



Shared path marking trial results

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Re: Shared path markings to replace signage – trial results

Quality Assurance Statement		
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Executive Summary

Traffic control device trialled

To reduce the occurrence or extent of “sign forests” on paths for walking and cycling, a trial of using pavement markings only (i.e. to replace the current signage requirements) on shared paths at transitions to exclusive cycle paths and / or footpaths has been undertaken.

Two localities are participating in the trial – Auckland and Christchurch. Whilst following the general requirements for the markings to be used, as outlined in the Gazette notice, each locality has adopted slightly different variations, based on their specific site contexts and historical marking specifications. The standard pedestrian and cycle symbols, as specified by the Traffic Control Devices (TCD) rule have been used, with Auckland opting to not use elongated bicycle symbols and placing the pedestrian and cycle symbols side-by-side, whereas Christchurch used elongated cycle symbols and the pedestrian symbol above the cycle symbol.

Methodology

The trial involved a comparison study, where “trial sites” (3 from Auckland, 6 from Christchurch) with path markings but no signs were compared to “comparison sites” (2 from Auckland, 1 from Christchurch) which had both signs and path markings. A comparison study was chosen (rather than a before-after study) to avoid having to install signs in new or existing sites and later incurring the problems associated the empty sign bases which can be hazardous to path users if left protruding from the pavement, or expensive (and ugly) to retrofit.

Observations of volume and behaviour were conducted at all trial and comparison sites. Intercept surveys to gauge user understanding and satisfaction were undertaken at ten selected sites.

Results and discussions

In total, 3,045 path user movements were observed across 13 sites. Cyclist compliance was above 90% at six of the eight trial sites. Pedestrian compliance was generally lower than cyclist compliance. Instances of non-compliance generally seemed to be due to insufficient path provision for particular movements (e.g. overly narrow, involving a large deviation from the desire-line, or not being catered for at all). The high rates of compliance at the comparison sites appear to be more related to the differences in path layout than the signage provision. Overall, the user behaviour observations suggest that pedestrians and cyclists are able to understand and comply with pavement markings alone.

In total, 206 people were interviewed, including a good mix of pedestrians and cyclists (noting that a high proportion of people who were walking at the time of the survey indicated that they ride a bike at least once a month).



Shared path marking trial results

The Christchurch responses to the path marking interpretation questions show that path markings alone are sufficient for people to distinguish cycleways, footpaths and shared paths.

The Auckland results for identifying footpaths based on the path markings were poor – this may be partly due to the quality of the image used in the survey question, but more so that an upside-down shared path marking (i.e. viewed by a person exiting a shared path) in itself is insufficient and that users require a marking to show the type of path being entered. Installing “shared path ends” signs would not improve user understanding, as less than half the respondents were able to identify the footpaths located after such a sign as being for pedestrians only. Based on the comprehension of other signs, it is expected that signs specifying the path or user type (e.g. “footpath begins” or “pedestrians only”) would be more effective, but such signs would increase the visual clutter and be problematic for RCAs to install consistently across the footpath network. Therefore, the most viable and efficacious option is to mark a pedestrian symbol to denote the beginning of a footpath after a shared path terminates, as was done at the Christchurch sites.

When asked whether the markings and signs represent a legal requirement, 33% of Auckland participants and 43% of Christchurch participants responded that there is a legal requirement to comply with path markings, while 57% of Auckland participants and 62% of Christchurch participants responded that there is a legal requirement to comply with signs. These results show that people perceive signs to be more legally binding than markings, but also that there is a poor understanding of the legal implications of either device. Adding signs to the markings would not increase users’ understanding of the legality to an acceptable level, thus other options such as education and / or enforcement might be required. More importantly, the compliance rates observed during the observation studies were higher than the percentages obtained for these questions, showing that people choose to comply with the markings and signs, even if they are unaware of the legal ramifications.

When asked their preferred treatment, 65% of Auckland respondents and 47% of Christchurch respondents said they preferred to have both signs and markings; this result does not offer strong support to the proposal to require markings only. However, 85% of people who preferred both signs and markings (across all surveys at trial and comparison sites in both Auckland and Christchurch) also considered the markings to be “easy enough to see” and 90% considered them to be “about the right size”; these results do not accord with the treatment preference stated. When asked to explain why they prefer to have both signs and markings, these respondents often acknowledged the lack of compliance at certain sites and identified treatments that they assumed *other* people require to improve their compliance. Contrary to this, very few people responded that having no signs causes problems for them personally. The discrepancy between the group of people who prefer signs and markings in general and the few people who stated a personal reason for requiring signs in addition to markings suggests that the former group of people is overly concerned for a group of *other* people who do not in fact exist. Therefore, the decision should be based on what the majority of people identify as being sufficiently effective for their own needs, rather than their stated preferences.



Shared path marking trial results

Three people suggested that the markings alone would be difficult to see in times of darkness, heavy rain or sun glare. While the other 203 participants did not voice such concerns, the researchers suggest that these concerns do warrant further consideration. It is expected that paths for walking and cycling should have good lighting provision, especially at transition points, so visibility of markings in the dark should not pose a hazard to users. In times of heavy rain or sun glare, it is more likely that users would be looking at the ground than looking up, thus signs may not offer any improvement.

It is noted that this trial has been required to prove that the current requirements for path signage are not necessary, yet it is doubtful that the current requirements were developed based on any scientific study or trial. Furthermore, considering cost-effectiveness, it seems that the current signs offer little value for money. If this is the case, it would be more prudent to require RCAs to justify the use of signs rather than risk wasted expenditure.

Recommendations

Based on the results of this trial, it is recommended that:

- RCAs should have the flexibility of choosing whether or not to install signs on these paths, provided suitable markings are provided at transition points between different path types.
- The marking regime should include pedestrian symbols wherever a shared path ends and a footpath begins.
- RCAs should retain the flexibility to specify the relative placement of the pedestrian and cycle symbols in their shared path markings, and whether or not to use elongated cycle symbols, to achieve the most appropriate markings for their networks and specific sites.



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1. Background

The *trial application for path markings to replace signage* (submitted to NZ Transport Agency 20 August 2015) and resulting Gazette notice (issued 30 November 2015, given in Appendix A) give detailed background to the motivation and parameters of the trial. A summary of the key points is given here, along with information on developments made since the previous documents were issued.

1.1. Outline of the issues

The TCD signage requirements for locations where there are multiple transitions between exclusive (or “segregated”) paths for pedestrians or cyclists and shared paths result in what is commonly known as “a sign forest” or “sign clutter”. This is considered unnecessary and, in some cases, counter-productive because:

- A sign forest may confuse path users
- An excessive number of signs may result in path users becoming desensitised to signs and ceasing to pay attention to them
- Signs are less effective than markings as pedestrians and cyclists generally pay more attention to a path surface
- Depending on the location, the sign forest signs often do not have any legal or practical significance for motorists and therefore there would not be any adverse effects involving motorists if the signs were replaced by markings.

1.2. Trial objectives

The main objective for this project is to reduce the occurrence or extent of “sign forests” by requiring use of marking only.

The secondary objectives, aimed at not creating further problems, are that the chosen treatment should:

- be intuitive for users,
- be aligned with good urban design principles in terms of aesthetics,
- have the same legal status as the current signs, and
- be informed by international best practice.

1.3. Project development

On Thursday 7 May 2015, a presentation was made to the Active Modes Infrastructure Group (AMIG) regarding the issues and several possible solutions. AMIG concluded that a trial of having no signs and using path markings only should be conducted.

A trial application was submitted on behalf of Auckland Transport on 20 August 2015.

The TCD committee discussed the application and determined that the path markings should use the pedestrian and cycle symbols currently prescribed by the TCD Rule, and that opportunity should be given to other localities to participate in the trial.



Christchurch City Council responded to the invitation and proposed several trial sites. The trial gazette notice (Appendix A) was issued 30 November 2015.

2. Traffic control device trialled

2.1. General

As a solution to the above issues, a trial of using pavement markings only (i.e. to replace the current signage requirements) on shared paths at transitions to exclusive cycle paths and / or footpaths has been approved.

Two localities are participating in the trial – Auckland and Christchurch. There are general requirements for the markings to be used, as outlined in the Gazette notice (Appendix A). Essentially, it was decided that the standard pedestrian and cycle symbols, as specified by the Traffic Control Devices (TCD) rule will be used, with the option of using elongated symbols (such as for the cycle symbol specified in diagram M2-3 of Schedule 2 of TCD Rule and in MOTSAM for cycle lanes and shared paths).

Whilst following these requirements, each locality has adopted slightly different variations, based on their specific site contexts and historical marking specifications.

2.2. Auckland

The Auckland shared path markings are shown in Figure 1:



Figure 1: Auckland path marking example

The essential features of the Auckland path marking are:

- Auckland Transport chose not to use an elongated cycle symbol (i.e. as per diagram M2-3 of Schedule 2 of TCD Rule) but rather use a cycle symbol of accurate proportions. This was based on the following considerations:
 - No specification for an elongated pedestrian marking is given in the TCD Rule. Given the shape of the pedestrian symbol, an elongated version would not be easily distinguishable as a pedestrian. It seems inconsistent to use a shared path marking that combines an elongated cycle with a pedestrian of normal proportions.



- Using a cycle symbol of normal proportions emphasises that shared paths are a different environment than on-road cycle lanes, for example, and that people on bikes are expected to travel more slowly in shared environments.
- Elongation of markings has been developed based on the viewpoint of a motor vehicle driver. Cyclists (and pedestrians) view the marking at a different angle, which means elongation is less important.
- Transition points between shared and exclusive paths are defined by using some or all of the following elements:
 - A chevron pointing away from the transition point and towards the continuation of the shared path (not used for transitions to large areas where users may travel in multiple directions).
 - A painted threshold line.
 - A change in surface colour / texture / pattern.
 - Cycle symbol markings at the start of exclusive cycle paths
 - Note that a pedestrian symbol was not marked where a shared path transitions to a footpath. It was assumed that the elements mentioned above would be sufficient to denote the transition, and AT preferred a minimalist approach in this respect.
- Where the shared path transitions to the roadway, it was considered that the standard elements (change in elevation, kerb cutdowns, tactile pavers etc) in conjunction with the shared path marking at the start of the shared path, would be sufficient to denote this type of transition.
- The pedestrian and cycle symbols overlap slightly.
 - Initially, a marking where the pedestrian symbol was placed above the cycle symbol (similar to the markings used in Christchurch, but with different proportions and spacings) was tested. However, members of the public expressed confusion and discontent with this marking.
 - AT modified the design, based on initial feedback.
 - The overlap emphasises that the path is shared.
 - The placement of cycle and pedestrian side-by-side emphasises that neither user has priority over the other.
- While the TCD Rule does not give any guidance on shared path marking sizes, the cycle symbols will be larger than the minimum requirements for cycle symbols. The size has been determined based on field tests and public responses from the initial markings tested.

Note that Auckland Transport had initially desired that the cycle symbol include the figure of a cyclist, with the intentions having a realistic symbol and “humansing” the portrayal of cycling. However, this was overruled by the decision of the TCD steering committee to use the standard TCD Rule cycle symbol.

2.3. Christchurch

The Christchurch shared path markings are shown in Figure 2:



Figure 2: Christchurch shared path markings

The essential features of these are:

- Elongated cycle symbol (i.e. as per diagram M2-3 of Schedule 2 of TCD Rule)
 - This has been traditionally used on Christchurch shared paths and this has not been changed, for consistency with other paths in the city.
- Transition points between shared and exclusive paths are defined by using some or all of the following elements:
 - Cycle symbol markings at the start of exclusive cycle paths or transitions to on-road cycle lanes, often with green surfacing as well.
 - Pedestrian symbol marked at the start of a footpath.
- Where the shared path transitions to the roadway, it was considered that the standard elements (change in elevation, kerb cutdowns, tactile pavers etc) in conjunction with the shared path marking at the start of the shared path, would be sufficient to denote this type of transition.

3. Methodology

3.1. Trial sites

3.1.1. Auckland trial sites

There are three trial sites from Auckland:

- TA1. Beach Road at Britomart Place – east corner
- TA2. Beach Road midblock location (opposite Anzac Ave)
- TA3. Beach Road at Tangihua Street – south corner

These sites have shared path markings but no signs.

3.1.2. Christchurch trial sites

There are six trial sites from Christchurch:

- TC1. Ilam Fields shared path exit to Ilam Road
- TC2. Riccarton Bush shared path exit to Ngahere Street
- TC3. Rutland Reserve shared path exit to Rutland Street / Tomes Road
- TC4. Matai Street at intersection with Railway pathway



TC5. Railway pathway at Fendalton Road

TC6. Railway pathway at Wroxtton Terrace

These sites have shared path markings but no signs.

Overall, the Christchurch sites are less complex than the Auckland sites, as they involve fewer transition points and generally these transitions are only between shared paths and footpaths (i.e. there are fewer instances of separated cycleways transitioning to shared paths among the Christchurch sites).

3.2. Comparison methods and sites

3.2.1. General notes on comparison method

The hypothesis of the trial is that, for walking and cycling paths, markings alone are sufficient to communicate the necessary information to users, and signs are not necessary.

Many of the existing shared paths in Christchurch in particular were installed prior to the TCD rule requiring signage and therefore remain without signs; this limited the availability of suitable sites involving shared path signs to be included in the trial. When signs are removed, the sign base remains protruding from the path surface; this poses a trip hazard to path users and can be expensive to retrofit later. Because of this, and assuming the hypothesis would be verified, it was decided to not install signs on the new paths that formed part of the motivation of the trial and were installed after being approved as trial sites. For the same reasons, it was also decided that retrofitting the existing trial sites that do not already have signs would be too counterproductive and expensive to warrant.

Therefore, rather than conduct a before-after study, it was chosen to conduct a comparison study, and compare the trial sites with comparison sites that currently have both signs and markings.

Given that Auckland Transport and Christchurch City Council consider it essential to have pavement markings (this accords with the hypothesis of the trial) it would not make sense to remove the existing markings for the sake of a 'scientific' trial. Hence the comparison made is "*signs plus markings versus marking alone*", rather than "*signs versus markings*". That is, the trial attempts to gauge whether it is worth using signs as well as markings, or whether a suitable outcome can be achieved with markings alone.

3.2.2. Auckland comparison sites

Three comparison sites from Auckland have been included. The first two are both located on opposite sides of the road at the Upper Queen Street overbridge, the third is located on a section of Beach Road that was installed prior to the trial sites mentioned above.

CA1. Upper Queen Street at Canada Street – south corner

CA2. Upper Queen Street at Grafton Gully path entrance

CA3. Beach Road at Churchill Street

Upper Queen Street is considered to be the worst case existing sign forest scenario and has been the subject of complaints received by Auckland Transport. However, it is



acknowledged that the sign forest problem at this site is not of the same magnitude as what would be experienced at the Beach Road stage 2 site if signs were installed there.

3.2.3. Christchurch comparison sites

One comparison site from Christchurch has been included.

CC1. Old Blenheim shared path at Deans Ave

This site does not involve a separated cycleway, rather it involves a transition between a shared path, footpaths, on-road cycle lanes and midblock pedestrian / cycle crossing. It does not represent a sign forest, as such, but will provide a useful comparison of user understanding and satisfaction.

3.3. Volume and behaviour surveys

Volume and behaviour surveys were conducted at all trial and comparison sites, however not all possible movements were surveyed at each site. The movements chosen were those where a combination of complying and non-complying options existed; for example, cyclists travelling in a particular direction could choose to ride on a cycleway (complying) or footpath (non-complying). For this reason, pedestrian movements were not recorded at sites where there were no feasible non-complying options.

3.4. Understanding and satisfaction surveys

Four Christchurch trial sites and the comparison site were selected as locations for intercept surveys to gauge user understanding and satisfaction:

- TC1 - Ilam Fields shared path exit to Ilam Road
- TC3 - Rutland Reserve shared path exit to Rutland Street / Tomes Road
- TC4 - Matai Street at intersection with Railway pathway
- TC6 - Railway pathway at Wroxton Terrace
- CC1 - Old Blenheim shared path at Deans Ave

Three Auckland trial sites and two comparison sites were selected as locations for intercept surveys to gauge user understanding and satisfaction:

- TA1 - Beach Road at Britomart Place – east corner
- TA2 - Beach Road midblock location (opposite Anzac Ave)
- TA3 - Beach Road at Tangihua Street – south corner
- CA2 - Upper Queen Street at Grafton Gully path entrance
- CA3 - Beach Road at Churchill Street

These sites were selected to provide a suitable cross-section of all sites and user types and a suitable user-base to obtain an adequate number of responses.



4. Results

4.1. Volume and behaviour surveys – Auckland sites

The survey data for the Auckland site observations of user volumes and behaviour are given in Appendix E; in total, 2341 movements of interest were recorded. The key points are presented and discussed here.

4.1.1. TA1 – Beach Road at Britomart Place

- Two surveys were undertaken, one in the morning peak period and the other in the evening peak period, to verify whether the survey was affected by a tidal flow. It was found that cycle volumes were low in both periods.
- Cyclists had a high rate of compliance – 84% in the morning survey, 100% in the evening survey.
- Pedestrians were less likely to comply with the path designation. In the morning survey, 70% of pedestrians used the correct path, and in the evening survey only 62% of pedestrians used the correct path.
- The approach location has big influence on whether or not pedestrians choose to walk on the cycle path – about half of those pedestrians who approached from locations B or C (i.e. the cycle path side – see Appendix C.1) chose to walk on the cycle path, whereas only 20% of those approaching from location A (i.e. the footpath side) chose to walk on the cycle path.
- Although pedestrians’ eventual destinations were not recorded, based on the observation of the effect of the origin location on compliance, it is expected that their destination and therefore their overall desire-line also have a significant influence on compliance.

4.1.2. TA2 – Beach Road midblock

- Only three cyclists were observed during the survey at this midblock location, whereas 362 pedestrians were observed.
- All cyclists observed used the cycle path.
- 74% of pedestrians walked on the footpath, the other 26% walked on the cycle path.
- As above, the pedestrians approaching from the side of the shared path closest to the cycleway (location B – see Appendix C.2) were much more likely to walk on the cycleway than those approaching closest to the footpath (location A). The section of shared path in this location has paired paths at either end, therefore it is assumed that the majority of those pedestrians approaching from location B had already walked along the upstream cycle path.

4.1.3. TA3 – Beach Road at Tangihua Street

- Only eight cyclists were observed during the survey at this location, whereas 207 pedestrians were observed.
- All cyclists observed used the cycle path.



- 88% of pedestrians walked on the footpath, the other 12% walked on the cycle path.
- As for the sites mentioned above, the majority of pedestrian non-compliance involved pedestrians coming from a location closer to the cycle path than the footpath.
- Note that the rate of pedestrian non-compliance at this site is lower than the Beach Road at Britomart Place site. The two sites are comparable in terms of layout and facility widths, but overall user volumes are lower at the Tangihua Street location. This suggests that capacity plays an important factor. As pedestrian volumes grow but cycle volumes remain relatively low, pedestrians are more likely to choose to walk on the cycle path, because the footpath is crowded but there is little obstruction to flow on the cycle path.

4.1.4. CA1 – Upper Queen Street at Canada Street

- Cycle and pedestrian volumes were more balanced at this site – 105 cyclists and 120 pedestrians were observed during the survey period.
- 93% of cyclists complied with the path designation.
- 98% of pedestrians complied with the path designation.
- The fact that cycle volumes are higher and more consistent with pedestrian volumes supports the theory that pedestrians are less likely to want to walk on a cycle path when cyclists are present.

4.1.5. CA2 – Upper Queen Street at Grafton Gully cycleway

- 87 cyclists and 142 pedestrians were observed during the survey period.
- 100% of cyclists complied with the path designation.
- 94% of pedestrians complied with the path designation.
- The balance in user volumes supports the theory that pedestrians are less likely to want to walk on a cycle path when cyclists are present.
- The fact that cycle volumes are higher and more consistent with pedestrian volumes supports the theory that pedestrians are less likely to want to walk on a cycle path when cyclists are present.

4.1.6. CA3 – Beach Road at Churchill Street

- 66 cyclists and 262 pedestrians were observed during the survey period.
- 100% of cyclists complied with the path designation.
- 99% of pedestrians complied with the path designation.
- The fact that cycle volumes are higher and more consistent with pedestrian volumes supports the theory that pedestrians are less likely to want to walk on a cycle path when cyclists are present.

4.2. Volume and behaviour surveys – Christchurch sites

The survey data for the Christchurch site observations of user volumes and behaviour are given in Appendix F; in total, 1282 movements of interest were recorded. The key points are presented and discussed here.



4.2.1. TC1 – Ilam Fields shared path exit to Ilam Road

- Significant volumes of both cyclists and pedestrians were recorded.
- Two non-complying pedestrian movements were recorded – walking the wrong way along the northbound cycleway – assumedly these people were accessing vehicles parked adjacent to the cycleway.
- 55% of cyclists crossed at the zebra crossing and continued along paths leading to the University (movements E and F). These paths appear to be footpaths, but as they are within University property, whether or not it is actually illegal to cycle on them depends more on University policy. The only alternatives for people on bikes are to either walk their bikes or cycle through the vehicle accesses. Therefore, these have been considered to be legal movements.
- A further 5% of cyclists biked on the footpath along the University frontage on the east side of Ilam Road rather than use the cycleway, however 23% did use the cycleway.
- In general, it appears that people do know where they may walk and cycle, but will cycle on footpaths where suitable alternatives are not provided.

4.2.2. TC2 – Riccarton Bush shared path exit to Ngahere Street

- The majority of pedestrians (64%) chose to walk straight onto the roadway rather than follow the footpaths; assumedly this is because there is very little traffic in this cul-de-sac and people on foot feel safe to choose the most direct course of travel.
- All cyclists rode straight onto the road (i.e. 100% compliance) rather than ride on the footpath.

4.2.3. TC3 – Rutland Reserve shared path exit to Rutland Street / Tomes Road

- A low number of cyclists were observed during the survey period. The observer noted that a significant number of pedestrians were present during this time.
- All cyclist movements involved some travel on footpaths; the reasons for this are discussed in the intercept survey section.

4.2.4. TC4 – Matai Street at intersection with Railway pathway

- While a suitable sample size of cyclists was obtained, volumes would have normally been higher – the path links upstream and downstream of the Matai Street section were closed for construction, meaning most people would have taken a detour route.
- A safety fence was installed adjacent to location where shared path transitions to footpath and cycleway, just prior to the survey date. The fence and its concrete feet encroached on the footpath. There is also a power pole on the footpath in this location. The combination of the fence and the power pole created a significant pinch point on the footpath (see Figure 3) which would mean pedestrians are much more likely to walk on the cycleway. Surveyors were instructed to count pedestrians who transitioned to the footpath after passing the pinch point as footpath movements.



Figure 3: Pinch point on footpath at Matai Street site

- Even without the safety fence, the footpath has been observed to be too narrow to accommodate the large groups of school students walking along there – this is affected by the power poles located frequently along the length of the footpath.
- The survey was concerned with a particular direction of travel, however observers noted that when there were significant numbers of users in the opposing direction, non-complying movements were more likely to occur.
- Whilst the majority (59%) of pedestrians complied with the path designations, a significant number (29%) walked on the cycleway. This was generally when they travelled in groups. Group travel is relatively common as this section services two large high schools.
- The vast majority of cyclists (91%) rode in the cycleway and none rode on the adjacent footpath.
- A small proportion of cyclists (4%) chose to cross the road and ride southbound on the footpath opposite the railway cycleway; the reasons for this are not clear.

4.2.5. TC5 – Railway pathway at Fendalton Road

- 107 cyclists coming from the north approach of the railway cycleway travelled straight through, but only 33 turned at this location.
- Only 33% of cyclists turning off the cycleway at this location turned directly onto the road.
- A large proportion (45%) of cyclists who turned onto Fendalton Road used the footpath on the south side. The surveyor noted that these were Girls' High students who then turned into Mona Vale. There is internal access to Girls' High from Mona Vale Avenue. It is not feasible for cyclists wishing to access Mona Vale to do so further up Fendalton Road. The other alternative would be to continue along the railway cycleway and turn onto Matai Street, but this is less direct.
- Those cyclists who turned onto the north side of Fendalton Road and travelled eastwards were identified as being predominantly Christ's College students. Most of these rode directly onto the cycle lane but those arriving at a red cycle light often chose to ride via the footpath and transition to the cycle lane at Clifford Ave; no cyclist continued on the footpath after this point. Thus, movement F has been considered legal, as it only involves a very short length of footpath cycling, and is arguably safer than cyclists having to manoeuvre into the eastbound cycle lane.



- These observations suggest that people on bikes know where they should be riding, but choose to use a short section of footpath for convenience.

4.2.6. TC6 - Railway pathway at Wroxton Terrace

- 144 cyclists coming from the north approach of the railway cycleway travelled straight through, and 59 turned at this location. The proportion of turning to through cyclists is higher at this site than at Fendalton Road.
- The vast majority (83%) of cyclists turning off the cycleway at this location turned directly onto the road. This contrasts with the Fendalton Road site; the differences are assumed to be due to:
 - People are likely to feel more comfortable cycling on Wroxton Tce, which has low traffic volumes and only two lanes of traffic (compared with four lanes and high volumes on Fendalton Road).
 - There are fewer constraints on Wroxton Tce with respect to people's desire lines.
- Those cyclists who cycled on the footpath (17%) did so by turning right onto the north-west footpath. The surveyor noted that these people were Boys' High students who then transitioned onto the road, crossed to the correct side and subsequently turned onto Jacksons Road. Assumedly the choice to cycling on the footpath was not due to a lack of understanding, rather it was more convenient than having to stop and cross the road at this point.

4.2.7. CC1 - Old Blenheim pathway at Deans Ave

Unfortunately, no cyclists coming from the western path leg turned onto the footpath or carriageway at Deans Avenue; all progressed straight through at the crossing.

The challenges faced in selecting a suitable comparison site in Christchurch have already been discussed in section **Error! Reference source not found.** The Old Blenheim path site was chosen due to it having signs, markings and transitions with combinations of possible complying and non-complying movements.

Effectively, all cyclists chose complying movements. This is most likely due to the fact that Hagley Park offers a much more attractive cycling environment than the Deans Ave carriageway. There is little reason that people cycling during this period would want to remain on the west side of Deans Avenue and therefore choose to cycle on the footpath (or the carriageway).

Overall, the volumes at this site are low due to the current lack of connection along Blenheim Road at the western end of the pathway.

4.3. Volume and behaviour surveys – summary

Figure 4 summarises the compliance rates by user type at the trial and comparison sites.



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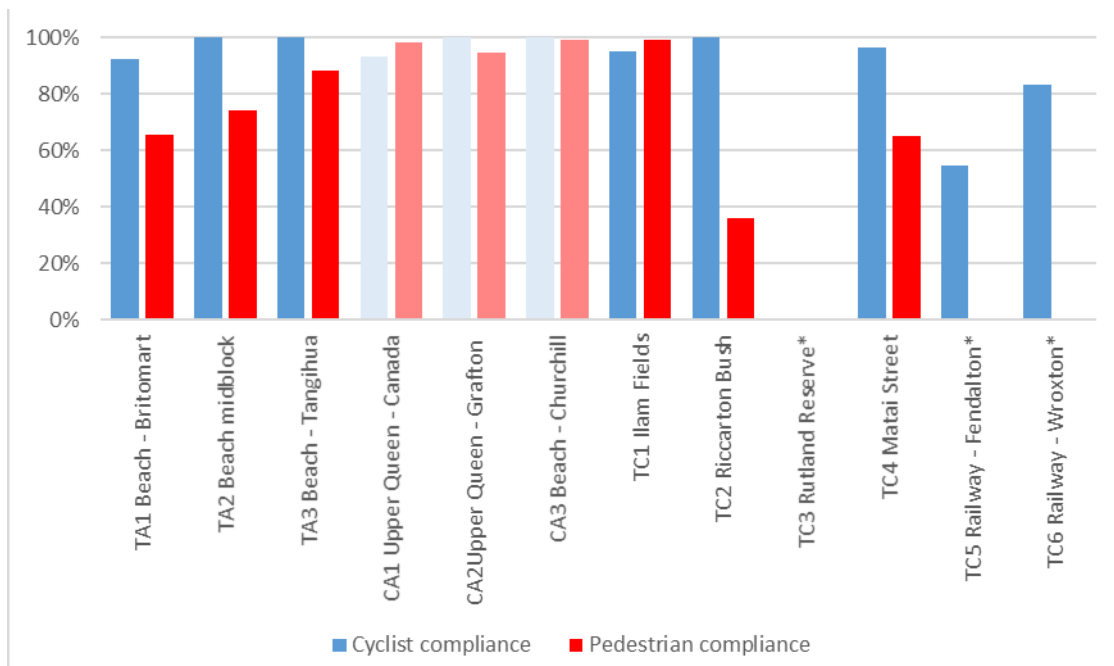


Figure 4: User compliance rates at trial and comparison sites

Notes:

- 1) * denotes sites where only cyclists were observed (as no non-compliant pedestrian movements were possible).
- 2) Pale colours denote comparison sites.

From the summary presented in Figure 4, it can be seen that:

- Cyclists generally had higher rates of compliance than pedestrians.
 - The only sites where cyclist compliance was less than 90% were at the Rutland reserve path (0% cyclist compliance) and the two Christchurch railway pathway sites – due to insufficient provision along cyclist desire-lines for key destinations such as schools (explained further in 4.2.3, 4.2.5 and 4.2.6).
- Pedestrian compliance rates at the Auckland comparison sites were higher than at the Auckland trial sites.
 - The origin-destination information for the three Beach Road trial sites shows that the location pedestrians approach from relative to the footpath has a significant effect on their compliance. At the comparison sites, however, the footpath and cycleway are directly adjacent, meaning pedestrians approaching closer to the cycleway don't have to walk much extra distance to access the footpath.
- For the Christchurch sites, pedestrian compliance was almost perfect at Ilam Fields, but very low at Riccarton Bush and low at Matai Street.
 - At Ilam Fields, the cycleway is at carriageway level, making it more akin to a road environment than a pedestrian environment, and the shared paths and footpaths cater well for all possible pedestrian desire-lines.



- At Riccarton Bush, the roadway of the small cul-de-sac was effectively reclaimed as a shared space by pedestrians short-cutting their path of travel knowing it was safe to do so due to low vehicle volumes and speeds.
- At Matai Street, the pinch point created by the safety fence forced most pedestrians onto the cycleway at the transition point. The high instances of large groups of school students walking together also resulted in some pedestrians walking on the cycleway.

Overall, the user behaviour observations suggest that pedestrians and cyclists are able to understand and comply with pavement markings alone. Instances of non-compliance generally seemed to be due to insufficient path provision for particular movements (e.g. overly narrow, involving a large deviation from the desire-line, or not being catered for at all).

4.4. Understanding and satisfaction surveys – Auckland sites

User understanding and satisfaction was assessed by intercept surveys conducted at the ten sites outlined in section 3.4. A summary of the responses to the user understanding and satisfaction surveys is given in Appendix G (note that the questions for the Auckland and Christchurch surveys were not exactly the same, due to site-specific factors to account for, and some additional questions added to the Auckland survey based on experience from having undertaken the Christchurch survey). In total 129 people were interviewed in Auckland. The key points are summarised here.

4.4.1. Demographics (questions 1-4)

- 34% of the respondents were riding a bike at the time of the interview, whereas 28% of the respondents who were pedestrians at the time of the interview indicated that they ride a bike at least once a month; this gives a good balance of participation from both cyclists and pedestrians, with many users understanding both modes.
- The vast majority of cyclists who participated in the survey identified that they cycle most days.
- Respondents ages were most likely to be 20-39 years old, with a significant number also in the 40-59 years old range.

4.4.2. Path marking interpretation (questions 5-8)

Question 5 revealed that the majority of respondents were familiar with the Beach Road site. This question was asked because the photos used in questions 6-8 to illustrate a transition between shared and exclusive paths had been taken at Beach Road. Comparing the responses of question 5 with those of questions 6-8 shows that familiarity with the Beach Road site did not have a strong influence on people's ability to identify the various path types correctly, i.e. those who were familiar and those who were unfamiliar with the Beach Road sites had similar success rates to questions 6-8.

Overall, of the 129 participants in the Auckland intercept surveys:

- 91% correctly identified that the shared path in the photo as being for people walking and cycling (question 6);



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- 86% correctly identified the cycleway in the photo as being for people cycling only (question 7); and
- 47% correctly identified the footpath as being for people walking only (question 8).

These results suggest that the path markings alone are sufficient for people to distinguish cycleways and shared paths. However, the success rate for identifying footpaths was insufficient; the vast majority of people who answered question 8 incorrectly identified the footpath as being for people walking or cycling, i.e. a shared path. This could be due in part to the image used in the survey, as the footpath was in the background and less obvious.

It is also likely that this result shows that an upside-down shared path marking (i.e. viewed by a person exiting a shared path) in itself is insufficient and that users require a marking to show the type of path being entered. The success rate for identifying the cycle path, and also the success rates for identifying the footpath in the Christchurch survey (which used pedestrian symbols to denote the beginning of the footpath) support this theory.

4.4.3. Sign interpretation (questions 10-12)

Overall, of the 129 participants in the Auckland intercept surveys:

- 87% correctly identified the path with a shared path sign as being intended for both people walking and people cycling (question 10);
- 78% correctly identified the side of a path with a cycle only sign as being intended for people cycling only (question 11);
- 49% correctly identified the footpath situated after the shared path ends sign as being for people walking only (question 12)

These results show that **people are easily able to interpret signs that specify the intended users** (e.g. shared or exclusive paths).

However, the implications of the “shared path ends” sign was not clear; few participants were able to conclude from this that the path after the shared path ends sign was in fact a footpath. The majority of people who responded incorrectly to this question assumed that the path was intended for “people walking or cycling”, this suggests that **people take their information from the pedestrian and cycle symbols** rather than the supplementary “ends” plate. This is similar to the finding for the poor success rate of identifying the start of a footpath based on an upside-down shared path marking as per question 8.

4.4.4. Legality of traffic control devices (questions 9 and 13)

When asked whether the markings (question 9) and signs (question 13) represent a legal requirement:

- 33% responded that there is a legal requirement to comply with path markings as shown in the photos.
- 57% responded that there is a legal requirement to comply with signs as shown in the photos.



Thus people perceive signs to be more legally binding than markings. Overall, though, there is a poor understanding of the legal implications of either device.

The difference between the opinions of the two traffic control devices may be in part due to the recent media attention given to the Beach Road marking trial. Furthermore, given that shared paths currently require signs, it could be argued that markings in themselves don't constitute a legal requirement and therefore those who responded "no" to question 9 (i.e. that they're not legally required to comply with the markings) would be technically correct, except that the trial has been approved and gazetted. In this respect, these questions may be a red herring.

The key point is that adding signs to the markings would not increase users' understanding of the legality to an acceptable level; this could only be achieved by increased education and / or enforcement. Perhaps what is more important is the ability of users to interpret the meaning of the devices, as discussed in the previous section.

4.4.5. Preference for markings and / or signs (questions 14-16)

Question 14 of the Auckland intercept survey was designed to find out how the addition or removal of signs would affect people's compliance.

- At the trial sites, where no signs were currently present, participants were shown a mock-up of what the location would look like with signs. 63% said they would be more likely to walk or bike in the correct location, 32% said the addition of signs would not influence them to change where they walk or bike.
- At the comparison sites, which currently have signs, participants were asked whether their behaviour would change if the signs were removed. Only 10% said they would be less likely to walk or bike in the correct location, whereas 72% said the removal of signs would not influence them to change where they walk or bike.

There is a discrepancy between the responses from the trial sites and those from the comparison sites. If people at the un-signed location think the introduction of signs would make them more compliant then it should also follow that the removal of signs would result in a decrease in compliant behaviour, however this is not exhibited. This discrepancy could be due to:

- The differences in the site layouts and user volumes. As identified in the observation surveys the comparison sites tend to be more balanced between pedestrian and cyclist volumes, so there is more motivation for pedestrians to stay on the footpath and more opportunity for them to do so. Thus the removal of signs here might not have a strong influence on their behaviour. Conversely, at the trial sites, there were few cyclists present and high pedestrian volumes on the footpaths, making walking on the cycleway a more attractive option. The addition of signs might introduce a deterrent to walking on the cycleway.
- A limitation of stated preference surveys – in reality, people do not always behave according to their response to a theoretical question.

Question 15 was designed to find out whether people preferred markings only, signs only or a combination of the two. Respondents at the trial sites (i.e. markings only) and comparison site (i.e. markings plus signs) were asked: "What do you think should be used here to give the message about who can travel on shared paths, cycleways and footpaths:



path markings, signs, or both? Note: this isn't about legal requirements, it's about what you think works best.")

Table 4.7 shows the responses to this question.

Table 4.1: Response to question on preference for markings and / or signs

	Trial sites		Comparison site		Sum	
Path markings only	18	28%	14	22%	32	25%
Signs only	4	6%	1	2%	5	4%
Signs and path markings	39	60%	45	70%	84	65%
Unsure	4	6%	4	6%	8	6%
Total	65		64		129	

It can be seen from Table 4.7 that the majority of respondents thought that signs and path markings is the most appropriate treatment.

Question 16 was an open question asking participants to explain the reason for their choice in question 15. The main reasons given for preferring signs as well as path markings were:

- Recognition of the current problem that many pedestrians walk on the cycleway, with the hope that introducing signs might change this.
- Providing more cues / information / variety is better
- Signs (and their posts) are more visible
- "Other" people might be more likely to comply with signs
- A misunderstanding that markings are only advisory whereas signs are regulatory.

Note though, that the explanations revealed some discrepancies in people's reasoning:

- Some people indicated that markings and signs should be used, but their comments focus only on the reason for needing markings (e.g. people looking down) rather than explaining why signs are important as well.
- Those that stated the current problem with pedestrians walking in the cycleway generally didn't seem convinced in that adding signs would actually solve this problem, but saw it as an attempt to do something.
- Some people preferred signs and markings, but said that the "begins" and "ends" plates would make it overly complicated and cluttered.
- One person said that people are already conditioned to markings and therefore adding signs might improve compliance. However, this doesn't address the issue of what to do if people then become conditioned to the signs.

Furthermore, the subsequent questions revealed that the majority of users who preferred signs and markings generally thought the existing markings were suitably visible and large.

4.4.6. Appropriateness of current markings (questions 17-18)

Table 4.2 and Table 4.3 present the responses at the trial and comparison sites respectively to question 17 (whether the current markings are visible enough) based on



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the stated preferred treatment. Similarly, Table 4.6 and Table 4.5 give a similar analysis for question 18 (whether the current markings are large enough).

Table 4.2: Comparison of responses to questions 14 and 17 at trial sites

		Preferred treatment (Q14)				
		Markings only	Signs only	Signs and markings	Unsure	
Opinion of visibility of current markings (Q17)	Markings easy enough to see	17	4	35	4	60
	Markings too hard to see	1	0	3	0	4
	Unsure	0	0	1	0	1
		18	4	39	4	

Table 4.3: Comparison of responses to questions 14 and 17 at comparison sites

		Preferred treatment (Q14)				
		Markings only	Signs only	Signs and markings	Unsure	
Opinion of visibility of current markings (Q17)	Markings easy enough to see	13	1	39	3	56
	Markings too hard to see	1	0	3	0	4
	Unsure	0	0	3	1	4
		14	1	45	4	

Table 4.4: Comparison of responses to questions 14 and 18 at trial sites

		Preferred treatment (Q14)				
		Markings only	Signs only	Signs and markings	Unsure	
Opinion of size of current markings (Q18)	Markings about the right size	17	3	38	4	62
	Markings too big	1	1	0	0	2
	Markings too small	0	0	1	0	1
	Unsure about marking size	0	0	0	0	0
		18	4	39	4	



Table 4.5: Comparison of responses to questions 14 and 18 at comparison sites

		Preferred treatment (Q14)				
		Markings only	Signs only	Signs <u>and</u> markings	Unsure	
Opinion of size of current markings (Q18)	Markings about the right size	14	1	42	4	61
	Markings too big	0	0	0	0	0
	Markings too small	0	0	2	0	2
	Unsure about marking size	0	0	1	0	1
		14	1	45	4	

The highlighted cells in the above tables show the people who responded that signs and markings should be used at the particular site where they were surveyed (question 14) yet considered that the current markings were suitably visible (question 17) and large enough (question 18). These values are very high: 90% of those at the trial sites and 87% of those at the comparison sites who thought signs and markings should be used also thought that the current markings by themselves were easy enough to serve the intended purpose. Similarly, 93% and 95% thought that the markings were the right size.

Table 4.10 shows the comparison of questions 16 and 17 for all participants at the trial sites (i.e. regardless of their preference in question 14):

Table 4.6: Comparison of questions 16 and 17 at trial sites

		Opinion of visibility of current markings (Q16)			
		Markings easy enough to see	Markings too hard to see	Unsure	
Opinion of size of current markings (Q17)	Markings about the right size	58	3	1	62
	Markings too big	2	0	0	2
	Markings too small	0	1	0	1
	Unsure about marking size	0	0	0	0
		60	4	1	

The highlighted cell in Table 4.10 shows that the vast majority (58 out of 65 people, i.e. 89%) considered the current markings to be both suitably visible and suitably sized. Note that question 17 included the statement “the markings on this path we’re currently on need to be seen by people approaching them.” Therefore, regardless of their response to



question 14, participants understood that questions 17 and 18 referred to the suitability of the markings alone.

4.4.7. Final comments from survey participants

The final question (19) gave participants the opportunity to make any further comments about the markings and signs discussed in the previous questions. Most people gave some response to this question but many focussed on broader issues related to provision for cycling. Among those responses regarding signs and / or markings, common themes were:

- Inherent problems with the Beach Road layout, meaning pedestrians are likely to walk along the cycleway regardless of treatment applied.
 - One respondent suggested that enforcement would be necessary to prevent this.
- The need for consistent markings.
 - Some people reported confusion with the pavement style used in the shared areas on Beach Road and the start / end of the cycleway sections.
 - Some people requested that the green surfacing be continued along the length of the cycleway.
- The importance of maintaining markings – i.e. repainting when they start to fade.

4.5. Understanding and satisfaction surveys – Christchurch sites

User understanding and satisfaction was assessed by intercept surveys conducted at the five sites outlined in section 3.4. A summary of the responses to the user understanding and satisfaction surveys is given in Appendix H (note that the questions for the Auckland and Christchurch surveys were not exactly the same, due to site-specific factors to account for, and some additional questions added to the Auckland survey based on experience from having undertaken the Christchurch survey). In total 77 people were interviewed in Christchurch. The key points are summarised here.

4.5.1. Demographics (questions 1-4)

- Both the trial sites and comparison site experienced a good balance of cyclists and pedestrians participating in the intercept surveys.
- About half of the participants who were pedestrians at the time of the survey identified that they ride a bike at least once a month, assumedly all those who were cyclists at the time of the survey also walk regularly. These people are therefore qualified to comment from both points of view.
- The vast majority of cyclists who participated in the survey identified that they cycle most days.
- Age ranges were skewed towards those of high school or university age and those in the 40-59 year old bracket.

4.5.2. Path marking interpretation (questions 5-8)

Question 5 revealed that the majority of respondents were familiar with the Matai Street site. This question was asked because the photos used in questions 6-8 to illustrate a



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transition between shared and exclusive paths had been taken at Matai Street. Furthermore, comparing the responses of question 5 with those of questions 6-8 shows:

- Those who were interviewed at Matai Street itself had a perfect response rate to all three questions.
- Those who were interviewed at other sites but identified as being familiar with Matai Street were more likely to answer incorrectly than those who identified as not being familiar with Matai Street (17% incorrect as opposed to 9% incorrect).

Overall, of the 77 participants in the intercept surveys:

- 77% correctly identified that the shared path in the photo as being for people walking and cycling (question 6);
- 97% correctly identified the footpath in the photo as being for people walking only (question 7); and
- 96% correctly identified the cycleway as being for people cycling only (question 8).

These results suggest that **path markings alone are sufficient for people to distinguish cycleways and footpaths as being exclusive paths.**

The success rate for identifying the shared path was lower than desirable; this could be due to a number of reasons:

- The shared path in the photo forms part of what is commonly known as “the Railway Cycleway” but this name is incorrect in terms of the path designation.
- The pedestrian symbol is placed above the cycle symbol, which may be ambiguous to some people.
- Problems with the quality of the Matai Street photo used to illustrate this
 - Participants were asked to identify the intended users of a shaded area of path next to the shared path markings, but participants may have thought this was a separate, adjacent path, similar to the layout around the bend on Matai Street.
 - The photo was taken to include sections of shared path, cycleway and footpath; but then perspective required to include all this meant that there was not a lot of additional context included in the photo.

Given that there was a perfect response rate to all three questions regarding the meaning of path markings among those interviewed at the Matai Street site itself, it is feasible to assume that the main problems with identifying the shared path were due to the photographic representation in the question. In light of this, and the responses to the question on footpaths and cycleways, it is appropriate to conclude that **path markings alone are sufficient for people to interpret shared paths, as well as cycleways and footpaths.**

4.5.3. Sign interpretation (questions 10-12)

Overall, of the 77 participants in the intercept surveys:

- 95% correctly identified the path with a shared path sign as being intended for both people walking and people cycling (question 10);



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- 91% correctly identified the side of a path with a cycle only sign as being intended for people cycling only (question 11);
- 44% correctly identified the footpath situated after the shared path ends sign as being for people walking only (question 12)

These results show that **people are easily able to interpret signs that specify the intended users** (e.g. shared or exclusive paths).

However, the implications of the shared path ends sign was not clear; few participants were able to conclude from this that the path after the shared path ends sign was in fact a footpath. The majority of people who responded incorrectly to this question assumed that the path was intended for “people walking or cycling”, this suggests that **people take their information from the pedestrian and cycle symbols** rather than the supplementary “ends” plate. A significant proportion of respondents indicated that they were “unsure”; this response was rarely chosen for any of the other questions. One person suggested to the surveyor that the path marked in the photo was intended for “nobody”.

4.5.4. Legality of traffic control devices (questions 9 and 13)

When asked whether the markings (question 9) and signs (question 13) represent a legal requirement:

- 43% responded that there is a legal requirement to comply with path markings.
- 62% responded that there is a legal requirement to comply with signs.

Thus people perceive signs to be more legally binding than markings. However, overall there is a poor understanding of the legal implications of either device. 38% of people think that it is not necessary to comply with signs on paths for walking and / or cycling – assumedly these people think that the signs are provided as indications only.

Given that shared paths currently require signs, it could be argued that markings in themselves don’t constitute a legal requirement and therefore those who responded “no” to question 9 (i.e. that they’re not legally required to comply with the markings) would be technically correct, except that the trial has been approved and gazetted. In this respect, these questions may be a red herring.

The key point is that adding signs to the markings would not increase users’ understanding of the legality to an acceptable level; this could only be achieved by increased education and / or enforcement. Perhaps what is more important is the ability of users to interpret the meaning of the devices, as discussed in the previous section.

4.5.5. Preference for markings and / or signs (questions 14-15)

Question 14 was designed to find out whether people preferred markings only, signs only or a combination of the two. Respondents at the trial sites (i.e. markings only) and comparison site (i.e. markings plus signs) were asked: “What do you think should be used here to give the message about who can travel on shared paths, cycleways and footpaths: path markings, signs, or both? Note: this isn’t about legal requirements, it’s about what you think works best.”)

Table 4.7 shows the responses to this question.



Table 4.7: Response to question on preference for markings and / or signs

	Trial sites		Comparison site		Sum	
Path markings only	31	52%	9	53%	40	52%
Signs only	1	2%	0	0%	1	1%
Signs and path markings	28	47%	8	47%	36	47%
Unsure	0	0%	0	0%	0	0%
Total	60		17		77	

It can be seen from Table 4.7 that:

- Just over half the respondents thought markings alone were sufficient and just under half thought that markings should be accompanied by signs.
- Only one person out of the 77 respondents thought that signs alone should be used. (This person was a cyclist 10-14 years old who cycled most days on the narrow Railway pathway at Wroxton Terrace. This person explained: “I don't look at paths - most people are going fast, you look straight ahead. If you look down, you'll crash.”)
- There is no difference between the response rates at the trial sites (which has markings only) and the comparison site (which has signs as well as markings)
 - i.e. the interview location didn't affect people's general preferences.
 - This may well have differed if a more relevant comparison site had been available and participants were able to see the effects of a significant sign forest.

Question 15 was an open question asking participants to explain the reason for their choice in question 14. The main reasons given for preferring signs as well as path markings were:

- Providing more cues / information / variety is better
- Signs (and their posts) are more visible
- People aren't always looking down
- In question 18 (an opportunity for additional comments) two people also noted that markings are harder to see when it's dark and / or wet. Another person responded that markings are hard to see when the sun is low and shining in one's eyes (but this would make signs even harder to see).

Note though, that the explanations revealed some discrepancies in people's reasoning:

- Some people specifically acknowledged that the provision of markings alone were sufficient for themselves personally but considered that they might not be appropriate for other people.
 - This occurred both for cyclists considering what pedestrians might want and pedestrians considering what cyclists might want.
 - This may be an underlying reason that explains why other people specified a preference for both signs and markings in question 14, even though they didn't express this blatantly in question 15.
- Several explanations were not about the path transitions, rather they were concerned with:
 - Poor provision at adjacent intersections, crossings or driveways



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- Poor provision along the path itself (too narrow, overhanging vegetation etc)
- Wanting signs that give additional messages (e.g. keep left, path intersection ahead, slow down) rather than the signs considered in the trial which display the extent and intended users of a path.

Furthermore, the subsequent questions revealed that the majority of users who preferred signs and markings generally thought the existing markings were suitably visible and large.

4.5.6. Appropriateness of current markings (questions 16-17)

Table 4.8 and Table 4.9 compare the responses at the trial sites (i.e. where only markings were present) to questions 15 and 16 (which ask whether the current markings are visible enough and large enough) with those of question 14 (people's preferences in traffic control device).

Table 4.8: Comparison of responses to questions 14 and 16 at trial sites

		Preferred treatment (Q14)			
		Markings only	Signs only	Signs <u>and</u> markings	
Opinion of visibility of current markings (Q16)	Markings easy enough to see	31	1	23	55
	Markings too hard to see	0	0	4	4
	Unsure	0	0	1	1
		31	1	28	

Table 4.9: Comparison of responses to questions 14 and 17 at trial sites

		Preferred treatment (Q14)			
		Markings only	Signs only	Signs <u>and</u> markings	
Opinion of size of current markings (Q17)	Markings about the right size	29	1	23	53
	Markings too big	0	0	0	0
	Markings too small	2	0	4	6
	Unsure about marking size	0	0	1	1
		29	1	23	

The highlighted cells in Table 4.8 and Table 4.9 show the people who responded that they think signs and markings should be used at their particular intercept site (question 14)



yet considered that the current markings were suitably visible (question 16) and large enough (question 17). These values are very high: 82% of those who thought signs and markings should be used thought that the current markings by themselves were easy enough to serve the intended purpose and 82% thought that the markings were the right size. Note that, while this value (82%) is the same for both questions 15 and 16, these results do not include exactly the same respondents, i.e. some people who thought signs and markings should be used thought the markings were easy enough to see but not the right size, and conversely.

Table 4.10 shows the comparison of questions 16 and 17 for all participants at the trial sites (i.e. regardless of their preference in question 14):

Table 4.10: Comparison of questions 16 and 17 at trial sites

		Opinion of visibility of current markings (Q16)			
		Markings easy enough to see	Markings too hard to see	Unsure	
Opinion of size of current markings (Q17)	Markings about the right size	50	2	1	53
	Markings too big	0	0	0	0
	Markings too small	5	1	0	6
	Unsure about marking size	0	1	0	1
		55	4	1	

The highlighted cell in Table 4.10 shows that the vast majority (50 out of 60 people, i.e. 83%) considered the current markings to be both suitably visible and suitably sized. Note that question 16 included the statement “the markings on this path we’re currently on need to be seen by people approaching them.” Therefore, regardless of their response to question 14, participants understood that questions 16 and 17 referred to the suitability of the markings alone.

4.5.7. Final comments from survey participants

The final question (18) gave participants the opportunity to make any further comments about the markings and signs discussed in the previous questions. Most people gave some response to this question but only six people actually made any mention of signs or markings; these involved:

- Two people suggested that markings are normally sufficient, but harder to see when it’s dark or wet – this is more of a justification that should have been included in question 15 and thus has already been included in the analysis in section 4.5.5.
- One person responded that markings are hard to see when the sun is low and shining in one’s eyes – this has also been discussed in section 4.5.5.
- One person specifically mentioned the markings positively, saying the “new path markings are very good and clear.”



Shared path marking trial results

- Two people mentioned signs, saying that they're too high to see and aren't noticed much. Again, this would have been more appropriate as an explanation in question 15.

The vast majority of responses to question 18 had nothing to do with the markings or signs previously discussed. Most responses focussed on other aspects of the specific survey sites or provision for walking and cycling in Christchurch in general that participants were dissatisfied with, some gave positive feedback.

These responses show that identifying the start and end of various path types is not a major concern for most people. Despite having been led through a comprehensive discussion on the topic, they still had other more pertinent issues on their minds at the end of the survey. Given that the majority of paths in Christchurch (where the surveys were conducted) do not currently have many, if any, signs, this suggests that people are comfortable with having minimal signage on paths for walking and cycling.



5. Discussion and conclusions

5.1. User behaviour

The movement data suggest that people generally know where they can walk or cycle, even when only path markings are present. However, people do choose to undertake non-complying movements, and it seems such choices are often due to:

- Lack of alternative complying option that aligns with the user's desire-line.
- The complying option represents a significant increase in travel distance compared with the user's desire-line.
- Disproportionate user volumes – this is shown in the Auckland data in particular. Pedestrian volumes are significantly greater than cycle volumes, whereas the respective facilities are similar in width. Of the three upper Beach Road sites, those with higher pedestrian volumes had higher rates of pedestrians choosing to walk on the cycle path. Whereas on Queen Street, pedestrian volumes were much lower and cycle volumes were almost as great as pedestrian volumes, leading to higher rates of compliance.
- Avoiding delay (e.g. turning onto a footpath rather than waiting at signals or for a break in traffic at a road crossing).
- The intended facility for the user being too narrow or involving pinch points.
- Significant user volumes in the opposing direction on a bi-directional facility, meaning users need to divert to an adjacent facility.

Factors that might influence user compliance (in addition to the inverses of those listed above) include:

- Speed differential between user groups. The Upper Queen Street sites involve sections with steep gradients, which increases speed of cyclists travelling in the downhill direction and increases the difference in speed between cyclists and pedestrians. Both user groups are more likely to want to adhere to the path designations as they understand that this will help them avoid collision.

5.2. User understanding

When asked whether the markings and signs represent a legal requirement, 33% of Auckland participants and 43% of Christchurch participants responded that there is a legal requirement to comply with path markings, while 57% of Auckland participants and 62% of Christchurch participants responded that there is a legal requirement to comply with signs. These results show that people perceive signs to be more legally binding than markings, but also that there is a poor understanding of the legal implications of either device. Adding signs to the markings would not increase users' understanding of the legality to an acceptable level, thus other options such as education and / or enforcement might be required, but it is unlikely that RCAs would wish to invest in such approaches. The more critical factor with regards to user understanding is not people's understanding of the legality but their ability to interpret the meaning of the devices; the compliance rates observed during the observation studies were higher than the percentages obtained



Shared path marking trial results

for these questions, showing that people choose to comply with the markings and signs, even if they are unaware of the legal ramifications.

The Christchurch responses to the path marking interpretation questions show that path markings alone are sufficient for people to distinguish cycleways, footpaths and shared paths.

The Auckland results for identifying footpaths were poor – it is assumed that this shows that an upside-down shared path marking (i.e. viewed by a person exiting a shared path) in itself is insufficient and that users require a marking to show the type of path being entered. At the Christchurch sites, a pedestrian symbol was used to denote the beginning of a footpath after a shared path, and most users were able to identify this as path intended for walking only.

When asked to identify the correct path based on a photo with a sign, few participants in either Auckland or Christchurch were able to identify that the path after the shared path ends sign was intended for pedestrians only. Thus, requiring a “shared path ends” sign would not be an effective way of increasing people’s awareness of footpaths beginning. Success rates for identifying the users associated with “shared path begins” and “cycle only” signs, however, were very high. These results show that people are easily able to interpret signs that specify the intended users, as opposed to the type of path that is terminating.

An alternative approach to address the confusion regarding the “shared path ends” sign would be to also require a “footpath begins” or “pedestrians only” sign, analogous to the “cycleway begins” and “cycle only” signs that are currently required. However, this would only add to a situation which seems to be already over-regulated. Furthermore, this requirement would be inconsistent unless RCAs were required to provide signs wherever a footpath starts or ends, which is obviously an unrealistic option. Therefore, the most effective approach is to provide markings, as per the Christchurch trials, so that the path type either side of a transition point are clear to users, approaching from either side of the transition.

Auckland and Christchurch used slightly different shared path markings in terms of relative placement of the pedestrian and cycle symbols and whether the bicycle was elongated or regular. 91% of Auckland respondents and 77% of Christchurch respondents correctly identified the shared path markings. Both results are considered satisfactory in terms of user understanding, but suggest that the Auckland markings are more effective. This could be in part due to the difficulties associated with the image of the Matai Street site used for the surveys (note that those interviewed at the site itself had a perfect response rate for identifying all three path types – see section 4.5.2). The two localities had different reasons for their chosen marking types, and site-specific factors (e.g. having a wide shared area versus a narrow shared path) can also influence which marking is most appropriate.

Overall, we conclude that, in terms of user understanding, it is feasible, and arguably less ambiguous, to rely on markings alone. The most viable and efficacious option is to mark a pedestrian symbol to denote the beginning of a footpath after a shared path terminates, as was done at the Christchurch sites.



5.3. User satisfaction

When asked their preferred treatment, 65% of Auckland respondents and 47% of Christchurch respondents said they preferred to have both signs and markings, which does not offer strong support to the proposal to require markings only. However, 85% of people who preferred both signs and markings (across all surveys at trial and comparison sites in both Auckland and Christchurch) also considered the markings to be “easy enough to see” and 90% considered them to be “about the right size”. Therefore, the reasons a significant proportion of people preferred a treatment combining signs and markings should be examined, and whether these can be addressed differently:

Table 5.1: Identifying and addressing underlying concerns

Underlying reason for preferring signs <u>and</u> markings	Discussion	Suggested approach
What a participant thought other users might require.	Given that the large majority of participants thought the markings were sufficiently visible, these concerns were largely inaccurate – i.e. this group of <i>other</i> users who do have a problem with markings alone does not exist.	This concern does not need to be addressed as it has been shown to be an incorrect assumption.
Path transitions are often located near road crossings and driveways and path users are concerned about motor traffic.	In these locations, there may be need for more treatments to highlight the conflict points to motorists. The signage that is the focus of this trial is used to designate the start and end of different path types and is therefore located and aligned for the benefit of path users, not motorists.	There are more appropriate signs and physical treatments to alert motorists and influence their behaviour around crossings and driveways. This depends on the specific site, but may include give way / warning signs for drivers, coloured surfacing, and traffic calming devices.
Participants who stated a preference for signs <u>and</u> markings often in fact wanted signs different to those actually considered in this trial.	Explanations often focused on concerns about motor traffic (see above), mixing with other users at path junctions, and poor behaviour of other users.	Rather than providing the standard path signs, it would be more effective to provide signs (and / or markings) in key locations that: <ul style="list-style-type: none"> • Provide advance warning about conflict points • Give guidance on desired behaviour (keep left, warn when approaching, etc.)



Underlying reason for preferring signs <u>and</u> markings	Discussion	Suggested approach
<p>Markings are normally sufficient, but harder to see when it's dark or wet, or when there's sun glare.</p>	<p>Only 3 people (out of 206) made comments to this effect. Nonetheless, the researchers suggest that these concerns do warrant further consideration.</p> <p>It is true that retro-reflective signs will be more visible when it's dark or wet. However, it is not certain that people would actually be looking upwards towards a sign during these times of poor visibility; they may be more likely to be looking at the ground because it is harder to distinguish obstacles or to avoid puddles etc.</p> <p>It is expected that paths for walking and cycling should have good lighting provision, especially at transition points, so visibility of markings in the dark should not pose a hazard to users. In times of heavy rain or sun glare, it is more likely that users would be looking at the ground than looking up, thus signs may not offer any improvement.</p> <p>Finally, people who walk and cycle during inclement conditions are more likely to be regular users familiar with the site and therefore understand the functions of the various paths.</p>	<p>Concentrate on providing advanced warning signs for points of conflict (as mentioned above) and ensuring path lighting at transition points complies with the design standards, so that users receive the important cues in all weather conditions.</p>

Therefore, there are number of approaches that would better address the majority of path users' underlying reasons for wanting signs, better than the actual signs specified for the beginning and end of paths.

Furthermore, the responses to the final question show that identifying the start and end of various path types is not a major concern for most people and suggests that people are comfortable with having minimal signage on paths for walking and cycling.

5.4. Methodology limitations

It is acknowledged that the Christchurch comparison site was not ideal, both in terms of its lack of a separated cycleway and also in terms of lack of users undertaking the transitional movements. The Auckland comparison sites were arguably different to the Beach Road trial sites, in terms of layout on the transition points, lack of a horizontal buffer between the footpath and cycleway, adjacent land use, and (for the Queen Street



sites) gradient. Many users commented on the difficulties associated with the Beach Road layout. Even so, it is considered that suitable comparisons were achieved through the use of survey questions.

Furthermore, the process of undertaking the surveys and analysis has revealed some aspects of the methodology that could have been improved on:

- Use of photos to illustrate key concepts
 - It was difficult to find a Christchurch example to illustrate a transition between all three path types and as a result there was some confusion regarding the image used for the shared path marking.
- How to convey the “sign forest” concept to survey participants
 - For the Auckland sites, participants were shown a mock-up of what the trial sites would look like with signs installed, however these static images do not properly portray the sign forest that would be experienced by users travelling along the corridor. Sign mock-ups were not produced for Christchurch due to difficulties with the bend at the Matai St site, which meant the required signs would not all be visible from one angle.
- Asking for people’s opinions and preferences, as opposed to the effectiveness of treatments.
 - Many people responded that they preferred signs and markings, whilst still indicating that they found the markings alone to be suitably effective. In this case, it has been shown that putting too much emphasis on the stated preferences would result in an over-engineered treatment that is not likely to result in an actual improvement of the situation. In hindsight, the researchers are not convinced it was necessary (or particularly helpful) to ask participants what treatment they prefer.

5.5. Additional considerations

It is noted that this trial has been required to prove that the current requirements for path signage are not necessary, yet it is doubtful that the current requirements were developed based on any scientific study or trial.

Furthermore, considering cost-effectiveness, it seems that the current signs offer little value for money. If this is the case, it would be more prudent to require RCAs to justify the use of signs rather than risk wasted expenditure.

6. Recommendations

Based on the observations and intercept surveys, there is no obvious benefit of requiring signs on paths for walking and cycling. It is therefore recommended that RCAs should have the flexibility of choosing whether or not to install signs on these paths, with a preference for not using signs, provided suitable markings are provided at transition points between different path types.

The Christchurch approach of marking a pedestrian symbol at the start of a footpath following a shared path was proven to have the highest proportion of users correctly identifying the footpath as being for people walking only. Alternative treatments, such as



Shared path marking trial results

an upside down shared path marking (viewed by a user leaving the shared path) and a “shared path ends” sign did not achieve suitable user comprehension rates. Therefore, it is advised that the marking regime should include pedestrian symbols wherever a shared path ends and a footpath begins.

Regarding the exact marking style that should be used for shared paths, the comprehension rates for both the Auckland and the Christchurch markings were satisfactory. It is therefore recommended that RCAs should retain the flexibility to specify the relative placement of the pedestrian and cycle symbols in their shared path markings, and whether or not to use elongated cycle symbols, to achieve the most appropriate markings for their networks and specific sites.



Gazette notice

NEW ZEALAND GAZETTE, No. 132 — 3 DECEMBER 2015

Cycle Path and Shared Path Markings Trial

Pursuant to subclause 3.4(1) of Land Transport Rule: Traffic Control Devices 2004 (“the Rule”) and a delegation from the NZ Transport Agency, I, Glenn Bunting, Network Manager, authorise the installation and maintenance of cycle and pedestrian pavement markings:

- a. for the purpose described in Schedule 1;
- b. in the form and layout set out in Schedule 2;
- c. at the locations stated in Schedule 3;
- d. for the period specified in Schedule 4; and
- e. subject to the evaluation outlined in Schedule 5.

The cycle and pedestrian pavement markings may be installed for the purpose of evaluating their use and the trial will be called the “cycle and shared path markings trial”.

Schedule 1—Purpose of trial

The purpose of the trial is to:

- a. evaluate the effectiveness and safety of identifying cycle paths and shared paths with pavement markings only, as an alternative to installing signs and markings as required in clause 11.4 of the Rule;
- b. enable the use of a cycle symbol with dimensions that are different from those specified in diagram M2-3 in Schedule 2 of the Rule to improve the shape of the symbol from a pedestrian’s point of view;
- c. assess cyclists’ and pedestrians’ understanding and use of cycle paths and shared paths that are identified with pavement markings only.

Schedule 2—Form and layout of cycle and shared path markings

- a. Cycle paths, used by cyclists only, must be marked with the cycle symbol in diagram M2-3 of Schedule 2 of the Rule.
- b. Shared paths, used by pedestrians, cycles, wheeled recreational devices or mobility devices, must be marked with the cycle symbol in diagram M2-3 and the pedestrian symbol in diagram M2-4 of Schedule 2 of the Rule, subject to the variation authorised in Schedule 2(d) of this notice.
- c. Shared paths where pedestrians, cycles, wheeled recreational devices or mobility devices are restricted to a specific side or part of the path, or where the path is separated for users travelling in different directions, must be marked to indicate the nature of the restriction with appropriate markings conforming with Schedule 2 of the Rule and with the cycle symbol in diagram M2-3 and the pedestrian symbol in diagram M2-4 of Schedule 2 of the Rule, subject to the variation authorised in Schedule 2(d) of this notice.
- d. On shared paths, the longitudinal dimension of the cycle symbol in diagram M2-3 of Schedule 2 of the Rule may be reduced in proportion to its lateral dimension so that the wheels appear circular to a pedestrian approaching the cycle marking.
- e. Cycle paths and shared paths must be marked with the symbols indicated in Schedule 2(a), (b), (c) or (d) of this notice:
 - i. at the start of the cycle path or shared path; and
 - ii. after every roadway or pathway with which the cycle path or shared path intersects.
- f. Additional markings that conform with the description in this schedule may be installed if the road controlling authority considers it necessary to identify cycle paths or shared paths or to discourage the use of the paths by unauthorised users.
- g. The luminance contrast between a marking and its background must be at least 70%, measured in accordance with section 5.3 of RTS 14 - Guidelines for facilities for blind and visually impaired pedestrians.

Schedule 3—Location

The locations approved for this trial are:



NEW ZEALAND GAZETTE, No. 132 — 3 DECEMBER 2015

Road Controlling Authority

Auckland Transport

Auckland Transport

Auckland Transport

Auckland Transport

Auckland Transport

Auckland Transport

Auckland Transport

Christchurch City Council

Christchurch City Council

Christchurch City Council

Christchurch City Council

Christchurch City Council

Christchurch City Council

Christchurch City Council

Christchurch City Council

Christchurch City Council

Location

Beach Road shared path, between Mahuru Crescent and Britomart Place.

Beaumont Street shared path, between Fanshawe Street and Victoria Street.

Britomart Place shared path.

Matakana Bridge shared path (new bridge on the eastern side of the bridge for motor vehicles).

Orpheus Drive shared path, between Seacliffe Road and Onehunga Harbour Road.

Te Whau Walkway shared path, from New Lynn Olympic Park to Te Atatu Road.

Upper Queen Street shared path, between Alex Evans Street and Canada Street.

All shared paths in Hagley Park.

Christchurch Boys' High School shared path, between Kahu Road and Straven Road.

Dovedale Avenue shared path, between Waimairi Road and the University of Canterbury entrance.

Grassmere Street to Rutland Street shared path.

Ilam Fields shared path, between Waimairi Road and Ilam Road.

Northern Line shared path, from Tuckers Road to Kilmarnock Street.

Old Blenheim Road shared path, between Deans Avenue and Mandeville Street.

Riccarton Bush shared path, between Ngahere Street and Kahu Road

University Drive shared path, between Ilam Road and Clyde Road.

Schedule 4—Period of trial

The trial may begin after the publication of this notice and, unless terminated earlier, must end by 30 November 2016.

Schedule 5—Evaluation

An evaluation must be undertaken and a report prepared which includes discussion and analysis of the following:

- a. measurement of cycle and pedestrian volumes using the facilities;
- b. measurement of cyclists' and pedestrians' compliance with the restrictions on using cycle paths, shared paths and footpaths;
- c. an assessment of cyclists' and pedestrians' recognition and understanding of the markings used to identify a cycle path or shared path and the methods used to indicate the transition between roadways, cycle paths, shared paths and footpaths;
- d. a summary of feedback received from cyclists, pedestrians and the general public during the trial; and
- e. a description of any operational issues which arose during the trial and how they were resolved.

An interim evaluation report must be sent to me by 31 May 2016 and a final report by 31 March 2017.

Signed at Wellington this 30th day of November 2015.

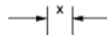
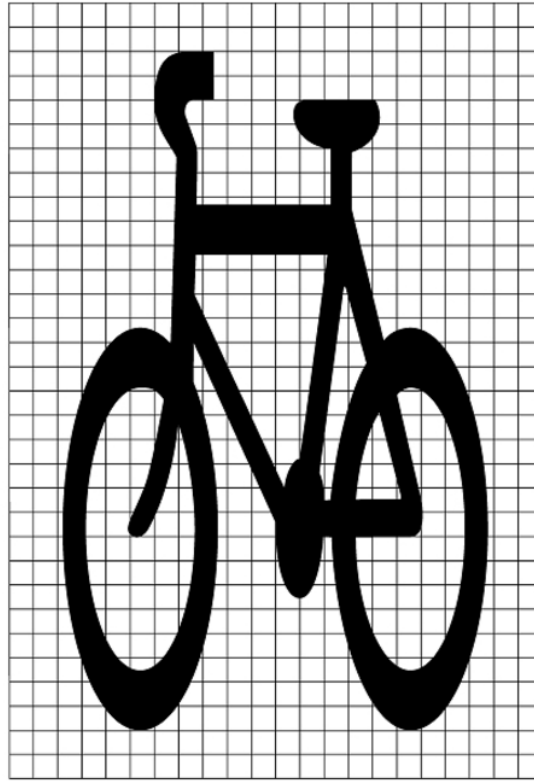
GLENN BUNTING, Network Manager.

2015-au7124



■ Cycle lane symbol - TCD Rule

M2-3 Cycle lane symbol



x.dimension of square grid, 20 mm minimum

Figure 5: Diagram M2-3 of Schedule 2 of Traffic Control Devices Rule



Auckland site maps and survey movements

C.1 Site TA1: Beach Road / Britomart Place east corner

Site description: the same corner of the intersection as China Yum Char and Scene One.

Here it is necessary to determine users' trajectories between three origins (A, B and C) and two destinations (Y and Z).

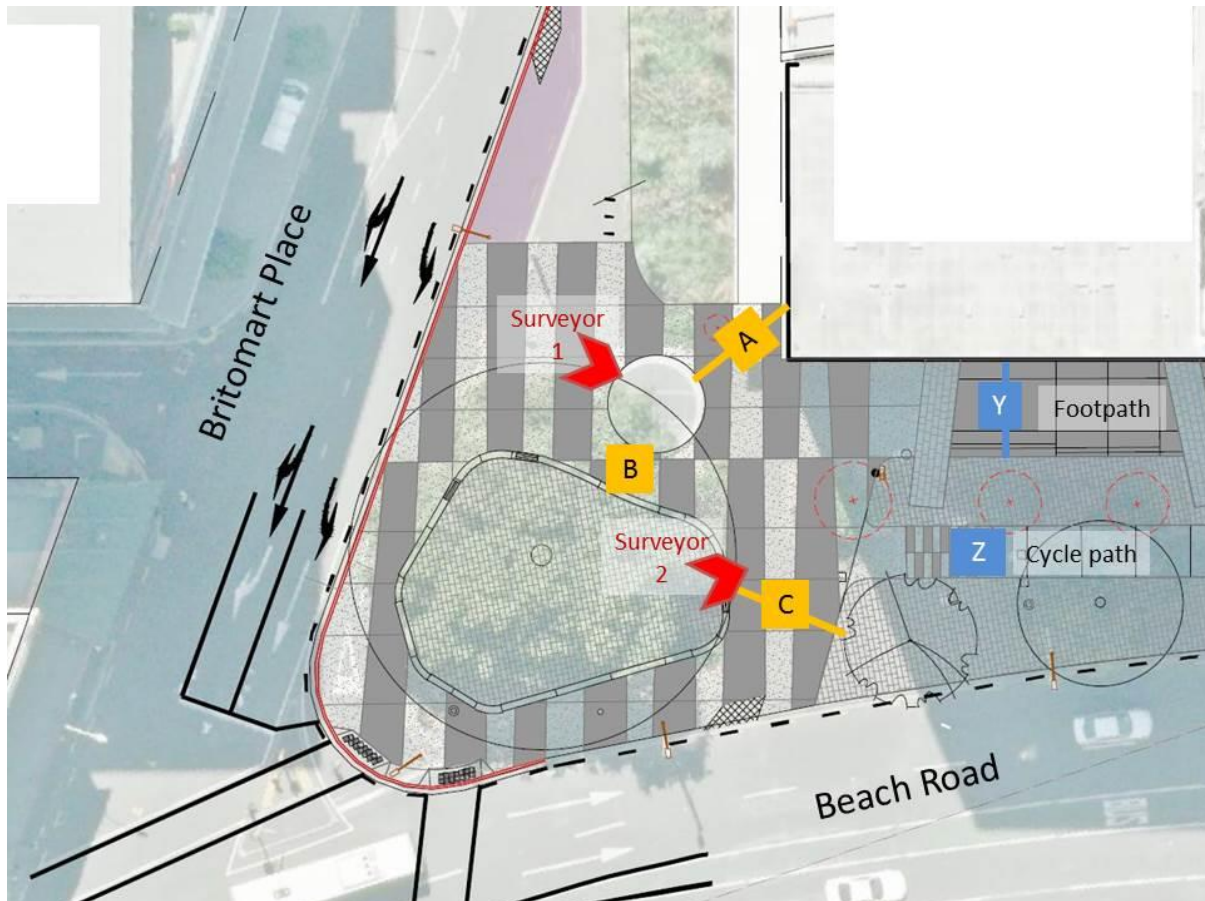


Figure 6: Beach Road at Britomart Place key areas for survey movements



C.2 Site TA2: Beach Road midblock

Site description: located opposite Anzac Avenue, where the shared area diverges into a footpath and a cycleway.

Here it is necessary to determine users' trajectories between two origins (A and B) and two destinations (Y and Z).

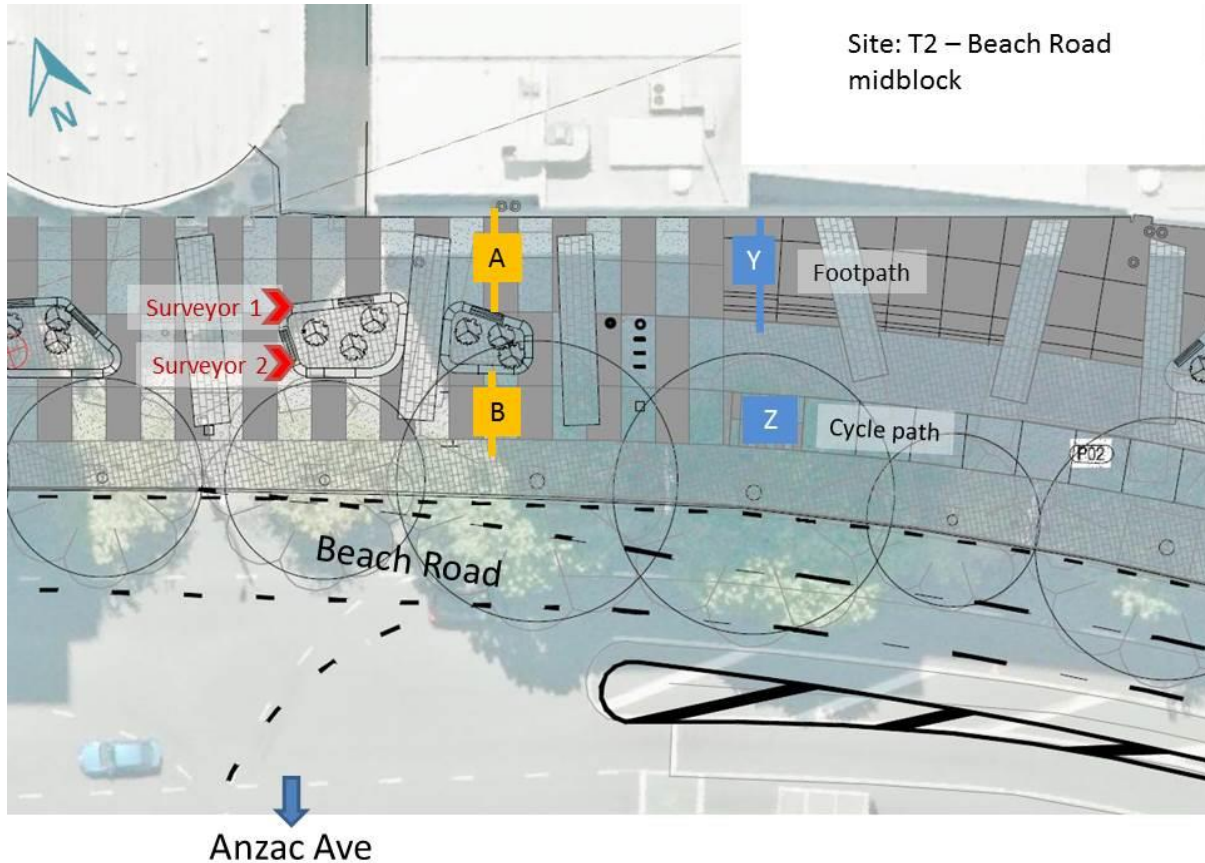


Figure 7: Beach Road midblock key areas for survey movements



C.3 Site TA3: Beach Road / Tangihua Street – south corner

Site description: on the same corner as the Waldorf Hotel and Saigonz café.

Here it is necessary to determine users' trajectories between two origins (A and B) and two destinations (Y and Z).

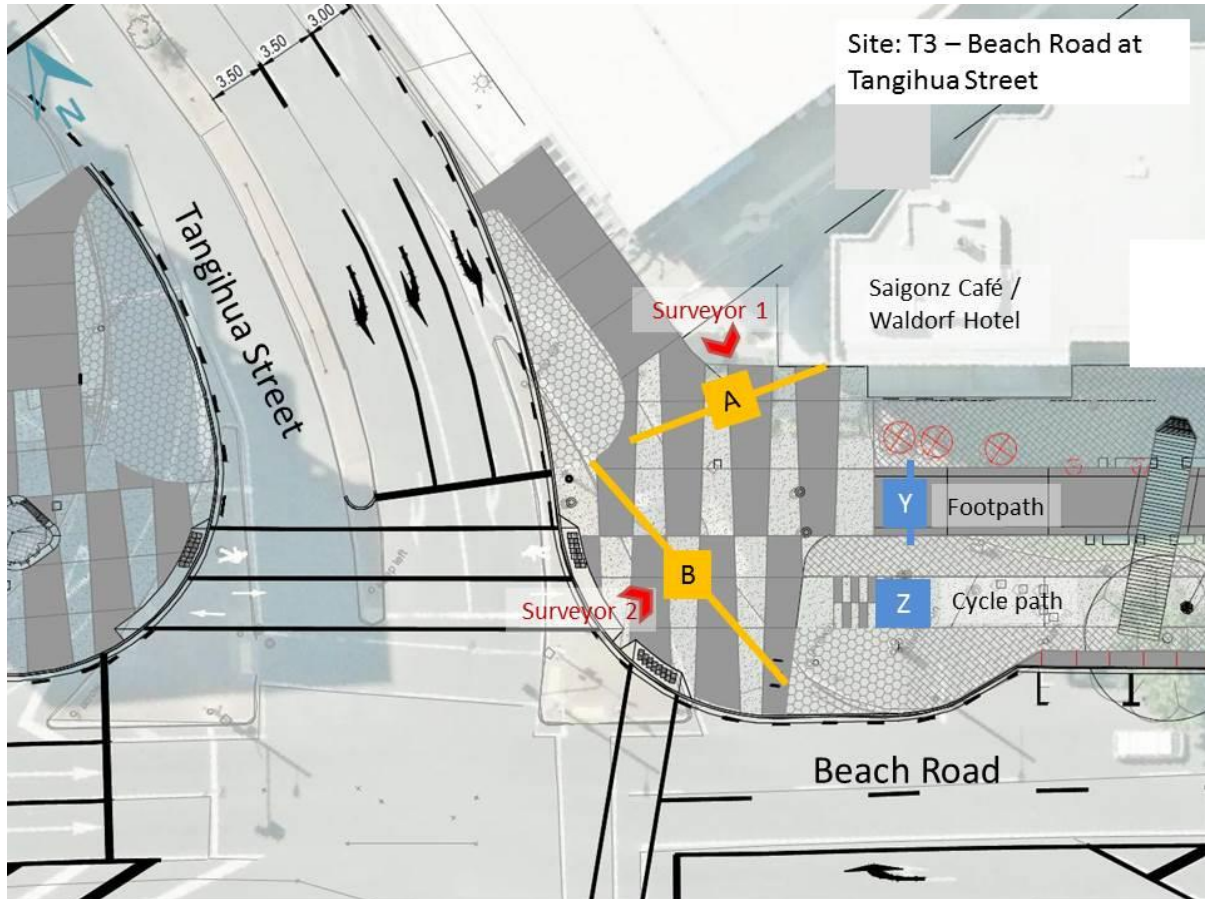


Figure 8: Beach Road at Tangihua Street key areas for survey movements



C.4 Site CA1: Upper Queen Street at Canada Street – south corner

Site description: shared path on Canada Street transitioning to adjacent cycle path and footpath across Queen Street overbridge.

Here it is necessary to determine users' trajectories between two origins (A and B) and two destinations (Y and Z).

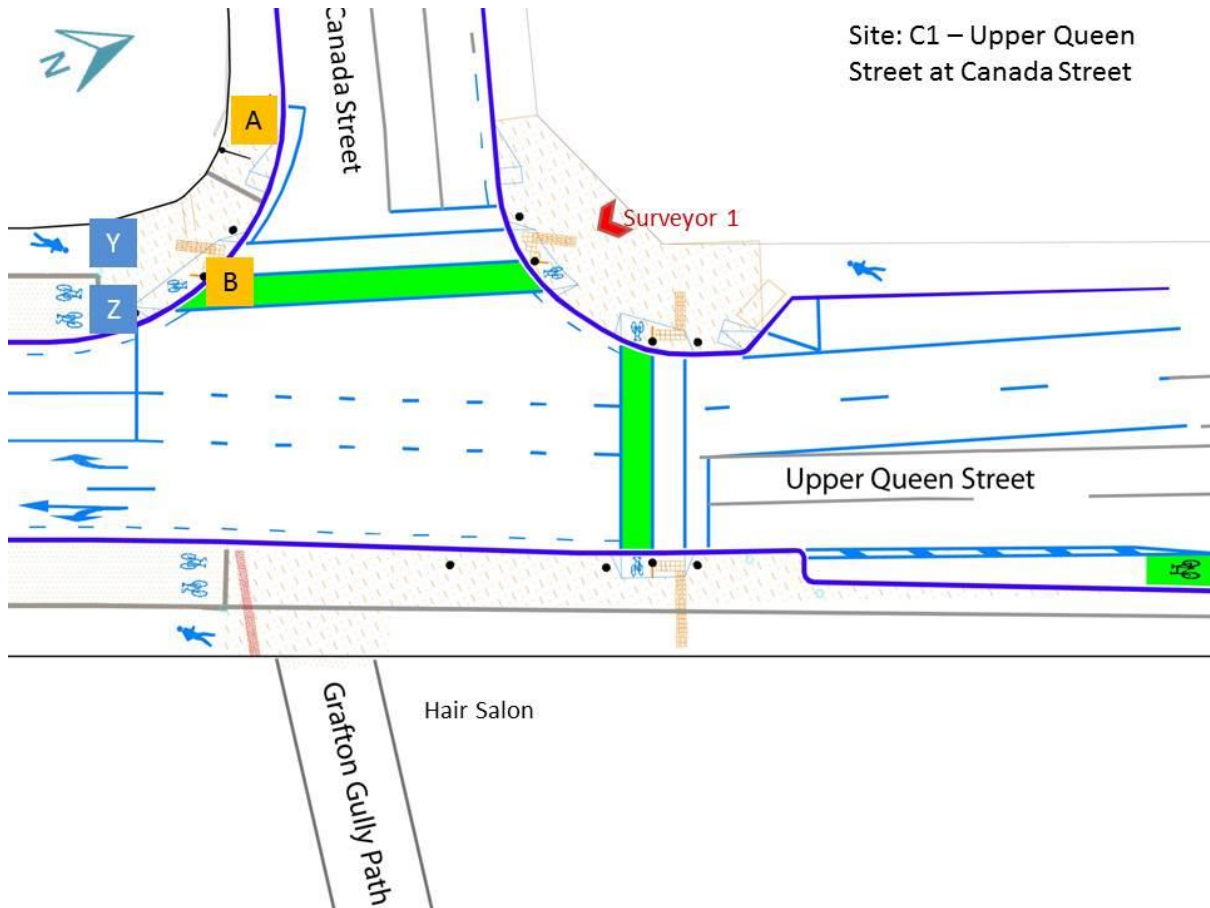


Figure 9: Upper Queen Street at Canada Street key areas for survey movements



C.5 Site CA2: Upper Queen Street at Grafton Gully path

Site description: shared path transitioning to adjacent cycle path and footpath across overbridge, near entrance to Grafton Gully path.

Here it is necessary to determine users' trajectories between two origins (A and B) and two destinations (Y and Z).

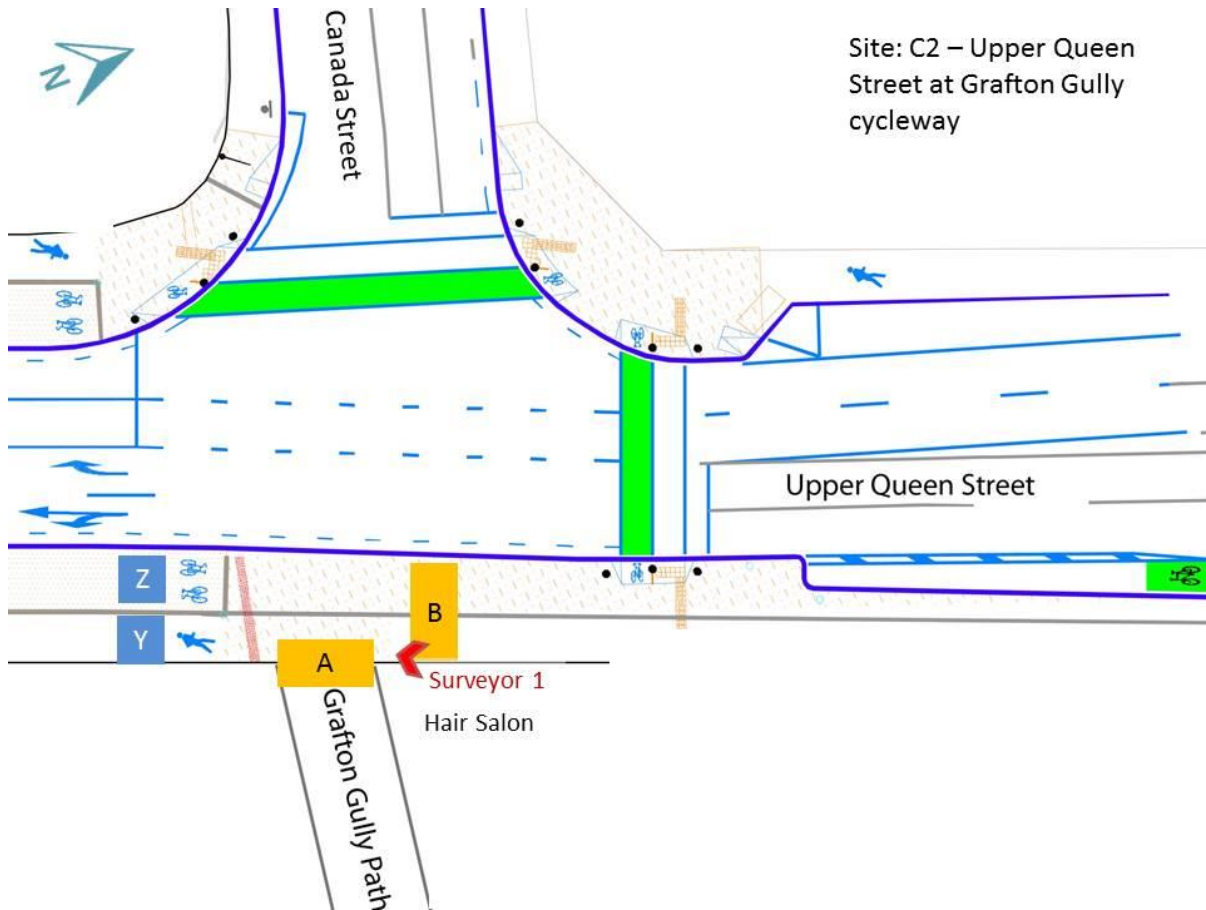


Figure 10: Upper Queen Street at Grafton Gully path key areas for survey movements

C.6 Site CA3: Beach Road at Churchill Street

Site description: shared path transitioning to adjacent cycle path and footpath, near Beach Road / Churchill Street intersection.

Here it is necessary to determine users' trajectories between two origins (A – the shared path and B – the on-road cycle lane coming from Parnell Rise) and two destinations (Y – the footpath and Z – the cycle path).

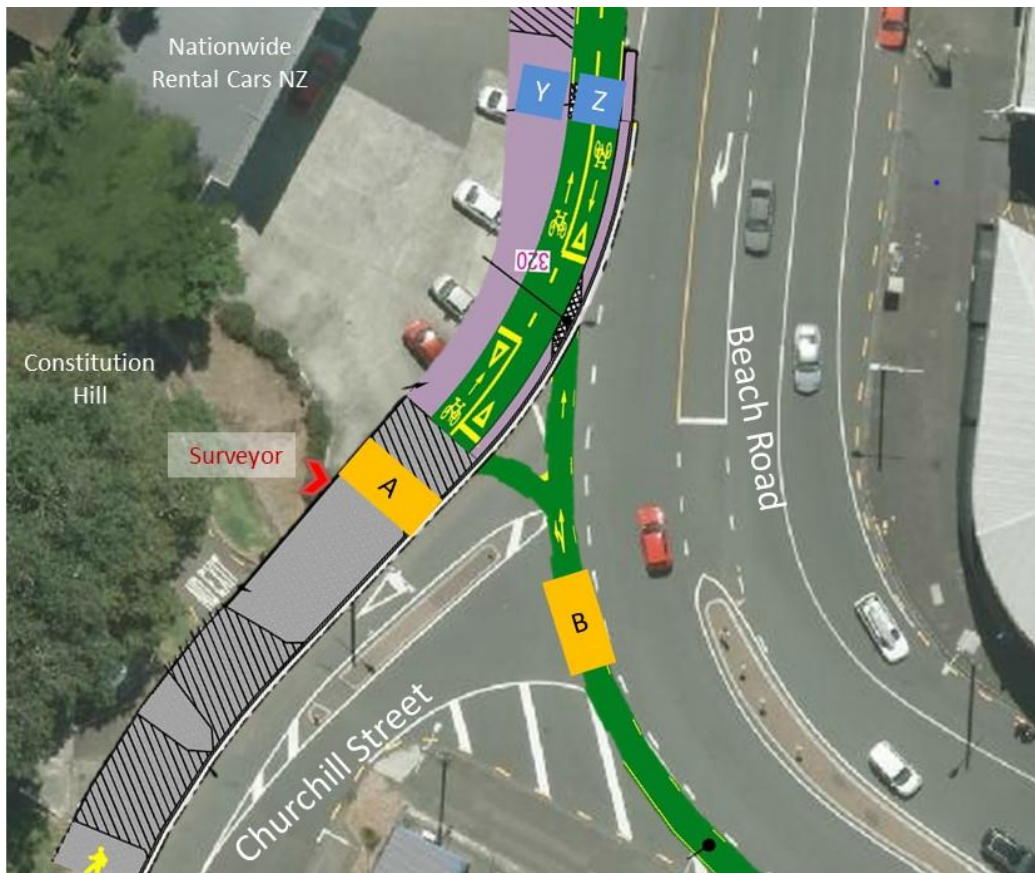


Figure 11: Beach Road at Churchill Street key areas for survey movements



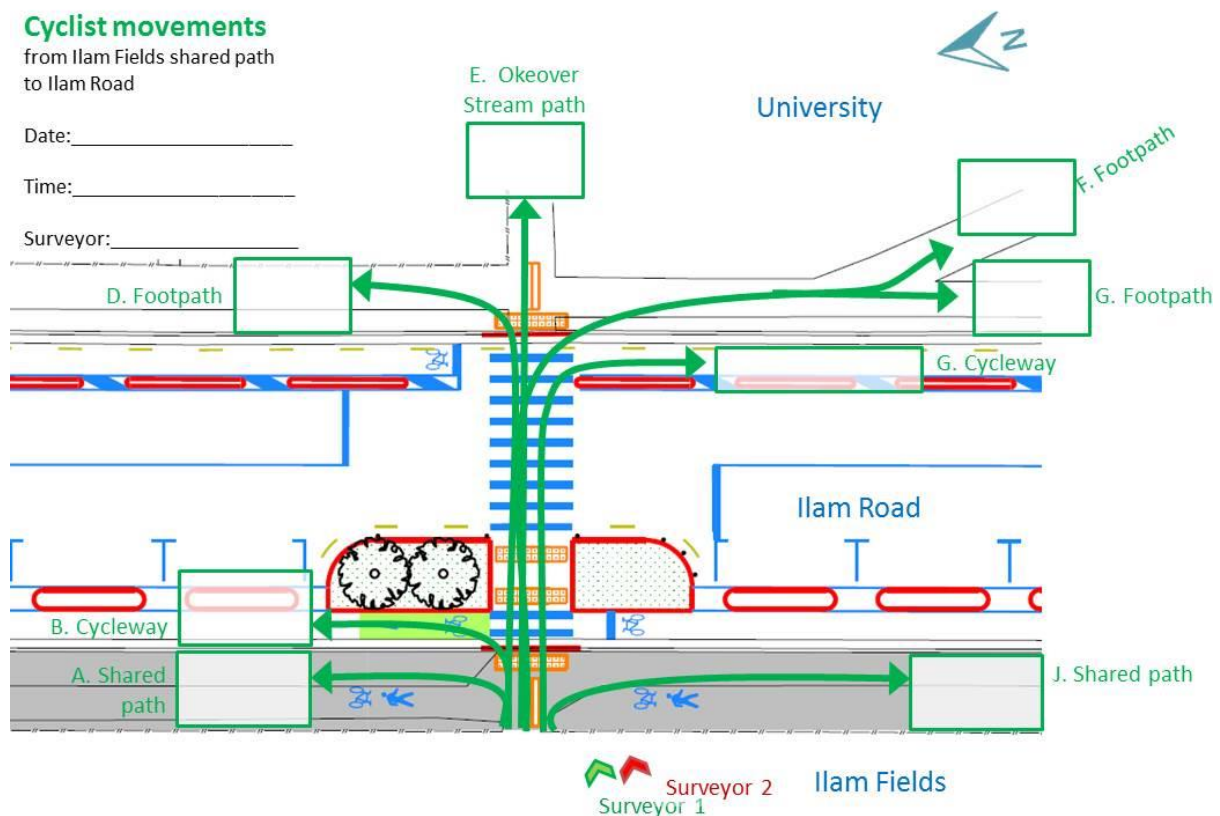
Christchurch site maps and survey movements

D.1 Site TC1: Ilam Fields shared path at Ilam Road

Site description: Shared path in Ilam Fields, where it arrives at the Ilam Road zebra crossing.

Here it is necessary to record movements for all users (i.e. pedestrians and cyclists) leaving the Ilam Fields shared path to continue along or across Ilam Road.

The survey sheet for cyclists is shown below:



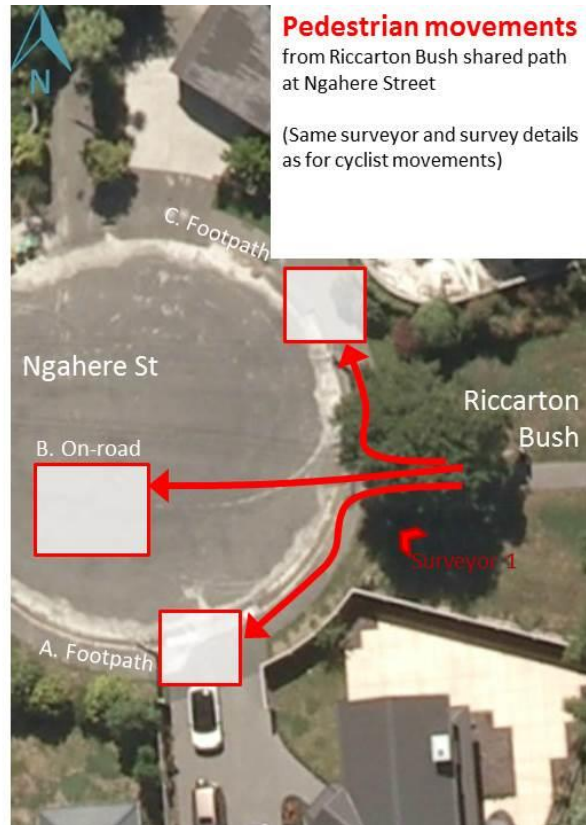


D.2 Site TC2: Riccarton Bush shared path at Ngahere Street

Site description: Shared path in Riccarton Bush exiting onto Ngahere Street, a quiet cul-de-sac.

Here it is necessary to record movements for all users (i.e. pedestrians and cyclists) exiting Riccarton Bush shared path onto Ngahere Street.

The survey sheets for cyclists and pedestrians are shown below:

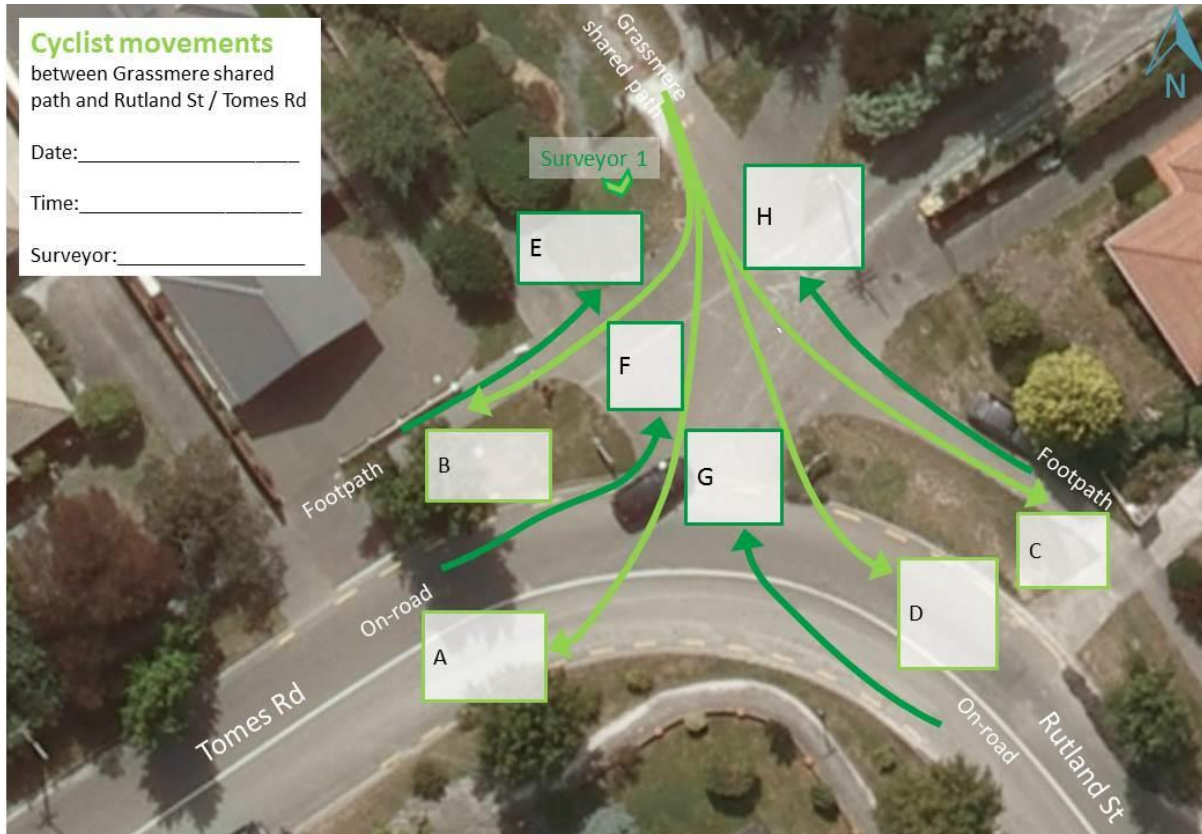




D.3 Site TC3: Rutland Reserve shared path at Rutland / Tomes

Site description: Shared path through Rutland Reserve where it arrives at the bend in the road where Rutland Street and Tomes Road join.

Here it is necessary to record movements for **cyclists only**, for all movements entering and exiting the shared path. The survey sheet is shown below:



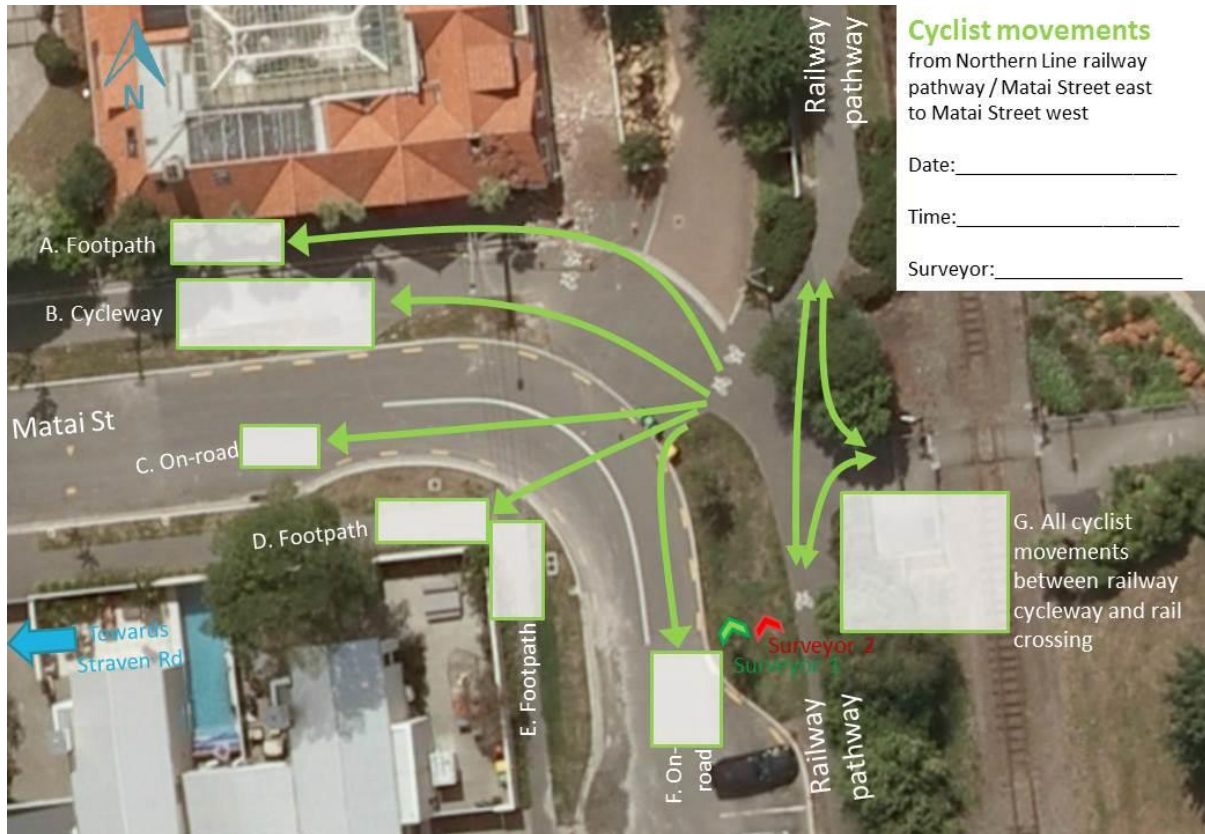


D.4 Site TC4: Matai Street Cycleway / Railway pathway

Site description: exclusive path for cyclists adjacent to footpath along Matai Street transitioning to shared area at intersection with Railway pathway and exit from railway crossing point.

Here it is necessary to record movements for all users leaving the shared area to travel along Matai Street. It is also intended to record movements between the Railway pathway and railway crossing together.

The survey sheet for cyclists is shown below:



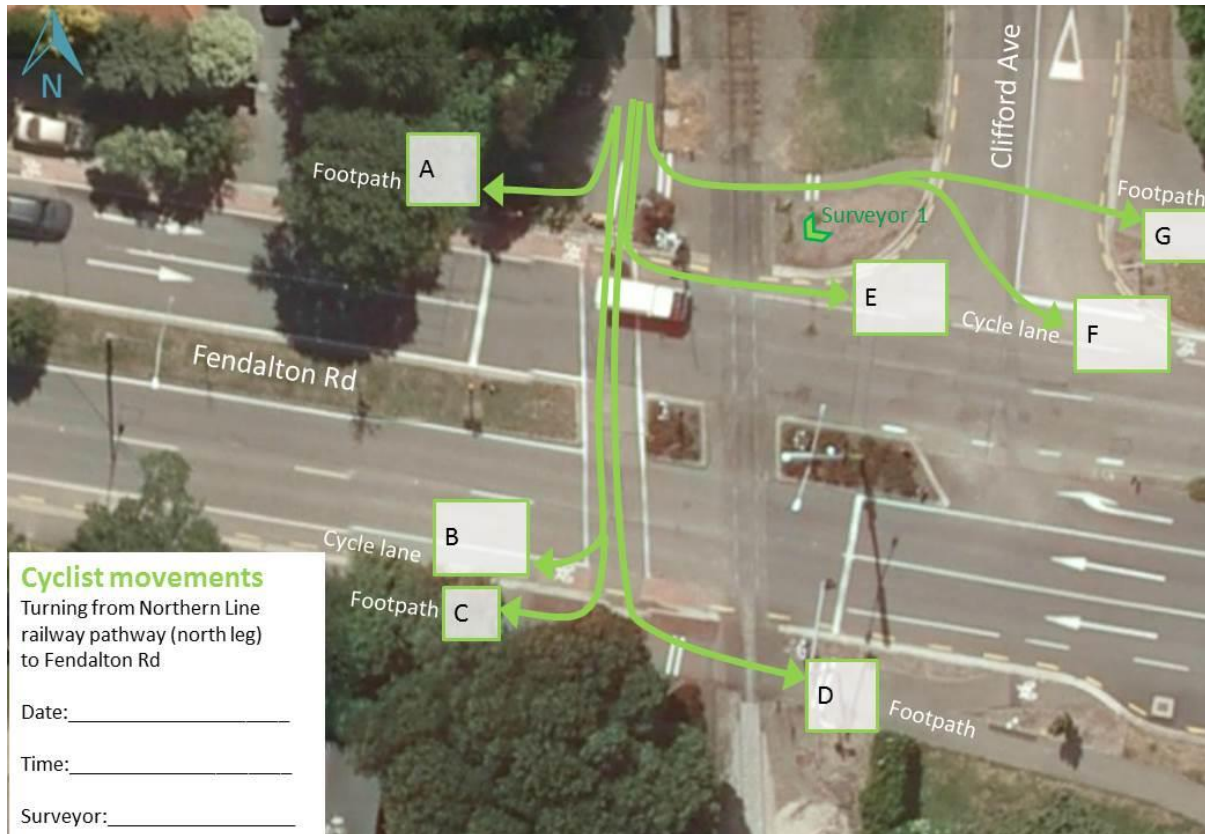


D.5 Site TC5: Railway pathway at Fendalton Road

Site description: Shared path running alongside railway at Fendalton Road crossing point.

Here it is necessary to record movements of all **cyclists** coming from the northern leg and turning (note that it was not considered necessary to record cyclists that continued straight through along the railway pathway, as this movement is legal, without any illegal alternatives). It was not considered necessary to record pedestrian movements at this site, as, apart from walking along the road, there were no possible illegal options.

The survey sheet is shown below:



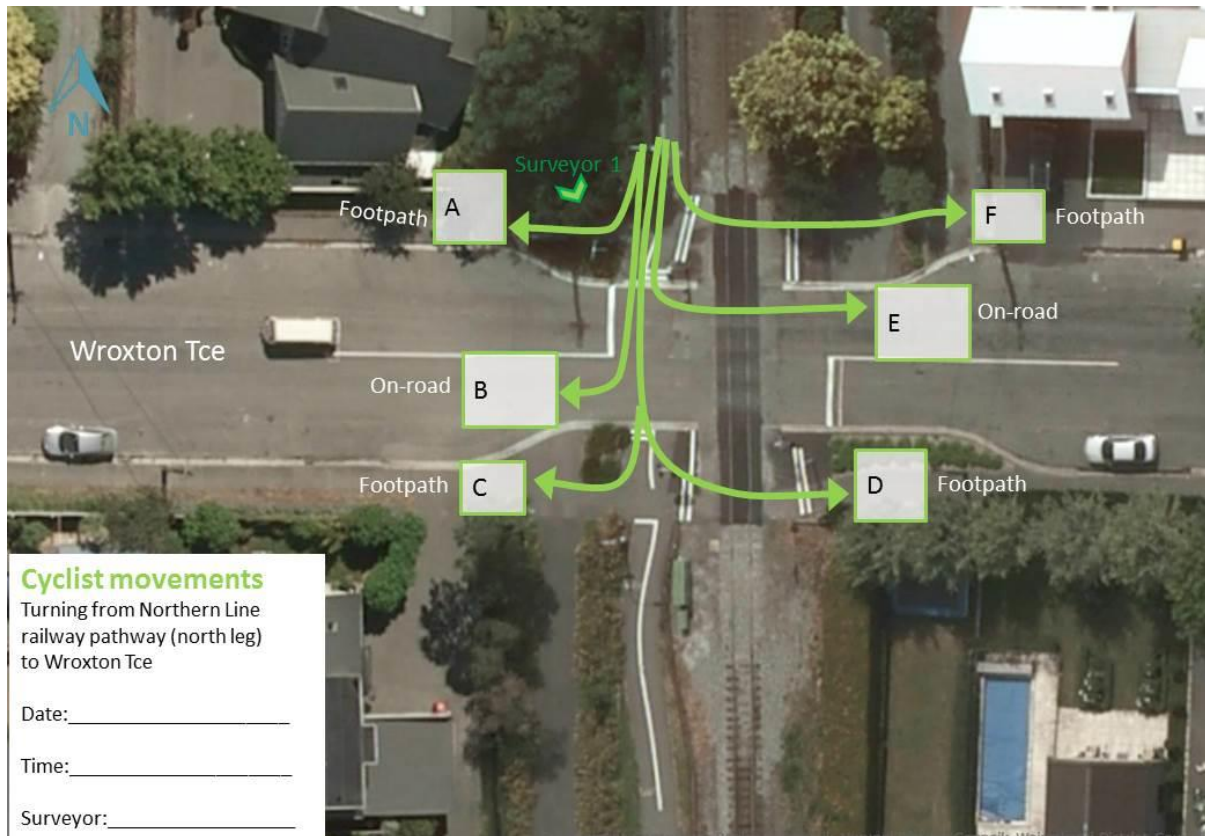


D.6 Site TC6: Railway pathway at Wroxton Terrace

Site description: Shared path running alongside railway at Wroxton Terrace crossing point.

Here it is necessary to record movements of all **cyclists** coming from the northern leg and turning (note that it was not considered necessary to record cyclists that continued straight through along the railway pathway, as this movement is legal, without any illegal alternatives). It was not considered necessary to record pedestrian movements at this site, as, apart from walking along the road, there were no possible illegal options.

The survey sheet is shown below:



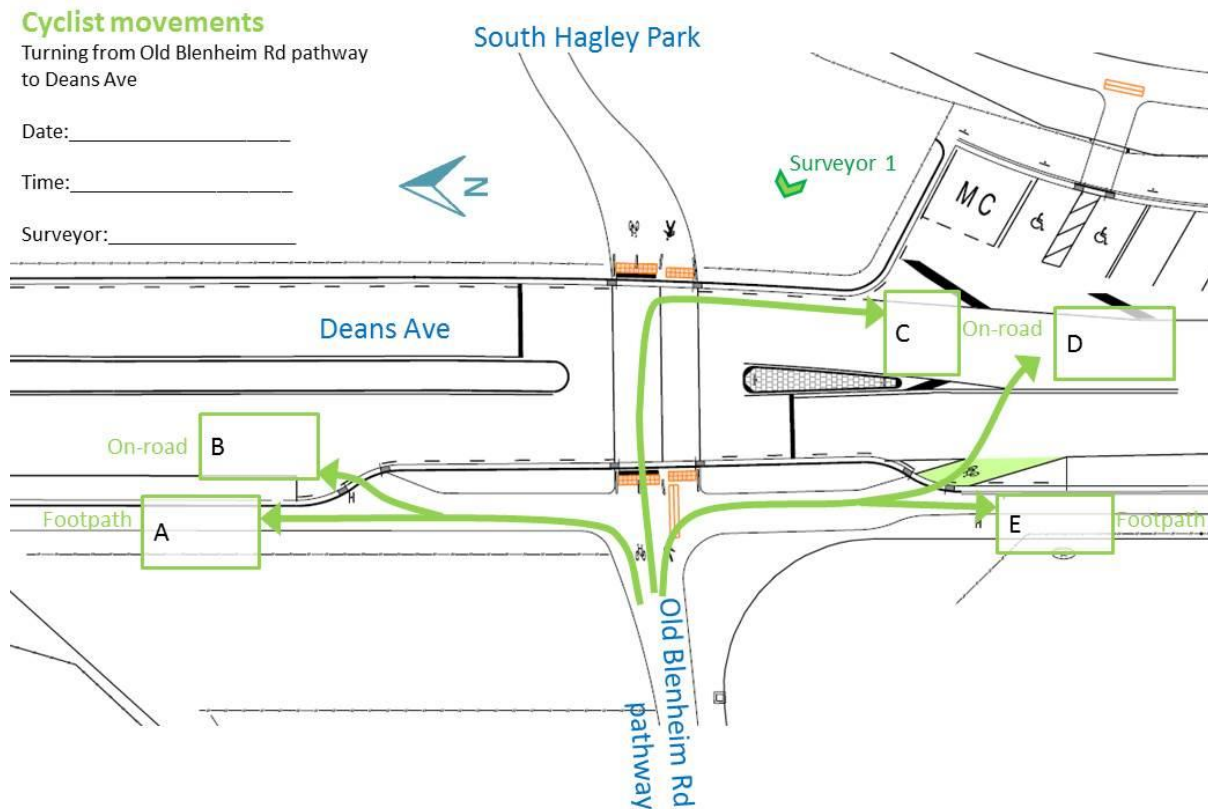


D.7 Site CC1: Old Blenheim path at Deans Ave

Site description: Shared path known as “Old Blenheim Road” (as this was historically the alignment of Blenheim Road) where it arrives at Deans Avenue.

Here it is necessary to record movements for **cyclists only** leaving the Old Blenheim Road shared path to turn on to Deans Ave (including by crossing at the signalised crossing point and then turning). Note that it was not considered necessary to record cyclists that continue straight through into South Hagley Park. It was not considered necessary to record pedestrian movements at this site, as, apart from walking along the road, there were no possible illegal options.

The survey sheet is shown below:





Auckland volume and behaviour data

E.1 Site TA1: Beach Road / Britomart Place east corner

Beach / Britomart Pedestrians (survey 1)		Movement						Total	
		Origin Destination	A		B		C		
			Y	Z	Y	Z	Y		Z
Time	Description	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway		
7:00	7:30	35	7	0	1	9	8	441	
7:30	8:00	54	19	3	1	21	16		
8:00	8:30	58	20	3	1	17	12		
8:30	9:00	81	25	5	6	21	18		
		228	71	11	9	68	54		
		52%	16%	2%	2%	15%	12%		

Beach / Britomart Pedestrians (survey 2)		Movement						Total	
		Origin Destination	A		B		C		
			Y	Z	Y	Z	Y		Z
Time	Description	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway		
16:00	16:30	35	6	3	8	23	43	499	
16:30	17:00	50	9	3	2	32	39		
17:00	17:30	30	4	1	5	35	42		
17:30	18:00	46	5	5	5	44	24		
		161	24	12	20	134	148		



Path marking trial application

		32%	5%	2%	4%	27%	30%
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Beach / Britomart Cyclists (survey 1)		Movement						Total
		A		B		C		
Origin	Destination	Y	Z	Y	Z	Y	Z	Total
Time	Description	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	
7:00	7:30	0	2	0	1	0	0	19
7:30	8:00	1	1	0	2	0	0	
8:00	8:30	0	2	0	4	0	0	
8:30	9:00	2	1	0	3	0	0	
		3	6	0	10	0	0	
		16%	32%	0%	53%	0%	0%	

Beach / Britomart Cyclists (survey 2)		Movement						Total
		A		B		C		
Origin	Destination	Y	Z	Y	Z	Y	Z	Total
Time	Description	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	
16:00	16:30	0	1	0	0	0	1	20
16:30	17:00	0	0	0	1	0	2	
17:00	17:30	0	2	0	0	0	2	
17:30	18:00	0	5	0	0	0	6	
		0	8	0	1	0	11	
		0%	40%	0%	5%	0%	55%	



Path marking trial application

E.2 Site TA2: Beach Road midblock

Beach midblock Pedestrians		Movement					
		Origin	A		B		
		Destination	Y	Z	Y	Z	
Time		Description	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	
7:00	7:30		47	0	0	7	
7:30	8:00		72	1	1	13	
8:00	8:30		63	0	4	35	
8:30	9:00		75	0	6	38	
			257	1	11	93	Total
			71%	0%	3%	26%	362

Beach midblock Cyclists		Movement					
		Origin	A		B		
		Destination	Y	Z	Y	Z	
Time		Description	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	
7:00	7:30		0	0	0	0	
7:30	8:00		0	0	0	2	
8:00	8:30		0	0	0	1	
8:30	9:00		0	0	0	0	
			0	0	0	3	Total
			0%	0%	0%	100%	3



Path marking trial application

E.3 Site TA3: Beach Road / Tangihua Street - south corner

Beach / Tangihua Pedestrians		Movement					
		Origin	A		B		
		Destination	Y	Z	Y	Z	
Time		Description	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	
7:00	7:30		9	0	25	6	Total 207
7:30	8:00		18	0	24	5	
8:00	8:30		16	0	45	7	
8:30	9:00		16	3	30	3	
			59	3	124	21	
			29%	1%	60%	10%	

Beach / Tangihua Cyclists		Movement					
		Origin	A		B		
		Destination	Y	Z	Y	Z	
Time		Description	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	
7:00	7:30		0	2	0	4	Total 8
7:30	8:00		0	0	0	1	
8:00	8:30		0	0	0	0	
8:30	9:00		0	0	0	1	
			0	2	0	6	
			0%	25%	0%	75%	



Path marking trial application

E.4 Site CA1: Upper Queen Street at Canada Street – south corner

Upper Queen Canada Pedestrians		Movement			
Origin	Destination	A		B	
Time	Description	Y	Z	Y	Z
		Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway
16:00	16:30	1	0	22	0
16:30	17:00	12	0	16	1
17:00	17:30	10	0	40	0
17:30	18:00	8	0	9	1
		31	0	87	2
		26%	0%	73%	2%
					Total
					120

Upper Queen Canada Cyclists		Movement			
Origin	Destination	A		B	
Time	Description	Y	Z	Y	Z
		Shared - footpath	Shared - cycleway	Road - footpath	Road - cycleway
16:00	16:30	0	9	0	1
16:30	17:00	1	17	0	0
17:00	17:30	1	31	0	2
17:30	18:00	4	36	1	2
		6	93	1	5
		6%	89%	1%	5%
					Total
					105



Path marking trial application

E.5 Site CA2: Upper Queen Street at Grafton Gully path

Upper Queen Grafton Pedestrians		Movement				
		Origin	A		B	
Destination		Y	Z	Y	Z	Total
Time	Description	Shared - footpath	Shared - cycleway	Shared - footpath	Shared - cycleway	
16:00	16:30	0	0	15	3	142
16:30	17:00	0	0	31	2	
17:00	17:30	0	0	43	1	
17:30	18:00	1	0	44	2	
		1	0	133	8	
		1%	0%	94%	6%	

Upper Queen Grafton Cyclists		Movement				
		Origin	A		B	
Destination		Y	Z	Y	Z	Total
Time	Description	Shared - footpath	Shared - cycleway	Road - footpath	Road - cycleway	
16:00	16:30	0	10	0	4	87
16:30	17:00	0	14	0	5	
17:00	17:30	0	13	0	13	
17:30	18:00	0	21	0	7	
		0	58	0	29	
		0%	67%	0%	33%	



Path marking trial application

E.6 Site CA3: Beach Road at Churchill Street

Beach midblock Pedestrians		Movement				
		Origin	A		B	
	Destination	Y	Z	Y	Z	
Time	Description	Shared - footpath	Shared - cycleway	Road - footpath	Road - cycleway	
16:00	16:30	47	0	12	0	
16:30	17:00	48	0	21	0	
17:00	17:30	60	1	13	1	
17:30	18:00	48	0	11	0	
		203	1	57	1	Total
		77%	0%	22%	0%	262

Beach midblock Cyclists		Movement				
		Origin	A		B	
	Destination	Y	Z	Y	Z	
Time	Description	Shared - footpath	Shared - cycleway	Road - footpath	Road - cycleway	
16:00	16:30	0	8	0	3	
16:30	17:00	0	4	0	3	
17:00	17:30	0	17	0	17	
17:30	18:00	0	9	0	5	
		0	38	0	28	Total
		0%	58%	0%	42%	66



Christchurch volume and behaviour data

F.1 Site TC1: Ilam Fields shared path at Ilam Road

Ilam Pedestrians	Movement										Total
	A	B	C	D	E	F	G	H	I	J	
Time	Shared path NW	Cycleway Nbd	Wrong way on Sbd cycleway	Footpath NE	Okeover Stream path	Footpath to Uni	Footpath SE	Cycleway Sbd	Wrong way on Nbd cycleway	Shared path SW	
8:30 9:00	1				17	85	1				2
9:00 9:30					2	23	4			1	
9:30 10:00	2				6	21					
10:00 10:30					4	16				1	
Total	3	0	0	0	29	145	5	0	2	2	186
	2%	0%	0%	0%	16%	78%	3%	0%	1%	1%	

Ilam Cyclists	Movement										Total
	A	B	C	D	E	F	G	H	I	J	
Time	Shared path NW	Cycleway Nbd	Wrong way on Sbd cycleway	Footpath NE	Okeover Stream path	Footpath to Uni	Footpath SE	Cycleway Sbd	Wrong way on Nbd cycleway	Shared path SW	
8:30 9:00	1	1			6	14	1	8			5
9:00 9:30					1	12	1	8			1
9:30 10:00					2	20	1	5			
10:00 10:30					1	11	2	3			
Total	1	1	0	0	10	57	5	24	0	6	104
	1%	1%	0%	0%	10%	55%	5%	23%	0%	6%	

Illegal Unlikely Technically illegal, but depends on UoC policy re cycling on uni grounds



F.2 Site TC2: Riccarton Bush shared path at Ngahere Street

Riccarton Bush Pedestrians	Movement			
	A	B	C	
Time	Path > Footpath south	Path > Roadway	Path > Footpath north	
14:00 14:30	1	8	0	
14:30 15:00	3	11	0	
15:00 15:30	3	0	0	
15:30 16:00	5	6	2	Total
Total	12	25	2	39
	31%	64%	5%	

Riccarton Bush Cyclists	Movement			
	A	B	C	
Time	Path > Footpath south	Path > Roadway	Path > Footpath north	
14:00 14:30	0	5	0	
14:30 15:00	0	2	0	
15:00 15:30	0	1	0	
15:30 16:00	0	2	0	Total
Total	0	10	0	10
	0%	100%	0%	

Illegal Unlikely



F.3 Site TC3: Rutland Reserve shared path at Rutland / Tomes

Rutland Cyclists	Movement							
	A	B	C	D	E	F	G	H
Time	Path > Tomes roadway	Path > Tomes footpath	Path > Rutland footpath	Path > Rutland roadway	Tomes footpath > path	Tomes Roadway > path	Rutland roadway > path	Rutland footpath > path
8:00 8:30		1	2					4
9:00 9:30					1			1
Total	0	1	2	0	1	0	0	5
	0%	11%	22%	0%	11%	0%	0%	56%

Total
9



Path marking trial application

F.4 Site TC4: Matai Street Cycleway / Railway pathway

Matai Pedestrians	Movement						Total
	A	B	C	D	E	F	
Time	Footpath W-E north side	Cycleway	Matai W-E roadway	Footpath W-E south side	Footpath N-S west side	Matai N-S roadway	
3:00 3:30	106	32		1	13		
3:30 4:00	10	5		0	1		
4:00 4:30	3	5		0	1		
4:30 5:00	2	13		0	0		
5:00 5:30	2	5		2	3		
5:30 6:00	0	1		2	0		
Total	123	61	0	5	18	0	207
	59%	29%	0%	2%	9%	0%	

G
Railway pathway / crossing movements
32
8
7
14
8
12
81

Matai Cyclists	Movement						Total
	A	B	C	D	E	F	
Time	Footpath W-E north side	Cycleway	Matai W-E roadway	Footpath W-E south side	Footpath N-S west side	Matai N-S roadway	
3:00 3:30	0	16	0	0	2	0	
3:30 4:00	0	5	2	0	0	0	
4:00 4:30	0	8	0	0	0	0	
4:30 5:00	0	5	0	0	0	0	
5:00 5:30	0	11	0	0	0	0	
5:30 6:00	0	7	1	0	0	0	
Total	0	52	3	0	2	0	57
	0%	91%	5%	0%	4%	0%	

G
Railway pathway / crossing movements
18
18
20
40
78
30
204



Path marking trial application

F.5 Site TC5: Railway pathway at Fendalton Road

Fendalton Cyclists	Movement							Total	Straight through
	A	B	C	D	E	F	G		
Time	Footpath NW	Cycle lane WBD	Footpath SW	Footpath SE	Cycle lane EBD (direct)	Cycle lane EBD via footpath	Footpath NE		
8:00 8:30	0	1	0	15	9	3	0		65
9:00 9:30	0	1	0	0	0	4	0	Total	42
Total	0	2	0	15	9	7	0	33	107
	0%	6%	0%	45%	27%	21%	0%		

F.6 Site TC6: Railway pathway at Wroxton Terrace

Wroxton Cyclists	Movement						Total	Straight through
	A	B	C	D	E	F		
Time	Footpath NW	On-road WBD	Footpath SW	Footpath SE	On-road EBD	Footpath NE		
8:00 8:30	10	31	0	0	2	0		93
9:00 9:30	0	13	0	0	3	0	Total	51
Total	10	44	0	0	5	0	59	144
	17%	75%	0%	0%	8%	0%		



F.7 Site CC1: Old Blenheim path at Deans Ave

Old Blenheim Cyclists	Movement				
	A	B	C	D	E
Time	Footpath NE	On-road Nbd	On-road Sbd via crossing	On-road Sbd via cutdown (wrong way)	Footpath SE
8:00 8:30	0	0	0	0	0
8:30 9:00	0	0	0	0	0
9:00 9:30	0	0	0	0	0
9:30 10:00	0	0	0	0	0
Total	0	0	0	0	0

Straight through
14
15
3
10
42



Auckland intercept survey data

G.1 Auckland trial sites

Q1 – Site location

Beach Road at Britomart Place (east corner)	37
Beach Road midblock location (opposite Anzac Ave)	15
Beach Road at Tangihua Street – south corner	13
	0
	65

Q2 – Respondent’s mode of travel

Cyclist	12
Walker/ runner etc	51
Skateboard / scooter / roller skates	2
Mobility scooter / wheelchair	0
Other	0
	65

Q3 – Age range

0-9 years	0
10-14 years	0
15-19 years	2
20-29 years	20
30-39 years	21
40-49 years	11
50-59 years	8
60-69 years	3
70-79 years	0
80 years or above	0
	65

Q4a: Cyclists: How often do you ride a bicycle?

Most days	12
1 – 2 times per week	2
1 – 2 times per fortnight	0
1 – 2 times per month	0
Less regularly	0
	14

Q4b: Non-cyclists: do you ever ride a bicycle? If so, how often?

Most days	2
1 – 2 times per week	6
1 – 2 times per fortnight	4
1 – 2 times per month	1
Less regularly	10
Never	28
	51



Q5 Are you familiar with the section of Upper Queen Street where it crosses the Southern Motorway shown in these photos?

Yes	52
No	11
Unsure	2
[N/A]	0
	65

Q6 Is the blue area [shared path] intended for people walking, people cycling, or both?

Only people walking	1
Only people cycling	3
People walking or cycling	60
Unsure	1
	65

Q7 Is the blue area [cycleway] intended for people walking, people cycling, or both?

Only people walking	1
Only people cycling	57
People walking or cycling	6
Unsure	1
	65

Q8 Is the blue area [footpath] intended for people walking, people cycling, or both?

Only people walking	26
Only people cycling	1
People walking or cycling	38
Unsure	0
	65

Q9 Are you legally required to comply with the path markings shown in this photo?

Yes	19
No	22
Unsure	24
	65

Q10 Is the path in this photo [shared path] intended for people walking, people cycling, or both?

Only people walking	4
Only people cycling	2
People walking or cycling	54
Unsure	5
	65



Q11 Is the path in this photo [cycle path] intended for people walking, people cycling, or both?

Only people walking	2
Only people cycling	47
People walking or cycling	12
Unsure	4
	65

Q12 Is the path in this photo [footpath] intended for people walking, people cycling, or both?

Only people walking	29
Only people cycling	2
People walking or cycling	28
Unsure	6
	65

Q13 Are you legally required to comply with the signs shown in these photos?

Yes	36
No	14
Unsure	15
	65

Q14 I can confirm that you are required to comply with both the markings and the signs we've talked about in the previous questions. If signs are used they need to be placed wherever a shared path or cycle path begins or ends.

Please consider the path we're currently on: if signs were installed in addition to the current markings, it would look a bit like this [show image]. Note that there would be additional signs at all the other transitions along the path.

If these signs were added, would you be more likely to walk / bike in the correct location?

More likely to walk / bike in correct location	41
Less likely to walk / bike in correct location	2
No change in where I walk / bike	21
Unsure	1
	65

Q15 What do you think should be used here to give the message about who can travel on shared paths, cycleways and footpaths: path markings, signs, or both?

Path markings only	18
Signs only	4
Signs and path markings	39
Unsure	4
	65



Q16 Please explain your answer to the previous question.

[Open]

Q17 The markings on this path we're currently on need to be seen by people approaching them. In terms of visibility, do you think the markings here are:

Easy enough to see	60
Too hard to see	4
Unsure	1
	65

Q18 In terms of size, do you think the markings here are:

About the right size	62
Too big	2
Too small	1
Unsure	0
	65

Q19 Do you have any further comments about the markings or signs we've been talking about today?

[Open]

G.2 Auckland comparison sites

Q1 Site location	
Upper Queen Street at Grafton Gully path entrance	31
Beach Road at Churchill Street	33
Northwestern Cycleway at Novar Place	0
	64

Q2 Respondent's mode of travel	
Cyclist	32
Walker/ runner etc	32
Skateboard / scooter / roller skates	0
Mobility scooter / wheelchair	0
Other	0
	64

Q3 Age	
0-9 years	0
10-14 years	0



Path marking trial application

15-19 years	4
20-29 years	17
30-39 years	12
40-49 years	12
50-59 years	14
60-69 years	5
70-79 years	0
80 years or above	0
	64

Q4a Cyclists: How often do you ride a bicycle?

Most days	25
1 – 2 times per week	4
1 – 2 times per fortnight	0
1 – 2 times per month	0
Less regularly	1
	30

Q4b Non-cyclists: do you ever ride a bicycle? If so, how often?

Most days	8
1 – 2 times per week	2
1 – 2 times per fortnight	1
1 – 2 times per month	0
Less regularly	23
Never	0
	34

Q5 Are you familiar with the Beach Road cycleway between Britomart and Mahuhu? [show image]

Yes	47
No	16
Unsure	1
	64

Q5b What do you notice more, the signs or the markings? [show image]

Signs	9
Markings	53
About the same	2
	64

Q6 Is the blue area [shared path] intended for people walking, people cycling, or both?

Only people walking	1
Only people cycling	0
People walking or cycling	58
Unsure	5
	64



Path marking trial application

Q7 Is the blue area [cycleway] intended for people walking, people cycling, or both?

Only people walking	2
Only people cycling	54
People walking or cycling	6
Unsure	2
	64

Q8 Is the blue area [footpath] intended for people walking, people cycling, or both?

Only people walking	34
Only people cycling	3
People walking or cycling	25
Unsure	2
	64

Q9 Are you legally required to comply with the path markings shown in this photo?

Yes	24
No	13
Unsure	27
	64

Q10 Is the path in this photo [shared path] intended for people walking, people cycling, or both?

Only people walking	5
Only people cycling	3
People walking or cycling	44
Unsure	12
	64

Q11 Is the path in this photo [cycle path] intended for people walking, people cycling, or both?

Only people walking	3
Only people cycling	57
People walking or cycling	4
Unsure	0
	64

Q12 Is the path in this photo [footpath] intended for people walking, people cycling, or both?

Only people walking	33
Only people cycling	1
People walking or cycling	17



Path marking trial application

Unsure	13
	64

Q13 Are you legally required to comply with the signs shown in these photos?

Yes	38
No	8
Unsure	18
	64

Q14 I can confirm that you are required to comply with both the markings and the signs we've talked about in the previous questions. If signs are used they need to be placed wherever a shared path or cycle path begins or ends.

Please consider the path we're currently on: if the signs were removed and only the current markings remained, would you be more likely to walk / bike in the correct location?

More likely to walk / bike in correct location	7
Less likely to walk / bike in correct location	10
No change in where I walk / bike	46
Unsure	1
	64

Q15 What do you think should be used here to give the message about who can travel on shared paths, cycleways and footpaths: path markings, signs, or both?

Path markings only	14
Signs only	1
Signs and path markings	45
Unsure	4
	64

Q16 Please explain your answer to the previous question.

[Open]

Q17 The markings on this path we're currently on need to be seen by people approaching them. In terms of visibility, do you think the markings here are:

Easy enough to see	56
Too hard to see	4
Unsure	4
	64

Q18 In terms of size, do you think the markings here are:

About the right size	61
Too big	0



Path marking trial application

Too small	2
Unsure	1
	64

Q19 Do you have any further comments about the markings or signs we've been talking about today?
[Open]



Christchurch intercept survey data

H.1 Christchurch trial sites

Q1

Site location

Ilam Fields pathway at Ilam Road	18
Rutland Reserve pathway at Rutland Street / Tomes Road	9
Matai Street cycleway at Railway pathway	17
Railway pathway at Wroxtton Terrace	16
	60

Q2

Respondent's mode of travel

Cyclist	29
Walker/ runner etc	27
Skateboard / scooter / roller skates	4
Mobility scooter / wheelchair	0
Other	0
	60

Q3

Age range

0-9 years	0
10-14 years	3
15-19 years	15
20-29 years	13
30-39 years	3
40-49 years	8
50-59 years	12
60-69 years	3
70-79 years	2
80 years or above	1
	60

Q4a

Cyclists: How often do you ride a bicycle?

Most days	24
1 – 2 times per week	3
1 – 2 times per fortnight	0
1 – 2 times per month	2

Q4b

Non-cyclists: do you ever ride a bicycle? If so, how often?

Most days	3
1 – 2 times per week	6
1 – 2 times per fortnight	1
1 – 2 times per month	3



Path marking trial application

Less regularly	0	Less regularly	1
	29	Never	17
			31

Q5

Are you familiar with the Matai Street cycleway?

Yes 42

No

Unsure

[N/A at Matai Street site]

Q6

Is the blue area [shared path] intended for people walking, people cycling, or both?

Only people walking 3

Only people cycling 9

People walking or cycling 47

Unsure 1

60

Q7

Is the blue area [footpath] intended for people walking, people cycling, or both?

Only people walking 58

Only people cycling 2

People walking or cycling 0

Unsure 0

60

Q8

Is the blue area [cycleway] intended for people walking, people cycling, or both?

Only people walking 1

Only people cycling 57

People walking or cycling 1

Unsure 1

60

Q9

Are you legally required to comply with the path markings shown in this photo?

Yes 23



Path marking trial application

No	23
Unsure	14
	60

Q10

Is the path in this photo [shared path] intended for people walking, people cycling, or both?

Only people walking	1
Only people cycling	0
People walking or cycling	58
Unsure	1
	60

Q11

Is the path in this photo [cycle path] intended for people walking, people cycling, or both?

Only people walking	1
Only people cycling	55
People walking or cycling	4
Unsure	0
	60

Q12

Is the path in this photo [footpath] intended for people walking, people cycling, or both?

Only people walking	30
Only people cycling	0
People walking or cycling	19
Unsure	11
	60

Q13

Are you legally required to comply with the signs shown in these photos?

Yes	35
No	8
Unsure	17
	60

Q14

I can confirm that you are required to comply with both the markings and the signs we've talked about in the previous questions. If signs are used they need to be placed wherever a shared path or cycle path begins or ends.



Path marking trial application

What do you think should be used here to give the message about who can travel on shared paths, cycleways and footpaths: path markings, signs, or both? (Note: this isn't about legal requirements, it's about what you think works best).

Path markings only	31
Signs only	1
Signs and path markings	28
Unsure	0
	60

Q15

Please explain your answer to the previous question.

[Open]

Q16

The markings on this path we're currently on need to be seen by people approaching them. In terms of visibility, do you think the markings here are:

Easy enough to see	55
Too hard to see	4
Unsure	1
	60

Q17

In terms of size, do you think the markings here are:

About the right size	53
Too big	0
Too small	6
Unsure	1
	60

Q18

Do you have any further comments about the markings or signs we've been talking about today?

[Open]

H.2 Christchurch comparison site

Q2

Respondent's mode of travel

Cyclist	7
Walker/ runner etc	10
Skateboard / scooter / roller skates	0



Path marking trial application

Mobility scooter / wheelchair	0
Other	0
	17

Q3

Age

0-9 years	0
10-14 years	0
15-19 years	1
20-29 years	6
30-39 years	4
40-49 years	3
50-59 years	2
60-69 years	0
70-79 years	1
80 years or above	0
	17

Q4a

Cyclists: How often do you ride a bicycle?

Most days	7
1 – 2 times per week	0
1 – 2 times per fortnight	0
1 – 2 times per month	0
Less regularly	0
	7

Q4b

Non-cyclists: do you ever ride a bicycle? If so, how often?

Most days	3
1 – 2 times per week	1
1 – 2 times per fortnight	0
1 – 2 times per month	0
Less regularly	3
Never	3
	10

Q5

Are you familiar with the Matai Street cycleway?

Yes	6
No	11
Unsure	0
	17

Q6

Is the blue area [shared path] intended for people walking, people cycling, or both?

Only people walking	3
Only people cycling	1
People walking or cycling	12
Unsure	1



Q7

Is the blue area [footpath] intended for people walking, people cycling, or both?

Only people walking	17
Only people cycling	0
People walking or cycling	0
Unsure	0
	17

Q8

Is the blue area [cycleway] intended for people walking, people cycling, or both?

Only people walking	0
Only people cycling	17
People walking or cycling	0
Unsure	0
	17

Q9

Are you legally required to comply with the path markings shown in this photo?

Yes	10
No	3
Unsure	4
	17

Q10

Is the path in this photo [shared path] intended for people walking, people cycling, or both?

Only people walking	1
Only people cycling	0
People walking or cycling	15
Unsure	1
	17

Q11

Is the path in this photo [cycle path] intended for people walking, people cycling, or both?

Only people walking	0
Only people cycling	15
People walking or cycling	1
Unsure	1



Q12

Is the path in this photo [footpath] intended for people walking, people cycling, or both?

Only people walking	4
Only people cycling	0
People walking or cycling	2
Unsure	11
	17

Q13

Are you legally required to comply with the signs shown in these photos?

Yes	13
No	2
Unsure	2
	17

Q14

I can confirm that you are required to comply with both the markings and the signs we've talked about in the previous questions. If signs are used they need to be placed wherever a shared path or cycle path begins or ends.

What do you think should be used here to give the message about who can travel on shared paths, cycleways and footpaths: path markings, signs, or both? (Note: this isn't about legal requirements, it's about what you think works best).

Path markings only	9
Signs only	0
Signs and path markings	8
Unsure	0
	17

Q15

Please explain your answer to the previous question.

[Open]

Q16

The markings on this path we're currently on need to be seen by people approaching them. In terms of visibility, do you think the markings here are:

Easy enough to see	14
Too hard to see	2
Unsure	1



Q17

In terms of size, do you think the markings here are:

About the right size	16
Too big	0
Too small	1
Unsure	0
	17

Q18

Do you have any further comments about the markings or signs we've been talking about today?

[Open]