Healthy Streets for Wellington

Victoria University of Wellington Summer Scholarship
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Sponsored by the Wellington City Council

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THERAPEUTIC + REHABILITATIVE
designed environments
TAIAO + Tūmahu

EXECUTIVE SUMMARY

Built environment professionals and health practitioners have come to recognise the role urban design can play in increasing physical activity as a way of preventing chronic disease and enhancing health and well-being.

Globally, large cities are implementing guidelines to ensure environment, economics and social issues are at the forefront of design. Pedestrian and cyclist friendly streets have become the desirable design solution for the public, enabling frameworks for more inclusive design outcomes. Healthier streets for residents have been developed for new social opportunities and commercial interactions.

Four of Wellington's inner-city streets were observed in this report, with personal interviews captured during a variety of times and days within the week recording users expectations and experiences.

This research finds that while mega-city streets share commonalities, such as, noise, air pollution, and congestion, their street frameworks are not developed for less congested, smaller urban centres. Seeking to understand how innovative pedestrian and cyclist-friendly streets can promote desirable public spaces the Healthy Street programme, established for London's inner city streets, has been tested in Wellington.

CONTENTS

INTRODUCTION

"There's something about cycling… which seems to destroy people's sense of proportion."

- Andrew Gilligan, Johnson's cycling commissioner

Wellington City Council is committed to creating a healthy street network that reflects the desires of its communities. The Healthy Streets project seeks to put people and their health at the centre of decisions about how Wellington City Council designs, manages and facilitates the use of public spaces. It aims to make Wellington's streets healthy, safe and welcoming for everyone. While much research has been directed towards street traffic, limited research has been conducted into the health of its streets.

Historically, transportation professionals handled every aspect of transportation planning: they decided on the technical solution, communicated that solution to the community, and defended their decisions. Wellington City Council have joined with the School of Architecture at Victoria University of Wellington to adopt a relatively new approach to transportation planning, commencing with a more community-oriented and inclusive process that engages stakeholders and eventually interdisciplinary teams to solve transportation problems together. This approach is collaborative and tailored to the specific context; it refers to both the process and the outcome.

Seeking an international benchmark for developing healthier streets, the London Healthy Street initiative was employed as it measures fair, sustainable and attractive urban spaces (Transport for London, 2017). The Healthy Streets Survey was developed to monitor progress towards this and is currently in use in cities throughout the world. Street health analysis combines factors such as noise levels, traffic congestion, public safety, and street types. These have not previously been studied together, meaning inclusive street design has not fully developed. Literature on healthy streets has distinguished issues that are closely linked to the traffic patterns, lack of public transport, street forms and street environments. Although personal mobility has improved through vehicular use, the influx of cars have created environmental and social implications (Mees, 2000, p. 5).

Physical activity has been linked to higher cognitive functions, increasing emotional well-being.

Walking and biking can improve local economies, stimulate social interaction and encourage street vibrancy.

The aging population in New Zealand has been calculated at 15.5% in 2018. This is expected to increase to a quarter of the population by 2068.

Obesity affects 1/3 of New Zealand adults and an eighth of children under 14.

What are the critical elements of a healthy street that suit the Wellington context?

The Healthy Streets Survey questionnaire asks people walking and dwelling on a street about how they perceive the street e.g. how attractive and enjoyable they find it to be there. In asking these questions the Healthy Streets Survey aims to capture the 'real life' experience of people on Wellington's streets in relation to 10 Healthy Streets Indicators. The results give a quantified indication of the performance of city streets which can be compared across locations and over time.

As a compact urban city, Wellington has the ability to implement public street initiatives, encouraging more inclusive street design. Functional street formats can improve city life, while also providing better public street interaction. This report suggests the local environment should be promoted, for more active and healthier lifestyles.

Research into Wellington streets has resulted in the formulation of goals for improving the welfare of city public life encouraging street individuality and public orientated spaces. This report has identified further street issues that impact the healthiness of Wellington streets. Environmental conditions, neighbourhood demographics and street identify can alter the appearance of specific streets.

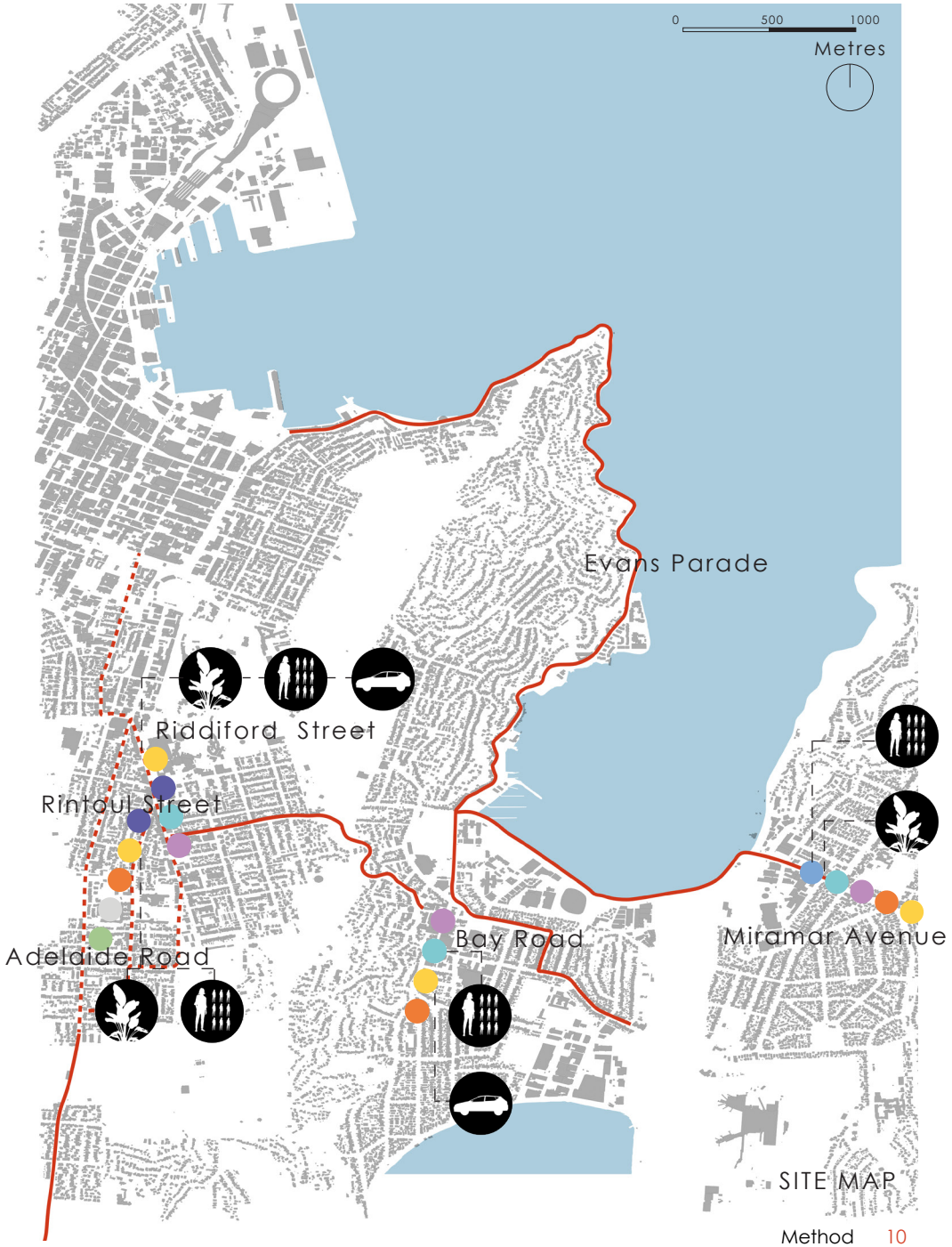
A high degree of individuality and uniqueness is present in Wellington's inner-suburban streetscapes. The collected research has indicated that street developments would be best suited to strengthening specific street identities, rather than copying generalised national agglomerations (Huigen & Meijering, 2005, p. 20).

This report suggests that there be allowance for design flexibility so that solutions can be context sensitive. Each street does not require the same features to be safe for active travel. A road designed for slow speeds, or one with a wide paved shoulder, may be safe for walking or bicycling. A healthy street may look different in quiet outer suburb compared with the inner urban suburbs. Streets may benefit from different new elements, such as painted crosswalks, accessible transit stops, pedestrian signals, lighting, median islands, sidewalks, and bicycle facilities (e.g., protected bike lanes, bike parking).

METHOD

Four different Wellington streets were analysed and compared. 262 participants were selected at random, drawing from a broad range of demographic. Interviews have been consistent across all sites and were carefully replicated to allow for detailed comparisons. The survey questionnaire asks people walking and on a street about their experiences and expectations of street life.

Interviews were developed from the London Study with a few additional questions. The guidelines of where, how and who to interview followed the London Study. Participants were selected randomly on the chosen, specific streets. The streets selected for sampling were those identified as target streets by Wellington City Council in their 'Wellington City Cycleways Programme 2015/2019'. Where possible (where there were sufficient numbers of people) the interviewer designated an imaginary line across the street and interviewed the 'next' (every third, or so) potential respondent who crossed the line, irrespective of whether they looked likely to participate or not. Where there were few pedestrians every person was approached. The people recruited were those persons walking or cycling on the street who were willing to participate. People with no spoken English, children under 14 years of age and people working on the street (roadworks, line maintenance, delivery personnel, etc) were not included. Members of the public stopped were asked about their perception of the street. As in other local and international Healthy Streets surveys, the procedure followed by the interviewers was consistent across all sites and tightly replicated. As much as possible, selected sites were on a 50-100m uninterrupted stretch where the character or condition did not change dramatically to ensure it was clear which location was being assessed. Surveys were not conducted within 15 metres of a junction as perceptions of adjoining streets may have affected the scores.



Interviews took place on the street using the questionnaire (see Appendix). The interviewer recorded precisely where she stood to conduct the interviews by taking a photo of the specific location and collecting the GPS coordinates. The survey consists of a 'core' survey and a list of optional questions to use for local or project-specific changes. Core questions must be included to enable comparison between surveys both internationally and over time, while optional questions can be added, removed or edited depending on the aim of the survey. All questions were approved by the Ethics committee prior to their use.

Using the Healthy Street Indicators, respondents were asked to rate their actual experiences of being on the street by scoring various elements from 0 to 10. Questions were focused on the current street at the present time. Pedestrian counts and external factors (such as, the weather, street works, difficulties crossing the street, etc...) were also recorded.

An overall Healthy Street score was calculated for each street by averaging the eight Indicators' scores for that segment. Fieldwork was halted at specified times to conduct pedestrian counts (6 mins in duration) including estimated age and gender. These counts are used to ensure the sample is representative of the people on the street and if necessary can be used as a basis for weighting final data. Interviewers will also record additional information e.g. weather, noise level.

Ethics approval was obtained from the Human Ethics Committee of Victoria University of Wellington no.: 0000026911.

10 Healthy Streets Indicators

From ‘Healthy Streets for London’

Pedestrians from all walks of life

London’s streets should be welcoming places for everyone to walk, spend time in and engage in community life.

People choose to walk, cycle and use public transport

Walking and cycling are the healthiest and most sustainable ways to travel, either for whole trips or as part of longer journeys on public transport. A successful transport system encourages and enables more people to walk and cycle more often. This will only happen if we reduce the volume and dominance of motor traffic and improve the experience of being on our streets.

Clean air

Improving air quality delivers benefits for everyone and reduces unfair health inequalities.

People feel safe

The whole community should feel comfortable and safe on our streets at all times. People should not feel worried about road danger or experience threats to their personal safety.

Not too noisy

Reducing the noise impacts of motor traffic will directly benefit health, improve the ambience of street environments and encourage active travel and human interaction.

Easy to cross

Making streets easier to cross is important to encourage more walking and to connect communities. People prefer direct routes and being able to cross streets at their convenience. Physical barriers and fast moving or heavy traffic can make streets difficult to cross.

Places to stop and rest

A lack of resting places can limit mobility for certain groups of people. Ensuring there are places to stop and rest benefits everyone, including local businesses, as people will be more willing to visit, spend time in, or meet other people on our streets.

Shade and shelter

Providing shade and shelter from high winds, heavy rain and direct sun enables everybody to use our streets, whatever the weather.

People feel relaxed

A wider range of people will choose to walk or cycle if our streets are not dominated by motorised traffic, and if pavements and cycle paths are not overcrowded, dirty, cluttered or in disrepair.

Things to see and do

People are more likely to use our streets when their journey is interesting and stimulating, with attractive views, buildings, planting and street art and where other people are using the street. They will be less dependent on cars if the shops and services they need are within short distances so they do not need to drive to get to them.

Lucy Saunders, Transport for London . (2017). Healthy Streets for London. Prioritising walking, cycling and public transport to create a healthy city. London: London Transport.

WHY HEALTHY STREETS?

The Healthy Streets Approach

The purpose of the 'Healthy Streets' initiative was not to provide a romanticised version of what a street should look like, but to develop a long-term model to improve quality of life (Transport for London, 2017, p. 8). The relationship between cars, public transport, pedestrians and cyclists is a feature cities should be moving towards for more inclusive design. Healthy streets are designed to accommodate all members of the community, from different demographics and backgrounds.

As city health is greatly affected by "socioeconomic conditions, lifestyles, the quality of the local environment and the quality of health and social services," it is important to understand the influence a street has on public well-being (Organisation, 1997, p. 25). In a healthy street, limited traffic congestion will improve environmental and social factors allowing for better street functionality, air quality, comfort, and street usability while traffic related stress, dominating vehicle patterns and uncomfortable noises should be reduced (Macmillan, et al., 2018, p. 11).

Street Life

Promotion of an active, healthier lifestyle, through the enhancement of endemic street qualities will not only improve public well-being, but street interaction. Observation into both "city patterns as well as street patterns" should be considered for future city developments (Anderson, 1978, p. 15). Streets and urban centres that symbolise the "collective interest,' of the neighbourhood, allow for street diversity and community connection (Anderson, 1978, p. 151). The interaction we have with a positive urban environment can act as a "restorative function and contribute to well-being" creating a "protective factor in regard to mitigating present and future stress" (Beatley & Newman, 2013, p. 3340).

WELLINGTON CASE STUDIES

This report has analysed themes related to four case studies within Wellington's streets. Streets identified in this report include **Riddiford Street, Rintoul Street, Bay Road and Miramar Ave.**

Specific themes have emerged identifying how environmental conditions, neighbourhood demographics, street individuality, and car dominance can directly impact a streets usability. Environmental conditions such as noise, topography, green space and air quality have been key factors for street perception. Important neighbourhood demographics including ethnicity, age and gender have contributed to how user-friendly the urban streetscapes are, whilst the individuality of the urban centres have contributed to what makes each street unique. Finally, dominating transport patterns have determined the pedestrian and cyclist constraints, which has impaired street usability.

The four observed case studies have provided a good range of local perspectives, establishing options for further healthy street development.

WELLINGTON STREET ARCHETYPES

PEDESTRIAN FRIENDLY
Providing access and comfort for all demographics, through wide paving, relaxed streetscape, user friendliness and community development

CYCLIST FRIENDLY
Clear street structures that provide room and safety for the cyclist, promoting a cleaner transport option within an urban centre

VIABLE TRANSPORT
Development of public transport options for all members of the community, connecting all of Wellington's suburbs the C.B.D.

MAIN ROAD
Described as a thoroughfare or main destination road. A main road allows suburbs to connect together, through a constant movement flow (vehicle or pedestrian base).

MIXED USE
Combination of residential and commercial buildings within a single street, promoting viable usable and flexible options for pedestrians

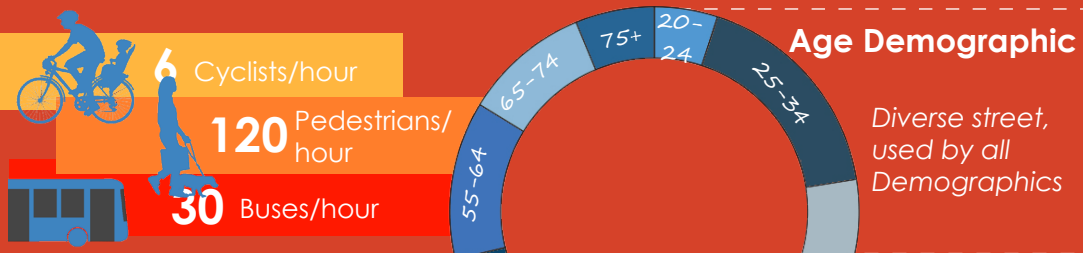
RESIDENTIAL
Heavily dominated by residential housing, creating a quieter street for people to use throughout the day.

COMMERCIAL
Dominated by commercial buildings, ranging from restaurants, cafés, retail and home stores. Usually associated with a destination street.

BUSY STREET
In constant use, a busy street should be used by all members of the public creating a healthy, safe street for Cyclists and Pedestrians and motor vehicles

QUIET STREET
1. Slow traffic flow on the street, indicating minimal car movement and pedestrian use.
2. Slow zone, forcing cars to reduce in speed. This can create a comfortable setting for pedestrians and cyclists, away from heavy vehicular noises.

CASE STUDY *ONE* - RIDDIFORD STREET



Age Demographic

Diverse street, used by all Demographics

Medium - Heavy Traffic

79 Survey Participants

54.5% **45.5%**

Experienced Street Qualities

Air Quality

Street Noise

Comfort crossing the street

Wide pavements, allocating room for pedestrian movement

3 18 18e 23 23e 29 29e

Main thoroughfare road, connecting southern and eastern suburbs

Diverse commercial retail hub, accommodating a broad demographic

Constant activity and liveliness throughout the street

Heavy vehicular patterns

Diverse demographic

Within the inner-city suburb of Newtown, Riddiford Street, connects the eastern and southern regions of Wellington to the city's urban centre. Located around a 35 minute walk (10-15 minute bus trip) from Wellington's C.B.D, Riddiford Street provides thoroughfare access for suburban commuters. Acting as a destination street, this commercial sector is home to a vast variety of shopping, grocery and dining outlets, as well as accommodating a public primary school, Wellington Hospital and local community library. The variety of stores express the diverse community within Newtown, displaying colour and vibrancy. The variety of commercial options on Riddiford Street provide numerous destinations for local and neighbouring residents to cluster, encouraging people to meet as "pubic facilities and services are close to home" (Welle, et al., 2015, p. 26)

Observations of Riddiford Street have identified key themes surrounding street functionality. Participants described concerns over environmental conditions including noise, air pollution, limited green spaces, scarce availability of rubbish facilities, and a dominating vehicle presence. The car dependent transport patterns have had an undesirable affect on health, and health equity of pedestrians (Macmillan, et al., 2018, p. 2). While this is mainly associated with peak hour traffic, participants have stated they have felt uncomfortable and confined on some occasions. Participants have indicated an average score of 5.4/10 for their ability to cross the street, yet have stated they would expect it to be 6.6/10. Although environmental concerns and car dominance are separate themes, they have had an intertwining relationship on this street.

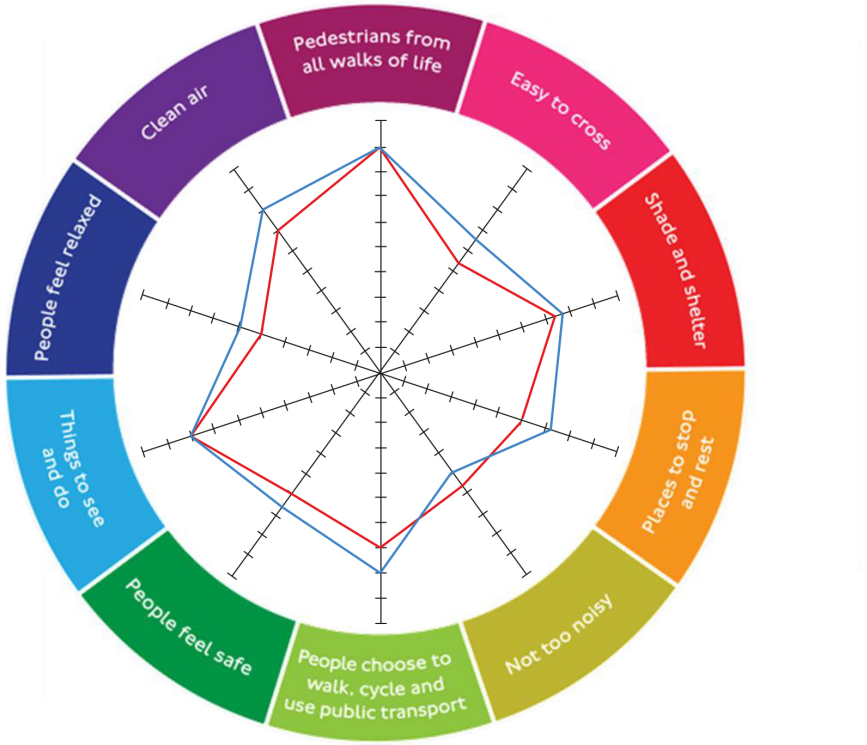
The limited spread of plants and rubbish bins on Riddiford Street have also been addressed by survey participants. With some describing "rubbish bags and trash always found on this street, especially during rubbish collection days."

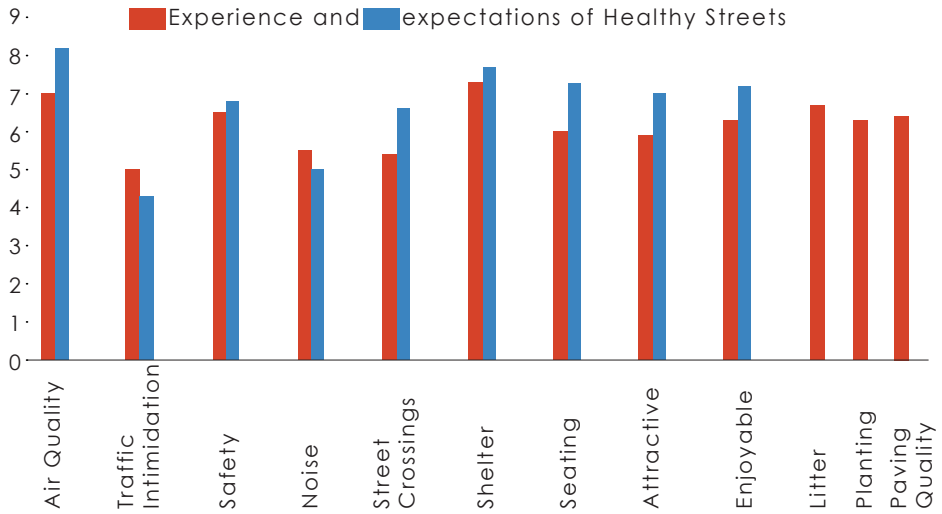
KEY
Morning
Midday
Evening

Demographics are an essential component to understanding the key users of the street. Age and gender were specific elements for comprehending how this street was used on a daily basis. Whilst a broad range of ages use this street, the majority were identified as 35-55 years. The outcomes highlight how the middle-working class utilise this street as a means of transport to and from work.

While environmental conditions were a key concern for participants, the local street identity become a popular conversation topic. Although not all participants were residents of Newtown, they did state Riddiford Street accommodated all demographics, promoting inclusion and community. Riddiford Street's 'place identity,' refers to its identity within the built environment, as well as being "derived from regional economic activities" (Huigen & Meijering, 2005, p. 20). The individual and diverse nature of the road was noted as being busy, but user-friendly, as well as energetic and colourful. Unlike other major commercial streets in Wellington, Riddiford Street accommodated both thoroughfare and destination traffic, as well as placing an emphasis on pedestrian traffic. As the street is in constant use, the unique qualities of Riddiford Street have been identified as being a bustling commercial hub for all users and demographics.

Healthy Street Indicator - Riddiford Street

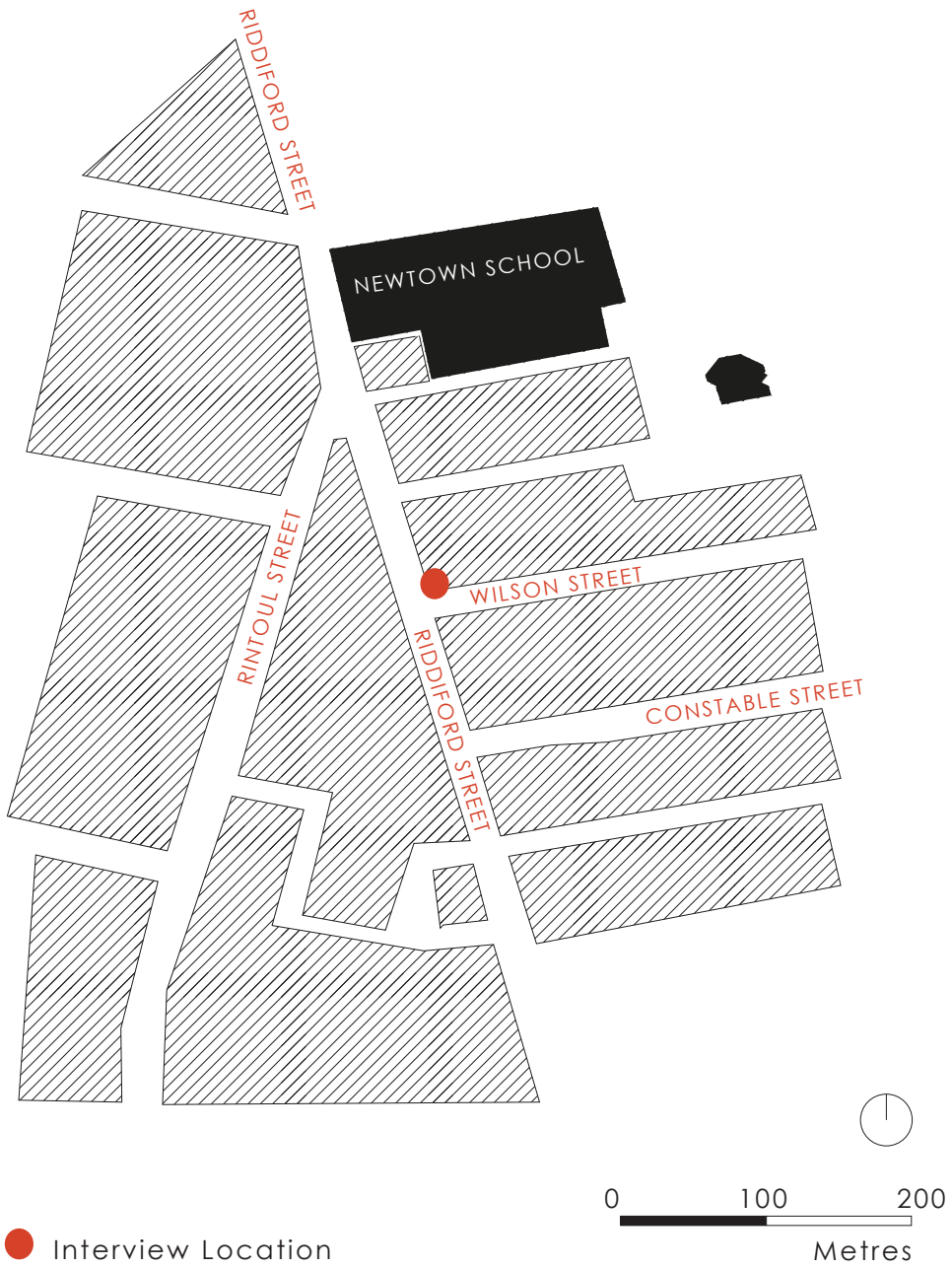




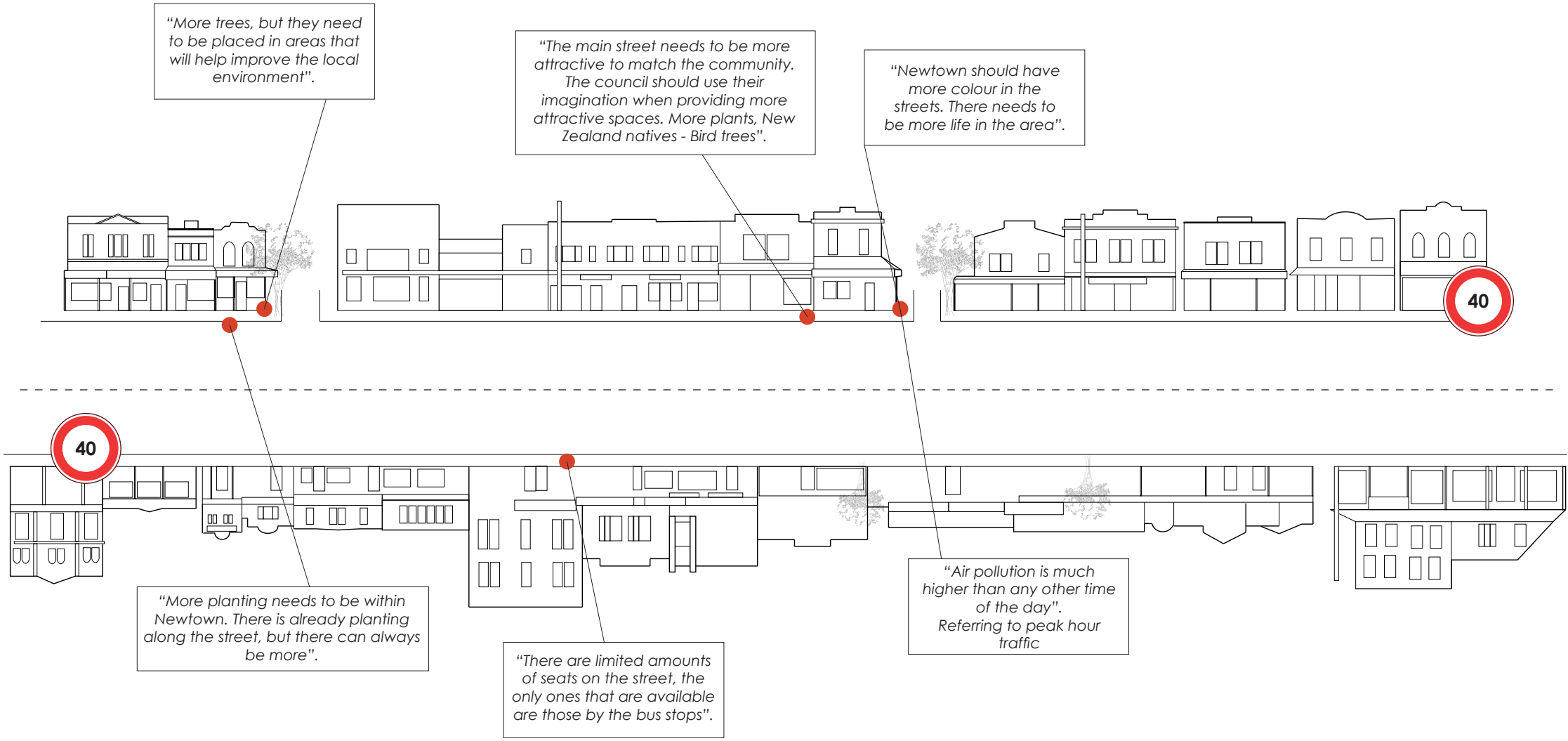
STREET FUNCTIONALITY

Increasing the diverse commercial sector of Newtown, without hindering the community and residential nature of the area, has become a core issue for the viability of the street. Whilst Riddiford Street accommodates viable transport options, pedestrian movements, commercial and public facilities, its lack of public free flow across the street, decreasing its overall functionality. The 'street environment', described in 'Liveable Streets', depicts how "controlling traveller behaviour and offering resident protection and compensation" are factors for modifying urban spaces (Appleyard, Gerson, & Lintell, 1981, p. 33). Factors such as the slow zone of 40km/hr that has been added to the street, influences heavy vehicular traffic from further disrupting the pedestrian flow of the street. Although vehicles have the primary authority over the road, pedestrian movements do have a hierarchy within Riddiford Street. This is compared to cyclists, who play a limited role in street transport viability. The functionality of Riddiford Street is heavily based on the unique qualities that provide it with its individual nature, suggesting that if more traffic were to pass through the street, the diverse character of the street could be lost or distorted. As streets are only a "reference to ideas and patterns of behaviour," Riddiford Street could easily slip into become a thoroughfare road, if more congestion is developed (Anderson, 1978, p. 16). With high vehicle traffic currently found on this street, a cycle way passing through the road would have some concerns associated with it, including ride safety and comfort.

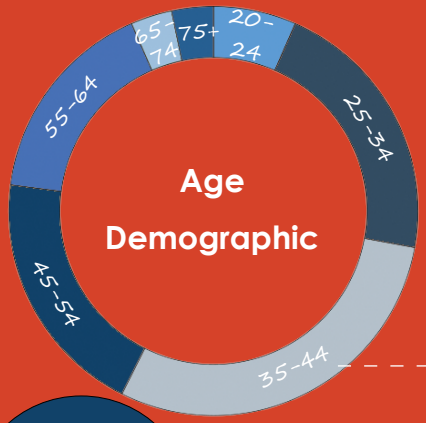
SITE MAP : RIDDIFORD STREET

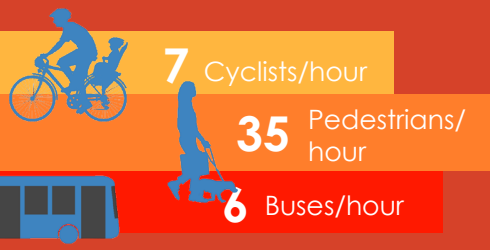


A SAMPLE OF INTERVIEW QUESTION



CASE STUDY *TWO* - RINTOUL STREET





Residential Street

61
Survey Participants

52%

48%

Residential street

Minimal vehicular movement

Pavement and planting create a comfortable space for pedestrians

11

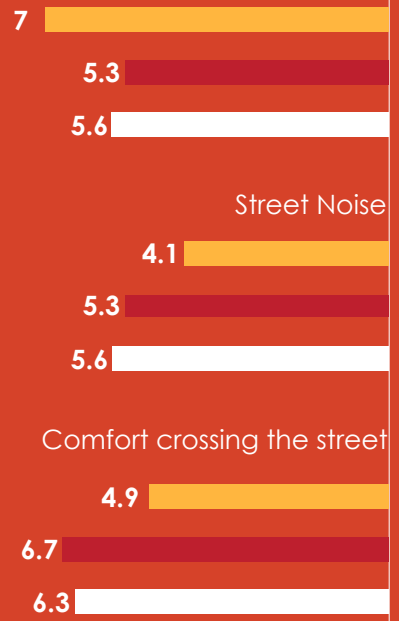
A main access way to Berhampore and Island Bay. Heavily used for on street parking

Heavy Vehicular Patterns

Diverse demographic

Extensive Planting

Experienced Street Qualities



Rintoul Street, located within the inner-city suburb of Newtown, is a side road linking southern suburbs, such as Berhampore and Island Bay, to Wellington's urban precinct. Establishing itself as a residential road, Rintoul Street provides direct access to wider suburbs through regular transport options. Although a minutes' walk from Newtown's commercial sector, Rintoul Street does not share in the same pedestrian foot traffic as the adjoining main road. Similar to Riddiford Street, Newtown's diverse community nature can be seen in this street, as the main community centre is located a minute from Riddiford Street. Both social and community based groups are able to gather at this location, promoting a 'healthy environment' for all members of the community (Francis, 2016, p. 199).

Critical conditions to Rintoul Street have addressed themselves through the key themes of environment, dominating transport, demographics and street uniqueness. Unlike other streets in this report, Rintoul Street is the only residential focused road, allowing for an altered perspective into Wellington's streetscapes. As less thoroughfare traffic is found on this street, environmental conditions were noted to be more supporting of the street layout. Cyclists have been observed to be more inclined to use Rintoul Street over Riddiford Street, as there is less traffic accumulation. Parked cars were observed to dominate street edges, confining pedestrians to the pavements. Participants noted the accumulation of cars limited their ability to cross the street, especially those affected by age, disability or travelling with young children. Green spaces and gardens were a main contributor to improving the visual quality of the street, with participants averaging a planting score of 7.1/10. This suggested front garden planting contributed to splitting up the concrete street structure, promoting a more comfortable setting for pedestrians.

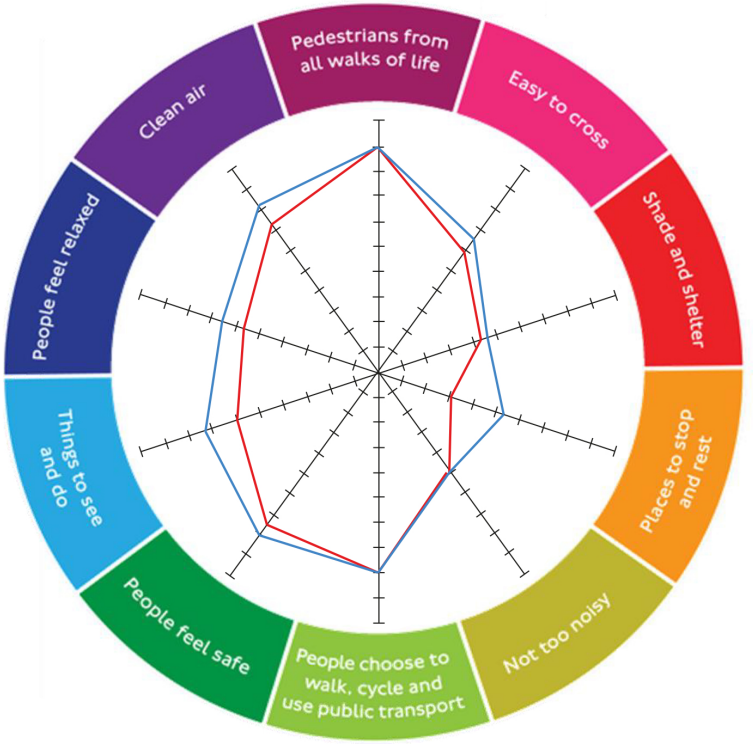
While factors, such as air quality and rubbish dispersal were main concerns affecting the street, they were noted to be temporary, rather than permanent issues. Important neighbourhood demographics, such as age and ethnicity provided key findings, as they signified the diverse nature of the street. The same cultural mix identified in Riddiford Street supports the observation that Newtown is a suburb with a diverse demographic.

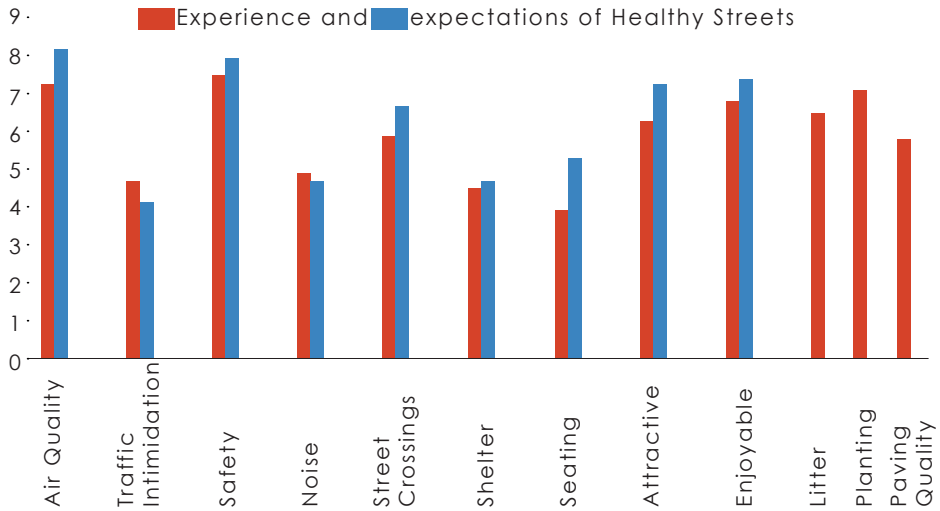
KEY
Morning
Midday
Evening

As environmental and vehicular conditions have shaped the layout of the street, its individuality and uniqueness are identified through the process of 'why this street is comfortable to walk along?' While a street's "identification is not always so mundane and trivial," the 'process,' in which we perceive Rintoul Street has allowed for its environment, culture and community to shapes it unique characteristic (Jenkins, 2014, p. 2). The process in which people walk through Rintoul Street, from a calm demeanour to a casual walk has suggested how planting, limited vehicular movement and narrow road structure can create a pleasant atmosphere. While the characteristics of dominating parked cars contrast the key theme of limited vehicular movement, it can be noted as adding to the streets functional uniqueness.

Although Rintoul Street is only a stone's throw away from the Newtown main commercial sector, you are able to remove yourself from the busy, heavily traffic of Riddiford Street, allowing pedestrians to feel relaxed.

Healthy Street Indicator - Rintoul Street

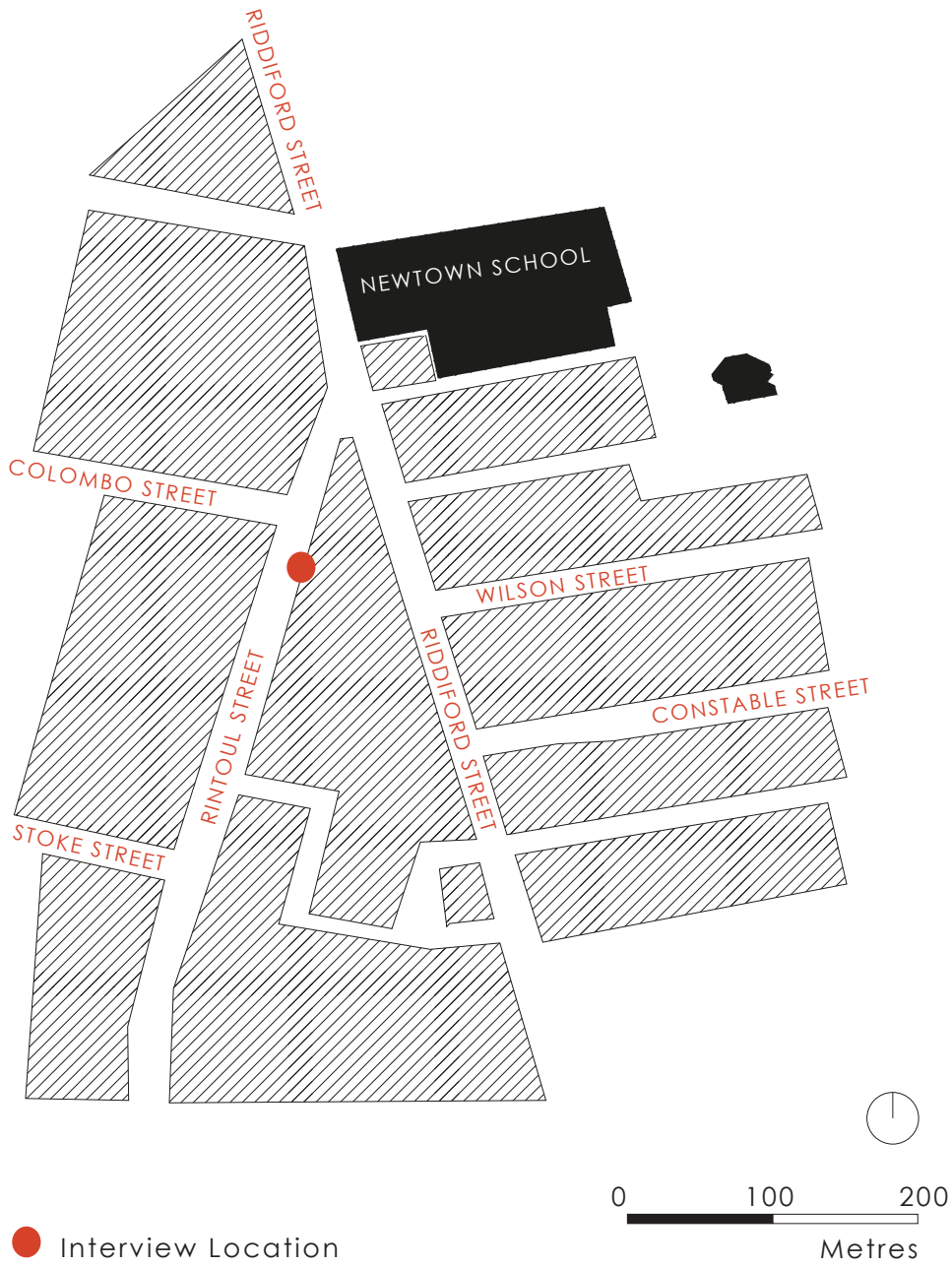




STREET FUNCTIONALITY

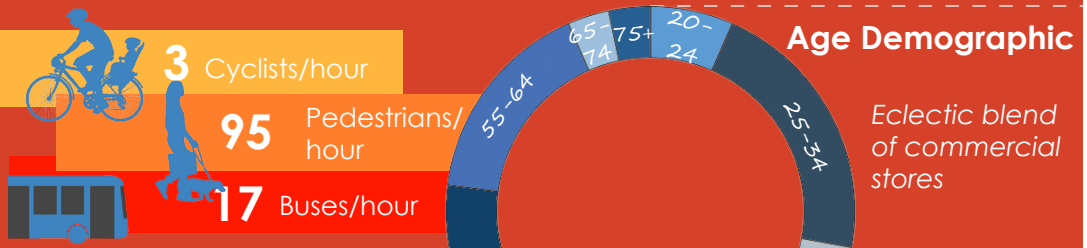
As this is a prominent residential street connecting wider suburbs to the Newtown commercial sector there have been concerns over the number of parked cars on the street. The majority of cars parked have been observed as only located there during working weekday hours. This indicated that workers from local businesses, the hospital and the primary school may be utilising the on-street parking during their shifts. While this is encouraging as it does suggest a high level of activity within Newtown, it does cause some level of discomfort for pedestrians and cyclists wishing to use the street. As Rintoul Street has been designed as a narrow residential road, the dominating car structure creates the impression that motor vehicles are the most important factor. This street structure not only limits the likeability of the street, but may hinder cyclist numbers in the future. As roadside parking has been noted as contributing to motor vehicle/cyclist crashes, "80% of infrequent, potential, and non-cyclists" have indicated their preference to a "cycleway separate from traffic" (Wang, Mirza, Cheung, & Moradi, 2014, p. 9). This is in conjunction with pedestrians expressing their concern over the limited ability to cross the street further up the road due to parked cars.

SITE MAP : RINTOUL STREET



A SAMPLE OF INTERVIEW QUESTION

CASE STUDY *THREE* - BAY ROAD



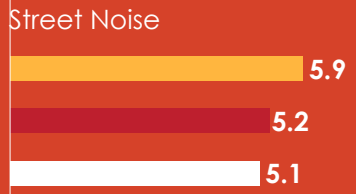
Eclectic blend of commercial stores

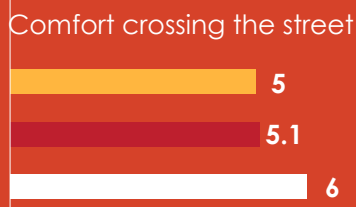
COMMERCIAL SECTOR

32 Survey Participants

50% 50%

Experienced Street Qualities





Heavy Vehicular Patterns

Diverse demographic

Wide pavements, allowing room for pedestrian movement

2 3 12 12e 14 18e 20 24 36 91

Diverse commercial retail hub, accommodating a broad demographic

Constant activity and liveliness throughout the street

Located in the heart of Kilbirnie, Bay Road accommodates a variety of commercial stores for this inner-city suburb. Developing itself as the suburb's main commercial hub, Bay Road provides accessible shopping for Kilbirnie residents. However, it does not receive the same quantity of foot traffic found on other commercial streets in the survey. Situating itself a minutes' walk from the suburbs central bus terminal, Bay Road is accessible to wider suburban residents, including Miramar, Lyall Bay, Newtown and Hataitai. This street study has included the identification of cyclists travelling around Bay Road, indicating multiple transport options to this suburban area.

Themes of environmental conditions, demographics, dominant transport patterns and individuality have been identified as key characteristics of the streets functionality. Environmental conditions corresponding to Bay Road's design layout have highlighted the concern over inadequate street conditions for pedestrians. Noise, fumes, and increased litter, as well as the limited dispersal of trees and planting have been observed as decreasing the visual likeability of the street. Participants have given an average score of 5.2/10 for trees and plants, indicating the sparse vegetation is overpowered by parked cars. Few usable seats are found on the road, as many are placed in uncovered locations, impairing their use when raining. In addition, seating distribution does not align with the local aging demographic, as there are few places for people to sit and rest.

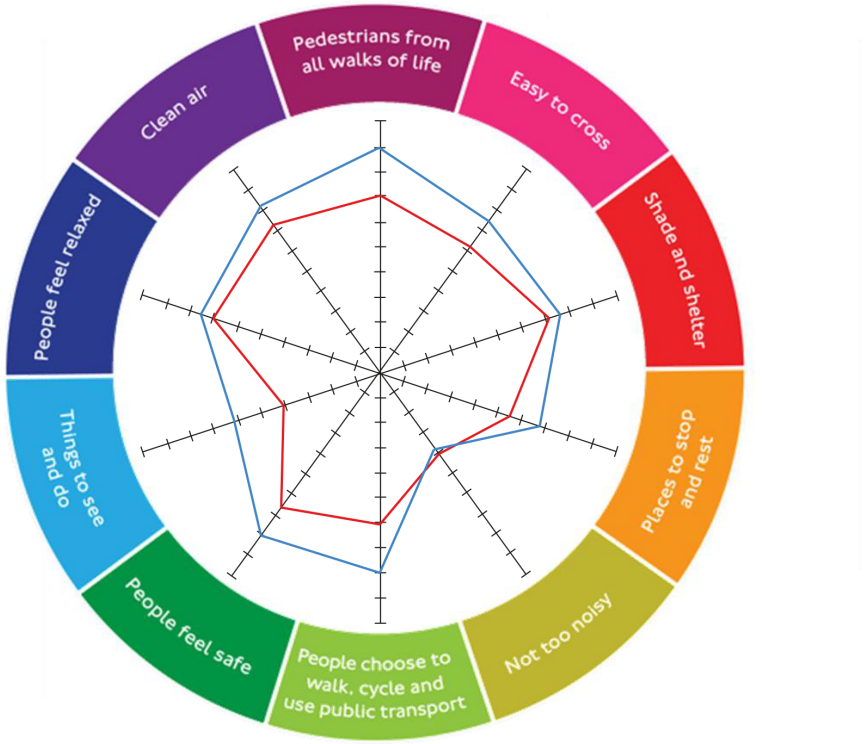
The importance of these demographics have highlighted how suburbs like Kilbirnie need to place an emphasis on questions such as 'should we design urban centres to aid the local demographics?

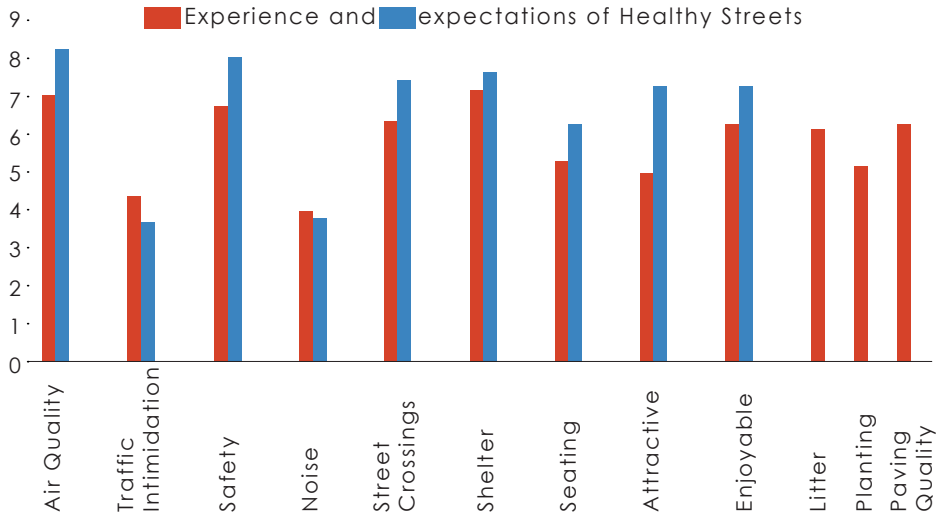
KEY
Morning
Midday
Evening

As a large proportion of pedestrians observed on the street were sixty years old, or older, their movement patterns altered the research. Data collected suggested people feel more comfortable when they distanced themselves from parked cars. Research into this street has shown how the visual discomfort of street environments can diminish the relationship between the public streetscapes and local residents.
Unlike previous streets surveyed in this report, Bay Road is not affected by thoroughfare traffic, but does have a high number of cars parked on its street. Whilst the street is in constant use by motor vehicles, the speed restriction of 30km/hr has enhanced street safety, as cars travelling below 30km/hr have been found to "drastically lessen the risk of fatalities" (Welle, et al., 2015, p. 15).

As street individuality is developed through visual cues, it is essential to understand how perceptions can change design characteristics. Factors such as the commercial sector, slow zones, major shop fronts and the pedestrian nature of the street have provided the key elements of this street. These factors alter its appearance from other roads in the vicinity, creating a setting that is more public-friendly than the rest of Kilbirnie. The combination of environmental and visual features have added to the street's uniqueness, creating n identity that means Bay Road differs from other commercial sectors. While cafés and smaller retail stores contribute a local eclectic commercial blend to Bay Road, they contrast with the larger retail chains, such as Warehouse Stationery, Postie Plus, Farmers and Countdown. These chains not only diminish and decrease street liveability, but they heavily impact the pedestrian nature of the street. Through long windowless concrete walls that contribute negatively to Kilbirnie, affecting the interactive quality of the street.

Healthy Street Indicator - Bay Road

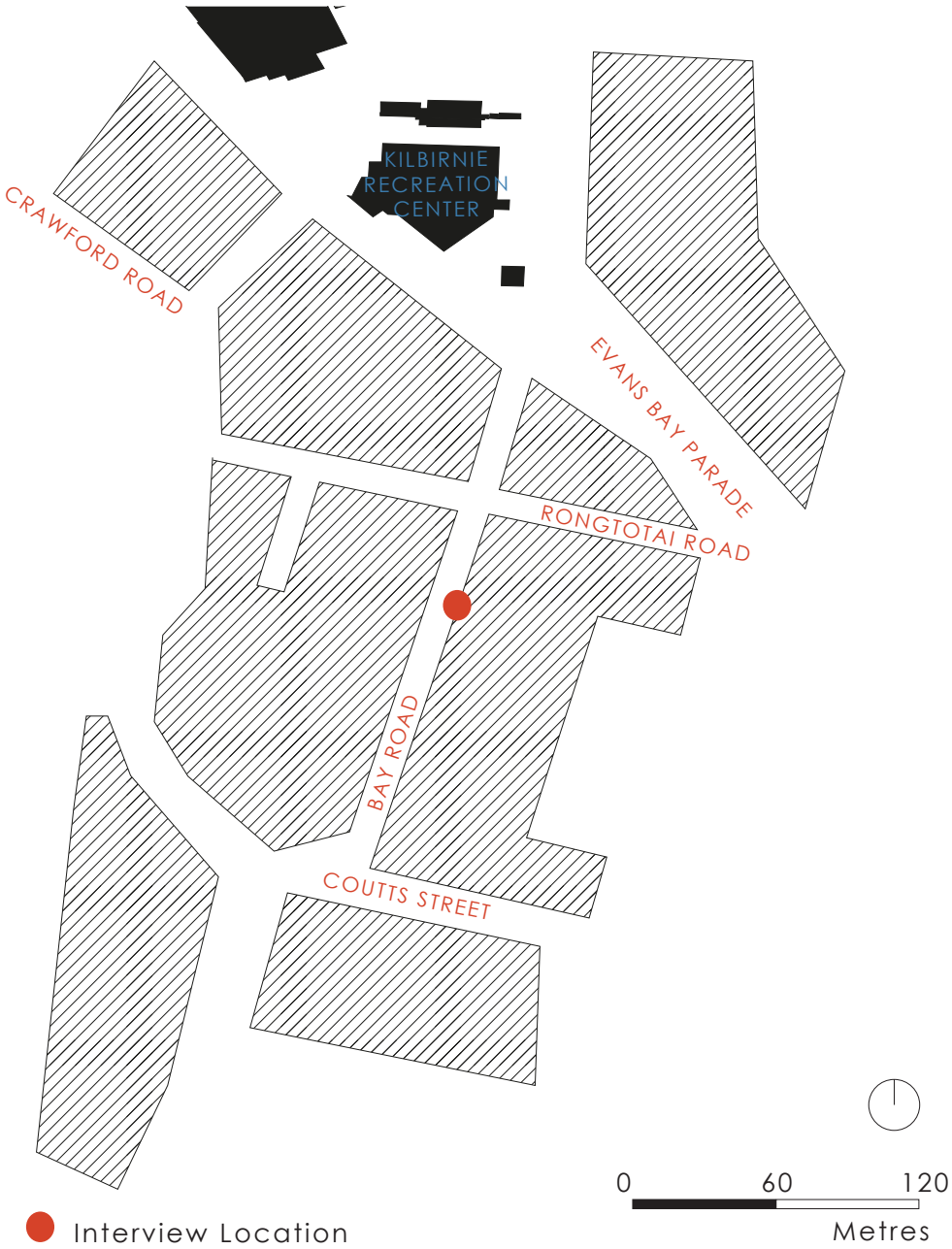




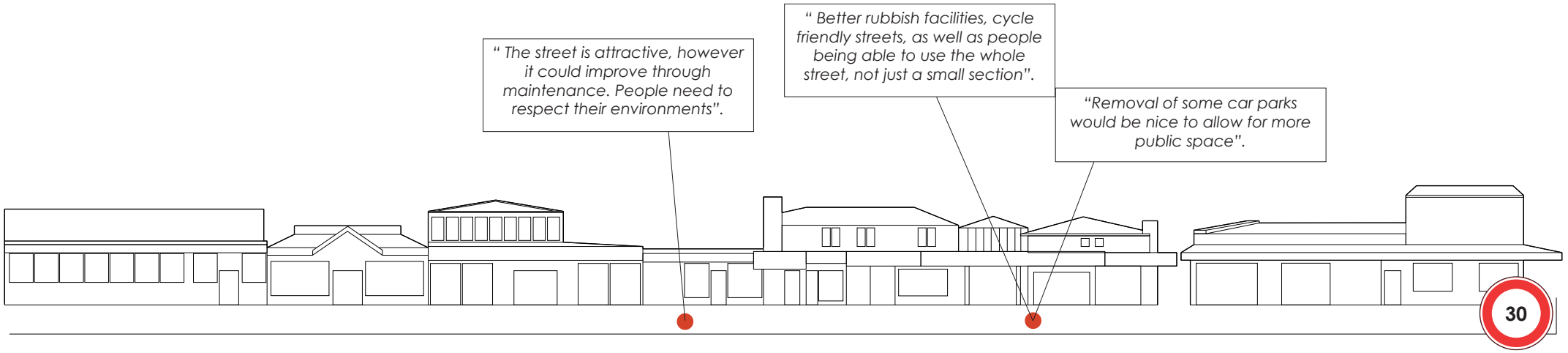
STREET FUNCTIONALITY

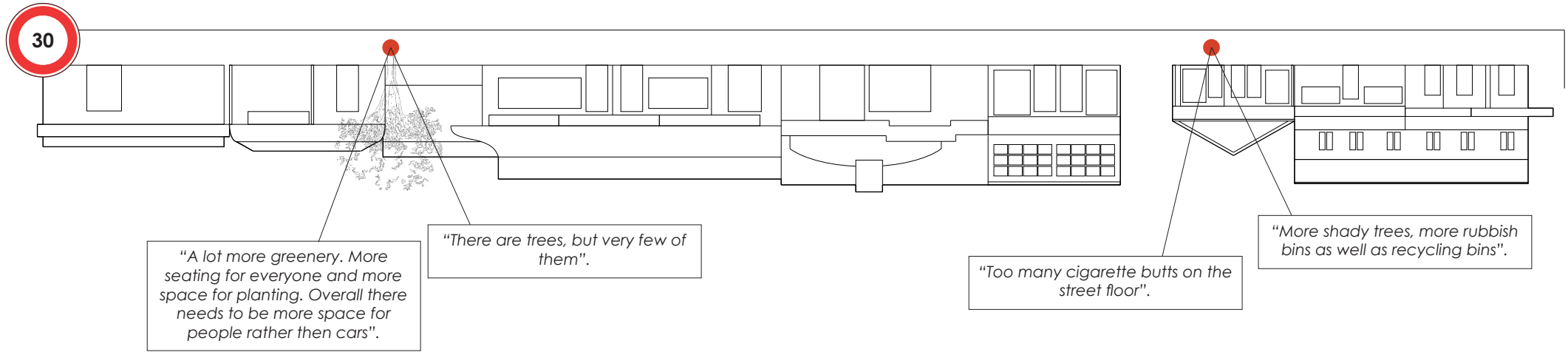
With the functionality of Bay Road fluctuating between pedestrian friendly and dominating vehicular patterns, there are factors that need to be addressed to improve the public interface of this road. Contradictory design functions, such as the pedestrian focused streetscapes with a car dominated street layout, have provided a road that allocates space to the public while also neglecting pedestrian interest in the urban centre. Although there is a speed restriction on this street, the social hierarchy of Bay Road has focused on how cars will be able to travel to these local stores. Paul Mees has stated in 'A Very Public Solution' that "heavy traffic levels create isolation, a decline in neighbourliness and deteriorating public space". This is reflected in the prioritisation of on street parking in Kilbirnie which discourages the public nature of the street. Although the commercial road is a main strip within Kilbirnie, it does not need to be tailored towards cyclists as Crawford Road and Rongotai Road provide sufficient cycle access to and from Kilbirnie.

SITE MAP : RINTOUL STREET

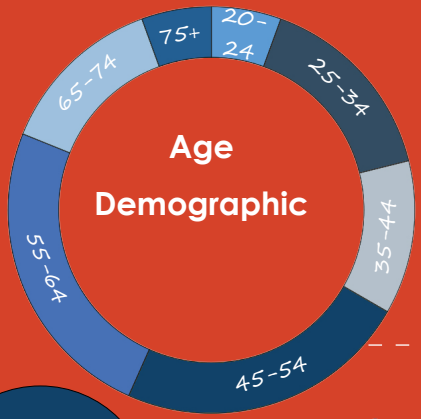


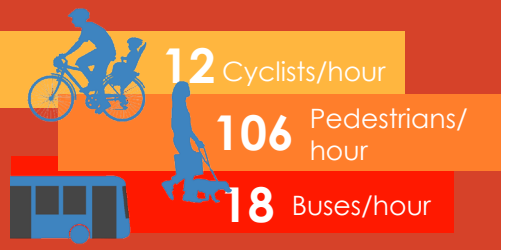
A SAMPLE OF INTERVIEW QUESTION





CASE STUDY *FOUR* - MIRAMAR AVENUE





Pedestrianised thoroughfare

90
Survey Participants

52%

48%

Cycle friendly

Commercial hub, accommodating to a broad demographic

Constant activity throughout the street

Pavement and planting create a comfortable environment for pedestrians

2 12 12e 18 18e 24

A main access way to the Miramar peninsula and a destination point.

Extensive Planting

Diverse demographic

Experienced Street Qualities

Air Quality

8
7.5
7.5

Street Noise

6.3
6.1
4

Comfort crossing the street

7.1
6.9
7.5

Miramar Avenue, situated within the eastern suburb of Miramar connects to Wellington's urban centre through various viable transport options. The expanding shopping area comprises numerous commercial stores, providing variety to both the local community and wider neighbourhoods. While this busy street is predominantly a thoroughfare road, it does act as a destination point for local residents. Pedestrians, cyclist and cars all utilise this road, accommodating a variety of demographics. Miramar Avenue is one of the wider streets within Wellington, encouraging pedestrian and cyclist friendly options for travelling. Observations of Miramar Avenue suggested there is a diverse community within the suburb.

The four key themes of this study have been recognised within Miramar Avenue, highlighting the advantages and limitations of this street. Ranging from environmental conditions, dominance of vehicular transport, the diverse demographic and street individuality, participants provided their perspectives on and expectations of this street. Environmental conditions, including the Pohutukawa trees, minimal rubbish dispersal, fresh air and low levels of vehicular noise have created a street setting that is relaxing, comfortable and safe. Whilst Pohutukawa are visually pleasing, some root structures have been identified as hazardous.

Participants have indicated vehicle traffic has caused a decrease in air quality, suggesting the fumes are diminishing street. Due to Wellington's constant wind, this pollution level is reasonably low. However, it highlighted an interest in more renewable and sustainable transport options for the suburb. Although this street is classified as a 'medium to high trafficked road,' there is little car dominance within the area (Appleyard, Gerson, & Lintell, 1981, pp. 15-16). As vehicular traffic on the street is restricted to 30km/hr, the public structure of the road has placed an emphasis on pedestrian movements.

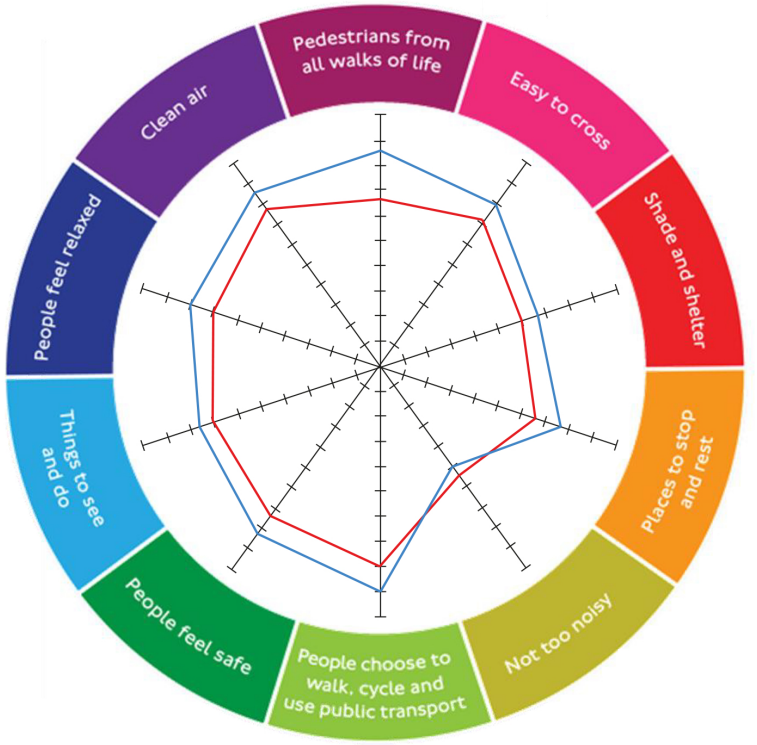
KEY
Morning
Midday
Evening

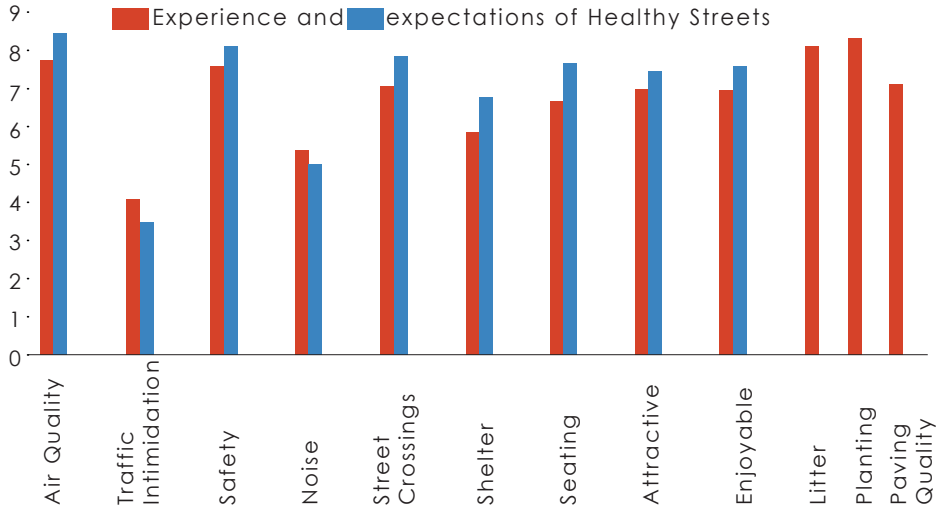
Contrary to other streets in this study, Miramar Avenue was the only commercial road placing hierarchy on pedestrians. The use of a wide pavement and road structure allocated more "equitable balance" for other road users (Francis, 2016, p. 198). In addition to this feature, the placement of trees provided a visual barrier separating the public and the main road. The street conditions found within Miramar have allowed for a diverse community, as age, disability, gender, and ethnicity have all contributed to Miramar Avenue's broader demographic. This 'democratic street' layout has allowed for pedestrians of all backgrounds to move with ease, inviting the local community to interact with this public environment (Francis, 2016, p. 192).

The combination of these factors, as well as a commercial setting has created the street's unique identity. While Miramar Avenue's environmental and vehicular conditions have shaped the streetscape, its prominent pedestrian hierarchy has been an indicator that this street is different from, or those in many other areas. Although this suburb is still affected by thoroughfare traffic and congestion, its approach to pedestrians and cyclists has provided the street with a unique layout design creating a livelier, safer space for the public to move through.

As "green neighbourhoods and more natural living environments have been associated with reductions in stress and increased levels of physical and mental health," Miramar Avenue has provided an urban centre focusing on the well-being of its residents (Beatley & Newman, 2013, p. 3329). As place identity is based on positive feelings of connection, implying a "particular places make you feel 'at home' and 'at ease,'" Miramar Avenue creates a setting that is relaxing and enjoyable to walk within (Huigen & Meijering, 2005, p. 21).

Healthy Street Indicator - Miramar Avenue

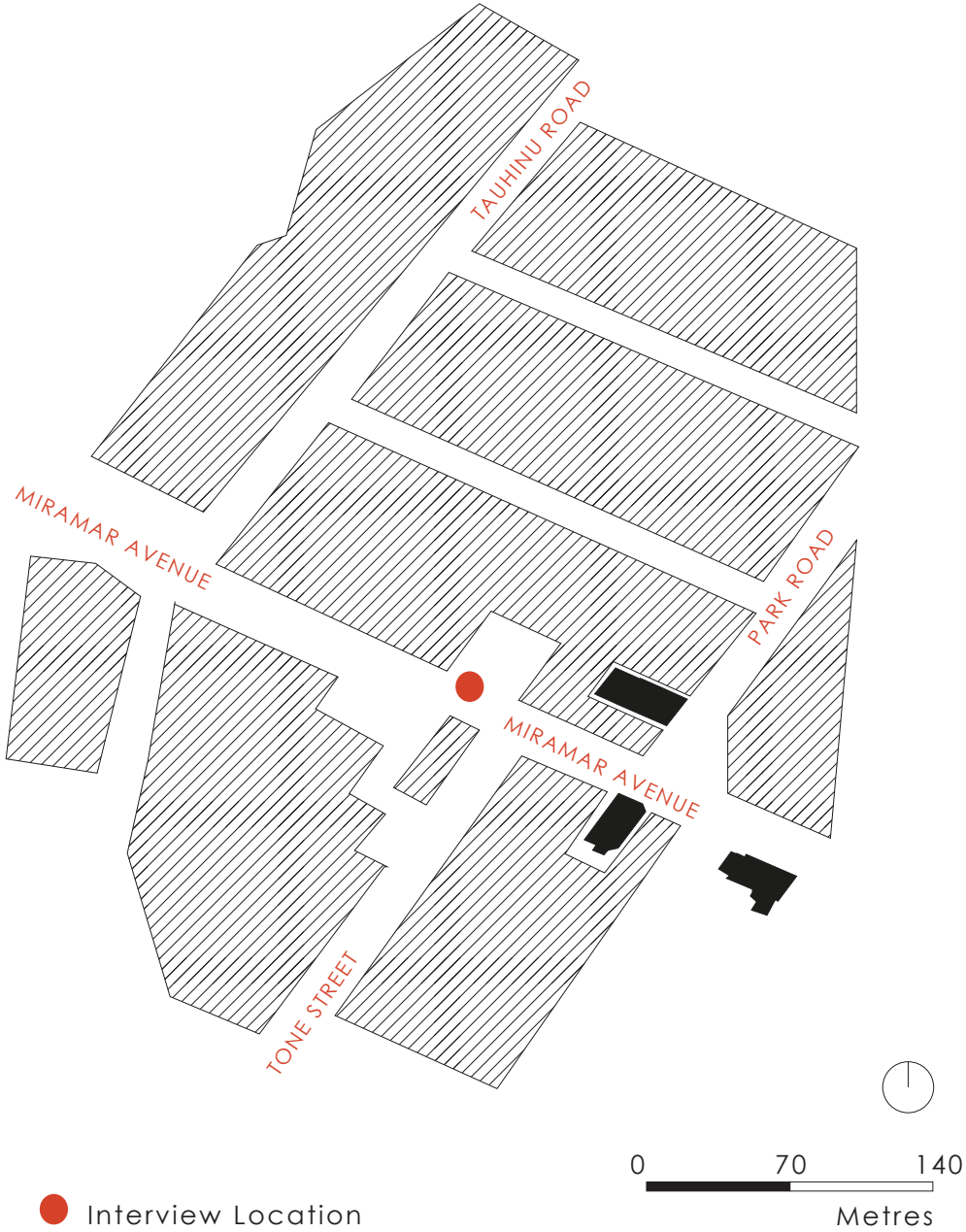




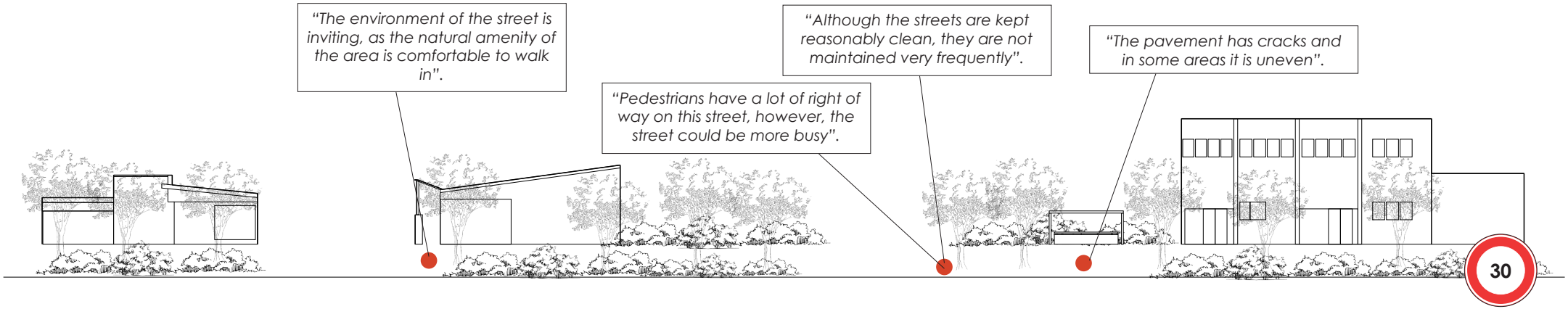
STREET FUNCTIONALITY

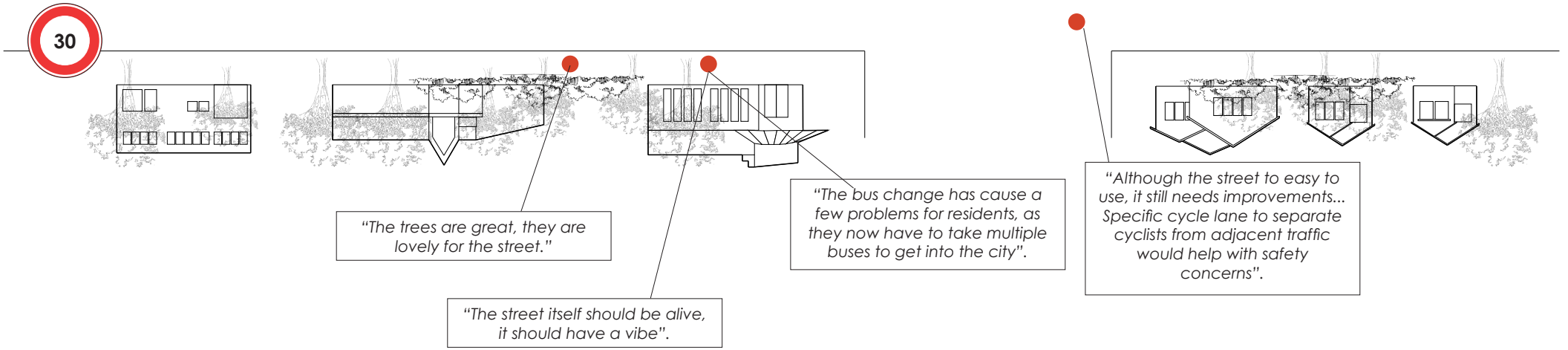
Through the unique design layout of Miramar Avenue's main road, a public orientated street has been created to focus of all forms of movement and travel. Contradicting other main road designs, this street has highlighted the importance of pedestrian and cyclists within a thoroughfare setting. As the street is the furthest surveyed space from Wellington C.B.D, the significance of public orientated transport systems has been of high importance. Buses, and cycle friendly streets can impose alternatives to single use cars, creating a viable, healthier street, for all demographics to utilise. Healthier options have already been applied to the design of the street, from planted canopy structures, public transport, wide footpaths and a diverse commercial sector, as well as the close proximity of residential dwellings. In order for this street to continue developing the way it is, a further push for more viable transport options need to be thought about. Paul Mees has described how the New Zealand street model has been focused on single user car travel, as people "seem to be wedded to their cars" (A Car-Dominated City and its Discontents , 2000, p. 3). Suggesting how spacious urban environments, which cater towards separate houses rather than flats, like that of Miramar, encourage the use of personal motor vehicles over the public transport network. However, as the population of Wellington continues to grow, the importance of viable transport network should be considered for reducing vehicle congestion.

SITE MAP : RINTOUL STREET



A SAMPLE OF INTERVIEW QUESTION





CONCLUSIONS

Through the development of this report, inclusive designs for pedestrians and cyclist-friendly streets have been identified. An in-depth understanding on how and why certain streets are utilised has produced specific street archetypes for public space functionalities. The adoption of 'London's Healthy Streets initiatives' has allowed for inclusive street parameters to be identified, suggesting how fair, sustainable, attractive urban spaces can improve the local streetscape. Environmental factors including vegetation and greener neighbourhoods have been linked to the duration of outdoor activities, promoting a basis for healthier lives and lifestyles (Beatley & Newman, 2013, 3336-3337).

Promotion of a more active and healthier lifestyle should be produced through local design features, enhancing the lively and 'sociability' of the street, recognising "the importance of the street environment for the social life of cities" (Francis, 2016, p. 196). This report has placed an emphasis on street qualities, endemic to the local environment, rather than suggesting how public spaces could be improved through repeating design features. A focus on demographic equity should be produced, to improve social environments for all members of society. Only when "equity is embedded in urban development strategies" will efficiency and social cohesion be enhanced (Brambilla, Michelangeli, & Peluso, 2015, p. 91).

A street's context determines what features are necessary to support safe active travel. Many factors help create this context, including the natural environment (e.g., rivers, open space); surrounding land use (e.g., parks, school, shopping district, health clinics); the demographics (e.g., children, older adults, low income); and the function of the street (e.g., neighbourhood local street, arterial). The four Wellington streets have been studied, recognising how each street's local archetypes have developed differently. Comparisons between these streets have described how individuality is not a generalised design feature, as environmental conditions, dominating vehicular patterns and demographics can change the unique qualities of an urban space. Trends within the survey suggested participants have a strong visual connection to a street when planting and colour are present. The survey also found high levels of vehicular traffic and minimal pedestrian movement can negatively affect the likeability of a street.

The divisions of main roads into destination streets or thoroughfare roads have placed a hierarchy on dominating vehicular patterns on local Wellington streets. Dominating vehicular patterns have been linked to a "diminished biodiversity and isolation from the rhythms of the natural world," creating a disconnection between the public and local, unique street qualities. Declining visual experience towards street likeability and comfort levels have been associated with these streets, as heavy traffic patterns and poor pedestrian flow have impacted street life. Through the survey questionnaire, participants have described the presence of heavy traffic patterns have decreasing air quality, street liveliness and sociality and public planting. Streets associated with pedestrian friendly movement patterns, public space, city greening and limited vehicular influence raise streets sociability and 'activeness.' These spaces facilitate "pro-social behaviour, foster social capital, and support community cohesion." Streets designed for all pedestrian users (youth, elderly,disabled, and adults), cyclists and public transport facilities are able to provide a comfortable streetscape. Less restriction is placed on the public from only using footpaths, as pedestrians can cross the street safely, and cyclists are able to bike on the road easily.

What's next for Wellington?

This report has highlighted the importance of versatile street functionality within Wellington City, particularly when looking at street themes, such as environmental conditions, transport patterns, neighbouring demographics and street individuality as a way of comprehending public street use. The use of London's Healthy Streets Initiative has formed a useful starting point. The strategy captured valuable information that can serve as a baseline for comparisons to others cities overseas, but also comparing streets before and after modification. The survey also has some limitation.

As the questionnaire has been taken from 'London's Healthy Street Initiative,' the survey has not taken into account the unique characteristics of Wellington's streets. A shortcoming is that the London survey has generalised specific street qualities, grouping design attributes as singular functions. Compact cities, like Wellington, require a modified street framework, where local individuality and identity become a critical component in citizens' health and well-being.

Although the four streets surveyed had a proportionate survey spread, time allocated to the total amount of on-site surveying limited the survey population size. Data may not be fully representative of the community population as certain demographics were more willing to participate than others. Cyclist's perspectives were limited to this report, as the majority of interviewees were pedestrians. Other factors such as headphones and disinterest in the survey reduced the amount of people willing to have a conversation about health streets. Future interest into healthy streets will need to address this problem, as a way of including all ages in a healthy street. This may include an online survey, which participants can complete at home, as well as one on one interviews on-site.

Inclusions and additions to' London's healthy Street Imitative' would help tailor questions towards Wellington's population and demographics. Wellington's own healthy street initiative will identify local area improvements, while also placing an emphasis on street individuality, instead of generalised design. A phrase change to the word 'expect' would be beneficial to future development to the questionnaire, as participants found the terminology to be confusing. As well as a reduction of survey questions, allocating 5 minutes for less for the survey to be completed in, will encourage more participants to participate.

Additional questions should include, longevity of stay on the street, how they arrived at the street (bus, car, walking, or cycling), how long they have lived in the area (if a local resident or international), and any environmental concerns they feel the street does not address. Future healthy street interviewing should comprise a range of times, throughout the week, including evening pedestrian activity.

A balance between single use vehicles, public transport, pedestrian and cyclist's movements, and public spaces should be a key identifier for healthier street qualities. Emphasis should be placed on creating better relationships with our streets, rather than making them 'a means to an end', a way of getting to a destination. The importance of "well planned integrated strategies, combined with effective consultation and communication" are key approaches to develop an efficient public orientated network (Directorate-General for the Environment (European Commission), 2004, p. 9). People should be able to utilise the street in a comfortable and safe manner, whether it is driving, walking, running or cycling.

To continue this important initial work, further surveys should be undertaken to develop neighbourhood transportation archetypes, as a way of monitoring changing community demographic and streets modifications. The development of street archetypes can establish transportation design guidelines, helping to mend the disconnection between people and urban spaces. Ongoing surveys can monitor the mood of local communities and communicate that the Wellington City Council is listening to them.

ID #:

Healthy Streets Survey

Capturing how members of the public experience the street

WELLINGTON CITY COUNCIL AND THE SCHOOL OF ARCHITECTURE, VICTORIA UNIVERSITY OF WELLINGTON

APPENDIX

Healthy Streets Survey core questions

- Interview location
- Weather on the day (Sunny, Cloudy, Light rain, Heavy rain)
- Shift type (Weekday AM, Weekday PM, Weekend)
- Assessment of level & speed of traffic
- Assessment for underage: If potentially 18 or younger, ask age here. Participants under 16 must be accompanied by a parent or guardian to be included.

Healthy Streets Indicator	Survey Questions
Clean Air	Q: How clean do you think the air on this street is today? Q: How clean would you expect the air on this street to be?
People feel safe	Q: How intimidated do you feel by the traffic on this street? Q: How safe from crime and antisocial behaviour do you feel on this street today? Q: How intimidated by the traffic would you expect to feel on this street, given its function and what it is used for? Q: How safe from crime and anti-social behaviour would you expect to feel on this street?
Not too noisy	Q: How noisy are you finding this street today? Q: How noisy would you expect this street to be?
Easy to cross	Q: How easy do you think it is to cross this street? Q: How easy would you expect it to be to cross this street?
Shade and shelter	Q: And, how easy do you think it would be for you to find shelter, for example if it was very sunny or raining? Q: And, how easy would you expect it to be for you to find shelter, for example if it was very sunny or raining?

Places to stop and rest	Q: How easy do you think it would be for you to find somewhere to sit or rest on this street if you needed to? Q: How easy would you expect it to be for you to find somewhere to stop, sit or rest on this street if you needed it?
Things to see and do	Q: How attractive do you find this street? Q: How attractive would you expect this street to be?
People feel relaxed	Q: How enjoyable are you finding being on this street today? Q: How enjoyable would you expect being on this street to be? Q: How clean and free from litter, dog mess and other rubbish do you find this street today? Q: How would you rate the trees, plants and green spaces on this street? Q: How would you rate the quality of the pavements on this street, thinking about the pavement width, pavement surface and pavement obstructions?
Contextual Information	Q: What is your main reason for being on this street today? (INTERVIEWER CUES: Shopping, travelling to/from work, travelling to/from school/college: as a student, Work-related activity, Personal business, Entertainment, Dining/Eating out, Tourism/Site seeing, Meeting friends/relatives, Visit place of worship, Health or medical appointment, Going for a walk/cycle/drive for enjoyment, Just passing through/On my way somewhere, Live nearby, Other) Q: Overall how satisfied are you with this street today?
Additional Questions	Q: (Evans Bay Parade and Northern Connection locations only) How would you rate the experience of being next to the sea? Q: (Kilbernie Connection only) How does the steepness of the street affect your enjoyment of walking/cycling? Q How does the wind affect your use of this street? Q Can you name a day when you found it too windy to walk/cycle?

Demographic data (interviewee)	Q: What is your employment status? (INTERVIEWER CUES: Working full time: 30+ hours a week, Working part time : 8-29 hours a week, Self-employed full time: 30+ hours a week, Self-employed part time: 8-29 hours a week, Student, Seeking work, Not working- not looking for work, Retired, Looking after the home, Other, Prefers not to say) Q: Do you have any long-term physical or mental impairment which limits your daily activities or the work you can do, including problems due to old age? (INTERVIEWER CUES: Mobility impairment, Age related mobility difficulties, Visual impairment, Hearing impairment, Learning difficulty, Mental health condition, Serious long term illness, Other: write in respondent's words, None) Q: Where do you live? (INTERVIEWER CUES: In Wellington, In NZ but outside of Wellington, Outside NZ, Prefer not to say) Q: What is your postcode or suburb of residence? Q: Which age category do you fall in? (INTERVIEWER CUES: <14, 14-19, 20-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75 and over, Prefer not to say)

Observations recorded by interviewer:

Gender (Male, Female)

Using:

- Walking frame
- One walking stick
- Two walking sticks
- Wheelchair
- Mobility scooter
- Guide dog
- White stick/cane
- Crutches
- Pram/pushchair
- Other (name)

Encumbered by:

- Shopping bag
- Shopping trolley
- Small child/baby
- Suitcase/heavy luggage
- Large or awkward item
- Baby pushchair/pram
- Bicycle
- Skateboard
- Other (name)

Accompanied by

- Baby
- Toddler/pre-school
- Children 5-1 I years
- Children 12-16 years
- Elderly person
- Person with mental/physical impairment
- Other adult (specify number of adults)
- Other (name

Additional questions under consideration:
1. Do you think the environmental concerns of the area have been met? or Do you think the environment is pleasing to be around?
2. How did you get to this site? (What mode of transport did you take?)
3. Do you feel comfortable crossing this street?
5. Do you believe this street is pedestrian/ cyclist friendly
6. How would you describe this street? (ie inviting, welcoming, easily accessible, relaxing)

REFERENCES

Anderson, S. &. (1978). On Streets. (S. Anderson, Ed.) Cambridge, Massachusetts: The MIT Press.

Appleyard, D., Gerson, M. S., & Lintell, M. (1981). Livable Streets. Berkeley: University of California Press.
Beatley, T., & Newman, P. (2013). Biophilic Cities Are Sustainable, Resilient Cities. Journal of Sustainability, 3328-3342.

Brambilla, M. G., Michelangeli, A., & Peluso, E. (2015). Cities, Equity and Quality of Life. In A. Michelangeli (Ed.), Quality of Life in Cities. Equitt, sustainable development and happiness from a policy perspective . Abingdon, United Kingdom : Routledge.

Directorate-General for the Environment (European Commission). (2004). Reclaiming city streets for people. Chaos or quality of life? European Commission .

Dohm, D., & Wooten, H. (2016). A Guide to Building Healthy Streets. ChangeLab Solutions.

Francis, M. (2016). The Making of Democratic Streets. In Contesti. Citta Territori Progetti (pp. 192 - 210). Firenze University Press.

Huigen, P. P., & Meijering, L. (2005). Making Places: A story of De Venen. In G. A. Graham (Ed.), Sense of Place: Sense of Time (pp. 19-30). Aldershot, United Kingdom: Ashgate Publishing Limited.

Jenkins, R. (2014). Social Identity (Fourth Edition ed.). (P. Hamilton, Ed.) Abingdon, United Kingdom: Routlegde.

Macmillan, A. K., Mackie, H., Hosking, J. E., Witten, K., Smith, M., Field, A., . . . Bass, P. (2018). Controlled before-after intervention study of suburb-wide street changes to increase walking and cycling: Te Ara Mua-Future Streets study design. BMC Public Health, 13.

Mees, P. (2000). A Car-Dominated City and its Discontents . In P. Mees, A Very Public Solution (pp. 11-45). Melbourne , Australia : Melbourne University Press.

Organisation, W. H. (1997). Sustainable development and health: Concepts, principles and frameworks for action for European cities and towns. (C. Prince, Ed.) Copenhagen: WHO Regional Office for Europe.

Transport for London . (2017). Healthy Streets for London. Prioritising walking, cycling and public transport to create a healthy city. London: London Transport.

Wang, J. Y., Mirza, L., Cheung, A. K., & Moradi, S. (2014). Understanding factors influencing choices of cyclists and potential cyclists: A case study at the university of Auckland. Road and Transport research: a journal of Australian and New Zealand research and practice , 18.

Welle, B., Liu, Q., Li, W., Adriazola-Steil, C., King, R., Sarmiento, C., & Obelheiro, M. (2015). Cities Safer By Design. Urban Design Recommendations for Healthier Cities, Fewer Traffic Fatalities. Washington, DC: World Resource Institute.