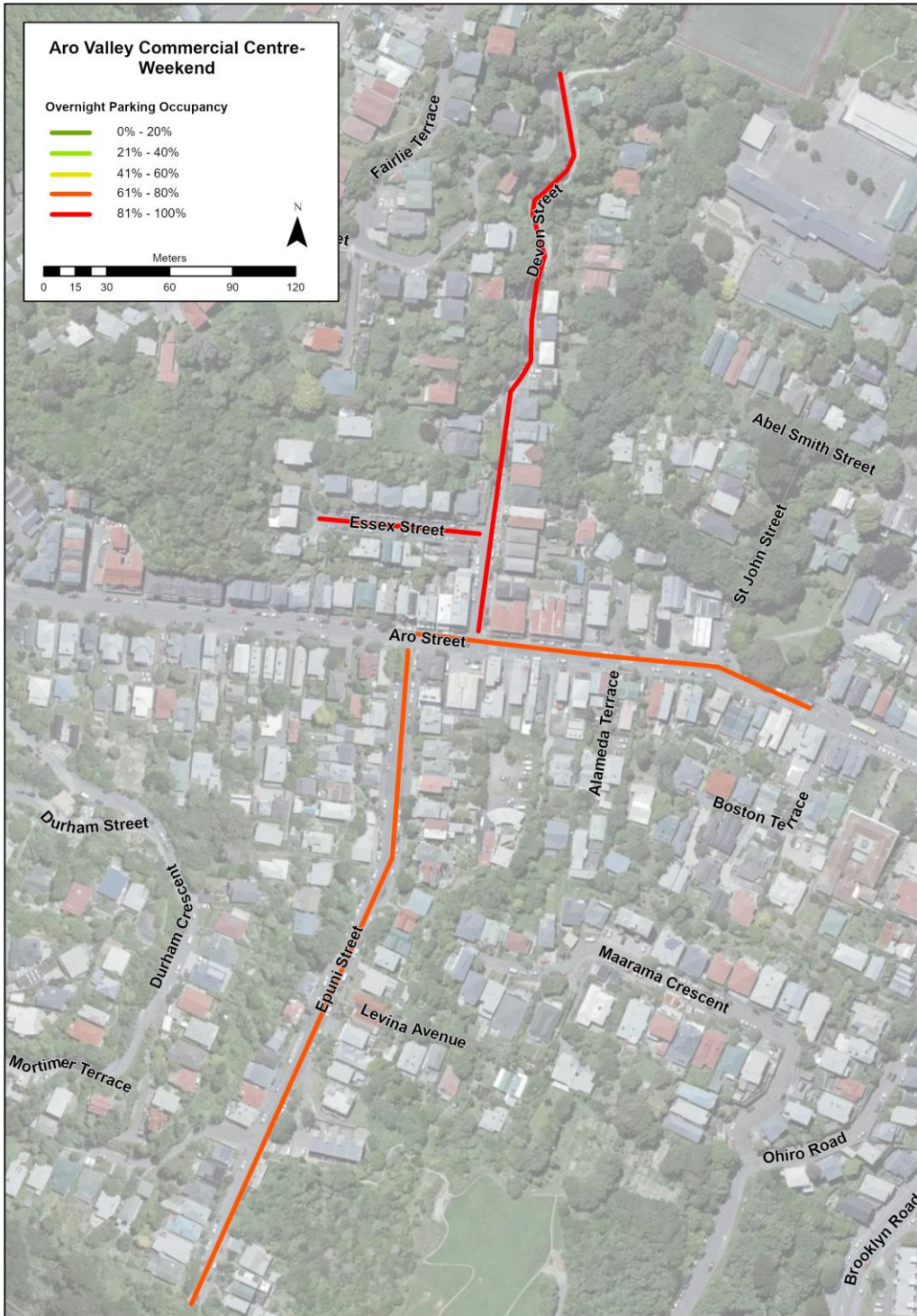


Figure 21 Aro Street Commercial Centre section overnight parking occupancy (Weekend)

6.5 Off-Street

Majority of buildings within the Aro Street Residential West section do not have off-street parking. However, around 65% of the buildings on the route have off-street parking.

Table 10 shows off-street parking inventory in this section and on the proposed cycleway route. Buildings included in the inventory are shown in Appendix C.

Table 15 Aro Street Commercial Centre section off-street parking inventory

Land use	Overall Off-street Parking	Overall Off-street Parking on Proposed on Route	Off-street parking on proposed route away from CBD	Off-street parking on proposed route towards CBD
Residential	40%	50%	67%	36%
Commercial	1%	4%	0%	7%
Other	2%	12%	0%	21%
Without Off-street Parking	57%	35%	33%	36%

6.6 Impacts of Proposed Aro Valley transitional Cycleway Stage One on Parking

6.6.1 Inventory impact on current parking due to the Stage One installation of the Transitional Cycleway (refer to Appendix D for map of parking removed/changed):

- Net loss of One parking space on the proposed route
 - Currently a P20 parking space
- Three current unrestricted spaces converted
 - Two car share spaces introduced
 - One P120 accessibility space introduced

6.6.2 Impact on current occupancy within Aro Street Commercial Centre section after the installation of Stage One of the Transitional Cycleway:

The loss of one space on the proposed route (Aro Street) is to convert the space for bicycle parking (6 bike parks). The impact on current occupancy on Aro street will then rise to an average expected occupancy of 60% (derived from higher weekend survey). Therefore, as this is significantly under the 85% ideal occupancy threshold, it is expected that users of the space should be able to easily find a park after Stage One installation.

According to the WCC Parking Policy 2020 in Table 1, short-stay parkers (medium priority) are of higher priority than long-stay privately owned vehicles (lowest priority).

The current 5 unrestricted parking spaces at the commercial end of Epuni Street are currently used at an average occupancy of 80%. Derived from the higher weekend survey, the proportion of short-stay parkers is around 38% (~ 2 spaces). Due to proximity to the commercial centre (within 1 minute walking distance), these parks are likely shared by shop workers and visitors. Prioritising the space for short-stay parkers, they will be directed to the unrestricted spaces on Epuni street and Devon Street or towards coupon parking on Epuni Street. Long-stay visitors will however struggle to find a park and will be encouraged to use other forms of transport where possible or directed towards unrestricted parking out of the scope of this section.

Table 16 Impact of proposed Stage One removal and changes to parking

Street	Average Current Occupancy (%)	Average Expected Occupancy (%)

Aro Street	57%	60%
Epuni Street	71%	71%
Devon Street	66%	66%
Essex Street	70%	70%

6.7 Mitigation of Parking Impact

The proposed parking removal is P20 in this section and the changed is currently unrestricted. Table 17 shows the proposed measures to mitigate the impact of parking change.

Table 17 Mitigation measures for Aro Street Commercial Centre section Stage One

Parking Type	Proposed mitigation	Level of impact after
unrestricted	Encourage long-stay private vehicle users to use other modes where possible. Direct long-stay private vehicle users to unrestricted spaces outside of section scope.	High
	Encourage short-stay visitors to use other modes where possible. Direct short-stay visitors to coupon parking on Epuni Street.	Very low
P20	Encourage visitors to use other modes where possible.	None

Table 18 shows the inventory for the area currently after the upgrades and after the mitigation measures are implemented. This also shows the expected occupancy of each parking type after mitigation.

Table 18 Comparison of Aro Street Commercial Centre section parking inventory Stage One

Parking type	Current inventory	Inventory after upgrades	Inventory after mitigation	Net changes	Current Occupancy	Average expected occupancy
Coupon	107	107	107	No change	69%	69%
Residential	29	29	29	No change	59%	59%
P20	22	21	21	No change	48%	50%
EV	2	2	2	No change	50%	50%
NL	9	6	6	No change	94%	100%

6.7.1 Aro Street Commercial Centre Stage One impacts and mitigation on each parking user type:

Table 19 describes the impact and mitigation in place for each parking user type after Stage One installation in the Aro Street Commercial Centre section.

Table 19 Aro Street Commercial Centre Stage One impacts and mitigation on each parking user type

Parking user type	Proposed mitigation	Level of impact after
Visitor (short stay)	Short stay visitors to the commercial centre within this section will be redirected to coupon spaces on Epuni Street and Devon Street.	Low Short stay visitors to the commercial centre are expected to find parking easily on Aro Street in the P20 spaces and coupon and unrestricted spaces on Epuni Street and Devon Street.
Commuter	Encourage commuters to use other modes of transport where possible. Direct commuters to unrestricted spaces on Holloway Road or Entrance Street (out of survey scope).	Moderate Commuters will be able to park and bus within a 2 -5 min walk from bus stops in directed unrestricted spaces.
Resident	There is no mitigation needed for residents as their spaces remain unchanged.	None Residents are expected to be able to park in their respective current spaces on Epuni Street, Devon Street and Essex Street.

Figure 23 shows the walking basins from the centre of the Aro Valley commercial centre. It shows how side streets within this section (Epuni Street, Essex Street and Devon street) are all within an estimated 2-minute walking distance. To walk to Holloway Road or Entrance from the commercial centre is also shown to fall within an estimated 5-minute walking time.

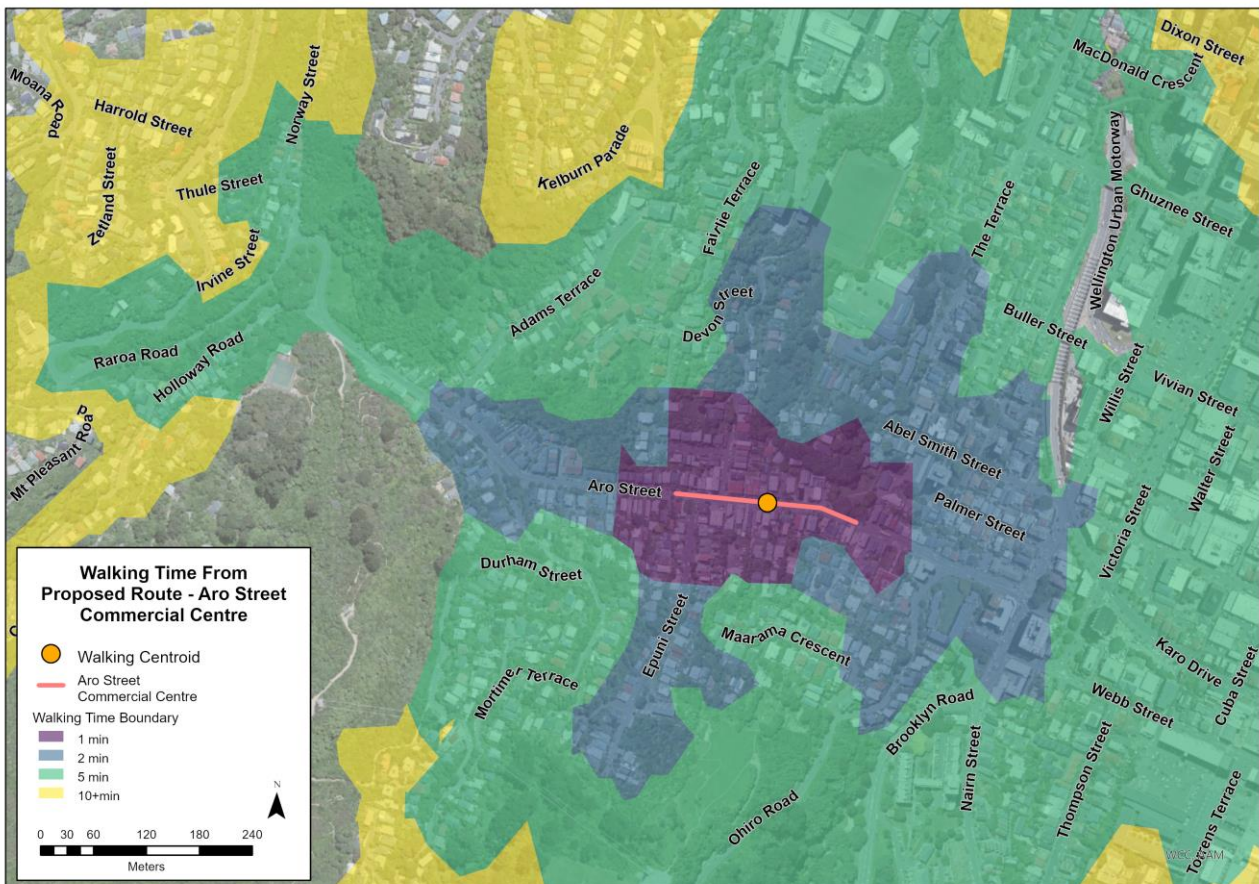


Figure 22 Aro Street Commercial Centre section walking basins

7 Aro Street Residential East

7.1 About the Area

The Aro Street Residential East area is a predominately residential land use area which also contains Aro Preschool, Aro Valley Community Centre, Lynchgate funeral Home, School of Practical Philosophy and 4 Square (see Figure 23. The proposed transitional cycleway flows through Aro Street (from Willis Street to Alameda Terrace).

The Eastern end of this section connects Aro Valley to Willis Street (flows into the southern end of the CBD). The western end of this section connects to the commercial centre of Aro Valley.

There was no construction in this section during survey days.



Figure 23 Aro Street Residential East section with key interest locations shown

7.2 Current Parking and Usage

Majority of the parking in this area is coupon on-street parking. However, a significant majority of parking on the proposed route is residential. There is also a small section of P10 spaces on the eastern end of the section outside the 4 Square.

Table 20 shows the parking inventory in this section. The parking restrictions in this section are shown in Appendix B.

Table 20 Aro Street Residential East section on-street parking inventory

Restriction Type	Overall Inventory (parks)	Spaces on the cycleway in towards CBD direction	Spaces on the cycleway in away from CBD direction
Coupon	34	0	8
Residential	23	0	23
P10	3	0	3
Total	60	0	35

Figure 25 shows the occupancy in this section as well as on the proposed cycleway throughout the day on both the weekday and weekend survey.

Key observations:

- On both survey days, occupancy of the entire section and on the route is below the 85% ideal occupancy threshold.
- Overall, during the weekend surveys the entire section and on the route had a relatively higher occupancy than on the weekday surveys.
- Higher occupancy on the weekend is likely driven by a combination of more residents at home and visitors to the commercial centre.
- The consistent fluctuation around 10% to 15% is likely driven by residential parking behaviour in the section.



Figure 24 Occupancy profile from both survey days for the Aro Street Residential East section

Figure 26 and Figure 27 show the peak parking occupancy per street in this section on each survey day. As seen in Figure 24, the overall occupancy of the section increases on the weekend, driven by residents being home and visitors to the shops. Only during the weekend survey, Ohiro Road occupancy is around the 85% occupancy threshold.



Figure 25 Peak parking occupancy per street from the weekday survey



Figure 26 Peak parking occupancy per street from the weekday survey

7.3 Duration of Stay

Figure 28 shows the weekday duration of stay profile for the Aro Street Residential East section, whilst Figure 29 shows the weekend profile.

The P10 spaces are notably of a small number so survey results are highly variable.

Key observations:

- On both the weekday and weekend survey, for all parking types, short-stay users (less than 2 hours) are of highest proportion.
- On the weekday survey, residential short-stay parking is significantly higher at 56% than residential long-stay (4+ hours) parking at 36%.
- A likely driver for the high amounts of residential short-stay parking during the weekday could be due to illegal parking by visitors to the area. This pattern in residential parking was also observed within the Aro Street Commercial Centre section.
- On the weekend survey, coupon short-stay parking is relatively high at 46% than coupon long-stay parking at 27%. Likely driven by visitor behaviour for access to the local shops.

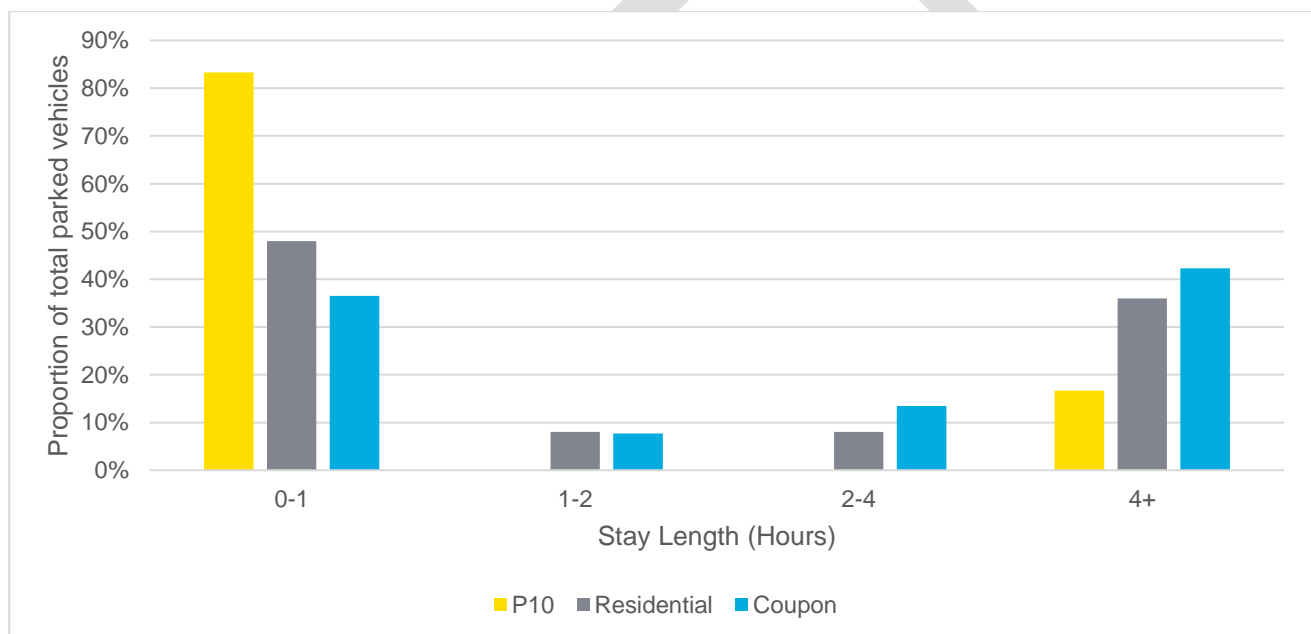


Figure 27 Aro Street Residential section duration of stay from the weekday survey

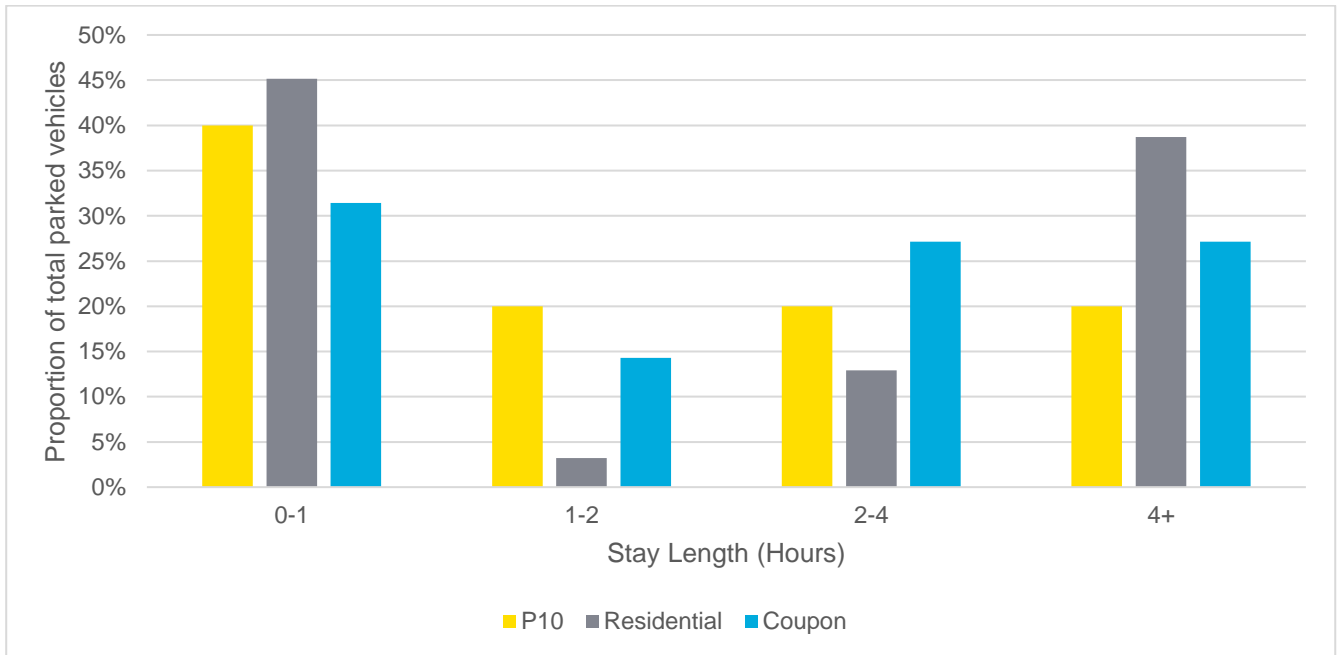


Figure 28 Aro Street Residential section duration of stay from the weekend survey

7.4 Overnight

Figure 30 and Figure 31 shows the occupancy per street of the on-street parking from both the weekday and weekend overnight parking assessment.

Key observations:

- Ohiro Road on both surveys is around the 85% ideal occupancy threshold.
- Aro Street is only around the 85% ideal occupancy threshold on weekdays. Likely driven by more residents going out on in the night during the weekend.
- The overall high occupancy of the section overnight shows that a high number of residents in these sections utilise off-street parking for their vehicles and already on Ohiro Road, finding a carpark is not easy for users.



Figure 29 Aro Street Residential East section overnight parking occupancy per street (weekday)



Figure 30 Aro Street Residential East section overnight parking occupancy per street (weekend)

7.5 Off-Street

Majority of buildings within the Aro Residential West section have off-street parking. Around 54% of the buildings on the route have off-street parking.

Table 21 shows off-street parking inventory in this section and on the proposed cycleway route. Buildings included in the inventory are shown in Appendix C.

Table 21 Aro Street Residential East off-street parking inventory

Land use	Overall Off-street Parking	Overall Off-street Parking on Proposed on Route	Off-street parking on proposed route away from CBD	Off-street parking on proposed route towards CBD
Residential	60%	48%	48%	47%
Commercial	1%	3%	0%	5%
Other	1%	3%	0%	5%
Without Off-street Parking	37%	48%	52%	42%

7.6 Impacts of Proposed Aro Valley Transitional Cycleway Stage Three on Parking

7.6.1 Inventory impact on current parking due to the Stage Three installation of the Transitional Cycleway (refer to Appendix D map of parking removed):

- Net loss of 22 parking space on the proposed route
 - Currently, coupon and residential parking spaces

7.6.2 Impact on current occupancy within Aro Street Residential East section after the installation of Stage Three of the Transitional Cycleway:

Table 22 shows the impact on average current occupancy after the installation of Stage Three in the Aro Street Residential East section. After the removal of 22 spaces in the section, Ohiro Road occupancy is expected to be impacted significantly (above the 85% occupancy threshold). Parking occupancy overnight in the section is also already around the threshold. Therefore, after Stage Three installation, it will become further difficult for resident parking users to find parking within the scope of this section. Users will be directed to similar parking types outside of the scope of this section. Residents will be encouraged to use personal off-street parking where available.

Table 22 Impact of proposed Stage One removal and changes to parking

Street	Average Current Occupancy (%)	Average Expected Occupancy (%)
Aro Street	77%	100%
Ohiro Road	78%	100%

7.7 Mitigation of Parking Impact

The proposed parking removal in this section is Resident and Coupon. Table 23 shows the proposed measures to mitigate the impact of parking removed.

Table 23 Mitigation measures for Aro Street Residential East after Stage Three installation

Parking Type	Proposed mitigation	Level of impact after
P10	No mitigation proposed as P10 spaces will remain untouched after Stage Three installation.	None
Coupon	Encourage visitors to use other modes where possible. Directed to Ohiro Road coupon spaces south out of survey scope (2-5 min walking from commercial centre).	Moderate
	Encourage resident users to use off-street personal parking where available and direct to similar parking spaces out of section scope further south of Ohiro Road (2 -5 min walking).	Moderate
Resident	Encourage resident users to use off-street personal parking where available and direct to similar parking spaces out of section scope (5-10 min walking).	Moderate
	Change 20 coupon spaces on Ohiro Road to resident parking spaces (1-2 min walking).	Low

Table 24 shows the inventory for the area currently, after the upgrades and after the mitigation measures are implemented. This also shows the expected occupancy of each parking type after mitigation.

Table 24 Comparison of Aro Street East Residential section parking inventory Stage Three

Parking type	Current inventory	Inventory after upgrades	Inventory after mitigation	Net changes	Current Occupancy	Average expected occupancy
Coupon	34	26	6	-20	77%	100%
Residential	23	0	20	+20	64%	74%
P10	3	3	3	No change	67%	67%

7.7.1 Aro Street Residential East extension of scope

Scope of the survey area within the Aro Street Residential East section was extended to express the current capacity side streets users are being directed to as a proposed mitigation strategy.

Table 25 shows the current inventory of the streets within the extended survey scope, broken down into the types of restrictions. The location of parking restrictions in this section are shown in Figure 30.

Table 25 Aro Street Residential East extended scope inventory

Street name	Coupon	Unrestricted	Resident	P60	Mobility
Ohiro Road (extended scope)	26	27	0	0	0

Maarama Crescent	31	0	0	0	0
Palmer Street	0	0	17	15	1
Brooklyn Road	13	0	0	0	0
Total	70	27	17	15	1

Table 26 shows the occupancy table for the Aro Street Residential East extended survey. Partial surveys were conducted to determine an average occupancy value to gage a high-level idea of current usage of the streets.

Key observations:

- Maarama Crescent on the weekdays is the only street to go above the 85% ideal occupancy threshold.
- Ohiro Road coupon parking is significantly lower than 50%. Likely driven by lack of buildings and elevation.
- Only on the weekend, Ohiro Road unrestricted parking is significantly lower than 50%. The higher occupancy on weekdays is likely driven by commuters and residents parking their cars in the space.
- Palmer street on both days is below the 85% ideal occupancy. However, there is not enough detail to gage current occupancy of resident and short-stay P60 parking.

Table 26 Aro Street Residential East occupancy table

Street name	Average Current Weekday Occupancy	Average Current Weekend Occupancy	Overnight Weekday	Overnight Weekend
Ohiro Road Coupon Parking (extended scope)	15%	23%	N/A	N/A
Ohiro Road Unrestricted (extended scope)	78%	27%	N/A	N/A
Maarama Crescent	94%	66%	N/A	N/A
Palmer Street	61%	73%	N/A	N/A
Brooklyn Road	N/A	N/A	N/A	N/A

Figure 30 shows the walking time basins from the walking centroid within the section. Figure 31 displays the topography of the walking basins in context to parking spaces.

Key map highlights:

- The converted coupon spaces to resident parking (light pink) on Ohiro Road fall into the 1–2-minute walking basins from Aro Street.
- Similar coupon parking (orange) from current Ohiro Road spaces is located further along Ohiro Road and Maarama Crescecent.
- Unrestricted parking (yellow) is located within the 2-minute walking basin.
- From Aro Street, similar resident, coupon parking and short stay P60 spaces (light blue) are located on a more levelled gradient within Palmer Street and Brooklyn Road within the 2-minute walking basin; one mobility space is also located within Palmer Street.

- There is a shared pathway (pink dashed line) connecting the main commercial centre to Palmer Street and Abel Smith Street to be noted.



Figure 29 Aro Street Residential East walking basins

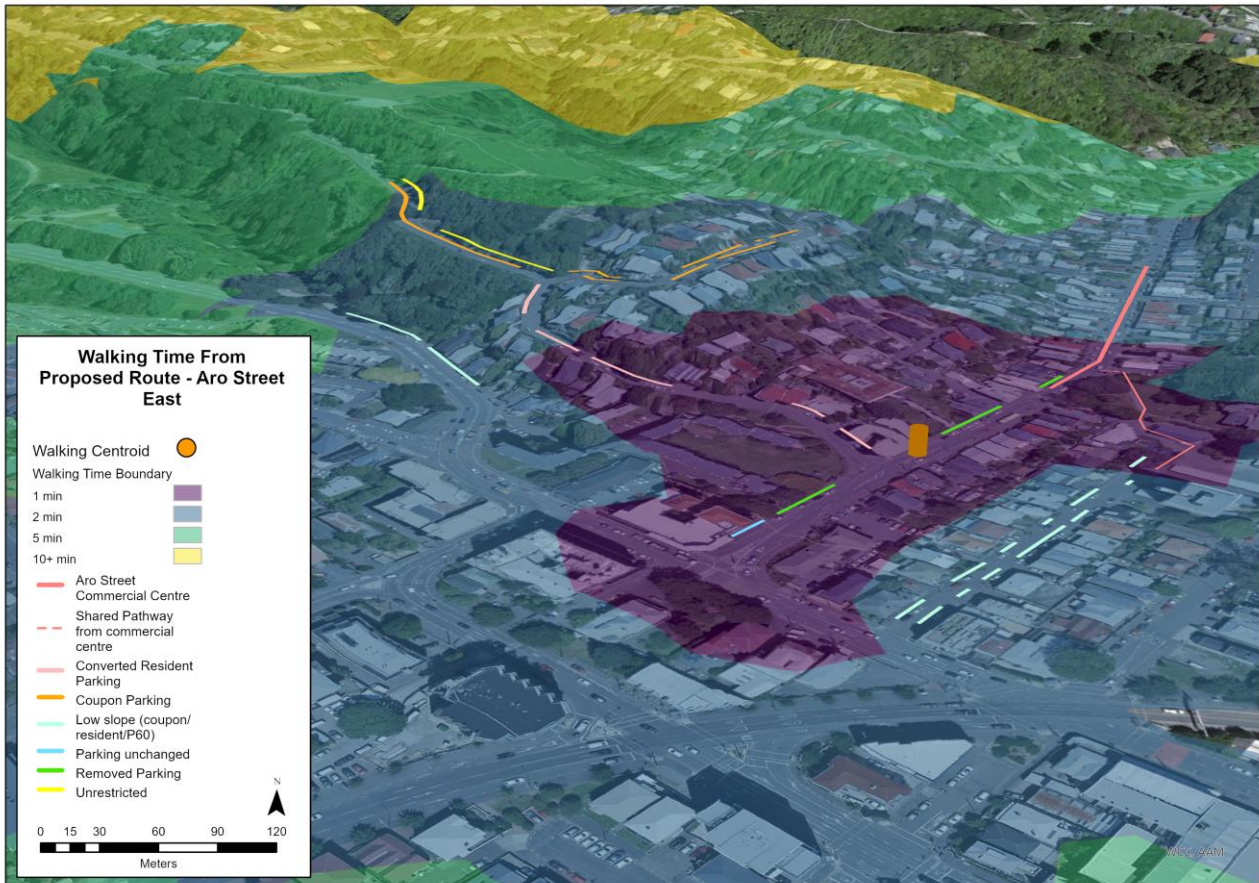


Figure 30 Aro Street Residential East walking basins (3D map)

7.7.2 Stage Three impacts and mitigation on each parking user type:

Table 27 Impacts and mitigation on parking user types

Parking user type	Proposed mitigation	Level of impact after
Visitor (short stay)	Short stay visitors within this section will be redirected to coupon spaces on the southern end of Ohiro Road (including out of the survey scope).	Moderate Short stay visitors may need to walk 2-5 mins to resident home or other facilities.
	Short stay visitors to commercial centre will be directed to coupon spaces on the southern end of Ohiro Road (including out of the survey scope).	Moderate Short stay visitors to the commercial centre may need to walk 2-5 mins if parking in this section.
Commuter	Encourage commuters to use other modes of transport where possible. Direct commuters to coupon or unrestricted parking south of Ohiro Road.	Moderate Commuters will be able to park and bus within 2-5 min walk from bus stops.
Resident	20 coupon spaces on Ohiro Road will be changed to resident parking spaces.	Moderate Aro Street residents are expected to park on Ohiro Road resident parking spaces (1-2 min walk). Ohiro Road residents may need to park further south on Ohiro Road (2-5min walk) with coupon exemptions.

8 Raroa Road/Crescent North

Raroa Road and Raroa Crescent North is a steep winding route with narrow sections of road. The land use of the area is predominantly residential. The northern end of the route resides by the entrance to the Zealandia Nature Reserve and links the suburb of Karori to the Aro Valley region.

There was no construction occurring on the route during the survey period.

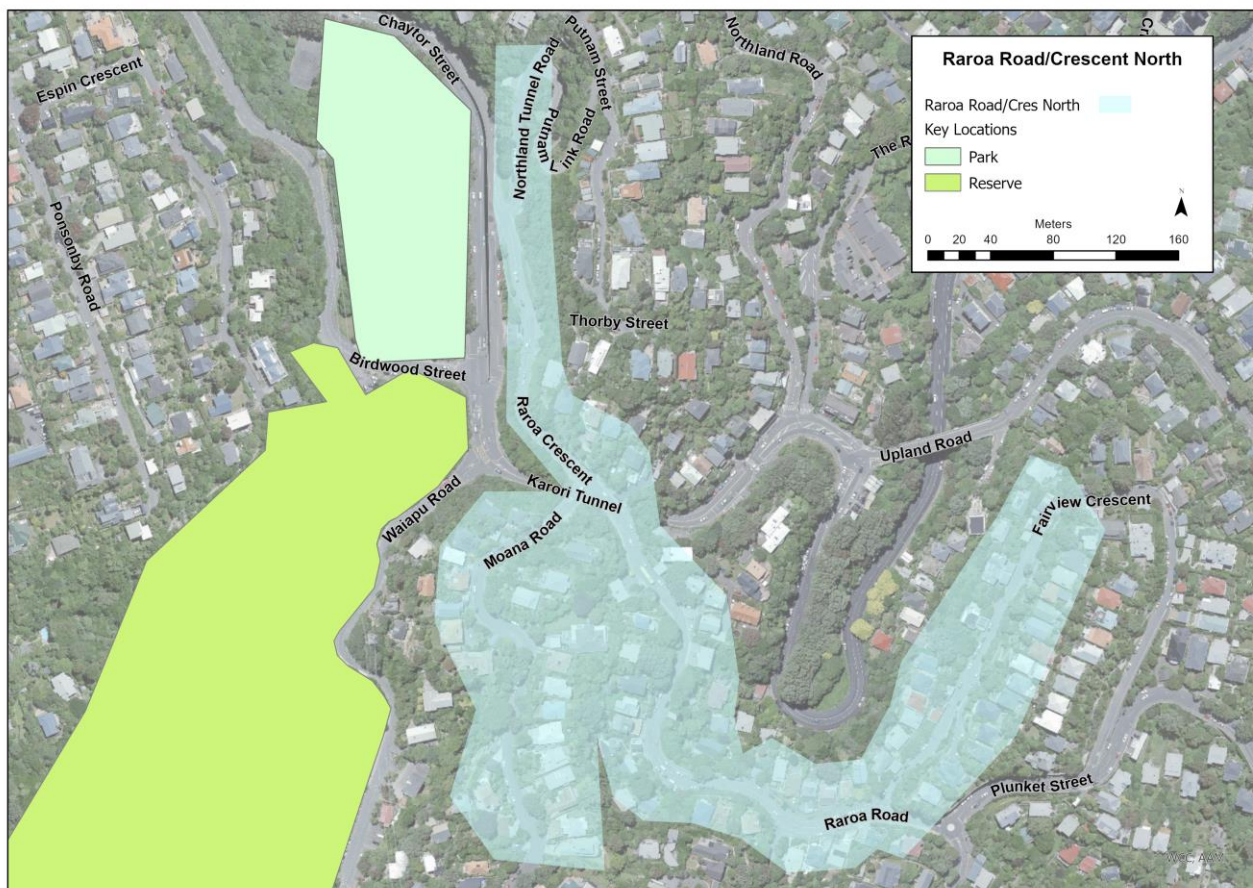


Figure 31 Raroa Road and Raroa Crescent section with key locations shown

8.1 Current Parking and Usage

Parking in this section is predominantly unrestricted parking. On the proposed route, all parking is unrestricted. All coupon spaces are located on Fairview Cres.

Table 28 shows the parking inventory in this section. The map of parking restrictions in this section are shown in Appendix B.

Table 28 Raroa Road and Raroa Crescent on-street parking inventory

Restriction Type	Overall Inventory (parks)	Spaces included on the cycleway in towards CBD direction	Spaces included on the cycleway in away from CBD direction	Excluded legal parking length (m)
Coupon	46	0	0	0
Unrestricted	72	28	25	216
Total	118	28	25	216

Table 29 shows average occupancy derived from partial surveys within the section to gage an idea of current occupancy. Overnight data to be updated.

Key understandings:

- All streets on both survey days are below the 85% ideal occupancy threshold.
- On weekend there are no cars parked on Northland Tunnel Road within survey area.
- Fairview Crescent drops in occupancy significantly on the weekend.
- On Raroa Road/Cres occupancy is averagley below 50% occupancy.

Table 29 Raroa Road/Crescent North section occupancy

Street Name	Average Weekday Occupancy	Average Weekend Occupancy	Overnight Weekday	Overnight Weeknight
Northland Tunnel Road	31%	0%	N/A	N/A
Moana Road	57%	55%	N/A	N/A
Fairview Cres	77%	45%	N/A	N/A
Raroa Road/cCres	49%	41%	N/A	N/A

8.2 Off-Street

Majority of residential sites within this section have off-street parking. On the route towards the CBD direction has a high proportion of off-street parking at 73% as well as in the away from CBD direction at 65%.

Table 30 shows off-street parking inventory in this section and on the proposed cycleway route. Buildings included in the inventory are shown in Appendix C.

Table 30 Raroa Road/Crescent North section off-street parking inventory

Land use	Overall Off-street Parking	Overall Off-street Parking on Proposed on Route	Off-street parking on proposed route away from CBD	Off-street parking on proposed route towards CBD
Residential	65%	67%	65%	73%
Commercial	0%	0%	0%	0%
Other	0%	0%	0%	0%
Without Off-street Parking	35%	33%	35%	27%

8.3 Impacts of Proposed Aro Valley Transitional Cycleway Stage One on Parking

8.3.1 Inventory impact on current parking due to the Stage One installation of the Transitional Cycleway (refer to Appendix D map of parking removed):

- Net loss of an estimated 29 parking spaces on the proposed route (25 uphill parking, 4 downhill parking)
 - Currently all unrestricted spaces.

8.3.2 Impact on current occupancy within Aro Street Residential East section after the installation of Stage Three of the Transitional Cycleway:

Table 31 shows the estimated impact on current occupancy on the proposed route after Stage One installation. After the installation of Stage One, on the proposed route 47% of current parking inventory will be removed. The expected average occupancy is above the 85% ideal occupancy threshold. Therefore, we may expect residents to find it harder to find a park on the proposed route after installation. As shown in Table 29, the average occupancy of the side streets is well below the 85% threshold. Residents will be redirected to either an unrestricted space on the downhill direction of the proposed route or to a side street (Northland Tunnel Road and Moana Road).

Table 31 Stage One installation impact on current occupancy within Raroa Rd/Cres North section

Street Name	Current Average Occupancy	Expected Average Occupancy
Raroa Rd/Cres North	45% (~24 spaces)	99%

8.4 Mitigation of Parking Impact

The proposed parking removal in this section is unrestricted parking. Table 32 shows the proposed measures to mitigate the impact of parking removed.

Table 32 Mitigation measures for Raroa Road/Cres North section Stage One installation

Parking Type	Proposed mitigation	Level of impact after
Unrestricted	Current unrestricted parking users in the uphill direction on Raroa Road will be redirected to parking in the downhill direction.	Low
	Encourage Residents to use off-street parking where available.	None
	Redirect unrestricted parking users to side streets within this section (Northland Tunnel Rd and Moana Rd) 1-3 mins.	Low

Table 33 shows the inventory for the area currently, after the upgrades and after the mitigation measures are implemented. This also shows the expected occupancy of each parking type after mitigation.

The average occupancy of unrestricted parking is expected to increase after Stage One installation. However, the expected occupancy of 60% is below the 85% ideal occupancy threshold so it is expected that unrestricted users within this section won't struggle to find an unrestricted park after the installation of Stage One.

Table 33 Comparison of Raroa Road/Cres North section parking inventory Stage One

Parking type	Current inventory	Inventory after upgrades	Inventory after mitigation	Net changes	Current average occupancy	Average expected occupancy
Coupon	46	46	46	No change	61%	61%
Unrestricted	72	47	47	No change	41%	60%

8.4.1 Raroa Road/Cres North Stage One impacts and mitigation on each parking user type:

Table 34 describes the impact and mitigation in place for each parking user type after Stage One installation in the Aro Street Commercial Centre section.

Table 34 Raroa Road/Cres North Stage One impacts and mitigation on each parking user type

Parking user type	Proposed mitigation	Level of impact after
Visitor (short stay)	There is no proposed mitigation for short stay visitors.	None No impact to short-stay visitors looking for parking. They are expected by able to find parking easily after Stage One installation.
Commuter	Encourage commuters to use other modes of transport where possible.	Low Commuters wanting to park within the section to utilise unrestricted spaces are redirected to side streets within the section or similar parking further out of survey scope (1-3 min walk).
Resident	Resident parking in the uphill direction on the proposed route are encouraged to use off-street parking where available or directed to spaces in the downhill direction on the route and side streets with similar unrestricted spaces (Nona Cres, Mt Pleasant Rd).	Low Residents are expected to struggle to find a parking space in the downhill direction on the proposed route and are redirected to similar parking within side streets (1-3 min walk).

9 Raroa Road South

Raroa Road and Raroa Crescent South is a steep winding road with narrow sections of road. The land use of the area is predominantly residential. The eastern end of Plunkett Street connects to the Kelburn commercial centre and the southern end of the section connects to the flatter region of Aro Valley.

There was no construction occurring on the route during the survey period.



Figure 32 Raroa Road South section with key locations shown

9.1 Current Parking and Usage

Majority of parking within this section is unrestricted parking. All coupon, residential and P30 parking is in Plunkett Street which is connected to the Kelburn commercial centre.

Table 35 shows the parking inventory in this section. The map of parking restrictions in this section are shown in Appendix B.

Table 35 Raroa Road South section on-street parking inventory

Restriction Type	Overall Inventory (parks)	Spaces included on the cycleway in towards CBD direction	Spaces included on the cycleway in away from CBD direction	Excluded legal parking length (m)
Coupon	48	0	0	0
Residential	12	0	0	0
P30	5	0	0	0
Unrestricted	187	48	66	1206
Total	252	48	66	1206

Table 36 shows average occupancy derived from partial surveys within the section to gage an idea of current occupancy. Overnight data to be updated.

Key understandings:

- All average occupancy on both survey days for all streets is below the 85% ideal occupancy threshold.
- Raroa Road and Plunkett street relatively have a higher occupancy on the weekday survey than the weekend.
- Norna Crescent has a uniform average occupancy on both survey days.

Table 36 Raroa Road South section occupancy

Street Name	Average Weekday Occupancy	Average Weekend Occupancy	Overnight Weekday	Overnight Weeknight
Plunkett Street	58%	56%	N/A	N/A
Norna Crescent	47%	47%	N/A	N/A
Mt Pleasant Road	38%	55%	N/A	N/A
Raroa Road	25%	21%	N/A	N/A

9.2 Off-Street

Majority of residential sites within this section have off-street parking. On the route there is majority 68% of sites with off-street facilities.

Table 37 shows off-street parking inventory in this section and on the proposed cycleway route. Buildings included in the inventory are shown in Appendix C.

Table 37 Raroa Road South section off-street parking inventory

Land use	Overall Off-street Parking	Overall Off-street Parking on Proposed on Route	Off-street parking on proposed route away from CBD	Off-street parking on proposed route towards CBD
Residential	58%	68%	68%	69%
Commercial	1%	0%	0%	0%
Other	0%	0%	0%	0%
Without Off-street Parking	41%	32%	32%	31%

9.3 Impacts of Proposed Aro Valley Transitional Cycleway Stage One on Parking

9.3.1 Inventory impact on current parking due to the Stage One installation of the Transitional Cycleway (refer to Appendix D map of parking removed):

- Net loss of an estimated 66 parking spaces on the proposed route (all uphill parking)
 - Currently all unrestricted spaces.

9.3.2 Impact on current occupancy within Aro Street Residential East section after the installation of Stage Three of the Transitional Cycleway:

Table 38 shows the impact on current average occupancy within the Raroa Road South section after the installation of Stage One. Average occupancy is expected to be significantly below the 85% ideal occupancy threshold. Currently the average estimated occupancy in the uphill direction is 19% (~13 spaces) and 28% (~13 spaces) in the downhill direction. Therefore, it is expected that unrestricted parking users on Raroa Road South, can easily find a park after Stage One installation.

Table 38 Stage One installation impact on current occupancy within Raroa Road South section

Street Name	Current Average Occupancy	Expected Average Occupancy
Raroa Rd/Cres North	23% (~26 spaces)	54%

9.4 Mitigation of Parking Impact

The proposed parking removal in this section is unrestricted parking. Table 39 shows the proposed measures to mitigate the impact of parking removed.

Table 39 Mitigation measures for Raroa Road South section after Stage One installation

Parking Type	Proposed mitigation	Level of impact after
Unrestricted	Current unrestricted parking users in the uphill direction on Raroa Road will be redirected to parking the downhill side.	Low

Encourage Residents to use off-street parking where available.	None
Redirect unrestricted parking users to side streets within this section (Plunkett St, Norma Cres and Mt Pleasant Rd) 1-3 mins.	Low

Table 40 shows the inventory for the area currently, after the upgrades and after the mitigation measures are implemented. This also shows the expected occupancy of each parking type after mitigation.

The average occupancy of unrestricted parking is expected to increase after Stage One installation. However, the expected occupancy of 60% is below the 85% ideal occupancy threshold so it is expected that unrestricted users within this section won't struggle to find an unrestricted park.

Table 40 Comparison of Raroa Road South section parking inventory Stage One

Parking type	Current inventory	Inventory after upgrades	Inventory after mitigation	Net changes	Current average occupancy	Average expected occupancy
Plunkett Street (Coupon, Resident, P30)	65	65	65	No change	57%	57%
Unrestricted	187	121	121	No change	47%	60%

9.4.1 Raroa Road South Stage One impacts and mitigation on each parking user type:

Table 41 describes the impact and mitigation in place for each parking user type after Stage One installation in the Aro Street Commercial Centre section.

Table 41 Raroa Road South Stage One impacts and mitigation on each parking user type

Parking user type	Proposed mitigation	Level of impact after
Visitor (short stay)	There is no proposed mitigation for short stay visitors.	None No impact to short-stay visitors looking for parking. They are expected to be able to find parking easily after Stage One installation.
Commuter	Encourage commuters to use other modes of transport where possible.	None Commuters wanting to park within the section to utilise unrestricted spaces are expected to be able to find a park easily.
Resident	Resident parking in the uphill direction on the proposed route are encouraged to use off-street parking where available or directed to spaces in the downhill direction on the route and side streets with similar unrestricted spaces (Norma Cres, Mt Pleasant Rd).	Low Residents are expected to be able to find a parking space in the downhill direction on the proposed route easily or directed to similar parking within side streets (1-3 min walk).

10 Exec Summary of Mitigation

Table 42 Exec summary of mitigation for all sections

Section	Stage of Installation	Mitigation Proposal
Aro Street Residential West	Stage One	No mitigation proposed for section, coupon parking users on the proposed route are expected to be able to find parking on route or side streets.
	Stage Two	Direct resident users on the proposed route to similar parking on side streets (1-2 min walk) and short-stay visitors to similar parking on side streets or Resident/P120 parking in Holloway Road.
Aro Street Commercial Centre	Stage One	Short-stay visitors are expected to find parking on proposed route after Stage One installation or directed to coupon/unrestricted parking on side streets.
Aro Street Residential East	Stage Three	Convert 20 parking spaces on Ohiro Road to resident parks to prioritise parking for residents on the proposed route and Ohiro Road.
Raroa Road/Crescent North	Stage One	Users of removed unrestricted spaces may struggle to find a parking space on the proposed route after Stage One installation and are directed to similar parking on side streets (1-3 min walk).
Raroa Road South	Stage One	Users of removed unrestricted spaces are expected to find parking on the proposed route after Stage One installation or directed to similar parking on side streets (1-3 min walk).

11 Discussion and Conclusion

This report has been developed to analyse the effects of the proposed Aro Valley Transitional Cycleway. The total removal of 170 parks due to the proposed route will result in some vehicles currently using the coupon, resident and unrestricted parking to seek available parking on side streets. The western end of the proposed route will allow room for short stay parkers to park in changed existing spaces and the section having enough capacity to meet the demands of residents parking in the space overnight. Within the commercial centre, the introduction of a bike rack, mobility space and 2 Car Share spaces on existing parks will still allow for short stay users to find an available space relatively easy after installation. On the eastern end of the proposed route, there is a shortfall of available parking for residents. Mitigation to redirect and change existing parking spaces to prioritise residents is proposed. Along Raroa Road an Raroa Crescent, residents are expected to find parking easily after installation in the southern end while in the northern end parking space users may struggle to find parking and are redirected to similar spaces in side streets.

Table 43 shows the summary of proposed parking removal in each section after mitigation and demonstrates that three of the five sections have occupancies above the 85% ideal occupancy threshold where adverse parking effects and behaviour is observed to occur.

Table 43 Occupancy of the five sections before and after the proposed changes

Section	Current Peak Occupancy	Expected Peak Occupancy	Proposed Removal
Aro Street Residential West	66%	79%	Net loss of 52 coupon spaces on the proposed route.
Aro Street Commercial Centre	90%	90%	Net loss of 1 space on the proposed route.
Aro Street Residential East	84%	100%	Net loss of 22 P10, coupon and resident parking spaces on the route.
Raroa Road/Crescent North	45% (average occ)	99% (expected average)	Net loss of 29 unrestricted spaces on the proposed route.
Raroa Road South	23% (average occ)	54% (expected average)	Net loss of 66 unrestricted spaces on the proposed route.

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Glossary

EV: Electric Vehicle

N/A: Not Assessed

NL: No Limit

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Appendix A – Impacted Parking Due to Construction Maps

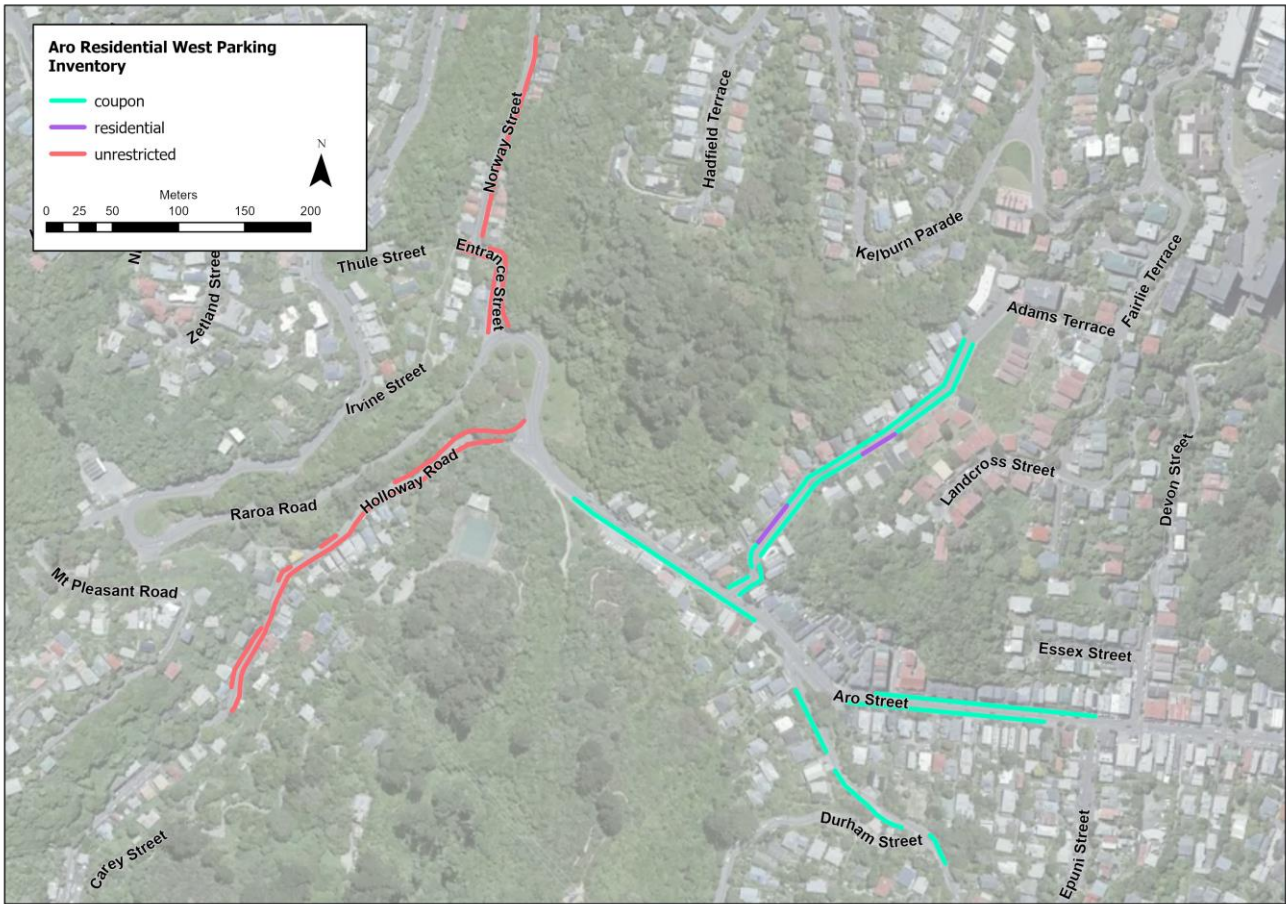
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Appendix B – On-Street Inventory Maps

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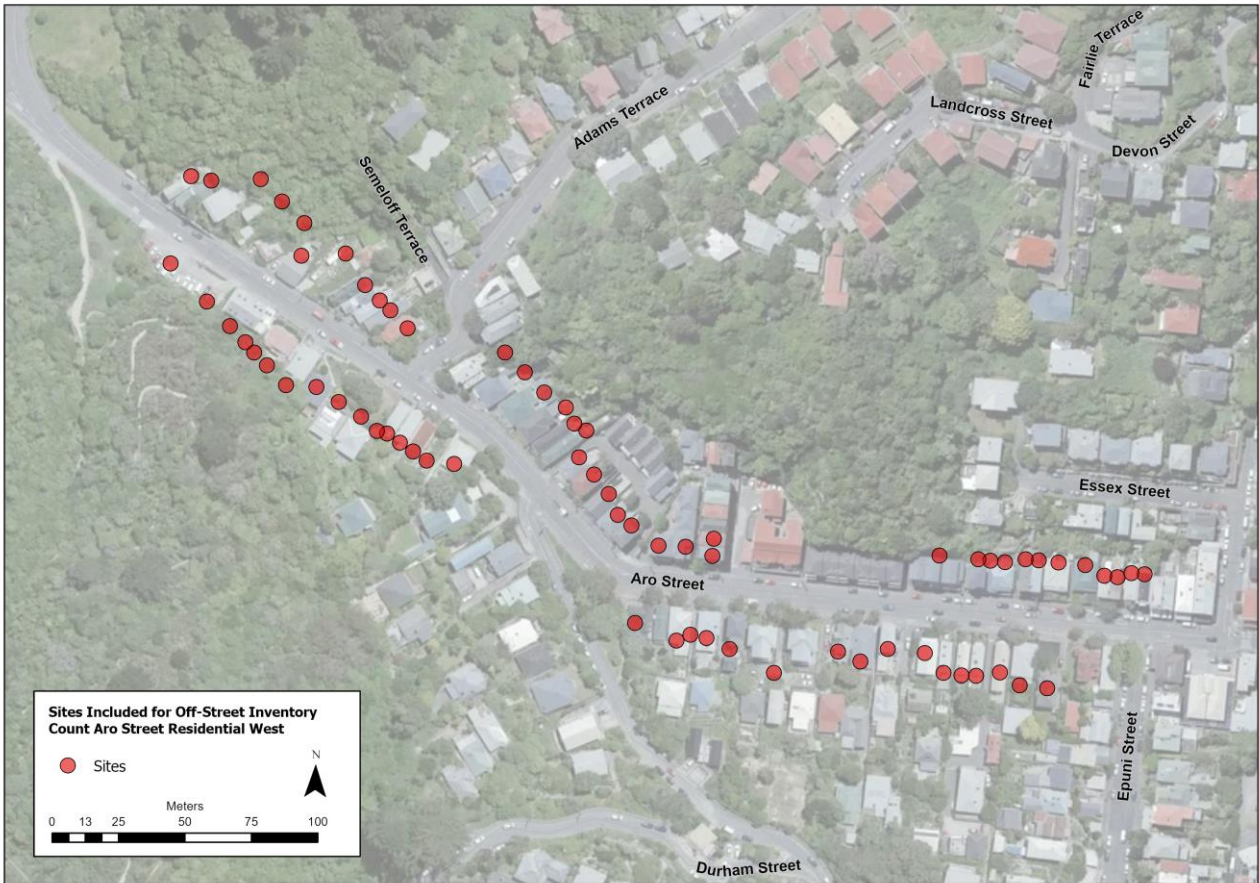


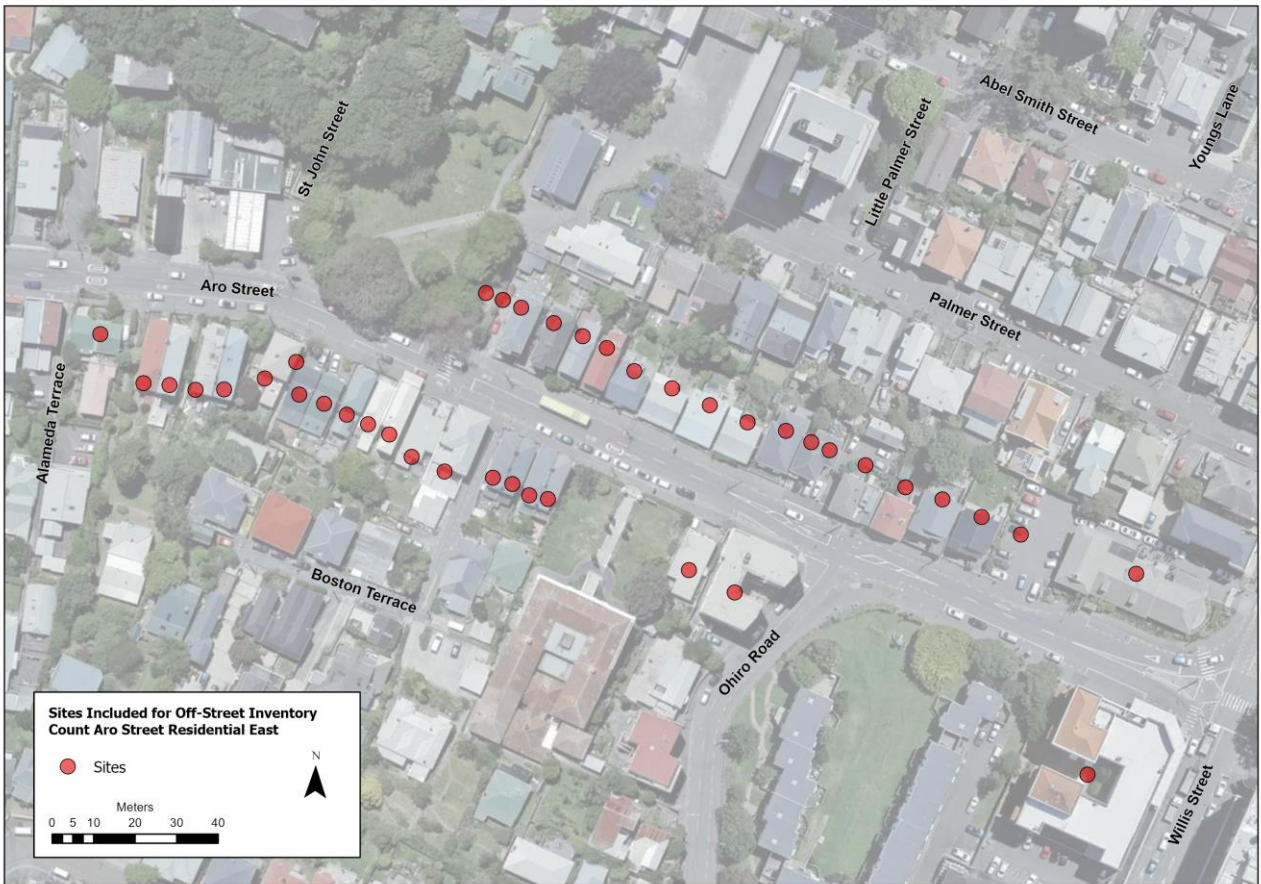
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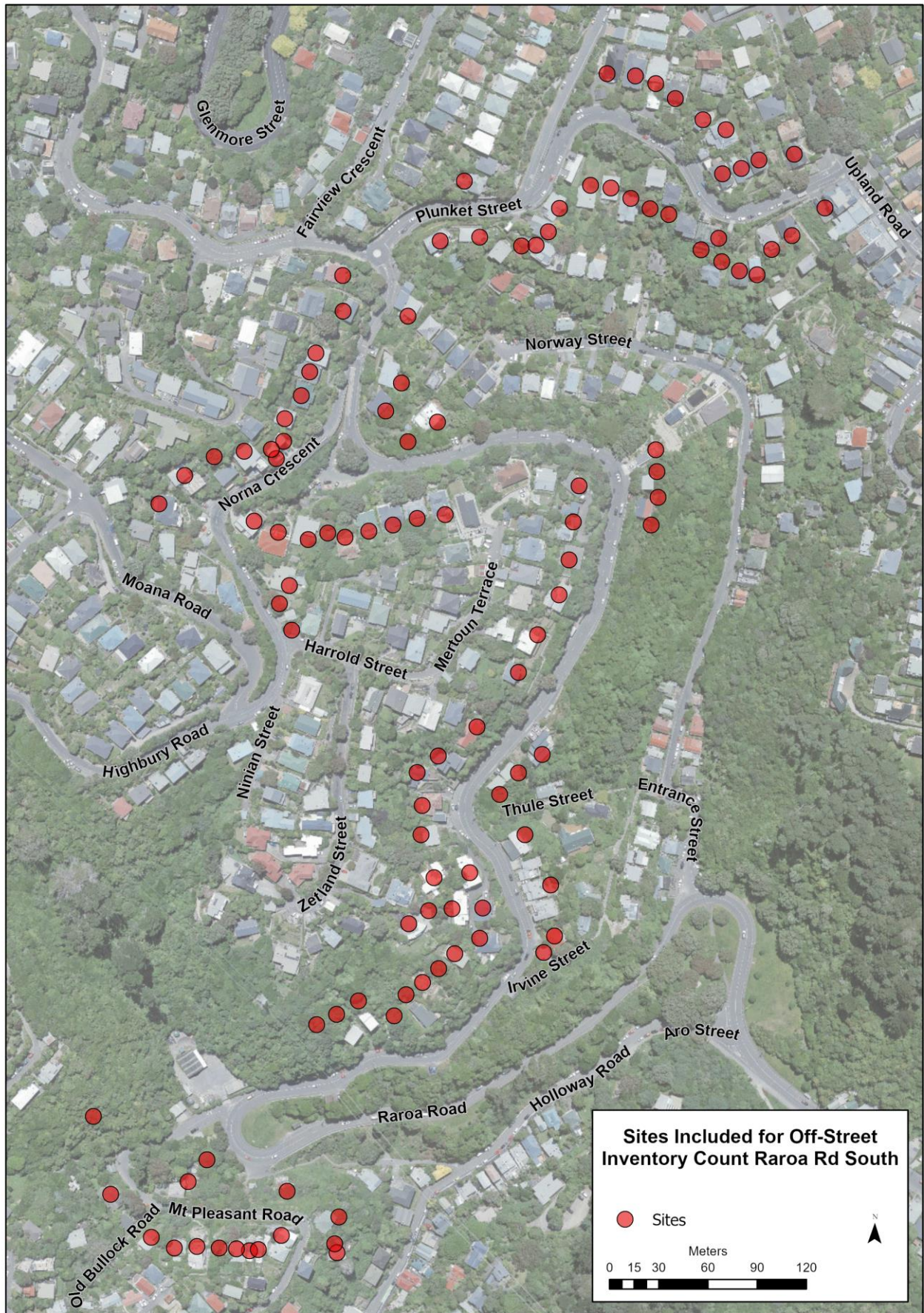


Appendix C – Sites included in Off-Street Inventory Count

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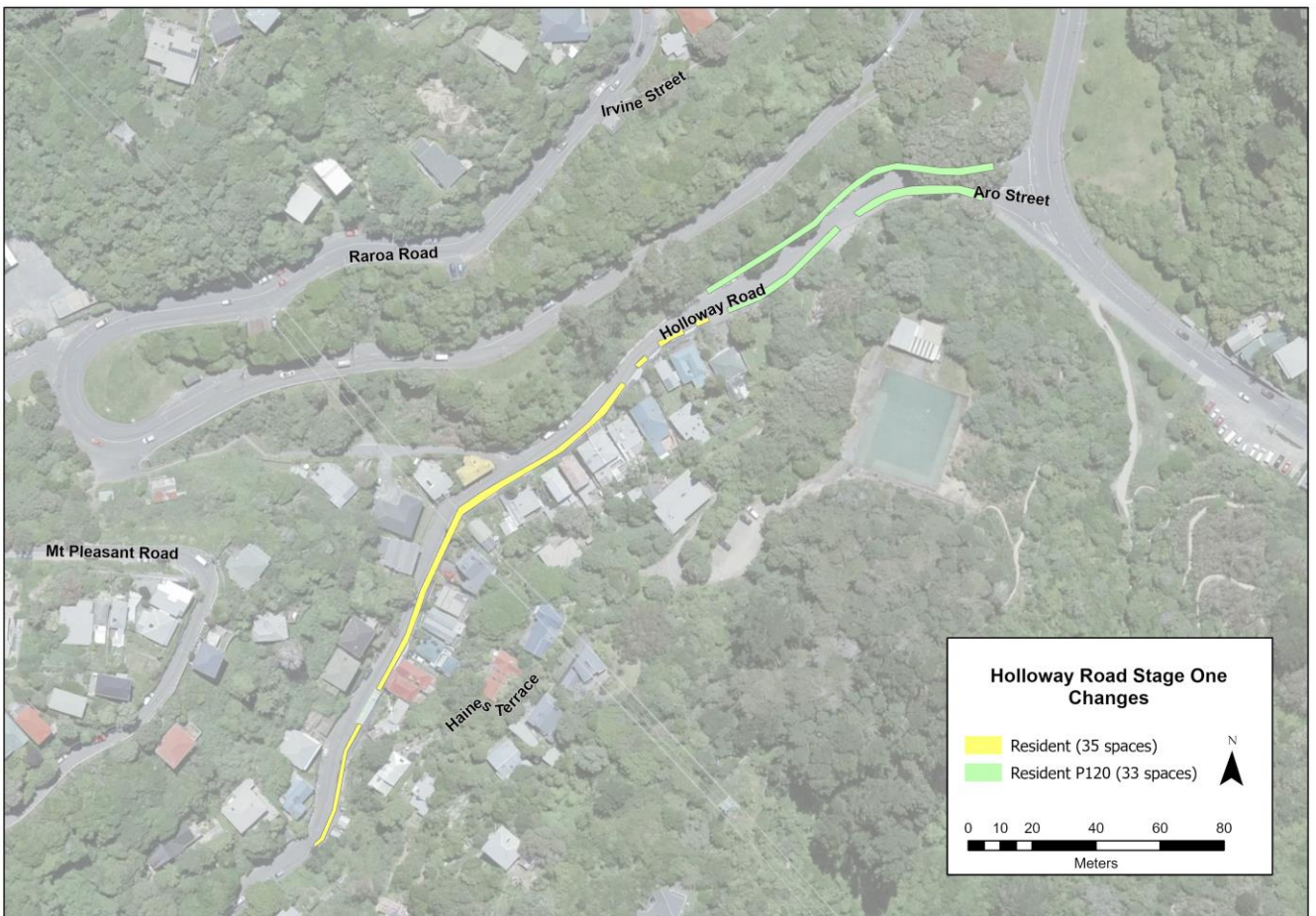






Appendix D – Parking Inventory impacted by Proposed Cycleway

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Appendix E Raroa Road and Raroa Crescent Included Parking Sketches

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