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Research Report Prepared for
Auckland Transport

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2012 Auckland Region Manual Cycle Monitor

- Franklin Ward -

Gravitas Research and Strategy Limited
Level 12, Wellesley Centre,
44-52 Wellesley St, Auckland
PO Box 3802, Shortland St, Auckland
tel. 09 356 8842, fax. 09 356 5767
e-mail. info@gravitas.co.nz

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1.1 Introduction

The Need For Reliable Cycle Trip Data

Monitoring cycle movements and cycle traffic is important to Auckland Transport, to identify where investment may be needed to improve infrastructure for cycling. Cycle traffic data will also help Auckland Transport prioritise future funding through the Auckland Land Transport Programme[1].

Cycle traffic data will help inform a major programme of improvements for cycling in the Auckland region. In 2007, over $100 million was planned to be invested in building over 50% of the Regional Cycle Network by 2016. By mid 2009, 21% of the Regional Cycle Network had been built. Comprehensive cycle data assists with the development of the region's cycle network and prioritisation of projects.

This cycle monitoring gives precise cycle traffic information for a number of locations across the region, which can guide investment in infrastructure and other programmes. It also allows Auckland Transport to track progress against a quality baseline over the coming decade.

Manual Cycle Monitoring

Historically, manual cycle monitoring had been carried out in four of the seven Auckland region Territorial Authorities (TAs). However, each monitor had been undertaken using a different methodology[2]. This variability prevented the possibility of comparing the relative popularity of different sites across TA boundaries. In addition, each monitor programme took place at different times of the year, preventing comparability from location to location since factors such as weather, school/tertiary education holidays, seasonal variations and daylight savings each have an impact on the numbers of cyclists. Even within TAs, inconsistencies as to when counts took place from year to year prevented robust comparability over time.

Through the Regional Cycle Monitoring Plan, it was proposed that these manual counts be regionally aligned to ensure better regional consistency. Ideally, cycle count monitoring would be carried out at the same time each year across the region, applying a standard methodology.

[1] Auckland Regional Transport Authority (2006) *Regional Cycle Monitoring Plan (Provisional Guidelines)*
[2] For example, Manukau and North Shore cities' monitors took place at the same morning and evening peak times, while Auckland city's differs by one hour for the evening peak, and Waitakere's differs for both peaks.

As outlined in the Regional Cycle Monitoring Plan, a consistent methodology would ensure that:

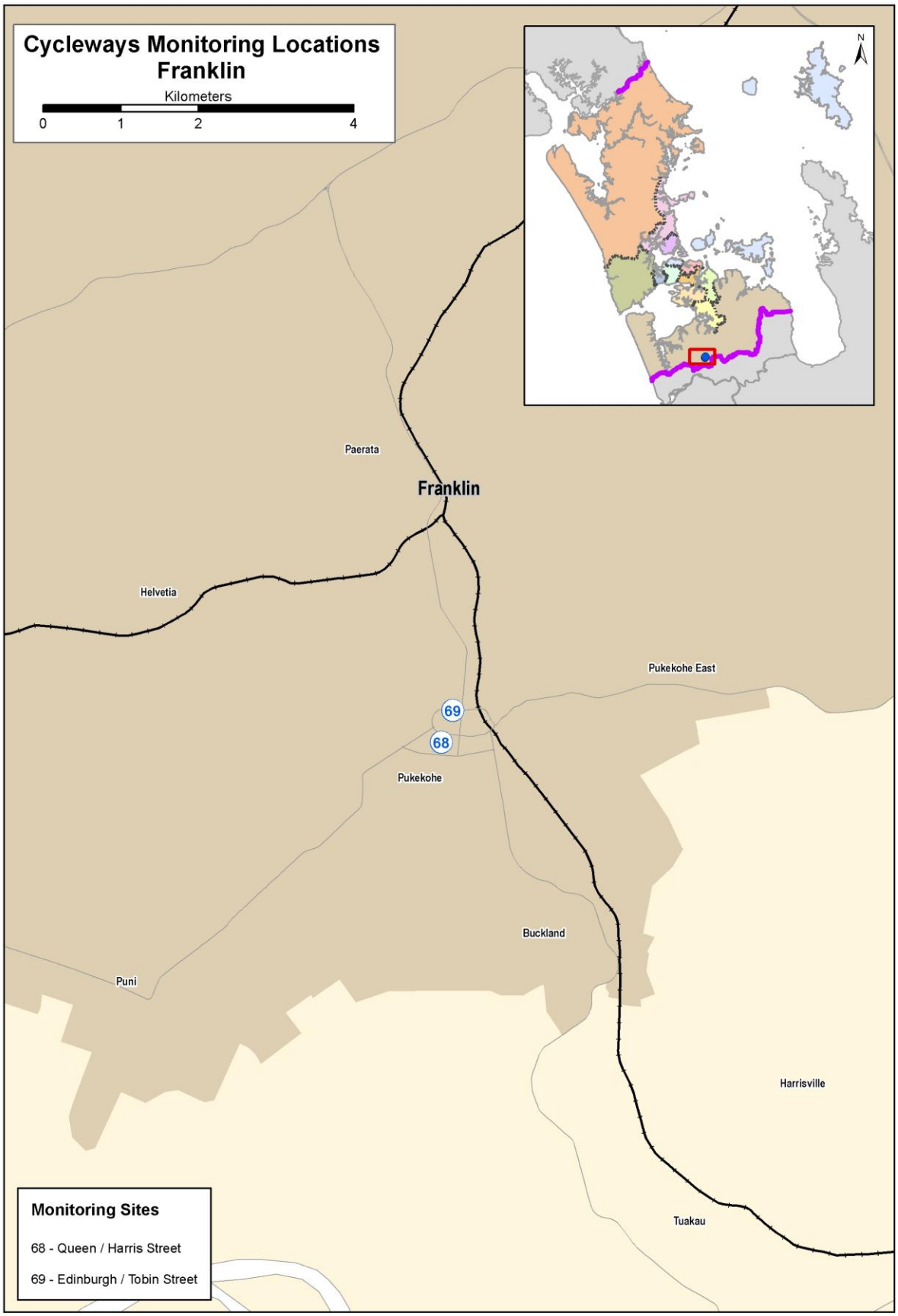
- standard monitoring days are used – that is, school and tertiary holidays, and statutory holidays are excluded and that monitoring preferably takes place at the same time each year to enable reliable year-on-year comparisons to be made. Decisions about whether cycle counts take place on weekdays and weekends would be made at the outset;
- a consistent set of times are used for monitoring, for the morning, evening and inter-peak periods; and
- a consistent method is used for monitoring direction and location of cyclists, including monitoring how many are on the footpath.

This report presents results from manual cycle counts conducted at two sites in the Franklin ward following a standardised methodology. Results are presented site-by-site, as well as being aggregated to a ward and region level. For sites also monitored in 2007, 2008, 2009, 2010 and/or 2011, comparative results are provided.

Important Note: This report provides the results of manual cycle monitoring conducted at two pre-determined sites in the Franklin ward only. Site-by-site results and ward summaries for all other Auckland region wards have been provided in separate documents. It is strongly recommended that this report be read in conjunction with the Regional Summary document, which provides aggregated data for the region, as well as a regional comparison of results.

Figure 1.1 shows the locations of the monitoring sites in the Franklin ward.

Figure 1.1: 2011 Cycle Monitoring Locations in Franklin Ward



1.2 Methodology

Manual cycle counts have been conducted using a standardised methodology across all sites. This methodology is outlined below.

Choice of Sites

Decisions as to which sites were chosen for cycle counts were guided by the planned developments for the Regional Cycle Network.

Manual counts were undertaken at 83 different sites throughout the region. Sites were distributed by ward as follows:

- Albany 15 sites
- Albert-Eden–Roskill 10 sites
- Franklin 2 sites
- Howick 5 sites
- Manukau 10 sites
- Manurewa-Papakura 4 sites
- Maungakiekie-Tamaki 7 sites
- North Shore 8 sites
- Orakei 2 sites
- Waitakere 13 sites
- Waitemata and Gulf 10 sites
- Whau 4 sites

(Note: Seven sites lie on the border of two wards. These sites have been included in both ward reports).

Monitoring Times

Time Of Day

Manual counts in the morning peak were conducted between 6:30 and 9:00 am, with manual counts in the evening peak conducted between 4:00pm and 7:00pm.

Day Of Week

Previous experience conducting cycle and other traffic manual counts has found that these counts are best undertaken on either a Tuesday, Wednesday or Thursday as travel patterns on Mondays and Fridays tend to be more variable.

Time Of Year

To ensure consistency throughout the region, standard monitoring days were selected and agreed upon by Auckland Transport. In selecting the days, consideration was given to:

- the timing of school and tertiary holidays/the commencement of term time for tertiary institutions;
- the timing of statutory holidays (particularly Easter);
- the timing of Bikewise Month; and
- daylight saving times.

It was agreed that manual counts would commence on Tuesday the 6th of March and be conducted on the first three fine days of the 6th, 7th, 8th, 13th, 14th, or 15th of March.

Counts were conducted on the following days:

- Tuesday 6th March — Albany, North Shore, Waitakere
- Wednesday 7th March — Whau, Albert-Eden-Roskill, Orakei, Manurewa-Papakura, Maungakiekie-Tamaki
- Tuesday 13th March — Howick, Franklin, Manukau, Waitemata & Gulf

Weather and Daylight Conditions

To reduce the impact of weather conditions on cycle numbers, manual counts were conducted on predominantly fine days. In addition, if it rained during the morning peak, monitoring in the evening peak on that same day was also postponed, irrespective of the weather (as it can be assumed that cyclists' travel behaviour in the evening peak will have been influenced by decisions they made earlier in the day – for example, the decision to leave their bike at home and use public transport instead). Care was taken to ensure that all manual counts were conducted prior to the conclusion of daylight saving.

The weather on the three count days in 2012 was as follows:

Tuesday 6th March

- Sunrise: 7:11am; Sunset: 7:52pm.
- Highest temperature: 21.3 degrees Celsius.
- Mostly fine weather with some cloud for some sites in the morning and afternoon shifts.

Wednesday 7th March

- Sunrise: 7:12am; Sunset: 7:51pm.
- Highest temperature: 24.0 degrees Celsius.
- Mostly fine weather with some cloud for all sites in the morning, some sites experienced showers intermittently from 16:00 until the end of the evening monitoring period.

Tuesday 13th March

- Sunrise: 7:17am; Sunset: 7:43pm.
- Highest temperature: 21.3 degrees Celsius.
- Mostly fine weather with some cloud for some sites in the morning and afternoon shifts.

Conducting The Manual Counts

Scoping Visit

Gravitas visited each of the sites prior to the first monitoring shift. This scoping visit was used to map the roading network and to identify and map the range of directions that cyclists could travel through the site. This visit was also used to identify any particular features (such as designated cycle ways) or potential hazards that surveyors needed to be aware of when monitoring at the site. As part of the scoping visit, a recommended observation point was identified and mapped (this point chosen on the basis of offering the best trade-off between visibility and safety). The maps prepared for each site have been included in this report – just prior to the count results for each site.

As part of the scoping visit, a small number of sites were identified as requiring two or more surveyors to accurately capture all cycle movements (due predominantly to the complexity of the roading/cycleway network at the site or poor visibility at the intersection). Two surveyors were used at:

- Great South Road/Campbell Road/Main Highway, Greenlane (Site 21; Maungakiekie-Tamaki/Albert-Eden-Roskill wards).
- Beach Road/Browns Bay Road, Mairangi Bay (Site 45; Albany ward).
- Onehunga Harbour Road (Site 17, Maungakiekie-Tamaki ward).

Three surveyors were used at the ferry terminal site (Site 22; Waitemata and Gulf ward).

Briefing Session

Prior to their monitoring shift, all surveyors participated in a briefing session. The session covered:

- the overall aims of the Regional Cycle Monitoring Plan and how the manual monitoring fits with this Plan;
- the aims and purpose of the cycle monitoring and the process to be used;
- review of all materials supplied – how to interpret and use the maps, how to accurately record data on count sheets etc;
- health and safety issues; and
- general administration – shift times, collection and return of materials etc.

This session was interactive, with surveyors being encouraged to ask questions and seek further explanation on issues they were unsure about. Surveyors were also provided with a copy of the briefing notes for reference during their shifts. During the briefing session, all surveyors were also required to conduct a "practice count" for 20 minutes at the Ponsonby Road/Karangahape Road site.

Conducting The Manual Counts

Each site was assigned to a surveyor, who was issued with a map that showed the range of movements a cyclist could make through that site. In addition to the map, surveyors were issued with a clipboard, a safety vest and a letter identifying them as a member of a Gravitas research team[3].

During their shift the surveyor collected data on:

- The total number of cyclists[4] passing through the intersection;
- The direction in which cyclists are travelling (using the numbers on the map provided);
- The time at which cyclists pass through the intersection (to the nearest minute);
- Whether cyclists are school children or adults (determined by whether they are wearing a school uniform or clearly of school age);
- Whether cyclists are wearing a helmet;
- Gender of the cyclist *(collected for the first time in 2011)*; and
- Whether cyclists are riding on the road, footpath or designated off- road cycleway[5].

[3] This letter also contained contact details for Auckland Transport and Gravitas Research and Strategy for any member of the public or local business owners who had queries about the work being undertaken.
[4] To ensure consistency across all surveyors, a "cycle" was defined as being non-motorised, with one or two wheels and requiring pedalling to make it move. Note that this definition did not include scooters.
[5] Note: For the purpose of this project, an off-road cycleway is defined as designated off-road path for cycles. This includes exclusive cycle paths, separated paths (such as the footpath on Tamaki Drive) and shared-use paths (available to cyclists and pedestrians). It excludes on-road cycle lanes (that is, designated lanes marked on the road).

Since 2009, surveyors have been required to indicate those cyclists riding together in groups of three or more. To be consistent with previous years, each member of these 'pelotons' has been included in the site-level analysis as a separate cyclist movement. However, where pelotons were observed, the number of cyclists and the time they passed through the site has been given in the report, along with a percentage figure indicating what share of all cyclists at the site were riding as groups.

In addition, where cyclists were recognisable, surveyors were instructed to record each cyclist no more than three times during a single shift, irrespective of how many movements they actually made through the site. Surveyors noted where and when this occurred.

Data was collected on the weather and daylight conditions at the site. Surveyors were also encouraged to record any information that may have affected cycle numbers or cycle movements at the site – for example, construction or maintenance works being conducted on the cycle way or road works at the intersection.

A team of supervisors checked that surveyors were in the correct position and recording data accurately.

Data Analysis

Upon their return to Gravitas, all count sheets were checked for completeness. The raw data was then entered into Excel for logic checking, analysis and graphing.

Annual Average Daily Traffic (AADT) Analysis

It is acknowledged that the number of cyclists using a site varies by time of day, day of the week and week of the year, and therefore it is not valid to simply multiply manual count data collected over a certain (relatively brief) period out to represent a full day, week or year. However, according to Land Transport New Zealand[6], Annual Average Daily Traffic (AADT) analysis can be used to estimate the average annual daily flow of cyclists from manual and automated cycle counts conducted at one point in time. The procedure involves deriving scale factors, which account for the time of day, day of the week, and week of the year (which varies with school holidays and season) as well as weather conditions on the count day. These scale factors are then applied to the count data collected to give an AADT estimate.

Using the manual count figures for each site, it has been possible to provide the average annual daily traffic flow of cyclists (cycling AADT) estimate for each site. AADT scale factors (morning and afternoon) were provided by ViaStrada[7].

[6] http://www.ltsa.govt.nz/road-user-safety/walking-and-cycling/cycle-network/appendix2.html
[7] ViaStrada is a traffic engineering and transport planning consultancy based in Christchurch, New Zealand.

By applying the scale factor to the manual count data for each morning and afternoon peak, and averaging the two figures, an average annual daily cyclist flow figure has been obtained for each site. *A more comprehensive overview of the methodology used for this analysis is provided in Appendix One.*

Note: ViaStrada acknowledge that, as cycling volumes fluctuate from day to day depending on the weather, this method should be used with caution. They note that ideally an estimate should be achieved based on the average of the results of several counts, rather than counts from a single day, as in this study[8].

School Bike Shed Counts

As stated above, manual cycle counts were undertaken during the morning (6:30am to 9:00am) and evening (4:00pm to 7:00pm) peaks. However, it was noted in the design phase of the project that the timing of the evening peak monitoring would mean that the greatest share of students cycling home from school will be excluded from the counts. This was identified as a potential weakness of the monitoring proposed.

Therefore, it was suggested that information on numbers of students cycling to and from intermediate and secondary schools across the region could be collected by counting the number of bikes in school bike sheds on a pre-determined day. Rates of cycling among students could also be assessed by calculating the number of bikes counted as a share of the school's total roll (or share of the school's roll eligible to cycle).

Initially it was decided that school bike shed monitoring would focus only on intermediate and secondary schools (and composite schools which included children of intermediate and secondary school age), since children travelling to primary schools are considered by many parents (and schools) as too young to cycle to school. Note however that, to ensure all children of intermediate school age cycling to school were captured, full primary schools (those catering for Years 1 to 8) were included in the school bike shed count from 2011.

[8] Appendix 2 of the Cycle Network and Route Planning Guide (CNRPG) (Land Transport New Zealand, 2004)

Methodology

The following process was used to collect the school bike shed count data.

1. Gravitas designed an information sheet that was distributed to most full primary, intermediate, secondary and composite (Years 1 to 13) schools in the Auckland region via email (note a small number of schools were omitted due to the special nature of the students e.g. boarding schools, special needs schools). This sheet was designed in consultation with Auckland Transport to ensure all necessary information was collected.

2. This email was then sent to all eligible schools in Auckland region (n=317) to notify them of the bike shed count and to let them know what they would be required to do. Included in this email was a link to an online count form.

3. To enhance the comparability of the school bike shed data with that of the regional cycle monitor, Tuesday 6th March was designated as the bike shed count day. (Most schools reported that they undertook the count on this day).

4. Once the school bike shed count had been completed, schools completed the online count form and submitted it electronically to Gravitas. Gravitas contacted all participating schools who had not returned their sheets after five working days, first by email (two rounds) and then by telephone. All count forms were checked for completeness before being data-entered into Excel. In 2012, 233 responses were received, a response rate of 74 per cent. (This compares with 68 per cent in 2011).

Reporting

The data from the manual counts has been presented at a site-by-site, TA and regional level.

Manual Counts - Site Level Reporting

The following results have been reported for each site:

- Total number of movements through the intersection during each peak;
- Total number of movements through the intersection during each ten-minute interval during each peak;
- Number of cyclists making each directional movement through the intersection during each peak; and
- Share of cyclists through the intersection during each peak who are:
  - adults/school children
  - wearing a helmet/not wearing a helmet
  - male/female
  - riding on the road/riding on the footpath/riding on an off-road path

Manual Counts - Aggregated Reporting

Results have also been reported at an aggregate level (that is, summing up all sites) – by ward and across the region – to show the total number of cycle movements recorded (both overall and by ten-minute intervals) and the characteristics of the cyclists.

Bike Shed Counts

Results have been provided by school (along with notes explaining why counts for some schools may not be representative), as well as at a ward and regional level. Raw cycle numbers and a "cyclists as a share of total school roll" figure have both been provided.

1.3 Summary of Results

This summary contains the aggregated results of the two sites surveyed in the Franklin ward. It is split into four sections – a summary of results for the morning peak period (6:30am to 9:00am), a summary for the evening peak period (4:00pm to 7:00pm), a summary of aggregated results (morning and evening combined) and a summary of the results from the school bike shed counts.

While the summaries in this section are useful in giving an overall picture of cycling behaviour in the Franklin ward, they hide much of the specific details of cycling behaviour at individual sites. The site-specific data varies significantly from site to site, and can be found in Sections Two and Three of this report.

Note: Surveying in the Franklin ward was undertaken on Tuesday 13th of March, 2012. Sunrise was at 7:17am and sunset was at 7:43pm. The highest temperature was 21.3 degrees Celsius.

1.4 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- At the Edinburgh/Tobin Street site there were road works with cones on both sides on Stadium Drive which may have had an effect on the cycle count.

Key Points

- A total of 18 cyclist movements were recorded across the two sites in the morning peak period (between 6:30am and 9:00am) in 2012. This represents a 28 per cent decrease on the result for 2011 (25 movements).
- The share of cycle movements recorded at the two sites has declined 70 per cent since monitoring began six years ago (61 movements recorded in 2007).
- The average volume of morning cyclist movements per site in the Franklin ward is 9 across the two sites monitored this year. This compares with an average of 13 movements in 2011.
- As in previous years, the busiest site in the morning peak is the intersection of Queen Street and Harris Street (11 cycle movements, down by 21 per cent from last year).

Table 1.1: Summary Of Morning Cyclist Movements

2007 – 2012 (n)

Site Number	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12	Change 07-12
68	Queen/Harris Street	44	31	27	18	14	**11**	**-21%**	**-75%**
69	Edinburgh/Tobin Street	17	16	15	17	11	**7**	**-36%**	**-59%**
	Average per site	***31***	***24***	***21***	***18***	***13***	**9**	**-31%**	**-71%**
	Total	***61***	***47***	***42***	***35***	***25***	**18**	**-28%**	**-70%**

- Morning cyclist characteristics are shown in Table 1.2 below. Overall, 83 per cent of cyclists are adults (up from 60 per cent in 2011).
- Half of cyclists across all Franklin ward sites are wearing a helmet (50 per cent, down from 92 per cent last year).
- Eight-nine per cent of morning cyclists are males.
- This year, more than half of all cyclists are riding on the footpath (53 per cent, down from 60 per cent in 2011).

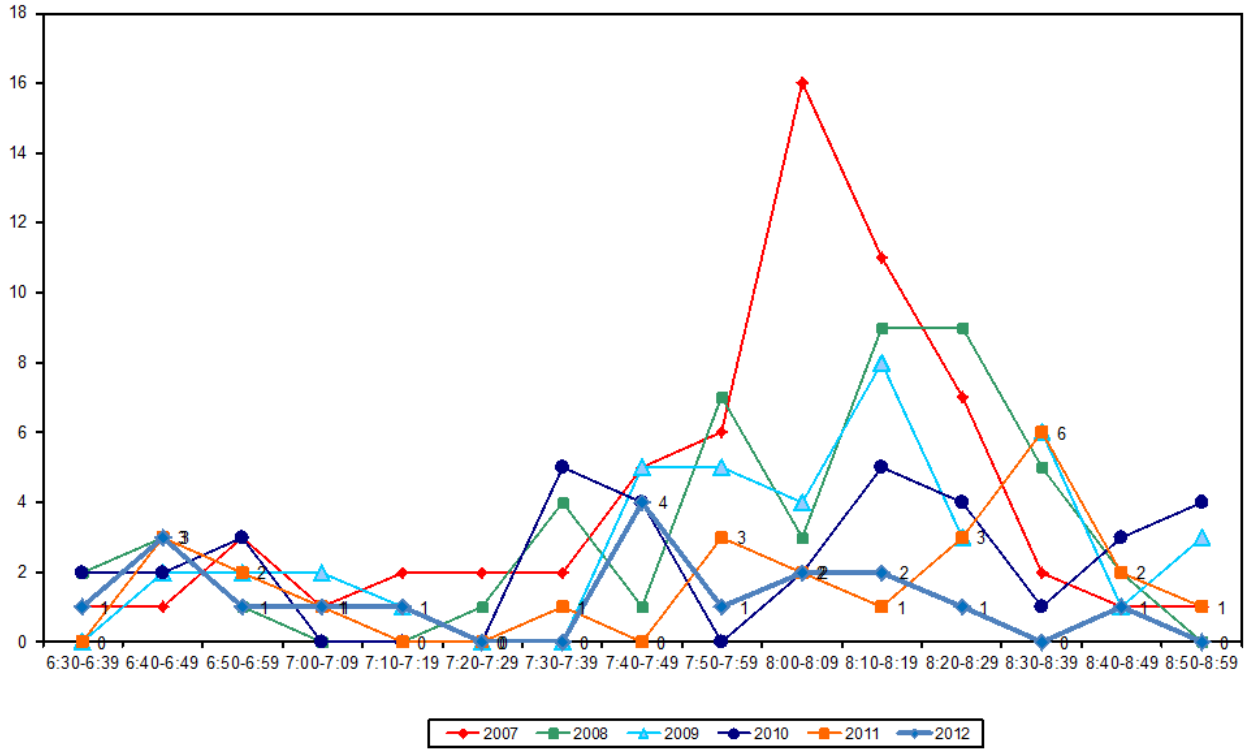
Table 1.2: Summary of Morning Cyclist Characteristics

2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type							
Adult	33	57	40	69	60	**83**	**13**
School child	67	43	60	31	40	**17**	**-13**
Helmet Wearing							
Helmet on head	93	91	79	80	92	**50**	**-42**
No helmet	7	9	21	20	8	**50**	**42**
Gender							
Male	-	-	-	-	80	**89**	**9**
Female	-	-	-	-	20	**6**	**-14**
Can't tell	-	-	-	-	0	**5**	**5**
Where Riding							
Road	31	64	45	63	40	**47**	**7**
Footpath	69	36	55	37	60	**53**	**-7**
Base:	***61***	***47***	***42***	***35***	***25***	***18***	

- Figure 1.2 illustrates the total number of cyclists in the morning peak by time of movement. The volume of morning cycle movements remains low throughout the morning period, peaking between 7:40am and 7:49am (4 movements), after which the number of movements declines over the rest of the monitoring period. Last year, cycle volumes peaked between 8:30am and 8:39am (6 movements).

Figure 1.2: Total Cyclist Frequency – Morning Peak



1.5 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift.
- At the Edinburgh/Tobin Street site there were road works with cones on both sides on Stadium Drive which may have had an effect on the cycle count.

Key Points

- A total of 54 cyclist movements were recorded across the two sites monitored in the evening peak period (between 4:00pm and 7:00pm) in 2012. This represents a 23 per cent decrease on the 2011 result (70 movements).
- The number of cycle movements recorded is down 28 per cent from six years ago (75 movements recorded in 2007).
- The average volume of evening cyclist movements per site in the Franklin ward is 27 over the two monitored sites. This compares with 35 movements in 2011.
- Consistent with the previous year, the intersection of Queen Street and Harris Street continues to be the busiest in terms of the evening cyclists' activity, with 33 cycle movements recorded (down from 53 movements in 2011).

Table 1.3: Summary Of Evening Cyclist Movements

2007 – 2012 (n)

Site Number	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12	Change 07-12
68	Queen/Harris Street	57	52	68	39	53	**33**	**-38%**	**-42%**
69	Edinburgh/Tobin Street	18	24	19	11	17	**21**	**24%**	**17%**
	Average per site	**38**	**38**	**44**	**25**	**35**	**27**	**-23%**	**-29%**
	Total	**75**	**76**	**87**	**50**	**70**	**54**	**-23%**	**-28%**

- Four out of every five evening cyclists are adults (80 per cent, up notably from 48 per cent in 2011).
- Approximately two-thirds (67 per cent) of cyclists are wearing a helmet (down from 77 per cent last year).
- Eighty-one per cent of evening cyclists are male.
- Half the cyclists are riding on the footpath (50 per cent, up from 31 per cent in the previous year).

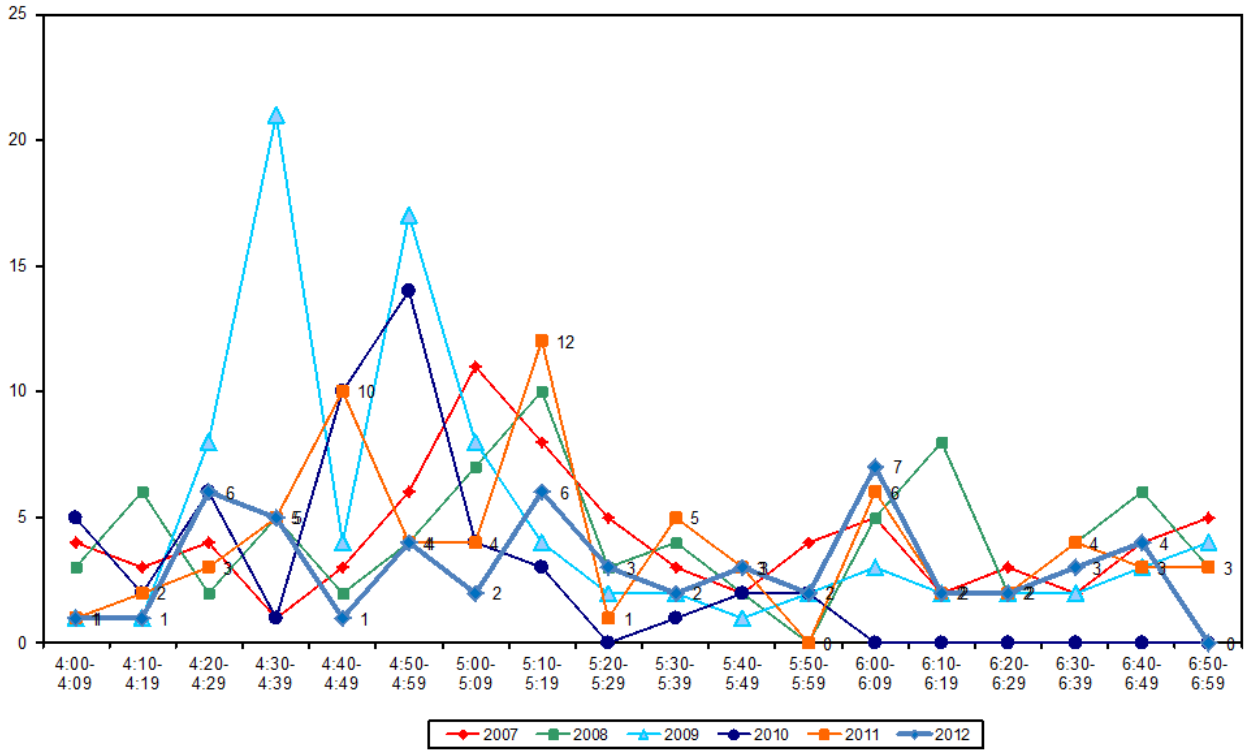
Table 1.4: Summary of Evening Cyclist Characteristics

2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type							
Adult	55	51	33	50	48	**80**	**32**
School child	45	49	67	50	52	**20**	**-32**
Helmet Wearing							
Helmet on head	64	63	85	78	77	**67**	**-10**
No helmet	36	37	15	22	23	**33**	**10**
Gender							
Male	-	-	-	-	90	**81**	**-9**
Female	-	-	-	-	10	**15**	**5**
Can't tell	-	-	-	-	0	**4**	**4**
Where Riding							
Road	40	43	24	38	31	**50**	**19**
Footpath	60	57	76	62	69	**50**	**-19**
Base:	***75***	***76***	***87***	***50***	***70***	***54***	

- The overall pattern of cyclist volumes by time of movement in the evening is illustrated in Figure 1.3. Evening cyclist volumes first peak early in the monitoring period, with 6 movements recorded between 4:20pm and 4:29pm, and 6 movements recorded between 5:10pm and 5:19pm. This is followed by a third peak between 6:00pm and 6:09pm (7 movements).

Figure 1.3: Total Cyclist Frequency – Evening Peak



1.6 Aggregated Total

- A total of 72 cyclist movements were recorded across the two monitored sites in 2012. This represents a 24 per cent decrease when compared with the 2011 result. The number of movements has declined notably (down 47 per cent) when compared with 2007.
- Consistent with last year, the busiest site is the intersection of Queen Street and Harris Street with a total of 44 movements recorded (the number of movements down 34 per cent from 2011).

Table 1.5: Summary Of Total Cyclist Movements

2007 – 2012 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12	Change 07-12
68	Queen/Harris/Wesley Street	101	83	95	57	67	**44**	**-34%**	**-56%**
69	Edinburgh/Tobin Street	35	40	34	28	28	**28**	**0%**	**-20%**
	Average per site	**68**	**62**	**65**	**43**	**48**	**36**	**-25%**	**-47%**
	Total	**136**	**123**	**129**	**85**	**95**	**72**	**-24%**	**-47%**

- Overall cyclist characteristics are illustrated in Table 1.6. In total, 81 per cent of cyclists are adults (up from 51 per cent in 2011).
- Fifty-eight per cent of cyclists are wearing a helmet (down from 81 per cent in 2011).
- Four out of every five cyclists observed in the Franklin ward are male (83 per cent).
- Just over half of cyclists are riding on the footpath (51 per cent, down from 67 per cent last year).

Table 1.6: Summary of Total Cyclist Characteristics

2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type							
Adult	45	54	36	58	51	**81**	**30**
School child	55	46	64	42	49	**19**	**-30**
Helmet Wearing							
Helmet on head	77	74	83	79	81	**62**	**-19**
No helmet	23	26	17	21	19	**38**	**19**
Gender							
Male	-	-	-	-	87	**83**	**-4**
Female	-	-	-	-	13	**13**	**0**
Can't tell	-	-	-	-	0	**4**	**4**
Where Riding							
Road	36	51	31	48	33	**49**	**16**
Footpath	64	49	69	52	67	**51**	**-16**
Base:	***136***	***123***	***129***	***85***	***95***	***72***	

1.7 Average Annual Daily Traffic (AADT) Estimate

Note: A discussion of Average Annual Daily Traffic Estimates is provided in Section 1.2. A full description of the tool, the calculation used, and the limitations of the estimates are provided in Appendix One. Readers are encouraged to review these sections in conjunction with the data presented here.

- Table 1.7 provides the comparative AADT estimates for each site, based on the average of morning and evening peak AADT calculations.
- The highest AADT is at Queen/Harris/Wesley Street (62 daily movements, down from 94 movements in 2011, down notably since monitoring began in 2007 (146 movements).

Table 1.7: Dry Weather AADT Estimates Based on Morning and Evening Cyclist Movements 2007 – 2012 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12	Change 07-12
68	Queen/Harris Street	146	119	135	81	94	**62**	**-34%**	**-58%**
69	Edinburgh/Tobin Street	51	58	49	41	40	**40**	**0%**	**-22%**

1.8 Pine Harbour Ferry Wharf

Seven cycles were observed parked at the Pine Harbour ferry wharf at Beachlands in 2012. This represents a 42 per cent decrease on the previous year (12 cycles observed in 2011).

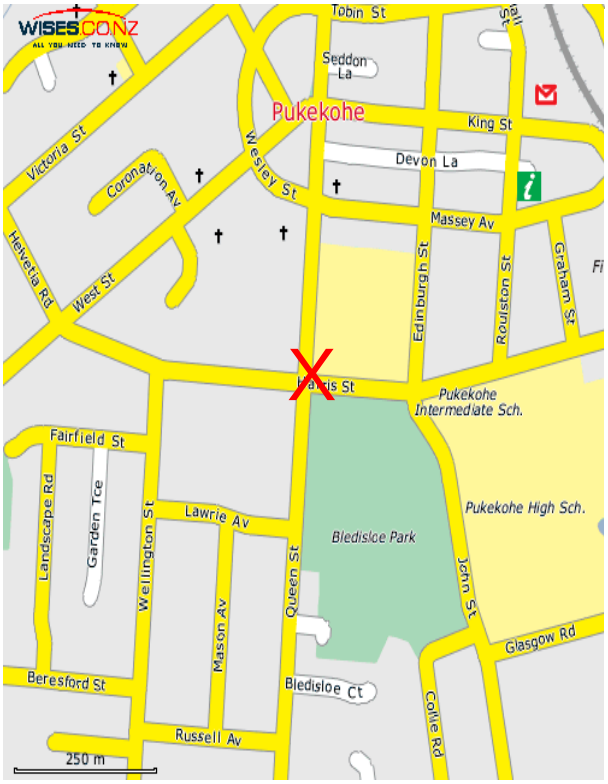
1.9 School Bike Shed Count Summary

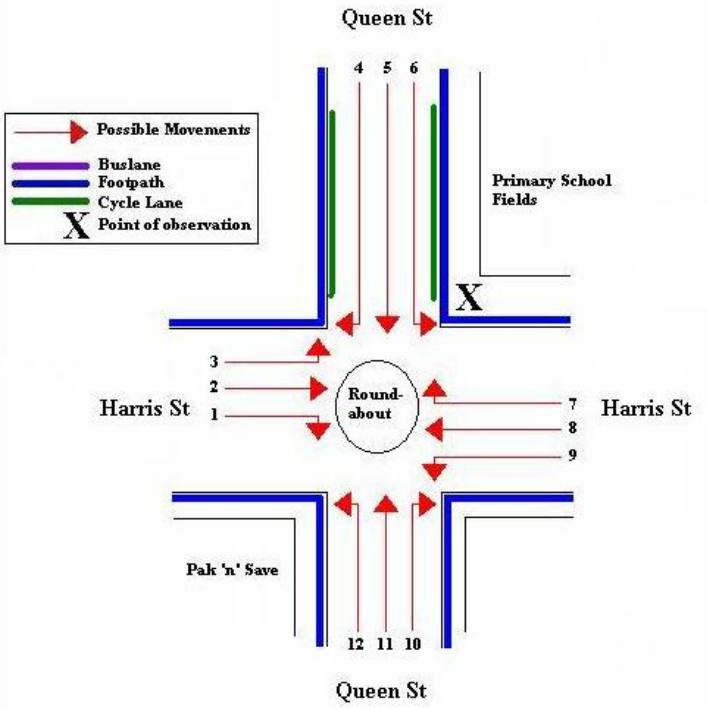
- Among the surveyed schools, of those eligible to cycle at school, on average, two per cent of students are cycling to their schools. This compares with 3 per cent in 2011
- Waiuku Primary School reported the highest share of cyclists – 12 per cent of all eligible students currently cycling to school, up from 5 per cent last year.
- In total, n=122 students from the responding schools were reported to be cycling to school.
- Rates of cycling to school are highest for the full primary schools (3 per cent), down from 4 per cent in 2011.

2. QUEEN STREET/HARRIS STREET, PUKEKOHE (SITE 68)

Figure 2.1 shows the possible cyclist movements at this intersection.

Figure 2.1: Cycle Movements: Queen/Harris Street





2.1 Site Summary

	Raw Counts			AADT
	Morning Peak	Evening Peak	Total	Total
2007	44	57	101	146
2008	31	52	83	119
2009	27	68	95	135
2010	18	39	57	81
2011	14	53	67	94
2012	**11**	**33**	**44**	**62**

2.2 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Eleven cycle movements were recorded in the morning peak, down from 14 movements last year.
- The most common movements in the morning are heading south along Queen St (Movement 5 = 3 cyclists), turning left from Harris Street into Queen Street (Movement 3 = 2 cyclists), and heading east along Harris Road (Movement 2 = 2 cyclists).
- The most notable decrease in cycle movements since 2011 is at Movement 11 (down 3 cyclists).

Table 2.1: Morning Cyclist Movements

Queen/Harris Street 2007 – 2012 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	0	0	0	0	1	1	**0**
2	16	7	13	7	2	2	**0**
3	12	7	2	2	3	2	**-1**
4	2	0	0	0	0	0	**0**
5	1	0	1	1	1	3	**2**
6	1	1	1	0	0	1	**1**
7	0	1	0	0	1	1	**0**
8	3	2	0	1	0	0	**0**
9	0	1	0	0	0	0	**0**
10	3	5	5	6	3	1	**-2**
11	4	7	5	1	3	0	**-3**
12	2	0	0	0	0	0	**0**
Total	**44**	**31**	**27**	**18**	**14**	**11**	**-3**

- Over the morning peak, the greatest share of cyclists (82 per cent) are adults, this share up from 43 per cent last year.
- Slightly more than one-third (36 per cent) of cyclists are wearing a helmet (a notable decrease from 100 per cent in 2011).
- More than four in five cyclists at this site (91 per cent) are male.
- In contrast to last year, half of cyclists this year are riding on the road (up from 36 per cent in 2011).

Table 2.2: Morning Cyclist Characteristics

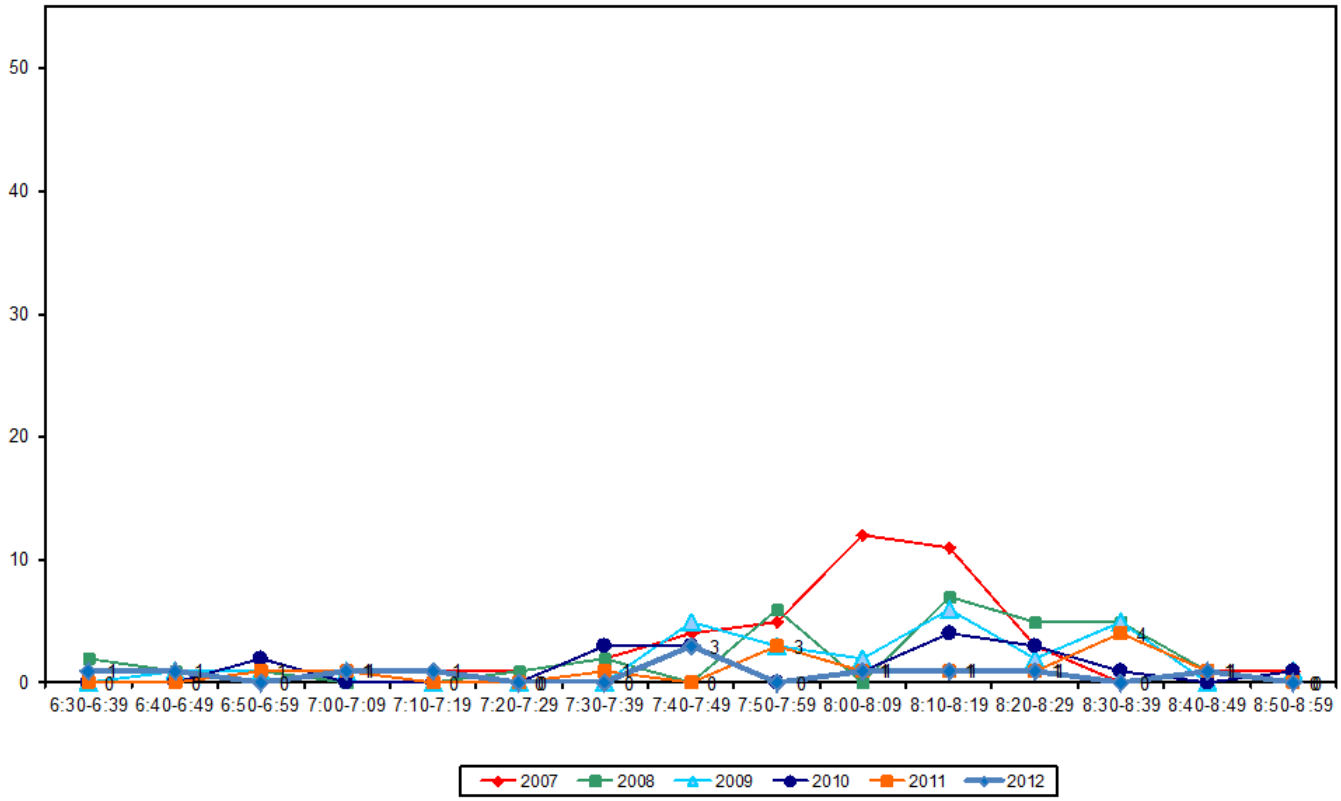
Queen/Harris Street 2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type							
Adult	27	58	37	61	43	**82**	**39**
School child	73	42	63	39	57	**18**	**-39**
Helmet Wearing							
Helmet on head	93	94	74	72	100	**36**	**-64**
No helmet	7	6	26	28	0	**64**	**64**
Gender							
Male	-	-	-	-	86	**91**	**5**
Female	-	-	-	-	14	**9**	**-5**
Can't tell	-	-	-	-	0	**0**	**0**
Where Riding							
Road	25	58	48	61	36	**50**	**14**
Footpath	75	42	52	39	64	**50**	**-14**
Base:	***44***	***31***	***27***	***18***	***14***	***11***	

- The volume of morning cycle movements remains relatively stable throughout the shift, with a slight peak evident between 7:40am and 7:49am (3 movements).

Figure 2.2: Morning Peak Cyclist Frequency

Queen/Harris Street 2007 – 2012 (n)



2.3 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cycle movements recorded at the Queen/Harris Street intersection in the evening has decreased, from 53 movements in 2011 to 33 movements this year.
- The most common movement in the evening is heading east along Harris Road (Movement 2 = 7 cyclists).
- The most notable change in terms of evening cyclist movements is reported for Movement 12 (down 12 cyclists).

Table 2.3: Evening Cyclist Movements

Queen/Harris Street 2007 – 2012 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	0	2	0	0	7	**0**	**-7**
2	1	3	1	0	4	**7**	**3**
3	6	4	3	0	0	**3**	**3**
4	6	4	2	0	3	**3**	**0**
5	17	8	4	6	8	**4**	**-4**
6	0	2	0	1	0	**1**	**1**
7	0	2	0	4	0	**0**	**0**
8	16	8	6	7	3	**3**	**0**
9	0	5	50	13	5	**5**	**0**
10	2	1	0	3	0	**1**	**1**
11	8	8	2	5	11	**6**	**-5**
12	1	5	0	0	12	**0**	**-12**
Total	**57**	**52**	**68**	**39**	**53**	**33**	**-20**

- Nearly three-quarters of all cyclists using the Queen/Harris Street intersection are adults (73 per cent, compared with 45 per cent last year).
- Sixty-seven per cent of cyclists at this site are wearing a helmet (down slightly from 72 per cent in 2011).
- Four out of every 5 cyclists at this site (79 per cent) are male.
- Footpath riding continues to be more common than riding on the road (61 per cent, down from 74 per cent last year).

Table 2.4: Evening Cyclist Characteristics

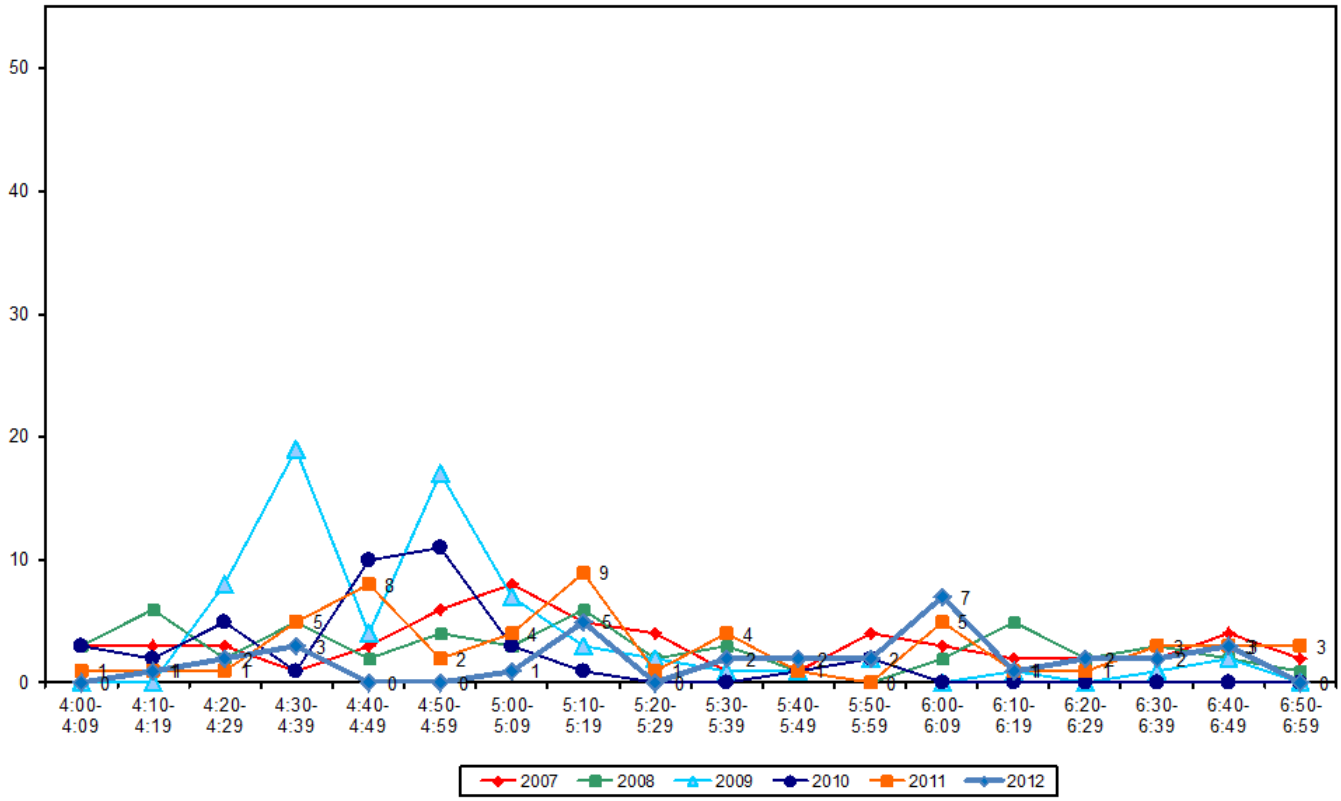
Queen/Harris Street 2007 – 2012 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	**Change 11-12**
Cyclist Type							
Adult	47	50	26	38	45	**73**	**28**
School child	53	50	74	62	55	**27**	**-28**
Helmet Wearing							
Helmet on head	60	67	93	77	72	**67**	**-5**
No helmet	40	33	7	23	28	**33**	**5**
Gender							
Male	-	-	-	-	94	**79**	**-15**
Female	-	-	-	-	6	**21**	**15**
Can't tell	-	-	-	-	0	**0**	**0**
Where Riding							
Road	35	42	15	26	26	**39**	**13**
Footpath	65	58	85	74	74	**61**	**-13**
Base:	***57***	***52***	***68***	***39***	***53***	***33***	

- The volume of cycle movements in the evening peaks between 5:10pm and 5:19pm (5 movements) and then again between 6:00pm and 6:09pm (7 movements).

Figure 2.3: Evening Peak Cyclist Frequency

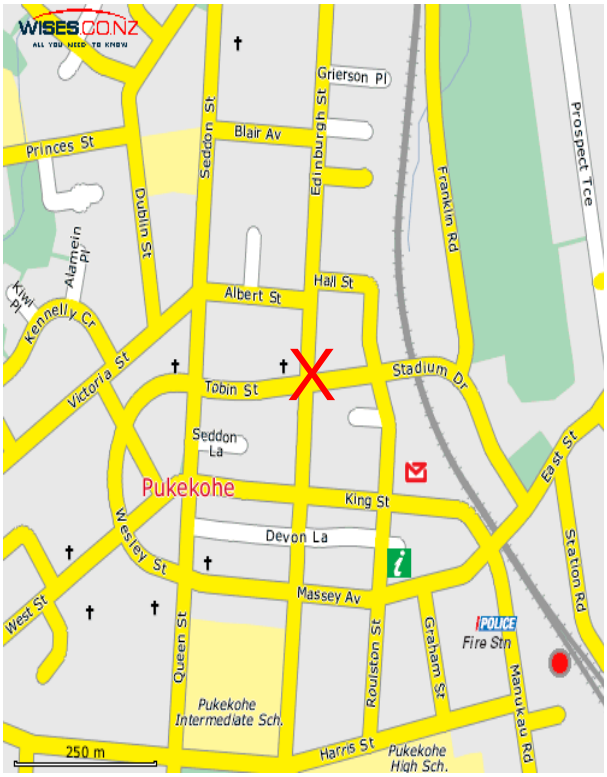
Queen/Harris Street 2007 – 2012 (n)

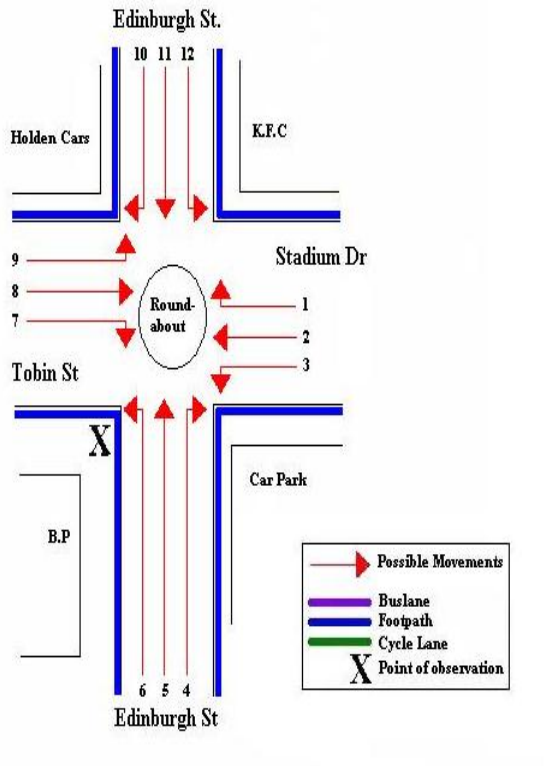


3. EDINBURGH STREET/TOBIN STREET, PUKEKOHE (SITE 69)

Figure 3.1 shows the possible cyclist movements at this intersection.

Figure 3.1: Cycle Movements: Edinburgh/Tobin Street





3.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	17	18	35	51
2008	16	24	40	58
2009	15	19	34	49
2010	17	11	28	41
2011	11	17	28	40
2012	**7**	**21**	**28**	**40**

3.2 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- Road works with cones were evident on both sides of Stadium Drive.

Key Points

- The volume of morning cyclists at the Edinburgh/Tobin Street intersection is the lowest it has been since monitoring began in 2007, with 7 movements recorded in 2012 (compared with 11 movements last year).
- The most common movement in the morning is turning left into Stadium Drive from Edinburgh Street (Movement 12 = 2 cyclists).
- Morning cyclist volumes at most movements are stable since last year, with the most notable change at Movement 11 (down 3 cyclists).

Table 3.1: Morning Cyclist Movements

Edinburgh/Tobin Street 2007 – 2012 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	0	1	0	0	1	**0**	**-1**
2	1	2	2	2	0	**1**	**1**
3	1	1	0	0	0	**0**	**0**
4	0	0	1	1	0	**0**	**0**
5	3	1	2	2	2	**1**	**-1**
6	0	0	0	0	0	**0**	**0**
7	0	1	1	0	1	**0**	**-1**
8	0	4	1	2	0	**1**	**1**
9	0	0	0	1	2	**1**	**-1**
10	0	1	2	0	0	**1**	**1**
11	10	3	6	6	3	**0**	**-3**
12	2	2	0	3	2	**2**	**0**
Total	**17**	**16**	**15**	**17**	**11**	**7**	**-4**

- Four in five cyclists at this site are adults (86 per cent, up slightly from 82 per cent last year).
- Two-thirds of cyclists are wearing a helmet (71 per cent, down from 82 per cent in 2011).
- Eighty-six per cent of cyclists at this intersection in the morning peak are male.
- Similar to 2011, the greatest share of cyclists (57%) are riding on the footpath (compared with 55 per cent last year).

Table 3.2: Morning Cyclist Characteristics

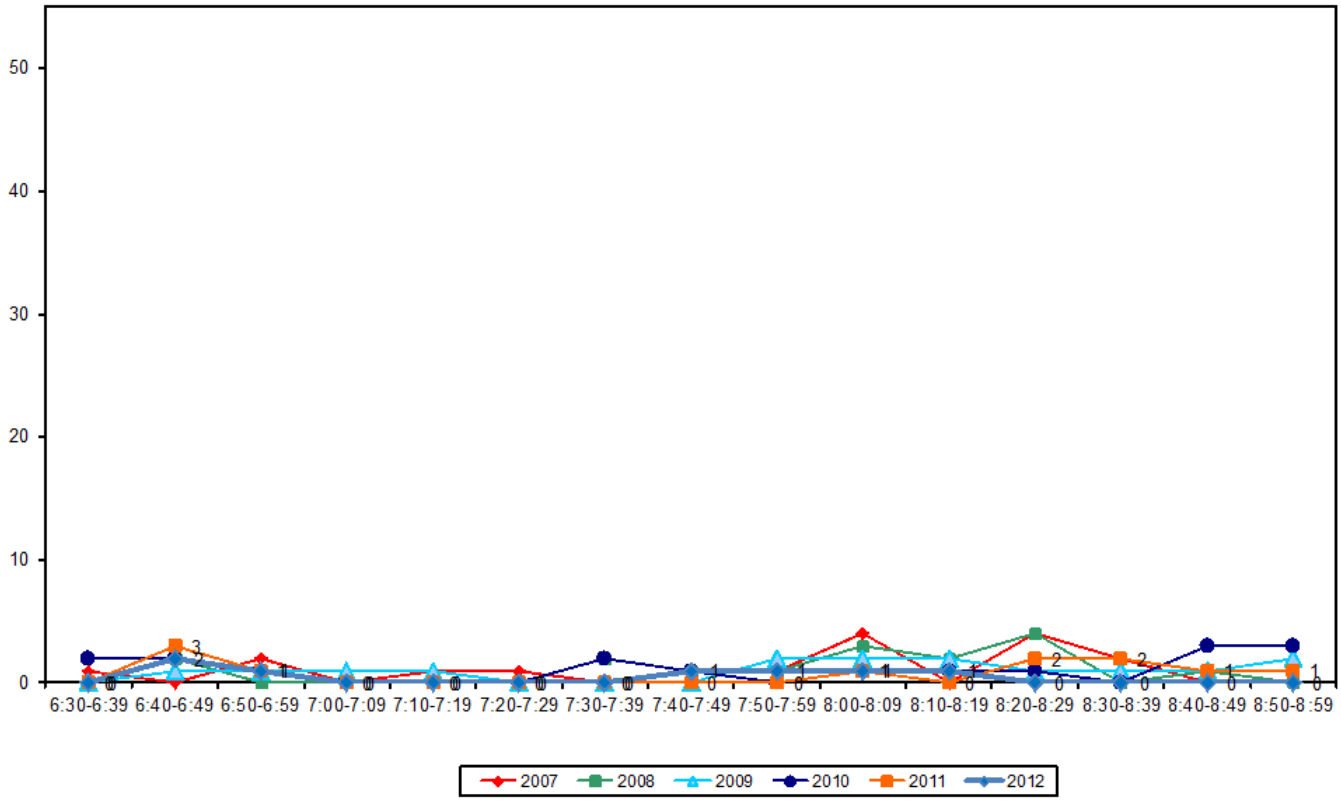
Edinburgh/Tobin Street 2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type							
Adult	47	56	47	76	82	**86**	**4**
School child	53	44	53	24	18	**14**	**-4**
Helmet Wearing							
Helmet on head	94	88	87	88	82	**71**	**-11**
No helmet	6	12	13	12	18	**29**	**11**
Gender							
Male	-	-	-	-	73	**86**	**13**
Female	-	-	-	-	27	**0**	**-27**
Can't tell	-	-	-	-	0	**14**	**14**
Where Riding							
Road	47	75	40	65	45	**43**	**-2**
Footpath	53	25	60	35	55	**57**	**2**
Base:	***17***	***16***	***15***	***17***	***11***	***7***	

- Morning cycle volumes are low throughout the monitoring period, with no more than two cyclists recorded during any ten minute interval. This pattern is consistent with that observed in previous years.

Figure 3.2: Morning Peak Cyclist Frequency

Edinburgh/Tobin Street 2007 – 2012 (n)



3.3 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift.
- Road works with cones were evident on both sides of Stadium Drive.

Key Points

- This year, the total number of cycle movements recorded in the evening at the Edinburgh/Tobin Street intersection has increased, from 17 in 2011 to 21 movements.
- The key movement in the evening is straight along Edinburgh Street heading north (Movement 5 = 4 cyclists).
- The most notable change in the evening is at Movements 2 (up 4 cyclists).

Table 3.3: Evening Cyclist Movements

Edinburgh/Tobin Street 2007 – 2012 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	0	2	0	0	2	**1**	**-1**
2	0	4	4	1	0	**4**	**4**
3	4	0	3	0	0	**1**	**1**
4	0	0	1	0	0	**1**	**1**
5	2	2	1	2	5	**4**	**-1**
6	1	4	0	2	0	**3**	**3**
7	1	0	1	1	1	**1**	**0**
8	1	5	0	0	3	**0**	**-3**
9	2	1	2	2	2	**2**	**0**
10	1	1	2	0	1	**1**	**0**
11	3	3	5	3	1	**2**	**1**
12	3	2	0	0	2	**1**	**-1**
Total	**18**	**24**	**19**	**11**	**17**	**21**	**4**

- The share of cyclists using this intersection in the evening who are children has decreased notably since last year – 10 per cent, down from 41 per cent last year. This distribution of cyclists by age in 2012 is consistent with that reported in 2011.
- Two-thirds (67 per cent) of cyclists at this site are wearing a helmet (67 per cent, down from 94 per cent in 2011).
- Four in five cyclists observed at this site (86 per cent) are male.
- In contrast to 2011, the greatest share of cyclists (67 per cent) are riding on the road (compared with 47 per cent last year).

Table 3.4: Evening Cyclist Characteristics

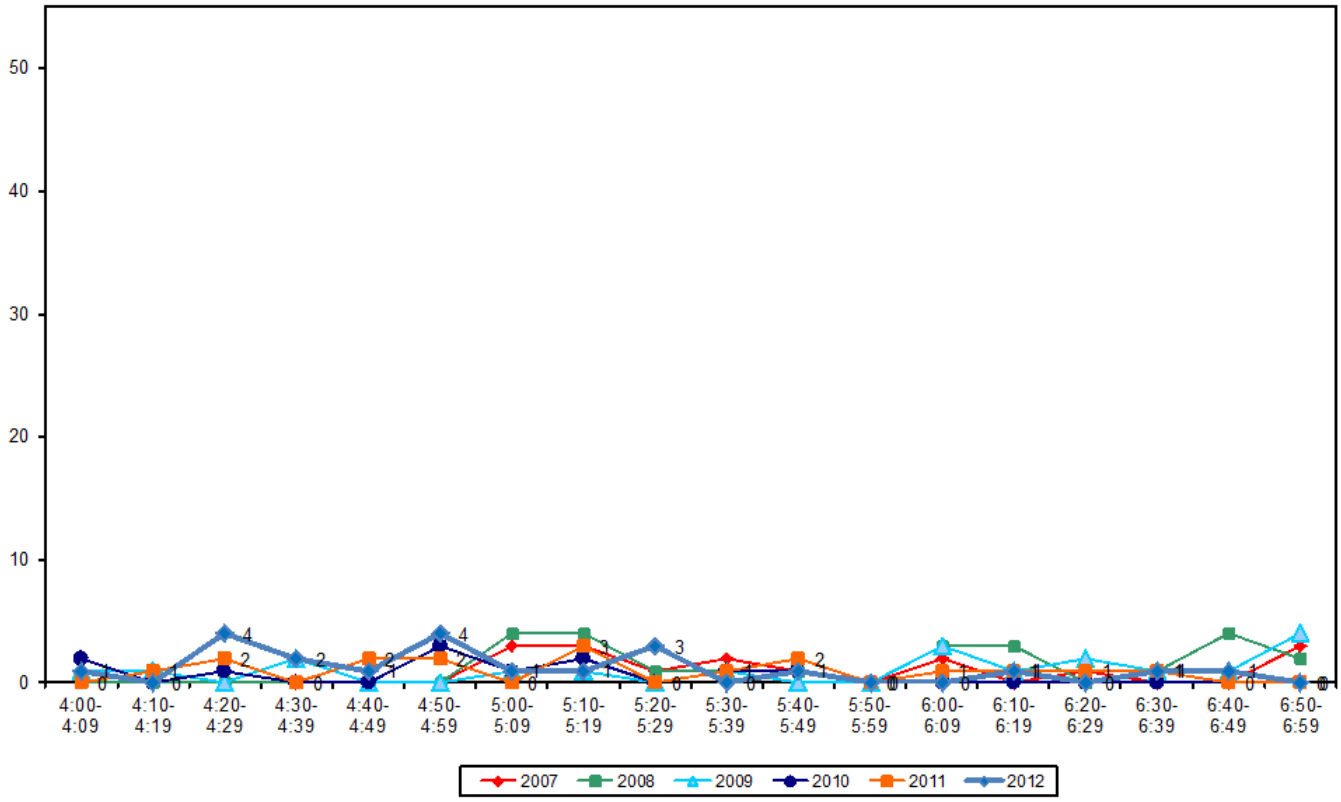
Edinburgh/Tobin Street 2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type							
Adult	78	54	58	91	59	**90**	**31**
School child	22	46	42	9	41	**10**	**-31**
Helmet Wearing							
Helmet on head	78	54	58	82	94	**67**	**-27**
No helmet	22	46	42	18	6	**33**	**27**
Gender							
Male	-	-	-	-	76	**86**	**10**
Female	-	-	-	-	24	**5**	**-19**
Can't tell	-	-	-	-	0	**9**	**9**
Where Riding							
Road	56	46	58	82	47	**67**	**10**
Footpath	44	54	42	18	53	**33**	**-20**
Base:	***18***	***24***	***19***	***11***	***17***	***21***	

- Evening cycle volumes are low throughout the monitoring period, with no more than four cyclists recorded during any ten minute interval. This pattern is consistent with that observed in previous years.

Figure 3.3: Evening Peak Cyclist Frequency

Edinburgh/Tobin Street 2007 – 2012 (n)



4. PINE HARBOUR FERRY WHARF

Key Points

- Seven cycles were observed parked at the Pine Harbour ferry wharf at Beachlands in 2012[9]. This represents a 42 per cent decrease on the previous year (12 cycles observed in 2011).

Table 4.1: Cycles Observed At Pine Harbour Ferry Wharf

2010 – 2012 (n)

	Number of Cycles Observed
2010	4
2011	12
2012	**7**

[9] Count undertaken on Tuesday 13th March.

5. SCHOOL BIKE SHED COUNT

Note: Full primary schools (those taking children through to Year 8) were included in the count for the first time in 2011.

5.1 Background Information

- A total of 21 schools in the Franklin ward participated in the school bike shed count. Of the schools that responded to the survey, most had no policies that restrict students cycling to school[10].
- Most schools surveyed reported no events or issues that may affect the cycle counts[11].
- The designated count day was Tuesday 6th of March 2012[12].

4.2 Key Points

- Among the surveyed schools, of those eligible to cycle at school, on average, two per cent of students are cycling to their schools. This compares with 3 per cent in 2011.
- Waiuku Primary School reported the highest share of cyclists – 12 per cent of all eligible students currently cycling to school. This share is up from 5 per cent in 2011.
- In total, n=122 students from the responding schools were reported to be cycling to school.
- Of the 21 schools that responded, nine had no students cycling to school.

[10] The following Schools have policies surrounding cycling to school:
- Sandspit School "*Year 4 and above*"
- Waiau Pa School "*Year 5 and above with Principal and parental permission*"
- Ramarama School "*No child under the age of ten should cycle to school unless accompanied by an adult*"
- Hunua School and Buckland School *"Years 5 to 8 only"*
- Beachlands School "*10 years and older*"

[11] St Joseph's School (Pukekohe) reported swimming sports on count day which may have affected the cycle count

[12] The following schools conducted their counts on alternative days:
- Awhitu District School – Friday 2nd March 2012
- Clevedon School – Tuesday 3rd April 2012
- St Joseph's School (Pukekohe) – Wednesday 7th March 2012
- Waiuku College – Monday 12th March 2012
- Hunua School – Wednesday 4th April 2012
- Maraetai Beach School – Wednesday 4th April 2012
- Waiuku Primary School – Thursday 5th April 2012.

Table 4.1 shows the results of the 21 schools surveyed in the Franklin ward.

Table 4.1: Summary Table Of School Bike Count 2007 – 2012 (n)

School Name	*School Type*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible[1]*					
				2012	*2011*	*2010*	*2009*	*2008*	*2007*
Waiuku Primary School	Full Primary	344	42	**12%**	5%	-	-	-	-
Beachlands School	Full Primary	502	30	**6%**	7%	-	-	-	-
Sandspit Road School	Full Primary	351	17	**5%**	10%	-	-	-	-
View Road School	Full Primary	149	8	**5%**	3%	-	-	-	-
Buckland School	Full Primary	246	4	**2%**	6%	-	-	-	-
Waiau Pa School	Full Primary	323	5	**2%**	-	-	-	-	-
Clevedon School	Full Primary	341	2	**1%**	-	-	-	-	-
Maraetai Beach School	Full Primary	245	2	**1%**	3%	-	-	-	-
Pukekohe Christian School	Composite	205	1	**<1%**	-	-	-	-	-
Pukekohe Intermediate School	Intermediate	620	5	**1%**	2%	-	3%	7%	5%
Ramarama School	Full Primary	196	2	**1%**	2%	-	-	-	-
Waiuku College	Secondary	860	4	**<1%**	-	-	-	-	-
Ararimu School	Full Primary	118	0	**0%**	0%	-	-	-	-
Awhitu District School	Full Primary	118	0	**0%**	2%	-	-	-	-
Bombay School	Full Primary	332	0	**0%**	0%	-	-	-	-
Glenbrook School	Full Primary	240	0	**0%**	0%	-	-	-	-
Hunua School	Full Primary	92	0	**0%**	-	-	-	-	-
KingsGate School	Full Primary	40	0	**0%**	0%	-	-	-	-
Parkside School	Composite	127	0	**0%**	-	-	-	-	-
St Joseph's School (Pukekohe)	Full Primary	374	0	**0%**	2%	-	-	-	-
Waipipi School	Full Primary	110	0	**0%**	-	-	-	-	-
Total		**5601**	**122**	**2%**	3%	-	-	-	-

- Table 4.2 illustrates the rates of cycling to school at different school levels. Rates of cycling to school are highest for the full primary schools (3 per cent) down from 4 per cent in 2011.

Table 4.2: Summary Table Of School Bike Count by School Type

2007 – 2012 (%)

School Type	*Number of Schools Responded in 2012*	Cyclists as share of those eligible						
		2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Full primary	17	-	-	-	-	4%	**3%**	**-1**
Intermediate	1	5%	7%	3%	-	2%	**1%**	**-1**
Composite	2	1%	1%	1%	2%	1%	**<1%**	**0**
Secondary	1	-	-	-	-	-	**<1%**	**0**
Intermediate/secondary	-	-	2%	1%	1%	1%	**-**	**-1**

APPENDIX

Appendix One: Annual Average Daily Traffic (AADT) Calculation

APPENDIX ONE: ANNUAL AVERAGE DAILY TRAFFIC (AADT) CALCULATION

Note: This description of the calculation of the Annual Average Daily Traffic Flow of Cyclists has been provided by ViaStrada based on their May 2007 report for ARTA entitled "Development of a Cycle Traffic AADT Tool".

Purpose

The purpose of this appendix is to document the recommended procedure for estimating a cycling AADT[13] in the Auckland region from any Gravitas manual count.

Method for Estimating AADT

The methodology is based on that published in Appendix 2 of the Cycle Network and Route Planning Guide (CNRPG)[14], adjusted for Auckland conditions based on data collected during March 2007. The aim was to use the published methodology as much as possible, with any necessary departure from it documented below. The following equation yields the best estimate of a cycling AADT:

$$AADT_{Cyc} = Count \times \frac{1}{\sum H} \times \frac{1}{D} \times \frac{W}{7} \times \frac{1}{R}$$

where *Count = result of count period*

H = scale factor for time of day

D = scale factor for day of week

W = scale factor for week of year

R = scale factor for weather conditions on the count day

If more than one set of count data is available (for example, both a morning count and afternoon count), then **the calculation should be carried out for each set of data, and the estimates derived from each averaged**.

The values for the scale factors (*H, D*, *W* and *R*) have been deduced in the ViaStrada report and are included in this report in Figure 1.

[13] Annual average daily traffic

[14] LTSA, 2004

For the Gravitas counts, the following factors apply:

$\sum H_{AM} = 30$; $\sum H_{PM} = 33.3$; (AM and PM refer to morning and afternoon respectively)

D = 14

W = 0.9

$R_{DRY} = 100$; $R_{WET} = 64$ (DRY and WET refer to fine and rainy conditions respectively)

These can be combined as a single multiplier to convert the manual count to an AADT estimate as follows:

	Morning	Afternoon
Dry weather	**3.06**	**2.78**
Wet weather	**4.78**	**4.35**

Worked Example

If morning and afternoon manual traffic counts are available at a site, the AADT can be calculated using the count summaries for each period. For example, a morning survey of 102 and an afternoon survey of 130 are suggested. It is assumed for this example that the weather was fine in both surveys.

- Thus the AADT from the morning survey is estimated as 3.06 x 102 = 312.
- The AADT from the afternoon survey is estimated as 2.78 x 130 = 359.
- The average of these two estimates is 335; this is the estimate of AADT for this site, based on the two surveys.

Appendix Figure 1: Scale Factors for Auckland Region

Period Starting	Period Ending	Interval (hours)	$H_{Weekday}$ Mon to Fri	$H_{Weekend}$ Sat & Sun
0:00	6:30	6.50	5.5%	1.8%
6:30	6:45	0.25	2.3%	0.8%
6:45	7:00	0.25	2.6%	1.5%
7:00	7:15	0.25	3.2%	1.4%
7:15	7:30	0.25	3.7%	2.1%
7:30	7:45	0.25	3.8%	2.8%
7:45	8:00	0.25	4.0%	3.3%
8:00	8:15	0.25	3.9%	3.2%
8:15	8:30	0.25	3.1%	3.8%
8:30	8:45	0.25	2.3%	3.5%
8:45	9:00	0.25	1.3%	3.5%
9:00	10:00	1.00	4.2%	13.6%
10:00	11:00	1.00	3.4%	11.6%
11:00	12:00	1.00	2.6%	9.1%
12:00	13:00	1.00	2.7%	6.6%
13:00	14:00	1.00	2.7%	5.0%
14:00	14:15	0.25	0.7%	1.9%
14:15	14:30	0.25	0.7%	1.3%
14:30	14:45	0.25	0.6%	1.3%
14:45	15:00	0.25	0.6%	1.2%
15:00	15:15	0.25	0.8%	1.1%
15:15	15:30	0.25	1.0%	0.9%
15:30	15:45	0.25	1.3%	1.4%
15:45	16:00	0.25	1.2%	1.3%
16:00	16:15	0.25	2.1%	1.0%
16:15	16:30	0.25	2.3%	1.7%
16:30	16:45	0.25	2.1%	1.0%
16:45	17:00	0.25	2.5%	1.2%
17:00	17:15	0.25	3.3%	1.2%
17:15	17:30	0.25	3.7%	1.2%
17:30	17:45	0.25	4.0%	1.1%
17:45	18:00	0.25	3.2%	1.1%
18:00	18:15	0.25	3.0%	0.9%
18:15	18:30	0.25	2.7%	0.7%
18:30	18:45	0.25	2.4%	0.8%
18:45	19:00	0.25	2.1%	0.6%
19:00	20:00	1.00	5.6%	2.0%
20:00	0:00	4.00	3.0%	1.5%
		24.00	100.0%	100.0%

Day	D
Monday	14%
Tuesday	14%
Wednesday	14%
Thursday	14%
Friday	14%
Saturday	14%
Sunday	16%

Period	W
Summer holidays	1.0
Term 1	0.9
April holidays	1.0
Term 2	1.0
July holidays	1.2
Term 3	1.1
Sep/Oct holidays	1.2
Term 4	1.0

Weather	R
Fine	100%
Rain	64%