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Research Report Prepared for
Auckland Transport

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2014 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

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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].

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:

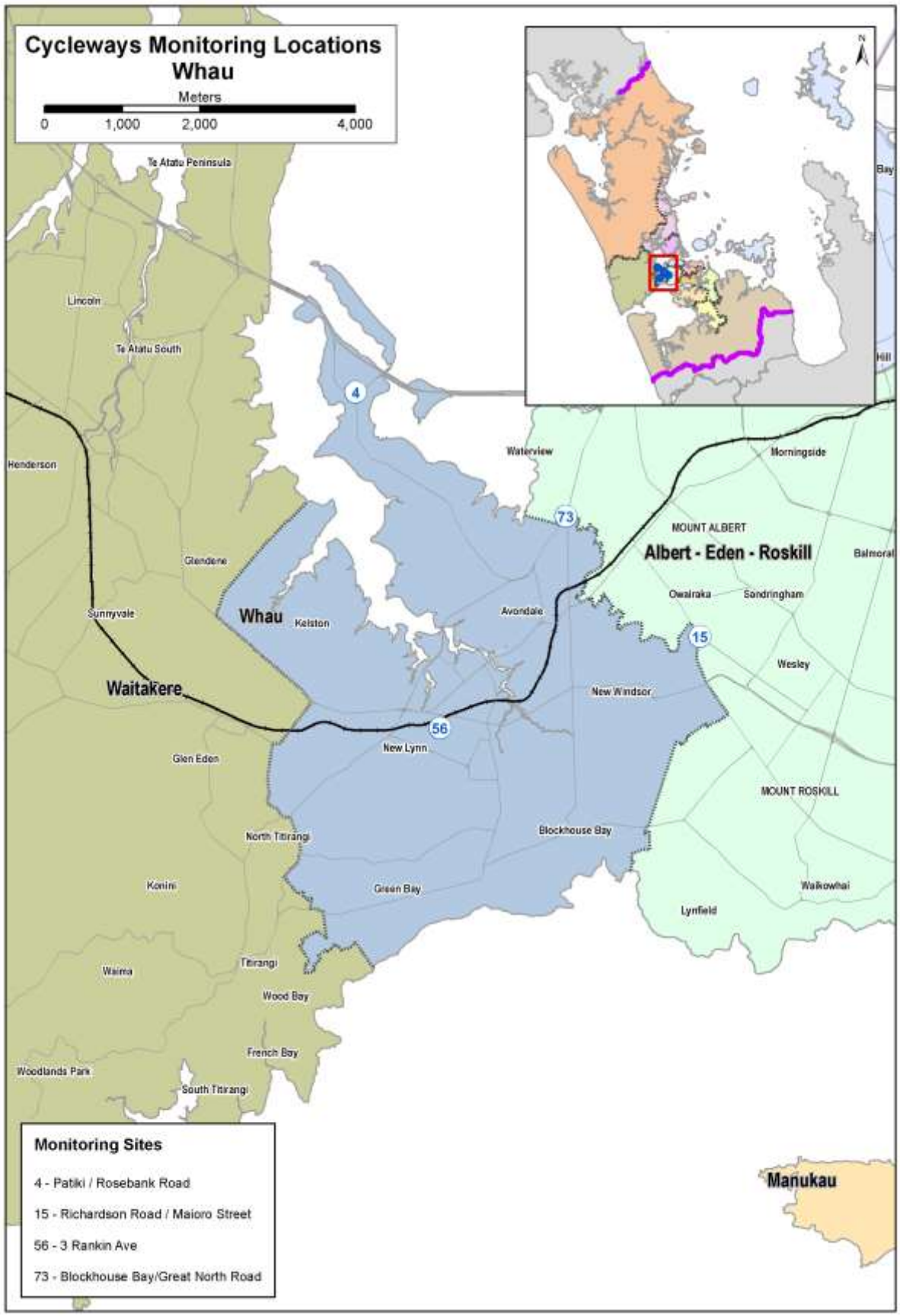
- standard monitoring days are used – that is, school and tertiary holidays, and statutory holidays are excluded and that monitoring preferably takes place at the same time each year to enable reliable year-on-year comparisons to be made. Decisions about whether cycle counts take place on weekdays and 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: 2014 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 4th of March and be conducted on the first three fine days of the 4th, 5th, 6th, 11th, 12th, or 13th of March.

Counts were conducted on the following days:

- Tuesday 4th March — Albany, North Shore, Waitakere
- Wednesday 5th March — Howick, Franklin, Manukau, Waitemata & Gulf
- Thursday 6th 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 three count days in 2014 was as follows:

Tuesday 4th March

- Sunrise: 7:09am; Sunset: 7:56pm.
- Highest temperature: 20.0 degrees Celsius.
- Mostly fine weather with the majority of sites experiencing drizzle in the morning and cloud in the evening.

Wednesday 5th March

- Sunrise: 7:10am; Sunset: 7:55pm.
- Highest temperature: 20.0 degrees Celsius.
- Cloudy and windy with occasional light drizzle for some sites during the morning shift. Mostly fine weather with clear sky in the evening with light winds for some sites.

Thursday 6th March

- Sunrise: 7:11am; Sunset: 7:54pm.
- Highest temperature: 22.0 degrees Celsius.
- Mostly fine weather 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.

Based on feedback from some schools in 2013, in 2014 a count of the number of students who use (non-motorised) scooters to get to and from school was also included in the school bike shed count.

[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 4th 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 2014, 264 responses were received, a response rate of 88 per cent. (This compares with 92 per cent in 2013).

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 6th of March, 2013. Sunrise was at 7:11am and sunset at 7:54pm; highest temperature was 24.0 degree Celsius.

1.4 Morning Peak Summary Results

Environmental Conditions

- All sites monitored in the Whau ward had fine weather in the morning.
- No sites had road works or accidents that would have affected cycle counts.

Key Points

- A total of 158 cyclist movements were recorded across the four sites in the morning peak period (between 7:00am and 9:00am) in 2013. This total represents a one per cent decrease on the result for 2013 (159 movements).
- The average volume of morning cyclists across the four sites in the Whau ward was 40 cycle movements, unchanged from 2013.
- The busiest site in the Whau ward this year was Blockhouse Bay/Great North Road (72 movements, a 1 per cent decrease since last year).
- In contrast, cycle movement numbers were lowest at 3 Rankin Avenue (17 movements, up 13 per cent from 2013).
- Two of the four sites recorded declines in cycle volumes this year compared to 2013, the most noticeable being Richardson Road/Maioro Street – down 16 per cent.
- Of the remaining two sites which recorded increases in cycle volumes this year compared to 2013, the most notable is 3 Rankin Avenue – up 13 per cent.

Table 1.1: Summary of Morning Cyclist Movements

2007 – 2014 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14	Change 07-14
4	Patiki/Rosebank Road	37	34	38	38	56	52	46	**48**	**4%**	**30%**
56	3 Rankin Avenue, New Lynn	16	17	21	12	16	20	15	**17**	**13%**	**6%**
	Average per site (2 sites since 2007)	**27**	**26**	**30**	**25**	**36**	**36**	**31**	**33**	**6%**	**22%**
	Total (2 sites since 2007)	**53**	**51**	**59**	**50**	**72**	**72**	**61**	**65**	**7%**	**23%**
73	Blockhouse Bay/Great North Road	-	57	57	66	56	60	73	**72**	**-1%**	-
15	Richardson Road/Maioro Street	-	-	8	14	15	29	25	**21**	**-16%**	-
	Average per site (3 sites in 2008, 4 sites from 2009)	-	**36**	**31**	**33**	**36**	**40**	**40**	**40**	**0%**	-
	Total (3 sites in 2008, 4 sites from 2009)	-	**108**	**124**	**130**	**143**	**161**	**159**	**158**	**-1%**	-

- The majority of cyclists this year were adults (96 per cent, up 5 percentage points from last year).
- Helmet wearing has continued to remain wide-spread (88 per cent, down from 92 per cent in 2013).
- The majority of cyclists were male (89 per cent).
- Riding on the road remained the most prevalent (63 per cent, up from 51 per cent in 2013). Twenty-seven per cent rode on the footpath (down 11 percentage points from 2013). The remaining 10 per cent were riding on the off-road cycleway (stable from 11 per cent from 2013).

Table 1.2: Summary of Morning Cyclist Characteristics

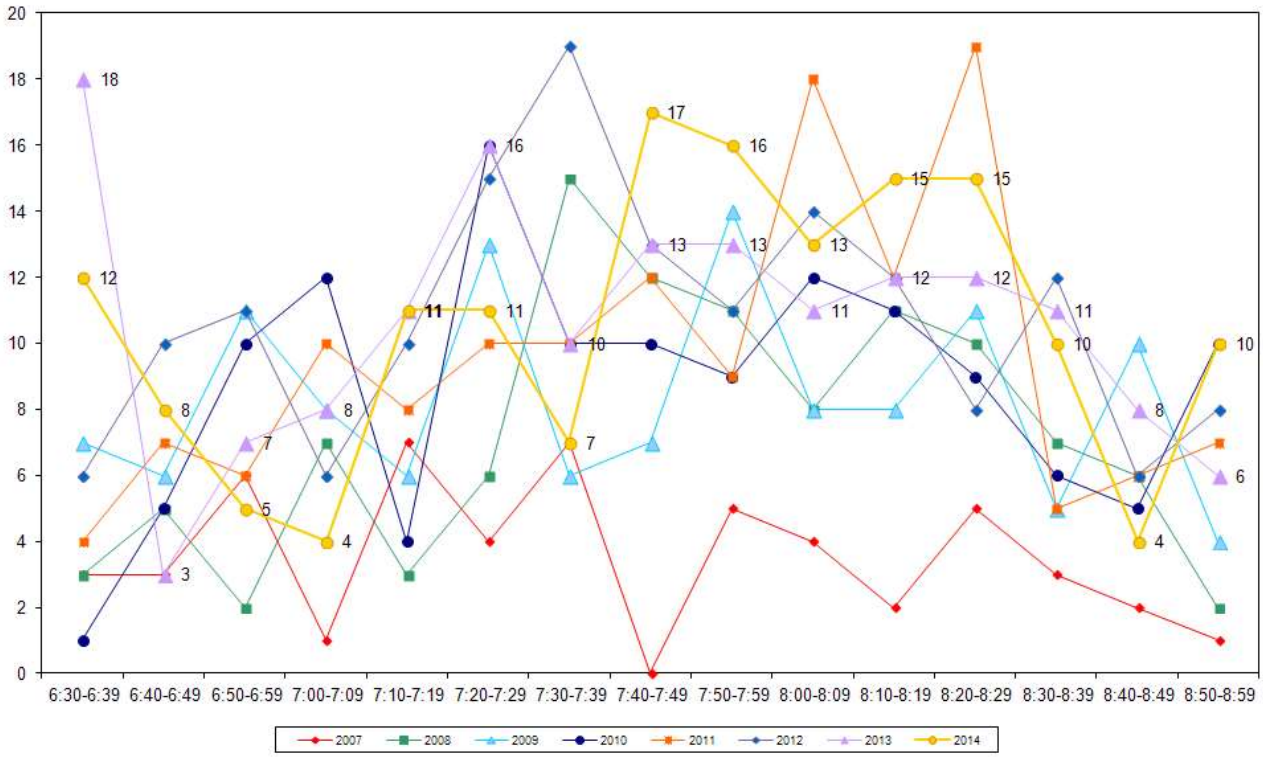
2007 – 2014 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
Cyclist Type									
Adult	96	93	75	95	91	92	91	**96**	**5**
School child	2	7	25	5	9	8	9	**4**	**-5**
Helmet Wearing									
Helmet on head	79	89	86	92	92	86	92	**88**	**-4**
No helmet	21	11	14	8	8	14	8	**11**	**3**
Don't know	0	0	0	0	0	0	0	**1**	**1**
Gender									
Male	-	-	-	-	84	84	86	**89**	**3**
Female	-	-	-	-	13	15	13	**11**	**-2**
Can't tell	-	-	-	-	3	1	1	**0**	**-1**
Where Riding									
Road	60	46	65	68	54	56	51	**63**	**12**
Footpath	40	54	35	29	42	33	38	**27**	**-11**
Off-road cycleway	-	-	-	3	4	11	11	**10**	**-1**
Base:	***53***	***108***	***124***	***130***	***143***	***161***	***159***	***158***	

- 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 (12 movements), then decreased over the next half an hour. Cycle volumes then increased, reaching a peak of 17 cyclists between 7:40am to 7:49am. From there, the number of cyclists generally declined for the remainder of the monitoring period.

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

2007 – 2014 (n)



1.5 Evening Peak Summary Results

Environmental Conditions

- All sites monitored in the Whau ward had fine weather in the evening.
- No sites had road works or accidents that would have affected cycle counts.

Key Points

- A total of 163 cyclist movements were recorded across the four sites in the evening peak period (between 4:00pm and 7:00pm) in 2014. This represented a 7 per cent decrease on the result for 2013 (175 movements).
- The average volume of evening cyclists across the four sites in the Whau ward was 41 cycle movements, 3 fewer movements than last year, a 7 per cent decrease.
- The two busiest sites in the Whau ward this year were Blockhouse Bay/Great North Road (70 movements) and Patiki/Rosebank Road (43 movements).
- Evening cycle movements were lowest at Richardson Road/Maioro Street (20 movements recorded).
- The greatest increase in cycle traffic was recorded at 3 Rankin Avenue, New Lynn – up 20 per cent compared to last year.

Table 1.3: Summary of Evening Cyclist Movements
2007 – 2014 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14	Change 07-14
4	Patiki/Rosebank Road	45	45	34	52	65	43	59	**43**	**-27%**	**-4%**
56	3 Rankin Avenue, New Lynn	15	21	17	20	26	18	25	**30**	**20%**	**100%**
	Average per site (2 sites since 2007)	**30**	**33**	**26**	**36**	**46**	**31**	**42**	**37**	**-12%**	**23%**
	Total (2 sites since 2007)	**60**	**66**	**51**	**72**	**91**	**61**	**84**	**73**	**-13%**	**22%**
73	Blockhouse Bay/Great North Road	-	60	62	75	73	69	68	**70**	**3%**	-
15	Richardson Road/Maioro Street	-	-	13	25	22	24	23	**20**	**-13%**	-
	Average per site (3 sites in 2008, 4 sites from 2009)	-	**42**	**32**	**43**	**47**	**39**	**44**	**41**	**-7%**	-
	Total (3 sites in 2008, 4 sites from 2009)	-	**126**	**126**	**172**	**186**	**154**	**175**	**163**	**-7%**	-

- Like last year, the majority of cyclists were adults (96 per cent, unchanged from the previous measure).
- Ninety per cent of cyclists wore helmets (stable from 88 per cent in 2013).
- The majority of cyclists were male (86 per cent, stable from 85 per cent last year).
- Riding on the road was still most common (63 per cent, up from 59 percent in 2013). Cycle numbers on the off-road cycleway have decreased this year, from 32 per cent last year to 23 per cent in 2014.

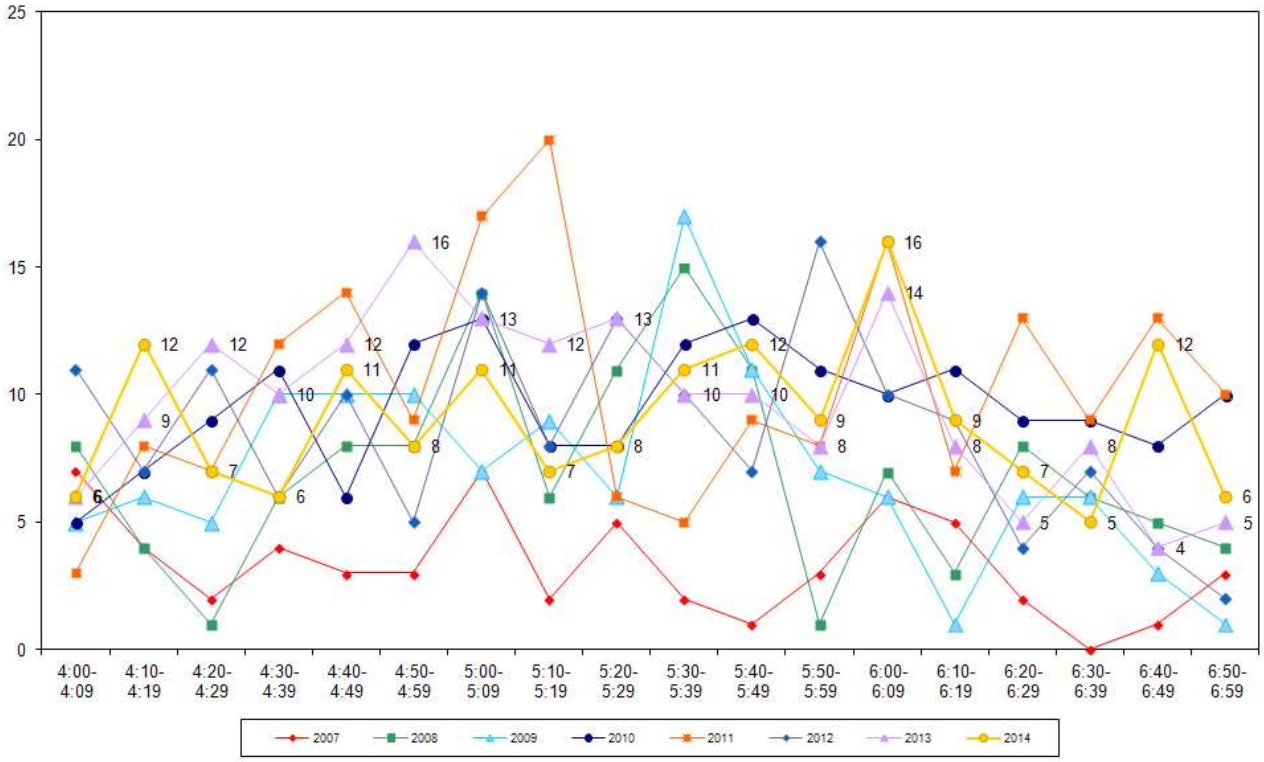
Table 1.4: Summary of Evening Cyclist Characteristics
2007 – 2014 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
Cyclist Type									
Adult	97	92	84	94	94	95	96	**96**	**0**
School child	3	8	16	6	6	5	4	**4**	**0**
Helmet Wearing									
Helmet on head	85	82	84	85	85	90	88	**90**	**2**
No helmet	15	18	16	15	15	10	12	**10**	**-2**
Gender									
Male	-	-	-	-	84	87	85	**86**	**1**
Female	-	-	-	-	15	12	15	**13**	**-2**
Can't tell	-	-	-	-	1	1	0	**1**	**1**
Where Riding									
Road	48	62	63	61	60	60	59	**63**	**4**
Footpath	52	38	37	29	33	32	32	**23**	**-9**
Off-road cycleway	-	-	-	10	7	8	9	**14**	**5**
Base:	***60***	***126***	***126***	***172***	***186***	***154***	***175***	***163***	

- 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 with a peak of 16 cyclists observed between 6:00pm to 6:09pm. A second peak is evident towards the end of the monitoring period, with 12 cyclists recorded between 6:40pm to 6:49pm.

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

2007 – 2014 (n)



1.6 Aggregated Total Summary Results

- A total of 321 cyclist movements were recorded across the four sites in 2014. This represents a four per cent decrease when compared with 2013 (334 movements).
- The average number of movements per site was 80 (down from 84 in 2013).
- The busiest site this year continued to be Blockhouse Bay/Great North Road, with a total of 142 movements (up 1 per cent from 2013).
- Richardson Road/Maioro Street had the fewest cycle movements (41 movements).
- The most notable change across all sites occurred at 3 Rankin Avenune, up 18 per cent to 47 cycle movements this year.

Table 1.5: Summary of Total Cyclist Movements

2007 – 2014 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14	Change 07-14
4	Patiki/Rosebank Road	82	79	72	90	121	95	105	**91**	**-13%**	**11%**
56	3 Rankin Avenue, New Lynn	31	38	38	32	42	38	40	**47**	**18%**	**52%**
	Average per site (2 sites in 2007)	**57**	**59**	**55**	**61**	**82**	**67**	**73**	**69**	**-5%**	**-21%**
	Total (2 sites in 2007)	**113**	**117**	**110**	**122**	**163**	**133**	**145**	**138**	**-5%**	**22%**
73	Blockhouse Bay/Great North Road	-	117	119	141	129	129	141	**142**	**1%**	**-**
15	Richardson Road/Maioro Street	-	-	21	39	37	53	48	**41**	**-15%**	**-**
	Average per site (3 sites in 2008, 4 sites from 2009)	**-**	**78**	**63**	**76**	**82**	**79**	**84**	**80**	**-5%**	**-**
	Total (3 sites in 2008, 4 sites from 2009)	**-**	**234**	**250**	**302**	**329**	**315**	**334**	**321**	**-4%**	**-**

- The majority of cyclists across the Whau ward were adults (96 per cent, stable from 94 per cent last year.
- Helmet-wearing continued to be widespread (89 per cent, stable from 2013).
- The greatest share of cyclists was male (88 per cent).
- The majority of cyclists were riding on the road (63 per cent, up from 55 per cent in 2013), 12 per were riding on the off-road cycleway (stable from 2012), with the remaining 25 per cent riding on the footpath (down from 35 per cent in 2013).

Table 1.6: Summary of Total Cyclist Characteristics

2007 – 2014 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
Cyclist Type									
Adult	96	92	80	94	93	94	94	**96**	**2**
School child	4	8	20	6	7	6	6	**4**	**-2**
Helmet Wearing									
Helmet on head	82	85	85	88	88	88	90	**89**	**-1**
No helmet	18	15	15	12	12	12	10	**11**	**1**
Gender									
Male	-	-	-	-	84	85	86	**88**	**2**
Female	-	-	-	-	14	14	14	**12**	**-2**
Can't tell	-	-	-	-	2	1	0	**0**	**0**
Where Riding									
Road	54	55	64	64	57	57	55	**63**	**8**
Footpath	46	45	36	29	37	33	35	**25**	**-10**
Off-road cycleway	0	0	0	7	6	10	10	**12**	**2**
Base:	***113***	***234***	***250***	***302***	***329***	***315***	***334***	***321***	

1.7 Average Annual Daily Traffic (AADT) Estimate

Note: A discussion of Average Annual Daily Traffic Estimates is provided in Section 1.1. A full description of the tool, the calculation used, and the limitations of the estimates are provided in Appendix One. Readers are encouraged to review these sections in conjunction with the data presented here.

- Table 1.7 provides the comparative AADT estimates for each site, based on the average of morning and evening peak AADT calculations.
- The highest AADT is at Blockhouse Bay/Great North Road (207 daily movements, up 1 per cent from 205 movements in 2013) and the lowest is at Richardson Road/Maioro Street (60 daily movements).
- Three of the four sites in this ward have recorded decreases in total AADT estimates this year compared with 2013. The intersections with decreases are:
  - 3 Rankin Avenue, New Lynn – down 18 per cent;
  - Richardson Road/Maioro Street – down 14 per cent; and
  - Patiki/Rosebank Road – down 13 per cent.
- Only one site had lower cycle volume than last year:
  - Blockhouse Bay/Great North Road – up 1 per cent.

Table 1.7: AADT Estimates Based on Morning and Evening Cyclist Movements 2007 – 2014 (n)

Site No.	*Locations*	*2007 AADT*	*2008 AADT*	*2009 AADT*	*2010 AADT*	*2011 AADT*	*2012 AADT*	*2013 AADT*	*2014 AADT*	13-14 Change	07-14 Change
73	Blockhouse Bay/Great North Road	-	170	173	204	186	187	205	**207**	**1%**	**-**
4	Patiki/Rosebank Road	119	114	105	130	175	139	152	**133**	**-13%**	**12%**
56	3 Rankin Avenue, New Lynn	45	55	56	46	60	55	57	**67**	**-18%**	**49%**
15	Richardson Road/Maioro Street	-	-	30	56	53	77	70	**60**	**-14%**	**-**

1.8 School Bike Shed Count Summary

Cycle Counts

- Among the surveyed schools, of those eligible to cycle, on average one per cent of students are cycling to their schools, unchanged from 2013.
- Green Bay Primary and Immanuel Christian School reported the highest share of cyclists – each with 4 per cent of all eligible students currently cycling to school.
- Of the 12 schools that responded, four (33 per cent) had no students cycling to school.
- Of the 20 schools that participated in the count in both 2013 and 2014, two (17 per cent) reported a decrease in the share of students cycling.
- Rates of cycling to school are highest for composite schools (4 per cent, up from 0 per cent in 2013).

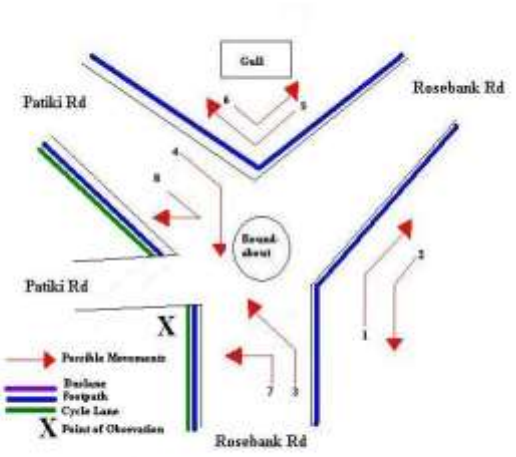
Scooter Counts

- Among the surveyed schools, of those eligible to scooter, on average, less than one per cent of students are scootering to their schools.
- Glenavon School reported the highest share of scooters – 5 per cent of all eligible students currently scootering to school.
- In total, n=39 students from the responding schools were reported to be scootering to school.
- Of the 12 schools that responded, 7 (58 per cent) had no students scootering to school.
- Rates of scootering to school are highest for the intermediate schools and full primary schools (2 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
2013	46	59	105	152
2014	**48**	**43**	**91**	**133**

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 48 movements. This is stable compared with 46 movements last year.
- The key movement at this site in the morning was south down Patiki Road into Rosebank Road (Movement 4 = 28 cyclists).
- The most notable changes were at Movement 2 (down 5 cyclists) and at Movement 4 (up 8 cyclists).

Table 2.1: Morning Cyclist Movements

Patiki/Rosebank 2007 – 2014 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
1	2	4	5	1	7	7	4	**5**	**1**
2	7	7	5	12	9	7	13	**8**	**-5**
3	5	4	8	5	15	14	6	**4**	**-2**
4	21	16	20	17	22	24	20	**28**	**8**
5	1	1	0	2	2	0	1	**1**	**0**
6	1	2	0	1	1	0	2	**0**	**-2**
7	-	-	-	-	-	0	0	**1**	**1**
8	-	-	-	-	-	0	0	**1**	**1**
Total	**37**	**34**	**38**	**38**	**56**	**52**	**46**	**48**	**2**

- 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 (85 per cent, down slightly from 89 per cent in 2013).
- Most cyclists over the morning peak were male (98 per cent, up from 85 per cent last year).
- Ninety-four per cent of the cyclists were riding on the road (up notably from 61 per cent last year).

Table 2.2: Morning Cyclist Characteristics

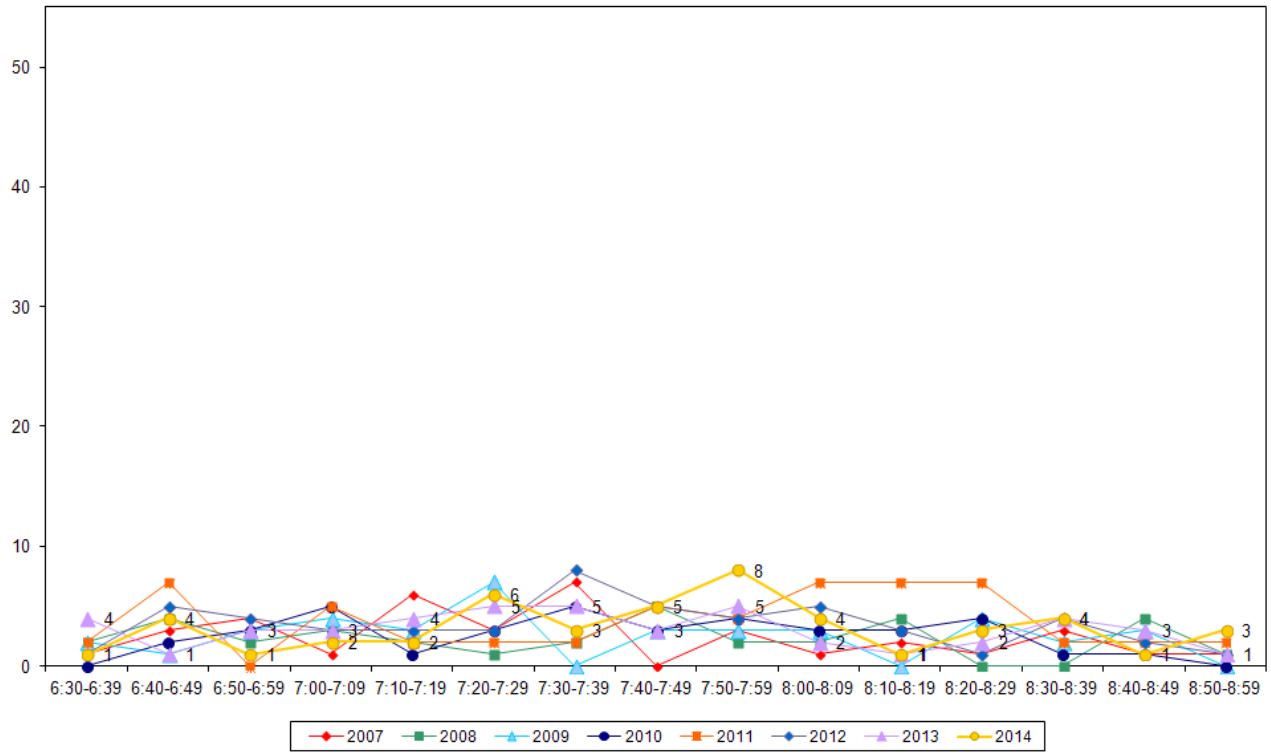
Patiki/Rosebank 2004 – 2014 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
Cyclist Type									
Adult	95	100	97	95	98	100	100	**100**	**0**
School child	5	0	3	5	2	0	0	**0**	**0**
Helmet Wearing									
Helmet on head	81	88	95	87	91	90	89	**85**	**-4**
No helmet	19	12	5	13	9	10	11	**15**	**4**
Gender									
Male	-	-	-	-	84	87	85	**98**	**13**
Female	-	-	-	-	16	13	15	**2**	**-13**
Where Riding									
Road	57	47	74	82	57	63	61	**94**	**33**
Footpath	43	53	26	18	43	37	39	**6**	**-33**
Base:	***37***	***34***	***38***	***38***	***56***	***52***	***46***	***48***	

- This year, the frequency of cyclists in the morning period was low and stable, with two slight peaks evident between 7:20am to 7:29am (6 cyclists) and between 7:50am to 7:59am (8 cyclists).

Figure 2.2: Morning Peak Cyclist Frequency

Patiki/Rosebank 2007 – 2014 (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 decreased, from 59 movements in 2013 to 43 in 2014.
- The most common movement at this site in the evening was north up Rosebank Road turning into Patiki Road (Movement 3 = 22 cyclists). This has been consistent since 2007.
- Evening cyclist volume has decreased most notably at Movement 3 (down 6 cyclists).

Table 2.3: Evening Cyclist Movements

Patiki/Rosebank 2007 – 2014 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
1	7	6	4	9	11	6	13	**9**	**-4**
2	2	8	7	9	11	7	8	**4**	**-4**
3	18	22	19	26	29	17	28	**22**	**-6**
4	14	7	1	4	10	9	7	**3**	**-4**
5	4	1	1	2	2	2	3	**3**	**0**
6	0	1	2	2	2	2	0	**2**	**2**
7	-	-	-	-	-	0	0	**0**	**0**
8	-	-	-	-	-	0	0	**0**	**0**
Total	**45**	**45**	**34**	**52**	**65**	**43**	**59**	**43**	**-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 (93 per cent, up from 83 per cent at the previous measure).
- The greatest share of evening peak cyclists was male (91 per cent).
- The volume of cyclists riding on the road has increased by 30 percentage points to 86 per cent this year.

Table 2.4: Evening Cyclist Characteristics

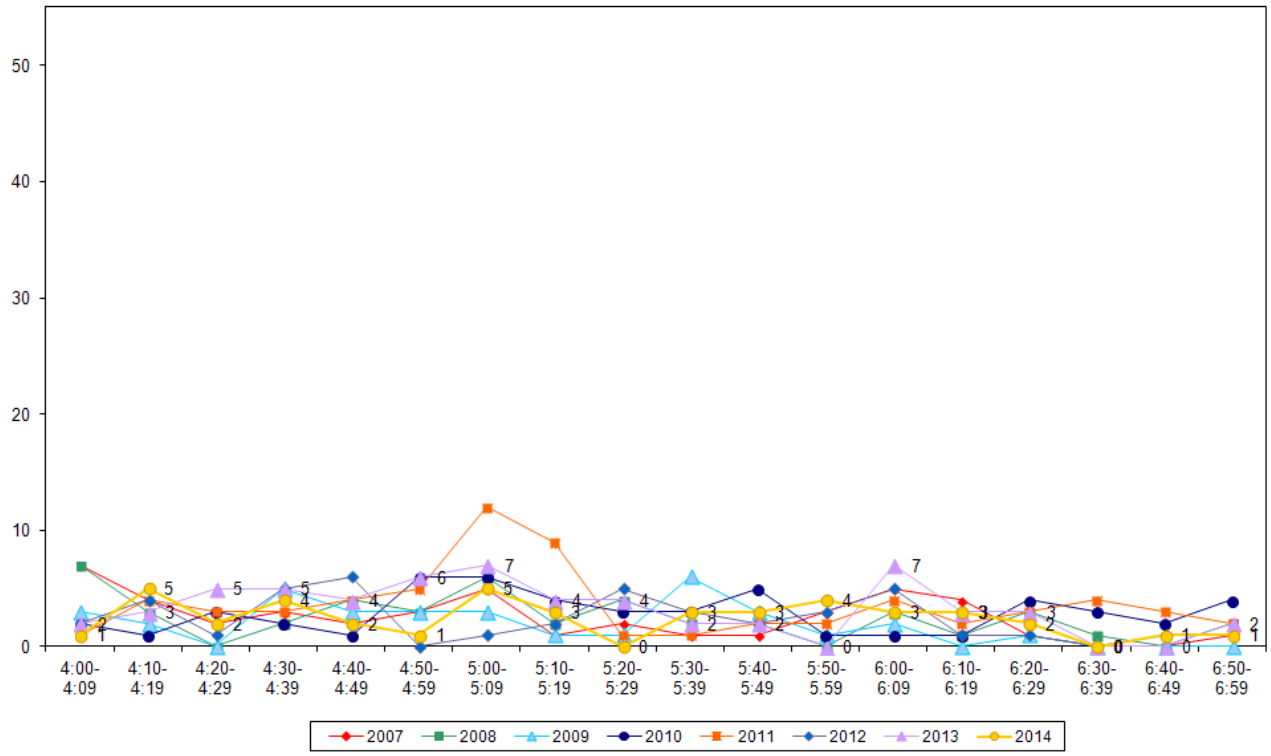
Patiki/Rosebank 2004 – 2014 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
Cyclist Type									
Adult	100	100	100	100	98	100	100	**100**	**0**
School child	0	0	0	0	2	0	0	**0**	**0**
Helmet Wearing									
Helmet on head	89	84	91	88	88	95	83	**93**	**10**
No helmet	11	16	9	12	12	5	17	**7**	**-10**
Gender									
Male	-	-	-	-	80	82	80	**91**	**11**
Female	-	-	-	-	20	16	20	**9**	**-11**
Can't tell	-	-	-	-	0	2	0	**0**	**0**
Where Riding									
Road	53	62	88	75	58	47	56	**86**	**30**
Footpath	47	38	12	25	42	53	44	**14**	**-30**
Base:	***45***	***45***	***34***	***52***	***65***	***43***	***59***	***43***	

- Cycle traffic remained stable throughout the evening shift, with no more than five cyclists observed at any ten minute interval. This pattern was similar to that observed in previous years.

Figure 2.3: Evening Peak Cyclist Frequency

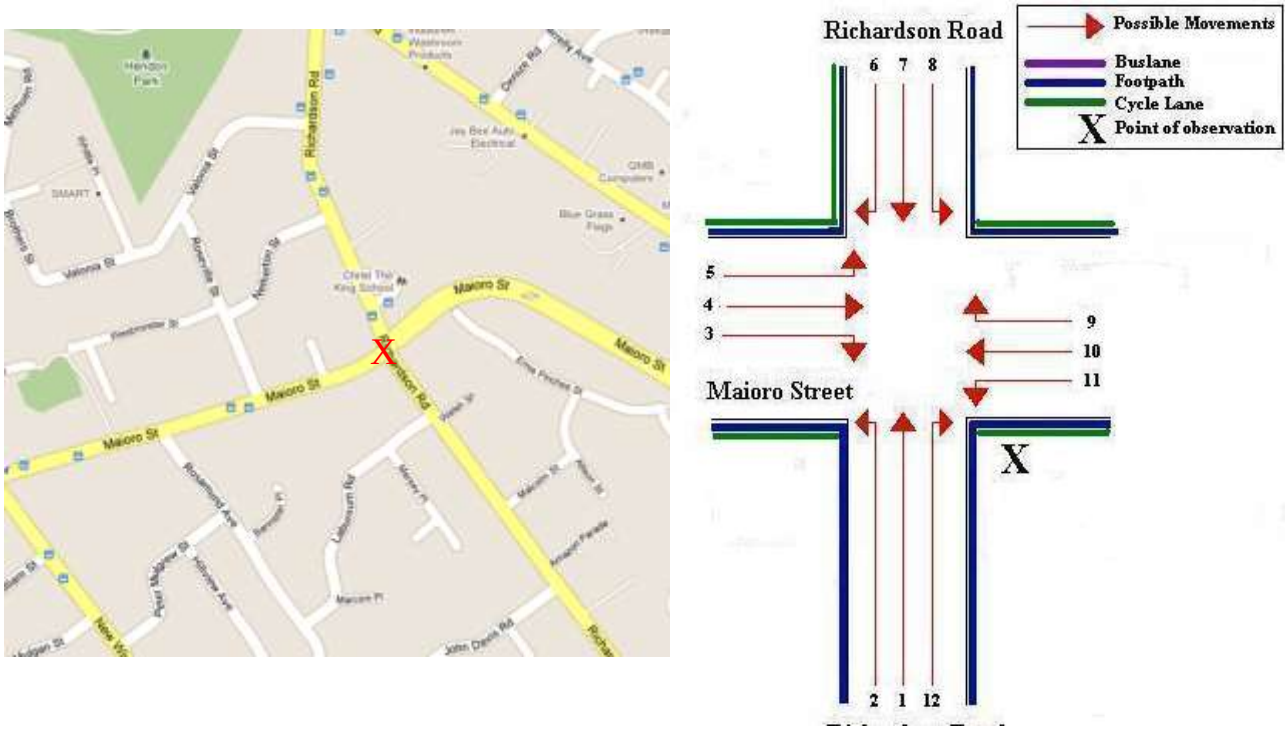
Patiki/Rosebank 2007 – 2014 (n)



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
2013	25	23	48	70
2014	**21**	**20**	**41**	**60**

3.2 Morning Peak

Environmental Conditions

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

Key Points

- The volume of cycle movements at the Richardson/Maioro intersection has decreased this year, with 21 cycle movements recorded (down 4 movements from last year).
- The key movement was travelling straight along Maioro Street travelling east (Movement 4 = 12 cyclists).
- The most noticeable changes occurred at Movement 10 – travelling straight along Maioro Road heading west (down 6 movements) and at Movement 4 – travelling straight along Maioro Road heading east (up 3 movements).

Table 3.1: Morning Cyclist Movements

Richardson/Maioro Street 2009 – 2014 (n)

Movement	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
1	2	4	1	4	1	**0**	**-1**
2	1	1	1	2	1	**2**	**1**
3	2	1	0	2	1	**1**	**0**
4	0	3	0	9	9	**12**	**3**
5	0	0	0	5	2	**1**	**-1**
6	1	0	0	0	1	**0**	**-1**
7	2	1	1	1	1	**2**	**1**
8	-	2	1	0	1	**0**	**-1**
9	-	0	1	0	0	**0**	**0**
10	-	2	10	6	8	**2**	**-6**
11	0	0	0	0	0	**0**	**0**
12	-	0	0	0	0	**1**	**1**
Total	**8**	**14**	**15**	**29**	**25**	**21**	**-4**

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

- Ninety per cent of the cyclists were adults (stable from last year).
- The majority of cyclists were wearing helmets (95 per cent, up from 88 per cent in 2013).
- Most of the cyclists were male (90 per cent).
- Nearly half of cyclists were riding on the off-road cycleway (48 per cent, down from 68 per cent last year). The remaining 52 per cent were riding on the road (up from 32 per cent in 2013).

Table 3.2: Morning Cyclist Characteristics

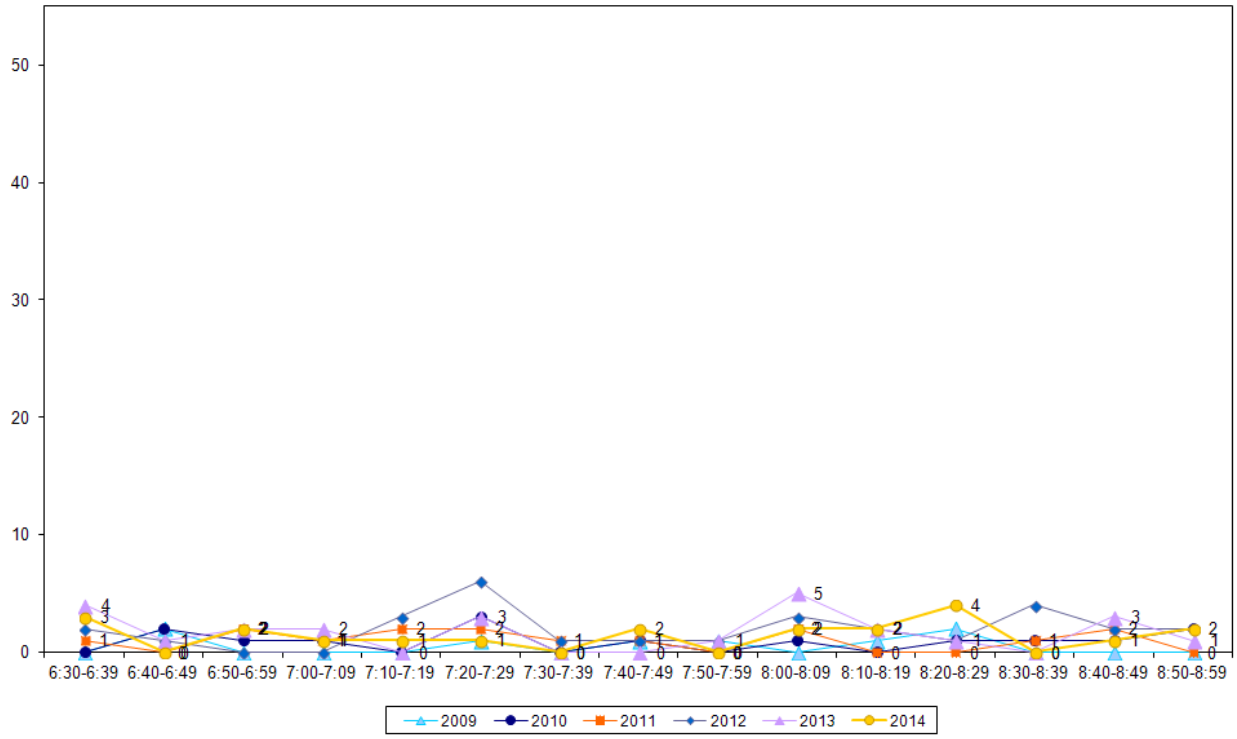
Richardson/Maioro Street 2009 – 2014 (%)

	2009	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
Cyclist Type							
Adult	100	100	93	69	92	**90**	**-2**
School child	0	0	7	31	8	**10**	**2**
Helmet Wearing							
Helmet on head	100	93	87	79	88	**95**	**7**
No helmet	0	7	13	21	12	**0**	**-12**
Don't know	0	0	0	0	0	**5**	**5**
Gender							
Male	-	-	80	76	84	**90**	**-6**
Female	-	-	20	24	16	**10**	**6**
Can't tell	-	-	0	0	0	**0**	**0**
Where Riding							
Road	88	57	47	38	32	**52**	**20**
Footpath	12	14	13	0	0	**0**	**0**
Off-road Cycleway	-	29	40	62	68	**48**	**-20**
Base:	***8***	***14***	***15***	***29***	***25***	***21***	

- Consistent with previous years, morning cycle volume was low throughout most of the morning monitoring period, with no more than four cyclists recorded at any ten minute interval throughout the monitoring period.

Figure 3.2: Morning Peak Cyclist Frequency

Richardson/Maioro Street 2009 – 2014 (n)



No cyclists were observed riding in groups at this site in 2014. This compares with 2013 where 12 per cent of cyclists (n=3) were recorded as riding in groups.

3.3 Evening Peak

Environmental Conditions

- The weather was fine but windy throughout the evening monitoring period.
- There were no road works or accidents that affected cycle counts.

Key Points

- The total number of evening cycle movements recorded at the Richardson/Maioro Street intersection was 20 (a slight decrease from 23 movements last year).
- The key movements in the evening were going straight along Maioro Street eastwards and westwards (Movement 4 = 5 cyclists; Movement 10 = 5 cyclists respectively).
- Turning left from Richardson Road to Maioro Street heading west (Movement 2) experienced the greatest change across all sites (up 4 movements).

Table 3.3: Evening Cyclist Movements

Richardson/Maioro Street 2009 – 2014 (n)

Movement	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
1	0	6	1	1	1	**0**	**-1**
2	4	2	1	6	1	**5**	**4**
3	1	1	2	3	2	**0**	**-2**
4	1	1	9	2	6	**5**	**-1**
5	1	0	1	0	1	**0**	**-1**
6	1	1	0	0	0	**1**	**1**
7	4	5	3	4	1	**2**	**1**
8	-	0	3	0	1	**0**	**-1**
9	-	3	1	1	1	**1**	**0**
10	-	4	1	4	7	**5**	**-2**
11	1	2	0	3	2	**1**	**-1**
12	-	0	0	0	0	**0**	**0**
Total	**13**	**25**	**22**	**24**	**23**	**20**	**-3**

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

- Four in five cyclists passing by this site were adults (90 per cent, a 10 percentage point decrease from 2013).
- Almost all cyclists were wearing a helmet (a decrease of 5 percentage points compared to last year).
- The majority of cyclists continued to be male (95 per cent).
- Sixty-five per cent of the cyclists were riding on the off-road cycleway (down 5 percentage points from 2013).

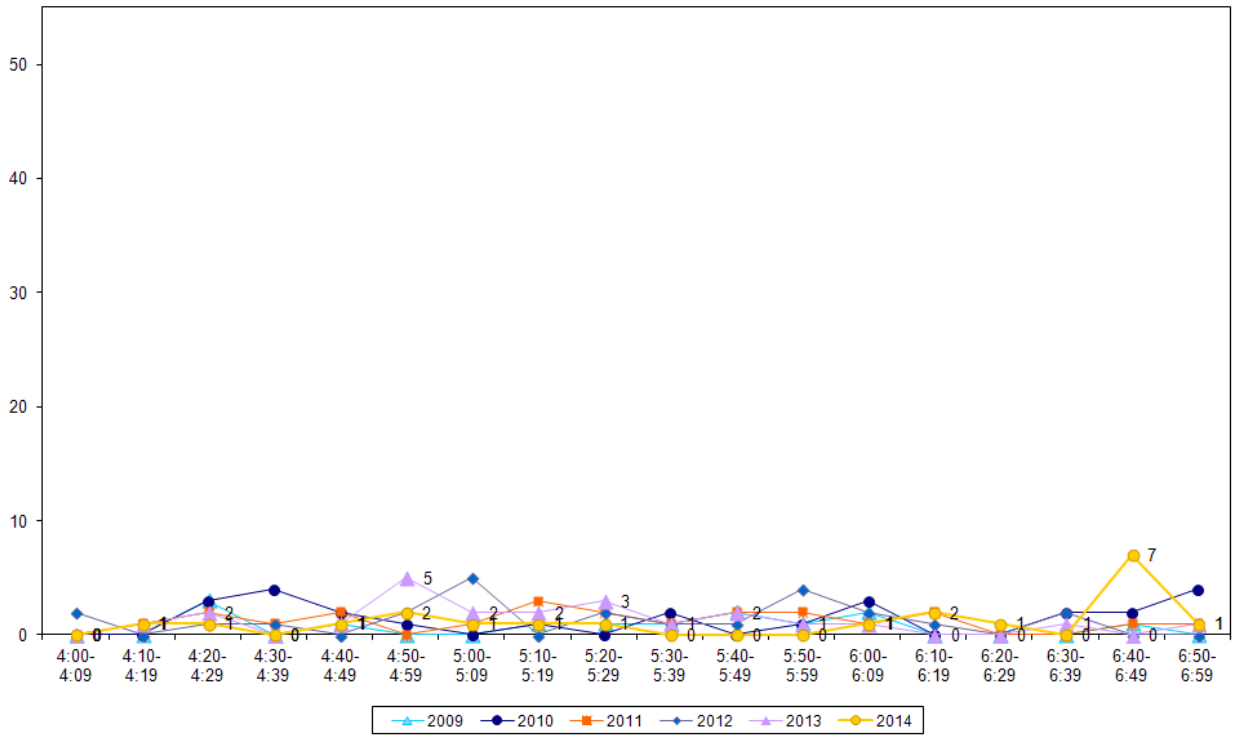
Table 3.4: Evening Cyclist Characteristics

Richardson/Maioro Street 2009 – 2014 (%)

	2009	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
Cyclist Type							
Adult	100	80	91	75	100	**90**	**-10**
School child	0	20	9	25	0	**10**	**10**
Helmet Wearing							
Helmet on head	85	76	77	75	100	**95**	**-5**
No helmet	15	24	23	25	0	**5**	**5**
Gender							
Male	-	-	86	92	87	**95**	**8**
Female	-	-	9	8	13	**5**	**-8**
Can't tell	-	-	5	0	0	**0**	
Where Riding							
Road	46	16	32	46	30	**35**	**5**
Footpath	54	16	14	0	0	**0**	**0**
Off-road cycleway	-	68	54	54	70	**65**	**-5**
Base:	***13***	***25***	***22***	***24***	***23***	***20***	

- The volume of cycle movements remained relatively low over the majority of the evening peak, with no more than two cyclists recorded during all but one of the 10 minute intervals. The exception was the peak towards the end of the monitoring period – between 6:40pm and 6:49pm (7 movements).

Figure 3.3: Evening Peak Cyclist Frequency
Richardson/Maioro Street 2009 – 2014 (n)

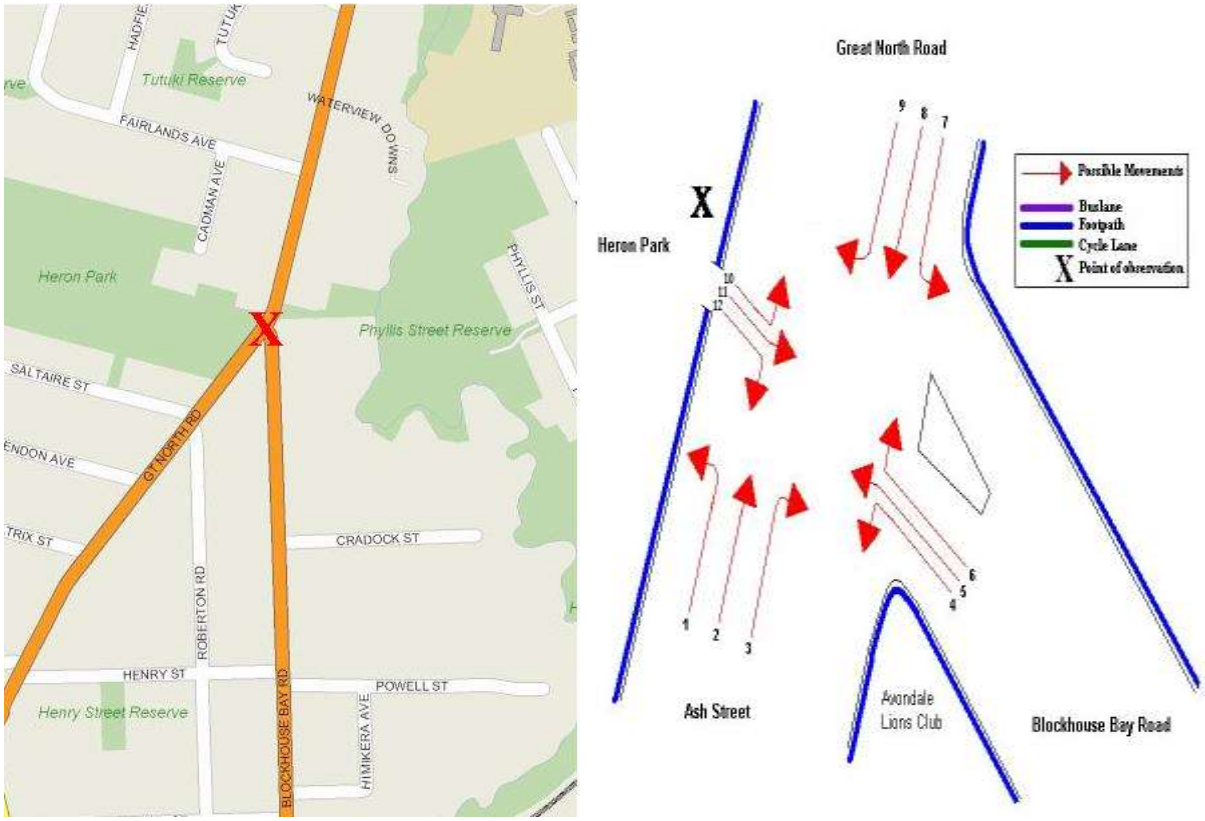


No cyclists were observed riding together in groups at this site in 2014. This compares with 2013 where 13 per cent of cyclists (n=3) were recorded as riding together.

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
2013	73	68	141	205
2014	**72**	**70**	**142**	**182**

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-two movements were recorded at the Blockhouse Bay/Great North Road site in the morning peak. This number is stable from the 73 movements recorded last year.
- The key morning movements were straight through Great North Road (Movement 2 = 42 cyclists) and the right turn out of Blockhouse Bay Road into Great North Road (Movement 6 = 21 cyclists).
- The most notable increase in cyclist movements in the morning at this site was at Movement 2 (up 8 cyclists) and the most notable decrease in cyclist movements was at Movement 8 (down 10 cyclists.

Table 4.1: Morning Cyclist Movements

Blockhouse Bay/Great North Road 2008 – 2014 (n)

Movement	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
1	0	0	0	0	0	0	**1**	**1**
2	29	28	33	23	36	34	**42**	**8**
3	0	0	2	0	0	1	**0**	**-1**
4	0	1	1	0	1	0	**0**	**0**
5	0	0	0	0	0	0	**0**	**0**
6	16	14	16	21	11	19	**21**	**2**
7	3	4	2	4	4	7	**4**	**-3**
8	9	10	12	8	6	12	**2**	**-10**
9	0	0	0	0	0	0	**0**	**0**
10	-	-	-	-	-	-	**0**	**0**
11	-	-	-	-	-	-	**1**	**1**
12	-	-	-	-	-	-	**1**	**1**
Total	**57**	**57**	**66**	**56**	**58**	**73**	**72**	**-1**

Note: In 2014 Movements 10, 11 and 12 were created in order to count cyclists who entered the intersection from Heron Park.

- Over the morning peak, most cyclists were adults (97 per cent, an increase from 86 per cent in 2013).
- The share of cyclists wearing a helmet has remained stable (94 per cent, compared with 96 per cent last year).
- Most cyclists were male (83 per cent).
- Fifty per cent of cyclists were observed riding on the road, an increase from 44 per cent last year.

Table 4.2: Morning Cyclist Characteristics

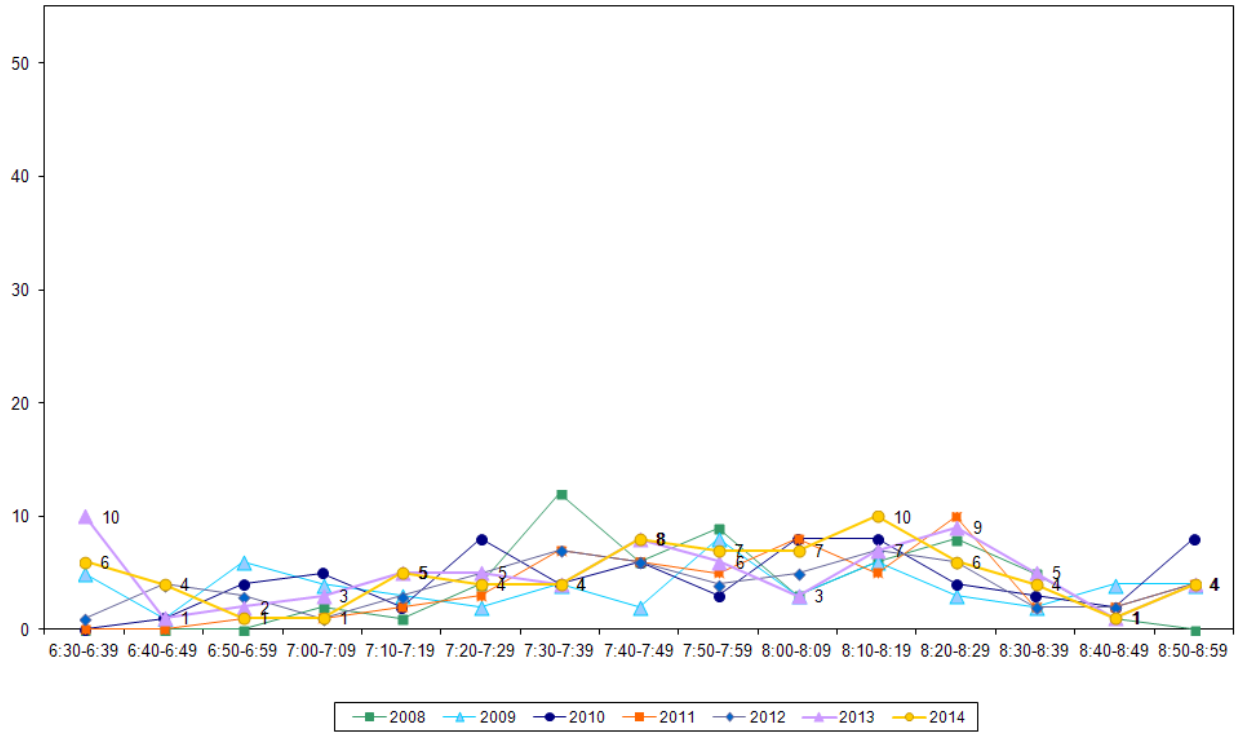
Blockhouse Bay/Great North Road 2008 – 2014 (%)

	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
Cyclist Type								
Adult	89	65	92	82	93	86	**97**	**11**
School child	11	35	8	18	7	14	**3**	**-11**
Helmet Wearing								
Helmet on head	93	88	95	98	88	96	**94**	**-2**
No helmet	7	12	5	2	12	4	**6**	**2**
Gender								
Male	-	-	-	86	85	91	**83**	**-8**
Female	-	-	-	5	13	8	**17**	**9**
Can't tell	-	-	-	9	2	1	**0**	**-1**
Where Riding								
Road	44	65	62	50	57	44	**50**	**6**
Footpath	56	35	38	50	43	56	**50**	**-6**
Base:	***57***	***57***	***66***	***56***	***60***	***73***	***72***	

- Morning cycle volumes remained stable throughout the morning monitoring period. The largest number of cycle movements recorded during any ten minute interval was 10, which were observed between 8:10am to 8:19am.

Figure 4.2: Morning Peak Cyclist Frequency

Blockhouse Bay/Great North Road 2008 – 2014 (n)



Note: In 2014, 3 cyclists (4 per cent of all morning peak cycle movements at this site) were observed riding together at 6:38am. This compares with 10 per cent of cyclists (n=7) observed riding together in 2013.

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 stable from last year (70 movements compared to 68 movements last year).
- The most common movement in the evening was straight through Great North Road in a south-westerly direction (Movement 8 = 38 cyclists).
- Cyclist volumes over the evening period have increased most notably at Movement 7 (up 10 cyclists) and decreased most notably at Movement 8 (down 6 cyclists).

Table 4.3: Evening Cyclist Movements

Blockhouse Bay/Great North Road 2008 – 2014 (n)

Movement	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
1	0	0	0	0	0	0	**0**	**0**
2	14	15	17	15	10	7	**5**	**-2**
3	0	0	2	1	2	0	**0**	**0**
4	0	1	0	0	1	0	**0**	**0**
5	0	2	0	0	0	0	**0**	**0**
6	1	2	4	6	5	5	**4**	**-1**
7	15	13	15	20	10	12	**22**	**10**
8	30	28	37	27	39	44	**38**	**-6**
9	0	1	0	4	1	0	**0**	**0**
10	-	-	-	-	-	-	**0**	**0**
11	-	-	-	-	-	-	**0**	**0**
12	-	-	-	-	-	-	**1**	**1**
Total	**60**	**62**	**75**	**73**	**68**	**68**	**70**	**2**

Note: In 2014 Movements 10, 11 and 12 were created in order to specifically count cyclists who entered the intersection from Heron Park and exited elsewhere.

- Over the evening peak, almost all cyclists at this site were adults (99 per cent, unchanged from 99 per cent last year).
- Most cyclists at this site were wearing a helmet (94 per cent, stable from 93 per cent at the previous measure).
- The majority of cyclists were recorded as male (77 per cent).
- Sixty-six per cent of cyclists were riding on the road, down from 72 per cent in 2013.

Table 4.4: Evening Cyclist Characteristics

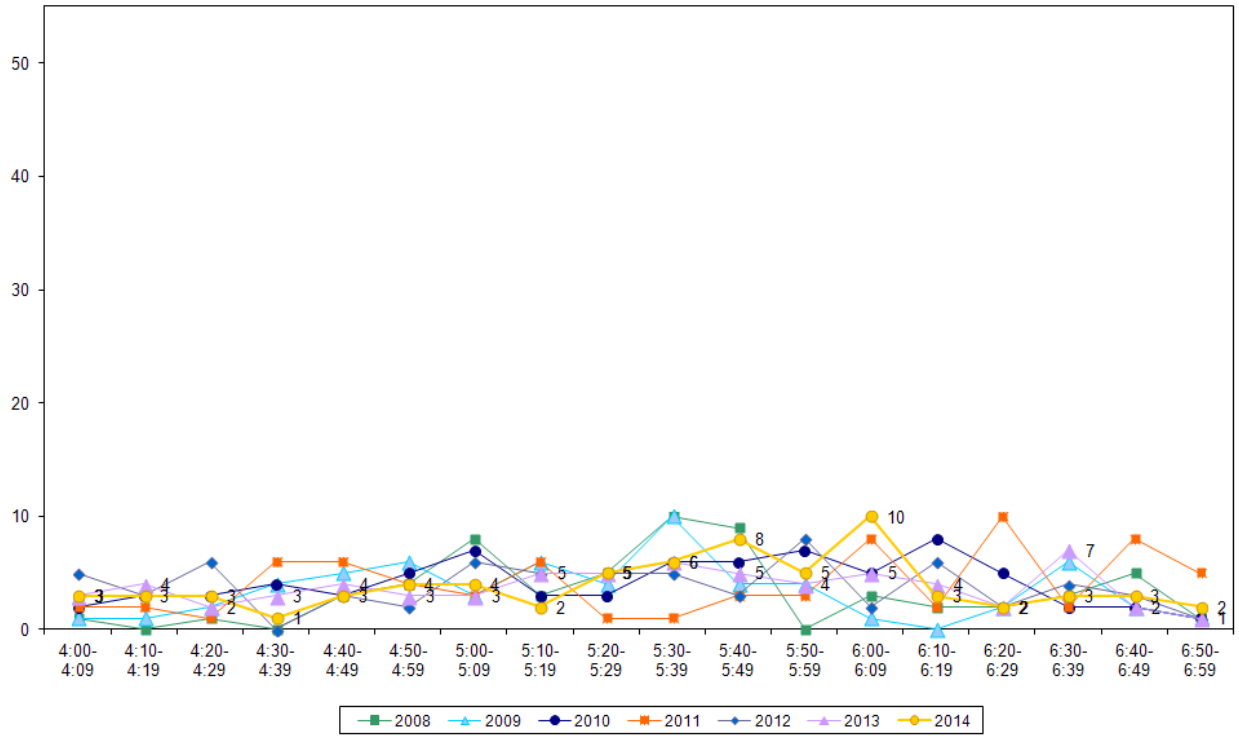
Blockhouse Bay/Great North Road 2008 – 2014 (%)

	2008	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
Cyclist Type								
Adult	90	76	96	95	100	99	**99**	**0**
School child	10	24	4	5	0	1	**1**	**0**
Helmet Wearing								
Helmet on head	87	81	93	89	94	93	**94**	**1**
No helmet	13	19	7	11	6	7	**6**	**-1**
Gender								
Male	-	-	-	86	87	91	**77**	**-14**
Female	-	-	-	12	12	9	**22**	**13**
Can't tell	-	-	-	1	1	0	**1**	**1**
Where Riding								
Road	67	56	72	70	75	72	**66**	**-6**
Footpath	33	44	28	30	25	28	**34**	**6**
Base:	***60***	***62***	***75***	***73***	***68***	***68***	***70***	

- Evening cycle volumes were relatively steady and low throughout the monitoring period. There was a small peak observed between 6:00pm to 6:09pm with 10 cyclists recorded during this interval.

Figure 4.3: Evening Peak Cyclist Frequency

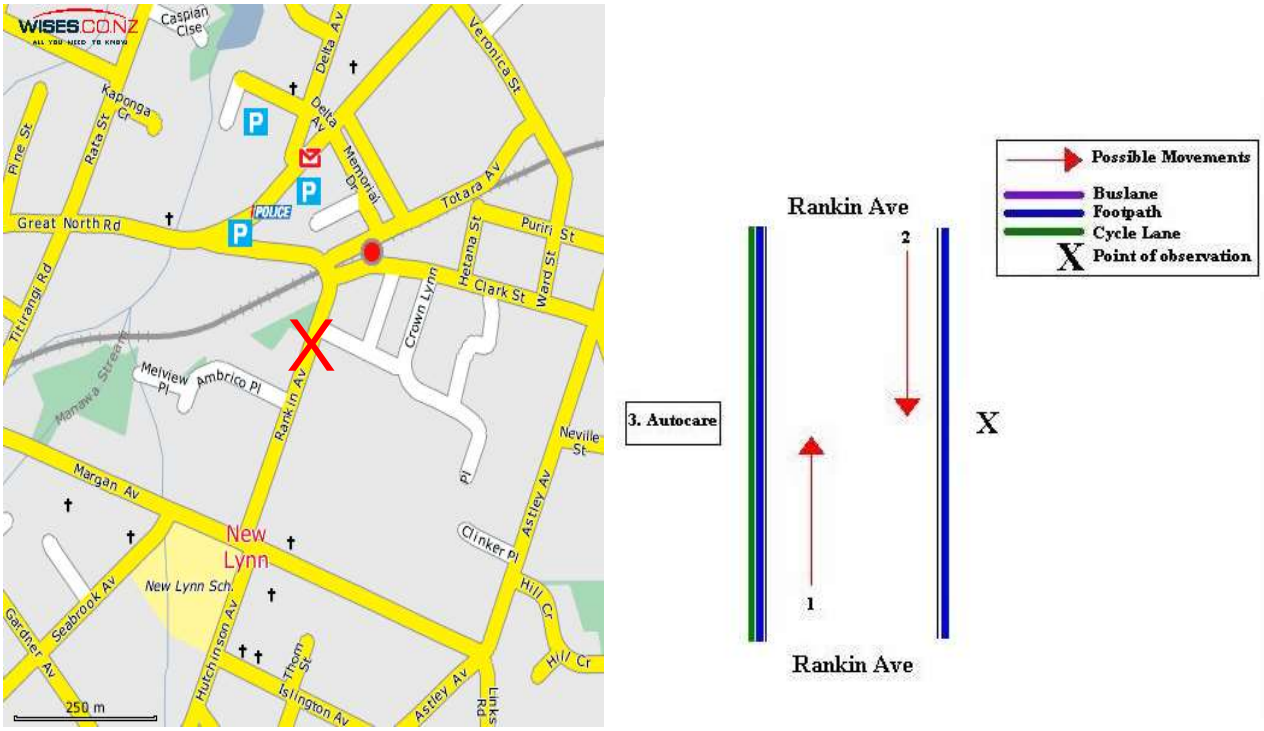
Blockhouse Bay/Great North Road 2008 – 2014 (n)



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



Note: An off-road cycleway was established on the western side of Rankin Ave between the 2013 and 2014 cycle counts.

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
2014	**17**	**30**	**47**	**67**

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 17 cycle movements recorded (compared with 15 movements in 2013).
- The most common movement in the morning continued to be straight along Rankin Avenue heading north (Movement 1 = 13 cyclists).

Table 5.1: Morning Cyclist Movements

3 Rankin Avenue 2007 – 2014 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
1	12	15	18	10	15	19	11	**13**	**2**
2	4	2	3	2	1	1	4	**4**	**0**
Total	**16**	**17**	**21**	**12**	**16**	**20**	**15**	**17**	**2**

- Over the morning peak, most cyclists at this site were adults (88 per cent, stable from 87 per cent last year).
- Fifty-nine per cent of cyclists are wearing a helmet (down from 80 per cent in 2013).
- The majority of cyclists were male (88 per cent, up from 73 per cent last year).
- Forty-one per cent of the cyclists were riding on the road (down 46 percentage points since last year). A notable share of these cyclists have moved to the off-road cycleway (35 per cent), while the remaining 24 per cent rode on the footpath.

Table 5.2: Morning Cyclist Characteristics

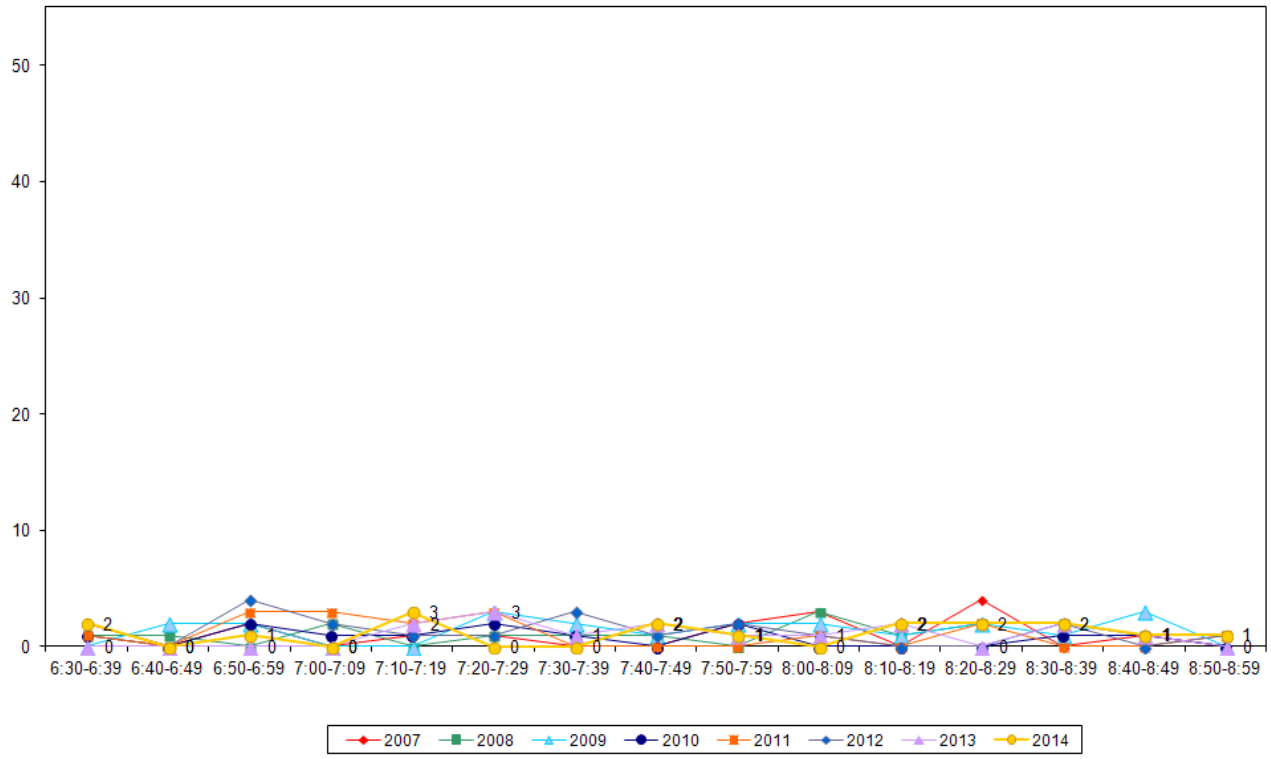
3 Rankin Avenue 2007 – 2014 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	**Change 13-14**
Cyclist Type									
Adult	100	88	52	100	100	100	87	**88**	**1**
School child	0	12	48	0	0	0	13	**12**	**-1**
Helmet Wearing									
Helmet on head	75	76	62	83	81	80	80	**59**	**-21**
No helmet	25	24	38	17	19	20	13	**41**	**28**
Unsure	-	-	-	-	-	-	7	**0**	**-7**
Gender									
Male	-	-	-	-	81	90	73	**88**	**15**
Female	-	-	-	-	19	10	27	**12**	**-15**
Can't tell	-	-	-	-	0	0	0	**0**	**0**
Where Riding									
Road	69	53	38	67	63	55	87	**41**	**-46**
Footpath	31	47	62	33	37	45	13	**24**	**11**
Off-road cycleway	-	-	-	-	-	-	-	**35**	**35**
Base:	***16***	***17***	***21***	***12***	***16***	***20***	***15***	***17***	

- Consistent with previous records, the volume of morning cycle movements was very low over the entire monitoring period. 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 – 2014 (n)



5.3 Evening Peak

Environmental Conditions

- The weather was sunny 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 5 movements to a total of 30.
- The key evening movement continued to be straight along Rankin Avenue heading south (Movement 2 = 16 cyclists).
- Cycle volumes have increased most noticeably at Movement 1, from 10 movements last year to 14 movements this year.

Table 5.3: Evening Cyclist Movements

3 Rankin Avenue 2007 – 2014 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	Change 13-14
1	6	5	3	5	7	0	10	**14**	**4**
2	9	16	14	15	19	18	15	**16**	**1**
Total	**15**	**21**	**17**	**20**	**26**	**18**	**25**	**30**	**5**

- The greatest share of cyclists using this site were adults (87 per cent, up from 76 per cent last year).
- Seventy per cent of cyclists at this site were wearing a helmet (down from 76 per cent last year).
- Most cyclists were recorded as male (93 per cent, up 13 percentage points since 2013).
- Forty per cent of all cyclists at this site in the evening were riding on the road, while 33 per cent rode on the off-road cycleway.

Table 5.4: Evening Cyclist Characteristics

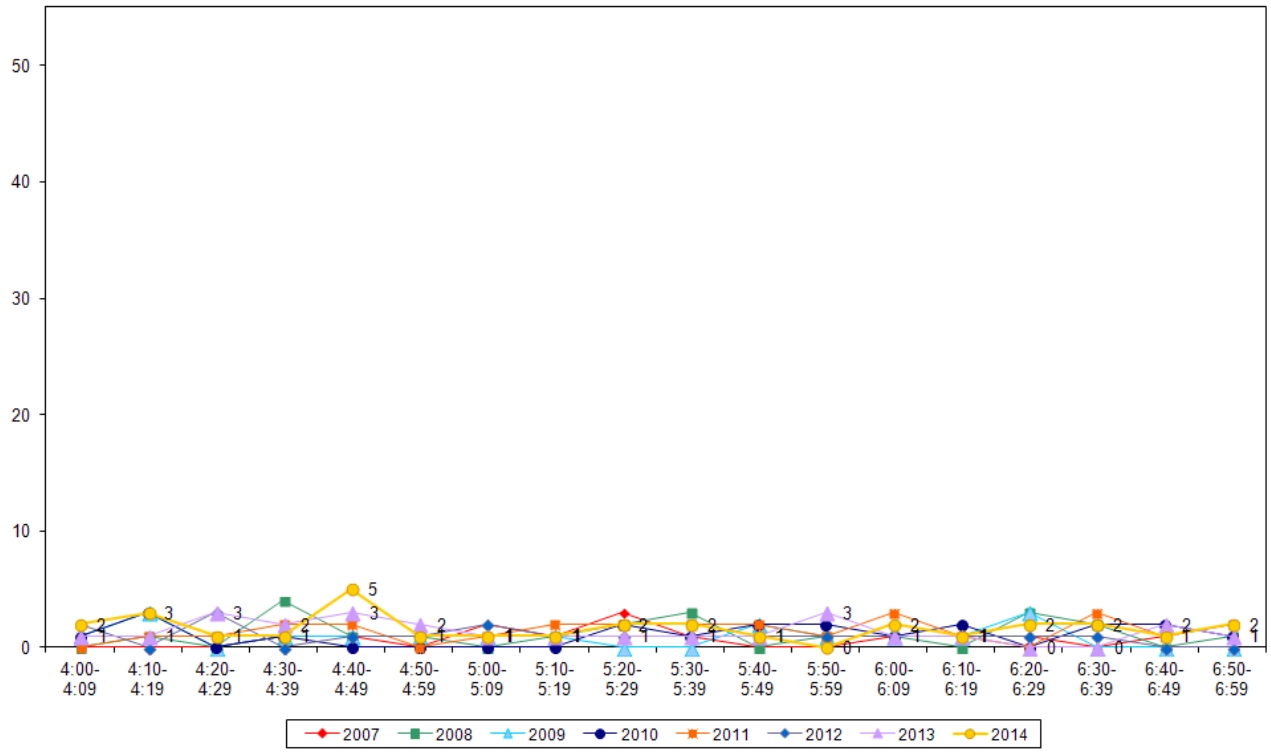
3 Rankin Avenue 2007 – 2014 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	**Change 13-14**
Cyclist Type									
Adult	87	81	71	85	81	94	76	**87**	**11**
School child	13	19	29	15	19	6	24	**13**	**-11**
Helmet Wearing									
Helmet on head	73	62	82	60	73	78	76	**70**	**-6**
No helmet	27	38	18	40	27	22	24	**30**	**6**
Gender									
Male	-	-	-	-	88	89	80	**93**	**13**
Female	-	-	-	-	12	11	20	**7**	**-13**
Can't tell	-	-	-	-	0	0	0	**0**	**0**
Where Riding									
Road	33	48	53	40	62	44	56	**40**	**-16**
Footpath	67	52	47	60	38	56	44	**27**	**-17**
Off-road cycleway	-	-	-	-	-	-	-	**33**	**33**
Base:	***15***	***21***	***17***	***20***	***26***	***18***	***25***	***30***	

- 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. The exception to this occurred between 4:40pm to 4:49pm with 5 cyclists recorded. This trend is consistent with previous years.

Figure 5.3: Evening Peak Cyclist Frequency

3 Rankin Avenue 2007 – 2014 (n)



6. SCHOOL BIKE SHED COUNT

6.1 Cycle Count Background Information

- A total of 12 schools in the Whau ward participated in the school bike shed count. Of the schools that responded to the survey, most had no policies that restrict students cycling to school[9].
- No schools surveyed reported any events or issues that may affect the cycle counts.
- While the designated count day was Tuesday 4th of March 2014, some schools conducted cycle counts on different days[10].

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

6.2 Cycle Count Key Points

- Among the surveyed schools, of those eligible to cycle to school, on average, one per cent of students are cycling to their schools, unchanged from 2013.
- Green Bay Primary School and Immanuel Christian School reported the highest share of cyclists – each with 4 per cent of all eligible students currently cycling to school.
- In total, n=72 students from the responding schools were reported to be cycling to school.
- Of the 12 schools that responded, four (33 per cent) had no students cycling to school.
- Of the 10 schools that participated in the count in both 2013 and 2014, only Immanuel Christian School reported an increase in the share of students cycling, (4 per cent, up from 0 per cent)
- Of the 20 schools that participated in the count in both 2013 and 2014, two (17 per cent) reported a decrease in the share of students cycling.

[9] The following schools have policies surrounding cycling to school:
- Green Bay Primary School *"Students year 5 and over"*
- Immanuel Christian School *"Year 7 and above"*

[10] The following schools conducted their counts on alternative days:
- Avondale Intermediate School – 18th March 2014
- Glenavon School – 12th March 2014
- Green Bay High School – 18th March 2014
- Immanuel Christian School – 13th March 2014
- Kelston Girls' High School – 26th March 2014
- Kelston Intermediate School – 18th March 2014
- Saint Mary's School (Avondale) – 17th March 2014

Table 6.1 shows the results of the 12 schools surveyed in the Whau ward.

Table 6.1: Summary Table Of School Bike Count

2007 – 2014 (n)

School Name	*School Type*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible*[11]							
				2014	*2013*	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
Green Bay Primary	Full Primary	214	8	4%	5%	2%	3%	-	-	-	-
Immanuel Christian School	Composite	50	2	4%	0%	2%	0%	-	2%	1%	1%
Blockhouse Bay Intermediate	Intermediate	802	24	3%	3%	5%	3%	-	3%	4%	4%
Wesley Intermediate School	Intermediate	134	4	3%	4%	1%	-	-	-	-	-
Avondale intermediate	Intermediate	299	7	2%	-	1%	-	-	-	-	-
Avondale College	Secondary	2643	17	1%	1%	-	-	-	1%	1%	-
Green Bay High School	Secondary	1350	8	1%	1%	1%	1%	1%	1%	1%	1%
Kelston Boys' High School	Secondary	857	2	<1%	<1%	<1%	<1%	<1%	0%	1%	1%
Glenavon School	Full Primary	215	0	0%	0%	0%	0%	-	-	-	-
Kelston Girls' High School	Secondary	678	0	0%	0%	0%	0%	0%	0%	0%	0%
Kelston Intermediate	Intermediate	260	0	0%	-	1%	-	-	-	-	-
St Mary's School (Avondale)	Full Primary	200	0	0%	0%	-	0%	-	-	-	-
Total		**7702**	**72**	**1%**	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 are highest for composite schools (4 per cent, up from 0 per cent in 2013).

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

2007 – 2014 (%)

School Type	*Number of Schools Responded in 2014 (n)*	*Cyclists as share of those eligible*								Change
		2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	13-14
Composite	1	1%	1%	2%	-	0%	2%	0%	**4%**	**4%**
Intermediate	4	-	-	-	-	1%	1%	2%	**2%**	**0%**
Secondary	4	1%	1%	1%	1%	1%	1%	1%	**1%**	**0%**
Full Primary	3	4%	4%	3%	-	3%	3%	4%	**1%**	**-3%**
Intermediate/Secondary	-	-	-	-	-	-	-	-	-	-

6.3 Scooter Count Background Information

- A total of 12 schools in the Whau ward participated in the school bike shed scooter count. No schools that responded to the survey reported policies that restrict students scootering to school.
- No schools surveyed reported any events or issues that may affect the scooter counts.
- While the designated count day was Tuesday 4th of March 2014, some schools conducted cycle counts on different days[12].

Note: Non-motorised scooters were counted for the first time in 2014.

6.4 Scooter Count Key Points

- Among the surveyed schools, of those eligible to scooter, on average, less than one per cent of students are scootering to their schools.
- Glenavon School reported the highest share of scooters – 5 per cent of all eligible students currently scootering to school.
- In total, n=39 students from the responding schools were reported to be scootering to school.
- Of the 12 schools that responded, 7 (58 per cent) had no students scootering to school.

[12] The following schools conducted their counts on alternative days:
- Avondale Intermediate School – 18th March 2014
- Glenavon School – 12th March 2014
- Green Bay High School – 18th March 2014
- Immanuel Christian School – 13th March 2014
- Kelston Girls' High School – 26th March 2014
- Kelston Intermediate School – 18th March 2014
- Saint Mary's School (Avondale) – 17th March 2014

Table 6.3 shows the results of the 12 schools surveyed in the Whau ward.

Table 6.3: Summary Table Of School Scooter Count

2007 – 2014 (n)

School Name	*School Type*	*School Roll Eligible To Scooter*	*No. of Scooters Counted*	*Scooters as share of those eligible*[13]
				2014
Glenavon School	Full Primary	215	10	5%
Blockhouse Bay Intermediate	Intermediate	802	18	2%
Avondale intermediate	Intermediate	299	4	1%
Green Bay High School	Secondary	1350	1	<1%
Green Bay Primary	Full Primary	493	6	1%
Avondale College	Secondary	2643	0	0%
Immanuel Christian School	Composite	111	0	0%
Kelston Boys' High School	Secondary	857	0	0%
Kelston Girls' High School	Secondary	678	0	0%
Kelston Intermediate	Intermediate	260	0	0%
St Mary's School (Avondale)	Full Primary	200	0	0%
Wesley Intermediate School	Intermediate	134	0	0%
Total		**8042**	**39**	**<1%**

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

Table 6.4 illustrates the rates of scootering to school at different school levels. Rates of scootering to school are highest for the intermediate schools and full primary schools (2 per cent each).

Table 6.4: Summary Table Of School Scooter Count by School Type

2007 – 2014 (%)

School Type	*Number of Schools Responded in 2014 (n)*	*Scooter riders as share of those eligible*
		2014
Intermediate	4	2%
Full Primary	3	2%
Secondary	4	<1%
Composite	1	0%
Intermediate/Secondary	-	-

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[14] 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)[15], 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.

[14] Annual average daily traffic

[15] 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%