gravitas

Research Report Prepared for
Auckland Transport

May 2013

2013 Auckland Region Manual Cycle Monitor

- Whau Ward -

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

TABLE OF CONTENTS

1. WHAU WARD SUMMARY OF RESULTS

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].

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:

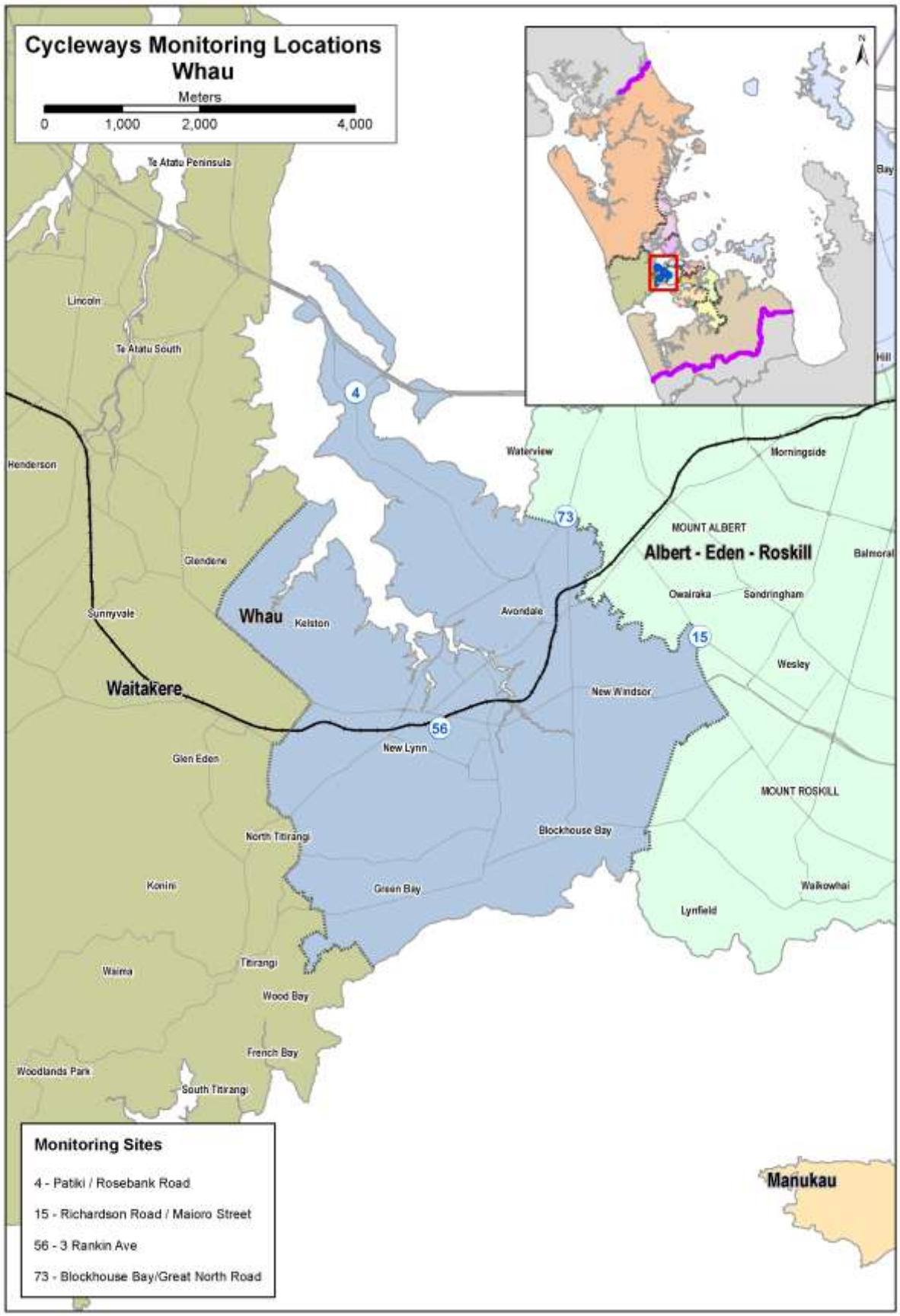
- standard monitoring days are used – that is, school and tertiary holidays, and statutory holidays are excluded and that monitoring preferably takes place at the same time each year to enable reliable year-on-year comparisons to be made. Decisions about whether cycle counts take place on weekdays and 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 previous years, 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: 2013 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 85 different sites throughout the region. Sites were distributed by ward as follows:

- Albany 15 sites
- Albert-Eden–Roskill 11 sites
- Franklin 2 sites
- Howick 5 sites
- Manukau 10 sites
- Manurewa-Papakura 4 sites
- Maungakiekie-Tamaki 7 sites
- North Shore 8 sites
- Orakei 3 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 5th, 6th, 7th, 12th, 13th, or 14th of March.

Counts were conducted on the following days:

- Tuesday 5th March — Albany, North Shore, Waitakere
- Wednesday 6th March — Howick, Franklin, Manukau, Waitemata & Gulf
- Thursday 7th March — Whau, Albert-Eden-Roskill, Orakei, Manurewa-Papakura, Maungakiekie-Tamaki

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 four count days in 2013 was as follows:

Tuesday 5th March

- Sunrise: 7:10am; Sunset: 7:55pm.
- Highest temperature: 24.0 degrees Celsius.
- Mostly fine weather with a few sites experiencing light drizzle in the morning and cloud in the evening.

Wednesday 6th March

- Sunrise: 7:11am; Sunset: 7:53pm.
- Highest temperature: 24.0 degrees Celsius.
- Mostly fine weather with clear sky in the morning and evening shifts.

Thursday 7th March

- Sunrise: 7:12am; Sunset: 7:52pm.
- Highest temperature: 26.0 degrees Celsius.
- Mostly fine weather with some clouds for some sites in 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).
- 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.

[6] http://www.ltsa.govt.nz/road-user-safety/walking-and-cycling/cycle-network/appendix2.html

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].

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.

[7] ViaStrada is a traffic engineering and transport planning consultancy based in Christchurch, New Zealand.
[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=306) 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 5th 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 2013, 283 responses were received, a response rate of 92 per cent. (This compares with 74 per cent in 2012).

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 Thursday 7th of March, 2013. Sunrise was at 7:12am and sunset at 7:52pm; highest temperature was 26.0 degree 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 sites had road works or accidents that would have affected cycle counts.

Key Points

- A total of 159 cyclist movements were recorded across the four sites in the morning peak period (between 7:00am and 9:00am) in 2013. It represents a one per cent decrease on the result for 2012 (161 movements).
- The average volume of morning cyclists across the four sites in the Whau ward was 40 cycle movements, unchanged from 2012.
- The busiest site in the Whau ward this year was Blockhouse Bay/Great North Road (73 movements, a 22 per cent increase since last year).
- In contrast, cycle movement numbers were lowest at 3 Rankin Avenue (15 movements, down 25 per cent from 2012).
- Most sites recorded declines in cycle volumes this year compared to 2012, the most noticeable being 3 Rankin Avenue – down 25 per cent. Blockhouse Bay/Great North Road was the only site that saw an increase.

Table 1.1: Summary of Morning Cyclist Movements

2007 – 2013 (n) – 6.30 to 9.00 am

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13	Change 07-13
4	Patiki/Rosebank Road	37	34	38	38	56	52	**46**	**-12%**	**24%**
56	3 Rankin Avenue, New Lynn	16	17	21	12	16	20	**15**	**-25%**	**-6%**
	Average per site (2 sites in 2007)	**27**	**26**	**30**	**25**	**36**	**36**	**31**	**-14%**	**15%**
	Total (2 sites in 2007)	**53**	**51**	**59**	**50**	**72**	**72**	**61**	**-15%**	**15%**
73	Blockhouse Bay/Great North Road	-	57	57	66	56	60	**73**	**22%**	**-**
15	Richardson Road/Maioro Street	-	-	8	14	15	29	**25**	**-14%**	**-**
	Average per site (3 sites in 2008, 4 sites from 2009)	**-**	**36**	**31**	**33**	**36**	**40**	**40**	**0%**	**-**
	Total (3 sites in 2008, 4 sites from 2009)	**-**	**108**	**124**	**130**	**143**	**161**	**159**	**-1%**	**-**

- Stable from last year, the majority of cyclists were adults (91 per cent).
- There has been an increase in the incidence of helmet-wearing (92 per cent, up from 86 per cent in 2012).
- The majority of cyclists were male (86 per cent).
- Riding on the road remained the most prevalent (51 per cent, slightly down from 56 per cent in 2012). Thirty-eight per cent rode on the footpath (up 5 percentage points from 2012). The remaining 11 per cent were riding on the off-road cycleway (unchanged from 2012).

Table 1.2: Summary of Morning Cyclist Characteristics

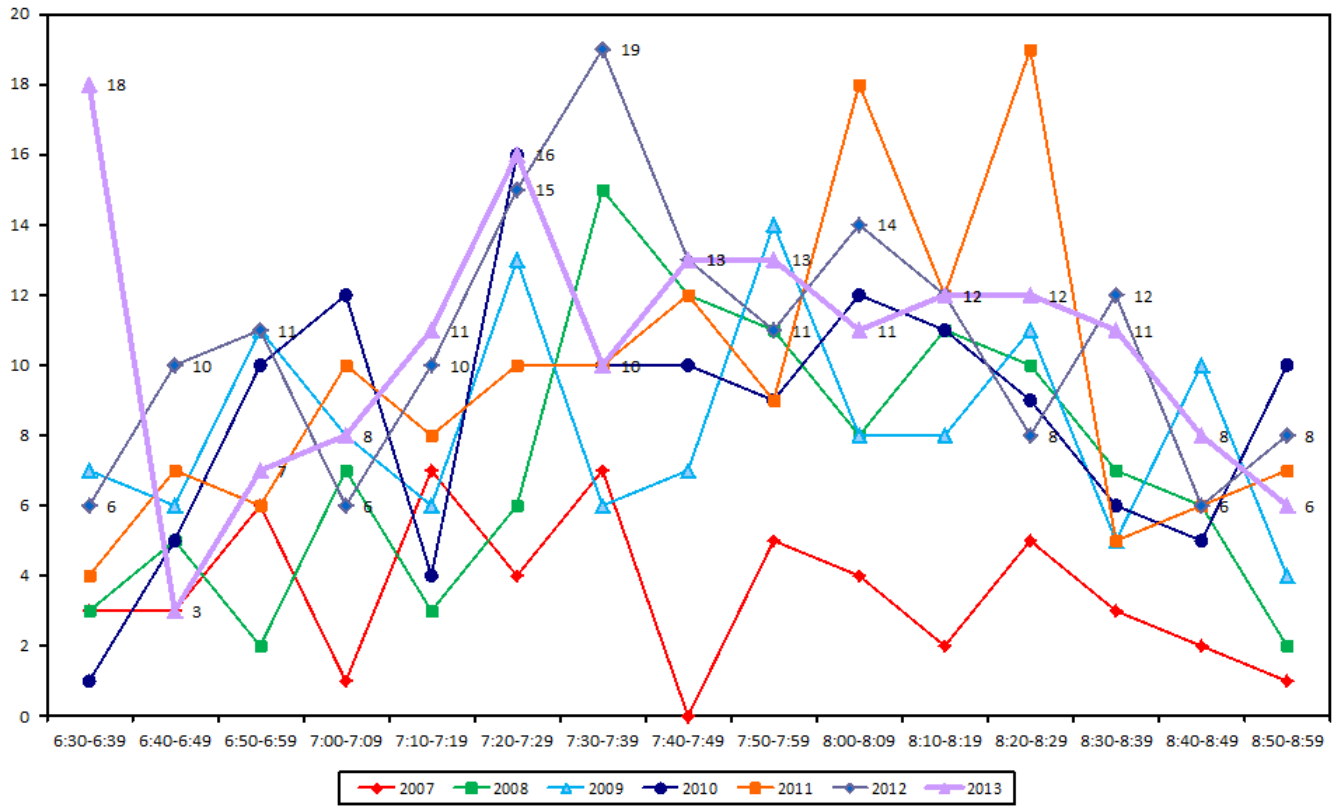
2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	96	93	75	95	91	92	**91**	**-1**
School child	2	7	25	5	9	8	**9**	**1**
Helmet Wearing								
Helmet on head	79	89	86	92	92	86	**92**	**6**
No helmet	21	11	14	8	8	14	**8**	**-6**
Gender								
Male	-	-	-	-	84	84	**86**	**2**
Female	-	-	-	-	13	15	**13**	**-2**
Can't tell	-	-	-	-	3	1	**1**	**0**
Where Riding								
Road	60	46	65	68	54	56	**51**	**-5**
Footpath	40	54	35	29	42	33	**38**	**5**
Off-road cycleway	-	-	-	3	4	11	**11**	**0**
Base:	***53***	***108***	***124***	***130***	***143***	***161***	***159***	

- Figure 1.2 illustrates the total number of morning cyclists by time of movement across the four sites monitored in the Whau ward. Cycle traffic started off as a peak (18 movements), then dropped suddenly to three cyclists. Volumes then increased to remain above ten movements until 8:39am, after which the traffic declined through to the end of the shift.

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

2007 – 2013 (n)



1.5 Evening Peak Summary Results

Environmental Conditions

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

Key Points

- A total of 175 cyclist movements were recorded across the four sites in the evening peak period (between 4:00pm and 7:00pm) in 2013. This represented a 14 per cent increase on the result for 2012 (154 movements).
- The average volume of evening cyclists across the four sites in the Whau ward was 44 cycle movements, 5 more movements than last year, a 13 per cent increase.
- The two busiest sites in the Whau ward this year were Blockhouse Bay/Great North Road (68 movements) and Patiki/Rosebank Road (59 movements).
- Evening cycle movements were lowest at Richardson Road/Maioro Street (23 movements recorded).
- The greatest increase in cycle traffic was recorded at 3 Rankin Avenue, New Lynn – up 39 per cent.

Table 1.3: Summary of Evening Cyclist Movements
2007 – 2013 (n) – 4.00pm to 7.00 pm

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13	Change 07-13
4	Patiki/Rosebank Road	45	45	34	52	65	43	**59**	**37%**	**31%**
56	3 Rankin Avenue, New Lynn	15	21	17	20	26	18	**25**	**39%**	**67%**
	Average per site (2 sites in 2007)	**30**	**33**	**26**	**36**	**46**	**31**	**42**	**35%**	**40%**
	Total (2 sites in 2007)	**60**	**66**	**51**	**72**	**91**	**61**	**84**	**38%**	**40%**
73	Blockhouse Bay/Great North Road	-	60	62	75	73	69	**68**	**-1%**	-
15	Richardson Road/Maioro Street	-	-	13	25	22	24	**23**	**-4%**	-
	Average per site (3 sites in 2008, 4 sites from 2009)	**-**	**42**	**32**	**43**	**47**	**39**	**44**	**13%**	-
	Total (3 sites in 2008, 4 sites from 2009)	**-**	**126**	**126**	**172**	**186**	**154**	**175**	**14%**	-

- Like last year, the majority of cyclists were adults (96 per cent, stable from 95 per cent at the previous measure).
- As in 2012, most cyclists wore helmets (88 per cent, stable from 90 per cent in 2012).
- The majority of cyclists were male (85 per cent, stable from 87 per cent last year).
- Riding on the road was still most common (59 per cent, stable from 2012).

Table 1.4: Summary of Evening Cyclist Characteristics

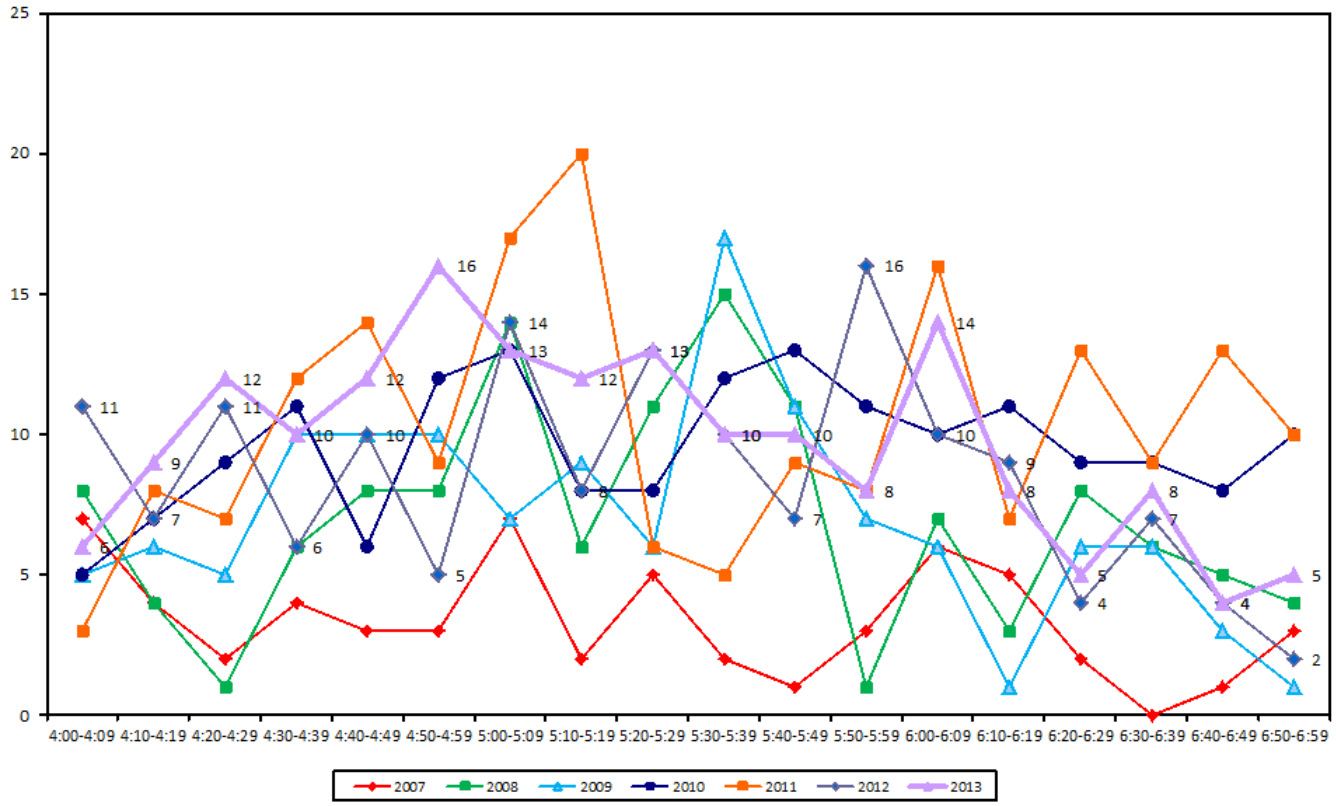
2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	97	92	84	94	94	95	**96**	**1**
School child	3	8	16	6	6	5	**4**	**-1**
Helmet Wearing								
Helmet on head	85	82	84	85	85	90	**88**	**-2**
No helmet	15	18	16	15	15	10	**12**	**2**
Gender								
Male	-	-	-	-	84	87	**85**	**-2**
Female	-	-	-	-	15	12	**15**	**3**
Can't tell	-	-	-	-	1	1	**0**	**-1**
Where Riding								
Road	48	62	63	61	60	60	**59**	**-1**
Footpath	52	38	37	29	33	32	**32**	**0**
Off-road cycleway	-	-	-	10	7	8	**9**	**1**
Base:	***60***	***126***	***126***	***172***	***186***	***154***	***175***	

- Figure 1.3 shows the total number of evening cyclists by time of movement across the four sites monitored in the Whau ward. Cycle volumes fluctuated during the entire shift, but with traffic slightly heavier in the middle of the shift than at the start and end. The maximum number of cyclists within a ten minute interval was 16 (between 4:50pm to 4:59pm).

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

2007 – 2013 (n)



1.6 Aggregated Total Summary Results

- A total of 334 cyclist movements were recorded across the four sites in 2013. This represents a six per cent increase when compared with 2012 (315 movements).
- The average number of movements per site was 84 (up from 79 in 2012).
- The busiest site this year continued to be Blockhouse Bay/Great North Road, with a total of 141 movements (up 9 per cent from 2012).
- 3 Rankin Avenue in New Lynn had the fewest cycle movements (40 movements).
- Richardson Road/Maioro Street was the only site that experienced a decrease in cycle volume – down 9 per cent from 2012.

Table 1.5: Summary of Total Cyclist Movements
2007 – 2013 (n) – 6.30 to 9.00 am & 4.00 to 7.00 pm

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13	Change 07-13
4	Patiki/Rosebank Road	82	79	72	90	121	95	**105**	**11%**	**28%**
56	3 Rankin Avenue, New Lynn	31	38	38	32	42	38	**40**	**5%**	**29%**
	Average per site (2 sites in 2007)	**57**	**59**	**55**	**61**	**82**	**67**	**73**	**9%**	**28%**
	Total (2 sites in 2007)	**113**	**117**	**110**	**122**	**163**	**133**	**145**	**9%**	**28%**
73	Blockhouse Bay/Great North Road	-	117	119	141	129	129	**141**	**9%**	**-**
15	Richardson Road/Maioro Street	-	-	21	39	37	53	**48**	**-9%**	**-**
	Average per site (3 sites in 2008, 4 sites from 2009)	**-**	**78**	**63**	**76**	**82**	**79**	**84**	**6%**	**-**
	Total (3 sites in 2008, 4 sites from 2009)	**-**	**234**	**250**	**302**	**329**	**315**	**334**	**6%**	**-**

- Unchanged from last year, 94 per cent of cyclists were adults.
- Helmet-wearing continued to be widespread (90 per cent, stable from 2012).
- The greatest share of cyclists was male (86 per cent).
- The majority of cyclists were riding on the road (55 per cent, stable from 2012), 10 per were riding on the off-road cycleway (unchanged from 2012), with the remaining 35 per cent riding on the footpath (stable from 33 per cent in 2012).

Table 1.6: Summary of Total Cyclist Characteristics

2007 – 2013 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Cyclist Type								
Adult	96	92	80	94	93	94	**94**	**0**
School child	4	8	20	6	7	6	**6**	**0**
Helmet Wearing								
Helmet on head	82	85	85	88	88	88	**90**	**2**
No helmet	18	15	15	12	12	12	**10**	**-2**
Gender								
Male	-	-	-	-	84	85	**86**	**1**
Female	-	-	-	-	14	14	**14**	**0**
Can't tell	-	-	-	-	2	1	**0**	**-1**
Where Riding								
Road	54	55	64	64	57	57	**55**	**-2**
Footpath	46	45	36	29	37	33	**35**	**2**
Off-road cycleway	0	0	0	7	6	10	**10**	**0**
Base:	***113***	***234***	***250***	***302***	***329***	***315***	***334***	

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 (205 daily movements, up 10 per cent from 187 movements in 2012) and the lowest is at 3 Rankin Avenue (57 daily movements).
- Three of the four sites in this ward have recorded increases in total AADT estimates this year compared with 2012. The intersections with increases are:
  - Blockhouse Bay/Great North Road – up 10 per cent
  - Patiki/Rosebank Road – up 10 per cent
  - 3 Rankin Avenue, New Lynn – up 4 per cent
- Only one site had lower cycle volume than last year:
  - Richardson Road/Maioro Street – down 10 per cent

Table 1.7: AADT Estimates Based on Morning and Evening Cyclist Movements 2007 – 2013 (n)

Site No.	*Locations*	*2007 AADT*	*2008 AADT*	*2009 AADT*	*2010 AADT*	*2011 AADT*	*2012 AADT*	*2013 AADT*	12-13 Change	07-13 Change
73	Blockhouse Bay/Great North Road	-	170	173	204	186	187	**205**	**10%**	**-**
4	Patiki/Rosebank Road	119	114	105	130	175	139	**152**	**10%**	**28%**
15	Richardson Road/Maioro Street	-	-	30	56	53	77	**70**	**-10%**	**-**
56	3 Rankin Avenue, New Lynn	45	55	56	46	60	55	**57**	**4%**	**27%**

1.8 School Bike Shed Count Summary

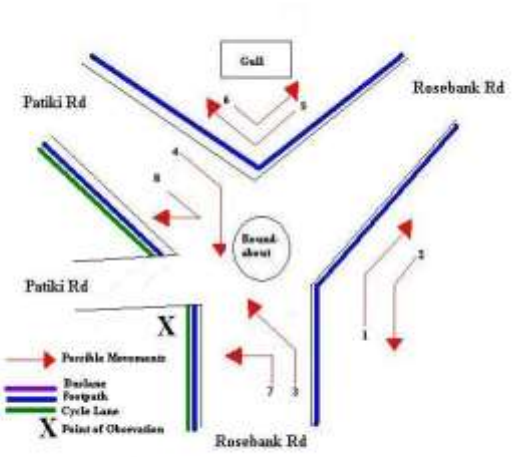
Key Points

- Of those eligible to cycle to school, on average one per cent of students are cycling to their schools. This compares with two per cent in 2012.
- Across the 10 eligible schools that responded, n=76 students were reported to cycle to school.
- Green Bay Primary and Intermediate School reported the highest share of cyclists – 5 per cent of all eligible students currently cycling.
- Of the 10 eligible schools that responded, four (40 per cent) had no students cycling to school.
- Rates of cycling to school are highest among intermediate schools (4 per cent), while composite schools had the lowest rates of cycling (no cyclists).

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
2013	**46**	**59**	**105**	**152**

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 was 46 movements. This compared with 52 movements last year.
- The key movements at this site in the morning were south down Patiki Road into Rosebank Road (Movement 4 = 20 cyclists) and heading south along Rosebank Road (Movement 2 = 13 cyclists).
- The most notable changes were at Movement 2 (up 6 cyclists each) and at Movement 4 (down 8 cyclists).

Table 2.1: Morning Cyclist Movements

Patiki/Rosebank 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	2	4	5	1	7	7	**4**	**-3**
2	7	7	5	12	9	7	**13**	**6**
3	5	4	8	5	15	14	**6**	**-8**
4	21	16	20	17	22	24	**20**	**-4**
5	1	1	0	2	2	0	**1**	**1**
6	1	2	0	1	1	0	**2**	**2**
7	-	-	-	-	-	0	**0**	**0**
8	-	-	-	-	-	0	**0**	**0**
Total	**37**	**34**	**38**	**38**	**56**	**52**	**46**	**-6**

- Over the morning peak, all cyclists were adults (100 per cent, unchanged from last year).
- The majority of cyclists were wearing helmets over the morning peak (89 per cent, stable from 90 per cent in 2012).
- Most cyclists over the morning peak were male (85 per cent, stable from last year).
- Sixty-one per cent of the cyclists were riding on the road, stable from last year.

Table 2.2: Morning Cyclist Characteristics

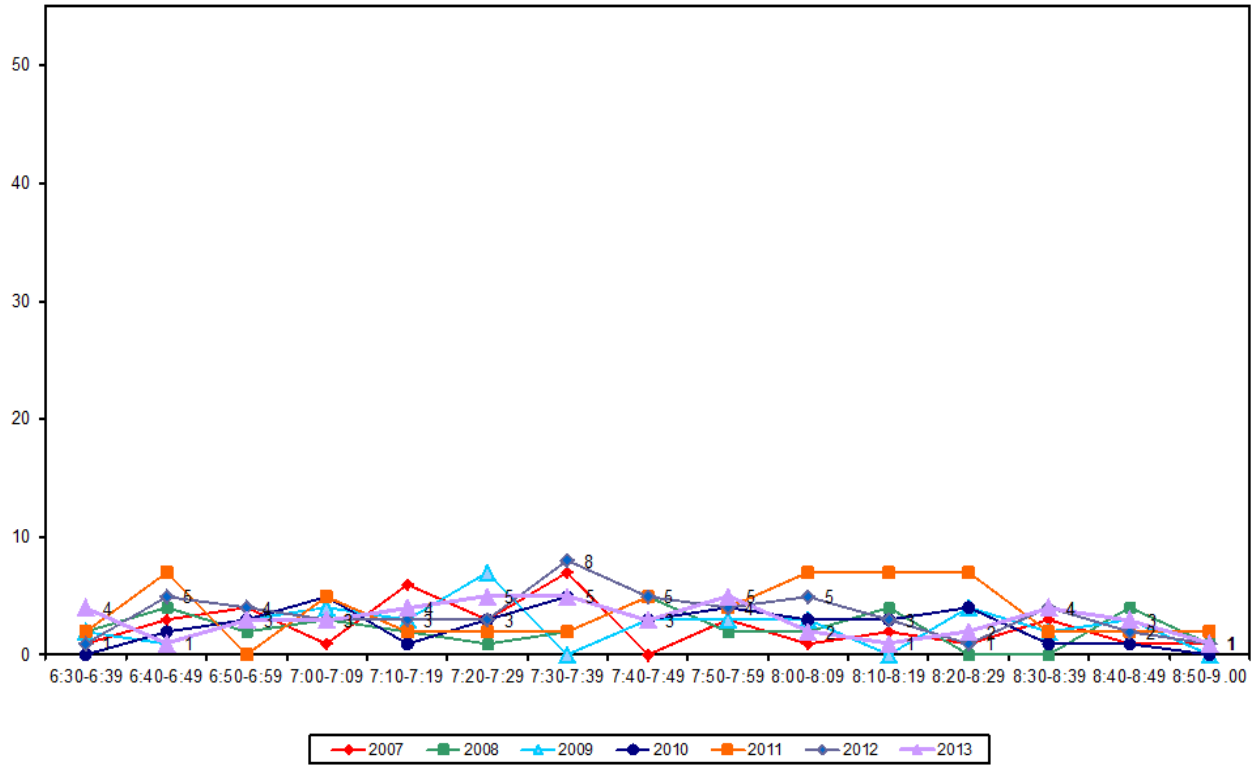
Patiki/Rosebank 2004 – 2013 (%)

	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type											
Adult	82	100	76	95	100	97	95	98	100	**100**	**0**
School child	18	0	24	5	0	3	5	2	0	**0**	**0**
Helmet Wearing											
Helmet on head	82	85	88	81	88	95	87	91	90	**89**	**-1**
No helmet	18	15	12	19	12	5	13	9	10	**11**	**1**
Gender											
Male	-	-	-	-	-	-	-	84	87	**85**	**-2**
Female	-	-	-	-	-	-	-	16	13	**15**	**2**
Where Riding											
Road	53	63	59	57	47	74	82	57	63	**61**	**-2**
Footpath	47	37	41	43	53	26	18	43	37	**39**	**2**
Base:	***17***	***27***	***34***	***37***	***34***	***38***	***38***	***56***	***52***	***46***	

- This year, the frequency of cyclists in the morning period was low and stable, with two slight peaks evident between 7:20am to 7:39am (5 cyclists in each of the ten minute intervals) and between 7:50am to 7:59am (5 cyclists).

Figure 2.2: Morning Peak Cyclist Frequency

Patiki/Rosebank 2007 – 2013 (n)



2.3 Evening Peak

Environmental Conditions

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

Key Points

- Evening cyclist volume recorded at the Patiki/Rosebank Road intersection has increased, from 43 movements in 2012 to 59 in 2013.
- The most common movement at this site in the evening was north up Rosebank Road turning into Patiki Road (Movement 3 = 28 cyclists). This has been consistent since 2007.
- Evening cyclist volume has increased most notably at Movement 3 (up 11 cyclists).

Table 2.3: Evening Cyclist Movements

Patiki/Rosebank 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	7	6	4	9	11	6	**13**	**7**
2	2	8	7	9	11	7	**8**	**1**
3	18	22	19	26	29	17	**28**	**11**
4	14	7	1	4	10	9	**7**	**-2**
5	4	1	1	2	2	2	**3**	**1**
6	0	1	2	2	2	2	**0**	**-2**
7	-	-	-	-	-	0	**0**	**0**
8	-	-	-	-	-	0	**0**	**0**
Total	**45**	**45**	**34**	**52**	**65**	**43**	**59**	**16**

- All evening cyclists using this intersection were adults (100 per cent, unchanged from 2012).
- Most cyclists were wearing a helmet in the evening peak (83 per cent, down from 95 per cent at the previous measure).
- The greatest share of evening peak cyclists was male (80 per cent).
- The volume of cyclists riding on the road has increased by 9 percentage points to 56 per cent this year.

Table 2.4: Evening Cyclist Characteristics

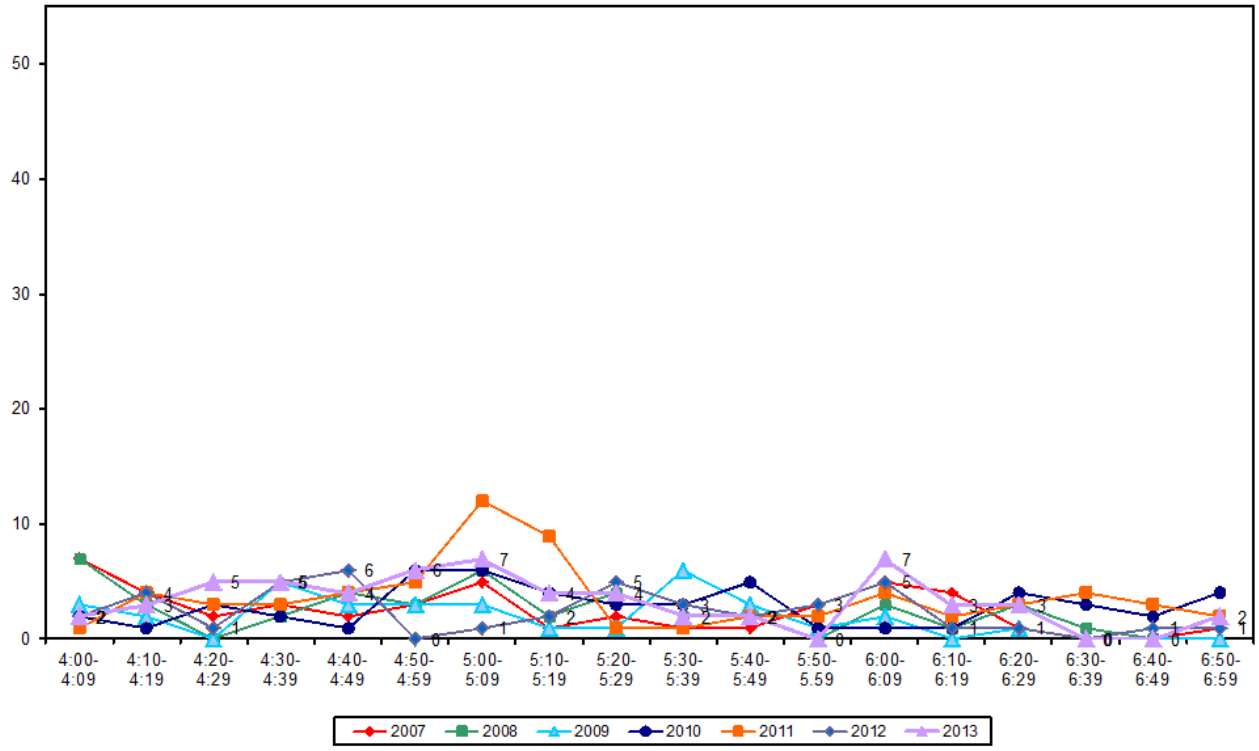
Patiki/Rosebank 2004 – 2013 (%)

	2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type											
Adult	95	100	94	100	100	100	100	98	100	**100**	**0**
School child	5	0	6	0	0	0	0	2	0	**0**	**0**
Helmet Wearing											
Helmet on head	100	87	84	89	84	91	88	88	95	**83**	**-12**
No helmet	0	13	16	11	16	9	12	12	5	**17**	**12**
Gender											
Male	-	-	-	-	-	-	-	80	82	**80**	**-2**
Female	-	-	-	-	-	-	-	20	16	**20**	**4**
Can't tell	-	-	-	-	-	-	-	0	2	**0**	**-2**
Where Riding											
Road	95	63	81	53	62	88	75	58	47	**56**	**9**
Footpath	5	37	19	47	38	12	25	42	53	**44**	**-9**
Base:	***20***	***38***	***31***	***45***	***45***	***34***	***52***	***65***	***43***	***59***	

- Cycle traffic was slightly heavier in the first half of the evening shift, with a slight peak (7 cyclists) evident between 5:00pm to 5:09pm. Volumes then decreased to zero but peaked again from 6:00pm to 6:09pm (7 cyclists also). This pattern was similar to that observed in previous years.

Figure 2.3: Evening Peak Cyclist Frequency

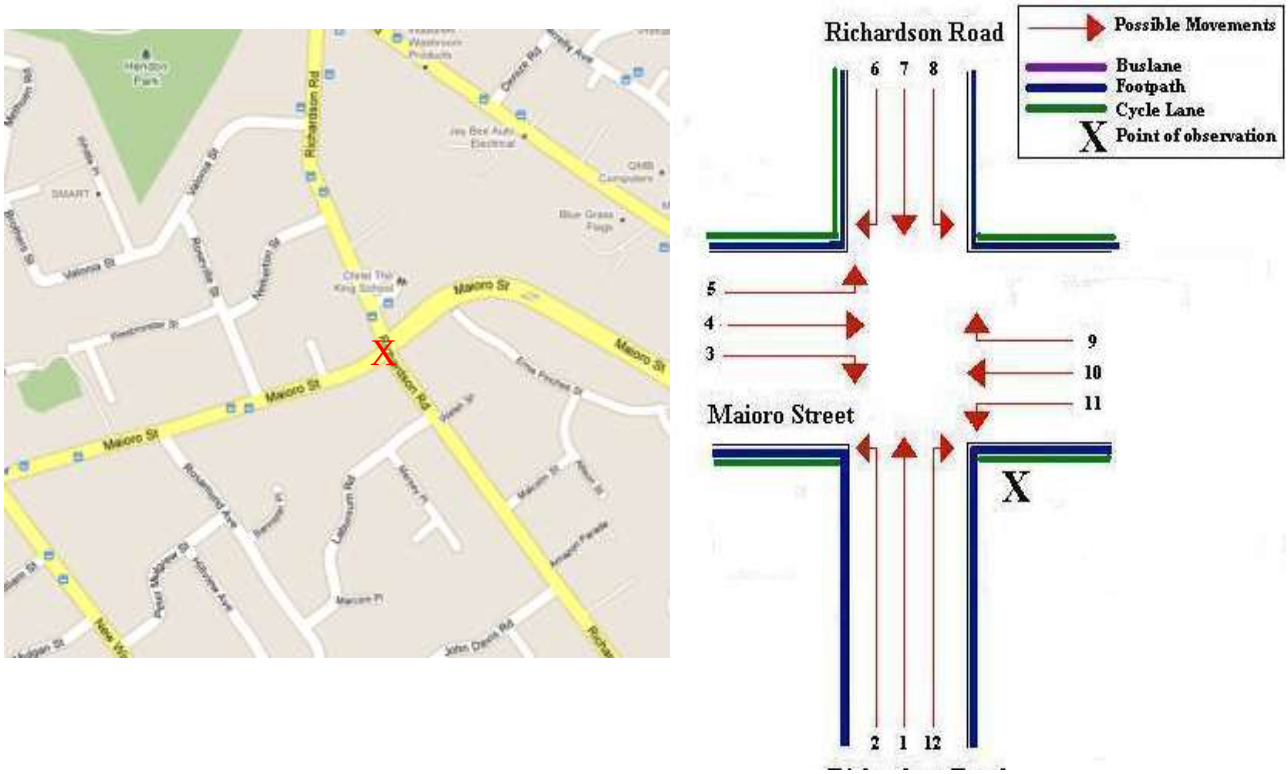
Patiki/Rosebank 2007 – 2013 (n)



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 pre 2010 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
2013	**25**	**23**	**48**	**70**

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 has decreased this year, with 25 cycle movements recorded (down 4 movements from last year).
- The key movement was travelling straight along Maioro Street travelling east (Movement 4 = 9 cyclists).
- The most noticeable changes occurred at Movement 1 – travelling straight along Richardson Road heading north (down 3 movements) and at Movement 5 – left turn from Maioro Street to Richardson Road heading north (down 3 movements).

Table 3.1: Morning Cyclist Movements

Richardson/Maioro Street 2009 – 2013 (n)

Movement	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	2	4	1	4	**1**	**-3**
2	1	1	1	2	**1**	**-1**
3	2	1	0	2	**1**	**-1**
4	0	3	0	9	**9**	**0**
5	0	0	0	5	**2**	**-3**
6	1	0	0	0	**1**	**1**
7	2	1	1	1	**1**	**0**
8	-	2	1	0	**1**	**1**
9	-	0	1	0	**0**	**0**
10	-	2	10	6	**8**	**2**
11	0	0	0	0	**0**	**0**
12	-	0	0	0	**0**	**0**
Total	**8**	**14**	**15**	**29**	**25**	**-4**

Note: Prior to 2010, Movements 8, 9, 10 and 12 were not possible.

- Ninety-two per cent of the cyclists were male (a 23 percentage point increase from last year).
- The majority of cyclists were wearing helmets (88 per cent, up from 79 per cent in 2012).
- Most of the cyclists were male (84 per cent, up from 76 per cent at the previous measure).
- The majority of cyclists were riding on the off-road cycleway (68 per cent, up from 62 per cent last year). The remaining 32 per cent were riding on the road (down from 38 per cent in 2012).

Table 3.2: Morning Cyclist Characteristics

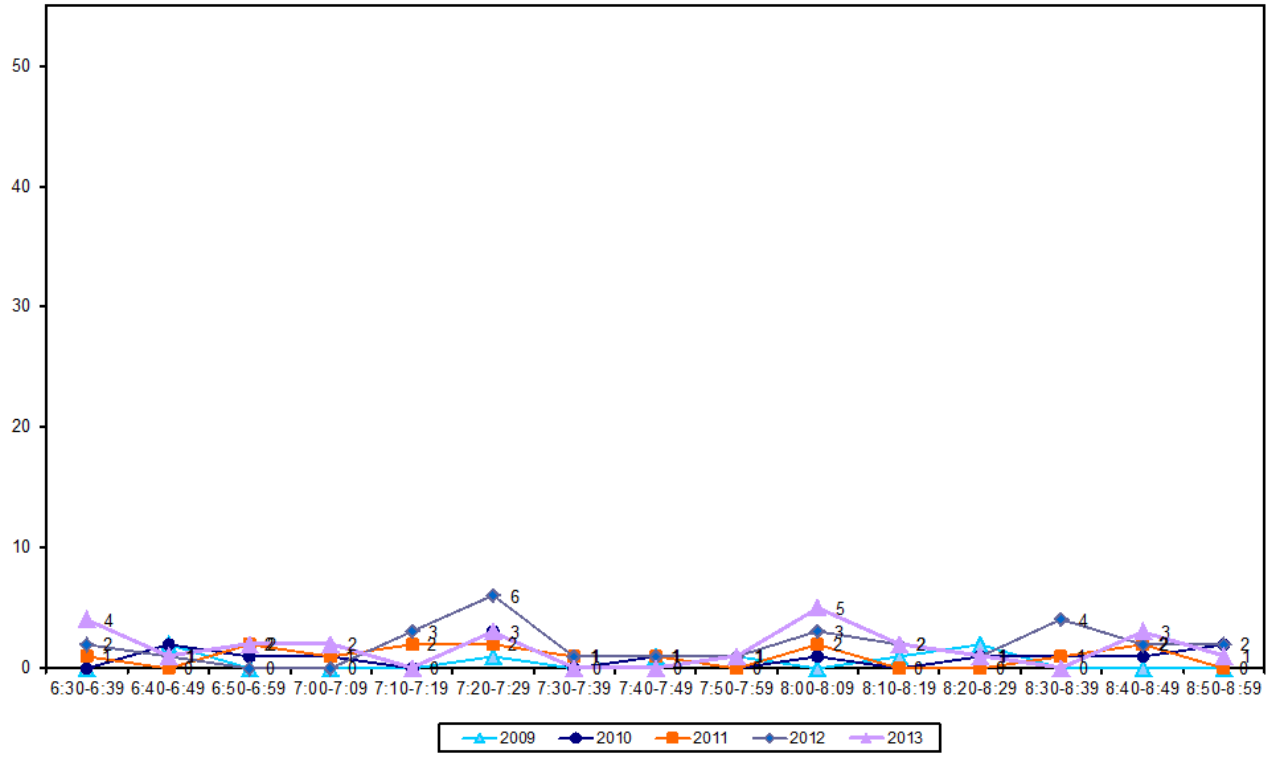
Richardson/Maioro Street 2009 – 2013 (%)

	2009	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type						
Adult	100	100	93	69	**92**	**23**
School child	0	0	7	31	**8**	**-23**
Helmet Wearing						
Helmet on head	100	93	87	79	**88**	**9**
No helmet	0	7	13	21	**12**	**-9**
Gender						
Male	-	-	80	76	**84**	**8**
Female	-	-	20	24	**16**	**-8**
Can't tell	-	-	0	0	**0**	**0**
Where Riding						
Road	88	57	47	38	**32**	**-6**
Footpath	12	14	13	0	**0**	**0**
Off-road Cycleway	-	29	40	62	**68**	**6**
Base:	***8***	***14***	***15***	***29***	***25***	

- Consistent with previous years, morning cycle volume was low throughout most of the morning monitoring period, with the peak of cyclist movements occurring between 8:00am and 8:09am (5 movements). Smaller peaks could be seen approximately every 40 minutes.

Figure 3.2: Cyclist Frequency

Richardson/Maioro Street 2009 – 2013 (n)



Note: A group of three cyclists (12 per cent of the morning cycle volume of this site) rode past at 6:31am.

3.3 Evening Peak

Environmental Conditions

- The weather was fine throughout the monitoring period.
- 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 was 23 (stable from 24 movements last year).
- The key movement in the evening was going straight along Richardson Road heading south (Movement 10 = 7 cyclists).
- Movement 2 experienced the greatest change across all sites (down 5 movements).

Table 3.3: Evening Cyclist Movements

Richardson/Maioro Street 2009 – 2013 (n)

Movement	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	0	6	1	1	**1**	**0**
2	4	2	1	6	**1**	**-5**
3	1	1	2	3	**2**	**-1**
4	1	1	9	2	**6**	**4**
5	1	0	1	0	**1**	**1**
6	1	1	0	0	**0**	**0**
7	4	5	3	4	**1**	**-3**
8	-	0	3	0	**1**	**1**
9	-	3	1	1	**1**	**0**
10	-	4	1	4	**7**	**3**
11	1	2	0	3	**2**	**-1**
12	-	0	0	0	**0**	**0**
Total	**13**	**25**	**22**	**24**	**23**	**-1**

Note: Prior to 2010, Movements 8, 9, 10 and 12 were not possible.

- All cyclists passing by this site were adults (an increase of 25 percentage points since 2012).
- All cyclists were wearing a helmet (up from 75 per cent last year).
- The majority of cyclists continued to be male (87 per cent).
- Seventy per cent of the cyclists were riding on the off-road cycleway (up 16 percentage points from 2012).

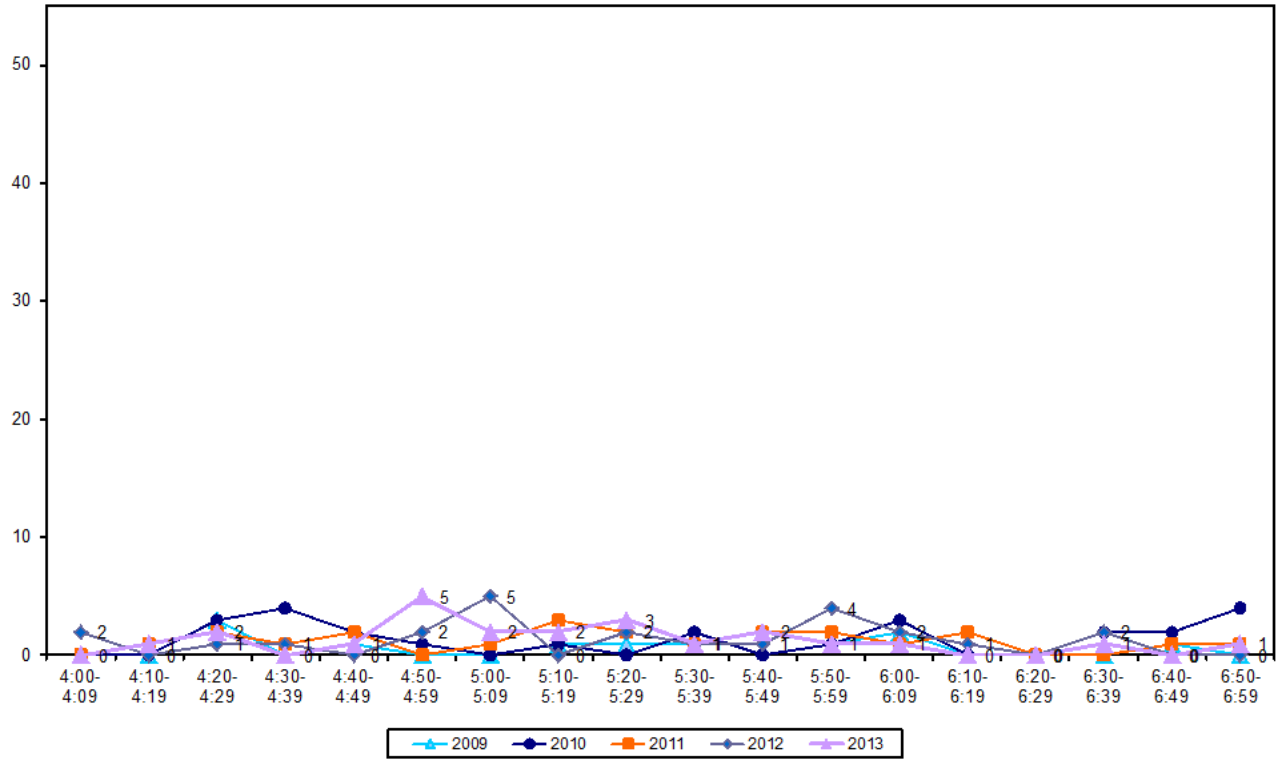
Table 3.4: Evening Cyclist Characteristics

Richardson/Maioro Street 2009 – 2013 (%)

	2009	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Cyclist Type						
Adult	100	80	91	75	100	**-25**
School child	0	20	9	25	0	**25**
Helmet Wearing						
Helmet on head	85	76	77	75	100	**-25**
No helmet	15	24	23	25	0	**25**
Gender						
Male	-	-	86	92	87	**-5**
Female	-	-	9	8	13	**5**
Can't tell	-	-	5	0	0	**0**
Where Riding						
Road	46	16	32	46	30	**-16**
Footpath	54	16	14	0	0	**0**
Off-road cycleway	-	68	54	54	70	**16**
Base:	***13***	***25***	***22***	***24***	***23***	

- The volume of cycle movements remained relatively low over the entire evening peak, with no more than three cyclists recorded during most ten minute intervals. The exception was the small peak between 4:50pm and 4:59pm (5 movements).

Figure 3.3: Evening Peak Cyclist Frequency
Richardson/Maioro Street 2009 – 2013 (n)

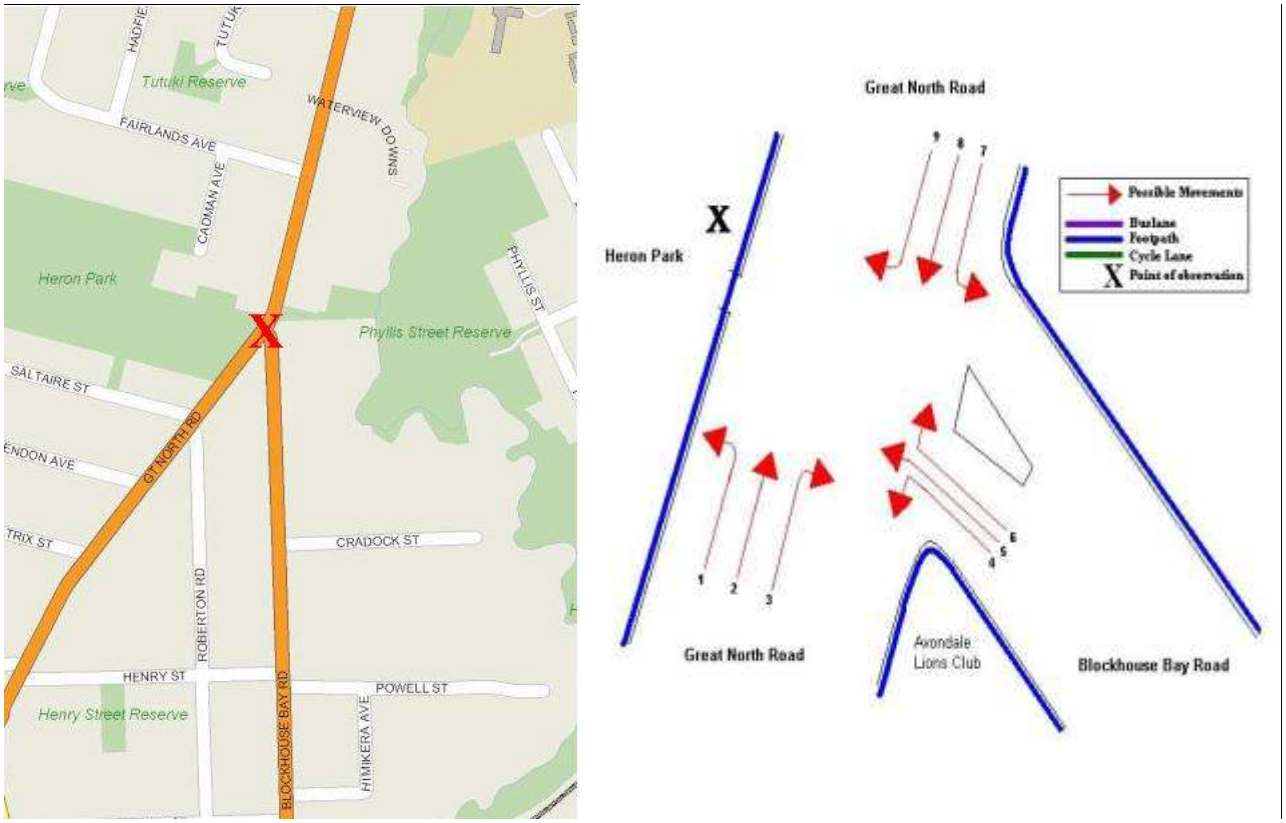


Note: A group of three cyclists (13 per cent of the evening cycle volume of this site) rode past at 4:51pm.

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	68	128	187
2013	**73**	**68**	**141**	**205**

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

- Seventy-three movements were recorded at the Blockhouse Bay/Great North Road site. This number was the highest recorded since monitoring began in 2008.
- The key morning movements were straight through Great North Road heading north (Movement 2 = 34 cyclists), the right turn out of Blockhouse Bay Road into Great North Road (Movement 6 = 19 cyclists) and heading south along Great North Road (Movement 8 = 12 movements).
- The most notable increases in cyclist movements in the morning at this site were at Movement 6 and Movement 8 (up 8 and 6 cyclists respectively).

Table 4.1: Morning Cyclist Movements

Blockhouse Bay/Great North Road 2008 – 2013 (n)

Movement	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	0	0	0	0	0	**0**	**0**
2	29	28	33	23	36	**34**	**-2**
3	0	0	2	0	0	**1**	**1**
4	0	1	1	0	1	**0**	**-1**
5	0	0	0	0	0	**0**	**0**
6	16	14	16	21	11	**19**	**8**
7	3	4	2	4	4	**7**	**3**
8	9	10	12	8	6	**12**	**6**
9	0	0	0	0	0	**0**	**0**
Total	**57**	**57**	**66**	**56**	**58**	**73**	**15**

- Over the morning peak, most cyclists were adults (86 per cent, a decrease from 93 per cent in 2012).
- There has been an 8 percentage point increase in helmet-wearing (96 per cent, compared with 88 per cent last year).
- Most cyclists were male (91 per cent).
- Fifty-six per cent of cyclists were observed riding on the footpath, an increase from 43 per cent last year.

Table 4.2: Morning Cyclist Characteristics

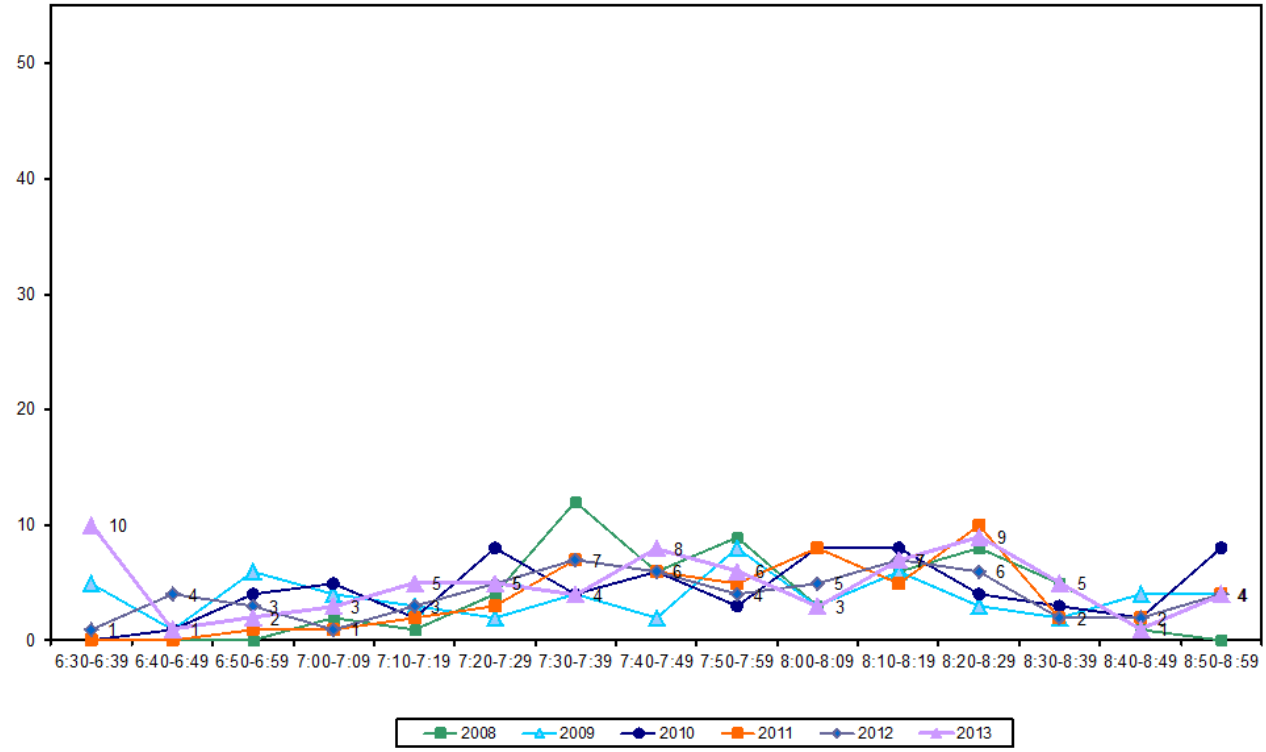
Blockhouse Bay/Great North Road 2008 – 2013 (%)

	2008	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type							
Adult	89	65	92	82	93	**86**	**-7**
School child	11	35	8	18	7	**14**	**7**
Helmet Wearing							
Helmet on head	93	88	95	98	88	**96**	**8**
No helmet	7	12	5	2	12	**4**	**-8**
Gender							
Male	-	-	-	86	85	**91**	**6**
Female	-	-	-	5	13	**8**	**-5**
Can't tell	-	-	-	9	2	**1**	**-1**
Where Riding							
Road	44	65	62	50	57	**44**	**-13**
Footpath	56	35	38	50	43	**56**	**13**
Base:	***57***	***57***	***66***	***56***	***60***	***73***	

- Morning cycle volumes started with a peak of ten movements but dropped rapidly in the next ten minutes. From there, cycle traffic gradually increased to two smaller peaks between 7:40am – 7:49am (8 movements) and between 8:20am - 8:29am (9 movements).

Figure 4.2: Morning Peak Cyclist Frequency

Blockhouse Bay/Great North Road 2008 – 2013 (n)



Note: There was a peloton of seven cyclists (10 per cent of the morning cycle volume at this site) observed at 6:35am.

4.3 Evening Peak

Environmental Conditions

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

Key Points

- The total number of evening peak cycle movements recorded at the Blockhouse Bay/Great North Road site was the same as last year (68 movements).
- The most common movement in the evening was straight through Great North Road in a south-westerly direction (Movement 8 = 44 cyclists). The number of cyclists making this movement is the highest recorded since monitoring began.
- Cyclist volumes over the evening period have increased most notably at Movement 8 (up 5 cyclists).

Table 4.3: Evening Cyclist Movements

Blockhouse Bay/Great North Road 2008 – 2013 (n)

Movement	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	0	0	0	0	0	**0**	**0**
2	14	15	17	15	10	**7**	**-3**
3	0	0	2	1	2	**0**	**-2**
4	0	1	0	0	1	**0**	**-1**
5	0	2	0	0	0	**0**	**0**
6	1	2	4	6	5	**5**	**0**
7	15	13	15	20	10	**12**	**2**
8	30	28	37	27	39	**44**	**5**
9	0	1	0	4	1	**0**	**-1**
Total	**60**	**62**	**75**	**73**	**68**	**68**	**0**

- Over the evening peak, almost all cyclists at this site were adults (99 per cent, stable from 100 per cent last year).
- Most cyclists at this site were wearing a helmet (93 per cent, stable from 94 per cent at the previous measure).
- The majority of cyclists were recorded as male (91 per cent, up 4 percentage points from last year).
- Seventy-two per cent of cyclists were riding on the road, down slightly from 75 per cent in 2012.

Table 4.4: Evening Cyclist Characteristics

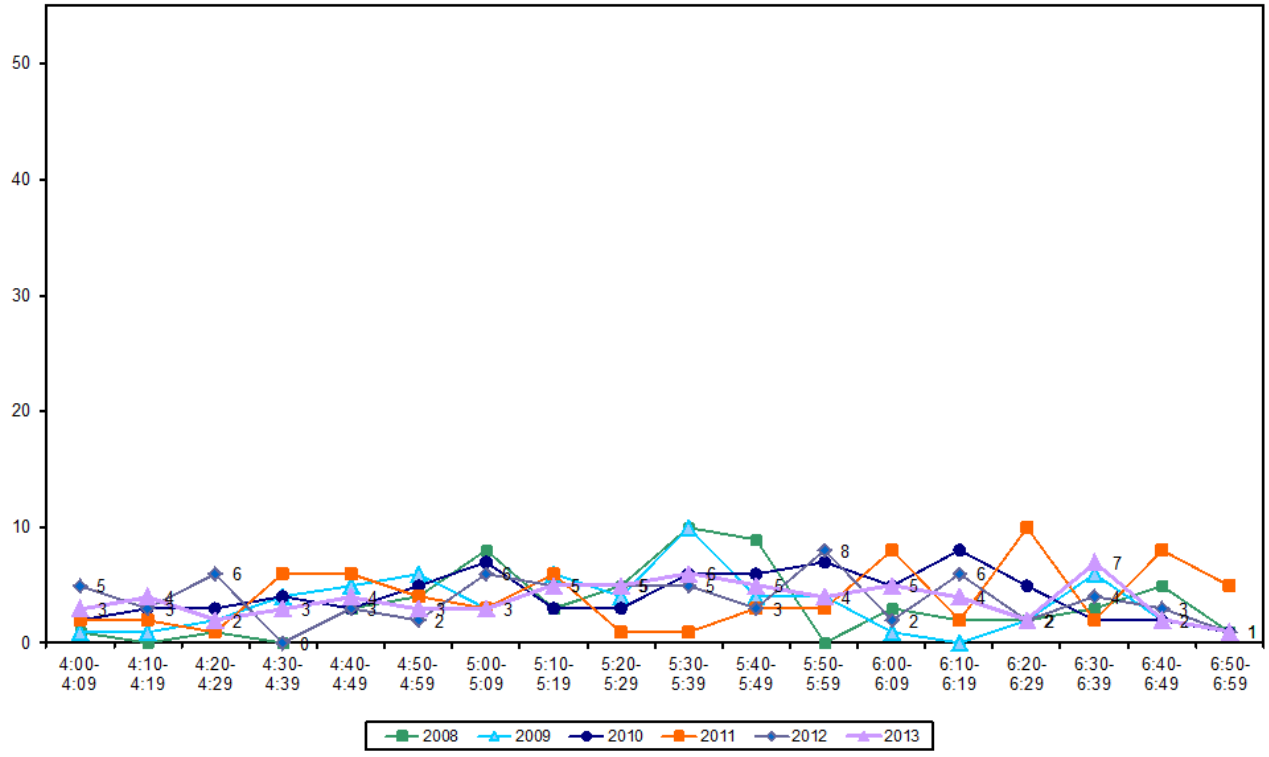
Blockhouse Bay/Great North Road 2008 – 2013 (%)

	2008	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type							
Adult	90	76	96	95	100	**99**	**-1**
School child	10	24	4	5	0	**1**	**1**
Helmet Wearing							
Helmet on head	87	81	93	89	94	**93**	**-1**
No helmet	13	19	7	11	6	**7**	**1**
Gender							
Male	-	-	-	86	87	**91**	**4**
Female	-	-	-	12	12	**9**	**-3**
Can't tell	-	-	-	1	1	**0**	**-1**
Where Riding							
Road	67	56	72	70	75	**72**	**-3**
Footpath	33	44	28	30	25	**28**	**3**
Base:	***60***	***62***	***75***	***73***	***68***	***68***	

- Evening cycle volumes were relatively steady and low throughout the monitoring period. The maximum number of cyclists during any ten minute interval was seven (between 6:30pm to 6:39pm).

Figure 4.3: Evening Peak Cyclist Frequency

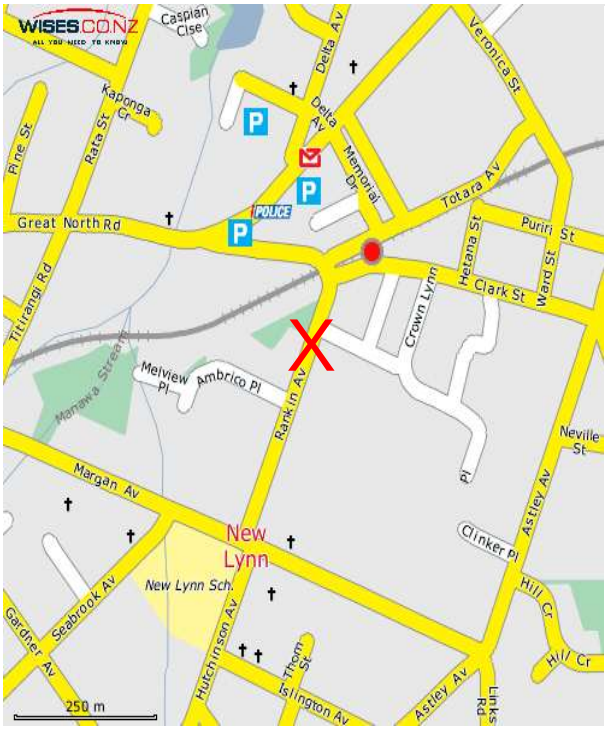
Blockhouse Bay/Great North Road (n) 2008 – 2013

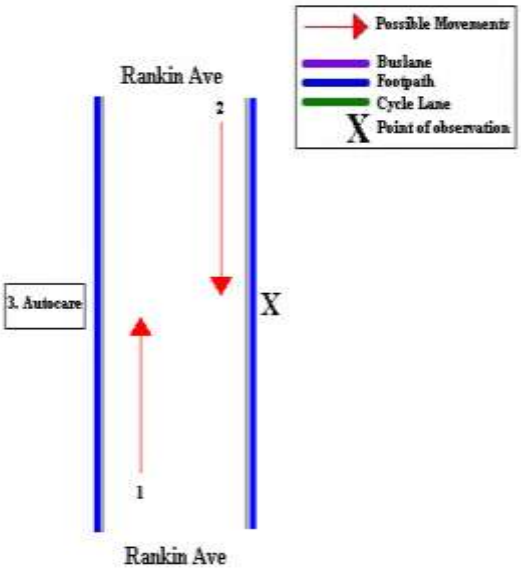


5. 3 RANKIN AVENUE, NEW LYNN (SITE 56)

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
2013	**15**	**25**	**40**	**57**

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 decreased slightly this year, with 15 cycle movements recorded (compared with 20 movements in 2012).
- The most common movement in the morning continued to be straight along Rankin Avenue heading north (Movement 1 = 11 cyclists).

Table 5.1: Morning Cyclist Movements

3 Rankin Avenue 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	12	15	18	10	15	19	**11**	**-8**
2	4	2	3	2	1	1	**4**	**3**
Total	**16**	**17**	**21**	**12**	**16**	**20**	**15**	**-5**

- There has been an increase in the number of school children cyclists (13 per cent, compared with zero per cent in the last three years).
- Eighty per cent of cyclists are wearing a helmet (unchanged since last year).
- Although most cyclists were male (73 per cent), there has been a 17 percentage point increase in female cyclists at this site.
- Eighty-seven per cent of the cyclists were riding on the road (up 32 percentage points since last year). The remaining cyclists were riding on the footpath (13 per cent).

Table 5.2: Morning Cyclist Characteristics

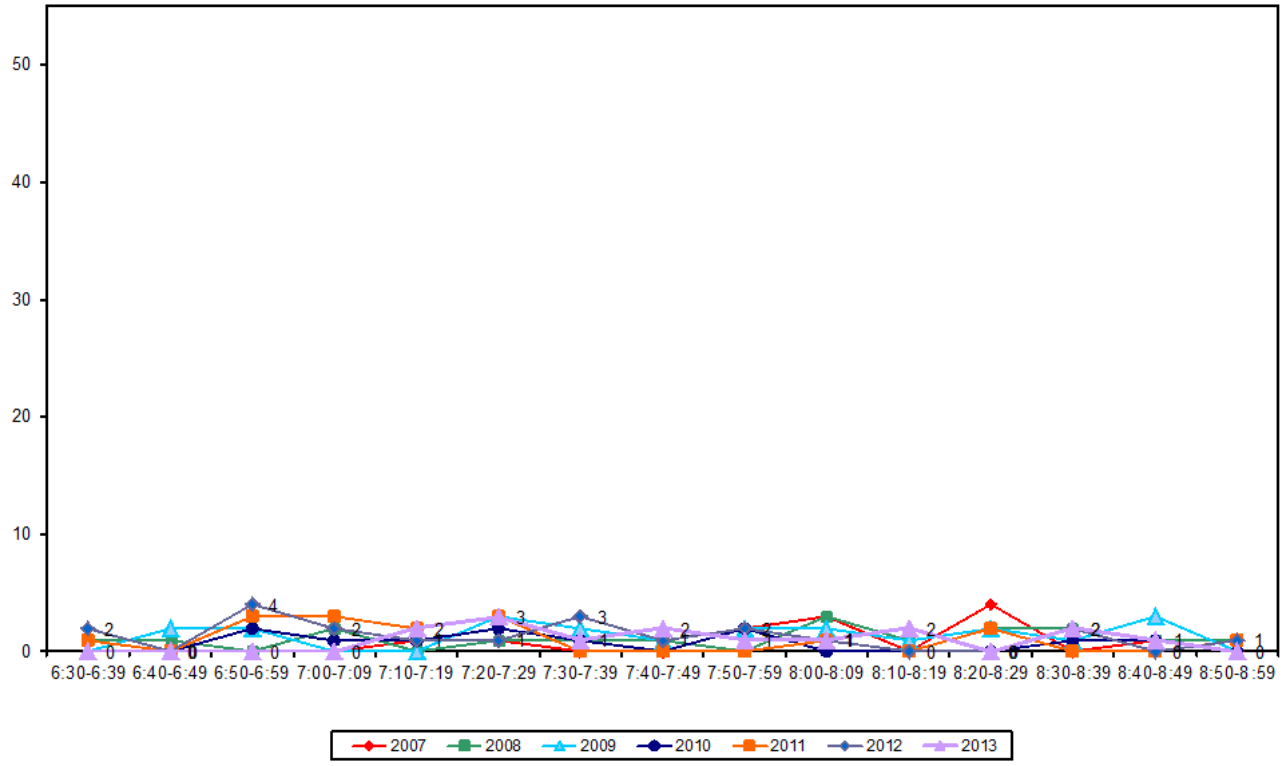
3 Rankin Avenue 2007 – 2013 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Cyclist Type								
Adult	100	88	52	100	100	100	**87**	**-13**
School child	0	12	48	0	0	0	**13**	**13**
Helmet Wearing								
Helmet on head	75	76	62	83	81	80	**80**	**0**
No helmet	25	24	38	17	19	20	**13**	**-7**
Unsure	-	-	-	-	-	-	**7**	**7**
Gender								
Male	-	-	-	-	81	90	**73**	**-17**
Female	-	-	-	-	19	10	**27**	**17**
Can't tell	-	-	-	-	0	0	**0**	**0**
Where Riding								
Road	69	53	38	67	63	55	**87**	**32**
Footpath	31	47	62	33	37	45	**13**	**-32**
Base:	***16***	***17***	***21***	***12***	***16***	***20***	***15***	

- The volume of morning cycle movements was very low over the entire monitoring period, consistent with previous records. There were no more than three cyclist movements observed in any of the ten minute monitoring intervals.

Figure 5.2: Morning Peak Cyclist Frequency

3 Rankin Avenue 2007 – 2013 (n)



5.3 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

- This year, the number of cycle movements in the evening at 3 Rankin Avenue has increased by 7 movements to a total of 25.
- The key evening movement continued to be straight along Rankin Avenue heading south (Movement 2 = 15 cyclists).
- Cycle volumes have increased most noticeably at Movement 1, from no movements last year to 10 movements this year.

Table 5.3: Evening Cyclist Movements

3 Rankin Avenue 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	6	5	3	5	7	0	**10**	**10**
2	9	16	14	15	19	18	**15**	**-3**
Total	**15**	**21**	**17**	**20**	**26**	**18**	**25**	**7**

- The greatest share of cyclists using this site were adults (76 per cent, down from 94 per cent last year).
- Seventy-six per cent of cyclists at this site were wearing a helmet, stable from last year.
- Most cyclists are recorded as male (80 per cent, down 9 percentage points since 2012).
- Fifty-six per cent of all cyclists at this site in the evening are riding on the road, up from 44 per cent last year.

Table 5.4: Evening Cyclist Characteristics

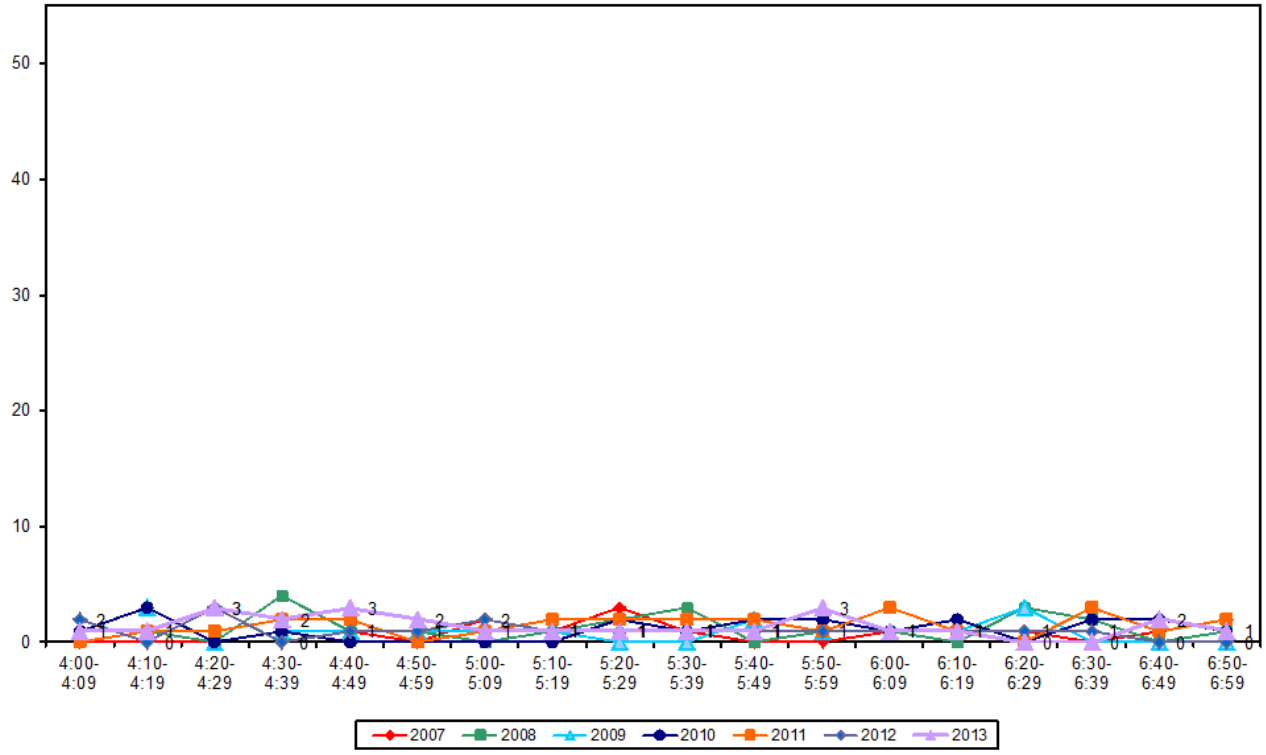
3 Rankin Avenue 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	87	81	71	85	81	94	**76**	**-18**
School child	13	19	29	15	19	6	**24**	**18**
Helmet Wearing								
Helmet on head	73	62	82	60	73	78	**76**	**-2**
No helmet	27	38	18	40	27	22	**24**	**2**
Gender								
Male	-	-	-	-	88	89	**80**	**-9**
Female	-	-	-	-	12	11	**20**	**9**
Can't tell	-	-	-	-	0	0	**0**	**0**
Where Riding								
Road	33	48	53	40	62	44	**56**	**12**
Footpath	67	52	47	60	38	56	**44**	**-12**
Base:	***15***	***21***	***17***	***20***	***26***	***18***	***25***	

- The volume of cycle movements remained 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 – 2013 (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 10 schools in the Whau ward participated in the school bike shed count.
- Most of the schools that responded to the survey have no policies that restrict students cycling to school[9].
- Of the schools that responded to the survey, no school reported any events or issues that may affect cycle counts.
- The designated count day was Tuesday 5th of March 2013[10].

Key Points

- Of those eligible to cycle to school, on average, one per cent of students are cycling to their schools. This compares with two per cent in 2012.
- Across the 10 eligible schools that responded, n=76 students were reported to cycle to school.
- Green Bay Primary and Intermediate School reported the highest share of cyclists – 5 per cent of all eligible students currently cycling.
- Of the eight schools that participated in the count in both 2012 and 2013, two (Green Bay Primary and Intermediate School and Wesley Intermediate School) reported an increase in the share of students cycling to school.
- Of the eight schools that participated in the count in both 2012 and 2013, 2 (25 per cent) reported a decrease in the share of students cycling.
- Of the 10 eligible schools that responded, four (40 per cent) had no students cycling to school.

[9] Green Bay Primary and Intermediate School stated that the school's policy surrounding riding a bicycle to school was *"Students in Year 5 and above may cycle to school".*

[10] The following schools conducted counts on alternative count days

- Avondale College – 28th February 2013
- Glenavon School – 13th March 2013
- Immanuel Christian School – 13th March 2013
- Kelston Girls' High School – 14th March 2013
- Wesley Intermediate – 14th March 2013

Table 6.1 shows the results of the 10 schools surveyed in Whau ward.

Table 6.1: Summary Table of School Bike Count

2007 – 2013 (n)

School Name	*School Type*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible*[11]						
				2013	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
Green Bay Primary and Intermediate School	Full Primary	215	10	**5%**	2%	3%	-	-	-	-
Wesley Intermediate School	Intermediate	126	5	**4%**	1%	-	-	-	-	-
Blockhouse Bay Intermediate	Intermediate	820	28	**3%**	5%	3%	-	3%	4%	4%
Avondale College	Secondary	2800	20	**1%**	-	-	-	1%	1%	-
Green Bay High School	Secondary	1344	9	**1%**	1%	1%	1%	1%	1%	1%
Kelston Boys' High School	Secondary	930	4	**<1%**	<1%	<1%	<1%	0%	1%	1%
Glenavon School	Full Primary	225	0	**0%**	0%	0%	-	-	-	-
Immanuel Christian School	Composite	129	0	**0%**	2%	0%	-	2%	1%	1%
Kelston Girls' High School	Secondary	640	0	**0%**	0%	0%	0%	0%	0%	0%
St Mary's School Avondale	Full Primary	210	0	**0%**	-	0%	-	-	-	-
Total		**7439**	**76**	**1%**	2%	1%	-	-	-	-

[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 6.2 illustrates the rates of cycling to school at different school levels. Rates of cycling to school continue to be highest among intermediate schools (4 per cent), while composite schools had the lowest rates of cycling (no cyclists).

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

2007 – 2013 (%)

Year Levels	***Number of Schools Responded in 2013***	***Cyclists as share of those eligible***							
		2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Intermediate	2	4%	4%	3%	-	3%	3%	**4%**	1%
Full Primary	3	-	-	-	-	1%	1%	**2%**	1%
Secondary	4	1%	1%	1%	1%	1%	1%	**1%**	0%
Composite	1	1%	1%	2%	-	0%	2%	**0%**	-2%
Intermediate/Secondary	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[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%