

# **An Assessment of Key Features to Maximise Pathway Use along the Avon-Otakaro Corridor**



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# Executive Summary

## Research Question

- An assessment of key features to maximise pathway use along the Avon-Otakaro green corridor

## Research Context

- The Canterbury earthquakes resulted in land damage and liquefaction throughout large parts of Christchurch. Consequently, the quality of land throughout the city, particularly within the eastern suburbs, was deemed unsatisfactory or uneconomical for future development. This resulted in governmental acquisition of a narrow strip of land following the Avon River, broadly running from the City Centre to the Heathcote Estuary.
- It has been proposed that a mixed-use pathway be constructed in this area, encouraging active transport, recreation, and tourism. This proposal has received widespread support, and resulted in the formation of our community partner; the Avon-Otakaro Network.
- Central government, the likely financiers, has yet to give a firm commitment to the plan.

## Method

- We conducted a number of interviews and focus groups with a wide range of stakeholders. These included the New Brighton Business Association, Spokes NZ, the Christchurch City Council, Burwood School, representatives from the Palms Mall, walkers, and a young mothers group.
- This consultation allowed us to identify the elements that may have the greatest impact on future usage, including key destinations in the immediate vicinity, connectivity, linkages with other council pathways, track quality, supporting infrastructure, and future commercial opportunities.
- GIS tools were utilised to present the results. All-important destinations in the immediate vicinity were illustrated visually, with key elements affecting connectivity being mapped. This presents a workable and practical element for our community partner to utilise in future.

- **Key Research Findings**

- Unanimous support was garnered from all respondents.
- Safety, connectivity and track quality were recurring themes.
- Separated tracks were preferred. However, the expense makes this problematic. As such, a multi-use option has been recommended.
- The supporting infrastructure will be key to the success of the mixed-use pathway. Features include the use of road separators, informative signage, etiquette boards, clear separation of pedestrians and cyclists, appropriate lighting, detailed maps, and appropriate weather mitigation measures.
- Mapping potential connections is dependent on the release of Council plans. However, these will need to be incorporated with existing features to both maximise connectivity and limit costs.

### **Shortcomings and Limitations**

- The limited project timeframe, which prevented us delving into more detail.
- Delayed or limited responses from individuals.
- The strict Council time frames regarding the release of information as to the planned pathway.
- The uncertain timescale of the multi-use pathway, which reduces the accuracy of future planning.
- Changes in demographics and educational providers in the surrounding areas. This may become particularly influential in the future.

### **Suggested Future Research**

- Costs of pathways, in light of the known budget, along with supporting infrastructure deemed essential to the project's completion and success.
- Quantifying user numbers to address the number of individuals, and the purpose, frequency and duration of usage.
- Investigation into the viability of commercial ventures, including tourism.
- Use of the surviving houses in the red zone for promoting sustainability.

## Introduction

Christchurch is well known for its garden city image. Large areas of green space and the meandering paths taken by the Avon River through the city make Christchurch a unique and beautiful location. The devastating earthquake events of 2010 and 2011 have left many locations around the city unliveable. This land has been deemed unsatisfactory and uneconomical for rebuilding on and has been classified as 'red zone'. It is therefore important to create innovative solutions to add value to red zone land and the surrounding communities as the rebuild of Christchurch progresses.

The Avon-Otakaro Corridor is a narrow strip in the eastern suburbs that follows the Avon River from the city center to the Heathcote Estuary. The ground accelerations experienced in this area during the earthquake events damaged the land severely. This is due to the unconsolidated young sediment that Christchurch is built upon which has the ability to increase the ground accelerations of an earthquake (Downs, 2013). Pre-earthquake, the environment surrounding the Corridor was a well-utilised facility for sport and recreation. The meandering paths that follow the course of the river were used by walkers, runners, and cyclists, providing alternative off-road routes for active transport. Post-earthquake, there has been a decline in the number of users due to the poor quality of the current gravel track. The environment has become overgrown and has been vandalised extensively, generating an atmosphere of danger. Decisions regarding the future use of red-zoned land must be well planned to diminish feelings of insecurity, and to revitalise the environment and community in this once bustling area.

The Avon-Otakaro Network formed as a response to thinking about what should become of red zone land in the Corridor. Its vision is "to promote the future use of the Avon-Otakaro River and surrounding red zone lands as an ecological and recreational reserve for the community" (Avon-Otakaro Network, 2012). The group is dedicated to developing a reserve and river park in the Avon River residential red zone. Associate Professor Harding is calling for Kiwis to preserve wetlands and rivers (University of Canterbury, 2013); the vision of the Avon-Otakaro Network is in keeping with this. Incorporated in the reserve and river park is a series of mixed-use

pathways that link to the network of cycle tracks planned by the Christchurch City Council (Christchurch Transport Strategic Plan, 2012). The Avon-Otakaro Community group would like these mixed-use tracks to become world-class (Scoop, 2013), and to allow safe connectivity between community hubs. The goal is to revitalise the east of Christchurch through economic, social, environmental, and health and fitness benefits that tracks would bring.

The aim of our research project was to assess key features of red zone mixed-use pathways to maximise their use, given diverse community needs. The objectives were to identify the best routes for connecting with key destinations and Council pathways, to determine the quality of tracks that would encourage use, to identify barriers and encouraging factors that would attract people to use them, and finally, to conduct a literature review on the benefits of cycling.

Our research builds on past research by Natalie van Looy (2013), whose study focused on the potential for a multi-use pathway along the banks of the Avon-Otakaro. We also incorporated findings from the 'Consultations and preliminary planning report' for Sport Canterbury (Fanning, 2013).



**Avon-Otakaro Corridor Red-Zone**

**Figure 1.** Map of the Avon-Otakaro Corridor Red-Zone. Source: CERA, 2013.

## Theory and Literature Review

Sustainable living concepts have generated research efforts worldwide into active transport, a healthy alternative to motoring. It is applicable to Christchurch, in circumstances enabling it to recapture its traditional cycling culture. With the earthquakes having rendered the red zone unsuitable for housing, research carried out in a city similar to Christchurch (City of Edmonton, 2001) shows that establishing cycle ways in the red zone and connecting Council-provided trails would benefit Christchurch in multiple ways.

Our research project, using problem-based learning, pursued a pragmatic approach. This deals with a problem using tools most suited to its solution. Our aim required garnering public opinion about cycle way usage, connectivity, and identifying characteristics that encourage or deter use. We used semi-structured questionnaires to consult a small number of people representing a wide range of interests.

Christchurch has over 330km of cycle ways (Christchurch City Council 2013-16 Community Outcomes), provided for in Christchurch's District Plan (Christchurch City Council, 2013a), Community Outcomes (Christchurch City Council, 2013b), Transport Strategy 2012-2042 (Christchurch City Council, 2012), Long Term Council Community Plan (Christchurch City Council, 2009), and Open Space Strategy (Christchurch City Council, 2011). Cycle ways around the river are also resonant with ECan's Water Management Strategy (Environment Canterbury, 2009), which provides for the sustainable management, and appreciation, of Canterbury's water resources. The Avon Otakaro Network has recently attracted funding for these pathways, with \$15 million recently being pledged by the Canterbury Earthquake Appeal Trust (Squires, 2013)

International research has found multiple benefits of cycling (see Appendix 1 for a complete list of references relating to cycling benefits), including economic savings, health benefits and greater utilization of urban greenspace (Asabere & Huffman, 2009). Requirements for encouraging cycling include practicality, connectivity, safety, and support from civic authorities (Beca Infrastructure Ltd, 2013; Barton, et al., 2009; European Cyclists Federation, 2013; Hung &

Abraham, 2007; Pooley, 2011). Active transport is one element of Smart Growth, Liveable Communities and New Urbanism concepts; civic authorities realise cycling is a good investment. New Zealand research confirms international research, and cycling, with its associated infrastructure, has been recommended in New Zealand (Kingham, et al. 2011).

Research shows that personal benefits from the more cost efficient transport mode amounts to savings of billions nationally over a short period. Cyclists also benefit from increased levels of health, fitness and alertness. Sociality increases as people interact more (Gehl, 2012), which in turn reduces crime (Racca & Dhanju, 2006). Safety is of paramount importance for individuals, which civic authorities can support through policy. Attitudes about cycling can be changed through multi-sectoral educational campaigns increasing social acceptance of cycling. Older adults' requirements also apply generally (Dill, et al 2010). Integrated policy, strategy and urban design, low-stress infrastructure, information, regulation and enforcement also lead to individual travel behaviour change, seen in increased cycling (see Appendix 1).

At the regional scale, civic authorities encourage people to cycle for congestion and pollution reduction, and the benefit:cost ratio is now estimated as 9:1 (Flusche, 2012). Providing facilities for inter-modal transport increases cycling, especially in medium-density areas (Mekuria, 2012). Cycle ways also contribute towards revitalizing disinvested areas, and property values increase near cycle ways (Flusche, 2012). Cycling infrastructure is comparatively cheap, simple to build, and compact. Policies that improve cyclists' safety encourage motorists to modify their behavior. While urban sprawl is not conducive to cycling, traffic calming and parking price hikes could increase its uptake because providing the facilities releases latent demand (Dowson & Doxford, 1997). Jobs, including in tourism, are also generated. Cyclists spend more than motorists, thus increasing demand for goods. Regional economic benefits accrue through greater employee productivity, health systems and fuel import savings, and increased tax revenues (Campbell & Wittegens, 2004; Flusche, 2012).

Locally, a recent report for the Avon Otakaro Network (Vallance & Tait, 2013) found that the benefits of having an integrated cycle way network throughout Christchurch would benefit the local economy by \$94.1 million annually. This conservative figure did not include nearby house price increases, tourist commercial ventures arising, or New Brighton revitalization.

## Methods

The questions and methodology employed by our group were in line with the aims. They required identifying factors having the greatest impacts on future usage, including:

- Key destinations in the immediate track vicinity
- Connectivity to the principal route
- Linkages with other Council pathways
- Track quality
- Supporting infrastructure
- Commercial and tourism opportunities

To cover the variation in respondents, we created three unique lists of questions (see Appendix 2). Because of this large scope, we focused primarily on gathering qualitative data. There was less emphasis placed on quantitative analysis, as statistical, mathematical or computational techniques did not align with the aims of this research.

Limitations identified prior to our research dictated our decisions. As these were primarily linked to time, the key was to ensure the project scope was achievable. As such, an investigation into potential pathway costs, development timeframes, or quantifiable likely user numbers, had to be discounted. It was simply unrealistic to gather reliable information on these points, as the assumptions needed would have compromised accuracy.

In light of this, we chose to conduct a number of interviews and focus groups with a wide range of stakeholders that were representative of the community. This allowed us to draw on those with vested interests for proposing improvements for connected pathways in Christchurch, and identified specific routes required by the community. The stakeholders contacted included:

- A representative of the New Brighton Business Association - an organisation promoting the collective business interests of New Brighton
- Spokes NZ - a vested stakeholder in commercial cycling initiatives in NZ
- The Christchurch City Council - a key player in any development in this area

- Burwood School - a major remaining educational facility in the area
- A representative from the Palms Mall - the key retail center in the vicinity
- A young mothers group - representing the young, and recreational users
- City Walkers - representing the middle-aged cohort of recreational users

By doing this, we avoided repeating earlier research of identifying potential user groups, but covered the interests of more certain recreational users, commuters, commercial operators and local residents.

The second element of our method utilised GIS, which digitized our results into visual form. Once key destinations were identified, we undertook fieldwork and associated research to ascertain the best routes for connectivity. We plotted the likely route of the pathway, then added suggestions for the best connections to existing cycle ways. A major part of this was dealing with issues with infrastructure, including bridges, intersections, and road crossings.

Altogether, this provided both analytical and qualitative data, along with a visual component, which will be of practical use to our community partner.

## Results

From all groups and individuals contacted, there was unanimous enthusiasm for the proposed cycle tracks. There was also a pre-existing understanding of the benefits to the environment, health and economy. With the research focusing on maximising the usage of these cycle ways, it was necessary to understand the current barriers people have to cycling, and possible solutions. The findings can be summarised into three broad categories: safety, quality, and connections.

### Safety

Lack of safety, whether real or perceived, is the leading barrier to cycling in Christchurch. Burwood school parents wanted tracks separated from Christchurch's roads. Their consensus was that roadside paint is not a safety feature and is a wasteful use of money. A study from Christchurch (Taylor, 2009) found that painted cycle ways are not respected by motorists, with cyclists frequently being intercepted by car doors opening and roadside parking maneuvers. Motorists may perceive that greater safety is provided by cycle way markings, giving a false sense of security on their part.

Our research found physical separation from vehicles to be the most effective way to encourage cycling. Many examples of this already exist and can be found overseas, as shown in Appendix 3. Many of the red zone pathways will follow the meandering of the Avon River, featuring vast stretches without road contact. Tracks on the river's banks would avoid the feared road hazards and provide increased visibility.

How to cross intersections elicited more suggestions that are varied. Spokes Cycling, a network of experienced adult cyclists, introduced the idea of cyclists being given an advanced green light at intersections. They also suggested a law change allowing cyclists to turn left without stopping or to continue through T-intersections, as having to stop and start continuously discouraged cycling. School parents considered lights for cyclists would raise the danger to them of cars continuing through red lights, hitting vulnerable cyclists mid-intersection.

Their solution was for traffic light phasing to be extended. These suggestions are comparable to recent policy developments in Europe to ensure increased safety for cyclists (Pucher & Buehler, 2007).

Although often mentioned in other research, our respondents did not suggest lowering traffic speeds. This can be attributed to the nature of the cycle tracks, as they are likely to be separated from roads. Christchurch's roads are flat and relatively wide, allowing for the accommodation of separated cycle ways. Where room is not available, as in many parts of Europe, lowering traffic speed is a practical measure of improving safety (Pucher & Buehler, 2007).

There was no unanimity about cyclists sharing tracks with other non-motorized forms of transport. With the literature identifying the causes of conflict between pedestrians and cyclists as being a lack of protocol, and competition for space (MacColl et al, 2009), single use tracks were the perceived preference, although costs must be considered. The respondents suggested compromising for shared pathways in Christchurch. A wider track would allow users more space, especially if pre-existing red zone roads were incorporated. Etiquette, supported by signage and newspaper advertisements, was seen as a practical solution to mitigate potential conflicts; this could include bells or spoken signals to inform walkers that a cyclist was approaching them from behind. The young mothers group was unsure whether signage rules would be adhered to, suggesting etiquette was developed through behavioral experience over time. However, the middle-aged walkers expressed some concern about sharing cycle ways and strongly advocated etiquette board signage.

### **Quality**

The quality of tracks and supporting infrastructure was considered vital in attracting more use. Respondents concluded that asphalt or fine tar-seal would suit a wide range of user groups. The walkers group felt strongly that mobility scooters and Segway users should be considered as potential users. If gravel is used, commuting cyclists would continue to use less safe on-road

cycle ways. Recreational cyclists travelling to Bottle Lake Forest would not be as discouraged if part of their journey was undertaken on smoother surfaces.

Another factor to increase commuters' and recreationalists' confidence towards cycling would be to provide secure bike parking (international examples shown in Appendix 3). Business managers said they provided bike-parking facilities, but the school parents attested that there were not enough. They felt bicycle parking needed to be given preference over car parks, and placed nearer the entrances to shops.

The intent of the user was found to determine the extent of requested infrastructure. Cycling enthusiasts saw only water fountains and toilets as mandatory. They held no strong opinion on cafes or signage, and noted that they often carried their own repair equipment. However, track usability may increase if such repair resources were available for casual users. Showers were seen as useful for commuters, particularly those who work in the Central Business District. Business representatives agreed that shower facilities should be supplied by businesses. Businesses with a more tourist-based approach and the walkers group saw the advantage of attracting casual users with cafes, using houses that survived developed, along sustainability principles.

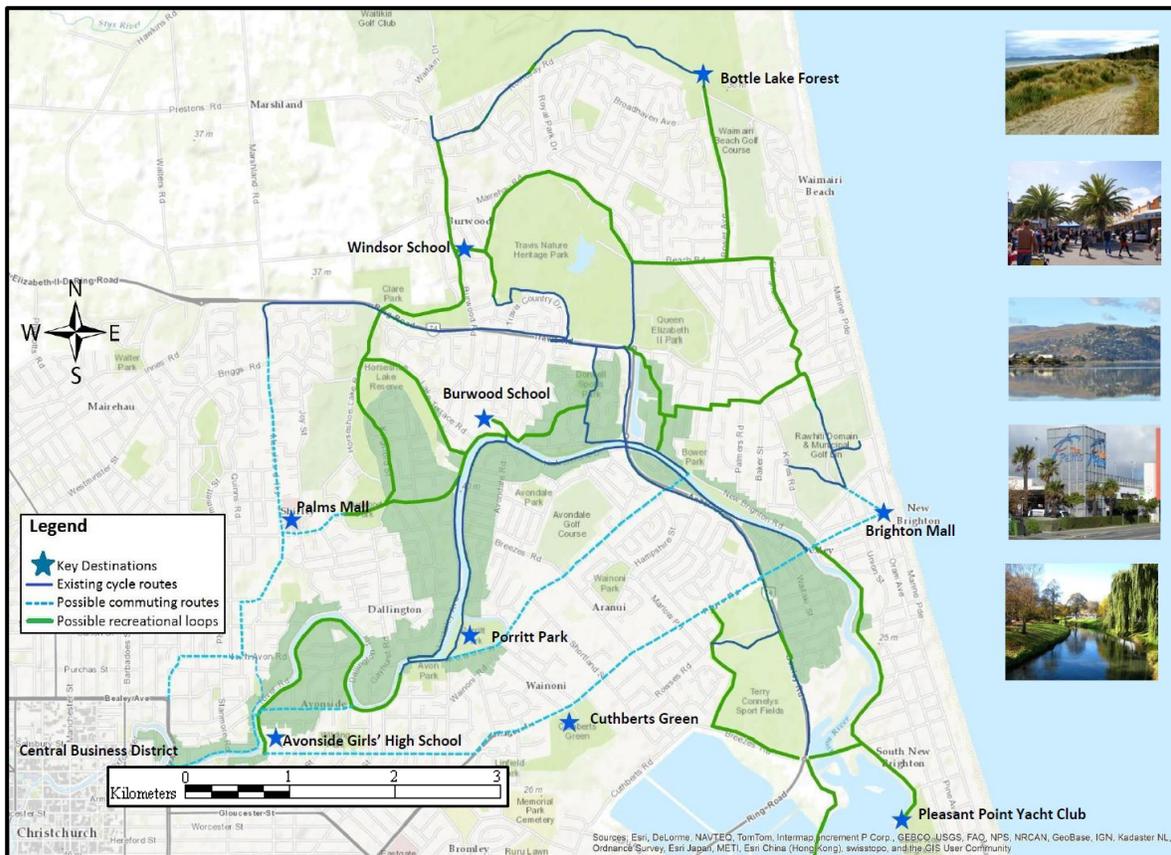
The final element that emerged regarding improvement of track quality was the inclusion of map billboards. Respondents suggested that signage, featuring historical information from multiple eras or points of interest, could make the routes more interesting.

## **Connections**

A fundamental factor in encouraging cycling is the provision of pathways that remove detours and traffic stress. In San Jose, California, Mekuria (2012) discovered cycling 'islands', areas within the urban environment mostly avoided by cyclists because of high traffic counts. The concept of specific routes, rather than every street within a city being cycle-friendly, is realistic and is supported by our findings. The need for prioritising cycling connections was

reinforced by all those contacted. Pathways that joined key destinations were important for increasing usability, and cyclists felt they would willingly travel 50% further if these links were provided.

New Brighton businesses were confident that tracks would attract customers to the struggling East. Palms Mall businesses recognised the connections would be mutually beneficial for customer and shops alike. Cycling groups, walkers, school parents and businesses wanted Bottle Lake Forest, the coast and MacLean’s Island linked with cycle routes for recreation. Sports facilities, such as Porritt Park and Cuthberts Green, also lie within the reach of an achievable cycling network, and incorporating them would increase usage. New Brighton business representatives backed the Pleasant Point Yacht Club being integrated also.



**Figure 2.** Proposed connections in the Avon-Otakaro corridor that incorporate destinations likely to incentivise usage.

School parents also want schools to be linked in a cycle way network. Though the Burwood school site is facing closure before 2016, its presence in the map indicates a population that will remain in the area in the meantime, and will require connections north to Windsor school, the location of the eventual merger. The restoration of the Porritt Park footbridge was strongly supported to ensure time efficient connections from the river's southern banks to the north without resorting to roads. The suggested destinations are included in Figure 2 above, which represents shared routes connecting the coastline to the Central Business District. The dark blue indicates existing cycle way routes, although the condition of these differs due to Christchurch's earthquakes. The light blue dashes signify where fast routes may be most efficient for Eastern residents commuting to the central city. Finally, the thick green line represents potential recreational pathways, which follow the Avon-Otakaro River, and incorporate existing parkland and reserve land, as well as red zone land.

Greater connections can be made when these pathways are supported by public transport networks. Spokes Cycling representatives suggested buses should allow more bicycle spaces on board, enabling part of commute to be in either mode. Our results support Rudd (2007), who found that mode complementation can be achieved if transit policy provides adequate infrastructure. In Christchurch, this could include bicycle parking at bus stops and bicycle hiring facilities. Although earlier experiments with bicycle hire resulted in vandalism, measures to limit vandalism were not explored in detail by the school parents. Dutch legislation that mitigated the risk of vandalism by providing secure bicycle parking in highly visible areas, no more than 200 metres from transit stops (Martens, 2007), could be copied for application in Christchurch.

The walking group, many of whom do not live in the East, believed further connections could be made if dogs were allowed on buses. The young mothers noted that bus drivers were often reluctant to allow prams on buses, which denied accessibility for young families. This suggests that the network would not be used for commuting alone, but would be a destination in its own right. The importance of loop tracks would also encourage higher use. If a cycle route or walkway boasts a complex network with quality facilities, users would be more likely to have more interest in the area.

## **Discussion**

Through our investigation to find features needed to maximise the usage of Avon-Otakaro pathways, we found the most important were those that improved safety and connectivity, and those revolving around practicality. The extent of community support was overwhelming. We found no opposing views, and people were excited to hear the details of such a proposal. We expected some community support for the proposed pathways, but did not expect it to be to the extent shown. The enthusiasm of some groups we talked to is best described as 'infectious'.

Comparisons between our results and international studies show many parallels and no contradictions, further validating our results. Our results are logical, with the biggest demands being for user safety, connectivity to key destinations and practicality of use. This was expected as these factors remove potential negative attitudes towards using active transport.

## **Limitations**

From early on, we identified time as our key limitation, having to constantly remind ourselves not to look too far afield from the Avon Residential Red Zone. It was too easy to see a key link leading to another, then realising we did not have time to construct a citywide plan. The scale of this project could be quite beyond our power. Given our objectives and time constraints, this report is a valuable research contribution for the cycle network of Christchurch.

Another issue stemming from our time constraints was the delays in responses from some groups, resulting in a restricted dataset. A further issue affecting our data and planning was the ongoing discussions in the Council as to what will be happening in this area, and on what timescale. Due to nothing being set in stone, it is challenging to not overlap with Council's work investigating multi-use pathway features.

Finally, a big challenge was to balance the scale of the pathways with financial costs, as the Christchurch City Council is spending large amounts of money on earthquake remediation. For this project to be completed on a limited budget, it should initially focus to the most efficient

and attractive pathways. This would have been significantly easier if we had seen finalised plans and a quote in order to evaluate different options.

### **Strong points**

The public support we received throughout this project has been astonishing, which is encouraging. This means our recommendations can be used with confidence by the Avon-Otakaro Network. The benefits of the pathways would reach far beyond the enjoyment of the users, but would also benefit the community economically, by a conservative estimate of \$94.1million annually. With such a high predicted financial return, building the cycle ways and connections to existing tracks would be a wise strategic investment for the City Council. Because of such cost efficiency, and having consulted with a wide target community, it seems logical that these pathways should go ahead.

### **Future research**

Areas for future research were identified throughout this project, especially those that went unexplored due to time constraints. Establishing the cost of the pathways network, along with supporting infrastructure, is especially relevant due to the restricted Council budget. This cost could be put into perspective with a study into the potential number of users, along with frequency and purpose of use. Viable commercial activities could be investigated, namely tourist facilities, and houses in the red zone that have been verified as safe, the latter being 'off the grid' to promote sustainable living. Respondents believed these would be worthwhile ventures.

## Conclusion

Christchurch could serve as a dynamic example for other cities in providing sustainable, active transport networks, and in revitalising abandoned or isolated areas.

Design engineers of mixed-use pathways should consider safety, connectivity and practicality as the key defining factors in planning how the pathways take shape. Separate user tracks would also be beneficial, but come at a price in covering additional ground. This is not immediate or crucial, as the first priority is to move the pathways away from cars, the largest hazard to active commuters.

As well as providing a recreation and commuting corridor, the pathways may also attract visitors back into the Eastern suburbs; it is likely this would lead to a partial revitalization of the New Brighton area where residents and shopkeepers have been vacating. This would bring many benefits to local businesses, which already support the pathways. It is important to keep them informed and supporting the pathway, as it would be an investment in customer numbers.

It is not a question of whether this pathway should go ahead, but when and how, because the funding is already coming together. The benefits are very large, with economic and health gains being the largest. It is not often that a proposal can attract such enthusiastic community support without one person being found in opposition. Some community members could be opposed to the walkway, but as per our findings, they must be rare.

In light of our above findings, we recommend that the most efficient ways to maximise the use of the Avon-Otakaro pathway would be to provide:

- Mixed-use pathways linking the key destinations marked on Figure 2.
- Separate light phasing for cyclists, and segregation from vehicle traffic
- Plentiful parking for cyclists at bus stops and close to shopping precincts
- Information boards with maps, user etiquette and points of interest
- Integration with public transport
- Sealed tracks wherever practical

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Our group has performed well together conducting this research. With all members using their strengths working on their relevant sections, it has led to a worthwhile study and a balanced workload. The challenge for our group was for all to meet at the same time; we met mostly during evenings. We as a group would like to thank each other for being so cooperative and for making this project so rewarding!

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# Appendices

## Appendix 1: Benefits of cycling

PLACE	BENEFITS	COMMENTS	REFERENCE
San Antonio, Texas	<p>Trails, greenbelts, or both, associated with increased house prices;</p> <p>Closeness to golf courses, playgrounds, tennis courts, pools and views also add to home values;</p> <p>Numerous cities that transformed blighted industrial areas into beautiful riverfront green space and tracks attracted businesses and residents;</p> <p>That paradigm shows increased economies anchored by popular stores and destinations;</p> <p>Community benefits: increased quality of life, more liveable communities, increased tourism, improved civic amenities, more open space, changes in local populations' physical activity;</p> <p>Cost benefits: improved public health, individual health and fitness, increased property values;</p> <p>Trails are also public amenities bringing wider appreciation.</p>	10,000 house sales analyzed	Asabere, P.K., & Huffman, F.E. (2009)
New Zealand	<p>Sustainable transport users spend 40% of total purchases;</p> <p>Pedestrians and cyclists contribute a higher economic spend proportionately, are vital to economic viability of local shopping areas;</p> <p>Shoppers value high-quality pedestrian and urban design more than car parking.</p>	Study investigated economic impacts of road space reallocation in shopping areas in major shopping areas	Beca Infrastructure Ltd (2013)
Sweden	High quality tracks even induce winter cycling for trips less than 5km.	Also applicable to Christchurch.	Bergstrom, A., & Magnusson, R. (2003)

<p>General</p>	<p>Reductions in: road construction, repair and maintenance costs; greenhouse gas emissions, health care costs; fuel, repair and maintenance of motor vehicles; personal and systems costs due to better road safety; traffic congestion; parking subsidies; air (multiple chemical compounds), and water (multiple pollution sources) pollution; crops and forests damage (can come from distant pollution too); noise pollution; surface run-off and flooding due to more pervious surfaces; loss of wetlands and shoreline modifications. Positive economic impacts: cycle tourism, bike sales and manufacture and maintenance; increased property values by bike trails; increased productivity and reduction in sick days due to workplace injuries due to better fitness of employees; more retail sales in pedestrian-friendly precincts; Environmental benefits: more green space, wildlife habitat, which is less fragmented; Social benefits: increased sense of community, of mobility, of comfort due to traffic delays; Regional economic impacts: increased business activity, more employment, less fuel imports; employee self-confidence and job satisfaction, stamina and mental alertness, memory and concentration improvements. In Canada benefits estimated to be several \$billions. Incorporating nature, heritage and education draws eco-tourists. Trails increase weekend local tourism. Support facilities benefit, e.g. accommodation, eateries. Public-private cooperation in track</p>	<p>Economic benefits of active transport used weighted averages.</p> <p>Overall conclusion: Benefits justify government expenditure on active transport.</p>	<p>Campbell, R., &amp; Wittegens, M. (2004)</p>
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	<p>development increases cost-effectiveness of trails.</p> <p>Visitors who travel further tend to spend more.</p> <p>More new businesses establish, and business vacancies drop when streets retrofitted for active transport.</p>		
Australia	Encouraging children in active transport translates to habitual physical activity for adolescent girls.		Carver, A., et al. (2011)
Dublin	Increased cyclist confidence provided through cycling infrastructure segregated from traffic		Caulfield, B., et al. (2012)
Bogota	<p>Facility design very important in inducing cycling.</p> <p>Segregated lanes attract other recreational users, e.g. skaters, joggers</p>	Principles are applicable world-wide.	Cervero, R., et al. (2009)
Queensland	<p>Lobby groups influencing planners is a legitimate activity that results in Facilities being built, which in turn increases cycle usage.</p>	Civic administrators were interviewed	Cole, R., et al. (2010)
43 large US cities	<p>Providing bike lanes encourages more people to commute.</p> <p>Perception of safety is paramount.</p> <p>Cities with more cycle infrastructure have higher levels of cyclists commuting.</p>		Dill, J., & Carr, T. (2003)
General	<p>Huge latent demand can be released if safe, convenient, well-designed, traffic-free routes are provided to connect destinations.</p> <p>Relatively flat terrain, publicity and signage assist in this.</p>	Very applicable to Christchurch.	Dowson, B., & Doxford, D. (1997)
Norway	Including monetized values for impacts of more activity associated with travel time for cyclists and pedestrians, improved road user health, and costs of insecurity makes a major difference for results in cost-benefit analyses.		Elvik, R. (2000)
Norway	More cyclists on roads reduce risk of injury		Elvik, R. (2009) ...

<p>EU-27</p>	<p>High level interest in cycling to continue.  Turnover = €200 bn annually. Total 2010 benefits: €205-217.3 bn.  Health benefits = €114-121 bn annually.  Political leadership increases cycle use, integrates planning.  Pollution externalities to be internalized in policy along with external health benefits.  Cycling in EU has €410-434 per capita economic benefit (conservative estimate), health the largest component.  Congestion easing €24.2 bn annual benefit (2010)  Fuel savings €1102.7-5.8 bn (US\$100/barrel) (2010)  Reduced CO2 emissions €1.4-3.0 bn (2010)  Reduced air pollution €0.9 bn (2010)  Reduced noise pollution €0.3 bn (2010)  Tourism €44 bn (2010)  Bicycle industry €18 bn (2010)</p>		<p>European Cyclists Federation (2013)</p>
<p>General</p>	<p>Multi-use conflicts can be reduced through good design, providing different challenges in different places of a track;  Education, user involvement, and policy-regulation-enforcement reduce multi-use conflicts.  To minimize conflict:  Recognize conflict as goal interference  Provide adequate trail opportunities  Involve users in a democratic manner as early as possible to understand their needs, identify conflict sources thus reduce problems,  Promote trail etiquette, encourage positive social cooperation between users  Monitor</p>	<p>Addressing different personal norms important</p>	<p>Federal Highway Administration and National Recreational Trails Advisory Committee (n.d.)</p>

<p>North America (Memphis, Iowa, Wisconsin, Portland, Baltimore, Minneapolis, Vermont, Minnesota, Colorado, Maine, North Carolina, Washington DC, Long Beach, CA, Cumberland, MD, McKeesport, PA, Pottsville and Philadelphia, PA Arlington County, VA, Indianapolis, Delaware; Quebec, Toronto; (Urban, rural, tourist tracks through scenic regions)</p>	<p>Revitalized disinvested areas;  Reinvigorated business communities along route because  Cyclists repeat trips, buy more, more frequently;  Personal savings on transport means  More discretionary income, spent on more valued items (amounting to \$billions when aggregated);  Health benefits been quantified;  Economical - cycling infrastructure cheaper to build, require less maintenance;  Cycle tracks create jobs;  Cyclists spend more than motorists;  Enhances shopping precincts and communities – business numbers increase;  Tourism generation is significant;  Businesses, including support business, are stimulated;  Creates more jobs/\$ than roads do;  Increased tax revenue;  Savings in health insurance;  Parking costs savings;  Bike parks take less space so more bike parks in same space;  Ample parking in small space means more business;  Increased property values nearby;  Major cycling events bring revenue;  Cycle track promotion draws enthusiasts;  Enthusiasts are usually better educated, earners;  Vehicle miles avoided translate to \$millions in consumer and health benefits by up to 9:1 when statistical lives included;  Cycle lanes slow car traffic therefore are safer, and people notice businesses therefor revenues increase;</p>	<p>Economic Impact study of numerous North American cities and states concluded that benefits were hugely greater than costs, contributing to \$billions in individual states. Increased spending led to more jobs, led to more taxes, better health</p>	<p>Flusche, D. (2012)</p>
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	<p>More business stimulates building renovation and art-related businesses, in turn stimulating community revitalization;</p> <p>More cyclists stimulate more cycle tracks;</p> <p>Improves quality of life for local residents;</p> <p>More cyclists lead to advocating bus bike racks, valet bike parking at events, promote “Bike Local-Shop Local” message;</p> <p>Bike corrals provide buffer between cars and pedestrians therefore safety benefit;</p> <p>Cycling promotes sustainability at all levels;</p> <p>Cycling improves physical and social environments;</p> <p>Cyclists buy near bike stations – businesses invest in corrals as part of cycling-friendly identity to improve profits;</p> <p>Cycling sells houses, plus communities due to increased “livability” – neighbourhoods more desirable;</p> <p>Home values increase near cycle tracks;</p> <p>Office and commercial space increase in value thus bring increased revenue.</p>		
Around the world: Shanghai, Dhaka, New York, Christchurch cities	Car-less spaces bring people out to use them	International Film Festival movie “The Human Scale”	Gehl, J. (2012)
Germany (Nation-wide survey; urban)	People inspire others	Social networks increase probability of cycling	Goetzke, G & Rave, T. (2011)
Portland, Oregon	<p>Bicycling increases physical activity;</p> <p>Investment costs for cycling infrastructure is far less compared to health benefits, health cost savings, savings in health care, personal and fuel savings;</p> <p>By 2040 estimates of savings between \$338 to \$594 million, fuel savings of \$143 to \$218 million, \$7 to \$12 billion in the value of statistical lives (mortality);</p> <p>Benefit-cost ratios for health care and fuel savings between 3.8 and 1.2:1, increased to</p>	<p>Portland is comparable to Christchurch in terms of size and topography.</p> <p>NB: HEAT approach critique p.56. Health care costs increased faster than other goods. Monetizing more factors would increase case for cycleways investments.</p>	Gotschi, T. (2011)

	<p>5:1 when value of statistical lives used;  Cycleways are very cost-effective even with few benefits used;  Better quality routes attract more cyclists - benefits multiply;  Opportunity costs of cycling are close to zero;  Initial causal relationship between investments and cycling growth;  Fewer bike-car crashes with more cyclists;  Air pollution reduces with more cyclists, thus positive health effects personally and for community;  Reduced CO2 good for globe;  Reduced road and parking needs;  Cycleways are ideal access points for other transport modalities – smart growth and mixed-use development.</p>	<p>Author used 48 references about health and economic benefits.</p>	
USA	<p>Facilities, safety guaranteed, encouraging social attitudes, all increase numbers of cycle owners and usage.</p>		<p>Handy, S.L., et al (2010)</p>
Bradford, England	<p>Costs and benefits of new cycle facilities are justified on safety grounds and benefits to cyclists.</p>		<p>Hopkinson, P. (1996)</p>
Public policy	<p>Improved walking and cycling environment shifts large numbers of sedentary trips to active travel, bringing the above-cited multiple health and environmental benefits.</p>	<p>Policy implications for local authorities</p>	<p>Insall, P. (2010)</p>
California, 47 Danish towns, European countries, UK, Netherlands (Rural and urban).	<p>Policies that increase numbers of walkers and cyclists improve safety of walkers and cyclists due to greater visibility of cyclists, making motorists adjust their behaviour.</p>	<p>Data sets explored to determine relationship between walking/cycling and collisions. Results unexpected.</p>	<p>Jacobsen, P. (2003)</p>
Minneapolis and St Paul	<p>Distances to retail and bicycle facilities are statistically significant predictors of choosing active modes.</p>		<p>Krizek, K.J., &amp; Johnson, P.J. (2006)</p>
Minneapolis	<p>Cyclists travel longer on good facilities;  Distance decay depends on trip purpose</p>		<p>Krizek, K.J., et al. (2007) ...</p>
General	<p>Urban design facilitates physical activity.</p>	<p>Implications for promotion in Christchurch.</p>	<p>Lee, A.C.K., &amp;</p>

	Perceptions of safety, attractiveness, and pollution types can be changed through effective urban design.		Maheswaran, R. (2010)
Sacramento, CA	Walkability increases property values and rents, and tourist numbers, because businesses are beginning to leave gridlocked, car-dependent cities. Walkability increases retail sales and rejuvenates declining city areas.	Car use decreases agricultural output 20-25%	Local Government Commission (1998)
18 US cities	Availability and Connectivity to residential and commercial areas motivates people to shift from cars to bikes		Nelson, A.C., & Allen, D. (1997)
North Carolina Northern Outer Banks	680,000 cycling visitors generate \$60million annually; Cycle facilities encourage tourism, boost the local economy, encourage longer stays and return visits; created 1,400 jobs; Economic impact is 9 times the value of initial investment in cycle facilities; Quality of life increased for whole community in more family time, safety, convenience of travel, reducing road and parking congestion thus enhancing motoring safety as well. Cycling is affordable to nearly everyone – no inequality issues. Continued expansion of cycle ways will increase all above benefits.		North Carolina Department of Transportations, Division of Bicycle and Pedestrian Transportation (n.d.)
New Orleans	Cyclists increased after cycling lanes were striped.		Parker, K.M., et al. (2013)
General policy, multiple countries	Separate cycling facilities, safe intersections, bike traffic signals, traffic calming of neighbourhood streets, safe and convenient cycle parking, education (motorists, cyclists alike) – all increase active transport. Promotional events increase participation in active transport.	EU recognizes importance of bike transport in economic, social and environmental benefits.	Pooley, C. (2011)
Canada	More dense urban areas make cycle tracks	A lesson for Christchurch and New Zealand	Pucher, J., & Buehler,

	<p>more economic;  Policy measures are important in this regard:  Separate cycle tracks increase safety;  Wider pavements, obstruction removal, good maintenance all increase usability;  Slower vehicle speed, access and parking restrictions combined with segregated cycle-pedestrian paths needed to increase track usability;  Driver liability in cases of cyclists or pedestrian injuries advocated;  Common facilities easily accessible by foot or bike, e.g. neighbourhood shopping centers, secure bike-parking facilities is good for community;  Flexible working hours needed to increase travel sustainability;  Make cycling and walking “cool” – support attitudinal change, because positive attitudes towards active transport encourage its use;  Rely more on user opinion and explore opinions of non-users to see what would induce them to pursue active travel;  Policy needs to integrate social welfare, employment, housing, health, education, environment and safety.</p>	generally	R. (2006)
France	<p>Health and Environment benefits from active transport.  Pollution, personal health benefits, population health.  A driver who switches to cycling for trips of 5km, 5 days/week, 46 weeks/year translates to €1,300 in health benefits due to reduced pollution. If individual lives in a city of &gt;500,000, health benefits are €30/year.  Loss due to the few fatal accidents is smaller than the health benefit of physical activity.</p>	Results considered robust, useful in cost-benefit analyses.	Rabl, A., & de Nazelle, A. (2012)
Delaware. Colorado	Property values near greenways can increase	Some studies of property prices varied, but the	Racca, D.P., & Dhanju,

	<p>in value by 42% compared to similar properties elsewhere;  No public safety issues linked to trail;  Properties nearer trail are easier to sell. Over 10 year period properties increased by 140% (Colorado);  Properties near trails increased residents' quality of life (this did not apply to some properties directly abutting trails in industrial areas).  Realtors use proximity of property to cycleway as a selling point.  Decreased crime rates on and near cycle ways compared with national rates.  Crime further reduced by education, lighting, well maintained tracks, all which further boost track use, creating a virtuous circle.  No major increase in nuisance noise, litter or illegal motorized vehicles.  Health, fitness and recreation are main benefits to communities; also  Aesthetics, good use put to otherwise wasteland.  Community development an integral part of cycle ways development, including increased green space.  Buyers prepared to pay more for proximity to greenway.  Houses near cycle ways sell faster.  Cycle trails seen as community assets.  Cycle ways also boost use by attracting skateboarders, skaters, scooters, pedestrians, families, thus facilitate sociability, especially if well maintained.</p>	<p>overall trend was an increase in value by proximity to cycleway. At worst, the effect of cycle ways on property values was neutral. Immediately abutting cycle ways in industrial areas does not always increase property values. Here concerns relate to litter, noise, loss of privacy and possible safety issues.  For policy, these issues can be dealt with by design and maintenance plans, adding to desirability and minimizing user conflicts.  A-O paths in red zone do not abut properties.</p>	A. (2006)
General	Quality and availability of footpaths is important for an aging population to be independent healthy and active.	Study is relevant for baby boomers generation.	Rosenberg, D.E., et al. (2012)
Norway	Benefits (health, pollution, personal security)	Costs of track networks in 3 Norwegian	Saelensminde, K.

	<p>from reduced externalities; Benefits to society of tracks are 4-5 times the costs of vehicle-related costs thus also more beneficial to society; Barrier costs are about the same as air pollution and more than double the noise costs; It is a good investment to build walking/cycling tracks.</p>	<p>cities. Compared benefits with construction costs. Sensitivity analyses were used.</p>	(2004)
General	<p>Smart Growth, Liveable communities, New urbanism, terms used for incorporating active transport in urban design, show economic benefits in designing desirable neighbourhoods: Higher house prices due to less traffic noise and speed; More businesses attracted to precincts, revitalized run-down areas and decreasing vacancy rates in people-friendly places; State revenues increase as a result; Economic benefits are felt before cycle tracks are completed – people don't wait until tracks are completed; Savings in medical care, workers' compensation, lost productivity saves \$billions in California over five years. Intensive mixed-use urban design with cycle tracks brings all above benefits.</p>	General fact sheet	Snyder, R. (n.d.)
Bloor-Danforth corridor, Toronto	<p>Fewer people drive past business area than cyclists thus Cyclists and pedestrians visit and spend more – more bikes + more business People prefer separate bike lanes – safety consideration</p>	Study of Bloor St businesses turned skeptics to believers in cycle facilities in the precinct	The Clean Air Partnership (2009)
USA	Research stimulates further research about Cycle way safety through improved design.	Case study of cycle injury, though not of severity	Thomas, B., & DeRobertis, M. (2012)
Minnesota	People travel longer if facilities are safe and		Tilahun, N.Y., et al.

	segregated		(2007)
Australia	Road connectivity, slowing traffic and leisure facilities provision reduces obesity in women	3 year longitudinal study in mothers and children	Timperio, A., et al. (2010)
General	New regular cyclists health gains was about 30% New regular pedestrians health gains was about 15% Intensity levels of exercise increases with separate cycling/walking tracks in urban areas, are higher in older people but lower in those with high BMI.	International Physical Activity Questionnaire applied for estimating metabolic equivalent task levels.	Veisten, K., et al. (2011)
Lincoln, Nebraska	Trails are viable health amenities because of cost-effectiveness; Trails reduce obesity, pollution exposure; Urban design, connectivity and land-use patterns promoting walking and cycling also create liveable communities and promote physical activity; Construction is a one-off investment, maintenance is ongoing – both relatively inexpensive; different surfaces' different costs always cheaper than road-building; Better quality surfaces bring more users.	Environments can improve after industrialization. Dirty environments lacking green space are hazardous for public health.	Wang, G., Macera, C.A., Scudder-Soucie, B., Schmid, T., Pratt, M., Buchner, D., & Heath, G. (2004)
Vancouver	Top motivators for cycling: routes away from traffic, beautiful scenery, separate paths along main traffic routes; Safety, ease, route maintenance, minimal interaction with motor vehicles increase active transport. Importance of location and design cannot be under-estimated. Engineering and transport planning increase cycling. Promotion, education and encouragement increase cycling. Separate paths with minimum gradients, prioritizing safety, lighting, segregated tracks,	With peak oil about to make motoring too expensive for many, is important to get people cycling - in Christchurch too.	Winters, M., et al. (2010)

	high quality tracks, aesthetics, environmental factors and connectivity to popular destinations all increase cycling.		
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## Appendix 2: Interview Questions

### Preamble:

The Christchurch City Council is building cycleways throughout the city radiating out from the center (show map from Transport Strategy).

The Avon-Otakaro Network, whose aim is to create a reserve and River Park in the Avon River residential red zone, would like to see the CCC tracks connected to other types of tracks and community hubs to increase their usability and enhance the city - socially, environmentally, in terms of people's health and fitness, and economically.

Research shows that cycle trails are popular in Europe, North and South America and Australasia. Research also shows they have positive spinoffs.

The Christchurch Transport Strategy incorporates cycling tracks in its plans. The City's Community Outcomes aims to connect communities increasingly by active travel. The Open Space Strategy, planned for the next 30 years, envisions greenways that benefit people's health, society and the environment, which will have positive economic outcomes through, for example, tourism, nature viewing, increasing shoppers and values of nearby property prices, among other benefits, which need to be connected by increased numbers of people cycling.

The AIM of these questions is to assess key features of especially Red Zone trails to maximize their use, given diverse community needs..

The OBJECTIVES of this research project are to (1) identify the best routes to provide connections between key destinations in the Avon-Otakaro Corridor with multi-use tracks connecting to Council trails, (2) determine the types of tracks people want, (3) estimate likely usage of the tracks if connections were built, (4) identify aspects of the track that would attract people to use them, and (5) identify barriers to use by different groups.

This research is confidential.

So, with that in mind we would like your opinion on tracks and other issues related to this.

## Questions for focus groups

1. Do you live relatively close to the Red Zone or the River Avon? (probe)
2. How often do you walk or cycle?
3. Have you thought about the Red Zone's potential for being an asset to Christchurch? (probe: how)
4. What do you think of the Avon-Otakaro proposal to connect Council-planned commuter tracks with other tracks designed for recreational use?
  - a. Would you like the CCC routes that radiate from the CBD to connect to Port Hills tracks, Bottle Lake or Sumner or anywhere else?
  - b. Would you like to see loop tracks for people to return to starting points?
  - c. Would you like to see a cycleway through QE2? Travis Wetland? Do you think trails through those areas would enhance the value of those areas?
5. If off-road or segregated walking and cycling tracks were available, would you use them?
  - a. What would be the primary purpose for your using them?
  - b. How often would you be likely use them?
  - c. How would you get there to start using the tracks? E.g. car, bus, bike.
  - d. If you would not use them, probe: what would motivate you to change?
6. What do you think are the key requirements for connection to a multi-use cycle or walkway?
7. Research has shown the first and last 100 meters may be the most important in terms of getting an individual to use a track. Would you agree with this? Why/why not?
8. Where do you think track connections should be? (Show the map going beyond the red zone to other cycle-walking tracks in Christchurch)
9. What barrier(s) would prevent you from using the track?
  - a. Why? (Reasons for barriers preventing track use)
  - b. What solutions are needed to reduce barriers to use?
10. Do you believe road crossings are a deterrent to people using designated cycle and walkways? (→ Uncontrolled/controlled)
  - a. For parents – is this a safety issue for you? Would you be prepared to oversee crossings?
  - b. For adults – is this a safety issue for you or are there other reasons? (probe – what are they)
11. How do you believe the issue of road crossings may be practically solved to ensure safety? I.e. crossings, lights, underpasses, overpasses, etc.
12. What type and quality of track would you prefer to connect to Council-planned cycleways? E.g. gravel shoulders either side of tar sealed track.
13. Would you be prepared to share tracks with other non-motorized user groups?
  - a. If tracks were 3 meters wide
  - b. If tracks had white lines down the middle to separate pedestrians from cyclists or skateboarders or skaters or scooters.
14. How do you think potential conflict can be overcome? E.g. etiquette signage or other?
15. How much further would you be prepared to travel to use an off-road cycleway that connected to a Council cycleway.

16. Do you think facilities should be provided, e.g. cafes, showers, bike parking especially at bus stops for enhanced connectivity, or bike racks on buses, etc? If so, where? What about “green” houses in the red zone?
17. Are there any other issues you want to raise?

(Thank you for your time)

## Questions for businesses

1. Do you know whether employees live relatively close to the Red Zone or the River Avon? (probe: how far, where do they come from?)
2. Do you know whether, and how often, staff walk or cycle to work?
3. Have you thought about the Red Zone's potential for being an asset to Christchurch? (probe: how)
4. What do you think of the Avon-Otakaro proposal to connect Council-planned commuter tracks with other tracks designed for recreational use?
  - a. Would you like the CCC routes that radiate from the CBD to connect to Port Hills tracks, Bottle Lake or Sumner, across the city, or anywhere else?
  - b. Would you like to see loop tracks for people to return to their starting points?
  - c. Would you like to see a cycleway through QE2? Travis Wetland? Do you think trails through those areas would enhance the value of those areas?
5. If off-road or segregated walking and cycling tracks were available, would you and/or your businesses or staff use them?
  - a. What do you think would be the primary purpose for using them?
  - b. How often do you think they would be used?
  - c. How would you get there to start using the tracks? E.g. car, bus, bike.
  - d. If you think the tracks would not be used, why not?
  - e. Probe: what would motivate people to change to using them?
6. What do you think are the key requirements for connections between a Council-designated cycle track and a multi-use track along the Avon-Otakaro?
7. What might be barriers to people using the tracks to your business area? (E.g. road crossings/safety)
  - a. what might be solutions to such barriers?
8. Research has shown the first and last 100 meters may be the most important in terms of getting an individual to use a track. Would you agree with this? Why/why not?
9. Where do you think track connections should be? (show the map going beyond the red zone to other cycle-walking tracks in Christchurch)
10. What type and quality of track would you prefer to connect your business area? E.g. gravel shoulders either side of tar sealed track, or ... ?
11. How do you believe the Avon-Otakaro cycleway would affect businesses in our area? (probe: how)
12. Research in the USA shows business increases due to people stopping more easily on a bike, buying more frequently. Do you think this would apply to your business area?
13. Do you think there should be bike parking and basic cycling facilities in your business area e.g. repairs, showers?
  - a. For New Brighton businesses: do you think a cycle track connected to New Brighton, winding its way to Hagley Park, would help revitalize the area?  
For both New Brighton and The Palms: Do you know if the Community Board or any other recreational group has aspirations for red zone use?
14. Would you be prepared to have low-impact signage on or near the connecting track? E.g. your logo or pamphlets or something else?

15. If a cycleway was connected to your business area, would you provide staff with facilities to assist those who bike? (probe: what sort)
16. Would you be prepared to campaign for the Community Board to provide a secure bike shed?
17. Do you think public transport should connect to cycle-walking tracks?
18. Would you like to see buses with bicycle racks for staff and customers to connect more easily?
19. Do you believe road crossings are important to people accessing your business areas and designated cycle and walkways?
20. Are there any other comments you would like to make?

(Thank you for your time.)

## Questions for Informed users, cycle and tourism businesses

1. Do you have a bike or prefer to walk?
2. Do you bike/walk often?
3. What do you think of the Avon-Otakaro proposal to connect Council commuter tracks with other tracks designed for recreational use?
  - a. Would you like the CCC-planned routes that radiate from the CBD to connect to Port Hills tracks, Bottle Lake, or Sumner, or anywhere else?
  - b. Would you like to see loop tracks for people to return to starting points?
  - c. Would you like to see a cycleway through QE2? Travis Wetland? Do you think trails through those areas would enhance the value of those areas?
4. What makes you enthusiastic about the Red Zone's potential for being an asset to Christchurch? (probe: how)
5. What do you think are the key requirements for connection to a cycle or walkway?
6. Research has shown the first and last 100 meters may be the most important in terms of getting an individual to use a track. Would you agree with this? Why/why not?
7. Where do you think track connections should be? (show the map going beyond the red zone to other cycle-walking tracks in Christchurch)
8. Do you think fitness enthusiasts would use a Red Zone multi-use trail along the River Avon that connected to a Council-planned track?
  - a. Do you think conflict could arise between users? If so, what might be solutions? E.g. etiquette signage, or ... ?
9. What type and quality of track would you prefer to connect to Council-planned cycleways? E.g. gravel shoulders either side of tar sealed track.
10. Do you think facilities should be provided at key points or business centers (cafes, showers, bike parking, repairs)?
11. Do you think buses should connect to the proposed Council-planned cycleways and connection to the Red Zone?
12. If off-road or segregated walking and cycling tracks were available, would you and people in your organization use them?
  - a. What would be the primary purpose for using them?
  - b. How often do you think they would be used?
  - c. If you think the tracks would not be used by some, why?
  - d. What do you think would motivate people to change to using the tracks?
13. What do you think are the key requirements for connection to a cycle or walkway?
14. Research has shown the first and last 100 meters may be the most important in terms of getting an individual to use a track. Would you agree with this? Why/why not?
15. Do you think a multi-use track connecting Hagley Park to the beach would help revitalize New Brighton?
16. Do you think it is feasible to retain some "green" houses in the red zone for use as examples of sustainable facilities and which could be used as cafes, caretaker houses, etc? (Solar panels, composting toilets, water harvesting).
17. Would you or your organization be prepared to assist in their promotion?
18. Do you have any further comments to make?

### Appendix 3: International examples



Example showing a riverside cycle way along the Yarra River in Melbourne.  
Sourced from: <http://www.vic.cycling.org.au/site/cycling/image/fullsize/4464.jpg>



Example of how a cycle way and 'Park & Ride' facility at a bus stop can be implemented, from Assen in The Netherlands.  
Sourced from: <http://www.aviewfromthecyclepath.com/2011/10/bus-stops-which-dont-cause-problems-for.html>

Following examples sourced from: <http://www.peopleforbikes.org/blog/entry/tech-talk-19-beautiful-ways-to-protect-bike-lanes-photos>



An example from Rotterdam in The Netherlands, showing an arty form of cyclist separation.



Example from Coronado, California showing how gardens and cycle ways can be integrated. This example is especially relevant for the 'Garden City' of Christchurch.