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Research Report Prepared for
Auckland Transport

6th May 2011

2011 Auckland Region Manual Cycle Monitor

- Waitemata and Gulf 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:

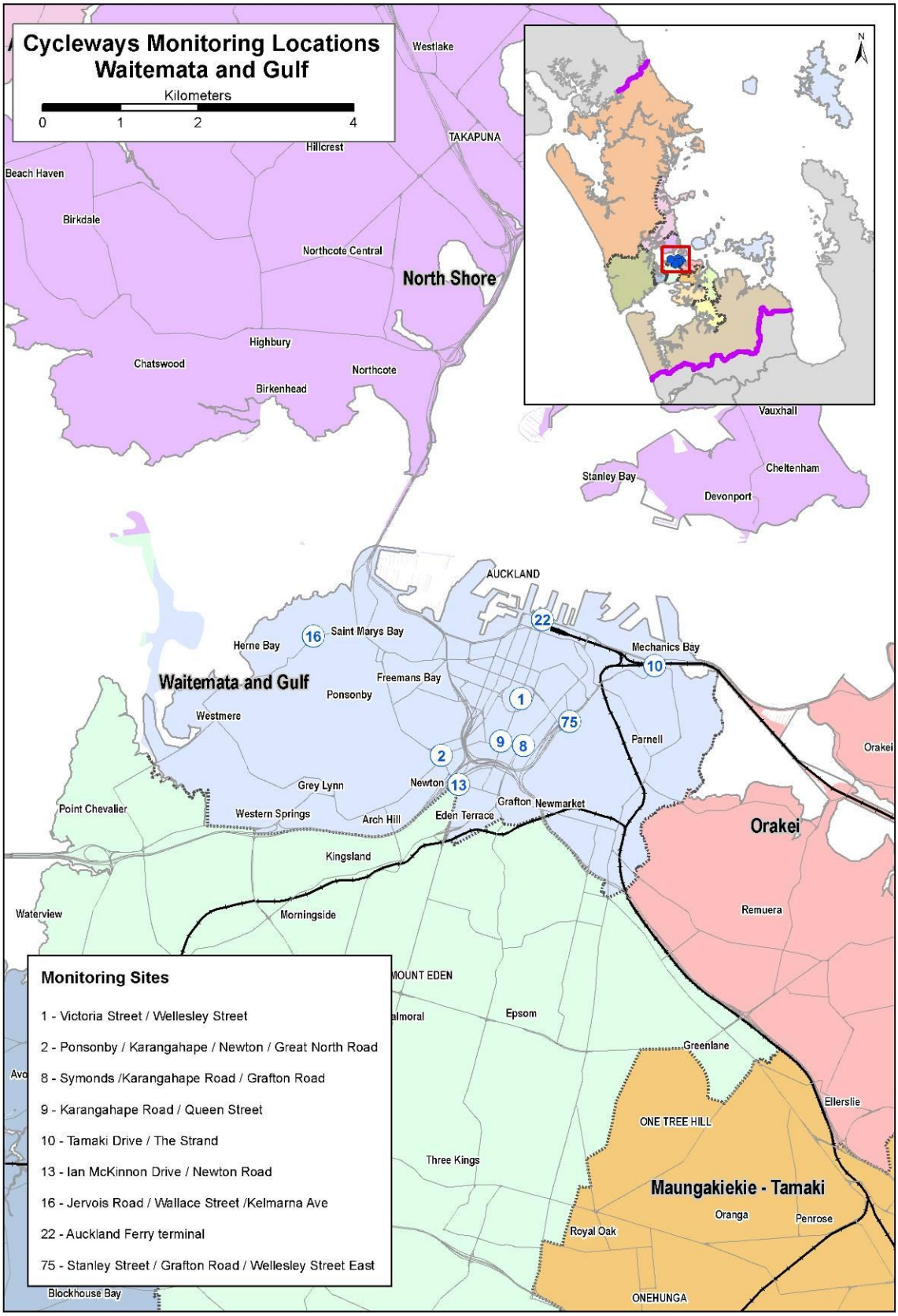
- standard monitoring days are used – that is, school and tertiary holidays, and statutory holidays are excluded and that monitoring preferably takes place at the same time each year to enable reliable year-on-year comparisons to be made. Decisions about whether cycle counts take place on weekdays and 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 9 sites in the Waitemata and Gulf 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 nine pre-determined sites in the Waitemata and Gulf 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 Waitemata and Gulf ward.

Figure 1.1: 2011 Cycle Monitoring Locations in Waitemata and Gulf 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 have 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 Waitemata and Gulf 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 Waitemata and Gulf 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 Ten of this report.

Note: Surveying in the Waitemata and Gulf ward was undertaken on Wednesday 9th of March, 2011. Sunrise was at 7:13am and sunset at 7:50pm. The highest temperature was 22.5 degrees Celsius.

1.4 Morning Peak Summary Results

Environmental Conditions

- All sites monitored in the Waitemata and Gulf ward had fine weather in the morning.
- No sites reported road works or accidents that may have affected cycle counts.

Key Points

- A total of 2,082 cyclist movements were recorded across the nine sites in the morning peak period in 2011. Nine per cent (n=184) of the total cycle movements in the morning peak were made by those cycling in groups.
- The total number of morning movements has increased over the last 12 months – up from 1,900 in 2010 to 2,082 this year, an increase of 10 per cent.
- The average volume of morning cyclists across the nine sites in the Waitemata and Gulf ward is 231 cycle movements. This compares with 211 movements in 2010.
- Of the nine sites monitored, the busiest site in the morning peak continues to be the intersection of Tamaki Drive and The Strand (630 cycle movements, up from 498 movements in 2010), whereas the Stanley Street/Grafton Road site has the lowest volume of morning cyclists (27 movements).
- Five sites recorded increases this year compared to 2010. The most notable increases are at:
  - Victoria/Wellesley Street – up 41 per cent;
  - Ian McKinnon/Newton Road – up 24 per cent; and
  - Tamaki Drive/The Strand – up 21 per cent.
- In contrast, the four remaining sites recorded declines. The most notable decrease was recorded at the Stanley Street/Grafton Road intersection (down 43 per cent from 2010).

Table 1.1: Summary Of Morning Cyclist Movements

2007-2011 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11	Change 07-11
10	Tamaki Drive/The Strand	480	416	321	498	**630**	**21%**	27%
8	Symonds Street/Karangahape Road	290	285	246	283	**317**	**12%**	9%
9	Karangahape Road/Queen Street	246	212	238	272	**256**	**-6%**	4%
2	Ponsonby/Karangahape Road	226	199	176	242	**222**	**-8%**	-2%
22	Ferry Terminal	195	158	137	198	**205**	**4%**	5%
1	Victoria/Wellesley Street	70	57	59	82	**116**	**41%**	66%
	Average per site (6 sites since 2007)	**251**	**221**	**196**	**263**	**291**	**11%**	16%
	Total (6 sites since 2007)	**1507**	**1327**	**1177**	**1575**	**1746**	**11%**	16%
13	Ian McKinnon/Newton Road	-	-	139	190	**236**	**24%**	-
16	Jervois Road/Wallace Street	-	-	60	88	**73**	**-17%**	-
75	Stanley Street/Grafton Road	-	36	49	47	**27**	**-43%**	-
	Average per site (7 sites since 2008, 9 sites since 2009)	**-**	**195**	**158**	**211**	**231**	**9%**	**-**
	Total (7 sites since 2008, 9 sites since 2009)	**-**	**1363**	**1425**	**1900**	**2082**	**10%**	**-**

- Morning cyclist characteristics this year are similar to those reported in 2010. Ninety-nine per cent of cyclists this year are adults (unchanged from 2010).
- Almost all cyclists are wearing a helmet (92 per cent in 2011, stable from 2010).
- Three-quarters of morning cyclists are male (74 per cent).
- Riding on the road remains common (74 per cent, stable from 75 per cent last year).

Table 1.2: Summary of Morning Cyclist Characteristics

2007 -2011 (%)

	2007	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type						
Adult	99	96	98	99	99	0
School child	1	4	2	1	1	0
Helmet Wearing						
Helmet on head	95	93	93	92	92	0
No helmet	5	7	7	8	8	0
Gender						
Male	-	-	-	-	74	-
Female	-	-	-	-	19	-
Can't tell	-	-	-	-	7	-
Where Riding*						
Road	89	94	78	75	74	-1
Footpath	11	6	11	16	15	-1
Off-road cycleway	0	0	11	9	11	2
Base:	***1507***	***1363***	***1425***	***1900***	***2082***	

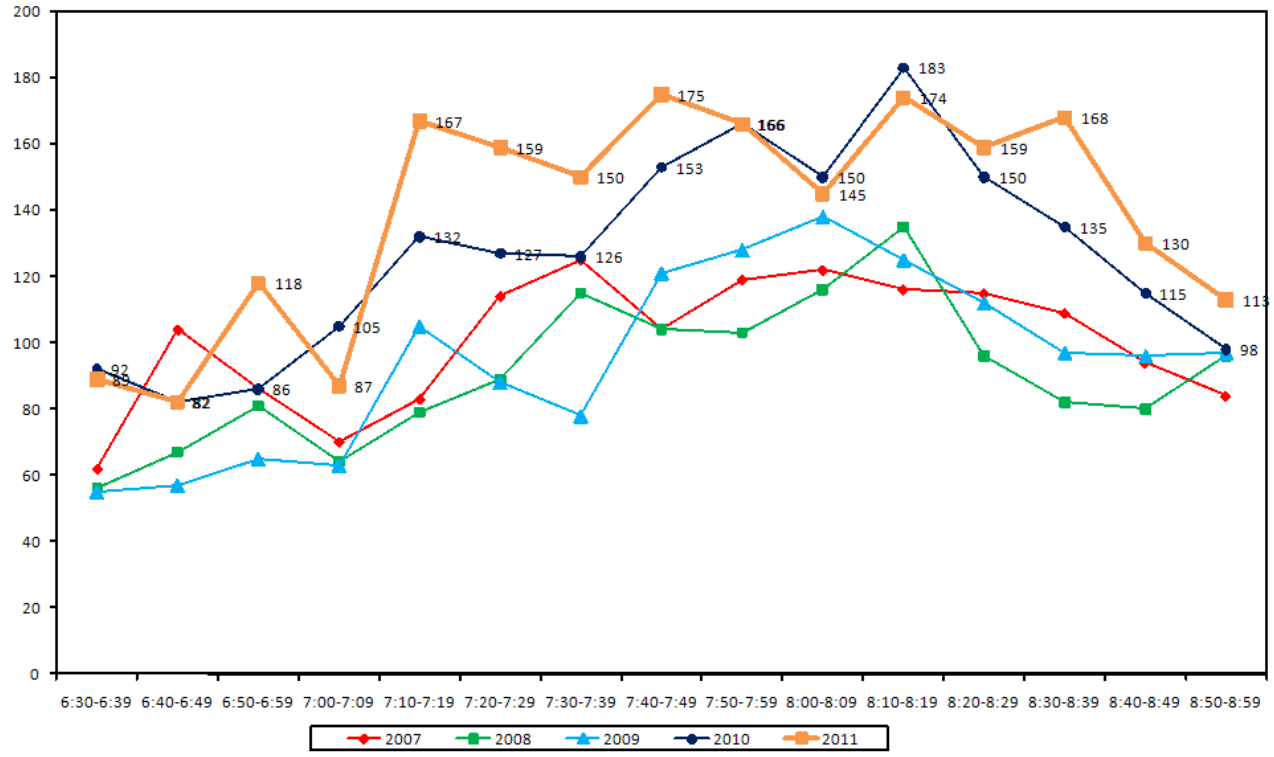
** Note: Prior to 2009, cyclists riding on the North-Western, Waikaraka, Onehunga Harbour Road cycleways, and the designated side of the footpath on Tamaki Drive are categorised as road riders.*

The Ferry Terminal, Auckland Central site has not been included for figures regarding where cyclists were riding.

- Figure 1.2 shows the overall pattern of morning cyclist volumes recorded at the nine sites monitored in 2011. Morning cyclist numbers follow a steady increasing trend from 6:30am to a peak between 7:40am and 7:49am (175 cyclists) and between 8:10am and 8:19am (174 cyclists) after which the numbers of movements decline gradually over the remainder of the morning period.

Figure 1.2: Total Cyclist Frequency – Morning Peak

2007-2011 (n)



1.5 Evening Peak Summary Results

Environmental Conditions

- All sites had fine weather until 6:00pm. Between 6:00pm and the end of the shift, light drizzle was observed at most sites, with some experiencing heavy showers around 6:30pm.
- All sites had no road works or accidents that may have affected cycle counts.

Key Points

- A total of 2,130 cyclist movements were recorded across the nine sites in the evening peak period in 2011. Two per cent (n=44) of the total cycle movements in the evening peak were made by those cycling in groups.
- The total number of evening movements has increased over the last 12 months – up from 1,965 in 2010 to 2,130 this year, an increase of 8 per cent.
- The average volume of evening cyclist movements across the nine sites is 237 cycle movements. This compares with 218 movements in 2010.
- Of the nine Waitemata and Gulf sites, the volume of cyclists is lowest at the Stanley Street/Grafton Road intersection in the evening (47 cycle movements), whereas the Tamaki Drive/The Strand intersection continues to be the busiest in terms of evening cyclists' activity, with 429 movements recorded.
- Four sites recorded increases this year compared to 2010. The most notable increases are at:
  - Ian McKinnon/Newton Road – up 76 per cent; and
  - Victoria/Wellesley Street – up 36 per cent.
- The five remaining sites recorded declines, with the most notable decrease at the Ponsonby/Karangahape Road intersection (down 9 per cent from 2010).

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

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11	Change 07-11
10	Tamaki Drive/The Strand	420	370	282	438	**429**	**-2%**	2%
8	Symonds Street/Karangahape Road	349	336	282	314	**373**	**19%**	7%
9	Karangahape Road/Queen Street	261	212	221	310	**298**	**-4%**	14%
2	Ponsonby/Karangahape Road	261	216	194	317	**289**	**-9%**	11%
22	Ferry Terminal	185	158	111	197	**186**	**-6%**	1%
1	Victoria/Wellesley Street	90	79	65	80	**109**	**36%**	21%
	Average per site (6 sites since 2007)	**261**	**229**	**193**	**276**	**281**	**2%**	8%
	Total (6 sites since 2007)	**1566**	**1371**	**1155**	**1656**	**1684**	**2%**	8%
13	Ian McKinnon/Newton Road	-	-	152	184	**324**	**76%**	-
16	Jervois Road/Wallace Street	-	-	51	79	**75**	**-5%**	-
75	Stanley Street/Grafton Road	-	29	47	46	**47**	**2%**	-
	Average per site (8 sites in 2008, 10 sites in 2009)	**-**	**189**	**156**	**218**	**237**	**8%**	-
	Total (8 sites in 2008, 10 sites in 2009)	**-**	**1321**	**1405**	**1965**	**2130**	**8%**	-

- Ninety-nine per cent of evening cyclists this year are adults (stable from 2010).
- Most cyclists are wearing a helmet in the evening (88 per cent, stable from 89 per cent in 2010).
- The majority of evening cyclists are riding on the road (64 per cent, stable from 62 per cent in 2010). Twenty one per cent of cyclists are riding on the footpath, and the remaining 15 per cent are using off-road cycleways.

Table 1.4: Summary of Evening Cyclist Characteristics

2007 -2011 (%)

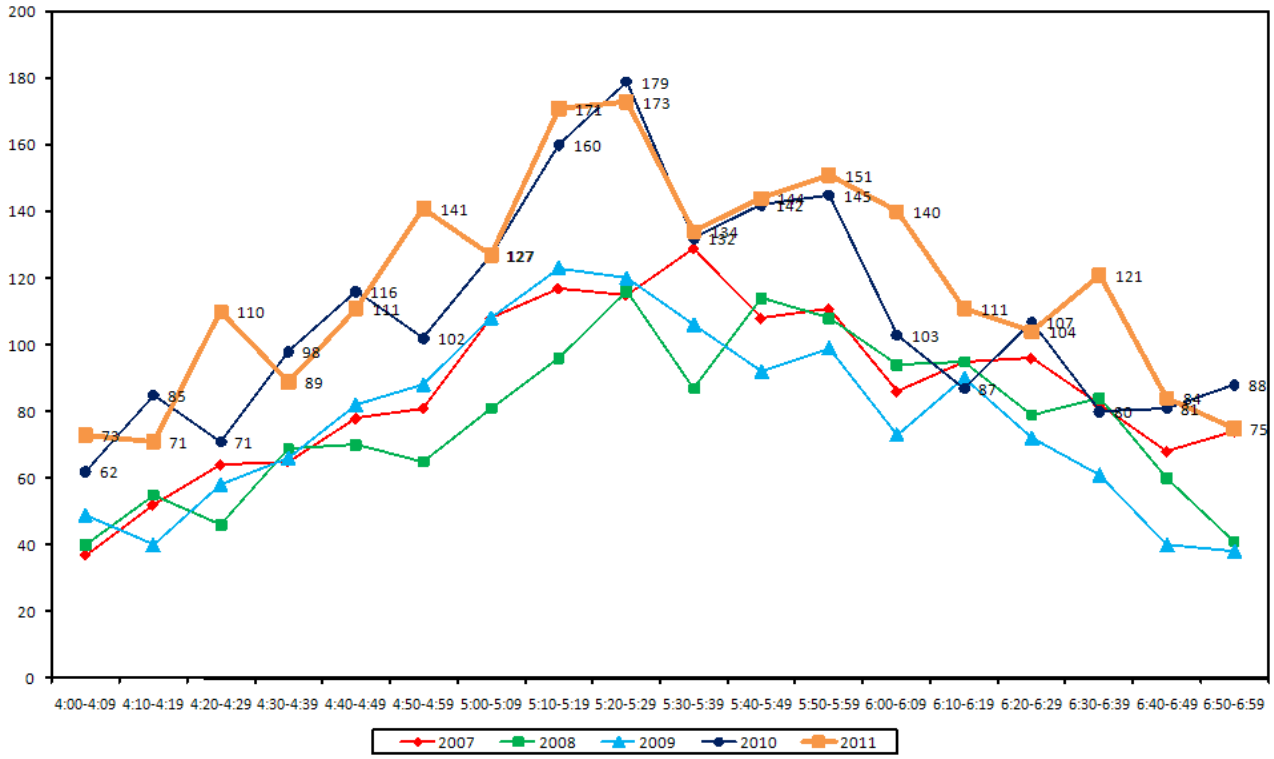
	2007	*2008*	*2009*	*2010*	*2011*	Change 10-11
Cyclist Type						
Adult	99	99	98	99	99	0
School child	1	1	2	1	1	0
Helmet Wearing						
Helmet on head	89	91	91	89	88	-1
No helmet	11	9	9	11	12	1
Gender						
Male	-	-	-	-	74	-
Female	-	-	-	-	19	-
Can't tell	-	-	-	-	7	-
Where Riding*						
Road	86	93	61	62	64	-2
Footpath	14	7	18	20	21	1
Off-road cycleway	0	0	21	18	15	-3
Base:	***1566***	***1321***	***1405***	***1965***	***2130***	

** Note: Prior to 2009, cyclists riding on the North-Western, Waikaraka, Onehunga Harbour Road cycleways, and the designated side of the footpath on Tamaki Drive were categorised as road riders.*
The Ferry Terminal, Auckland Central site has not been included for figures regarding where cyclists were riding.

- The overall pattern of evening cyclist volumes derived from the nine Waitemata and Gulf sites is illustrated in Figure 1.3. Evening cycle volumes start off relatively low, and increase gradually to peak between 5:10pm and 5:29pm (171 movements and 173 movements each ten minute period respectively). This is consistent with results from 2010, with a peak of 179 movements between 5:20pm and 5:29pm.

Figure 1.3: Total Cyclist Frequency – Evening Peak

2007-2011 (n)



1.6 Aggregated Total Summary Results

- Overall, a total of 4,212 cyclist movements were recorded across the nine sites monitored in 2011 - five per cent (n=228) observed as cycling in groups.
- The total number of cycle movements has increased over the last 12 months – up from 3,865 in 2010 to 4,212, an increase of 9 per cent.
- The average number of cycle movements for the nine sites monitored is 468, an increase of 9 per cent from last year.
- Of the nine sites, the busiest site continues to be Tamaki/The Strand with a total of 1,059 movements, while Stanley Street/Grafton Road has the fewest number of cyclists (74 movements).

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
10	Tamaki Drive/The Strand	900	786	603	936	**1059**	**13%**	18%
8	Symonds Street/Karangahape Road	639	621	528	597	**690**	**16%**	8%
9	Karangahape Road/Queen Street	507	424	459	582	**554**	**-5%**	9%
2	Ponsonby/Karangahape Road	487	415	370	559	**511**	**-9%**	5%
22	Ferry Terminal	380	316	248	395	**391**	**-1%**	3%
1	Victoria/Wellesley Street	160	136	124	162	**225**	**39%**	41%
	Average per site (6 sites since 2007)	**512**	**450**	**389**	**539**	**572**	**6%**	12%
	Total (6 sites since 2007)	**3073**	**2698**	**2332**	**3231**	**3430**	**6%**	12%
13	Ian McKinnon/Newton Road	-	-	291	374	**560**	**50%**	-
16	Jervois Road/Wallace Street	-	-	111	167	**148**	**-11%**	-
75	Stanley Street/Grafton Road	-	65	96	93	**74**	**-20%**	-
	Average per site (7 sites in 2008, 9 sites in 2009)	**-**	**375**	**314**	**429**	**468**	**9%**	-
	Total (7 sites in 2008, 9 sites in 2009)	**-**	**2627**	**2830**	**3865**	**4212**	**9%**	-

- Overall, cyclist characteristics this year are similar to those reported in 2010. In particular, 99 per cent of evening cyclists this year are adults (unchanged from 2010).
- Most cyclists are wearing a helmet (90 per cent, unchanged from 2010).
- Three-quarters of cyclists are male (74 per cent).
- The majority of cyclists are riding on the road (69 per cent, up from 65 per cent in 2010). Thirteen per cent are riding on the off-road cycleways (13 per cent, down from 18 per cent), with the remaining 18 per cent riding on the footpath.

Table 1.6: Summary of Total Cyclist Characteristics

2007 -2011 (%)

	2007	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type						
Adult	99	98	98	99	99	0
School child	1	2	2	1	1	0
Helmet Wearing						
Helmet on head	92	92	92	90	90	0
No helmet	8	8	8	10	10	0
Gender						
Male	-	-	-	-	74	-
Female	-	-	-	-	19	-
Can't tell	-	-	-	-	7	-
Where Riding*						
Road	87	93	66	65	69	4
Footpath	13	7	14	17	18	1
Off-road cycleway	0	0	20	18	13	-3
Base:	***3073***	***2627***	***2830***	***3865***	***4212***	

** Note:* *Prior to 2009 cyclists riding on the North-Western, Waikaraka, Onehunga Harbour Road cycleways, and the designated side of the footpath on Tamaki Drive were categorised as road riders.*

The Ferry Terminal, Auckland Central site has not been included for figures regarding where cyclists were riding.

1.7 Average Annual Daily Traffic (AADT) Estimate

Note: A discussion of Average Annual Daily Traffic Estimates is provided in Section 1.1. 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 Tamaki Drive/The Strand (1,555 daily movements, up from 1,365 movements in 2010) and the lowest is at Stanley Street/Grafton Road (106 daily movements).
- Four sites have recorded increases in total AADT estimates this year compared with 2010. The intersections with the biggest increases are:
  - Ian McKinnon/Newton Road – up 48 per cent; and
  - Victoria/Wellesley Street – up 39 per cent.
- In contrast, the number of total cyclists recorded at the remaining five sites is lower than last year, with the most notable decrease at Stanley Street/Grafton Road (down 21 per cent from 2010).

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

Site Number	*Locations*	*2007 AADT*	*2008 AADT*	*2009 AADT*	*2010 AADT*	*2011 AADT*	10-11 Change	07-11 Change
10	Tamaki Drive/The Strand	1313	1146	880	1365	**1555**	**14%**	18%
8	Symonds Street/Karangahape Road	924	899	765	865	**999**	**15%**	8%
13	Ian McKinnon/Newton Road	-	-	422	544	**807**	**48%**	-
9	Karangahape Road/Queen Street	736	616	669	843	**802**	**-5%**	9%
2	Ponsonby/Karangahape Road	705	602	536	807	**738**	**-9%**	5%
22	Ferry Terminal	553	459	363	574	**570**	**-1%**	3%
1	Victoria/Wellesley Street	231	201	180	236	**328**	**39%**	42%
16	Jervois Road/Wallace Street	-	-	162	243	**215**	**-12%**	-
75	Stanley Street/Grafton Road	-	95	140	135	**106**	**-21%**	-

1.8 School Bike Shed Count Summary

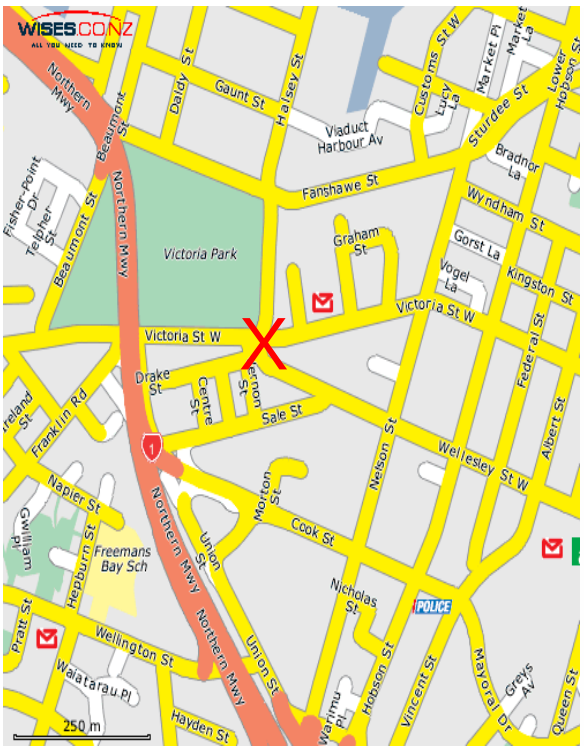
Key Points

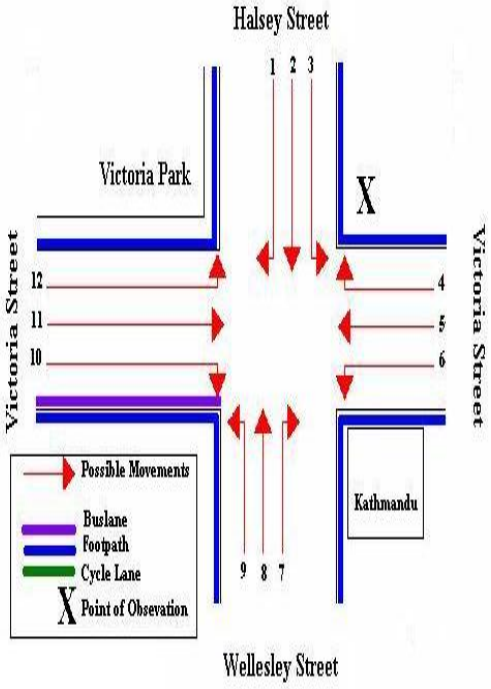
- Of those eligible to cycle at school, on average two per cent of students are cycling to their schools.
- Across the 13 eligible schools that responded, n=158 students were reported to cycle to school.
- Kadimah School reported the highest share of cyclists – 8 per cent of all eligible students currently cycling.
- Five schools (38 per cent) had no students cycling to school.
- Rates of cycling to school are highest among intermediate schools (5 per cent), while combined intermediate and secondary schools have the lowest rates in this ward (no cyclists, unchanged from last year).

2. VICTORIA STREET/WELLESLEY STREET/HALSEY STREET (SITE 1)

Figure 2.1 shows the possible cyclist movements at this intersection.

Figure 2.1: Cycle Movements: Victoria/Wellesley/Halsey Street





2.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	70	90	160	231
2008	57	79	136	201
2009	59	65	124	180
2010	82	80	162	236
2011	**116**	**109**	**225**	**328**

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

- The volume of morning peak cyclist movements recorded at the Victoria/Wellesley/Halsey intersection has increased (116 movements, up from 82 in 2010).
- The key routes in the morning are Victoria Street West turning left onto Halsey Street travelling south (Movement 12 = 29 movements) and Halsey Street turning left onto Victoria Street travelling east (Movement 3 = 23 movements).
- Of the twelve movements possible at this intersection, the most notable change since last year is at Movements 3 (up 18 movements).

Table 2.1: Morning Cyclist Movements

Victoria/Wellesley/Halsey 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	16	10	6	11	**18**	7
2	0	4	2	10	**6**	-4
3	2	5	2	5	**23**	18
4	1	0	3	3	**0**	-3
5	3	5	1	5	**4**	-1
6	0	0	1	1	**3**	2
7	0	0	0	0	**2**	2
8	1	4	1	4	**9**	5
9	0	1	1	0	**5**	5
10	2	2	1	3	**1**	-2
11	22	13	11	15	**16**	1
12	23	13	30	25	**29**	4
Total	**70**	**57**	**59**	**82**	**116**	**34**

- Almost all cyclists at this site were adults (99 per cent, no change from 2010).
- Most cyclists were wearing a helmet (90 per cent, no change from 2010).
- The majority of cyclists were male (85 per cent).
- The majority of cyclists are riding on the road (81 per cent, down slightly from 84 per cent in 2010).

Table 2.2: Morning Cyclist Characteristics

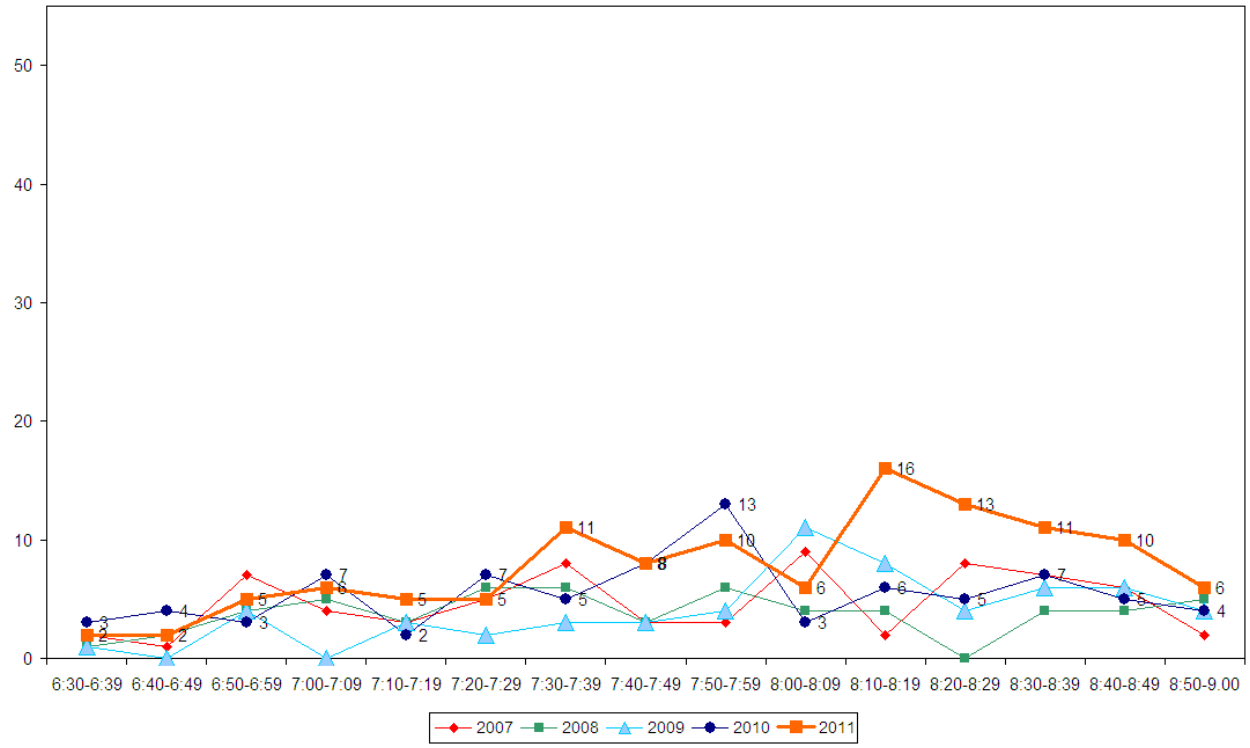
Victoria/Wellesley/Halsey 2004-2011(%)

	2004	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type									
Adult	100	89	100	100	100	92	99	**99**	0
School child	0	11	0	0	0	8	1	**1**	0
Helmet Wearing									
Helmet on head	94	91	96	91	98	93	90	**90**	0
No helmet	6	9	4	9	2	7	10	**10**	0
Gender									
Male	-	-	-	-	-	-	-	**85**	-
Female	-	-	-	-	-	-	-	**15**	-
Can't tell	-	-	-	-	-	-	-	**0**	-
Where Riding									
Road	88	88	100	91	86	83	84	**81**	-3
Footpath	12	12	0	9	14	17	16	**19**	3
Base:	***33***	***56***	***51***	***70***	***57***	***59***	***82***	***116***	

- The volume of morning cycle movements in 2011 first peaks between 7:30am and 7:39am (11 movements), and reaches its highest peak between 8:10am and 8:19am (18 movements). The highest peak in 2010 was recorded 10 minutes earlier, between 7:50am and 7:59am (13 movements).

Figure 2.2: Morning Peak Cyclist Frequency

Victoria/Wellesley/Halsey (n)



Note: In 2011, four cyclists were observed riding as a group at this site at 7:36am. This equates to three per cent of all morning peak cyclists at this site.

2.3 Evening Peak

Environmental Conditions

- The weather was fine throughout most of the evening shift. However, light drizzle was observed from 6:16pm, which developed into heavy rain at 6:49pm. Light rain fell from 6:56pm until the end of the evening monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of evening peak cyclist movements recorded at the Victoria/Wellesley/Halsey intersection has increased (109 movements, up from 80 in 2010).
- The key movements in the evening are turning right from Halsey Street onto Victoria Street travelling west (Movement 1 = 28 cyclists), Victoria Street West turning left onto Halsey Street travelling south (Movement 12 = 26 movements), and heading straight on Victoria Street West travelling west (Movement 5 = 21).
- Evening cyclist volumes have most notably increased at Movement 12 (up 13 movements) and decreased at Movement 11 (down 8 movements).

Table 2.3: Evening Cyclist Movements

Victoria/Wellesley/Halsey 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	25	23	15	26	**28**	2
2	3	6	5	2	**12**	10
3	0	1	7	1	**1**	0
4	5	3	3	3	**8**	5
5	23	8	11	12	**21**	9
6	1	0	0	0	**0**	0
7	0	2	0	0	**1**	1
8	2	10	6	11	**6**	-5
9	3	2	4	3	**5**	2
10	4	0	0	0	**0**	0
11	5	7	5	9	**1**	-8
12	19	17	9	13	**26**	13
Total	**90**	**79**	**65**	**80**	**109**	**29**

- Almost all cyclists using the Victoria/Wellesley/Halsey intersection were adults (98 per cent, stable from 100 per cent in 2010).
- Most evening cyclists at this site were wearing a helmet (86 per cent, up slightly from 81 per cent in 2010).
- The majority of cyclists were male (80 per cent).
- Almost three quarters of cyclists were riding on the road (73 per cent, down slightly from 76 per cent in 2010).

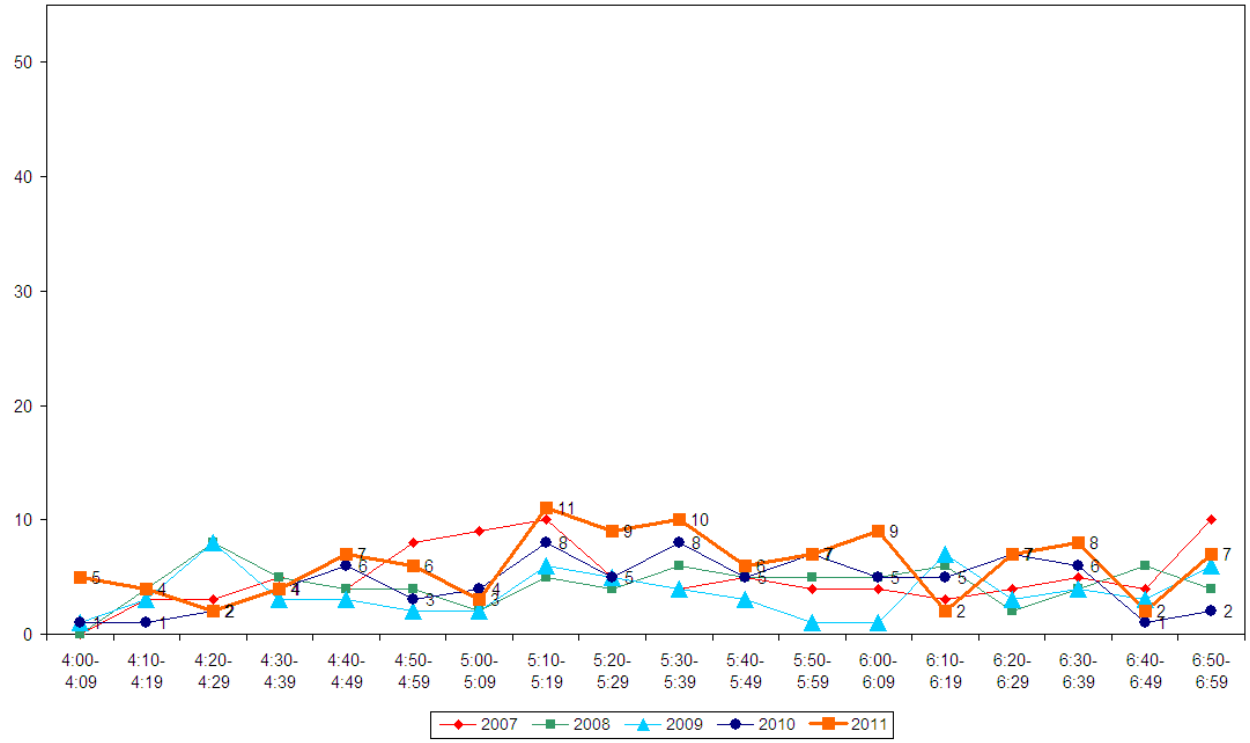
Table 2.4: Evening Cyclist Characteristics

Victoria/Wellesley/Halsey 2004-2011(%)

	2004	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
Cyclist Type								
Adult	100	97	100	99	100	100	**98**	-2
School child	0	3	0	1	0	0	**2**	2
Helmet Wearing								
Helmet on head	86	91	91	96	83	81	**86**	5
No helmet	14	9	9	4	17	19	**14**	-5
Gender								
Male	-	-	-	-	-	-	**80**	-
Female	-	-	-	-	-	-	**17**	-
Can't tell	-	-	-	-	-	-	**3**	-
Where Riding								
Road	72	94	87	87	71	76	**73**	-3
Footpath	18	6	13	13	29	24	**27**	3
Base:	***36***	***33***	***90***	***79***	***65***	***80***	***109***	

- A notable peak in evening cyclist movements occurs between 5:10pm and 5:19pm (11 movements), the same time as the first peak in 2010 (8 movements). The number of cyclists remains above five movements for most of the remainder of the observation period.

Figure 2.3: Evening Peak Cyclist Frequency
Victoria/Wellesley/Halsey (n)

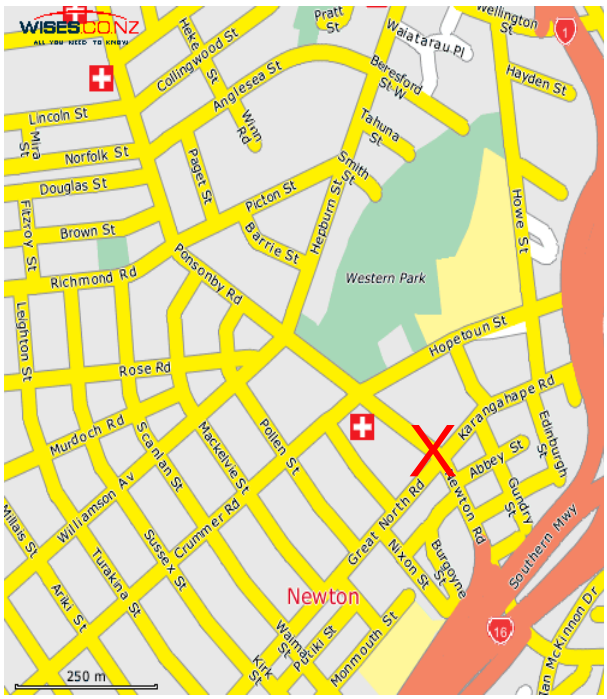


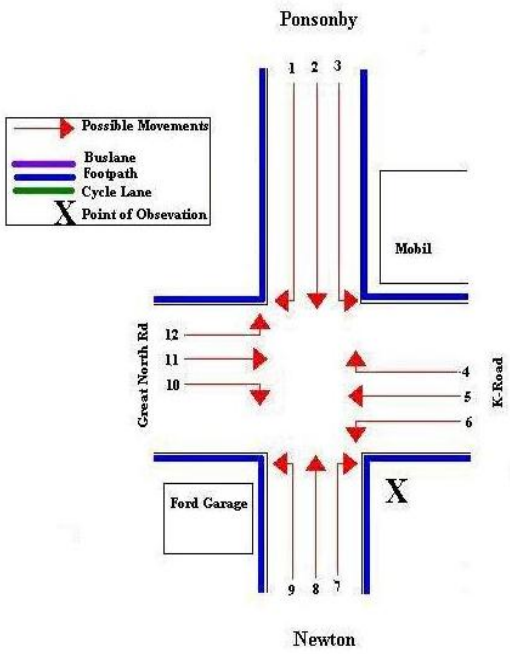
Note: In 2011, four cyclists were observed riding together at this site at 6:52pm. This equates to four per cent of all evening peak cyclists at this site.

3. PONSONBY/KARANGAHAPE/ NEWTON/GREAT NORTH ROAD, NEWTON (SITE 2)

Figure 3.1 shows the possible cyclist movements at this intersection.

Figure 3.1: Cycle Movements: Ponsonby/Karangahape/Newton/Great North





3.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	226	261	487	705
2008	199	216	415	602
2009	176	194	370	536
2010	242	317	559	807
2011	**222**	**289**	**511**	**738**

3.2 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

- The volume of morning peak cyclists recorded at the Ponsonby/Karangahape/Newton/Great North Road intersection in 2011 has decreased (222 movements, down from 242 movements in 2010).
- The most common movement at this intersection continues to be straight through from Great North Road into Karangahape Road travelling in a north-easterly direction (Movement 11 = 79 cyclists).
- Morning cyclist volumes decreased most notably at Movement 11 (down 18 movements) while the most notable increase occurred at Movement 3 (up 7 movements).

Table 3.1: Morning Cyclist Movements

Ponsonby/Karangahape/Newton/Great North 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	7	6	8	10	**5**	-5
2	7	6	7	12	**6**	-6
3	24	22	28	36	**43**	7
4	15	15	9	14	**18**	4
5	16	9	7	10	**9**	-1
6	2	1	1	2	**1**	-1
7	11	5	5	4	**8**	4
8	11	15	7	19	**15**	-4
9	0	2	1	2	**1**	-1
10	5	0	0	1	**4**	3
11	105	97	84	97	**79**	-18
12	23	21	19	35	**33**	-2
Total	**226**	**199**	**176**	**242**	**222**	**-20**

- All cyclists using the Ponsonby/Karangahape/Newton/Great North Road intersection were adults (100 per cent, stable from 99 per cent in 2010).
- Most cyclists were wearing a helmet (89 per cent, no change from 2010).
- Three-quarters of cyclists were male (75 per cent).
- Approximately two thirds of the cyclists at this site were riding on the road (66 per cent, stable from 64 per cent in 2010).

Table 3.2: Morning Cyclist Characteristics

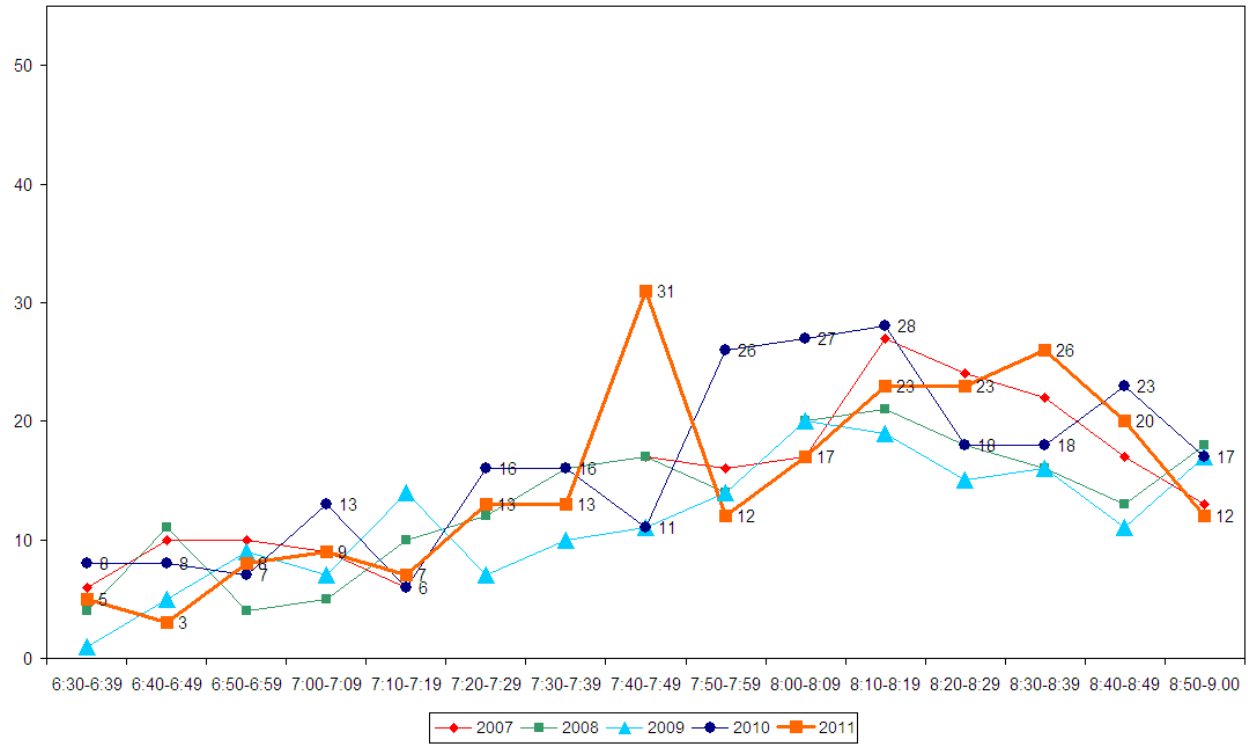
Ponsonby/Karangahape/Newton/Great North 2004-2011(%)

	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
Cyclist Type									
Adult	96	96	100	98	97	95	99	**100**	1
School child	4	4	0	2	3	5	1	**0**	-1
Helmet Wearing									
Helmet on head	92	92	92	93	92	91	89	**89**	0
No helmet	8	8	8	7	8	9	11	**11**	0
Gender									
Male	-	-	-	-	-	-	-	**75**	-
Female	-	-	-	-	-	-	-	**18**	-
Can't tell	-	-	-	-	-	-	-	**6**	-
Where Riding									
Road	40	89	72	68	91	79	64	**66**	2
Footpath	60	11	28	32	9	21	36	**34**	-2
Base:	***177***	***155***	***140***	***226***	***199***	***176***	***242***	***222***	

- Morning cyclists movements rose steadily from the beginning of the shift to a sharp peak between 7:40am and 7:49am (31 movements), before decreasing then rising again to a second, smaller peak between 8:30am and 8:39am (26 movements). Volumes then decline through to the end of the shift.

Figure 3.2: Morning Peak Cyclist Frequency

Ponsonby/Karangahape/Newton/Great North (n)



Note: In 2011, three cyclists were observed riding as a group at 6:32am. This comprises one per cent of the total cycle movements at this site in the morning peak.

3.3 Evening Peak

Environmental Conditions

- The weather was fine throughout most of the evening shift. Light drizzle was observed from 6:18pm, which developed into heavy showers at 6:41pm, through until the end of the monitoring period.
- Three police cars were observed at the site between 4:52pm and 5:05pm, dealing with a persistent jaywalker. There were no road works or accidents that may affect cycle counts.

Key Points

- Total cyclist movement volumes at the Ponsonby/Karangahape/Newton/Great North Road intersection decreased in 2011 (289 movements, down from 317 in 2010).
- As in earlier years, the most common movement at this intersection was straight through from Karangahape Road into Great North Road travelling in a south-westerly direction (Movement 5 = 110 movements).
- The most notable change in evening cyclist movement volumes was at Movement 5 (down 29 movements from 2010).

Table 3.3: Evening Cyclist Movements

Ponsonby/Karangahape/Newton/Great North 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	38	18	23	19	**27**	8
2	14	20	7	21	**18**	-3
3	20	12	15	19	**24**	5
4	32	25	31	45	**40**	-5
5	106	97	85	139	**110**	-29
6	8	1	9	15	**15**	0
7	1	1	1	2	**2**	0
8	10	6	6	16	**11**	-5
9	1	1	3	0	**2**	2
10	0	1	1	0	**1**	1
11	22	22	8	31	**30**	-1
12	9	12	5	10	**9**	-1
Total	**261**	**216**	**194**	**317**	**289**	**-28**

- Over the evening peak, all riders at this intersection were adults (100 percent, stable from 99 per cent in 2011).
- The majority of cyclists were wearing a helmet (85 per cent, no change from 2010).
- The majority of cyclists were male (78 per cent).
- Nearly three-quarters of the cyclists were riding on the road (72 per cent, up from 68 per cent in 2010).

Table 3.4: Evening Cyclist Characteristics

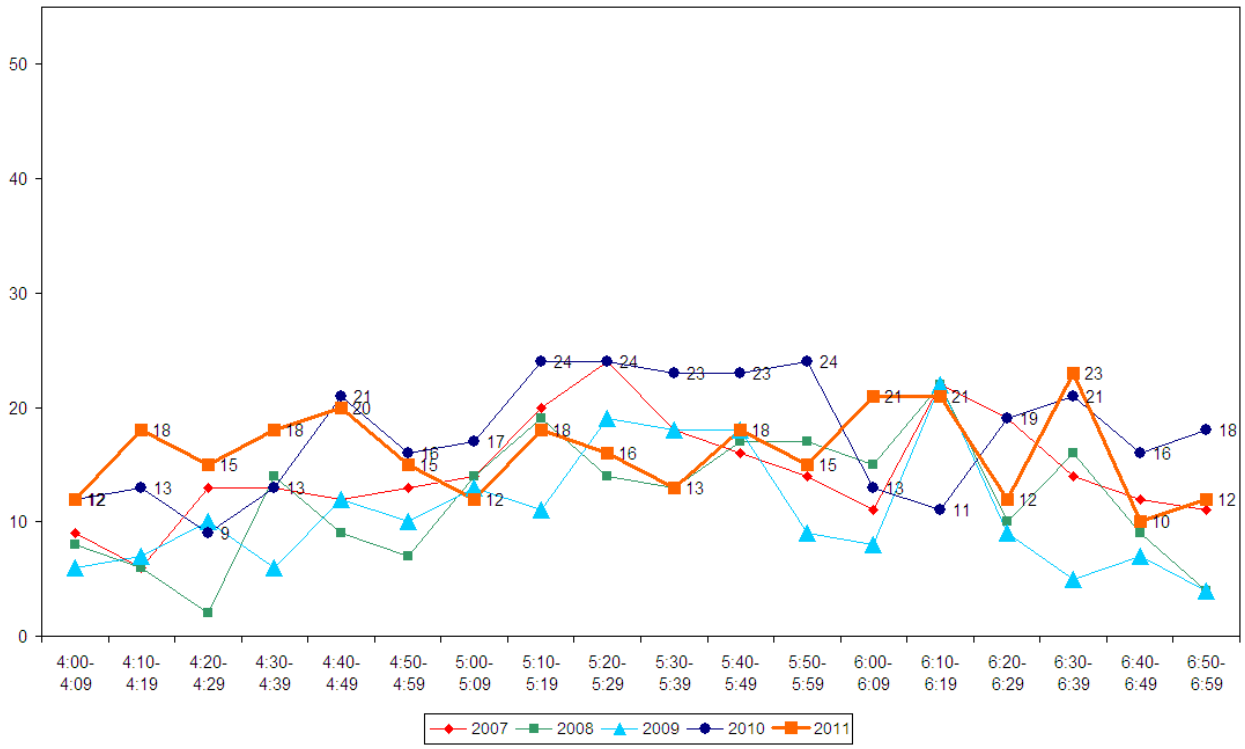
Ponsonby/Karangahape/Newton/Great North 2004-2011(%)

	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
Cyclist Type									
Adult	94	98	100	99	98	97	99	**100**	1
School child	6	2	0	1	2	3	1	**0**	-1
Helmet Wearing									
Helmet on head	87	90	86	87	89	88	85	**85**	0
No helmet	13	10	14	13	11	12	15	**15**	0
Gender									
Male	-	-	-	-	-	-	-	**78**	-
Female	-	-	-	-	-	-	-	**20**	-
Can't tell	-	-	-	-	-	-	-	**2**	-
Where Riding									
Road	65	88	68	74	90	75	68	**72**	4
Footpath	35	12	32	26	10	25	32	**28**	-4
Base:	***154***	***136***	***117***	***261***	***216***	***194***	***317***	***289***	

- The volume of cyclist movements remains high throughout the observation period. A slight peak was evident between 4:10pm and 4:19pm (20 movements), the same time as the first peak last year. Another peak occurred at 6:00pm and 6:19pm (21 movements over both 10 minute intervals), with the final peak soon after (6:30pm and 6:39pm = 23 movements).

Figure 3.3: Evening Peak Cyclist Frequency

Ponsonby/Karangahape/Newton/Great North (n)



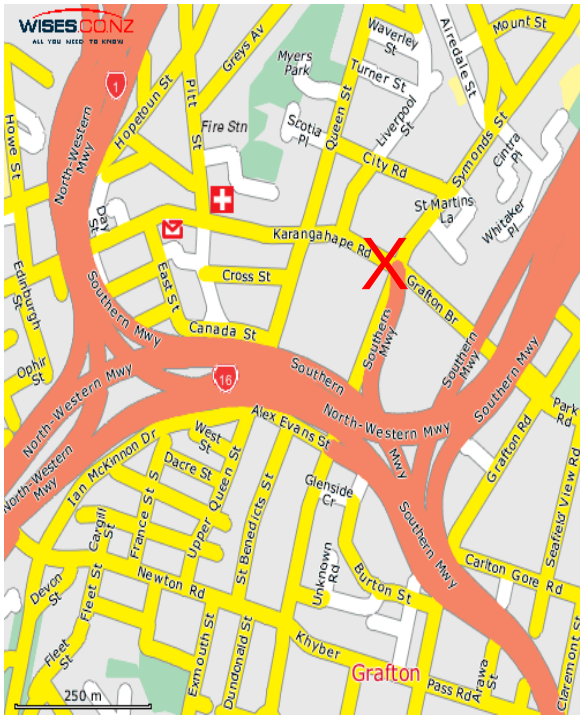
Note: In 2011, three per cent of the total cycle movements in the evening peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

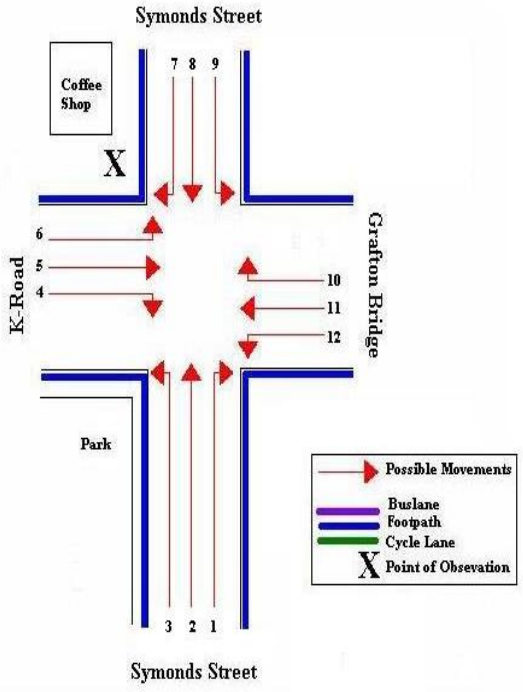
- *Six cyclists at 6:32pm*
- *Three cyclists at 6:59pm.*

4. SYMONDS/KARANGAHAPE/ GRAFTON ROAD, GRAFTON (SITE 8)

Figure 4.1 shows the possible cyclist movements at this intersection.

Figure 4.1: Cycle Movements: Symonds/Karangahape/Grafton





4.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	290	349	639	924
2008	285	336	621	899
2009	246	282	528	735
2010	283	314	597	865
2011	**317**	**373**	**690**	**999**

4.2 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

- The volume of morning peak cyclists recorded at the Symonds/Karangahape/Grafton intersection in 2011 (317 movements) has increased since last year (283 movements).
- This year, key routes in the morning are northbound along Symonds Street (Movement 2 = 75 cyclists), from Karangahape Road onto Grafton Bridge (Movement 5 = 57 cyclists), and straight through from Grafton Bridge into Karangahape Road (Movement 11 = 55 cyclists).
- The most notable increases since last year are at Movement 6 (19 movements) and Movement 1 (13 movements). The most notable decrease for this year is at Movement 3 (13 fewer movements than in 2010).

Table 4.1: Morning Cyclist Movements

Symonds/Karangahape/Grafton 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	3	10	6	4	**17**	13
2	92	81	77	87	**75**	-2
3	9	18	18	22	**9**	-13
4	2	6	1	1	**6**	5
5	55	54	51	51	**57**	6
6	12	11	12	7	**26**	19
7	3	3	0	1	**6**	5
8	11	8	2	19	**17**	-2
9	8	5	9	7	**8**	1
10	41	33	21	31	**38**	7
11	51	53	48	48	**55**	7
12	3	3	1	5	**3**	-2
Total	**290**	**285**	**246**	**283**	**317**	**34**

- Almost all morning cyclists at this site are adults (99 per cent, stable from last year).
- Ninety-five per cent of cyclists at this site were wearing a helmet.
- The greatest share of cyclists (68 per cent) were identified as male.
- The number of cyclists riding on the road is slightly higher than in 2010 (93 per cent, up from 87 per cent).

Table 4.2: Morning Cyclist Characteristics

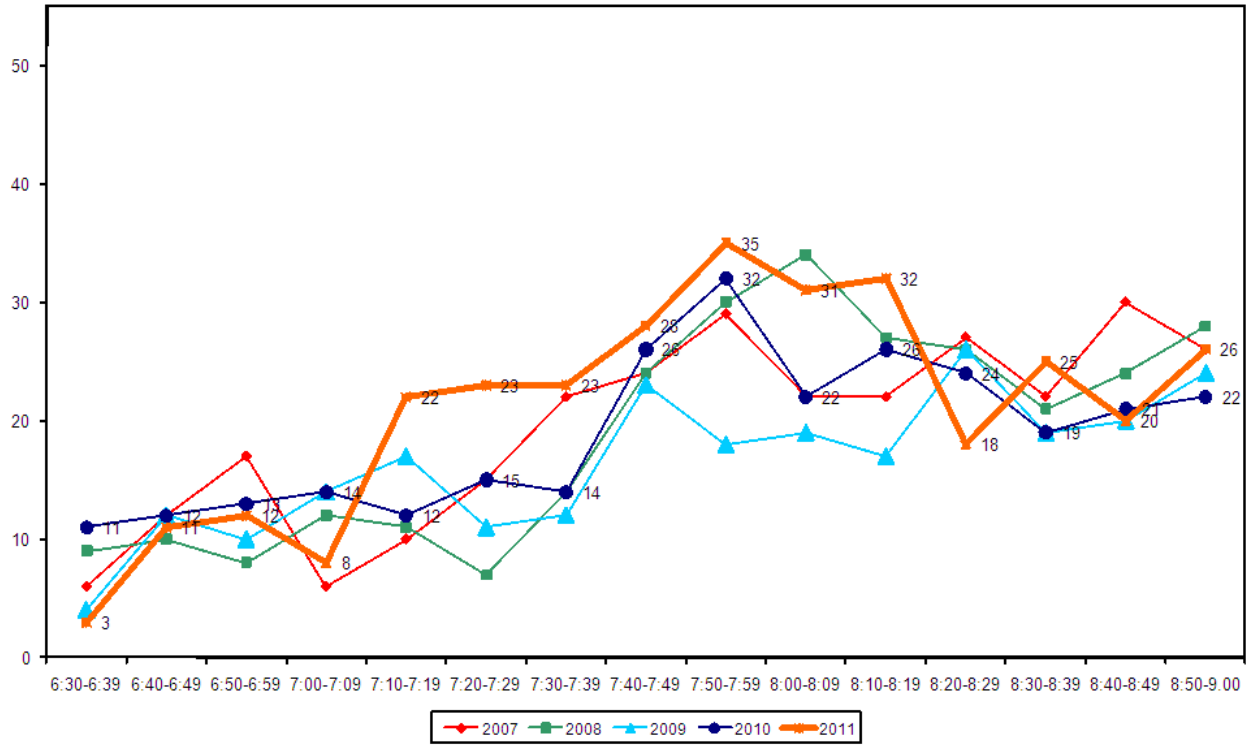
Symonds/Karangahape/Grafton 2004-2011(%)

	2004	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type									
Adult	99	99	99	99	100	100	99	**99**	0
School child	1	1	1	1	0	0	1	**1**	0
Helmet Wearing									
Helmet on head	95	96	94	98	95	94	94	**95**	1
No helmet	5	4	6	2	5	6	6	**5**	-1
Gender									
Male	-	-	-	-	-	-	-	**68**	-
Female	-	-	-	-	-	-	-	**18**	-
Can't tell	-	-	-	-	-	-	-	**14**	-
Where Riding									
Road	84	92	92	91	92	91	87	**93**	6
Footpath	16	8	8	9	8	9	13	**7**	-6
Base:	***202***	***231***	***271***	***290***	***285***	***246***	***283***	***317***	

- Morning cyclist movement volumes increased over the morning period until reaching the highest peak volume between 7:50am and 7:59am (35 movements), the same time as 2010's highest peak (32 movements). Like last year, the number of movements at the end of the observation period remained high (26 movements).

Figure 4.2: Morning Peak Cyclist Frequency

Symonds/Karangahape/Grafton (n)



Note: In 2011, three per cent of the total cycle movements in the morning peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- *Four cyclists at 7:17am*
- *Four cyclists at 7.57am*

4.3 Evening Peak

Environmental Conditions

- The weather was fine throughout most of the evening shift. Rain was observed from 6:20pm until the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The number of cyclists at this site has increased notably this year (373 movements, up from 314 in 2010).
- The key evening movements at this site were straight along Symonds Street travelling south (Movement 8 = 89 movements) and straight from Grafton Bridge into Karangahape Road travelling (Movement 11 = 89 movements).
- Several movements saw notable increases, including Movement 7 (up 22 movements), Movement 5 (up 17 movements), Movement 11 (up 15 movements), and Movement 12 (up 10 movements). Only two movements saw decreases, the largest occurring at Movement 2 (down 9 movements).

Table 4.3: Evening Cyclist Movements

Symonds/Karangahape/Grafton 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	2	1	0	2	**2**	0
2	20	17	11	24	**15**	-9
3	4	4	6	3	**3**	0
4	17	24	23	20	**21**	1
5	56	49	40	41	**58**	17
6	4	5	3	8	**10**	2
7	16	16	12	7	**29**	22
8	117	103	74	85	**89**	4
9	38	55	33	27	**30**	3
10	20	11	16	15	**9**	-6
11	42	42	60	74	**89**	15
12	13	9	4	8	**18**	10
Total	**349**	**336**	**282**	**314**	**373**	**59**

- Almost all evening cyclists at the Symonds/Karangahape/Grafton intersection were adults (99 per cent, stable since the monitor began).
- The majority of cyclists at this site are wearing a helmet (90 per cent, relatively stable since the monitor began).
- The majority of cyclists were male (69 per cent).
- Most cyclists were riding on the road (82 per cent, up slightly from 79 per cent in 2010).

Table 4.4: Evening Cyclist Characteristics

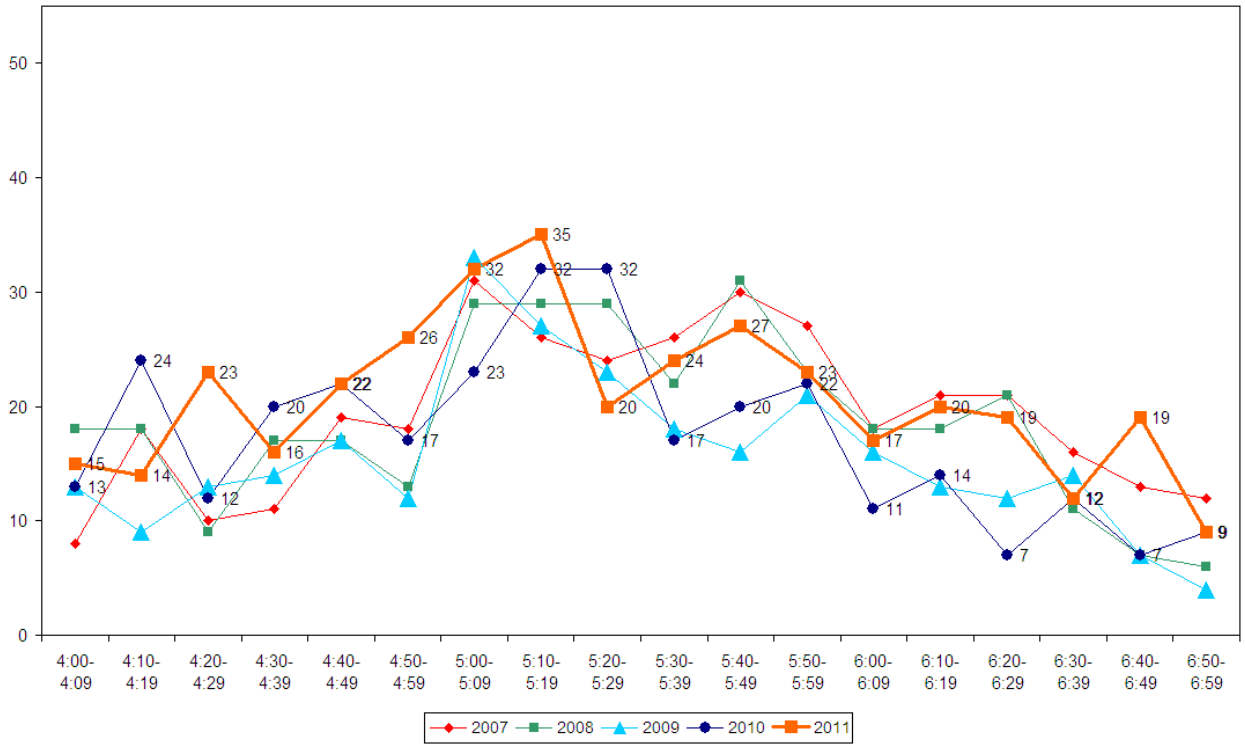
Symonds/Karangahape/Grafton 2004-2011(%)

	2004	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type									
Adult	99	98	99	99	100	100	99	**99**	0
School child	1	2	1	1	0	0	1	**1**	0
Helmet Wearing									
Helmet on head	90	90	94	90	92	90	92	**90**	-2
No helmet	10	10	6	10	8	10	8	**10**	2
Gender									
Male	-	-	-	-	-	-	-	**69**	-
Female	-	-	-	-	-	-	-	**22**	-
Can't tell	-	-	-	-	-	-	-	**9**	-
Where Riding									
Road	81	88	80	84	97	88	79	**82**	3
Footpath	19	12	20	16	3	12	21	**18**	-3
Base:	***205***	***202***	***258***	***349***	***336***	***282***	***314***	***373***	

- Evening cycle volumes in 2011 increase over the monitoring period to peak between 5:10pm and 5:29pm (35 movements), following the same pattern as last year. Movement volumes decrease and then peak again between 5:40pm and 5:49pm (27 movements). This is 10 minutes earlier than 2010's second peak between 5:50pm and 5:59pm.

Figure 4.3: Evening Peak Cyclist Frequency

Symonds/Karangahape/Grafton (n)

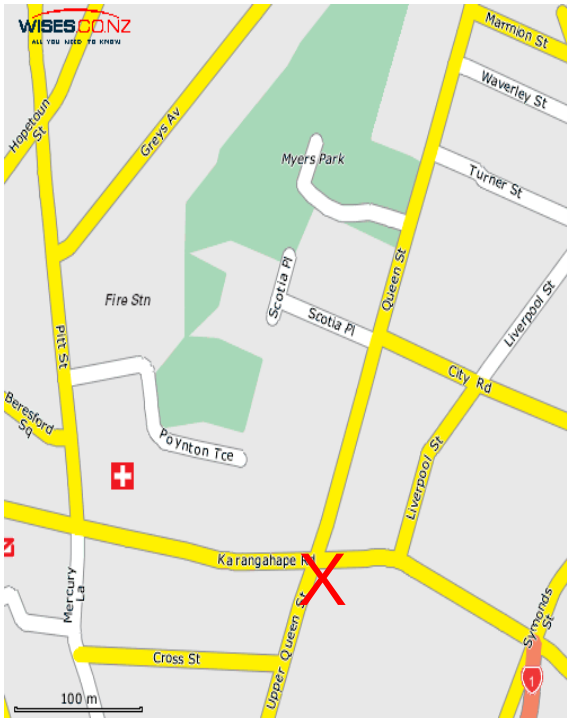


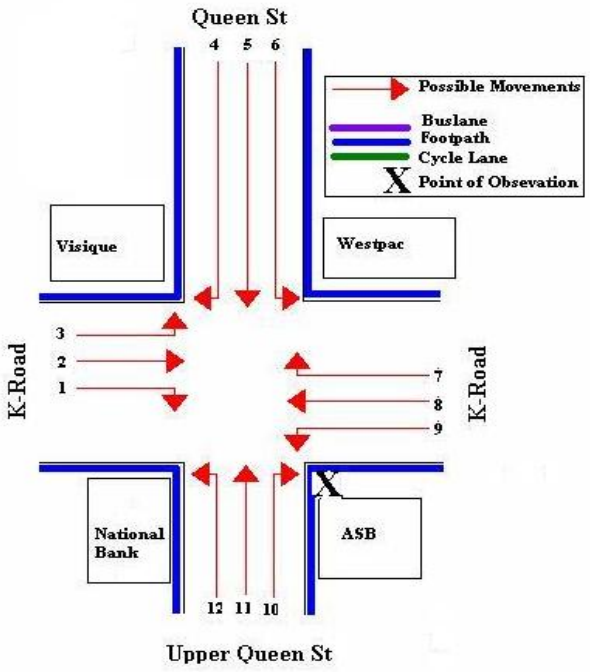
Note: In 2011, six cyclists were observed riding as a group at 6:27pm. This comprises two per cent of the total cycle movements at this site in the evening peak.

5. KARANGAHAPE ROAD/QUEEN STREET, AUCKLAND CENTRAL (SITE 9)

Figure 5.1 shows the possible cyclist movements at this intersection.

Figure 5.1: Cycle Movements: Karangahape/Queen





5.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	246	261	507	736
2008	212	212	424	616
2009	238	221	459	669
2010	272	310	582	843
2011	**256**	**298**	**554**	**802**

5.2 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

- Total morning cyclist movement volumes recorded at the Karangahape/Queen Street intersection in 2011 have decreased from last year (256 movements, down from 272 in 2010).
- Key morning movements are straight along Karangahape Road in both directions (Movement 2 = 93 movements travelling east; Movement 8 = 69 movements travelling west).
- Of the twelve movements possible at this intersection, the most notable change occurred at Movement 11 (down 16 movements).

Table 5.1: Morning Cyclist Movements

Karangahape/Queen 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	0	0	1	0	**0**	0
2	85	77	96	99	**93**	-6
3	10	6	13	8	**6**	-2
4	8	2	2	2	**2**	0
5	2	4	2	3	**4**	1
6	9	0	3	2	**6**	4
7	9	11	10	15	**12**	-3
8	60	67	69	74	**69**	-5
9	0	1	0	0	**4**	4
10	12	16	8	13	**13**	0
11	38	20	28	46	**30**	-16
12	13	8	6	10	**17**	7
Total	**246**	**212**	**238**	**272**	**256**	**-16**

- Almost all cyclists were adults (99 per cent, consistent with results recorded in previous years with the exception of 2008 – 83 per cent).
- Most of the cyclists were wearing a helmet (92 per cent, down from 97 per cent in 2010).
- The majority of cyclists were male (78 per cent).
- Although less than last year, the percentage of cyclists riding on the road is still high (86 per cent, down from 94 per cent in 2010).

Table 5.2: Morning Cyclist Characteristics

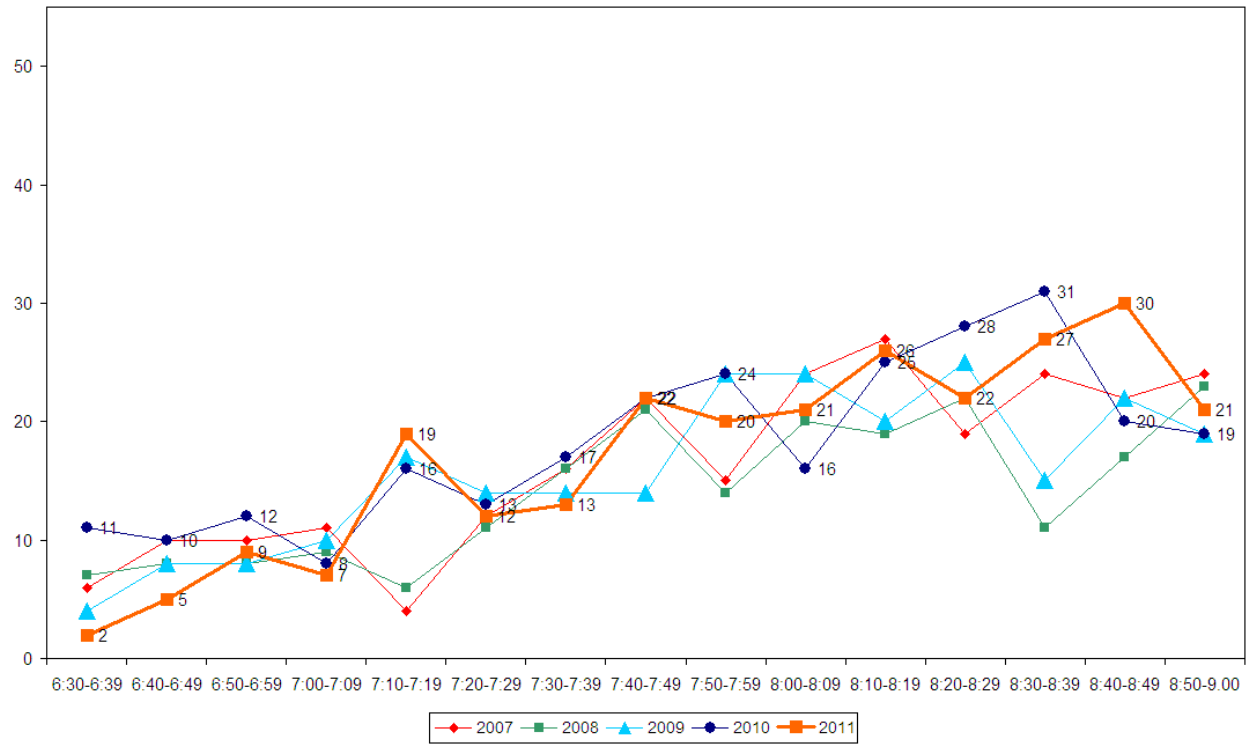
Karangahape/Queen 2004-2011(%)

	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
Cyclist Type									
Adult	99	99	99	99	83	99	100	**99**	-1
School child	1	1	1	1	17	1	0	**1**	1
Helmet Wearing									
Helmet on head	90	91	91	95	92	93	97	**92**	-5
No helmet	10	9	9	5	8	7	3	**8**	5
Gender									
Male	-	-	-	-	-	-	-	**78**	-
Female	-	-	-	-	-	-	-	**18**	-
Can't tell	-	-	-	-	-	-	-	**4**	-
Where Riding									
Road	95	93	94	92	92	92	94	**86**	-8
Footpath	5	7	6	8	8	8	6	**14**	8
Base:	***209***	***203***	***211***	***246***	***212***	***238***	***272***	***256***	

- Similar to the pattern noted in previous years, the volume of morning cyclist movements in 2011 follows an increasing trend. Cyclist movement volumes first peak between 7:10am and 7:19am (19 movements), the same time as the first peak seen in 2010. They peak again between 7:40am and 7:49am (22 movements). A slight peak also occurs between 8:10 and 8:19 (26 movements), before reaching the highest peak between 8:40am and 8:49am (30 movements).

Figure 10.2: Morning Peak Cyclist Frequency

Karangahape/Queen (n)



Note: In 2011, three cyclists were observed riding as a group at 7:47am. This comprises one per cent of the total cycle movements at this site in the morning peak.

5.3 Evening Peak

Environmental Conditions

- The weather was fine throughout most of the evening shift. Light drizzle was observed from 6:40pm, with a shower of rain at 6:45pm. Light drizzle continued through until the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The number of evening cyclist movements recorded at the Karangahape Road/Queen Street intersection in 2011 has decreased (298 movements, down from 310 in 2010).
- Key evening movements are straight along Karangahape Road in both directions (Movement 8 = 140 movements travelling west; Movement 2 = 83 movements travelling east).
- A notable decrease in cycle movement volumes was seen at Movement 2 (down 21 movements). No notable increases were seen at any movement.

Table 5.3: Evening Cyclist Movements

Karangahape/Queen 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	4	3	3	6	**6**	0
2	85	63	70	104	**83**	-21
3	2	8	5	4	**3**	-1
4	6	4	14	15	**10**	-5
5	24	17	10	15	**21**	6
6	16	4	5	4	**5**	1
7	6	5	5	10	**9**	-1
8	94	84	101	137	**140**	3
9	5	11	4	8	**9**	1
10	2	3	0	1	**3**	2
11	11	9	3	4	**7**	3
12	6	1	1	2	**2**	0
Total	**261**	**212**	**221**	**310**	**298**	**-12**

- Almost all riders at this intersection were adults (99 per cent, consistent with previous years).
- Most cyclists were wearing a helmet (82 per cent, down from 91 per cent in 2010).
- The majority of cyclists were male (76 percent).
- Although less than last year, the percentage of cyclists riding on the road is still high (74 per cent, down notably from 86 per cent in 2010).

Table 4.4: Evening Cyclist Characteristics

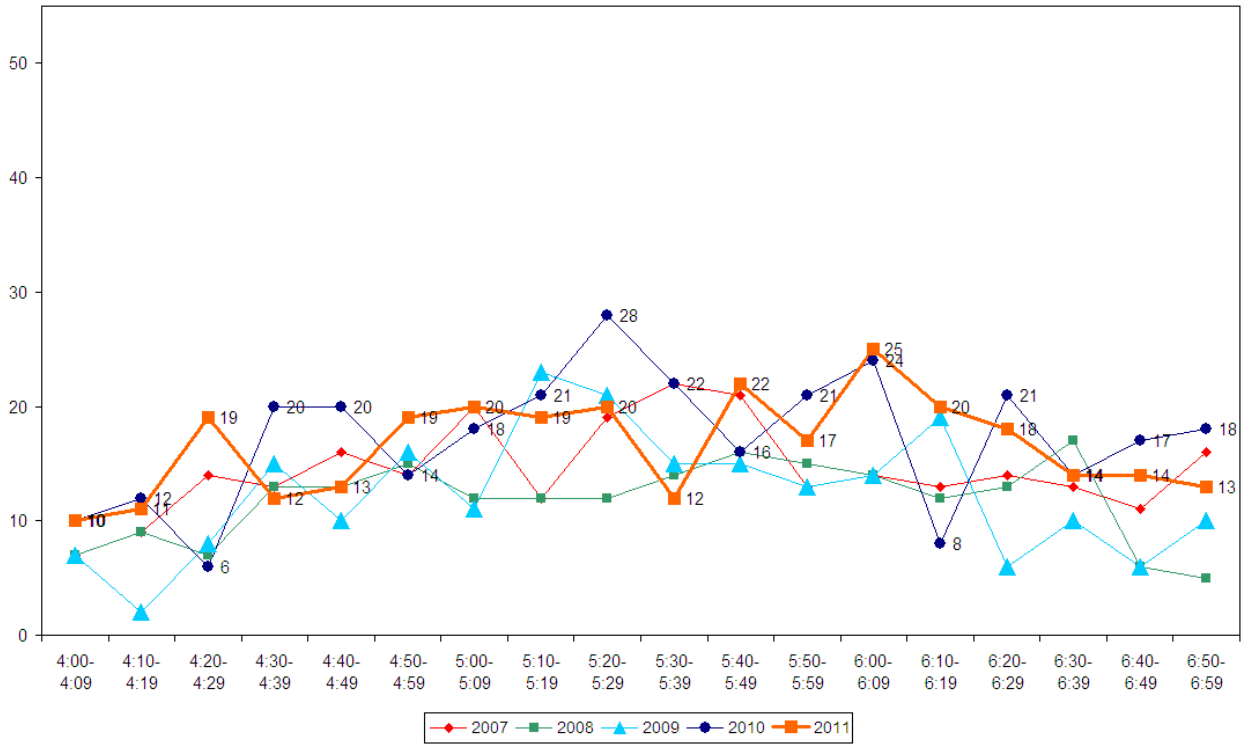
Karangahape/Queen 2004-2011(%)

	2004	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type									
Adult	98	99	100	99	94	100	100	**99**	-1
School child	2	1	0	1	6	0	0	**1**	1
Helmet Wearing									
Helmet on head	80	77	88	78	88	86	91	**82**	-9
No helmet	20	23	12	22	12	14	9	**18**	9
Gender									
Male	-	-	-	-	-	-	-	**76**	-
Female	-	-	-	-	-	-	-	**23**	-
Can't tell	-	-	-	-	-	-	-	**1**	-
Where Riding									
Road	81	75	78	80	86	77	86	**74**	-12
Footpath	19	25	22	20	14	23	14	**26**	12
Base:	***168***	***142***	***120***	***261***	***212***	***221***	***310***	***298***	

- Evening cyclist movement volumes first peak early in the observation period, between 4:20 pm and 4:29pm (19 movements), 10 minutes earlier than in 2010. The volume decreases and remains stable for a time before reaching the highest peak between 6:00pm and 6:09pm (25 movements).

Figure 5.3: Evening Peak Cyclist Frequency

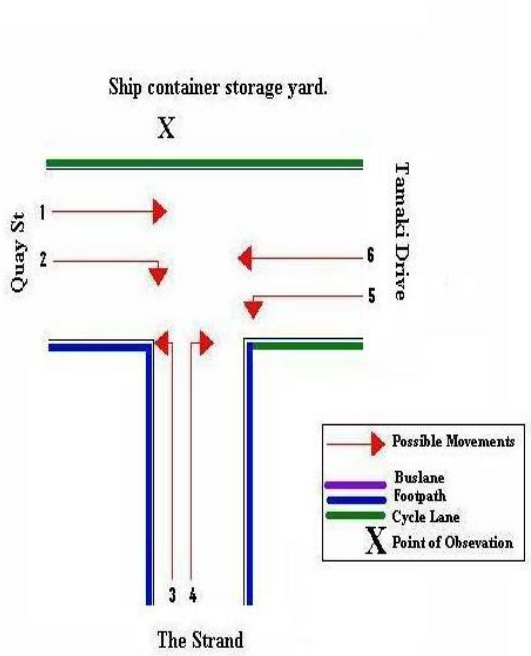
Karangahape/Queen (n)



6. TAMAKI DRIVE/THE STRAND, PARNELL (SITE 10)

Figure 6.1 shows the possible cyclist movements at this intersection.

Figure 6.1: Cycle Movements: Tamaki/The Strand



Note: in 2011, monitoring at this site was conducted on Tuesday 15th March.

6.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	480	420	900	1313
2008	416	370	786	1146
2009	321	282	603	880
2010	498	438	936	1365
2011	**630**	**429**	**1059**	**1555**

6.2 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

- Morning cyclist numbers at the Tamaki Drive/The Strand/Quay Street intersection in 2011 have increased notably from the previous year (630 movements, up from 498 in 2010).
- The majority of cycle movements occur heading straight on Tamaki Drive onto Quay Street (Movement 6 = 253 movements) and turning left from Tamaki Drive onto The Strand (Movement 5 = 221).
- Of the six movements possible at this site, cyclist movements have increased, most notably at Movement 5 (up 115 movements). The greatest decrease occurred at Movement 1 (down 35 movements).

Table 6.1: Morning Cyclist Movements

Tamaki/The Strand 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	55	58	47	92	**57**	-35
2	31	36	29	37	**43**	6
3	14	9	14	29	**19**	-10
4	26	25	8	17	**37**	20
5	147	112	50	106	**221**	115
6	207	176	173	217	**253**	36
Total	**480**	**416**	**321**	**498**	**630**	**132**

- Almost all cyclists at this intersection were adults (99 per cent, stable from previous years).
- Nearly all riders were wearing a helmet (97 per cent, stable from previous years).
- The majority of riders were male (77 per cent).
- Most cyclists were riding on the road (77 per cent), while 14 per cent rode on the off-road cycleway, and 9 per cent road on the footpath.

Table 6.2: Morning Cyclist Characteristics

Tamaki/The Strand 2004-2011(%)

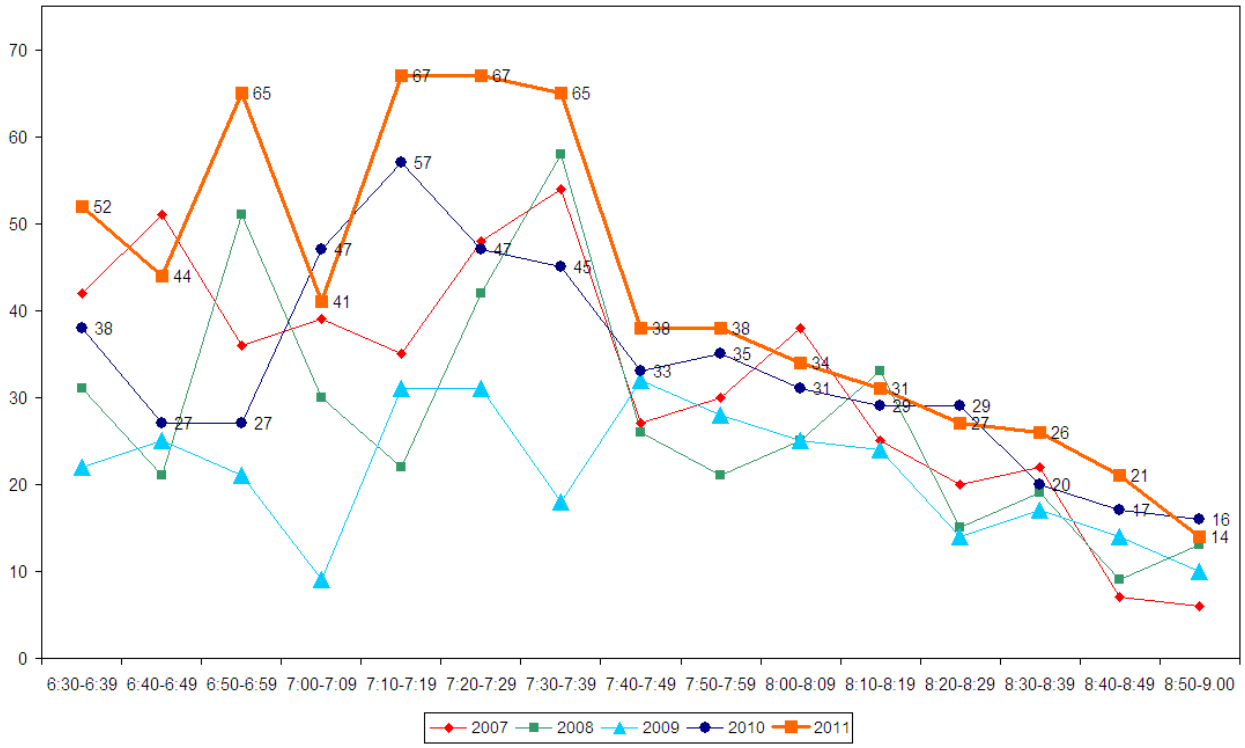
	2004	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type									
Adult	98	100	100	100	100	100	100	**99**	-1
School child	2	0	0	0	0	0	0	**1**	1
Helmet Wearing									
Helmet on head	97	98	98	99	100	99	97	**97**	0
No helmet	3	2	2	1	0	1	3	**3**	0
Gender									
Male	-	-	-	-	-	-	-	**77**	-
Female	-	-	-	-	-	-	-	**23**	-
Can't tell	-	-	-	-	-	-	-	**0**	-
Where Riding*									
Road	83	71	70	95	99	74	78	**77**	-1
Footpath	17	29	30	5	1	2	7	**9**	2
Off-road cycleway	-	-	-	-	-	24	15	**14**	-1
Base:	***125***	***261***	***282***	***480***	***416***	***321***	***498***	***630***	

** Prior to 2009, cyclists riding on the cycle-designated side of the footpath on Tamaki Drive were classified as road riders. In 2009, a separate classification of 'off-road cycleway' was introduced, which incorporates separated cycleways such as Tamaki Drive. From 2009, 'road riders' were defined as those cycling on the cycle designated side of the footpath, and 'footpath' riders as those cycling on the pedestrian-designated side of the footpath.*

- Starting high (52 movements), morning cyclist volumes varied at the start of the shift, with a peak at 6:50am and 6:59am (65 movements), and the highest peak, between 7:10am and 7:19am (67 movements). This is the same time the highest peak occurred in 2010 (57 movements).

Figure 6.2: Morning Peak Cyclist Frequency

Tamaki/The Strand (n)



Note: In 2011, 24 per cent of the total cycle movements in the morning peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- *Four cyclists at 6.32am*
- *Fourteen cyclists at 6:38am*
- *Four cyclists at 6:44am*
- *Four cyclists at 6:49am*
- *Five cyclists at 6:50am*
- *Four cyclists at 6:52am*
- *Twelve cyclists at 6:53am*
- *Three cyclists at 6:54am*
- *Three cyclists at 6:55am*
- *Twelve cyclists at 6:56am*
- *Four cyclists at 7:09am*
- *Four cyclists at 7:10am*
- *Four cyclists at 7.11am*
- *Fifteen cyclists at 7:15am*
- *Thirteen cyclists at 7:21am*
- *Ten cyclists at 7:24am*
- *Seven cyclists at 7:27am*
- *Ten cyclists at 7:36am*
- *Twelve cyclists at 7:37am*
- *Four cyclists at 7:55am*

6.3 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

- Evening cycle movement volumes decreased slightly from last year (429 movements, down from 438 in 2010).
- Key movements in the evening are dominated by those travelling east along Tamaki Drive away from the city (Movement 1 = 200 cyclists), and also to a lesser extent, by those travelling right onto Tamaki Drive from The Strand (Movement 4 = 73 cyclists).
- Cyclist volumes have notably increased at Movement 1 (up 30 movements) and decreased at both Movement 6 (down 32 movements) and Movement 4 (down 29 movements).

Table 6.3: Evening Cyclist Movements
Tamaki/The Strand 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	182	150	152	170	**200**	30
2	24	12	15	29	**28**	-1
3	21	25	24	28	**38**	10
4	98	78	51	102	**73**	-29
5	38	30	13	36	**49**	13
6	57	75	27	73	**41**	-32
Total	**420**	**370**	**282**	**438**	**429**	**-9**

- All cyclists using this intersection were adults (100 per cent, stable from 99 per cent in 2010).
- Almost all cyclists were wearing a helmet (93 per cent, down slightly from 96 per cent last year).
- The greatest share of evening cyclists are male (82 per cent).
- Most cyclists were riding on the road (61 per cent), 23 per cent rode on the off-road cycle way, while 16 per cent road on the footpath (all results stable from last year).

Table 6.4: Evening Cyclist Characteristics

Tamaki/The Strand 2002-2011 (%)

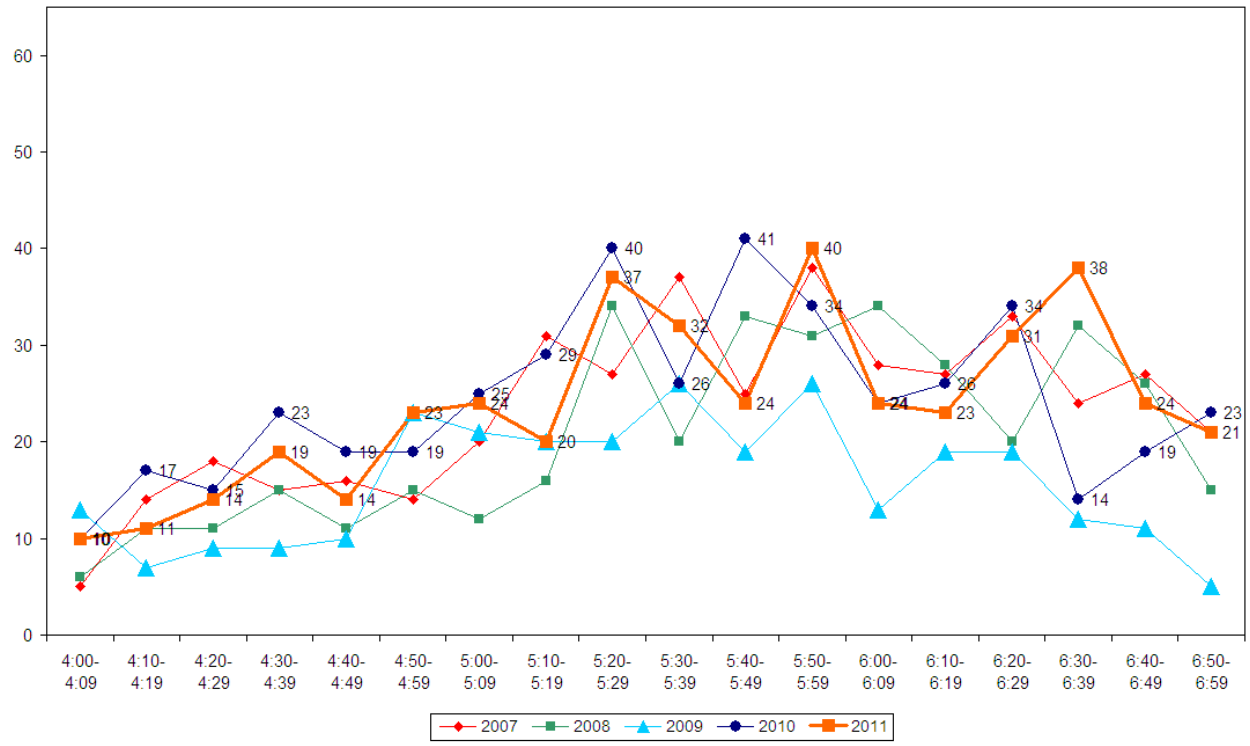
	2004	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type									
Adult	94	98	100	100	100	100	99	**100**	1
School child	6	2	0	0	0	0	1	**0**	-1
Helmet Wearing									
Helmet on head	91	98	98	96	100	99	96	**93**	-3
No helmet	9	2	2	4	0	1	4	**7**	3
Gender									
Male	-	-	-	-	-	-	-	**82**	-
Female	-	-	-	-	-	-	-	**18**	-
Can't tell	-	-	-	-	-	-	-	**0**	-
Where Riding*									
Road	54	78	61	97	99	57	63	**61**	-2
Footpath	46	22	39	3	1	4	12	**16**	4
Off-road cycleway	-	-	-	-	-	39	25	**23**	-2
Base:	***116***	***199***	***120***	***420***	***370***	***282***	***438***	***429***	

** Prior to 2009, cyclists riding on the cycle-designated side of the footpath on Tamaki Drive were classified as road riders. In 2009, a separate classification of 'off-road cycleway' was introduced, which incorporates separated cycleways such as Tamaki Drive. From 2009, 'road riders' were defined as those cycling on the cycle designated side of the footpath, and 'footpath' riders as those cycling on the pedestrian-designated side of the footpath.*

- In the evening, cyclist movement volumes generally increased over the observation period until the first peak occurred between 5:20pm and 5:29pm (37 movements); the same trend seen, and time, as the first peak. The volume decreased and then peaked again between 5:50pm and 5:59pm (40 movements). The third and final peak occurred between 6:30pm and 6:39pm (38 movements).

Figure 6.3: Evening Peak Cyclist Frequency

Tamaki/The Strand (n)



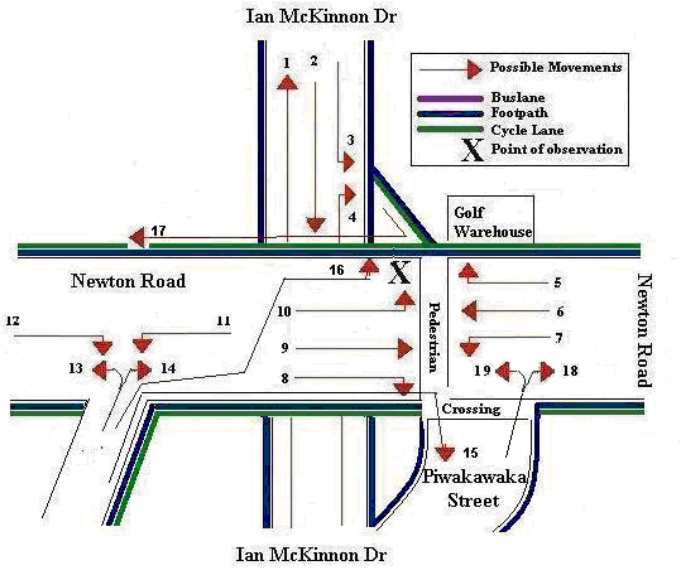
Note: In 2011, five per cent of the total cycle movements in the evening peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- *Three cyclists at 4:02pm*
- *Three cyclists at 5:34pm*
- *Six cyclists at 5:52pm*
- *Ten cyclists at 6:32pm.*

7. IAN MCKINNON DRIVE/NEWTON ROAD, NEWTON (SITE 13)

Figure 7.1 shows the possible cyclist movements at this intersection.

Figure 7.1: Cycle Movements: Ian McKinnon Drive/Newton Road



7.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2009	139	152	291	422
2010	190	184	374	544
2011	**236**	**324**	**560**	**807**

7.2 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

- The volume of morning cyclists at the Ian McKinnon Drive/Newton Road site was 236, up notably from 190 movements in 2010.
- The key morning movement at this intersection is straight along Ian McKinnon Drive heading north towards the city (Movement 1 = 71 cyclists, down from 78 cyclists last year).

Table 7.1: Morning Cyclist Movements

Ian McKinnon Drive/Newton Road 2009 - 2011 (n)

Movement	2009	2010	2011	Change 10-11
1	51	78	**71**	-7
2	1	0	**6**	6
3	0	2	**0**	-2
4	0	1	**1**	0
5	1	0	**0**	0
6	9	17	**10**	-7
7	1	0	**0**	0
8	6	0	**0**	0
9	10	16	**12**	-4
10	7	4	**8**	4
11	2	1	**2**	1
12	1	1	**1**	0
13	9	21	**36**	15
14	41	13	**22**	9
15	0	19	**41**	22
16	0	17	**19**	2
17	0	0	**2**	2
18	-	-	**0**	0
19	-	-	**5**	5
Total	**139**	**190**	**236**	**46**

Note: Movements 18 and 19 are new possible movements in 2011.

- All cyclists at this site are adults (up from 99 per cent last year).
- Most cyclists are wearing a helmet (98 per cent, compared with 93 per cent in 2010).
- Just over half of cyclists are identified as male (53 per cent).
- Just over half of cyclists are riding on the off-road cycleway (53 per cent, up from 38 per cent last year), while 25 per cent are riding on the road. The remaining 22 per cent are riding on the footpath.

Table 7.2: Morning Cyclist Characteristics

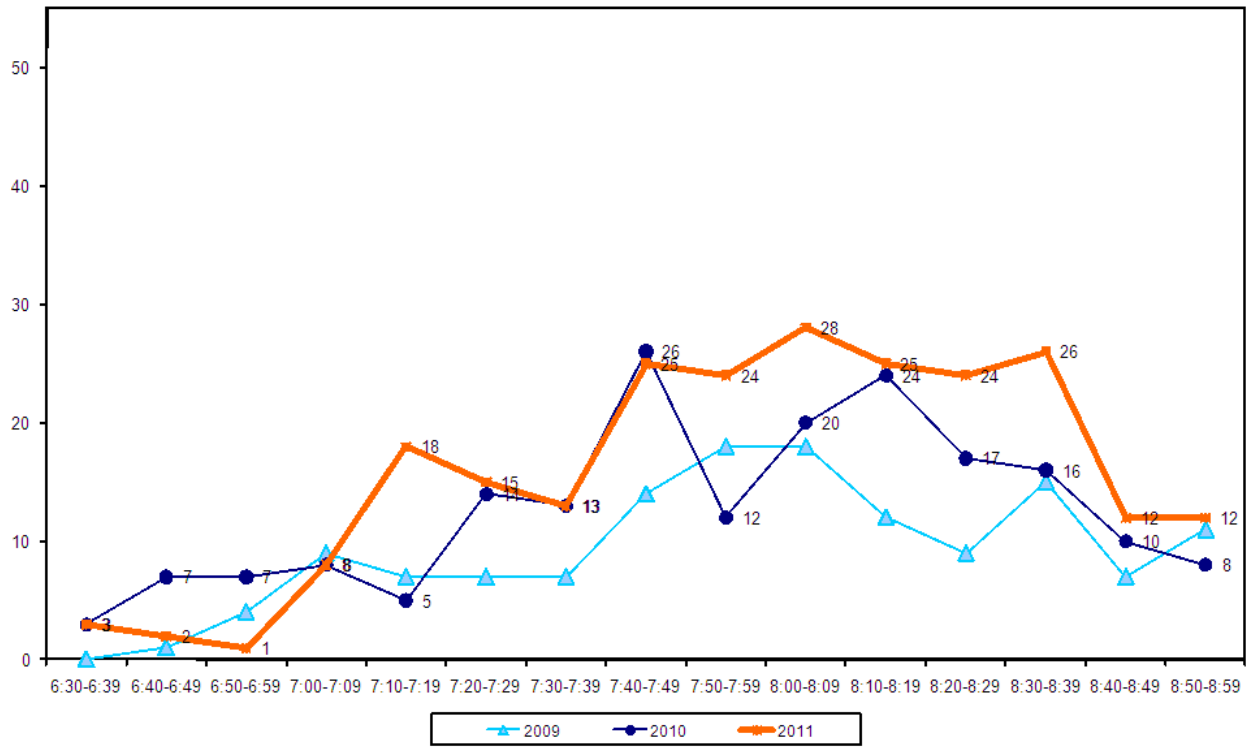
Ian McKinnon Drive/Newton Road 2009 - 2011 (%)

	2009	***2010***	***2011***	**Change 10-11**
Cyclist Type				
Adult	99	99	**100**	1
School child	1	1	**0**	-1
Helmet Wearing				
Helmet on head	90	93	**98**	5
No helmet	10	7	**2**	-5
Gender				
Male	-	-	**53**	-
Female	-	-	**15**	-
Can't tell	-	-	**32**	-
Where Riding				
Road	40	43	**25**	-18
Footpath	15	19	**22**	3
Off-road cycleway	45	38	**53**	15
Base:	***139***	***190***	***236***	

- As in 2010, morning cyclist movement volumes started off low. In 2011, the first peak occurred between 7:10 and 7:19 (18 movements). A second peak occurs between 7:40 and 7:49 (25 movements), the same time as the largest peak in 2010 (26 movements). Cycle volumes remain high, with the largest peak occurring between 8:00am and 8:09am (28 movements).

Figure 7.2: Morning Peak Cyclist Frequency

Ian McKinnon Drive/Newton Road (n)



7.3 Evening Peak

Environmental Conditions

- The weather was fine throughout most of the evening shift. Light drizzle was observed from 6:17pm, developing into rain by 6:39pm. Rain then persisted through until the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The number of evening cyclists recorded at the Ian McKinnon Drive/Newton Road intersection was 324, up notably from 184 movements in 2010.
- The key evening movements at this intersection are Movement 2 (74 cyclist movements, compared with 43 last year), Movement 11 (62 cyclist movements, compared with 49 in 2009), and Movement 19 (57 cyclist movements).

Table 7.3: Evening Cyclist Movements

Ian McKinnon Drive/Newton Road 2009 - 2011 (n)

Movement	2009	2010	2011	Change 10-11
1	4	4	**3**	-1
2	48	43	**74**	31
3	7	3	**12**	9
4	1	1	**1**	0
5	0	0	**1**	1
6	11	14	**21**	7
7	4	1	**0**	-1
8	0	7	**7**	0
9	22	19	**12**	-7
10	0	4	**6**	2
11	45	49	**62**	13
12	2	14	**40**	26
13	5	7	**6**	-1
14	3	3	**3**	0
15	0	0	**3**	3
16	0	4	**0**	-4
17	0	11	**13**	2
18	-	-	**3**	3
19	-	-	**57**	57
Total	**152**	**184**	**324**	**140**

Note: Movements 18 and 19 are new possible movements in 2011.

- Over the evening peak, all cyclists using this site are adults (up from 99 per cent in 2010).
- The greatest share of cyclists at this site are wearing a helmet (97 per cent, stable from 96 per cent last year).
- The greatest single share of respondents are riding on the off-road cycleway (60 per cent, up from 32 per cent in 2010). A further 24 per cent are riding on the road (down from 39 per cent last year), while 16 per cent are riding on the footpath (compared with 29 per cent in 2010).

Table 7.4: Evening Cyclist Characteristics

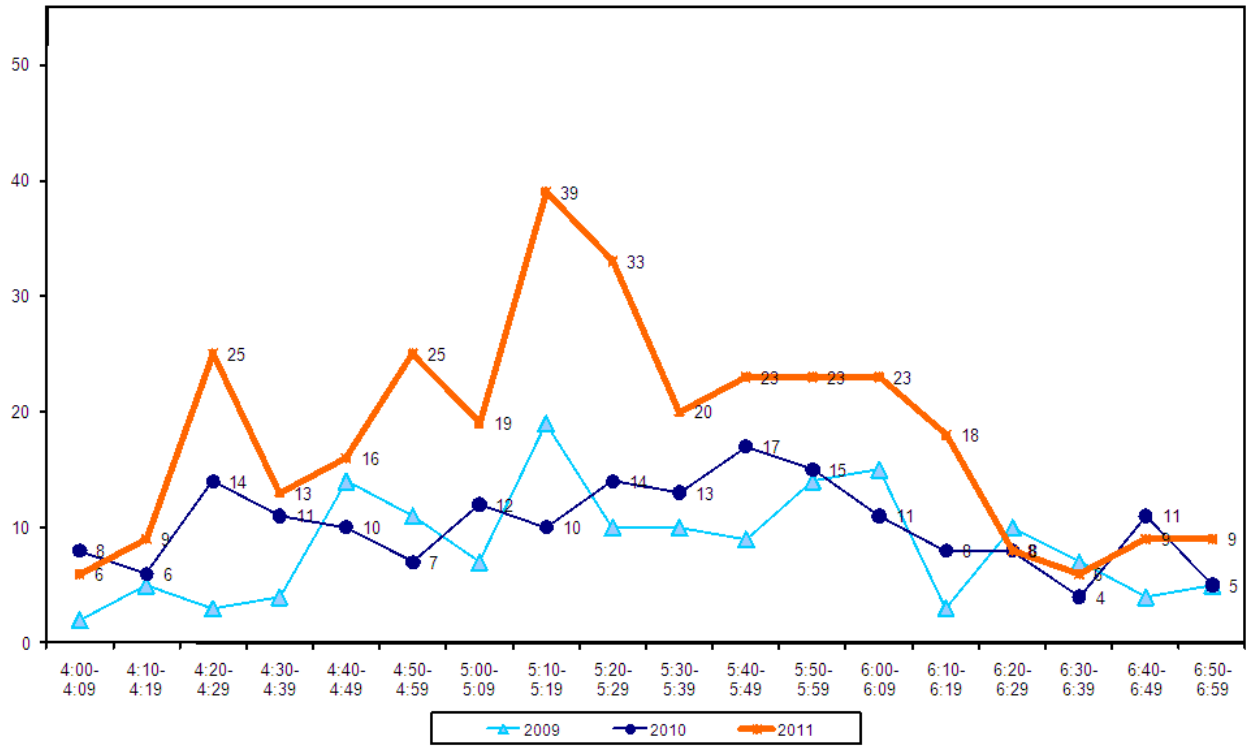
Ian McKinnon Drive/Newton Road 2009 - 2011 (%)

	2009	2010	2011	Change 10-11
Cyclist Type				
Adult	98	99	**100**	1
School child	2	1	**0**	-1
Helmet Wearing				
Helmet on head	95	96	**97**	1
No helmet	5	4	**3**	-1
Gender				
Male	-	-	**56**	-
Female	-	-	**17**	-
Can't tell	-	-	**27**	-
Where Riding				
Road	31	39	**24**	-15
Footpath	25	29	**16**	-13
Off-road cycleway	44	32	**60**	28
Base:	***152***	***184***	***324***	

- Unlike the relatively steady cyclist movement volumes recorded in 2010, volumes this year are variable, peaking three times early in the observation period: 4:20pm and 4:29pm (25 movements), 4:50pm and 4:59pm (25 movements), and the largest, between 5:10pm and 5:19pm (39 movements). By comparison, the largest peak in 2010 occurred thirty minutes later than in 2011, between 5:40pm and 5:49pm (17 movements).

Figure 7.3: Evening Peak Cyclist Frequency

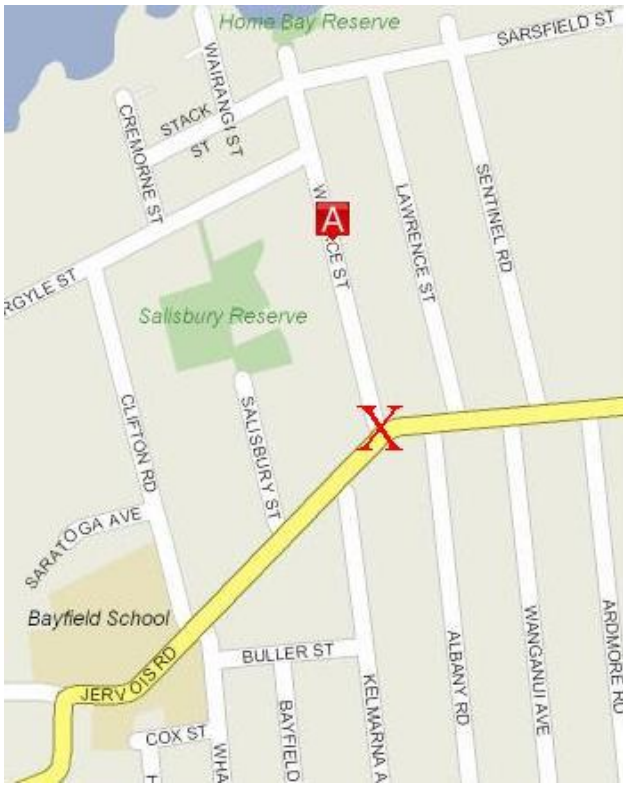
Ian McKinnon Drive/Newton Road (n)

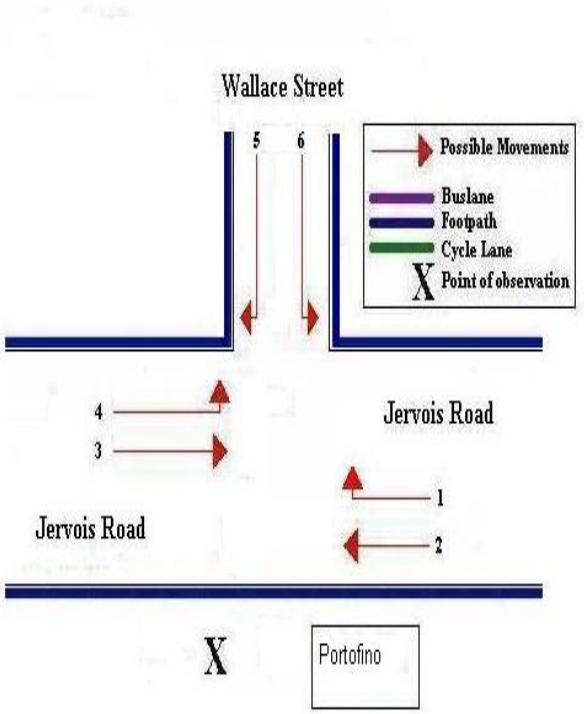


8. JERVOIS ROAD/WALLACE STREET, HERNE BAY (SITE 16)

Figure 8.1 shows the possible cyclist movements at this intersection.

Figure 8.1: Cycle Movements: Jervois Road/Wallace Street





8.1 Site Summary

	Raw Counts			*AADT*
	Morning Peak	***Evening Peak***	***Total***	***Total***
2009	60	51	111	162
2010	88	79	167	243
2011	**73**	**79**	**152**	**215**

8.2 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

- The total number of cyclists recorded at this site in the morning has decreased (73 movements, down from 88 in 2010).
- The key movements are straight along Jervois Road in both directions (Movement 2 heading southwest = 37 movements; Movement 3 heading northeast = 25 movements).
- The most notable change was a decline at Movements 3 (down 12 movements).

Table 8.1: Morning Cyclist Movements

Jervois Road/Wallace Street 2009-2011 (n)

Movement	*2009*	*2010*	*2011*	Change 10-11
1	0	1	**1**	0
2	30	36	**37**	1
3	24	37	**25**	-12
4	2	12	**8**	-4
5	1	1	**0**	-1
6	3	1	**2**	1
Total	**60**	**88**	**73**	**-15**

- Almost all the cyclists at this intersection were adults (97 per cent, up notably from 80 per cent in 2010).
- Helmet wearing continues to be widespread (93 per cent, down from 97 per cent in 2010).
- The majority of cyclists were male (71 per cent).
- Most cyclists were riding on the road (85 per cent, up notably from 73 per cent in 2010).

Table 8.2: Morning Cyclist Characteristics

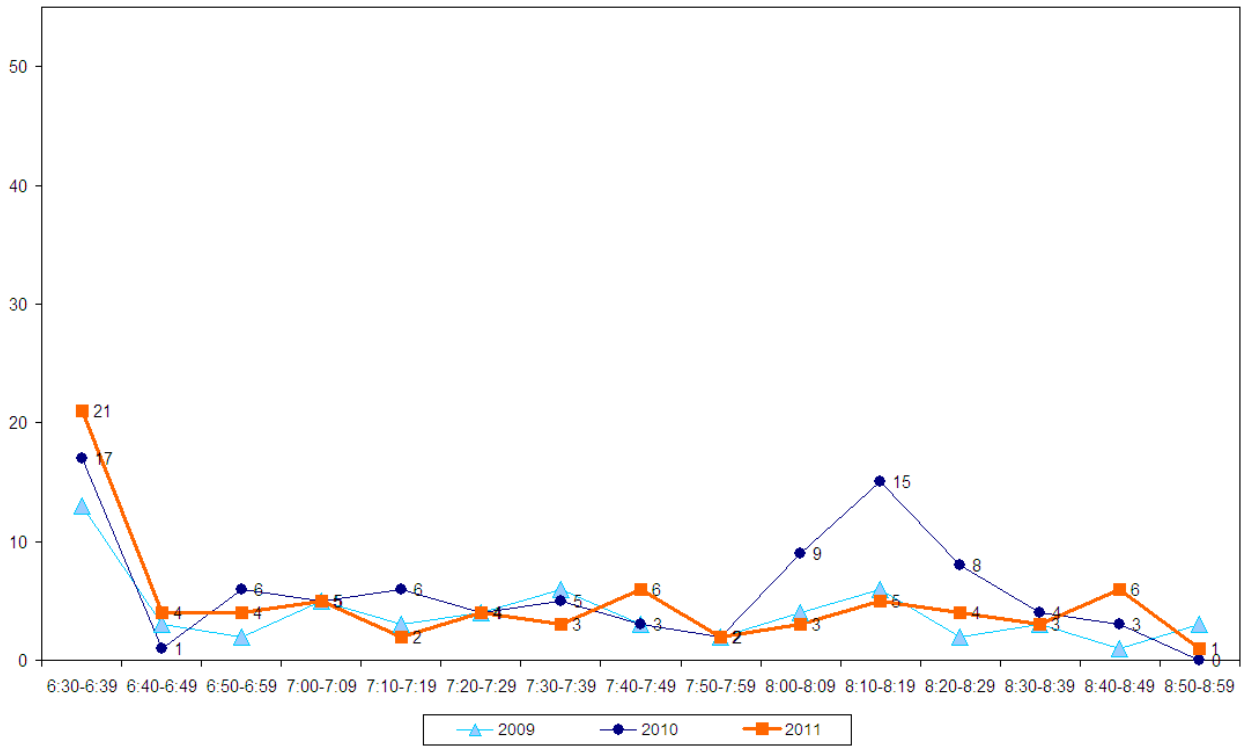
Jervois Road/Wallace Street 2009-2011 (%)

	2009	2010	2011	Change 10-11
Cyclist Type				
Adult	90	80	**97**	**17**
School child	10	20	**3**	**-17**
Helmet Wearing				
Helmet on head	98	97	**93**	**-4**
No helmet	2	3	**7**	**4**
Gender				
Male	-	-	**71**	**-**
Female	-	-	**29**	**-**
Can't tell	-	-	**0**	**-**
Where Riding				
Road	85	73	**85**	**12**
Footpath	15	27	**15**	**-12**
Base:	***60***	***88***	***73***	

- Morning cycle volumes are relatively low over most of the monitoring period, with no more than six cyclists recorded passing during most ten minute intervals. Consistent with previous years, a notable peak occurs at the beginning of the monitoring period, with 21 cyclists recorded between 6:30am and 6:39am.

Figure 8.2: Morning Peak Cyclist Frequency

Jervois Road/Wallace Street (n)



Note: In 2011, 25 per cent of the total cycle movements in the morning peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- *Fifteen cyclists at 6.37am*
- *Three cyclists at 6:42am*

8.3 Evening Peak

Environmental Conditions

- The weather was fine throughout most of the evening shift. Light drizzle was observed from 6:15pm, developing into heavy rain by 6:50pm. Light showers were evident through until the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Evening cyclist numbers have remained relatively stable since last year's count (75 movements, down slightly from 79 in 2010).
- Consistent with the morning peak, the key movement in the evening is straight along Jervois Road travelling in a southwest direction (Movement 2 = 41 movements).
- The most notable changes occurred at Movement 2 (down 9 movements) and Movement 5 (up 6 movements).

Table 8.3: Evening Cyclist Movements

Jervois Road/Wallace Street 2009-2011 (n)

Movement	2009	2010	2011	Change 10-11
1	1	4	**1**	-3
2	22	50	**41**	-9
3	17	21	**19**	-2
4	3	0	**1**	1
5	3	4	**10**	6
6	5	0	**3**	3
Total	**51**	**79**	**75**	**-4**

- Increasing notably from 2010, almost all of the cyclists at this site n 2011 were adults (92 per cent, up from 78 per cent in 2010).
- Most cyclists were wearing a helmet (92 per cent, up from 85 per cent in 2010).
- The majority of cyclists were male (76 per cent).
- Just over three-quarters of the cyclists were riding on the road (76 per cent up notably from 62 per cent in 2010).

Table 8.4: Evening Cyclist Characteristics

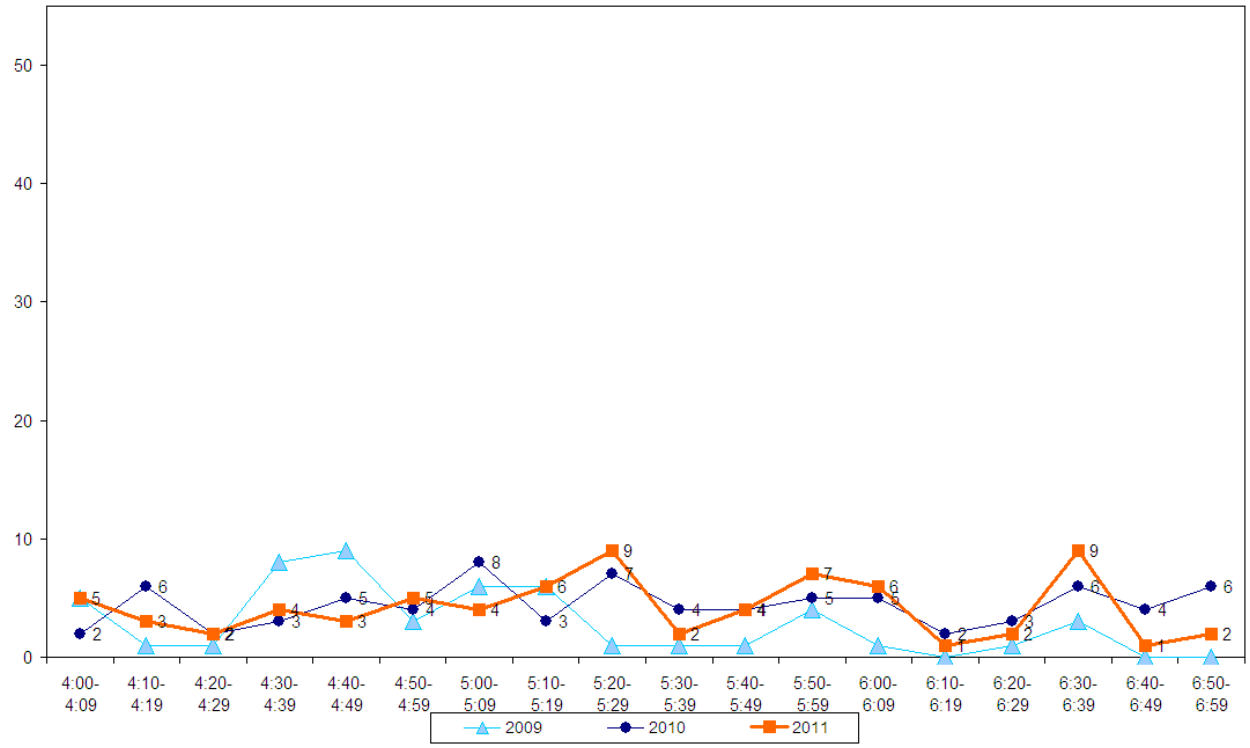
Jervois Road/Wallace Street 2009-2011 (%)

	2009	2010	2011	Change 10-11
Cyclist Type				
Adult	55	78	**92**	14
School child	45	22	**8**	-14
Helmet Wearing				
Helmet on head	98	85	**92**	7
No helmet	2	15	**8**	-7
Gender				
Male	-	-	**76**	-
Female	-	-	**24**	-
Can't tell	-	-	**0**	-
Where Riding				
Road	55	62	**76**	14
Footpath	45	38	**24**	-14
Base:	***51***	***79***	***75***	

- Evening cycle movement volumes were relatively stable across the entire monitoring period, with the first peak occurring between 5:20pm and 5:29pm (9 movements), another occurring between 5:50pm and 5:59pm (7 movements), and a final peak occurring between 6:30pm and 6:39pm (9 movements).

Figure 8.3: Evening Peak Cyclist Frequency

Jervois Road/Wallace Street (n)

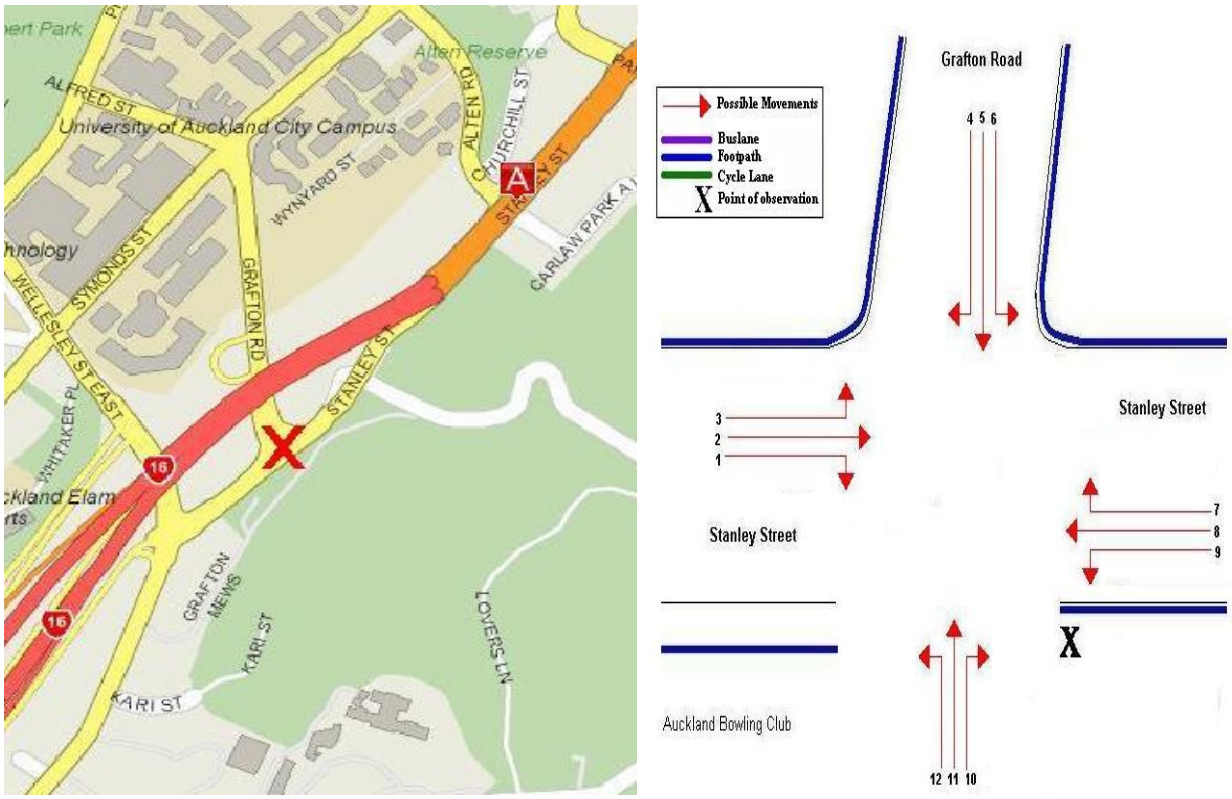


Note: Three cyclists were observed riding together at this site at 4:39pm. This equates to four per cent of all evening peak cycle movements at this site.

9. STANLEY STREET/GRAFTON ROAD, GRAFTON (SITE 75)

Figure 9.1 shows the possible cyclist movements at this intersection.

Figure 9.1: Cycle Movements: Stanley Street/Grafton Road



9.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2008	36	29	65	95
2009	49	47	96	140
2010	47	46	93	135
2011	**27**	**47**	**74**	**106**

9.2 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

- The cycle volumes at the Stanley Street/Grafton Road site decreased notably this year (27 movements, down from 47 in 2010).
- The most common morning movement is from Stanley Street, turning right onto Grafton Road (Movement 7 = 8 movements).
- The most notable changes in cyclist movement volumes from 2010 were at Movement 8 (down 11 movements) and Movement 11 (down 9 movements).

Table 9.1: Morning Cyclist Movements

Stanley Street/Grafton Road 2008-2011 (n)

Movement	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	0	0	0	0	0
2	3	10	9	6	-3
3	1	1	1	1	0
4	0	0	0	0	0
5	0	0	1	0	-1
6	1	1	0	1	1
7	8	11	9	8	-1
8	9	13	16	5	-11
9	2	3	0	4	4
10	0	0	0	0	0
11	12	9	11	2	-9
12	0	1	0	0	0
Total	**36**	**49**	**47**	**27**	**-20**

- Over the morning peak, all cyclists were adults (100 per cent, unchanged from last year).
- All cyclists were wearing a helmet (100 per cent, up from 94 per cent in 2010).
- The majority of cyclists were male (85 per cent).
- Increasing from 2010, most cyclists were riding on the road (81 per cent, up notably from 49 per cent in 2010).

Table 9.2: Morning Cyclist Characteristics

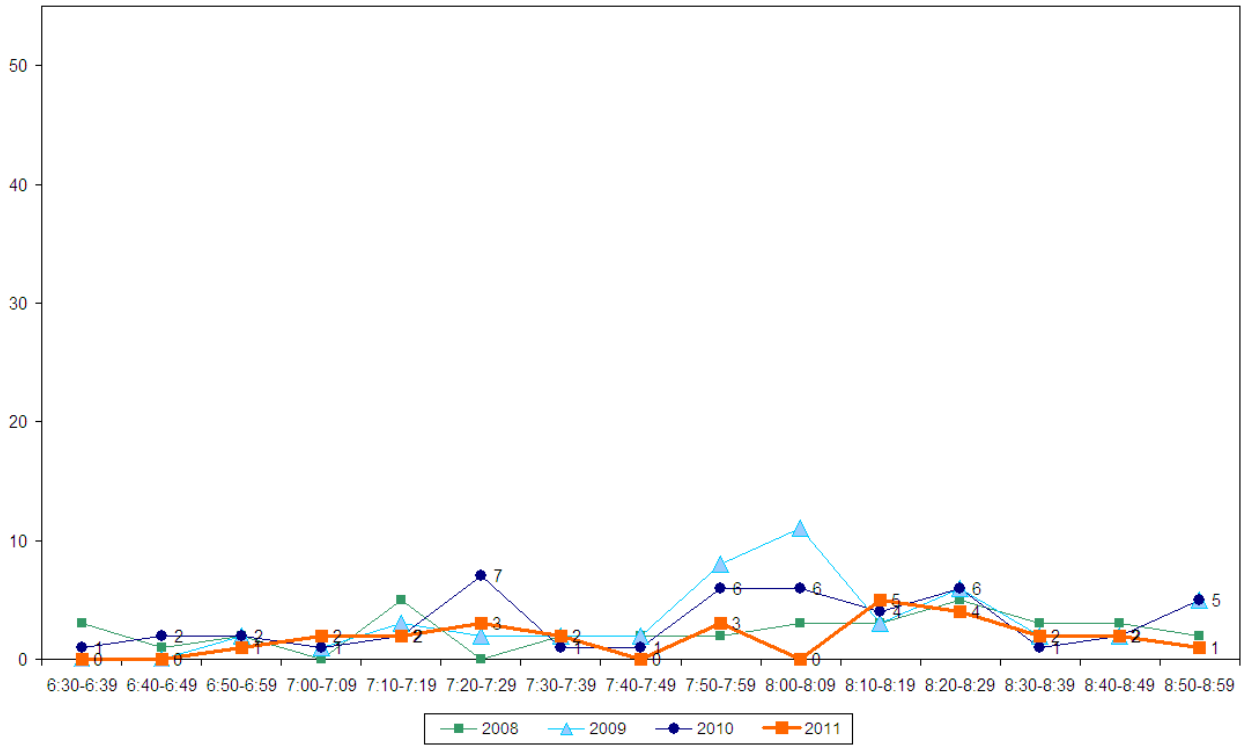
Stanley Street/Grafton Road 2008-2011 (%)

	2008	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type					
Adult	100	100	100	**100**	0
School child	0	0	0	**0**	0
Helmet Wearing					
Helmet on head	92	94	94	**100**	6
No helmet	8	6	6	**0**	-6
Gender					
Male	-	-	-	**85**	-
Female	-	-	-	**15**	-
Can't tell	-	-	-	**0**	-
Where Riding					
Road	78	61	49	**81**	32
Footpath	22	39	51	**19**	-32
Base:	***36***	***49***	***47***	***27***	

- Morning cyclist movement volumes remained low and stable throughout the observation period, peaking slightly between 8:10am and 8:19am (6 movements). .

Figure 26.2: Morning Peak Cyclist Frequency

Stanley Street/Grafton Road (n)



9.3 Evening Peak

Environmental Conditions

- The weather was fine throughout most of the evening shift. Light drizzle was observed from 6:15pm, developing into heavy rain by 6:30pm. Light showers were evident through until the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cycle movements recorded at the Stanley Street/Grafton Road site remained stable from last year (47 movements, stable from 46 movements in 2010).
- The key movements in the evening are straight along Stanley Street heading northwest (Movement 8 = 11 cyclists) and from Grafton Road, turning left onto Stanley Street travelling in a north-easterly direction (Movement 6 = 10 cyclists).
- The most notable decrease since 2010 was at Movement 2 (down 9 movements) while the most notable increase was at Movement 9 (up 7 movements).

Table 9.3: Evening Cyclist Movements

Stanley Street/Grafton Road 2008-2011 (n)

Movement	*2008*	*2009*	*2010*	*2011*	Change 10-11
1	0	0	0	**0**	0
2	8	13	11	**2**	-9
3	3	0	1	**2**	1
4	1	1	1	**2**	1
5	3	8	7	**2**	-5
6	4	5	8	**10**	2
7	2	1	1	**3**	2
8	2	12	15	**11**	-4
9	1	2	1	**8**	7
10	4	2	0	**4**	4
11	1	3	1	**3**	2
12	0	0	0	**0**	0
Total	**29**	**47**	**46**	**47**	**1**

- Over the evening peak, all cyclists using this site were adults (100 per cent, unchanged from 2010).
- Most cyclists at this site were wearing a helmet (91 per cent, up from 89 per cent in 2010).
- The majority of cyclists were male (85 per cent).
- Nearly two thirds of cyclists were riding on the road (64 per cent, up from 57 per cent in 2010).

Table 9.4: Evening Cyclist Characteristics

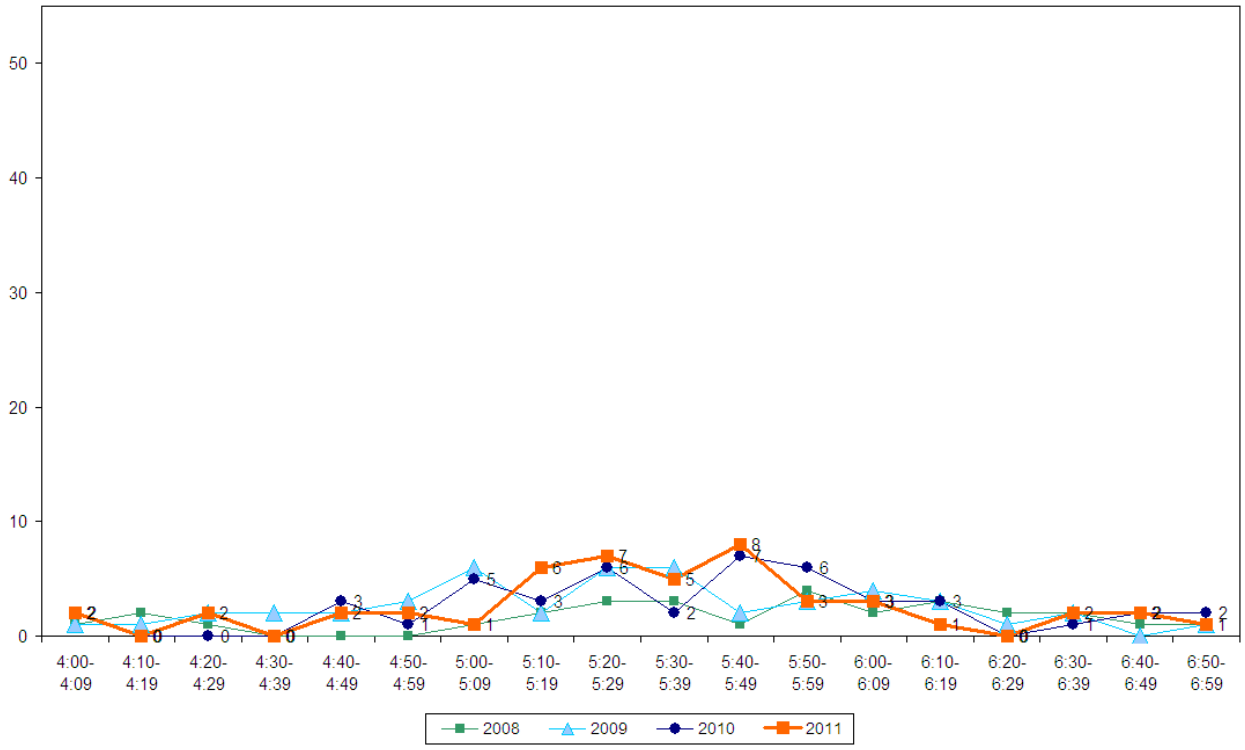
Stanley Street/Grafton Road 2008-2011 (%)

	2008	***2009***	***2010***	***2011***	**Change 10-11**
Cyclist Type					
Adult	100	100	100	**100**	0
School child	0	0	0	**0**	0
Helmet Wearing					
Helmet on head	93	96	89	**91**	2
No helmet	7	4	11	**9**	-2
Gender					
Male	-	-	-	**85**	-
Female	-	-	-	**15**	-
Can't tell	-	-	-	**0**	-
Where Riding					
Road	66	36	57	**64**	7
Footpath	34	64	43	**36**	-7
Base:	***29***	***47***	***46***	***47***	

- Consistent with 2010, evening cyclist volumes were low throughout the shift, with no more than three cyclists recorded during most ten minute intervals.

Figure 9.3: Evening Peak Cyclist Frequency

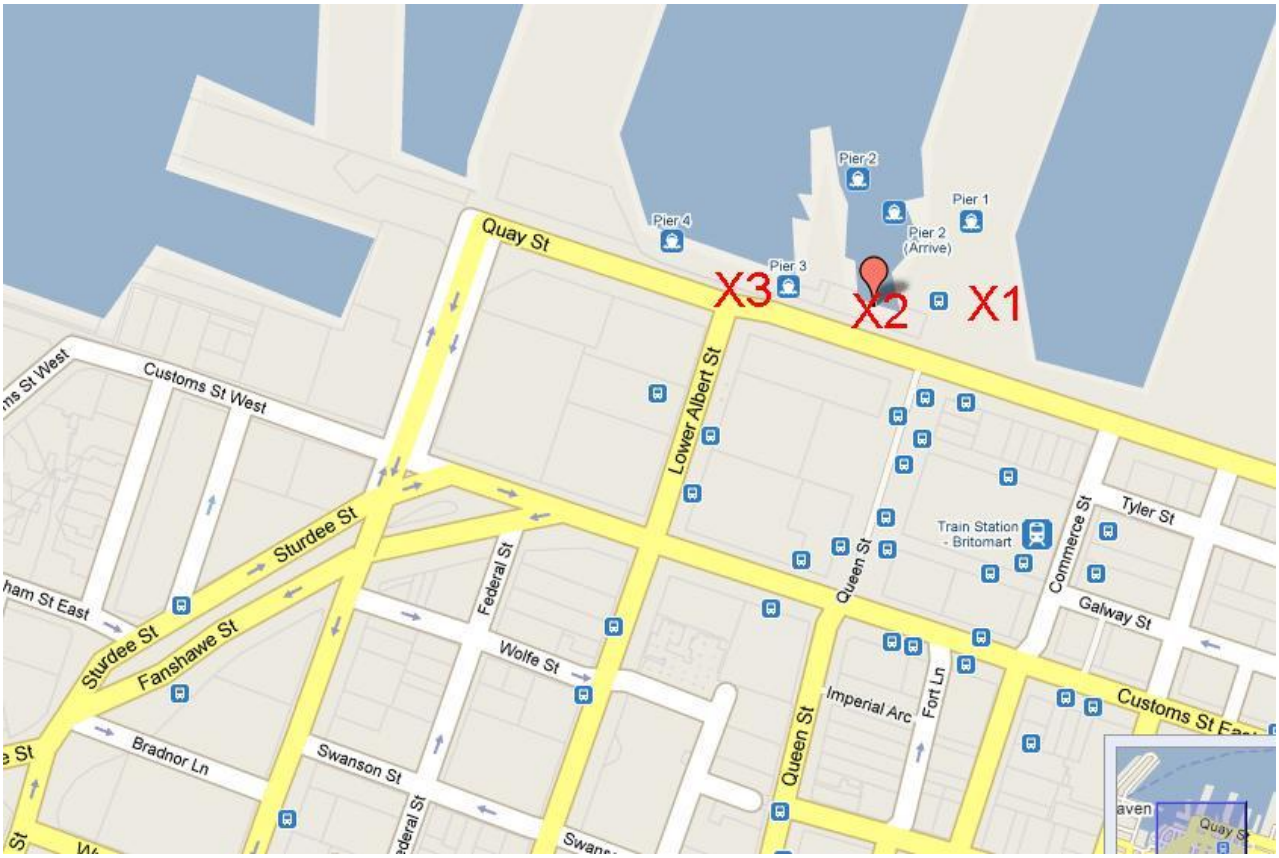
Stanley Street/Grafton Road (n)



10. FERRY TERMINAL, AUCKLAND CENTRAL (SITE 22)

Figure 10.1 shows the possible cyclist movements at this site. *Note: Due to the size of this site, three surveyors were used to conduct the cycle counts. One surveyor counted cycle traffic entering and leaving via the actual ferry terminal (Pier 1). The second surveyor counted cycle traffic using the ferries at Pier 2. The third surveyor counted cycle traffic using ferries at Piers 3 and 4.*

Figure 10.1: Cycle Movements: Ferry Terminal



10.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	195	185	380	553
2008	158	158	316	459
2009	137	111	248	363
2010	198	197	395	574
2011	**205**	**186**	**391**	**570**

10.2 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- Whilst road works were observed in the vicinity of the ferry building, it was felt that these did not affect cycle counts

Key Points

- The volume of cyclist movements at the Ferry Terminal site has increased slightly from last year (205 movements, up from 198 movements in 2010).
- Like last year, the key movement in the morning is disembarking the terminal at Pier One, which provides access to ferry services to and from Birkenhead, Northcote Point, Bayswater and Devonport (141 movements).
- The most notable change occurred in cyclist movements disembarking from Pier One (up 43 movements).

Table 10.1: Morning Cyclist Movements

Ferry Terminal 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
Pier One						
Boarding	18	11	10	24	**14**	-10
Disembarking	136	127	100	134	**141**	43
Pier Two						
Boarding	8	5	1	0	**4**	4
Disembarking	18	10	16	28	**32**	4
Pier Three						
Boarding	0	0	1	0	**0**	0
Disembarking	4	3	3	8	**8**	0
Pier Four						
Boarding	0	0	4	0	**1**	1
Disembarking	11	2	2	4	**5**	1
Total	**195**	**158**	**137**	**198**	**205**	**43**

Pier 1 – departs for Birkenhead, Northcote Point, Bayswater and Devonport
Pier 2 – departs for Waiheke Island and Half Moon Bay
Pier 3 – departs for West Harbour and Pine Harbour
Pier 4 – departs for Gulf Harbour and Stanley Bay

Table 10.2A: Morning Cyclist Movements – Which Ferry Boarded (n)

Ferry	2009	2010	2011	Change 10-11
Pier Two				
Half Moon Bay	0	0	**0**	0
Waiheke	1	0	**4**	4
Pier Three				
Pine Harbour	0	0	**0**	0
West Harbour	1	0	**0**	0
Pier Four				
Gulf Harbour	0	0	**0**	0
Stanley Bay	4	0	**1**	1
Total	**6**	**0**	**5**	**5**

Note: At Pier 1, it is not possible to identify which ferry cyclists are boarding.

Table 10.2B: Morning Cyclist Movements – Which Ferry Disembarked (n)

Ferry	2009	2010	2011	Change 10-11
Pier One				
Bayswater	22	-	**35**	-
Birkenhead	34	-	**28**	-
Devonport	44	-	**78**	-
Pier Two				
Half Moon Bay	4	10	**7**	-3
Waiheke	12	18	**25**	7
Pier Three				
Pine Harbour	2	8	**8**	0
West Harbour	1	0	**0**	0
Pier Four				
Gulf Harbour	1	1	**1**	0
Stanley Bay	1	3	**4**	1
Total	**121**	**40**	**186**	**-**

- Almost all cyclists using this site in the morning are adults (98 per cent, stable from 99 per cent in 2010).
- Approximately two in three cyclists were wearing a helmet (68 per cent, stable from 69 per cent in 2010).
- The majority of cyclists were male (83 per cent).

Table 10.3: Morning Cyclist Characteristics

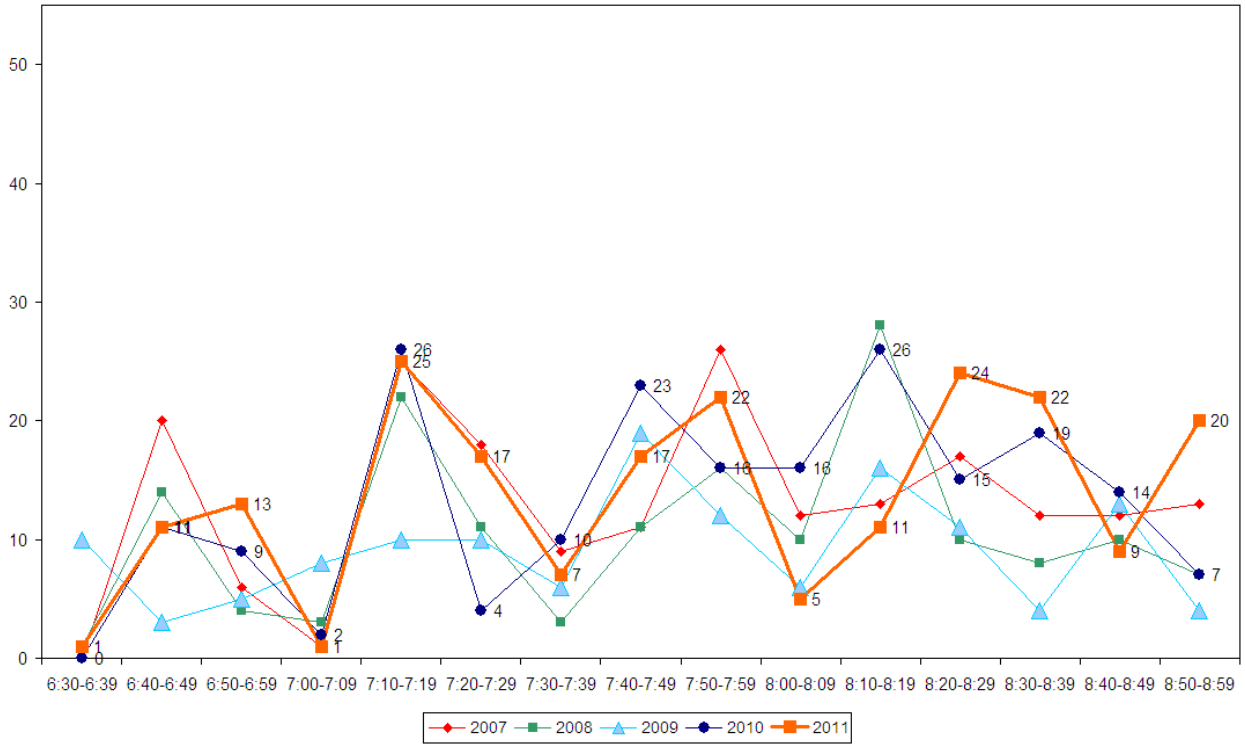
Ferry Terminal 2007-2011 (%)

	2007	***2008***	***2009***	**2010**	**2011**	**Change 10-11**
Cyclist Type						
Adult	98	96	100	99	**98**	-1
School child	2	4	0	1	**2**	1
Helmet Wearing						
Helmet on head	87	70	80	69	**68**	-1
No helmet	13	30	20	31	**32**	1
Gender						
Male	-	-	-	-	**83**	-
Female	-	-	-	-	**17**	-
Can't tell	-	-	-	-	**0**	-
Base:	***195***	***158***	***137***	***198***	***205***	

- Morning cyclist volumes vary throughout the shift.

Figure 23.2: Morning Peak Cyclist Frequency

Ferry Terminal (n)



10.3 Evening Peak

Environmental Conditions

- The weather was fine throughout most of the evening monitoring period. Light drizzle was observed from 6:30pm through until the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of evening cycle movements at the Ferry Terminal site has decreased from last year (186 movements, down from 197 in 2010).
- In contrast to the morning shift, the key movement in the evening is boarding the ferries at Pier One (135 movements).
- Compared with last year, the most notable change is disembarking the ferry at Pier One (down 10 movements).

Table 10.4: Evening Cyclist Movements

Ferry Terminal 2007-2011 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	Change 10-11
Pier One						
Boarding	131	122	88	137	**135**	-2
Disembarking	15	13	5	25	**15**	-10
Pier Two						
Boarding	7	15	10	21	**19**	-2
Disembarking	16	6	0	3	**5**	2
Pier Three						
Boarding	0	2	5	6	**6**	0
Disembarking	0	0	0	0	**0**	0
Pier Four						
Boarding	0	0	3	3	**5**	2
Disembarking	16	0	0	2	**1**	-1
Total	**185**	**158**	**111**	**197**	**186**	**-11**

Pier 1 – departs for Birkenhead, Northcote Point, Bayswater and Devonport
Pier 2 – departs for Waiheke Island and Half Moon Bay
Pier 3 – departs for West Harbour and Pine Harbour
Pier 4 – departs for Gulf Harbour and Stanley Bay

Table 10.5A: Evening Cyclist Movements – Which Ferry to Board (n)

Ferry	2009	2010	2011	Change 10-11
Pier Two				
Half Moon Bay	3	4	**6**	2
Waiheke	7	17	**13**	-4
Pier Three				
Pine Harbour	4	6	**6**	0
West Harbour	1	0	**0**	0
Pier Four				
Gulf Harbour	0	0	**0**	0
Stanley Bay	3	3	**5**	2
Total	**18**	**30**	**30**	**0**

Note: At Pier 1 it is not possible to identify which ferry cyclists are boarding

Table 10.5B: Evening Cyclist Movements – Which Ferry to Disembark (n)

Ferry	2009	2010	2011	Change 10-11
Pier One				
Bayswater	0	-	**0**	-
Birkenhead	0	-	**2**	-
Devonport	5	-	**13**	-
Pier Two				
Half Moon Bay	0	0	**0**	0
Waiheke	0	3	**5**	0
Pier Three				
Pine Harbour	0	0	**0**	0
West Harbour	0	0	**0**	0
Pier Four				
Gulf Harbour	0	1	**0**	-1
Stanley Bay	0	1	**1**	0
Total	**5**	**5**	**21**	**-**

- Over the evening peak, almost all cyclists using this site were adults (98 per cent, stable from previous measures).
- Slightly more than two thirds of cyclists were wearing a helmet (68 per cent, down slightly from 71 per cent in 2010).
- The majority of cyclists were male (83 per cent).

Table 10.6: Evening Cyclist Characteristics

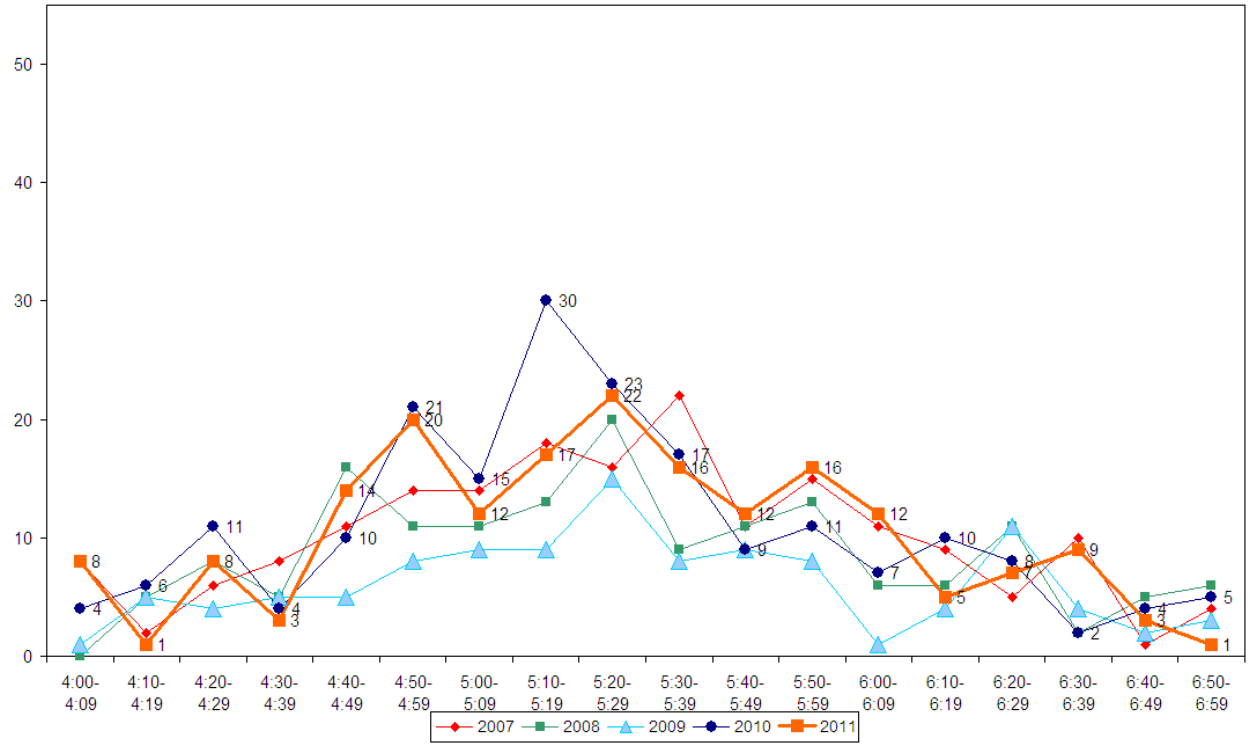
Ferry Terminal 2007-2011 (%)

	2007	*2008*	*2009*	*2010*	2011	Change 10-11
Cyclist Type						
Adult	99	98	100	100	**98**	-2
School child	1	2	0	0	**2**	2
Helmet Wearing						
Helmet on head	85	69	80	71	**68**	-3
No helmet	15	31	20	29	**32**	3
Gender						
Male	-	-	-	-	**83**	-
Female	-	-	-	-	**17**	-
Can't tell	-	-	-	-	**0**	-
Base:	***185***	***158***	***111***	***198***	***186***	

- Evening cyclist movement volumes vary throughout the shift, increasing from the beginning of the shift and first peaking between 4:50 and 4:59 (20 movements). The highest volume of movements occurred between 5:20pm and 5:29pm (22 movements).

Figure 10.6: Evening Peak Cyclist Frequency

Ferry Terminal (n)



10.4 Waiheke Island Ferry Terminal

- A count was conducted on the morning of Wednesday the 9th of March at the Waiheke Island ferry wharf. Twelve parked cycles were observed.

11. 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.

Background Information

- A total of 13 schools in the Waitemata and Gulf ward took part in the school bike shed count.
- Of the schools who participated, most do not have policies that restrict students cycling to school[9].
- The designated count day was Tuesday 8th of March[10].

Key Points

- Of those eligible to cycle, on average two per cent of students are cycling to their schools.
- Across the 13 eligible schools that responded, n=158 students were reported to cycle to school.
- Kadimah School reported the highest share of cyclists – 8 per cent of all eligible students currently cycling.
- Five schools (38 per cent) had no students cycling to school.

[9] Kadimah permits students 10 years or older to cycle to school. Marist Catholic School permits students Year 5 and over to cycle to school.

[10] The following schools undertook counts on alternative days:

- St Mary's College, Ponsonby – Thursday 3rd March
- St Paul's College – Wednesday 9th March
- Ponsonby Intermediate – Thursday 10th March
- Auckland international College – Thursday 24th March
- St Joseph's School – Thursday 31st March

Table 11.1 shows the results of the 13 schools surveyed in the Waitemata and Gulf ward.

Table 11.1: 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*[11]				
				2011	*2010*	*2009*	*2008*	*2007*
Kadimah	Full primary	40	3	**8%**	-	-	-	-
Marist Catholic School	Full primary	36	3	**8%**	-	-	-	-
Ponsonby Intermediate	Intermediate	556	26	**5%**	6%	5%	4%	6%
Auckland Grammar	Secondary	2494	88	**4%**	4%	4%	3%	2%
Waiheke High School	Secondary	461	20	**4%**	4%	3%	2%	3%
Parnell District School	Full primary	467	7	**1%**	-	-	-	-
ACG Parnell College	Composite	800	9	**1%**	1%	-	0%	-
Auckland Girls Grammar School	Secondary	1474	2	**<1%**	0%	0%	0%	<1%
ACG Senior College	Secondary	360	0	**0%**	1%	-	0%	-
Auckland International College	Secondary	380	0	**0%**	0%	0%	0%	-
St Marys College Ponsonby	Intermediate/secondary	836	0	**0%**	0%	0%	-	-
St Pauls College	Intermediate/secondary	215	0	**0%**	-	0%	-	-
St Joseph's School, Grey Lynn	Full primary	96	0	**0%**	-	-	-	-
Total		**8215**	**158**	**2%**				

[11] 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 11.2 illustrate the rates of cycling to school at different school levels. Rates of cycling to school are highest among intermediate schools (5 per cent), while combined intermediate and secondary schools have the lowest rates in this ward (no cyclists, unchanged from last year).

Table 11.2: 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**
Intermediate	1	6%	4%	5%	6%	**5%**	-1
Secondary	5	2%	1%	2%	2%	**2%**	0
Full primary	4	-	-	-	-	**2%**	-
Composite	1	-	0%	-	1%	**1%**	0
Intermediate/Secondary	2	-	-	0%	0%	**0%**	0

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APPENDICES

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[12] 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)[13], 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.

[12] Annual average daily traffic

[13] 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.

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%