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

Rodney District

Prepared by Gravitas Research and Strategy Limited

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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 eight sites across the Rodney district 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 eight pre-determined sites in Rodney district 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 city's differs for both peaks.

1.2 Methodology

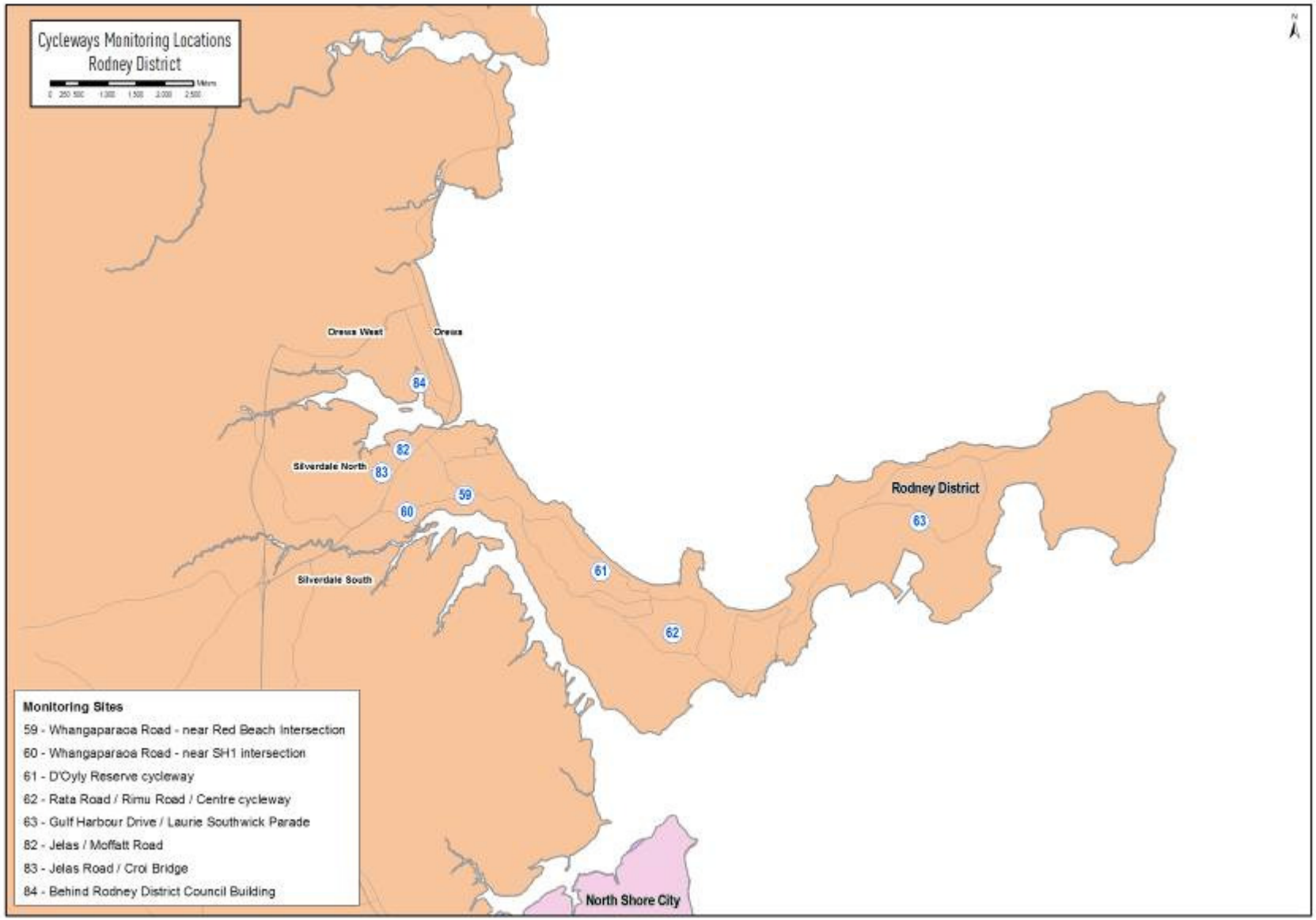
Manual cycle counts have been conducted using a standardised methodology across all sites. This methodology is outlined below. *Note: To ensure the longitudinal comparability of its cycle data, Gravitas have conducted the regional monitoring using a similar approach to that used to collect manual count 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
Rodney District
Orewa West
Orewa
Silverdale North
Silverdale South
Rodney District
North Shore City
84
82
83
59
60
61
62
63
Monitoring Sites
59 - Whangaparaoa Road - near Red Beach Intersection
60 - Whangaparaoa Road - near SH1 intersection
61 - D'Oyly Reserve cycleway
62 - Rata Road / Rimu Road / Centre cycleway
63 - Gulf Harbour Drive / Laurie Southwick Parade
82 - Jelas / Moffatt Road
83 - Jelas Road / Croi Bridge
84 - Behind Rodney District Council Building

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 Three.

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 Three.

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 eight sites surveyed in Rodney district. 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 Rodney district, 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 Nine of this report.

Note: Surveying in Rodney district was undertaken on Thursday 12th March, 2009. Sunrise was at 7:16am and sunset was at 7:45pm. The average temperature was 16 degrees Celsius.

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

- "high/heavy" when 23 or more cycle movements are reported;
- "moderate" when between 11 and 22 cycle movements are reported;
- "low/light" when between 0 and 10 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

- All sites monitored in Rodney district had fine weather in the morning, apart from early showers which cleared by 7:00am at the following sites:
  - Whangaparoa Road near the Beach Road intersection;
  - Whangaparoa Road near the State Highway 1 intersection;
  - D'Oyly Reserve cycleway; and
  - the Jelas/Moffat Road site.
- There were no road works or accidents that may affect cycle counts.

Key Points

- A total of 37 cyclist movements were recorded across the five previously-monitored sites in the morning peak period (between 6:30am and 9:00am) in 2009. This represents a 44 per cent decrease on the result for 2008 (66 movements). However, this decline is not statistically significant – that is, the decrease falls within the margin of error at the 95% confidence interval.
- A total of 128 cycle movements were recorded across all eight sites monitored in 2009.
- The busiest site in the morning peak is behind the Rodney District Council building (75 movements), while the quietest site is the Jelas Road/Croi Bridge site, with only one cycle movement across the entire morning monitoring period.
- Four of the five previously-monitored sites recorded declines this year compared to 2008. The most notable decrease is at D'Oyly Reserve cycleway, the number of movements having fallen from 19 in 2008 to 5 this year (a 74% decrease).
- The average volume of morning cyclist movements across the five previously-monitored sites in Rodney District is 7 cycle movements. This compares with 13 movements in 2008.
- The average volume of morning cyclist movements across all eight sites monitored in 2009 is 16 movements.

Table 1.1: Summary Of Morning Cyclist Movements

2007-2009 (n)

Site Number	*Locations*	*2007*	*2008*	*2009*	Change 08-09	Change 07-09
59	Whangaparaoa Road near Red Beach intersection	13	15	**15**	**0%**	15%
60	Whangaparaoa Road near SH1 intersection	11	9	**6**	**-33%**	-45%
62	Rata Road/Rimu Road/Centre cycleway	21	9	**6**	**-33%**	-71%
61	D'Oyly Reserve cycleway	14	19	**5**	**-74%**	-64%
63	Gulf Harbour Drive/Laurie Southwick Parade	17	14	**5**	**-64%**	-71%
	Average per site (5 sites since 2007)	**15**	**13**	**7**	**-46%**	**-53%**
	Total (5 sites since 2007)	**76**	**66**	**37**	**-44%**	**-51%**
84	Behind Rodney District Council Building	-	-	**75**	*	*
82	Jelas/Moffatt Road	-	-	**15**	*	*
83	Jelas Road/Croi Bridge	-	-	**1**	*	*
	Average per site (8 sites in 2009)	**-**	**-**	**16**	*	*
	Total (8 sites in 2009)	**-**	**-**	**128**	*	*

* Note that sites 82, 83 and 84 are new sites in 2009. Therefore, no previous data were provided.

- Morning cyclist characteristics are shown in Table 1.2 below. Overall, 86 per cent of cyclists are school children (up from 76 per cent in 2008). Of the eight locations monitored, the Whangaparoa Road intersection near State Highway 1 has the highest proportion of cyclists who are adults (50 per cent).
- The majority of cyclists are wearing a helmet (84 per cent, up from 77 per cent last year). The D'Oyly Reserve cycleway has the highest proportion of cyclists not wearing a helmet (80 per cent).
- On average, seven in ten cyclists are riding on off-road cycleways (71 per cent). Road riders comprise 12 per cent of all cycle movements, while 17 per cent are riding on the footpath. The Gulf Harbour Drive/Laurie Southwick Parade site has the highest proportion of cyclists riding on the footpath (100 per cent).

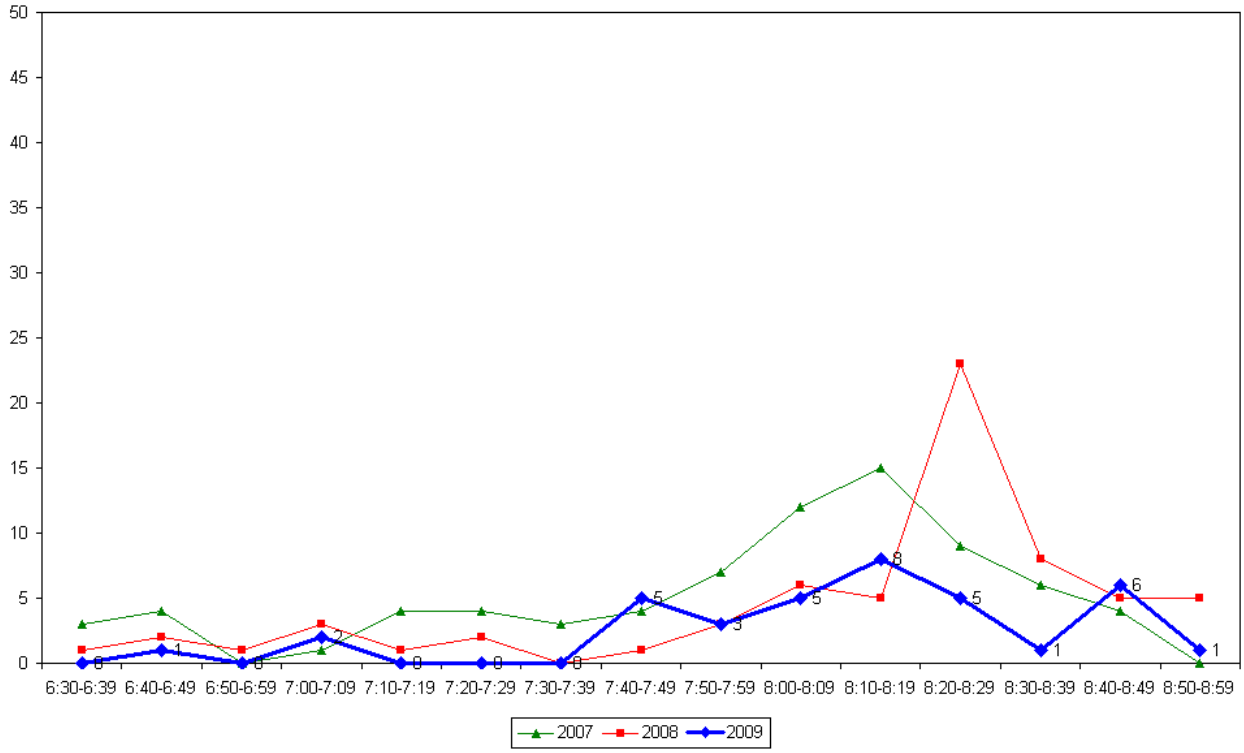
Table 1.2: Summary of Morning Cyclist Characteristics 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	41%	24%	14%	-10%
School child	59%	76%	86%	10%
Helmet Wearing				
Helmet on head	86%	77%	84%	7%
No helmet	14%	23%	16%	-7%
Where Riding				
Road	59%	62%	12%	-
Footpath	41%	38%	17%	-21%
Off-road cycleway[9]	-	-	71%	-
Base:	***76***	***66***	***128***	

[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.*

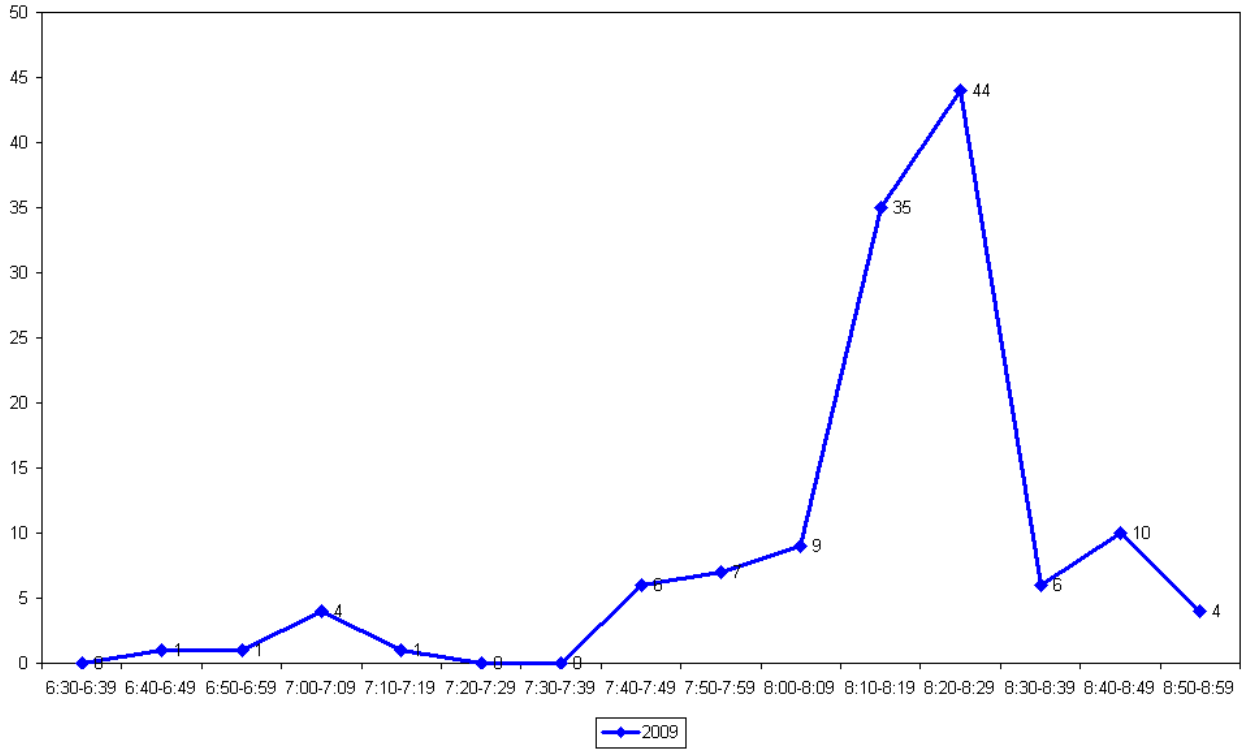
- Figure 1.1 illustrates the total number of cyclists in the morning peak by time of trip for the five previously-monitored sites. The volume of morning cycle movements increases after 7:39am, and then reaches the slight peak between 8:10am and 8:19am (8 movements) – ten minutes earlier than last year.

Figure 1.1: Total Cyclist Frequency
– Morning Peak 2007-2009 (5 sites)



- Figure 1.1a illustrates the total number of cyclists in the morning peak by time of trip for all eight sites monitored in 2009. The volume of morning cycle movements peaks sharply between 8:10am and 8:29am (35 and 44 movements over each ten minute period respectively).

Figure 1.1a: Total Cyclist Frequency – Morning Peak 2009 (8 sites)



1.5 Evening Peak

Environmental Conditions

- All sites had overcast weather and experienced light intermittent drizzle.
- There were no road works or accidents that may affect cycle counts.

Key Points

- A total of 39 cyclist movements were recorded across the four[10] previously-monitored sites in the evening peak period (between 4:00pm and 7:00pm) in 2009. This represents a 37 per cent decrease on the 2008 result (62 movements). However, this decline is not statistically significant – that is, the decrease falls within the margin of error at the 95% confidence interval.
- A total of 78 cycle movements were recorded across all eight sites monitored this year.
- The Jelas/Moffatt Road intersection is the busiest in terms of the evening cyclists' activity, with 23 cycle movements recorded. Consistent with the morning peak, the lowest level of evening cyclist traffic is at the Jelas Road/Croi Bridge site, with only one cycle movement recorded over the evening monitoring period.
- Cycle movements across four of the five previously-monitored sites have decreased this year. The most notable decrease is at the D'Oyly Reserve cycleway, down 95 per cent. *(Note that school children were observed using this site multiple times in the 2008 monitoring period).*
- The average volume of evening cyclist movements across the five previously-monitored sites in Rodney district is 9. This compares with 29 movements in 2008. *(Note that the high average in 2008 was due exclusively to a notable increase in cycle movements at the D'Oyly Reserve site.)*
- The average volume of cycle movements across all eight sites monitored this year is 10.

10 Note that the evening count for D'Oyly Reserve cycleway (site 61) in 2008 is considered as an outlier, so the average and total figures exclude this outlier for more accurate comparison.

Table 1.3: Summary Of Evening Cyclist Movements

2007-2009 (n)

Site Number	***Locations***	***2007***	***2008***	***2009***	**Change 08-09**	**Change 07-09**
63	Gulf Harbour Drive/Laurie Southwick Parade	39	30	17	**-43%**	-56%
59	Whangaparaoa Road near Red Beach intersection	16	16	11	**-31%**	-31%
60	Whangaparaoa Road near SH1 intersection	17	11	6	**-45%**	-65%
62	Rata Road/Rimu Road/Centre cycleway	10	5	5	**0%**	-50%
	Average per site (4 sites since 2007)∞	**21**	**16**	**10**	**-38%**	**-52%**
	Total (4 sites since 2007)	**82**	**62**	**39**	**-37%**	**-52%**
61	D'Oyly Reserve cycleway	10	84^	4	**-95%**	-60%
82	Jelas/Moffatt Road	-	-	23	*	*
84	Behind Rodney District Council Building	-	-	11	*	*
83	Jelas Road/Croi Bridge	-	-	1	*	*
	Average per site (8 sites in 2009)	**-**	**-**	**10**	*	*
	Total (8 sites in 2009)	**-**	**-**	**78**	*	*

^ Some school children were observed using this site multiple times during the evening peak. This will have resulted in double – and even triple – counting of cyclists using this site.

*Note that sites 82, 83 and 84 are new sites in 2009. Therefore, no previous data were provided.

∞ Note that the evening count for D'Oyly Reserve cycleway (site 61) in 2008 is considered as an outlier, so the average and total figures exclude this outlier for more accurate comparison.

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

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 eight sites decreases notably from the number recorded in the morning shift.
- The numbers of evening cyclists recorded at six of the eight sites are lower than in the morning peak. The most notable decrease is at the cycleway behind the Rodney District Council Building (down from 75 morning peak movements to 9 cycle movements recorded in the evening peak).
- In contrast, two out of the eight sites have the evening cycle volume greater than the morning cycle volume. This increase is most notable at the intersection of Gulf Harbour Drive and Laurie Southwick Parade (up from 5 morning movements, to 14 movements in the evening).

Table 1.4: Summary Of Change in Cyclist Movements from Morning to Evening 2007-2009 (%)

Site Number	*Locations*	*AM*	*PM*[11]	Change
63	Gulf Harbour Drive/Laurie Southwick Parade	5	14	65%
82	Jelas/Moffatt Road	15	19	22%
60	Whangaparaoa Road/Near SH1 intersection	6	5	-20%
83	Jelas Road/Croi Bridge	1	1	-20%
62	Rata Road/Rimu Road/Centre cycleway	6	4	-44%
61	D'Oyly Reserve cycleway	5	3	-50%
59	Whangaparaoa Road/Near Red Beach intersection	15	9	-64%
84	Behind Rodney District Council Building	75	9	-718%
	Total	**113**	**56**	**-102%**

[11] 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.

- By comparison with last year, more evening cyclists are adults (50 per cent, up from 42 per cent in 2008). The D'Oyly Reserve cycleway has the highest proportion of cyclists who are children (100 per cent).
- Compared with last year, a higher proportion of evening cyclists are wearing a helmet (77 per cent, up notably from 55 per cent in 2008). The intersection of Gulf Harbour Drive and Laurie Southwick Parade has the greatest share of cyclists who are not wearing a helmet (53 per cent).
- Approximately half of all evening cyclists are riding on the off-road cycleway (48 per cent). Twenty-eight per cent are riding on the road, while the remaining 24 per cent are riding on the footpath. The Whangaparoa Road site near the Beach Road intersection has the highest proportion of cyclists riding on the footpath (64 per cent).

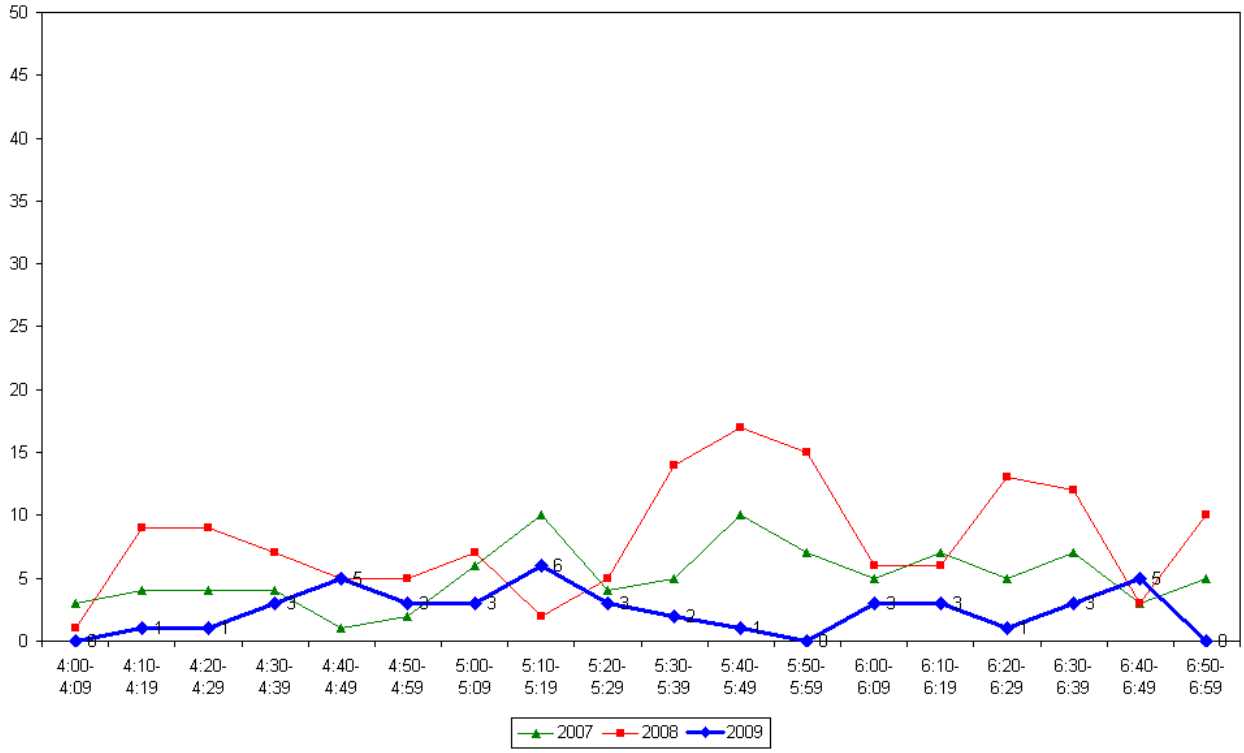
Table 1.5: Summary of Evening Cyclist Characteristics 2007-2009 (%)

	2007	***2008***	***2009***	**Change 08-09**
Cyclist Type				
Adult	62%	42%	50%	8%
School child	38%	58%	50%	-8%
Helmet Wearing				
Helmet on head	78%	55%	77%	22%
No helmet	22%	45%	23%	-22%
Where Riding				
Road	53%	85%	28%	-
Footpath	47%	15%	24%	9%
Off-road cycleway[12]	-	-	48%	-
Base:	***92***	***146***	***78***	

[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.*

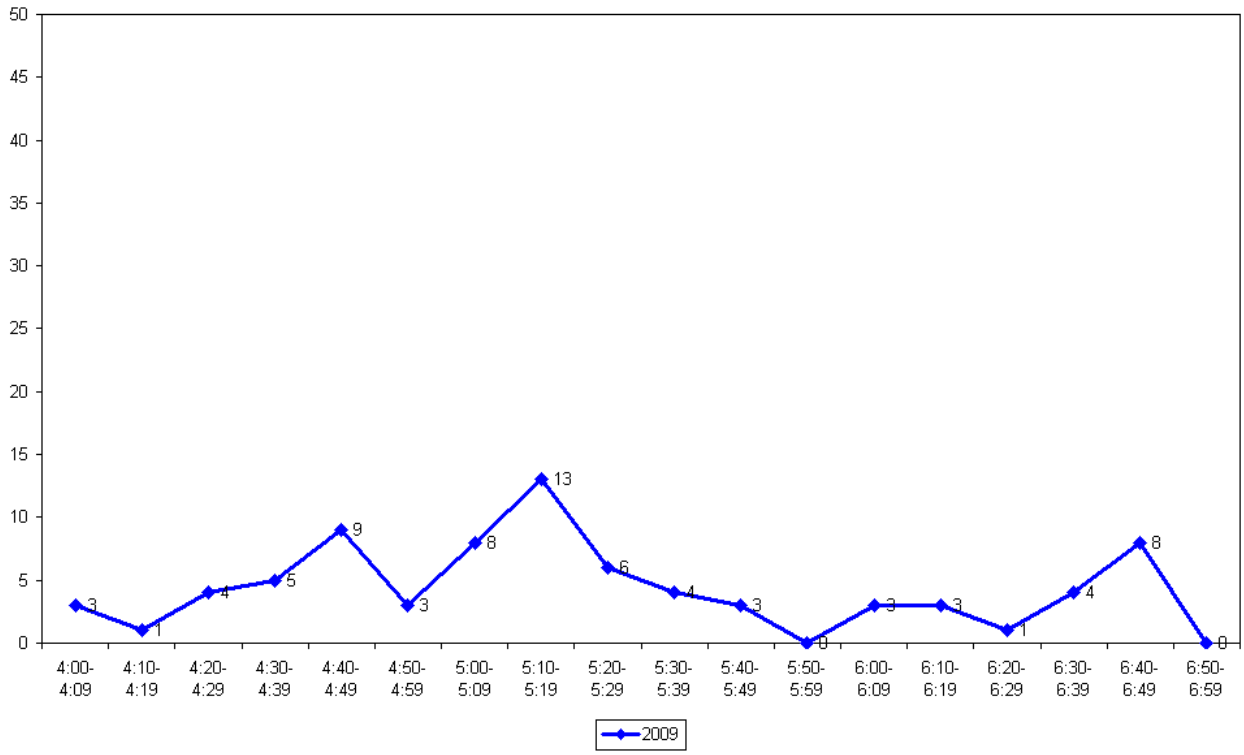
- The overall pattern of cyclist volumes by time of trip in the evening for the five previously-monitored sites is illustrated in Figure 1.2. Cycle volumes are relatively stable throughout the monitoring period, with a slight peak of 6 movements between 5:10pm and 5:19pm. This compares with a strong peak between 5:40pm and 5:49pm (17 movements) in 2008.

Figure 1.2: Total Cyclist Frequency – Evening Peak 2007-2009 (5 sites)



- Figure 1.2a illustrates the overall pattern of cyclist volumes by time of trip in the evening for all eight sites monitored this year. The peak is more notable than for the five previously-monitored sites and occurs between 5:10pm and 5:19pm (13 movements).

Figure 1.2a: Total Cyclist Frequency – Evening Peak 2009 (8 sites)



1.6 Aggregated Total

- A total of 71 cyclist movements were recorded across the four[13] previously-monitored sites in 2009. This represents a 35 per cent decrease when compared with 2008 (109 movements) – not statistically significant at the 95% confidence interval. The number of evening cyclists comprises a slightly larger share (54 per cent) of the total number of cycle movements than the morning cyclists (46 per cent).
- In contrast, of all eight sites monitored in 2009, morning cyclists comprise a larger share of the total cycle movements (62 per cent, compared with 38 per cent of evening movements).
- The busiest site is behind the Rodney District Council building (86 movements), whereas the lowest cyclist traffic is observed at the Jelas Road/Croi Bridge site (2 movements).

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

Site Number	*Locations*	*2007*	*2008*	*2009*	Change 08-09	Change 07-09
59	Whangaparaoa Road near Red Beach intersection	29	31	**26**	**-16%**	-10%
63	Gulf Harbour Drive/Laurie Southwick Parade	56	44	**22**	**-50%**	-61%
60	Whangaparaoa Road/Near SH1 intersection	28	20	**12**	**-40%**	-57%
62	Rata Road/Rimu Road/Centre cycleway	31	14	**11**	**-21%**	-65%
	Total (4 sites since 2007) ∞	**144**	**109**	**71**	**-35%**	**-51%**
61	D'Oyly Reserve cycleway	24	103	**9**	**-91%**	-63%
84	Behind Rodney District Council Building	-	-	**86**	*	*
82	Jelas/Moffatt Road	-	-	**38**	*	*
83	Jelas Road/Croi Bridge	-	-	**2**	*	*
	Total (8 sites in 2009)	**-**	**-**	**206**	*	*

∞Note that the evening count for D'Oyly Reserve cycleway (site 61) in 2008 is considered as an outlier, so the average and total figures exclude this outlier for more accurate comparison.
*Note that sites 82, 83 and 84 are new sites in 2009. Therefore, no previous data were provided.

13 Note that the evening count for D'Oyly Reserve cycleway (site 61) in 2008 is considered as an outlier, so the average and total figures exclude this outlier for more accurate comparison.

- Overall cyclist characteristics are illustrated in Table 1.7. In total, 72 per cent of cyclists are school children (up from 63 per cent last year).
- On average, around four in five cyclists are wearing a helmet (82 per cent, up notably from 62 per cent in 2008).
- The majority of cyclists are riding on the off-road cycleway (62 per cent). One-fifth are riding on the footpath (20 per cent) while the remaining 18 per cent are riding on the road.

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

	2007	*2008*	*2009*	**Change 08-09**
Cyclist Type				
Adult	52%	37%	28%	-9%
School child	48%	63%	72%	9%
Helmet Wearing				
Helmet on head	82%	62%	82%	20%
No helmet	18%	38%	18%	-20%
Where Riding				
Road	56%	78%	18%	-
Footpath	44%	22%	20%	-2%
Off-road cycleway[14]	-	-	62%	-
Base:	***168***	***212***	***206***	

[14] *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 Average Annual Daily Traffic (AADT) Estimate

Note: A discussion of Average Annual Daily Traffic Estimates is provided in Section 1.2. A full description of the tool, the calculation used, and the limitations of the estimates are provided in Appendix One. Readers are encouraged to review these sections in conjunction with the data presented here.

Table 1.8 provides the comparative AADT estimates for each site, based on the average of morning and evening peak AADT calculations.

- The highest AADT is behind the Rodney District Council building (30 daily trips) and the lowest is at the Jelas Road/Croi Bridge site (3 daily trips).

Table 1.8: Dry Weather Factor 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
84	Behind Rodney District Council Building	-	-	**130**	*	*
82	Jelas/Moffatt Road	-	-	**55**	*	*
59	Whangaparaoa Road near Red Beach intersection	42	45	**38**	**-16%**	-10%
63	Gulf Harbour Drive/Laurie Southwick Parade	80	63	**31**	**-51%**	-61%
60	Whangaparaoa Road near SH1 intersection	40	29	**17**	**-41%**	-58%
62	Rata Road/Rimu Road/Centre cycleway	46	21	**16**	**-24%**	-65%
61	D'Oyly Reserve cycleway	35	145	**13**	**-91%**	-63%
83	Jelas Road/Croi Bridge	-	-	**3**	*	*

Note: Despite evidence of intermittent rain at at least one site during the morning and/or evening monitoring periods, the dry weather factor has been applied in calculating the AADT estimates. For the purpose of comparison, Appendix Two provides comparative 2009 AADT estimates using both the dry and wet weather factors.

1.8 School Bike Shed Count Summary

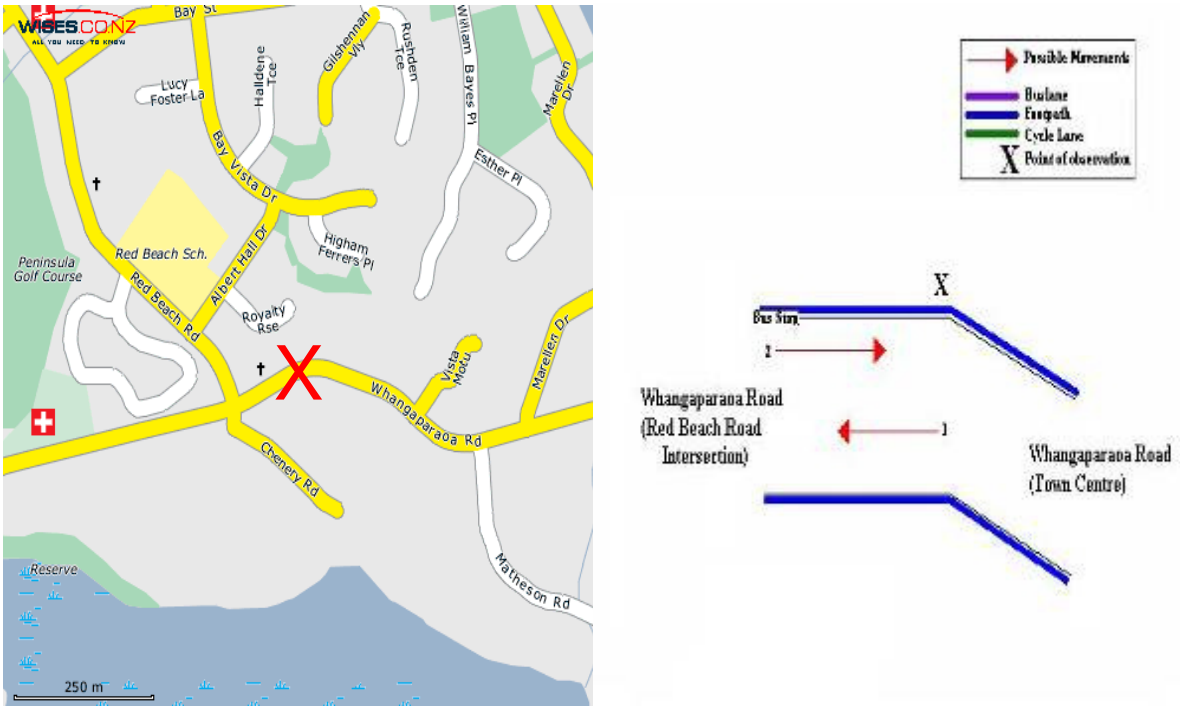
Key Points

- Among the surveyed schools, of those eligible to cycle at school, on average, three per cent of students are cycling to their schools. This compares with 2 per cent in 2008.
- Among the six responding schools, n=131 students were identified as cycling to school.
- This year, Living Way Learning Centre reported the highest share of cyclists – 9 per cent of all eligible students currently cycling. This compares with 2008, where Orewa College reported the highest share, at 5 per cent.
- Of the six schools that responded, one (17 per cent) had no students cycling to school. This compares with 2008 where two (25 per cent) had no students cycling to school.
- Rates of cycling to school are highest among combined intermediate/secondary schools (4 per cent, up from 3 per cent) and lowest for secondary schools (0 per cent, unchanged from 2008).

2. WHANGAPARAOA ROAD – NEAR RED BEACH INTERSECTION, WHANGAPARAOA (SITE 59)

Figure 2.1 shows the possible cyclist movements at this site.

Figure 2.1: Cycle Movements: Whangaparaoa Road/Red Beach Intersection



AADT Estimate

- The AADT for this site is 38 cycle movements per day. This compares with:
  - 45 movements in 2008
  - 42 movements in 2007.

2.1 Morning Peak

Environmental Conditions

- There was rain at the beginning of the monitoring period, which eased around 6:55am.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of morning cyclists at the Whangaparaoa Road intersection near the Red Beach intersection remains unchanged from 2008 (15 movements).
- The key morning movement is straight along Whangaparaoa Road heading west towards the Red Beach intersection (Movement 1 = 12 cyclists, stable from last year).

Table 2.1: Morning Cyclist Movements
Whangaparaoa Road/Red Beach Intersection 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	10	13	12	-1
2	3	2	3	1
Total	**13**	**15**	**15**	**0**

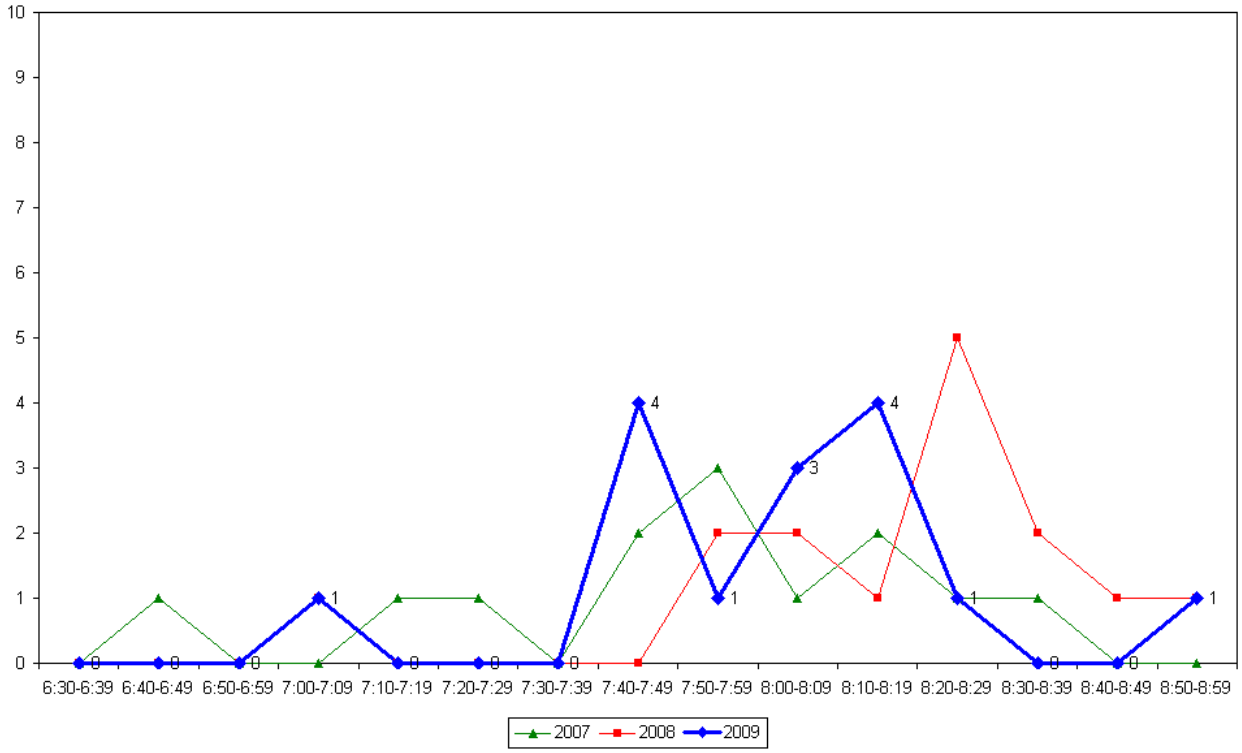
- Over the morning peak, school children comprise approximately four-fifths of the total number of cycle movements (80 per cent, up from 73 per cent in 2008).
- Most cyclists are wearing a helmet (93 per cent, down from 100 per cent last year).
- The incidence of riding on the footpath is the high at this site (87 per cent, up from 80 per cent at the previous measure).

Table 2.2: Morning Cyclist Characteristics
Whangaparaoa Road/Red Beach Intersection 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	62	27	20	-7
School child	38	73	80	7
Helmet Wearing				
Helmet on head	92	100	93	-7
No helmet	8	0	7	7
Where Riding				
Road	15	20	13	-7
Footpath	85	80	87	7
Base:	***13***	***15***	***15***	

- In 2009, the volume of morning cycle movements is very low until 7:30am (no cyclist within most ten minutes intervals), peaks between 7:40am and 7:49am (4 cyclists) and again between 8:00am and 8:19am (3 and 4 cyclists recorded over each ten minute period respectively), before tailing off towards the end of the morning period. This compares with a slightly later peak between 8:20am and 8:29am last year (5 movements).

Figure 2.2: Whangaparaoa Road /Red Beach Intersection Cyclist Frequency – Morning Peak



2.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with patches of light rain between 4:25pm and 4:30pm, 5:06pm and 5:10pm, and 5:26pm and 5:30pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cycle movements recorded at the Whangaparaoa Road/Red Beach intersection is down from 2008, with 11 movements recorded compared with 16 movements last year.
- In contrast to the morning shift, the most common movement in the evening is east along Whangaparaoa Road heading towards the Town Centre (Movement 2 = 7 cyclists, down from 13 cyclists recorded in 2008).

Table 2.3: Evening Cyclist Movements
Whangaparaoa Road /Red Beach Intersection 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	6	3	4	1
2	10	13	7	-6
Total	**16**	**16**	**11**	**-5**

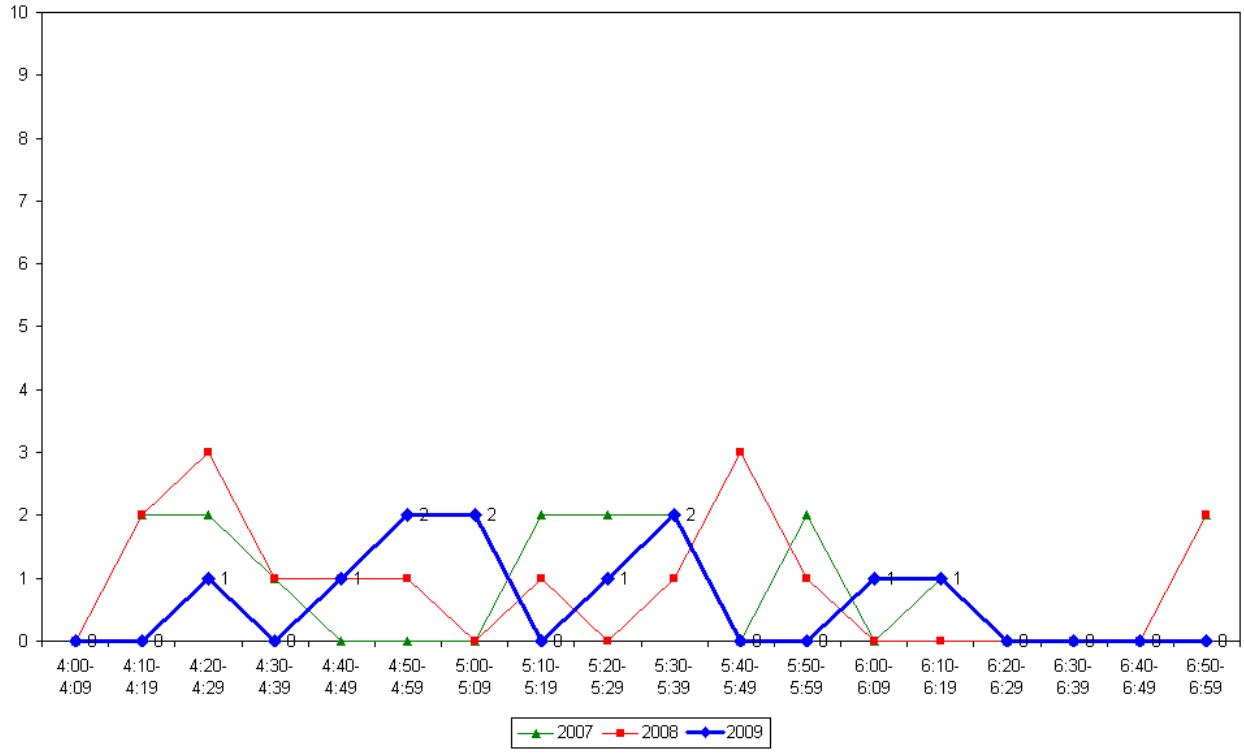
- In contrast with the morning peak, the greatest share of cyclists using Whangaparaoa Road are adults (64 per cent, down notably from 88 per cent last year).
- All cyclists are wearing a helmet (up from 94 per cent in 2008).
- Nearly two-thirds of cyclists are riding on the footpath (64 per cent, stable from 63 per cent last year).

Table 2.4: Evening Cyclist Characteristics
Whangaparaoa Road /Red Beach Intersection 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	75	88	64	-24
School child	25	12	36	24
Helmet Wearing				
Helmet on head	87	94	100	6
No helmet	13	6	0	-6
Where Riding				
Road	25	37	36	-1
Footpath	75	63	64	1
Base:	***16***	***16***	***11***	

- Evening cyclist numbers remain relatively low over the entire peak period, with no more than one cyclist recorded over most ten minute intervals. Slight peaks occur between 4:50pm and 5:09pm, and again between 5:30pm and 5:39pm (2 cyclists over each ten minute interval).

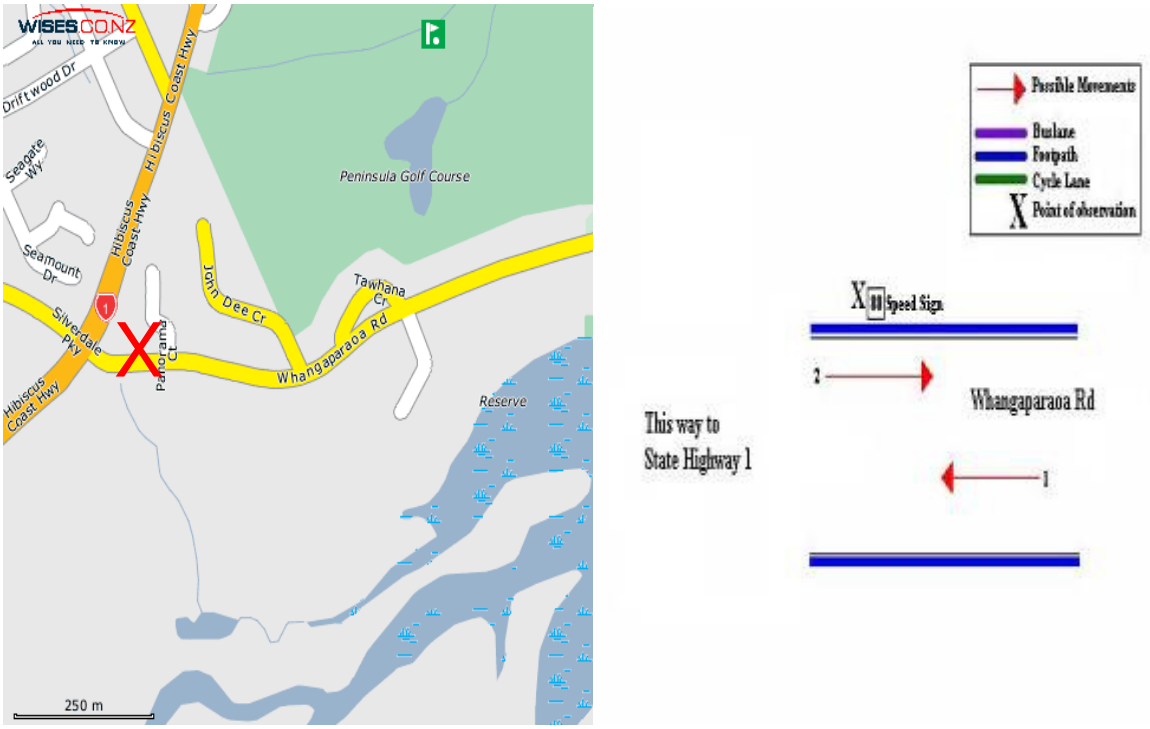
Figure 2.3: Whangaparaoa Road /Red Beach Intersection Cyclist Frequency – Evening Peak



3. WHANGAPARAOA ROAD – NEAR SH1 INTERSECTION, WHANGAPARAOA (SITE 60)

Figure 3.1 shows the possible cyclist movements at this site.

Figure 3.1: Cycle Movements: Whangaparaoa Road near SH1 Intersection



AADT Estimate

- The AADT for this site is 17 cycle movements per day. This compares with:
  - 29 movements in 2008
  - 40 movements in 2007.

3.1 Morning Peak

Environmental Conditions

- There was rain at the beginning of the monitoring period, which stopped at approximately 7:00am.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The level of morning cyclist traffic at Whangaparaoa Road near the State Highway 1 intersection is low, with 6 cycle movements recorded (down from 9 movements last year).
- Almost all cyclists at this site are moving straight along Whangaparaoa Road heading towards the State Highway 1 intersection (Movement 1 = 5 cyclists).

Table 3.1: Morning Cyclist Movements
Whangaparaoa Road near SH1 Intersection 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	9	9	5	-4
2	2	0	1	1
Total	**11**	**9**	**6**	**-3**

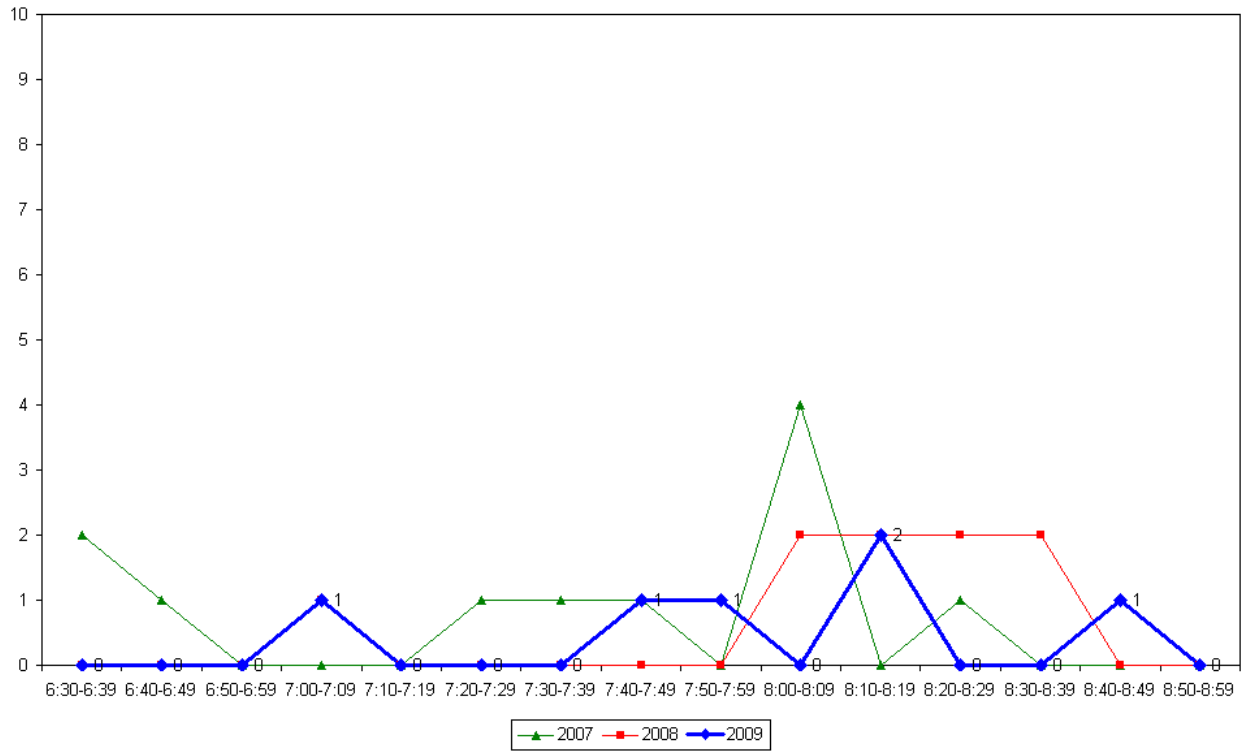
- Over the morning peak, school children comprise half of all cycle movements (50 per cent, down from 67 per cent last year).
- All cyclists are wearing a helmet (unchanged from last year).
- On average, two in three cyclists are riding on the footpath (67 per cent, unchanged from 2008).

Table 3.2: Morning Cyclist Characteristics
Whangaparaoa Road near SH1 Intersection 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	55	33	50	17
School child	45	67	50	-17
Helmet Wearing				
Helmet on head	91	100	100	0
No helmet	9	0	0	0
Where Riding				
Road	36	33	33	0
Footpath	64	67	67	0
Base:	***11***	***9***	***6***	

- As in 2007, no more than one cyclist was recorded during most ten minute intervals. The volume of morning cycle movements peaks slightly between 8:10am and 8:19am (2 cyclists within this ten minute interval).

Figure 3.2: Whangaparaoa Road near SH1 Intersection Cyclist Frequency – Morning Peak



3.2 Evening Peak

Environmental Conditions

- The weather was variable throughout the evening shift, starting out fine with rain present by the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of evening cyclists recorded at Whangaparaoa Road near the State Highway 1 intersection decreases to 6 movements in 2009 (compared with 11 movements in 2008).
- Consistent with the morning shift, the most common movement in the evening is straight along Whangaparaoa Road heading west (Movement 1 = 4 cycle movements).
- The number of cyclists at Movement 2 has decreased notably, from 9 movements in 2008 to 2 movements this year.

Table 3.3: Evening Cyclist Movements
Whangaparaoa Road near SH1 Intersection 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	6	2	4	2
2	11	9	2	-7
Total	**17**	**11**	**6**	**-5**

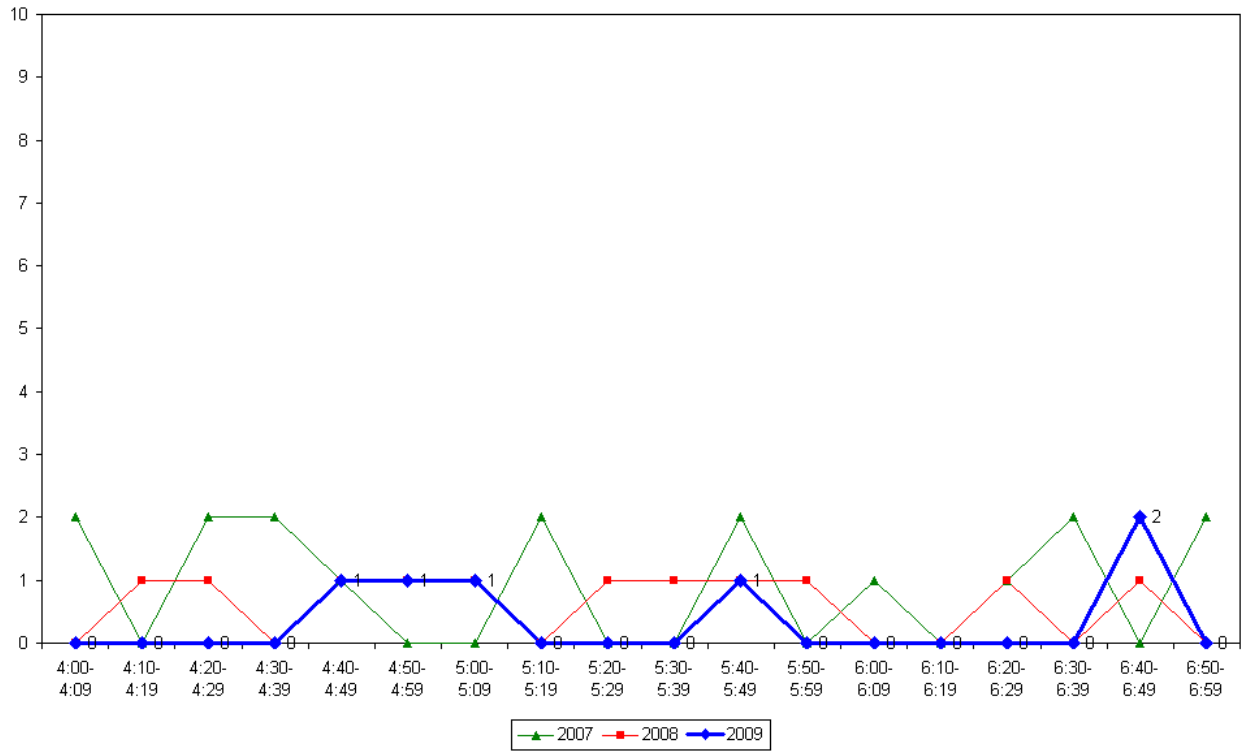
- The greatest share of cyclists using this site in the evening are adults (67 per cent, down notably from 82 per cent last year).
- All cyclists are wearing a helmet (unchanged from 2008).
- Half of cyclists are riding on the footpath (50 per cent, down slightly from 55 per cent at the previous measure).

Table 3.4: Evening Cyclist Characteristics
Whangaparaoa Road near SH1 Intersection 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	53	82	67	-15
School child	47	18	33	15
Helmet Wearing				
Helmet on head	82	100	100	0
No helmet	18	0	0	0
Where Riding				
Road	35	45	50	5
Footpath	65	55	50	-5
Base:	***17***	***11***	***6***	

- The frequency of evening cyclists remains very low over the entire peak period, with no more than one cyclist recorded passing during most ten minute intervals. A slight peak of 2 movements occurs between 6:40pm and 6:49pm.

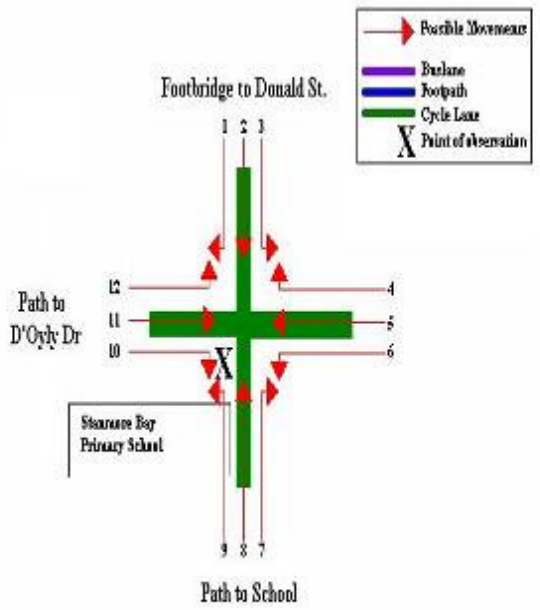
Figure 3.3: Whangaparaoa Road near SH1 Intersection Cyclist Frequency – Evening Peak



4. D'OYLY RESERVE CYCLEWAY, WHANGAPARAOA (SITE 61)

Figure 4.1 shows the possible cyclist movements at this site.

Figure 4.1: Cycle Movements: D'Oyly Reserve Cycleway



AADT Estimate

- The AADT for this site is 13 cycle movements per day. This compares with:
  - 145 movements in 2008
  - 35 movements in 2007.

4.1 Morning Peak

Environmental Conditions

- The weather was overcast throughout the morning shift, with light rain stopping at 6:30am.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Morning cyclist traffic at the D'Oyly Reserve cycleway declined notably this year, from 19 movements last year to 5 movements.
- The most common movement in the morning is the left turn from the cycleway into the path to Stanmore Bay Primary School (Movement 6 = 4 cyclists).
- The most notable declines this year have been at Movement 11 (down 6 cyclists) and Movement 5 (down 5 cyclists).

Table 4.1: Morning Cyclist Movements
D'Oyly Reserve Cycleway 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	0	0	0
2	0	0	0	0
3	2	2	0	-2
4	0	0	0	0
5	3	5	0	-5
6	3	5	4	-1
7	0	0	0	0
8	0	0	0	0
9	1	0	0	0
10	0	0	0	0
11	5	7	1	-6
12	0	0	0	0
Total	**14**	**19**	**5**	**-14**

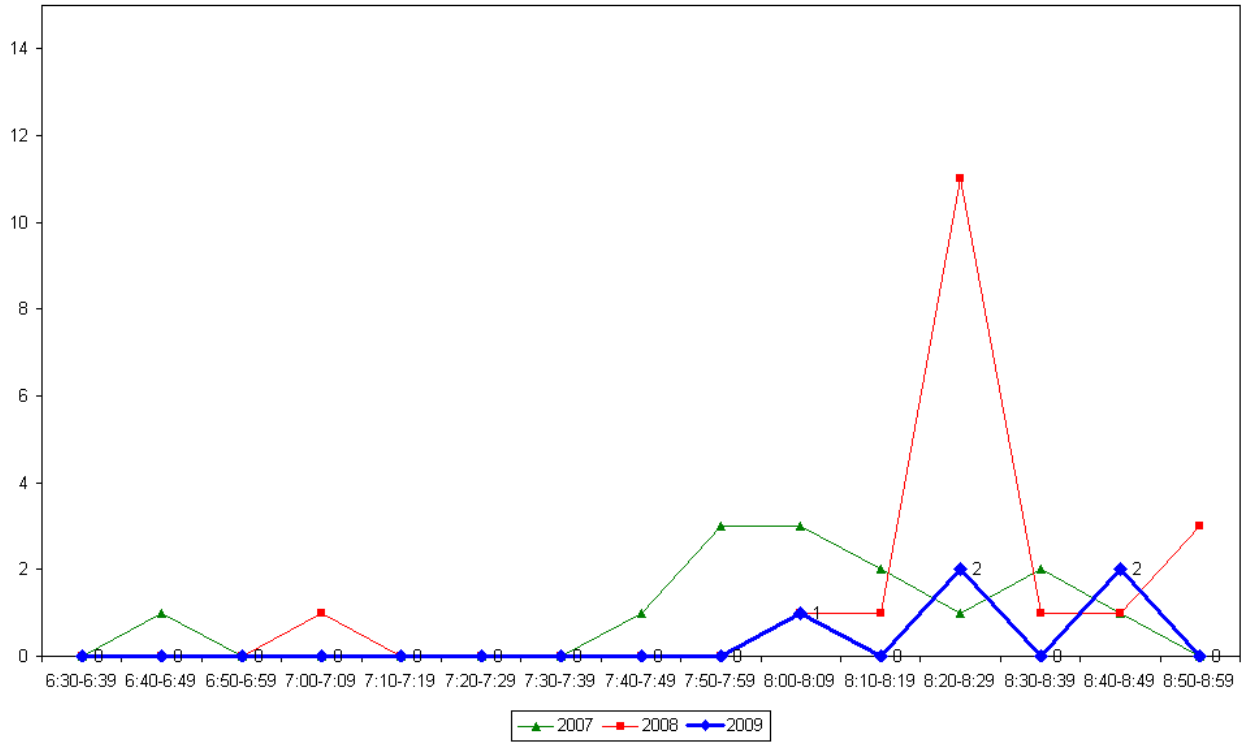
- All morning cyclists at this site are school children (up from 84 per cent last year).
- Approximately four in five cyclists (80 per cent) are not wearing helmets, this share up notably from 42 per cent in 2008.

Table 4.2: Morning Cyclist Characteristics
D'Oyly Reserve Cycleway 2007-2009 (%)

	2007	*2008*	*2009*	**Change 08-09**
Cyclist Type				
Adult	21	16	0	-16
School child	79	84	100	16
Helmet Wearing				
Helmet on head	64	58	20	-38
No helmet	36	42	80	38
Where Riding				
Off-road Cycleway	100	100	100	0
Base:	***14***	***19***	***5***	

- The volume of morning cycle movements is very low until 7:59am (no cyclist recorded during all ten minute intervals), with two cyclists recorded between 8:20am and 8:29am, and a further two cyclists recorded between 8:40am and 8:49am. This compares to a notable peak of 11 cycle movements between 8:20am and 8:29am in 2008.

Figure 4.2: D'Oyly Reserve Cycleway Cyclist Frequency – Morning Peak



4.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with light rain between 4:25pm and 4:30pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- This year, the number of movements observed at this site has dropped notably, from 84 movements last year to only 4 movements in 2009. However, volumes are more consistent with those in 2007, where 10 cycle movements were observed. *Note that multiple counting for school children cycling around at this site will have contributed to the sharp increase in 2008.*
- The key movement in the evening is straight along the cycleway heading west towards D'Oyly Dr (Movement 5 = 2 cyclists).
- Most of the twelve movements possible at this site have decreased since last year. The most notable decreases are at Movement 3 (down 17 cyclists), Movement 4 (down 15 cyclists) and Movement 5 (down 12 cyclists).

Table 4.3: Evening Cyclist Movements
D'Oyly Reserve Cycleway 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	10	0	-10
2	0	3	0	-3
3	2	17	0	-17
4	0	15	0	-15
5	4	14	2	-12
6	2	1	0	-1
7	1	6	0	-6
8	1	0	0	0
9	0	0	1	1
10	0	0	0	0
11	0	9	1	-8
12	0	9	0	-9
Total	**10**	**84**	**4**	**-80**

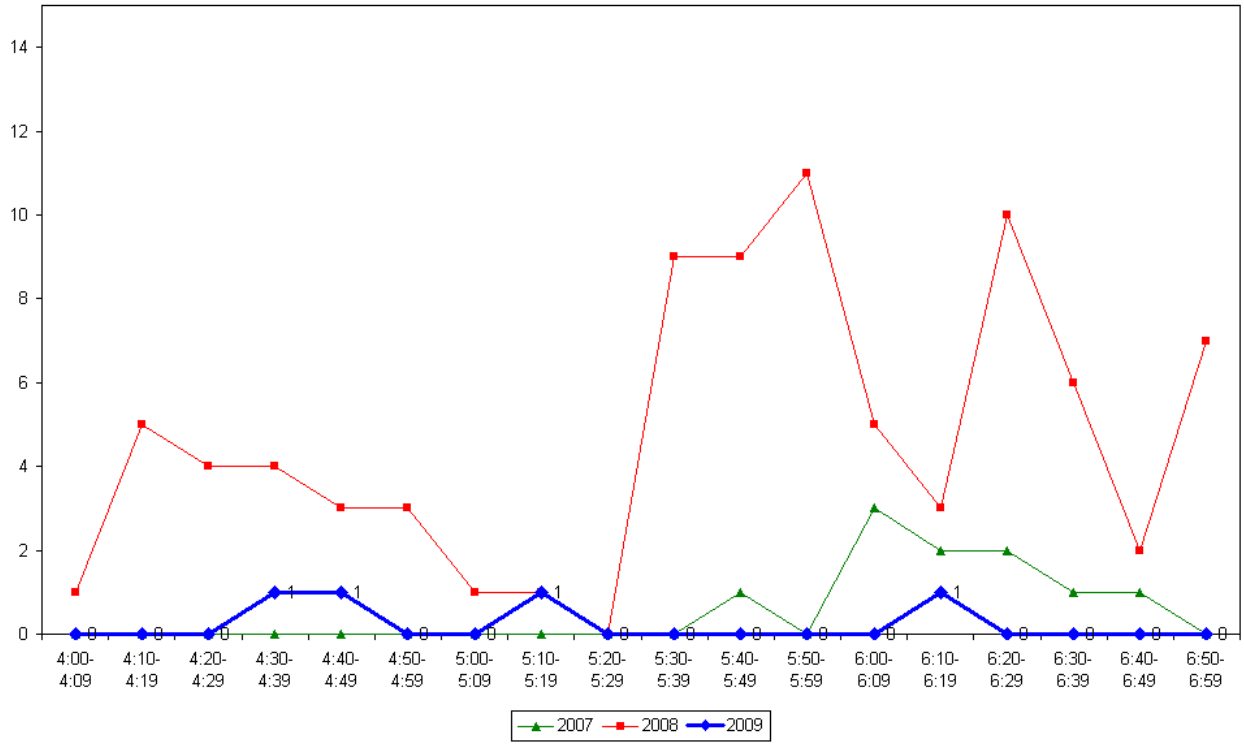
- All cyclists using the D'Oyly Reserve cycleway are school children (up from 83 per cent last year).
- Three-quarters of cyclists at this site are wearing a helmet (75 per cent, up notably from 33 per cent in 2008).

Table 4.4: Evening Cyclist Characteristics
D'Oyly Reserve Cycleway 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	50	17	0	-17
School child	50	83	100	17
Helmet Wearing				
Helmet on head	70	33	75	42
No helmet	30	67	25	-42
Where Riding				
Off-road Cycleway	100	100	100	0
Base:	***10***	***84***	**4**	

- Cycle volumes are low across the entire monitoring period, with no more than one cyclist recorded over all ten minute intervals.

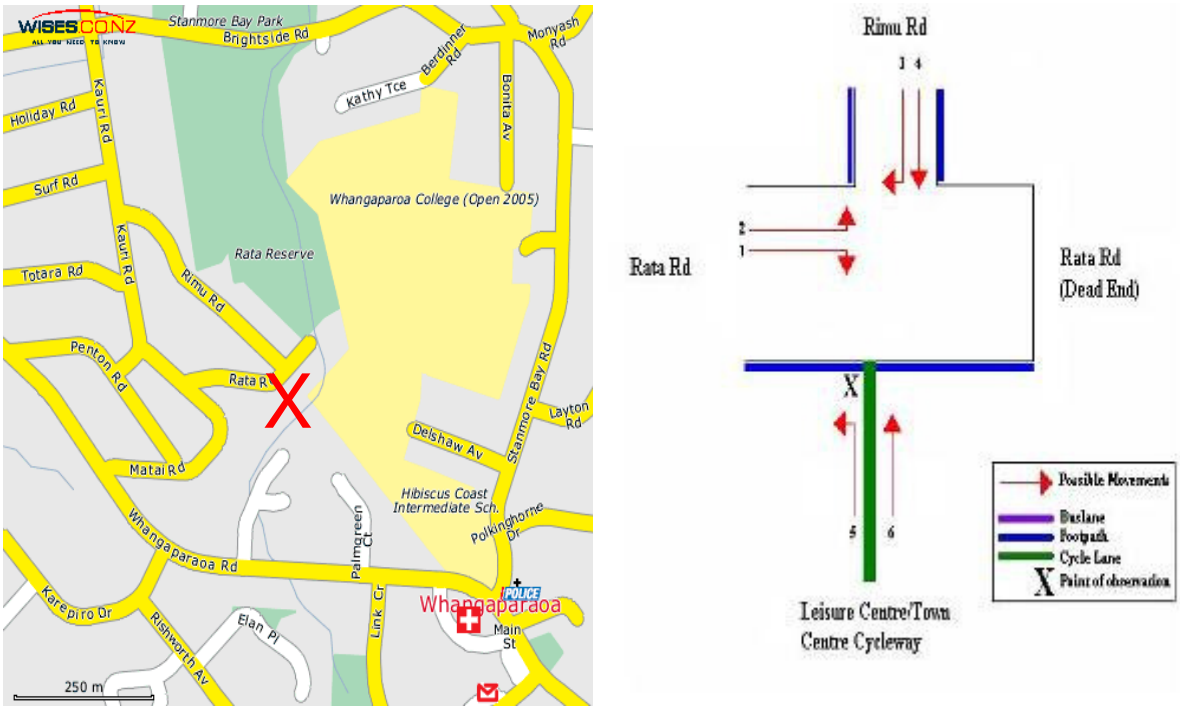
Figure 4.3: D'Oyly Reserve Cycleway Cyclist Frequency – Evening Peak



5. CYCLEWAY BETWEEN WHANGAPARAOA TOWN CENTRE AND LEISURE CENTRE, WHANGAPARAOA (SITE 62)

Figure 5.1 shows the possible cyclist movements at this site.

Figure 5.1: Cycle Movements: Rata Road/Rimu Road/Centre Cycleway



AADT Estimate

- The AADT for this site is 16 cycle movements per day. This compares with:
  - 21 movements in 2008
  - 46 movements in 2007.

5.1 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

- Cycle movements at the intersection of Rata Road and Rimu Road have declined from 9 movements in 2008 to 6 movements this year.
- The key morning movement is from Rimu Road to the Leisure Centre/Town Centre cycleway (Movement 4 = 5 cyclists, down 4 cyclists from 2008).

Table 5.1: Morning Cyclist Movements
Rata Road/Rimu Road/Centre Cycleway 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	0	1	1
2	1	0	0	0
3	1	0	0	0
4	19	9	5	-4
5	0	0	0	0
6	0	0	0	0
Total	**21**	**9**	**6**	**-3**

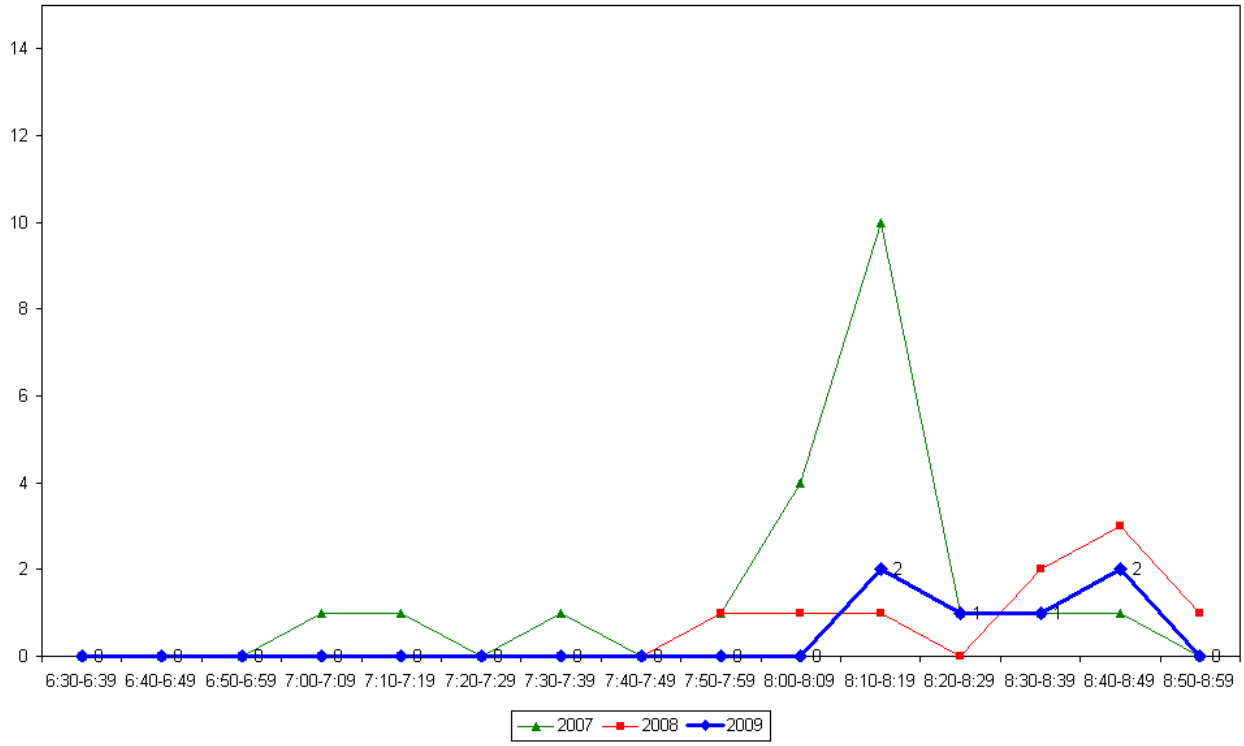
- Over the morning peak, all cyclists riding at the Rata/Rimu Road/Centre cycleway are school children (unchanged from last year).
- Most cyclists are wearing a helmet (83 per cent, down from all cyclists in 2008).
- As in 2008, all cyclists observed were riding on the off-road cycleway.

Table 5.2: Morning Cyclist Characteristics
Rata Road/Rimu Road/Centre Cycleway 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	24	0	0	0
School child	76	100	100	0
Helmet Wearing				
Helmet on head	90	100	83	-17
No helmet	10	0	17	17
Where Riding				
Footpath	14	0	0	0
Off-road cycleway	86	100	100	
Base:	***21***	***9***	***6***	

- This year, morning cyclist volumes are very low (no cyclists recorded between 6:30am and 8:00am). Two slight peaks occur between 8:10am and 8:19am and between 8:40am and 8:49am (2 cyclists over each ten minute interval). The second peak occurs at the same time as the peak recorded last year.

Figure 5.2: Rata Road/Rimu Road/Centre Cycleway Cyclist Frequency – Morning Peak



5.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from a light shower at 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 Rata/Rimu Road intersection in the evening is unchanged from last year, with 5 cyclists observed.
- Consistent with the morning shift, the most common movement in the evening is straight through from Rimu Road to the Leisure Centre/Town Centre cycleway (Movement 4 = 3 cyclists).
- Evening cyclist volumes at all movements are stable since last year.

Table 5.3: Evening Cyclist Movements
Rata Road/Rimu Road/Centre Cycleway 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	0	0	0
2	2	0	0	0
3	2	0	0	0
4	1	4	3	-1
5	0	0	1	1
6	5	1	1	0
Total	**10**	**5**	**5**	**0**

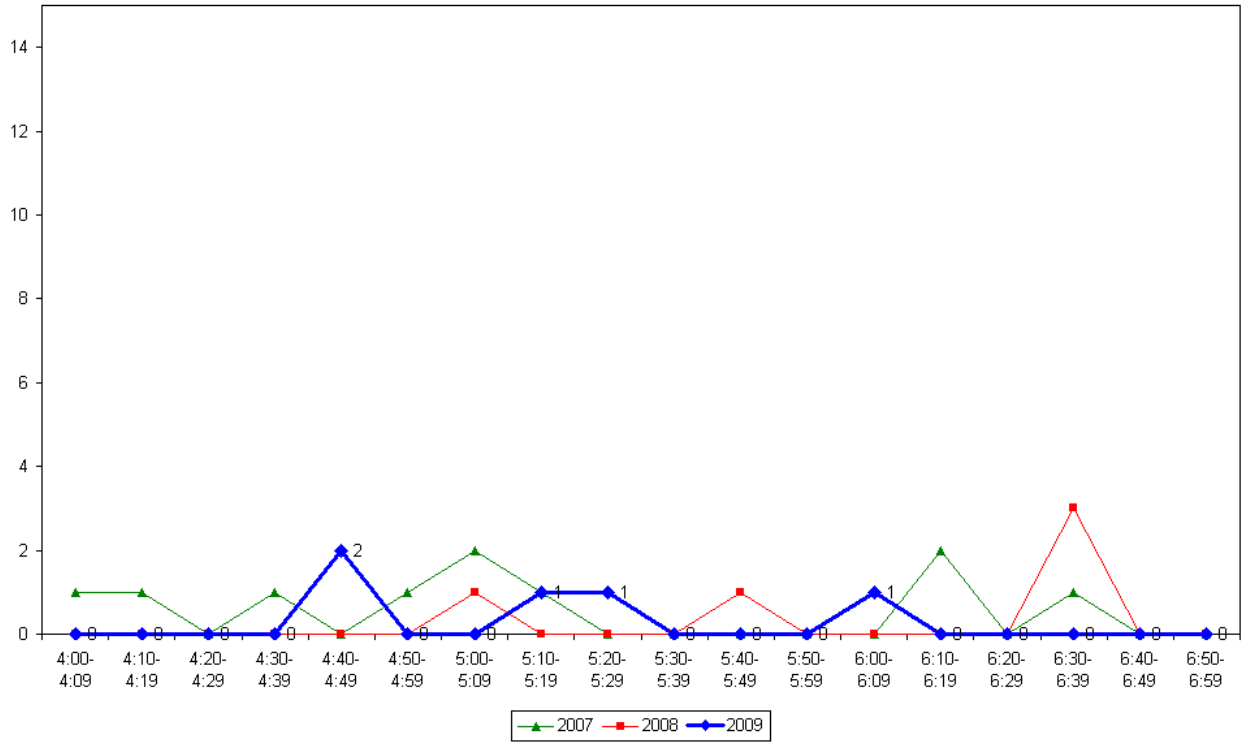
- Consistent with the morning peak, the greatest share of cyclists using the Rata/Rimu Road intersection are school children (60 per cent, unchanged from last year).
- All cyclists at this site are wearing a helmet (unchanged from 2008).
- Of the five cyclists at this site, four were observed riding on the off-road cycleway and one on the footpath.

Table 5.4: Evening Cyclist Characteristics
Rata Road/Rimu Road/Centre Cycleway 2007-2009 (%)

	2007	*2008*	*2009*	**Change 08-09**
Cyclist Type				
Adult	30	40	40	0
School child	70	60	60	0
Helmet Wearing				
Helmet on head	70	100	100	0
No helmet	30	0	0	0
Where Riding				
Footpath	20	0	20	20
Off-road cycleway	80	100	80	20
Base:	***10***	***5***	***5***	

- Overall, evening cycle volumes are very low over the entire peak period. The peak (just 2 movements) occurs between 4:40pm and 4:49pm.

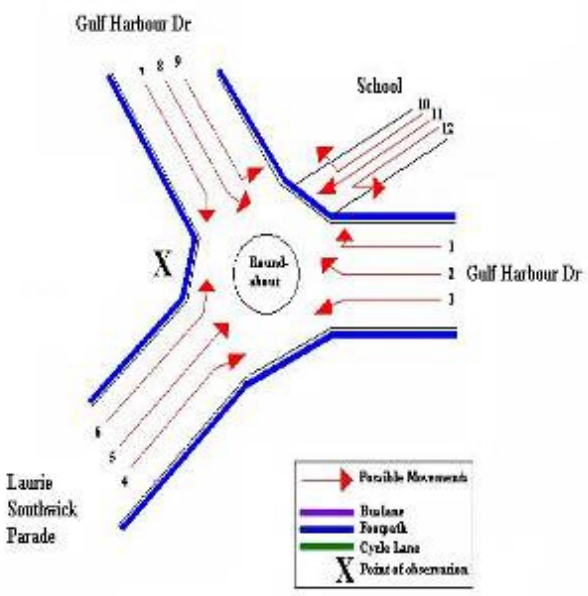
Figure 5.3: Rata Road/Rimu Road/Centre Cycleway Cyclist Frequency – Evening Peak



6. GULF HARBOUR DRIVE/LAURIE SOUTHWICK PARADE, WHANGAPARAOA (SITE 63)

Figure 6.1 shows the possible cyclist movements at this intersection.

Figure 6.1: Cycle Movements: Gulf Harbour Drive/Laurie Southwick Parade



AADT Estimate

- The AADT for this site is 31 cycle movements per day. This compares with:
  - 63 movements in 2008
  - 80 movements in 2007.

6.1 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 number of morning cycle movements at the Gulf Harbour Drive/Laurie Southwick Parade intersection declines from 14 movements in 2008 to 5 movements this year.
- The key morning movement is turning right out of Gulf Harbour Drive on to Laurie Southwick Parade (Movement 7 = 2 cyclists).
- Morning cyclist volumes at all movements at this site remain relatively stable since last year, with the most notable decline at Movement 8 (down 4 cyclists).

Table 6.1: Morning Cyclist Movements
Gulf Harbour Drive/Laurie Southwick Parade 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	2	1	1	0
2	0	1	0	-1
3	2	0	0	0
4	1	2	1	-1
5	1	0	0	0
6	1	2	1	-1
7	4	4	2	-2
8	6	4	0	-4
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
Total	**17**	**14**	**5**	**-9**

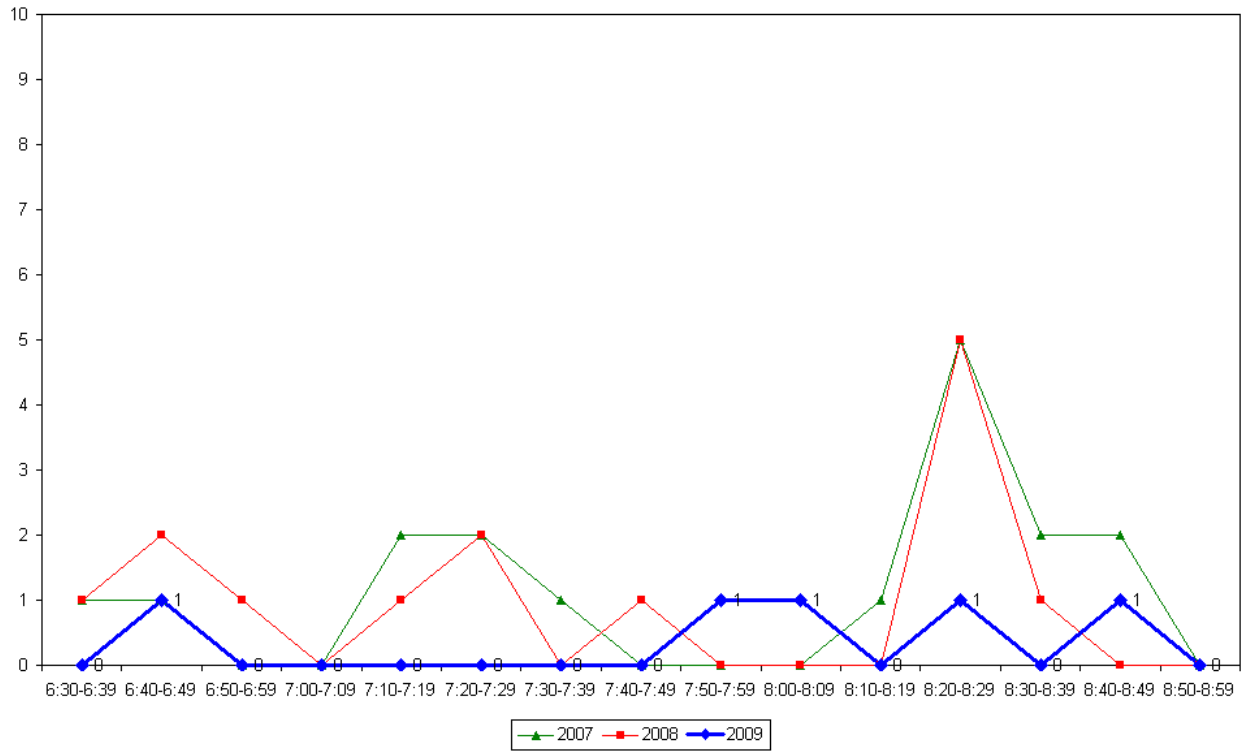
- Over the morning peak, school children comprise over half of cycle movements (60 per cent, up slightly from 57 per cent last year).
- Most cyclists are wearing a helmet (80 per cent, up notably from 50 per cent in 2008).
- All cyclists are riding on the footpath (up notably from 50 per cent at the previous measure).

Table 6.2: Morning Cyclist Characteristics
Gulf Harbour Drive/Laurie Southwick Parade 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	53	43	40	-3
School child	47	57	60	3
Helmet Wearing				
Helmet on head	88	50	80	30
No helmet	12	50	20	-30
Where Riding				
Road	41	50	0	-50
Footpath	59	50	100	50
Base:	***17***	***14***	***5***	

- The volume of cycle movements is low across the monitoring period, with no more than one cyclist recorded over any ten minute interval. This compares with a notable peak of 5 cyclists recorded between 8:20am and 8:29am in 2008.

Figure 6.2: Gulf Harbour Drive/Laurie Southwick Parade Cyclist Frequency – Morning Peak



6.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from some misty rain between 4:30pm and 4:45pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Of the five sites monitored in Rodney district, cyclist volumes at the Gulf Harbour Drive/Laurie Southwick Parade intersection are the second highest in the evening peak (17 movements, down notably from 30 movements in 2008).
- The most common movement in the evening is the right turn from Gulf Harbour Drive into Laurie Southwick Parade (Movement 7 = 6 cyclists).
- Evening cyclist volumes at all movements are unchanged or have declined since last year. The most notable decline is at Movement 3 (down 6 cyclists).

Table 6.3: Evening Cyclist Movements

Gulf Harbour Drive/Laurie Southwick Parade 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	0	0	0
2	4	4	2	-2
3	8	7	1	-6
4	6	7	3	-4
5	0	0	0	0
6	8	3	3	0
7	6	2	6	4
8	6	6	2	-4
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	1	1	0	-1
Total	**39**	**30**	**17**	**-13**

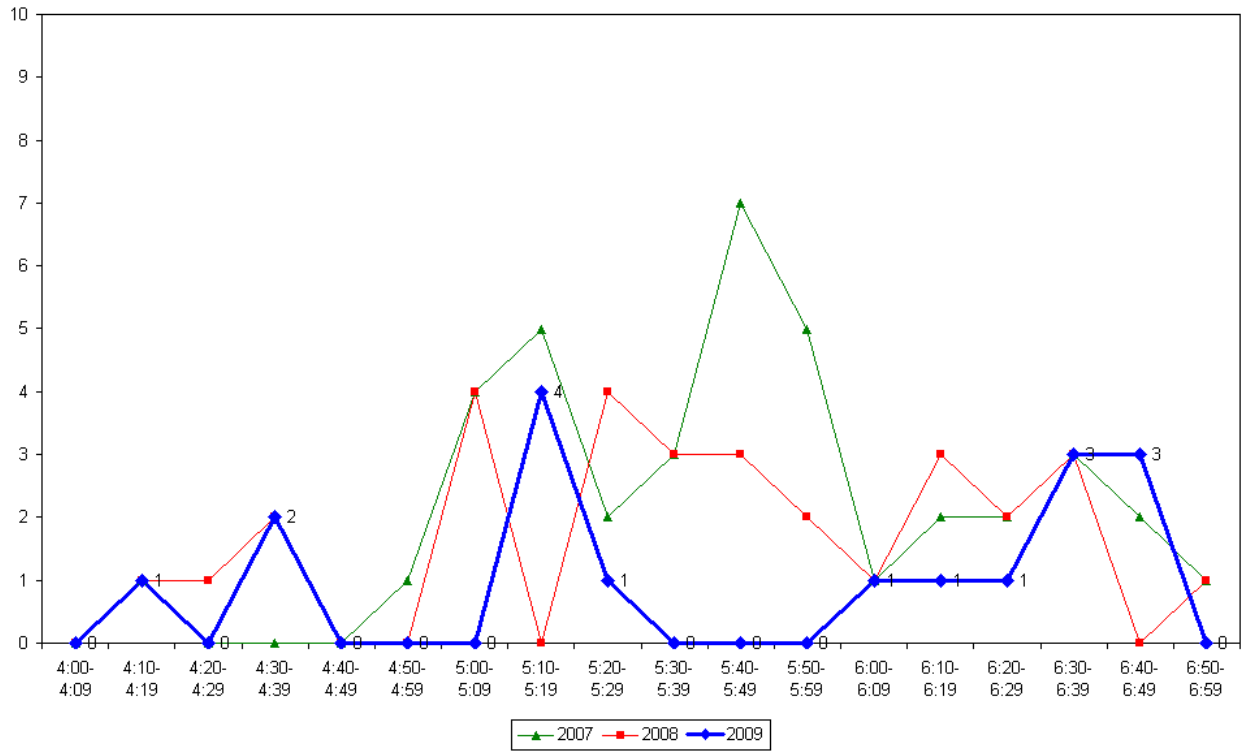
- The greatest share of cyclists using this intersection are adults (65 per cent, down from 77 per cent last year).
- More than half of all cyclists at this site are not wearing a helmet (53 per cent, up notably from 27 per cent last year).
- Fifty-three per cent of cyclists are riding on the road, down notably from 80 per cent in 2008.

Table 6.4: Evening Cyclist Characteristics
Gulf Harbour Drive/Laurie Southwick Parade 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	72	77	65	-12
School child	28	23	35	12
Helmet Wearing				
Helmet on head	77	73	47	-26
No helmet	23	27	53	26
Where Riding				
Road	54	80	53	-27
Footpath	46	20	47	27
Base:	***39***	***30***	***17***	

- In 2009, the volume of evening cycle movements peaks between 5:10pm and 5:19pm (4 movements) – ten minutes before and ten minutes after the peaks that occurred last year.

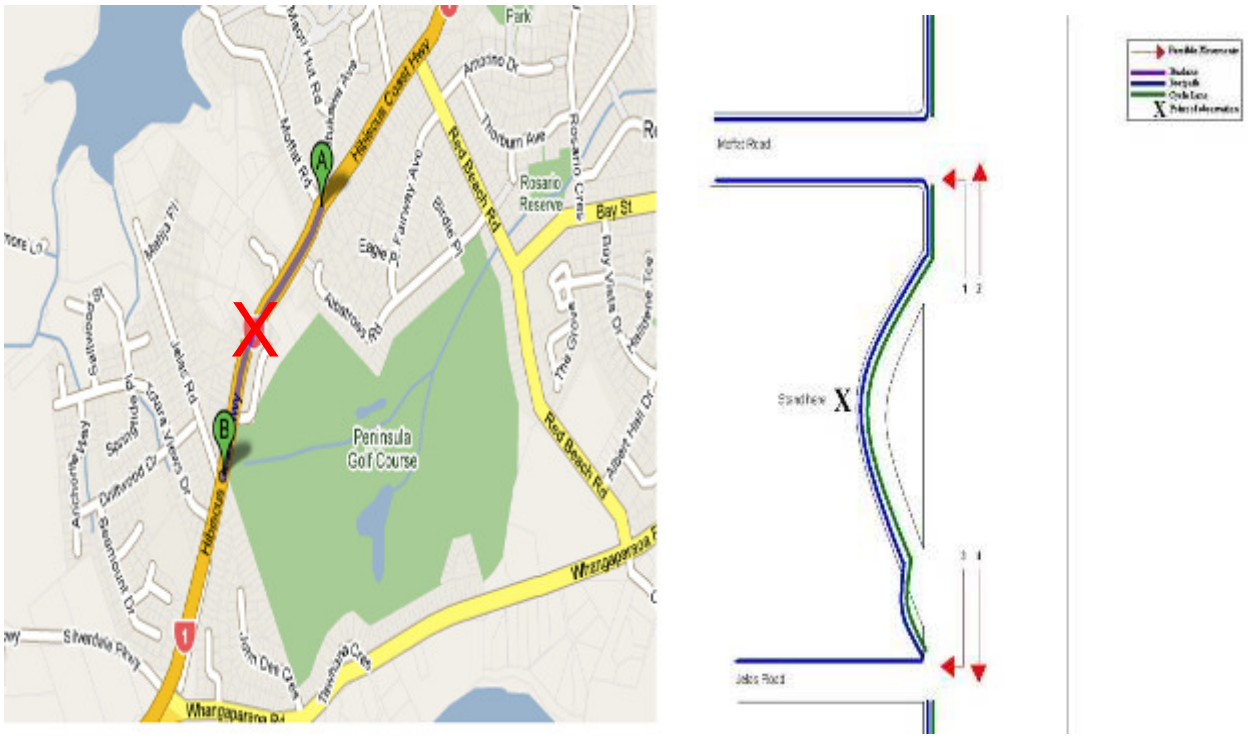
Figure 6.3: Gulf Harbour Drive/Laurie Southwick Parade Cyclist Frequency – Evening Peak



7. JELAS/MOFFATT ROAD (SITE 82)

Figure 7.1 shows the possible cyclist movements at this site.

Figure 7.1: Cycle Movements: Jelas/Moffatt 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 55 cycle movements per day.

7.1 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift, apart from a shower between 6.30am and 6.40am.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Consistent with the other sites in Rodney district, the volume of morning cyclists recorded at the Jelas/Moffatt Road was relatively light (15 movements).
- The most common movement in the morning is the left turn into Moffatt Road from Hibiscus Coast Highway (Movement 1 = 8 cyclists).
- As this site was monitored for the first time in 2009, no comparative results over time are available.

Table 7.1: Morning Cyclist Movements

Jelas/Moffatt Road 2009 (n)

Movement	2009
1	8
2	4
3	1
4	2
Total	**15**

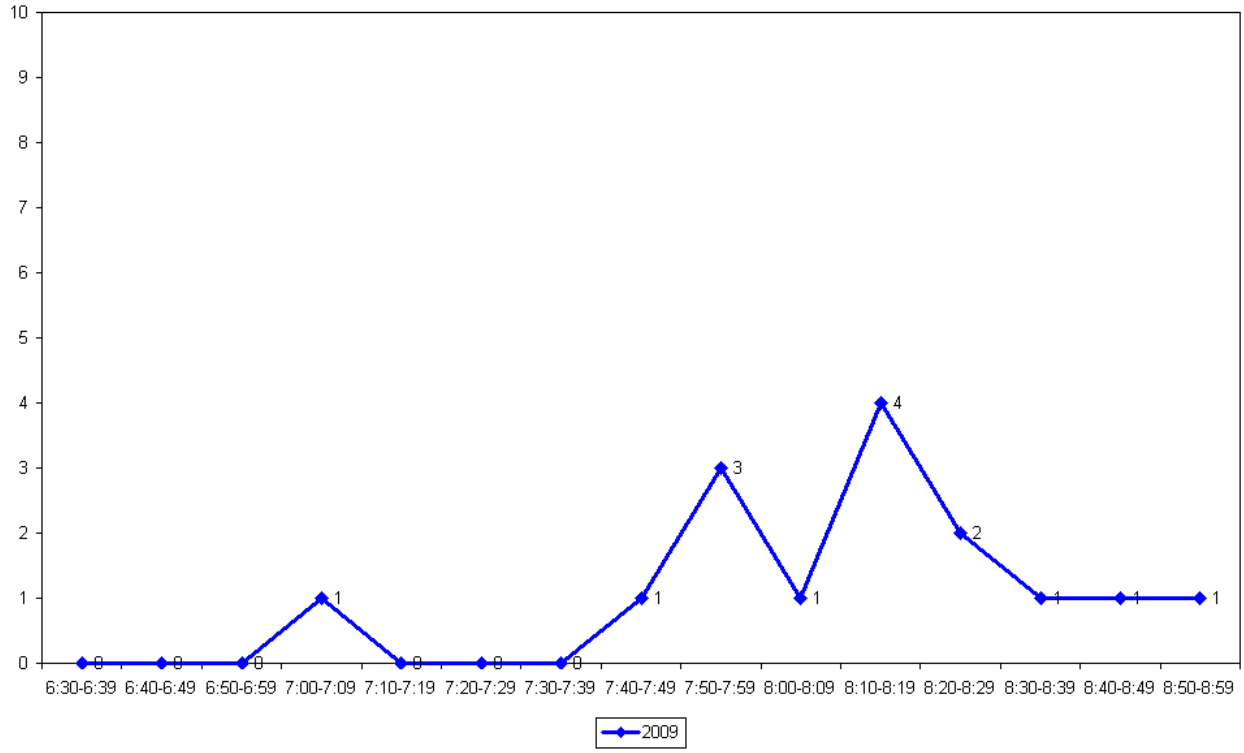
- Just over seven in ten cyclists at this site during the morning shift are children (73 per cent).
- Most cyclists are wearing a helmet (93 per cent).
- Two-thirds of cyclists are riding on the road (67 per cent), while the remaining one-third are riding on the off-road cycleway (33 per cent).

Table 7.2: Morning Cyclist Characteristics
Jelas/Moffatt Road 2009 (%)

	2009
Cyclist Type	
Adult	27
School child	73
Helmet Wearing	
Helmet on head	93
No helmet	7
Where Riding	
Road	67
Footpath	0
Off-road cycleway	33
Base:	***15***

- The volume of morning cycle movements is low across the monitoring period, with a slight peak of 4 cycle movements between 8:10pm and 8:19pm.

Figure 7.2: Jelas/Moffatt Road Cyclist Frequency – Morning Peak



7.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with intermittent drizzle, particularly between 5:26pm and 5:40pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Of the eight sites monitored in Rodney District, Jelas/Moffatt Road has the highest level of evening cyclist traffic, with 23 movements. *Note however, that a child was observed riding through this site multiple times between 4.06pm and 5.20pm.*
- Consistent with the morning shift, the key movement in the evening is the left turn into Moffatt Road from Hibiscus Coast Highway (Movement 1 = 12 cyclists).
- As this site was monitored for the first time in 2009, no comparative results over time are available.

Table 7.3: Evening Cyclist Movements
Jelas/Moffatt Road 2009 (n)

Movement	2009
1	12
2	2
3	8
4	1
Total	**23**

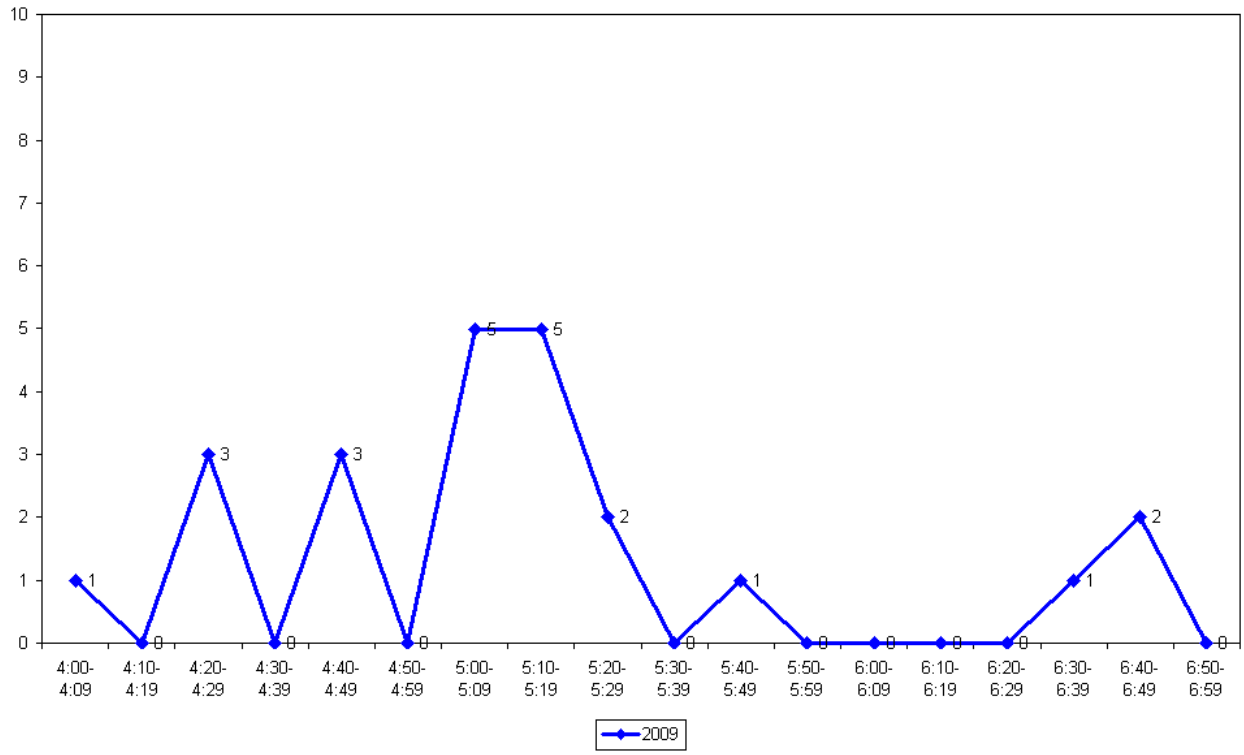
- The majority of cyclists using Jelas/Moffatt Road are school children (83 per cent).
- Approximately three-quarters of cyclists at this site in the evening are wearing helmets (74 per cent).
- Most cyclists are riding on the off-road cycleway (78 per cent), with the remaining 22 per cent riding on the road.

Table 7.4: Evening Cyclist Characteristics
Jelas/Moffatt Road 2009 (%)

	2009
Cyclist Type	
Adult	17
School child	83
Helmet Wearing	
Helmet on head	74
No helmet	26
Where Riding	
Road	22
Footpath	0
Off-road cycleway	78
Base:	***23***

- Cycle movements are low throughout the evening monitoring period. A slight peak occurs between 5:00pm and 5:19pm, with 5 cyclists recorded during each ten minute interval.

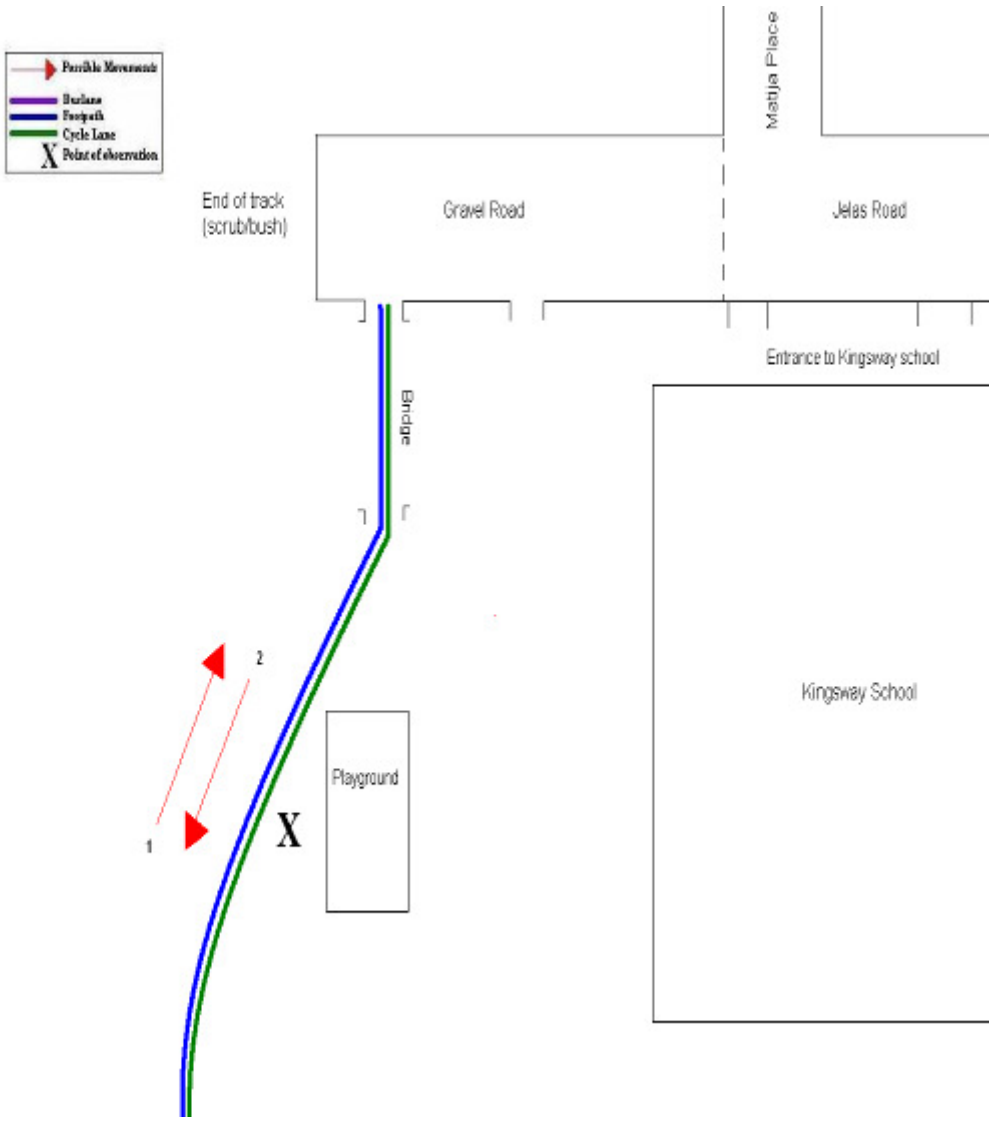
Figure 7.3: Jelas/Moffatt Road Cyclist Frequency – Evening Peak



8. JELAS ROAD/CROI BRIDGE, RED BEACH (SITE 83)

Figure 8.1 shows the possible cyclist movements at this site.

Figure 8.1: Cycle Movements: Jelas Road/Croi Bridge



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 3 cycle movements per day.

8.1 Morning Peak

Environmental Conditions

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

Key Points

- The volume of morning cyclists recorded at the Jelas Road/Croi Bridge site was extremely light and the lowest of all the Rodney district sites, with only one movement recorded.
- The movement made was heading west away from Jelas Road (Movement 2).
- As this site was monitored for the first time in 2009, no comparative results over time are available.

Table 8.1: Morning Cyclist Movements
Jelas Road/Croi Bridge 2009 (n)

Movement	2009
1	0
2	1
Total	**1**

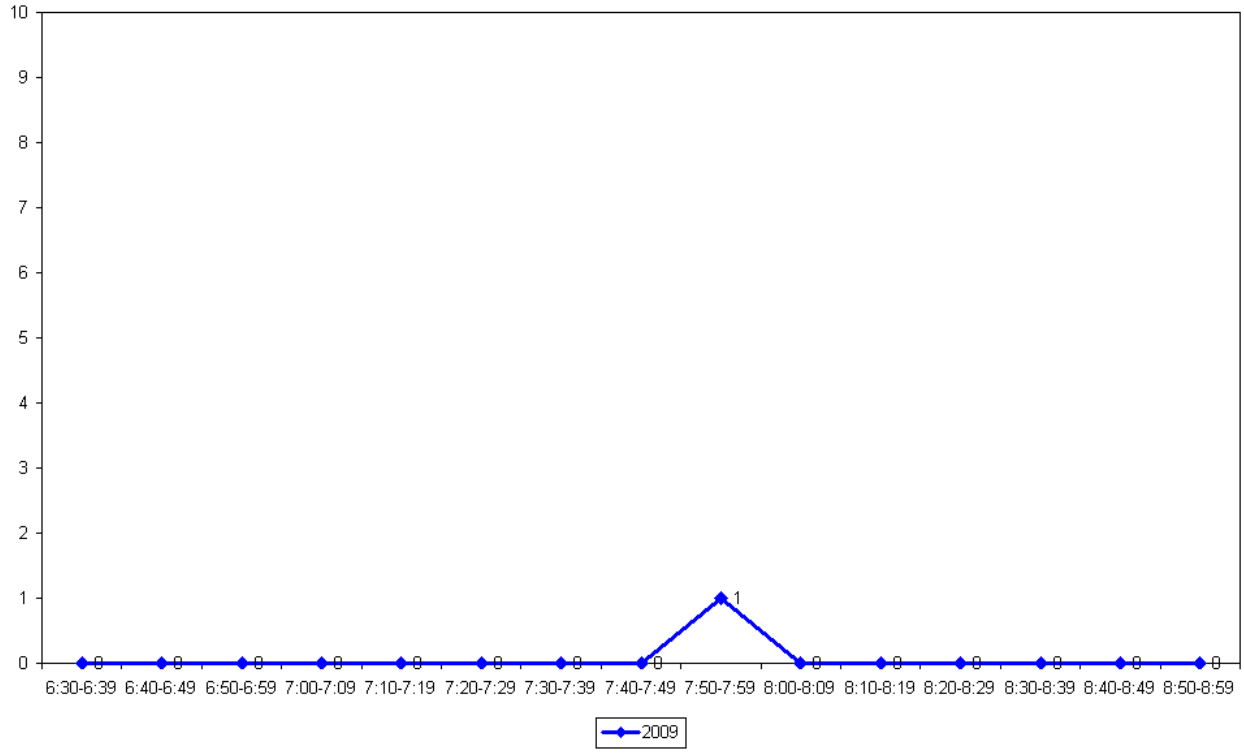
- The morning cyclist at this site was a school child.
- The cyclist was wearing a helmet.

Table 8.2: Morning Cyclist Characteristics
Jelas Road/Croi Bridge 2009 (%)

	2009
Cyclist Type	
Adult	0
School child	100
Helmet Wearing	
Helmet on head	100
No helmet	0
Where Riding	
Footpath	0
Off-road cycleway	100
Base:	***1***

- The volume of morning cyclists at this site is extremely low, with only one cyclist reported during the morning peak between 7:50am and 7:59am.

Figure 8.2: Jelas Road/Croi Bridge Cyclist Frequency – Morning Peak



8.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with light showers between 4:50pm and 4:52pm, and again between 5:31pm and 5:33pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Of the eight sites monitored in Rodney district, consistent with the morning shift, Jelas Road/Croi Bridge has the lowest level of evening cyclist traffic, with 1 movement recorded.
- The movement made in the evening was heading west away from Jelas Road (Movement 2).
- As this site was monitored for the first time in 2009, no comparative results over time are available.

Table 8.3: Evening Cyclist Movements
Jelas Road/Croi Bridge 2009 (n)

Movement	2009
1	0
2	1
Total	**1**

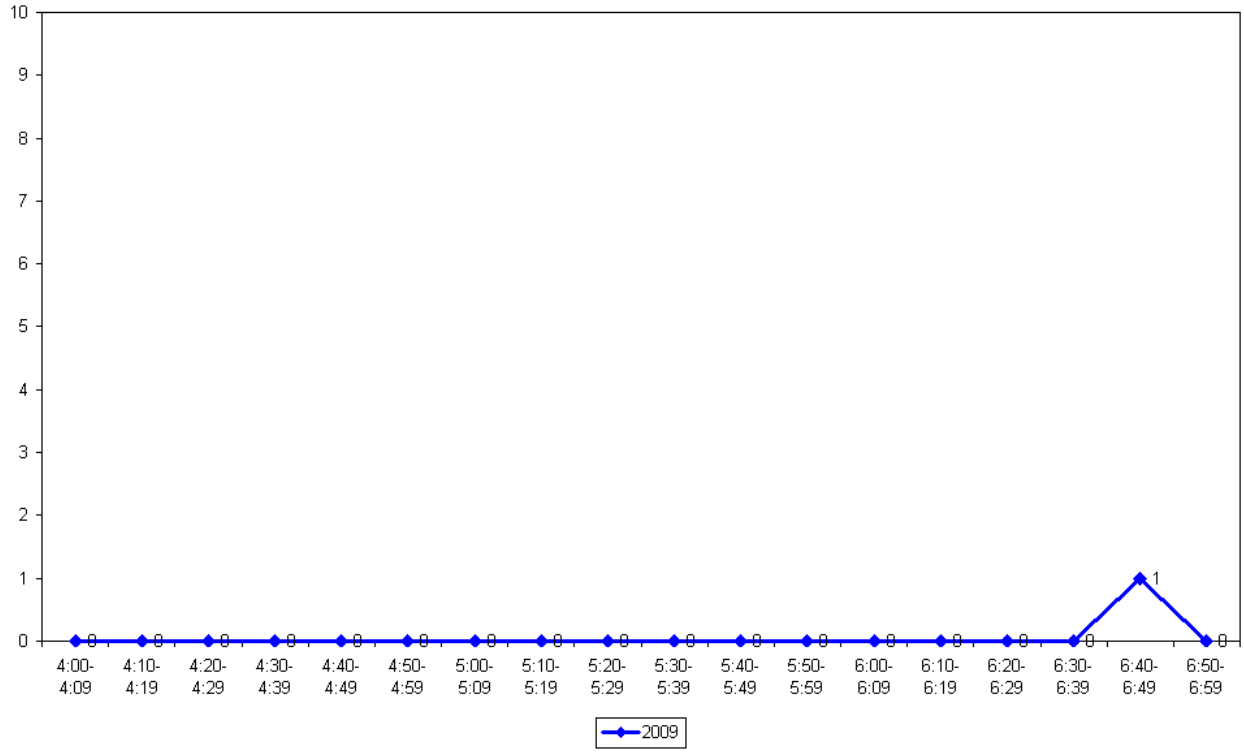
- The cyclist observed during the evening peak was an adult.
- The cyclist was wearing a helmet.

Table 8.4: Evening Cyclist Characteristics
Jelas Road/Croi Bridge 2009 (%)

	2009
Cyclist Type	
Adult	100
School child	0
Helmet Wearing	
Helmet on head	100
No helmet	0
Where Riding	
Footpath	0
Off-road cycleway	100
Base:	***1***

- The volume of evening cyclists at this site is extremely low, with only one cyclist reported during the evening peak between 6:40pm and 6:49pm.

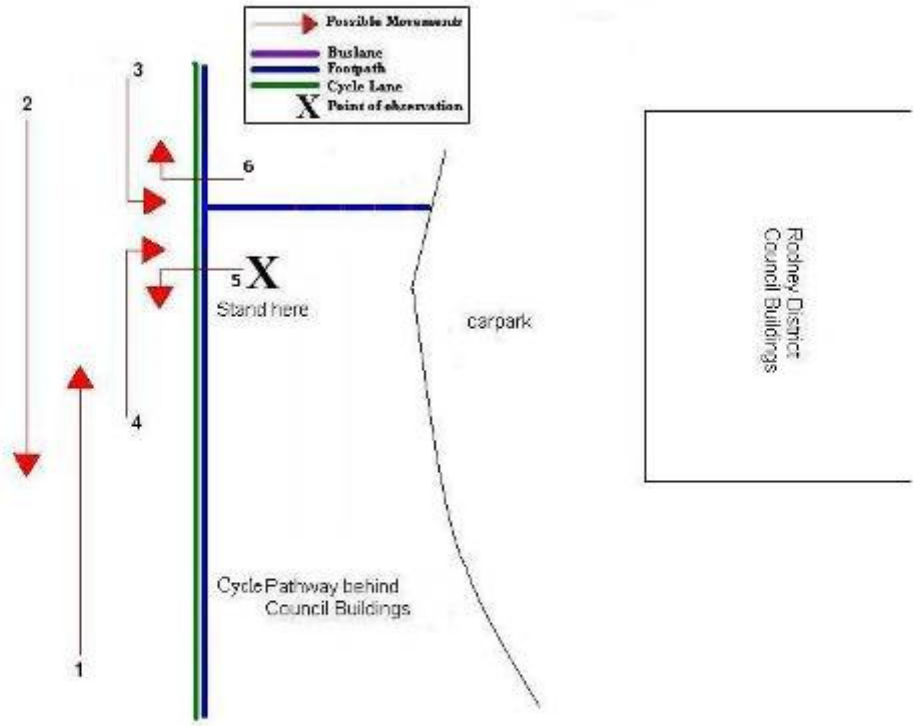
Figure 8.3: Jelas Road/Croi Bridge Cyclist Frequency – Evening Peak



9. BEHIND RODNEY DISTRICT COUNCIL BUILDING, OREWA (SITE 84)

Figure 9.1 shows the possible cyclist movements at this site.

Figure 9.1: Cycle Movements: Behind Rodney District Council Building



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 130 cycle movements per day.

9.1 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

- Of the Rodney District sites, the volume of morning cycle movements is greatest at this site, with 75 movements recorded.
- Almost all movements in the morning are heading south along the cycleway (Movement 1 = 73 cyclists).
- As this site was monitored for the first time in 2009, no comparative results over time are available.

Table 9.1: Morning Cyclist Movements
Behind Rodney District Council Building 2009 (n)

Movement	2009
1	73
2	1
3	0
4	1
5	0
6	0
Total	**75**

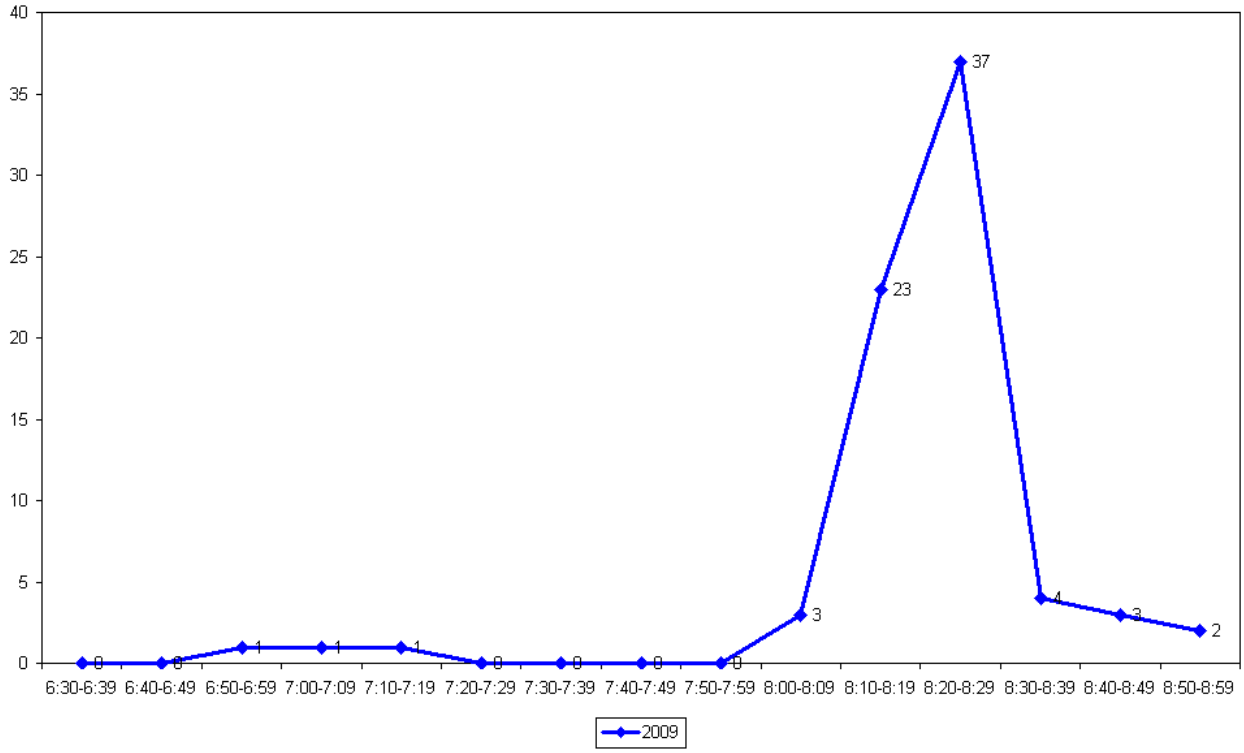
- Most cyclists at this site are children (92 per cent).
- The majority of cyclists are wearing a helmet (84 per cent).

Table 9.2: Morning Cyclist Characteristics
Behind Rodney District Council Building 2009 (%)

	2009
Cyclist Type	
Adult	8
School child	92
Helmet Wearing	
Helmet on head	84
No helmet	16
Where Riding	
Off-road cycleway	100
Base:	***75***

- The volume of morning cycle movements is very low until 8:00 am, with no cyclists recorded during almost all ten minute intervals. A sharp peak occurs between 8:10am and 8:29am with 23 and 37 movements recorded between each ten minute interval respectively.

Figure 9.2: Behind Rodney District Council Building Cyclist Frequency – Morning Peak



9.2 Evening Peak

Environmental Conditions

- The weather was variable throughout the evening shift, with patches of intermittent drizzle and light showers around 5:30pm and 6:50pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Eleven cycle movements were recorded during the evening peak at this site, notably lower than during the morning shift.
- The key movements are heading south (Movement 1 = 5 cyclists) and north (Movement 2 = 4 cyclists) along the cycleway.

Table 9.3: Evening Cyclist Movements
Behind Rodney District Council Building 2009 (n)

Movement	2009
1	5
2	4
3	0
4	1
5	1
6	0
Total	**11**

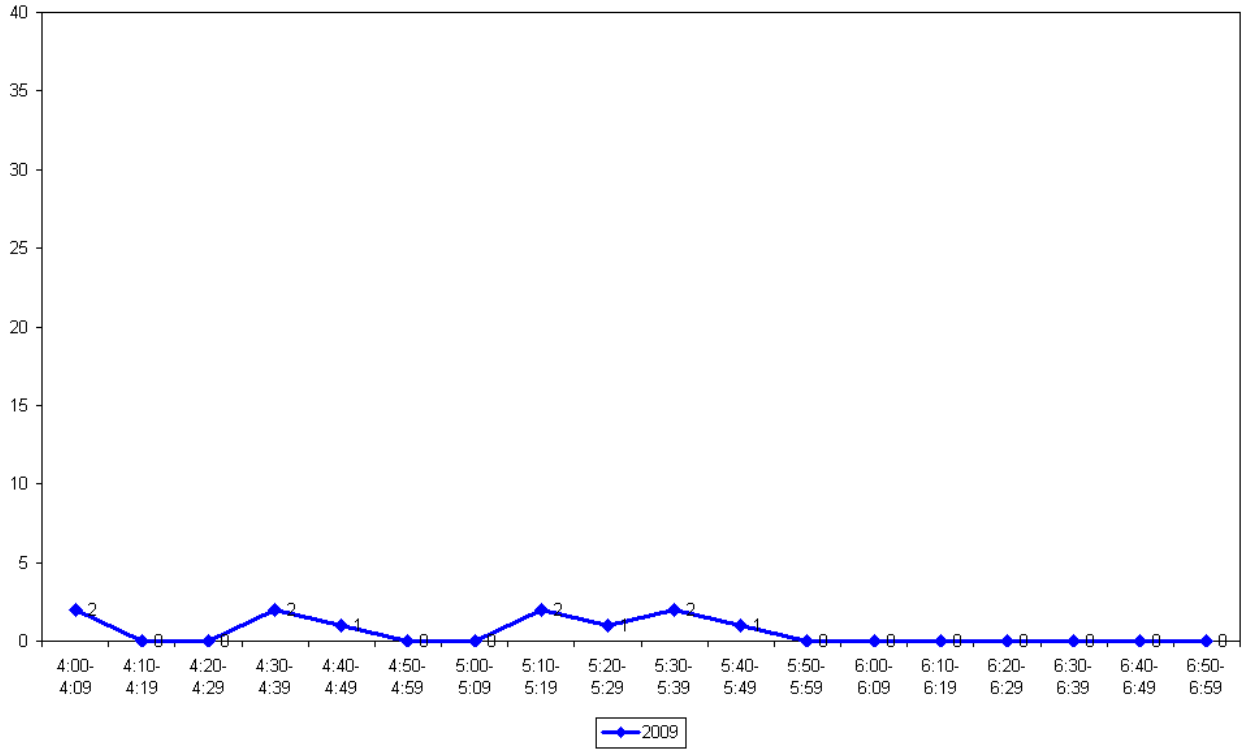
- Most cyclists at this site in the evening are adults (91 per cent).
- The majority are wearing a helmet (82 per cent).

Table 9.4: Evening Cyclist Characteristics
Behind Rodney District Council Building 2009 (%)

	2009
Cyclist Type	
Adult	91
School child	9
Helmet Wearing	
Helmet on head	82
No helmet	18
Where Riding	
Off-road cycleway	100
Base:	***11***

- Cyclist volumes were extremely low over the entire monitoring period, with no more than two cyclists recorded over any ten minute interval.

Figure 9.3: Behind Rodney District Council Building Cyclist Frequency – Evening Peak



10. SCHOOL BIKE SHED COUNT - RODNEY DISTRICT

Background Information

- A total of nine schools were contacted in Rodney District. Of the six schools that responded to the survey (67 per cent), most schools surveyed have no policies that restrict students cycling to school.
- Kingsway School report only allowing students in Year Five and above to cycle to school.
- No school surveyed reported events or issues that may affect the cycle counts.
- The designated count day was Tuesday 10th of March[15].

Key Points

- Among the surveyed composite, secondary and intermediate/secondary schools, of those eligible to cycle at school, on average, three per cent of students are cycling to their schools. This compares with 2 per cent in 2008.
- Among the six responding schools, n=131 students were identified as cycling to school.
- This year, Living Way Learning Centre reported the highest share of cyclists – 9 per cent of all eligible students currently cycling. This compares with 2008, where Orewa College reported the highest share, at 5 per cent.
- Of the six schools that responded, one (17 per cent) had no students cycling to school. This compares with 2008 where two (25 per cent) had no students cycling to school.

[15] The following schools conducted their counts on alternative days:
- Orewa College – Wednesday, 11th March
- Kingsway School – Thursday, 26th March

Table 10.1 shows the results of the 6 schools surveyed in Rodney District.

Table 10.1: 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[16] (2009)*	*Cyclists as share of those eligible (2008)*	*Cyclists as share of those eligible (2007)*
Living Way Learning Centre	Composite	34	3	**9%**	3%	24%
Orewa College	Intermediate/Secondary	1700	92	**5%**	5%	6%
Wentworth College	Intermediate/Secondary	218	8	**4%**	<1%	3%
Kingsway School	Composite	800	7	**1%**	1%	<1%
Whangaparaoa College	Intermediate/Secondary	1435	21	**1%**	2%	4%
Rodney College	Secondary	342	0	**0%**	0%	2%
Total		**4529**	**131**	**3%**	**2%**	**3%**

[16] 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 10.1a: Summary Table Of Non-Participating Schools 2007-2009 (n)

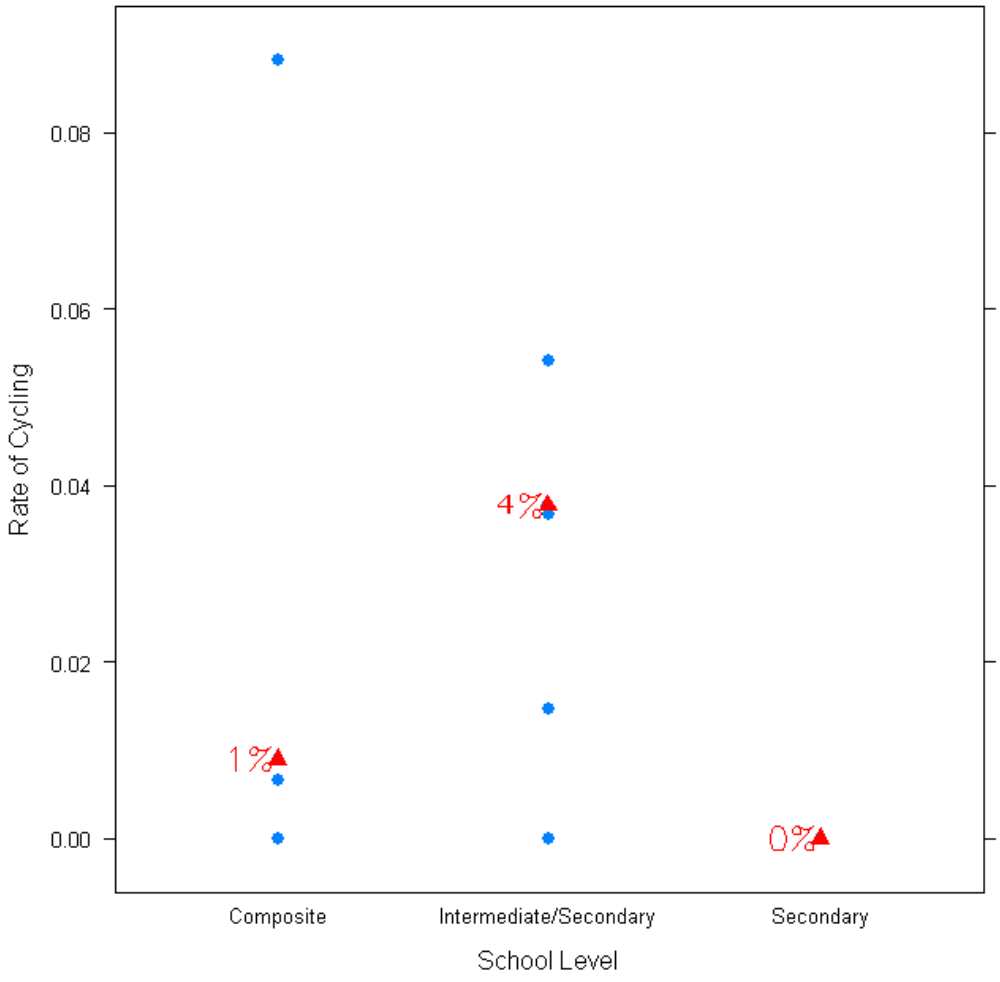
School Name	*Year Levels*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible (2009)*	*Cyclists as share of those eligible (2008)*	*Cyclists as share of those eligible (2007)*
Mahurangi College	Intermediate/Secondary	1140	-	-	1%	1%
Kaipara College	Secondary	663	-	-	0%	<1%
Tau Te Arohanoa Akoranga	Composite	48	-	-	-	-

- Table 10.2 and Figure 10.1 illustrate the rates of cycling to school at different school levels. Rates of cycling to school are highest among combined intermediate/secondary schools (4 per cent, up from 3 per cent last year) and lowest for secondary schools (0 per cent, unchanged from 2008).

Table 10.2: Summary Table Of School Bike Count by Year Levels 2007-2009 (%)

Year Levels	*Number of Schools Responded in 2009 (n)*	*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/Secondary	3	4	3	**4**	1
Composite	2	1	1	**1**	0
Secondary	1	1	0	**0**	0
Total	**6**	**3**	**2**	**3**	**1**

Figure 10.1: Cycling Rates by School Level 2009 (%)



APPENDICES

Appendix One: Annual Average Daily Traffic (AADT) Calculation

Appendix Two: Comparative 2009 AADT Estimates Using Dry and Wet Weather Factors

Appendix Three: 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[17] 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)[18], 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.

[17] Annual average daily traffic

[18] 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: COMPARATIVE 2009 AADT ESTIMATES USING DRY AND WET WEATHER FACTORS

Table 1: Dry Weather Factor 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
84	Behind Rodney District Council Building	-	-	**130**	*	*
82	Jelas/Moffatt Road	-	-	**55**	*	*
59	Whangaparaoa Road near Red Beach intersection	42	45	**38**	**-16%**	-10%
63	Gulf Harbour Drive/Laurie Southwick Parade	80	63	**31**	**-51%**	-61%
60	Whangaparaoa Road near SH1 intersection	40	29	**17**	**-41%**	-58%
62	Rata Road/Rimu Road/Centre cycleway	46	21	**16**	**-24%**	-65%
61	D'Oyly Reserve cycleway	35	145	**13**	**-91%**	-63%
83	Jelas Road/Croi Bridge	-	-	**3**	*	*

Table 2: Wet Weather Factor AADT Estimates Based on Morning and Evening Cyclist Movements in 2009 (n)

Site Number	*Locations*	*2007 AADT*	*2008 AADT*	*2009 AADT*	Change 08-09	Change 07-09
84	Behind Rodney District Council Building	-	-	**203**	*	*
82	Jelas/Moffatt Road	-	-	**85**	*	*
59	Whangaparaoa Road near Red Beach intersection	42	45	**60**	**33%**	43%
63	Gulf Harbour Drive/Laurie Southwick Parade	80	63	**49**	**-22%**	-39%
60	Whangaparaoa Road near SH1 intersection	40	29	**27**	**-7%**	-33%
62	Rata Road/Rimu Road/Centre cycleway	46	21	**25**	**19%**	-46%
61	D'Oyly Reserve cycleway	35	145	**21**	**-86%**	-40%
83	Jelas Road/Croi Bridge	-	-	**5**	*	*

APPENDIX THREE: 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