



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

MANUAL CYCLE MONITORING IN THE AUCKLAND REGION

March 2010

Rodney District

Prepared by Gravitas Research and Strategy Limited

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1. RODNEY DISTRICT SUMMARY OF RESULTS

1.1 Introduction

The Need For Reliable Cycle Trip Data

Monitoring cycle movements 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 Programme¹.

Cycle traffic data will help inform a major programme of improvements for cycling in the Auckland region. In 2007, over \$100 million was planned to be invested in building over 50% of the Regional Cycle Network by 2016. By mid 2009, 21% of the Regional Cycle Network had been built. Comprehensive cycle data assists with the development of the region's cycle network and prioritisation of projects.

This cycle monitoring gives precise cycle traffic information for a number of locations across the region, which can guide investment in infrastructure and other programmes. It also allows 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 methodology². 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, 2008 and/or 2009, 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's differs for both peaks.

1.2 Methodology

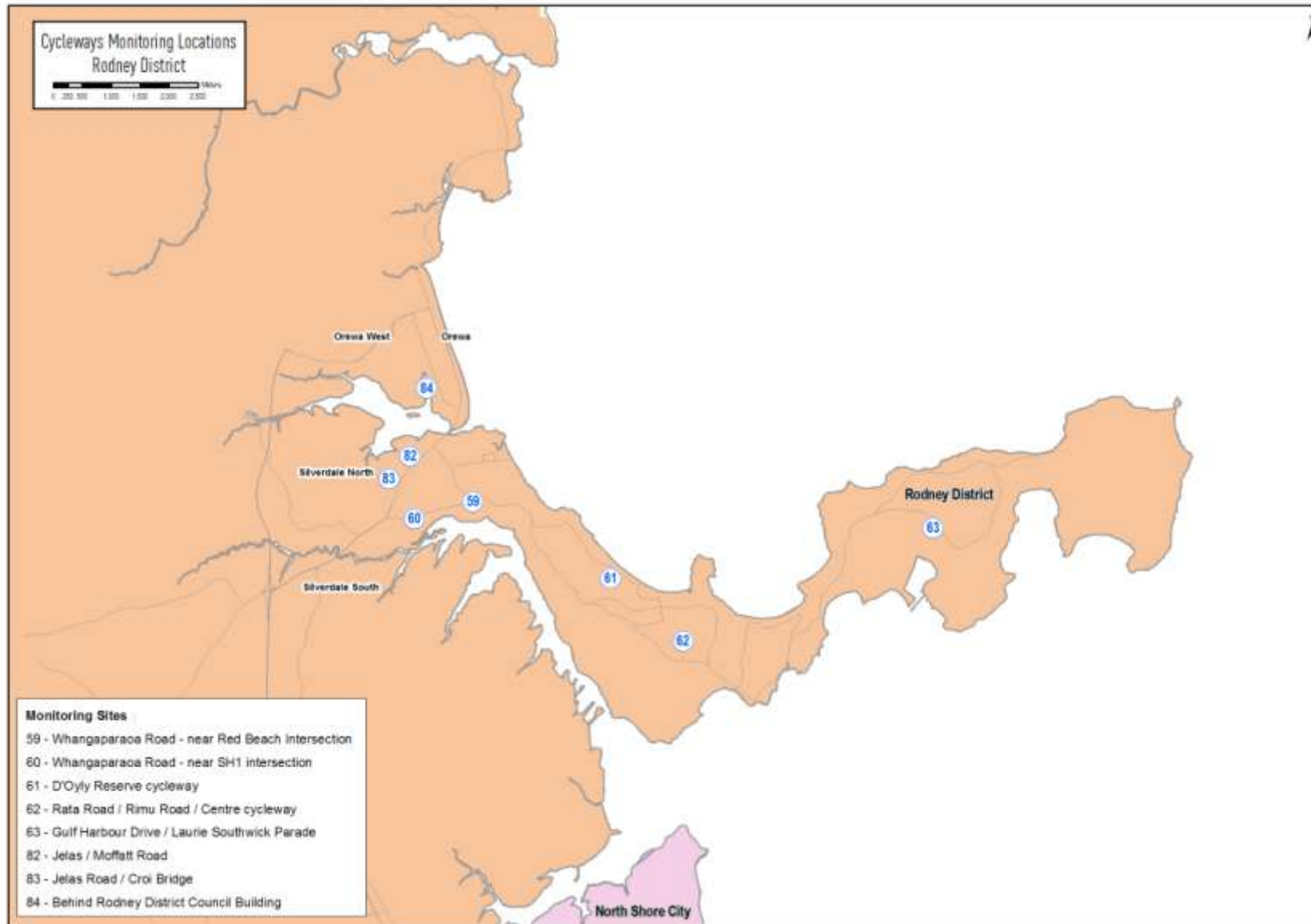
Manual cycle counts have been conducted using a standardised methodology across all sites. This methodology is outlined below. *Note: To ensure the longitudinal comparability of its cycle data, Gravitas have conducted the regional monitoring using a similar approach to that used to collect manual count 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 84 different sites throughout the region. Sites were distributed throughout the region as follows:

- Auckland City n=28 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, one site added in 2010)
- Waitakere City n=15 sites (11 sites monitored since 2007; 2 sites added in 2008; 1 site added in 2009; one site relocated and one site added in 2010)
- 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)
- North Shore City n=13 sites
- 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=2 sites (3 sites monitored since 2007; 1 site dropped in 2010)



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 9th of March and be conducted on the first three fine days of the 9th, 10th, 11th, 16th, 17th, or 18th of March.

Counting at sites in **North Shore and Waitakere** cities was completed on **Tuesday the 9th of March**. Counting at sites in **Auckland city** was completed on **Wednesday the 10th of March**. Counts in **Manukau, Rodney, Papakura and Franklin** were completed on **Thursday the 11th 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 2010 was as follows:

Tuesday 9th March

(Waitakere and North Shore city sites monitored)

- Sunrise: 7:13am; Sunset: 7:49pm.
- Average temperature: 19 degrees Celsius.
- Fine weather for all sites in the morning period.
- Weather fine throughout the evening shift.

Wednesday 10th March

(Auckland city sites monitored)

- Sunrise: 7:14am; Sunset: 7:48pm.
- Average temperature: 14 degrees Celsius.
- Fine weather at most sites in the morning period.

Thursday 11th March

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

- Sunrise: 7:15am; Sunset: 7:46pm.
- Average temperature: 20 degrees Celsius.
- Rodney district has fine weather throughout the morning shift. Most sites had overcast weather in the morning period apart from light drizzle at two Manukau city sites, one Franklin and one Papakura site.
- Weather in the evening period was overcast, with intermittent drizzle throughout the period.

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 or more surveyors to accurately capture all cycle movements (due predominantly to the complexity of the roading/cycleway network at the site or poor visibility at the intersection). Two surveyors were used at:

- Great South Road/Campbell Road/Main Highway, Greenlane (Site 21; Auckland city);
- Beach Road/Browns Bay Road, Mairangi Bay (Site 45; North Shore city).

Three surveyors were used at the ferry terminal site (Site 22; Auckland 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 team³.

For consistency with the Auckland city cycle data collected since 2001, during their shift the surveyor collected data on:

- The total number of cyclists⁴ 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 cycleway⁵.

Since 2009, surveyors have been 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, where cyclists were recognisable, surveyors were instructed to record each cyclist no more than three times during a single shift, irrespective of how many movements they actually made through the site. Surveyors noted where and when this occurred.

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

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 designated off-road path for cycles. This includes exclusive cycle paths, separated paths (such as the footpath on Tamaki Drive) and shared-use paths (available to cyclists and pedestrians). It excludes on-road cycle lanes (that is, designated lanes marked on the road).

movements at the site – for example, construction or maintenance works being conducted on the cycle way or road works at the intersection.

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

Data Analysis

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

Annual Average Daily Traffic (AADT) Analysis

It is acknowledged that the number of cyclists using a site varies by time of day, day of the week and week of the year, and therefore it is not valid to simply multiply manual count data collected over a certain (relatively brief) period out to represent a full day, week or year. However, according to Land Transport New Zealand⁶, 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 ViaStrada⁷.

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 study⁸.

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 an information sheet that was distributed to most intermediate, secondary and composite (Years 1 to 13) schools in the Auckland region via email (note a small number of schools were omitted due to the special nature of the students eg special needs schools). This sheet was designed in consultation with the Regional Cycle Monitoring Working Group to ensure all necessary information was collected.
2. This email was then sent to all intermediate, secondary and composite schools in Auckland region (n=160) to notify them of the bike shed count and to let them know what they would be required to do. Included in this email was a link to an online count form.
3. To enhance the comparability of the school bike shed data with that of the regional cycle monitor, Tuesday 9th March was designated as the bike shed count day. (Most schools reported that they undertook the count on this day).
4. Once the school bike shed count had been completed, schools completed the online count form and submitted it electronically to Gravitas. Gravitas contacted all participating schools who had not returned their sheets after five working days, first by email (two rounds) and then by telephone. All count forms were checked for completeness before being data-

entered into Excel. One hundred and twenty-five response were received, a response rate of 78 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 11th March, 2010. Sunrise was at 7:15am and sunset was at 7:46pm. The average temperature was 20 degrees Celsius.

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

- “high/heavy” when 25 or more cycle movements are reported;
- “moderate” when between 16 and 24 cycle movements are reported;
- “low/light” when between 0 and 15 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.
- There were no road works or accidents that may affect cycle counts.

Key Points

- A total of 87 cyclist movements were recorded across the five original monitoring sites in the morning peak period (between 6:30am and 9:00am) in 2010. This represents a 135 per cent increase on the result for 2009 (37 movements). However, this increase is not statistically significant – that is, the increase falls within the margin of error at the 95% confidence interval.
- A total of 188 cycle movements were recorded across all eight sites monitored in 2010. This represents a 47 per cent increase on the result for 2009 (128).
- The busiest site in the morning peak is behind the Rodney District Council building (73 movements), while the quietest site is the Jelas Road/Croi Bridge site, with only four cycle movements across the entire morning monitoring period.
- Seven of the eight sites recorded increases this year compared to 2009. The most notable increases are at:
 - D'Oyly Reserve cycleway – up 520 per cent;
 - Jelas Road/Croi Bridge – up 300 per cent; and
 - Gulf Harbour Drive/Laurie Southwick Parade – up 180 per cent.
- In contrast, the only site that recorded a decline is behind the Rodney District Council Building, the number of movements having fallen from 75 in 2009 to 73 this year (a 3% decrease).
- The average volume of morning cyclist movements across the five original monitoring sites in Rodney District is 17 cycle movements. This compares with 17 movements in 2009.
- The average volume of morning cyclist movements across all eight sites monitored in 2010 is 63 movements.

**Table 1.1: Summary Of Morning Cyclist Movements
2007-2010 (n)**

Site Number	Locations	2007	2008	2009	2010	Change 09-10	Change 07-10
61	D'Oyly Reserve cycleway	14	19	5	31	520%	121%
59	Whangaparaoa Road near Red Beach intersection	13	15	15	21	40%	62%
63	Gulf Harbour Drive/Laurie Southwick Parade	17	14	5	14	180%	-18%
60	Whangaparaoa Road near SH1 intersection	11	9	6	13	117%	18%
62	Rata Road/Rimu Road/Centre cycleway	21	9	6	8	33%	-62%
	Average per site (5 sites since 2007)	15	13	7	17	143%	13%
	Total (5 sites since 2007)	76	66	37	87	135%	14%
84	Behind Rodney District Council Building	-	-	75	73	-3%	*
82	Jelas/Moffatt Road	-	-	15	24	60%	*
83	Jelas Road/Croi Bridge	-	-	1	4	300%	*
	Average per site (8 sites in 2010)	-	-	16	63	294%	*
	Total (8 sites in 2010)	-	-	128	188	47%	*

* Note that sites 82, 83 and 84 were new sites in 2009.

- Morning cyclist characteristics are shown in Table 1.2 below. Overall, 78 per cent of cyclists are school children (down from 86 per cent in 2009). Of the eight locations monitored, Whangaparoa Road near Red Beach intersection has the highest proportion of cyclists who are adults (48 per cent).
- The majority of cyclists are wearing a helmet (82 per cent, stable from 84 per cent last year). The Jelas Road/Croi Bridge site has the highest proportion of cyclists not wearing a helmet (50 per cent).
- On average, two in three cyclists are riding on off-road cycleways (65 per cent). Road riders comprise 18 per cent of all cycle movements, while 17 per cent are riding on the footpath. The Whangaparoa Road near Red Beach intersection has the highest proportion of cyclists riding on the footpath (67 per cent).

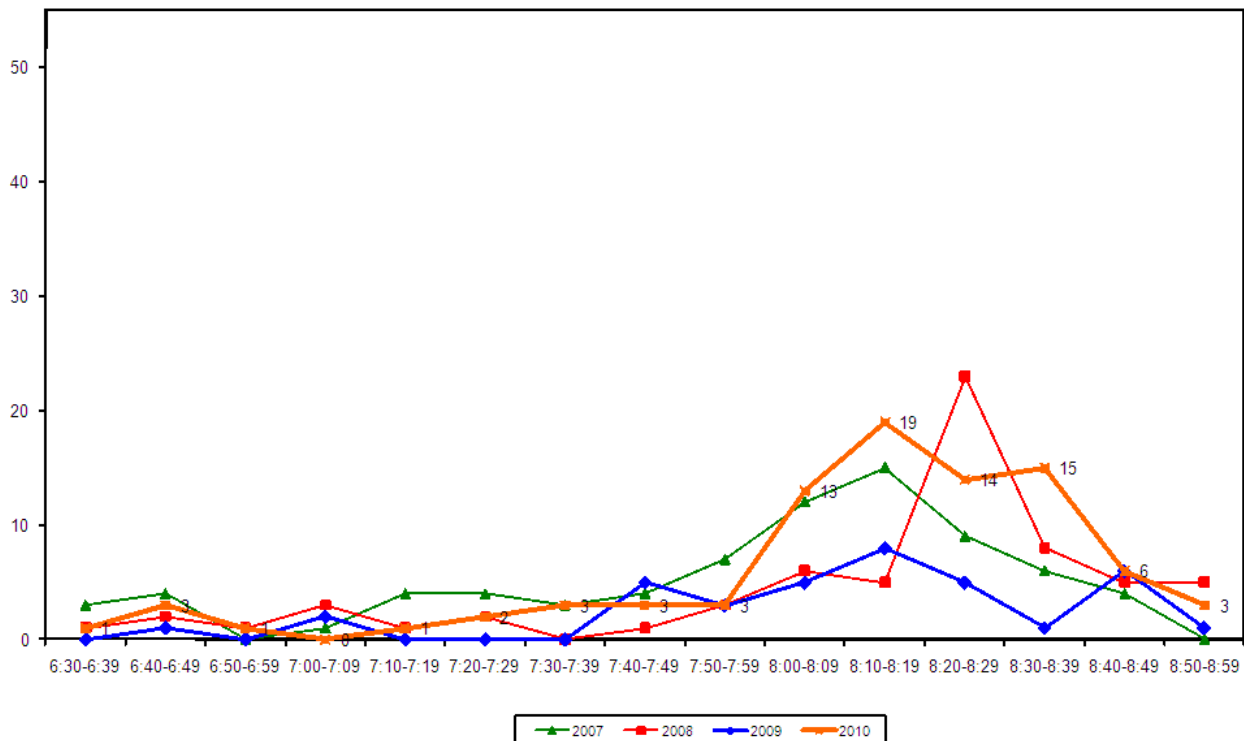
**Table 1.2: Summary of Morning Cyclist Characteristics
2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	41%	24%	14%	22%	8%
School child	59%	76%	86%	78%	-8%
Helmet Wearing					
Helmet on head	86%	77%	84%	82%	-2%
No helmet	14%	23%	16%	18%	2%
Where Riding					
Road	59%	62%	12%	18%	6%
Footpath	41%	38%	17%	17%	0%
Off-road cycleway ⁹	-	-	71%	65%	-6%
Base:	76	66	128	188	

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.

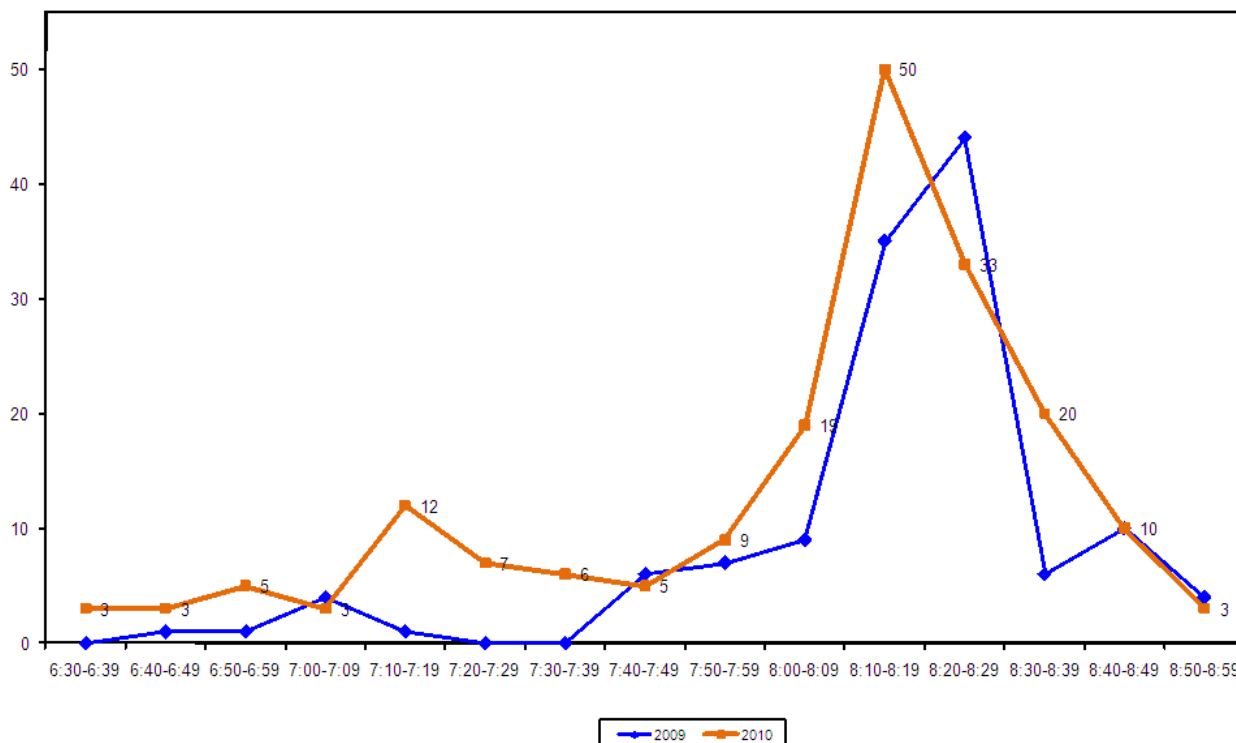
- Figure 1.1 illustrates the total number of cyclists in the morning peak by time of movement for the five sites monitored prior to 2009. The volume of morning cycle movements increases after 7:59am, and then reaches the a peak between 8:10am and 8:19am (19 movements) – the same time as the slight peak last year.

**Figure 1.1: Total Cyclist Frequency
– Morning Peak 2007-2010 (5 sites)**



- Figure 1.1a illustrates the total number of cyclists in the morning peak by time of movement for all eight sites monitored in 2009 and 2010. The volume of morning cycle movements peaks sharply between 8:10am and 8:19am (50 movements). This peak is at the same time as the sharp peak observed in 2009.

**Figure 1.1a: Total Cyclist Frequency
– Morning Peak 2009 - 2010 (8 sites)**



1.5 Evening Peak

Environmental Conditions

- All sites had overcast weather at the start of the monitoring period with drizzle and rain developing at all sites towards the end of the shift.
- There were no road works or accidents that may affect cycle counts.

Key Points

- A total of 55 cyclist movements were recorded across the five sites monitored prior to 2009 in the evening peak period (between 4:00pm and 7:00pm) in 2010. This represents a 28 per cent increase on the 2009 result (43 movements). However, this increase is not statistically significant – that is, the increase falls within the margin of error at the 95% confidence interval.
- A total of 95 cycle movements were recorded across all eight sites monitored this year (up from 78 movements in 2009).
- The Gulf Harbour Drive/Laurie Southwick Parade intersection is the busiest in terms of the evening cyclists' activity, with 23 cycle movements recorded. The lowest level of evening cyclist traffic is at the Rata Road/Rimu Road/Centre cycleway site, with only one cycle movement recorded over the evening monitoring period.
- Cycle movements across the five sites monitored prior to 2009 have increased this year. The most notable increase is at the D'Oyly Reserve cycleway, up 225 per cent.
- The average volume of evening cyclist movements across the five sites monitored prior to 2009 in Rodney district is 11. This compares with 9 movements in 2009.
- The average volume of cycle movements across all eight sites monitored this year is 12. This compares with 10 movements in 2009.

**Table 1.3: Summary Of Evening Cyclist Movements
2007-2010 (n)**

Site Number	Locations	2007	2008	2009	2010	Change 09-10	Change 07-10
63	Gulf Harbour Drive/Laurie Southwick Parade	39	30	17	23	35%	-41%
61	D'Oyly Reserve cycleway	10	84 [^]	4	13	225%	30%
60	Whangaparaoa Road near SH1 intersection	17	11	6	10	67%	-41%
59	Whangaparaoa Road near Red Beach intersection	16	16	11	8	-27%	-50%
62	Rata Road/Rimu Road/Centre cycleway	10	5	5	1	-80%	-90%
	Average per site (5 sites since 2007)	18	29	9	11	22%	-48%
	Total (5 sites since 2007)	92	146	43	55	28%	-33%
84	Behind Rodney District Council Building	-	-	11	22	100%	*
82	Jelas/Moffatt Road	-	-	23	15	-35%	*
83	Jelas Road/Croi Bridge	-	-	1	3	200%	*
	Average per site (8 sites in 2010)	-	-	10	12	20%	*
	Total (8 sites in 2010)	-	-	78	95	22%	*

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

*Note that sites 82, 83 and 84 were new sites in 2009.

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 seven of the eight sites are lower than in the morning peak. The most notable decrease is at the Rata Road/Rimu Road/Centre cycleway site (down from 8 morning peak movements to 1 cycle movement recorded in the evening peak).
- In contrast, one site has an evening cycle volume greater than the morning cycle volume. This is the intersection of Gulf Harbour Drive and Laurie Southwick Parade (up from 14 morning movements, to 19 movements in the evening).

**Table 1.4: Summary Of Change in Cyclist Movements from Morning to Evening
2007-2010 (%)**

Site Number	Locations	AM	PM ¹⁰	Change
63	Gulf Harbour Drive/Laurie Southwick Parade	14	19	36%
83	Jelas Road/Croi Bridge	4	3	-25%
60	Whangaparaoa Road/Near SH1 intersection	13	8	-38%
82	Jelas/Moffatt Road	24	13	-46%
61	D'Oyly Reserve cycleway	31	11	-65%
59	Whangaparaoa Road/Near Red Beach intersection	21	7	-67%
84	Behind Rodney District Council Building	73	18	-75%
62	Rata Road/Rimu Road/Centre cycleway	8	1	-88%
	Total	188	80	-57%

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

- By comparison with last year, more evening cyclists are adults (59 per cent, up from 50 per cent in 2009). The Rata Road/Rimu Road/Centre cycleway has the highest proportion of cyclists who are children (100 per cent).
- Compared with last year, a lower proportion of evening cyclists are wearing a helmet (67 per cent, down from 77 per cent in 2009). The Rata Road/Rimu Road/Centre cycleway site has the greatest share of cyclists who are not wearing a helmet (100 per cent).
- Approximately half of all evening cyclists are riding on an off-road cycleway (46 per cent, stable from 48 per cent last year). One-third of cyclists are riding on the road, while the remaining 21 per cent are riding on the footpath. Consistent with last year, the Whangaparoa Road site near the Beach Road intersection has the highest proportion of cyclists riding on the footpath (88 per cent).

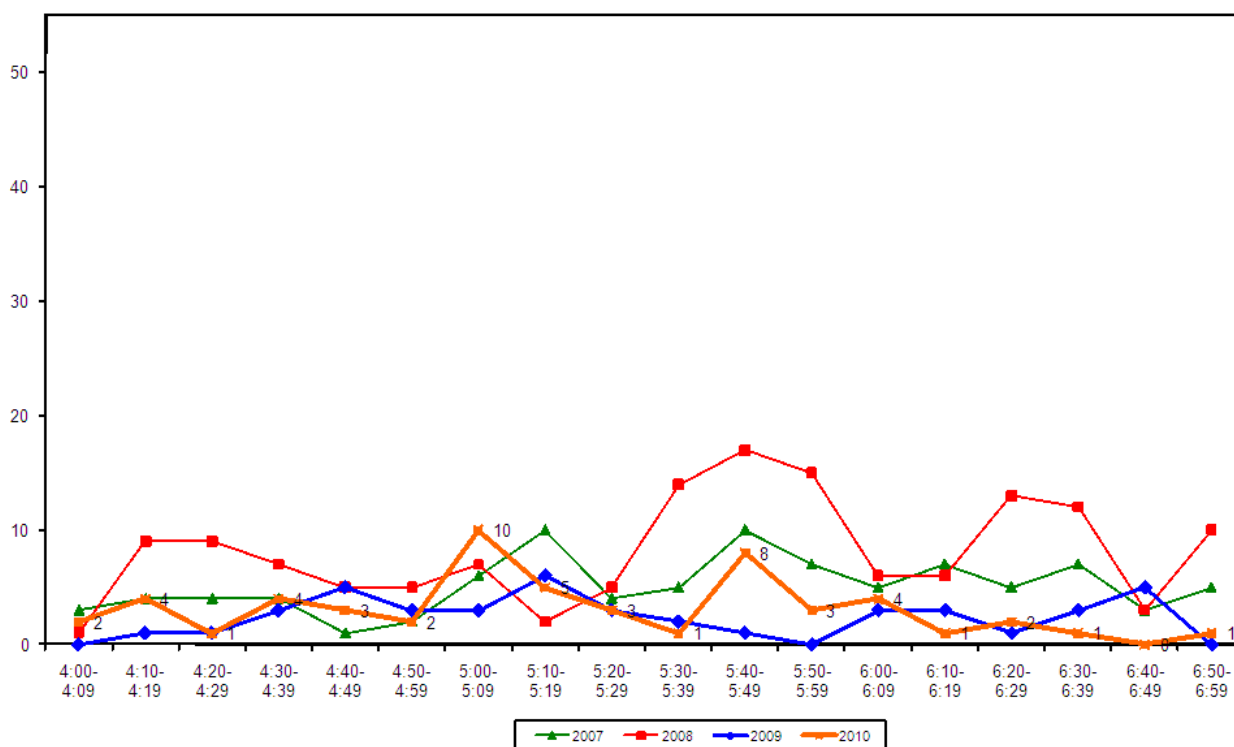
**Table 1.5: Summary of Evening Cyclist Characteristics
2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	62%	42%	50%	59%	9%
School child	38%	58%	50%	41%	-9%
Helmet Wearing					
Helmet on head	78%	55%	77%	67%	-10%
No helmet	22%	45%	23%	33%	10%
Where Riding					
Road	53%	85%	28%	33%	5%
Footpath	47%	15%	24%	21%	-3%
Off-road cycleway ¹¹	-	-	48%	46%	-2%
Base:	92	146	78	95	

¹¹ 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.

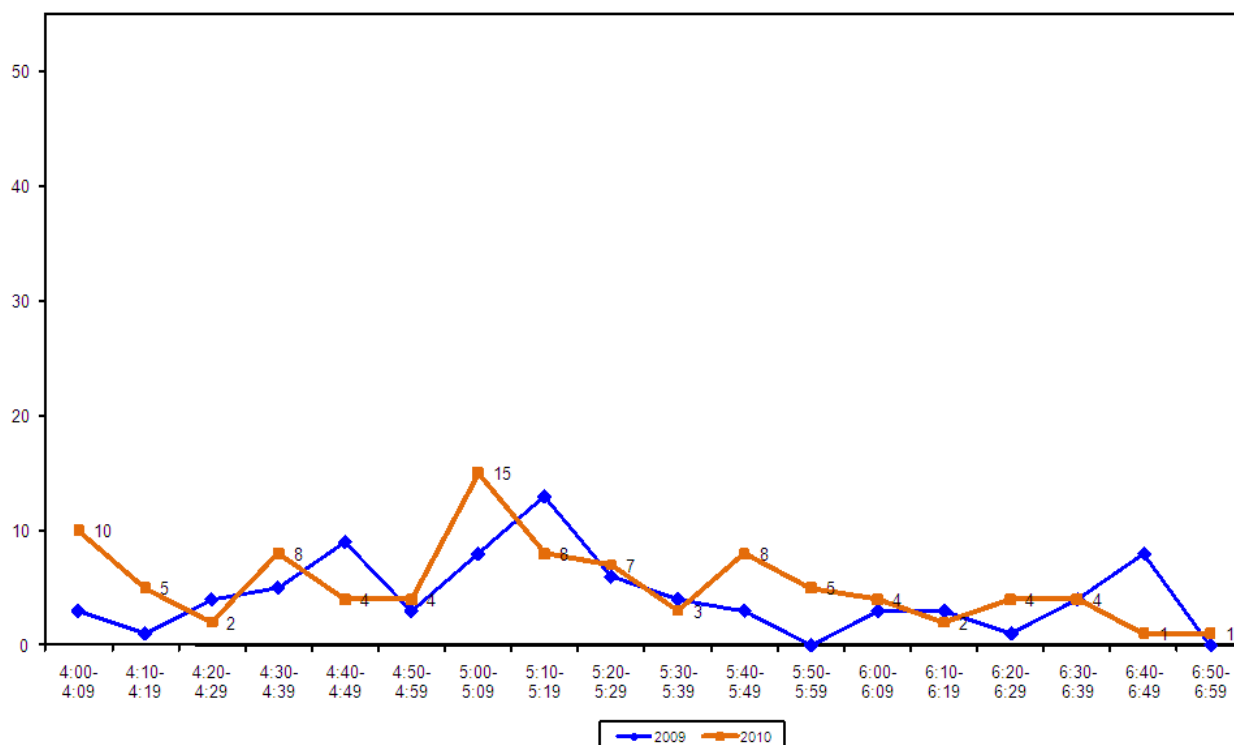
- The overall pattern of cyclist volumes by time of movement in the evening for the five sites monitored prior to 2009 is illustrated in Figure 1.2. Cycle volumes are relatively stable throughout the monitoring period, with a slight peak of 10 movements between 5:00pm and 5:09pm and another slight peak of 8 movements between 5:40pm and 5:49pm. This compares with a slight peak between 5:10pm and 5:19pm (6 movements) in 2009.

**Figure 1.2: Total Cyclist Frequency
– Evening Peak 2007-2010 (5 sites)**



- Figure 1.2a illustrates the overall pattern of cyclist volumes by time of movement in the evening for all eight sites monitored this year. A slight peak occurs between 5:00pm and 5:09pm (15 movements), ten minutes earlier than the slight peak observed in 2009.

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



1.6 Aggregated Total

- A total of 142 cyclist movements were recorded across the five sites monitored prior to 2009. This represents a 78 per cent increase when compared with 2009 (80 movements) – not statistically significant at the 95% confidence interval. The number of evening cyclists comprises a larger share (61 per cent) of the total number of cycle movements than the morning cyclists (39 per cent).
- In contrast, of all eight sites monitored in 2010, morning cyclists comprise a larger share of the total cycle movements (66 per cent, compared with 34 per cent of evening movements).
- The busiest site is behind the Rodney District Council building (95 movements), whereas the lowest cyclist traffic is observed at the Jelas Road/Croi Bridge site (7 movements).

**Table 1.6: Summary Of Total Cyclist Movements
2007-2010 (n)**

Site Number	Locations	2007	2008	2009	2010	Change 09-10	Change 07-09
61	D'Oyly Reserve cycleway	24	103	9	44	389%	83%
63	Gulf Harbour Drive/Laurie Southwick Parade	56	44	22	37	68%	-34%
59	Whangaparaoa Road near Red Beach intersection	29	31	26	29	12%	0%
60	Whangaparaoa Road/Near SH1 intersection	28	20	12	23	92%	-18%
62	Rata Road/Rimu Road/Centre cycleway	31	14	11	9	-18%	-71%
	Total (4 sites since 2007) ∞	168	212	80	142	78%	-15%
84	Behind Rodney District Council Building	-	-	86	95	10%	*
82	Jelas/Moffatt Road	-	-	38	39	3%	*
83	Jelas Road/Croi Bridge	-	-	2	7	250%	*
	Total (8 sites in 2009)	-	-	206	283	37%	*

∞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.

- Overall cyclist characteristics are illustrated in Table 1.7. In total, 66 per cent of cyclists are school children (down from 72 per cent last year).
- On average, around three in four cyclists are wearing a helmet (77 per cent, down from 82 per cent in 2009).
- The majority of cyclists are riding on the off-road cycleway (59 per cent). Twenty-three per cent are riding on the road while the remaining 18 per cent are riding on the footpath.

**Table 1.7: Summary of Total Cyclist Characteristics
2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	52%	37%	28%	34%	6%
School child	48%	63%	72%	66%	-6%
Helmet Wearing					
Helmet on head	82%	62%	82%	77%	-5%
No helmet	18%	38%	18%	23%	5%
Where Riding					
Road	56%	78%	18%	23%	5%
Footpath	44%	22%	20%	18%	-2%
Off-road cycleway ¹²	-	-	62%	59%	-3%
Base:	168	212	206	283	

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

1.7 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 (142 daily movements) and the lowest is at the Jelas Road/Croi Bridge site (10 daily movements).

Table 1.8: Dry Weather Factor AADT Estimates Based on Morning and Evening Cyclist Movements 2007-2010 (n)

Site No.	Locations	2007 AADT	2008 AADT	2009 AADT	2010 AADT	Change 09-10	Change 07-10
84	Behind Rodney District Council Building	-	-	130	142	9%	-
61	D'Oyly Reserve cycleway	35	145	13	65	400%	86%
82	Jelas/Moffatt Road	-	-	55	57	4%	-
63	Gulf Harbour Drive/Laurie Southwick Parade	80	63	31	53	71%	-34%
59	Whangaparaoa Road near Red Beach intersection	42	45	38	43	13%	2%
60	Whangaparaoa Road near SH1 intersection	40	29	17	34	100%	-15%
62	Rata Road/Rimu Road/Centre cycleway	46	21	16	14	-13%	-70%
83	Jelas Road/Croi Bridge	-	-	3	10	233%	-

1.8 School Bike Shed Count Summary

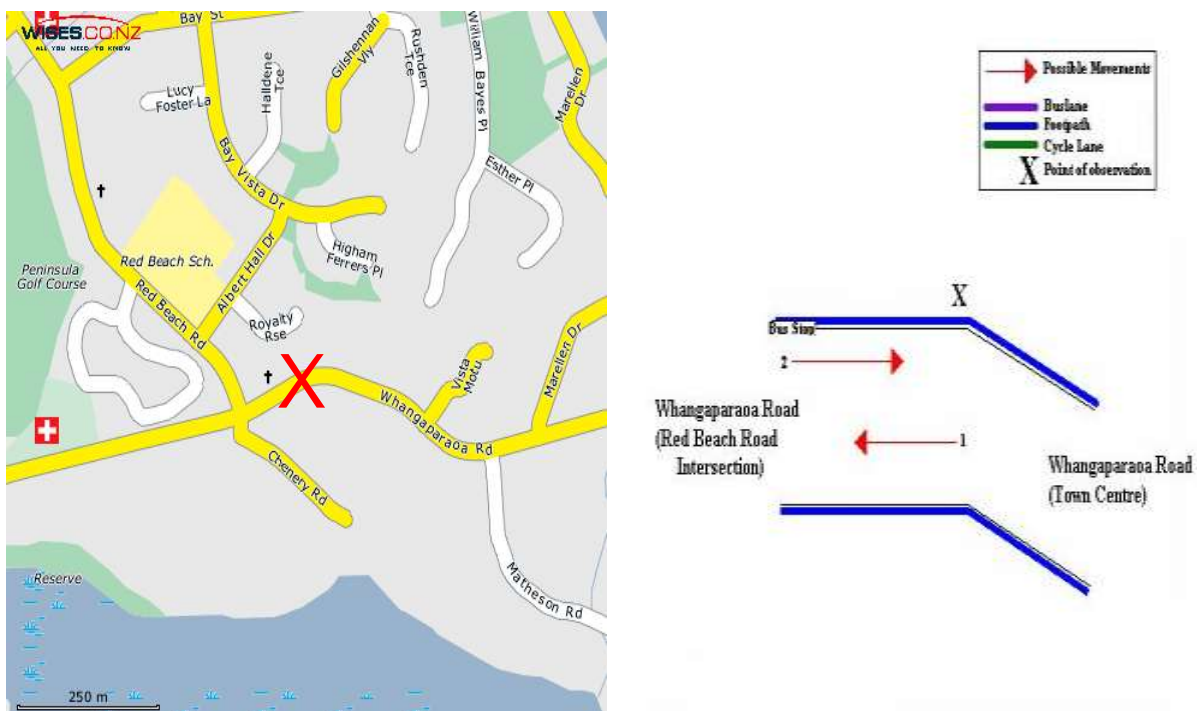
Key Points

- Among the surveyed composite, secondary and intermediate/secondary schools, of those eligible to cycle at school, on average, two per cent of students are cycling to their schools. This compares with 3 per cent in 2009.
- Among the eight responding schools, n=154 students were identified as cycling to school.
- This year, Orewa College reported the highest share of cyclists – 7 per cent of all eligible students currently cycling. This compares with 2009, where five per cent of students reported cycling to school.
- Of the eight schools that responded, two (25 per cent) had no students cycling to school. This compares with 2009 where one (17 per cent) had no students cycling to school.
- Rates of cycling to school are highest among combined intermediate/secondary schools (3 per cent, down from 4 per cent last year) and lowest for secondary schools (0 per cent, unchanged from 2009).

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 43. This compares with:
 - 38 in 2009
 - 45 in 2008
 - 42 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	21	8	29

2.1 Morning Peak

Environmental Conditions

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

Key Points

- The volume of morning cyclists at Whangaparaoa Road near the Red Beach intersection has increased to 21 movements in 2010 (up from 15 movements in 2009).
- The key morning movement is straight along Whangaparaoa Road heading west towards the Red Beach intersection (Movement 1 = 18 cyclists, up from 12 last year).

Table 2.1: Morning Cyclist Movements
Whangaparaoa Road/Red Beach Intersection 2007-2010 (n)

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	10	13	12	18	6
2	3	2	3	3	0
Total	13	15	15	21	6

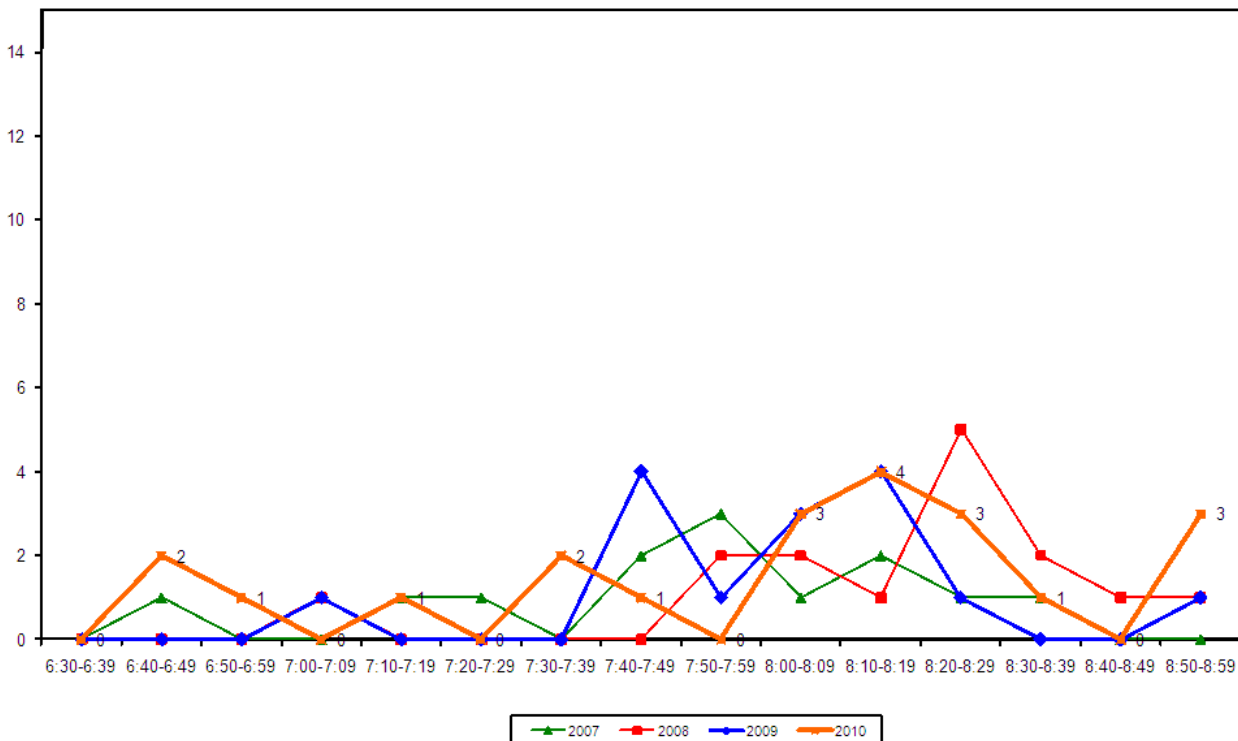
- Over the morning peak, school children comprise just over half of the total number of cycle movements (52 per cent, down from 80 per cent in 2009).
- Three-quarters of cyclists are wearing a helmet (76 per cent, down from 93 per cent last year).
- The incidence of riding on the footpath is high at this site (67 per cent, down notably from 87 per cent at the previous measure).

Table 2.2: Morning Cyclist Characteristics
Whangaparaoa Road/Red Beach Intersection 2007-2010 (%)

	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
Cyclist Type					
Adult	62	27	20	48	28
School child	38	73	80	52	-28
Helmet Wearing					
Helmet on head	92	100	93	76	-17
No helmet	8	0	7	24	17
Where Riding					
Road	15	20	13	33	20
Footpath	85	80	87	67	-20
Base:	13	15	15	21	

- The volume of morning cycle movements increases over the monitoring period to peak between 8:10am and 8:19am (4 cyclists). This compares to a peak at the same time in 2009, as well as an earlier peak between 7:40am and 7:49am.

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



2.2 Evening Peak

Environmental Conditions

- The weather was overcast at the start of the evening shift. Light rain began shortly after 6:00pm developing to heavy rain and strong winds by 7:00pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cycle movements recorded at the Whangaparaoa Road/Red Beach intersection is down from 2009, with 8 movements recorded compared with 11 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 = 5 cyclists, down from 7 cyclists recorded in 2009).

Table 2.3: Evening Cyclist Movements
Whangaparaoa Road /Red Beach Intersection 2007-2010 (n)

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	6	3	4	3	-1
2	10	13	7	5	-2
Total	16	16	11	8	-3

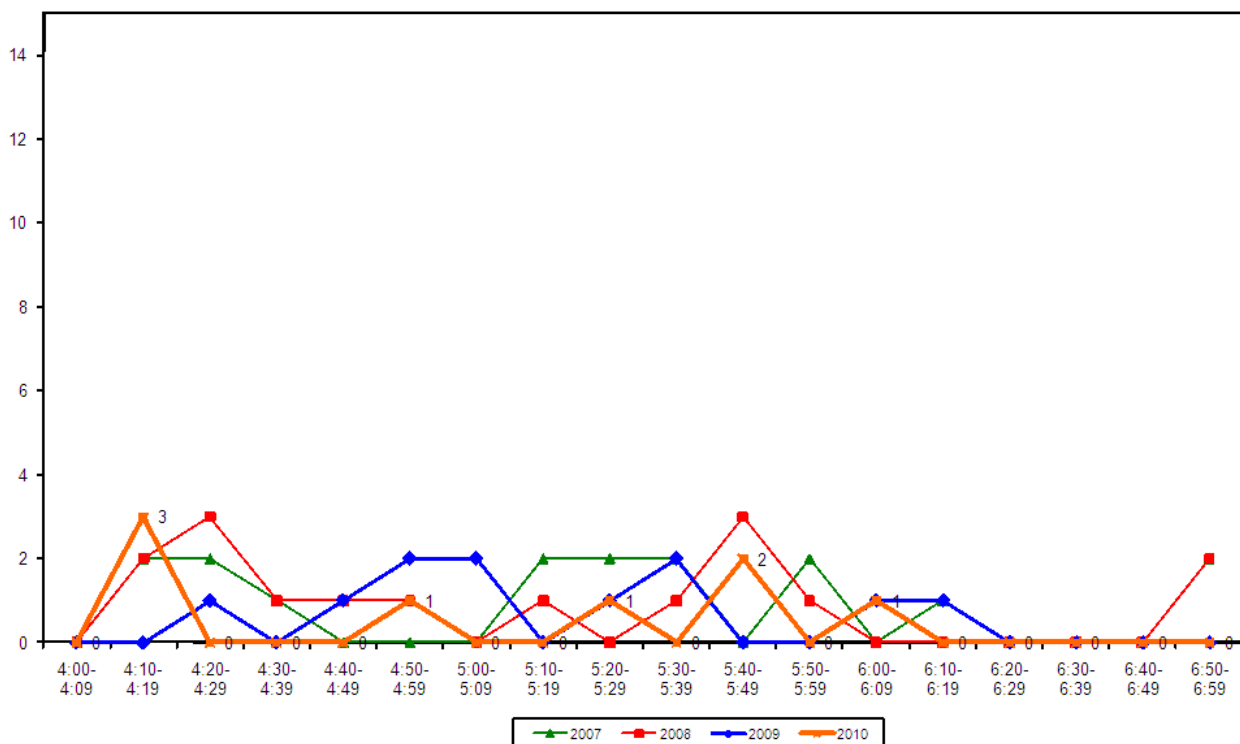
- In contrast with the morning peak, the greatest share of cyclists using Whangaparaoa Road are adults (75 per cent, up from 64 per cent last year).
- Approximately three in five cyclists are wearing a helmet (down notably from 100 per cent in 2009).
- Most cyclists are riding on the footpath (88 per cent, up from 64 per cent last year).

Table 2.4: Evening Cyclist Characteristics
Whangaparaoa Road /Red Beach Intersection 2007-2010 (%)

	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
Cyclist Type					
Adult	75	88	64	75	11
School child	25	12	36	25	-11
Helmet Wearing					
Helmet on head	87	94	100	63	-37
No helmet	13	6	0	37	37
Where Riding					
Road	25	37	36	12	-24
Footpath	75	63	64	88	24
Base:	16	16	11	8	

- 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 4:10pm and 4:19pm, and again between 5:40pm and 5:49pm (3 and 2 cyclists over each ten minute interval respectively). This compares to slight peaks of 2 cyclists per ten minute interval between 4:50pm and 5:09pm and 5:30pm and 5:39pm in 2009.

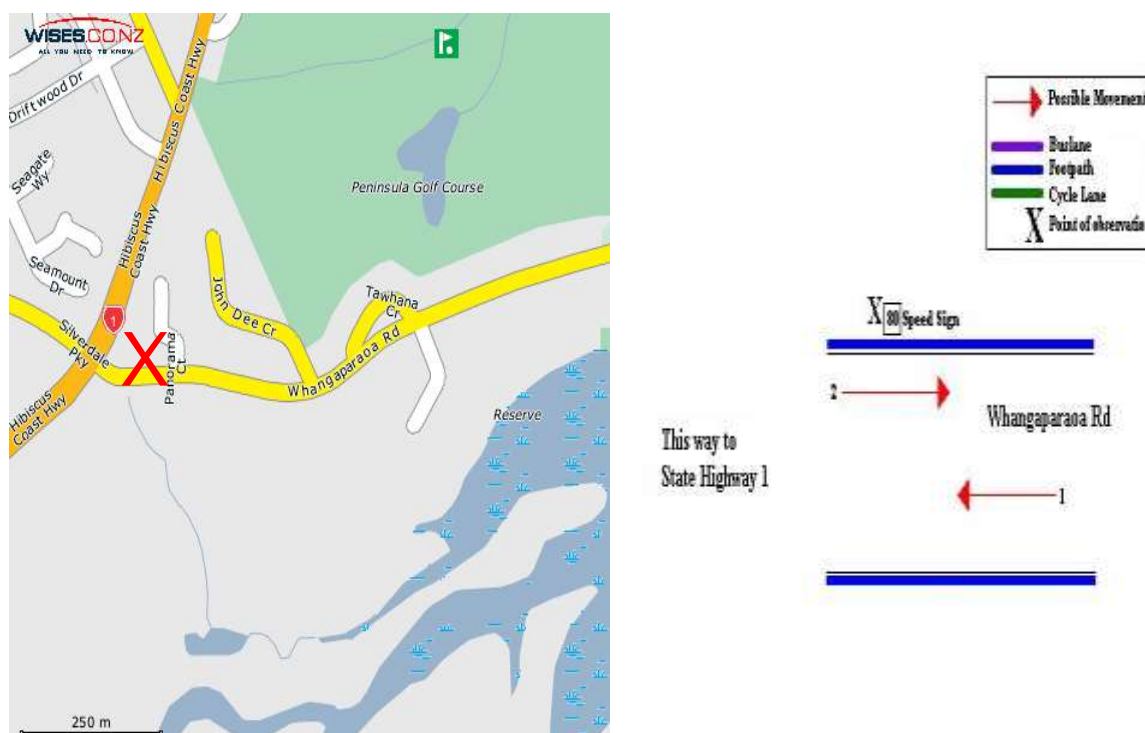
Figure 2.3: Whangaparaoa Road /Red Beach Intersection Cyclist Frequency – Evening Peak



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 34. This compares with:
 - 17 in 2009
 - 29 in 2008
 - 40 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	13	10	23

3.1 Morning Peak

Environmental Conditions

- The weather was fine with some cloud throughout the morning monitoring period.
- 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 13 cycle movements recorded (up from 6 movements last year).
- Almost all cyclists at this site are moving straight along Whangaparaoa Road heading towards the State Highway 1 intersection (Movement 1 = 11 cyclists).

Table 3.1: Morning Cyclist Movements
Whangaparaoa Road near SH1 Intersection 2007-2010 (n)

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	9	9	5	11	6
2	2	0	1	2	1
Total	11	9	6	13	7

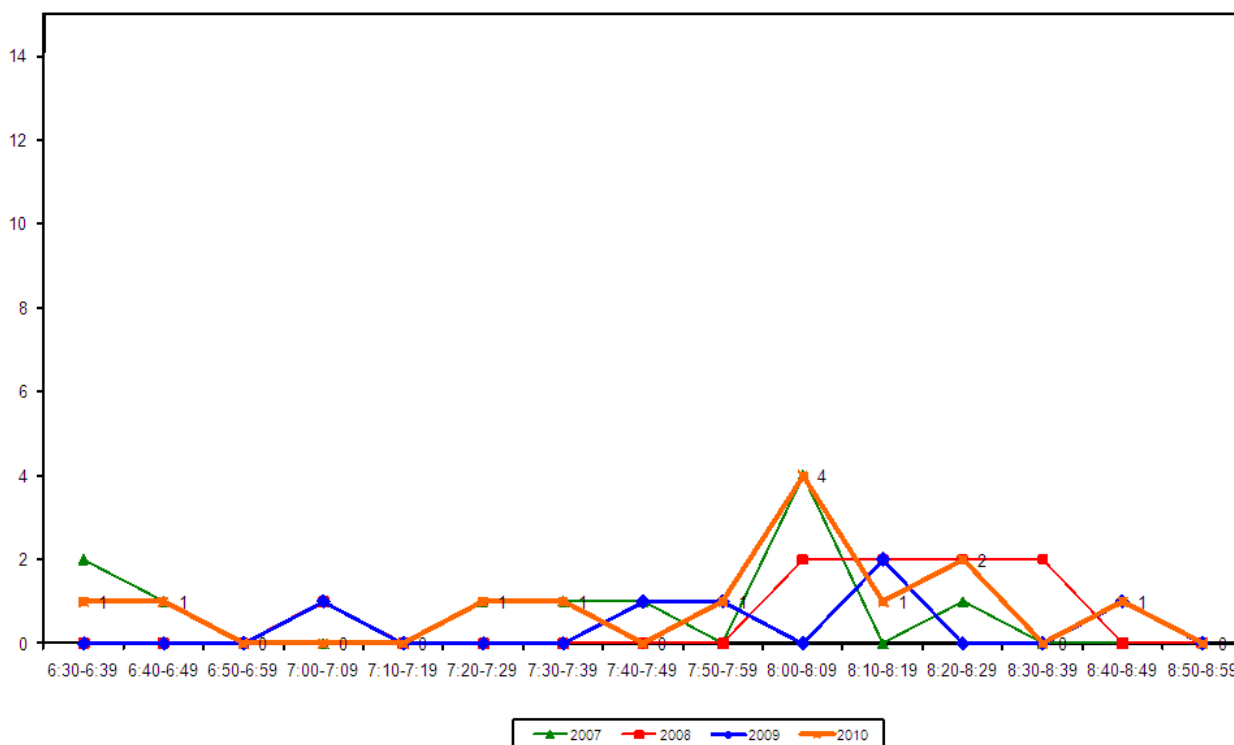
- Over the morning peak, school children comprise 62 per cent of all cycle movements (up from 50 per cent last year).
- All cyclists are wearing a helmet (unchanged from last year).
- On average, two in three cyclists are riding on the footpath (69 per cent, stable from 2009).

Table 3.2: Morning Cyclist Characteristics
Whangaparaoa Road near SH1 Intersection 2007-2010 (%)

	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
Cyclist Type					
Adult	55	33	50	38	-12
School child	45	67	50	62	12
Helmet Wearing					
Helmet on head	91	100	100	100	0
No helmet	9	0	0	0	0
Where Riding					
Road	36	33	33	31	-2
Footpath	64	67	67	69	2
Base:	11	9	6	13	

- As in 2009, no more than one cyclist was recorded during most ten minute intervals. The volume of morning cycle movements peaks between 8:00am and 8:09am (4 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 increases to 10 movements in 2010 (compared with 6 movements in 2009).
- The most common movement in the evening monitoring period is straight along Whangaparaoa Road heading east (Movement 2 = 6 cycle movements).
- The number of cyclists at Movement 2 has increased notably, from 2 movements in 2009 to 6 movements this year.

**Table 3.3: Evening Cyclist Movements
Whangaparaoa Road near SH1 Intersection 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	6	2	4	4	0
2	11	9	2	6	4
Total	17	11	6	10	4

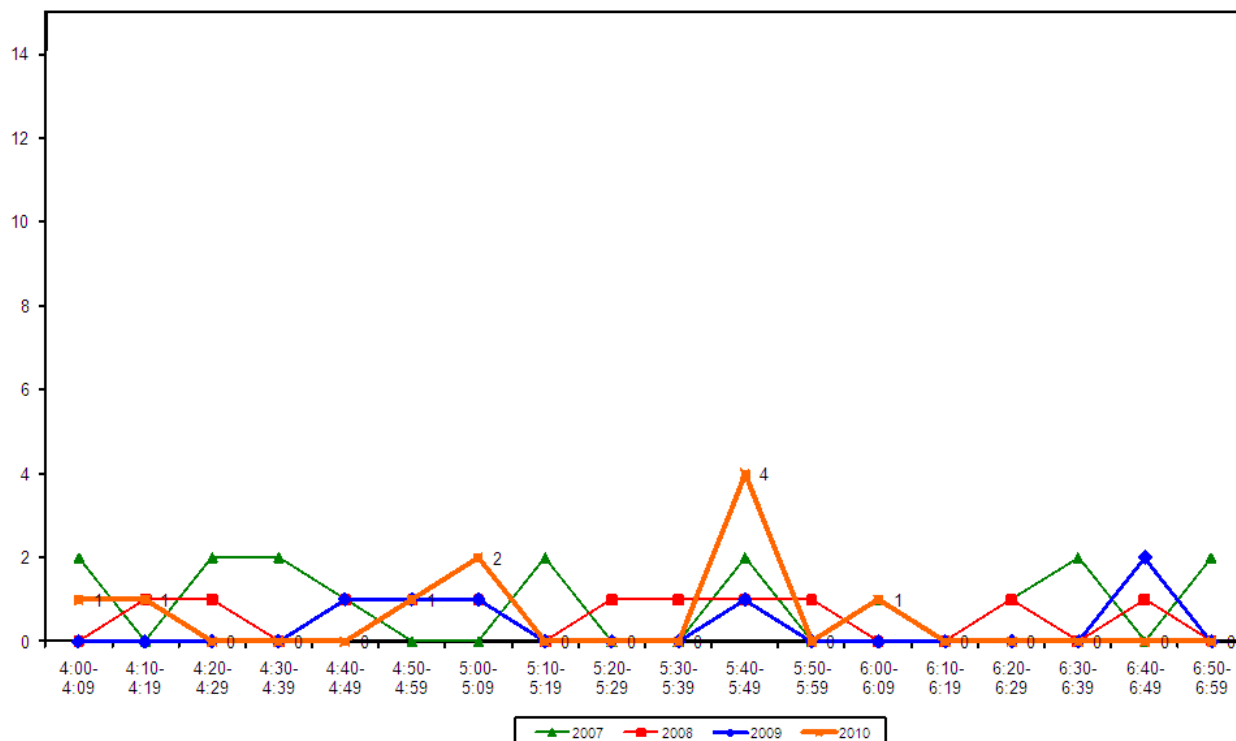
- The greatest share of cyclists using this site in the evening are adults (60 per cent, down from 67 per cent last year).
- Most cyclists are wearing a helmet (90 per cent, down from 100 per cent in 2009).
- Approximately two-thirds of cyclists are riding on the footpath (70 per cent, up notably from 50 per cent at the previous measure).

**Table 3.4: Evening Cyclist Characteristics
Whangaparaoa Road near SH1 Intersection 2007-2010 (%)**

	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
Cyclist Type					
Adult	53	82	67	60	-7
School child	47	18	33	40	7
Helmet Wearing					
Helmet on head	82	100	100	90	-10
No helmet	18	0	0	10	10
Where Riding					
Road	35	45	50	30	-20
Footpath	65	55	50	70	20
Base:	17	11	6	10	

- 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 peak occurred between 5:40pm and 5:49pm (4 cyclists). This compares with a slight peak of 2 movements occurring between 6:40pm and 6:49pm in 2009.

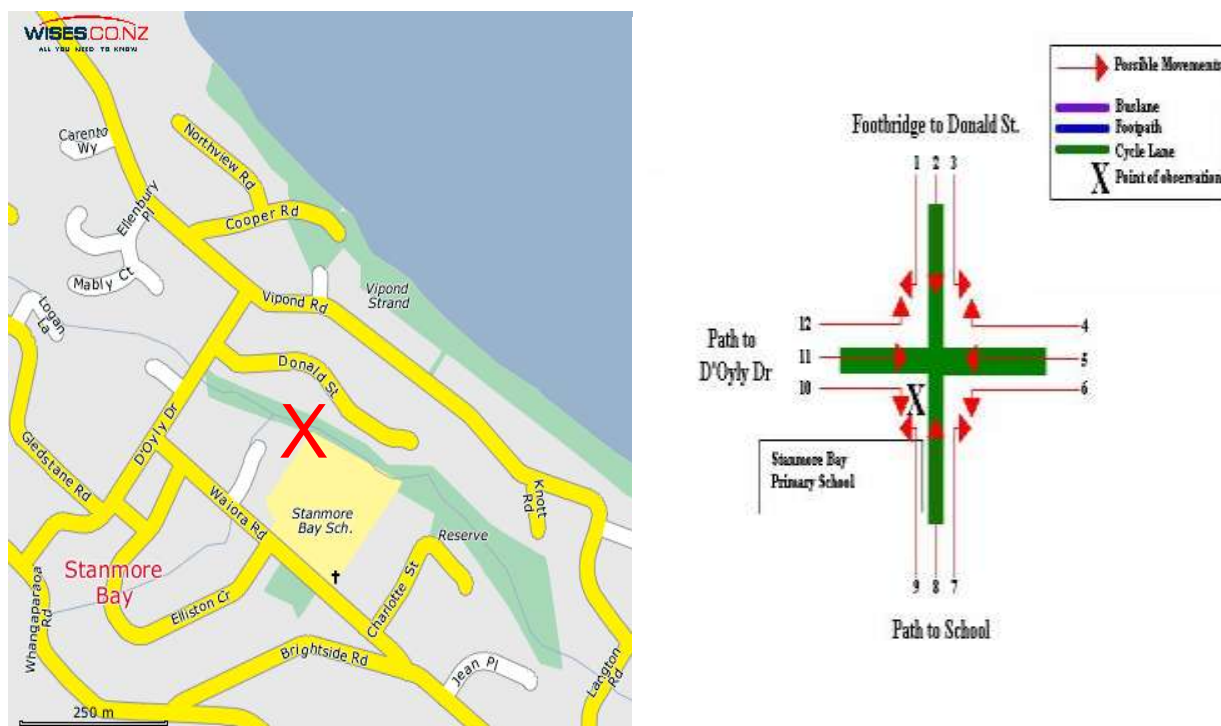
Figure 3.3: Whangaparaoa Road near SH1 Intersection Cyclist Frequency – Evening Peak



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 65. This compares with:
 - 13 in 2009
 - 145 in 2008
 - 35 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	31	13	44

4.1 Morning Peak

Environmental Conditions

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

Key Points

- Morning cyclist traffic at the D'Oyly Reserve cycleway increased notably this year, from 5 movements last year to 31 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 = 15 cyclists).
- The most notable increase this year has been at Movement 6 (up 11 cyclists) and Movement 10 (up 7 cyclists).

**Table 4.1: Morning Cyclist Movements
D'Oyly Reserve Cycleway 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	0	0	0	0	0
2	0	0	0	3	3
3	2	2	0	1	1
4	0	0	0	0	0
5	3	5	0	1	1
6	3	5	4	15	11
7	0	0	0	2	2
8	0	0	0	0	0
9	1	0	0	0	0
10	0	0	0	7	7
11	5	7	1	2	1
12	0	0	0	0	0
Total	14	19	5	31	26

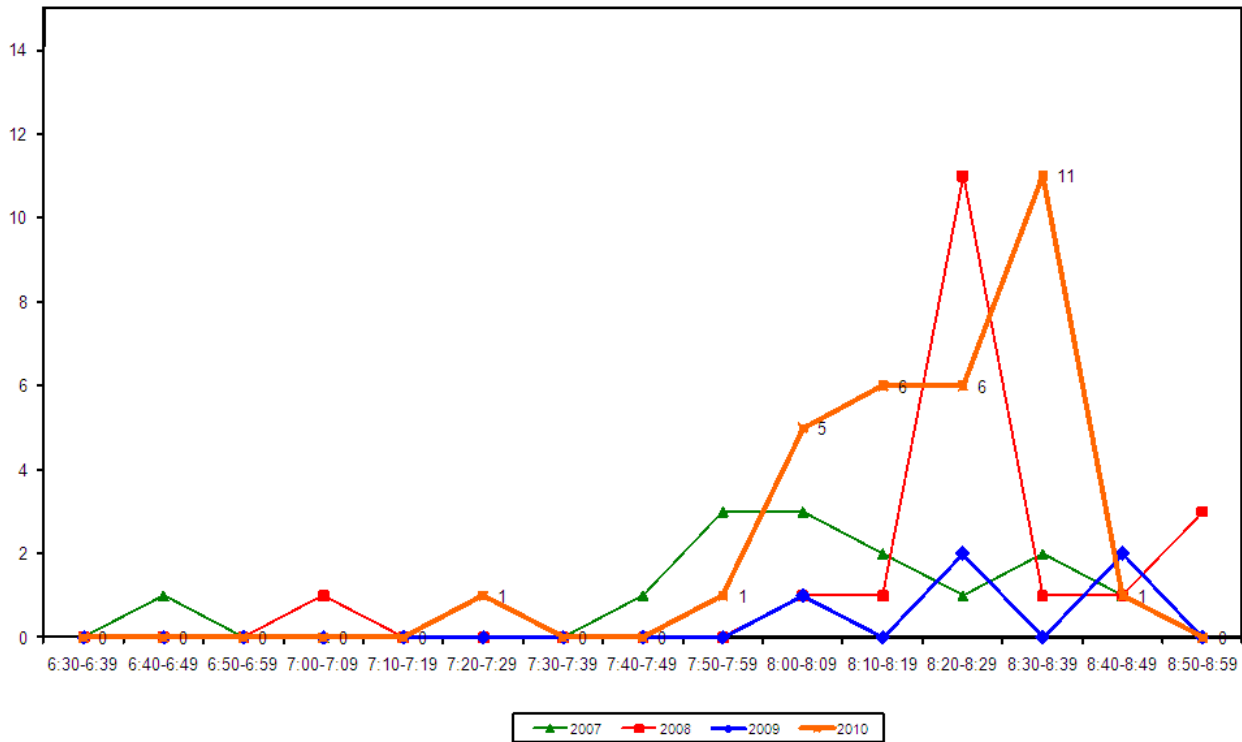
- Most morning cyclists at this site are school children (90 per cent, down from 100 per cent last year).
- Approximately two in three cyclists (65 per cent) are wearing helmets, this share up notably from 20 per cent in 2009.

**Table 4.2: Morning Cyclist Characteristics
D'Oyly Reserve Cycleway 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	21	16	0	10	10
School child	79	84	100	90	-10
Helmet Wearing					
Helmet on head	64	58	20	65	45
No helmet	36	42	80	35	-45
Where Riding					
Off-road Cycleway	100	100	100	100	0
Base:	14	19	5	31	

- The volume of morning cycle movements is very low until 7:59am (one cyclist recorded between 6:30am and 7:49am). Cyclist traffic then increases from 7:59am to peak between 8:30am and 8:39am (11 cyclists). This compares to peaks of 2 cycle movements between 8:20am and 8:29am and 8:40am and 8:49am in 2009.

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



4.2 Evening Peak

Environmental Conditions

- The weather was fine at the start of the evening shift with drizzle developing around 6:35pm and continuing throughout the rest of the monitoring period.
- 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 increased notably, from 4 movements last year to 13 movements in 2010.
- The key movement in the evening is straight along the cycleway heading west towards D'Oyly Drive (Movement 5 = 6 cyclists).
- The most notable increases are at Movement 5 (up 4 cyclists) and Movement 11 (up 3 cyclists).

**Table 4.3: Evening Cyclist Movements
D'Oyly Reserve Cycleway 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	0	10	0	0	0
2	0	3	0	0	0
3	2	17	0	0	0
4	0	15	0	1	1
5	4	14	2	6	4
6	2	1	0	0	0
7	1	6	0	1	1
8	1	0	0	0	0
9	0	0	1	0	-1
10	0	0	0	0	0
11	0	9	1	4	3
12	0	9	0	1	1
Total	10	84	4	13	9

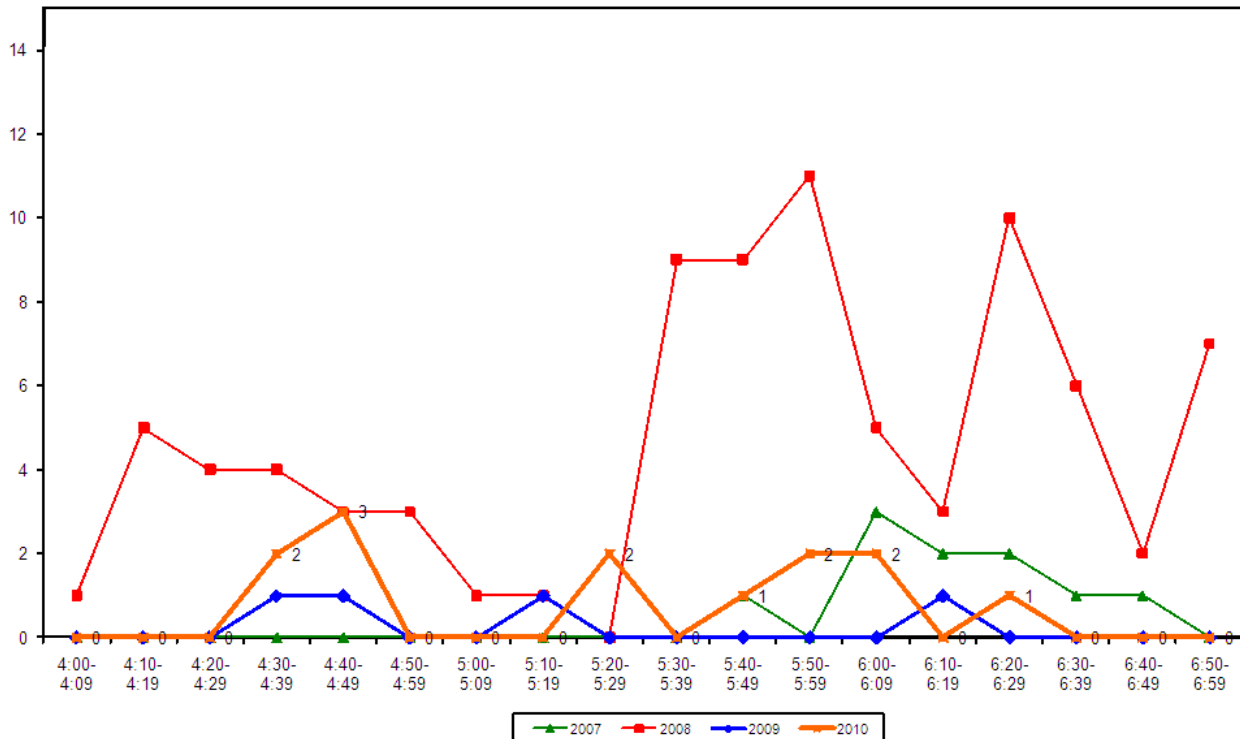
- Slightly more than half of the cyclists using the D'Oyly Reserve cycleway are adults (up notable from none last year).
- Slightly more than half of the cyclists at this site are wearing a helmet (54 per cent, down notably from 75 per cent in 2009).

**Table 4.4: Evening Cyclist Characteristics
D'Oyly Reserve Cycleway 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	50	17	0	54	54
School child	50	83	100	46	-54
Helmet Wearing					
Helmet on head	70	33	75	54	-21
No helmet	30	67	25	46	21
Where Riding					
Off-road Cycleway	100	100	100	100	0
Base:	10	84	4	13	

- Cycle volumes peak between 4:40pm and 4:49pm (3 cyclists) and again between 5:20pm and 5:29pm and 5:59pm and 6:09pm with 2 cyclists per ten minute interval. This compares to low cyclist volumes recorded last year with no more than one cyclist recorded over all ten minute intervals

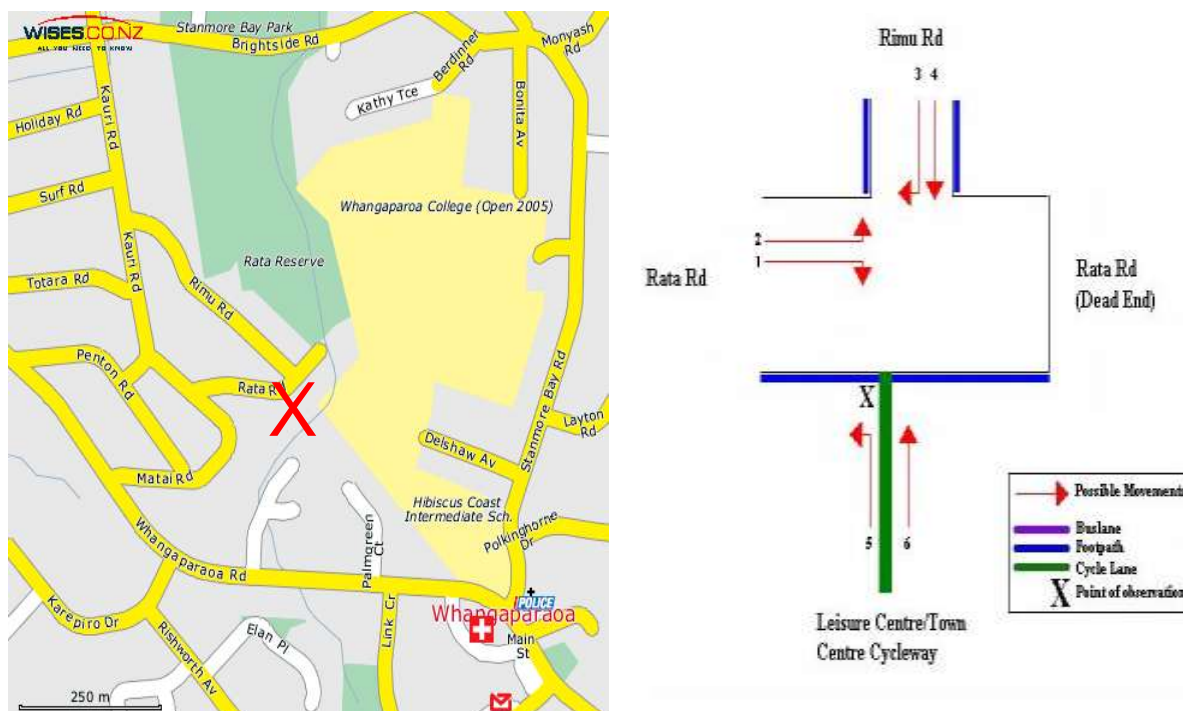
Figure 4.3: D'Oyly Reserve Cycleway Cyclist Frequency – Evening Peak



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 14. This compares with:
 - 16 in 2009
 - 21 in 2008
 - 46 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	8	1	9

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 increased from 6 movements in 2009 to 8 movements this year.
- The key morning movement is from Rimu Road to the Leisure Centre/Town Centre cycleway (Movement 4 = 7 cyclists, up 2 cyclists from 2009).

Table 5.1: Morning Cyclist Movements
Rata Road/Rimu Road/Centre Cycleway 2007-2010 (n)

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	0	0	1	0	-1
2	1	0	0	0	0
3	1	0	0	0	0
4	19	9	5	7	2
5	0	0	0	0	0
6	0	0	0	1	1
Total	21	9	6	8	2

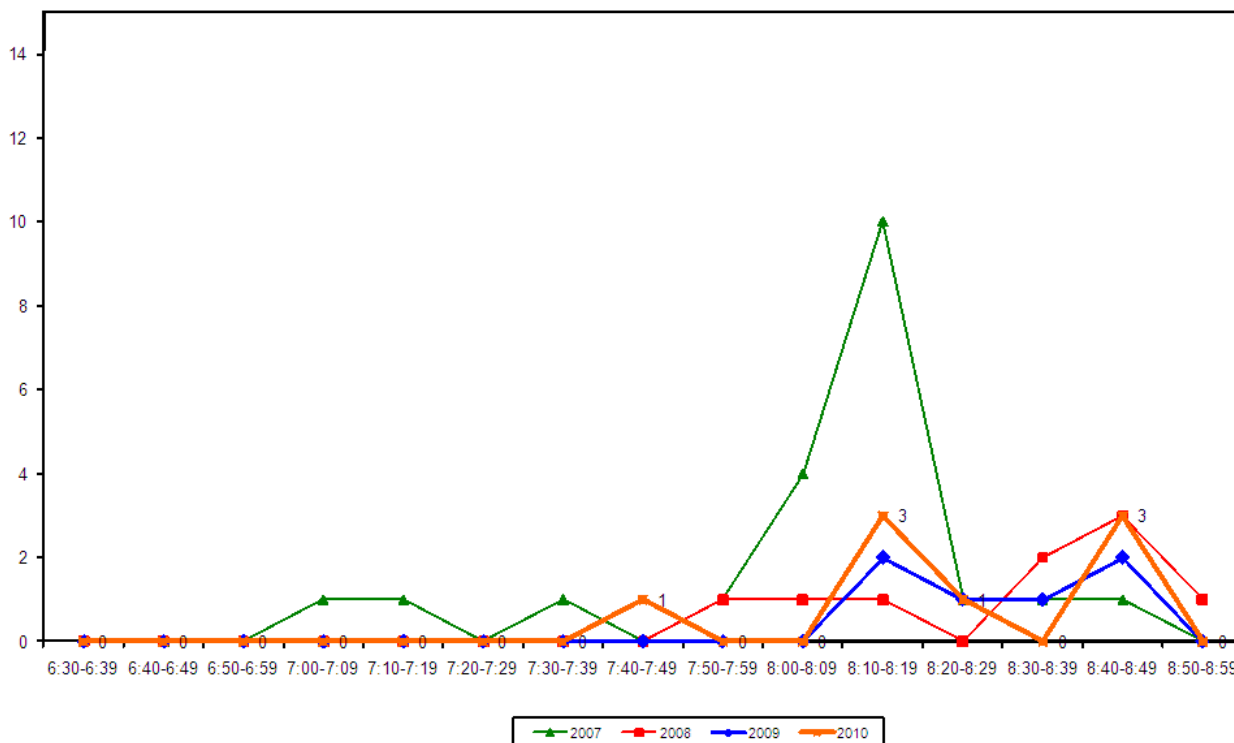
- Over the morning peak, three-quarters of the cyclists riding at the Rata/Rimu Road/Centre cycleway are school children (down from 100 per cent last year).
- All cyclists are wearing a helmet (up from 83 per cent in 2009).

Table 5.2: Morning Cyclist Characteristics
Rata Road/Rimu Road/Centre Cycleway 2007-2010 (%)

	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
Cyclist Type					
Adult	24	0	0	25	25
School child	76	100	100	75	-25
Helmet Wearing					
Helmet on head	90	100	83	100	17
No helmet	10	0	17	0	-17
Where Riding					
Footpath	14	0	0	0	0
Off-road cycleway	86	100	100	100	0
Base:	21	9	6	8	

- 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 (3 cyclists over each ten minute interval). These two peaks occur at the same time as the peaks 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 from the start of the evening shift until around 6:30pm when light drizzle developed which persisted throughout the rest of the shift.
- 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 has decreased notably from last year to only one cyclist (down from 5 in 2009).
- The one cyclist recorded turned left from the Leisure Centre/Town Centre cycleway into Rata Road (Movement 5).
- Evening cyclist volumes have decreased to zero at Movement 4 (down from 3 cyclists in 2009).

**Table 5.3: Evening Cyclist Movements
Rata Road/Rimu Road/Centre Cycleway 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	0	0	0	0	0
2	2	0	0	0	0
3	2	0	0	0	0
4	1	4	3	0	-3
5	0	0	1	1	0
6	5	1	1	0	-1
Total	10	5	5	1	-4

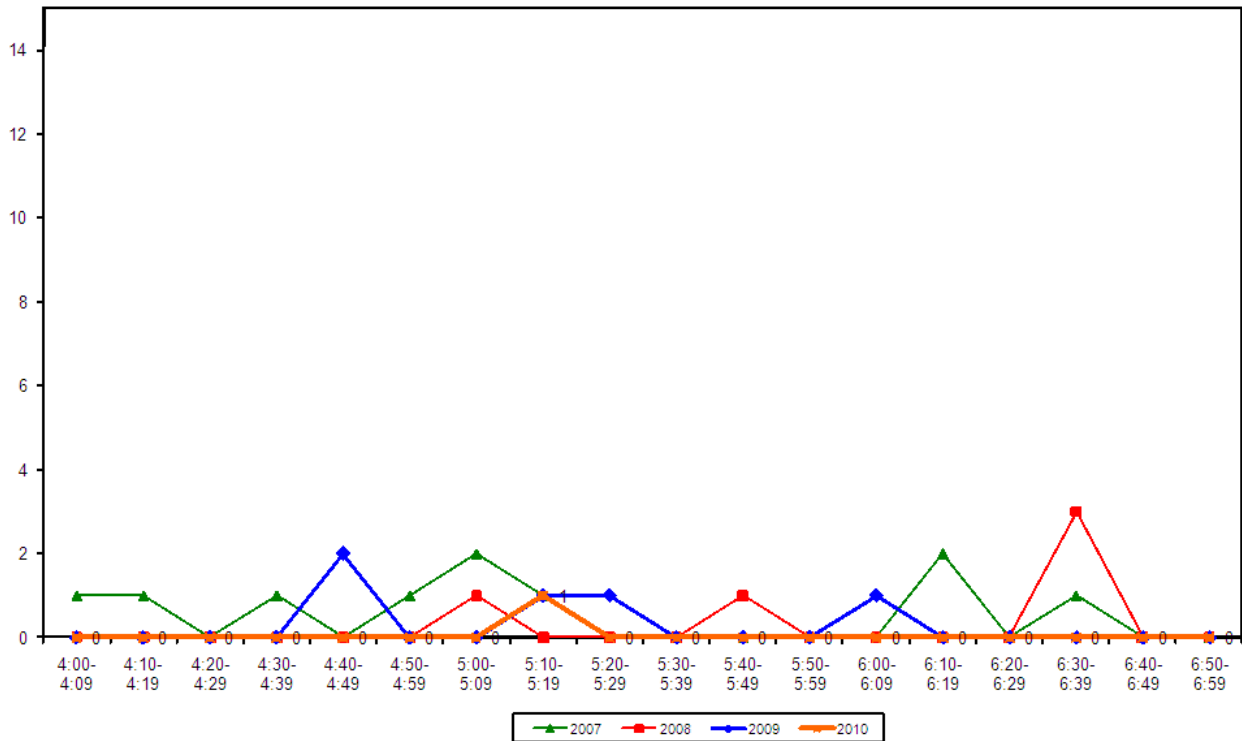
- The cyclist recorded during the evening shift was a school child.
- The cyclist recorded was not wearing a helmet.

Table 5.4: Evening Cyclist Characteristics
Rata Road/Rimu Road/Centre Cycleway 2007-2010 (%)

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	30	40	40	0	-40
School child	70	60	60	100	40
Helmet Wearing					
Helmet on head	70	100	100	0	-100
No helmet	30	0	0	100	100
Where Riding					
Footpath	20	0	20	0	-20
Off-road cycleway	80	100	80	100	20
Base:	10	5	5	1	

- The cyclist observed during the evening shift was observed between 5:00pm and 5:09pm.

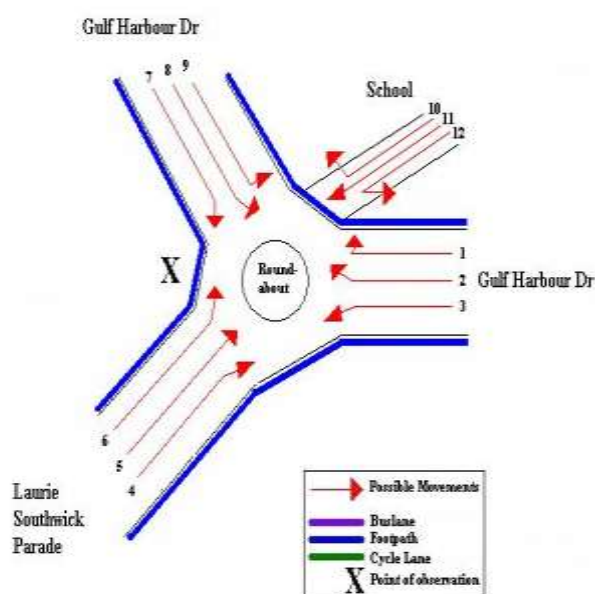
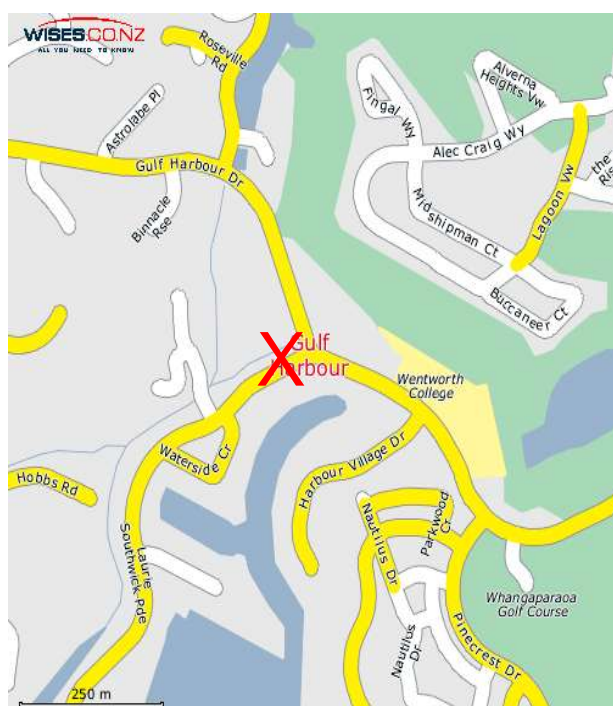
Figure 5.3: Rata Road/Rimu Road/Centre Cycleway Cyclist Frequency – Evening Peak



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 53. This compares with:
 - 31 in 2009
 - 63 in 2008
 - 80 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	14	23	37

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 increased from 5 movements in 2009 to 14 movements this year.
- The key morning movement is turning left out of Laurie Southwick Parade on to Gulf Harbour Drive (Movement 6 = 6 cyclists).
- Morning cyclist volumes at all movements at this site remain relatively stable from last year, with the most notable increase at Movement 6 (up 5 cyclists).

Table 6.1: Morning Cyclist Movements
Gulf Harbour Drive/Laurie Southwick Parade 2007-2010 (n)

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	2	1	1	1	0
2	0	1	0	2	2
3	2	0	0	0	0
4	1	2	1	1	0
5	1	0	0	1	1
6	1	2	1	6	5
7	4	4	2	1	-1
8	6	4	0	2	2
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
Total	17	14	5	14	9

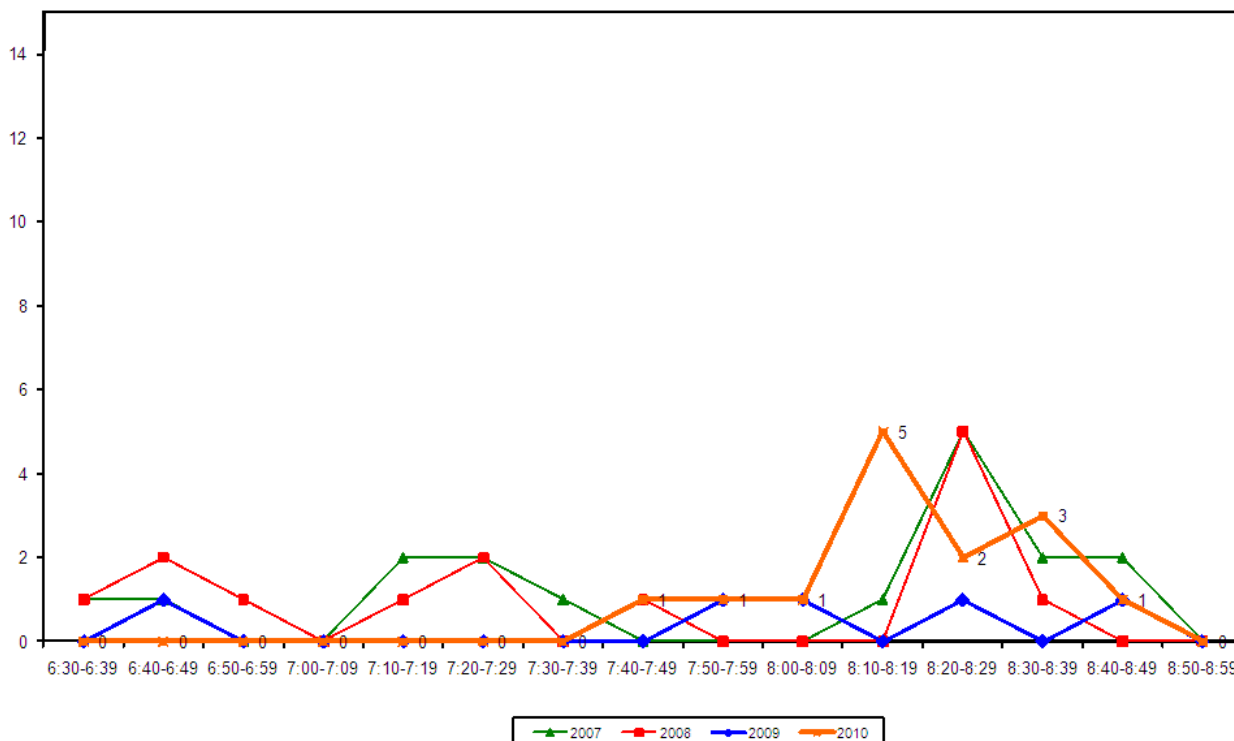
- Over the morning peak, school children comprise almost two thirds of cycle movements (64 per cent, up slightly from 60 per cent last year).
- Just less than three-quarters of cyclists are wearing a helmet (71 per cent, down from 80 per cent in 2009).
- Approximately two-thirds of cyclists are riding on the footpath (64 per cent, down notably from 100 per cent at the previous measure).

Table 6.2: Morning Cyclist Characteristics
Gulf Harbour Drive/Laurie Southwick Parade 2007-2010 (%)

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	53	43	40	36	-4
School child	47	57	60	64	4
Helmet Wearing					
Helmet on head	88	50	80	71	-9
No helmet	12	50	20	29	9
Where Riding					
Road	41	50	0	36	36
Footpath	59	50	100	64	-36
Base:	17	14	5	14	

- The volume of cycle movements is low across the monitoring period, with no cyclists recorded in the first hour of monitoring. Cyclist volumes then increase to peak between 8:10am and 8:19am (5 cyclists) and then trail off to the end of the monitoring period. This compares to no more than one cyclist recorded over any ten minute interval in 2009.

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 light rain from 6:54pm until the end of the monitoring period.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Evening cyclist volumes at the Gulf Harbour Drive/Laurie Southwick Parade intersection increase slightly, from 17 movements in 2009 to 23 movements this year.
- The most common movement in the evening is the right turn from Gulf Harbour Drive into Laurie Southwick Parade (Movement 7 = 7 cyclists).
- Evening cyclist volumes are relatively stable from 2009, with change most notable at Movement 8 (up 3 cyclists).

**Table 6.3: Evening Cyclist Movements
Gulf Harbour Drive/Laurie Southwick Parade 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	0	0	0	1	1
2	4	4	2	1	-1
3	8	7	1	2	1
4	6	7	3	3	0
5	0	0	0	0	0
6	8	3	3	3	0
7	6	2	6	7	1
8	6	6	2	5	3
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	1	1	0	1	1
Total	39	30	17	23	6

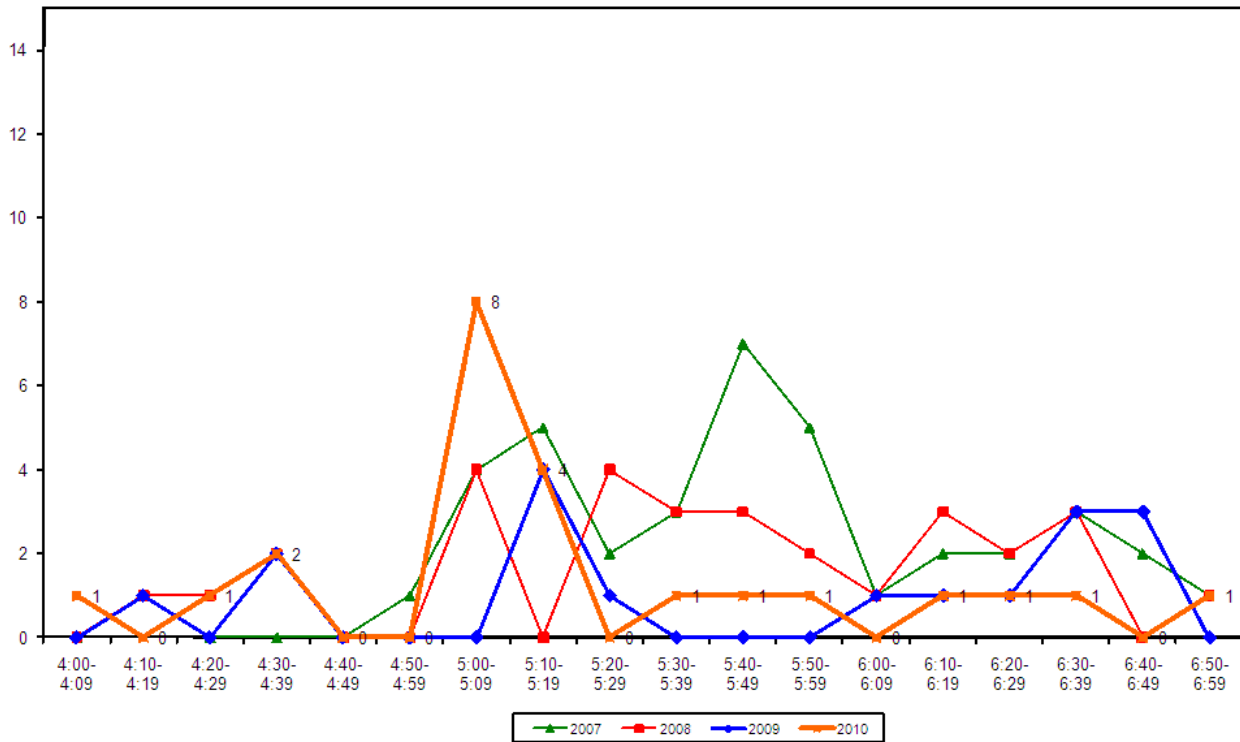
- The greatest share of cyclists using this intersection are adults (74 per cent, up from 65 per cent last year).
- Seventy per cent of cyclists are wearing a helmet (up notably from 47 per cent last year).
- Three-quarters of cyclists are riding on the road, up notably from 53 per cent in 2009.

Table 6.4: Evening Cyclist Characteristics
Gulf Harbour Drive/Laurie Southwick Parade 2007-2010 (%)

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	72	77	65	74	9
School child	28	23	35	26	-9
Helmet Wearing					
Helmet on head	77	73	47	70	23
No helmet	23	27	53	30	-23
Where Riding					
Road	54	80	53	74	21
Footpath	46	20	47	26	-21
Base:	39	30	17	23	

- In 2010, the volume of evening cycle movements peaks between 5:00pm and 5:09pm (8 movements) – ten minutes before the peak that occurred last year.

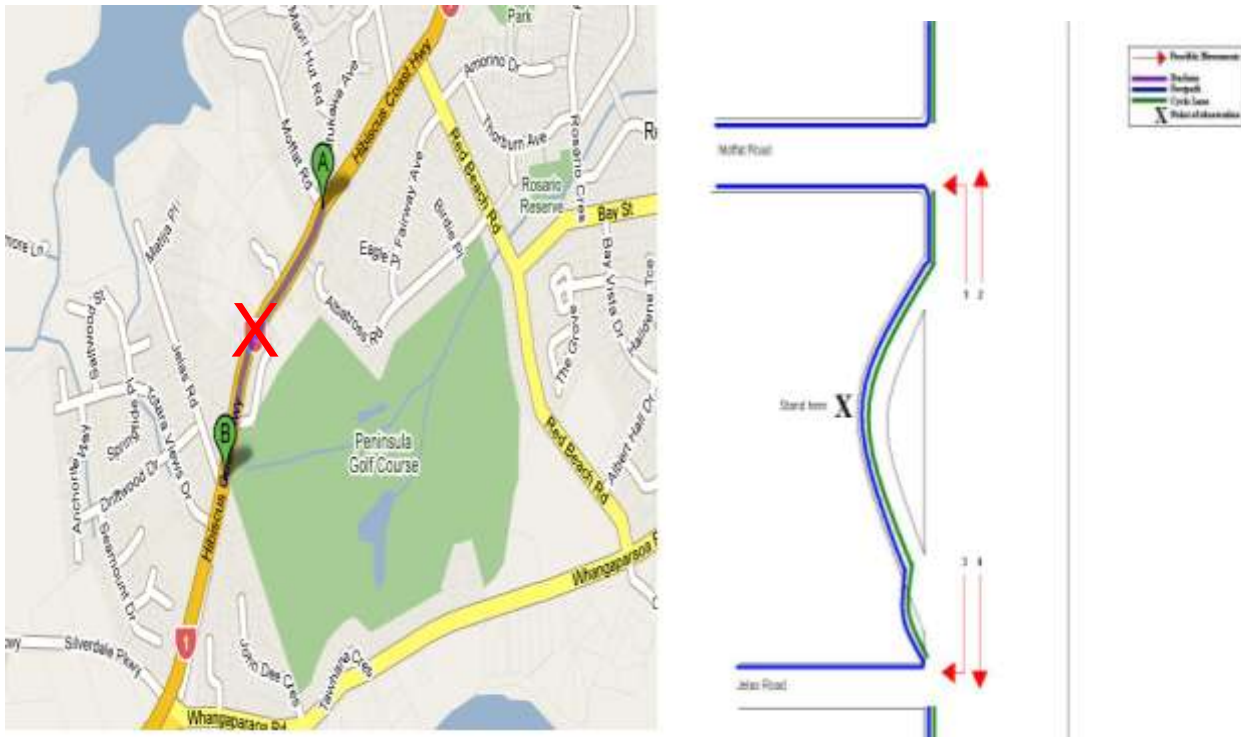
Figure 6.3: Gulf Harbour Drive/Laurie Southwick Parade Cyclist Frequency – Evening Peak



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 only 2009 and 2010 results are available to be compared.

AADT Estimate

- The AADT for this site is 57. This compares with 55 in 2009.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	24	15	39

7.1 Morning Peak

Environmental Conditions

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

Key Points

- Consistent with the other sites in Rodney district, the volume of morning cyclists recorded at the Jelas/Moffatt Road site was relatively light (24 movements).
- The most common movements in the morning are the left turn into Moffatt Road from Hibiscus Coast Highway (Movement 1 = 8 cyclists) and travelling straight along Hibiscus Coast Highway heading north (Movement 2 = 8 cyclists).
- Cyclist volumes have most notably increased at the site at Movements 2 and 3 (both up 4 cyclists).

**Table 7.1: Morning Cyclist Movements
Jelas/Moffatt Road 2009 - 2010 (n)**

<i>Movement</i>	2009	2010	Change 09-10
1	8	8	0
2	4	8	4
3	1	5	4
4	2	3	1
Total	15	24	9

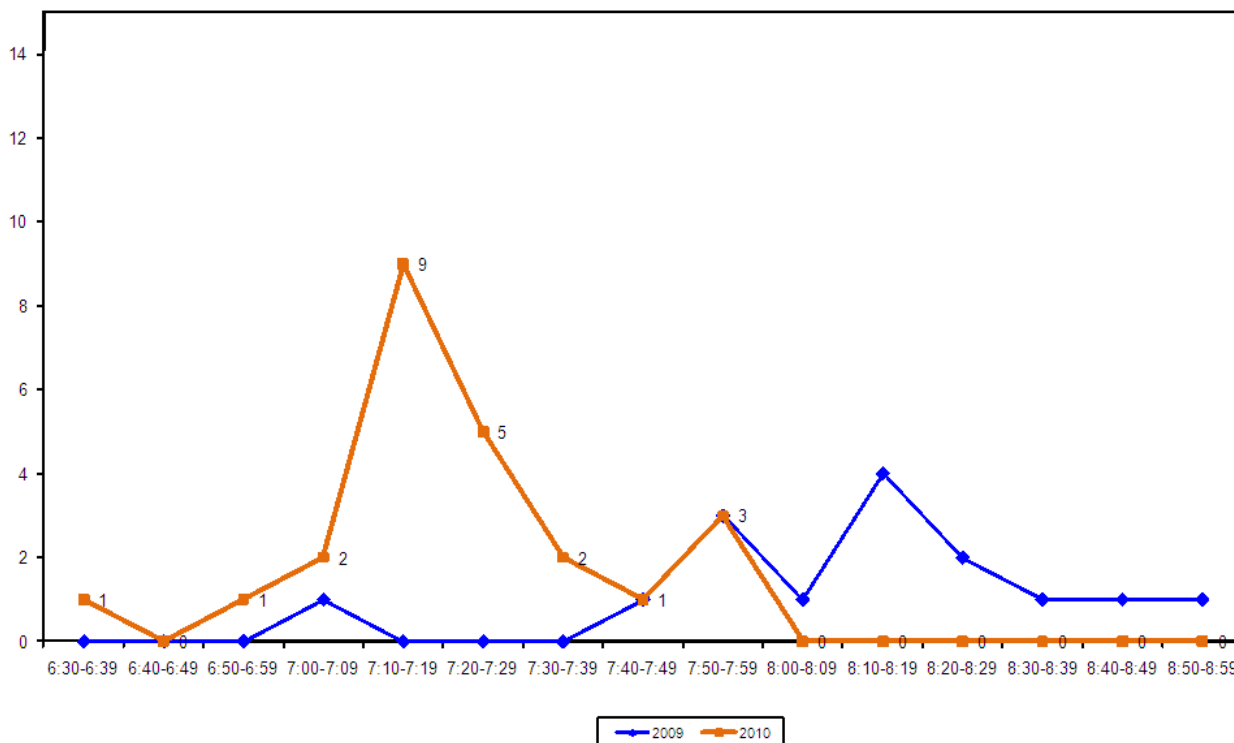
- Three-quarters of cyclists at this site during the morning shift are children (75 per cent, stable from 73 per cent last year).
- Most cyclists are wearing a helmet (88 per cent, down slightly from 93 per cent in 2009).
- Seventy-one per cent of cyclists are riding on the road (up slightly from 67 per cent in 2009), while the remaining 29 per cent are riding on the off-road cycleway.

Table 7.2: Morning Cyclist Characteristics
Jelas/Moffatt Road 2009 - 2010 (%)

	2009	2010	Change 09-10
Cyclist Type			
Adult	27	25	-2
School child	73	75	2
Helmet Wearing			
Helmet on head	93	88	-5
No helmet	7	13	6
Where Riding			
Road	67	71	4
Footpath	0	0	0
Off-road cycleway	33	29	-4
Base:	15	24	

- Cyclist volumes at the Jelas/Moffatt Road site peak sharply between 7:10am and 7:19am (9 cyclists). No cyclists were recorded at the site from 8:00am through to the end of the monitoring period. This compares to low cyclist volumes across the monitoring period, with a slight peak of 4 cycle movements between 8:10am and 8:19am in 2009.

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



7.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift until 6:45pm when light drizzle began which persisted through the remainder of the evening shift.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Evening cyclist traffic at Jelas/Moffatt Road remains relatively low, with 15 movements (down from 23 movements in 2009).
- Consistent with the morning shift, the key movement in the evening is the left turn into Moffatt Road from Hibiscus Coast Highway (Movement 1 = 5 cyclists).
- Changes in evening cyclist volumes at this site since 2009 are most notable at Movement 1 (down 7 cyclists).

**Table 7.3: Evening Cyclist Movements
Jelas/Moffatt Road 2009 - 2010 (n)**

<i>Movement</i>	2009	2010	Change 09-10
1	12	5	-7
2	2	4	2
3	8	3	-5
4	1	3	2
Total	23	15	-8

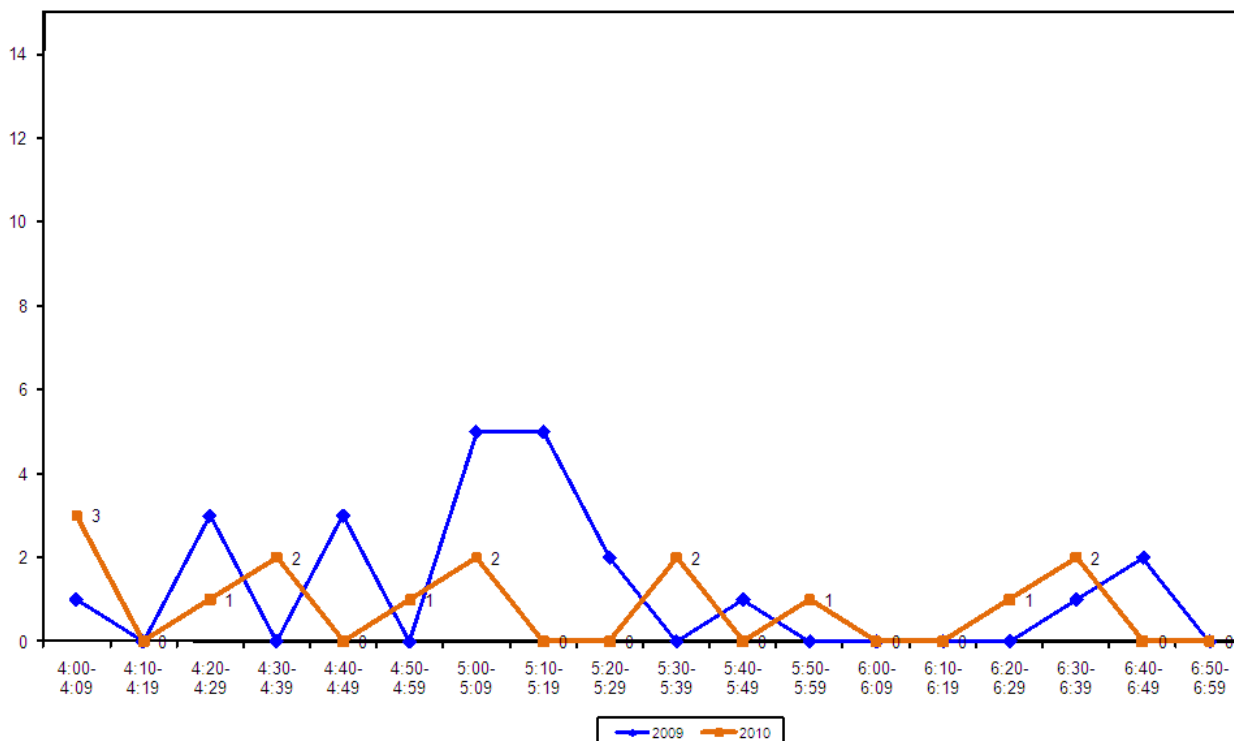
- Just over half of the cyclists using the Jelas/Moffatt Road site are adults (53 per cent, up notably from 17 per cent in 2009).
- Most of the cyclists at this site in the evening are wearing helmets (93 per cent, up notably from 74 per cent last year).
- Two-thirds of the cyclists using the site are riding on the road (67 per cent, up notably from 22 per cent last year). The remaining third are riding on the off-road cycleway (33 per cent).

**Table 7.4: Evening Cyclist Characteristics
Jelas/Moffatt Road 2009 - 2010 (%)**

	2009	2010	Change 09-10
Cyclist Type			
Adult	17	53	36
School child	83	47	-36
Helmet Wearing			
Helmet on head	74	93	19
No helmet	26	7	-19
Where Riding			
Road	22	67	45
Footpath	0	0	0
Off-road cycleway	78	33	-45
Base:	23	15	

- Cycle movements are low throughout the evening monitoring period, with no more than two cyclists recorded over any ten minute interval. The only exception was three cyclists recorded between 4:00pm and 4:09pm. This compares to a slight peak between 5:00pm and 5:19pm, with 5 cyclists recorded during each ten minute interval in 2009.

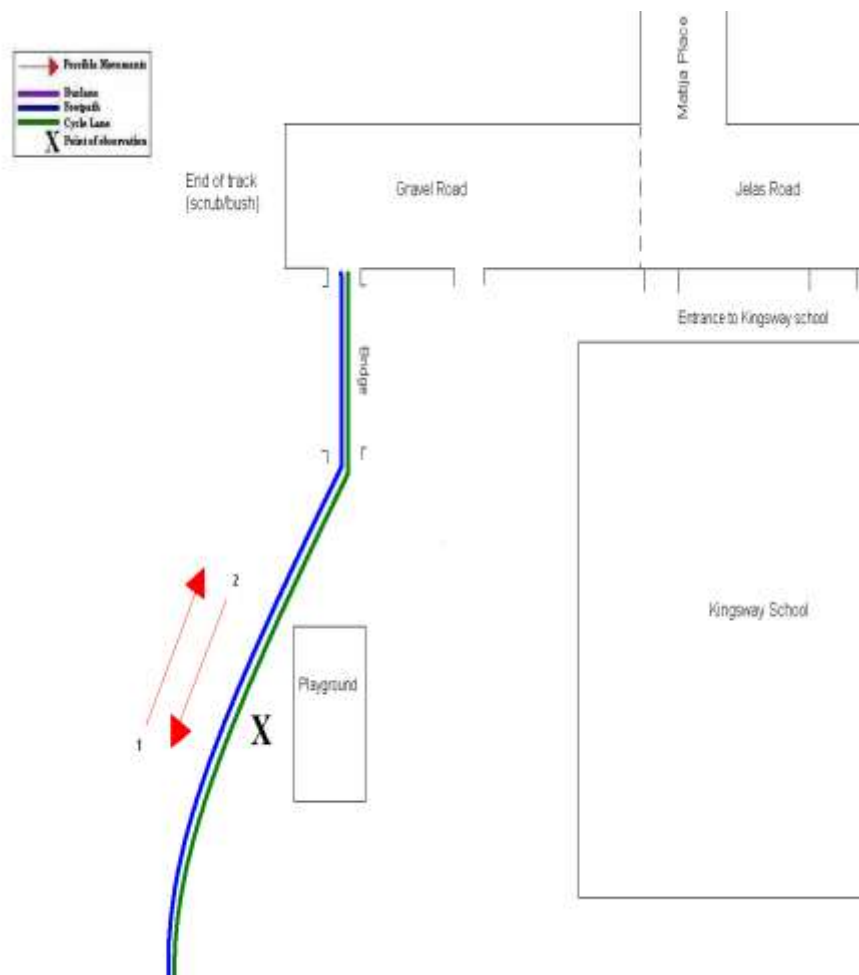
Figure 7.3: Jelas/Moffatt Road Cyclist Frequency – Evening Peak



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 only 2009 and 2010 results are available from comparison.

AADT Estimate

- The AADT for this site is 10. This compares with 3 in 2009.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	4	3	7

8.1 Morning Peak

Environmental Conditions

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

Key Points

- The volume of morning cyclists recorded at the Jelas Road/Croi Bridge site was very light and the lowest of all the Rodney district sites, with only four movements recorded (up from 1 movement in 2009).
- The key movement was heading east towards Jelas Road (Movement 1 = 3 cyclists).
- All cyclist movement increases at this site were at Movement 1 (up 3 cyclists).

**Table 8.1: Morning Cyclist Movements
Jelas Road/Croi Bridge 2009 - 2010 (n)**

<i>Movement</i>	2009	2010	Change 09-10
1	0	3	3
2	1	1	0
Total	1	4	3

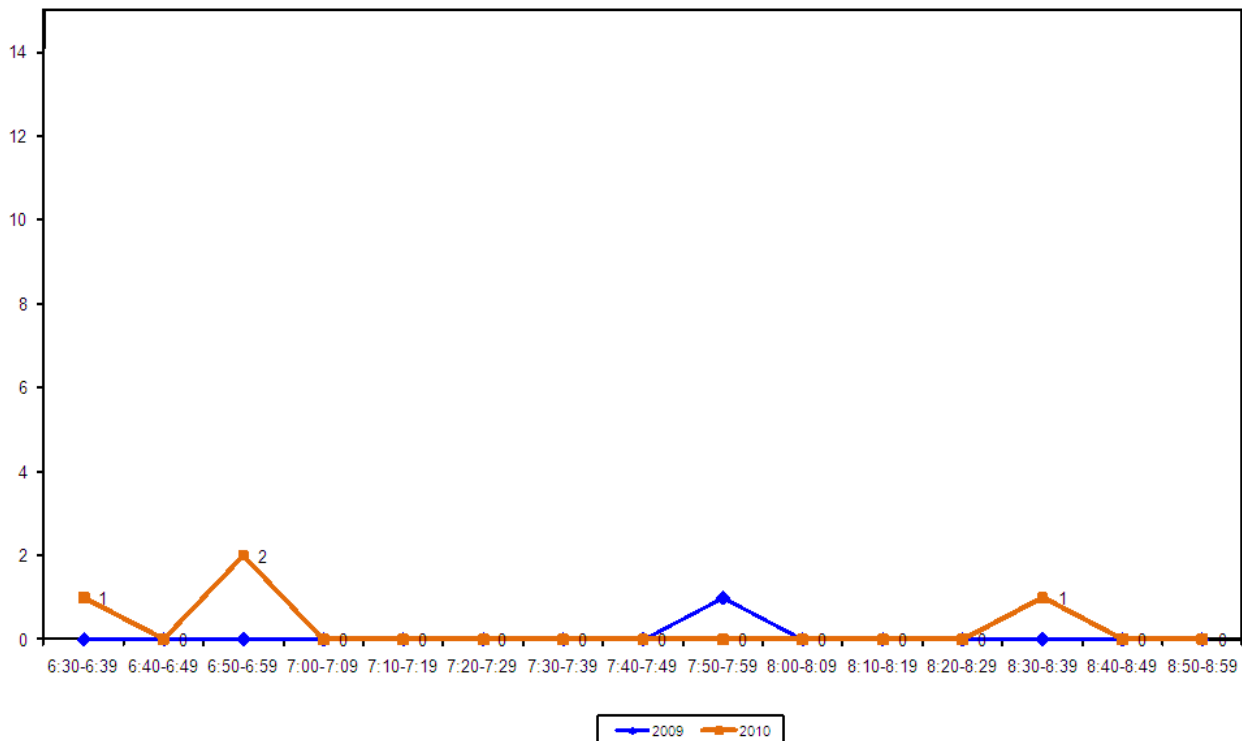
- Three-quarters of the morning cyclists at this site were school children (down from 100 per cent in 2009)
- Half of the cyclists at this site were wearing a helmet (down from 100 per cent last year).

**Table 8.2: Morning Cyclist Characteristics
Jelas Road/Croi Bridge 2009 - 2010 (%)**

	2009	2010	Change 09-10
Cyclist Type			
Adult	0	25	25
School child	100	75	-25
Helmet Wearing			
Helmet on head	100	50	-50
No helmet	0	50	50
Where Riding			
Footpath	0	0	0
Off-road cycleway	100	100	0
Base:	1	4	

- The volume of morning cyclists at this site is very low, with two cyclists reported 6:50am and 6:59am and one cyclist recorded around 6:35am and another around 8:35am. This compares to a single cyclist throughout the 2009 monitoring period 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 drizzle between 6:10pm and 6:20pm, and heavy drizzle from 6:35pm to the end of the shift.
- 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 3 movements recorded (up slightly from 1 movement in 2009).
- The key movement made in the evening was heading west away from Jelas Road (Movement 2 = 2 cyclists).
- Both movements at this site have increased by 1 cyclist since 2009.

**Table 8.3: Evening Cyclist Movements
Jelas Road/Croi Bridge 2009 - 2010 (n)**

<i>Movement</i>	2009	2010	Change 09-10
1	0	1	1
2	1	2	1
Total	1	3	2

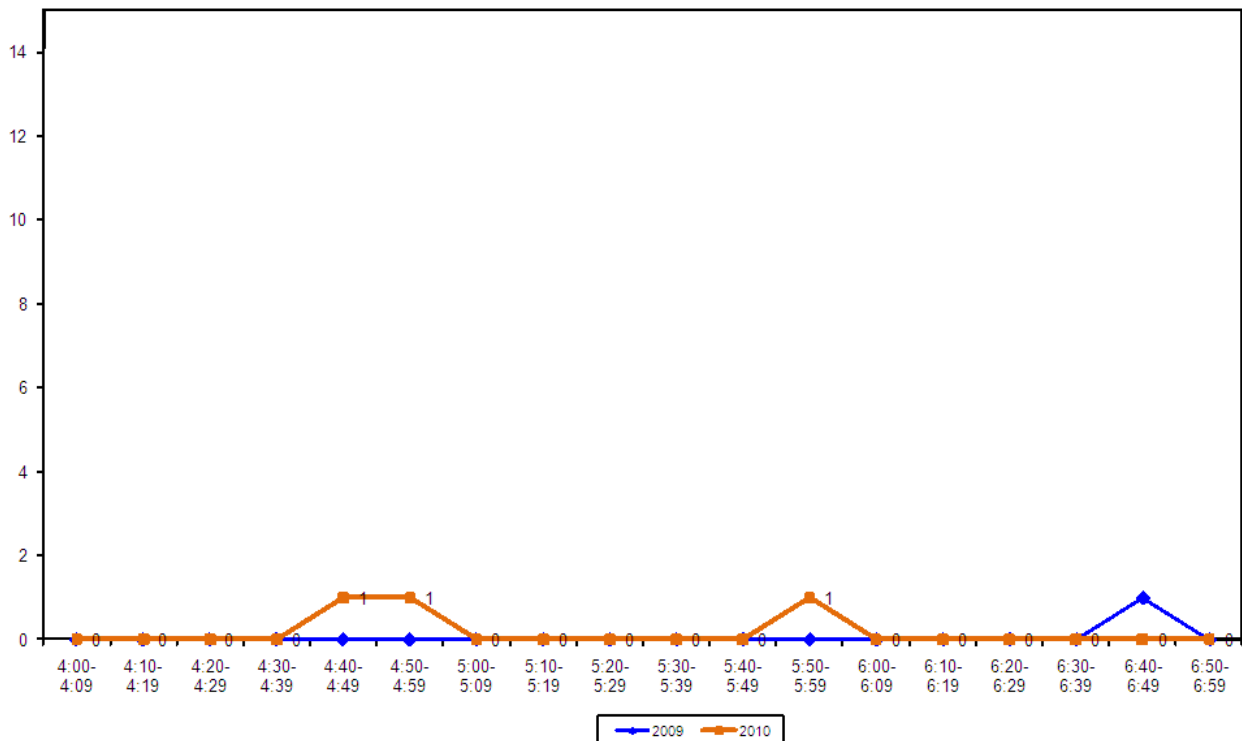
- All three cyclists observed this year were school children (compared to one adult recorded in 2009)
- None of the cyclists were wearing helmets (compared to one cyclist wearing a helmet in last year's monitoring period).

**Table 8.4: Evening Cyclist Characteristics
Jelas Road/Croi Bridge 2009 - 2010 (%)**

	2009	2010	Change 09-10
Cyclist Type			
Adult	100	0	-100
School child	0	100	100
Helmet Wearing			
Helmet on head	100	0	-100
No helmet	0	100	100
Where Riding			
Footpath	0	0	0
Off-road cycleway	100	100	0
Base:	1	3	

- The volume of evening cyclists at this site is extremely low, with only three cyclists recorded around the times of 4:45pm, 4:55pm and 5:55pm. This compares to a single cyclist around 6:45pm in 2009.

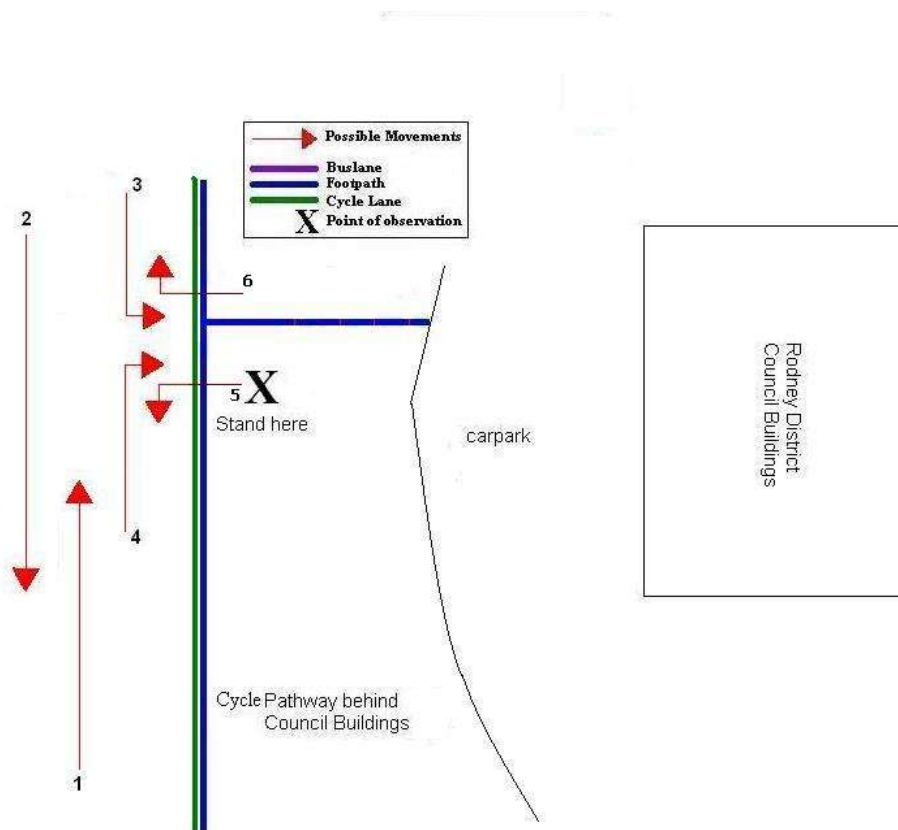
Figure 8.3: Jelas Road/Croi Bridge Cyclist Frequency
 – Evening Peak



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 only last year's results are available to be compared with this year's findings.

ADT Estimate

- The ADT for this site is 142. This compares with 130 in 2009.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	73	22	95

9.1 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift, with some cloud around 8:20am
- 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 73 movements recorded.
- Almost all movements in the morning are heading north along the cycleway (Movement 1 = 70 cyclists).
- The most notable decrease in morning cyclist volumes at this site was at Movement 1 (down 3 cyclists).

**Table 9.1: Morning Cyclist Movements
Behind Rodney District Council Building 2009 - 2010 (n)**

<i>Movement</i>	2009	2010	Change 09-10
1	73	70	-3
2	1	3	2
3	0	0	0
4	1	0	-1
5	0	0	0
6	0	0	0
Total	75	73	-2

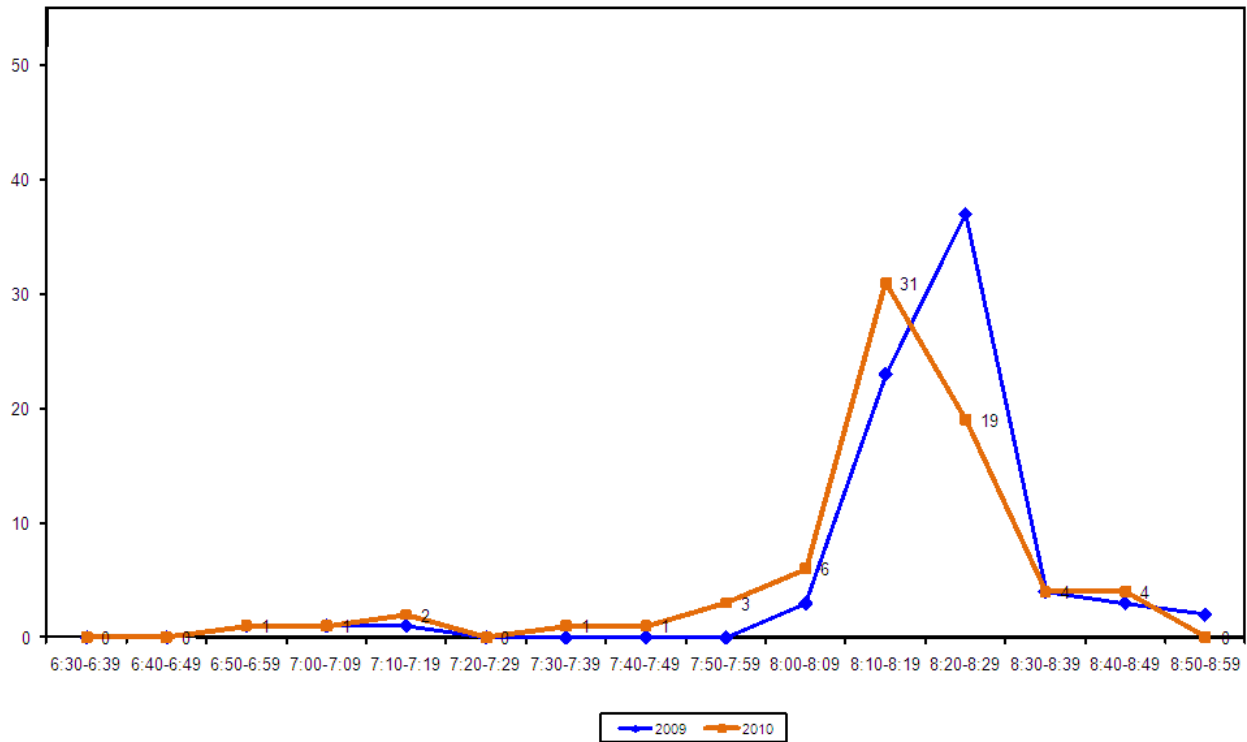
- Most cyclists at this site are children (88 per cent, down slightly from 92 per cent last year).
- The majority of cyclists are wearing a helmet (88 per cent, up slightly from 84 per cent last year).

**Table 9.2: Morning Cyclist Characteristics
Behind Rodney District Council Building 2009 - 2010 (%)**

	2009	2010	Change 09-10
Cyclist Type			
Adult	8	12	4
School child	92	88	-4
Helmet Wearing			
Helmet on head	84	88	4
No helmet	16	12	-4
Where Riding			
Off-road cycleway	100	100	0
Base:	75	73	

- 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 31 and 19 movements recorded between each ten minute interval respectively. This is consistent with the peak recorded in 2009.

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



9.2 Evening Peak

Environmental Conditions

- The weather was fine at the start of the evening shift, changing to overcast by 5:35pm. Light drizzle began at 6:10pm which persisted until rain developed at 6:50pm. This rain continued for the rest of the shift.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Twenty-two cycle movements were recorded during the evening peak at this site, notably higher than the 11 movements recorded in 2009.
- The key movements are heading north (Movement 1 = 10 cyclists) and south (Movement 2 = 12 cyclists) along the cycleway.

**Table 9.3: Evening Cyclist Movements
Behind Rodney District Council Building 2009 - 2010 (n)**

<i>Movement</i>	2009	2010	Change 09-10
1	5	10	5
2	4	12	8
3	0	0	0
4	1	0	-1
5	1	0	-1
6	0	0	0
Total	11	22	11

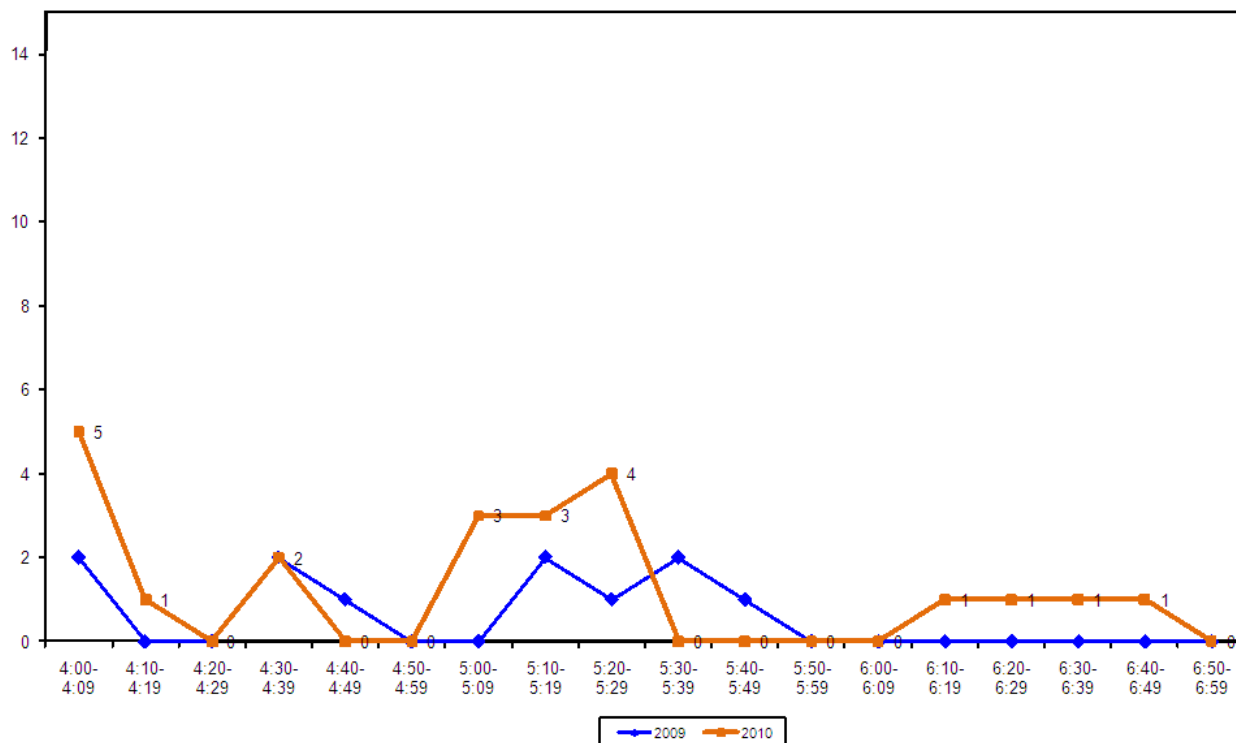
- Just over half of cyclists at this site in the evening are adults (55 per cent, down notably from 91 per cent last year).
- Fifty-nine per cent of cyclists are wearing a helmet (down notably from 82 per cent).

**Table 9.4: Evening Cyclist Characteristics
Behind Rodney District Council Building 2009 - 2010 (%)**

	2009	2010	Change 09-10
Cyclist Type			
Adult	91	55	-36
School child	9	45	36
Helmet Wearing			
Helmet on head	82	59	-23
No helmet	18	41	23
Where Riding			
Off-road cycleway	100	100	0
Base:	11	22	

- Cyclist volumes were low over most of the monitoring period, with a peak between 4:00pm and 4:09pm and a slight peak between 5:00pm and 5:29pm (3, 3 and 4 cyclists per ten minute interval respectively). This compares to no more than 2 cyclists recorded in any ten minute interval in 2009.

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 eight schools that responded to the survey (89 per cent), all schools surveyed have no policies that restrict students cycling to school.
- No school surveyed reported events or issues that may affect the cycle counts.
- The designated count day was Tuesday 9th of March¹³.

Key Points

- Among the surveyed composite, secondary and intermediate/secondary schools, of those eligible to cycle at school, on average, two per cent of students are cycling to their schools. This compares with 3 per cent in 2009.
- Among the eight responding schools, n=154 students were identified as cycling to school.
- This year, Orewa College reported the highest share of cyclists – 7 per cent of all eligible students currently cycling. This compares with 2009, where five per cent of students were reported to be cycling.
- Of the eight schools that responded, two (25 per cent) had no students cycling to school. This compares with 2009 where one (17 per cent) had no students cycling to school.

¹³ The following schools conducted their counts on alternative days:

- Rodney College – Friday, 5th March
- Orewa College – Wednesday, 10th March
- Mahurangi College and Whangaparaoa College – Monday, 15th March
- Kaipara College and Living Way Learning Centre – Friday, 19th March

Table 10.1 shows the results of the 8 schools surveyed in Rodney District.

**Table 10.1: Summary Table Of School Bike Count
2007-2010 (n)**

School Name	Year Levels	School Roll Eligible To Cycle	No. of Cycles Counted	Cyclists as share of those eligible¹⁴ (2010)	Cyclists as share of those eligible¹⁵ (2009)	Cyclists as share of those eligible (2008)	Cyclists as share of those eligible (2007)
Orewa College	Intermediate/Secondary	1600	104	7%	5%	5%	6%
Living Way Learning Centre	Composite	31	1	3%	9%	3%	24%
Wentworth College	Intermediate/Secondary	219	7	3%	4%	<1%	3%
Whangaparaoa College	Intermediate/Secondary	1393	25	2%	1%	2%	4%
Kingsway School	Composite	1058	15	1%	1%	1%	<1%
Mahurangi College	Intermediate/Secondary	1225	2	<1%	0%	1%	1%
Kaipara College	Secondary	673	0	0%	-	0%	<1%
Rodney College	Secondary	339	0	0%	0%	0%	2%
Total		6538	154	2%	3%	2%	3%

¹⁴ This share is calculated by averaging the number of cycles counted over the total number of students eligible to cycle. The figure obtained is rounded to zero decimal places.

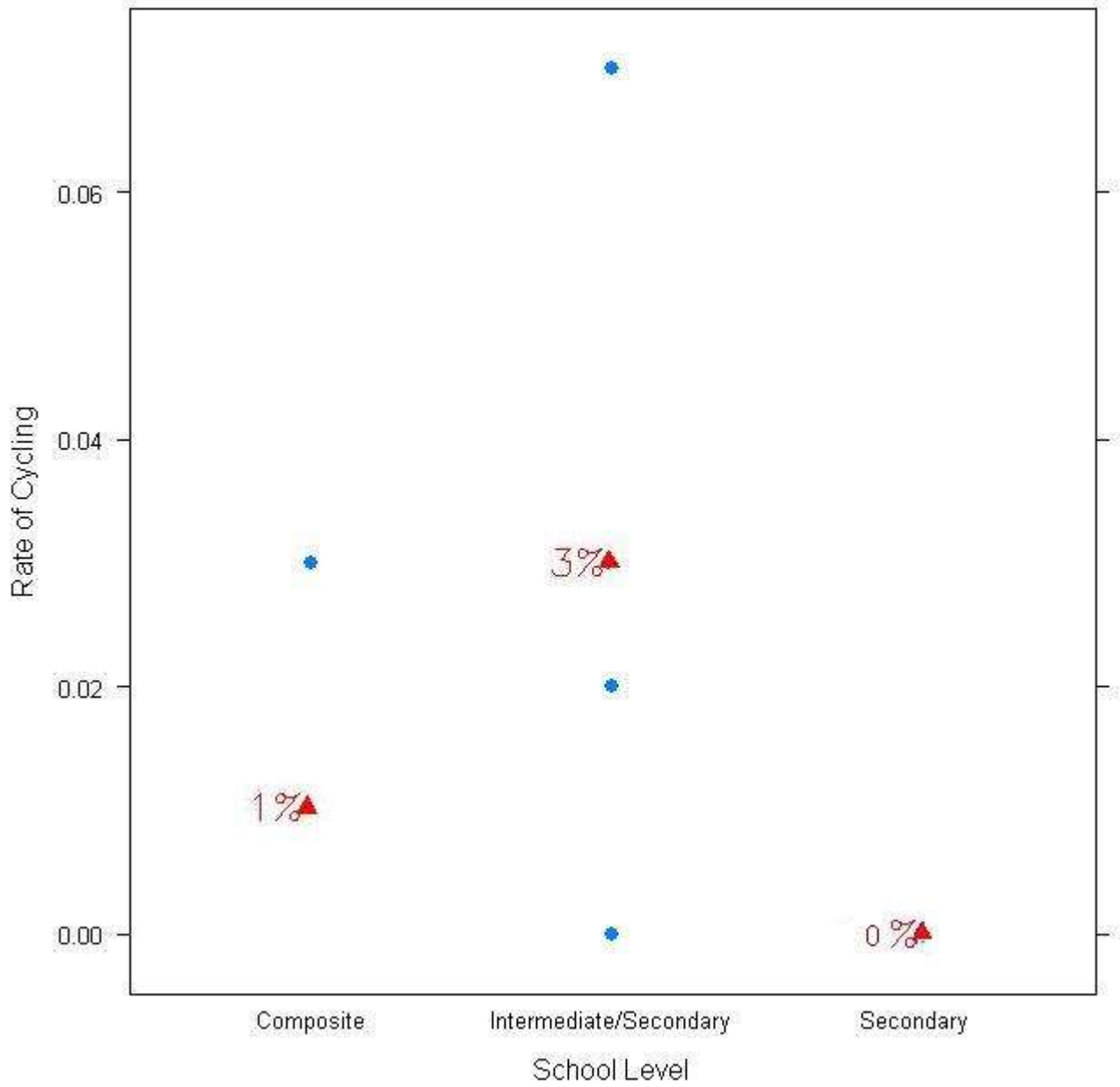
¹⁵ This share is calculated by averaging the number of cycles counted over the total number of students eligible to cycle. The figure obtained is rounded to zero decimal places.

Table 10.2 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 (3 per cent, down from 4 per cent last year) and lowest for secondary schools (0 per cent, unchanged from 2009).

**Table 10.2: Summary Table Of School Bike Count by Year Levels
2007-2010 (%)**

Year Levels	Number of Schools Responded in 2010 (n)	Cyclists as share of those eligible - 2007	Cyclists as share of those eligible - 2008	Cyclists as share of those eligible - 2009	Cyclists as share of those eligible - 2010	Change 08-09
Intermediate/Secondary	4	4	3	4	3	-1
Composite	2	1	1	1	1	0
Secondary	2	1	0	0	0	0
Total	8	3	2	3	2	1

**Figure 10.1: Cycling Rates by School Level
2010 (%)**



APPENDIX

Appendix One: Annual Average Daily Traffic (AADT) Calculation

APPENDIX ONE: ANNUAL AVERAGE DAILY TRAFFIC (AADT) CALCULATION

Note: *This description of the calculation of the Annual Average Daily Traffic Flow of Cyclists has been provided by ViaStrada based on their May 2007 report for ARTA entitled “Development of a Cycle Traffic AADT Tool”.*

Purpose

The purpose of this appendix is to document the recommended procedure for estimating a cycling AADT¹⁶ 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)¹⁷, 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.

¹⁶ Annual average daily traffic

¹⁷ LTSA, 2004

For the Gravitas counts, the following factors apply:

$$\sum H_{AM} = 30 ; \sum H_{PM} = 33.3 ; \text{(AM and PM refer to morning and afternoon respectively)}$$

$$D = 14$$

$$W = 0.9$$

$$R_{DRY} = 100 ; R_{WET} = 64 \text{ (DRY and WET refer to fine and rainy conditions respectively)}$$

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 $3.06 \times 102 = 312$.
- The AADT from the afternoon survey is estimated as $2.78 \times 130 = 359$.
- 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}		H _{Weekend}	
			Mon to Fri	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%