MONITORING REPORT

Prepared For Regional Cycle Monitoring Working Group
(Co-ordinated by Auckland Regional Transport Authority)

MANUAL CYCLE MONITORING IN THE AUCKLAND REGION

March 2009

Waitakere

Prepared by Gravitas Research and Strategy Limited

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TABLE OF CONTENTS

1. WAITAKERE SUMMARY OF RESULTS 1

1.1 Introduction 1
1.2 Methodology 3
1.3 Summary Of Results 12
1.4 Morning Peak 13
1.5 Evening Peak 17
1.6 Aggregated Total 22
1.7 Annual Average Daily Traffic (AADT) Estimates 24
1.8 School Bike Shed Count Summary 25

2. HENDERSON CREEK, HENDERSON (SITE 48) 26

2.1 Morning Peak 27
2.2 Evening Peak 29

3. TRIANGLE ROAD/DON BUCK ROAD, HENDERSON (SITE 49) 31

3.1 Morning Peak 32
3.2 Evening Peak 35

4. LINCOLN ROAD/FAIRDENE AVENUE, HENDERSON (SITE 50) 38

4.1 Morning Peak 39
4.2 Evening Peak 42

5. LUCKENS ROAD/HOBSONVILLE ROAD, WEST HARBOUR (SITE 51) 45

5.1 Morning Peak 46
5.2 Evening Peak 49

6. CENTRAL PARK DRIVE, HENDERSON (SITE 52) 52

6.1 Morning Peak 53
6.2 Evening Peak 56

7. 326 TE ATATU ROAD, TE ATATU (SITE 53) 59

7.1 Morning Peak 60
7.2 Evening Peak 62

8. TE ATATU ROAD/ELCOAT AVENUE, HENDERSON (SITE 54) 64
8.1 Morning Peak 65
8.2 Evening Peak 68

9. SWANSON ROAD/RANUI STATION ROAD/ARMADA DRIVE, RANUI (SITE 55) 71
9.1 Morning Peak 72
9.2 Evening Peak 75

10. 3 RANKIN AVENUE, NEW LYNN (SITE 56) 78
10.1 Morning Peak 79
10.2 Evening Peak 82

11. WEST COAST ROAD/ROSIER ROAD, GLEN EDEN (SITE 57) 85
11.1 Morning Peak 86
11.2 Evening Peak 89

12. NORTH WESTERN CYCLEWAY (NEAR TE ATATU RD OFF-RAMP), TE ATATU (SITE 58) 92
12.1 Morning Peak 93
12.2 Evening Peak 95

13. UPPER HARBOUR BRIDGE, GREENHITHE(SITE 70) 98
13.1 Morning Peak 99
13.2 Evening Peak 101

14. TE ATATU/OLD TE ATATU ROAD/TATAU WAY, TE ATATU (SITE 72) 103
14.1 Morning Peak 104
14.2 Evening Peak 107

15. RATHGAR/POMARIA ROAD, HENDERSON (SITE 85) 110
15.1 Morning Peak 111
15.2 Evening Peak 113

16. SCHOOL BIKE SHED COUNT - WAITAKERE 116

APPENDICES

Appendix One: Annual Average Daily Traffic (AADT) Calculation
Appendix Two: School Bike Shed Information Sheet And Cover Letter

1. WAITAKERE SUMMARY OF RESULTS

1.1 Introduction

The Need For Reliable Cycle Trip Data

Monitoring cycle trips and cycle traffic is important to the Auckland Regional Transport Authority (ARTA) and the local councils in the Auckland region, to identify where investment may be needed to improve infrastructure for cycling. Cycle traffic data will also help ARTA prioritise future funding through the Auckland Land Transport Programme[1].

Cycle traffic data will help inform a major programme of improvements for cycling in the Auckland region – over $100 million is planned to be invested in building over 50% of the Regional Cycle Network over the next nine years. Comprehensive cycle data assists with the development of the region's cycle network and prioritization of projects.

This cycle monitoring gives precise cycle traffic information for a number of locations across the region, which can guide investment in infrastructure and other programmes. It also allows councils to track progress against a quality baseline over the coming decade.

[1] Auckland Regional Transport Authority (2006) *Regional Cycle Monitoring Plan (Provisional Guidelines)*

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. 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 14 sites across Waitakere following a standardised methodology. Results are presented site-by-site, as well as being aggregated to a TA and region level. For sites also monitored in 2007 and 2008, comparative results are provided.

Important Note: This report provides the results of manual cycle monitoring conducted at 14 pre-determined sites in Waitakere only. Site-by-site results and city/district summaries for all other Auckland region Territorial Authorities 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.

[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.

1.2 Methodology

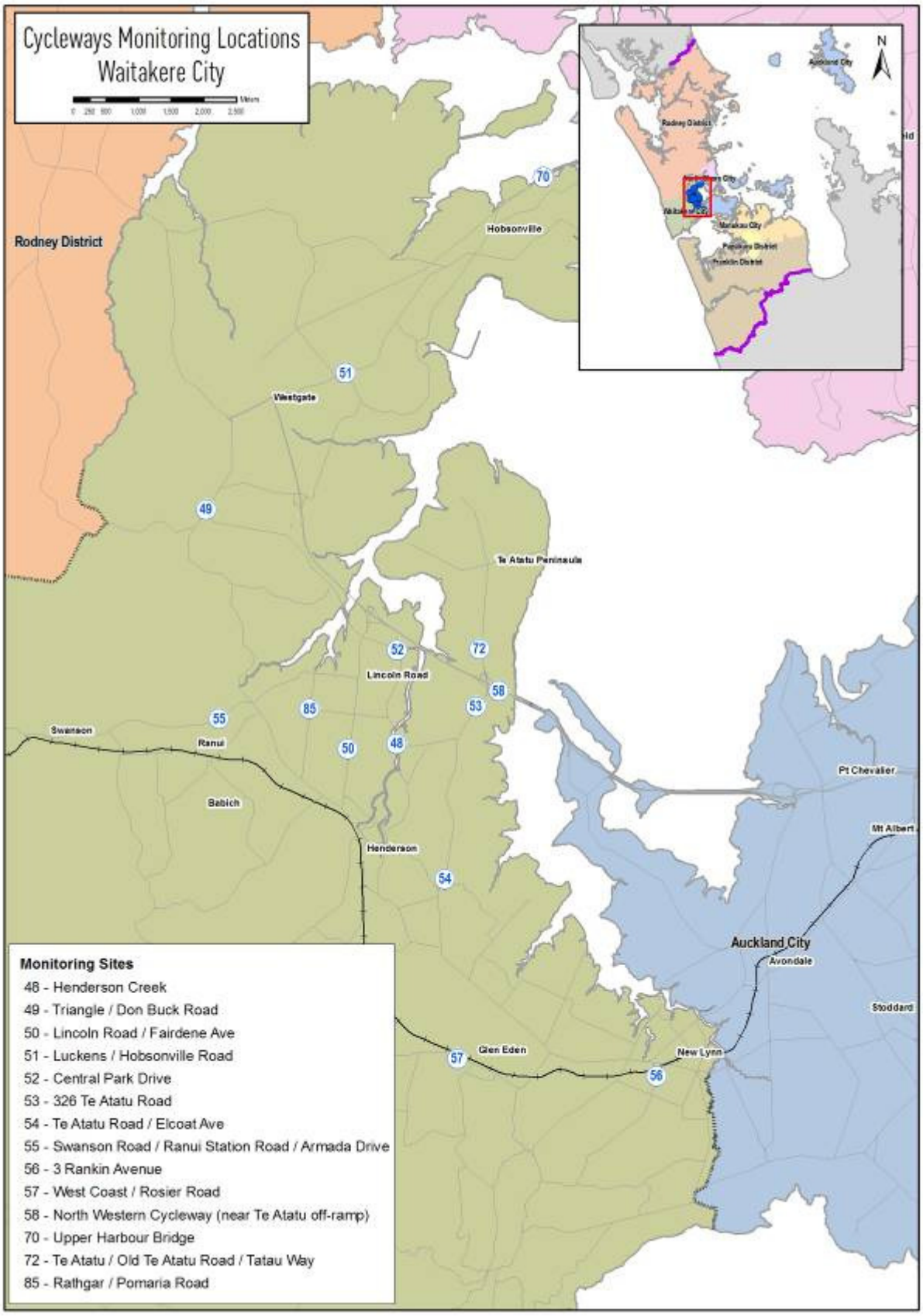
Manual cycle counts have been conducted using a standardised methodology across all sites. This methodology is outlined below. *Note: To ensure the longitudinal comparability of its cycle data, Gravitas have conducted the regional monitoring using a similar approach to that used to collect manual count data for Auckland City Council between 2001 and 2006.*

Choice Of Sites

Decisions as to which sites were chosen for cycle counts were guided by each respective TA, keeping in mind the planned developments for the Regional Cycle Network. In choosing their sites, TAs were strongly recommended to consider sites that could be retained over time as this will allow for the most accurate longitudinal assessment of change in cycle numbers.

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

- Auckland City n=27 sites (12 sites monitored since 2001; 10 sites added in 2007; 5 sites added in 2008; 3 sites relocated, one site dropped and one site added in 2009)
- Manukau City n=14 sites (12 sites monitored since 2007; 1 site added in 2008; one site relocated, 2 sites dropped and 3 sites added in 2009)
- Waitakere City n=14 sites (11 sites monitored since 2007; 2 sites added in 2008; 1 site added in 2009)
- North Shore City n=13
- Rodney District n=8 (5 sites monitored since 2007; 3 sites added in 2009)
- Franklin District n=4 (3 sites monitored since 2007; 1 site added in 2009)
- Papakura District n=3


Cycleways Monitoring Locations
Waitakere City
N
Rodney District
Hobsonville
Westgate
Te Atatu Peninsula
Lincoln Road
Swanson
Ranui
Babich
Henderson
Pt Chevalier
Mt Albert
Auckland City
Avondale
Stoddard
Glen Eden
New Lynn
70
51
49
52
72
58
53
85
55
50
48
54
57
56
Monitoring Sites
48 - Henderson Creek
49 - Triangle / Don Buck Road
50 - Lincoln Road / Fairdene Ave
51 - Luckens / Hobsonville Road
52 - Central Park Drive
53 - 326 Te Atatu Road
54 - Te Atatu Road / Elcoat Ave
55 - Swanson Road / Ranui Station Road / Armada Drive
56 - 3 Rankin Avenue
57 - West Coast / Rosier Road
58 - North Western Cycleway (near Te Atatu off-ramp)
70 - Upper Harbour Bridge
72 - Te Atatu / Old Te Atatu Road / Tatau Way
85 - Rathgar / Pomaria Road

Monitoring Times

Time Of Day

On the recommendation of the Regional Cycling Monitoring Working Group, manual counts in the morning peak were conducted between **6.30 and 9.00 am.** It should be noted that this is a slightly longer morning peak than was used for manual counts in Auckland city prior to 2007 – 7.00 to 9.00 am. However, to allow for longitudinal comparisons, results for Auckland city have been presented for both 7.00 to 9.00 am and 6.30 to 9.00 am.

Between 2001 and 2006, Gravitas monitored Auckland city evening cycle numbers between 4.00 and 6.00 pm. However, in 2005 and 2006, data collected at some sites had shown upwards trends and notable peaks later in the shift (particularly between 5.50 and 6.00pm) which suggested that cycle numbers after 6.00 pm may remain high or even increase. To capture this trend, Gravitas recommended extending the evening peak monitoring period to **4.00 to 7.00 pm**. Once again, to allow for longitudinal comparisons, results for Auckland city have been presented for 4.00 to 6.00 pm as well as 4.00 to 7.00 pm.

Day Of Week

Previous experience conducting cycle and other traffic manual counts on behalf of Auckland city 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 the Regional Cycle Monitoring Working Group. 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 10th of March and be conducted on the first three fine days of the 10th, 11th, 12th, 17th, 18th or 19th of March.

Counting at sites in **North Shore and Waitakere** cities was completed on **Tuesday the 10th of March**. Counting at sites in **Auckland city** was completed on **Wednesday the 11th of March**. Counts in **Manukau, Rodney, Papakura and Franklin** were completed on **Thursday the 12th of March**. Note: Counts in the morning and evening peaks took place on the same day for each site.

Weather and Daylight Conditions

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

To reduce the impact of weather conditions on cycle numbers, manual counts were conducted on predominantly fine days (although intermittent drizzle was observed at a small number of sites). 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 2009 was as follows:

Tuesday 10th March

(Waitakere and North Shore city sites monitored)

- Sunrise: 7:15am; Sunset: 7:48pm.
- Average temperature: 18 degrees Celsius.
- Fine weather for all but one site in the morning period.
- Weather fine with some cloud throughout the evening shift. Most Waitakere sites and one North Shore site experienced very light drizzle intermittently between 6:30pm and 7:00pm.

Wednesday 11th March

(Auckland city sites monitored)

- Sunrise: 7:15am; Sunset: 7:46pm.
- Average temperature: 17 degrees Celsius.
- Fine weather at most sites in the morning period. Light drizzle and/or showers reported at six of the 27 sites.
- All but three sites experienced intermittent light drizzle and/or showers throughout the evening period.

Thursday 12th March

(Manukau city and Rodney, Papakura and Franklin district sites monitored)

- Sunrise: 7:16am; Sunset: 7:45pm.
- Average temperature: 16 degrees Celsius.
- Almost all sites had fine weather in the morning period apart from light drizzle at the Rodney sites which cleared by 7am; four sites experienced intermittent light showers throughout the morning period (these sites predominantly in Manukau).
- Weather in the evening period was overcast, with intermittent drizzle throughout the period. Brief, but often heavy, showers were reported at some sites in Manukau and Papakura.

Conducting The Manual Counts

Scoping Visit

Gravitas visited each of the selected 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 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; Auckland city);
- Ferry terminal (Site 22; Auckland city); and
- Beach Road/Browns Bay Road, Mairangi Bay (Site 45; North Shore city).

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].

For consistency with the Auckland city cycle data collected since 2001, 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; and
- Whether cyclists are riding on the road, footpath or designated off- road cycleway[5].

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

In addition, 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.

[3] This letter also contained contact details for the client organisation 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 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 disgnated 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 marketd on the road).

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

Data Analysis

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

Annual Average Daily Traffic (AADT) Analysis

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

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

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].

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

[7] ViaStrada is a traffic engineering and transport planning consultancy based in Christchurch, New Zealand.

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

School Bike Shed Counts

As stated above, manual cycle counts were undertaken during the morning (6.30 am to 9 am) and evening (4 pm to 7 pm) 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).

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.

Methodology

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

1. Gravitas designed a fax information sheet that was distributed to most intermediate, secondary and composite (Years 1 to 13) schools in the Auckland region (note a small number of schools were omitted due to the special nature of the students eg special needs schools). This sheet was designed in consultation with the Regional Cycle Monitoring Working Group to ensure all necessary information was collected. A copy of the information sheet is provided in Appendix Two.

2. Gravitas contacted all intermediate, secondary and composite schools in Auckland region (n=156) to notify them of the bike shed count and to let them know what they would be required to do. Gravitas then sent out the information sheet to all schools that agreed to take part in the bike shed count, along with a cover letter explaining the purpose of the research and providing detail on how to complete and submit the form. A copy of this letter is provided in Appendix Two.

3. To enhance the comparability of the school bike shed data with that of the regional cycle monitor, Tuesday 10th 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 were requested to fax or (free) post the information sheets back to Gravitas. Gravitas contacted all participating schools who had not returned their sheets after five working days. All information sheets were checked for completeness before being data-entered into Excel. One hundred and twenty-four response were received, a response rate of 79 per cent.

Reporting

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

Manual Counts - Site Level Reporting

For consistency with Auckland city's cycle monitor, 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
  - 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 city/district 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 TA 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 14 sites surveyed in Waitakere. 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 Waitakere, 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 Fifteen of this report.

Note: Surveying in Waitakere was undertaken on Tuesday 10th March, 2009. Sunrise was at 7:15am and sunset was at 7:48pm. The average temperature was 18 degrees Celsius.

Note: To enable comparisons of sites within Waitakere, cyclist volumes at each site are considered as:

- "high/heavy" when 79 or more cycle movements are reported;
- "moderate" when between 32 and 78 cycle movements are reported;
- "low/light" when between 0 and 31 cycle movements are reported;
- having "notably" increased/decreased if the change is more than 15% of the data being compared with;
- having "slightly" increased/decreased if the change is less than 5% of the data being compared with.
- being "stable" since last year if the change is less or equal to 3 cycle movements/percentages.

1.4 Morning Peak

Environmental Conditions

- Most sites had fine weather in the morning, apart light drizzle reported at the Luckens Road/Hobsonville Road intersection at the beginning of the monitoring period.
- A truck was parked on the grass from 7:22am which partially blocked the cycleway at the Central Park Drive site. At 7:36am a digger parked on the cycleway completely blocking all access from Movement 2. Both vehicles vacated the site at 7:47am.
- School crossing guards were present at the Swanson Road/Ranui Station Road/Armada Drive site between 8:35am and 8:45am.
- There were road works near the Rankin Avenue site.

Key Points

- A total of 545 cyclist movements were recorded across the 11 previously-monitored sites in the morning peak period (between 6:30am and 9:00am) in 2009. This represents a 34 per cent increase on the result for 2008 (408 movements). This increase is statistically significant – that is, the increase falls outside the margin of error at the 95% confidence interval.
- In total, 666 cycle movements were recorded across the 14 Waitakere sites. Five per cent (n=31) of these movements were made by cyclists riding as groups.
- As in 2007 and 2008, the busiest site in the morning peak is North Western cycleway (157 movements, up from 121 movements last year), whereas the sites at Triangle Road/Don Buck Road, Lincoln Road/Fairdene Ave and 3 Rankin Ave have the lowest level of morning cyclist traffic (21 cycle movements each).
- Twelve sites recorded increases this year compared to 2008. The most notable increases are at:
  - Henderson Creek – up 145 per cent; and
  - Swanson/Ranui Station Road/Armada Drive – up 76 per cent.
- In contrast, the Triangle Road/Don Buck Road site recorded a decline, down 28 per cent.
- The average volume of morning cyclists across the 11 sites monitored in Waitakere since 2007 is 50 cycle movements. This compares with an average of 37 movements in 2008.

Table 1.1: Summary Of Morning Cyclist Movements 2007-2009 (n)

Site Number	*Locations*	*2007*	*2008*	*2009*	Change 08-09 (%)	Change 07-09 (%)
58	North Western Cycleway/near Te Atatu Road off-ramp	102	121	**157**	**30%**	54%
52	Central Park Drive, Henderson	61	68	**91**	**34%**	49%
53	326 Te Atatu Road (Near Covil Ave)	44	52	**79**	**52%**	80%
54	Te Atatu Road/Elcoat Avenue	26	27	**37**	**37%**	42%
55	Swanson/Ranui Station Road/Armada Drive	15	21	**37**	**76%**	147%
57	West Coast/Rosier Road, Glen Eden	19	18	**28**	**56%**	47%
48	Henderson Creek	14	11	**27**	**145%**	93%
51	Luckens/Hobsonville Road	20	25	**26**	**4%**	30%
49	Triangle Road/Don Buck Road, Massey	24	29	**21**	**-28%**	-13%
50	Lincoln Road/Fairdene Avenue	13	19	**21**	**11%**	62%
56	3 Rankin Avenue, New Lynn	16	17	**21**	**24%**	31%
	Average per site (11 sites since 2007)	**32**	**37**	**50**	**35%**	**56%**
	Total (11 sites since 2007)	**354**	**408**	**545**	**34%**	**54%**
72	Te Atatu/Old Te Atatu Road/Tatau Way	-	56	**66**	**18%**	*
85	Rathgar/Pomaria Road	-	-	**32**	*	*
70	Upper Harbour Bridge	-	17	**23**	**35%**	*
	Average per site (13 sites in 2008, 14 sites in 2009)	**-**	**37**	**48**	**30%**	*
	Total (13 sites in 2008, 14 sites in 2009)	**-**	**481**	**666**	*	*

- Morning cyclist characteristics this year are very similar to those reported in 2008. Overall, 78 per cent of cyclists are adults (unchanged from last year). Of the 14 locations monitored in Waitakere city, the Te Atatu Road/Elcoat Ave site has the highest proportion of cyclists that are school children (68 per cent).
- Almost all morning cyclists are wearing a helmet across the Waitakere sites (90 per cent, stable from 91 per cent in the previous year). However, helmet wearing is least likely to occur at the Lincoln Road/Fairdene Ave intersection (38 per cent not wearing a helmet) and the 3 Rankin Ave site (38 per cent not wearing a helmet).
- Thirty-seven per cent of morning cyclists are riding on the off-road cycleway, one in three are riding on the road (33 per cent), and the remaining 30 per cent are riding on the footpath. Compared with other sites in Waitakere city, the incidence of cyclists riding on the footpath is the highest at the 326 Te Atatu Road site (82 per cent).

Table 1.2: Summary of Morning Cyclist Characteristics 2007-2009 (%)

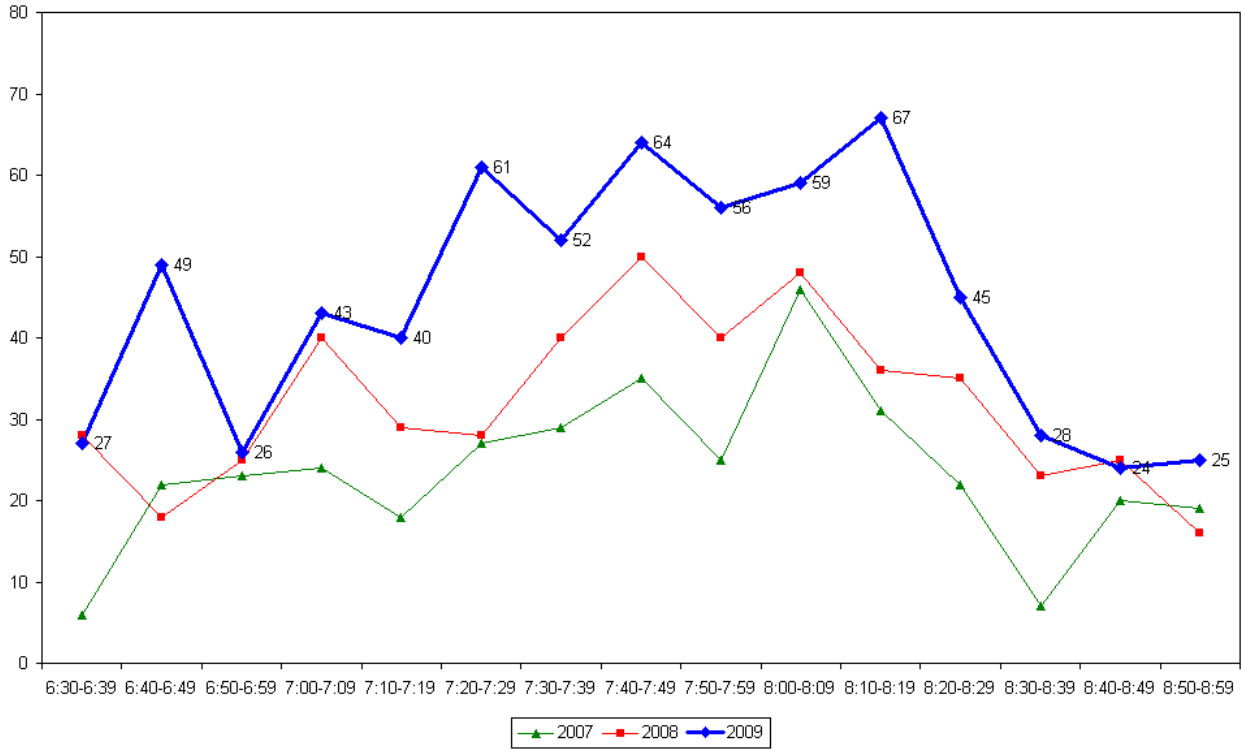
	2007	***2008***	***2009***	**Change 08-09**
Cyclist Type				
Adult	81%	78%	78%	0%
School child	19%%	22%	22%	0%
Helmet Wearing				
Helmet on head	91%%	91%	90%	-1%
No helmet	9%	9%	10%	1%
Where Riding*				
Road	68%	71%	33%	-
Footpath	32%	29%	30%	1%
Off-road cycleway[9]	-	-	37%	-
Base:	***354***	***481***	***666***	

Note: Prior to 2009, cyclists riding on the North-Western, Henderson Creek and Upper Harbour Drive cycleways were categorised as road riders.

[9] *In 2009, surveyors were asked to distinguish between cyclists riding on the road and cyclists riding on off-road cycleways. In previous years, all cyclists riding on both off-road cycleway and road were classified as road riders. Thus, no comparable results are provided with previous years.*

- Figure 1.1 illustrates the total number of cyclists in the morning peak by time of trip since 2007. The volume of morning cycle movements peaks between 7:20am and 7:29am (61 movements), between 7:40am and 7:49am (64 movements) and again between 8:10am and 8:19am (67 movements), before tailing off towards the end of the monitoring period. This is fairly consistent with the overall pattern reported last year. *Note that this year there is one new site.*

Figure 1.1: Total Cyclist Frequency – Morning Peak



1.5 Evening Peak

Environmental Conditions

- The weather was fine with some cloud throughout the evening shift. All sites but two had light drizzle at varying times between 6:30pm and 7:00pm. The two exceptions were Lincoln Road/Fairdene Ave and 326 Te Atatu Road (both sites having fine weather throughout the evening shift).
- Road works at the Rankin Avenue site continued in the evening.

Key Points

- A total of 681 cyclist movements were recorded across the 11 previously monitored sites in the evening peak period (between 4:00pm and 7:00pm) in 2009. This represents a 31 per cent increase on the 2008 result (521 movements). This increase is statistically significant – that is, the increase falls outside the margin of error at the 95% confidence interval.
- In total, 847 cycle movements were recorded across the 14 Waitakere sites during the evening peak – including three per cent (n=29) observed cycling as groups.
- Consistent with the morning peak, the North Western cycleway continues to be the busiest in terms of the evening cyclists' activity, with 198 cycle movements recorded. By contrast, the lowest level of evening cyclist traffic is at 3 Rankin Ave (17 cycle movements).
- Eleven sites recorded increases this year compared to 2008. The most notable increases are at:
  - Luckens/Hobsonville Road – up 219 per cent;
  - Upper Harbour Bridge – up 150 per cent; and
  - Henderson Creek – up 142 per cent.
- In contrast, two sites recorded declines:
  - Lincoln Road/Fairdene Ave – down 39 per cent; and
  - 3 Rankin Ave – down 19 per cent.
- The average volume of evening cyclists across the 11 sites monitored in Waitakere in 2007, 2008 and 2009 is 62 cycle movements. This compares with an average of 47 movements in 2008.

Table 1.3: Summary Of Evening Cyclist Movements 2007-2009 (n)

Site Numbe	*Locations*	*2007*	*2008*	*2009*	Change 08-09 (%)	Change 07-09 (%)
58	North Western cycleway/near Te Atatu Road off-ramp	130	151	**198**	**31%**	52%
52	Central Park Drive, Henderson	66	89	**121**	**36%**	83%
55	Swanson/Ranui Station Road/Armada Drive	47	65	**66**	**2%**	40%
53	326 Te Atatu Road (Near Covil Ave)	43	55	**59**	**7%**	37%
51	Luckens/Hobsonville Road	12	16	**51**	**219%**	325%
48	Henderson Creek	32	19	**46**	**142%**	44%
49	Triangle Road/Don Buck Road, Massey	43	32	**35**	**9%**	-19%
57	West Coast/Rosier Road, Glen Eden	29	19	**34**	**79%**	17%
54	Te Atatu Road/Elcoat Avenue	24	18	**32**	**78%**	33%
50	Lincoln Road/Fairdene Avenue	27	36	**22**	**-39%**	-19%
56	3 Rankin Avenue, New Lynn	15	21	**17**	**-19%**	13%
	Average per site (11 sites since 2007)	**43**	**47**	**62**	**32%**	**44%**
	Total (11 sites since 2007)	**468**	**521**	**681**	**31%**	**46%**
72	Te Atatu/Old Te Atatu Road/Tatau Way	-	55	**68**	**24%**	*
85	Rathgar/Pomaria Road	-	-	**53**	*	*
70	Upper Harbour Bridge	-	18	**45**	**150%**	*
	Average per site (13 sites in 2008, 14 sites in 2009)	**-**	**46**	**61**	**33%**	*
	Total (13 sites in 2008, 14 sites in 2009)	**-**	**594**	**847**	*	*

Table 1.4 shows the percentage change in cyclist movements from morning to evening at each site monitored in Waitakere.

Note that there are three hours for the evening monitoring period compared with 2.5 hours in the morning. To enable the morning and evening cyclist volumes to be fairly compared, a scale factor has been applied so that the count numbers for both periods are based on the same length of time (2.5 hours). However, the limitation of this approach is that it does not take into account the variation in cycle movement numbers that exist over the course of a shift (as illustrated in Figures 1.1 and 1.3); rather, the number of cycle movements is assumed to be consistent throughout the monitoring period. Consequently, the results presented in Table 1.4 should be considered indicative only.

- Overall, the number of evening cycle movements across the 14 sites is slightly greater than the number recorded in the morning shift.
- Nine out of the 14 sites have an evening cycle volume higher than the morning cycle volume. The most notable increases between the morning and evening peak are reported at:
  - Luckens/Hobsonville Road – up from 26 to 43 movements; and
  - Upper Harbour Bridge –up from 23 to 38 movements.
- In contrast, the number of evening cyclists recorded at five sites is lower than in the morning peak. The greatest decreases are at:
  - 326 Te Atatu Road – down from 79 to 49 movements; and
  - 3 Rankin Ave – down from 21 to 14 movements.

Table 1.4: Summary Of Change in Cyclist Movements from Morning to Evening 2009 (%)

Site Number	*Locations*	*AM*	*PM*[10]	Change
51	Luckens/Hobsonville Road	26	43	39%
70	Upper Harbour Bridge	23	38	39%
55	Swanson/Ranui Station Road/Armada Drive	37	55	33%
48	Henderson Creek	27	38	30%
49	Triangle Road/Don Buck Road, Massey	21	29	28%
85	Rathgar/Pomaria Road	32	44	28%
52	Central Park Drive, Henderson	91	101	10%
58	North Western Cycleway/near Te Atatu Road off-ramp	157	165	5%
57	West Coast/Rosier Road, Glen Eden	28	28	1%
50	Lincoln Road/Fairdene Avenue	21	18	-15%
72	Te Atatu/Old Te Atatu Road/Tatau Way	66	57	-16%
54	Te Atatu Road/Elcoat Avenue	37	27	-39%
56	3 Rankin Avenue, New Lynn	21	14	-48%
53	326 Te Atatu Road (Near Covil Ave)	79	49	-61%
	Total	**666**	**706**	**6%**

[10] A scale factor of 5/6 has been applied to reduce the evening cyclist volumes to a 2.5 hour interval, consistent with the morning monitoring period.

- Evening cyclist characteristics this year are stable from 2008. In particular, 84 per cent of cyclists are adults (unchanged from last year and 2007). Of the 14 Waitakere sites monitored this year, the intersection of Rathgar/Pomaria Road has the highest proportion of cyclists who are school children (58 per cent).
- The majority of evening cyclists are wearing a helmet (82 per cent, compared with 79 per cent from the previous measure). The Swanson/Ranui Station Road/Armada Drive intersection has the highest proportion not wearing a helmet (58 per cent).
- Two in five evening cyclists (41%) are riding on the off-road cycleway, while 30 per cent are riding on the road. The shore riding on the footpath (29 per cent) is stable from last year (30 per cent). Riding on the footpath is most common at Lincoln Road/Fairdene Ave (91 per cent).

Table 1.5: Summary of Evening Cyclist Characteristics 2007-2009 (%)

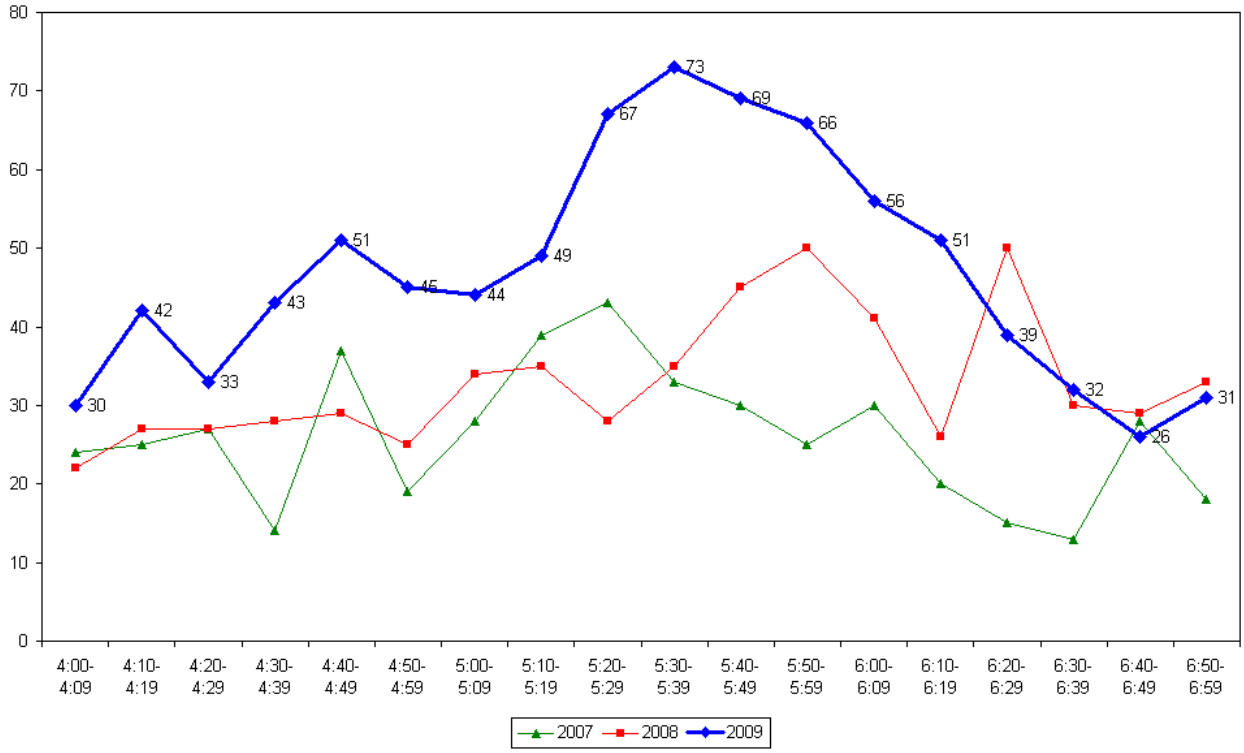
	2007	***2008***	***2009***	**Change 08-09**
Cyclist Type				
Adult	84%	84%	84%	0%
School child	16%	16%	16%	0%
Helmet Wearing				
Helmet on head	81%	79%	82%	3%
No helmet	19%	21%	18%	-3%
Where Riding*				
Road	65%	70%	30%	-
Footpath	35%	30%	29%	-1%
Off-road cycleway[11]	-	-	41%	-
Base:	***468***	***594***	***847***	

Note: Prior to 2009, yclists riding on the North-Western, Henderson Creek and Upper Harbour Drive cycleways were categorised as road riders.

[11] *In 2009, surveyors were asked to distinguish between cyclist riding on the road and cyclists riding on off-road cycleway. In previous years, all cyclists riding on both off-road cycleway and road were classified as road riders. Thus, no comparable results are provided with previous years.*

- The overall pattern of cyclist volumes by time of trip in the evening is illustrated in Figure 1.2. This year, evening cyclist volumes peak in the middle of the monitoring period, with 73 movements recorded between 5:30pm and 5:39pm. Cycle volumes then decline gradually through to the end of the monitoring period. Last year, peaks occurred between 5:50pm and 5:59pm (50 movements) and around 6:20pm (50 movements). *Note that this year there is one new site.*

Figure 1.2: Total Cyclist Frequency – Evening Peak



1.6 Aggregated Total

- A total of 1226 cyclist movements were recorded across the 11 previously monitored sites in 2009. This represents a 32 per cent increase when compared with 2008 (929 movements). This increase is statistically significant – that is, the increase falls outside the margin of error at the 95% confidence interval.
- Overall, a total of 1,513 cycle movements were recorded across the 14 sites monitored in 2009 – including four per cent (n=60) observed cycling as groups. The number of evening cyclists comprises a slightly larger share (56 per cent) of the total number of cycle movements than the morning cyclists (44 per cent).
- The busiest site is the North Western cycleway with a total of 355 movements (up from 272 movements in 2008), while the 3 Rankin Ave site contributes the lowest number of cyclist movements (38 movements, unchanged from last year).
- Most sites (10 out of 13) have recorded increases in total cyclist numbers this year compared with 2008. The intersections with the biggest increases are Henderson Creek (up 143 per cent) and Upper Harbour Bridge (up 94 per cent).
- In contrast, only two sites have recorded decreases in movements this year. These sites are the intersection of Lincoln Road/Fairdene Avenue (down 22 per cent) and Triangle Road/Don Buck Road (down 8 per cent).

Table 1.6: Summary Of Total Cyclist Movements 2007-2009 (n)

Site Number	*Locations*	*2007*	*2008*	*2009*	Change 08-09 (%)	Change 07-09 (%)
58	North Western Cycleway/near Te Atatu Road off-ramp	232	272	**355**	**31%**	53%
52	Central Park Drive, Henderson	127	157	**212**	**35%**	67%
53	326 Te Atatu Road (Near Covil Ave)	87	107	**138**	**29%**	59%
55	Swanson/Ranui Station Road/Armada Drive	62	86	**103**	**20%**	66%
51	Luckens/Hobsonville Road	32	41	**77**	**88%**	141%
48	Henderson Creek	46	30	**73**	**143%**	59%
54	Te Atatu Road/Elcoat Avenue	50	45	**69**	**53%**	38%
57	West Coast/Rosier Road, Glen Eden	48	37	**62**	**68%**	29%
49	Triangle Road/Don Buck Road, Massey	67	61	**56**	**-8%**	-16%
50	Lincoln Road/Fairdene Avenue	40	55	**43**	**-22%**	8%
56	3 Rankin Avenue, New Lynn	31	38	**38**	**0%**	23%
	Total (11 sites since 2007)	**822**	**929**	**1226**	**32%**	**49%**
72	Te Atatu/Old Te Atatu Road/Tatau Way	-	111	**134**	**21%**	*
85	Rathgar/Pomaria Road	-	-	**85**	*	*
70	Upper Harbour Bridge	-	35	**68**	**94%**	*
	Total (13 sites in 2008, 14 sites in 2009)	**-**	**1075**	**1513**	*	*

- Overall cyclist characteristics are illustrated in Table 1.7. In total, 81 per cent of cyclists are adults (unchanged from last year).
- The majority of cyclists are wearing a helmet (86 per cent, stable from last year).
- Two in five cyclists are riding on the off-road cycleway (39 per cent), while one-third are riding on the road (32 per cent) and 29 per cent are riding on the footpath (this share unchanged from 2008).

Table 1.7: Summary of Total Cyclist Characteristics 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	83%	81%	81%	0%
School child	17%	19%	19%	0%
Helmet Wearing				
Helmet on head	85%	85%	86%	1%
No helmet	15%	15%	14%	-1%
Where Riding*				
Road	66%	71%	32%	-
Footpath	34%	29%	29%	0%
Off-road cycleway[12]	-	-	39%	-
Base:	***822***	***1075***	***1513***	

Note: Prior to 2009, cyclists riding on the North-Western, Henderson Creek and Upper Harbour Drive cycleways were categorised as road riders.

[12] *In 2009, surveyors were asked to distinguish between cyclists riding on the road and cyclists riding on off-road cycleways. In previous years, all cyclists riding on both off-road cycleway and road were classified as road riders. Thus, no comparable results are provided with previous years.*

1.7 Annual Average Daily Traffic (AADT) Estimates

AADT Estimate

- 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 the North Western Cycleway (513 daily trips, up from 393 daily trips last year) and the lowest is at 3 Rankin Avenue (56 daily trips, stable from 55 trips in 2008).
- Most sites (11 out of 13) have recorded increases in total AADT estimates this year compared with 2008. The intersections with the biggest increases are:
  - Henderson Creek – up 144 per cent;
  - Upper Harbour Bridge – up 90 per cent; and
  - Luckens/Hobsonville Road – up 83 per cent.
- In contrast, the number of cyclist movements at two sites is lower than last year. These declines are at:
  - Lincoln Road/Fairdene Avenue – down 22 per cent; and
  - Triangle Road/Don Buck Road – down 9 per cent.

Table 1.8: AADT Estimates Based on Morning and Evening Cyclist Movements 2007-2009 (n)

Site Number	*Locations*	*2007 AADT*	*2008 AADT*	*2009 AADT*	Change 08-09 (%)	Change 07-09 (%)
58	North Western Cycleway/near Te Atatu Road off-ramp	335	393	**513**	31%	53%
52	Central Park Drive, Henderson	184	227	**306**	35%	66%
53	326 Te Atatu Road (Near Covil Ave)	127	155	**202**	30%	59%
72	Te Atatu/Old Te Atatu Road/Tatau Way	-	161	**195**	21%	*
55	Swanson/Ranui Station Road/Armada Drive	88	122	**148**	21%	68%
51	Luckens/Hobsonville Road	47	60	**110**	83%	134%
48	Henderson Creek	65	43	**105**	144%	62%
54	Te Atatu Road/Elcoat Avenue	73	66	**101**	53%	38%
70	Upper Harbour Bridge	-	51	**97**	90%	*
57	West Coast/Rosier Road, Glen Eden	69	54	**90**	67%	30%
49	Triangle Road/Don Buck Road, Massey	96	88	**80**	-9%	-17%
50	Lincoln Road/Fairdene Avenue	57	79	**62**	-22%	9%
56	3 Rankin Avenue, New Lynn	45	55	**56**	2%	24%
85	Rathgar/Pomaria Road	**-**	**-**	**122**	*	*

1.8 School Bike Shed Count Summary

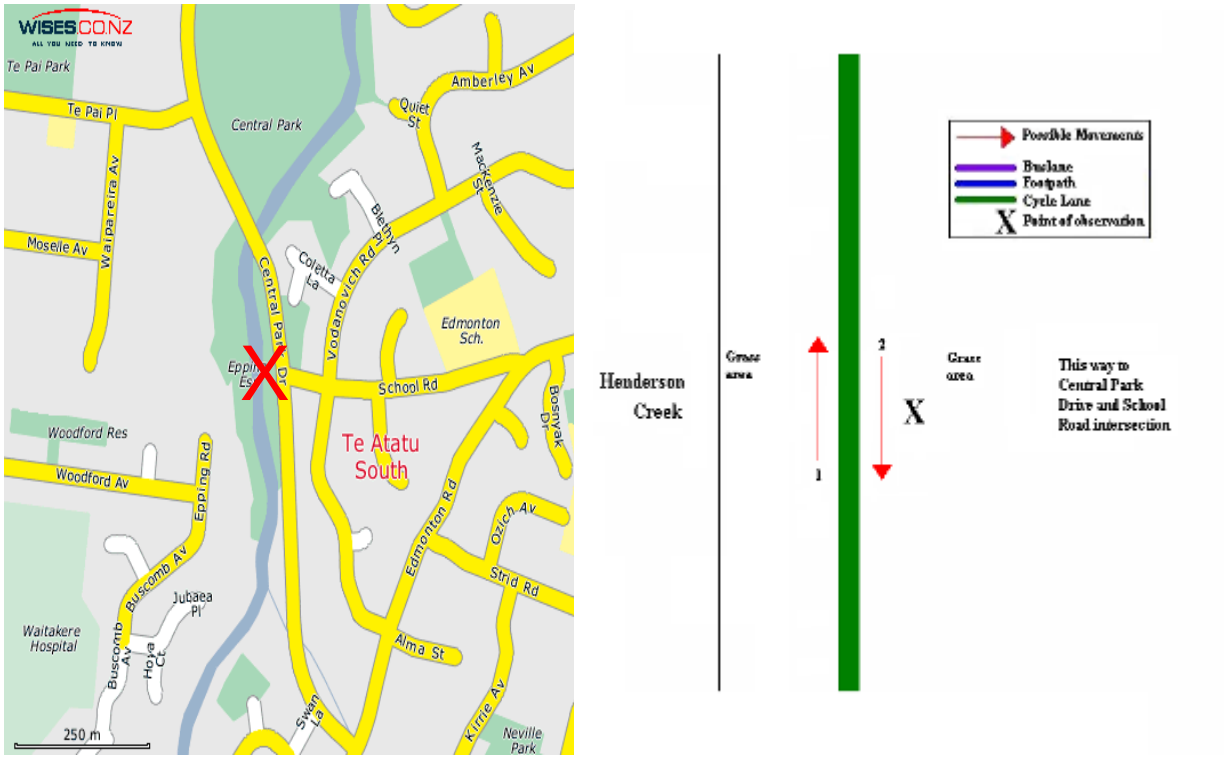
Key Points

- Among those Waitakere schools that responded to the survey, of those eligible to cycle to school, on average, two per cent of students are cycling to their schools. This compares with one per cent in 2008.
- Among the 17 schools that responded, n=213 students were reported to be cycling to school.
- This year, Te Atatu Intermediate reported the highest share of cyclists – 9 per cent of all eligible students currently cycling to school. This is consistent with 2008 result, where Te Atatu Intermediate reported the highest share of 7 per cent (along with Nga Kakano Christian Reo Rua Kura, also 7 per cent).
- Of the 17 schools that responded, three (8 per cent) had no students cycling to school. This compares with two schools (12 per cent) in 2008.

2. HENDERSON CREEK, HENDERSON (SITE 48)

Figure 2.1 shows the possible cyclist movements at this site.

Figure 2.1: Cycle Movements: Henderson Creek



AADT Estimate

- The AADT for this site is 105 cycle movements per day. This compares with:
  - 43 movements in 2008
  - 65 movements in 2007.

2.1 Morning Peak

Environmental Conditions

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

Key Points

- The volume of morning cyclists at the Henderson Creek shared path has more than doubled this year, with 27 cycle movements recorded (compared with 11 movements last year).
- The key morning movement is straight along Henderson Creek heading south (Movement 2 = 17 cyclists).
- Morning cyclist volumes have increased most notably at Movement 2 (up 11 cyclists).

Table 2.1: Morning Cyclist Movements
Henderson Creek 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	6	5	10	5
2	8	6	17	11
Total	**14**	**11**	**27**	**16**

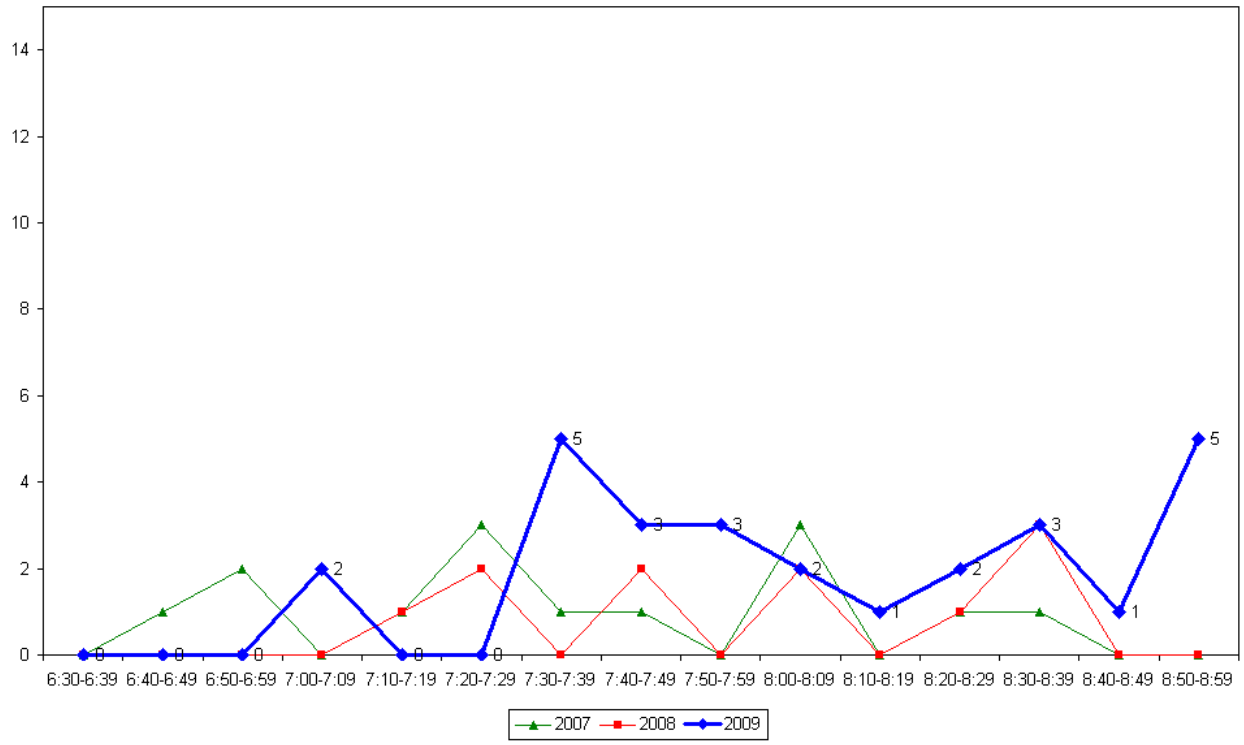
- Over the morning peak, adults comprise the majority of cycle movements (85 per cent, stable from 82 per cent in 2008).
- Most cyclists are wearing a helmet (93 per cent, down from 100 per cent last year).

Table 2.2: Morning Cyclist Characteristics
Henderson Creek 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	93	82	85	3
School child	7	18	15	-3
Helmet Wearing				
Helmet on head	79	100	93	-7
No helmet	21	0	7	7
Where Riding				
Off-road cycleway	100	100	100	0
Base:	***14***	***11***	***27***	

- Similar to last year, the volume of morning cycle movements in 2008 continues to be low throughout the entire morning peak, with no more than three cyclists recorded over most ten minute intervals. Slight peaks occur between 7:30am and 7:39am (5 cyclists) and between 8:50am and 8:59am (5 cyclists).

Figure 2.2: Henderson Creek Cyclist Frequency – Morning Peak



2.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with intermittent drizzle between 6:36pm and 6:49pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Consistent with the morning shift, the total number of cycle movements recorded at the Henderson Creek site in the evening has increased notably this year, from 19 to 46 movements.
- Twenty-seven cyclists were recorded making Movement 2 (up 15 cyclists), while 19 were recorded making Movement 1 (up 12 cyclists).

Table 2.3: Evening Cyclist Movements
Henderson Creek 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	15	7	19	12
2	17	12	27	15
Total	**32**	**19**	**46**	**27**

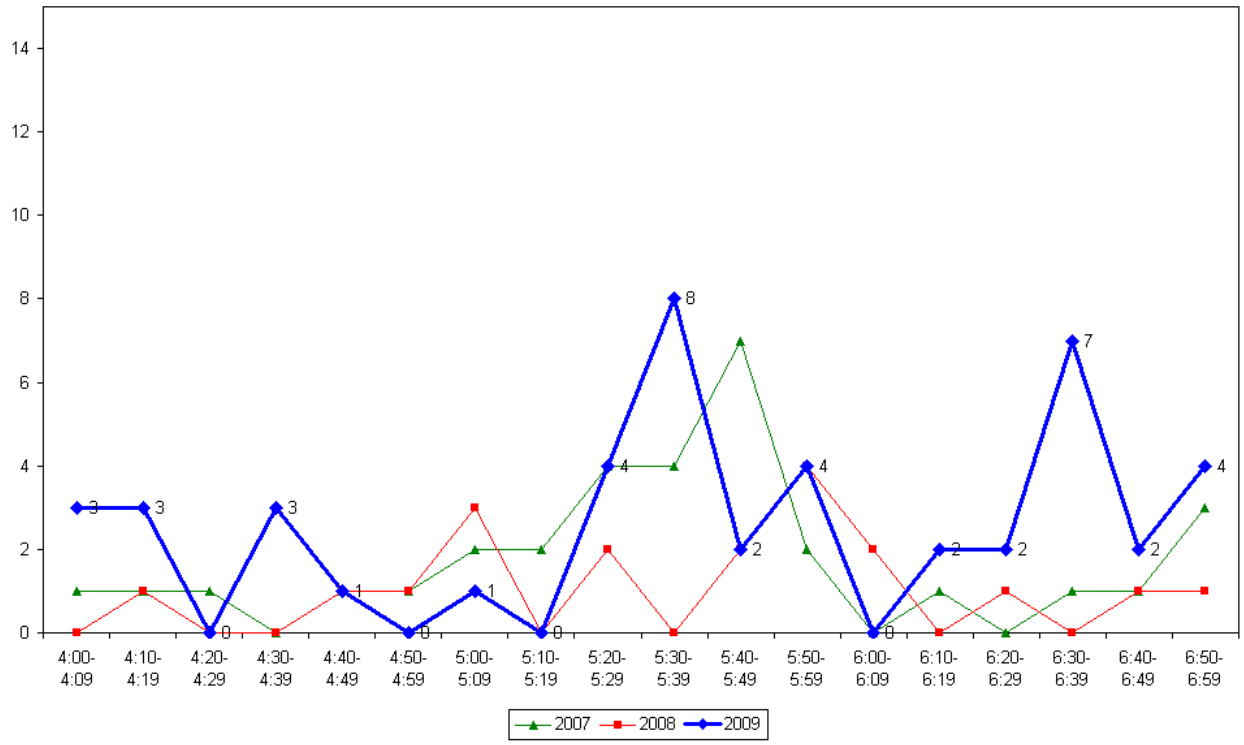
- Over the evening peak, most cyclists (87 per cent) using Henderson Creek are adults, down from all cyclists in 2007 and 2008.
- Most cyclists at this site are wearing a helmet (91 per cent, stable from 89 per cent last year).

Table 2.4: Evening Cyclist Characteristics
Henderson Creek 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	100	100	87	-13
School child	0	0	13	13
Helmet Wearing				
Helmet on head	78	89	91	2
No helmet	22	11	9	-2
Where Riding				
Off-road cycleway	100	100	100	0
Base:	***32***	***19***	***46***	

- The volume of evening cycle movements peaks notably between 5:30pm and 5:39pm (8 cyclists, 20 minutes earlier than last year's peak), with another peak occurring an hour later between 6:30pm and 6:39pm (7 movements).

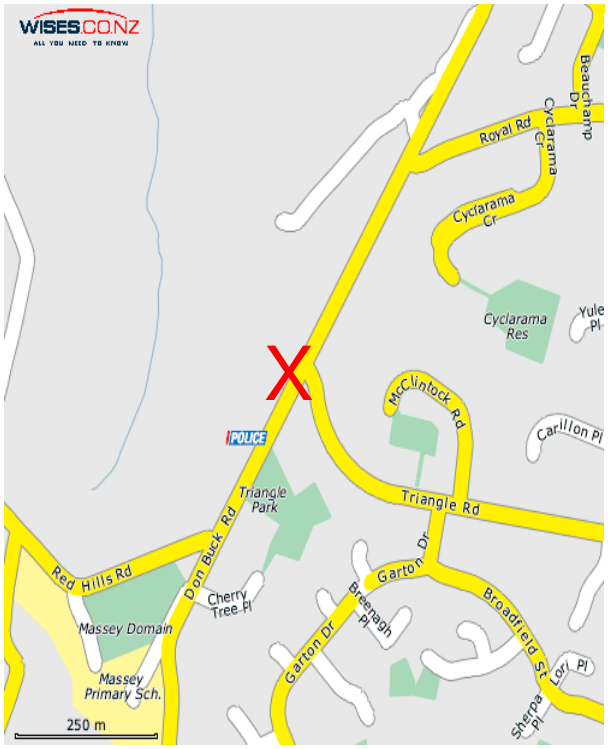
Figure 2.3: Henderson Creek Cyclist Frequency – Evening Peak

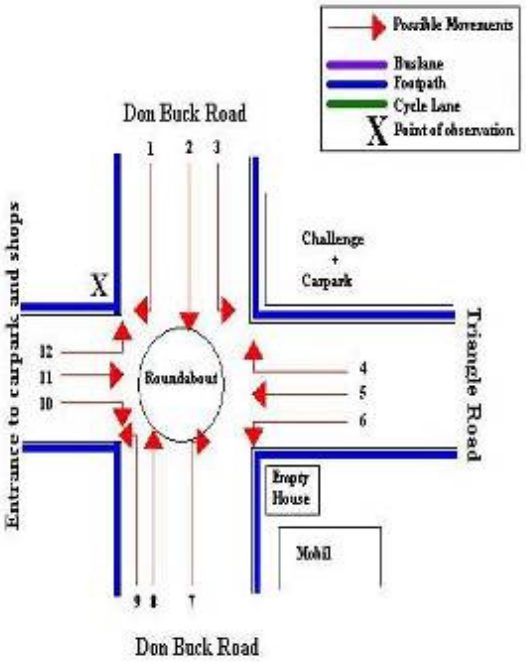


3. TRIANGLE ROAD/DON BUCK ROAD, HENDERSON (SITE 49)

Figure 3.1 shows the possible cyclist movements at this intersection.

Figure 3.1: Cycle Movements: Triangle Road/Don Buck Road





AADT Estimate

- The AADT for this site is 80 cycle movements per day. This compares with:
  - 88 movements in 2008
  - 96 movements in 2007.

3.1 Morning Peak

Environmental Conditions

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

Key Points

- In 2009, the volume of morning cyclists recorded at the Triangle Road/Don Buck Road site has declined (21 cycle movements, compared with 29 cycle movements recorded last year). This is the lowest equal number across the 14 Waitakere city sites monitored.
- The key morning movement is straight along Don Buck Road heading south (Movement 2 = 9 cyclists).
- Morning cyclist volumes for all twelve movements possible at this site remain stable since 2008, with the most notable change at Movement 1 (down 4 movements).

Table 3.1: Morning Cyclist Movements
Triangle Road/Don Buck Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	2	4	0	-4
2	10	9	9	0
3	3	4	7	3
4	3	3	0	-3
5	0	1	0	-1
6	3	4	2	-2
7	2	1	1	0
8	0	3	2	-1
9	0	0	0	0
10	1	0	0	0
11	0	0	0	0
12	0	0	0	0
Total	**24**	**29**	**21**	**-8**

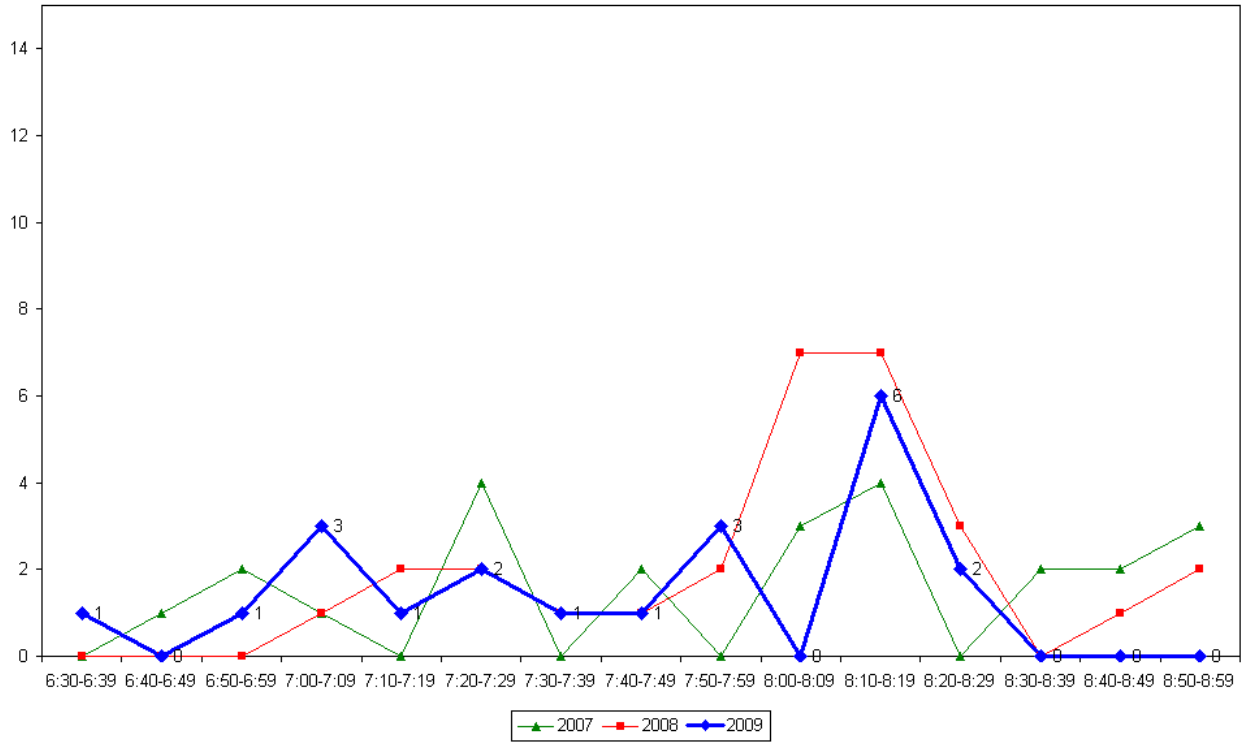
- Over the morning peak, the share of cyclists being classified as adults has increased notably, from 41 per cent last year to 67 per cent in 2009.
- Most cyclists are wearing a helmet (86 per cent, down from 97 per cent last year).
- Approximately seven in ten cyclists are riding on the road (71 per cent, up notably from 48 per cent at the previous measure).

Table 3.2: Morning Cyclist Characteristics
Triangle Road/Don Buck Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	79	41	67	26
School child	21	59	33	-26
Helmet Wearing				
Helmet on head	87	97	86	-11
No helmet	13	3	14	11
Where Riding				
Road	62	48	71	23
Footpath	38	52	29	-23
Base:	***24***	***29***	***21***	

- The volume of morning cycle movements peaks in the middle of the monitoring period (8 cyclists between 8:10am and 8:19am – approximately the same time as last year), after which cyclist numbers drop off to the end of the monitoring period.

Figure 3.2: Triangle Road/Don Buck Road Cyclist Frequency – Morning Peak



3.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from light rain from 6:40pm to the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- This year, the total number of cycle movements recorded at the Triangle Road/Don Buck Road intersection has remained stable, with 35 movements in the evening (compared with 32 movements last year).
- The key movement at this site in the evening is straight along Don Buck Road heading north (Movement 8 = 13 cyclists).
- The most notable change since 2008 is at Movement 8 (up 9 cyclists).

Table 3.3: Evening Cyclist Movements
Triangle Road/Don Buck Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	1	0	0	0
2	8	7	4	-3
3	7	4	4	0
4	4	4	6	2
5	1	0	0	0
6	10	9	5	-4
7	4	3	3	0
8	4	4	13	9
9	0	0	0	0
10	0	0	0	0
11	0	1	0	-1
12	4	0	0	0
Total	**43**	**32**	**35**	**3**

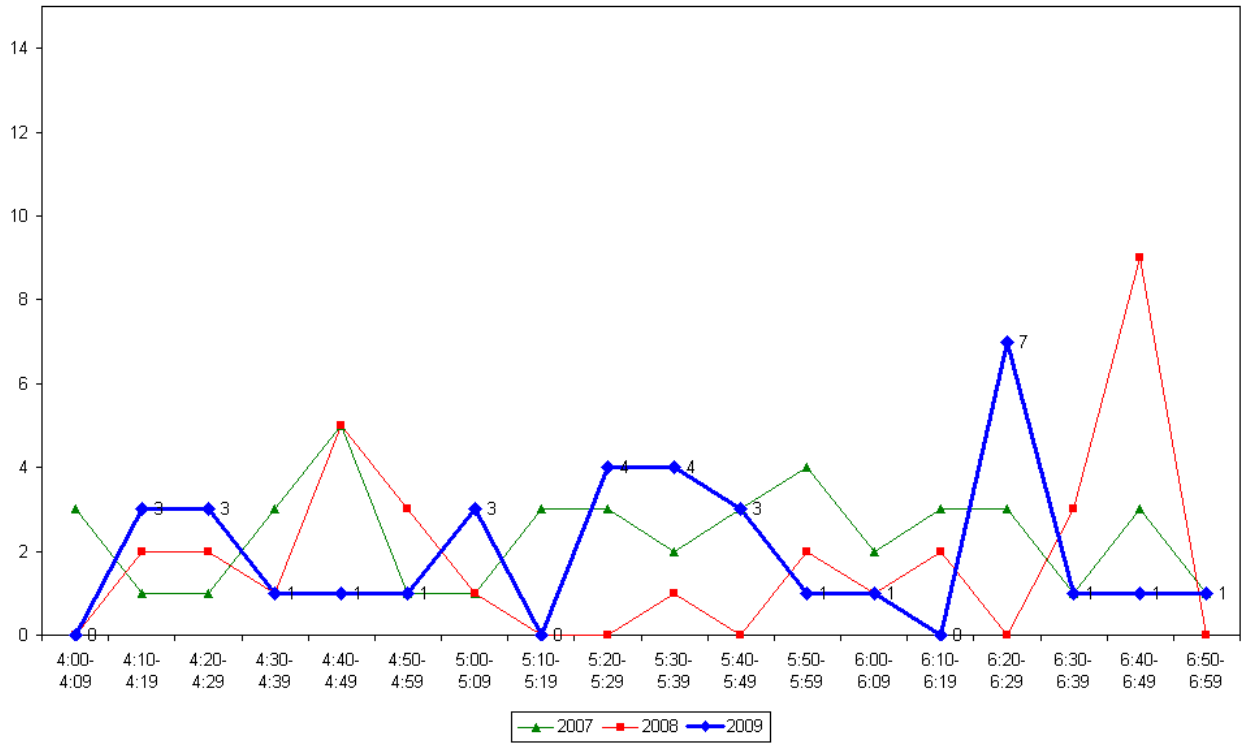
- Consistent with the previous year, the greatest share of cyclists using the Triangle Road/Don Buck Road intersection are adults (80 per cent, compared with 78 per cent in 2008).
- Over three-quarters of cyclists at this site are wearing a helmet (77 per cent, stable from 78 per cent last year).
- On average, about seven in ten cyclists are riding on the road (71 per cent, stable since last year – 72 per cent).

Table 3.4: Evening Cyclist Characteristics
Triangle Road/Don Buck Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	74	78	80	2
School child	26	22	20	-2
Helmet Wearing				
Helmet on head	63	78	77	-1
No helmet	37	22	23	1
Where Riding				
Road	58	72	71	-1
Footpath	42	28	29	1
Base:	***43***	***32***	***35***	

- In contrast to previous years, the volume of cycle movements peaks only later in the evening (7 movements between 6:20pm and 6:29pm, 20 minutes earlier than last year).

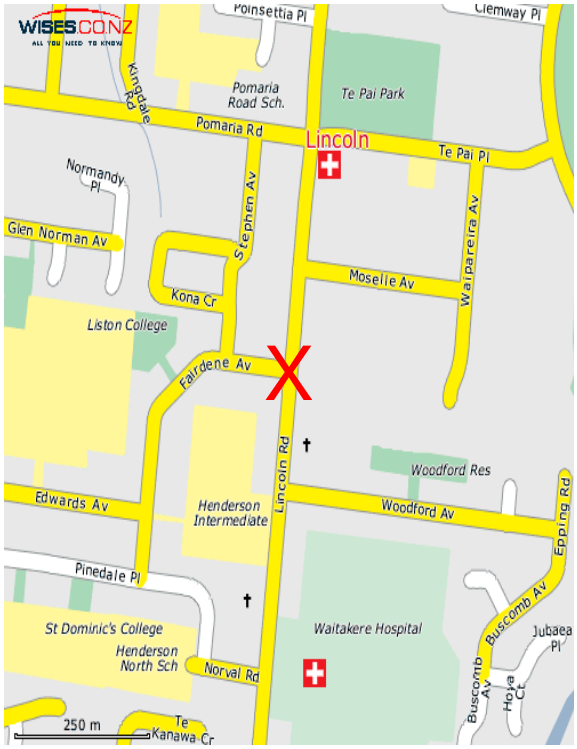
Figure 3.3: Triangle Road/Don Buck Road Cyclist Frequency – Evening Peak

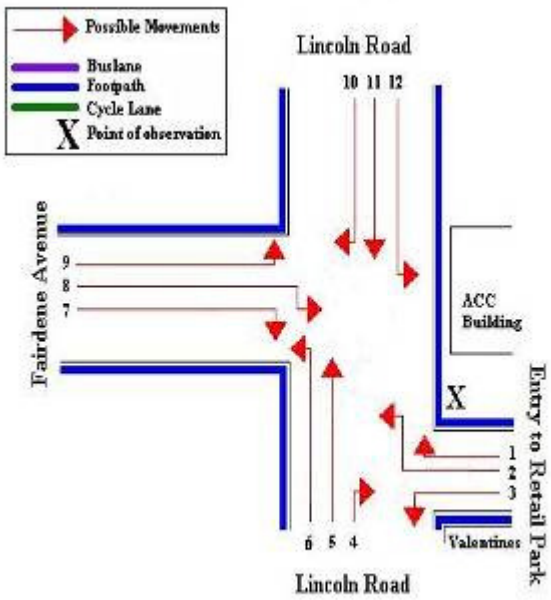


4. LINCOLN ROAD/FAIRDENE AVENUE, HENDERSON (SITE 50)

Figure 4.1 shows the possible cyclist movements at this intersection.

Figure 4.1: Cycle Movements: Lincoln Road/Fairdene Avenue





AADT Estimate

- The AADT for this site is 62 cycle movements per day. This compares with:
  - 79 movements in 2008
  - 57 movements in 2007.

4.1 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

- Similar to last year, the intersection of Lincoln Road and Fairdene Avenue continues to have a low level of morning cyclist traffic (21 cycle movements, stable from last year). This is the equal lowest across the 14 sites monitored in Waitakere city.
- The most common movement in the morning is straight along Lincoln Road heading north (Movement 5 = 11 cyclists, an increase of 8 movements from last year).

Table 4.1: Morning Cyclist Movements

Lincoln Road/Fairdene Avenue 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	1	0	-1
2	3	0	0	0
3	1	0	1	1
4	2	2	2	0
5	1	3	11	8
6	3	0	1	1
7	1	4	0	-4
8	0	0	0	0
9	2	0	0	0
10	0	1	0	-1
11	0	8	6	-2
12	0	0	0	0
Total	**13**	**19**	**21**	**2**

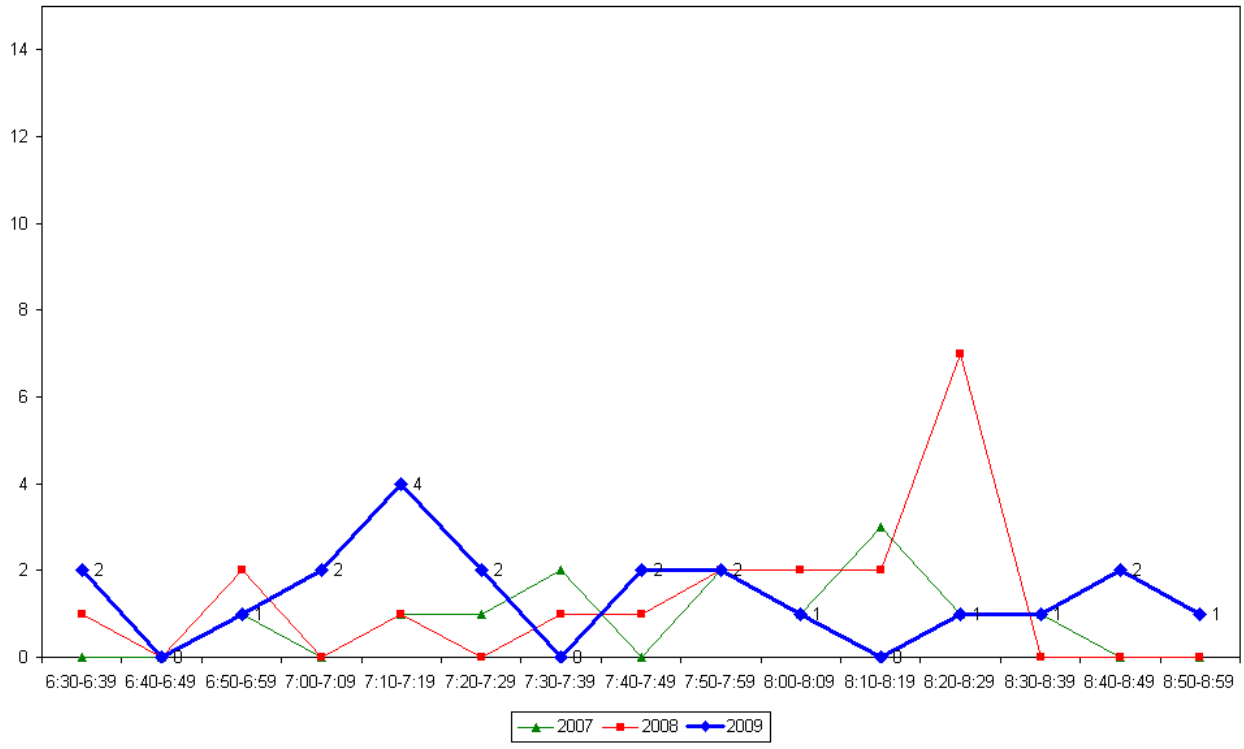
- Over the morning peak, adults comprise three-quarters (76 per cent) of the cycle movements (up from 58 per cent last year).
- Around two-thirds of cyclists are wearing a helmet (62 per cent, down notably from 89 per cent in 2008).
- Riding on the footpath (62 per cent) continues to be much more common than riding on the road (stable from 63 per cent last year).

Table 4.2: Morning Cyclist Characteristics
Lincoln Road/Fairdene Avenue 2007-2009 (%)

	2007	*2008*	*2009*	**Change 08-09**
Cyclist Type				
Adult	62	58	76	18
School child	38	42	24	-18
Helmet Wearing				
Helmet on head	92	89	62	-27
No helmet	8	11	38	27
Where Riding				
Road	31	37	38	1
Footpath	69	63	62	-1
Base:	***13***	***19***	***21***	

- The volume of morning cycle movements peaks slightly between 7:10am and 7:19am (4 cyclists) but is low across the entire morning monitoring period, with no more than 2 cyclists recorded over all other ten minute intervals. This compares with a more notable peak of 7 movements recorded between 8:20am and 8:29am last year.

Figure 4.2: Lincoln Road/Fairdene Avenue Cyclist Frequency – Morning Peak



4.2 Evening Peak

Environmental Conditions

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

Key Points

- The total number of cycle movements recorded in the evening at the Lincoln Road/Fairdene Avenue intersection decreases from 36 in 2008 to 22 movements this year, the second lowest across the 14 sites monitored in Waitakere city.
- The key movement in the evening is straight along Lincoln Road heading south (Movement 11 = 9 cyclists).
- Of the twelve movements possible at this site, the most notable change compared with last year is at Movement 5 (down 8 cyclists).

Table 4.3: Evening Cyclist Movements
Lincoln Road/Fairdene Avenue 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	1	0	1	1
2	2	2	0	-2
3	3	1	3	2
4	5	2	2	0
5	1	13	5	-8
6	1	1	1	0
7	3	2	0	-2
8	3	3	0	-3
9	5	0	0	0
10	0	2	1	-1
11	1	10	9	-1
12	2	0	0	0
Total	**27**	**36**	**22**	**-14**

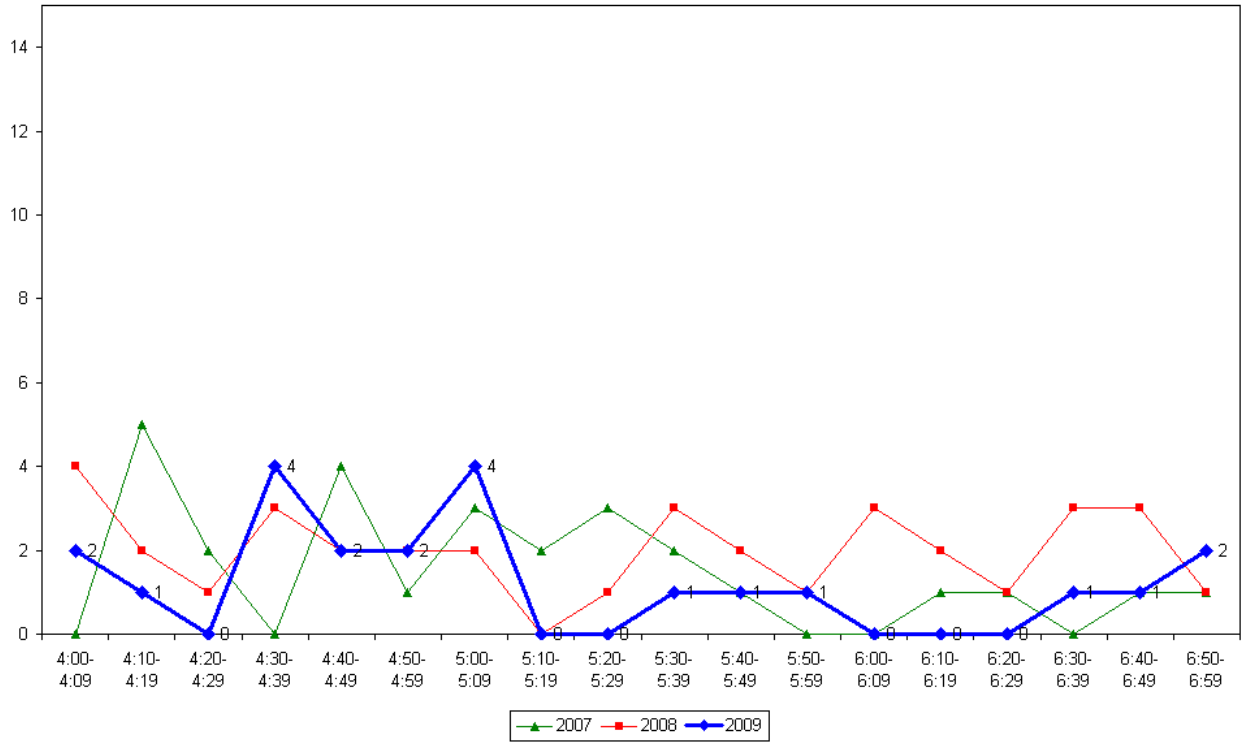
- In contrast to the previous year, a greater share of cyclists using this intersection are adults (59 per cent, up from 44 per cent in 2008).
- Half of cyclists are wearing a helmet (50 per cent, down from 67 per cent last year).
- The incidence of cyclists riding on the footpath is the highest at this site compared with all other sites monitored in Waitakere (91 per cent, stable from 89 per cent at the previous measure).

Table 4.4: Evening Cyclist Characteristics
Lincoln Road/Fairdene Avenue 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	89	44	59	15
School child	11	56	41	-15
Helmet Wearing				
Helmet on head	52	67	50	-17
No helmet	48	33	50	17
Where Riding				
Road	19	11	9	-2
Footpath	81	89	91	2
Base:	***27***	***36***	***22***	

- In contrast to the morning shift, the volume of cycle movements peaks twice in the first half of the monitoring period – between 4:30pm and 4:39pm (4 cyclists) and between 5:00pm and 5:09pm (4 cyclists) – after which cycle volumes remain low for the remainder of the monitoring period. This compares with an earlier peak between 4:00pm and 4:09pm (4 movements) in 2008, after which cycle volumes varied with between one and three movements during most ten minute intervals.

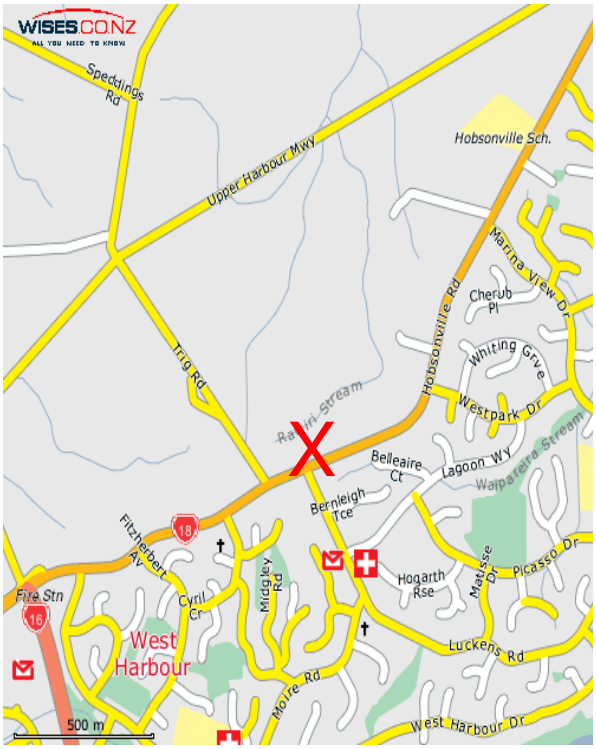
Figure 4.3: Lincoln Road/Fairdene Avenue Cyclist Frequency – Evening Peak

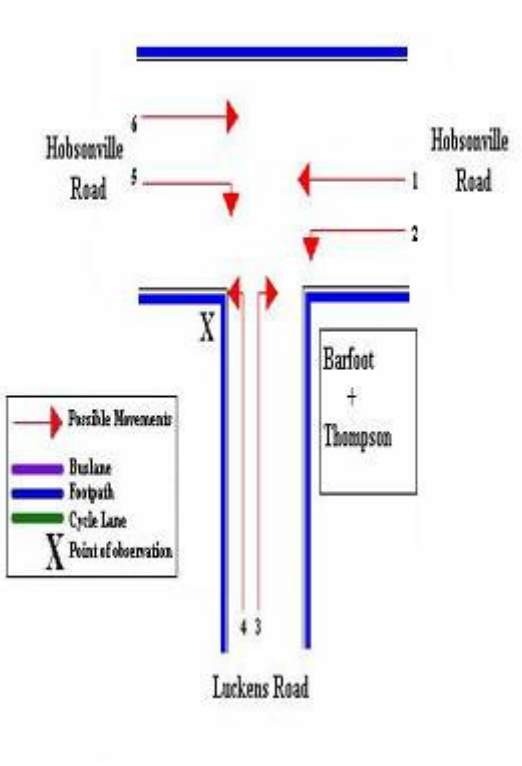


5. LUCKENS ROAD/HOBSONVILLE ROAD, WEST HARBOUR (SITE 51)

Figure 5.1 shows the possible cyclist movements at this intersection.

Figure 5.1: Cycle Movement: Luckens Road/Hobsonville Road





AADT Estimate

- The AADT for this site is 110 cycle movements per day. This compares with:
  - 60 movements in 2008
  - 47 movements in 2007.

5.1 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift, apart from a light patch of drizzle at the beginning of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of morning cyclists at the Luckens/Hobsonville Road intersection continues to be light (26 cycle movements, compared with 25 movements in 2008).
- Key morning movements are turning left into Luckens Road from Hobsonville Road (Movement 2 = 9 cyclists), riding straight along Hobsonville Road heading southwest (Movement 1 = 7 cyclists) and the left turn from Luckens Road into Hobsonville Road (Movement 4 = 6 cyclists).
- Of the six movements possible at this intersection, the most notable change is at Movement 3 (down 6 cyclists).

Table 5.1: Morning Cyclist Movements
Luckens/Hobsonville Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	5	3	7	4
2	3	8	9	1
3	2	7	1	-6
4	2	3	6	3
5	0	2	2	0
6	8	2	1	-1
Total	**20**	**25**	**26**	**1**

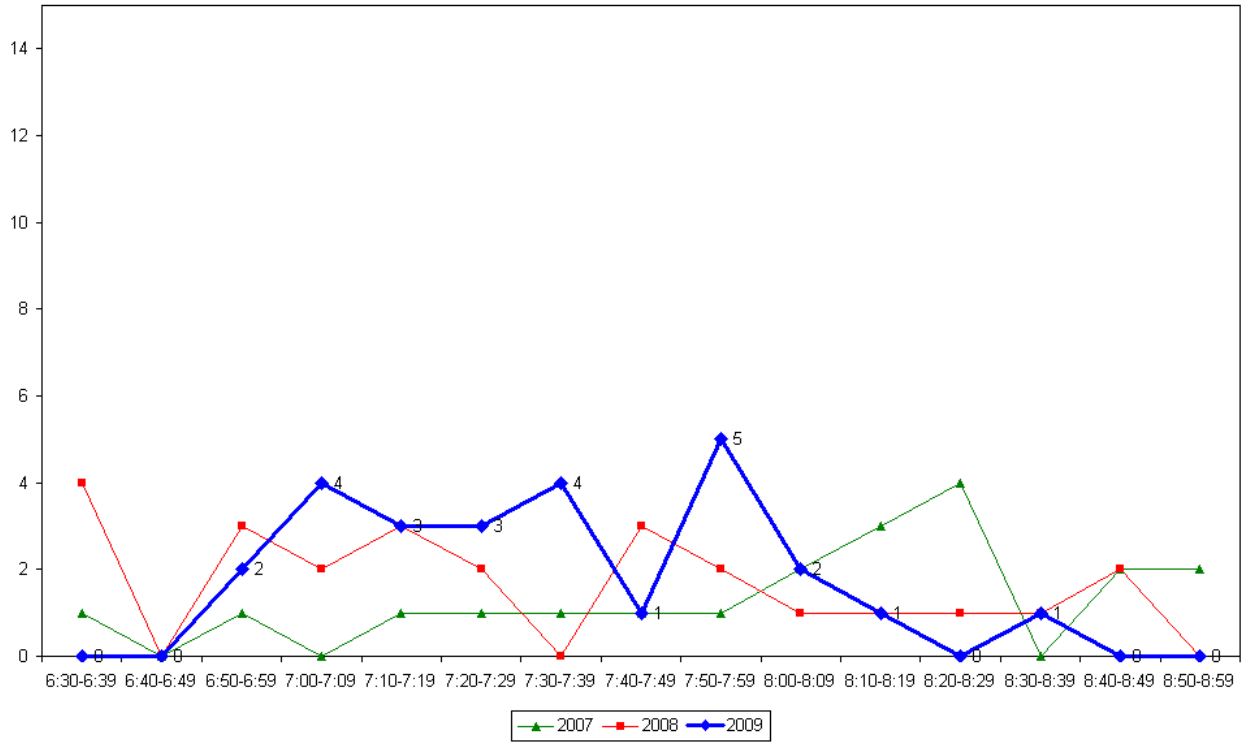
- Over the morning peak, adults comprise the greatest share (88 per cent) of the cycle movements (unchanged from last year).
- Almost all cyclists are wearing a helmet (96 per cent, down slightly from all cyclists in 2007 and 2008).
- On average, four in five cyclists are riding on the road (81 per cent, stable from 80 per cent in 2008).

Table 5.2: Morning Cyclist Characteristics
Luckens/Hobsonville Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	75	88	88	0
School child	25	12	12	0
Helmet Wearing				
Helmet on head	100	100	96	-4
No helmet	0	0	4	4
Where Riding				
Road	70	80	81	1
Footpath	30	20	19	-1
Base:	***20***	***25***	***26***	

- The volume of morning cycle movements is low throughout the entire morning shift, with a slight peak occurring between 7:50am and 7:59am (5 cyclists) after which cycle volumes remain low for the remainder of the monitoring period. This compares with a slight peak at the start of the monitoring period (4 cyclists) in 2008.

Figure 5.2 Luckens/Hobsonville Road Cyclist Frequency – Morning Peak



5.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from light drizzle at around 6:30pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- In the evening, the total number of cycle movements recorded at the Luckens/Hobsonville Road intersection has increased notably from last year, with 51 movements recorded (compared with 16 movements in 2008).
- The most common movements in the evening are straight along Hobsonville Road heading northeast (Movement 6 = 21 cyclists) and the right turn from Luckens Road into Hobsonville Road (Movement 3 = 13 cyclists. *Note that a group of four cyclists was observed at Movement 3 at 5:56pm.*).
- Of the six possible movements, the most notable changes this year have been at Movement 6 (up 16 cyclists) and Movement 3 (up 11 cyclists).

Table 5.3: Evening Cyclist Movements
Luckens/Hobsonville Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	6	1	8	7
2	3	6	4	-2
3	1	2	13	11
4	2	2	2	0
5	0	0	3	3
6	0	5	21	16
Total	**12**	**16**	**51**	**35**

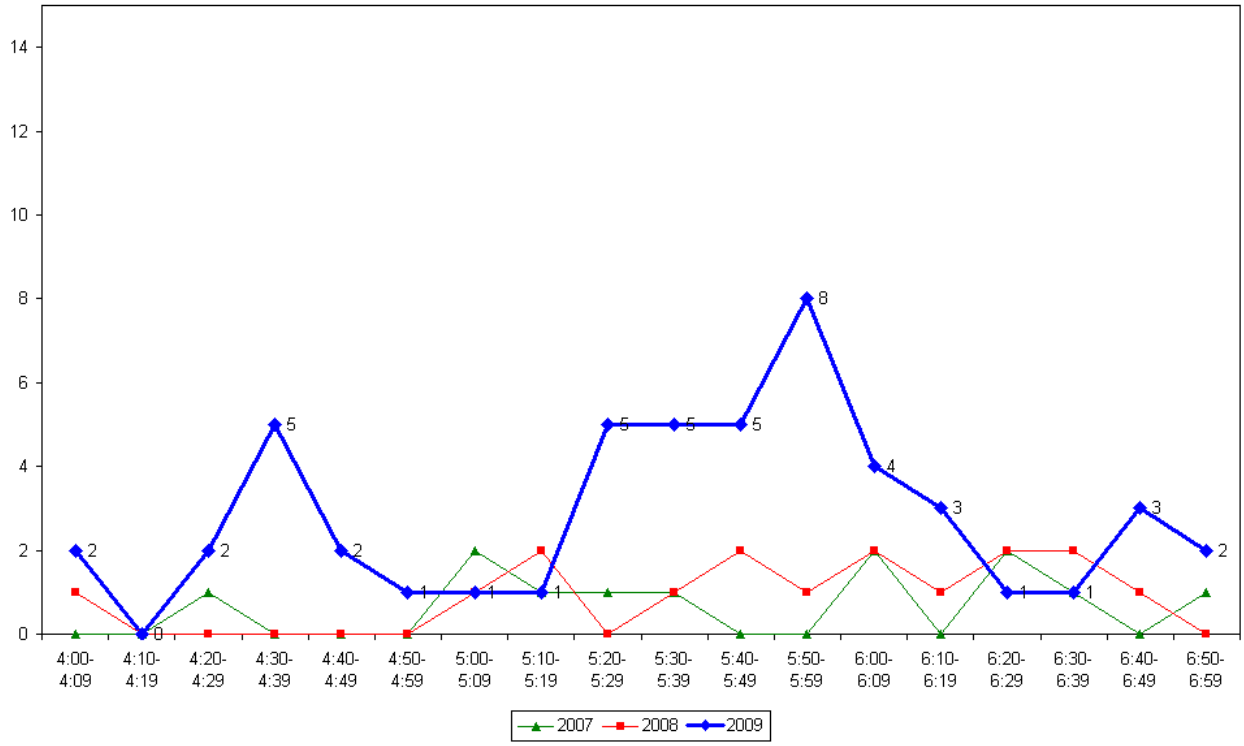
- All cyclists using this intersection are adults (100 per cent, compared with 94 per cent in the previous year).
- Almost all cyclists at this site are wearing a helmet (98 per cent, up notably from 69 per cent last year).
- The majority of cyclists are riding on the road (90 per cent, up from 81 per cent in 2008).

Table 5.4: Evening Cyclist Characteristics
Luckens/Hobsonville Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	100	94	100	6
School child	0	6	0	-6
Helmet Wearing				
Helmet on head	100	69	98	29
No helmet	0	31	2	-29
Where Riding				
Road	100	81	90	9
Footpath	0	19	10	-9
Base:	***12***	***16***	***51***	

- This year, cycle volumes peak between 5:50pm and 5:59pm, with 8 cyclists recorded. This compares to 2008, where evening cycle volumes remained low over the entire monitoring period.

Figure 5.3: Luckens/Hobsonville Road Cyclist Frequency – Evening Peak

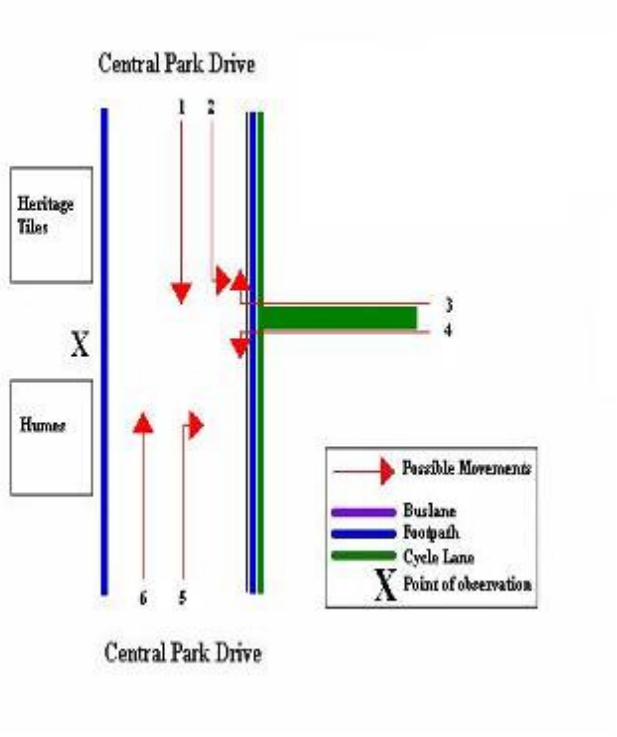


Note: A group of four cyclists was observed riding together at this site at 5:56pm. This comprises eight per cent of the total cycle movements recorded in the evening peak.

6. CENTRAL PARK DRIVE, HENDERSON (SITE 52)

Figure 6.1 shows the possible cyclist movements at this intersection.

Figure 6.1: Cycle Movement: Central Park Drive



AADT Estimate

- The AADT for this site is 306 cycle movements per day. This compares with:
  - 227 movements in 2008
  - 184 movements in 2007.

6.1 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- There was a truck parked on the grass from 7:22am which partially blocked the cycleway. At 7:36am a digger parked on the cycleway completely blocking all access for Movement 2. Both vehicles vacated the site at 7:47am.

Key Points

- Cycle volumes at Central Park Drive have increased notably this year, with 91 cycle movements recorded (compared with 68 movements in 2008).
- The most common movement in the morning is turning off the northern end of Central Park Drive into the cycle way (Movement 2 = 36 cyclists).
- Of the six possible movements at this site, the most notable increases since 2008 have been at Movement 6 (up 11 cyclists) and Movement 5 (up 10 cyclists).

Table 6.1: Morning Cyclist Movements
Central Park Drive 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	8	4	0	-4
2	20	34	36	2
3	8	12	12	0
4	8	7	11	4
5	14	10	20	10
6	3	1	12	11
Total	**61**	**68**	**91**	**23**

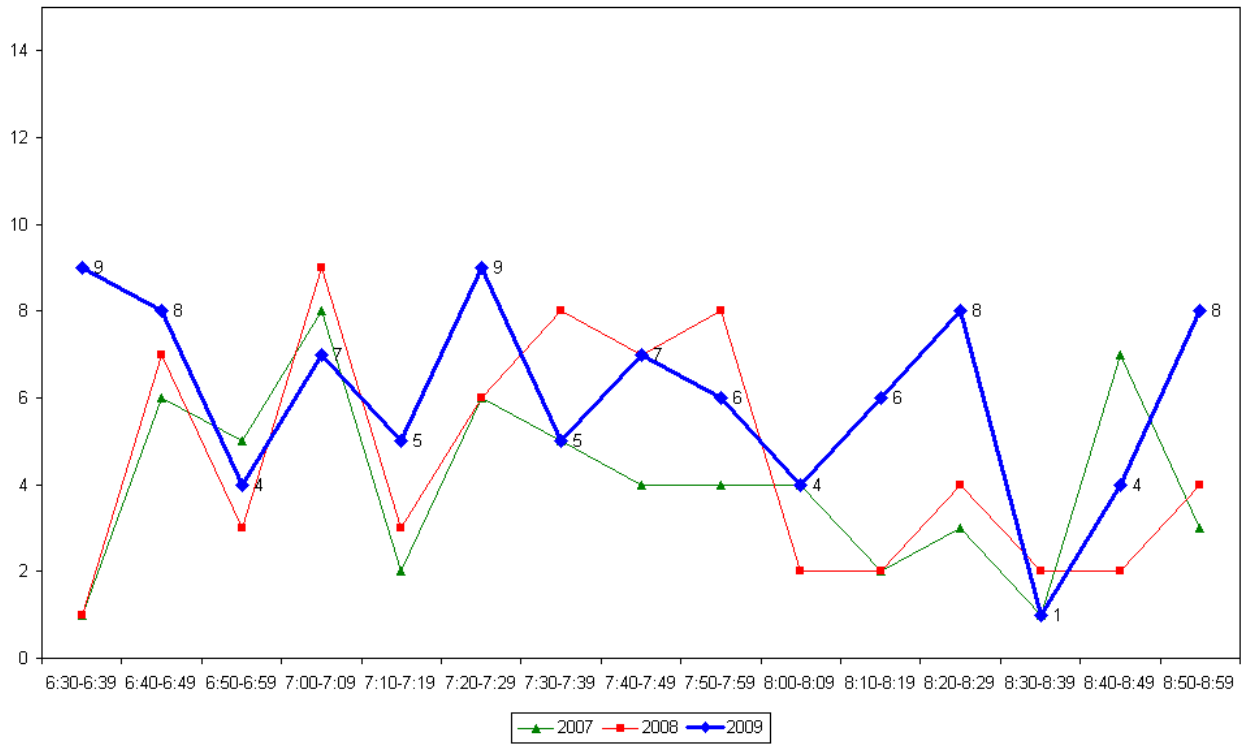
- Over the morning peak, almost all cyclists are adults (96 per cent, stable from 99 per cent at the previous measure).
- Most cyclists are wearing a helmet (97 per cent, stable from 94 per cent last year).
- This year riding on the road was split into riding on the road and riding on the off-road cycleway. Approximately three in five cyclists are riding on the road (59 per cent), with 38 per cent riding on the off-road cycleway and 3 per cent riding on the footpath.

Table 6.2: Morning Cyclist Characteristics
Central Park Drive 2007-2009 (%)

	2007	*2008*	*2009*	**Change 08-09**
Cyclist Type				
Adult	98	99	96	-3
School child	2	1	4	3
Helmet Wearing				
Helmet on head	92	94	97	3
No helmet	8	6	3	-3
Where Riding				
Road	74	99	59	-
Footpath	26	1	3	2
Off-road cycleway	-	-	38	-
Base:	***61***	***68***	***91***	

- The volume of cycle movements peaks at the beginning of the monitoring period (9 cyclists between 6:30am and 6:39am), then peaks again between 7:20am and 7:29am (9 cyclists). Cycle volumes remain moderate throughout the monitoring period, with between 4 and 8 cyclists recorded during most ten minute intervals. This compares with last year where cycle volumes were lower over the last hour of monitoring.

Figure 6.2: Central Park Drive Cyclist Frequency – Morning Peak



Note: A group of three cyclists was observed riding together at 6.39am. This comprises three per cent of the total cycle movements recorded in the morning peak.

6.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from light drizzle between 6:45pm and 6:53pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- This year, the total number of cycle movements recorded at the Central Park Drive intersection in the evening increases notably, from 89 in 2008 to 121 movements.
- In contrast to the morning shift, the most common movement in the evening is turning out of the cycleway onto Central Park Drive heading north (Movement 3 = 49 cyclists).
- The most notable increase since last year is at Movement 4 (up 23 cyclists).

Table 6.3: Evening Cyclist Movements
Central Park Drive 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	5	5	1	-4
2	12	14	17	3
3	22	38	49	11
4	14	10	33	23
5	11	17	11	-6
6	2	5	10	5
Total	**66**	**89**	**121**	**32**

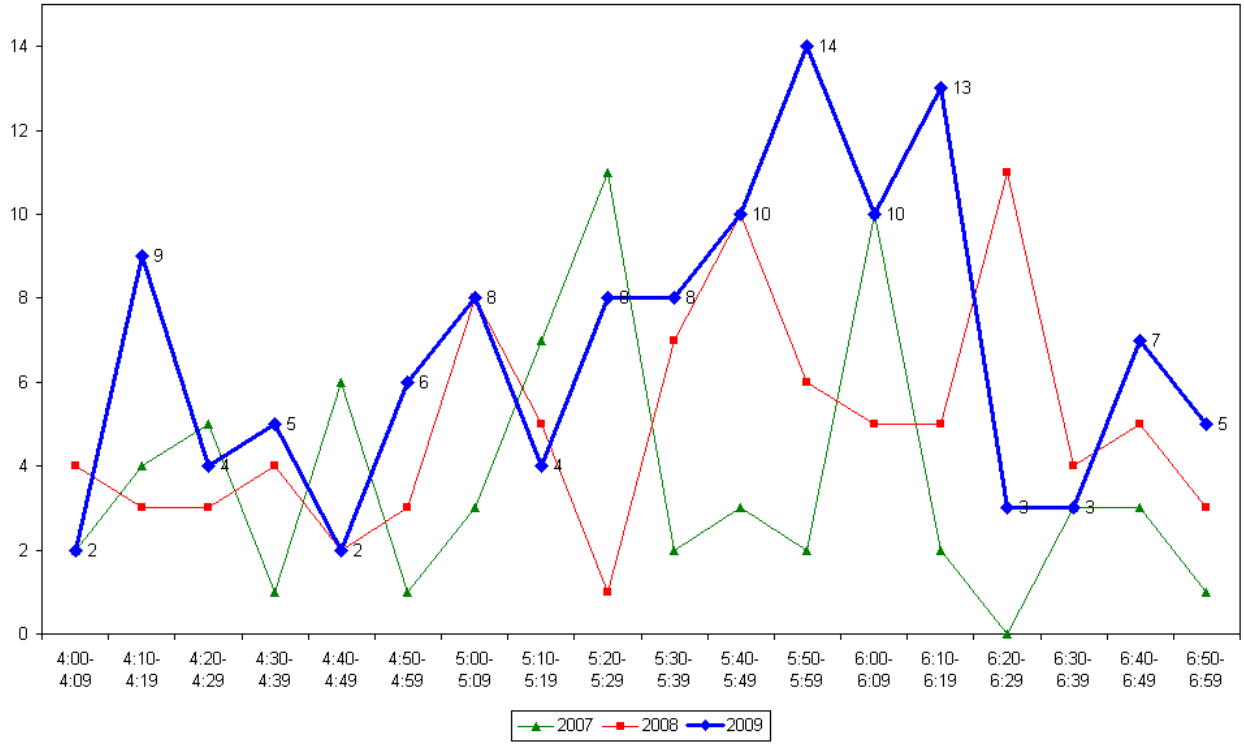
- Over the evening peak, most cyclists at this site are adults (97 per cent, unchanged from the previous year).
- Helmet wearing is still common in the evening (93 per cent, stable from 91 per cent in 2008).
- This year, riding on the road was split into riding on the road and riding on the off-road cycleway. Just over half of cyclists in the evening are riding on the road (55 per cent). Forty-four per cent are riding on the off-road cycleway, and 2 per cent riding on the footpath.

Table 6.4: Evening Cyclist Characteristics
Central Park Drive 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	100	97	97	0
School child	0	3	3	0
Helmet Wearing				
Helmet on head	94	91	93	2
No helmet	6	9	7	-2
Where Riding				
Road	83	97	55	-
Footpath	17	3	2	-1
Off-road cycleway	-	-	44	-
Base:	***66***	***89***	***121***	

- The volume of evening cyclist movements increases steadily over the first half of the monitoring period, with a notable number of cyclist movements between 4:10pm and 4:19pm (9 cyclists). Cycle volumes peak between 5:50pm and 5:59pm (14 movements) and again between 6:10pm and 6:19pm (13 movements), before dropping off through to the end of the monitoring period. This compares with peaks between 5:40pm and 5:49pm (10 cyclists) and 6:20pm and 6:29pm (11 movements) last year.

Figure 6.3: Central Park Drive Cyclist Frequency – Evening Peak

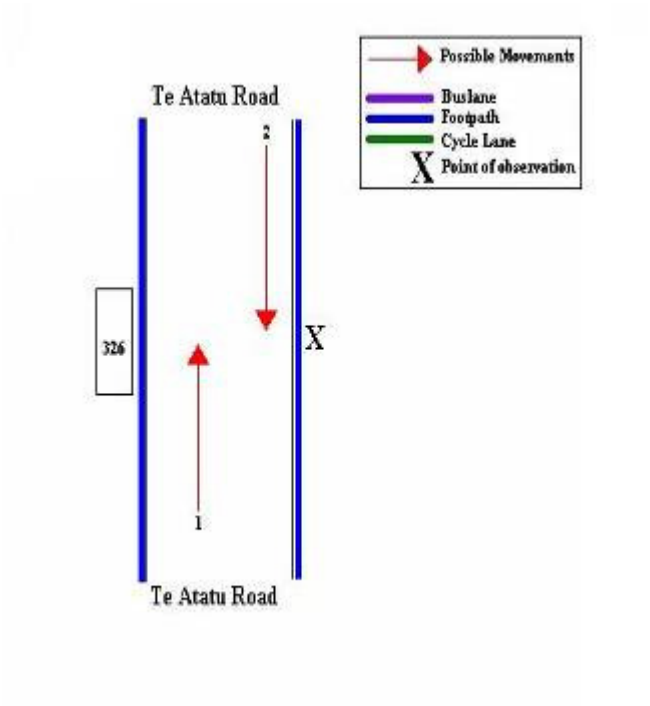


Note: A group of four cyclists were observed riding together at 5.45pm. This comprises three per cent of the total cycle movements recorded in the evening peak.

7. 326 TE ATATU ROAD, TE ATATU (SITE 53)

Figure 7.1 shows the possible cyclist movements at this site.

Figure 7.1: Cycle Mouvements: 326 Te Atatu Road



AADT Estimate

- The AADT for this site is 202 cycle movements per day. This compares with:
  - 155 movements in 2008
  - 127 movements in 2007.

7.1 Morning Peak

Environmental Conditions

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

Key Points

- As in 2007 and 2008, the volume of morning cyclists at 326 Te Atatu Road in 2009 is the third highest compared with other sites in Waitakere (79 cycle movements, up from 52 movements recorded in 2008).
- The most common movement is straight along Te Atatu Road heading north (Movement 1 = 60 cyclists, up 18 cyclists).

Table 7.1: Morning Cyclist Movements
326 Te Atatu Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	35	42	60	18
2	9	10	19	9
Total	**44**	**52**	**79**	**27**

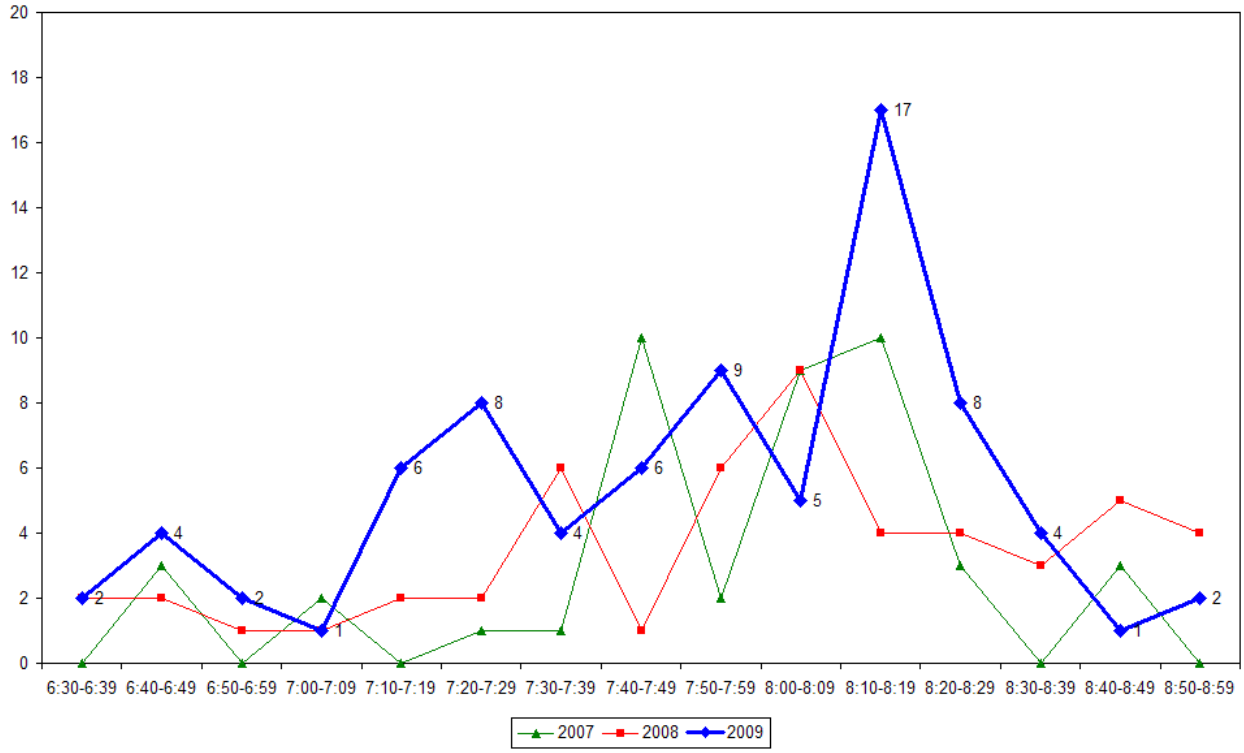
- Over the morning peak, school children comprise over half of cycle movements (54 per cent, up from 48 per cent last year), the second highest of the 14 sites monitored in Waitakere city.
- Most cyclists are wearing a helmet (94 per cent, compared with 87 per cent in 2008).
- Of the 14 Waitakere sites monitored in the morning, this site has the highest proportion of morning cyclists riding on the footpath (82 per cent, down from 92 per cent last year).

Table 7.2: Morning Cyclist Characteristics
326 Te Atatu Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	43	52	46	-6
School child	57	48	54	6
Helmet Wearing				
Helmet on head	84	87	94	7
No helmet	16	13	6	-7
Where Riding				
Road	11	8	18	10
Footpath	89	92	82	-10
Base:	***44***	***52***	***79***	

- In 2009, the volume of morning cycle movements starts off low, then increases to peak between 8:10am and 8:19am (17 cyclists, ten minutes later than last year's peak), before tailing off towards the end of the morning period).

Figure 7.2: 326 Te Atatu Road Cyclist Frequency – Morning Peak



Note: Twenty-three per cent of total morning cycle movements were identified as cycling as groups. Groups of three or more cyclists riding together were observed at:

- *06.46am (3 cyclists*
- *8.13am (3 cyclists)*
- *8.15am (6 cyclists)*
- *8.22am (3 cyclists)*
- *8.31am (3 cyclists)*

7.2 Evening Peak

Environmental Conditions

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

Key Points

- The total number of cycle movements recorded in the evening at the 326 Te Atatu Road site has increased slightly, from 55 in 2008 to 59 movements this year.
- The most common movement in the evening is straight along Te Atatu Road in the opposite direction from the morning shift (Movement 2 = 42 cyclists travelling south).
- There have been no notable changes at either movement this year.

Table 7.3: Evening Cyclist Movements
326 Te Atatu Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	16	15	17	2
2	27	40	42	2
Total	**43**	**55**	**59**	**4**

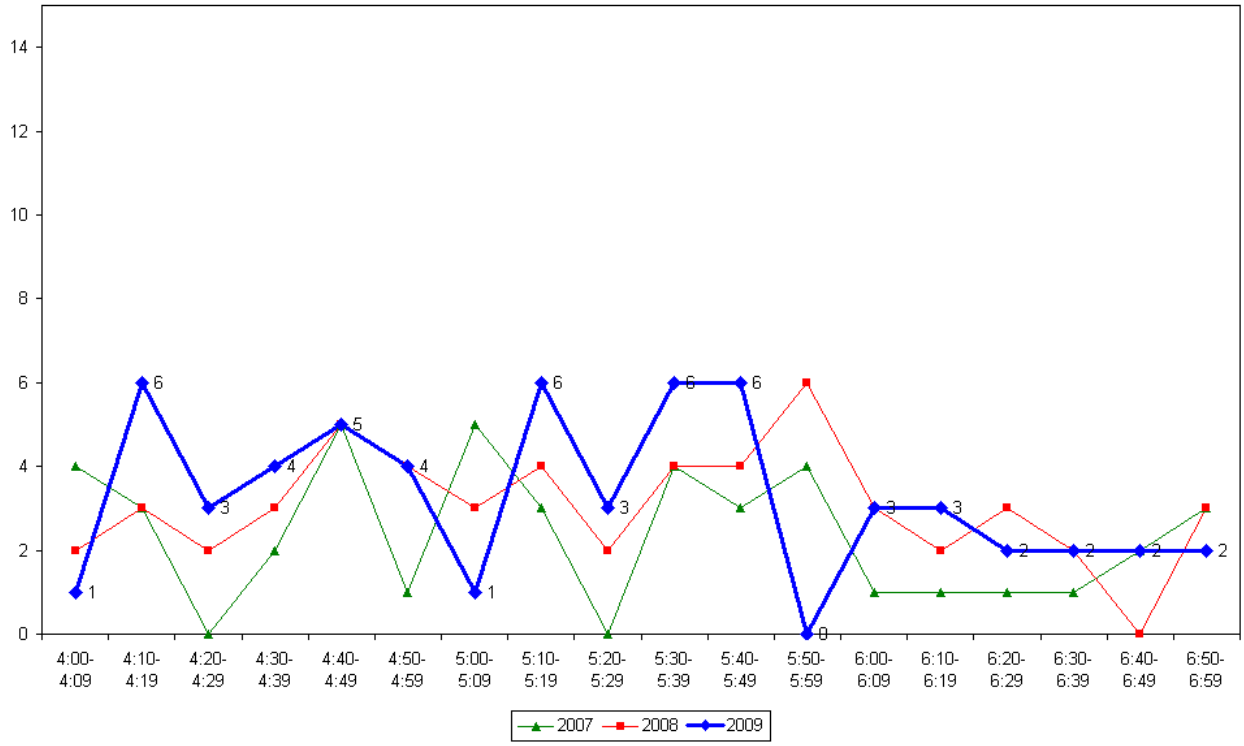
- The greatest share of cyclists using this site are adults (80 per cent, down from 91 per cent in the previous year).
- A large proportion of cyclists are wearing a helmet (80 per cent, down slightly from 84 per cent in 2008).
- On average, three in four cyclists are riding on the footpath (78 per cent, stable from 76 per cent last year).

Table 7.4: Evening Cyclist Characteristics
326 Te Atatu Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	72	91	80	-11
School child	28	9	20	11
Helmet Wearing				
Helmet on head	88	84	80	-4
No helmet	12	16	20	4
Where Riding				
Road	16	24	22	-2
Footpath	84	76	78	2
Base:	***43***	***55***	***59***	

- This year, cycle volumes are consistent throughout most of the evening monitoring period, with between two and six cyclists recorded over almost all ten minute intervals. Cyclist numbers are lower in the last hour of monitoring, with 14 cyclists recorded between 6:00pm and 6:59pm.

Figure 7.3: 326 Te Atatu Road Cyclist Frequency – Evening Peak

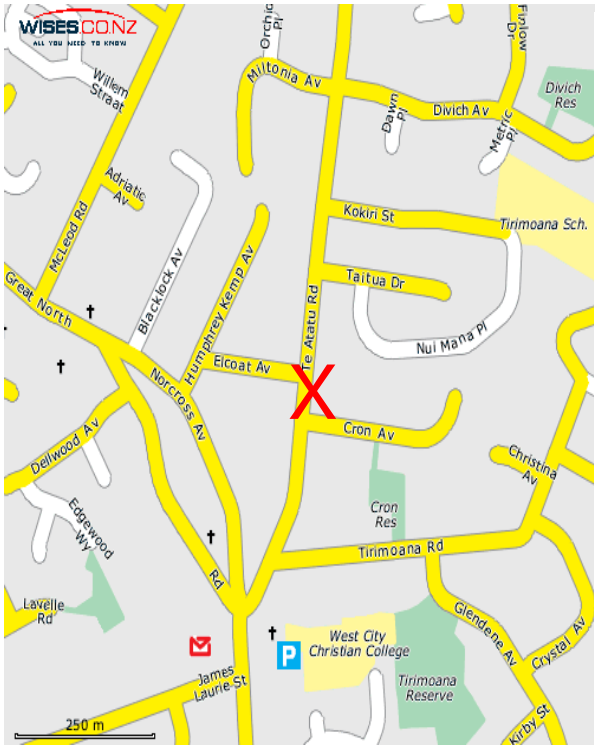


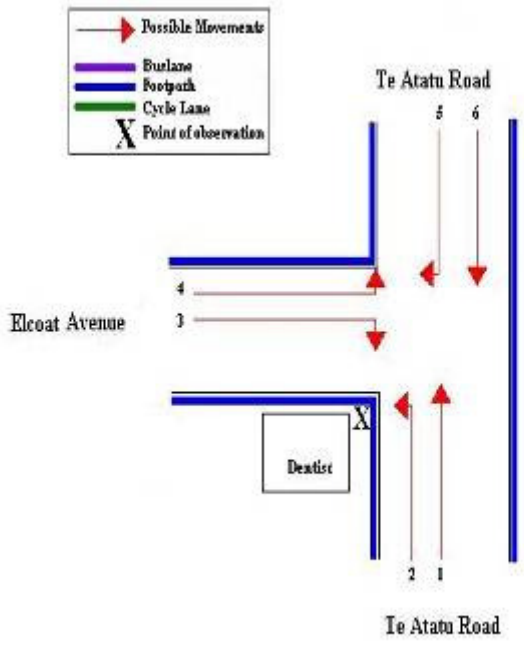
Note: A group of three cyclists was observed riding together at 4.32pm. This comprises five per cent of the total cycle movements recorded in the evening peak.

8. TE ATATU ROAD/ELCOAT AVENUE, HENDERSON (SITE 54)

Figure 8.1 shows the possible cyclist movements at this intersection.

Figure 8.1: Cycle Movements: Te Atatu Road/Elcoat Avenue





AADT Estimate

- The AADT for this site is 101 cycle movements per day. This compares with:
  - 66 movements in 2008
  - 73 movements in 2007.

8.1 Morning Peak

Environmental Conditions

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

Key Points

- Since 2008, the volume of morning cyclists at the Te Atatu Road/Elcoat Avenue intersection has increased (37 cycle movements, compared with 27 movement last year).
- The most common morning movement is north up Te Atatu Road (Movement 1 = 28 cyclists).
- Of the six possible movements at this site, the most notable increase since 2008 is at Movement 1 (up 9 cyclists).

Table 8.1: Morning Cyclist Movements
Te Atatu Road/Elcoat Avenue 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	16	19	28	9
2	0	0	1	1
3	0	0	0	0
4	2	1	2	1
5	0	0	1	1
6	8	7	5	-2
Total	**26**	**27**	**37**	**10**

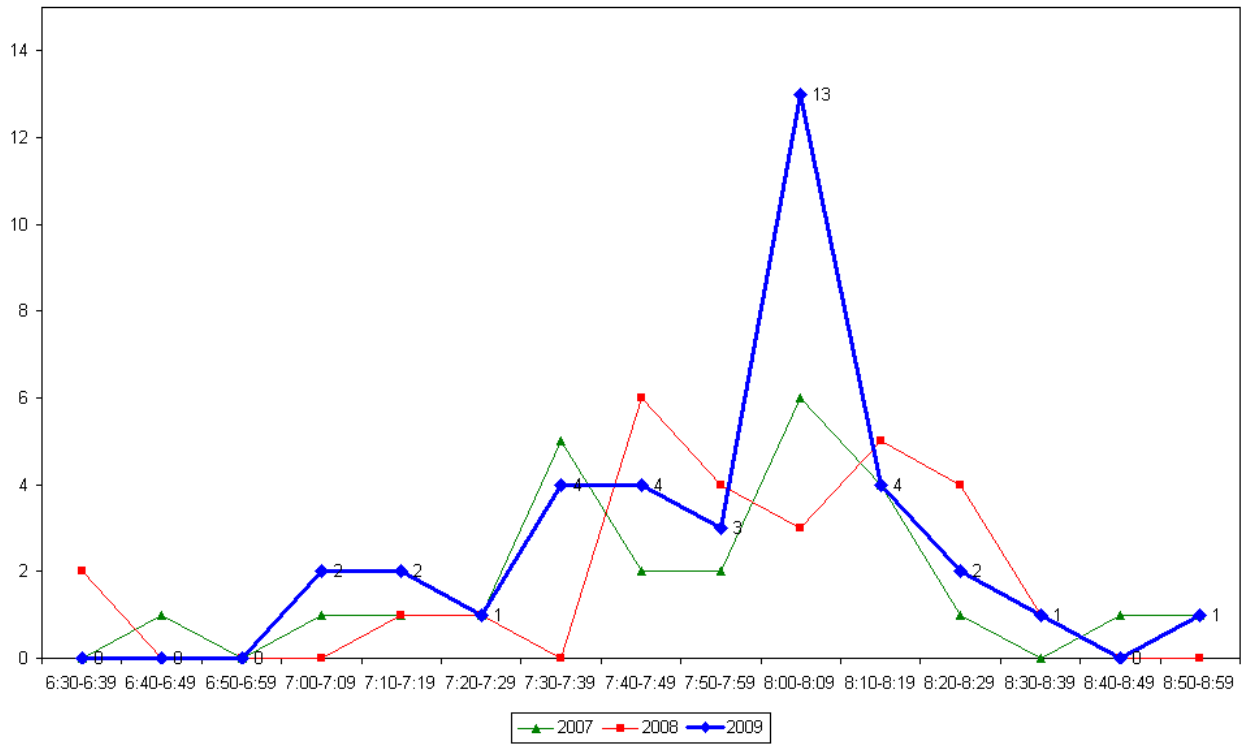
- Over the morning peak, school children comprise two-thirds of the total number of cycle movements (68 per cent, up slightly from 63 per cent in 2008).
- Most cyclists are wearing a helmet (86 per cent, compared with 89 per cent at the last measure).
- Approximately four in five cyclists are riding on the footpath in the morning (81 per cent, up from 74 per cent last year). This is the highest across the 14 sites monitored in Waitakere.

Table 8.2: Morning Cyclist Characteristics
Te Atatu Road/Elcoat Avenue 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	46	37	32	-5
School child	54	63	68	5
Helmet Wearing				
Helmet on head	88	89	86	-3
No helmet	12	11	14	3
Where Riding				
Road	38	26	19	-7
Footpath	62	74	81	7
Base:	***26***	***27***	***37***	

- This year, the volume of morning cycle movements peaks sharply between 8:00am and 8:09am, with 13 cyclists recorded. No more than four cyclists were recorded over any other ten minute interval across the monitoring period. This compares with slight peaks between 7:40am and 7:49am (6 cyclists) and again between 8:10am and 8:19am (5 cyclists) last year.

Figure 8.2: Te Atatu Road/Elcoat Avenue Cyclist Frequency – Morning Peak



8.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from light drizzle towards the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- In the evening, the total number of cycle movements recorded at the Te Atatu Road/Elcoat Avenue intersection has increased, from 18 movements last year to 32 movements in 2009.
- In contrast to the morning shift, the most common movement in the evening is south down Te Atatu Road (Movement 6 = 18 cyclists).
- Compared with last year, the most notable changes are at Movement 6 (up 6 cyclists) and Movement 1 (up 5 cyclists).

Table 8.3: Evening Cyclist Movements
Te Atatu Road/Elcoat Avenue Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	9	2	7	5
2	0	2	1	-1
3	0	0	2	2
4	1	0	3	3
5	1	2	1	-1
6	13	12	18	6
Total	**24**	**18**	**32**	**14**

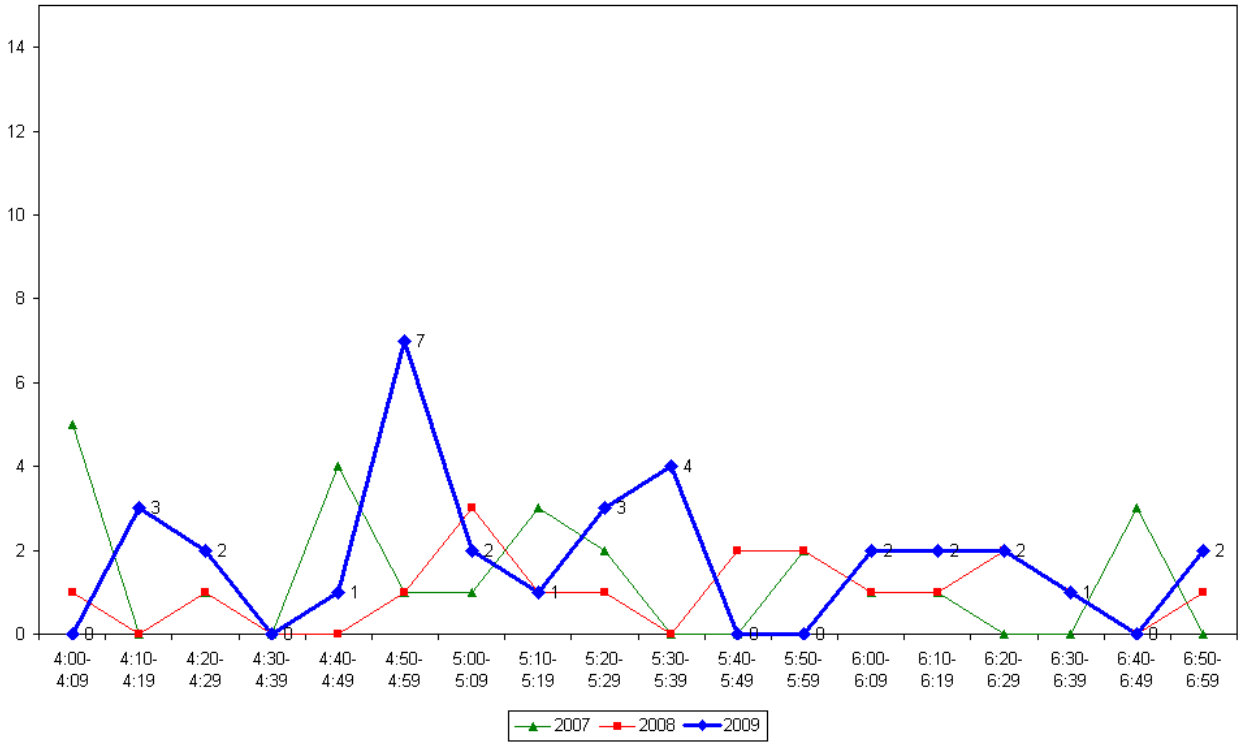
- Just over half of the cyclists using this intersection are adults (53 per cent, down notably from 83 per cent last year).
- Approximately two-thirds of cyclists at this site are wearing a helmet (66 per cent, down from 78 per cent in the previous year).
- Almost all cyclists (81 per cent) are riding on the footpath (up notably from 50 per cent in 2008), the second highest of all sites monitored in Waitakere city.

Table 8.4: Evening Cyclist Characteristics
Te Atatu Road/Elcoat Avenue 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	58	83	53	-30
School child	42	17	47	30
Helmet Wearing				
Helmet on head	87	78	66	-12
No helmet	13	22	34	12
Where Riding				
Road	50	50	19	-31
Footpath	50	50	81	31
Base:	***24***	***18***	***32***	

- This year, evening cyclist volumes peak between 4:50pm and 4:59pm (7 movements). This compares to consistently low cycle volumes across the entire monitoring period in 2008.

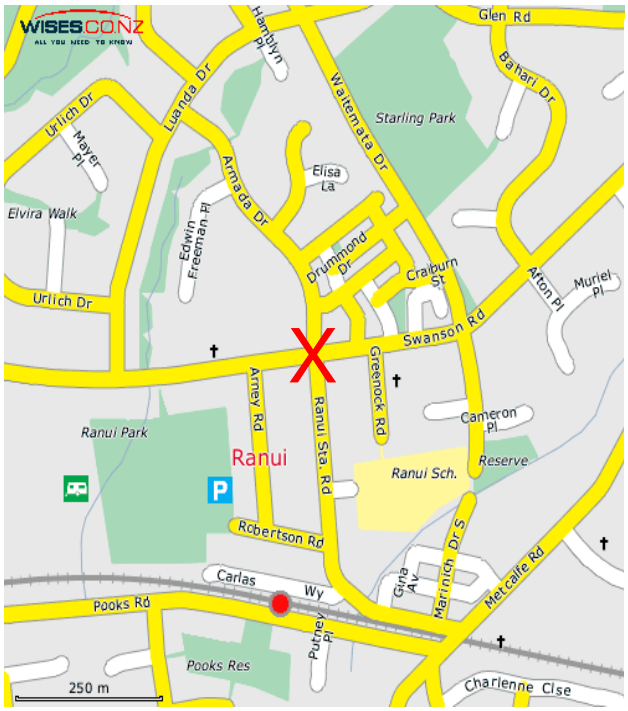
Figure 8.3: Te Atatu Road/Elcoat Avenue Cyclist Frequency – Evening Peak

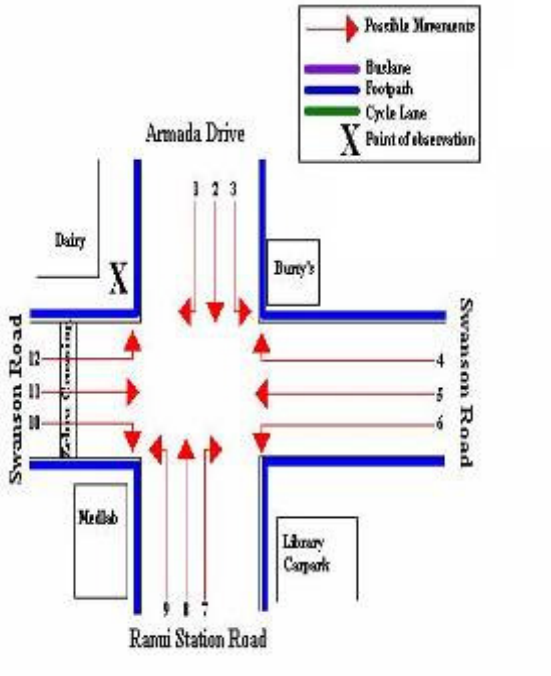


9. SWANSON ROAD/RANUI STATION ROAD/ARMADA DRIVE, RANUI (SITE 55)

Figure 9.1 shows the possible cyclist movements at this intersection.

Figure 9.1: Cycle Movements: Swanson Road/Ranui Station Road/Armada Drive





AADT Estimate

- The AADT for this site is 148 cycle movements per day. This compares with:
  - 122 movements in 2008
  - 88 movements in 2007.

9.1 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- School crossing guards were present at this site between 8:35am and 8:45am.

Key Points

- The volume of morning cyclists at the Swanson Road/Armada Drive intersection has increased, from 21 in 2008 to 37 cycle movements this year.
- The most common movement is straight along Swanson Road heading east (Movement 11 = 23 cyclists).
- Compared to last year, the most notable increase in cycle volumes is at Movement 11 (up 10 cyclists).

Table 9.1: Morning Cyclist Movements

Swanson Road/Ranui Station Road/Armada Drive 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	2	3	1
2	0	0	2	2
3	1	0	0	0
4	0	2	0	-2
5	1	3	2	-1
6	1	1	1	0
7	0	0	0	0
8	1	0	1	1
9	1	0	0	0
10	0	0	3	3
11	10	13	23	10
12	0	0	2	2
Total	**15**	**21**	**37**	**16**

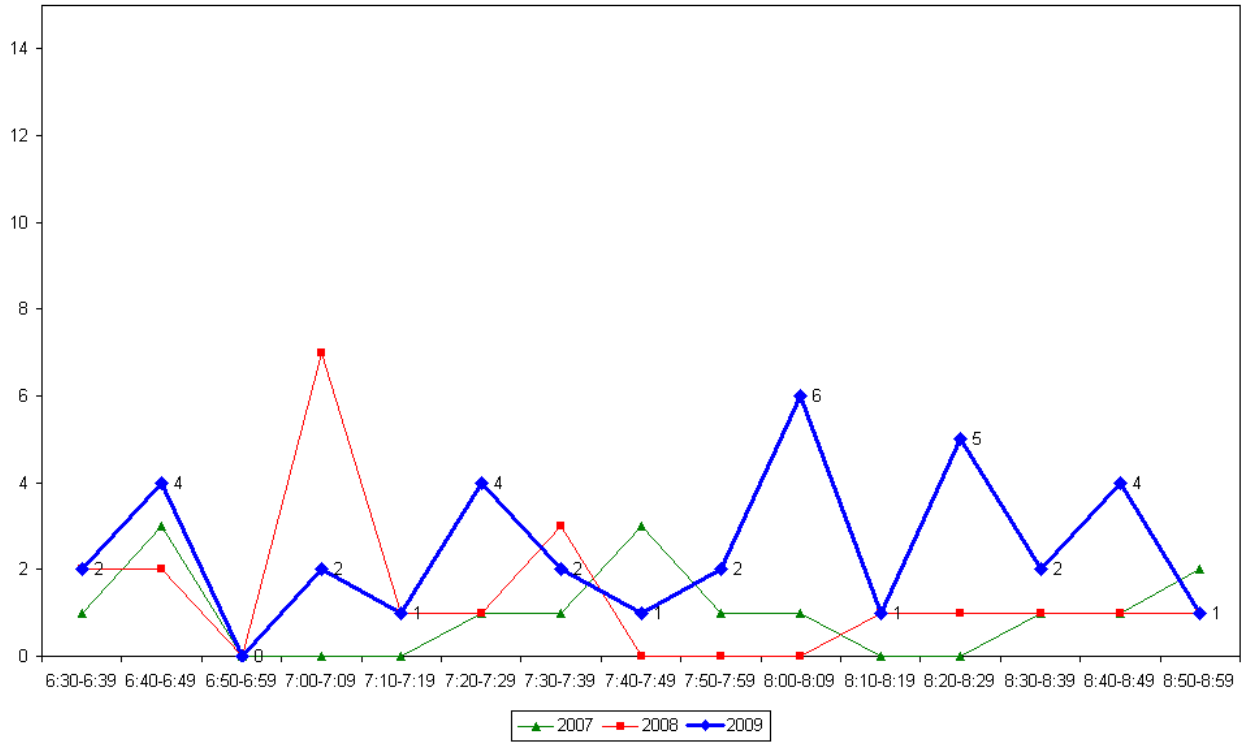
- Over the morning peak, adults comprise the greatest share of the total number of cycle movements (81 per cent, unchanged from last year).
- Approximately four in five cyclists are wearing a helmet (81 per cent, up from 67 per cent last year).
- Just over half of cyclists are riding on the road (54 per cent, down from 62 per cent in 2008).

Table 9.2: Morning Cyclist Characteristics
Swanson Road/Ranui Station Road/Armada Drive 2007-2009 (%)

	2007	*2008*	*2009*	**Change 08-09**
Cyclist Type				
Adult	87	81	81	0
School child	13	19	19	0
Helmet Wearing				
Helmet on head	93	67	81	14
No helmet	7	33	19	-14
Where Riding				
Road	73	62	54	-8
Footpath	27	38	46	8
Base:	***15***	***21***	***37***	

- Morning cycle volumes are generally low and peak between 8:00am and 8:09am (6 movements), one hour later than the peak last year (7:00am and 7:09am - 7 movements).

Figure 9.2: Swanson Road/Ranui Station Road/Armada Drive Cyclist Frequency – Morning Peak



9.2 Evening Peak

Environmental Conditions

- The weather was overcast but fine throughout the evening shift, with light rain between 6:40pm and 6:47pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Compared with the previous year, the total number of evening cycle movements recorded at the Swanson Road/Armada Drive intersection has remained stable (66 movements, compared with 65 movements in 2008).
- The key movement in the evening is riding straight along Swanson Road heading west (Movement 5 = 20 cyclists).
- The most notable increase since last year has been at Movement 5 (up 10 cyclists), while the most notable declines have been at Movements 1 and 9 (each down 7 cyclists) and at Movement 12 (down 6 cyclists).

Table 9.3: Evening Cyclist Movements

Swanson Road/Ranui Station Road/Armada Drive 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	2	15	8	-7
2	4	4	2	-2
3	0	0	2	2
4	0	0	1	1
5	11	10	20	10
6	2	0	0	0
7	1	1	3	2
8	7	0	3	3
9	2	7	0	-7
10	4	2	5	3
11	11	9	11	2
12	3	17	11	-6
Total	**47**	**65**	**66**	**1**

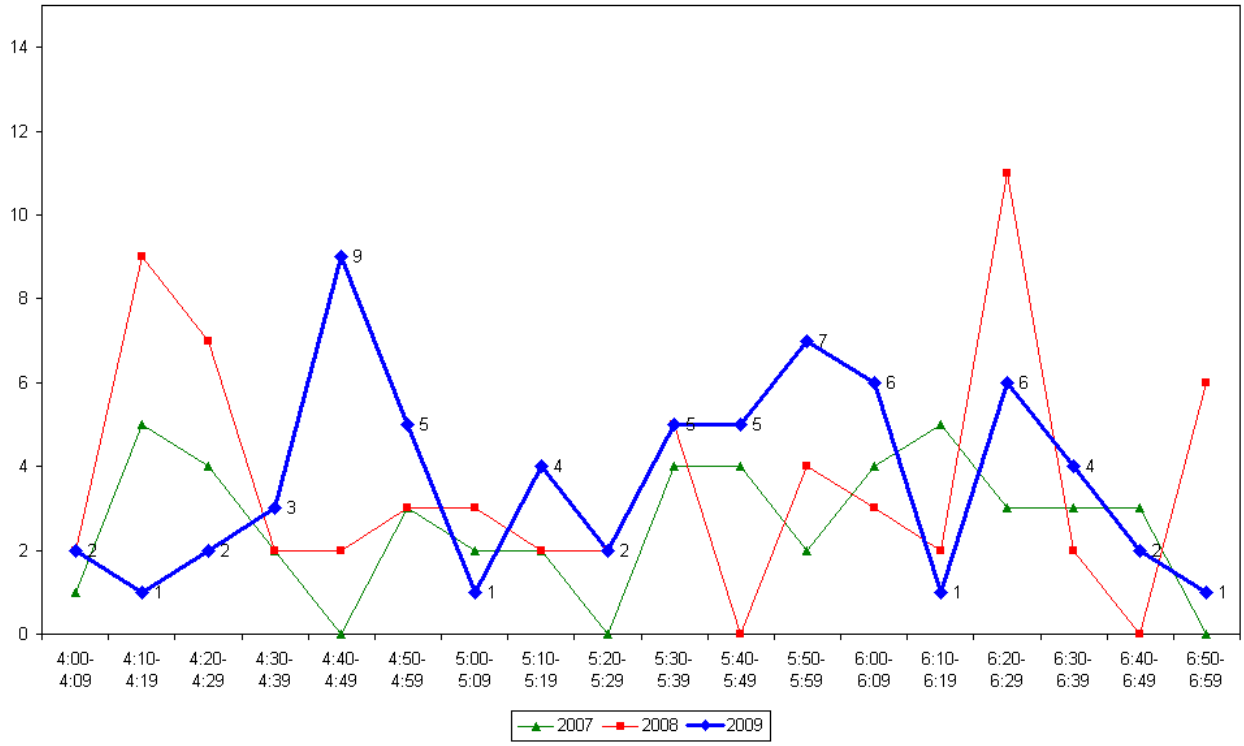
- Of the 14 sites monitored in Waitakere, the share of children using the Swanson Road/Armada Drive intersection is the second highest in the evening (53 per cent, down from 68 per cent last year).
- Similarly, the proportion of cyclists not wearing a helmet is the highest across all Waitakere city sites (58 per cent, down from 69 per cent in the previous year).
- Just less than two-thirds of cyclists are riding on the footpath (64 per cent, down from 77 per cent in 2008).

Table 9.4: Evening Cyclist Characteristics
Swanson Road/Ranui Station Road/Armada Drive 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	68	32	47	15
School child	32	68	53	-15
Helmet Wearing				
Helmet on head	60	31	42	11
No helmet	40	69	58	-11
Where Riding				
Road	43	23	36	13
Footpath	57	77	64	-13
Base:	***47***	***65***	***66***	

- Evening cyclist volumes start off low, then peak early in the monitoring period (between 4:40pm and 4:49pm - 9 cyclists). This compares with a slight peak of 9 movements between 4:10pm and 4:19pm, and a later peak around 6:25pm (11 movements) in 2008.

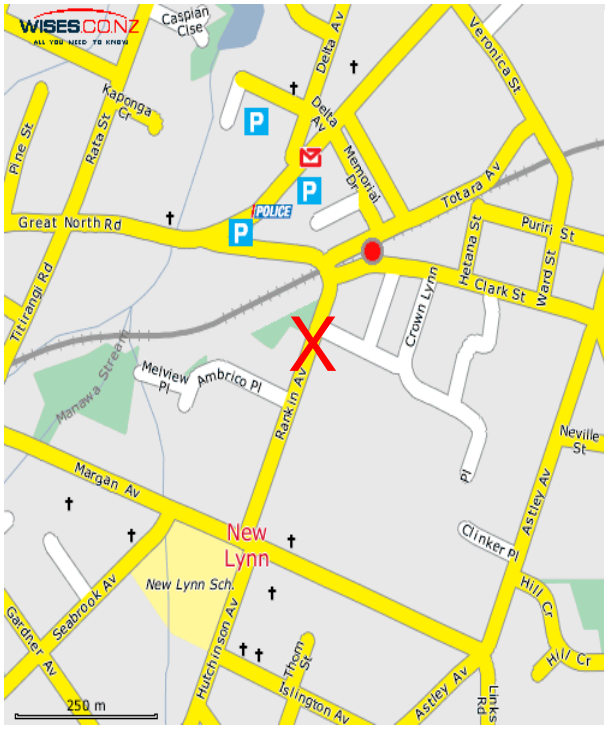
Figure 9.3: Swanson Road/Ranui Station Road/Armada Drive Cyclist Frequency – Evening Peak

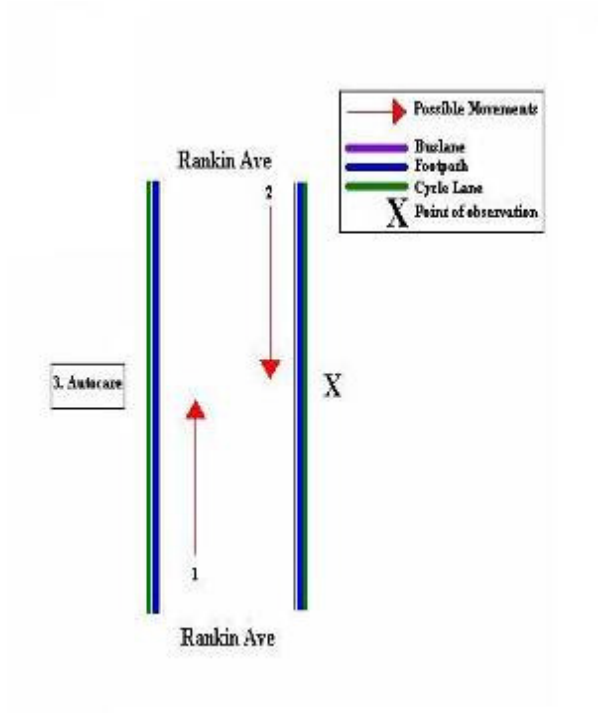


10.3 RANKIN AVENUE, NEW LYNN (SITE 56)

Figure 10.1 shows the possible cyclist movements at this site.

Figure 10.1: Cycle Movements: 3 Rankin Avenue





AADT Estimate

- The AADT for this site is 56 cycle movements per day. This compares with:
  - 55 movements in 2008
  - 45 movements in 2007.

10.1 Morning Peak

Environmental Conditions

- The weather was overcast but fine throughout the morning shift.
- There were road works along Clark Street near the monitoring site, which may affect cycle counts.

Key Points

- Compared with other sites in Waitakere, the volume of morning cyclists at 3 Rankin Avenue is the lightest, with 21 cycle movements recorded (compared with 17 movements in 2008).
- The most common movement in the morning is straight along Rankin Avenue heading north (Movement 1 = 18 cyclists, up 3 cyclists from last year).

Table 10.1: Morning Cyclist Movements
3 Rankin Avenue 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	12	15	18	3
2	4	2	3	1
Total	**16**	**17**	**21**	**4**

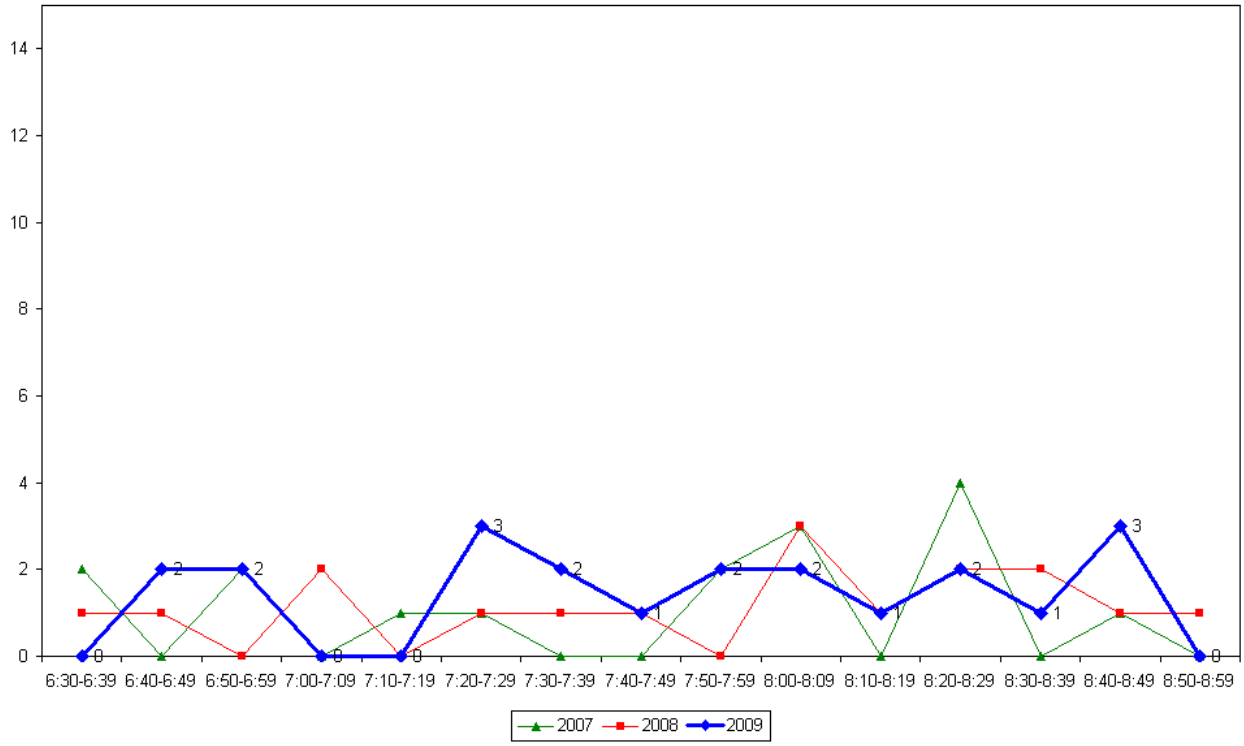
- Over the morning peak, just over half of those using this site are adults (52 per cent, down notably from 88 per cent last year).
- Just over three in five cyclists are wearing a helmet (62 per cent, down from 76 per cent last year).
- This year riding on the road was split into riding on the road and riding on the off-road cycleway. The greatest share of cyclists are riding on the road (38 per cent), with one-third riding on the off-road cycleway (33 per cent) and the remaining 29 per cent riding on the footpath.

Table 10.2: Morning Cyclist Characteristics
3 Rankin Avenue 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	100	88	52	-36
School child	0	12	48	36
Helmet Wearing				
Helmet on head	75	76	62	-14
No helmet	25	24	38	14
Where Riding				
Road	69	53	38	-
Footpath	31	47	29	-18
Off-road cycleway	-	-	33	-
Base:	***16***	***17***	***21***	

- The volume of morning cycle movements is very low over the entire monitoring period, with slight peaks between 7:20am and 7:29am (3 cyclists) and 8:40am and 8:49am (3 cyclists). This compares with a slight peak of 3 cycle movements between 8:00am and 8:09am last year.

Figure 10.2: 3 Rankin Avenue Cyclist Frequency – Morning Peak



10.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from light drizzle between 6:45pm and 7:00pm.
- There were road works along Clark Street near the monitoring site, which may affect cycle counts.

Key Points

- This year, the total number of cycle movements recorded in the evening at 3 Rankin Avenue decreases slightly, from 21 in 2008 to 17 movements, and is the lowest cyclist volume of the 14 sites monitored in Waitakere city.
- The key evening movement is straight along Rankin Avenue heading south (Movement 2 = 14 cyclists).
- Cycle volumes at both movements are stable from the previous measure.

Table 10.3: Evening Cyclist Movements
3 Rankin Avenue 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	6	5	3	-2
2	9	16	14	-2
Total	**15**	**21**	**17**	**-4**

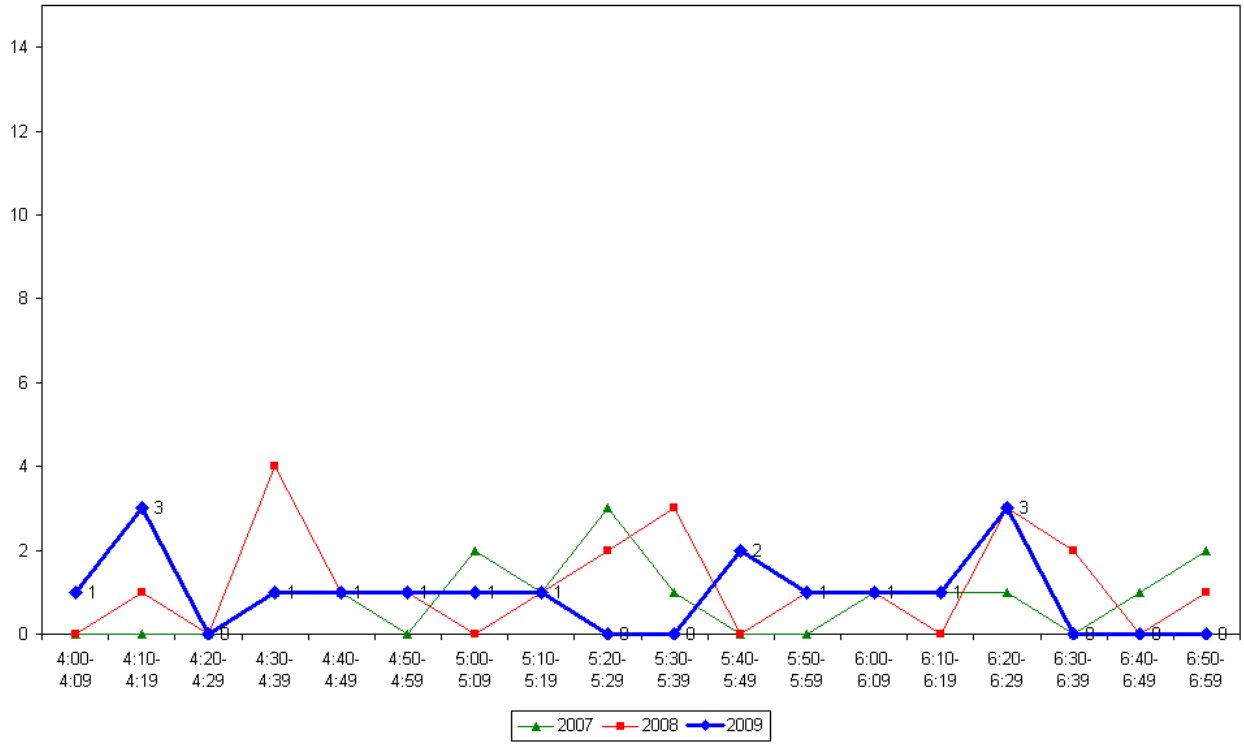
- The greatest share of cyclists using this site are adults (71 per cent, down from 81 per cent last year).
- Just over four-fifths of cyclists at this site are wearing a helmet (82 per cent, up notably from 62 per cent in the previous year).
- This year riding on the road was split into riding on the road and riding on the off-road cycleway. Just over half of all cyclists at this site in the evening are riding on the road (53 per cent). Twenty-nine per cent are riding on the footpath, while the remaining 18 per cent are riding on the off-road cycleway.

Table 10.4: Evening Cyclist Characteristics
3 Rankin Avenue 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	87	81	71	-10
School child	13	19	29	10
Helmet Wearing				
Helmet on head	73	62	82	20
No helmet	27	38	18	-20
Where Riding				
Road	33	48	53	-
Footpath	67	52	29	-23
Off-road cycleway	-	-	18	-
Base:	***15***	***21***	***17***	

- The volume of cycle movements remains low over the entire evening peak, with no more than two cyclists recorded passing over most ten minute intervals. Two slight peaks occur, with 3 cyclists recorded between 4:10pm and 4:19pm, and 3 cyclists between 6:20pm and 6:29pm. This compares to a slight peak between 4:30pm and 4:39pm (4 movements) last year.

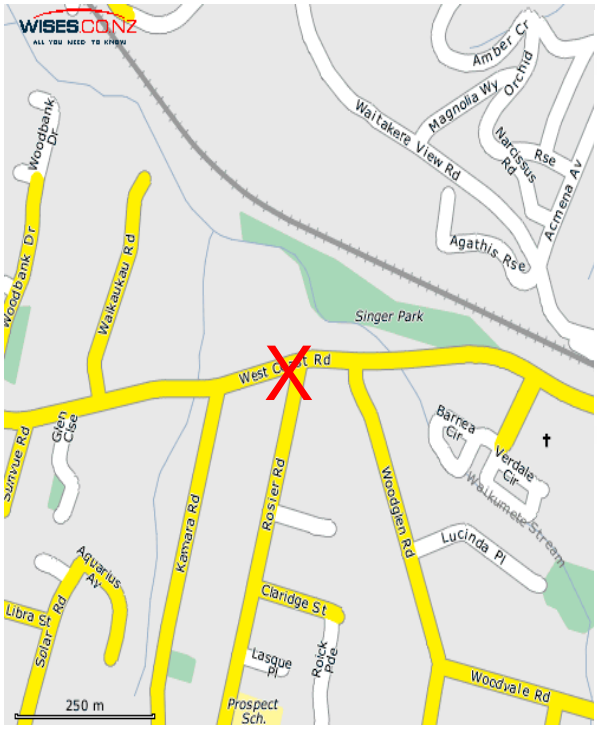
Figure 10.3: 3 Rankin Avenue Cyclist Frequency – Evening Peak

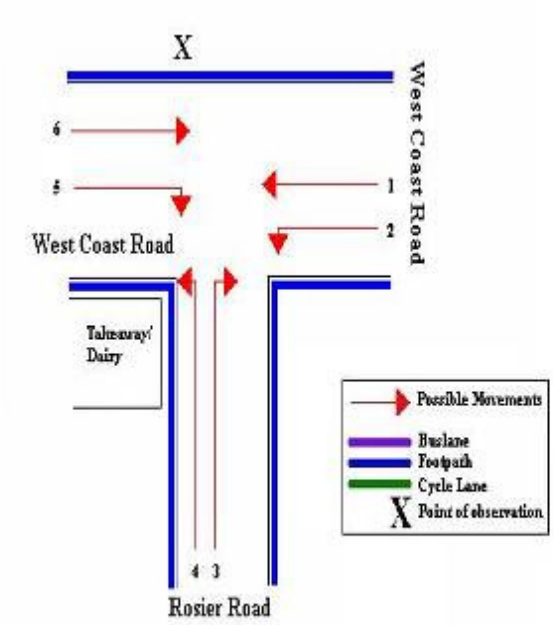


11. WEST COAST ROAD/ROSIER ROAD, GLEN EDEN (SITE 57)

Figure 11.1 shows the possible cyclist movements at this intersection.

Figure 11.1: Cycle Movements: West Coast Road/Rosier Road





AADT Estimate

- The AADT for this site is 90 cycle movements per day. This compares with:
  - 54 movements in 2008
  - 69 movements in 2007.

11.1 Morning Peak

Environmental Conditions

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

Key Points

- The volume of morning cyclists at the West Coast Road/Rosier Road intersection has increased this year, up from 18 movements in 2008 to 28 movements in 2009.
- The most common movement in the morning is straight along West Coast heading west (Movement 1 = 13 cyclists).
- Morning cyclist volumes at most movements remain stable since last year, with the most notable increase at Movement 1 (up 6 cyclists).

Table 11.1: Morning Cyclist Movements
West Coast Road/Rosier Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	4	7	13	6
2	0	0	0	0
3	4	2	3	1
4	1	1	2	1
5	1	2	1	-1
6	9	6	9	3
Total	**19**	**18**	**28**	**10**

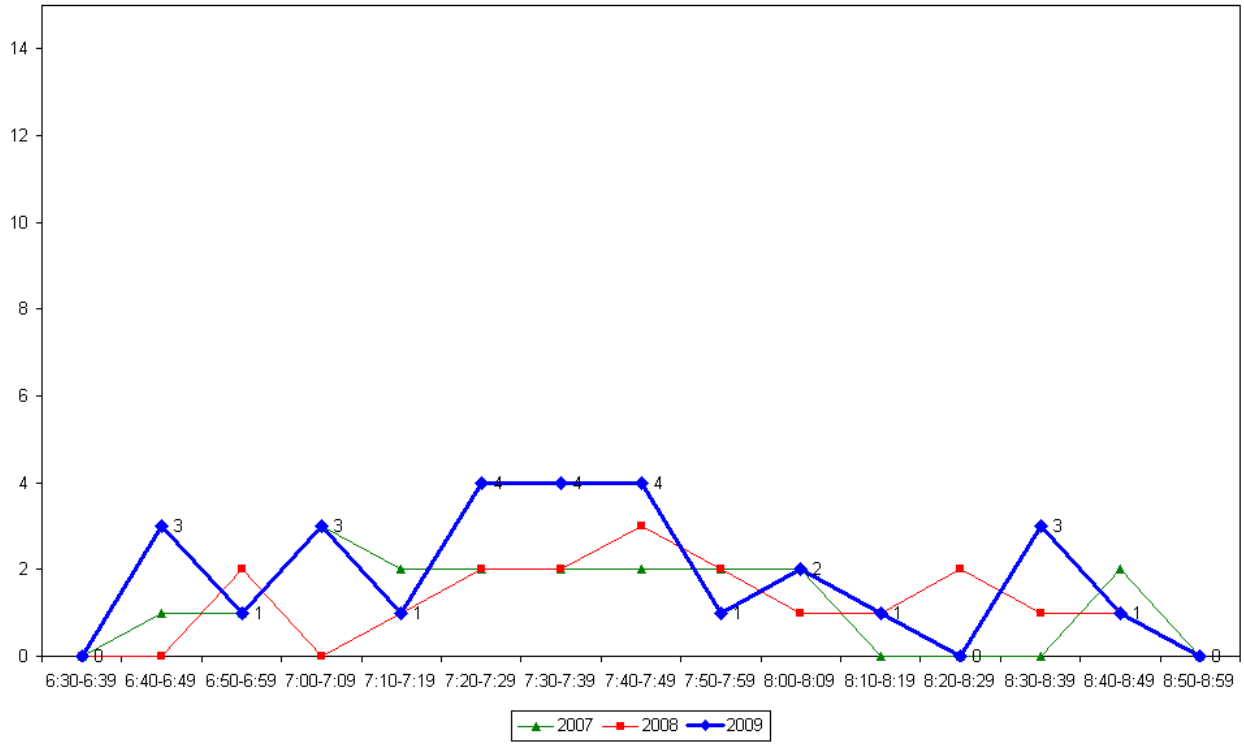
- Over the morning peak, adults comprise almost all cycle movements (93 per cent, up notably from 72 per cent in 2008).
- Helmet wearing is widespread (93 per cent, up from 78 per cent last year).
- Approximately seven in ten cyclists are riding on the road (71 per cent, up notably from 56 per cent at the previous measure).

Table 11.2: Morning Cyclist Characteristics
West Coast Road/Rosier Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	74	72	93	21
School child	26	28	7	-21
Helmet Wearing				
Helmet on head	84	78	93	15
No helmet	16	22	7	-15
Where Riding				
Road	74	56	71	15
Footpath	26	44	29	-15
Base:	***19***	***18***	***28***	

- Morning cycle volumes are very low over the entire monitoring period, with no more than three cyclists recorded passing during most ten minute intervals. A slight peak occurs between 7:20am and 7:49am, with 4 movements recorded over each ten minute interval. This compares with a shorter peak between 7:40am and 7:49am (3 movements) in 2008.

Figure 11.2: West Coast Road/Rosier Road Cyclist Frequency – Morning Peak



11.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from light drizzle between 6:40pm and 7:00pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Compared with the previous year, the total number of cycle movements recorded at the West Coast Road/Rosier Road intersection in the evening is up, from 19 in 2008 to 34 movements in 2009.
- The key movements in the evening are straight along West Coast Road heading east (Movement 6 = 16 cyclists) and straight along West Coast Road heading west (Movement 1 = 13 cyclists).
- Of the six movements possible at this site, the most notable changes in terms of evening cyclist numbers are at Movement 1 (up 10 cyclists) and Movement 6 (up 8 cyclists).

Table 11.3: Evening Cyclist Movements
West Coast Road/Rosier Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	8	3	13	10
2	3	2	2	0
3	1	3	1	-2
4	5	2	1	-1
5	4	1	1	0
6	8	8	16	8
Total	**29**	**19**	**34**	**15**

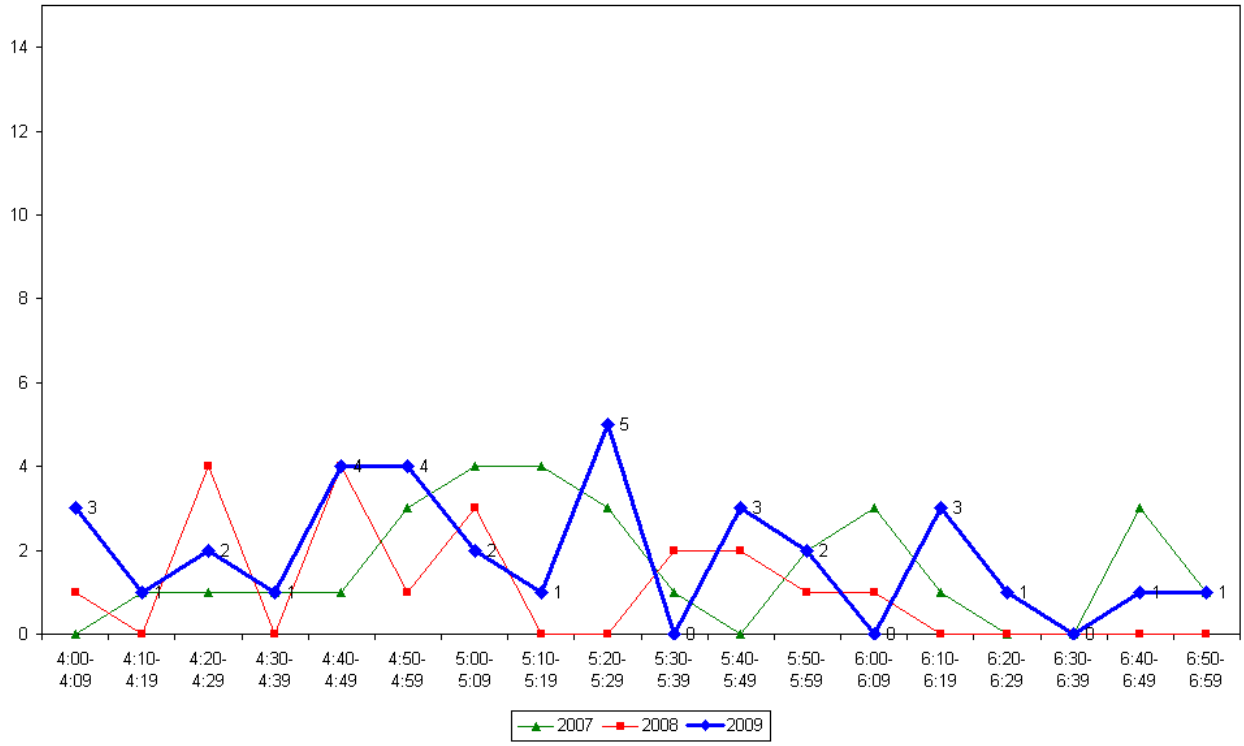
- Most evening cyclists using the West Coast Road/Rosier Road intersection are adults (88 per cent, up from 74 per cent in 2008).
- On average, four in five cyclists at this site are wearing a helmet (79 per cent, up slightly from 74 per cent last year).
- A higher proportion of cyclists are riding on the footpath this year (53 per cent, up from 42 per cent in the previous year).

Table 11.4: Evening Cyclist Characteristics
West Coast Road/Rosier Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	66	74	88	14
School child	34	26	12	-14
Helmet Wearing				
Helmet on head	59	74	79	5
No helmet	41	26	21	-5
Where Riding				
Road	34	58	47	-11
Footpath	66	42	53	11
Base:	***29***	***19***	***34***	

- Evening cyclist volumes are mostly consistent throughout the monitoring period but peak slightly between 5:20pm and 5:29pm (5 movements). This compares with two slight peaks earlier in the monitoring period last year, with 4 movements recorded between 4:20pm and 4:29pm, and a further 4 movements between 4:50pm and 4:59pm.

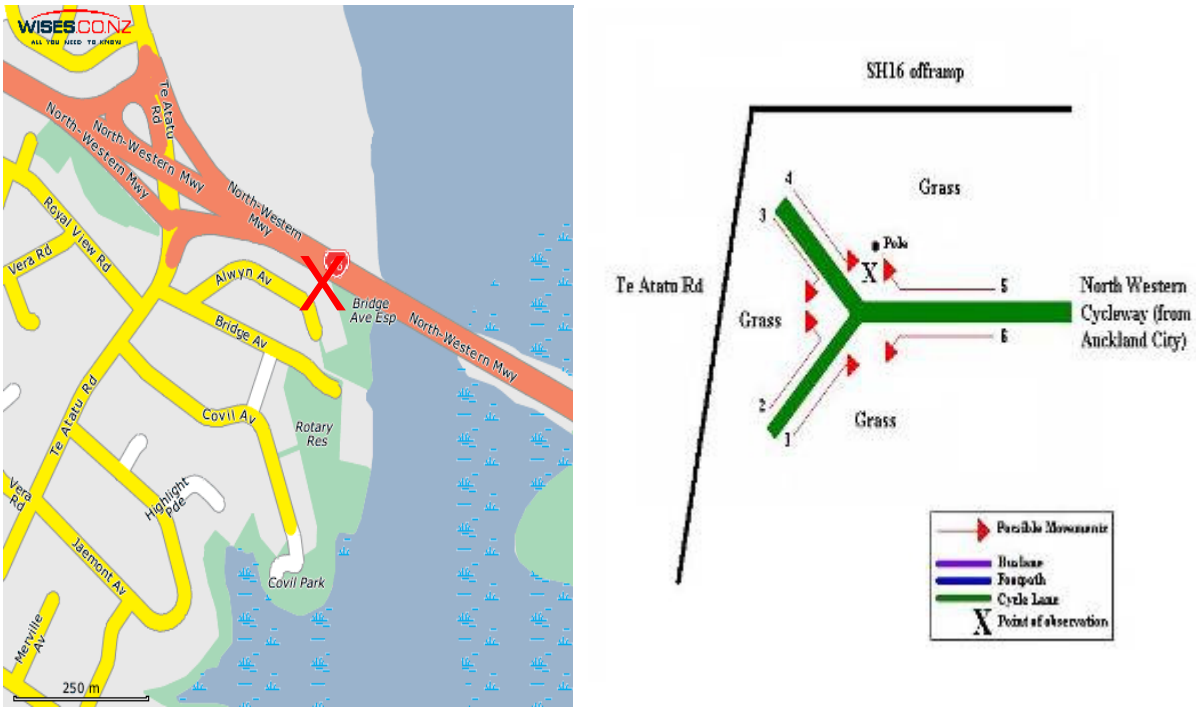
Figure 11.3: West Coast Road/Rosier Road Cyclist Frequency – Evening Peak



12. NORTH WESTERN CYCLEWAY (NEAR TE ATATU RD OFF-RAMP), TE ATATU (SITE 58)

Figure 12.1 shows the possible cyclist movements at this intersection.

Figure 12.1: Cycle Movements: North Western Cycleway



AADT Estimate

- The AADT for this site is 513 cycle movements per day. This compares with:
  - 393 movements in 2008
  - 335 movements in 2007.

12.1 Morning Peak

Environmental Conditions

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

Key Points

- As in previous years, of the 14 sites monitored in Waitakere, the North Western Cycleway continues to be the busiest in terms of cyclists' activity (157 cycle movements, up from 121 movements last year).
- Key morning movements are Movement 4 (85 cyclists), Movement 1 (30 cyclists) and Movement 5 (27 cyclists).
- The most notable increases are at Movement 6 (up 13 cyclists) and Movement 4 (up 11 cyclists).

Table 12.1: Morning Cyclist Movements
North Western Cycleway 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	16	22	30	8
2	0	0	0	0
3	0	0	0	0
4	58	74	85	11
5	25	23	27	4
6	3	2	15	13
Total	**102**	**121**	**157**	**36**

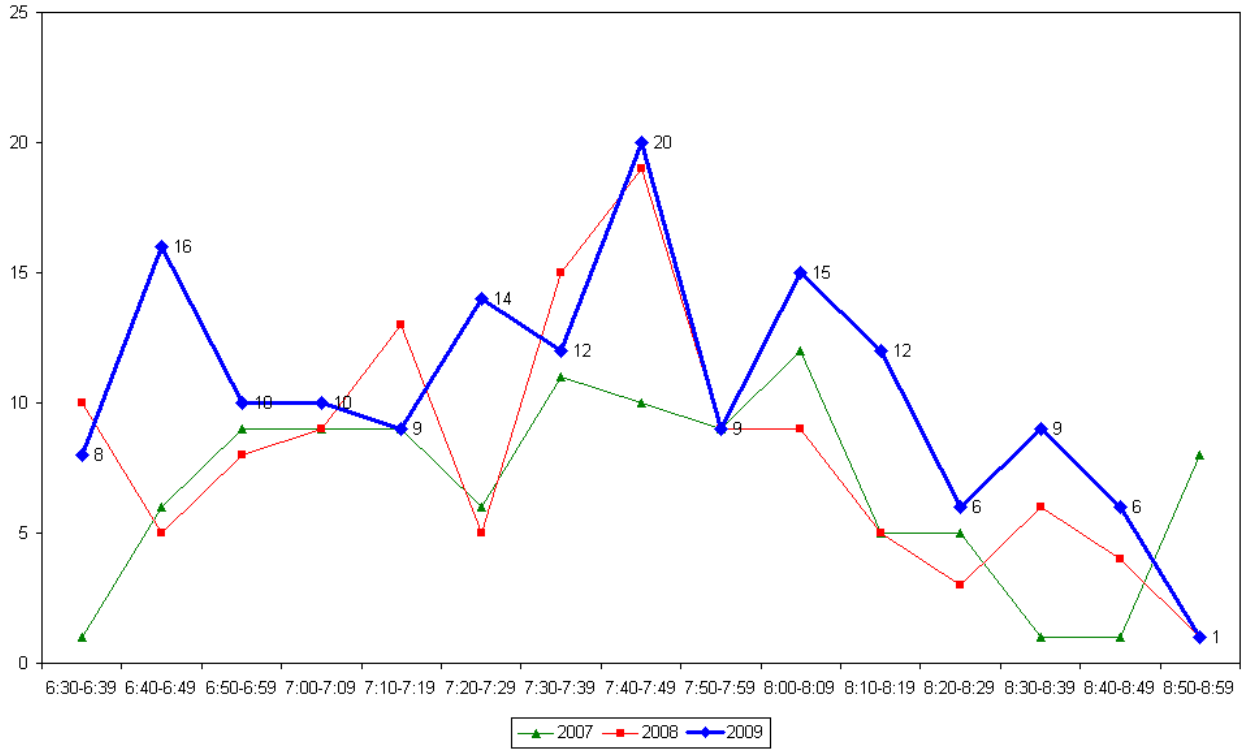
- Over the morning peak, almost all cyclists are adults (99 per cent, unchanged from last year).
- Most cyclists are wearing a helmet (96 per cent, stable from 95 per cent in 2008).

Table 12.2: Morning Cyclist Characteristics
North Western Cycleway 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	95	99	99	0
School child	5	1	1	0
Helmet Wearing				
Helmet on head	97	95	96	1
No helmet	3	5	4	-1
Where Riding				
Cycleway	100	100	100	0
Base:	***102***	***121***	***157***	

- Morning cycle volumes increase gradually before peaking strongly between 7:40am and 7:49am (20 cyclists), with a slight peak between 6:40am and 6:49am (16 cyclists including a group of 7 cycling together). Cycle volumes then drop off through the rest of the end of the monitoring period. This is similar to the pattern reported last year, where the peak also occurred between 7:40am and 7:49am (19 movements).

Figure 12.2: North Western Cycleway Cyclist Frequency – Morning Peak



Note: A group of seven cyclists was observed riding together at 6.43am. This comprises four per cent of the total cycle movements recorded in the morning peak.

12.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from light rain between 6:40pm and 6:52pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- This year, the total number of cycle movements recorded at the North Western Cycleway continues to be the highest of the 14 sites monitored in Waitakere city, with 198 movements evident in the evening (compared with 151 movements in 2008).
- Consistent with the morning shift, the most common movements in the evening are Movement 5 (113 cyclists), Movement 6 (42 cyclists) and Movement 4 (32 cyclists).
- Of the eight movements possible at this intersection, the most notable change is at Movement 5 (up 38 cyclists).

Table 12.3: Evening Cyclist Movements
North Western Cycleway 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	15	3	11	8
2	0	0	0	0
3	0	0	0	0
4	27	36	32	-4
5	58	75	113	38
6	30	37	42	5
Total	**130**	**151**	**198**	**47**

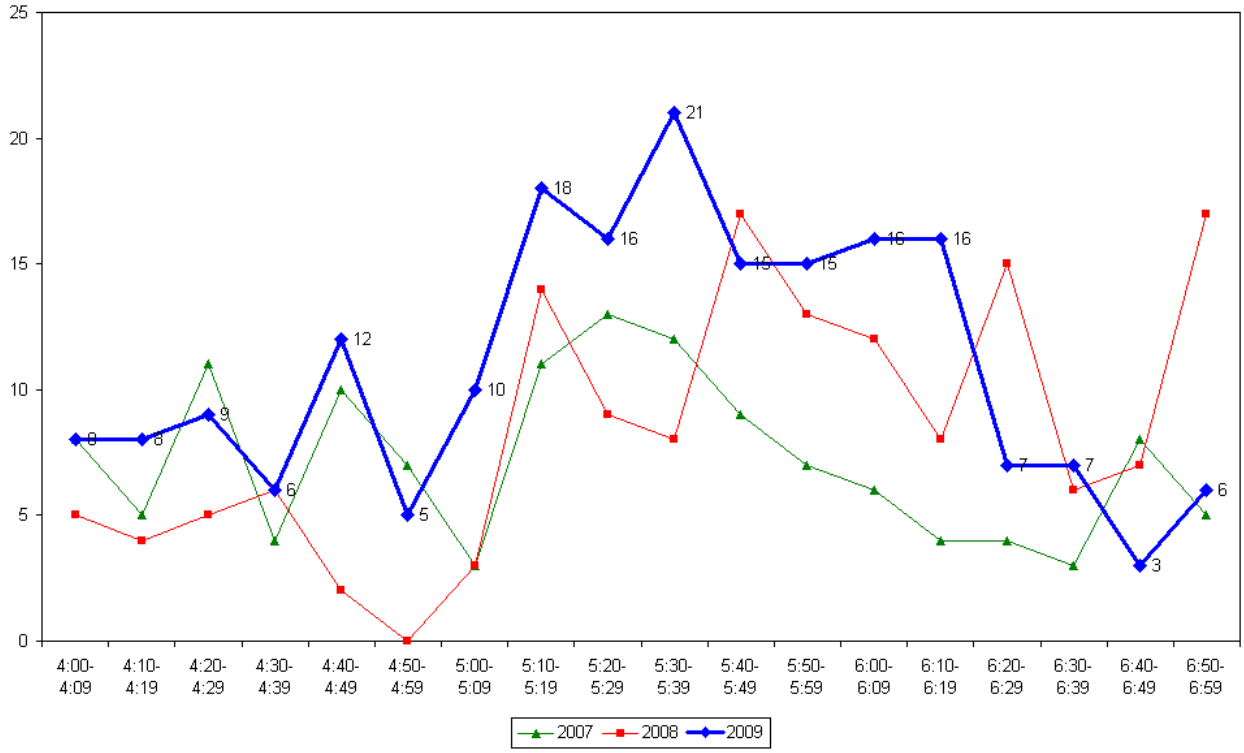
- Over the evening peak, almost all cyclists using this cycleway are adults (99 per cent, stable from 100 per cent last year).
- Most cyclists at this site are wearing a helmet (95 per cent, unchanged from the previous two measures).

Table 12.4: Evening Cyclist Characteristics
North Western Cycleway 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	91	100	99	-1
School child	9	0	1	1
Helmet Wearing				
Helmet on head	95	95	95	0
No helmet	5	5	5	0
Where Riding				
Cycleway	100	100	100	
Base:	***130***	***151***	**198**	

- Evening cycle volumes increase steadily to the first peak at around 5:10pm (18 movements), and peak again between 5:30pm and 5:39pm (21 movements including 6 cyclists riding as a group). This compares to last year, where peaks occurred at around 5:10pm, 5:40pm, 6:20pm and in the last ten minutes leading to 7:00pm.

Figure 12.3: North Western Cycleway Cyclist Frequency – Evening Peak



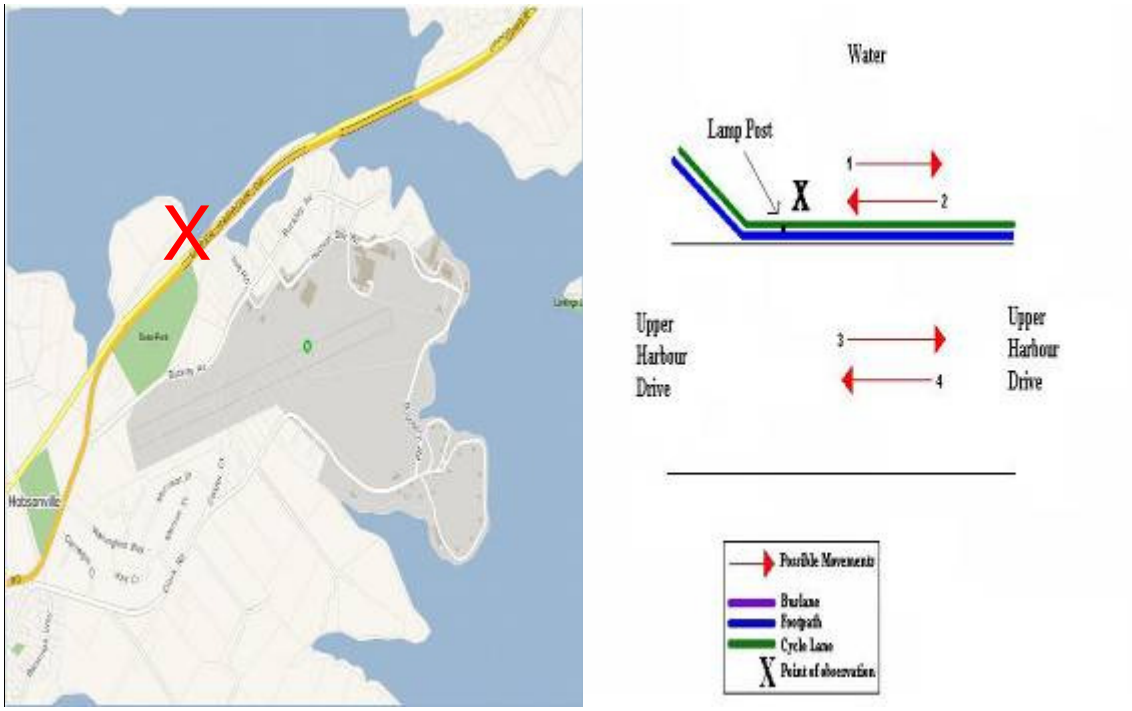
Note: Seven per cent of total evening cycle movements were identified as cycling as groups. Groups of three cyclists were observed riding together at:

- *5.39pm (6 cyclists)*
- *6.04pm (3 cyclists)*
- *6.10pm (5 cyclists).*

13. UPPER HARBOUR BRIDGE, GREENHITHE(SITE 70)

Figure 13.1 shows the possible cyclist movements at this intersection.

Figure 13.1: Cycle Movements: Upper Harbour Bridge



AADT Estimate

- The AADT for this site is 97 cycle movements per day. This compares with 51 cycle movements in 2008.

13.1 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

- Compared with other sites in Waitakere, the cycle volumes at the Upper Harbour Bridge site are low, with 23 cycle movements recorded.
- The key morning movement is heading southwest along the Upper Harbour Drive cycleway (Movement 2 = 14 cyclists, up 11 cyclists from 2008).

Table 13.1: Morning Cyclist Movements
Upper Harbour Bridge 2008-2009 (n)

Movement	*2008*	*2009*	Change 08-09
1	10	9	-1
2	3	14	11
3	0	0	0
4	4	0	-4
Total	**17**	**23**	**6**

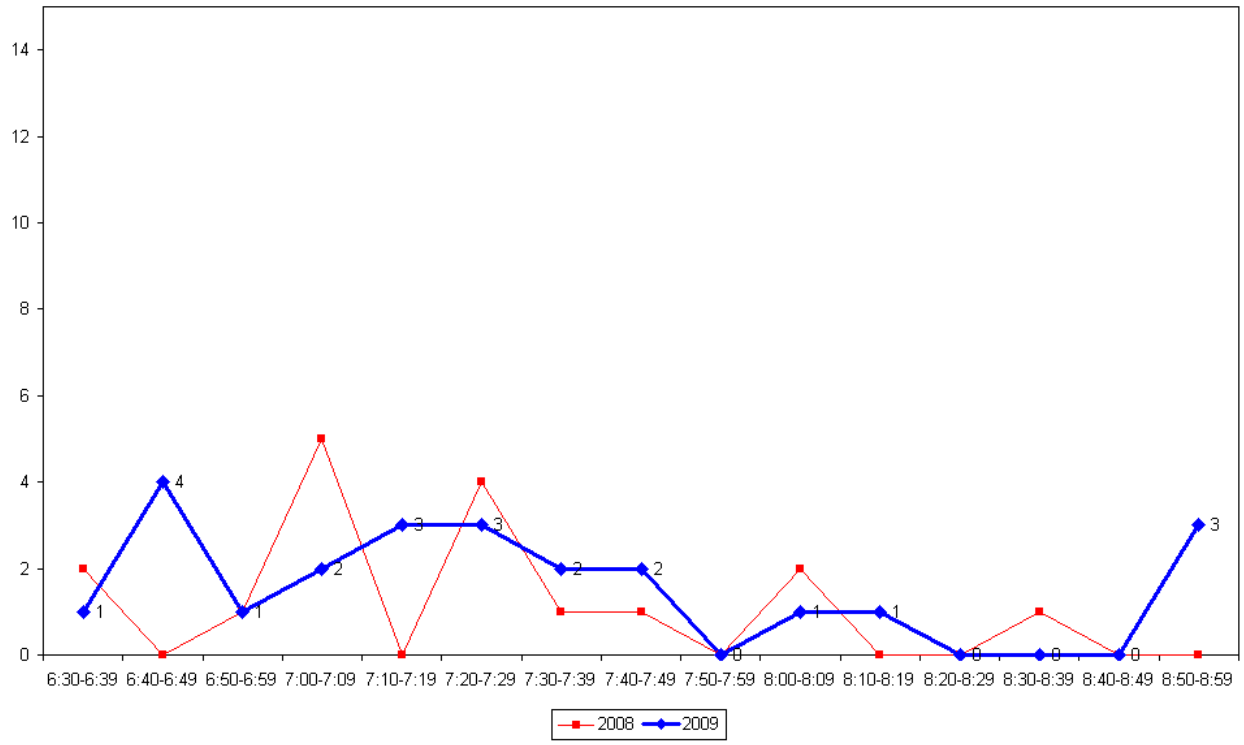
- Over the morning peak, all cyclists are adults (100 per cent).
- All cyclists are wearing a helmet (100 per cent).
- This year riding on the road was split into riding on the road and riding on the off-road cycleway. All cyclists this year are classified as riding on the off-road cycleway.

Table 13.2: Morning Cyclist Characteristics
Upper Harbour Bridge 2008-2009 (%)

	2008	*2009*	Change 08-09
Cyclist Type			
Adult	100	100	0
School child	0	0	0
Helmet Wearing			
Helmet on head	100	100	0
No helmet	0	0	0
Where Riding			
Road	100	0	-
Footpath	0	0	0
Off-road cycleway	-	100	-
Base:	***17***	***23***	

- Morning cycle volumes are low throughout the shift, with no more than three cyclists recorded during most ten minute intervals. A slight peak occurs between 6:40am and 6:49am (4 cyclists), 20 minutes earlier than the slight peak recorded last year (5 cyclists).

Figure 13.2: Upper Harbour Bridge Cyclist Frequency – Morning Peak



Note: A group of three cyclists was observed riding together at 6.49am. This comprises 13 per cent of the total cycle movements recorded in the morning peak.

13.2 Evening Peak

Environmental Conditions

- The weather was cloudy throughout the evening shift, with light drizzle between 6:45pm and 7:00pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cycle movements recorded at the Upper Harbour Bridge site has increased notably this year, to 45 movements (up from 18 movements last year).
- The most common movement in the evening is heading northeast along the Upper Harbour Drive cycleway (26 movements, up from 3 movements in 2008).

Table 13.3: Evening Cyclist Movements
Upper Harbour Bridge 2008-2009 (n)

Movement	*2008*	*2009*	Change 08-09
1	3	26	23
2	11	17	6
3	2	2	0
4	2	0	-2
Total	**18**	**45**	**27**

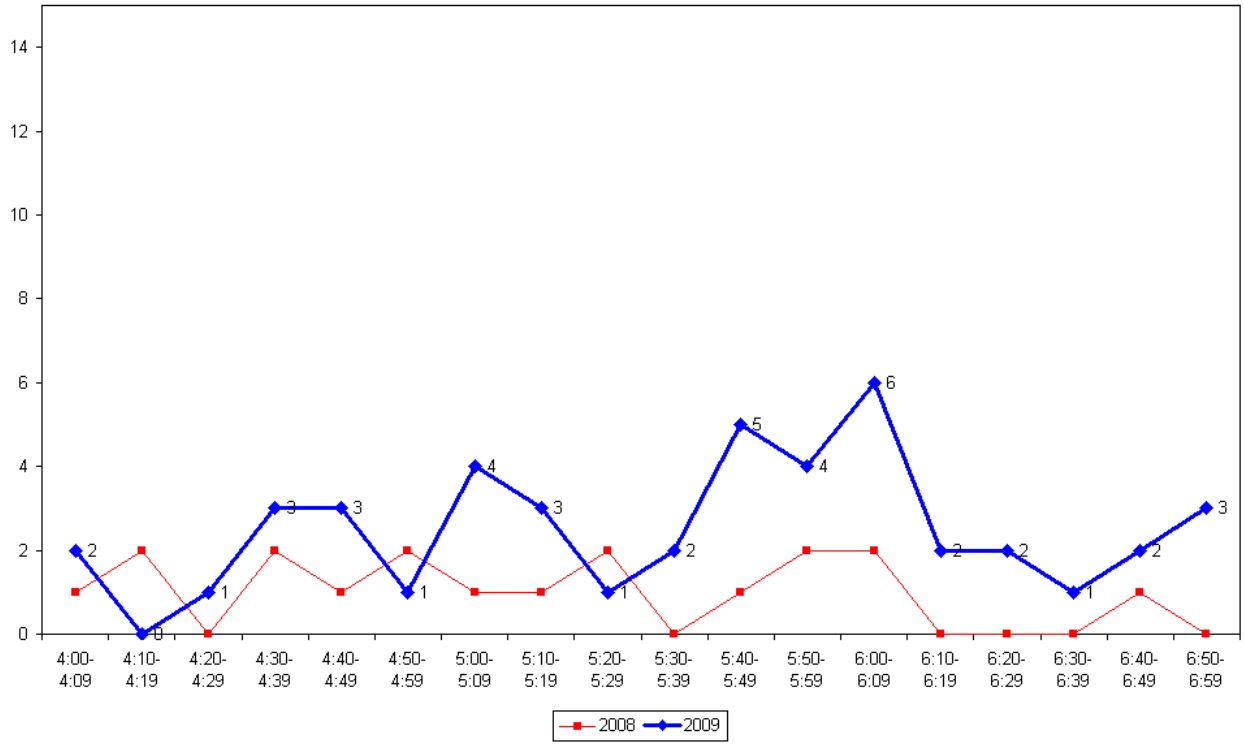
- Over the evening peak, all cyclists using this site are adults (100 per cent).
- All evening cyclists at this site are wearing a helmet (100 per cent, up from 89 per cent last year).
- This year riding on the road was split into riding on the road and riding on the off-road cycleway. Almost all cyclists are riding on the off-road cycleway (98 per cent).

Table 13.4: Evening Cyclist Characteristics
Upper Harbour Bridge 2008-2009 (%)

	2008	*2009*	Change 08-09
Cyclist Type			
Adult	100	100	0
School child	0	0	0
Helmet Wearing			
Helmet on head	89	100	11
No helmet	11	0	-11
Where Riding			
Road	100	2	-
Footpath	0	0	0
Off-road cycleway	-	98	-
Base:	***18***	***45***	

- This year, evening cycle volumes increase gradually to peak between 6:00pm and 6:09pm (6 movements), before dropping off for the last hour of monitoring. In contrast, last year evening cycle volumes were low throughout the shift.

Figure 13.3: Upper Harbour Bridge Cyclist Frequency – Evening Peak

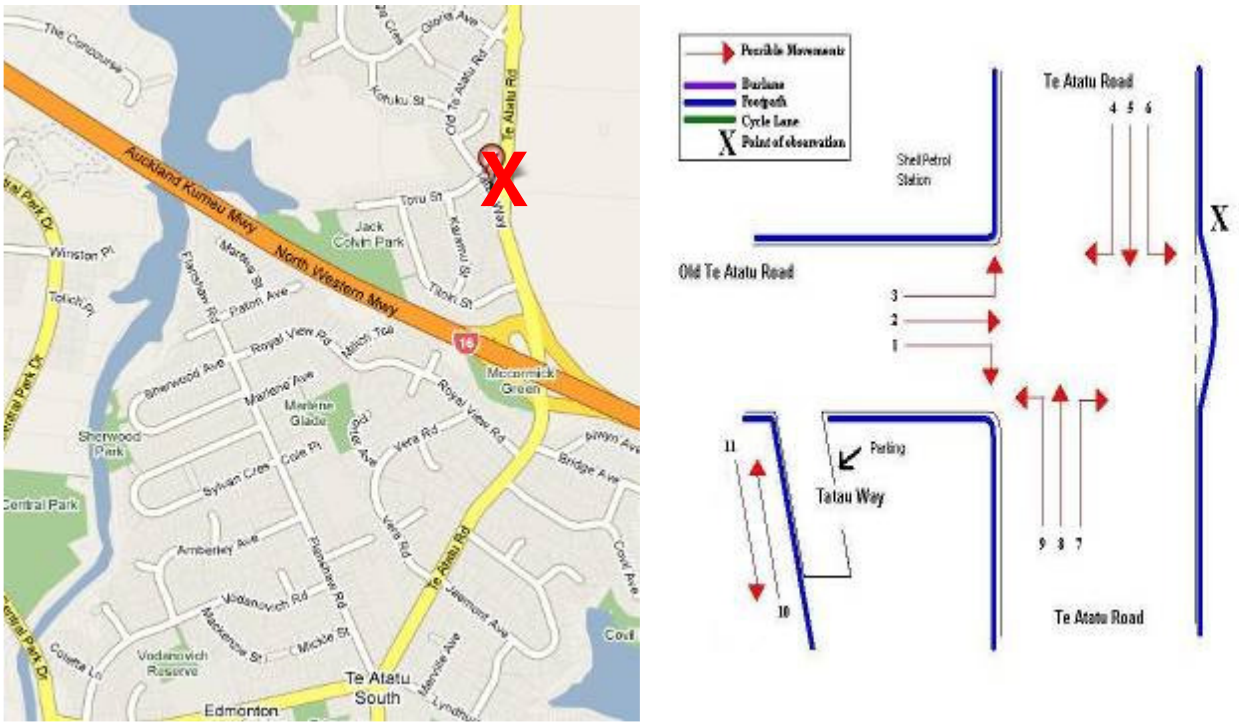


Note: A group of four cyclists was observed riding together at 6.01pm. This comprises nine per cent of the total cycle movements recorded in the evening peak.

14. TE ATATU/OLD TE ATATU ROAD/TATAU WAY, TE ATATU (SITE 72)

Figure 14.1 shows the possible cyclist movements at this intersection.

Figure 14.1: Cycle Movements: Te Atatu/Old Te Atatu Road/Tatau Way



Note: Movements 10 and 11 indicate the footpath on Tatau Way.

AADT Estimate

- The AADT for this site is 195 cycle movements per day. This compares with 161 cycle movements in 2008.

14.1 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

- This year, morning cycle volumes at the Te Atatu/Old Te Atatu Road/Tatau Way site have increased, from 56 movements in 2008 to 66 movements in 2009.
- The key morning movements are south down Te Atatu Road (Movement 5 =27 cyclists), and straight along Tatau Way in both directions (Movement 10 = 18 cyclists; Movement 11 = 15 cyclists).
- Of the 11 possible movements at this site, the most notable increase is at Movement 5 (up 10 cyclists).

Table 14.1: Morning Cyclist Movements
Te Atatu/Old Te Atatu Road/Tatau Way 2008-2009 (n)

Movement	*2008*	*2009*	*Change 08-09*
1	5	1	-4
2	0	0	0
3	0	0	0
4	0	0	0
5	17	27	10
6	0	0	0
7	0	0	0
8	6	3	-3
9	0	2	2
10	15	18	3
11	13	15	2
Total	**56**	**66**	**10**

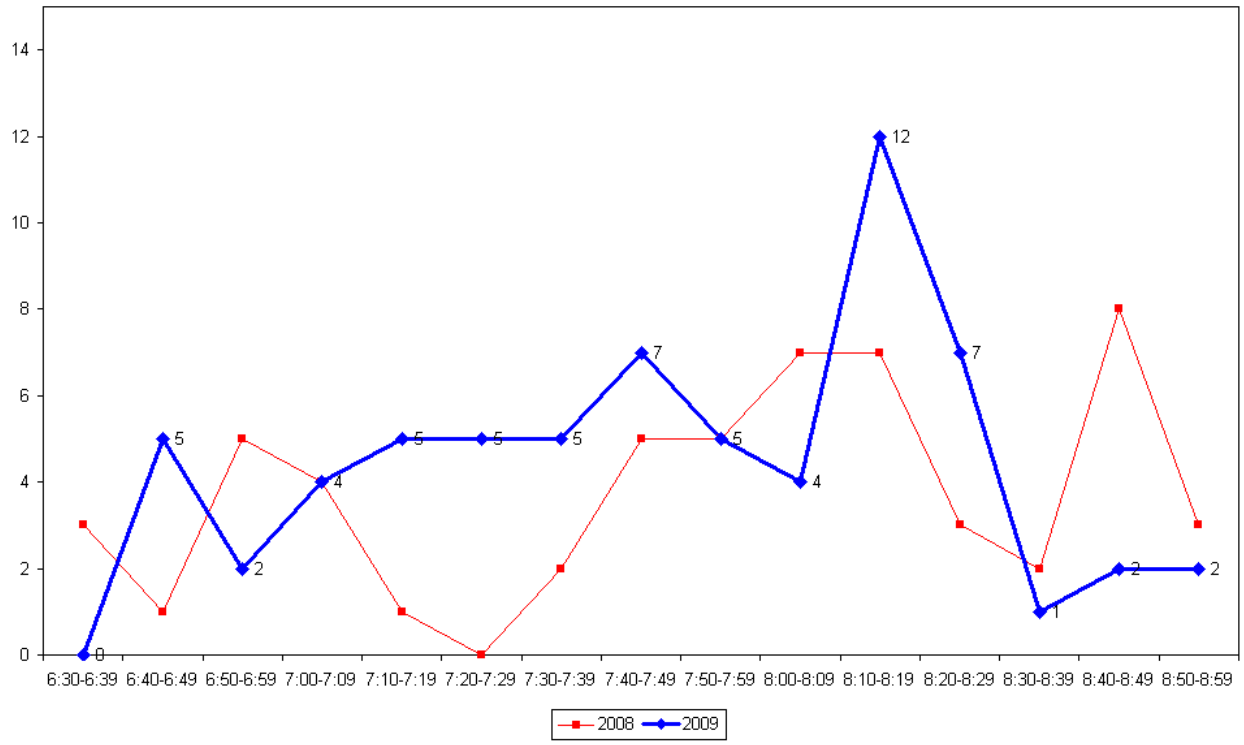
- Over the morning peak, most cyclists at this site are adults (71 per cent, up from 59 per cent last year).
- Almost all cyclists are wearing a helmet (91 per cent, compared with 95 per cent in 2008).
- Just less than three in five cyclists are riding on the road (58 per cent, down notably from 75 per cent last year).

Table 14.2: Morning Cyclist Characteristics
Te Atatu/Old Te Atatu Road/Tatau Way 2008-2009 (%)

	2008	*2009*	*Change 08-09*
Cyclist Type			
Adult	59	71	12
School child	41	29	-12
Helmet Wearing			
Helmet on head	95	91	-4
No helmet	5	9	4
Where Riding			
Road	75	58	-17
Footpath	25	42	17
Base:	***56***	***66***	

- Morning cycle volumes increase gradually before peaking sharply between 8:10am and 8:19am (12 cyclists). Last year two peaks occurred – the first about the same time as this year (between 8:00am and 8:19am - 7 cyclists) and the second about half an hour later (between 8:40am and 8:49am - 8 cyclists).

Figure 14.2: Te Atatu/Old Te Atatu Road/Tatau Way Cyclist Frequency – Morning Peak



14.2 Evening Peak

Environmental Conditions

- The weather was cloudy throughout the evening shift, with light showers occurring near the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cycle movements recorded at the Te Atatu/Old Te Atatu Road/Tatau Way site continues to be relatively high with 68 movements evident in the evening (up from 55 movements last year).
- The most common movements in the evening are north up both Te Atatu Road (Movement 8 = 27 cyclists) and Tatau Way (Movement 10 = 19 cyclists).
- The most notable change from 2008 is at Movement 8 (up 10 cyclists).

Table 14.3: Evening Cyclist Movements
Te Atatu/Old Te Atatu Road/Tatau Way 2008-2009 (n)

Movement	*2008*	*2009*	*Change 08-09*
1	3	4	1
2	0	0	0
3	0	0	0
4	0	0	0
5	7	7	0
6	0	0	0
7	0	0	0
8	17	27	10
9	2	5	3
10	20	19	-1
11	6	6	0
Total	**55**	**68**	**13**

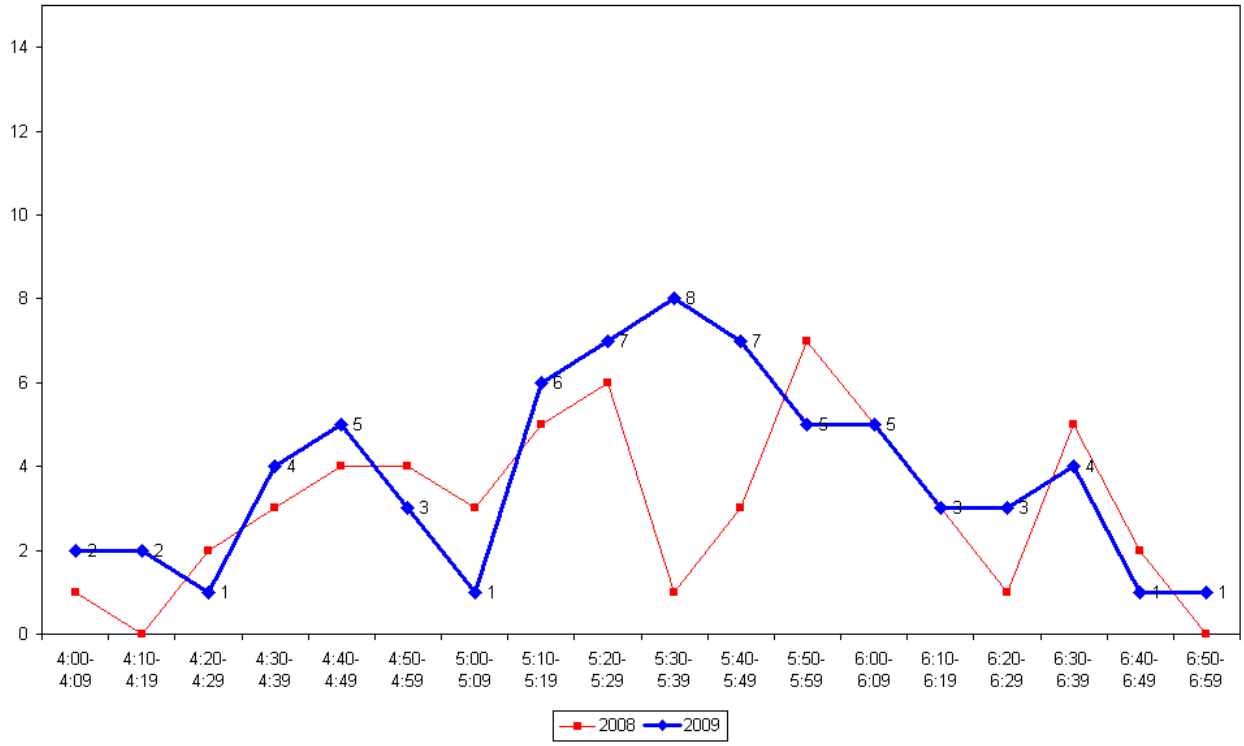
- Over the evening peak, the greatest share of cyclists using this site are adults (90 per cent, stable from 91 per cent last year).
- Most cyclists at this site are wearing a helmet (84 per cent, stable from 87 per cent in 2008).
- Approximately half of all cyclists at this site are riding on the footpath (51 per cent, up notably from 18 per cent last year), with the other half riding on the road (49 per cent).

Table 14.4: Evening Cyclist Characteristics
Te Atatu/Old Te Atatu Road/Tatau Way 2008-2009 (%)

	2008	*2009*	*Change 08-09*
Cyclist Type			
Adult	91	90	-1
School child	9	10	1
Helmet Wearing			
Helmet on head	87	84	-3
No helmet	13	16	3
Where Riding			
Road	82	49	-33
Footpath	18	51	33
Base:	***55***	***68***	

- Evening cycle volumes increase steadily to peak between 5:30pm and 5:39pm (8 cyclists), twenty minutes earlier than the peak reported last year.

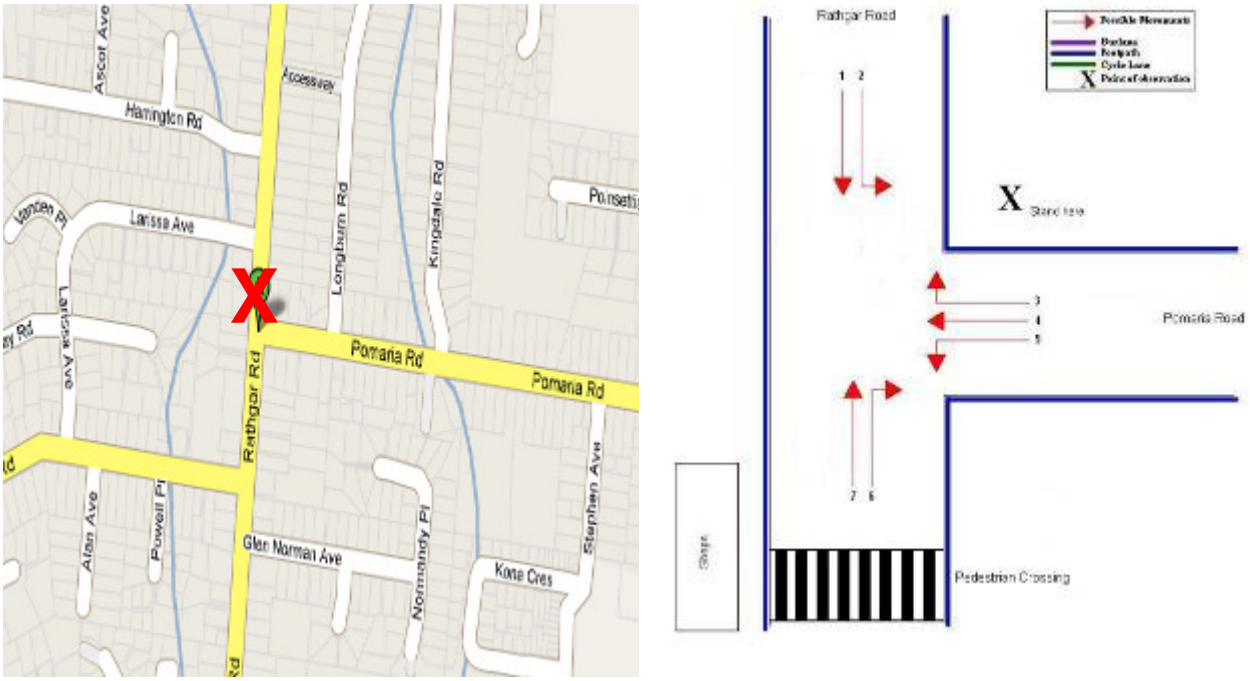
Figure 14.3: Te Atatu/Old Te Atatu Road/Tatau Way Cyclist Frequency – Evening Peak



15. RATHGAR/POMARIA ROAD, HENDERSON (SITE 85)

Figure 15.1 shows the possible cyclist movements at this intersection.

Figure 15.1: Cycle Movements: Rathgar/Pomaria Road



Note: This site was monitored for the first time in 2009. Consequently no comparative results are available.

AADT Estimate

- The AADT for this site is 122 cycle movements per day.

15.1 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

- Compared with other sites in Waitakere, cycle volumes at the Rathgar/Pomaria Road site are moderate, with 32 cycle movements recorded.
- The key morning movements are the right turn from Rathgar Road into Pomaria Road (Movement 6 = 12 cyclists) and the left turn from Pomaria Road into Rathgar Road (Movement 5 = 10 cyclists).

Table 15.1: Morning Cyclist Movements

Rathgar/Pomaria Road 2009 (n)

Movement	2009
1	4
2	3
3	2
4	0
5	10
6	12
7	1
Total	**32**

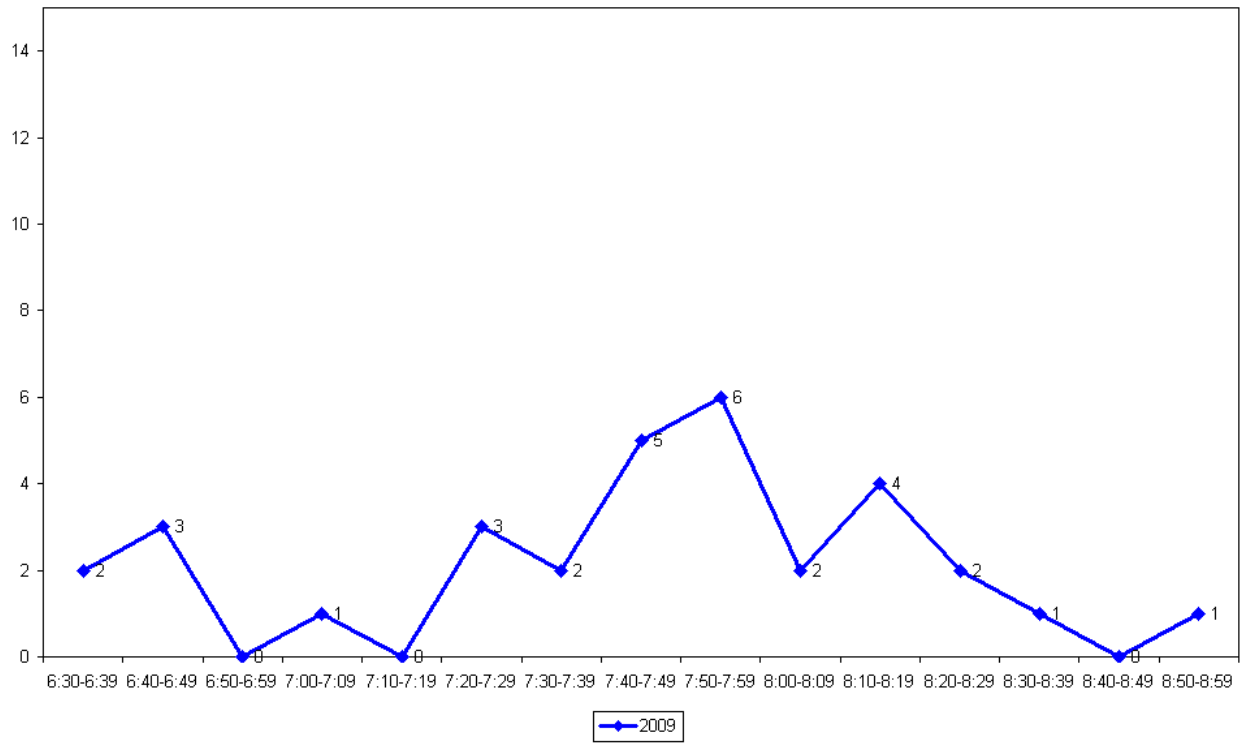
- Over the morning peak, just over half of cyclists are adults (53 per cent).
- Just over two-thirds of cyclists are wearing a helmet (69 per cent).
- Half of all cyclists are riding on the road (50 per cent), with the other half riding on the footpath (50 per cent).

Table 15.2: Morning Cyclist Characteristics Rathgar/Pomaria Road 2009 (%)

	2009
Cyclist Type	
Adult	53
School child	47
Helmet Wearing	
Helmet on head	69
No helmet	31
Where Riding	
Road	50
Footpath	50
Base:	***32***

- Morning cycle volumes peak between 7:50am and 7:59am (6 movements).

Figure 15.2: Rathgar/Pomaria Road Cyclist Frequency – Morning Peak



15.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from a light shower between 6:40pm and 6:52pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cycle movements recorded at the Rathgar/Pomaria Road site in the evening is moderate, with 53 movements recorded.
- The most common movements in the evening are the left turn from Pomaria Road into Rathgar Road (Movement 5 = 16 cyclists) and straight along Rathgar Road heading south (Movement 1 = 14 cyclists).

Table 15.3: Evening Cyclist Movements
Rathgar/Pomaria Road 2009 (n)

Movement	2009
1	14
2	1
3	3
4	0
5	16
6	9
7	10
Total	**53**

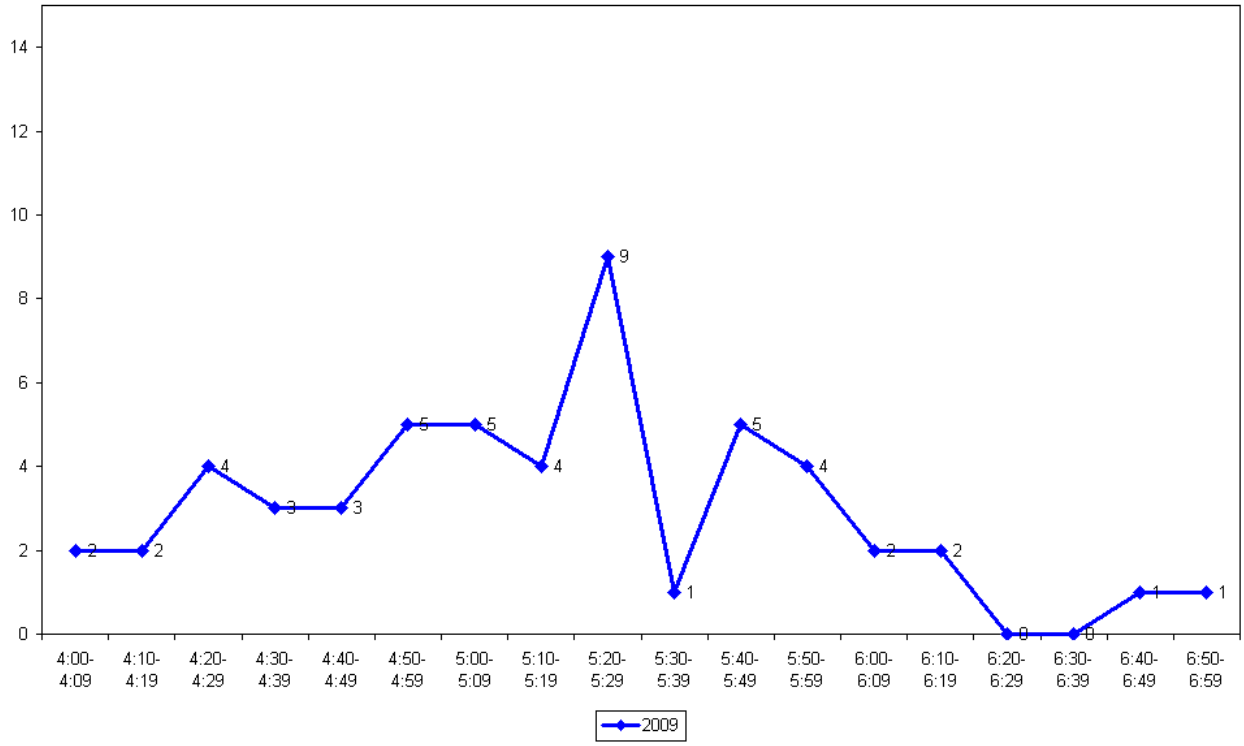
- Over the evening peak, the greatest share of cyclists using this intersection are school children (58 per cent).
- Approximately half of those cyclists using the site in the evening are not wearing a helmet (51 per cent).
- The majority of evening cyclists are riding on the footpath (68 per cent).

Table 15.4: Evening Cyclist Characteristics
Rathgar/Pomaria Road 2009 (%)

	2009
Cyclist Type	
Adult	42
School child	58
Helmet Wearing	
Helmet on head	49
No helmet	51
Where Riding	
Road	32
Footpath	68
Base:	***53***

- Evening cycle volumes peak between 5:20pm and 5:29pm (9 cyclists).

Figure 15.3: Rathgar/Pomaria Road Cyclist Frequency – Evening Peak



16. SCHOOL BIKE SHED COUNT - WAITAKERE

Background Information

- A total of 19 schools were contacted in Waitakere. Of the 17 schools that responded to the survey (89 per cent), no schools have policies that restrict students cycling to school.
- Note however, that West City Christian College had students away on school camp.
- The designated count day was Tuesday 10th of March[13].

Key Points

- Among those Waitakere schools that responded to the survey, of those eligible to cycle to school, on average, two per cent of students are cycling to their schools. This compares with one per cent in 2008.
- Among the schools that responded, n=213 students were reported to be cycling to school.
- This year, Te Atatu Intermediate reported the highest share of cyclists – 9 per cent of all eligible students currently cycling to school. This is consistent with 2008 result, where Te Atatu Intermediate reported the highest share of 7 per cent (along with Nga Kakano Christian Reo Rua Kura, also 7 per cent).
- Of the 17 schools that responded, three (8 per cent) had no students cycling to school. This compares with two schools (12 per cent) in 2008.

[13] The following schools conducted counts on alternative count days
- Nga Kakano Christian Reo e Rua Kura – Monday 2nd March
- Liston College – Wednesday 11th March
- Kelston Girls College – Thursday 12th March
- Te Atatu Intermediate – Tuesday 24th March
- Massey High schools – Monday 30th March
-

Table 16.1 shows the results of the 17 schools surveyed in Waitakere.

Table 16.1: Summary Table Of School Bike Count 2007-2009 (n)

School Name	*Year Levels*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible[14] (2009)*	*Cyclists as share of those eligible (2008)*	*Cyclists as share of those eligible (2007)*
Te Atatu Intermediate	Intermediate	294	25	**9%**	7%	10%
Nga Kakano Christian Reo Rua Kura	Composite	54	3	**6%**	7%	7%
Bruce McLaren Intermediate	Intermediate	323	13	**4%**	2%	2%
Rutherford College	Secondary	1345	52	**4%**	3%	3%
Glen Eden Intermediate	Intermediate	1011	28	**3%**	-	-
Henderson Intermediate	Intermediate	520	13	**3%**	3%	5%
Liston College	Secondary	791	21	**3%**	2%	2%
Rangeview Intermediate	Intermediate	953	24	**3%**	2%	3%
Sunderland School and College	Composite	240	5	**2%**	1%	-
Green Bay High School	Secondary	1022	9	**1%**	1%	1%
Massey High School	Secondary	2422	19	**1%**	1%	1%
Waitakere College	Secondary	1150	13	**1%**	1%	1%
St Dominics College	Intermediate/Secondary	916	4	**<1%**	<1%	<1%
Kelston Boys High School	Secondary	1105	3	**<1%**	1%	1%
Kelston Girls High School	Secondary	905	0	**0%**	0%	0%
Te Kura Kaupapa Maori O Hoani Waititi	Composite	180	0	**0%**	0%	-
West City Christian College	Composite	85	0	**0%**	-	-
Total		**13316**	**232**	**2%**	**1%**	**2%**

[14] 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 16.1a: Summary Table Of Non-Participating Schools 2007-2009 (n)

School Name	*Year Levels*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible (2009)*	*Cyclists as share of those eligible (2008)*	*Cyclists as share of those eligible (2007)*
Henderson High School	Secondary	975	-	-	1%	<1%
Kelston Intermediate	Intermediate	326	-	-	2%	-

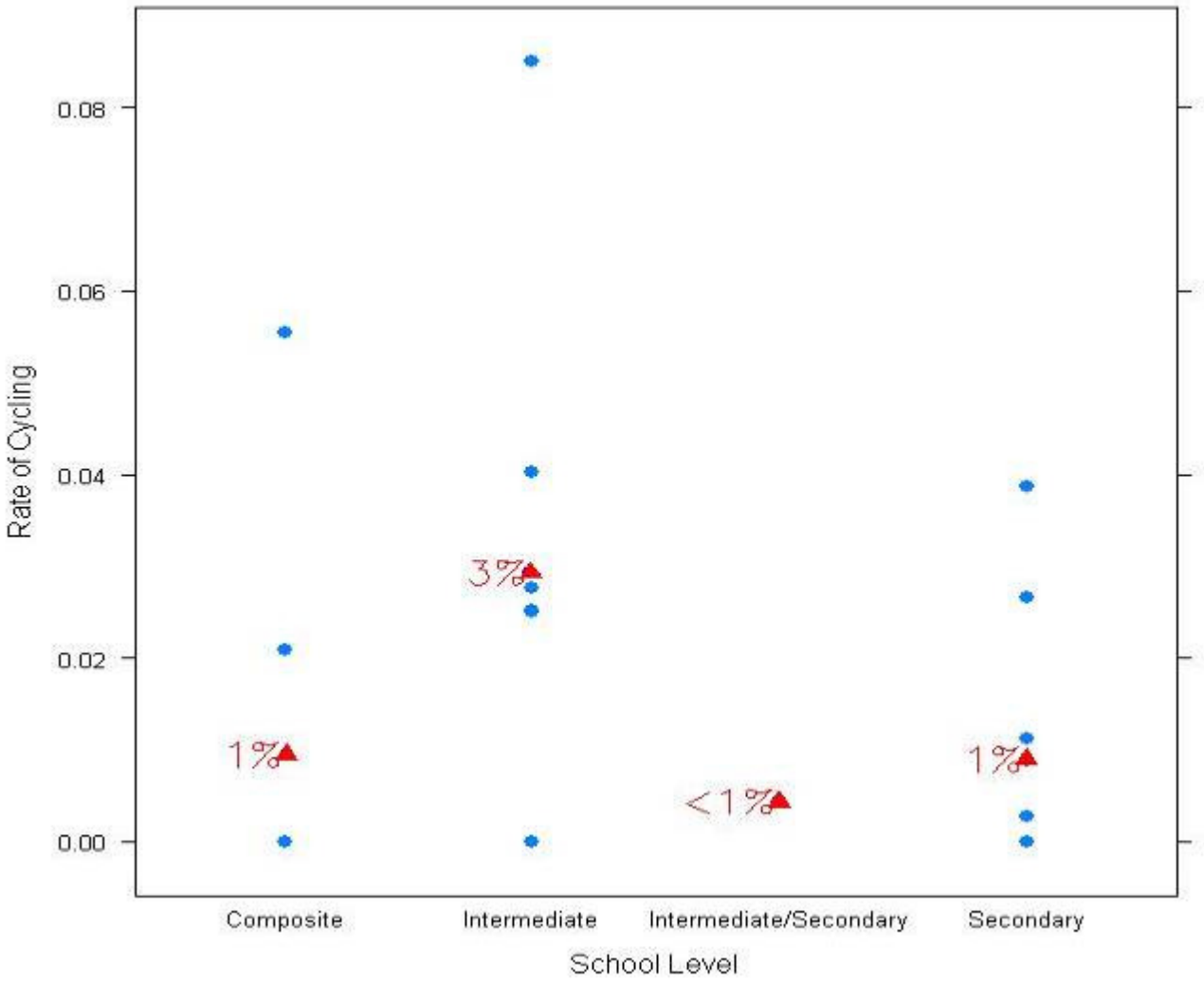
- Table 16.2 and Figure 16.1 illustrate the rates of cycling to school at different school levels. Rates of cycling to school are highest among intermediate schools (3 per cent, unchanged from last year) and lowest for combined intermediate/secondary schools (<1 per cent, unchanged from last year).

Table 16.2: Summary Table Of School Bike Count by Year Levels 2008-2009 (%)

Year Levels	*Number of Schools Responded in 2009*	*Cyclists as share of those eligible - 2007*	*Cyclists as share of those eligible - 2008*	*Cyclists as share of those eligible -2009*	Change 08-09
Intermediate	5	4	3	**3**	0
Composite	4	7	1	**1**	0
Secondary	7	1	1	**1**	0
Intermediate/Secondary	1	<1	<1	**<1**	0
Total	**17**	**2**	**1**	**2**	**0**

Figure 16.1: Cycling Rates by School Level

2009 (%)



APPENDICES

Appendix One: Annual Average Daily Traffic (AADT) Calculation

Appendix Two: School Bike Shed Information Sheet And Cover Letter

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[15] 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)[16], 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.

[15] Annual average daily traffic

[16] 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%

APPENDIX TWO: SCHOOL BIKE SHED INFORMATION SHEET AND COVER LETTER

AUCKLAND REGIONAL CYCLE MONITOR

- 2009 SCHOOL CYCLE COUNT –

ABOUT YOUR SCHOOL (To be completed by staff member)

Name of school: _____

Physical address of school: _____

_____

This school caters for students from Year ☐ to Year ☐

Current school roll (total number of students): ☐

Does the school have a policy which recommends only certain Year levels should cycle to school? *(Please tick one box only)*

☐ No

☐ Yes *Please outline which Year levels the policy recommends should cycle to school:*

_____

_____

If school policy recommends only certain Year levels should cycle to and from school, please tell us the current school roll of students in Year levels allowed to cycle to school: ☐

Is there any reason why this cycle count may NOT be representative of the usual number of students who cycle to school? eg students away at school camp, senior study break etc. *Please write in*.

_____

_____

In case we need to contact you about the information you have provided:

Contact staff member's name _____ Contact phone number: _____

AUCKLAND REGIONAL CYCLE MONITOR

- 2009 SCHOOL CYCLE COUNT –

THE CYCLE COUNT (Can be completed by staff member or student)

Name of school: _____

Date of cycle count: _____

(Note: The preferred day is Tuesday 10th of March)

Total number of cycles counted: ☐

Name of counter: _____

Postal address: _____

_____

(Please note that your personal details will only be used by Gravitas if we need to contact you for clarification of your school or count information. Your personal details will not be passed on to any other organisation or used for any purpose other than this research).

Thank you for your assistance with the project – your contribution is much appreciated.

Once completed, please place this form (check you have both pages) in the stamped addressed envelope provided and post no later than Friday March 13 2009.

26 February 2009

«Staff_Member_Name»
«Schools_Name»
«Address_1»
«Address_2_suburb»
«Address_3»

Dear «Staff_Member»

Re: Regional Cycle Monitoring Programme – Student Cyclists

In conjunction with a larger region-wide cycle monitoring programme being undertaken in early March, intermediate and secondary schools in the Auckland region are being invited to play a part in building a greater understanding of how students get to school. The data provided by schools, along with counts of cyclists at major intersections throughout the Auckland region, will provide local Councils and the Auckland Regional Transport Authority with the information they need to ensure future funding for improvements to cycle infrastructure.

This is the third year that this count of student cyclists has been undertaken. On behalf of the local Councils and the Auckland Regional Transport Authority, we would like to thank those schools that have participated in 2007 and 2008 for their contribution. We look forward to hearing from you again this year.

Accompanying this letter is an information form. The form is in two parts:

- The first part of the form ("About Your School") asks for basic information about your school, including whether there is a policy around recommending that only certain Year levels should cycle to and from school. Given the nature of the information being requested, it is probably most appropriate for the first part of the form to be filled out by a staff member. It should only take two or three minutes to complete.

- The second part of the form ("The Cycle Count") asks for a count of the number of bicycles at your school (in bike sheds, racks etc.) on a pre-determined day. It is envisaged that this information could be collected by a student during one of their breaks (however, if students are permitted to leave the school on cycles during lunchtime, we would ask that the count not be conducted at this time).

To ensure consistency across all schools in the region, **Tuesday the 10th of March** has been selected as the day we would like the cycle count to be conducted. We realise that the weather plays a significant role in the numbers of students cycling to school on any particular day. For this reason, if the weather is particularly bad on the 10th of March, then please postpone the count until **Tuesday the 17th of March**.

Once BOTH PARTS of the form have been completed, it should be placed in the stamped, addressed envelope accompanying this letter and posted no later than Friday the 13th of March (or Friday the 20th of March should the count be postponed due to bad weather).

The data you provide will be analysed to provide an 'actual student cyclists as a share of all potential student cyclists' figure for each school as well as aggregated results by city/district and region. (The final results will be available in May. If you would like a copy, you can contact Brian Horspool at ARTA – Brian.Horspool@arta.co.nz). Please be assured that all information you provide will be treated in the strictest confidence and only used for the purpose of this study.

One of our team will call you in the next couple of days to confirm that you have received the form and to answer any questions you have. However, if you have any questions about what is required, or would like further information about the wider study being undertaken, please don't hesitate to contact me (tania@gravitas.co.nz).

Thank you for your co-operation. Your assistance is greatly appreciated.

Kind regards

Tania Boyer
Project Director
Gravitas Research and Strategy Limited