Cycle counting in New Zealand

Land Transport NZ
Ikiiki Whenua Aotearoa

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Summary

This project consists of two components:

- a literature review of traffic-counting technology able to detect and monitor cycle traffic on a continuous basis
- an internet-based survey of road controlling authorities (RCAs) and regional councils about their experience and interest in counting cycle traffic, either manually or automatically.

Review of continuous cycle counting technologies

All of the products that were reviewed count cycles but many are also able to:

- record the direction of travel, speed and even position of bicycles, and/or
- distinguish between bicycles and motor vehicles and therefore be used in mixed-traffic situations, and/or
- distinguish between cyclists and pedestrians and therefore be appropriate for shared-use, off-road paths where the numbers of pedestrians are also required.

Most counters range in price from $3000 to $10,000.

From this limited literature review, the inductive loop products (Counters and Accessories' Bicycle Recorder and Eco-Counter's ZELT) appear to be the best for counting both on-road and off-road cycle traffic.

It is recommended that Land Transport New Zealand:

- obtains a Bicycle Recorder and a ZELT counter for testing in New Zealand
- commissions a pilot study of the equipment – counts should be done with both counters simultaneously in a variety of locations, including both off-road and on-road sites (the counters should be calibrated against manual counts and existing loop detectors, where feasible)
- publishes a report summarising the findings and recommending a counter or counters for use in New Zealand for continuous cycle counting, in both off-road and on-road situations.

Survey of agencies about bicycle counting experience

An excellent response rate of 71 percent was achieved for this survey. It appears that RCAs and regional councils are very interested in cycle counting.

The survey findings include the following:

- About half of the RCAs and regional councils that responded to the survey have counted cycle traffic in recent years.
- Two-thirds of those that reported counting cycle traffic use manual counts only.
- About two-thirds of respondents have cycle infrastructure projects in their forward works programmes.
- Most of the 11 agencies that count cycle traffic automatically use MetroCount 5600 or 5700 series counters.

- Half (18) of those agencies that do not count cycle traffic use MetroCount counters to count motor vehicles. These counters are capable of counting cycles. A further 12 agencies count cycle traffic manually but not automatically, although they use MetroCount counters to count motor vehicles. Thus, there are 30 agencies that could count cycles automatically with technology they already use.
- Two-thirds of the agencies that count cycle traffic have been doing so for three years or less.
- Only three agencies count (or have recently counted) cycle traffic continuously (for months or more at a time).
- Some respondents reported difficulty in getting MetroCount counters to count cycle traffic successfully, while others noted that care is needed to get reliable counts. Appendix 1 provides advice on the successful installation of MetroCount 5600 rubber tube traffic counters for counting cycles.

It is recommended that this report be made available to survey respondents by email and on the Land Transport New Zealand website.

Contents

1 Introduction

Land Transport New Zealand commissioned ViaStrada Ltd to undertake an international literature review of technologies for counting cycle traffic continuously (for several months or more) and to survey all local and regional councils and Transit New Zealand offices about their experience with various types of cycle traffic counting, including continuous, automatic and manual counts.

Section 2 of this report considers equipment for continuous counting of both off-road and on-road cycle traffic. The purpose of the survey (reported in section 3) was to understand how much cycle counting is currently taking place in New Zealand and what methods are being used.

2 Literature review of continuous cycle-counting technologies

This literature review explores the merits, limitations and costs of seven main types of technology available for counting bicycle traffic on a continuous basis. For the purposes of this report, 'continuous' means for several months or more. The technologies investigated were:

1. passive infrared detectors – detect radiation emitted by people and animals
2. active infrared detectors – send out beams of infrared radiation that, when broken, determine the presence and position of the obstruction
3. radio beam detectors – operate in a similar way to active infrared detectors, using radio waves rather than light waves
4. underground pressure counters – detect changes in surface pressure from passing vehicles or pedestrians
5. pneumatic tube counters – above-ground pressure counters
6. video-image processing – detect changes in pre-defined zones of interest as recorded by video cameras
7. inductive loop detectors – identify the electromagnetic signals of bicycles riding past.

All prices quoted are for New Zealand dollars, exclusive of GST (as of October 2007).

2.1 Passive infrared detectors

These use lenses that detect radiation emitted by people and animals. By placing two detectors along a path, information can be obtained on the speed and direction of travel. However, the detectors cannot distinguish between mode types.

Several trials of passive infrared detectors have been documented (Schneider et al 2005, Thé 2007). In all cases, the studies counted pedestrian and bicycle numbers on shared-use, off-road paths, as infrared counters were deemed inappropriate for mixed-traffic situations. Infrared counters are able to gather data for long observation periods in all weather conditions. However, in many studies, the devices also counted animals and, occasionally, falling leaves. In some cases, the infrared counter could not distinguish between one and two people.

Many surveyors deemed it necessary to supplement the automatic counts with manual survey information to distinguish between cyclists and pedestrians and provide demographic characteristics, such as age, gender and reason for travel.

Eco-Counter (www.eco-compteur.com) manufactures several passive infrared detectors (they are known as 'pyroelectric sensors'). The devices can operate at a range of up to 4 m and come with a data logger that has a battery life of approximately 10 years. A unit costs approximately $3700.

Figure 1 How passive infrared detectors like Eco-Counter's Pyroelectric Sensor work

2.2 Active infrared detectors

These emit one or more beams of infrared radiation (that may scan back and forth along a line) and detect when the beams are obstructed. As with passive infrared detectors, information can be obtained on speed and direction. In addition, however, special algorithms can be used to infer the type of mode detected.

One trial used the active infrared device Autosense II to detect cyclists and pedestrians on a shared-use path. Noyce, Gajendran and Dharmaraju (Noyce et al 2006) developed an algorithm that could be used with Autosense II that detected cyclists and pedestrians 100 percent of the time, with 92 percent accuracy for distinguishing between the two. The algorithm had a good accuracy even when multiple cyclists passed at once.

Figure 2 Autosense II

This illustrates that it is possible to achieve good results using active infrared devices. The algorithm developed was intended to distinguish between pedestrians and cyclists and would need to be modified for the cyclist versus motor traffic situation. It has also been noted (Schneider et al 2005) that, as the Autosense II was designed for motor traffic situations, it would classify bicycles as motorcycles. The software would need to be revised if applied in situations where both bicycles and motorcycles would be present.

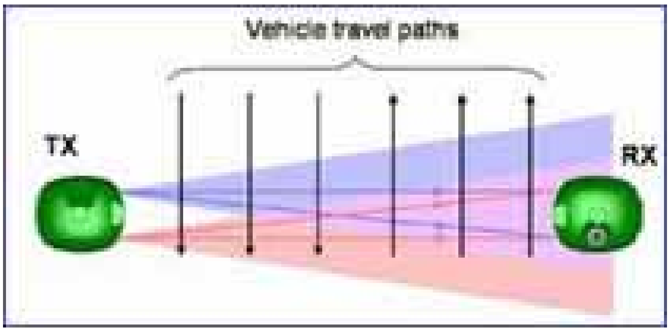
Unfortunately, the algorithm was developed as research and does not appear to be commercially available; also, it seems Schwartz Electro Optics, the company that developed the Autosense II, declared bankruptcy in 2003. Similar products have not been identified.

TIRTL (The Infra-Red Traffic Logger), manufactured by CEOS (www.ceos.com.au), is another active infrared counter that can determine vehicle types, directions and speeds.

Figure 3 TIRTL

Also, because the TIRTL has four infrared beams, two straight and two crossed (as shown in figure 4), it is able to measure a vehicle's position across the roadway and hence determine which lane it is in.

Figure 4 TIRTL beams



Russell Kean from Opus's Central Laboratory in Lower Hutt has been using a TIRTL for several years. He reports a 98 percent accuracy (compared to the 99 percent accuracy claimed by the manufacturers) for classifying motor vehicles in dry conditions and states that the TIRTL does not perform as well in wet weather. In mixed-traffic situations, the TIRTL only correctly classified bicycles (as 'vehicles under 1 m') about 50 percent of the time. However, Opus was not focusing on counting bicycles and states that it may be possible to program a more reliable classification process to increase the TIRTL's accuracy for counting bicycles. This would involve further research and testing. Also, according to Macbeth and Weeds (2002), bicycles typically have wheelbases of between 1.0 m and 1.1 m, so the TIRTL's default settings would not be appropriate for detecting bicycles.

The TIRTL is available at around $23,400 and can be powered either by a 12 volt battery (which provides power for two to three weeks) or through an external power supply. The TIRTL's data logger can store up to 30 million vehicle records.

2.3 Radio beam detectors

These emit radio waves and detect travellers when the beams are broken.

By using two radio frequencies, it is possible to distinguish between pedestrians and cyclists on shared-use paths. However, such systems are not generally able to provide information on cyclist speed and direction – to do so would require two detectors and additional software development.

No documentation on radio beam detectors was found in the literature review, but personal correspondence with the Queenstown Lakes District Council revealed that they have two radio beam counters installed on shared-use paths. The engineer in charge of the counters stated that they were the best technology he had found in his 20-year experience using counters.

Figure 5 Location of the radio beam bicycle counter used by the Queenstown Lakes District Council

Chambers Electronics (www.chambers-electronics.com) manufactures the Radio Beam Bike and People Counter used by the Queenstown Lakes District Council.

Figure 6 Chambers Electronics' Bike and People Counter

This device operates at a range of up to 3.5 m and uses a 12 volt battery that operates for 100 days before charging is required. The total cost of the counter, two batteries, a battery charger, mounting posts, loggers and computer software is approximately $7500.

2.4 Underground pressure counters

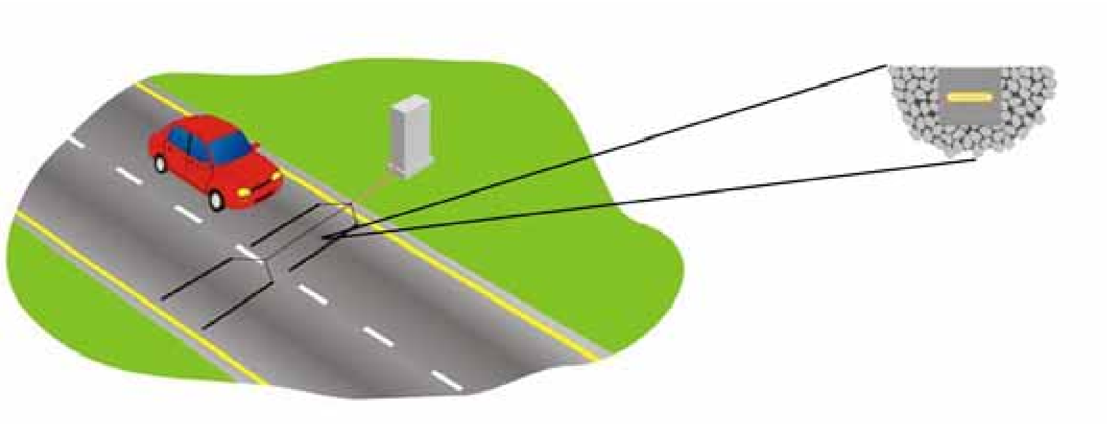
These are made from piezoelectric material, which is buried underground and detects changes in pressure when bicycles are ridden over the surface.

Pressure counters are the least visible of all counting technologies. Dual systems can be used to infer the speed and direction of travel, and algorithms can be developed to distinguish between cyclists and pedestrians. The United Kingdom's Department of the Environment Traffic and the Regions uses some piezoelectric counters for continuous monitoring. They stated 95 percent accuracy but acknowledged that, in mixed-traffic situations, the presence of motor vehicles significantly reduces their accuracy.

In one American trial (Schneider et al 2005), piezo-film counters were used with algorithms aimed at distinguishing bicycles from pedestrians on shared-use paths. It was acknowledged that occasionally non-bicycle objects were recorded as bicycles. The trial identified one of piezo-film's advantages as being that it is much less conspicuous over infrared devices. One instance was noted where concerned residents noticed the infrared device and informed the police, who called the bomb-squad and had it destroyed. Piezo-film was not identified as being more accurate than other devices.

MetroCount (www.metrocount.com) manufactures piezoelectric underground pressure counters. No information from existing users in New Zealand or Australia has been found.

Figure 7 How pressure counters like MetroCount's 5710 Piezo-Counter work



The MetroCount 5710 system costs approximately $5800, with significant discounts per unit for bulk purchases. It has a battery life and data storage capability of around 290 days (or longer in lower-flow conditions).

2.5 Pneumatic tube counters

Pneumatic tubes, often known as 'rubber tubes', are currently the most common device for automatically counting cycle traffic. The pressure counter is laid on the ground and detects changes in air pressure when the tubes are compacted.

Pneumatic tubes will only detect pedestrians if they step directly on the tube so it is not advisable to use them in situations where pedestrians are present, as some will be detected (but possibly recorded as other modes) and others not. However, when two tubes are used in conjunction with algorithms that can distinguish between bicycles and motor vehicles, they do work in mixed-traffic situations and can classify traffic and determine speed and direction.

A New Zealand study (Macbeth and Weeds 2002) showed that pneumatic tubes are appropriate for use on New Zealand roads and, at the time, were more accurate than inductive loops for distinguishing between bicycles and motor vehicles. When the MetroCount 5600 system was used on a site with a 5 m tube length, it accurately counted 50 cyclists. However, when the tube length was increased to 10 m (to include motor vehicle counts), the accuracy decreased to 86 percent. The Golden River Marksman 410 system was shown to be more accurate because of its longer tubes, having a 96 percent accuracy for three different count sites with a combined sample size of 427 cyclists.

It was noted that cyclists who rode on footpaths would not be recorded by pneumatic tube counters installed on the roads, unless counter tubes were also installed across the footpath. Also, false detection would occur when bicycles and motor vehicles passed over the tubes simultaneously. The tube counters were generally less accurate in urban situations than semi-rural situations.

A more recent New Zealand study (Macbeth 2007), with a much larger sample size than the first, identified many problems that occurred when using the MetroCount tube system to count on-road cyclists:

- The system could not accurately classify groups of cyclists riding together.
- Although the tubes were not extended fully into the traffic lane, often motor vehicles would hit the tubes and the system could not properly distinguish between cyclists and motor vehicles when both types of vehicles hit the tubes simultaneously (or nearly so).
- Some cyclists were observed to swerve around the tubes and others who rode on the footpath were also not recorded.

When the MetroCount data for five on-road sites (both sides of each road) were compared with manual counts taken over the same survey period, the MetroCount system was 62 percent accurate (the sites ranged in accuracy from 14 percent to 100 percent). A similar investigation for four off-road sites yielded an accuracy of 85 percent (ranging from 74 percent to 100 percent). It was identified that site selection and placement of tubes are important factors in determining the accuracy of the MetroCount pneumatic tube system.

Appendix 1 contains a guide to selecting sites suitable for cycle counting using MetroCount tubes and to placing the tubes.

Figure 8 MetroCount 5600

The MetroCount 5600 system costs approximately $3000, with significant discounts per unit for bulk purchases. It has a battery life and data storage capability of around 290 days (or longer in lower-flow conditions).

Several other manufacturers produce pneumatic tube counters; however, as MetroCount is the most common in New Zealand, other manufacturers have not been researched further.

Although little documentation on the sturdiness of pneumatic tubes was found, anecdotal evidence suggests that they are very susceptible to wear and tear from traffic and are not appropriate for permanent counting. Tubes may become worn or broken and result in the loss (or decreased accuracy) of data. There is no way of remotely determining when this occurs. Also, because pneumatic tubes and counters are situated above the ground surface, they can be vandalised.

2.6 Video-image processing

This involves recording the traffic with a video camera and determining the presence of cyclists or other mode users, either manually or with a computer.

Video-image processes can be used to determine cyclists' speeds, directions and positioning across the roadway.

Fowler and Koorey (2006) used video recording to monitor cyclists' direction and positioning, with the aid of painted marks across the road. Recordings were processed manually after surveying. Skilton (2007) used a similar process involving still photographs. Both groups of researchers found that the process was very time intensive (as they were required to be present during the recordings and later in the analysis of the images). However, a very positive outcome was that they could also gain insights into the behaviour of cyclists and characteristics such as their age, gender and ability that was not available from 'blind' technologies.

The Christchurch City Council has experimented with video technology at wide intersections where there had been a problem with cyclists beginning to cross the intersection at the end of the green phase and not having enough time to reach the other side of the intersection before the start of the opposing traffic's green phase. The aim was that, when a cyclist was present in the intersection during the inter-green time, the video camera would detect a pixel disturbance and delay the beginning of the opposing traffic's green phase. However, other things, such as pedestrians or cars turning through the intersection, also created pixel disturbances. This resulted in the longer green phase being used when it was not necessary and hence too much wasted time and a decrease in the intersection's efficiency. The Christchurch City Council no longer uses video technology for this purpose.

While this was not intended to count cyclists but to detect them, the process used and the information obtained could easily be used for counting cyclists.

Autoscope manufactures several video imaging products.

Figure 9 Autoscope's Solo Terra

Autoscope counts vehicles passing through a pre-defined 'detector zone'; thus, it could be used to count cycles travelling on a cycle lane. However, there would be errors when cyclists rode side by side, when cyclists avoided the cycle lane or when vehicles and pedestrians entered into the cycle lane.

In addition to the Solo Terra camera, a processing unit is required; the combined cost is approximately $9500 (based on a minimum purchase of 10 units).

2.7 Inductive loop detectors

These are wires laid in the ground that experience electro-magnetic induction when metal objects (such as motor vehicles and most bicycles) pass over them.

Inductive loops are used extensively in New Zealand for detecting motor vehicles so that SCATS (Sydney Coordinated Adaptive Traffic System) can control signal timings. The Christchurch City Council obtains cycle traffic information from SCATS inductive loops where shared use pedestrian and cycle paths have signalised road crossings. These data are not routinely used for cycle monitoring, however.

The council has also trialled inductive loops to detect cyclists crossing signalised road intersections at the end of a green phase. Similar problems to those of the video imaging technology were noted. The loops would not distinguish between cyclists and motor vehicles. Also, placement of the loops was difficult as cyclists do not always ride in the same place through an intersection.

The Bicycle Recorder manufactured by Counters and Accessories (www.c-a.co.uk) is an inductive loop detector commonly used for counting cycle lane traffic in South Australia. One user said they had achieved high success rates with the device, even when two cyclists rode side by side. When tested, the device did not record shopping trolleys, prams or other metal objects. Counters and Accessories identified a 95 percent accuracy in a study where they had chosen the site; no additional information was available regarding this study.

Figure 10 Bicycle Recorder by Counters and Accessories

The Bicycle Recorder can be powered by mains or solar power and can be fitted with a GSM modem, which allows remote data download. The total cost of such a system is approximately $5000.

Eco-Counter's ZELT inductive loop sensor system claims to be able to detect the characteristic electro-magnetic signature of bicycles and distinguish them from motor vehicles. The French Government Transportation Research Lab found a ±5 percent accuracy for the ZELT when used in mixed-traffic situations. In a study, 91 percent of bicycles (156 out of 171) were correctly detected, 6 percent of motorcycles (7 out of 120) were incorrectly classified as bicycles and no other motor vehicles were classified as bicycles.

Figure 11 How Eco-Counter's ZELT inductive loop sensor system works

ZELT can work for a lane width of up to 3 m; considering that most cycle lanes are well below this and that cyclists ride to the side of shared traffic lanes, this width should be sufficient. The logger uses two 3.6 volt batteries that have a lifetime of one year and are cheap to replace (or can be recharged).

For a situation where bicycles are to be detected beside or among motor vehicles, the cost of the ZELT detectors, logger and software would be approximately $2900 (or $4000 if speed and direction information were required). Installation costs would be additional.

The ZELT and Bicycle Recorder systems are different to inductive loops already in use as they use specialised algorithms and loop patterns to detect bicycles accurately. It would be possible to modify current loops used (eg for SCATS) but this would require research and the development of new algorithms.

Inductive loops will not detect bicycles made from non-metallic materials, such as carbon fibre. This issue is not yet sufficiently significant to prevent the use of induction loops, but the increasing trend for carbon-fibre bicycles may affect the reliability of inductive loop counting in the future. Most counters claim an accuracy of about ±5 percent, so a small proportion of carbon-fibre cycles would not introduce excessive errors.

Another limitation is that inductive loop counters installed on a road will not count cyclists riding on an adjacent footpath, so counting cyclists on a road where there also happens to be a significant amount of footpath cycling would introduce errors (unless additional loops were installed on the footpath). They also do not detect pedestrians.

2.8 Summary

Table 1 Characteristics of counters

Product	Direction	Speed	Position	Counts pedestrians separately	Can be used on-road	Distinguishes between cycles and motor vehicles	Invisible	Advantages	Disadvantages
1 Passive Infrared Pyroelectric Sensor (Eco-Counter)	X	X		X			X		Unreliable if more than one user passes at once
2 Active Infrared Autosense II (SEO)	X	X		X					No longer on market
3 Active Infrared TIRTL (CEOS)	X	X	X		X	X			Classification algorithms do not currently distinguish bicycles from motor vehicles well
4 Radio Beam Bike and People Counter (Chambers Electronics)				X			X		
5 Piezoelectric counter 5710 (MetroCount)	X	X			X	X	X	Output similar to MetroCount 5600 which is familiar technology	
6 Pneumatic tubes 5600 (MetroCount)	X	X			X	X		Familiar technology	Exposed to damage from traffic or vandalism. Varying reports on accuracy
7 Video technology Solo Terra (Autoscope)	X				X			Shows cyclist behaviour and characteristics etc	
8 Inductive Loop Bicycle Recorder (Counters and Accessories)	X	X			X	X	X	Detects cyclists riding side by side. Does not detect prams, trolleys etc	Does not detect carbon fibre cycles
9 Inductive Loop ZELT (Eco-Counter)	X	X			X	X	X	Very accurate	Does not detect carbon fibre cycles

2.9 Conclusions and recommendations

All of the products that were reviewed count cycles but many are also able to:

- record the direction of travel, speed and even position of bicycles, and/or
- distinguish between bicycles and motor vehicles and therefore be used in mixed-traffic situations, and/or
- distinguish between cyclists and pedestrians and therefore be appropriate for shared-use, off-road paths where the numbers of pedestrians are also required.

Most counters range in price from $3000 to $10,000. Installation costs would be additional to this.

From this limited literature review, the inductive loop products (Counters and Accessories' Bicycle Recorder and Eco-Counter's ZELT) appear to be the best for counting both on-road and off-road cycle traffic.

Accordingly, it would be useful to test these two counters in New Zealand. As a number of key personnel are based in Christchurch and some sites already exist with inductive loops installed, it would be logical to undertake a pilot project in Christchurch. It is understood that Glen Koorey at the University of Canterbury has a video recorder and would be interested in collaborating with this pilot. It may also be beneficial to collaborate with Opus International Consultants Ltd, which is currently working on a research project on pedestrian counters.

If pedestrian counts are also required, it would be advisable to consider Eco-Counter's Pyroelectric Sensor or Chambers Electronics' Bike and People Counter. Video technology could also be considered.

It is recommended that Land Transport NZ:

- obtains a Bicycle Recorder and a ZELT counter for testing in New Zealand
- commissions a pilot study of the equipment – counts should be done with both counters simultaneously in a variety of locations, including both off-road and on-road sites (the counters should be calibrated against manual counts and existing loop detectors, where feasible)
- publishes a report summarising the findings and recommending a counter or counters for use in New Zealand for continuous cycle counting, in both off-road and on-road situations.

2.10 Literature review references

Fowler, ML and GF Koorey (2006) *The effect of the Pages Road cycle lane installation on cyclists' safety and traffic flow operation*, IPENZ Transportation Group Conference, Queenstown, http://viastrada.co.nz/sites/viastrada/files/pages-cycle-lanes.pdf.

Macbeth, AG (2007) *Development of a cycle traffic AADT tool*, ViaStrada Ltd, Christchurch.

Macbeth, AG and MG Weeds (2002) *Evaluation of automatic bicycle counters in New Zealand*, Transfund research report no. 230, MWH New Zealand, Christchurch.

Noyce, DA, A Gajendra and R Dharmaraju (2006) *Development of a bicycle and pedestrian detection and classification algorithm for active-infrared overhead vehicle imaging sensors*, University of Wisconsin-Madison, Washington DC.

Schneider, R, R Patton, J Toole and C Raborn (2005) *Pedestrian and bicycle data collection in United States communities – quantifying use, surveying users and documenting facility extent*, University of North Carolina, Chapel Hill.

Skilton, L (2007) *Effect of colouring a cycle lane*, IPENZ Transportation Conference, Tauranga, www.hardingconsultants.co.nz/transportationconference2007/images/Remits/F3%20Laura%20Skilton.pdf.

Thé, R (2007) *Expansion of the Bicycle Count Program*, City of Vancouver, Vancouver.

3 Survey of road controlling authorities and regional councils

3.1 Objective

The objective of the survey was to establish the extent to which road controlling authorities (RCAs) (ie local councils and Transit New Zealand offices) and regional councils were counting cycles. A variety of questions sought to establish whether these agencies were counting cycle traffic manually or automatically, amongst other things.

3.2 Method

A commercially available online survey package called Zoomerang was used. This was seen as an effective way to reach the agencies whose practices and views were sought, and to analyse the results.

A group of 12 practitioners was asked to complete a pilot survey before the main survey to ensure that the survey was clear and simple to use. Comments from the pilot survey were then used to refine the main survey.

The main survey was emailed to 83 councils (district, city and regional) and nine Transit offices. Land Transport NZ generated the address list from its contacts through regional offices. Invited participants were typically roading asset managers from local authorities and Transit's regionally based 'cycling champions'. Each practitioner was invited to undertake the survey and was advised that it would take approximately 10 minutes to complete. If organisations did not count cycle traffic, various questions were able to be 'skipped' and the survey took less time. Several follow-up emails were sent to encourage participation in the survey. The survey is attached as appendix 2. The breakdown of survey recipients and response rates is shown in table 2.

Table 2 Survey recipients and response rates

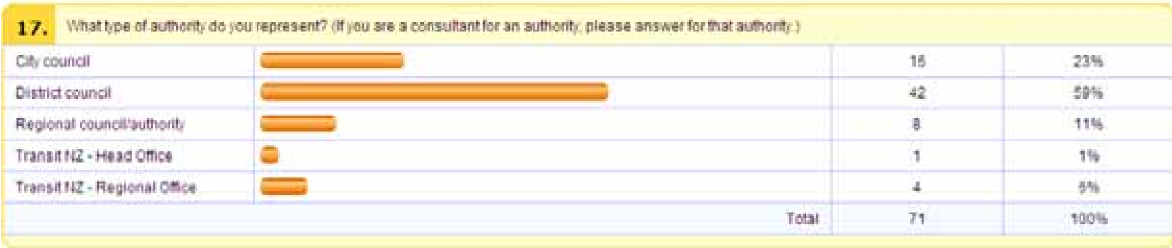
	Invited to respond	Responses received	Response rate
City councils	16	16	100%
District councils	57	42	74%
Regional councils	10	8	80%
Transit offices	9	5	56%
Total	**92**	**71**	**77%**

Of the 92 agencies invited to participate, 71 surveys were completed, representing a response rate of 77 percent. A late response was received from one Transit office, effectively pushing Transit's response rate up to 67 percent (from the 56 percent shown in table 2) and the overall response rate up to 78 percent, although the data were not able to be used in the analysis. Overall trends, patterns and conclusions are not affected by this additional response.

3.3 Responses to questions answered by all respondents

3.3.1 Type of agency

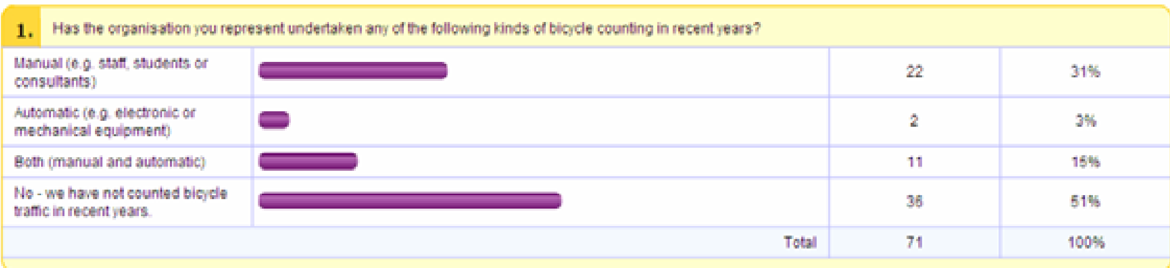
Of the 71 organisations that responded to the survey, 59 percent were district councils, 23 percent were city councils, 11 percent were regional councils and 7 percent were from Transit offices.



17. What type of authority do you represent? (If you are a consultant for an authority, please answer for that authority.)		
City council	16	23%
District council	42	59%
Regional council/authority	8	11%
Transit NZ - Head Office	1	1%
Transit NZ - Regional Office	4	6%
Total	71	100%

3.3.2 Experience with counting bicycle traffic

Of those organisations that responded to the survey, 36 (51 percent) do not count cycle traffic, while 35 (49 percent) do. Of the 35 organisations that do count cycle traffic, 22 (31 percent of all respondents) use only manual counts (people physically counting cyclists, typically at intersections), while 11 (15 percent) use both manual counts and automatic methods.



1. Has the organisation you represent undertaken any of the following kinds of bicycle counting in recent years?		
Manual (e.g. staff, students or consultants)	22	31%
Automatic (e.g. electronic or mechanical equipment)	2	3%
Both (manual and automatic)	11	15%
No - we have not counted bicycle traffic in recent years.	36	51%
Total	71	100%

A cross-tabulation of questions 1 and 17 revealed that, of the 36 agencies that do not count cycle traffic, only one was a city council. City councils are not only likely to count cycle traffic, but are more likely to use both manual and automatic methods.

Most district councils (67 percent) and regional councils (75 percent) do not count cycle traffic, while most city councils (94 percent) and Transit offices that responded to the survey (80 percent) do. District and regional councils and Transit offices that count cycles are more likely to do manual counts than automatics. The results of this cross-tabulation are shown in table 3.

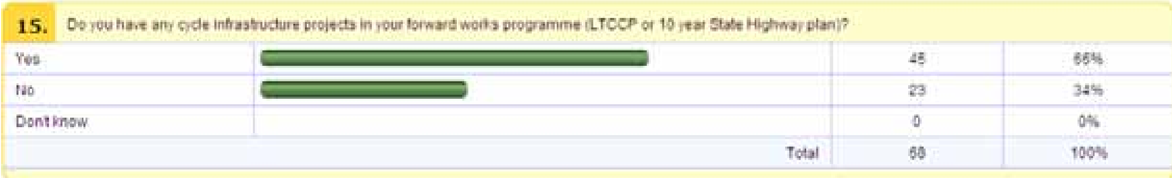
Table 3 Experience counting cycle traffic by agency type

	No. of responses	Manual	Automatic	Both	None
City councils	16	5	0	10	1 (6%)
District councils	42	12	2	0	28 (67%)
Regional councils	8	2	0	0	6 (75%)
Transit offices	5	3	0	1	1 (20%)
Total	**71**	**22**	**2**	**11**	**36**

Thus, all but one of New Zealand's 16 city councils count cycle traffic, while most of the district and regional councils do not. It is reasonable to assume that most of the councils and Transit offices that did not respond to the survey do not count cycle traffic.

3.3.3 Cycle infrastructure projects in forward works programme

Of all respondents to this survey, 66 percent have cycle infrastructure projects in either their long-term council community plan (LTCCP) or their 10-year State Highway plan.



15. Do you have any cycle infrastructure projects in your forward works programme (LTCCP or 10 year State Highway plan)?			
Yes		45	66%
No		23	34%
Dont know		0	0%
	Total	68	100%

From a cross-tabulation of questions 15 and 17, it has been determined that most city councils (93 percent of the 15 that responded to this question) have cycle infrastructure projects in their LTCCP, while 63 percent of district councils and 13 percent of regional authorities do. All Transit offices that responded also have cycle infrastructure projects in their 10-year State Highway plans. These results are shown in table 4.

Table 4 Cycle projects in forward works programmes, by agency type

	No. of responses	Contain cycle projects in LTCCP or 10-year SH plan	Percentage
City councils	14	13	93%
District councils	41	26	63%
Regional councils	8	1	13%
Transit offices	5	5	100%
Total	**69**	**45**	**65%**

3.3.4 Type of automatic counters used for counting motor vehicles

The majority (62, or 87 percent) of the 71 agencies that responded to this survey count motor vehicle traffic automatically. Some use more than one technology. The most popular technology is MetroCount models 5600 or 5700 (pneumatic tube counters), accounting for 55 percent of respondents. Other kinds of rubber tube counters are used by 34 percent of respondents. Inductive and SCATS loops are also used.

Only nine respondents do not count motor vehicles: three district councils and six regional councils.

16. What types of automatic counters, if any, do you use for counting MOTOR VEHICLES?

None - we do not do automatic MOTOR VEHICLE traffic counting	9	13%
Pneumatic (rubber tube) - MetroCount 5600 or 5700 series	38	55%
Pneumatic (rubber tube) - Other MetroCount	10	14%
Pneumatic (rubber tube) - Golden River	3	4%
Pneumatic (rubber tube) - Other brands	11	16%
Inductive loops	10	14%
SCATS loops	11	16%
Piezoelectric sensors	1	1%
Radar	0	0%
Video recognition	1	1%
Infrared recognition	1	1%
Not sure which type	12	17%
Other (please specify)	5	7%

Of the 35 agencies that do not count cycle traffic and that responded to this question, 18 (over half) use MetroCount 5600 or 5700 counters to count motor vehicle traffic. These machines are the most commonly used counters for cycle traffic, so if these agencies wished to count cycle traffic, it would be relatively easy for them to do so. In addition, another 12 agencies count cycles manually (but not automatically), yet use these counters for motor vehicles. These agencies too have the potential to count cycle traffic automatically. Probably all they need is some encouragement on the key techniques and some special bicycle counting tubes (slightly softer than regular motor vehicle counting tubes).

3.4 Responses from those who DO count cycle traffic

3.4.1 Years counting bicycle traffic

Most agencies (22, or 67 percent) that count cycle traffic have done so for three years or less. However, four organisations have been counting cycle traffic for more than 10 years.

2. For how many years have you been counting bicycle traffic?

Less than 1 year	9	27%
1 - 3 years	13	39%
4 - 6 years	6	18%
7 - 10 years	1	3%
More than 10 years	4	12%
Total	33	100%

3.4.2 Who does manual counting

Of the 35 agencies that count cycle traffic, only four (11 percent) do not count cycle traffic manually. The majority (27, or 77 percent) of agencies that count cycles use external staff (such as contractors or students) for manual counts, as opposed to four (11 percent) who count traffic manually using their own staff.

3.	Who does most of your MANUAL cycle counting?	
None - we don't do manual cycle counting	4	11%
Contractors	14	40%
Casual staff (e.g. students)	13	37%
Our own (regular) staff	4	11%
Total	35	100%

3.4.3 Who does automatic counting

Automatic cycle counting is carried out by only 11 agencies, or one-third of the agencies that responded to this question. Of these, seven use external contractors and four use their own staff.

4.	Who does most of your AUTOMATIC cycle counting?	
None - we don't do automatic cycle counting	22	67%
Contractors	7	21%
Our own staff	4	12%
Total	33	100%

3.4.4 Use of 'before and after' counts

Of those agencies that count cycle traffic, about half do 'before and after' cycle counts in association with installing new cycle facilities, and half do not.

5.	Do you usually count cyclists before and after installation of new cycle facilities?	
Yes	17	52%
No	16	48%
Total	33	100%

3.4.5 How many locations and what kinds of counts

Respondents seemed to have some difficulty with question 6 (the most complex question in the survey):

- only about 30 (of the 35 who claim to do some cycle counting) responded to the sub-questions about manual cycle counting
- only about 15 responded to the sub-questions about automatic counting.

Of the 30 agencies that responded to the question about manual intersection surveys, 14 (47 percent) count 1–5 locations per year, nine (30 percent) count 6–25 locations and one (3 percent) counts 26–100 locations per year. Some 20 percent of respondents to this sub-question do not do manual intersection cycle counts.

Of the 27 agencies that responded to the question about manual mid-block surveys, 10 (37 percent) count 1–5 locations per year, 12 (44 percent) count 6–25 locations and one (4 percent) counts 26–100 locations per year. Some 15 percent of respondents to this sub-question do not do manual mid-block cycle counts.

6.	At how many locations do you count cycles each year, and what kinds of counts are these? Please tick as many as are appropriate.				
Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	1 - 5 locations	6 - 25 locations	26 - 100 locations	100+ locations	N/A None
Manual surveys of intersections (at road or path intersections)	14 47%	9 30%	1 3%	0 0%	6 20%
Manual surveys at midblock locations (roads or paths)	10 37%	12 44%	1 4%	0 0%	4 15%
Pneumatic tubes	1 7%	2 13%	1 7%	0 0%	11 73%
Inductive loops	1 6%	0 0%	0 0%	0 0%	15 94%
SCATS loops	1 7%	1 7%	0 0%	0 0%	13 87%
Piezoelectric sensors	0 0%	0 0%	0 0%	0 0%	15 100%
Radar	0 0%	0 0%	0 0%	0 0%	15 100%
Video recognition	0 0%	0 0%	0 0%	0 0%	15 100%
Infrared recognition	2 12%	0 0%	0 0%	0 0%	15 88%
Other types of automatic counts	1 6%	0 0%	0 0%	0 0%	15 94%

Relatively few agencies use any of the automatic counting technologies, although pneumatic tubes (such as the MetroCount machines) are used by four agencies. Even fewer agencies are using inductive loops (1), SCATS loops (2) and infrared recognition (2), while no agencies reported using piezoelectric, radar or video recognition technology.

3.4.6 Continuous cycle traffic monitoring

Five agencies claimed to count cycle traffic continuously. On further follow-up, it was determined that Queenstown Lakes District Council is currently successfully using radio beam counters to count cyclists and pedestrians on off-road paths. None of the others is counting traffic continuously, although two (Christchurch City Council, Palmerston North City Council) have extracted continuous counts from traffic signal loops for extended periods of time.

7.	Does your organisation have any sites where cycle traffic is monitored continuously (throughout the year, ongoing)?		
Yes		5	14%
No		30	86%
	Total	35	100%

3.4.7 Consideration of other counting technologies

New technologies are being considered by nine agencies that currently count cycle traffic (26 percent). The technologies being considered include upright inductive loops, video technology and piezoelectric counters.

8.	Is your organisation considering using any cycle counting technologies that it has not used before?		
No		25	74%
Yes - please specify the type of technology		9	26%
	Total	34	100%

3.4.8 Type of pneumatic counters used for counting cycle traffic

Of the 10 agencies that replied in the affirmative to this question, seven use MetroCount 5600 or 5700 counters and two of the remaining three were unsure (and might use the same counter). These counters are also used by many agencies for counting motor vehicle traffic.

9. What types of pneumatic (rubber tube) counters, if any, do you (or your contractor) use for counting cycle traffic?		
None - we do not do pneumatic cycle counting	25	74%
MetroCount 5600 or 5700 series	7	21%
Other MetroCount	0	0%
Golden River	0	0%
Other brands of pneumatic counter	0	0%
Not sure which type	2	6%
Other; please specify	1	3%

3.4.9 3.4.9 Systematic programme for cycle counting

Of those organisations that count cycle traffic, 48 percent have a systematic programme in place, while 23 percent of those that do not are developing one. Manual counting is the most popular type of counting included in cycle counting programmes.

10. Do you have a systematic programme for cycle counting?		
No, we don't have a systematic cycle counting programme	10	29%
No, but we're developing one	8	23%
Yes, for manual counts	11	31%
Yes, for automatic counts	3	9%
Yes, for both manual and automatic counts	1	3%
Not sure; or other	2	6%
Total	35	100%

3.4.10 Tools used for analysing cycle counts

The most commonly used analysis tool for cycle counts is a spreadsheet, although 27 percent of respondents were unsure. Only 12 percent used software provided by the counting equipment supplier. Respondents were able to include more than one kind of analysis tool for this question.

11. What type of data analysis tools do you (or your contractor) use for analysing bicycle counts? Please tick as many as are appropriate.		
Software provided by the equipment supplier	4	12%
Software written in-house	0	0%
Spreadsheet e.g. Microsoft Excel	21	64%
Database e.g. Microsoft Access	2	6%
Not sure; or other	9	27%

3.4.11 Cycle count data storage

Most organisations (19, or 56 percent) use spreadsheets to store their data. Only three organisations store their data in a RAMM database, while eight use hard copies and seven were not sure. Respondents were able to include more than one kind of data storage medium for this question.

12. How do you store your cycle count data?		
Spreadsheets	19	56%
Access databases	1	3%
RAMM database	3	9%
Hard copy only	8	24%
Not sure; or other	7	21%

3.5 Responses from those who DO NOT count cycle traffic

3.5.1 Systematic programme for cycle counting

Questions 14 and 15 were answered by respondents who do not currently count cycles. As expected, the majority (86 percent) do not have a systematic cycle counting programme. Two agencies (both regional authorities) are proposing to develop a systematic programme for cycle counting, while one (a district council) has a programme but doesn't count cycle traffic.

14. Do you have a systematic programme for cycle counting?		
No, we don't have a systematic cycle counting programme	31	86%
No, but we're developing one	2	6%
Yes, we have a systematic cycle counting programme but don't count cycle traffic ourselves	1	3%
Not sure; or other	2	6%
Total	36	100%

3.5.2 Consideration of other counting technologies

Of the 35 who do not currently undertake cycle counting and who answered this question, 15 (43 percent) are not considering doing so, eight (23 percent) are not sure and 12 (34 percent) are considering counting cycle traffic. Of those considering counting cycle traffic, most (eight) would use manual counts only, two would use automatics only and two would use both manuals and automatics.

13. What method, if any, are you considering using to count bicycle traffic in the future?		
None	15	43%
Manual	8	23%
Automatic	2	6%
Both	2	6%
Not sure	8	23%
Total	35	100%

3.6 Additional comments

The final question of the survey asked respondents for any additional comments. Thirty respondents chose to do so: 18 of those who currently count cycles and 12 of those who currently do not.

The large number of comments suggests that participants were interested in the survey and the subject area. Some of the counts were relatively minor (eg one respondent simply replied ‘no’, ie he had no additional comments to make), but most were substantive. All comments are recorded in appendix 4, along with responses to some of the issues raised. The following key points emerged:

- Seven respondents were interested in starting to count cycle traffic and supported the principle of collecting better cycle traffic data.
- Two respondents were unsure about the appropriate technology to use for automatic counts, while another two requested copies of the survey report. (Note: all survey respondents will be offered electronic copies of this report.)
- Two respondents had encountered accuracy or reliability problems when counting cycles with automatic counters. Another respondent noted, however, that considerable care was needed in setting up the counters and selecting an appropriate location for automatic counter tubes. (Note: some contractors are accurately counting cycles with MetroCount counters. Special cycle counting tubes are required – these are slightly softer than those used for counting motor vehicles. The precise placement location of counter tubes is important, to ensure that cyclists are likely to be travelling in single file and that the tubes are not often being hit by motor vehicle tyres. Better information is needed to support those who are having difficulty.)
- Two respondents mentioned other kinds of cycle counts they undertake – helmet use and school cycle use.
- Two reported that, as they worked for very rural councils, they had low numbers of cyclists and consequently counting cycle traffic was a low priority for them.

3.7 Summary

- An excellent response rate of 71 percent was achieved for this survey. It appears that RCAs and regional councils are very interested in bicycle counting.
- About half of the RCAs and regional councils that responded to the survey have counted cycle traffic in recent years.
- Two-thirds of those that reported counting cycle traffic use manual counts only.
- About two-thirds of respondents have cycle infrastructure projects in their forward works programmes.
- Most of the 11 agencies that count cycle traffic automatically use MetroCount 5600 or 5700 series counters.
- Half of those agencies that do not count cycle traffic use MetroCount counters for counting motor vehicles. These counters are capable of counting cycles. In addition to these 18 agencies, there are another 12 that count cycle traffic manually but not automatically while also using MetroCount counters for counting motor vehicles. Thus, there are 30 agencies that could count cycles automatically with technology they already use.
- Two-thirds of the agencies that count cycle traffic have been doing so for three years or less.
- Only three agencies count (or have recently counted) cycle traffic continuously (for months or more at a time).
- Some respondents reported difficulty in getting MetroCount counters to count cycle traffic successfully, while others noted that care is needed to get reliable counts. Appendix 1 provides advice on the successful installation of MetroCount 5600 rubber tube traffic counters for counting cycles.

3.8 Recommendation

It is recommended that this report be made available to survey respondents by email and on the Land Transport New Zealand website.

Appendix 1 – Guidelines for counting cycles with tube counters

Disclaimer

These guidelines are to assist in the installation of MetroCount 5600 traffic counters when counting cycles. The manufacturer's instructions should be used as the main source of advice when using any automated traffic counters. These guidelines have been prepared by MWH New Zealand Ltd and ViaStrada Ltd to complement information from MetroCount and are provided in good faith; however, no responsibility for the results achieved by following these guidelines is accepted. Those counting cycle traffic should use their best judgement and, if in doubt, seek assistance from MetroCount directly.

General

The setup for counting cycles is similar to that for classified counts for motor vehicles (two tubes). The main differences are the tube type used and some layout considerations.

The tubes used for counting cycles are smaller and softer than those used for motor vehicles, but the setup parameters are the same. The softer tubes mean that it is preferable to minimise the amount of motor vehicle traffic across the tubes, to minimise damage by trucks in particular. MetroCount 5600 counters can easily distinguish between motor vehicles and cycles, but as with most automatic counters, if there are multiple simultaneous 'hits', the counter is likely to be confused. The length of tubes should be limited to 7 m.

Guidelines for paths

The layout for off-road paths is simple. The tubes should traverse the entire path, with care taken not to place tubes in the vicinity of obstacles (such as overhanging trees, etc) that may affect cyclists' behaviour or trajectory. A typical installation is illustrated in figure A1.

Figure A1 Typical off-road path counting installation

Guidelines for roads

A separate counter should be set up on each side of the road, with tubes extending into the road only as far as necessary to record cycles, based on observation of where cyclists actually ride. This minimises the recording of motor vehicles, which may reduce the accuracy of the cycle counts if traffic volumes are high.

The tubes should be installed on uniform mid-block sections of road. Try to avoid getting too close to intersections where there may be 'intersection noise', such as left-turn lanes.

Avoid placing the tubes near service lids such as fire hydrants, valve covers, etc, as cyclists often try to avoid these and they may miss the tubes in the process.

Where possible, avoid placing the tubes in areas where parking exists, as a car parked on a tube will stop that tube from detecting cycles. If car parking can't be avoided, assess the parking demand. For an area with high parking demand, the tubes should be fenced or coned off. If the area has low parking demand, then it may be preferable to not use cones, which would highlight the presence of the tubes and increase the risk of vandalism. Spray painting the road and the tubes in the parking area with a pseudo crosshatching (as shown in figure A2) can be beneficial.

If the tubes are being placed across a cycle lane, they should extend approximately 400 mm beyond the cycle lane line (measured from the centre of the line to the end of the tube), as shown in figure A3. This provides space to secure the tubes with straps well clear of the cycle lane, to encourage cyclists to ride over the tubes.

Figure A2 Spray painting tubes to discourage parking where parking demand is low

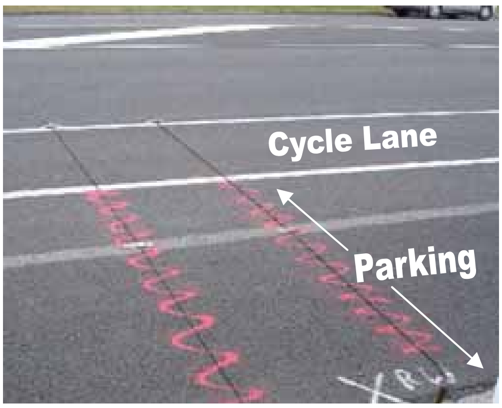


Figure A3 Tubes extend 400 mm beyond the cycle lane or edge line

If the tubes are being placed on a section of road with no cycle lanes, then as a general rule of thumb the tubes should extend to 40 percent of the traffic lane width. For example, on a traffic lane 4 m wide, the tubes should extend 1.6 m from the kerb, edge line or car parking line.

Appendix 2 – List of agencies that responded to the survey

Ashburton District Council
Buller District Council
Central Otago District Council
Christchurch City Council
Dunedin City Council
Environment Canterbury
Far North District Council
Gisborne District Council
Greater Wellington Regional Council
Hamilton City Council
Hawke's Bay Regional Council
Hurunui District Council
Invercargill City Council
Kapiti Coast District Council
Manawatu District Council
Marlborough District Council
Nelson City Council
North Shore City Council
Otorohanga District Council
Papakura District Council
Queenstown Lakes District Council
Rodney District Council
Selwyn District Council
South Waikato District Council
Stratford District Council
Tauranga City Council
Timaru District Council
Waikato District Council
Waimate District Council
Waitomo District Council
Wellington City Council
Western Bay of Plenty District Council
Whakatane District Council
Transit New Zealand – Hamilton
Transit New Zealand – Napier
Transit New Zealand – Wellington
Auckland City Council
Carterton District Council
Chatham Islands Council
Clutha District Council
Environment Bay of Plenty
Environment Waikato
Franklin District Council
Gore District Council
Grey District Council
Hastings District Council
Horizons Regional Council
Hutt City Council
Kaikoura District Council
Kawerau District Council
Manukau City Council
Napier City Council
New Plymouth District Council
Otago Regional Council
Palmerston North City Council
Porirua City Council
Rangitikei District Council
Rotorua District Council
South Taranaki District Council
Southland District Council
Taupo District Council
Thames Coromandel District Council
Upper Hutt City Council
Waimakariri District Council
Waitakere City Council
Wanganui District Council
West Coast Regional Council
Westland District Council
Whangarei District Council
Transit New Zealand – Head Office
Transit New Zealand – Wanganui

Appendix 3 – Bicycle counting survey tool

NZ Bicycle Counting Survey

1 Has the organisation you represent undertaken any of the following kinds of bicycle counting in recent years?

- Manual (e.g. staff, students or consultants)
- Automatic (e.g. electronic or mechanical equipment)
- Both (manual and automatic)
- No - we have not counted bicycle traffic in recent years.

SUBMIT

Note – those responding ‘No’ went straight to question 13.

NZ Bicycle Counting Survey

2 For how many years have you been counting bicycle traffic?

- Less than 1 year
- 1 - 3 years
- 4 - 6 years
- 7 - 10 years
- More than 10 years

3 Who does most of your MANUAL cycle counting?

- None - we don't do manual cycle counting
- Contractors
- Casual staff (e.g. students)
- Our own (regular) staff

4 Who does most of your AUTOMATIC cycle counting?

- None - we don't do automatic cycle counting
- Contractors
- Our own staff

5 Do you usually count cyclists before and after installation of new cycle facilities?

- Yes
- No

6 At how many locations do you count cycles each year, and what kinds of counts are these?

Please tick as many as are appropriate.

	1 1 - 5 locations	2 6 - 25 locations	3 26 - 100 locations	4 100+ locations	N/A None
Manual surveys of intersections (at road or path intersections)	1	2	3	4	
Manual surveys at midblock locations (roads or paths)	1	2	3	4	
Pneumatic tubes	1	2	3	4	
Inductive loops	1	2	3	4	
SCATS loops	1	2	3	4	
Piezoelectric sensors	1	2	3	4	
Radar	1	2	3	4	
Video recognition	1	2	3	4	
Infrared recognition	1	2	3	4	
Other types of automatic counts	1	2	3	4	

7 Does your organisation have any sites where cycle traffic is monitored continuously (throughout the year, ongoing)?

- Yes
- No

8 Is your organisation considering using any cycle counting technologies that it has not used before?

- No
- Yes - please specify the type of technology

9 What types of pneumatic (rubber tube) counters, if any, do you (or your contractor) use for counting cycle traffic?

- None - we do not do pneumatic cycle counting
- MetroCount 5600 or 5700 series
- Other MetroCount
- Golden River
- Other brands of pneumatic counter
- Not sure which type
- Other; please specify

10 Do you have a systematic programme for cycle counting?

- No, we don't have a systematic cycle counting programme
- No, but we're developing one
- Yes, for manual counts
- Yes, for automatic counts
- Yes, for both manual and automatic counts
- Not sure; or other

11 What type of data analysis tools do you (or your contractor) use for analysing bicycle counts?

Please tick as many as are appropriate.

- Software provided by the equipment supplier
- Software written in-house
- Spreadsheet e.g. Microsoft Excel
- Database e.g. Microsoft Access
- Not sure; or other

12 How do you store your cycle count data?

- Spreadsheets
- Access databases
- RAMM database
- Hard copy only
- Not sure; or other

SUBMIT

Respondents to this series of questions (who all count cycle traffic) now skip to question 15 (questions 13 and 14 are for those who do not cycle traffic).

NZ Bicycle Counting Survey

13 What method, if any, are you considering using to count bicycle traffic in the future?

- None
- Manual
- Automatic
- Both
- Not sure

14 Do you have a systematic programme for cycle counting?

- No, we don't have a systematic cycle counting programme
- No, but we're developing one
- Yes, we have a systematic cycle counting programme but don't count cycle traffic ourselves
- Not sure; or other

SUBMIT

All respondents were asked to respond to the final 5 questions.

NZ Bicycle Counting Survey

15 Do you have any cycle infrastructure projects in your forward works programme (LTCCP or 10 year State Highway plan)?

- Yes
- No
- Don't know

16 What types of automatic counters, if any, do you use for counting MOTOR VEHICLES?

- None - we do not do automatic MOTOR VEHICLE traffic counting
- Pneumatic (rubber tube) - MetroCount 5600 or 5700 series
- Pneumatic (rubber tube) - Other MetroCount
- Pneumatic (rubber tube) - Golden River
- Pneumatic (rubber tube) - Other brands
- Inductive loops
- SCATS loops
- Piezoelectric sensors
- Radar
- Video recognition
- Infrared recognition
- Not sure which type
- Other (please specify)

17 What type of authority do you represent? (If you are a consultant for an authority, please answer for that authority.)

- City council
- District council
- Regional council/authority
- Transit NZ - Head Office
- Transit NZ - Regional Office

18 Please provide your name, organisation and contact details.

Name	
Organisation you represent for this survey	
Organisation you work for (if different)	
Phone number	
Cellphone number	
E-mail address	

19 Do you have any additional comments?

SUBMIT

Appendix 4 – Additional comments by survey respondents (question 19) and ViaStrada's responses

Comment	Response
No.	
Accuracy has been a bit of an issue – placement of tubes is important. Maintenance has also been an issue bike tube counters (vandalism). Manual counts can be unreliable due to human component. Concerned over the accuracy of SCATS loops – further investigations to be conducted.	Agree re accuracy, tube placement and manual counts. SCATS loops are probably accurate in appropriate locations (free of motor vehicles).
We have had some automatic counts done by [name] of MWH in Chch as part of a study he is working on.	Refers to a nationwide research project for Land Transport NZ involving both MWH and ViaStrada. Aims to develop a tool for predicting cycle traffic on new facilities.
As you are probably aware, TAs in the Auckland region completed a regional cycle count this year. The answers submitted here are on this basis. Counts completed in previous years were ad-hoc and limited to summer student type counts. Information on types of tubes etc. used in the automated component of the Waitakere CC count (as part of regional count) contributed to data used to produce an AADT count for sites. This activity was completed by an external consultant.	Manual counts done by Gravitas; automatic counts and development of an AADT cycle traffic estimation tool (from manual counts) done by MWH and ViaStrada.
We are keen to measure cycling activity as part of our Active Westland campaign to get people out walking/cycling, involved in sport and other physical activity. Manual surveys initially.	
Our detailed cycle counts commenced during the 06/07 Christmas holiday period. Prior to this we had little or no detailed data on cyclist numbers and the counts are intended to be ongoing from now on (generally during university holiday periods throughout the year). The need for these counts has been generated by the increased national emphasis on walking and cycling as modes of travel and by this council's goals under its recently adopted cycle strategy. We identify a number of factors during these counts such as type of cyclist. Also we have commenced counts of cycles at school bike sheds. In due course such data will assist in developing cases and priorities for projects as well as being a tool for measuring cyclist growth over time.	General support for counting.
Please supply a copy of survey results.	All survey respondents will be offered electronic copies of this report.

Comment	Response
We do contribute to the Waikato River Trails project, both walking and cycling adjacent to the Waikato River.	
Not sure if you need 'time of day' counts? I noted from the ARTA counts done in March that the times did not, in my opinion, adequately capture all cycle movements.	Automatic counts (with perhaps 15-minute time intervals) can be used to complement manual counts for this reason.
We do not have a regular cycle counting programme but we do manual counts in support of local cycling projects.	
Being a small rural local authority we do not generate sufficient cycle traffic to justify any special considerations.	
We recognise the value of cycle counting but not sure on methodology. Although we have the perception that cycling is increasing we have no data and lack of such data also hinders the implementation of projects due to Land Transport NZ financial assistance criteria not being met.	All survey respondents will be offered electronic copies of this report.
We recognise the need to gather more data on cycle volumes. Our new counting contract allows for the collection of automatic cycle counts. We hope to install an automatic loop based counter site on one of busiest cycle routes this year.	
We usually use consultants/contractors.	
Whangarei will be considering automatic counting for cyclists and would like to be kept informed of relevant technology.	All survey respondents will be offered electronic copies of this report.
Whoops, can't go back and correct wrong entries – I remembered we also do manual counts at three locations on one morning each year.	
Alternative contacts are [name] and [name] – Grey District Council.	
Not many bikers out this way!	
Whilst we do not count cycle numbers we do cycle helmet surveys so have a reasonable idea of numbers in certain locations.	Helmet surveys
We also counted and monitored bicycle numbers at various schools to assess effects of cycle promotion initiatives.	School surveys
We tried the special MetroCount bike tubes to use as part of our automatic counts – but gave up as the contractors didn't have any success with them.	Some contractors are accurately counting cycles with MetroCount counters. Better info is needed to support those who are having difficulty.

Comment	Response
We are currently developing a regional walking and cycling strategy. We too have discovered that there is little cycle count data available from the TAs in our region.	
A cycleway development committee has been formed at Manawatu District to assist in the recommendations of the Manawatu Active Cycle Strategy. A further contact who represents that committee is [name] on the same phone number.	
A recent manual traffic survey carried out by Transit and KDC included cycles and pedestrians.	
I am 2 weeks into this role and know little at this stage.	
All of our cycle counting is done as part of the ARTA Regional Cycle Monitoring Plan.	
Cycle counts were done for the Gravitas report and are being done annually.	Manual counts done by Gravitas; automatic counts and development of an AADT cycle traffic estimation tool (from manual counts) done by MWH and ViaStrada.
Cycle counts are not large, but we recognise that we need to set out regular count at control sites to determine if usage is changing (growing or declining). It is planned to set up some formal control points later in 2007/08.	
With the increased emphasis on alternative mode transport solutions further guides and assistance on how to measure and equate the benefits of cycling would be very useful to help justify projects/packages. Part of this is having sufficient and appropriate data to assist in this. Currently unsure what is available or what can be achieved for example through existing traffic counting capability or other options to obtain the necessary data in the appropriate form.	All survey respondents will be offered electronic copies of this report.
Counts to date show a large difference between the manual and auto counts (MetroCount). We will probably only perform manual counts until the automatic system becomes more reliable.	Some contractors are accurately counting cycles with MetroCount counters. Better info is needed to support those who are having difficulty.

Our contact details

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PO Box 13364, Christchurch

Dunedin Office
Telephone 03 951 3009 Fax 03 951 3013
AA Centre, 450 Moray Place
PO Box 5245, Dunedin

Transport Registry Centre

Telephone 06 953 6200 Fax 06 953 6411
Level 3, IRD Building
Cnr Ashley and Ferguson Streets
Private Bag, Palmerston North

Contact centres

General enquiries	0800 699 000
Driver licensing	0800 822 422
Road user charges	0800 655 644
Motor vehicle registration	0800 108 809
Overdimension permits	0800 683 774

Land Transport NZ
Ikiiki Whenua Aotearoa

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