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Research Report Prepared for
Auckland Transport

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2011 Auckland Region Manual Cycle Monitor

- Franklin Ward -

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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:

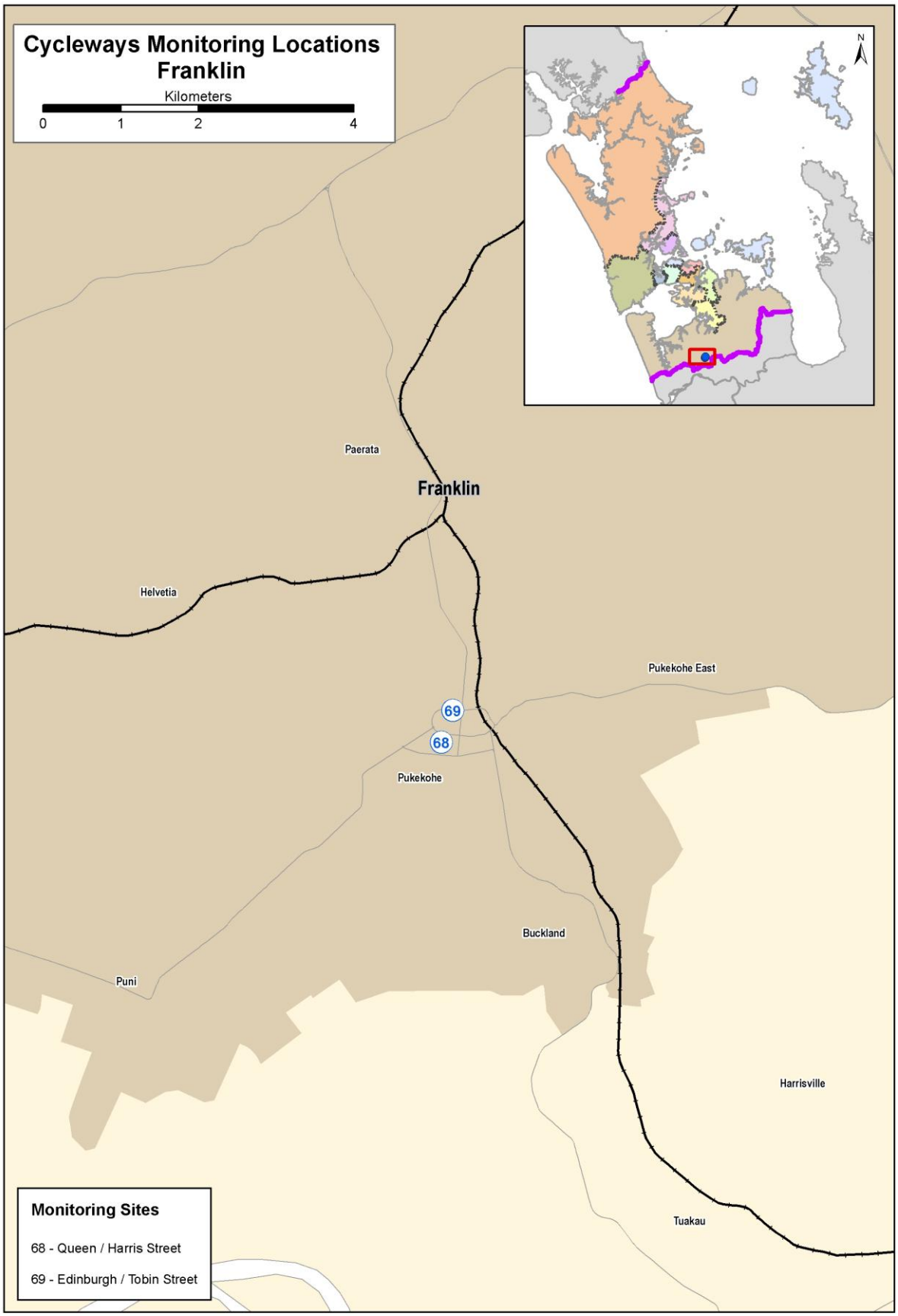
- standard monitoring days are used – that is, school and tertiary holidays, and statutory holidays are excluded and that monitoring preferably takes place at the same time each year to enable reliable year-on-year comparisons to be made. Decisions about whether cycle counts take place on weekdays and 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 and/or 2010, 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 82 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 9 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 8th of March and be conducted on the first three fine days of the 8th, 9th, 10th, 15th, 16th, or 17th of March.

Counts were conducted on the following days:

• Tuesday 8th March	Albany, Manukau, Manurewa-Papakura, Franklin
• Wednesday 9th March	North Shore, Waitemata and Gulf, Whau, Albert-Eden-Roskill
• Thursday 10th March	Maungakiekie-Tamaki, Howick, Orakei, Waitakere

Note: Counts in the morning and evening peaks took place on the same day for each site.

Weather and Daylight Conditions

Auckland city's 2006 cycle monitor provides a clear example of the impact of weather conditions on the validity of the data collected. During the (fine) morning peak, 1579 cyclists were recorded across the twelve monitoring sites. By comparison, in the (wet) evening peak on the same day, only 1050 cyclists were counted, demonstrating that only 66% of those who cycled during the morning peak were counted again in the evening. Such a significant drop in cycle numbers was not observed in previous years, when weather was comparable in the morning and evening peak.

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 2011 was as follows:

Tuesday 8th March

- Sunrise: 7:12am; Sunset: 7:51pm.
- Highest temperature: 20.1 degrees Celsius.
- Fine weather for all sites in both the morning and evening shifts.

Wednesday 9th March

- Sunrise: 7:13am; Sunset: 7:50pm.
- Highest temperature: 22.5 degrees Celsius.
- Fine weather for all sites in the morning shifts. In the evening shift, showers were observed at some sites from 6.00pm until the end of the monitoring period.

Thursday 10th March

- Sunrise: 7:14am; Sunset: 7:48pm.
- Highest temperature: 21.7 degrees Celsius.
- Fine weather for all sites in both the morning and evening 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).

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=295) 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 8th 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 2011, 201 responses were received, a response rate of 68 per cent.

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 8th of March, 2011. Sunrise was at 7:12am and sunset was at 7:51pm. The highest temperature was 20 degrees Celsius.

1.4 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- Seddon Lane (off Tobin Street) was closed to traffic throughout the shift, with detour signs in place at the intersection.
- There were no road works at the Queen Street/Harris Street site that may affect cycle counts.

Key Points

- A total of 25 cyclist movements were recorded across the two sites in the morning peak period (between 6:30am and 9:00am) in 2011. This represents a 29 per cent decrease on the result for 2010 (35 movements).
- The share of cycle movements recorded at the two sites has declined 59 per cent since monitoring began five years ago (61 movements recorded in 2007).
- The average volume of morning cyclist movements per site in the Franklin ward is 13 across the two sites monitored this year. This compares with an average of 18 movements in 2010.
- As in previous years, the busiest site in the morning peak is the intersection of Queen Street and Harris Street (14 cycle movements, down by 22 per cent from last year).

Table 1.1: Summary Of Morning Cyclist Movements

2007-2011 (n)

Site Number	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11	Change 07-11
68	Queen/Harris Street	44	31	27	18	**14**	**-22%**	-68%
69	Edinburgh/Tobin Street	17	16	15	17	**11**	**-35%**	-35%
	Average per site	***31***	***24***	***21***	***18***	***13***	***-28%***	*-58%*
	Total	***61***	***47***	***42***	***35***	***25***	***-29%***	*-59%*

- Morning cyclist characteristics are shown in Table 1.2 below. Overall, 60 per cent of cyclists are adults (down from 69 per cent in 2010).
- The majority of cyclists across all Franklin ward sites are wearing a helmet (92 per cent, up from 80 per cent last year).
- Four in five (80 per cent) morning cyclists are males.
- This year, more than half of all cyclists are riding on the footpath (60 per cent, up from 37 per cent in 2010).

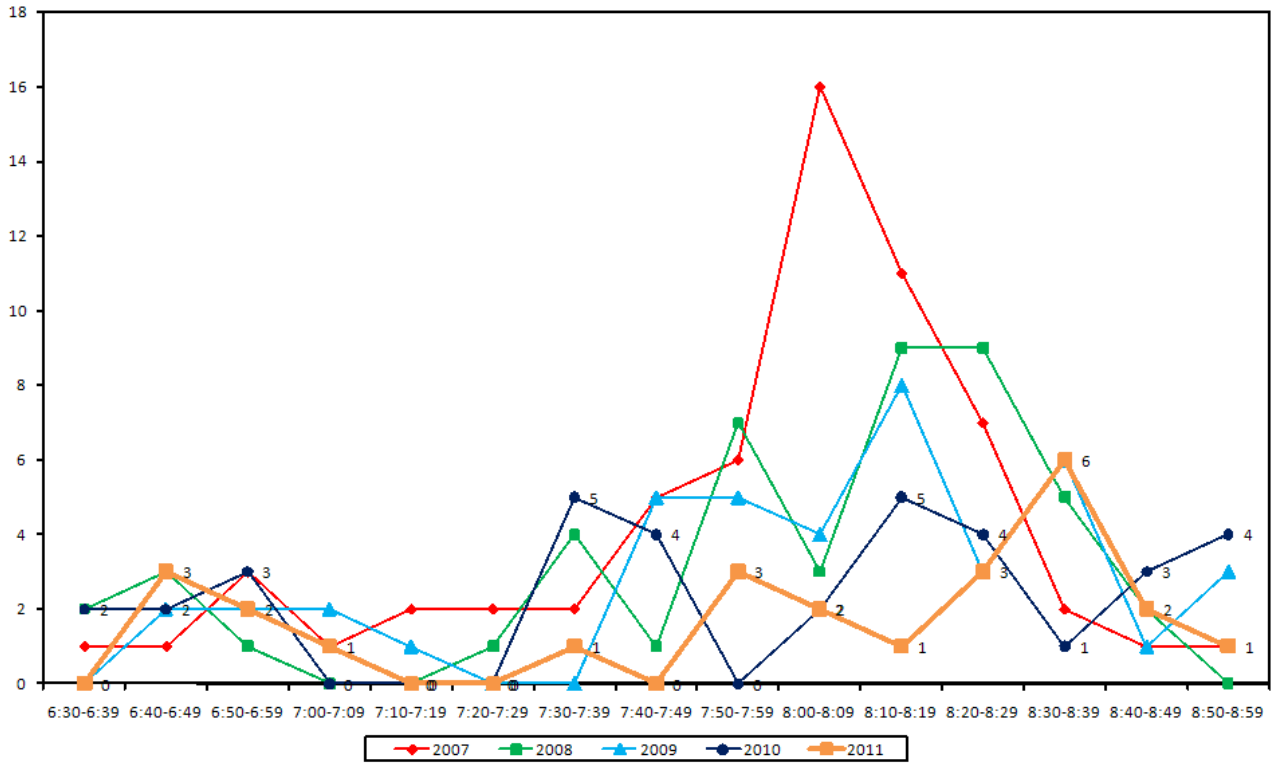
Table 1.2: Summary of Morning Cyclist Characteristics

2007-2011 (%)

	2007	*2008*	*2009*	*2010*	*2011*	Change 10-11
Cyclist Type						
Adult	33	57	40	69	60	-8
School child	67	43	60	31	40	8
Helmet Wearing						
Helmet on head	93	91	79	80	92	12
No helmet	7	9	21	20	8	-12
Gender						
Male	-	-	-	-	80	-
Female	-	-	-	-	20	-
Can't tell	-	-	-	-	0	-
Where Riding						
Road	31	64	45	63	40	-23
Footpath	69	36	55	37	60	23
Base:	***61***	***47***	***42***	***35***	***25***	

- 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, increasing to peak between 8:30am and 8:39am (6 movements), after which the number of movements declines over the rest of the monitoring period. Last year, cycle volumes peaked twice, between 7:30am and 7:39am (5 movements) and between 8:10am and 8:19am (5 movements).

Figure 1.2: Total Cyclist Frequency – Morning Peak



1.5 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift.
- Seddon Lane (off Tobin Street) was closed to traffic throughout the shift, with detour signs in place at the intersection.
- There were no road works at the Queen Street/Harris Street site that may affect cycle counts.

Key Points

- A total of 70 cyclist movements were recorded across the two sites monitored in the evening peak period (between 4:00pm and 7:00pm) in 2011. This represents a 40 per cent increase on the 2010 result (50 movements).
- The number of cycle movements recorded is down 7 per cent from five years ago (75 movements recorded in 2007).
- The average volume of evening cyclist movements per site in the Franklin ward is 35 over the two monitored sites. This compares with 25 movements in 2010.
- 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 53 cycle movements recorded (up from 39 movements in 2010).

Table 1.3: Summary Of Evening Cyclist Movements 2007-2011 (n)

Site Number	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11	Change 07-11
68	Queen/Harris Street	57	52	68	39	53	**36%**	**-7%**
69	Edinburgh/Tobin Street	18	24	19	11	17	**55%**	**-6%**
	Average per site	**38**	**38**	**44**	**25**	**35**	**40%**	**-8%**
	Total	**75**	**76**	**87**	**50**	**70**	**40%**	**-7%**

- The majority of evening cyclists are children (52 per cent, up slightly from 50 per cent in 2010).
- Approximately three-quarters (77 per cent) of cyclists are wearing a helmet (stable from 78 per cent last year).
- Nine in ten (90 per cent) evening cyclists are male.
- Most cyclists are riding on the footpath (69 per cent, up from 62 per cent in the previous year).

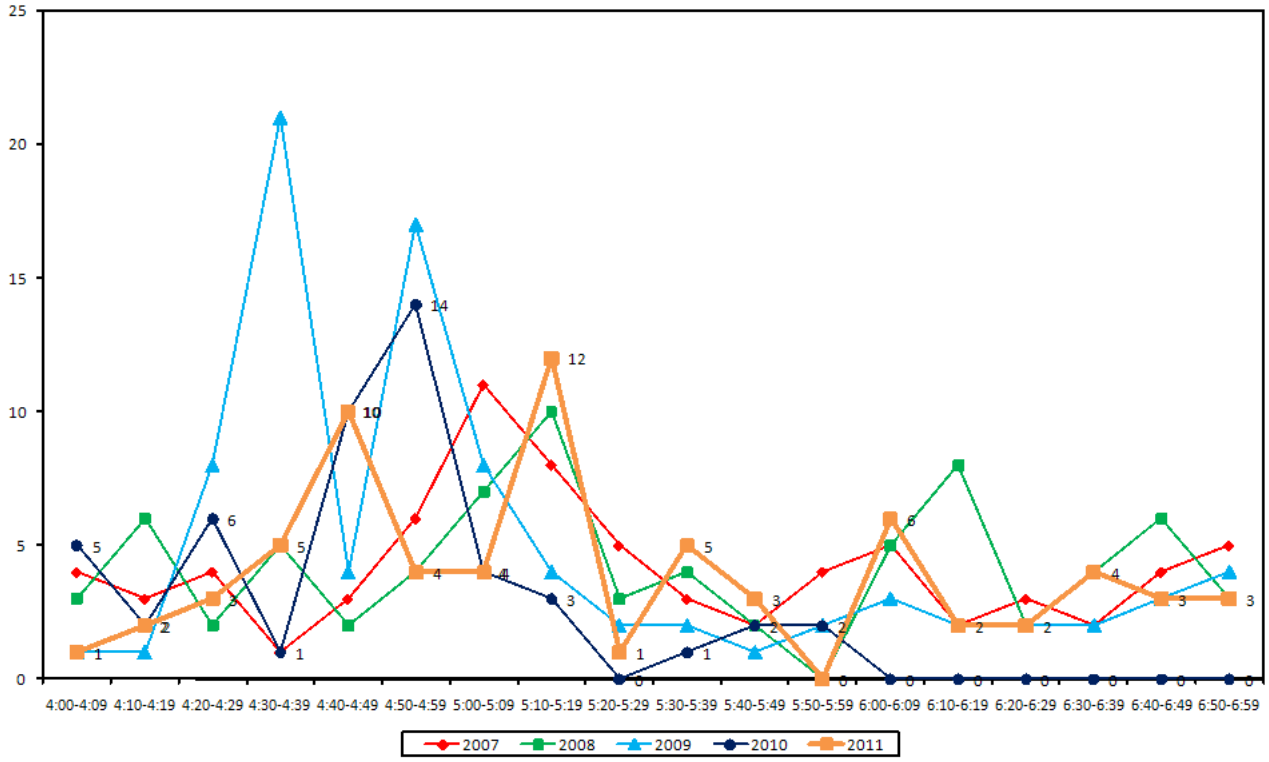
Table 1.4: Summary of Evening Cyclist Characteristics

2007-2011 (%)

	2007	*2008*	*2009*	*2010*	*2011*	Change 10-11
Cyclist Type						
Adult	55	51	33	50	**48**	-2
School child	45	49	67	50	**52**	2
Helmet Wearing						
Helmet on head	64	63	85	78	**77**	-1
No helmet	36	37	15	22	**23**	1
Gender						
Male	-	-	-	-	**90**	-
Female	-	-	-	-	**10**	-
Can't tell	-	-	-	-	**0**	-
Where Riding						
Road	40	43	24	38	**31**	-7
Footpath	60	57	76	62	**69**	7
Base:	***75***	***76***	***87***	***50***	***70***	

- The overall pattern of cyclist volumes by time of movement in the evening is illustrated in Figure 1.3. Evening cyclist volumes peak early in the monitoring period, with 10 movements recorded between 4:40pm and 4:49pm, and 12 movements recorded between 5:10pm and 5:19pm. This compares with 2010 where cycle volumes peaked between 4:50pm and 4:59pm (14 movements).

Figure 1.3: Total Cyclist Frequency – Evening Peak



1.6 Aggregated Total

- A total of 95 cyclist movements were recorded across the two monitored sites in 2011. This represents a 12 per cent increase when compared with the 2010 result. However, the number of movements has declined notably (down 30 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 67 movements recorded (the number of movements up 18 per cent from 2010).

Table 1.5: Summary Of Total Cyclist Movements

2007-2011 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11	Change 07-11
68	Queen/Harris/Wesley Street	101	83	95	57	**67**	**18%**	-34%
69	Edinburgh/Tobin Street	35	40	34	28	**28**	**0%**	-20%
	Average per site	**68**	**62**	**65**	**43**	**48**	**12%**	-29%
	Total	**136**	**123**	**129**	**85**	**95**	**12%**	-30%

- Overall cyclist characteristics are illustrated in Table 1.6. In total, 51 per cent of cyclists are adults (down from 58 per cent in 2010).
- Approximately four in five cyclists are wearing a helmet (81 per cent, up slightly from 79 per cent in 2010).
- Eighty-seven per cent of cyclists in the Franklin ward are male.
- Two-thirds of cyclists are riding on the footpath (67 per cent, up from 52 per cent last year).

Table 1.6: Summary of Total Cyclist Characteristics

2007-2011 (%)

	2007	*2008*	*2009*	*2010*	*2011*	Change 10-11
Cyclist Type						
Adult	45	54	36	58	51	-6
School child	55	46	64	42	49	6
Helmet Wearing						
Helmet on head	77	74	83	79	81	2
No helmet	23	26	17	21	19	-2
Gender						
Male	-	-	-	-	87	-
Female	-	-	-	-	13	-
Can't tell	-	-	-	-	0	-
Where Riding						
Road	36	51	31	48	33	-15
Footpath	64	49	69	52	67	15
Base:	***136***	***123***	***129***	***85***	***95***	

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 (94 daily movements, up from 81 movements in 2010, but down notably since monitoring began in 2007 (146 movements).

Table 1.7: Dry Weather AADT Estimates Based on Morning and Evening Cyclist Movements 2007-2011 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11	Change 07-11
68	Queen/Harris Street	146	119	135	81	**94**	**16%**	-36%
69	Edinburgh/Tobin Street	51	58	49	41	**40**	**-2%**	-22%

1.8 Pine Harbour Ferry Wharf

Twelve cycles were observed parked at the Pine Harbour ferry wharf at Beachlands in 2011. This represents a 200 per cent on the previous year (4 cycles observed in 2010).

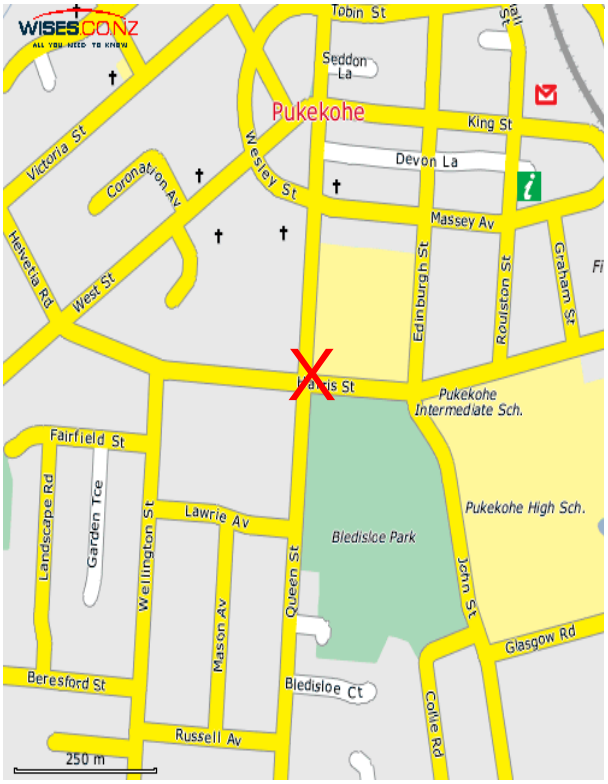
1.9 School Bike Shed Count Summary

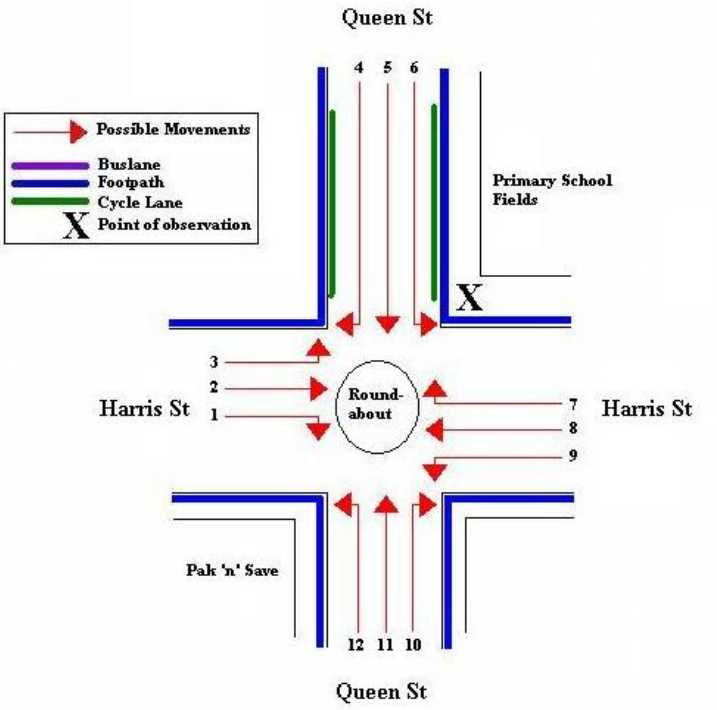
- Among the surveyed schools, of those eligible to cycle at school, on average, three per cent of students are cycling to their schools.
- Sandspit Road School reported the highest share of cyclists – 10 per cent of all eligible students currently cycling to school.
- In total, n=136 students from the responding schools were reported to be cycling to school.
- Rates of cycling to school are highest for the full primary schools (4 per cent).

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**

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

- Fourteen cycle movements were recorded in the morning peak, down from 18 movements last year.
- The most common movements in the morning are turning left from Harris Street into Queen Street (Movement 3 = 3 cyclists), turning right from Queen Street into Harris Street (Movement 10 = 3 cyclists), and north along Queen Street (Movement 11 = 3 cyclists).
- The most notable decrease in cycle movements since 2010 is at Movement 2 (down 5 cyclists).

Table 2.1: Morning Cyclist Movements

Queen/Harris Street 2007-2011 (n)

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

- Over the morning peak, the greatest share of cyclists (57 per cent) are children, this share up from 39 per cent last year.
- All cyclists are wearing a helmet (up from 72 per cent in 2010).
- More than four in five cyclists at this site (86 per cent) are male.
- Reflecting the increase in the share of cyclists who are children, the share of footpath riders has increased notably from last year – up from 39 per cent in 2010 to 64 per cent this year.

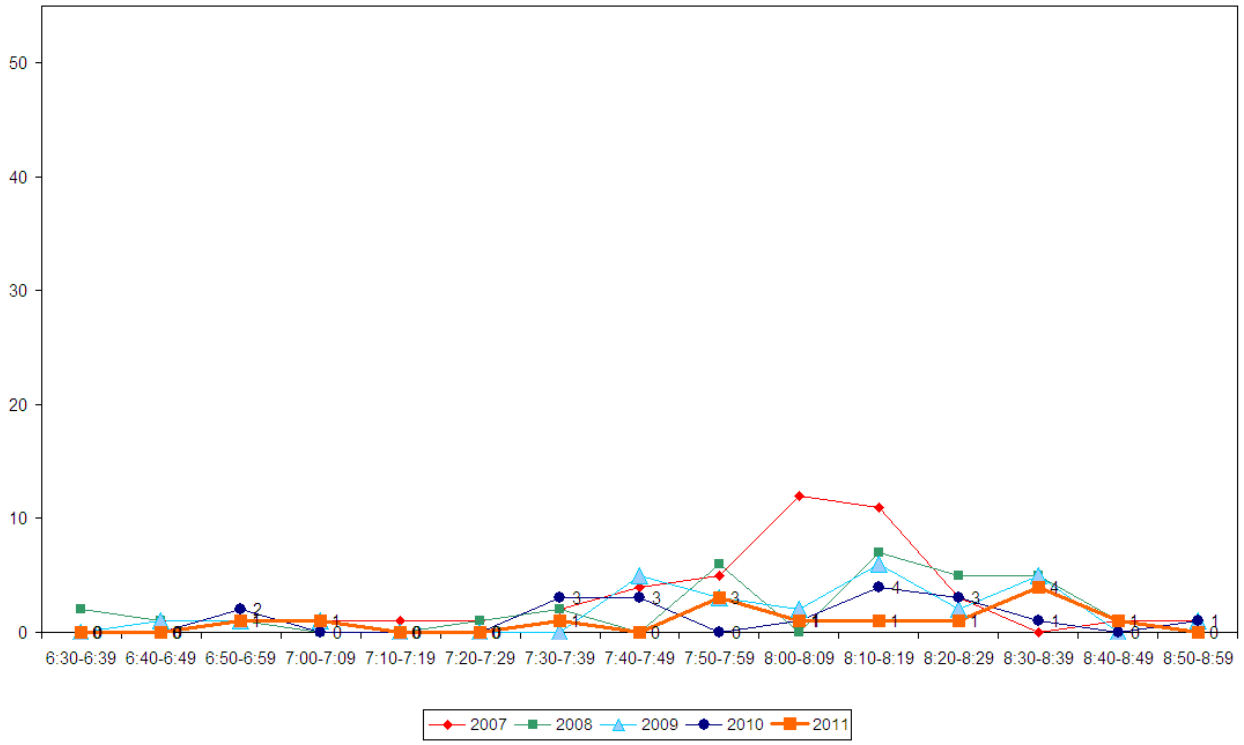
Table 2.2: Morning Cyclist Characteristics

Queen/Harris Street 2007-2011 (%)

	2007	*2008*	*2009*	*2010*	*2011*	Change 10-11
Cyclist Type						
Adult	27	58	37	61	43	**-18**
School child	73	42	63	39	57	**18**
Helmet Wearing						
Helmet on head	93	94	74	72	100	**28**
No helmet	7	6	26	28	0	**-28**
Gender						
Male	-	-	-	-	86	**-**
Female	-	-	-	-	14	**-**
Can't tell	-	-	-	-	0	**-**
Where Riding						
Road	25	58	48	61	36	**-25**
Footpath	75	42	52	39	64	**25**
Base:	***44***	***31***	***27***	***18***	***14***	

- The volume of morning cycle movements remains relatively stable throughout the shift, with slight peaks evident between 7:50am and 7:59am (3 movements) and again between 8:30am and 8:39am (4 movements).

Figure 2.2: Morning Peak Cyclist Frequency
Queen/Harris Street 2007-2011 (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 increased, from 39 movements in 2010 to 53 movements this year.
- The most common movement in the evening is the left hand turn from Queen Street in Harris Street (Movement 12 = 12 cyclists).
- The most notable change in terms of evening cyclist movements is reported for Movement 12 (up 12 cyclists).

Table 2.3: Evening Cyclist Movements

Queen/Harris Street 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	0	2	0	0	7	**7**
2	1	3	1	0	4	**4**
3	6	4	3	0	0	**0**
4	6	4	2	0	3	**3**
5	17	8	4	6	8	**2**
6	0	2	0	1	0	**-1**
7	0	2	0	4	0	**-4**
8	16	8	6	7	3	**-4**
9	0	5	50	13	5	**-8**
10	2	1	0	3	0	**-3**
11	8	8	2	5	11	**6**
12	1	5	0	0	12	**12**
Total	**57**	**52**	**68**	**39**	**53**	**14**

- Just over half of all cyclists using the Queen/Harris Street intersection are school children (55 per cent, compared with 62 per cent last year).
- Seventy-two per cent of cyclists at this site are wearing a helmet (down slightly from 77 per cent in 2010).
- Almost all cyclists at this site (94 per cent) are male.
- Footpath riding continues to be more common than riding on the road (74 per cent, unchanged from last year).

Table 2.4: Evening Cyclist Characteristics

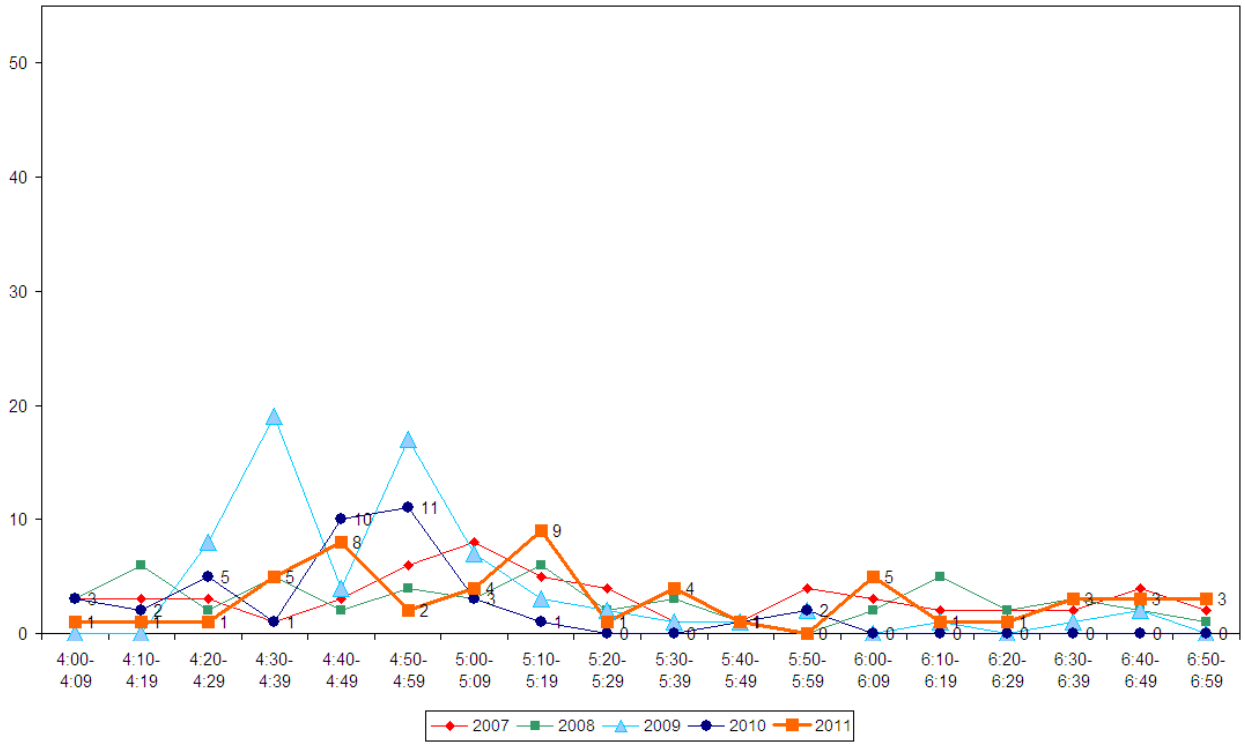
Queen/Harris Street 2007-2011 (%)

	2007	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type						
Adult	47	50	26	38	45	**7**
School child	53	50	74	62	55	**-7**
Helmet Wearing						
Helmet on head	60	67	93	77	72	**-5**
No helmet	40	33	7	23	28	**5**
Gender						
Male	-	-	-	-	94	**-**
Female	-	-	-	-	6	**-**
Can't tell	-	-	-	-	0	**-**
Where Riding						
Road	35	42	15	26	26	**0**
Footpath	65	58	85	74	74	**0**
Base:	***57***	***52***	***68***	***39***	***53***	

- The volume of cycle movements in the evening peaks between 4:40pm and 4:49pm (8 movements; consistent with 2010) and then again between 5:10pm and 5:19pm (9 movements) before tailing off to the end of the monitoring period.

Figure 2.3: Evening Peak Cyclist Frequency

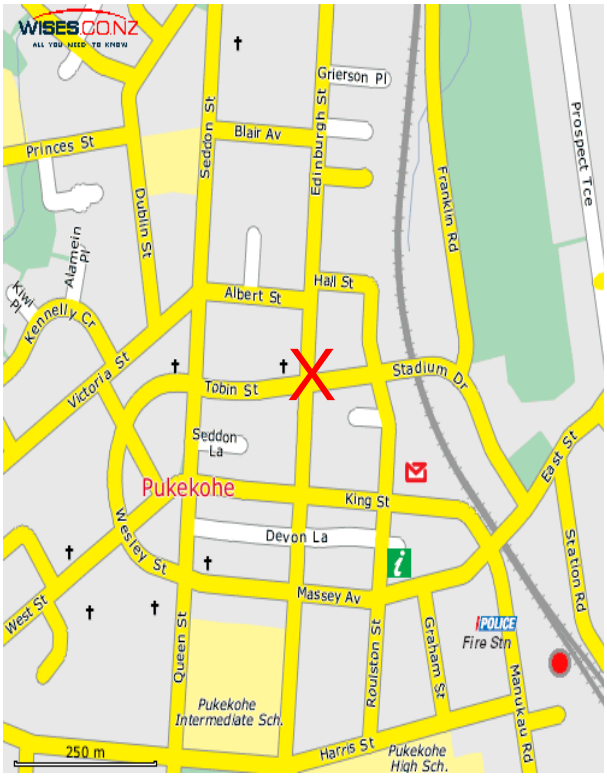
Queen/Harris Street 2007-2011 (n)

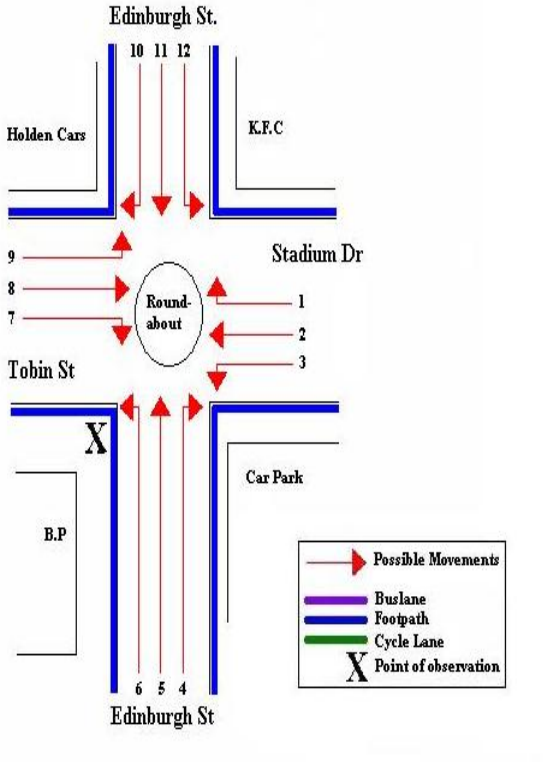


3. EDINBURGH STREET/TOBIN STREET, PUKEKOHE (SITE 69)

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**

3.2 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- Seddon Lane (off Tobin Street) was closed to traffic throughout the shift, with detour signs in place at the intersection.

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 11 movements recorded in 2011 (compared with 17 movements last year).
- The most common movement in the morning continues to be south along Edinburgh Street (Movement 11 = 3 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 2007-2011 (n)

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

- Four in five cyclists at this site are adults (82 per cent, up slightly from 76 per cent last year).
- Most cyclists are wearing a helmet (82 per cent, down slightly from 88 per cent in 2010).
- Three-quarters of cyclists at this intersection in the morning peak (73 per cent) are male.
- In contrast to 2010, the greatest share of cyclists (55%) are riding on the footpath (compared with 35 per cent last year). *Note: In 2010, the footpath from Tobin Street to Edinburgh Street was closed off for construction, so Movements 9 and 10 were only possible on the road.*

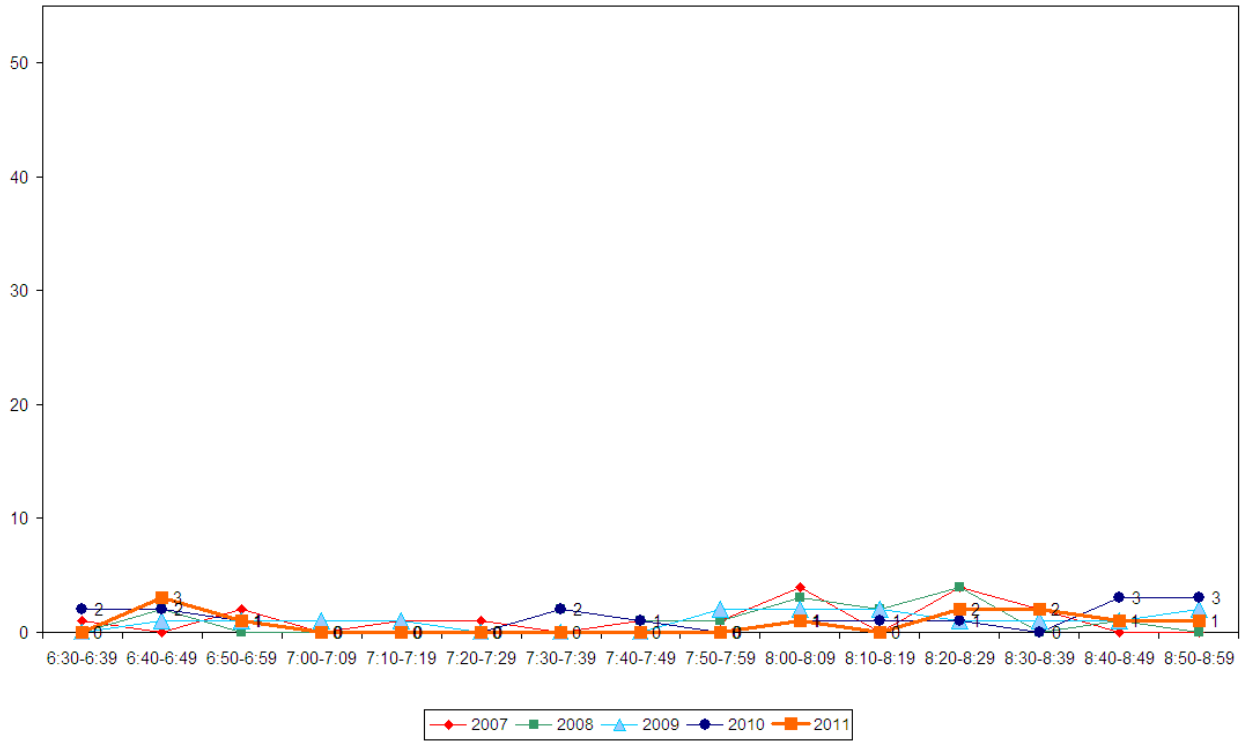
Table 3.2: Morning Cyclist Characteristics

Edinburgh/Tobin Street 2007-2011 (%)

	2007	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type						
Adult	47	56	47	76	82	**6**
School child	53	44	53	24	18	**-6**
Helmet Wearing						
Helmet on head	94	88	87	88	82	**-6**
No helmet	6	12	13	12	18	**6**
Gender						
Male	-	-	-	-	73	**-**
Female	-	-	-	-	27	**-**
Can't tell	-	-	-	-	0	**-**
Where Riding						
Road	47	75	40	65	45	**-20**
Footpath	53	25	60	35	55	**20**
Base:	***17***	***16***	***15***	***17***	***11***	

- Morning cycle volumes are low throughout the monitoring period, with no more than three 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 2007-2011 (n)



3.3 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift.
- Seddon Lane (off Tobin Street) was closed to traffic throughout the shift, with detour signs in place at the intersection.

Key Points

- This year, the total number of cycle movements recorded in the evening at the Edinburgh/Tobin Street intersection has increased, from 11 in 2010 to 17 movements.
- The key movement in the evening is straight along Edinburgh Street heading north (Movement 5 = 5 cyclists).
- The most notable changes in the evening are at Movements 5 and 8 (both up 3 cyclists).

Table 3.3: Evening Cyclist Movements

Edinburgh/Tobin Street 2007-2011 (n)

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

- The share of cyclists using this intersection in the evening who are children has increased notably since last year – 41 per cent, up from 9 per cent last year. This distribution of cyclists by age in 2011 is consistent with that reported in 2008 and 2009.
- Almost all cyclists at this site are wearing a helmet (94 per cent, up from 82 per cent in 2010).
- Three-quarters of cyclists observed at this site (76 per cent) are male.
- In contrast to 2010, the greatest share of cyclists (53%) are riding on the footpath (compared with just 18 per cent last year). *Note: In 2010, the footpath from Tobin Street to Edinburgh Street was closed off for construction, so Movements 9 and 10 were only possible on the road.*

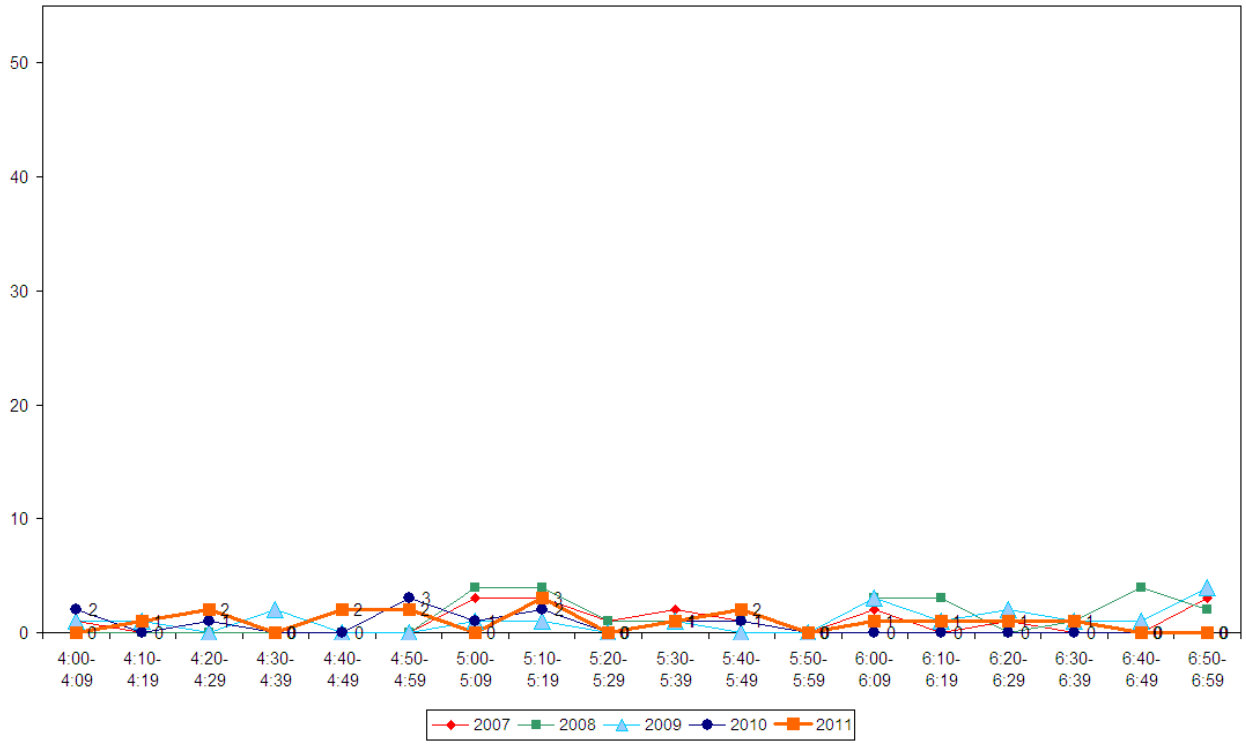
Table 3.4: Evening Cyclist Characteristics

Edinburgh/Tobin Street 2007-2011 (%)

	2007	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type						
Adult	78	54	58	91	59	**-32**
School child	22	46	42	9	41	**32**
Helmet Wearing						
Helmet on head	78	54	58	82	94	**12**
No helmet	22	46	42	18	6	**-12**
Gender						
Male	-	-	-	-	76	**-**
Female	-	-	-	-	24	**-**
Can't tell	-	-	-	-	0	**-**
Where Riding						
Road	56	46	58	82	47	**-35**
Footpath	44	54	42	18	53	**35**
Base:	***18***	***24***	***19***	***11***	***17***	

- Evening cycle volumes are low throughout the monitoring period, with no more than three 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 2007-2011 (n)



4. PINE HARBOUR FERRY WHARF

Key Points

- Twelve cycles were observed parked at the Pine Harbour ferry wharf at Beachlands in 2011[9]. This represents a 200 per cent on the previous year (4 cycles observed in 2010).

Table 4.1: Cycles Observed At Pine Harbour Ferry Wharf

2010 – 2011 (n)

	Number of Cycles Observed
2010	4
2011	12

[9] Count undertaken on Wednesday 9th 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 17 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].
- No school surveyed reported events or issues that may affect the cycle counts.
- The designated count day was Tuesday 8th of March[11].

4.2 Key Points

- Among the surveyed schools, of those eligible to cycle at school, on average, three per cent of students are cycling to their schools.
- Sandspit Road School reported the highest share of cyclists – 10 per cent of all eligible students currently cycling to school.
- In total, n=136 students from the responding schools were reported to be cycling to school.
- Of the 17 schools that responded, five had no students cycling to school.

[10] Beachlands School recommends that only children aged 10 years or over cycle to school. Ramarama School insists that no students under 10 years cycle to school without parental supervision. Sandspit Road School only allows cycling for students Year 4 and older. St Joseph's Pukekohe only allows cycling for students Year 5 and older.

[11] The following schools conducted their counts on alternative days:
- Sandspit School – Wednesday 9th March
- Buckland School, Waiuku Primary – Friday 11th March
- Bombay School – Wednesday 16th March
- Ararimu School, Ardmore School – Tuesday 29th March.

Table 4.1 shows the results of the 17 schools surveyed in the Franklin ward.

Table 4.1: Summary Table Of School Bike Count - 2007-2011 (n)

School Name	*School Type*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible*[12]				
				2011	*2010*	*2009*	*2008*	*2007*
Sandspit Road School	Full primary	200	20	**10%**	-	-	-	-
Beachlands School	Full primary	512	37	**7%**	-	-	-	-
Buckland School	Full primary	238	15	**6%**	-	-	-	-
Waiuku Primary	Full primary	450	22	**5%**	-	-	-	-
Maraetai Beach School	Full primary	260	8	**3%**	-	-	-	-
View Road School	Full primary	149	4	**3%**	-	-	-	-
Awhitu District School	Full primary	111	2	**2%**	-	-	-	-
Pukekohe Intermediate School	Intermediate	611	10	**2%**	-	3%	7%	5%
Ramarama School	Full primary	90	2	**2%**	-	-	-	-
St Joseph's Pukekohe	Full primary	182	3	**2%**	-	-	-	-
Onewhero Area School	Composite	450	5	**1%**	2%	1%	1%	1%
Tuakau College	Intermediate/secondary	679	8	**1%**	1%	1%	2%	-
Ararimu School	Full primary	90	0	**0%**	-	-	-	-
Ardmore School	Full primary	330	0	**0%**	-	-	-	-
Bombay School	Full primary	334	0	**0%**	-	-	-	-
Glenbrook	Full primary	203	0	**0%**	-	-	-	-
Kingsgate School	Full primary	37	0	**0%**	-	-	-	-
Total		**4926**	**136**	**3%**				

[12] This share is calculated by averaging the number of cycles counted over the total number of students eligible to cycle. The figure obtained is rounded to zero decimal places.

- 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 (4 per cent).

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

2007-2011 (%)

School Type	***Number of Schools Responded in 2011***	**Cyclists as share of those eligible**					
		2007	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Full primary	14	-	-	-	-	**4%**	-
Intermediate	1	5%	7%	3%	-	**2%**	-1
Composite	1	1%	1%	1%	2%	**1%**	-1
Intermediate/secondary	1	-	2%	1%	1%	**1%**	0

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%