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Research Report Prepared for
Auckland Transport

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2012 Auckland Region Manual Cycle Monitor

- Whau 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:

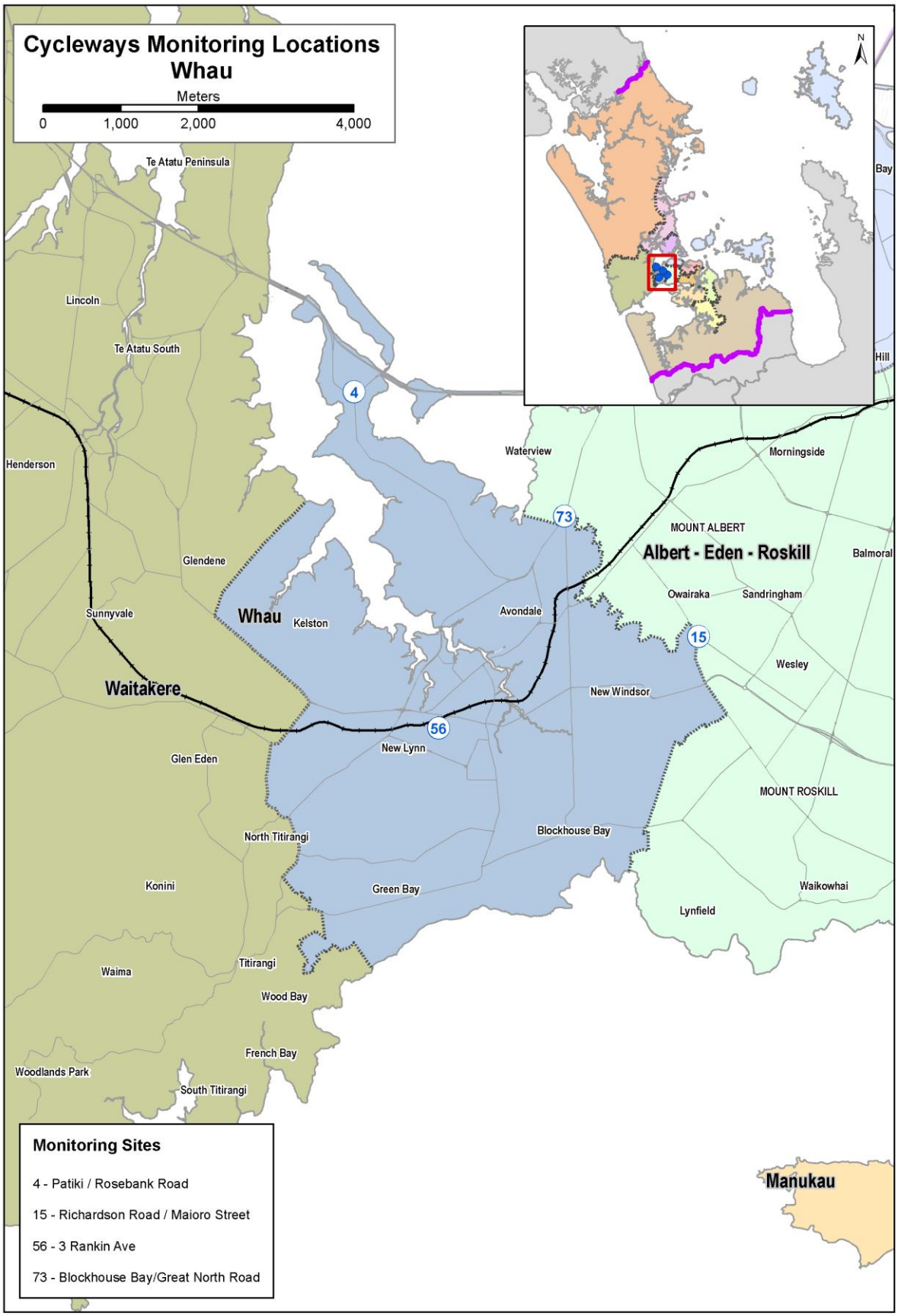
- standard monitoring days are used – that is, school and tertiary holidays, and statutory holidays are excluded and that monitoring preferably takes place at the same time each year to enable reliable year-on-year comparisons to be made. Decisions about whether cycle counts take place on weekdays and 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 four sites in the Whau ward following a standardised methodology. Results are presented site-by-site, as well as being aggregated to a ward and region level. For sites also monitored in 2007, 2008, 2009, 2010 and/or 2011, comparative results are provided.

Important Note: This report provides the results of manual cycle monitoring conducted at four pre-determined sites in the Whau 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 Whau ward. Note that two sites (Blockhouse Bay/Great North Road in Avondale (Site 73) and Richardson Road/Maioro Street in Mt Roskill (Site 15)) lie on the border with the Albert-Eden-Roskill ward and consequently have been included in both ward reports.

Figure 1.1: 2011 Cycle Monitoring Locations in Whau Ward



1.2 Methodology

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

Choice of Sites

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

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

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

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

Monitoring Times

Time Of Day

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

Day Of Week

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

Time Of Year

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

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

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

Counts were conducted on the following days:

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

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

Weather and Daylight Conditions

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

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

Tuesday 6th March

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

Wednesday 7th March

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

Tuesday 13th March

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

Conducting The Manual Counts

Scoping Visit

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

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

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

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

Briefing Session

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

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

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

Conducting The Manual Counts

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

During their shift the surveyor collected data on:

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

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

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

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

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

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

Data Analysis

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

Annual Average Daily Traffic (AADT) Analysis

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

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

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

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

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

School Bike Shed Counts

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

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

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

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

Methodology

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

1. Gravitas designed an information sheet that was distributed to most full primary, intermediate, secondary and composite (Years 1 to 13) schools in the Auckland region via email (note a small number of schools were omitted due to the special nature of the students eg 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 6th March was designated as the bike shed count day. (Most schools reported that they undertook the count on this day).

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

Reporting

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

Manual Counts - Site Level Reporting

The following results have been reported for each site:

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

Manual Counts - Aggregated Reporting

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

Bike Shed Counts

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

1.3 Summary of Results

This summary contains the aggregated results of the four sites surveyed in the Whau 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 Whau 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 to Five of this report.

Note: Surveying in the Whau ward was undertaken on Wednesday 7th of March, 2012. Sunrise was at 7:12am and sunset at 7:51pm. The highest temperature was 24.0 degrees Celsius.

1.4 Morning Peak Summary Results

Environmental Conditions

- All sites monitored in the Whau ward had fine weather in the morning.
- None of the Whau ward sited had road works or accidents that would have affected cycle counts.

Key Points

- A total of 161 cyclist movements were recorded across the four sites in the morning peak period (between 7:00am and 9:00am) in 2012. This represents a 13 per cent increase on the result for 2011 (143 movements).
- Three per cent of cyclists are identified as cycling in groups (n=5), while no morning cycle groups were identified last year.
- The average volume of morning cyclists across the four sites in the Whau ward is 40 cycle movements, compared with 36 movements in 2011, an 11 per cent increase.
- The two busiest sites in the Whau ward this year are Blockhouse Bay and Great North Road (60 movements, up slightly from 56 movements in 2011 – a 7 per cent increase) and Patiki and Rosebank Road (52 movements, down slightly from 56 movements in 2011 – a 7 per cent decrease).
- In contrast, cycle movement numbers are lowest at 3 Rankin Avenue (20 movements, up slightly from 16 in 2011).
- All but one site recorded increases in cycle volumes this year compared to 2011, the most notable being at Richardson Road/Maioro Street - up 93 per cent.

Table 1.1: Summary of Morning Cyclist Movements

2007 – 2012 (n) – 6.30 to 9.00 am

Site No.	*Locations*	*2007*	*2008*	*2009*	2010	2011	2012	Change 11-12	Change 07-12
4	Patiki/Rosebank Road	37	34	38	38	56	**52**	**-7%**	**41%**
56	3 Rankin Avenue, New Lynn	16	17	21	12	16	**20**	**25%**	**25%**
	Average per site (2 sites in 2007)	**27**	**26**	**30**	**25**	**36**	**36**	**0%**	**33%**
	Total (2 sites in 2007)	**53**	**51**	**59**	**50**	**72**	**72**	**0%**	**36%**
73	Blockhouse Bay/Great North Road	-	57	57	66	56	**60**	**7%**	-
15	Richardson Road/Maioro Street	-	-	8	14	15	**29**	**93%**	-
	Average per site (3 sites in 2008, 4 sites from 2009)	**-**	**36**	**31**	**33**	**36**	**40**	**11%**	**208%**
	Total (3 sites in 2008, 4 sites from 2009)	**-**	**108**	**124**	**130**	**143**	**161**	**13%**	**204%**

- Consistent with last year, the majority of cyclists were adults (93 per cent, stable from 91 per cent in 2011).
- As in 2011, most cyclists wore helmets (86 per cent, down from 92 per cent in 2011).
- The majority of cyclists were male (84 per cent).
- Riding on the road is still most common (56 per cent, stable from 54 per cent in 2011). One third of cyclists are riding on the footpath (33 per cent, down from 42 per cent last year). The remaining 11 per cent are riding on off-road cycleways (up from 4 per cent in 2011).

Table 1.2: Summary of Morning Cyclist Characteristics

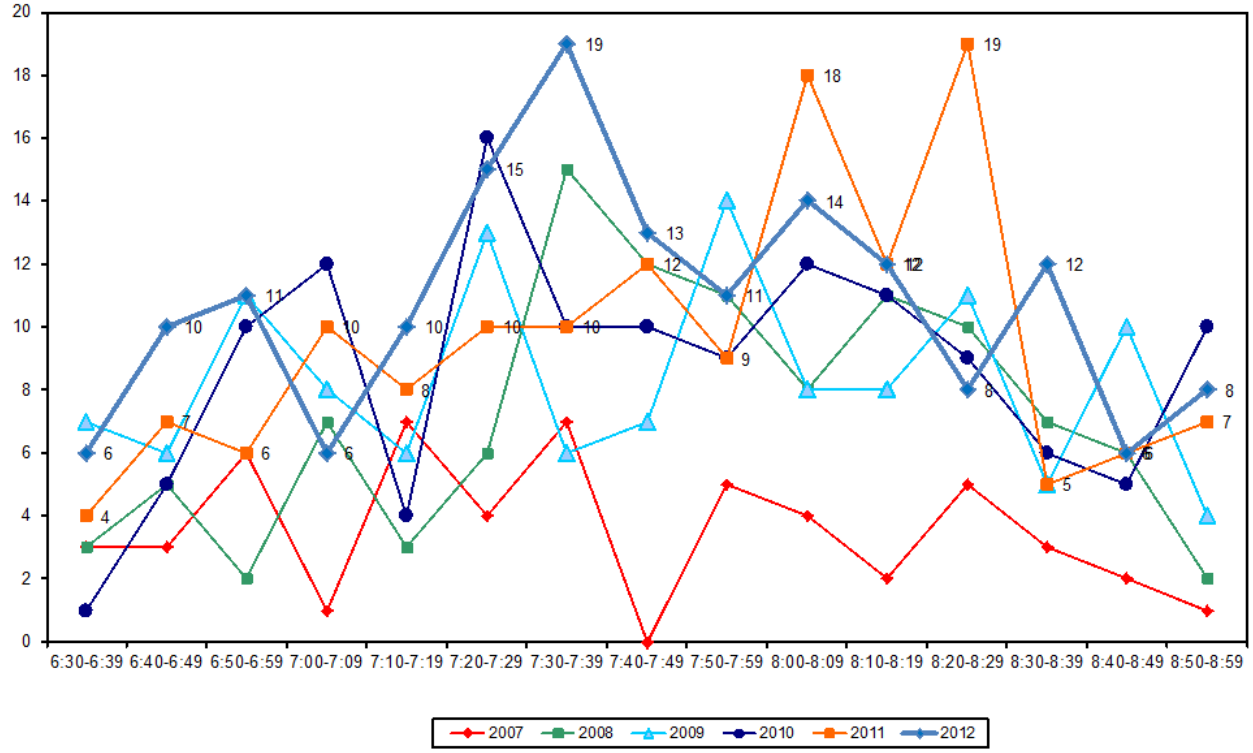
2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type							
Adult	96	93	75	95	91	**92**	**1**
School child	2	7	25	5	9	**8**	**-1**
Helmet Wearing							
Helmet on head	79	89	86	92	92	**86**	**-6**
No helmet	21	11	14	8	8	**14**	**6**
Gender							
Male	-	-	-	-	84	**84**	**0**
Female	-	-	-	-	13	**15**	**2**
Can't tell	-	-	-	-	3	**1**	**-2**
Where Riding							
Road	60	46	65	68	54	**56**	**2**
Footpath	40	54	35	29	42	**33**	**-9**
Off-road cycleway	-	-	-	3	4	**11**	**7**
Base:	***53***	***108***	***124***	***130***	***143***	***159***	

- Figure 1.2 illustrates the total number of morning cyclists by time of movement across the four sites monitored in the Whau ward. The graph shows a peak near the middle of the monitoring period between 7:30am and 7:39am (19 movements).

Figure 1.2: Total Cyclist Frequency of Whau Ward Sites – Morning Peak

2007 – 2011 (n)



1.5 Evening Peak Summary Results

Environmental Conditions

- The weather at the start of the evening shift was fine but overcast. Showers, and in some cases rain, was evident at various times at all sites from 4.15pm until the end of the monitoring period.
- None of the Whau ward sited had road works or accidents that would have affected cycle counts.

Key Points

- A total of 154 cyclist movements were recorded across the four sites in the evening peak period (between 4:00pm and 7:00pm) in 2012. This represents a 17 per cent decrease on the result for 2011 (186 movements).
- The average volume of evening cyclists across the four sites in the Whau ward is 39 cycle movements, compared with 47 movements in 2011, a 17 per cent decrease.
- The two busiest sites in the Whau ward this year are Blockhouse Bay and Great North Road (69 movements, down slightly from 73 movements in 2011) and Patiki and Rosebank Road (43 movements, down notably from 65 movements in 2011 – a 34 per cent decrease).
- Evening cycle movements are lowest at 3 Rankin Avenue (18 movements, down from 26 in 2011, a 31 per cent decrease).
- When compared to 2011, only the Richardson Road/Maioro Street site saw an increase in cyclist movement volumes, up 9 per cent.
- The most notable decrease in cyclist volumes was recorded at Patiki/Rosebank Road – down 34 per cent.

Table 1.3: Summary of Evening Cyclist Movements
2007 – 2012 (n) – 4.00 to 7.00 pm

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12	Change 07-12
4	Patiki/Rosebank Road	45	45	34	52	65	**43**	**-34%**	**-4%**
56	3 Rankin Avenue, New Lynn	15	21	17	20	26	**18**	**-31%**	**20%**
	Average per site (2 sites in 2007)	**30**	**33**	**26**	**36**	**46**	**31**	**-33%**	**3%**
	Total (2 sites in 2007)	**60**	**66**	**51**	**72**	**91**	**61**	**-33%**	**2%**
73	Blockhouse Bay/Great North Road	-	60	62	75	73	**69**	**-5%**	**-**
15	Richardson Road/Maioro Street	-	-	13	25	22	**24**	**9%**	**-**
	Average per site (3 sites in 2008, 4 sites from 2009)	**-**	**42**	**32**	**43**	**47**	**39**	**-17%**	**160%**
	Total (3 sites in 2008, 4 sites from 2009)	**-**	**126**	**126**	**172**	**186**	**154**	**-17%**	**157%**

- Like last year, the majority of cyclists were adults (95 percent, stable from 94 per cent at the previous measure).
- As in 2011, most cyclists wore helmets (90 percent, up from 85 per cent in 2011).
- The majority of cyclists were male (87 per cent, up slightly from 84 per cent last year).
- Riding on the road is still most common (60 per cent, unchanged from 2011).

Table 1.4: Summary of Evening Cyclist Characteristics

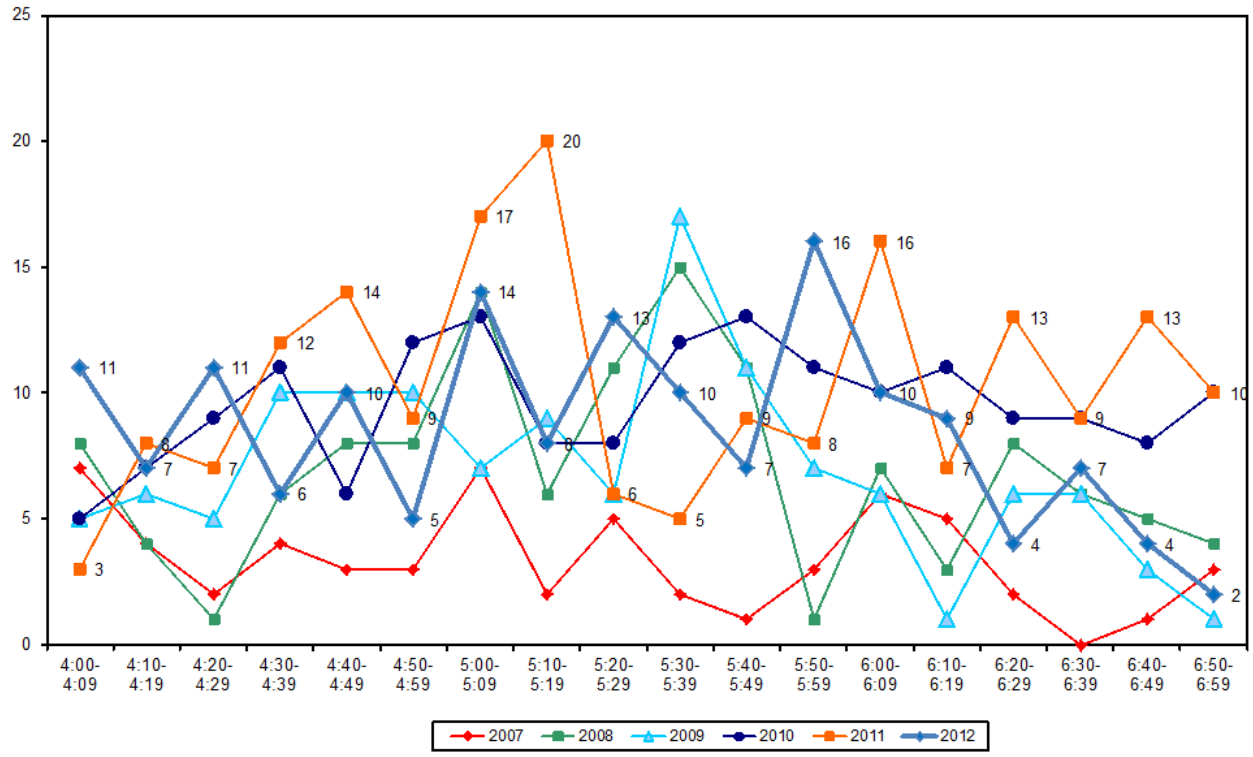
2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 10-11
Cyclist Type							
Adult	97	92	84	94	94	**95**	**1**
School child	3	8	16	6	6	**5**	**-1**
Helmet Wearing							
Helmet on head	85	82	84	85	85	**90**	**5**
No helmet	15	18	16	15	15	**10**	**-5**
Gender							
Male	-	-	-	-	84	**87**	**3**
Female	-	-	-	-	15	**12**	**-3**
Can't tell	-	-	-	-	1	**1**	**0**
Where Riding							
Road	48	62	63	61	60	**60**	**0**
Footpath	52	38	37	29	33	**32**	**-1**
Off-road cycleway	-	-	-	10	7	**8**	**1**
Base:	***60***	***126***	***126***	***172***	***186***	***154***	

- The overall pattern of cyclist volumes by time of movement in the evening is similar to the pattern noted in previous years, with cycle numbers low throughout the monitoring period. This year, evening cyclist numbers peak between 5:50pm and 5:59pm (16 movements), then decrease throughout the remainder of the evening peak period.

Figure 1.3: Total Cyclist Frequency of Whau Ward Sites – Evening Peak

2007 – 2011 (n)



1.6 Aggregated Total Summary Results

- A total of 315 cyclist movements were recorded across the four sites in 2012. This represents a 4 per cent decrease when compared with 2011 (329 movements).
- The average number of movements per site is 79, a 4 per cent decrease from 2011 (82).
- Of the four sites, the busiest site this year was Blockhouse Bay/Great North Road, with a total of 129 movements (unchanged from 2011).
- This year, the Rankin Avenue, New Lynn site had the fewest cycle movements (38 movements).
- The most notable increase in cycle movements was at Richardson Road/Maioro Street – up 43 per cent from 2011.

Table 1.5: Summary of Total Cyclist Movements
2007 – 2012 (n) – 6.30 to 9.00 am & 4.00 to 7.00 pm

Site No.	*Locations*	*2007*	*2008*	*2009*	2010	2011	2012	Change 11-12	Change 07-12
4	Patiki/Rosebank Road	82	79	72	90	121	**95**	**-21%**	**16%**
56	3 Rankin Avenue, New Lynn	31	38	38	32	42	**38**	**-10%**	**23%**
	Average per site (2 sites in 2007)	**57**	**59**	**55**	**61**	**82**	**67**	**-18%**	**18%**
	Total (2 sites in 2007)	**113**	**117**	**110**	**122**	**163**	**133**	**-18%**	**18%**
73	Blockhouse Bay/Great North Road	-	117	119	141	129	**129**	**0%**	-
15	Richardson Road/Maioro Street	-	-	21	39	37	**53**	**43%**	-
	Average per site (3 sites in 2008, 4 sites from 2009)	-	**78**	**63**	**76**	**82**	**79**	**-4%**	-
	Total (3 sites in 2008, 4 sites from 2009)	-	**234**	**250**	**302**	**329**	**315**	**-4%**	-

- Overall, almost all the cyclists this year were adults (94 per cent, stable from 93 per cent in 2011).
- Most cyclists were wearing a helmet (88 per cent, unchanged from 2011).
- The greatest share of cyclists are male (85 per cent).
- The majority of cyclists were riding on the road (57 per cent, unchanged from 2010), 10 per were riding on the off-road cycleway (up slightly from 6 per cent in 2011), with the remaining 33 per cent riding on the footpath (down slightly from 37 per cent in 2011.

Table 1.6: Summary of Total Cyclist Characteristics

2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type							
Adult	96	92	80	94	93	**94**	**1**
School child	4	8	20	6	7	**6**	**-1**
Helmet Wearing							
Helmet on head	82	85	85	88	88	**88**	**0**
No helmet	18	15	15	12	12	**12**	**0**
Gender							
Male	-	-	-	-	84	**85**	**1**
Female	-	-	-	-	14	**14**	**0**
Can't tell	-	-	-	-	2	**1**	**-1**
Where Riding							
Road	54	55	64	64	57	**57**	**0**
Footpath	46	45	36	29	37	**33**	**-4**
Off-road cycleway	0	0	0	7	6	**10**	**4**
Base:	***113***	***234***	***250***	***302***	***329***	**315**	

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 1.8 provides the comparative AADT estimates for each site, based on the average of morning and evening peak AADT calculations.
- The highest AADT is at Blockhouse Bay/Great North Road (187 daily movements, stable from 186 movements in 2011) and the lowest is at Richardson/Maioro Street (55 daily movements).
- Two out of the four sites in this ward have recorded increases in total AADT estimates this year compared with 2011. The intersections with increases are:
  - Richardson Road/Maioro Street – up 45 per cent; and
  - Blockhouse Bay/Great North Road – up 1 per cent.
- In contrast, the number of total cyclists recorded at the two other sites is lower than last year:
  - Patiki/Rosebank Road – down 21 per cent; and
  - 3 Rankin Avenue, New Lynn – down 8 per cent.

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

Site No.	*Locations*	*2007 AADT*	*2008 AADT*	*2009 AADT*	*2010 AADT*	*2011 AADT*	2012 AADT	11-12 Change	07-12 Change
73	Blockhouse Bay/Great North Road	-	170	173	204	186	**187**	**1%**	**-**
4	Patiki/Rosebank Road	119	114	105	130	175	**139**	**-21%**	**17%**
15	Richardson Road/Maioro Street	-	-	30	56	53	**77**	**45%**	**-**
56	3 Rankin Avenue, New Lynn	45	55	56	46	60	**55**	**-8%**	**22%**

1.8 School Bike Shed Count Summary

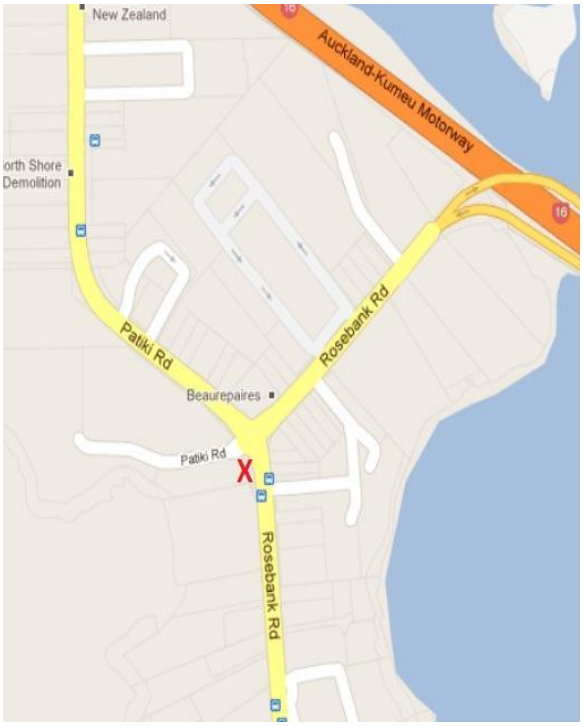
Key Points

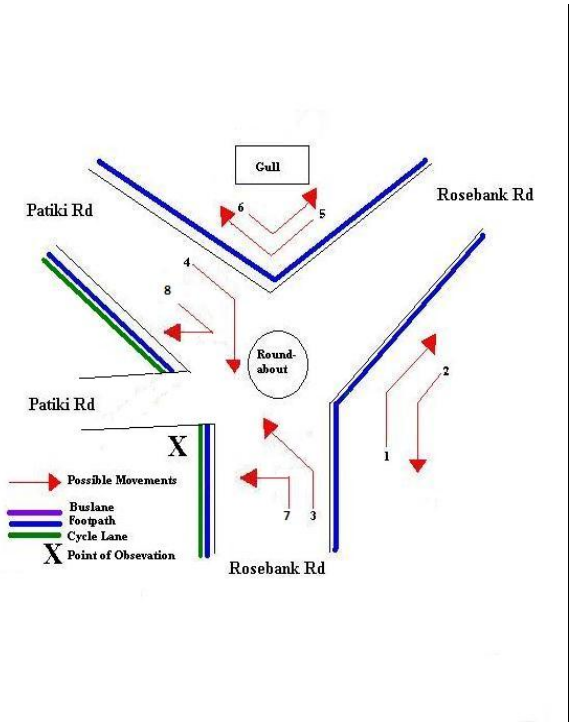
- Of those eligible to cycle at school, on average, two per cent of students are cycling to their schools. This compares with one per cent in 2011.
- Across the nine eligible schools that responded, n=81 students were reported to cycle to school.
- Blockhouse Bay Intermediate reported the highest share of cyclists – 5 per cent of all eligible students currently cycling.
- Of the nine eligible schools that responded, one (11 per cent) had no students cycling to school.
- Rates of cycling to school are highest among intermediate schools (3 per cent), while full primary and secondary schools had the lowest rates of cycling (one per cent each).

2. PATIKI/ROSEBANK ROAD, AVONDALE (SITE 4)

Figure 2.1 shows the possible cyclist movements at this intersection.

Figure 2.1: Cycle Movements: Patiki/Rosebank





2.1 Site Summary

	Raw Counts			*AADT*
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	37	45	82	119
2008	34	45	79	114
2009	38	34	72	105
2010	38	52	90	130
2011	56	65	121	175
2012	**52**	**43**	**95**	**139**

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 total cyclist volume recorded at the Patiki/Rosebank Road intersection in 2012 is 52 movements. This compares with 56 movements last year.
- The key movements at this site in the morning are south down Patiki Road into Rosebank Road (Movement 4 = 24 cyclists) and heading north up Rosebank Road into Patiki Road (Movement 3 = 14 cyclists).
- The most notable changes are at Movement 2 and 5 (down 2 cyclists each) and Movement 4 (up 2 cyclists).

Table 2.1: Morning Cyclist Movements

Patiki/Rosebank 2007 – 2012 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	2	4	5	1	7	**7**	**0**
2	7	7	5	12	9	**7**	**-2**
3	5	4	8	5	15	**14**	**-1**
4	21	16	20	17	22	**24**	**2**
5	1	1	0	2	2	**0**	**-2**
6	1	2	0	1	1	**0**	**-1**
7	-	-	-	-	-	**0**	**-**
8	-	-	-	-	-	**0**	**-**
Total	**37**	**34**	**38**	**38**	**56**	**52**	**-4**

- Over the morning peak, all cyclists are adults (100 per cent, stable from 98 per cent last year).
- The majority of cyclists are wearing helmets over the morning peak (90 per cent, stable from 91 per cent in 2011).
- Most cyclists over the morning peak are male (87 per cent).
- Over half the cyclists (63 per cent) were riding on the road, up from 57 per cent in 2011.

Table 2.2: Morning Cyclist Characteristics

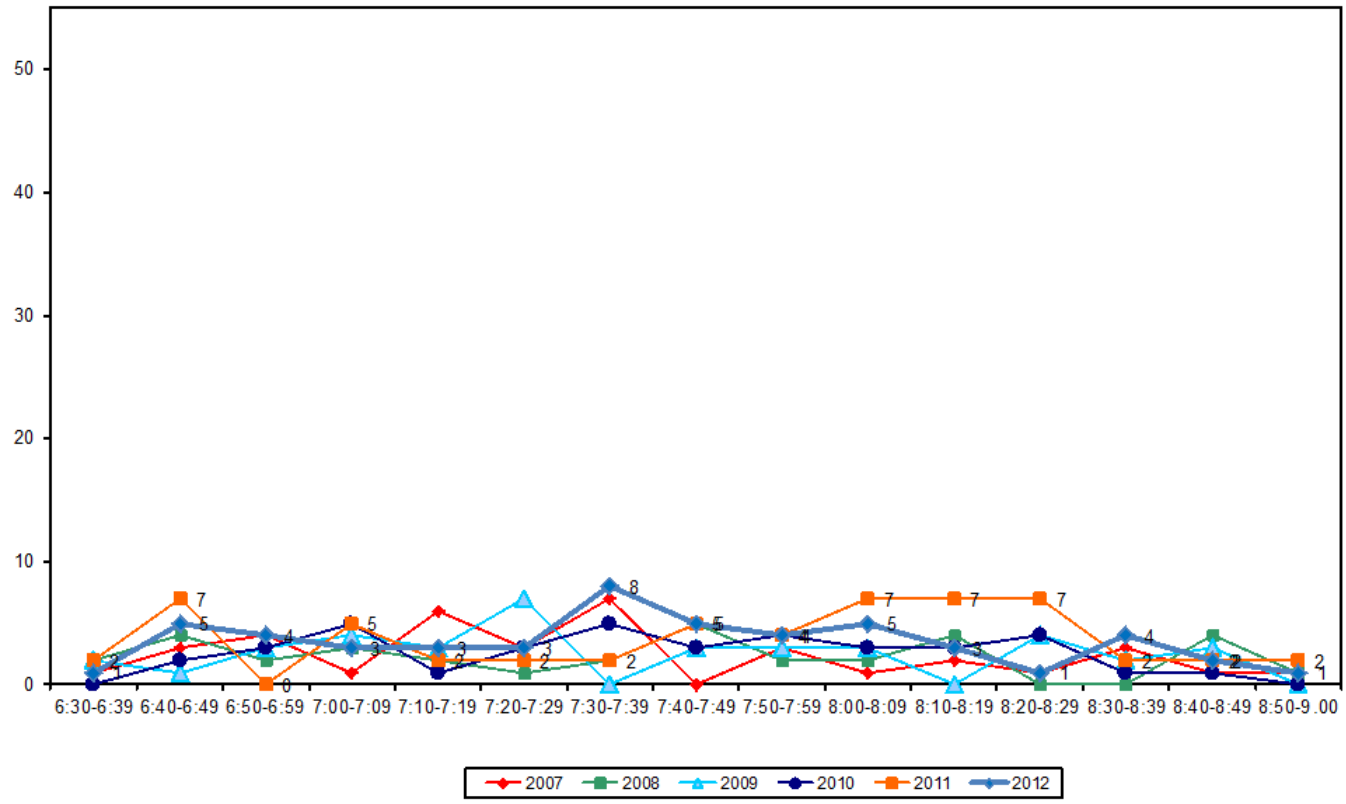
Patiki/Rosebank 2004 – 2012 (%)

	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type										
Adult	82	100	76	95	100	97	95	98	**100**	**2**
School child	18	0	24	5	0	3	5	2	**0**	**-2**
Helmet Wearing										
Helmet on head	82	85	88	81	88	95	87	91	**90**	**-1**
No helmet	18	15	12	19	12	5	13	9	**10**	**1**
Gender										
Male	-	-	-	-	-	-	-	84	**87**	**3**
Female	-	-	-	-	-	-	-	16	**13**	**-3**
Can't tell	-	-	-	-	-	-	-	0	**0**	**0**
Where Riding										
Road	53	63	59	57	47	74	82	57	**63**	**6**
Footpath	47	37	41	43	53	26	18	43	**37**	**-6**
Base:	***17***	***27***	***34***	***37***	***34***	***38***	***38***	***56***	***52***	

- This year, the frequency of cyclists in the morning period varies slightly by time period, with a slight peak evident between 7:30am and 7:39am (8 cyclists). This is in comparison to 2011 where slight peaks were evident between 6:40am and 6:49am and between 8:00am and 8:39am (7 cyclist movements per ten minute interval).

Figure 2.2: Morning Peak Cyclist Frequency

Patiki/Rosebank 2007 – 2012 (n)



2.3 Evening Peak

Environmental Conditions

- The weather was fine but overcast at the start of the evening shift. Light rain was observed from 4:35pm until 4:45pm, when heavy rain developed which persisted through until the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total cyclist volume recorded at the Patiki/Rosebank Road intersection continues to be light in the evening peak (43 movements, down from 65 last year).
- The most common movement at this site in the evening is north up Rosebank Road turning into Patiki Road (Movement 3 = 17 cyclists). This is consistent with last year.
- Evening cyclist volumes have decreased most notably at Movement 3 (down 12 cyclists).

Table 2.3: Evening Cyclist Movements

Patiki/Rosebank 2007 – 2012 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	7	6	4	9	11	**6**	**-5**
2	2	8	7	9	11	**7**	**-4**
3	18	22	19	26	29	**17**	**-12**
4	14	7	1	4	10	**9**	**-1**
5	4	1	1	2	2	**2**	**0**
6	0	1	2	2	2	**2**	**0**
7	-	-	-	-	-	**0**	**-**
8	-	-	-	-	-	**0**	**-**
Total	**45**	**45**	**34**	**52**	**65**	**43**	**-22**

- All evening cyclists using this intersection are adults (100 per cent, stable from 98 per cent in 2011).
- Most cyclists are wearing a helmet in the evening peak (95 per cent, up from 88 per cent at the previous measure).
- The greatest share of evening peak cyclists are male (82%).
- The volume of cyclists riding on the footpath has increased from 42 per cent in 2011 to 53 per cent this year.

Table 2.4: Evening Cyclist Characteristics

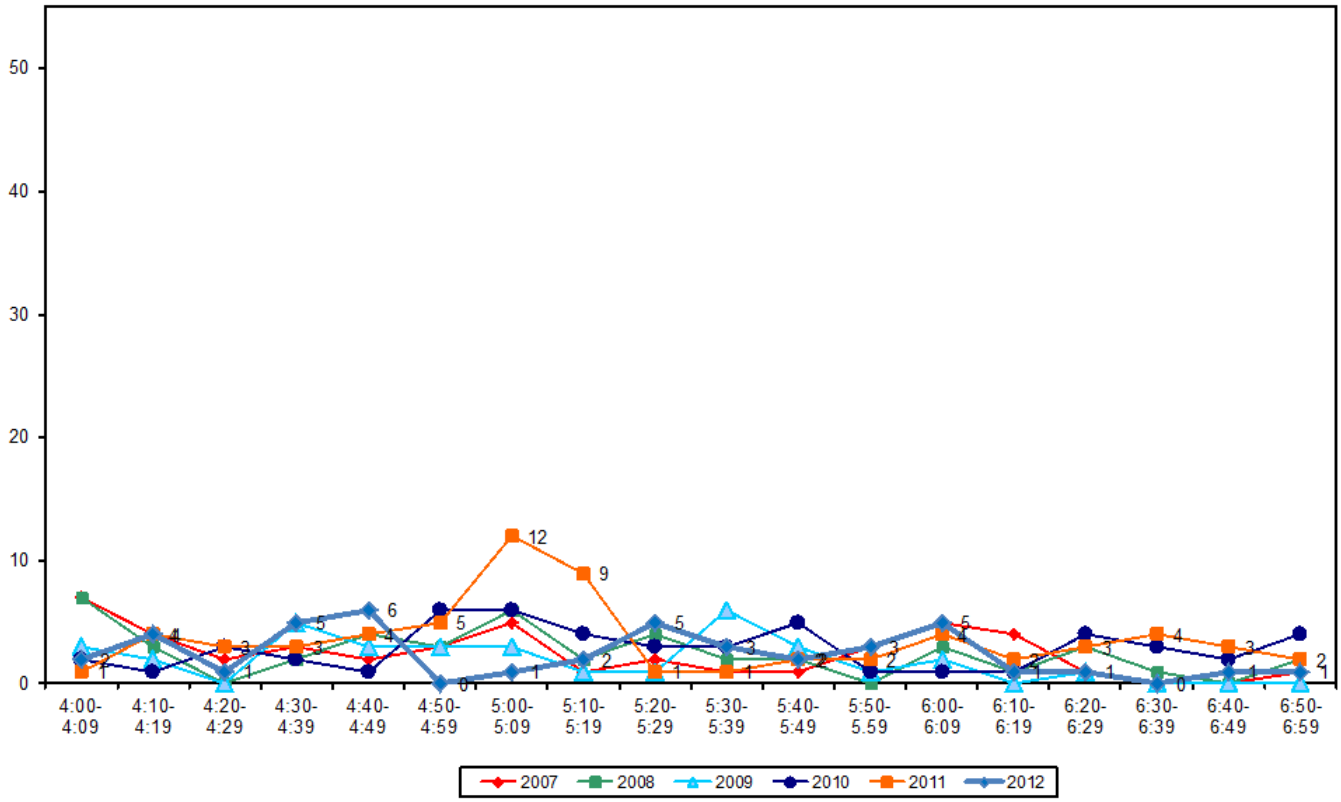
Patiki/Rosebank 2004 – 2012 (%)

	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type										
Adult	95	100	94	100	100	100	100	98	**100**	**2**
School child	5	0	6	0	0	0	0	2	**0**	**-2**
Helmet Wearing										
Helmet on head	100	87	84	89	84	91	88	88	**95**	**7**
No helmet	0	13	16	11	16	9	12	12	**5**	**-7**
Gender										
Male	-	-	-	-	-	-	-	80	**82**	**2**
Female	-	-	-	-	-	-	-	20	**16**	**-4**
Can't tell	-	-	-	-	-	-	-	0	**2**	**2**
Where Riding										
Road	95	63	81	53	62	88	75	58	**47**	**-11**
Footpath	5	37	19	47	38	12	25	42	**53**	**11**
Base:	***20***	***38***	***31***	***45***	***45***	***34***	***52***	***65***	***43***	

- The volume of evening cyclists in 2012 peaks slightly between 4:40pm and 4:49pm (6 cyclists). This compares with a peak between 5:00pm and 5:09pm (12 cyclists) in 2011.

Figure 2.3: Evening Peak Cyclist Frequency

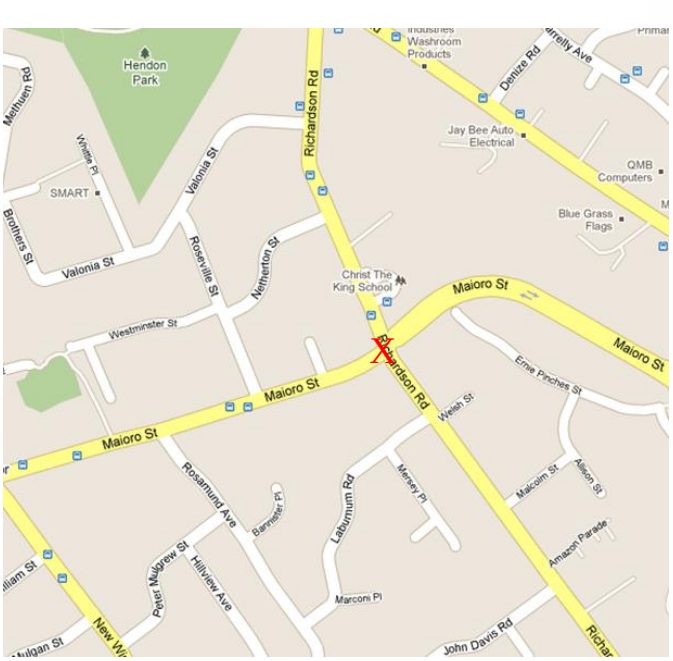
Patiki/Rosebank 2007 – 2012 (n)

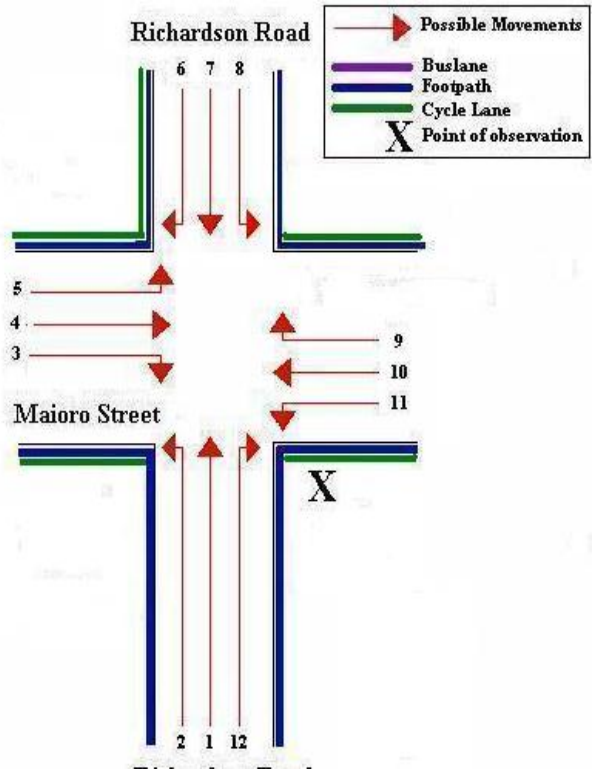


3. RICHARDSON ROAD/MAIORO STREET, MT ROSKILL (SITE 15)

Figure 3.1 shows the possible cyclist movements at this intersection.

Figure 3.1: Cycle Movement: Richardson Road/Maioro Street





Note: In 2010, the site map for this site was changed to reflect the construction of the Southern Motorway connection to the Manukau Motorway. Consequently, comparative results are indicative only.

3.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2009	8	13	21	30
2010	14	25	39	56
2011	15	22	37	53
2012	**29**	**24**	**53**	**77**

3.2 Morning Peak

Environmental Conditions

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

Key Points

- The volume of cycle movements at the Richardson/Maioro intersection continues to be light, with 29 cycle movements recorded (up from 15 movements last year).
- The key movement is straight along Maioro Street heading east (Movement 4 = 9 cyclists).
- The most notable change in morning cyclist volumes since 2011 is at Movement 4, up 9 cyclist movements.

Table 3.1: Morning Cyclist Movements

Richardson/Maioro Street 2009 – 2012 (n)

Movement	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	2	4	1	**4**	**3**
2	1	1	1	**2**	**1**
3	2	1	0	**2**	**2**
4	0	3	0	**9**	**9**
5	0	0	0	**5**	**5**
6	1	0	0	**0**	**0**
7	2	1	1	**1**	**0**
8	-	2	1	**0**	**-1**
9	-	0	1	**0**	**-1**
10	-	2	10	**6**	**-4**
11	0	0	0	**0**	**0**
12	-	0	0	**0**	**0**
Total	**8**	**14**	**15**	**29**	**14**

Note: In 2009, Movements 8, 9, 10 and 12 were not possible.

- Over the morning peak, most cyclists are adults (69 per cent, down notably 24 percentage points from last year).
- The majority of cyclists are wearing helmets (79 per cent, down from 87 per cent in 2011).
- Approximately four in five cyclists (76 per cent) are recorded as male (down slightly from 80 per cent in 2011).
- The majority of cyclists are riding on the off-road cycleway (62 per cent, up notably from 40 per cent last year). The remaining 38 per cent are riding on the road, down from 47 per cent in 2011. No cyclists were riding on the footpath this year.

Table 3.2: Morning Cyclist Characteristics

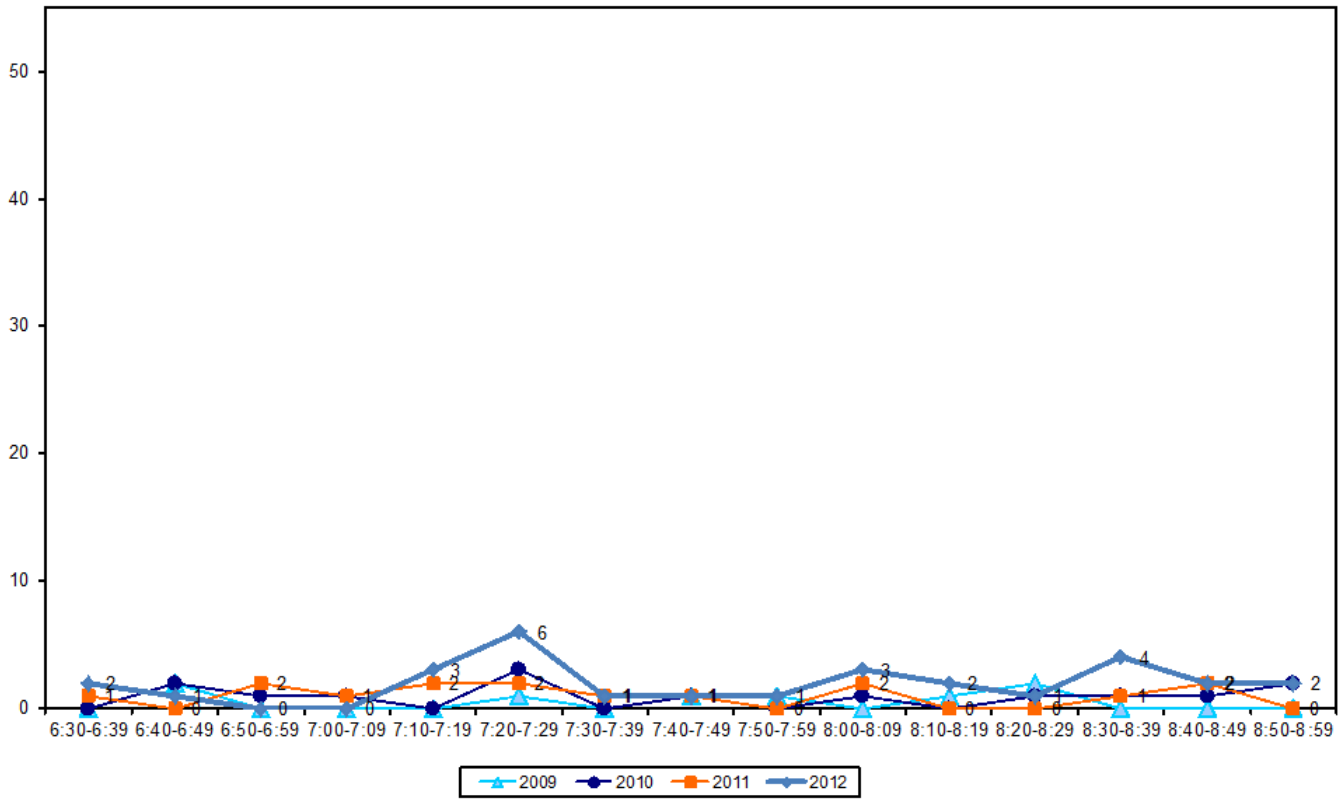
Richardson/Maioro Street 2009 – 2012 (%)

	2009	2010	2011	2012	Change 11-12
Cyclist Type					
Adult	100	100	93	**69**	**24**
School child	0	0	7	**31**	**24**
Helmet Wearing					
Helmet on head	100	93	87	**79**	**-8**
No helmet	0	7	13	**21**	**8**
Gender					
Male	-	-	80	**76**	**-4**
Female	-	-	20	**24**	**4**
Can't tell	-	-	0	**0**	**0**
Where Riding					
Road	88	57	47	**38**	**-9**
Footpath	12	14	13	**0**	**-13**
Off-road Cycleway	-	29	40	**62**	**22**
Base:	***8***	***14***	***15***	***29***	

- Morning cycle volumes are low over the entire monitoring period, with a slight peak occurring between 7:20am and 7:29am (6 cyclists). This compares with no more than two cyclists over any ten minute interval in 2011.

Figure 3.2: Cyclist Frequency

Richardson/Maioro Street 2009 – 2012 (n)



3.3 Evening Peak

Environmental Conditions

- The weather was fine but overcast at the start of the shift. Light rain was observed from 4:41 pm, and persisted through to the end of the evening monitoring shift.
- There were no road works that may affect cycle counts.

Key Points

- The total number of evening cycle movements recorded at the Richardson/Maioro Street intersection is 24 (stable from 22 movements last year).
- The key movement in the evening is turning left from Richardson Road into Maioro Street (Movement 2 = 6 cyclists).
- The most notable change in evening cyclist movements in 2012 is at Movement 4 (down 7 cyclists).

Table 3.3: Evening Cyclist Movements

Richardson/Maioro Street 2009 – 2012 (n)

Movement	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	0	6	1	**1**	**0**
2	4	2	1	**6**	**5**
3	1	1	2	**3**	**1**
4	1	1	9	**2**	**-7**
5	1	0	1	**0**	**-1**
6	1	1	0	**0**	**0**
7	4	5	3	**4**	**1**
8	-	0	3	**0**	**-3**
9	-	3	1	**1**	**0**
10	-	4	1	**4**	**3**
11	1	2	0	**3**	**3**
12	-	0	0	**0**	**0**
Total	**13**	**25**	**22**	**24**	**2**

Note: In 2009, Movements 8, 9, 10 and 12 were not possible.

- The majority of cyclists at this intersection are adults (75 per cent, down from 91 per cent last year).
- Three-quarters of cyclists are wearing a helmet (75 per cent, stable from 77 per cent last year).
- Ninety-two per cent of cyclists are male.
- Over half of the cyclists at this intersection are riding on the off-road cycleway (54 per cent, unchanged from last year). The remainder are riding on the road (up 14 percentage points from last year). No cyclists are riding on the footpath.

Table 3.4: Evening Cyclist Characteristics

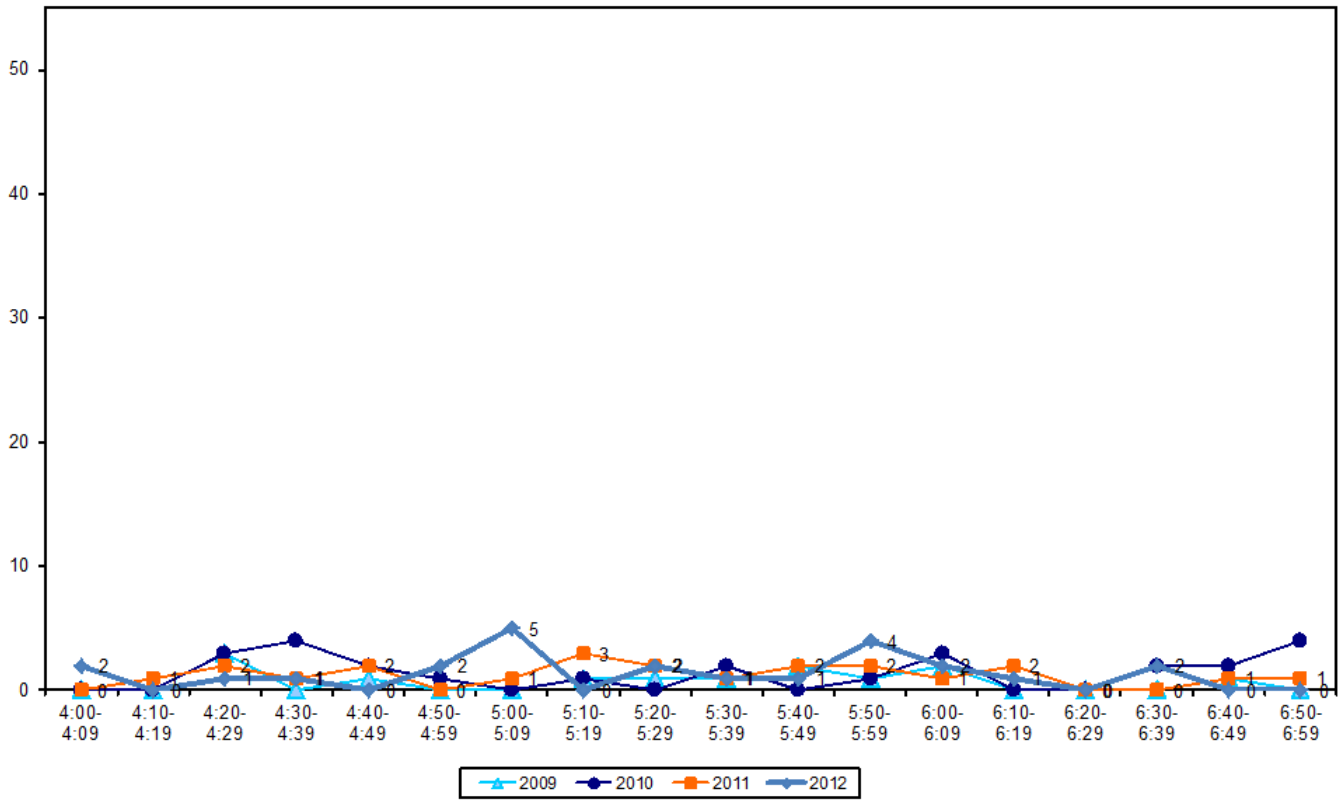
Richardson/Maioro Street 2009 – 2012 (%)

	2009	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type					
Adult	100	80	91	**75**	**-16**
School child	0	20	9	**25**	**16**
Helmet Wearing					
Helmet on head	85	76	77	**75**	**-2**
No helmet	15	24	23	**25**	**2**
Gender					
Male	-	-	86	**92**	**6**
Female	-	-	9	**8**	**-1**
Can't tell	-	-	5	**0**	**-5**
Where Riding					
Road	46	16	32	**46**	**14**
Footpath	54	16	14	**0**	**-14**
Off-road cycleway	-	68	54	**54**	**0**
Base:	***13***	***25***	***22***	***24***	

- The volume of cycle movements remains relatively low over the entire evening peak, with two slight peaks between 5:00pm and 5:09pm (5 movements) and between 5:50pm and 5:59pm (4 movements). This compares with no more than three cyclists recorded during all ten minute intervals in 2011.

Figure 3.3: Evening Peak Cyclist Frequency

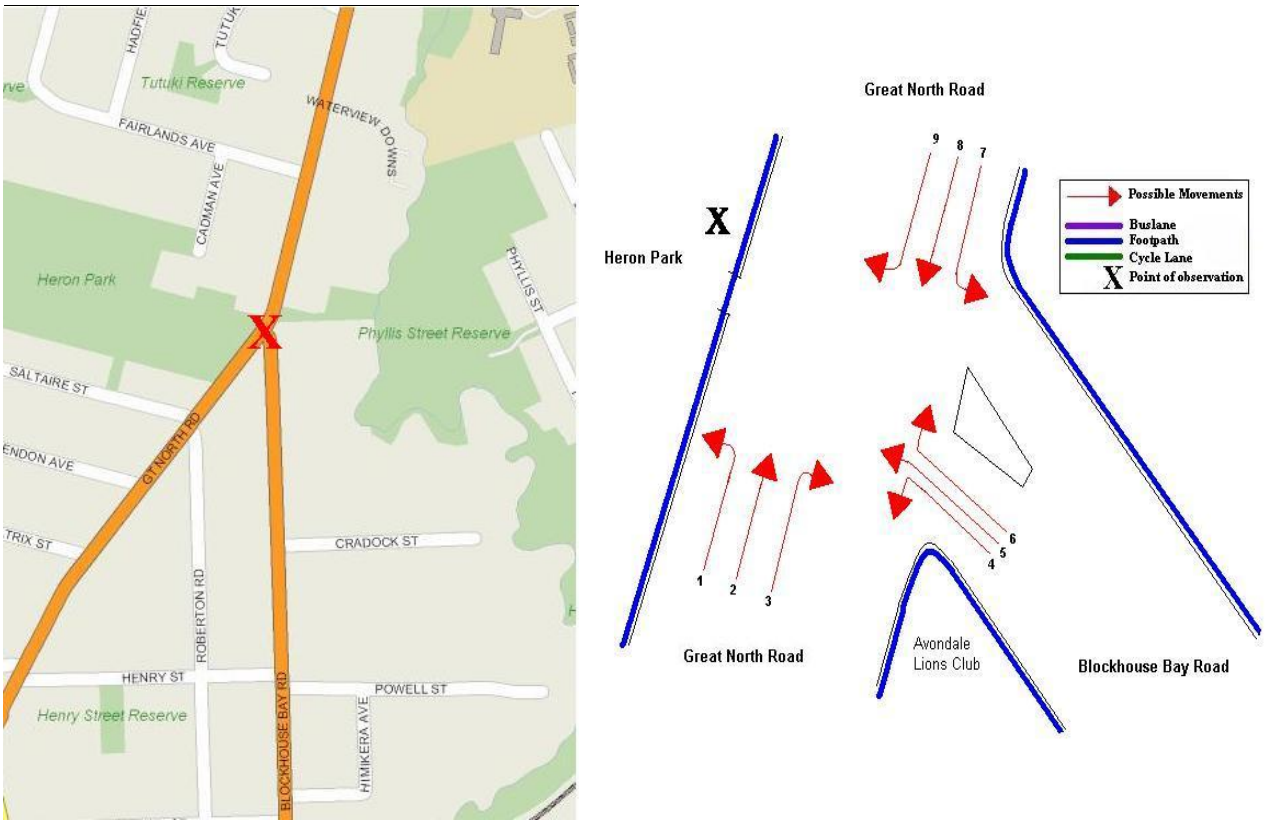
Richardson/Maioro Street 2009 – 2012 (n)



4. BLOCKHOUSE BAY ROAD/GREAT NORTH ROAD, AVONDALE (SITE 73)

Figure 4.1 shows the possible cyclist movements at this intersection.

Figure 4.1: Cycle Movements: Blockhouse Bay/Great North Road



4.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2008	57	60	117	170
2009	57	62	119	173
2010	66	75	141	204
2011	56	73	129	186
2012	**60**	**69**	**129**	**187**

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

- Sixty movements were recorded at the Blockhouse Bay/Great North Road site, up from 56 movements in 2011.
- The key morning movements are straight through Great North Road (Movement 2 = 36 cyclists) and the right turn out of Blockhouse Bay Road into Great North Road (Movement 6 = 11 cyclists).
- The most notable increase in cyclist movements in the morning at this site was at Movement 2 (up 13 cyclists).

Table 4.1: Morning Cyclist Movements

Blockhouse Bay/Great North Road 2008 – 2012 (n)

Movement	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	0	0	0	0	0	**0**
2	29	28	33	23	36	**13**
3	0	0	2	0	0	**0**
4	0	1	1	0	1	**1**
5	0	0	0	0	0	**0**
6	16	14	16	21	11	**-10**
7	3	4	2	4	4	**0**
8	9	10	12	8	6	**-2**
9	0	0	0	0	0	**0**
Total	**57**	**57**	**66**	**56**	**60**	**4**

- Over the morning peak, most cyclists are adults (93 per cent, an increase from 82 per cent in 2011).
- Most cyclists are wearing a helmet (88 per cent, a decrease from 98 per cent at the previous measure).
- Most cyclists are male (85 per cent).
- Fifty-seven per cent of cyclists are riding on the road, an increase from 50 per cent last year.

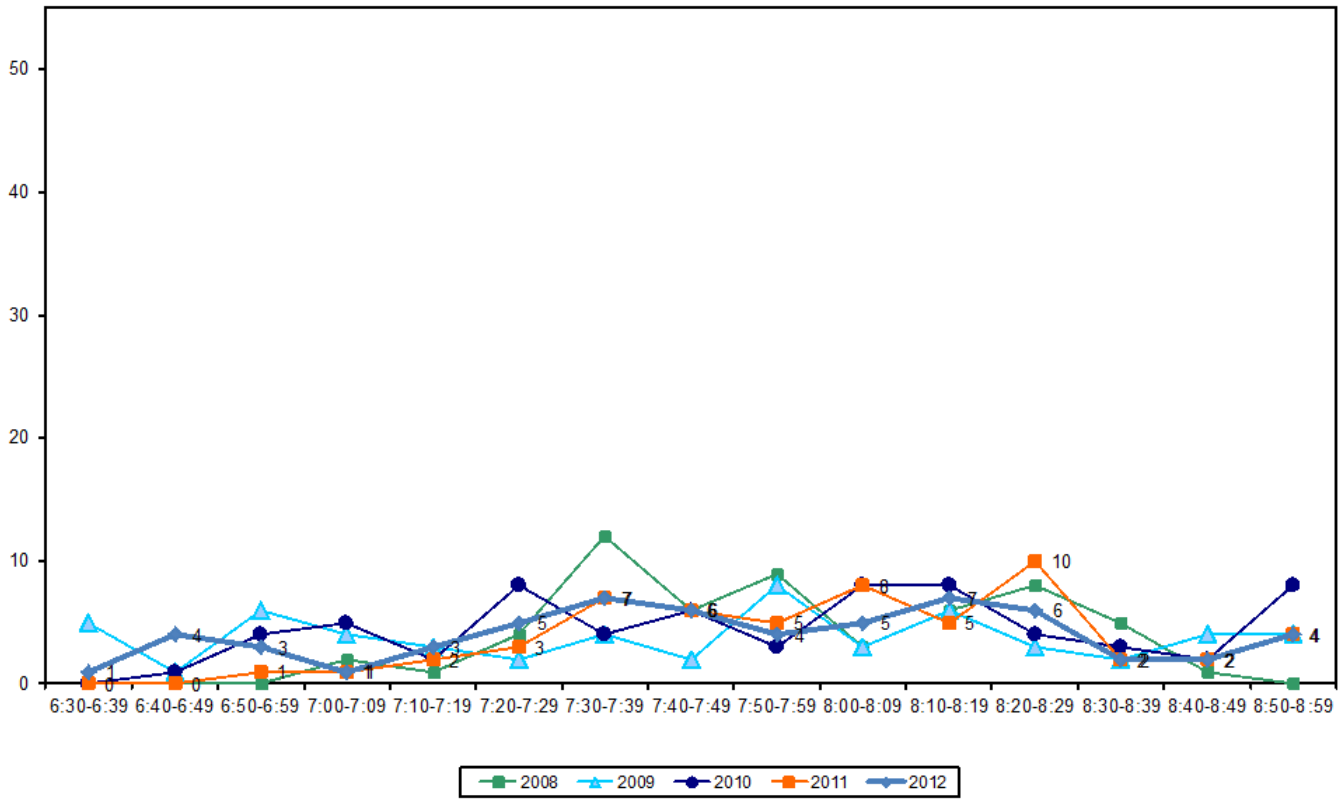
Table 4.2: Morning Cyclist Characteristics

Blockhouse Bay/Great North Road 2008 – 2012 (%)

	2008	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type						
Adult	89	65	92	82	**93**	**11**
School child	11	35	8	18	**7**	**-11**
Helmet Wearing						
Helmet on head	93	88	95	98	**88**	**-10**
No helmet	7	12	5	2	**12**	**10**
Gender						
Male	-	-	-	86	**85**	**-1**
Female	-	-	-	5	**13**	**8**
Can't tell	-	-	-	9	**2**	**-7**
Where Riding						
Road	44	65	62	50	**57**	**7**
Footpath	56	35	38	50	**43**	**-7**
Base:	***57***	***57***	***66***	***56***	***60***	

- Morning cycle volumes peak slightly between 7:30am and 7:39am (7 cyclists) and then again between 8:10am and 8:19am (7 movements). This compares with slight peaks between 8:20am and 8:29am (10 movements) in 2011.

Figure 4.2: Morning Peak Cyclist Frequency
Blockhouse Bay/Great North Road (n) 2008 – 2012



4.3 Evening Peak

Environmental Conditions

- The weather was fine throughout most of the evening shift, with the exception of rain showers between 4:15pm and 6:00pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of evening peak cycle movements recorded at the Blockhouse Bay/Great North Road site is 68, down from 2011 (73 movements).
- The most common movement in the evening is straight through Great North Road in a south-westerly direction (Movement 8 =39 cyclists).
- Cyclist volumes over the evening period have increased most notably at Movement 8 (up 12 cyclists).

Table 4.3: Evening Cyclist Movements

Blockhouse Bay/Great North Road 2008 – 2012 (n)

Movement	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	0	0	0	0	**0**	**0**
2	14	15	17	15	**10**	**-5**
3	0	0	2	1	**2**	**1**
4	0	1	0	0	**1**	**1**
5	0	2	0	0	**0**	**0**
6	1	2	4	6	**5**	**-1**
7	15	13	15	20	**10**	**-10**
8	30	28	37	27	**39**	**12**
9	0	1	0	4	**1**	**-3**
Total	**60**	**62**	**75**	**73**	**68**	**-5**

- Over the evening peak, all cyclists at this site are adults (100 per cent, up slightly from 95 per cent last year).
- Most cyclists at this site are wearing a helmet (94 per cent, up from 89 per cent at the previous measure).
- The majority of cyclists are recorded as male (87 per cent).
- Seventy-five per cent of cyclists are riding on the road, up slightly from 70 per cent in 2011.

Table 4.4: Evening Cyclist Characteristics

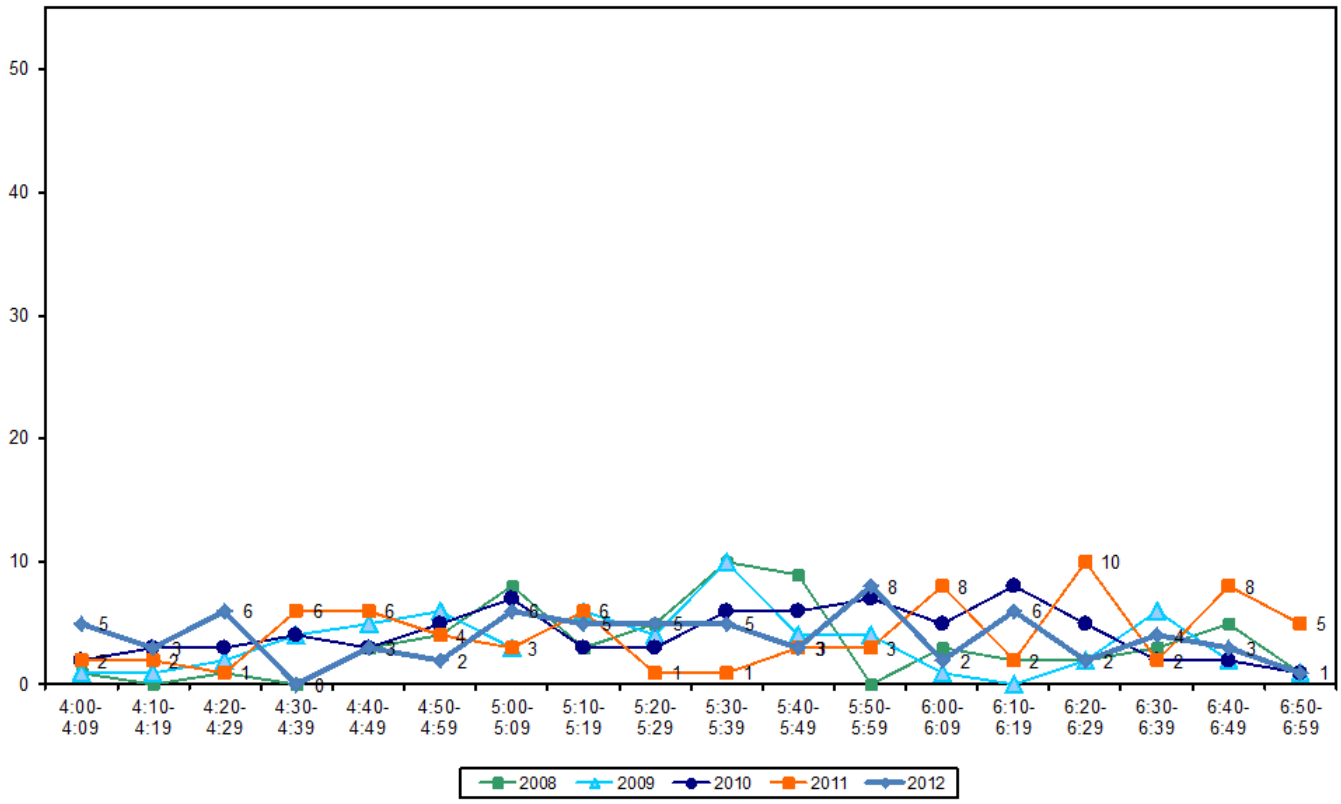
Blockhouse Bay/Great North Road 2008 – 2012 (%)

	2008	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type						
Adult	90	76	96	95	**100**	**5**
School child	10	24	4	5	**0**	**-5**
Helmet Wearing						
Helmet on head	87	81	93	89	**94**	**5**
No helmet	13	19	7	11	**6**	**-5**
Gender						
Male	-	-	-	86	**87**	**1**
Female	-	-	-	12	**12**	**0**
Can't tell	-	-	-	1	**1**	**0**
Where Riding						
Road	67	56	72	70	**75**	**5**
Footpath	33	44	28	30	**25**	**-5**
Base:	***60***	***62***	***75***	***73***	***68***	

- Evening cycle volumes vary throughout the monitoring period to peak between 5:50pm and 5:59pm (8 cyclists), as well as three smaller peaks evident between 4:20pm and 4:29pm, 5:00pm and 5:09pm and between 6:10pm and 6:19pm (6 cyclists per ten minute interval). This compares to a peak between 6:20pm and 6:29pm (10 cyclists) in 2011.

Figure 4.3: Evening Peak Cyclist Frequency

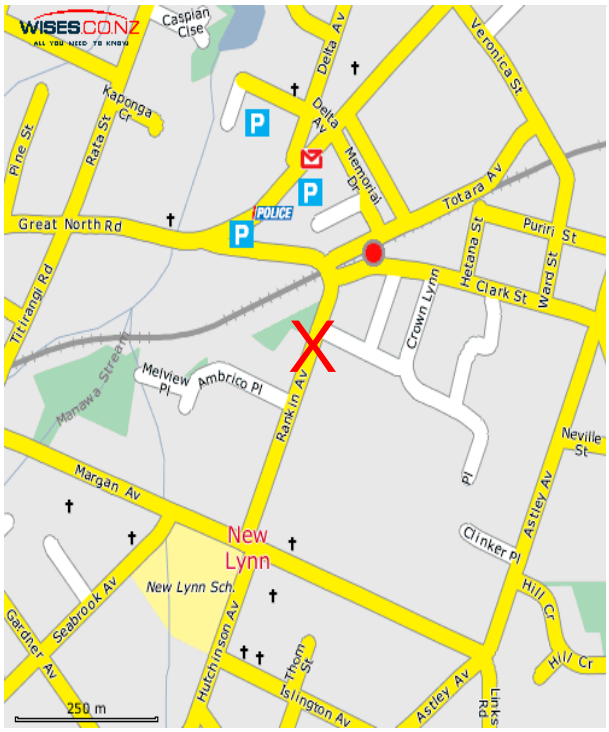
Blockhouse Bay/Great North Road (n) 2008 – 2012

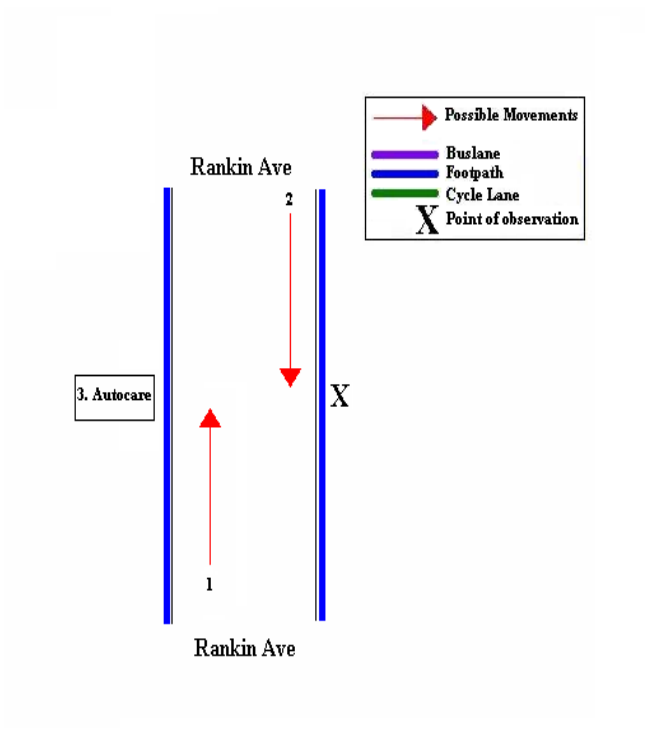


5. 3 RANKIN AVENUE, NEW LYNN (SITE 56)

Figure 5.1 shows the possible cyclist movements at this site.

Figure 5.1: Cycle Movements: 3 Rankin Avenue





5.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	16	15	31	45
2008	17	21	38	55
2009	21	17	38	56
2010	12	20	32	46
2011	16	26	42	60
2012	**20**	**18**	**38**	**55**

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

- The volume of morning cyclists at 3 Rankin Avenue has increased slightly this year, with 20 cycle movements recorded (compared with 16 movements in 2011).
- The most common movement in the morning is straight along Rankin Avenue heading north (Movement 1 = 19 cyclists, up 4 cyclists from last year).

Table 5.1: Morning Cyclist Movements

3 Rankin Avenue 2007 – 2012 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	12	15	18	10	15	**19**	**4**
2	4	2	3	2	1	**1**	**0**
Total	**16**	**17**	**21**	**12**	**16**	**20**	**4**

- Over the morning peak, all those using this site are adults (the same as last year).
- Eighty per cent of cyclists are wearing a helmet (stable from 81 per cent last year).
- Most cyclists using this site are male (90 per cent).
- Just over half of cyclists are riding on the road (55 per cent, down from 63 per cent last year). The remaining cyclists are riding on the footpath (45 per cent, up from 37 per cent in 2011).

Table 5.2: Morning Cyclist Characteristics

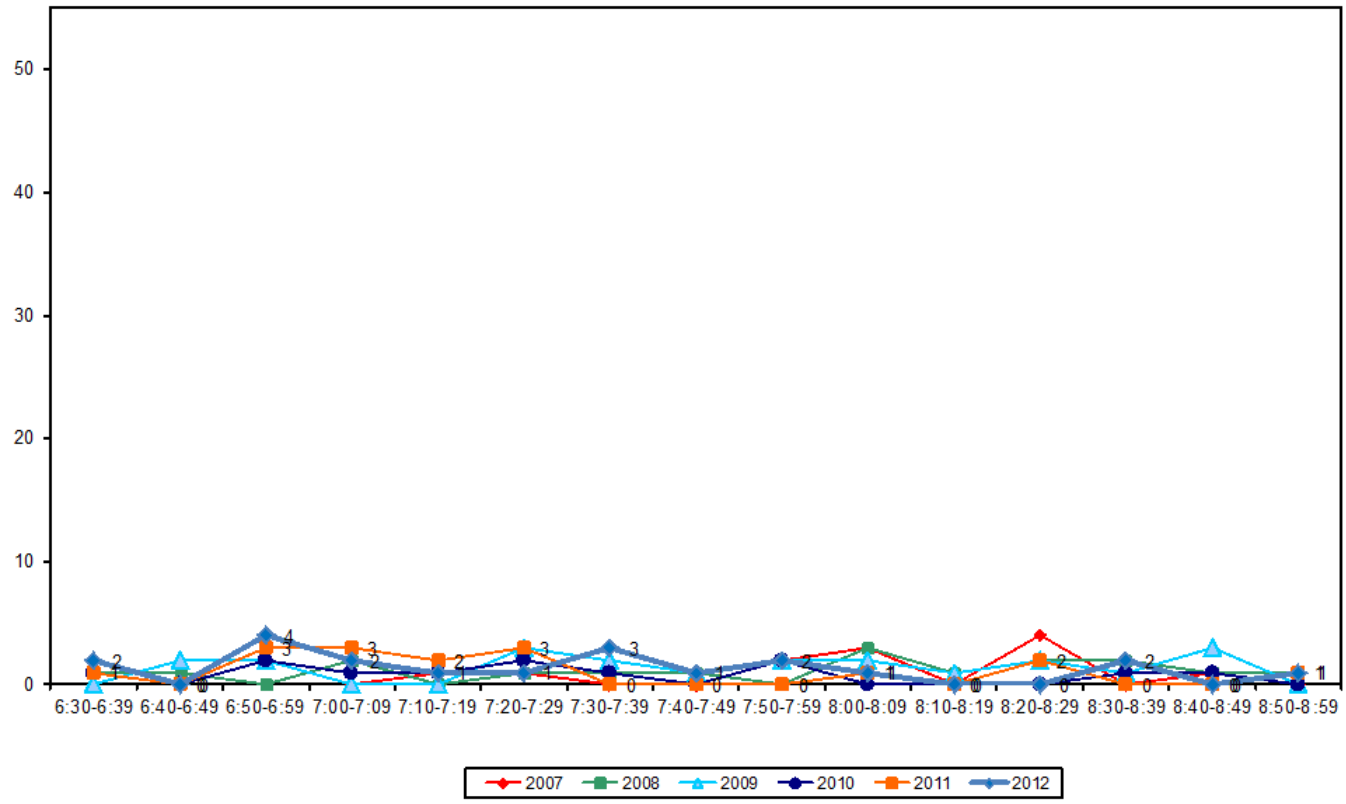
3 Rankin Avenue 2007 – 2012 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	**Change 11-12**
Cyclist Type							
Adult	100	88	52	100	100	**100**	**0**
School child	0	12	48	0	0	**0**	**0**
Helmet Wearing							
Helmet on head	75	76	62	83	81	**80**	**-1**
No helmet	25	24	38	17	19	**20**	**1**
Gender							
Male	-	-	-	-	81	**90**	**9**
Female	-	-	-	-	19	**10**	**-9**
Can't tell	-	-	-	-	0	**0**	**0**
Where Riding							
Road	69	53	38	67	63	**55**	**-8**
Footpath	31	47	62	33	37	**45**	**8**
Base:	***16***	***17***	***21***	***12***	***16***	***20***	

- The volume of morning cycle movements is very low over the entire monitoring period, with no more than four cyclist movements occurring in any of the ten minute monitoring intervals. This is similar to last year where no more than three cyclists recorded as using the site in any of the ten minute intervals.

Figure 5.2: Morning Peak Cyclist Frequency

3 Rankin Avenue 2007 – 2012 (n)



5.3 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, with the exception of drizzle between 4:50pm and 5:25pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- This year, the total number of cycle movements recorded in the evening at 3 Rankin Avenue decreased, from 26 in 2011 to 18 movements.
- The key evening movement is straight along Rankin Avenue heading south (Movement 2 = 18 cyclists).
- Cycle volumes have decreased most notably at Movement 1, down 7 movements from last year.

Table 5.3: Evening Cyclist Movements

3 Rankin Avenue 2007 – 2012 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
1	6	5	3	5	7	**0**	**-7**
2	9	16	14	15	19	**18**	**-1**
Total	**15**	**21**	**17**	**20**	**26**	**18**	**-8**

- The greatest share of cyclists using this site are adults (94 per cent, up from 81 per cent last year).
- Seventy-eight per cent of cyclists at this site are wearing a helmet, an increase from 73 per cent in the previous year.
- Most cyclists are recorded as being male (89 per cent, stable from 88 per cent in 2011).
- Fifty-six per cent of all cyclists at this site in the evening are riding on the footpath, up notably from 38 per cent last year.

Table 5.4: Evening Cyclist Characteristics

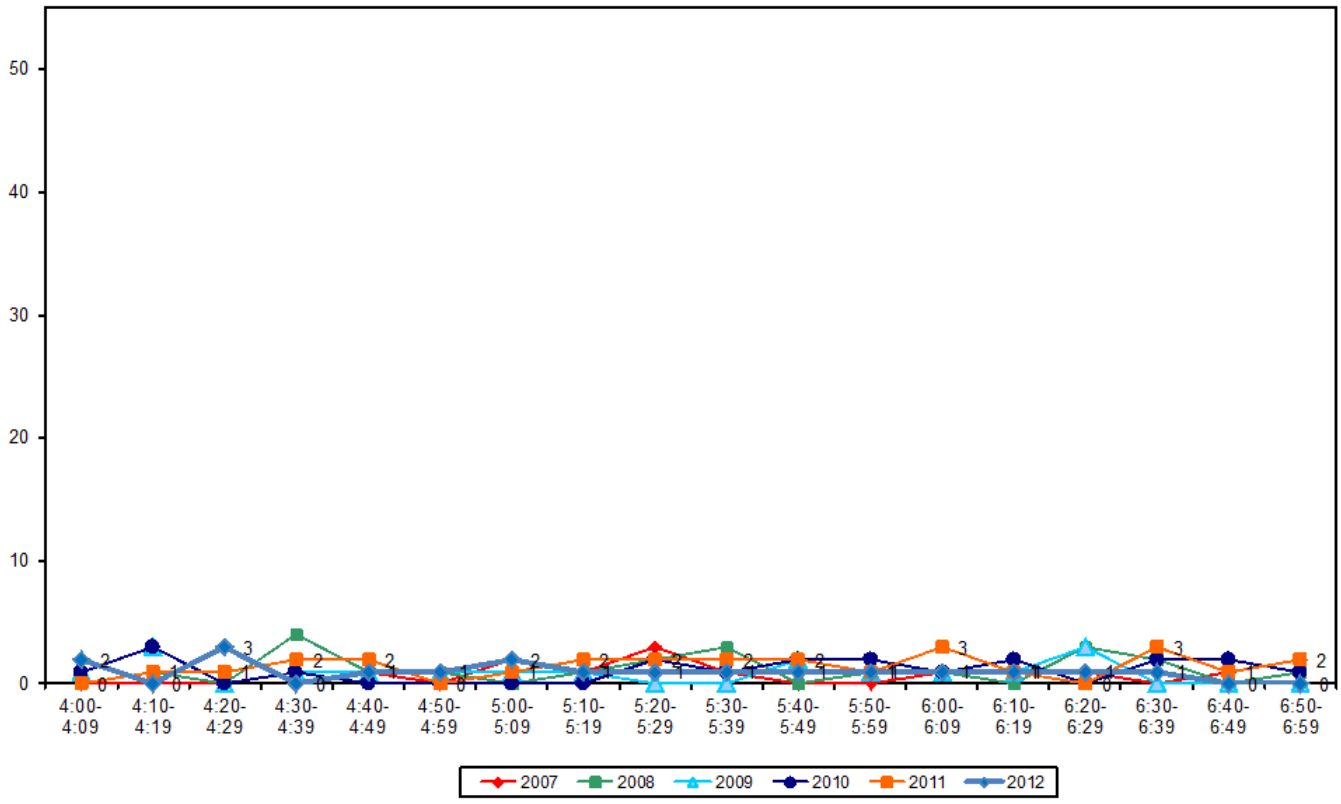
3 Rankin Avenue 2007 – 2012 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	Change 11-12
Cyclist Type							
Adult	87	81	71	85	81	**94**	**13**
School child	13	19	29	15	19	**6**	**-13**
Helmet Wearing							
Helmet on head	73	62	82	60	73	**78**	**5**
No helmet	27	38	18	40	27	**22**	**-5**
Gender							
Male	-	-	-	-	88	**89**	**1**
Female	-	-	-	-	12	**11**	**-1**
Can't tell	-	-	-	-	0	**0**	**0**
Where Riding							
Road	33	48	53	40	62	**44**	**-18**
Footpath	67	52	47	60	38	**56**	**18**
Base:	***15***	***21***	***17***	***20***	***26***	***18***	

- The volume of cycle movements remains low over the entire evening peak, with no more than three cyclists recorded passing over most ten minute intervals. This trend is consistent with previous years.

Figure 5.3: Evening Peak Cyclist Frequency

3 Rankin Avenue 2007 – 2012 (n)



6. 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 nine schools in the Whau ward participated in the school bike shed count.
- Most of these schools do not have policies that restrict students cycling to school[9].
- The designated count day was Tuesday 6th of March[10].

Key Points

- Of those eligible to cycle at school, on average, two per cent of students are cycling to their schools. This compares with one per cent in 2011.
- Across the nine eligible schools that responded, n=81 students were reported to cycle to school.
- Blockhouse Bay Intermediate reported the highest share of cyclists – 5 per cent of all eligible students currently cycling.
- Of the six schools that participated in the count in both 2011 and 2012, two (Blockhouse Bay Intermediate and Immanuel Christian School) reported an increase in the share of students cycling to school.
- Of the nine eligible schools that responded, one (11 per cent) had no students cycling to school.

[9] Green Bay Primary and Intermediate School policy states *"No child to ride a bike to school under the age of 9 years (Police guidelines are 9 years or Year 5), unless accompanied by an adult"*.

[10] The following schools undertook counts on alternative days:
- Blockhouse Bay Intermediate – Thursday 10th March
- Wesley Intermediate – Thursday 24th March
- Glenavon School – Tuesday 29th March
- St Dominic's Catholic Primary School – Thursday 31st March

Table 6.1 shows the results of the nine schools surveyed in Whau ward.

Table 6.1: Summary Table of School Bike Count

2007 – 2012 (n)

School Name	*School Type*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible[1]*					
				2012	*2011*	*2010*	*2009*	*2008*	*2007*
Blockhouse Bay Intermediate	Intermediate	870	43	**5%**	3%	-	3%	4%	4%
Green Bay Primary and Intermediate School	Full Primary	415	8	**2%**	3%	-	-	-	-
Immanuel Christian School	Composite	128	2	**2%**	0%	-	2%	1%	1%
Avondale Intermediate School	Intermediate	338	5	**1%**	-	-	-	-	-
Green Bay High School	Secondary	1320	17	**1%**	1%	1%	1%	1%	1%
Kelston Boys High School	Secondary	976	3	**<1%**	<1%	<1%	0%	1%	1%
Kelston Intermediate	Intermediate	300	2	**1%**	-	-	-	-	-
Wesley Intermediate School	Intermediate	131	1	**1%**	-	-	-	-	-
Glenavon School	Full Primary	246	0	**0%**	0%	-	-	-	-
Total		**4724**	**81**	**2%**	1%	-	-	-	-

Table 6.2 illustrates the rates of cycling to school at different school levels. Rates of cycling to school are highest among intermediate schools (3 per cent), while full primary and secondary schools had the lowest rates of cycling (one per cent each).

Table 6.2: Summary Table of School Bike Count by School Type

2007 – 2012 (%)

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

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[11] 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)[12], 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.

[11] Annual average daily traffic

[12] 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%