Christchurch Cycle Network Plan: Cyclist Survey Project

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ABSTRACT

The Christchurch Cycle Network Plan: Cyclist Survey project was initiated to determine the most popular cycling routes used in Christchurch to enable the creation of a "current demand cycle route network" map based on current travel patterns. The project involved the recruitment of some 400 cyclists, of various user groups, to participate in a weeklong survey of their cycling activity. In total, the surveyed participants made nearly 4,000 cycling trips. The participants recorded the origin, destination and length of their cycling trips and identified hazardous locations for cyclists on the road network.

The surveyed data showed that most cycling trips are made on major arterial roads leading toward the city centre and on popular recreational and sport training cycling routes. The project also reinforced anecdotal evidence that cycling demand is lower on some highly trafficked roads that have no cycle facilities and this may indicate that cycling activity is strongly influenced by the presence of cycling facilities and cycle friendly streets. The study also identified average trips times by trip purpose.

Council will use the information coming out of this project, combined with other known information, including cycle counts, cycle accidents, information on paths, subdivisions, other relevant long term plans and the current locations of cycle lanes and paths, to create an updated Cycle Network Plan, which shows where cycle facilities need to be provided in an ideal Christchurch cycle network.

1 INTRODUCTION

The Christchurch City Council (Council) Cycling Strategy commits Christchurch to becoming a 'Cycle Friendly City', where the benefits of cycling as a safe, enjoyable and popular form of transport and recreation are valued by the community, and recognition of these benefits leads to growth in cycling.

This Cycle Network Plan: Cyclists Survey project helps to deliver the strategy. It was initiated by Council to identify the most common routes currently used by cyclists in Christchurch taking into account factors such as, the expansion of the city, development of new subdivisions, and changes in cycling infrastructure since the initial 1999 surveys.

1.1 Project Objective

The objective of this project was to determine the most popular cycling routes used in Christchurch to enable the creation of a "current demand cycle route network" map based on current travel patterns.

The project would also identify the routes used by different cyclist user groups, including commuter or recreational. These distinctions being important as different cycle users require different types of facilities. Furthermore, the project sought to capture information on where cyclists want improvements made to the cycling environment to improve their safety. All of this information can then be used in the planning and implementation of improvements to the Christchurch cycle network.

2 PROJECT PROCEDURE

This Cycle Network Plan: Cyclists Survey project was undertaken in two parts. The first part involved the engagement of 400 cyclists to participate in a weeklong travel survey of all their cycling activity. The survey was coordinated and managed by The Field Connection Ltd with input from Beca and Council on the form of the survey.

The survey required participants to record a number of aspects of their cycling activity including trip purpose, departure and arrival times, trip route, identify any problem locations and suggest improvements to mitigate those problems.

The second stage of the project involved entry of the information collected from the surveys into a database, mapping of cycle routes and problem locations using GIS software, and analysis and reporting of the outputs.

2.1 Participant Recruitment

Cyclists were recruited for the survey via telephone by The Field Connection's team of interviewers. Potential participants were identified from a random sample of telephone numbers generated for each of the community wards in Christchurch.

A total of 34 participants were recruited from each community ward so that participants in the survey were evenly distributed across the city. This would minimise the opportunity of the survey results being biased toward the residential location of people participating in the survey e.g. over or under representation of cycling activity in certain parts of the city.

The participants recruited for the survey were all aged 16 years or older and stated that they cycled either as a commuter or for recreation.

2.2 Data Gathering

Data from the surveys was collected using a daily self-completion diary.

An individual pack containing the diary, covering letter and a postage paid return envelope was sent to each participant in the survey. A telephone call was made to each participant 48 hours after the mail-out to answer any questions the cyclist had on how to fill in the diary.

The recruiting interviewer made a subsequent telephone call to each participant two days after the weeklong cycle diary commenced in order to check that the cyclist was not experiencing any problems with their diary completion. A further telephone call was made at the conclusion of seven days to remind cyclists to return their completed diary.

A total of 417 completed diaries were returned for data checking. If any anomalies were detected within the cyclist diary information, the participant was contacted to clarify the data.

A thank you letter, a voucher for $20 from the Bike HQ and cycling maps of Christchurch were then posted to each individual participant in the survey.

Completed diaries and tabulated demographic profiling information obtained from the recruitment phase were then forwarded to Beca for subsequent data entry, mapping, analysis and reporting.

The cyclist survey was completed over two time periods, as cyclist behaviour in the first wave of recruitment was impacted by inclement weather. The first wave of recruitment was conducted between the 12th May – 12th June 2006 and the second wave between the 6th October – 23rd November 2006.

2.3 Data Entry

To address the task of capturing 400 questionnaires with minimum possibility for data entry error, Beca developed a custom interface in a dedicated database software package.

Pick lists were created for specific fields to avoid data entry personnel entering long text values and reduce the opportunity for error in the form of spelling or context mistakes. The pick lists were developed from a list of predefined values specified in the diary.

If the value "Other" was chosen from the pick list, the appropriate text box would become active and the user could enter the destination or reason if the value was not a preset value contained in the pick list.

The data collected from surveys included:

Person Name	*Time Left At*
Personal Code	*Time Arrived At*
Day	*Destination (5 classes)*
Date	*Other Destinations*
From Street Number	*Reason*
From Street Name	*Other Reasons (3 classes)*
From Street Comment	*Problem Locations*
Anything Unusual	*Worst Problem Locations*
Trip Number	*Best Solution*
To Street Number	*Other Solutions*
To Street Name	*Suggestions 1*
To Street Comment	*Suggestions 2*
Suburb	*Suggestions 3*

To allow for the data to be connected to spatial data, Beca created a unique ID, which was a concatenation of the Person ID, the Date and the Trip Number. This was used as a Route ID.

The custom interface contained checks on data types and empty text boxes. Before moving on to a next trip or day, the data entry person was prompted of any errors in the data entry e.g. there are empty text boxes and require a value, or that the start time for the trip is more than the end time.

2.4 GIS Capture of Cycled Routes

Spatial data was captured according to the routes identified on the maps in the participant's diaries.

During the first part of the project (May & June 2006), the cycling routes were captured manually directly from the cycling diaries. The routes were manually mapped over the Christchurch Road Network database, however this meant that mapped routes were not associated with road centrelines and it was possible that the mapped routes may be offset from the road centreline depending on the accuracy employed during data capture from both the survey participant and data entry personnel.

Many of the routes marked in the cycle diaries were unclear or illogical i.e. disjointed (Figure 1). Where such problems were encountered Beca used other information in the diary, such as the origin and destination information, as a guide to identifying the most likely cycled route.

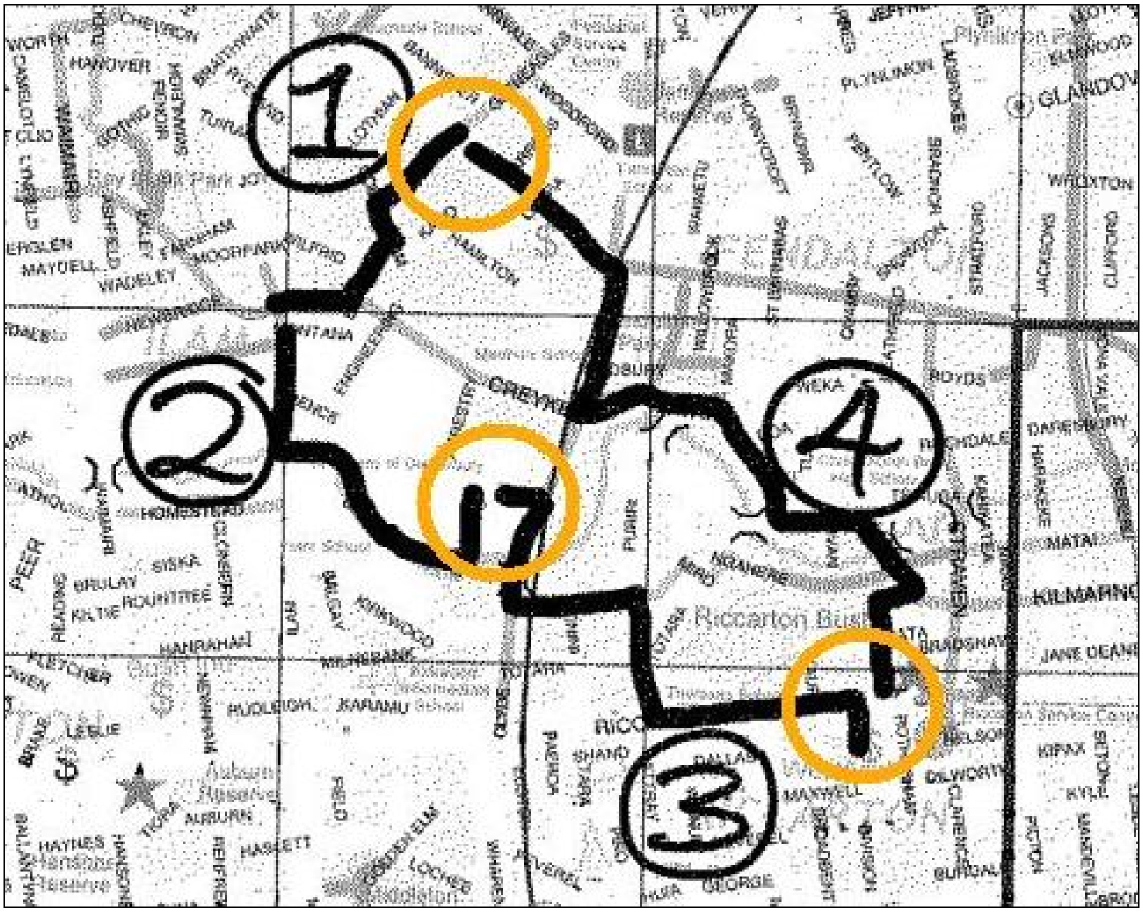


Figure 1: Example of disjointed route information.

The potential for mapping error was overcome by assigning a midpoint to every road segment in the Christchurch Road Network database (a segment is classified as a section of road between intersections). A buffer of 5m was then applied to each midpoint to intersect any 'stray' routes (Figure 2). This allowed the number of trips passing through each midpoint buffer to be counted for each road segment and subsequently be mapped. While this form of data capture offered a significant improvement in accuracy over manual assignment, it was time consuming and still not an absolute guarantee that all cycle trips would be captured.

Attributes of each trip e.g. trip date, time, purpose, etc. were captured using a custom interface in Microsoft Access, built specifically for the project.

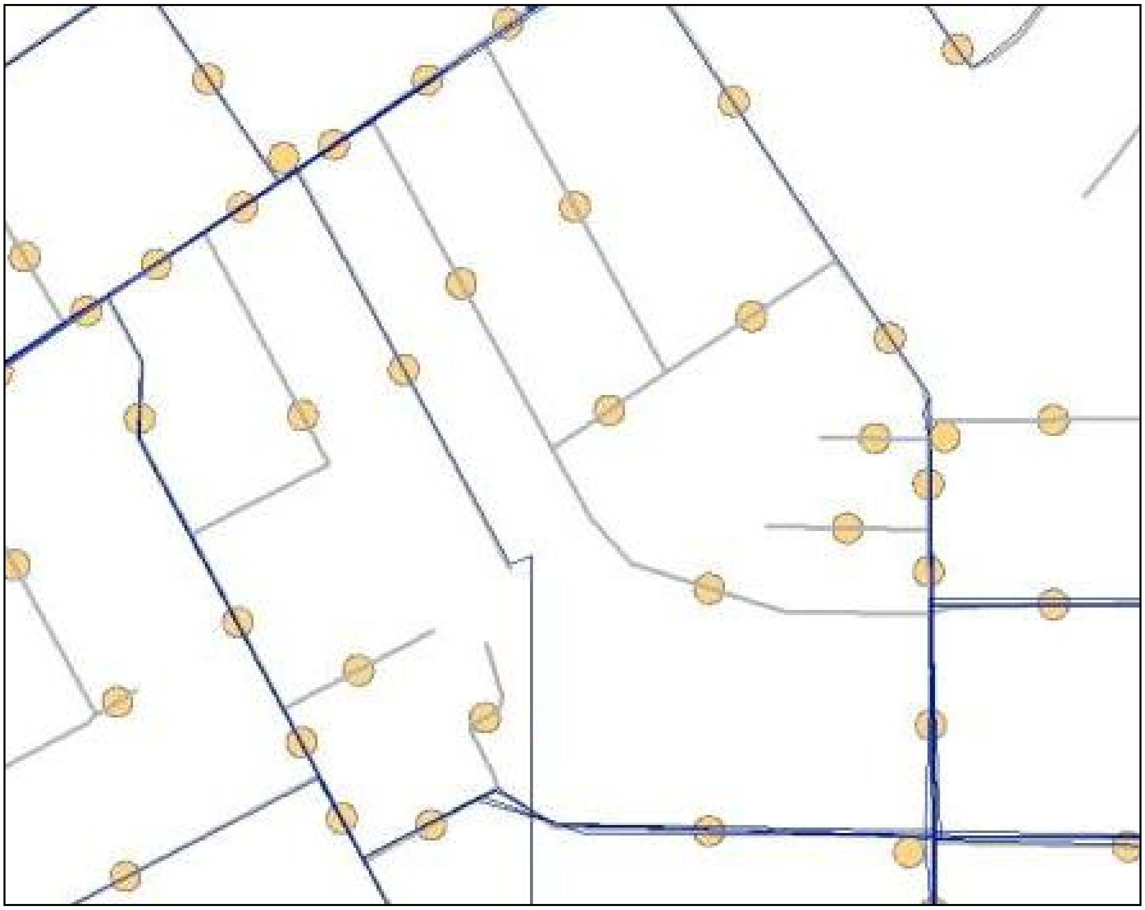


Figure 2: Midpoint buffer nodes intercept cycle routes.

For the second part of the project, the mapping methodology was modified to further improve the cycling route capture for all road segments.

This time the spatial data was captured by selecting the road centrelines from the Christchurch Road Network database and copying them into another data layer. This created a layer with multiple overlapping/stacked lines (coincident lines). Counts for the overlaps were generated to see how many occurrences or trips took place over the segments. The attributes for these lines were then copied back to the individual road centrelines, while adding up the appropriate values, e.g. total trip counts.

The midpoints of all road segments in the Christchurch Road Network database, containing all the data from the centrelines, were buffered with a low distance (2m) and intersected with the stacked lines. This provided a layer of short sections as intersected with both the ID's from the centrelines and the stacked lines. Now, this resulting table could be summarised by the road segment and counts could be retrieved for each segment.

The resulting outputs reduced mapping errors further and placed a high level of confidence on the mapped outputs.

3 CYCLE DEMAND MAPS

A series of maps were produced that included all trips, trips on weekdays, trips on weekends, the major trip purposes (weekday and weekend), and problem locations. This was accomplished by summarising the database tables to retrieve counts from the appropriate fields. These counts were joined to the road centrelines and the symbology of the layer was set to coincide with the appropriate fields to produce the maps. Examples of the final maps are included as an Appendix to this paper.

3.1 General Findings

The 417 cycle survey participants made a total of 3,927 cycling trips over the duration of the survey.

The main cycling purpose was travel to and from work – around 48% of all trips. A further 29% of all trips were for recreational purposes. The remaining 23% of trips were distributed among trips to education and other destinations, including going shopping and visiting friends. We expect that this latter group is likely to be slightly underestimated in relation to the population as a whole, as most school aged people (15 and under) were excluded from the survey.

The majority of cycle trips from the survey were made on major arterial roads leading toward the city centre and on popular recreational and sport training cycling routes. There were a few notable exceptions.

Northern Sector

The most frequently used roads by cyclists in the north of Christchurch were Marshland Road, Belfast Road, Prestons Road, Grimseys Road and Cavendish Road. Demand along these roads was not continuous reflecting trips toward specific areas of attraction, such as Bottle Lake Forest Park.

It was interesting to note that cycling demand along Main North Road was low in comparison to the volume of traffic on this road, especially when compared to the much higher cycling demand on the adjacent Grimseys Road. This was thought to be a result of the lack of cycle facilities present on Main North Road and the perceived lack of safety that cyclists are afforded given the high traffic volumes and narrow kerbside traffic lane adjacent moderate all day parking demand.

Western Sector

The most frequently used roads by cyclists in the west of Christchurch included McLeans Island Road, Yaldhurst Road, Springs Road, Main South Road and Avonhead Road.

Cycle volumes along Russley Road, an 80km/h major arterial road that runs around the west and northwestern outskirts of Christchurch, were relatively low in comparison to the volume of traffic on that road. It was evident from the mapping of all cycle trips that cyclists prefer to cycle on roads around the back of the airport in preference to Russley Road, where traffic volumes are considerably lower.

Central & Eastern Sectors

Cycling demand levels were highest in this part of the city. Key routes into the central city for cyclists were along Antigua Street, Riccarton Road, Memorial Avenue, Fendalton Road, Rossall Street, Papanui Road, Victoria Street, Avonside Drive, Linwood Avenue, Ferry Road and cycle paths through Hagley Park.

Cycling demand was high on nearly all roads in the centre of Christchurch, primarily as a result of commuter cycling. There was also high cycling demand on roads that provide links between suburbs, including Avondale Road, Bassett Street, Marine Parade, Radley Street, Hargood Street, Dyers Road, Brougham Street (near Opawa Road), Wrights Road, Kotare Street and Hinau Street.

Cycle demand was comparatively light on some major arterial roads, including sections of Moorhouse Avenue, Brougham Street, New Brighton Road and Cranford Street.

South Western Sector

Cycle demand was somewhat scattered throughout the southwest Christchurch, with highest demand being recorded on recreational cycle routes including Halswell Road, Kennedys Bush Road, Dyers Pass Road (south of the Sign of the Takahe), and parts of Cashmere Road and Centaurus Road.

There was also moderate to high cycle demand along arterial roads including Lincoln Road, Hoon Hay Road, Curletts Road, Barrington Street, Milton Street, Colombo Street, Somerfield Street and Strickland Street. However, cycling demand on these arterial roads is typically less than those arterial roads in the ‘Central’ and ‘East’ regions.

Cycling activity is relatively evenly distributed across the major roads in the southwest without exception, which shows that most of the roads in this part of the city are cycle friendly in nature with many having cycling facilities.

South Eastern Sector

Cycling demand in the southeast was dominated by recreation cyclist trips on Summit Road, Evans Pass Road, Wakefield Avenue, Main Road, Bridle Path Road and Port Hills Road.

3.2 Relationship with Existing Cycle Network

A network is a series of routes connecting destinations. A complete cycle network enables cyclists to travel more conveniently, feel more comfortable and safer than a road without cycle routes.

The Christchurch Cycling Strategy states that a network plan is developed to a set of rules, which include:

- The network consists of a series of linked cycle routes that meet cyclists needs i.e. it is continuous and goes where cyclists want to ride and provides appropriately for cycling.
- All links shall connect to each other or to recognised major cycle destinations.
- The network will primarily consist of a series of routes moving radially from the city centre, connected by a series of ring links.

The existing cycle network indicates that cycle facilities are currently provided on many of the major routes into the city centre, however there are notable exceptions particularly in the north and west of the city. Some cycle facilities are provided on the city's ring route, but these are typically incomplete and tend to serve cyclists in the vicinity of major cycling destinations. Examples of this include Canterbury University (Clyde Road) and Burnside High School (Greers Road).

The mapped outputs show the frequency of road usage by cyclists participating in the project. While it is only a snapshot from a sample of 417 participants, trends and patterns have arisen from the data that allow for comparison with existing data, including the existing cycle network.

The mapped outputs clearly indicate that there were high levels of cycling activity along a number of corridors where cycle facilities were not provided (or were not continuous) including Riccarton Road, Memorial Avenue and Papanui Road (all in the west and north west of the city).

There were also a number of arterial roads where cycle demand was lower than would be expected, which may be a reflection of the lack of cycle facilities that exist along these roads. Some of the roads that fall into this category include Bealey Avenue, Cranford Street, Hills Road, Woodham Road, Brougham Street, Moorhouse Avenue, Barrington Street and parts of Waimairi Road, Grahams Road and Greers Road. Most of these roads are also busy roads for traffic and the lack of cycling facilities is likely to be a deterrent to cyclists.

Lessons and Recommendations

The mapping of actual cycling trips and comparison with the existing cycling network generated a number of lessons for cycle network planners. These included:

- The obvious gaps/deficiencies in the existing cycling network (e.g. Riccarton Road, Memorial Avenue and Papanui Road) should receive the highest priority for the provision of future cycling facilities as they currently accommodate high levels of cycling demand and to link other parts of the existing cycle network.

- Those arterial roads where cycle demand is lower than would be expected (e.g. Bealey Avenue, Cranford Street, Hills Road, Woodham Road, Brougham Street, Moorhouse Avenue, Barrington Street and parts of Waimairi Road, Grahams Road and Greers Road) should be next in priority. All of these roads are busy traffic roads and the lack of cycling facilities is likely to be a deterrent to cycling.

3.3 Trip Purpose

Maps were produced showing cycle demand by trip purpose, including commuter trips (to work, to home), trips to places of education and recreational trips. Analysis of these maps produced some interesting findings, which included:

Commuter Trips to Work

The maps show the greatest concentration of commuter related cycle trips to work occurs along Rolleston Avenue from the Avon Boatsheds through to Armagh Street. This particular section of road collects many cyclists travelling from suburban areas in the south (Antigua Street), south west (Hagley Avenue / Lincoln Road) and west (Riccarton Avenue / Riccarton Road) of Christchurch.

This section of Rolleston Drive provides a shared cycling and walking path along the western side of the street. It is a popular and well-designed facility, as it is wide and there are few vehicle crossing points that intersect it.

Within the city centre, commuter cycling demand is also strong along parts of Park Terrace, Victoria Street, Kilmore Street, Hereford Street, St Asaph Street, Ferry Road, Antigua Street and Hagley Avenue.

Outside of the city centre, cycling activity is high along many of the main arterial roads the radiate out from the city centre including Riccarton Road, Kilmarnock Street, Memorial Avenue and Fendalton Road, Papanui Road, Avonside Drive, and Ferry Road.

Key lessons:

- High quality cycle paths in and near the CBD receive high levels of usage.
- Commuter cycling routes radiate out along main arterial roads from the CBD.

Education Related Trips

These maps show that education related trips are widely dispersed across the city.

High levels of cycling activity were observed on key suburban arterial roads including Riccarton Road, Memorial Avenue, Fendalton Road, Papanui Road, Linwood Avenue and Ferry Road.

Interestingly, high levels of cycling demand for education related trips was also recorded on popular recreational cycling routes including McLeans Island Road, Main Road, Evans Pass Road and Dyers Pass Road.

There was an increase in cycling demand observed around the university, but perhaps not as much as would have been anticipated.

Recreation Trips

Maps were produced showing recreational cycling trips on weekdays and weekends.

The maps showed that more recreational cycling trips occurred on weekdays than on weekends, which is somewhat surprising, even given the number of days in each sample set.

On weekdays, the highest recreational cycling demand was recorded on Cashmere Road, Halswell Road and Main Road corridors while throughout the remainder of the city demand was scattered.

On weekends, the highest recreational cycling demand was recorded on the Cashmere Road, Centaurus Road and Main Road corridors. These roads form part of a popular recreational and sport training route for cyclists around the base of the Port Hills.

3.4 Trip Times

Average trip times were calculated utilising the trip start and end timing information provided by survey participants. The segregation of the survey into two parts, May and October, enabled cycle trip length behaviour to be compared during a time of inclement weather (May) and a time of fine weather (October).

All Trips

Table 1 shows the average cycling time for every trip made as part of this project.

Table 1

Average Cycling Trip Time (hours)

May/June Average Cycling Time	0:26
October/November Average Cycling Time	0:27
Average Cycling Time	**0:26**

Table 1 shows that the average time spent cycling for all types of trips were almost identical for the survey conducted in May/June and those in October/November. Given that the weather conditions were quite different in each of the surveyed periods, it is reasonable to conclude that the average time spent cycling is independent of the time of year and weather conditions.

Based on an average cycling speed of 15 - 20km/h (including stopped time at intersections), a 26 minute trip would be in the order of 6.5 to 8.7 km in length.

The data was further disaggregated to establish whether there were any differences in trip length by trip purpose. Tables 2 – 5 show the average cycling time per trip for 'Utility', 'Commuting', 'Education' and 'Recreation' purposes respectively.

Utility Trips

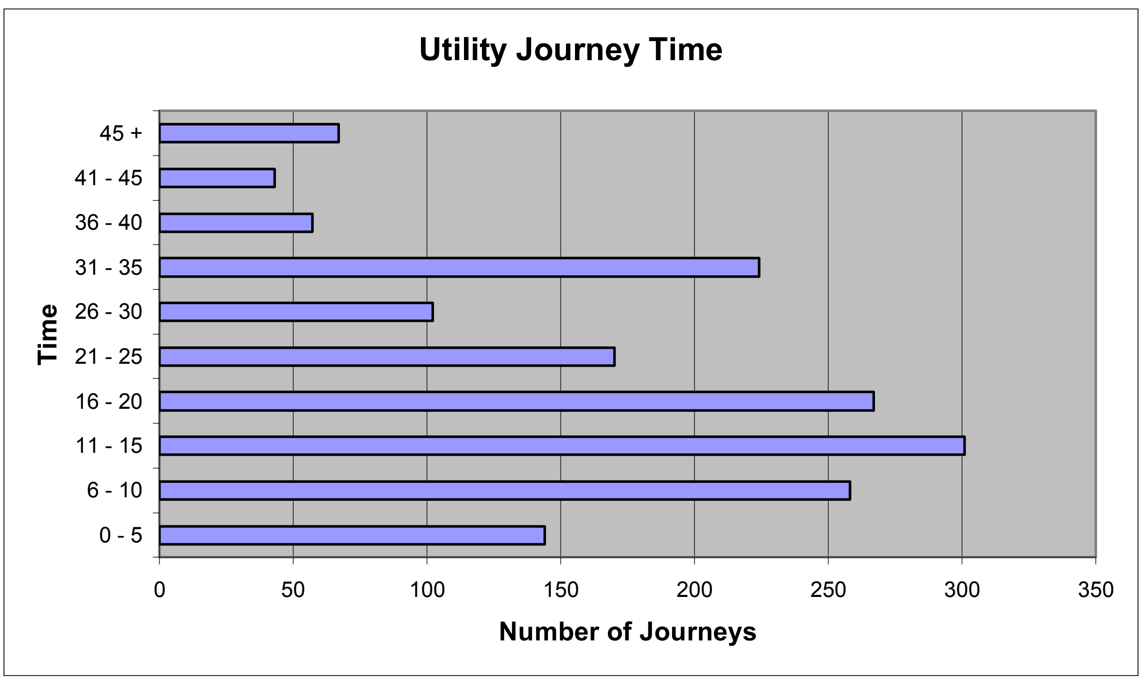
Table 2 shows that trip times for 'Utility' purposes i.e. to go somewhere specific (excluding recreational based cycling trips) did not vary between surveyed periods. It is worth noting that the time spent cycling on 'Utility' trips is shorter than the average cycle trip. However, the average trip time is significantly influenced by the much longer 'Recreation' trips (refer Table 5).

Based on an average cycling speed of 15 - 20km/h (including stopped time at intersections), a 20 minute trip would be in the order of 5.0 - 6.7 km in length.

Table 2

Average Cycling Trip Time – Utility (hours)

May/June Average Cycling Time	0:20
October/November Average Cycling Time	0:20
Average Cycling Time	0:20



Commuter Trips

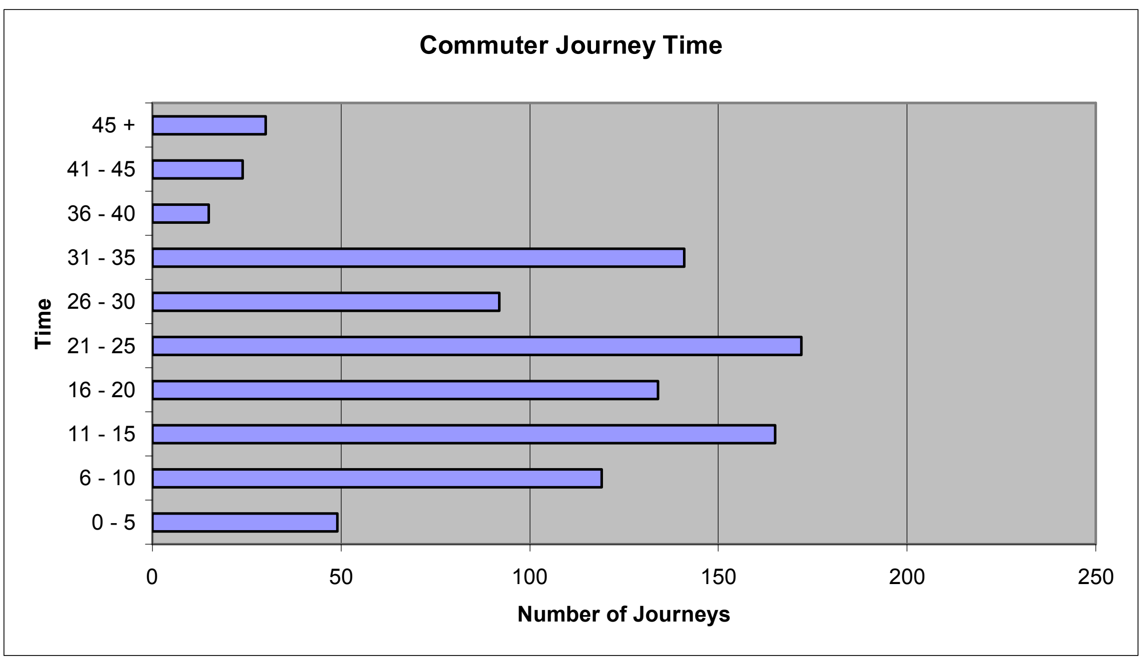
Table 3, like the earlier tables, shows that average cycling time for commuter trips to work did not vary between surveyed periods. It is worth noting that the time spent cycling to work is shorter than the average cycle trip. However, the average trip time is significantly influenced by the much longer 'Recreation' trips (refer Table 5).

Based on an average cycling speed of 15 - 20km/h (including stopped time at intersections), a 20 minute trip would be in the order of 5.0 - 6.7 km in length.

Table 3

Average Cycling Trip Time – Commuter (hours)

May/June Average Cycling Time	0:20
October/November Average Cycling Time	0:20
Average Cycling Time	0:20



Education Trips

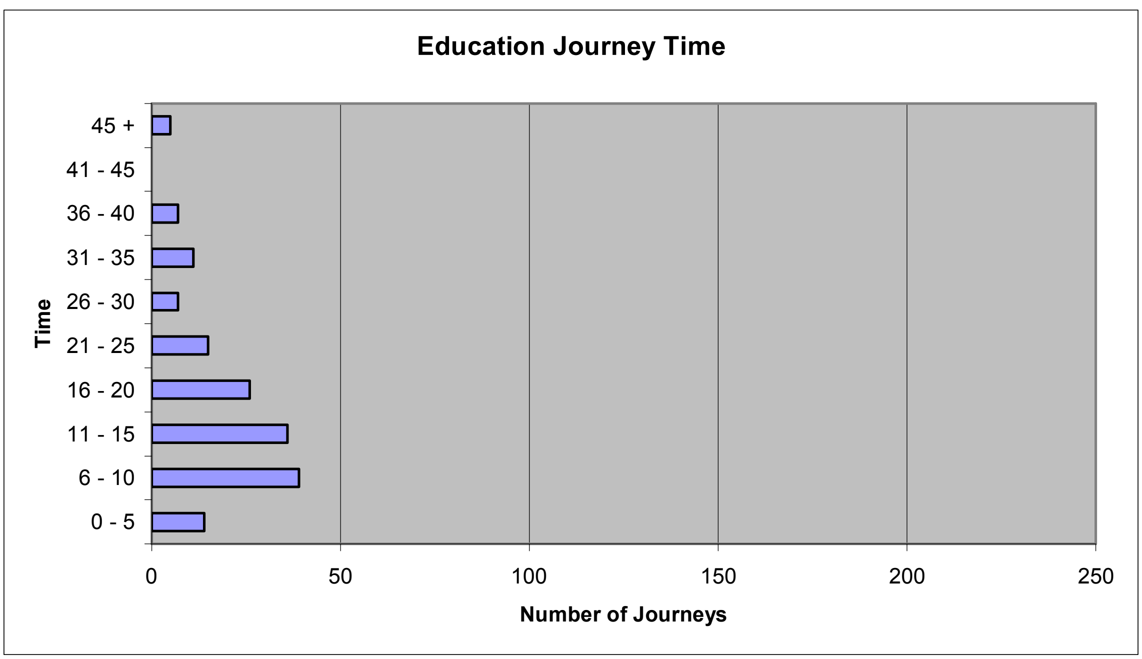
Table 4 suggests that the weather conditions have an influence over the time people are prepared to cycle to education facilities, as the average cycling trip time in May/June is considerably lower than October/November. It is probable that the significantly shorter cycling trip times in the autumn/winter period are a result of cyclists using alternative forms of transport when the weather was inclement unless the cycling trip could be made in a relatively short period of time.

Based on an average cycling speed of 15 - 20km/h (including stopped time at intersections), a 18 minute trip would be in the order of 4.5 – 6.0 km in length.

Table 4

Average Cycling Trip Time – Education (hours)

May/June Average Cycling Time	0:15
October/November Average Cycling Time	0:24
Average Cycling Time	0:18



Recreation Trips

Table 5 shows that 'Recreation' cycling trips were typically longer in May/June than October/November. This may be explained by the change in recreational cycling trip that occurs in better weather conditions such as family outings, which are likely to be of shorter duration than recreational trips for sport training.

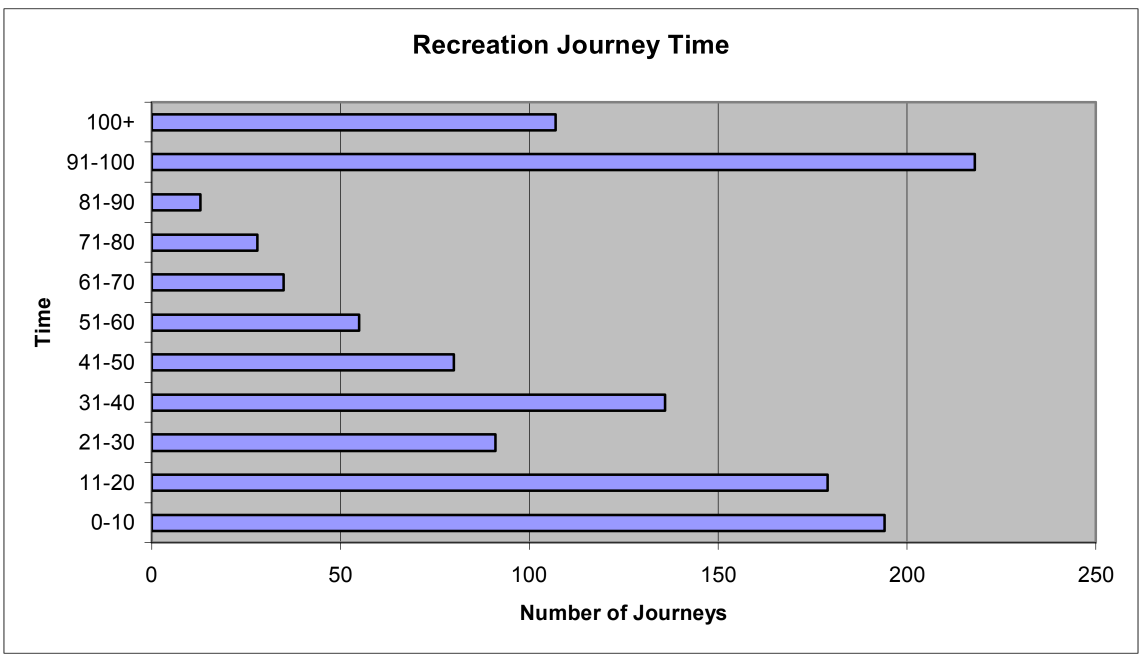
More importantly however, is that cycle trips for recreational purposes are typically three times longer than utility, commuter and education purpose trips.

Based on an average cycling speed of 20 – 25km/h[1] (including stopped time at intersections), a 59 minute trip would be in the order of 19.7 – 24.6 km in length.

Table 5

Average Cycling Trip Time – Recreation

May/June Average Cycling Time	1:08
October/November Average Cycling Time	0:51
Average Cycling Time	0:59



1 The average speed of recreational trips is likely to be higher than cycling trips for other purposes, as recreational cyclists usually seek out routes where they are required to stop on a minimal number of occasions.

4 PROBLEM LOCATIONS

Participants in the survey were asked to list any problem areas they experienced along their cycled routes. Comments were directed at a specific point location such as an intersection, a section of road or a general comment was made on cycling in general. Those comments made on point locations and a section of road was then mapped.

Problem locations were classified either as a **Point Problem** i.e. an intersection, bridge etc. or a **Route Problem** e.g. Riccarton Road. There were some instances where a participant identified a specific section of a route that caused them a problem, however to simplify the mapping task these comments were simply applied to the entire length of road.

Where a participant identified the same problem location on more than one occasion, this was recorded as a single entry for mapping purposes to avoid bias toward sites where a participant may have identified a specific site as causing problems each time they cycled through it.

Point Problems

The most frequently identified problem locations were the:

- Deans Avenue / Riccarton Avenue / Riccarton Road roundabout intersection; and
- The Ferrymead Bridge.

Other sites that attracted five to seven negative comments were:

- Riccarton Road / Yaldhurst Road intersection (unsignalised)
- Lincoln Road / Lyttelton Street / Wrights Road intersection (traffic signals)
- Falsgrave Street / Fitzgerald Avenue / Moorhouse Avenue intersection (traffic signals)
- Ferry Road / Moorhouse Avenue / Wilsons Road intersection (traffic signals)
- Buckleys Road / Ensors Road / Linwood Avenue intersection (traffic signals)
- Marshland Road / QEII Drive intersection (roundabout)
- Burwood Road / QEII Drive / Travis Road intersection (roundabout)
- New Brighton Road / Pages Road intersection (roundabout)

Nearly all of these intersections noted above are large intersections that carry large volumes of traffic.

Route Problems

Cyclists identified that Bealey Avenue, Blenheim Road, Marine Parade, Moorhouse Avenue and Riccarton Road were the most problematic for cyclists to negotiate.

There are similarities between these roads that are likely to contribute towards the problems that cyclists experience, especially:

- There are no cycle lanes on Bealey Avenue, Marine Parade, Moorhouse Avenue and Riccarton Road; and
- Bealey Avenue, Blenheim Road and Moorhouse Avenue are multi-lane high volume roads.

A number of other roads also attracted between 11 and 20 comments included:

- Marshland Road
- Memorial Avenue
- Lincoln Road
- Barrington Street
- Brougham Street
- Armagh Street
- Colombo Street
- Manchester Street
- Cranford Street
- New Brighton Road
- Dyers Road
- Opawa Road
- Centaurus Road

It is likely that there will be some bias in negative comments toward those roads that have high cyclist usage. However, of particular concern are those roads where the negative comments appear to be overrepresented compared to the volume of cycle traffic travelling along those roads. This indicates that these roads act as a strong deterrent to cycling, presumably because of the unsafe features that are perceived.

These roads include Moorhouse Avenue, Cranford Street, New Brighton Road, Brougham Street and Opawa Road.

5 CAUSE OF PROBLEMS

Many of the participants in the survey identified the reason why certain locations on the road network caused them particular problems. Interestingly, most of the problems noted by an individual were common to the experience of other participants, highlighting the common themes that cause problems for cyclists.

The main problems identified by the participants, in no particular order were:

- Tram tracks – especially on Armagh Street;
- Broken glass on the road and in cycle lanes;

- Parents and caregivers dropping off and picking up their children from school;
- Traffic calming devices such as chicanes and speed humps;
- Loose shingle / gravel on the road and in cycle lanes;
- Road works and road work signage being positioned in cycle lanes;
- Rough road and cycle lane surfaces;
- Vehicles, including buses, parking / stopping in locations that force cyclists to swerve into the traffic lane;
- Pinch points – including locations where the road narrows from two lanes to one, or where the road width becomes constrained e.g. bridges;
- The lack of cycle lanes; and
- Poor lighting for cycling at night.

5.1 Treating Problem Locations

A number of recommendations were made to alleviate cyclists' perceived causes of problems across the road network.

Tram Tracks

The tram tracks on Armagh Street are more problematic for cyclists along Armagh Street than other roads traversed by the city trams, as the tram tracks cross from the centre of the traffic lane to kerbside on three occasions. The tram tracks generally intercept the path of cyclists at low angles increasing the risk of a cyclist getting their tyre stuck in the tram tracks.

We are aware of rubber infill products that have been used in train and tram tracks to improve the crossing ability for cyclists while still being soft enough to be depressed by the weight of the tram.

Road Maintenance

Broken glass, debris and shingle were common complaints from cyclists. The issue is far more pronounced for cyclists than general traffic, as traffic tends to shift any such material from the traffic lane towards the kerb and into the path of cyclists.

It may be necessary to increase the frequency of sweeping cycle lanes and kerbside lanes especially on the more heavily used cycle routes.

Schools

Parked cars, opening doors and people entering the road from between cars are all hazards for cyclists. It would appear from the comments received from participants that it is essential to provide separate cycling and walking facilities outside schools to reduce the number of conflict points between these user groups.

Road Works

It would appear that many road work sites do not cater for cyclists to an adequate level. Examples mentioned by participants include the placement of road work signage in cycle lanes or the normal path of cyclists, or there is a lack of provision for cyclists, which is required under the Code of Practice for Temporary Traffic Management, especially if cycle facilities are rendered unusable during road works.

When reviewing a Traffic Management Plan (TMP), Council should consider how the proposed road works is likely to impact on cyclists, including the positioning of road work signage, and whether suitable mitigation is proposed within the TMP to deal with this.

Longer-term work sites in particular should be audited to make sure they comply with the requirements.

Road Surface Quality

Ride quality is highly valued by cyclists. It is important that Council consider the condition of the pavement and surface quality in the cycle lane and not only that of the traffic lane when prioritising road pavement and surface improvement works.

Stopped Vehicles

Cyclists identified vehicles stopping in cycle lanes, including buses, as being a major problem. Typically, this issue coincided with sections of road that had no kerbside parking provision and where bus stops were integrated into the cycle lane e.g. parts of Centaurus Road.

Council should consider providing indented bus bays where possible, especially along high cycle volume roads.

Pinch Points

Pinch points are locations where the road narrows to an extent where cyclists and traffic move from a situation of having sufficient road space to operate alongside one another to a point where they must share road space. This places cyclists in a particularly vulnerable position and can lead to a high crash risk situation.

Lighting

Some cyclists identified that the level of lighting provided along many of our streets was inadequate for them to cycle safely at night. I believe the concerns related more to cyclists not being able to clearly see the road ahead rather than issues surrounding cyclist visibility to traffic.

6 USAGE OF THE CHRISTCHURCH CYCLE NETWORK PLAN: CYCLIST SURVEY MAY 2007 REPORT

The above report and associated maps are being used as a major part of the input for updating the Councils 1999 'Full Cycle Network Plan'.

It is expected that in early 2008 a staff report to the Council that includes this survey will address the updating of the existing network plan. It will also assist in providing a clear priority on cycle route provision in the cycling capital budget for the next 5 years. The maps show the current demand, time of demand, type of usage on the existing network which all provides clear, timely and detailed information that is helping with the network planning.

It is also currently being used in the planning for a number of major projects.

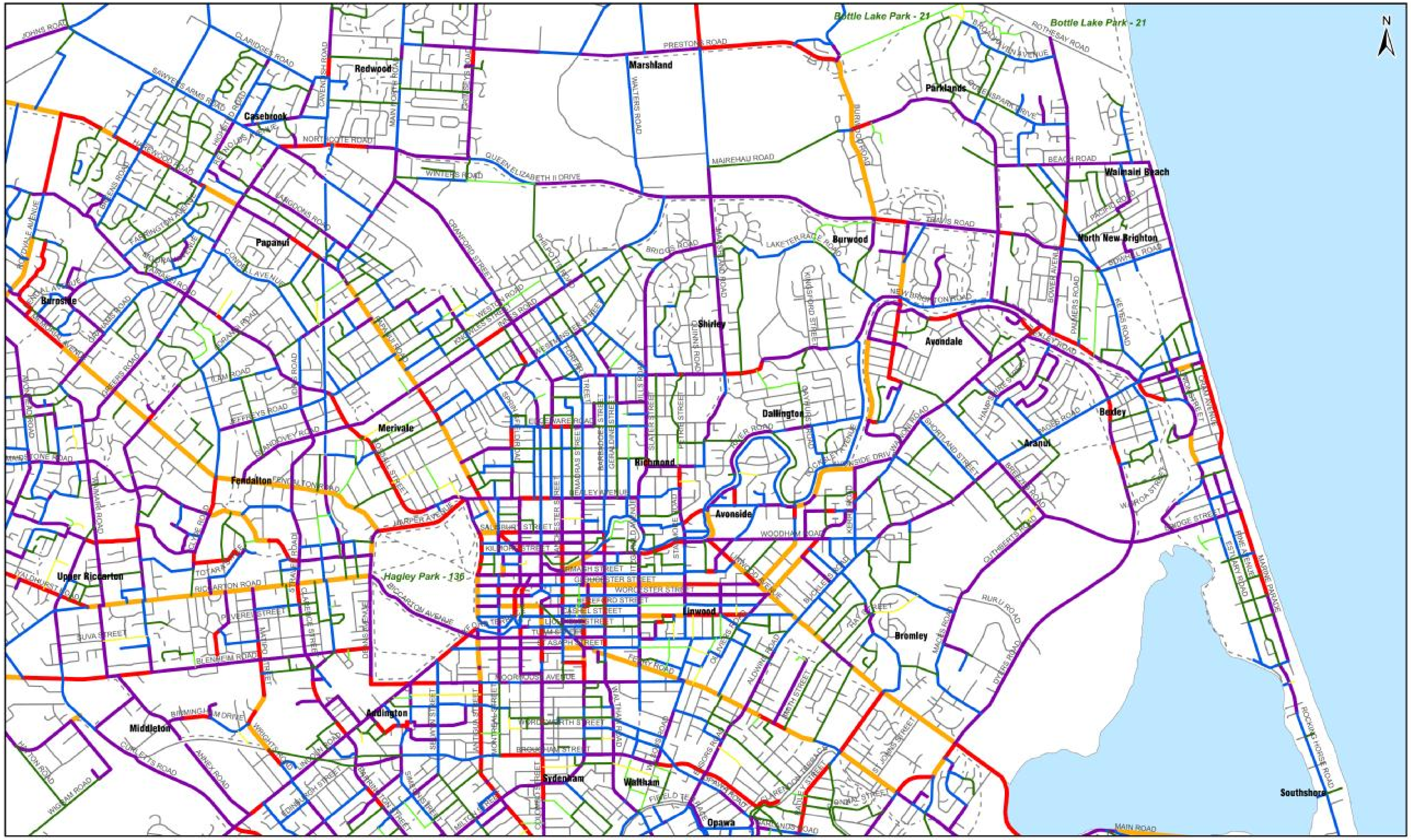
The South West Area Plan (SWAP) is being revised from its 2005 version as the area planning project is confirmed. SWAP is a long-term plan (35+ years), for managing the effects of urban growth on the environment, infrastructure (including transport facilities) and communities. The area plan integrates land-use planning with key infrastructure projects, such as the major sewer upgrade, strategic roading projects (for example the proposed Southern Motorway) and community facilities, such as the new Halswell library. The information on cycle demand is being included within the staff SWAP revision to ensure the potential of the Area Plan is maximised for cyclists. This is also being used to feed into other major area plans such as the Belfast Area Plan and our Central City Revitalisation project and will continue to do so with the development of any future new area plans.

Since June 2007 the maps have been referred to steadily by staff with requests on cycle movements over the network, particularly in relation to providing cycle infrastructure projects.

The report and maps have also been insightful in identifying 'problem' sections of the network for cyclists and using the volumes alongside the comments has proved useful in helping to prioritise them from the capital upgrading budget.

As this project has provided a comprehensive comparison of the existing network use (as a comparison of approx. 4000 cycle trips) this complements the regular manual monitoring counts to such a degree that a number of manual count sites may be reconsidered next year. Hence it is also being used as a monitoring tool over the network.

This project provides the base in which to be able to periodically reload any further future surveys. This periodical updating will provide further insights into the progress of the network and help keep us abreast of any changing demands.



Christchurch Cycling Survey

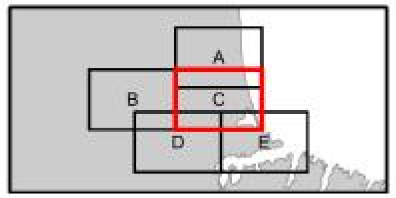
Scale at A3 - 1:40,000

Map: C 1

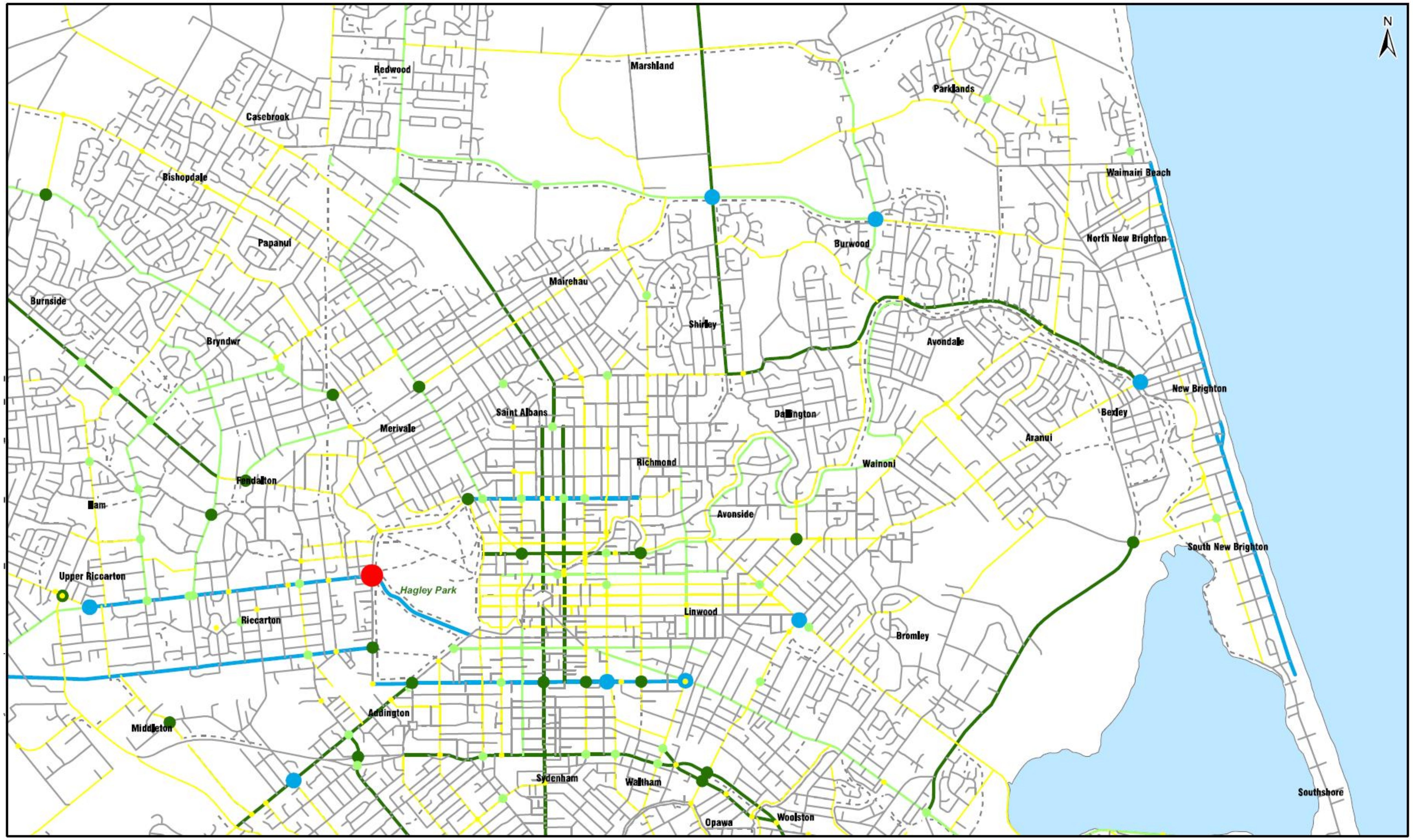
Road Centreline and Cycleway Network data sourced from Christchurch City Council.
Cycle Counts derived from Christchurch Cycle Survey
Based on a survey of 400 cyclists over a one week period.

Cycle Counts
Trip Count (over 7 days)

1 - 5	21 - 40	120+
6 - 10	41 - 80	Road Network
11 - 20	81 - 120	Cycleway



CHRISTCHURCH
CITY COUNCIL · YOUR PEOPLE · YOUR CITY



Christchurch Cycling Survey

Scale at A3 - 1:40,000

Map: C11

Road Centreline and Cycleway Network data sourced from Christchurch City Council.
Cycle Counts derived from Christchurch Cycle Survey
Based on a survey of 400 cyclists over a one week period.

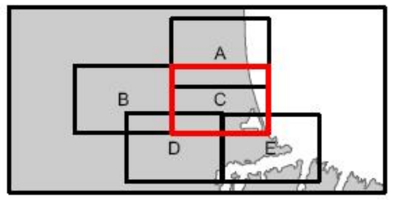
Selection of Unsafe Roads and Intersections

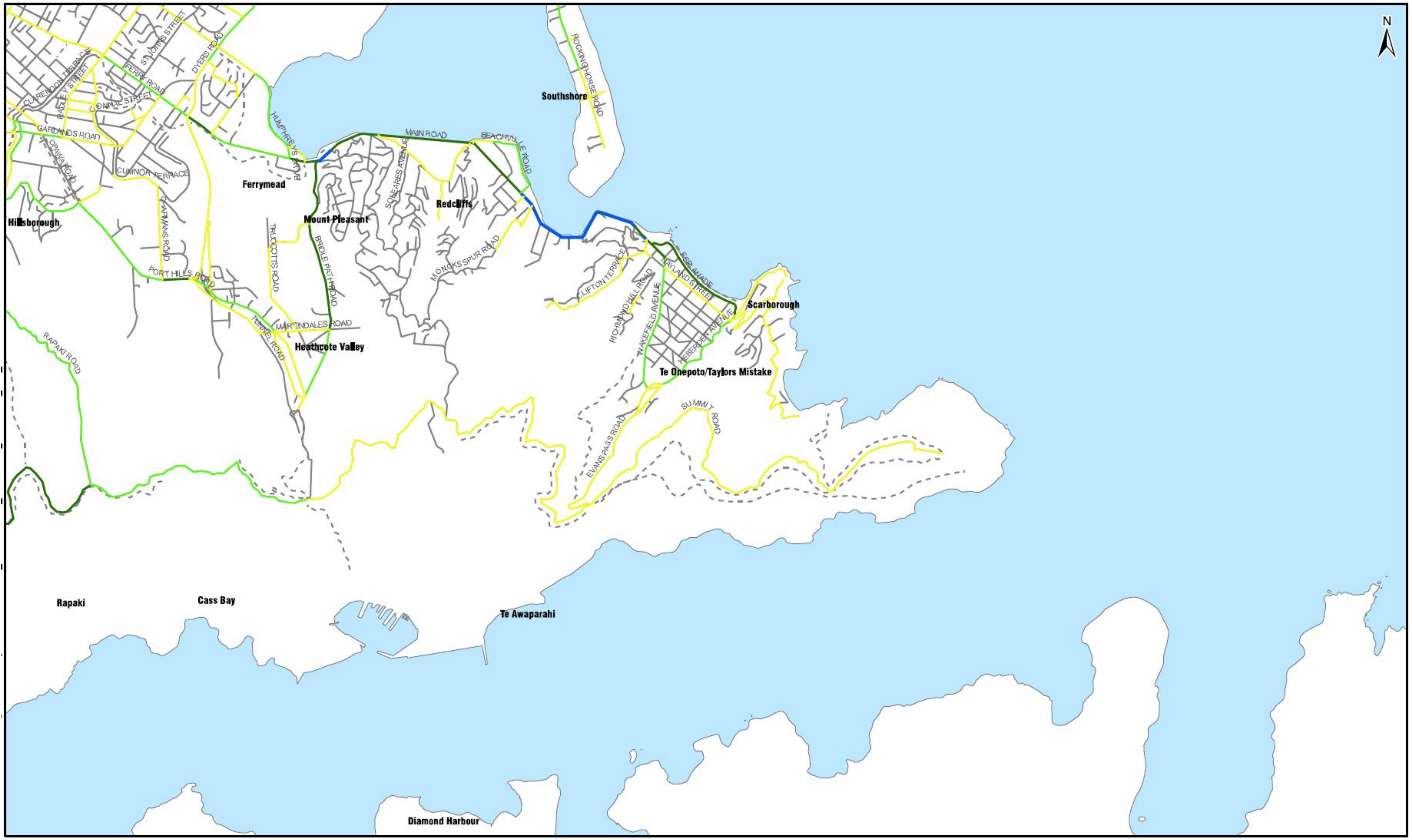
Count of Negative Comments per Road

- Roads
- 1 - 5
- 6 - 10
- 11 - 20
- 21 - 40
- 41 - 80
- 81+
- CycleWay

Count of Negative Comments per Intersection

- 1
- 2
- 3 - 4
- 5 - 7
- 8 - 10
- 10+





Christchurch Cycling Survey

Scale at A3 - 1:40,000

Map: E10

Road Centreline and Cycleway Network data sourced from Christchurch City Council.
Cycle Counts derived from Christchurch Cycle Survey
Based on a survey of 400 cyclists over a one week period.

Cycle Counts
Weekend Trips: Reason - Recreation

1 - 5	21 - 40	120+
6 - 10	41 - 80	Road Network
11 - 20	81 - 120	Cycleway