

MONITORING REPORT

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

MANUAL CYCLE MONITORING IN THE AUCKLAND REGION

March 2010

North Shore City

Prepared by Gravitas Research and Strategy Limited

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1. NORTH SHORE CITY SUMMARY OF RESULTS

1.1 Introduction

The Need For Reliable Cycle Trip Data

Monitoring cycle trips and cycle traffic is important to the Auckland Regional Transport Authority (ARTA) and the local councils in the Auckland region, to identify where investment may be needed to improve infrastructure for cycling. Cycle traffic data will also help ARTA prioritise future funding through the Auckland Land Transport 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 13 sites across the North Shore city 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 13 pre-determined sites in North Shore city 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

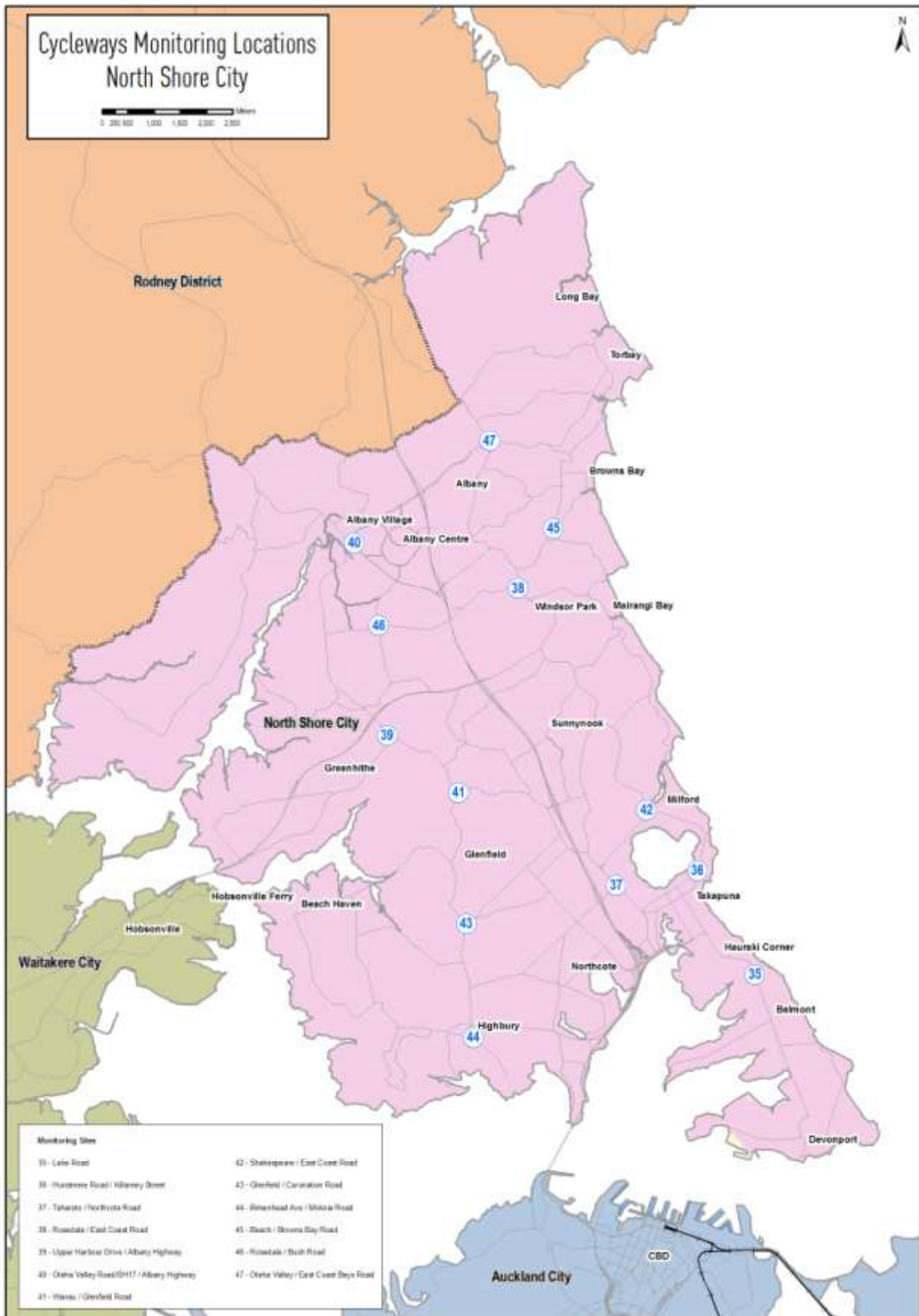
Manual cycle counts have been conducted using a standardised methodology across all sites. This methodology is outlined below. *Note: To ensure the longitudinal comparability of its cycle data, Gravitas have conducted the regional monitoring using a similar approach to that used to collect manual count 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 responses 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 thirteen sites surveyed in North Shore city the Ferry Terminal⁹ site surveyed in Auckland city and the Upper Harbour/Buckley Road site surveyed in Waitakere City. It is split into four sections – a summary of results for the morning peak period (6:30am to 9:00am), a summary for the evening peak period (4:00pm to 7:00pm), a summary of aggregated results (morning and evening combined) and a summary of the results from the school bike shed counts.

While the summaries in this section are useful in giving an overall picture of cycling behaviour in the North Shore city, 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 Sixteen of this report.

Note: Surveying in North Shore city was undertaken on Tuesday 9th March, 2010. Sunrise was at 7:13am and sunset was at 7:49pm. The average temperature was 19 degrees Celsius.

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

- “high/heavy” when 94 or more cycle movements are reported;
- “moderate” when between 50 and 93 cycle movements are reported;
- “low/light” when between 0 and 49 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.

⁹ Note that the Ferry Terminal site is included in Section Fourteen of this report for completeness, as this Auckland city site contains cyclist counts on ferries depart from and arrive to North Shore. However, it is not included in the summary section as not all ferries at this terminal depart from and arrive to North Shore. The same applies to the Upper Harbour Drive/Buckley Road site in Waitakere City.

1.4 Morning Peak

Environmental Conditions

- All sites had fine weather during the morning monitoring period.
- There were no road works that may affect cycle counts.

Key Points

- A total of 1,105 cyclist movements were recorded across the 13 sites in the morning peak period (between 6:30am and 9:00am) in 2010 – including 15 per cent (n=161) observed cycling as groups. This figure is up from 1049 movements recorded in 2009 (an increase of 5 per cent). However, this increase is not statistically significant – that is, the increase falls within the margin of error at the 95% confidence interval.
- The busiest site in the morning peak is at Lake Road by Takapuna Grammar (186, up from 166 cycle movements in 2009), whereas Oteha Valley/State Highway 17/Albany Highway and Birkenhead Avenue/Mokoia Road have the lowest level of morning cyclist traffic (29 cycle movements each).
- Nine of the 13 sites recorded increases this year compared to 2009. The most notable increases are at:
 - Rosedale/Bush Road – up from 26 to 48 movements (85 per cent); and
 - Beach/Browns Bay Road – up from 29 to 50 movements (72 per cent).
- Only four sites recorded declines, the most notable being Shakespeare/East Coast Road – down from 177 to 146 movements (18 per cent).
- The average volume of morning cyclists across the 13 sites monitored in North Shore city is 85 cycle movements. This compares with 81 cycle movements in 2009.

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

Site Number	Locations	2007	2008	2009	2010	Change 09-10	Change 07-10
35	Lake Road, by Takapuna Grammar	127	200	166	186	12%	46%
36	Hurstmere Road/Killarney Street	76	134	186	180	-3%	137%
42	Shakespeare/East Coast Road	82	127	177	146	-18%	78%
37	Taharoto/Northcote Road	111	160	98	117	19%	5%
38	Rosedale/East Coast Road	54	52	105	93	-11%	72%
47	Oteha Valley/East Coast Road	42	40	69	87	26%	107%
39	Upper Harbour Drive/Albany Highway	14	54	63	65	3%	364%
45	Beach/Browns Bay Road	11	26	29	50	72%	355%
46	Rosedale/Bush Road	15	36	26	48	85%	220%
41	Wairau/Glenfield Road	34	39	42	38	-10%	12%
43	Glenfield/Coronation Road	16	36	36	37	3%	131%
40	Oteha Valley/SH17/Albany Highway	4	20	25	29	16%	625%
44	Birkenhead Ave/Mokoia Road	20	20	27	29	7%	45%
	Average per site	47	73	81	85	5%	81%
	Total	606	944	1049	1105	5%	82%

- Morning cyclist characteristics are shown in Table 1.2 below. Overall, 81 per cent of cyclists are adults (compared with 82 per cent in 2009). Of the 13 sites monitored in North Shore city, the Oteha Valley/East Coast Road intersection has the greatest share of cyclists who are school children (35 per cent).
- Almost all morning cyclists (97 per cent) are wearing a helmet across all North Shore city sites (stable from 96 per cent last year). Helmet wearing is least prevalent at the intersection of Beach/Browns Bay Road (89 per cent wearing a helmet).
- On average, 79 per cent of cyclists are riding on the road (stable from 77 per cent in 2009). Footpath riding is most evident at the Rosedale/East Coast Road intersection (38 per cent).

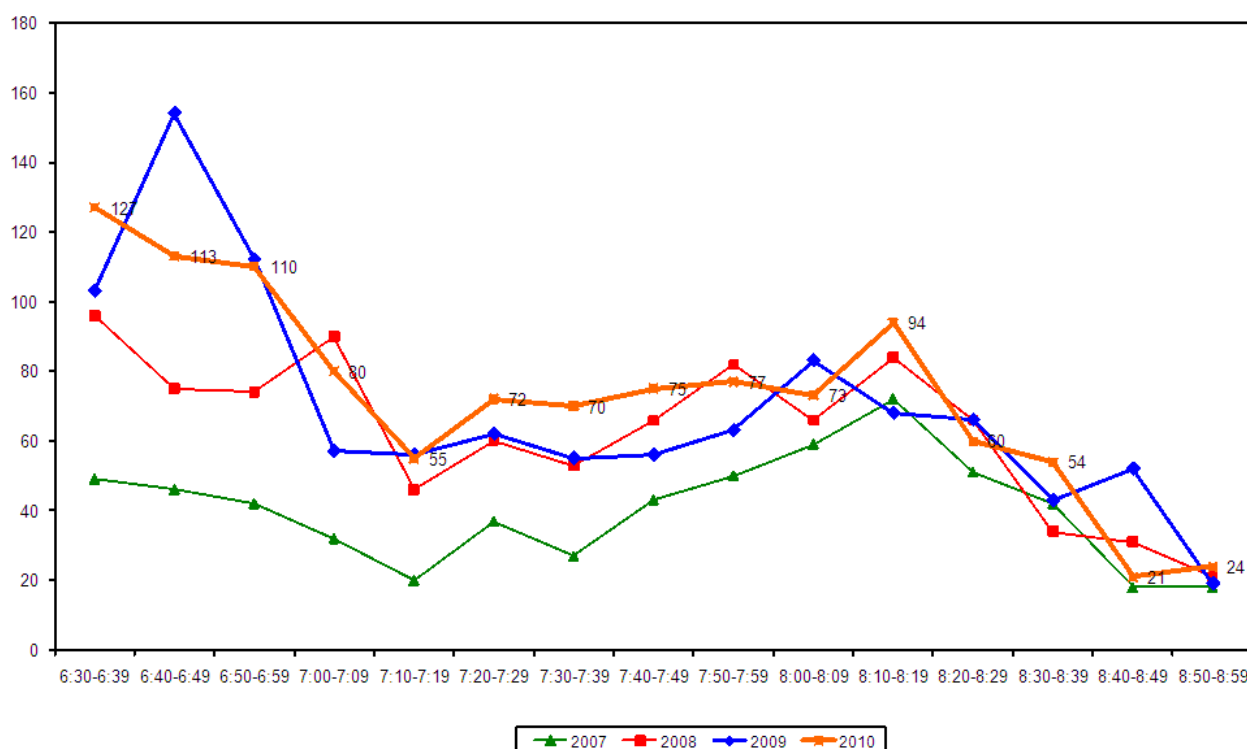
**Table 1.2: Summary of Morning Cyclist Characteristics
2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	69%	78%	82%	81%	-1%
School child	31%	22%	18%	19%	1%
Helmet Wearing					
Helmet on head	93%	98%	96%	97%	1%
No helmet	7%	2%	4%	3%	-1%
Where Riding					
Road	67%	80%	77%	79%	2%
Footpath	33%	20%	22%	20%	-2%
Off-road cycleway ¹⁰	-	-	1%	1%	0%
Base:	606	944	1049	1105	

¹⁰ 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 cycleways 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. The volume of morning cycle movements starts off with a notable peak (127 movements, 113 movements and 110 movements recorded over each ten minute interval respectively from 6:30am to 6:59am). Cycle volumes then level off with another slight peak recorded between 8:10am and 8:19am (94 movements) before tailing off to the end of the monitoring period.
- The general pattern is consistent with the previous years. However, the peak in the first 30 minutes of monitoring is lower than in 2009, but still higher than recorded in 2007 and 2008. The peak between 8:10am and 8:19am is ten minutes later than the peak observed in 2009, but the same time as the peaks in 2007 and 2008.

**Figure 1.1: Total Cyclist Frequency
– Morning Peak**



1.5 Evening Peak

Environmental Conditions

- Consistent with the morning shift, all North Shore city sites had good weather in the evening monitoring period.
- There were no road works that may affect cycle counts

Key Points

- A total of 1072 cyclist movements were recorded across the 13 sites in the evening peak period (between 4:00pm and 7:00pm) in 2010 – including three per cent (n=27) observed cycling as groups. This figure has increased notably from 929 movements recorded in 2009 (an increase of 15 per cent). This increase is not statistically significant – that is, the increase falls within the margin of error at the 95% confidence interval.
- Of the 13 sites monitored in North Shore city, the intersections at Shakespeare/East Coast Road site is the busiest in terms of the evening cyclists' activity, with 159 cycle movements recorded (up from 133 movements last year). Lake Road (141 movements) and Hurstmere Road/Killarney Street (122 movements) are also busy sites in North Shore city.
- The lowest level of evening cyclist traffic is at the Beach/Brown Bay Road intersection (27 movements).
- Almost all sites recorded increases this year compared to 2009. The most notable increases are at:
 - Birkenhead Avenue/Mokoia Road – up from 30 to 46 movements (53 per cent); and
 - Wairau/Glenfield Road – up from 38 to 53 movements (39 per cent)
- Decreases in cycle volumes were recorded at the intersections of:
 - Beach/Browns Bay Road – down from 30 to 27 movements (10 per cent); and
 - Hurstmere Road/Killarney Street (down from 132 to 122 movements (8 per cent).
- The average volume of evening cyclists across the 13 sites monitored in North Shore city is 82 cycle movements. This compares with 71 movements in 2009.

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

Site No.	Locations	2007	2008	2009	2010	Change 09-10	Change 07-10
42	Shakespeare/East Coast Road	55	123	133	159	20%	189%
35	Lake Road, by Takapuna Grammar	65	97	129	141	9%	117%
36	Hurstmere Road/Killarney Street	45	118	132	122	-8%	171%
37	Taharoto/Northcote Road	51	110	104	112	8%	120%
39	Upper Harbour Drive/Albany Highway	11	44	75	93	24%	745%
47	Oteha Valley/East Coast Road	17	74	69	81	17%	376%
40	Oteha Valley/SH17/Albany Highway	15	28	47	62	32%	313%
46	Rosedale/Bush Road	16	37	46	61	33%	281%
38	Rosedale/East Coast Road	22	46	54	59	9%	168%
43	Glenfield/Coronation Road	12	39	42	56	33%	367%
41	Wairau/Glenfield Road	30	34	38	53	39%	77%
44	Birkenhead Ave/Mokoia Road	20	29	30	46	53%	130%
45	Beach/Browns Bay Road	8	19	30	27	-10%	238%
	Average per site	28	61	71	82	15%	193%
	Total	367	798	929	1072	15%	192%

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

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 Figure 1.1 and 1.2); 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 13 sites decrease by 19 per cent from the number recorded in the morning shift.
- Seven out of the 13 sites have the evening cycle volume lower than the morning cycle volume. The most notable declines between the morning and evening peak are reported at:
 - Beach/Browns Bay Road – down 54 per cent;
 - Rosedale/East Coast Road – down 47 per cent;
 - Hurstmere Road/Killarney Street – down 43 per cent; and
 - Lake Road, by Takapuna Grammar – down 37 per cent.
- In contrast, the number of evening cyclists recorded at six intersections are higher than the morning cycle volume. The most notable increases between the morning and evening peak are reported at:
 - Oteha Valley/SH17/Albany Highway – up 79 per cent;
 - Birkenhead Avenue/Mokoia Road – up 31 per cent; and
 - Glenfield/Coronation Road – up 27 per cent.

Note: The notably higher number of morning shift cyclists can be attributed, at least in part, to the presence of cyclist training groups

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

Site Number	Locations	AM	PM¹¹	Change
40	Oteha Valley/SH17/Albany Highway	29	52	79%
44	Birkenhead Ave/Mokoia Road	29	38	31%
43	Glenfield/Coronation Road	37	47	27%
39	Upper Harbour Drive/Albany Highway	65	78	20%
41	Wairau/Glenfield Road	38	44	16%
46	Rosedale/Bush Road	48	51	6%
42	Shakespeare/East Coast Road	146	133	-9%
37	Taharoto/Northcote Road	117	93	-21%
47	Oteha Valley/East Coast Road	87	68	-22%
35	Lake Road, by Takapuna Grammar	186	118	-37%
36	Hurstmere Road/Killarney Street	180	102	-43%
38	Rosedale/East Coast Road	93	49	-47%
45	Beach/Browns Bay Road	50	23	-54%
	Total	1105	893	-19%

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.

- Compared with the previous year, the majority of evening cyclists continue to be adults (83 per cent, down slightly from 86 per cent in 2009). Of the 13 sites, the Shakespeare/East Coast Road intersection has the smallest share of adult cyclists in the evening (74 per cent).
- The majority of evening cyclists are wearing a helmet (94 per cent, stable from 95 per cent last year). A higher proportion of evening cyclists at the Birkenhead Avenue/Mokoia Road intersection are not wearing a helmet compared with other sites (20 per cent).
- Three-quarters of cyclists are riding on the road in the evening (75 per cent, stable from 77 per cent in 2009). The incidence of riding on the footpath was higher at the Shakespeare/East Coast Road intersection than other sites monitored in North Shore city (40 per cent).

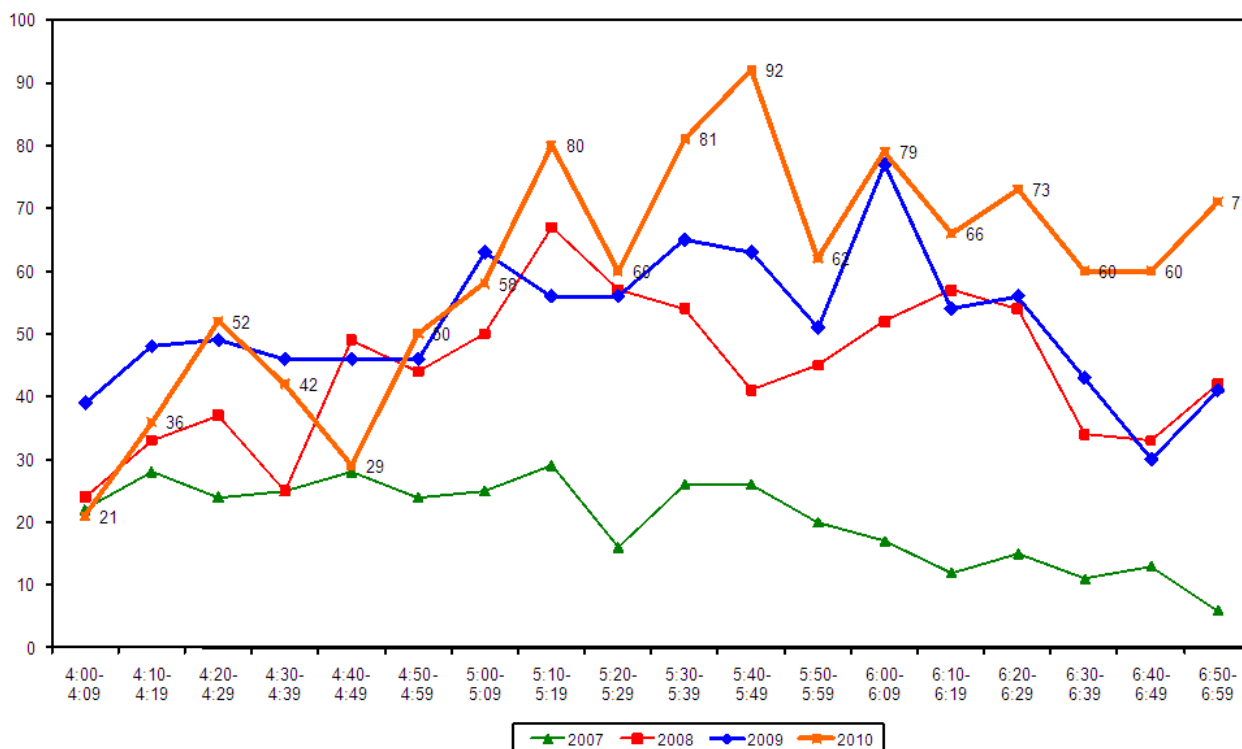
**Table 1.5: Summary of Evening Cyclist Characteristics
2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	89%	83%	86%	83%	-3%
School child	11%	17%	14%	17%	3%
Helmet Wearing					
Helmet on head	89%	94%	95%	94%	-1%
No helmet	11%	6%	5%	6%	1%
Where Riding					
Road	80%	77%	77%	75%	-2%
Footpath	20%	23%	22%	25%	3%
Off-road cycleway ¹²	-	-	1%	0%	-1%
Base:	367	798	929	1072	

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 movement in the evening is illustrated in Figure 1.2. Evening cyclist volumes increase steadily to peak between 5:40pm and 5:49pm (92 movements) and remain relatively high through the rest of the monitoring period. This compares to a steady increase to peak between 6:00pm and 6:09pm (77 movements) before tailing off towards the end of the monitoring period in 2009.

**Figure 1.2: Total Cyclist Frequency
– Evening Peak**



1.6 Aggregated Total

- A total of 2,177 cyclist movements were recorded across the 13 sites in 2010. This represents a 10 per cent increase from last year's measure (1,978 movements) - not statistically significant at the 95% confidence interval. Nine per cent (n=188) of the total cycle movements were observed cycling as groups.
- The number of morning cyclists comprises a slightly larger share (51 per cent) of the total number of cycle movements than the evening cyclists (49 per cent).
- In contrast to 2009, the busiest site is at Lake Road, by Takapuna Grammar, with a total of 327 movements recorded, while the Birkenhead Ave/Mokoia Road intersection continues to have the fewest cyclists (75 movements).
- Cyclist volumes have increased for 10 of the 13 sites monitored, with the most notable increase at the intersection of Rosedale/Bush Road (up 51 per cent from 72 movements in 2009 to 109 movements this year).

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

Site Number	Locations	2007	2008	2009	2010	Change 09-10	Change 07-10
35	Lake Road, by Takapuna Grammar	192	297	295	327	11%	70%
42	Shakespeare/East Coast Road	137	250	310	305	-2%	123%
36	Hurstmere Road/Killarney Street	121	252	318	302	-5%	150%
37	Taharoto/Northcote Road	162	270	202	229	13%	41%
47	Oteha Valley/East Coast Road	59	114	138	168	22%	185%
39	Upper Harbour Drive/Albany Highway	25	98	138	158	14%	532%
38	Rosedale/East Coast Road	76	98	159	152	-4%	100%
46	Rosedale/Bush Road	31	73	72	109	51%	252%
43	Glenfield/Coronation Road	28	75	78	93	19%	232%
40	Oteha Valley/SH17/Albany Highway	19	48	72	91	26%	379%
41	Wairau/Glenfield Road	64	73	80	91	14%	42%
45	Beach/Browns Bay Road	19	45	59	77	31%	305%
44	Birkenhead Ave/Mokoia Road	40	49	57	75	32%	88%
	Total	973	1742	1978	2177	10%	124%

- Overall cyclist characteristics are illustrated in Table 1.7. In total, 82 per cent of cyclists are adults (stable from 84 per cent in 2009).
- Almost all cyclists are wearing a helmet (95 per cent, stable from 96 per cent last year).
- On average, just more than three-quarters of cyclists are riding on the road (77 per cent, unchanged from 2009).

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

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	77%	80%	84%	82%	-2%
School child	23%	20%	16%	18%	2%
Helmet Wearing					
Helmet on head	92%	96%	96%	95%	-1%
No helmet	8%	4%	4%	5%	1%
Where Riding					
Road	72%	78%	77%	77%	0%
Footpath	28%	22%	22%	23%	1%
Off-road cycleway ¹³	-	-	1%	0%	-1%
Base:	973	1742	1978	2177	

¹³ 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

AADT Estimate

- Table 1.8 provides the comparative AADT estimates for each site, based on the average of morning and evening peak AADT calculations.
- The highest AADT is at the Lake Road site (479 daily movements, compared with 432 movements in 2009) and the lowest is at Birkenhead Ave/Mokoia Road (108 daily movements, up from 83 movements last year).
- Most sites (10 out of 13) have recorded increases in total AADT estimates this year compared with 2009. The intersections with the biggest increases are:
 - Rosedale/Bush Road (up 55 per cent);
 - Beach/Browns Bay Road (up 33 per cent); and
 - Birkenhead Ave/Mokoia Road (up 30 per cent).
- In contrast, the number of total cyclists recorded at three sites is lower than last year. The most notable decreases are at Hurstmere Road/Killarney Street (443 daily movements, down 5 per cent from 2009) and Rosedale/East Coast Road (224 daily movements, also down 5 per cent from 2009).

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

Site Number	Locations	2007 ¹⁴	2008	2009	2010	Change 09-10	Change 07-10
35	Lake Road, by Takapuna Grammar	444	440	432	479	11%	8%
36	Hurstmere Road/Killarney Street	279	368	466	443	-5%	59%
42	Shakespeare/East Coast Road	314	364	454	442	-3%	41%
37	Taharoto/Northcote Road	375	396	293	333	14%	-11%
47	Oteha Valley/East Coast Road	137	163	201	245	22%	79%
39	Upper Harbour Drive/Albany Highway	57	143	200	228	14%	300%
38	Rosedale/East Coast Road	176	143	235	224	-5%	27%
46	Rosedale/Bush Road	70	106	103	157	52%	124%
43	Glenfield/Coronation Road	64	109	113	134	19%	109%
41	Wairau/Glenfield Road	93	107	117	131	12%	41%
40	Oteha Valley/SH17/Albany Highway	42	69	103	130	26%	210%
45	Beach/Browns Bay Road	44	66	86	114	33%	159%
44	Birkenhead Ave/Mokoia Road	58	71	83	108	30%	86%

¹⁴ As in 2008 and 2009, the AADT estimates for North Shore city this year are calculated under “dry” weather factor, whereas a “wet” factor was applied to AADT calculations in 2007.

1.8 School Bike Shed Count Summary

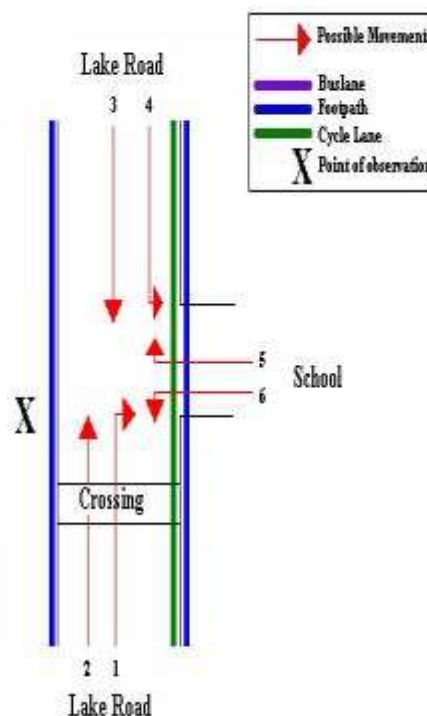
Key Points

- Among the surveyed schools, of those eligible to cycle at school, on average, three per cent of students are cycling to their schools (up from 2 per cent from last year).
- Among the 22 participating schools, n=617 students were reported as cycling to school.
- As in previous years, Belmont Intermediate School reported the highest share of cyclists – 33 per cent of all eligible students currently cycling (up from 22 per cent last year).
- Of the 22 schools that responded, one (9 per cent) had no students cycling to school. This compares with three schools (14 per cent) in 2009.
- Rates of cycling to school are highest among intermediate schools (8 per cent, up from 5 per cent in 2009) and lowest for composite schools (<1 per cent, unchanged from last year).

2. LAKE ROAD, TAKAPUNA (SITE 35)

Figure 2.1 shows the possible cyclist movements at this site.

Figure 2.1: Cycle Movements: Lake Road



AADT Estimate

- The AADT for this site is 479. This compares with:
 - 432 in 2009
 - 440 in 2008
 - 444 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	186	141	327

2.1 Morning Peak

Environmental Conditions

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

Key Points

- Morning cyclist traffic has increased at the Lake Road site this year to 186 movements (up from 166 movements in 2009). Lake Road is now the busiest of the 13 sites monitored in the morning peak.
- Key morning movements are straight along Lake Road in both directions (Movement 3 = 131 cyclists; Movement 2 = 51 cyclists).
- Movement 3 (up 21 cyclists) has been the only notable change in cyclist traffic movements in 2009.

**Table 2.1: Morning Cyclist Movements
Lake Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	1	0	3	1	-2
2	40	68	50	51	1
3	85	132	110	131	21
4	1	0	3	3	0
5	0	0	0	0	0
6	0	0	0	0	0
Total	127	200	166	186	20

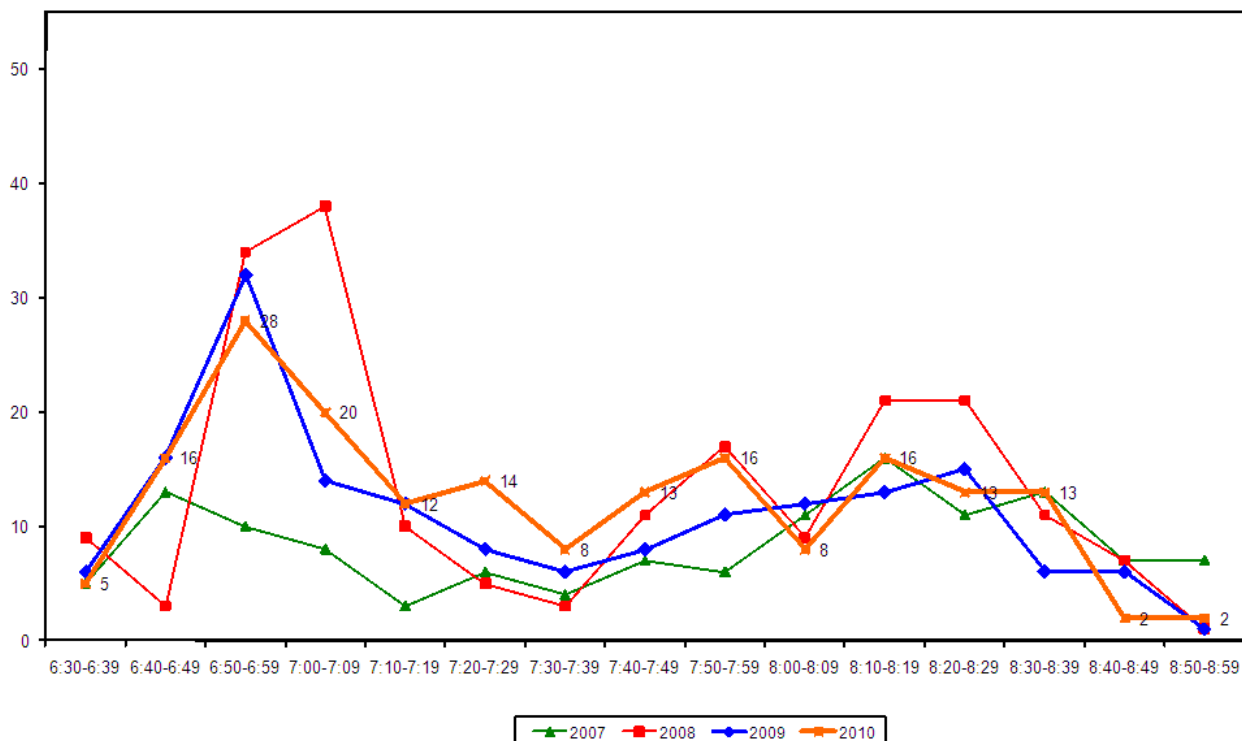
- Over the morning peak in 2010, adults comprise the greatest share of cycle movements (81 per cent, stable from last year).
- The majority of cyclists are wearing a helmet (97 per cent, stable from 2009).
- Eighty-four per cent of cyclists are riding on the road (up from 77 per cent last year).

**Table 2.2: Morning Cyclist Characteristics
Lake Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	64	77	83	81	-2
School child	36	23	17	19	2
Helmet Wearing					
Helmet on head	98	98	98	97	-1
No helmet	2	2	2	3	1
Where Riding					
Road	77	78	77	84	7
Footpath	23	22	23	16	-7
Base:	127	200	166	186	

- The volume of morning cycle movements increases to peak at 28 movements early in the monitoring period (between 6:50am and 6:59am) before levelling out again to between 8 and 16 cyclists recorded during most ten minute intervals. This compares with a similar peak last year between 6:50am and 6:59am. Only four cyclists were recorded between 8:40am and 8:59am at the end of the monitoring period.

**Figure 2.2: Lake Road Cyclist Frequency
– Morning Peak**



Note: In 2010, 17 per cent of the total cycle movements in the morning peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- Three cyclists at 6.49am
- Seven cyclists at 6.51am
- Six cyclists at 6.54am
- Four cyclists at 6.55am
- Six cyclists at 7.05am
- Five cyclists at 8.12am

2.2 Evening Peak

Environmental Conditions

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

Key Points

- In 2010, the volume of evening cyclists has increased, from 129 in 2009 to 141 movements recorded this year.
- Consistent with last year, the most common movements in the evening are straight along Lake Road in both directions (Movement 2 = 92 cyclists; Movement 3 = 44 cyclists).
- The most notable increase in evening cyclist volumes is at Movement 2 (up 28 cyclists).

**Table 2.3: Evening Cyclist Movements
Lake Road 2007-2010 (n)**

Movement	2007	2008	2009	2010	Change 09-10
1	0	0	2	0	-2
2	27	38	64	92	28
3	34	56	53	44	-9
4	1	3	2	3	1
5	2	0	5	1	-4
6	1	0	3	1	-2
Total	65	97	129	141	12

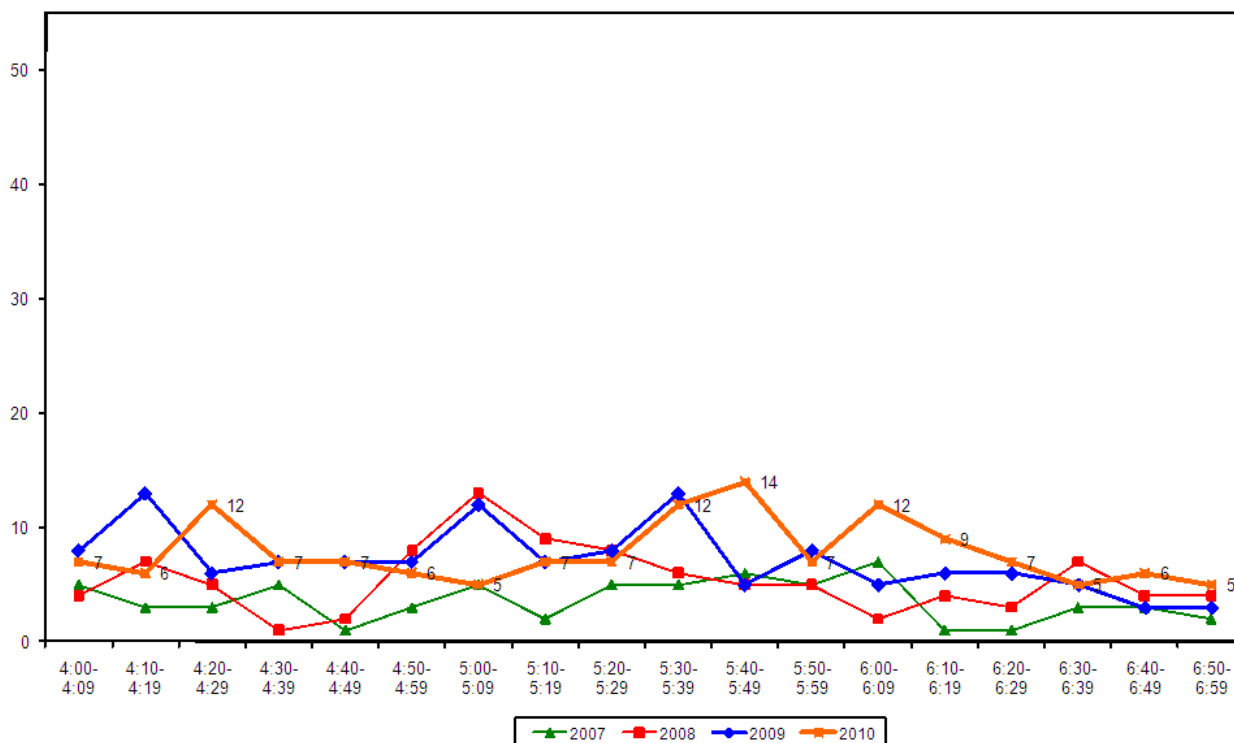
- The majority of cyclists using this site in the evening are adults (85 per cent, unchanged from 2009).
- As in 2009, helmet wearing continues to be widespread (91 per cent, compared with 94 per cent last year).
- Three quarters of cyclists (76 per cent) are riding on the road (stable from 74 per cent last year).

**Table 2.4: Evening Cyclist Characteristics
Lake Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	97	85	85	85	0
School child	3	15	15	15	0
Helmet Wearing					
Helmet on head	94	92	94	91	-3
No helmet	6	8	6	9	3
Where Riding					
Road	95	76	74	76	2
Footpath	5	24	26	24	-2
Base:	65	97	129	141	

- This year, the volume of cycle movements is more variable during the evening shift, with three peaks evident - between 4:20pm and 4:29pm (12 movements), 5:40pm and 5:49pm (14 movements) and 6:00pm and 6:09pm (12 movements). This compares with peaks between 4:10pm and 4:19pm, 5:00pm and 5:09pm and 5:09pm and 5:39pm in 2009.

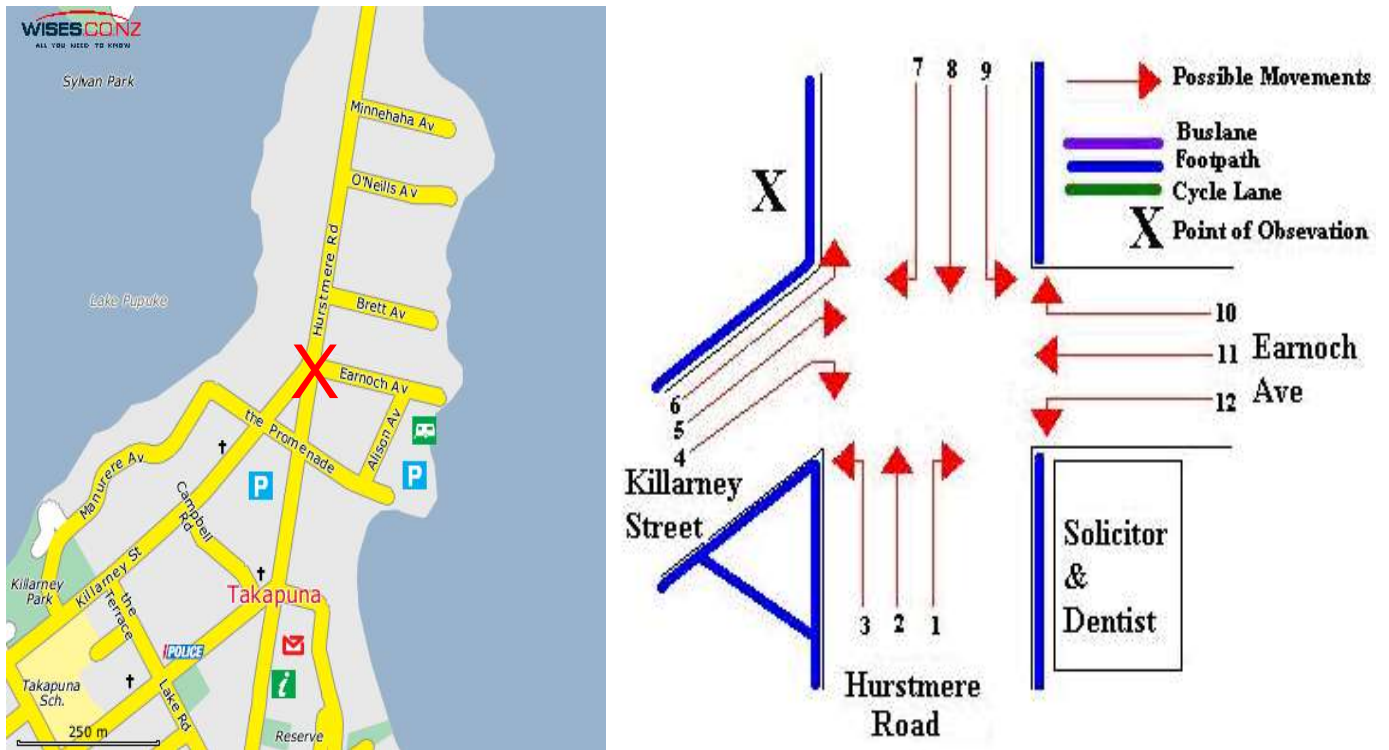
Figure 2.3: Lake Road Cyclist Frequency – Evening Peak



3. HURSTMERE ROAD/KILLARNEY STREET, TAKAPUNA (SITE 36)

Figure 3.1 shows the possible cyclist movements at this intersection.

Figure 3.1: Cycle Movements: Hurstmere Road/Killarney Street



AADT Estimate

- The AADT for this site is 443. This compares with:
 - 466 in 2009
 - 368 in 2008
 - 279 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	180	122	302

3.1 Morning Peak

Environmental Conditions

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

Key Points

- The volume of morning cyclists at the Hurstmere Road/Killarney Street intersection is down from 186 in 2009 to 180 cycle movements in 2010.
- The key movement in the morning is straight along Hurstmere Road heading south (Movement 8 = 91 cyclists).
- Cyclist volumes at Movement 6 are up notably, from 15 movements in 2009 to 42 movements in 2010. The most notable decrease is at Movement 8 (down from 117 to 91).

**Table 3.1: Morning Cyclist Movements
Hurstmere Road/Killarney Street 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	2	0	-2
2	15	43	44	33	-11
3	0	1	1	5	4
4	0	3	0	1	1
5	0	0	0	0	0
6	9	46	15	42	27
7	6	6	6	7	1
8	44	33	117	91	-26
9	2	1	0	1	1
10	0	1	0	0	0
11	0	0	0	0	0
12	0	0	1	0	-1
Total	76	134	186	180	-6

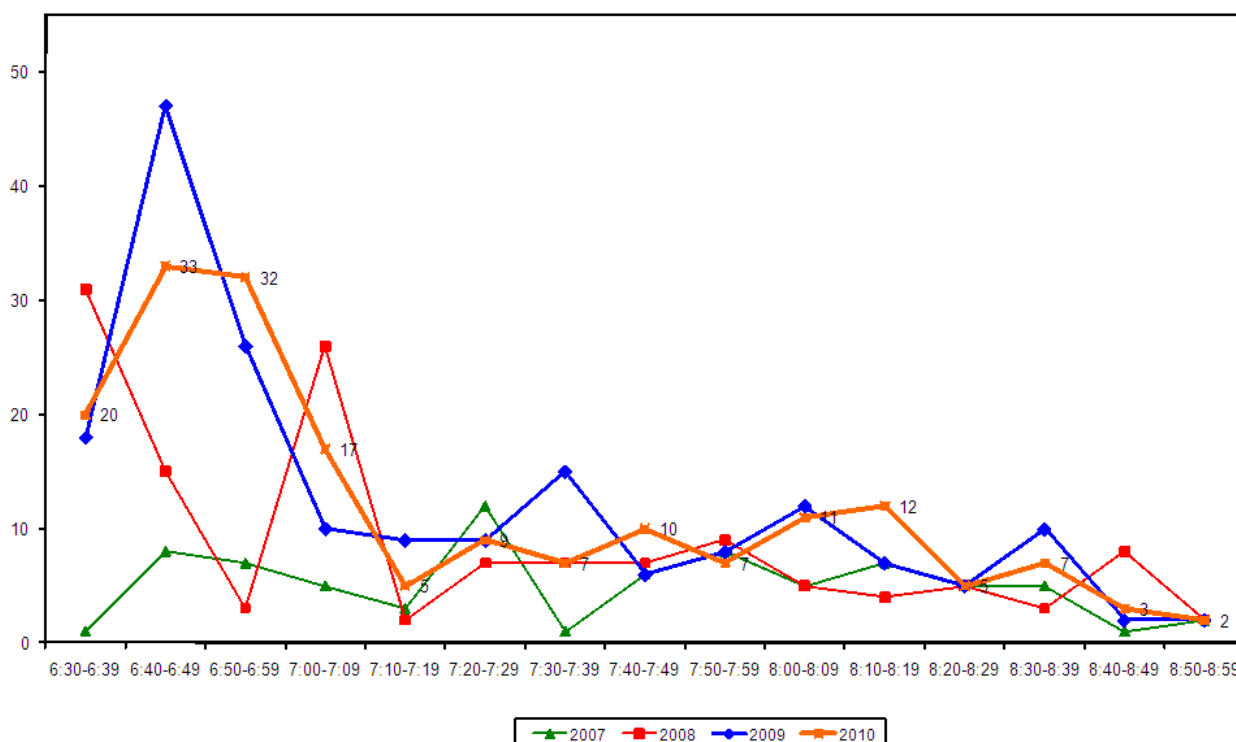
- Over the morning peak, most cyclists using this intersection are adults (92 per cent, stable from 94 per cent in 2009).
- Almost all cyclists are wearing a helmet (99 per cent, stable from 98 per cent last year).
- Most cyclists are riding on the road (90 per cent, stable from last year).

**Table 3.2: Morning Cyclist Characteristics
Hurstmere Road/Killarney Street 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	87	75	94	92	-2
School child	13	25	6	8	2
Helmet Wearing					
Helmet on head	93	99	98	99	1
No helmet	7	1	2	1	-1
Where Riding					
Road	83	93	90	90	0
Footpath	17	7	10	10	0
Base:	76	134	186	180	

- The volume of morning cycle movements peaks notably at the beginning of the monitoring period, with 33 movements recorded between 6:40am and 6:49am. Cycle volumes then drop off to be relatively consistent through to the end of the monitoring period. Last year cycle volumes also peaked between 6:40am and 6:49am. *Note that cyclist training groups at this site are likely to have contributed to the sharp increase at the start of the morning monitoring period in 2008, 2009 and 2010.*

Figure 3.2: Hurstmere Road/Killarney Street Cyclist Frequency – Morning Peak



Note: In 2010, 29 per cent of the total cycle movements in the morning peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- Three cyclists at 6.30am
- Three cyclists at 6.35am
- Seven cyclists at 6.44am
- Seven cyclists at 6.46am
- Three cyclists at 6.49am
- Three cyclists at 6.50am
- Four cyclists at 6.52am.
- Eight cyclists at 6.58am
- Six cyclists at 6.58am
- Four cyclists at 7.35am
- Four cyclists at 7.47am.

3.2 Evening Peak

Environmental Conditions

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

Key Points

- Of the 13 sites monitored in North Shore city, the Hurstmere Road/Killarney Street intersection is the second busiest in terms of evening cyclists' activity, with 122 cycle movements recorded (down from 132 movements in 2009).
- The key movement in the evening is straight along Hurstmere Road heading north (Movement 2 = 53 cyclists). Other notable movements are the left turn off Killarney Street onto Hurstmere Road (Movement 6 = 31 cyclists), and straight along Hurstmere Road heading south (Movement 8 = 25 cyclists).
- Of the 12 movements possible at this site the most notable decrease is at Movement 2 (down 28 cyclists).

**Table 3.3: Evening Cyclist Movements
Hurstmere Road/Killarney Street 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	24	42	81	53	-28
3	0	0	2	1	-1
4	0	0	0	1	1
5	0	1	0	0	0
6	7	48	27	31	4
7	2	5	3	6	3
8	10	20	19	25	6
9	2	0	0	0	0
10	0	2	0	5	5
11	0	0	0	0	0
12	0	0	0	0	0
Total	45	118	132	122	-10

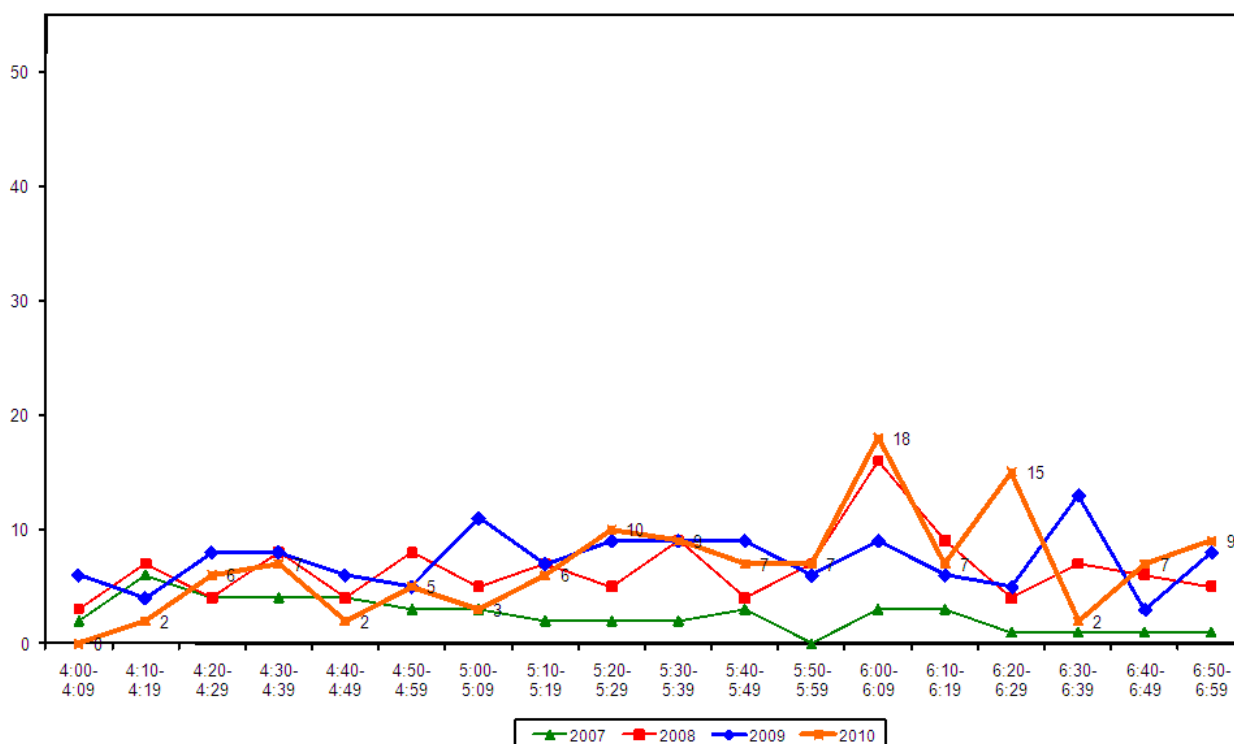
- Over the evening peak, the greatest share of cyclists using the Hurstmere Road/Killarney Street intersection are adults (78 per cent, notably down from 92 per cent in 2009).
- Most cyclists are wearing a helmet (93 per cent, compared with 96 per cent last year).
- Seventy-two per cent of cyclists are riding on the road, down notably from 89 per cent in 2009.

**Table 3.4: Evening Cyclist Characteristics
Hurstmere Road/Killarney Street 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	89	81	92	78	-14
School child	11	19	8	22	14
Helmet Wearing					
Helmet on head	89	92	96	93	-3
No helmet	11	8	4	7	3
Where Riding					
Road	82	79	89	72	-17
Footpath	18	21	11	28	17
Base:	45	118	132	122	

- The volume of evening cyclists stays relatively stable until the first peak between 6:00pm and 6:09pm and the second between 6:20pm and 6:29pm. This compares with a peak between 6:30pm and 6:39pm in 2009.

Figure 3.3: Hurstmere Road/Killarney Street Cyclist Frequency – Evening Peak

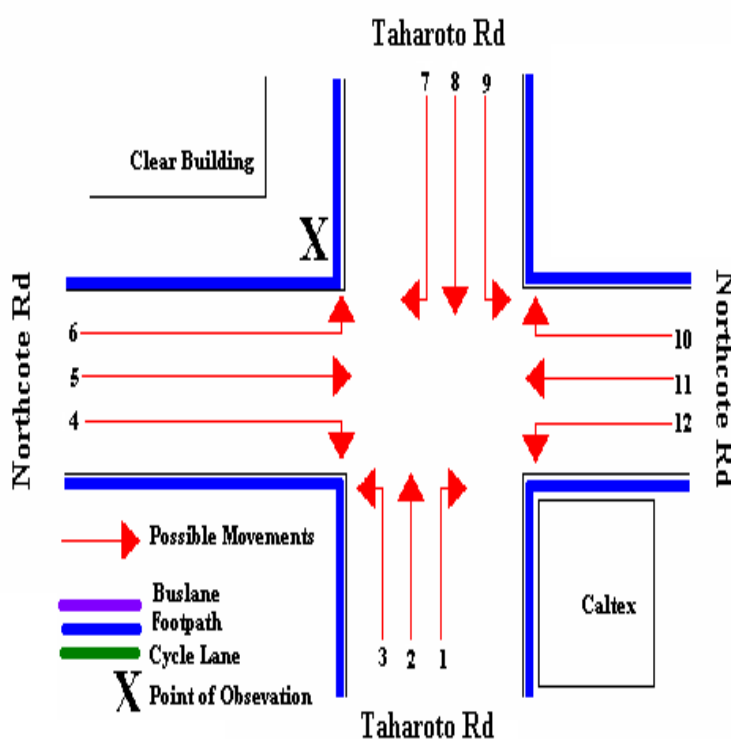


Note: In 2010, four cyclists were observed riding as a group at 6.44pm. This comprises three per cent of the total cycle movements in the evening peak in 2010.

4. TAHAROTO ROAD/NORTHCOTE ROAD, TAKAPUNA (SITE 37)

Figure 4.1 shows the possible cyclist movements at this intersection.

Figure 4.1: Cycle Movements: Taharoto/Northcote Road



AADT Estimate

- The AADT for this site is 333. This compares with:
 - 293 in 2009
 - 396 in 2008
 - 375 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	117	112	229

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

- Cycle volumes have increased this year, from 98 in 2009 to 117 in 2010.
- The key morning movement is straight along Taharoto Road heading southeast (Movement 8 = 69 cyclists).
- Morning cyclist volumes at most movements have remained stable from last year. The notable exception from this is Movement 8 (up 25 cyclists).

**Table 4.1: Morning Cyclist Movements
Taharoto/Northcote Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	1	4	4	4	0
2	9	21	21	17	-4
3	12	3	2	1	-1
4	19	14	14	12	-2
5	3	2	2	5	3
6	3	7	2	0	-2
7	1	3	4	2	-2
8	42	78	44	69	25
9	0	0	1	0	-1
10	0	0	0	0	0
11	2	1	1	3	2
12	16	27	3	4	1
Total	109	160	98	117	19

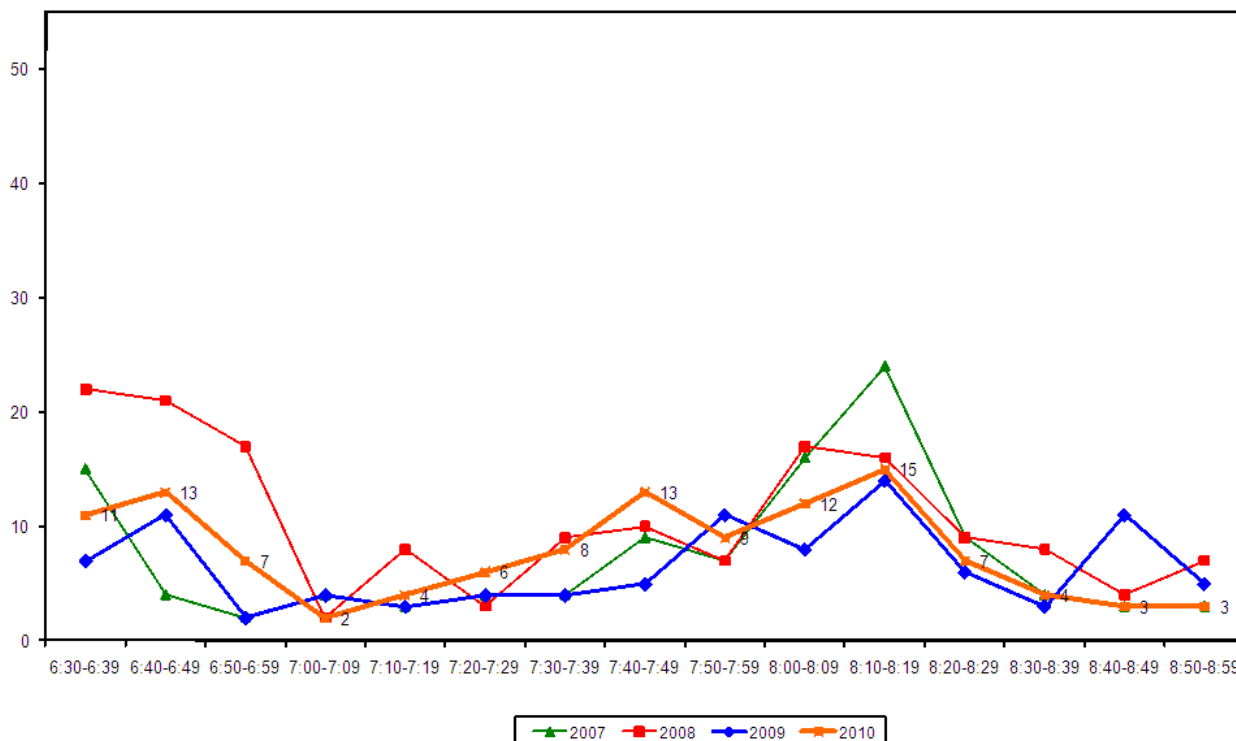
- Over the morning peak, adults comprise just less than three-quarters of cycle movements (72 per cent, stable from last year).
- Helmet wearing is widespread (98 per cent, up slightly from 93 per cent in 2009).
- Approximately two-thirds of cyclists are riding on the road (65 per cent, stable from 68 per cent last year).

**Table 4.2: Morning Cyclist Characteristics
Taharoto/Northcote Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	54	78	72	72	0
School child	46	22	28	28	0
Helmet Wearing					
Helmet on head	94	99	93	98	5
No helmet	6	1	7	2	-5
Where Riding					
Road	47	70	68	65	-3
Footpath	53	30	32	35	3
Base:	109	160	98	117	

- Morning cyclist numbers start off moderately, then decline slightly and remain relatively stable before increasing to a slight peak between 8:10am and 8:19am (15 movements), the same time as the past three years.

**Figure 4.2: Taharoto /Northcote Road Cyclist Frequency
– Morning Peak**



Note: In 2010, four cyclists were observed riding as a group at 6.41am. This comprises three per cent of the total cycle movements in the morning peak in 2010.

4.2 Evening Peak

Environmental Conditions

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

Key Points

- Compared with last year, the total number of cycle movements observed at the Taharoto/Northcote Road intersection has increased (to 112 movements) from 104 movements in 2009.
- The key evening movement at this site is straight along Taharoto Road in a south-easterly direction (Movement 8 = 53 cyclists).
- Of the 12 movements possible at this site, the most notable increases are at Movement 2 and Movement 8 (both up 8 cyclists).

**Table 4.3: Evening Cyclist Movements
Taharoto/Northcote Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	1	4	2	1	-1
2	8	23	20	28	8
3	12	13	11	7	-4
4	10	3	6	8	2
5	0	2	1	1	0
6	0	3	6	6	0
7	3	3	2	2	0
8	11	52	45	53	8
9	0	0	0	0	0
10	0	0	0	1	1
11	3	2	5	2	-3
12	2	5	6	3	-3
Total	50	110	104	112	8

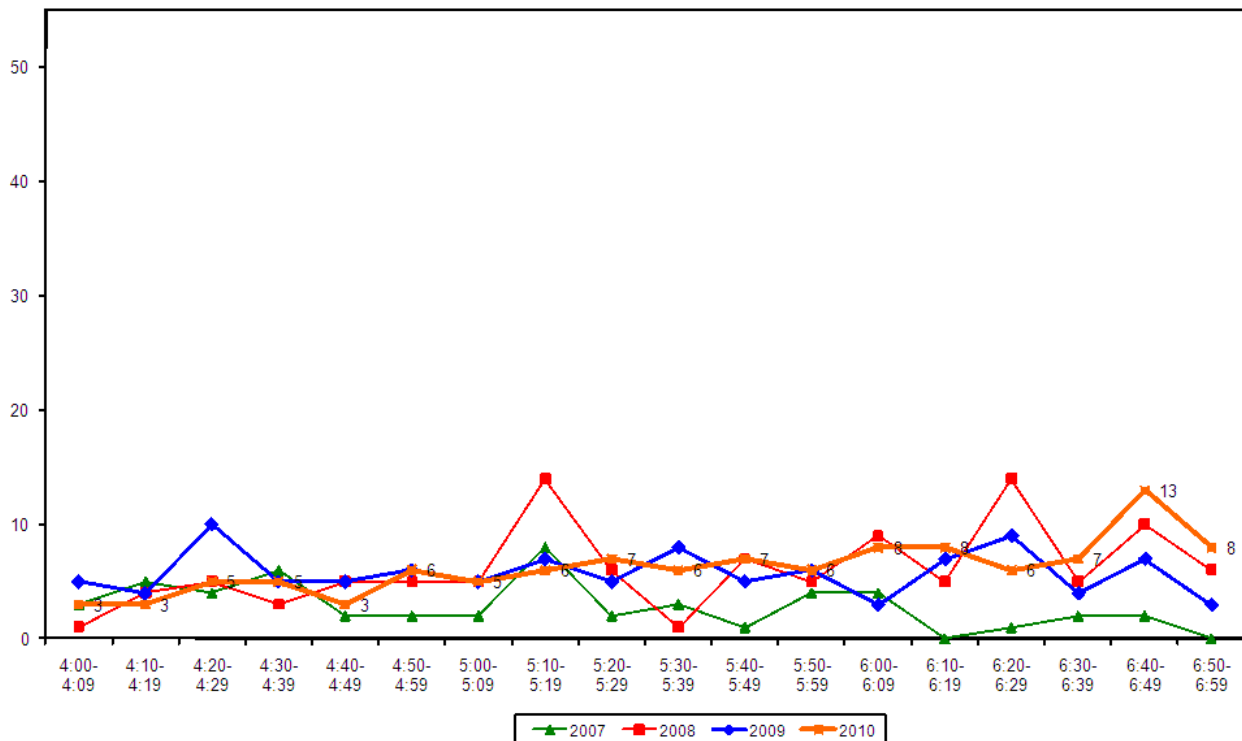
- Over the evening peak, the greatest share of cyclists using this intersection are adults (81 per cent, down from 92 per cent last year).
- Almost all cyclists at this site are wearing a helmet (96 per cent, stable from 94 per cent in 2009).
- Seventy per cent of cyclists are riding on the road (down from 81 per cent last year).

**Table 4.4: Evening Cyclist Characteristics
Taharoto/Northcote Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	84	90	92	81	-11
School child	16	10	8	19	11
Helmet Wearing					
Helmet on head	82	97	94	96	2
No helmet	18	3	6	4	-2
Where Riding					
Road	69	75	81	70	-11
Footpath	31	25	19	30	11
Base:	50	110	104	112	

- The volume of evening cyclists steadily increases over the monitoring period to a peak between 6:40pm and 6:49pm (13 cyclists). This compares to stable volume throughout the monitoring period with a slight peak between 4:20pm and 4:29pm in 2009.

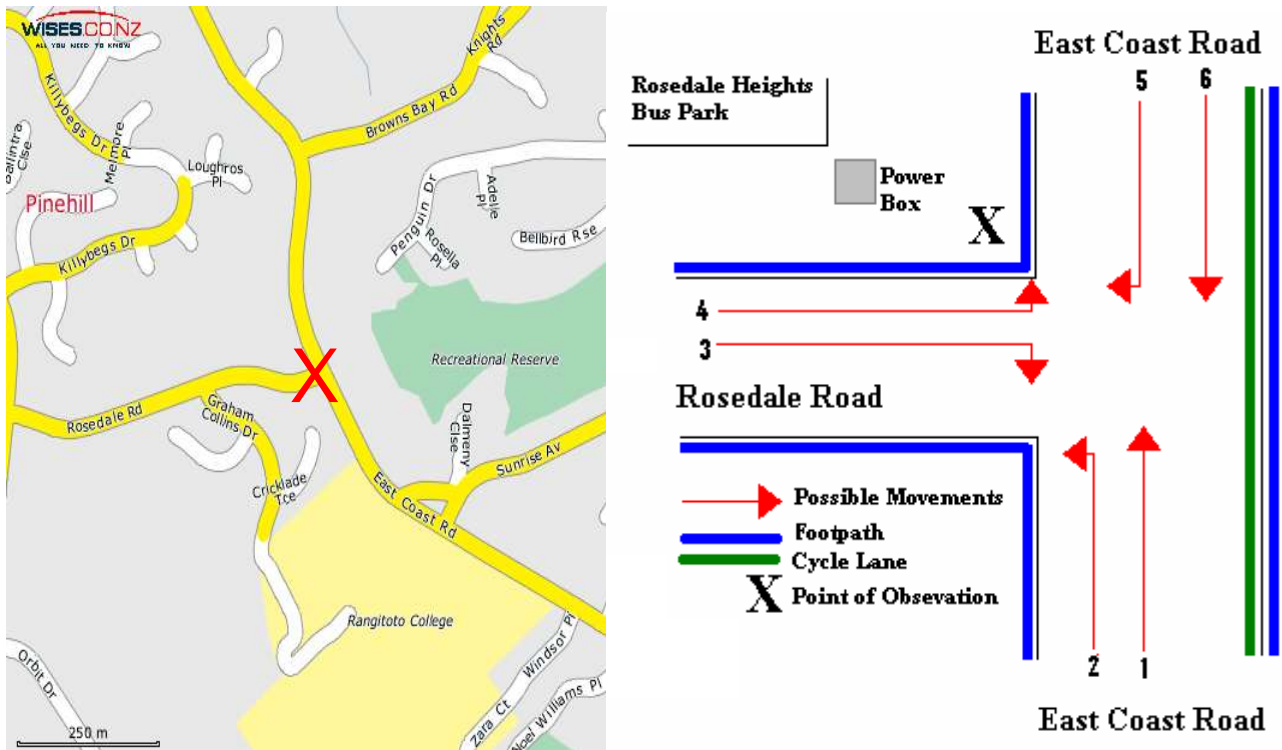
Figure 4.3: Taharoto/Northcote Road Cyclist Frequency – Evening Peak



5. ROSEDALE ROAD/EAST COAST ROAD, MAIRANGI BAY (SITE 38)

Figure 5.1 shows the possible cyclist movements at this intersection.

Figure 5.1: Cycle Movements: Rosedale/East Coast Road



AADT Estimate

- The AADT for this site is 224. This compares with:
 - 235 in 2009
 - 143 in 2008
 - 176 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	93	59	152

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

- Compared with last year, cyclist traffic at the intersection of Rosedale and East Coast Road has decreased, from 105 movements last year to 93 movements this year.
- The key movement in the morning is straight along East Coast Road in a southerly direction (Movement 6 = 63 cyclists).
- The most notable decrease since 2009 is at Movement 6 (down 15 cyclists).

**Table 5.1: Morning Cyclist Movements
Rosedale/East Coast Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	7	5	12	14	2
2	1	2	5	8	3
3	3	4	3	5	2
4	0	0	1	0	-1
5	2	2	6	3	-3
6	41	39	78	63	-15
Total	54	52	105	93	-12

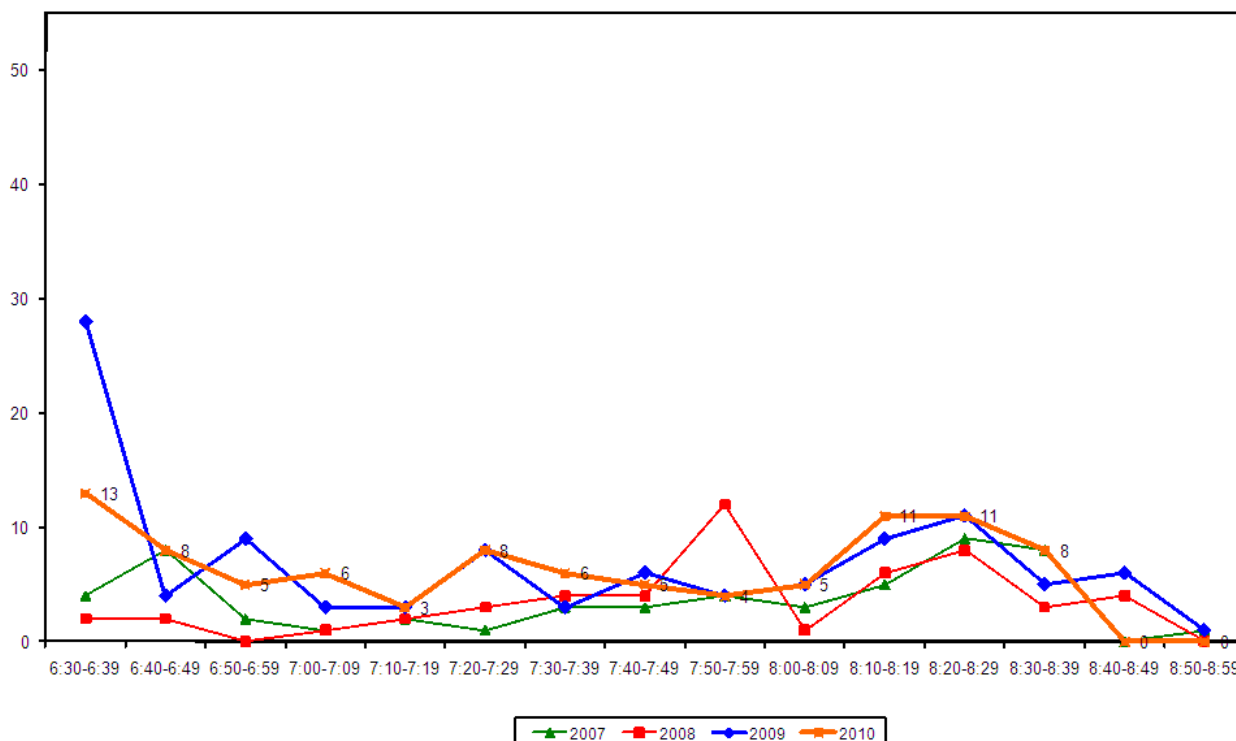
- This year, a lower proportion of morning cyclists using this intersection are adults (65 per cent, compared with 71 per cent in 2009).
- Most cyclists are wearing a helmet (91 per cent, stable from 93 per cent last year).
- Sixty-two per cent of cyclists are riding on the road (down from 68 per cent in 2009).

**Table 5.2: Morning Cyclist Characteristics
Rosedale/East Coast Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	57	63	71	65	-6
School child	43	37	29	35	6
Helmet Wearing					
Helmet on head	85	94	93	91	-2
No helmet	15	6	7	9	2
Where Riding					
Road	46	69	68	62	-6
Footpath	54	31	32	38	6
Base:	54	52	105	93	

- Morning cycle volumes peak between 6:30am and 6:39am (13 cyclists), and again between 8:10am and 8:29am (11 cyclists per 10 minute interval). The first peak in 2010 matches the time of the first peak in 2009.

Figure 5.2: Rosedale/East Coast Road Cyclist Frequency – Morning Peak



Note: In 2010, eight cyclists were observed riding as a group at 6.32am. This comprises nine per cent of the total cycle movements in the morning peak in 2010.

5.2 Evening Peak

Environmental Conditions

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

Key Points

- The volume of evening cyclists increased to 59 movements this year, up from 54 in 2009.
- The most common movement in the evening is straight along East Coast Road heading north (Movement 1 = 35 cyclists).
- The most notable increase in cyclist volumes in 2010 is Movement 6 (up 4 cyclists).

**Table 5.3: Evening Cyclist Movements
Rosedale/East Coast Road 2007-2010 (n)**

Movement	2007	2008	2009	2010	Change 09-10
1	6	25	33	35	2
2	1	1	1	2	1
3	0	3	6	3	-3
4	2	4	4	5	1
5	0	2	1	1	0
6	13	11	9	13	4
Total	22	46	54	59	5

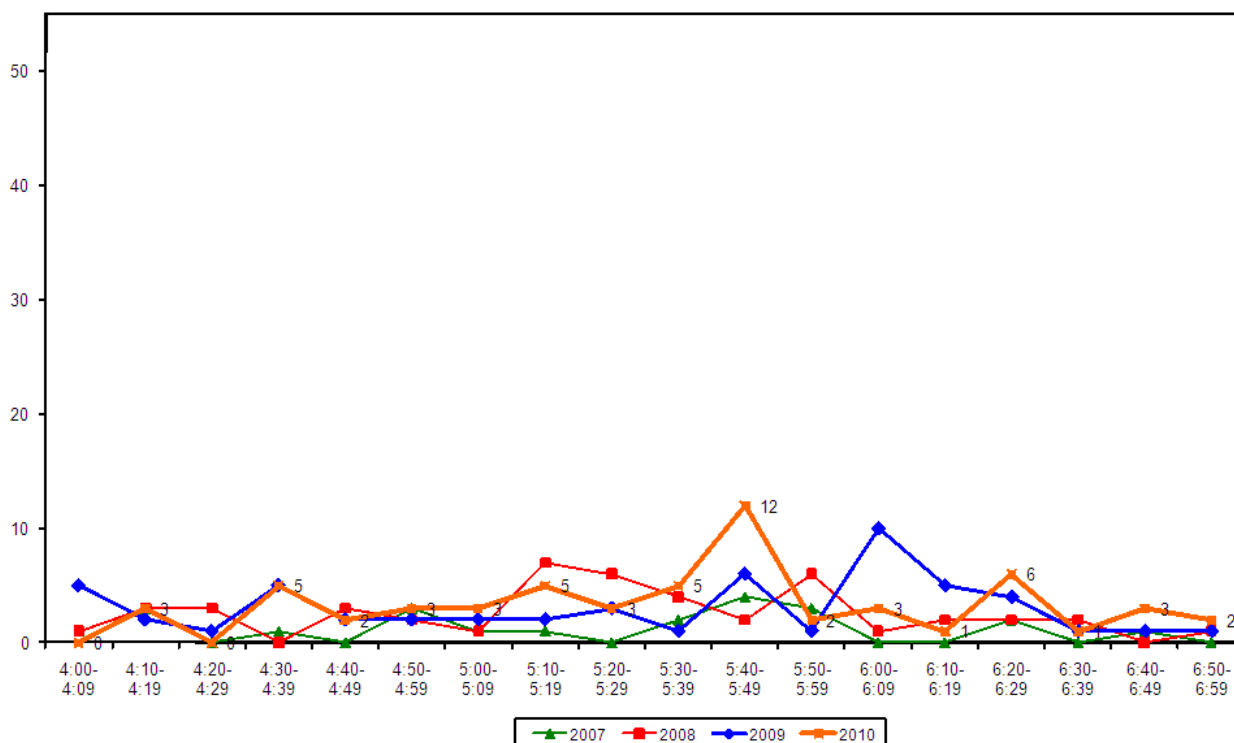
- Over the evening shift, most cyclists using this intersection are adults (86 per cent, down from 91 per cent last year).
- Helmet wearing is still common in the evening (97 per cent, stable from 96 per cent in 2009).
- Most evening cyclists are riding on the road (80 per cent, down from 85 per cent last year).

**Table 5.4: Evening Cyclist Characteristics
Rosedale/East Coast Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	73	74	91	86	-5
School child	27	26	9	14	5
Helmet Wearing					
Helmet on head	95	89	96	97	1
No helmet	5	11	4	3	-1
Where Riding					
Road	64	72	85	80	-5
Footpath	36	28	15	20	5
Base:	22	46	54	59	

- Evening cycle volumes are relatively low over the entire monitoring period, with no more than four cyclists recorded passing during most ten minute intervals. A slight peak (12 movements) occurs between 5:40pm and 5:49pm – 20 minutes earlier than the peak reported last year.

Figure 5.3: Rosedale/East Coast Road Cyclist Frequency – Evening Peak

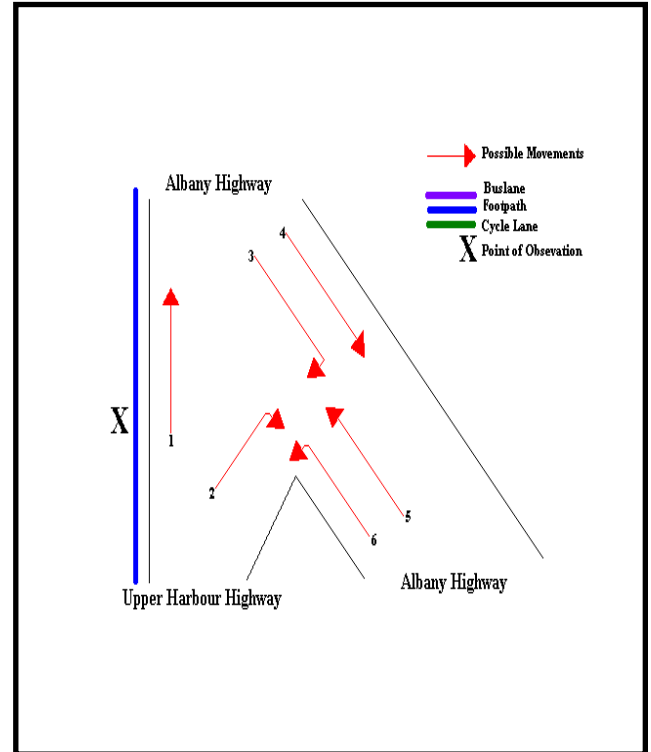
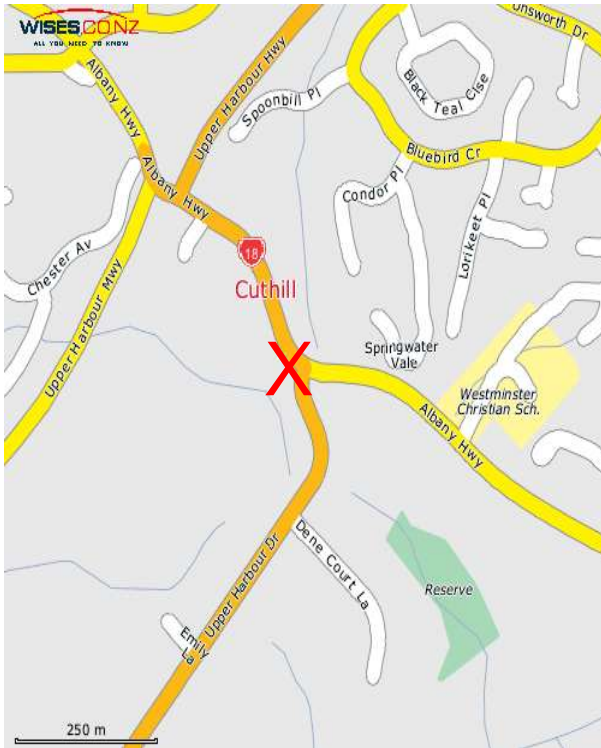


Note: In 2010, five cyclists were observed riding as a group at 6.25pm. This comprises eight per cent of the total cycle movements in the evening peak in 2010.

6. UPPER HARBOUR DRIVE/ALBANY HIGHWAY, GREENHITE (SITE 39)

Figure 6.1 shows the possible cyclist movements at this intersection.

Figure 6.1: Cycle Movements: Upper Harbour Drive/Albany Highway



AADT Estimate

- The AADT for this site is 228. This compares with:
 - 200 in 2009
 - 143 in 2008
 - 57 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	65	93	158

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 count.

Key Points

- Compared with last year, the volume of morning cyclists at the Upper Harbour Drive/Albany Highway intersection has increased slightly, from 63 to 65 cycle movements this year.
- The most common movement in the morning is left from the Albany Highway into Upper Harbour Drive (Movement 6 = 20 cyclists).
- Morning cyclist volumes differ most notably from last year at Movement 6 (up 11 cyclists) and Movement 5 (down 8 cyclists).

**Table 6.1: Morning Cyclist Movements
Upper Harbour Drive/Albany Highway 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	7	1	10	12	2
2	1	0	11	10	-1
3	0	26	6	7	1
4	0	6	5	2	-3
5	6	10	22	14	-8
6	0	11	9	20	11
Total	14	54	63	65	2

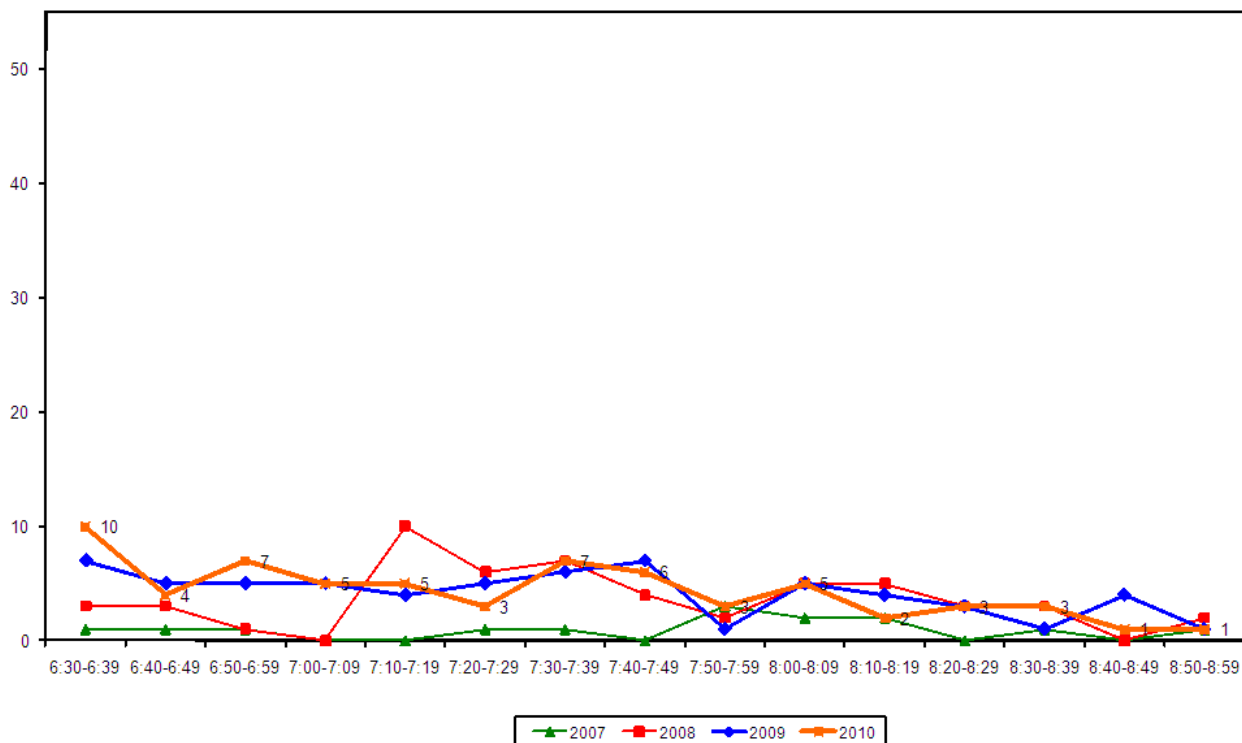
- Over the morning peak, most cyclists at this intersection are identified as adults (95 per cent, stable from last year).
- Almost all cyclists are wearing a helmet (97 per cent, up from 92 per cent in 2009).
- The majority of cyclists are riding on the road (98 per cent, up from 92 per cent last year).

**Table 6.2: Morning Cyclist Characteristics
Upper Harbour Drive/Albany Highway 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	100	89	94	95	1
School child	0	11	6	5	-1
Helmet Wearing					
Helmet on head	100	98	92	97	5
No helmet	0	2	8	3	-5
Where Riding					
Road	86	94	92	98	6
Footpath	14	6	8	2	-6
Base:	14	54	63	65	

- The volume of morning cycle movements is stable throughout the morning shift, with slightly fewer cyclists recorded during the second half of the monitoring period. This trend was also identified in the monitoring last year. A slight peak occurred between 6:30am and 6:39am (10 cyclists).

Figure 6.2: Upper Harbour Drive/Albany Highway Cyclist Frequency – Morning Peak



6.2 Evening Peak

Environmental Conditions

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

Key Points

- Evening cyclist volumes at the Upper Harbour Drive/Albany Highway intersection have increased, from 75 in 2009 to 93 movements this year.
- The most common movement in the evening is straight through from Upper Harbour Drive onto Albany Highway (Movement 1 = 25 cyclists).
- Of the six movements possible at this site, the most notable increases are at Movements 1, 2 and 5 (up 6 cyclists each).

**Table 6.3: Evening Cyclist Movements
Upper Harbour Drive/Albany Highway 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	1	20	19	25	6
2	2	9	5	11	6
3	3	4	13	10	-3
4	4	6	15	17	2
5	1	2	9	15	6
6	0	3	14	15	1
Total	11	44	75	93	18

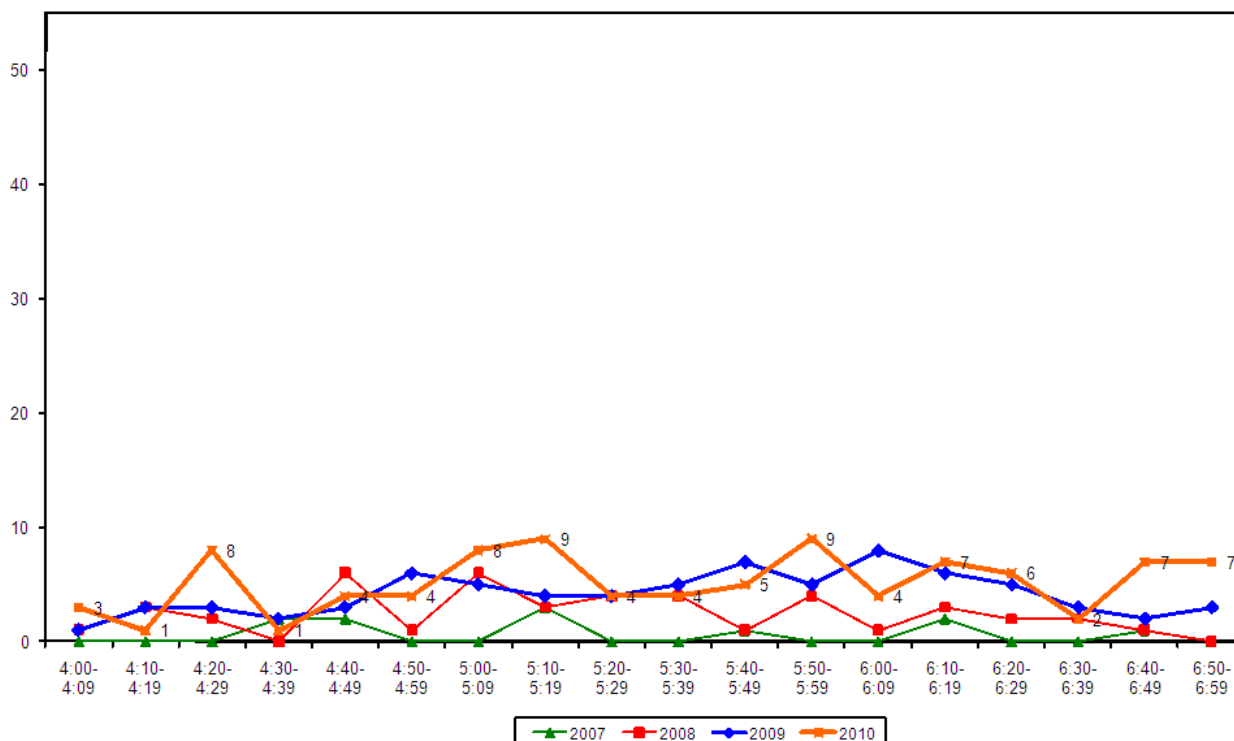
- Over the evening peak, most cyclists using this intersection are adults (94 per cent, compared with 92 per cent in 2009).
- Almost all cyclists are wearing a helmet (97 per cent, stable from last year).
- Most cyclists are riding on the road (97 per cent, up from 92 per cent in 2009).

**Table 6.4: Evening Cyclist Characteristics
Upper Harbour Drive/Albany Highway 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	100	89	92	94	2
School child	0	11	8	6	-2
Helmet Wearing					
Helmet on head	100	100	99	97	-2
No helmet	0	0	1	3	2
Where Riding					
Road	91	84	92	97	5
Footpath	9	16	8	3	-5
Base:	11	44	75	93	

- Evening cycle volumes are fairly even over the evening monitoring period. Three slight peaks occurred between 4:20pm and 4:29pm, 5:10 and 5:19pm and 5:50pm and 5:59pm (9 cyclists each interval). This compares to relatively low evening cycle volumes over the entire monitoring period in 2009 with a slight peak between 6:00pm and 6:09pm.

Figure 6.3: Upper Harbour Drive/Albany Highway Cyclist Frequency – Evening Peak



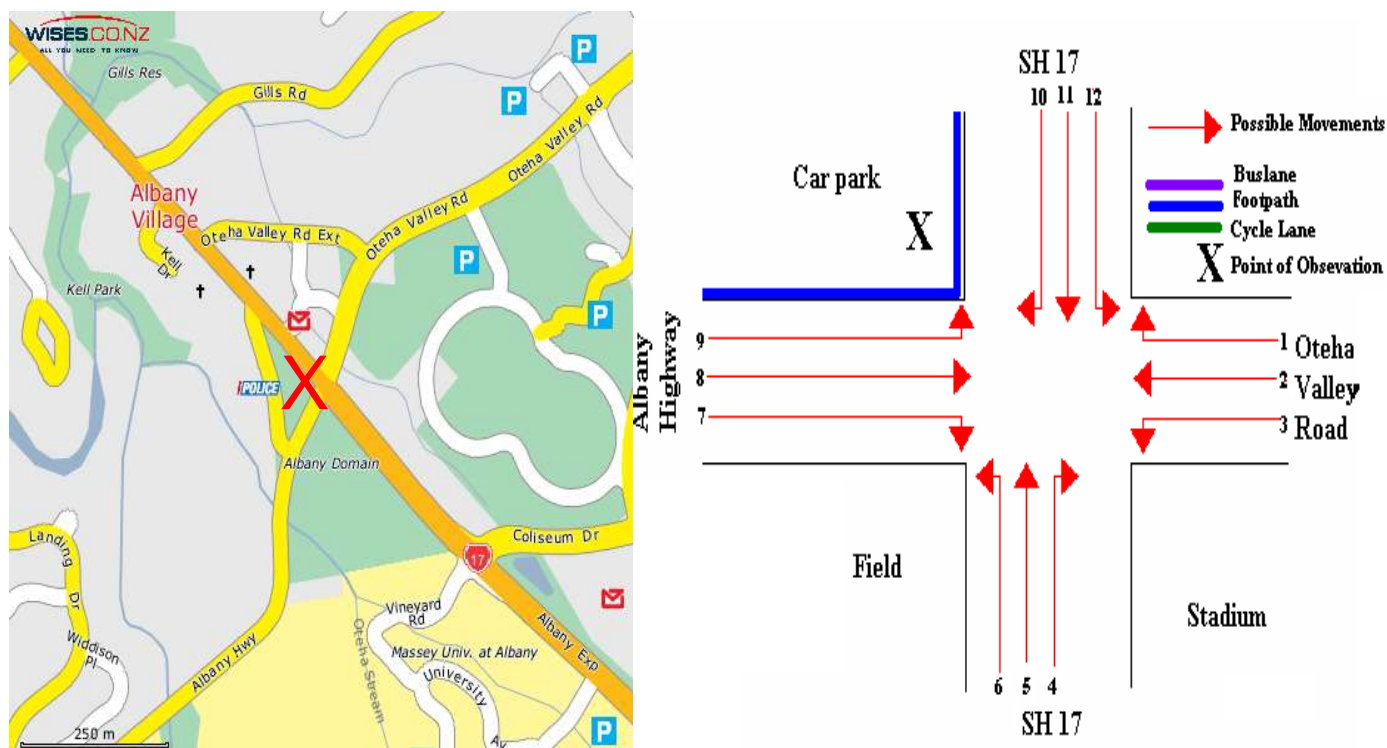
Note: In 2010, six per cent of the total cycle movements in the evening peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- Three cyclists at 4.26pm
- Three cyclists at 5.06pm

7. OTEHA VALLEY ROAD/SH17/ALBANY HIGHWAY, ALBANY (SITE 40)

Figure 7.1 shows the possible cyclist movements at this intersection.

Figure 7.1: Cycle Movements: Oteha Valley Road/SH17/Albany Highway



AADT Estimate

- The AADT for this site is 130. This compares with:
 - 103 in 2009
 - 69 in 2008
 - 42 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	29	62	91

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

- Of the 13 sites monitored in North Shore city, the volume of cycle movements at the Oteha Valley Road/SH17/Albany Highway intersection continues to be low, with 29 cycle movements recorded (up from 25 movements in 2009).
- The key movement in the morning is riding straight along Oteha Valley Road onto Albany Highway (Movement 2 = 9 cyclists).
- The most notable increase this measure is at Movement 6 (up 4 cyclists) while the most notable decrease is at Movement 10 (down 3 cyclists).

**Table 7.1: Morning Cyclist Movements
Oteha Valley Road/SH17/Albany Highway 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	1	0	0	0
2	1	2	7	9	2
3	1	0	0	2	2
4	0	1	0	0	0
5	0	0	0	0	0
6	0	6	0	4	4
7	0	0	1	0	-1
8	0	4	7	5	-2
9	0	1	0	0	0
10	0	1	4	1	-3
11	2	3	6	6	0
12	0	1	0	2	2
Total	4	20	25	29	4

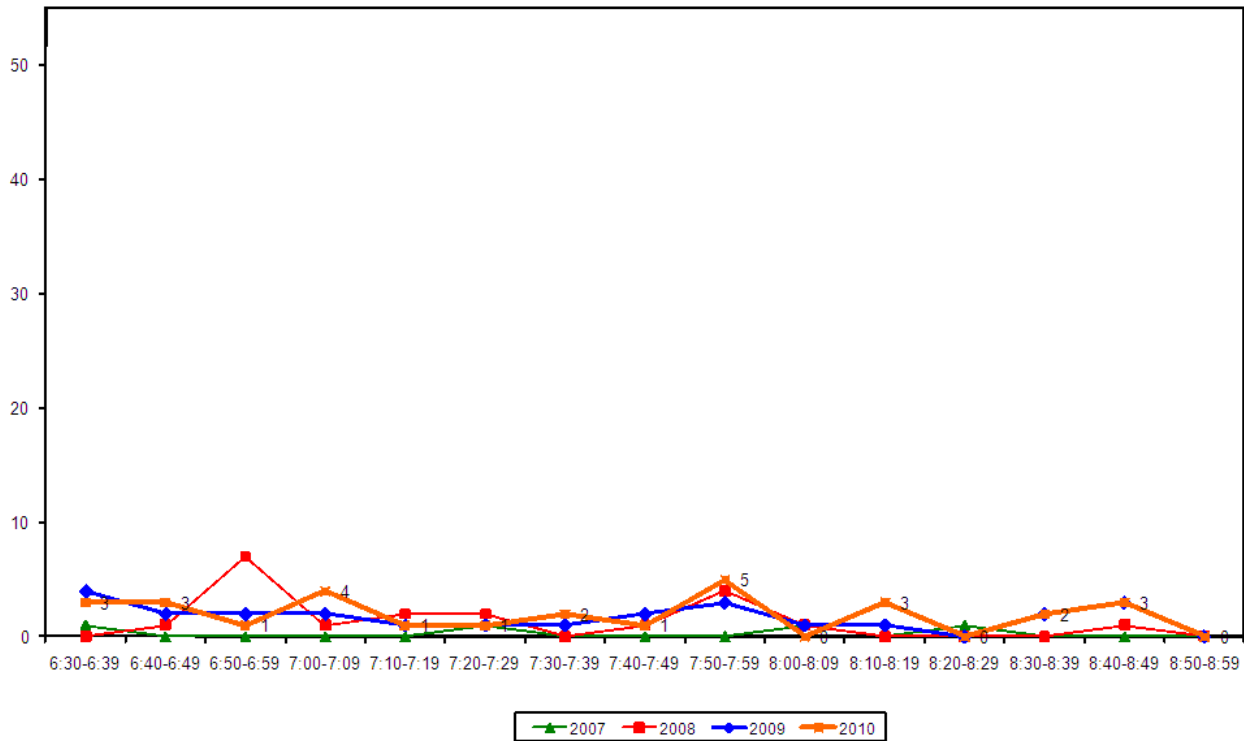
- Over the morning peak, most cyclists riding through this intersection are adults (83 per cent, down from 92 per cent last year).
- All cyclists are wearing helmets (up from 88 per cent last year).
- Three-quarters of cyclists are riding on the road (76 per cent, down from 92 per cent in 2009).

**Table 7.2: Morning Cyclist Characteristics
Oteha Valley Road/SH17/Albany Highway 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	100	80	92	83	-9
School child	0	20	8	17	9
Helmet Wearing					
Helmet on head	100	100	88	100	12
No helmet	0	0	12	0	-12
Where Riding					
Road	50	100	92	76	-16
Footpath	50	0	8	24	16
Base:	4	20	25	29	

- Morning cycle volumes are low over the entire monitoring period, with no more than three cyclists recorded within most ten minute intervals. A slight peak occurred between 7:50am and 7:59am (5 cyclists). In comparison, last year no more than two cyclists were recorded within most ten minute intervals.

Figure 7.2: Oteha Valley Road/SH17/Albany Highway Cyclist Frequency – Morning Peak



7.2 Evening Peak

Environmental Conditions

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

Key Points

- Compared with last year, evening cyclist numbers recorded at the Oteha Valley Road/SH17/Albany Highway intersection increase notably, from 47 to 62 cycle movements this year.
- The most common movements in the evening are riding straight along Albany Highway into Oteha Valley Road (Movement 8 = 25 cyclists) and turning right from Albany Highway into SH17 (Movement 7 = 9 cyclists).
- Evening cyclist volumes at all movements remain relatively stable since last year, with change most notable at Movement 8 (up 13 cyclists).

**Table 7.3: Evening Cyclist Movements
Oteha Valley Road/SH17/Albany Highway 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	2	2	0	-2
2	1	5	3	6	3
3	0	0	1	4	3
4	1	1	1	3	2
5	4	5	5	4	-1
6	1	1	3	1	-2
7	1	3	10	9	-1
8	1	4	12	25	13
9	0	1	1	1	0
10	3	3	4	6	2
11	3	3	5	1	-4
12	0	0	0	2	2
Total	15	28	47	62	15

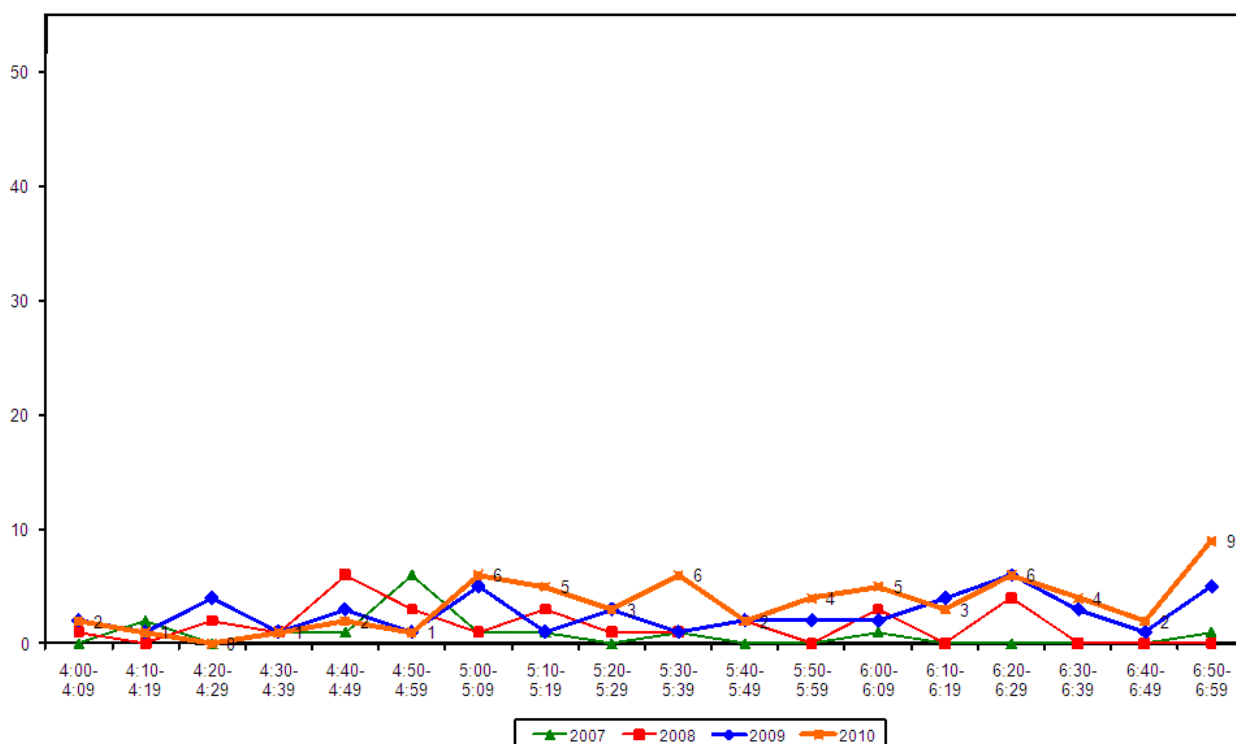
- Over the evening peak, the majority of cyclists using this site are adults (94 per cent, stable from last year).
- All cyclists are wearing a helmet (100 per cent, up slightly from 94 per cent in 2009).
- Ninety per cent of cyclists are riding on the road (compared with 81 per cent last year).

Table 7.4: Evening Cyclist Characteristics
Oteha Valley Road/SH17/Albany Highway 2007-2010 (%)

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	100	82	94	94	0
School child	0	18	6	6	0
Helmet Wearing					
Helmet on head	93	89	94	100	6
No helmet	7	11	6	0	-6
Where Riding					
Road	87	100	81	90	9
Footpath	13	0	19	10	-9
Base:	15	28	47	62	

- The volume of evening cycle movements increases gradually over the monitoring period to peak between 6:50pm and 6:59pm (9 cyclists). This compares with 2009 when cycle volumes peaked between 6:20pm and 6:29pm.

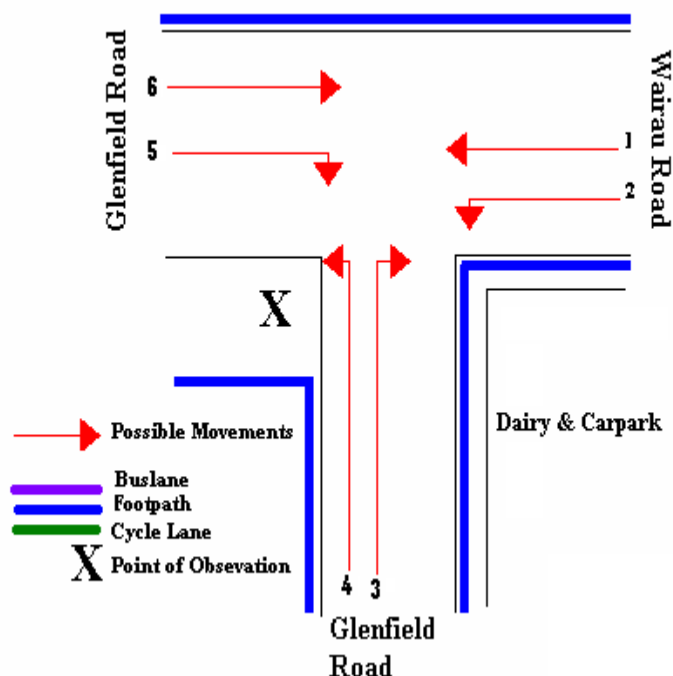
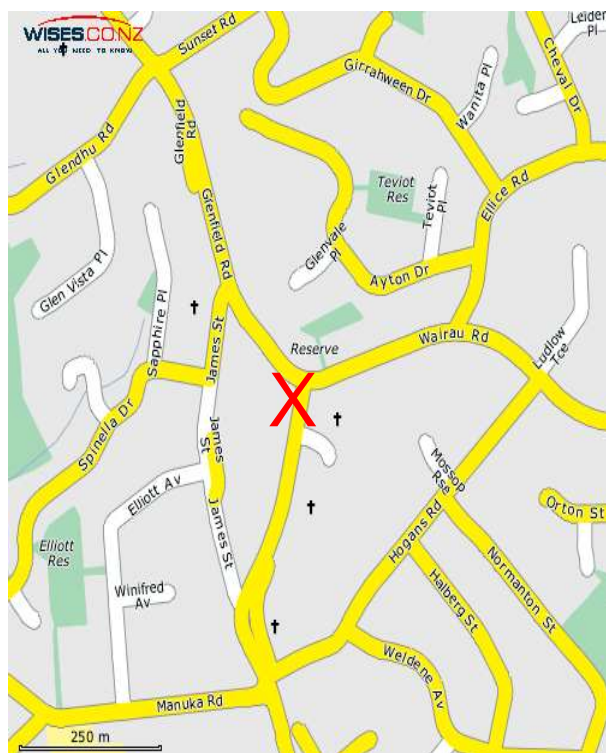
Figure 7.3: Oteha Valley Road/SH17/Albany Highway Cyclist Frequency – Evening Peak



8. WAIRAU ROAD/GLENFIELD ROAD, GLENFIELD (SITE 41)

Figure 8.1 shows the possible cyclist movements at this intersection.

Figure 8.1: Cycle Movements: Wairau/Glenfield Road



AADT Estimate

- The AADT for this site is 131. This compares with:
 - 117 in 2009
 - 107 in 2008
 - 93 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	38	53	91

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

- Compared with other sites in North Shore city, the volume of morning cyclists at the Wairau/Glenfield Road intersection is moderate, with 38 cycle movements recorded (down slightly from 42 movements in 2009).
- The most common movement in the morning is northwest along Glenfield Road (Movement 4 = 17 cyclists).
- Morning cyclist volumes at all movements remain relatively consistent with the previous measure, with change most notable at Movement 6 (down 3 cyclists).

**Table 8.1: Morning Cyclist Movements
Wairau/Glenfield Road 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	6	8	9	1
2	2	4	1	1	0
3	4	2	3	1	-2
4	11	11	17	17	0
5	9	8	4	4	0
6	6	8	9	6	-3
Total	34	39	42	38	-4

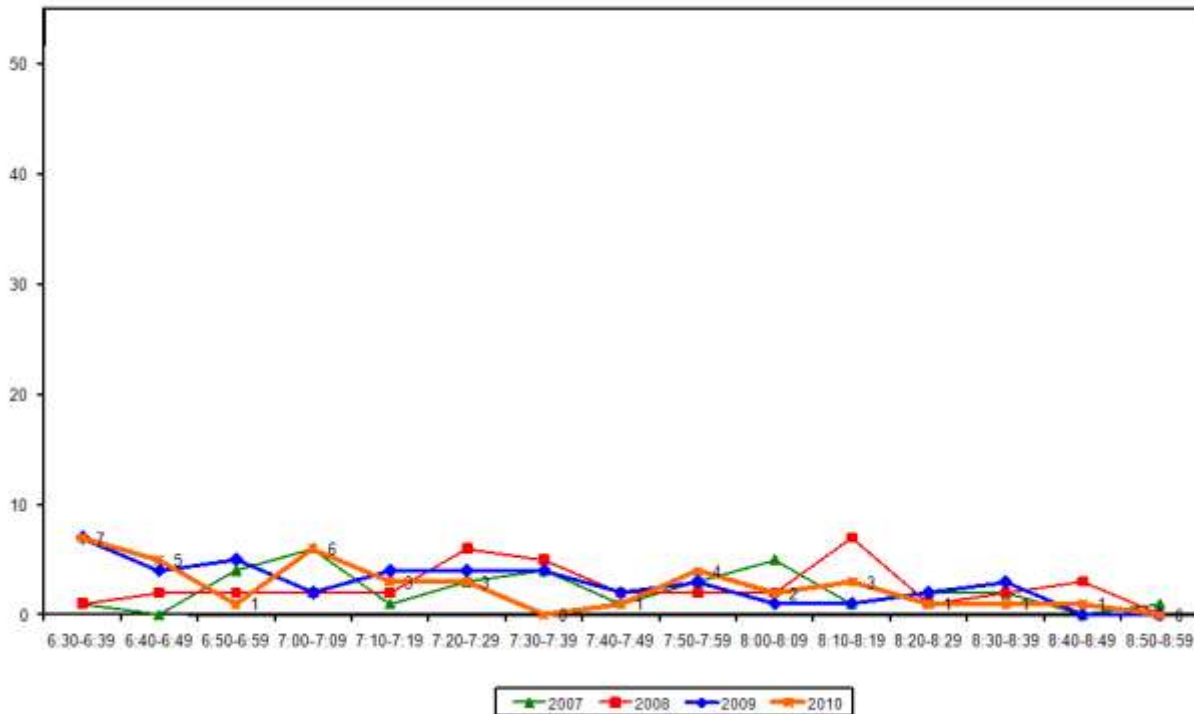
- Over the morning peak, adults comprise the greatest share of cycle movements (97 per cent, up slightly from 93 per cent in 2009).
- Most cyclists are wearing a helmet at this site (95 per cent, compared with 100 per cent last year).
- Almost all cyclists are riding on the road (97 per cent, stable from last year).

**Table 8.2: Morning Cyclist Characteristics
Wairau/Glenfield Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	91	87	93	97	4
School child	9	13	7	3	-4
Helmet Wearing					
Helmet on head	82	97	100	95	-5
No helmet	18	3	0	5	5
Where Riding					
Road	62	82	95	97	2
Footpath	38	18	5	3	-2
Base:	34	39	42	38	

- The volume of morning cycle movements peaks at the beginning of the monitoring period between 6:30am and 6:39am (7 movements) before declining, with no more than four cyclists recorded during most ten minute intervals. This matches the trend observed in the 2009 monitoring.

Figure 8.2: Wairau/Glenfield Road Cyclist Frequency – Morning Peak



Note: In 2010, four cyclists were observed riding as a group at 6.35am. This comprises eleven per cent of the total cycle movements in the morning peak in 2010.

8.2 Evening Peak

Environmental Conditions

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

Key Points

- Compared with last year, the total number of evening cycle movements at the Wairau/Glenfield Road intersection is notably higher this year (53 movements, compared with 38 movements in 2009).
- The key movements in the evening are south along Glenfield Road (Movement 5 = 15 cyclists) and straight through Wairau Road into Glenfield Road (Movement 1 = 14 cyclists).
- The most notable changes from last year are at Movement 1 (up 6 cyclists) and Movements 2 and 6 (both up 5 cyclists).

**Table 8.3: Evening Cyclist Movements
Wairau/Glenfield Road 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	4	8	14	6
2	2	3	1	6	5
3	3	1	1	0	-1
4	7	5	8	11	3
5	8	16	18	15	-3
6	4	5	2	7	5
Total	30	34	38	53	15

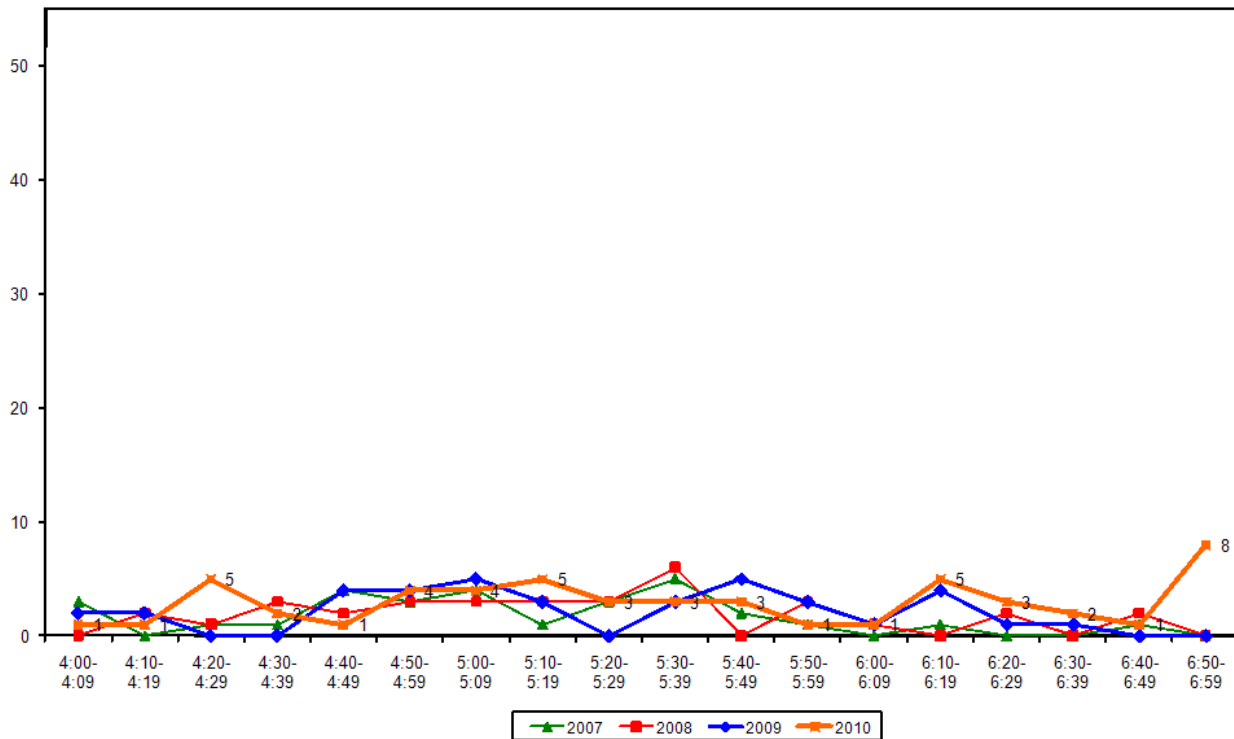
- Over the evening period, most cyclists using this site are adults (91 per cent, down slightly from 95 per cent last year).
- Helmet wearing continues to be widespread in the evening (94 per cent, unchanged from 92 per cent in 2009).
- Almost all cyclists are riding on the road (89 per cent, down from 95 per cent at the previous measure).

**Table 8.4: Evening Cyclist Characteristics
Wairau/Glenfield Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	100	91	95	91	-4
School child	0	9	5	9	4
Helmet Wearing					
Helmet on head	87	97	92	94	2
No helmet	13	3	8	6	-2
Where Riding					
Road	73	85	95	89	-6
Footpath	27	15	5	11	6
Base:	30	34	38	53	

- Evening cyclist numbers remain low throughout the monitoring period, with no more than 5 cyclists recording during most ten minute intervals. A slight peak occurs between 6:50pm and 6:59pm (8 cyclists). This compares with slight peaks between 5:00pm and 5:09pm and 5:40pm and 5:49pm in 2009.

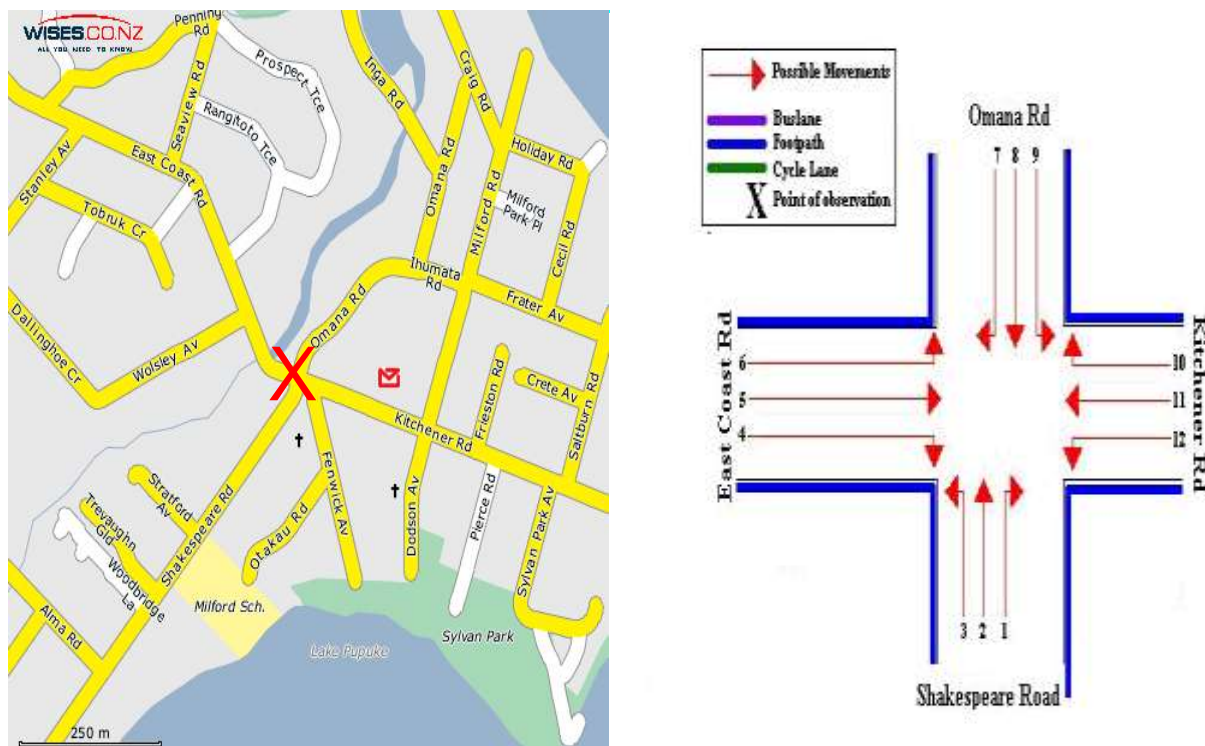
Figure 8.3: Wairau/Glenfield Road Cyclist Frequency – Evening Peak



9. SHAKESPEARE ROAD/EAST COAST ROAD, MILFORD (SITE 42)

Figure 9.1 shows the possible cyclist movements at this intersection.

Figure 9.1: Cycle Movements: Shakespeare/East Coast Road



AADT Estimate

- The AADT for this site is 442. This compares with:
 - 454 in 2009
 - 364 in 2008
 - 314 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	146	159	305

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

- The volume of cyclists at the Shakespeare/East Coast Road intersection is lower than last year, down notably from 177 to 146 movements in 2010. Note that this decline can be attributed, at least in part, to a fall in the number of pelatons observed at this site this year.
- The most common movement is heading straight along East Coast Road into Kitchener Road (Movement 5 = 46 cyclists).
- The most notable decrease occurred at Movement 5 (down 50 cyclists).

**Table 9.1: Morning Cyclist Movements
Shakespeare/East Coast Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	13	7	9	6	-3
2	3	0	3	1	-2
3	1	1	0	4	4
4	5	8	9	16	7
5	28	26	96	46	-50
6	1	0	2	1	-1
7	0	0	0	1	1
8	3	6	15	9	-6
9	2	0	0	2	2
10	0	0	0	4	4
11	5	13	16	26	10
12	21	66	27	30	3
Total	82	127	177	146	-31

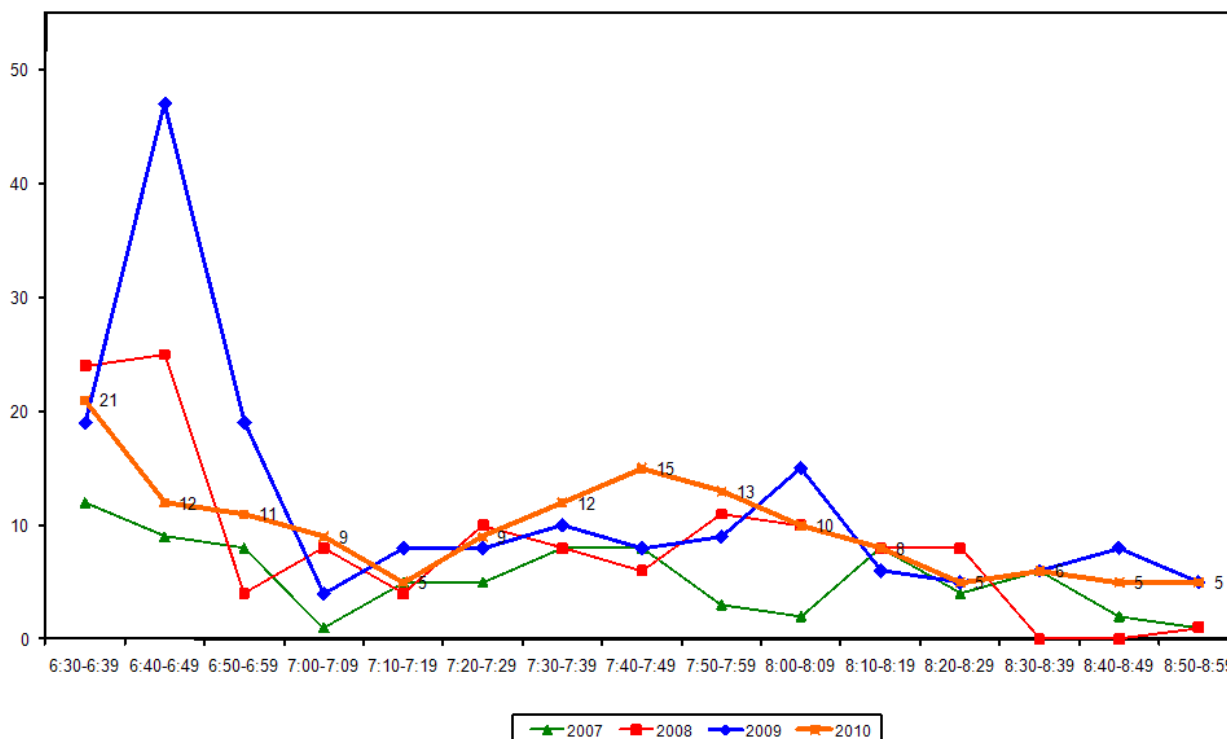
- Over the morning peak, adults comprise the greatest share of cycle movements (77 per cent, down from 83 per cent last year).
- All cyclists are wearing a helmet (100 per cent, up from 98 per cent in 2009).
- Seventy-one per cent of cyclists are riding on the road (compared with 79 per cent in the previous year).

**Table 9.2: Morning Cyclist Characteristics
Shakespeare/East Coast Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	83	82	83	77	-6
School child	17	18	17	23	6
Helmet Wearing					
Helmet on head	96	98	98	100	2
No helmet	4	2	2	0	-2
Where Riding					
Road	77	81	79	71	-8
Footpath	23	19	21	29	8
Base:	82	127	177	146	

- Morning cyclist numbers start off with a notable peak between 6:30am and 6:39am (21 movements). The volume of morning cyclists also peaks between 7:40am and 7:49am in 2010 (15 movements). The large peak between 6:40am and 6:49am in 2009 has declined notably.

Figure 9.2: Shakespeare/East Coast Road Cyclist Frequency – Morning Peak



Note: In 2010, 26 per cent of the total cycle movements in the morning peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- Three cyclists at 6.30am
- Three cyclists at 6.32am
- Seven cyclists at 6.36am
- Four cyclists at 6.37am
- Three cyclists at 6.40am
- Three cyclists at 6.46am
- Four cyclists at 6.50am.
- Three cyclists at 7.32am
- Three cyclists at 7.38am
- Five cyclists at 7.43am.

9.2 Evening Peak

Environmental Conditions

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

Key Points

- Of the 13 sites monitored in North Shore city, the intersection of Shakespeare/East Coast Road is the busiest in terms of the evening cyclists' activity, with 159 cycle movements (up from 133 movements in 2009).
- The most common movements in the evening are straight along Kitchener Road into East Coast Road (Movement 11 = 40 cyclists) and the left turn out of Kitchener Road into Shakespeare Road (Movement 12 = 38 cyclists).
- The most notable change since 2009 has been at Movement 1 (up 23 cyclists) and Movement 5 (up 9 cyclists).

**Table 9.3: Evening Cyclist Movements
Shakespeare/East Coast Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	5	15	5	28	23
2	3	2	8	11	3
3	6	1	5	5	0
4	2	4	6	3	-3
5	6	11	12	21	9
6	4	3	3	2	-1
7	0	0	0	2	2
8	1	3	2	8	6
9	0	0	1	1	0
10	0	0	2	0	-2
11	13	27	47	40	-7
12	15	57	42	38	-4
Total	55	123	133	159	26

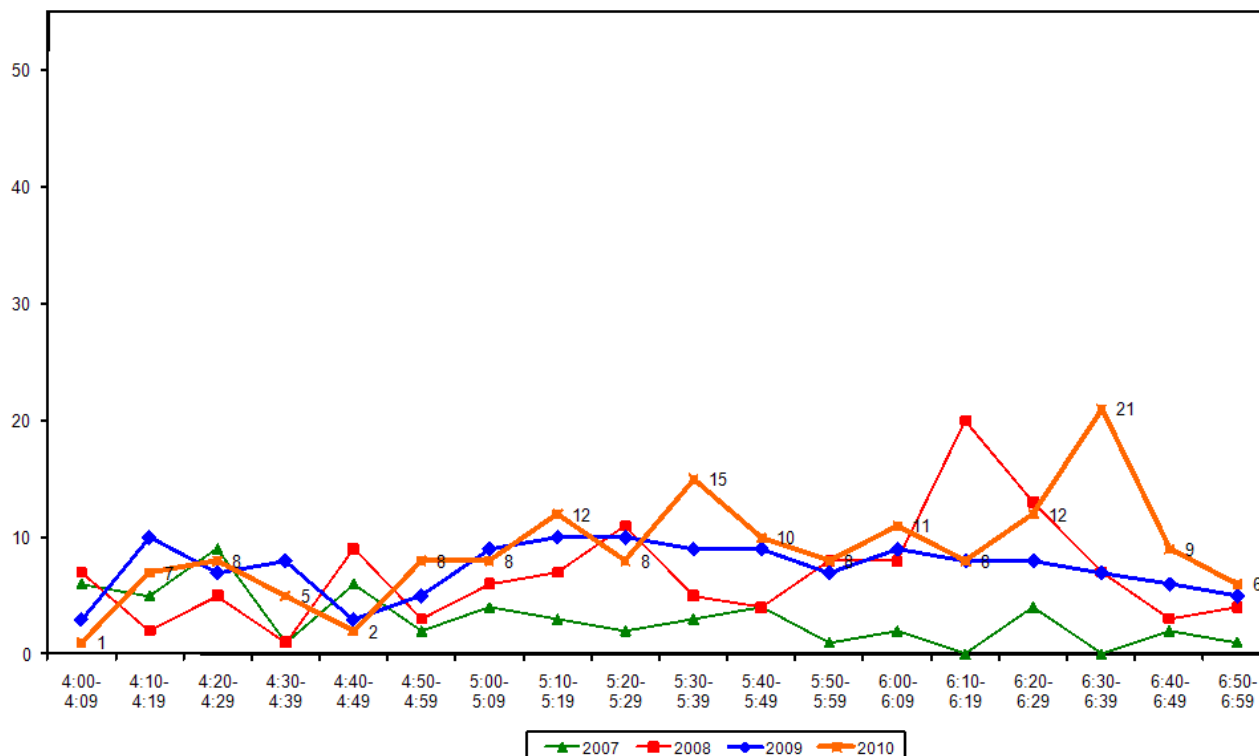
- Over the evening peak, the majority of cyclists using this intersection are adults (74 per cent, down from 81 per cent last year).
- A high proportion of cyclists are wearing a helmet (99 per cent, stable from 97 per cent in 2009).
- Three in five cyclists are riding on the road (60 per cent, down from 69 per cent at the previous measure).

**Table 9.4: Evening Cyclist Characteristics
Shakespeare/East Coast Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	82	76	81	74	-7
School child	18	24	19	26	7
Helmet Wearing					
Helmet on head	82	94	97	99	2
No helmet	18	6	3	1	-2
Where Riding					
Road	73	72	69	60	-9
Footpath	27	28	31	40	9
Base:	55	123	133	159	

- The volume of cycle movements increases throughout the monitoring period, peaking between 6:30pm and 6:39pm (21 cyclists). This compares with a fairly constant volume of cyclists throughout the monitoring period in 2009.

Figure 9.3: Shakespeare/East Coast Road Cyclist Frequency – Evening Peak

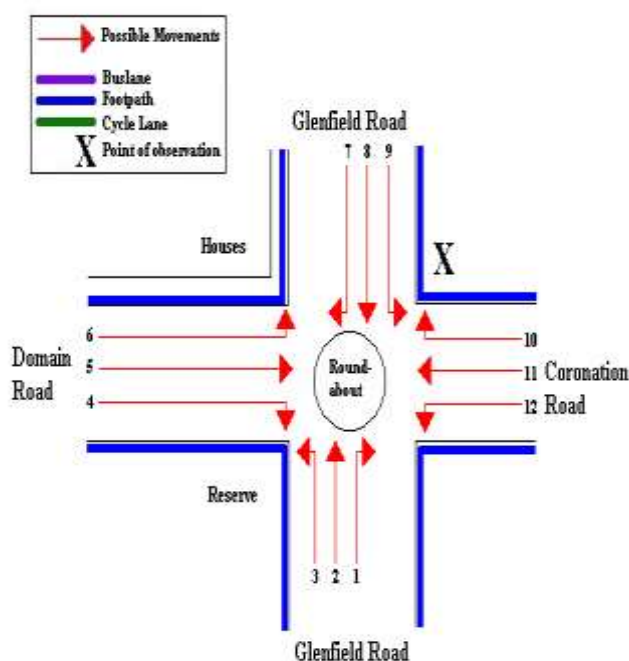
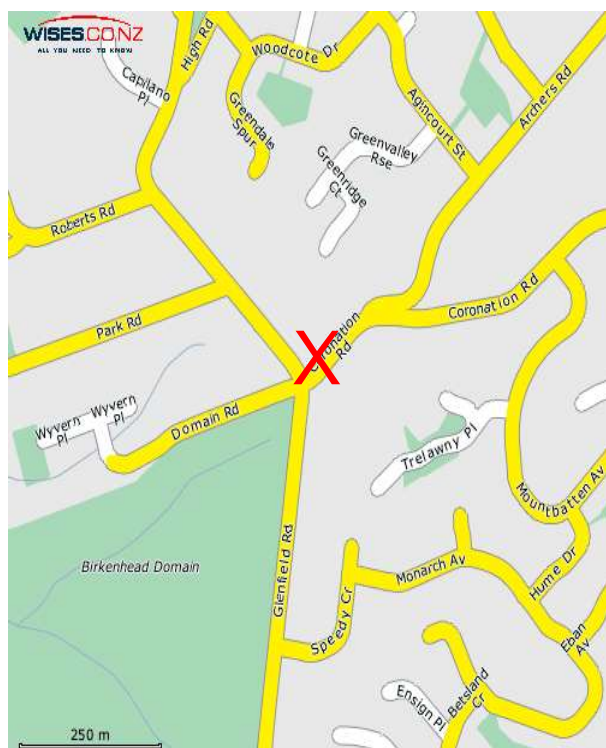


Note: In 2010, four cyclists were observed riding as a group at 6.36pm. This comprises three per cent of the total cycle movements in the evening peak in 2010.

10. GLENFIELD ROAD/CORONATION ROAD, HILLCREST (SITE 43)

Figure 10.1 shows the possible cyclist movements at this intersection.

Figure 10.1: Cycle Movements: Glenfield/Coronation Road



AADT Estimate

- The AADT for this site is 134. This compares with:
 - 113 in 2009
 - 109 in 2008
 - 64 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	37	56	93

10.1 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

- Compared with last year, the volume of morning cyclists at the Glenfield/Coronation Road intersection has remained stable (up from 36 cyclists in 2009 to 37 cyclists in 2010).
- The key movement in the morning is straight through Glenfield Road heading south (Movement 8 = 11 cyclists).
- Morning cyclist numbers at most movements at this site remain stable since last year, with the changes most notable at Movement 1 (down 7 cyclists) and Movement 8 (up 5 cyclists).

**Table 10.1: Morning Cyclist Movements
Glenfield/Coronation Road 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	7	13	6	-7
2	1	5	5	7	2
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	7	9	6	11	5
9	6	8	9	9	0
10	0	5	3	2	-1
11	0	0	0	0	0
12	0	2	0	2	2
Total	16	36	36	37	1

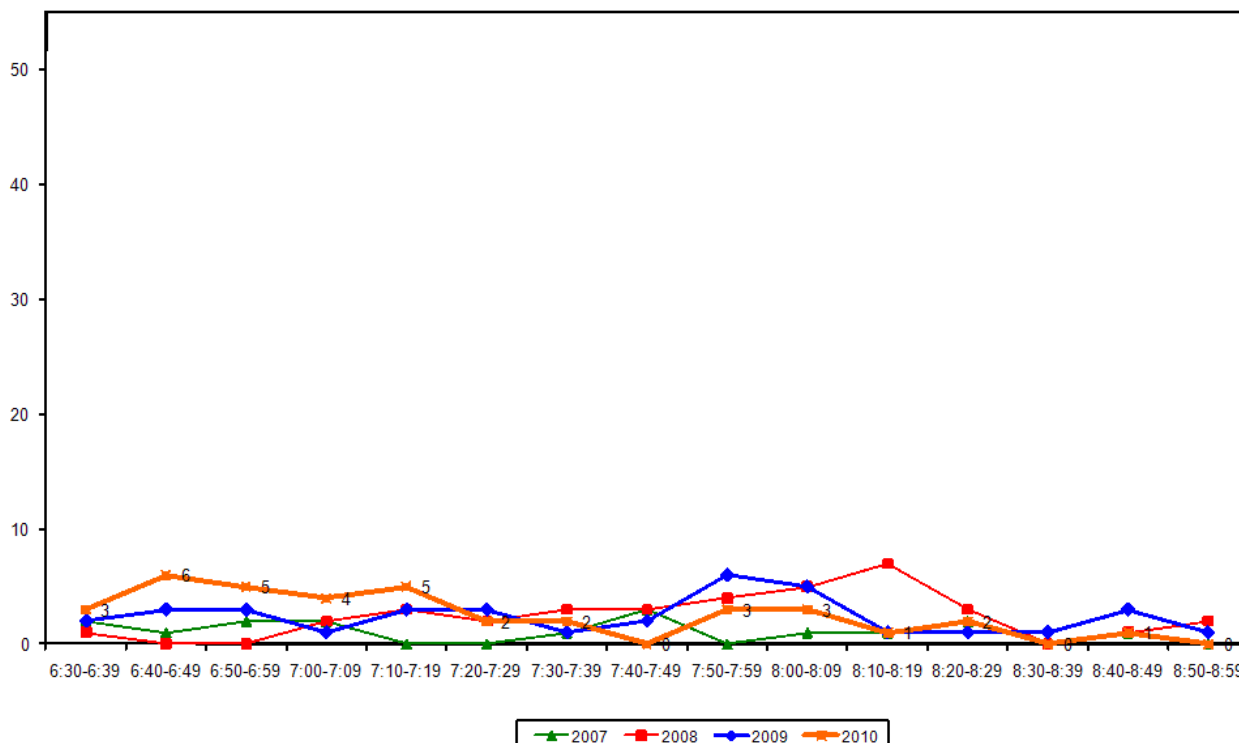
- Over the morning peak, adults comprise the greatest share of cycle movements (84 per cent, up from 75 per cent in the previous year).
- Almost all cyclists are wearing a helmet (95 per cent, stable from 97 per cent of cyclists last year).
- Three-quarters of cyclists are riding on the road (76 per cent, compared with 69 per cent in 2009).

**Table 10.2: Morning Cyclist Characteristics
Glenfield/Coronation Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	94	83	75	84	9
School child	6	17	25	16	-9
Helmet Wearing					
Helmet on head	87	100	97	95	-2
No helmet	13	0	3	5	2
Where Riding					
Road	87	83	69	76	7
Footpath	13	17	31	24	-7
Base:	16	36	36	37	

- Morning cycle volumes are low over the entire monitoring period, with no more than three cyclists recorded during most ten minute intervals. A slight peak occurs between 6:40am and 6:49am (6 movements). This peak is much earlier than the peak recorded last year (between 7:50am and 7:59am).

Figure 10.2: Glenfield/Coronation Road Cyclist Frequency – Morning Peak



10.2 Evening Peak

Environmental Conditions

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

Key Points

- The total number of cycle movements recorded at the Glenfield/Coronation Road intersection in the evening increased from 2009 (56 cycle movements, up from 42 movements in 2009).
- The key movement in the evening is travelling straight through Glenfield Road heading north (Movement 2 = 16 cyclists).
- The most notable increases are at Movement 2 (up 9 cyclists) and Movement 9 (up 6 cyclists).

**Table 10.3: Evening Cyclist Movements
Glenfield/Coronation Road 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	3	6	1	-5
2	4	6	7	16	9
3	0	3	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	5	6	8	9	1
9	0	4	3	9	6
10	1	4	6	11	5
11	0	0	0	0	0
12	2	13	12	10	-2
Total	12	39	42	56	14

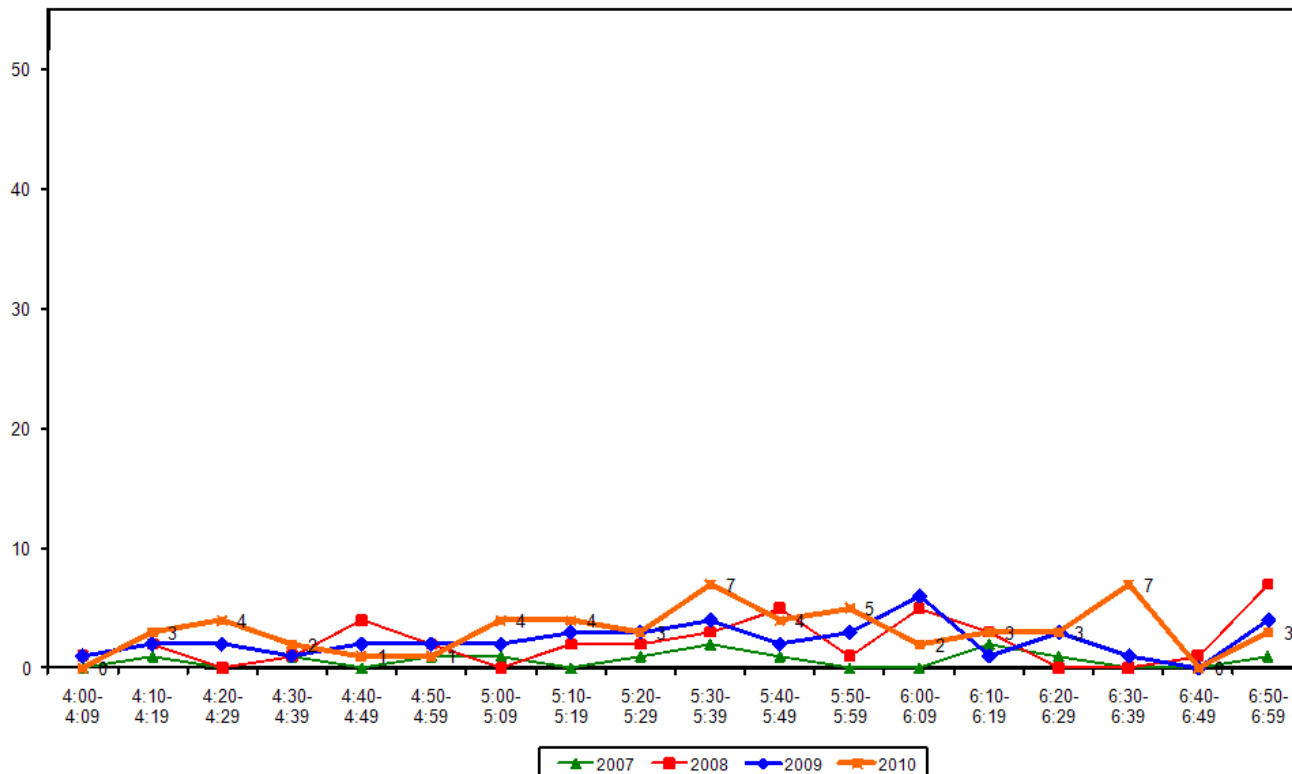
- Adults comprise the greatest share of evening cyclists (89 per cent, up from 76 per cent in 2009).
- Ninety-one per cent of cyclists are wearing a helmet (up from 81 per cent last year).
- Seventy-seven per cent of cyclists are riding on the road (up from 69 per cent in 2009).

**Table 10.4: Evening Cyclist Characteristics
Glenfield/Coronation Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	83	95	76	89	13
School child	17	5	24	11	-13
Helmet Wearing					
Helmet on head	75	95	81	91	10
No helmet	25	5	19	9	-10
Where Riding					
Road	83	77	69	77	8
Footpath	17	23	31	23	-8
Base:	12	39	42	56	

- Evening cyclist volumes peak twice, between 5:30pm and 5:39pm (7 movements) and between 6:30pm and 6:39pm (7 movements). This compares to the slight peak between 6:00pm and 6:09pm in 2009.

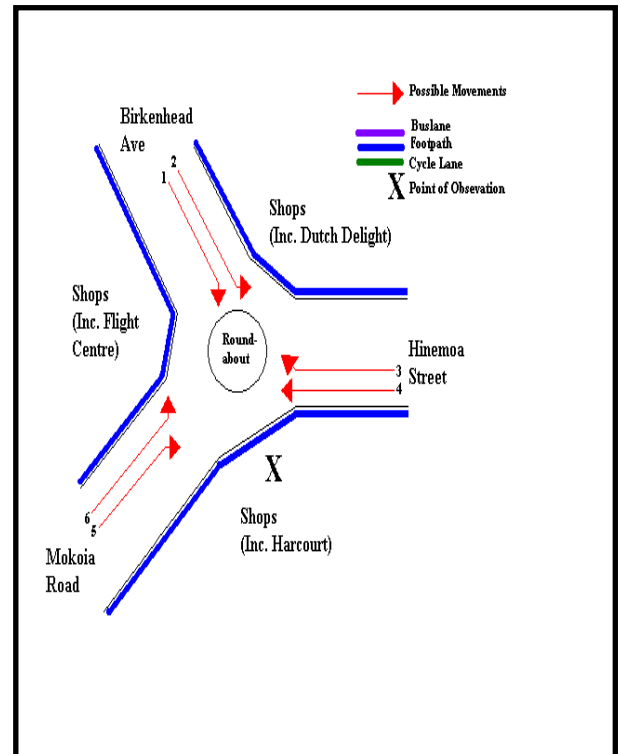
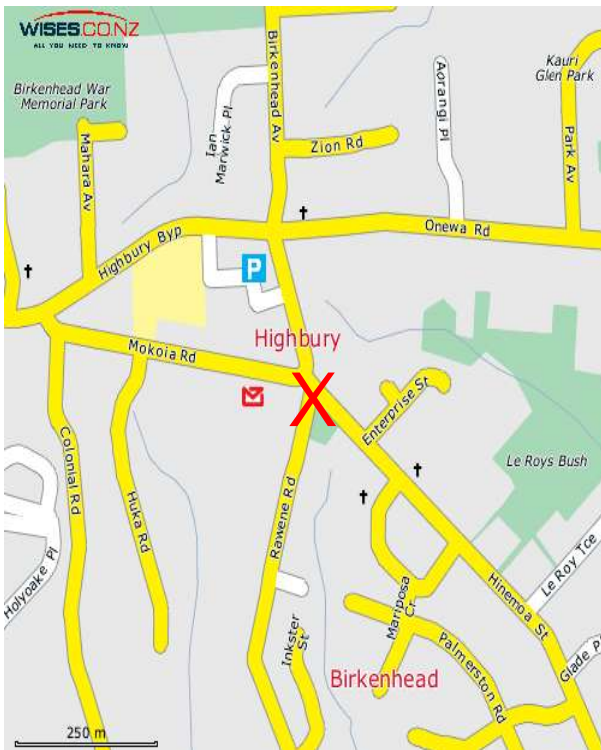
Figure 10.3: Glenfield/Coronation Road Cyclist Frequency – Evening Peak



11. BIRKENHEAD AVENUE/MOKOIA ROAD, BIRKENHEAD (SITE 44)

Figure 11.1 shows the possible cyclist movements at this intersection.

Figure 11.1: Cycle Movements: Birkenhead/Mokoia Road



AADT Estimate

- The AADT for this site is 108. This compares with:
 - 83 in 2009
 - 71 in 2008
 - 58 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	29	46	75

11.1 Morning Peak

Environmental Conditions

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

Key Points

- The volume of morning cyclists at the Birkenhead Avenue/Mokoia Road intersection has increased slightly from last year (up from 27 cycle movements to 29).
- The key movement in the morning is turning from Birkenhead Avenue into Hinemoa Road, (Movement 2 = 16 cyclists).
- The most notable change since 2009 has been at Movement 2 (up 4 cyclists).

**Table 11.1: Morning Cyclist Movements
Birkenhead Avenue/Mokoia Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	1	1	0	1	1
2	7	6	12	16	4
3	1	4	4	1	-3
4	2	0	0	2	2
5	8	7	9	9	0
6	1	2	2	0	-2
Total	20	20	27	29	2

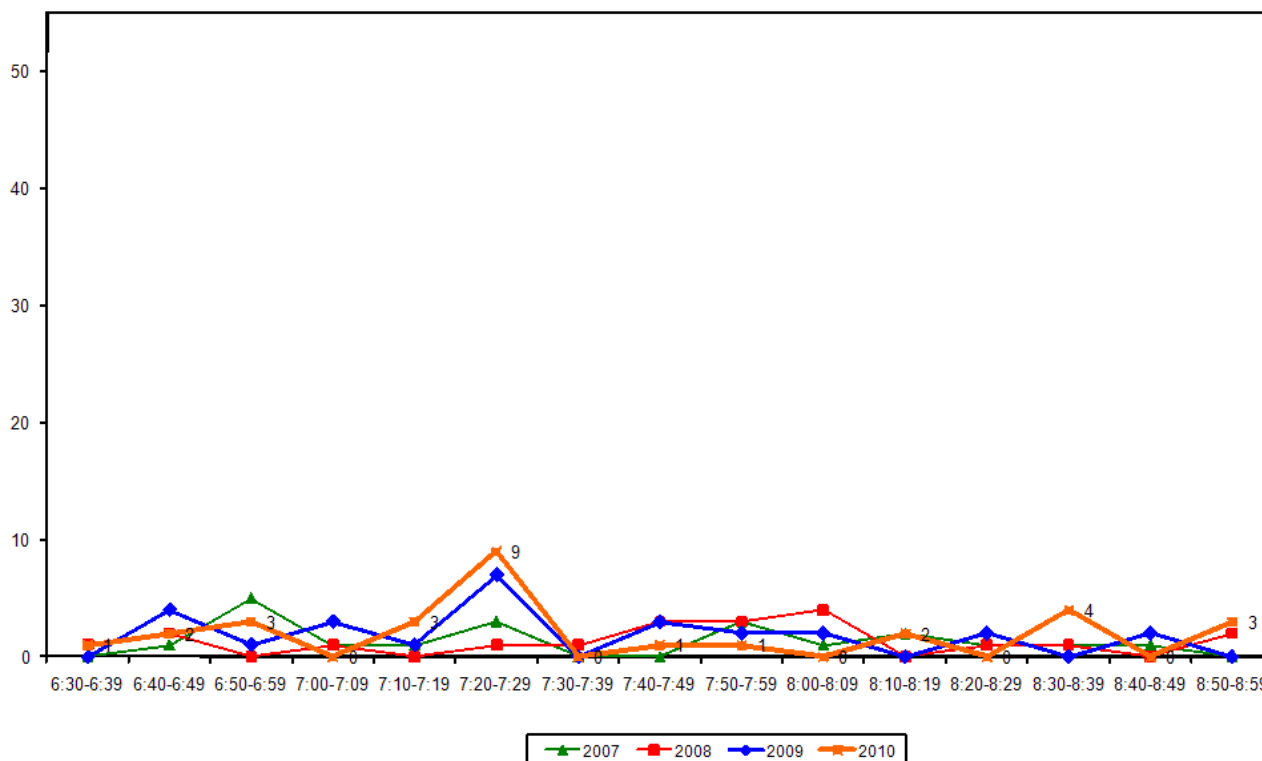
- Over the morning peak, all cyclists using the Birkenhead Avenue/Mokoia Road intersection are adults (100 per cent, consistent with last year).
- Most cyclists are wearing a helmet (90 per cent, down from 96 per cent in 2009).
- Ninety-seven per cent of cyclists are riding on the road (stable from 96 per cent last year).

**Table 11.2: Morning Cyclist Characteristics
Birkenhead Avenue/Mokoia Road 2007-2010 (%)**

	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
Cyclist Type					
Adult	100	95	100	100	0
School child	0	5	0	0	0
Helmet Wearing					
Helmet on head	80	100	96	90	-6
No helmet	20	0	4	10	6
Where Riding					
Road	90	90	96	97	1
Footpath	10	10	4	3	-1
Base:	20	20	27	29	

- The volume of morning cycle movements is relatively low over the entire monitoring period with no more than three cyclists recorded passing during most ten minute intervals. A peak occurs between 7:20am and 7:29am (9 cyclists), which is consistent with the peak observed in 2009.

Figure 11.2: Birkenhead Avenue/Mokoia Road Cyclist Frequency – Morning Peak



11.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift.
- There were no road works or accidents that may affect cycle counts.
- Two individuals were recorded travelling through the intersection multiple times during the shift. The first was an adult who cycled through the intersection three times. The second was a school child cycling on the footpath who travelled past four times making Movements 1 and 6. Note that the child has been recorded as making a maximum of three movements.

Key Points

- Compared with the previous year, the total number of cycle movements recorded at the Birkenhead Avenue/Mokoia Road intersection has increased, with 30 movements recorded in 2009 and 46 movements recorded in 2010.
- The most common movements in the evening are turning out of Hinemoa Road into Mokoia Road and Birkenhead Avenue, respectively (Movement 3 = 17 cyclists; Movement 4 = 13 cyclists).
- The most notable increases are at Movement 1 and Movement 3 (both up 6 cyclists).

**Table 11.3: Evening Cyclist Movements
Birkenhead Avenue/Mokoia Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	1	6	2	8	6
2	1	2	3	4	1
3	8	8	11	17	6
4	8	10	12	13	1
5	2	2	1	1	0
6	0	1	1	3	2
Total	20	29	30	46	16

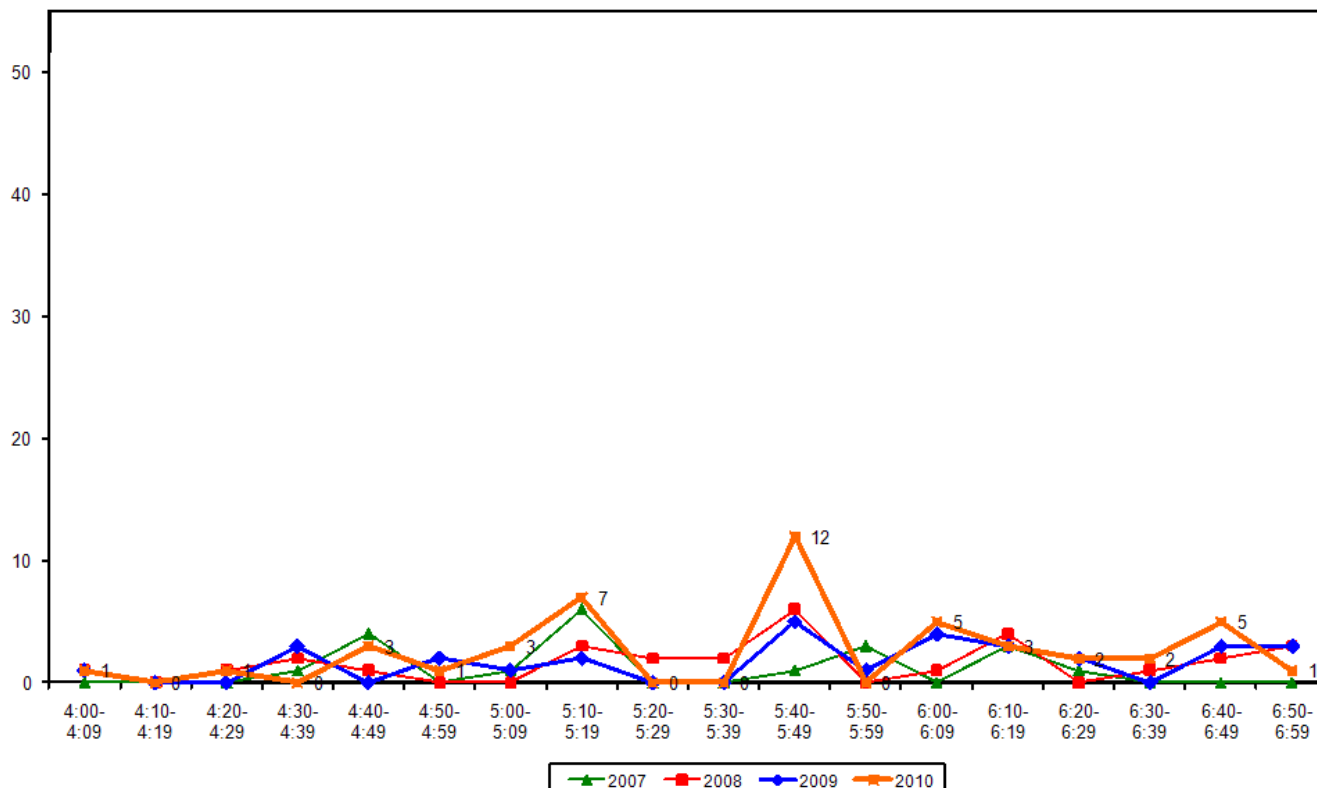
- Over the evening peak, most cyclists using this intersection are adults (87 per cent, down from 93 per cent last year).
- Helmet wearing has notably decreased from 2009 (80 per cent, down from 93 per cent in 2009).
- Three-quarters of cyclists are riding on the road (76 per cent, down from 80 per cent at the previous measure).

**Table 11.4: Evening Cyclist Characteristics
Birkenhead Avenue/Mokoia Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	95	93	93	87	-6
School child	5	7	7	13	6
Helmet Wearing					
Helmet on head	95	93	93	80	-13
No helmet	5	7	7	20	13
Where Riding					
Road	100	93	80	76	-4
Footpath	0	7	20	24	4
Base:	20	29	30	46	

- The volume of cyclists peaks twice, between 5:10pm and 5:19pm (7 cyclists) and between 5:40pm and 5:49pm (12 cyclists). The second peak is the same as was recorded in the past two years.

Figure 11.3: Birkenhead Avenue/Mokoia Road Cyclist Frequency – Evening Peak

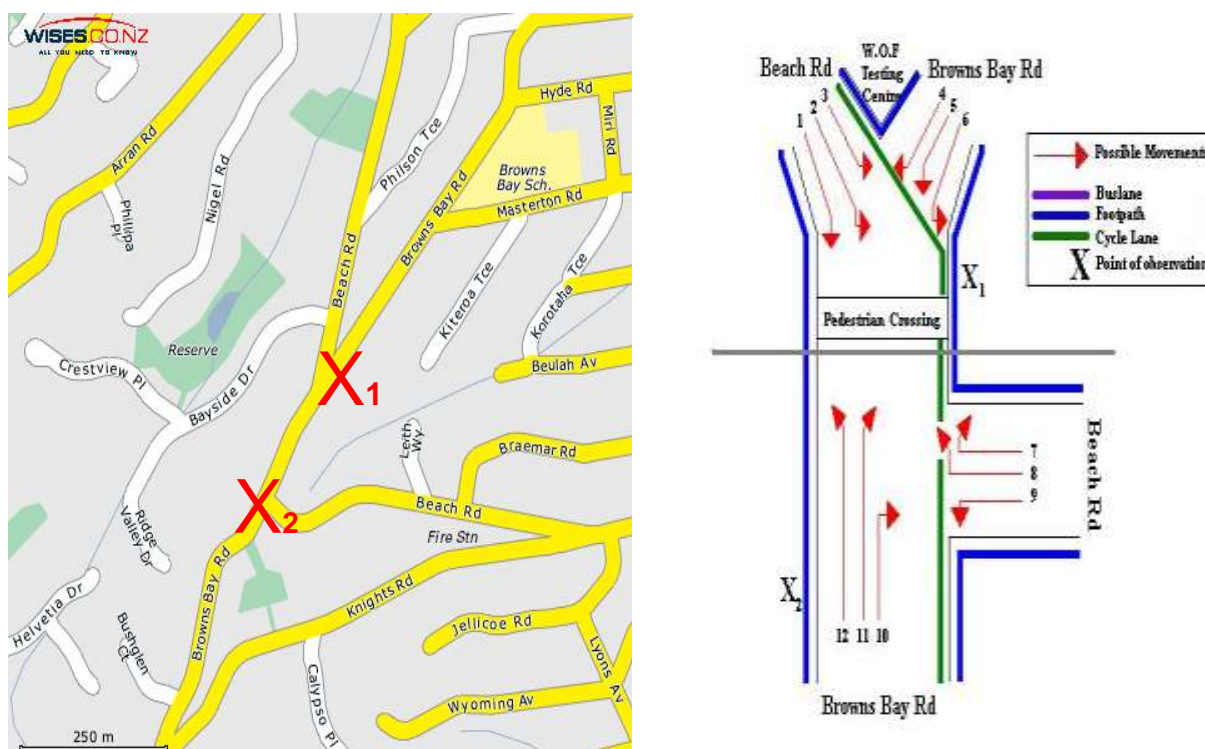


Note: In 2010, three cyclists were observed riding as a group at 5.46pm. This comprises seven per cent of the total cycle movements in the evening peak in 2010.

12.BEACH ROAD/BROWNS BAY ROAD, ROTHESSAY BAY (SITE 45)

Figure 12.1 shows the possible cyclist movements at this intersection. *Note: Due to the size of this intersection, two surveyors were used to conduct the cycle counts.*

Figure 12.1: Cycle Movements: Beach/Browns Bay Road



AADT Estimate

- The AADT for this site is 114. This compares with:
 - 86 in 2009
 - 66 in 2008
 - 44 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	50	27	77

12.1 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

- In 2010, the morning cyclist traffic at the intersection of Beach/Browns Bay Road has notably increased, from 29 in 2009 to 50 cycle movements.
- The key movement in the morning is riding south along Browns Bay Road continuing through the intersection (Movement 5 = 22 cyclists).
- Morning cyclist volumes at this site have most notably increased at Movement 5 (up 15 cyclists from 2009).

**Table 12.1: Morning Cyclist Movements
Beach/Browns Bay Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	1	4	7	0	-7
2	2	4	0	1	1
3	3	0	0	2	2
4	3	0	0	1	1
5	0	4	7	22	15
6	2	3	0	1	1
7	0	0	5	7	2
8	0	9	6	3	-3
9	0	0	0	3	3
10	0	0	0	0	0
11	0	0	3	8	5
12	0	2	1	2	1
Total	11	26	29	50	21

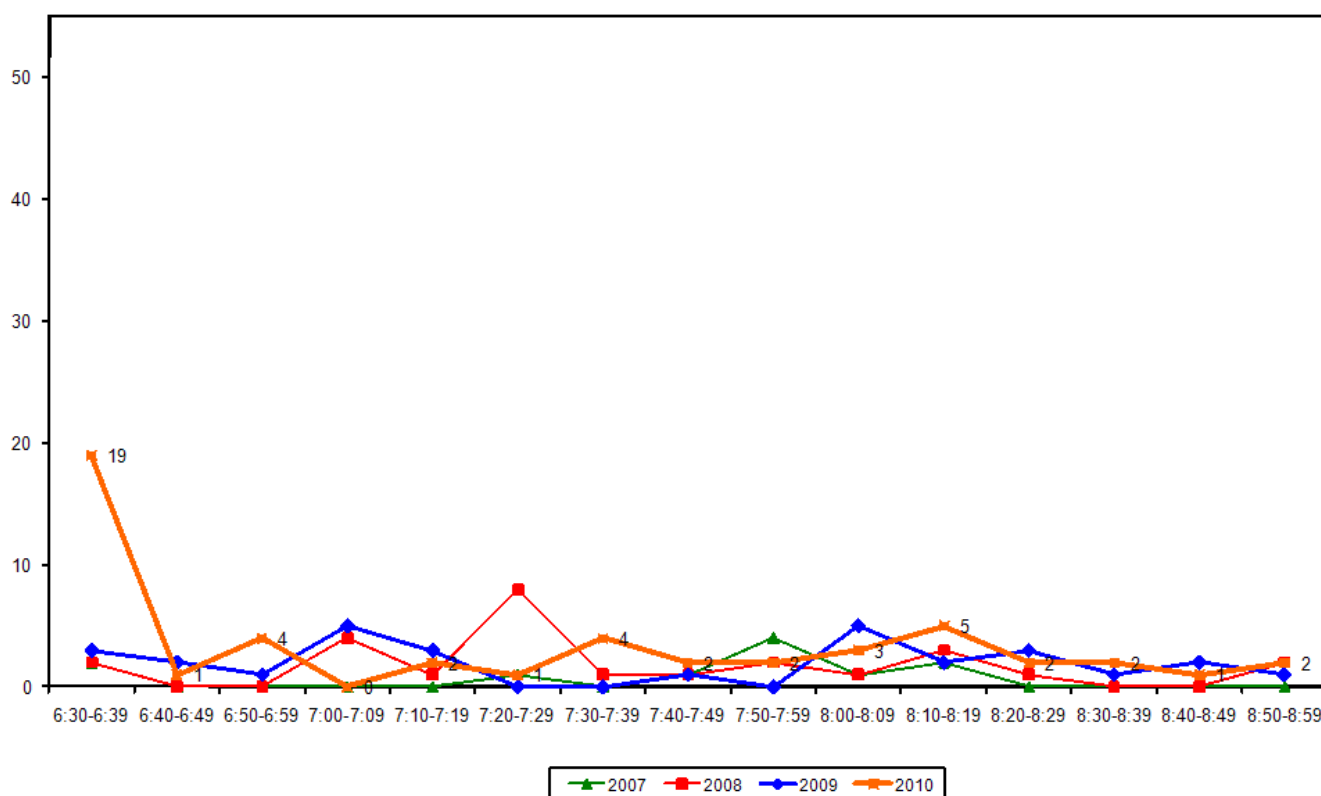
- Over the morning peak in 2010, adults comprise four in five (80 per cent) of total cycle movements – this share having increased from 69 per cent recorded last year.
- Helmet wearing continues to be widespread this year (98 per cent, up slightly from 93 per cent in 2009).
- From 2009, cycling on the road was split into cycling on the road and cycling on the off-road cycleway. Fourteen per cent cyclists are riding on the off-road cycleway (down from 24 per cent in 2009), while 80 per cent are riding on the road (up notably from 42 per cent last year).

**Table 12.2: Morning Cyclist Characteristics
Beach/Browns Bay Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	36	88	69	80	11
School child	64	12	31	20	-11
Helmet Wearing					
Helmet on head	91	96	93	98	5
No helmet	9	4	7	2	-5
Where Riding					
Road	45	88	42	80	38
Footpath	55	12	34	6	-28
Off-road cycleway	-	-	24	14	-10
Base:	11	26	29	50	

- The volume of morning cyclists remains low over the morning monitoring period with no more than five cyclists per ten minute monitoring interval. The notable exception to this is a sharp peak between 6:30am and 6:39am (19 cyclists). This compares to relatively low morning cycle movements over the entire monitoring period in 2009, with slight peaks occurring between 7:00am and 7:09am (5 cyclists) and between 8:00am and 8:09am (5 cyclists).

Figure 12.2: Beach/Browns Bay Road Cyclist Frequency – Morning Peak



Note: In 2010, 44 per cent of the total cycle movements in the morning peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- Eighteen cyclists at 6.36am
- Four cyclists at 8.12am

12.2 Evening Peak

Environmental Conditions

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

Key Points

- The volume of cycle movements at the Beach/Browns Bay Road intersection (27 cycle movements) has decreased slightly from last year (30 movements).
- The key movements in the evening are riding north along Browns Bay Road continuing through the intersection (Movement 11 = 5 cyclists) and riding north along Browns Bay Road turning left into Beach Road (Movement 12 = 5 cyclists).
- Compared with last year, the volume of evening cyclists is most notably lower at Movement 5 (down 10 cyclists from 2009).

**Table 12.3: Evening Cyclist Movements
Beach/Browns Bay Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	1	3	4	4	0
2	0	2	0	3	3
3	3	1	0	0	0
4	0	0	0	0	0
5	0	2	13	3	-10
6	0	1	0	2	2
7	1	1	4	1	-3
8	0	1	4	3	-1
9	0	0	0	1	1
10	0	0	0	0	0
11	3	4	3	5	2
12	0	4	2	5	3
Total	8	19	30	27	-3

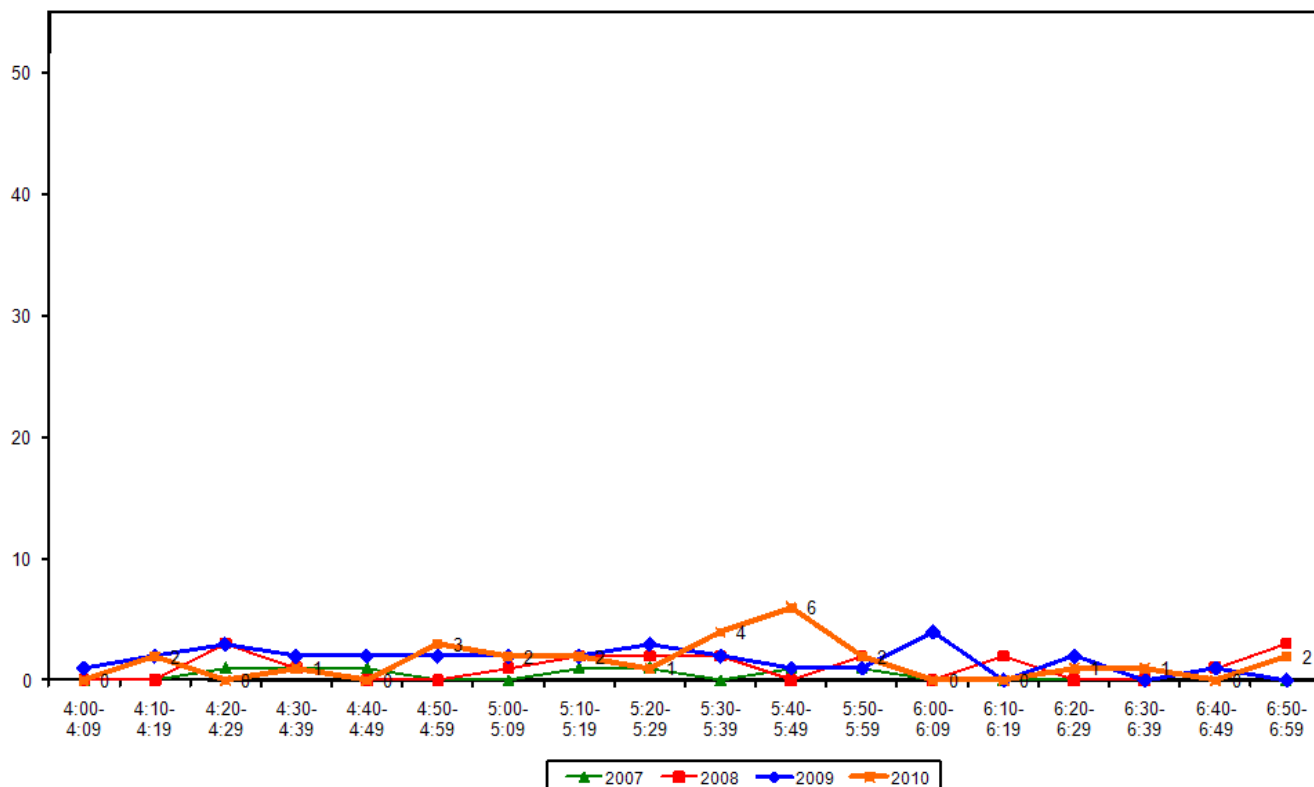
- The proportion of cyclists over the evening peak that are school children has decreased notably since 2009 (15 per cent, down notably from 40 per cent last year).
- Most cyclists are wearing a helmet (89 per cent, down from 100 per cent in 2009).
- From 2009, riding on the road was split into riding on the road and riding on the off-road cycleway. Only four per cent of cyclists were riding on the off-road cycleway (down from 23 per cent in 2009), while the proportion of cyclists riding on the road has increased notably, from 33 per cent in 2009 to 81 per cent this year.

**Table 12.4: Evening Cyclist Characteristics
Beach/Browns Bay Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	100	58	60	85	25
School child	0	42	40	15	-25
Helmet Wearing					
Helmet on head	100	95	100	89	-11
No helmet	0	5	0	11	11
Where Riding					
Road	87	63	33	81	48
Footpath	13	37	44	15	-29
Off-road cycleway	-	-	23	4	-19
Base:	8	19	30	27	

- Evening volumes are very low over the entire monitoring period, with no more than three cyclists recorded passing over most ten minute intervals. A slight peak occurred between 5:30pm and 5:49pm (4 and 6 cyclists per ten minute interval respectively). This compares to a slight peak between 6:00pm and 6:09pm (4 cyclists) in 2009.

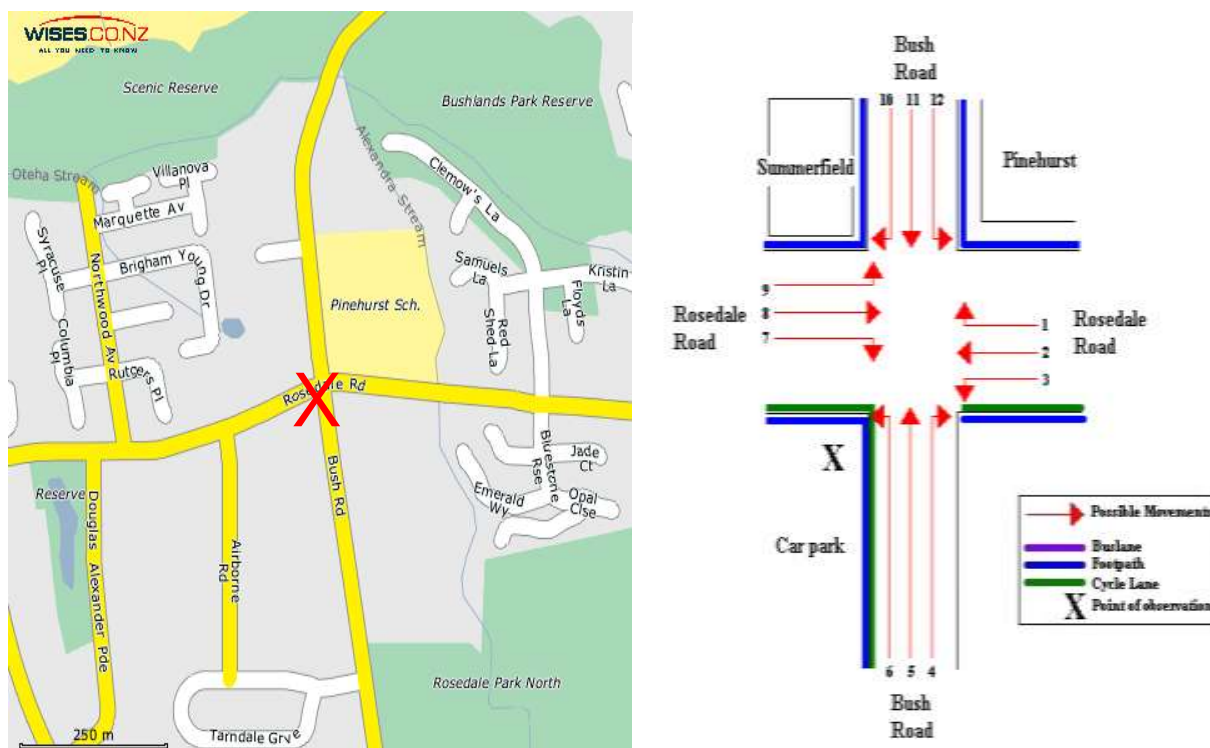
**Figure 12.3: Beach/Browns Bay Road Cyclist Frequency
– Evening Peak**



13.ROSEDALE ROAD/BUSH ROAD, ALBANY (SITE 46)

Figure 13.1 shows the possible cyclist movements at this intersection.

Figure 13.1: Cycle Movements: Rosedale/Bush Road



AADT Estimate

- The AADT for this site is 157. This compares with:
 - 103 in 2009
 - 106 in 2008
 - 70 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	48	61	109

13.1 Morning Peak

Environmental Conditions

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

Key Points

- Since last year, the volume of morning cyclists at the Rosedale/Bush Road intersection has increased notably, from 26 in 2009 to 48 movements this year.
- The most common movement in the morning is straight along Rosedale Road heading west (Movement 2 = 16 cyclists).
- The most notable increase since last year is at Movement 5 (up 5 cyclists).

**Table 13.1: Morning Cyclist Movements
Rosedale/Bush Road 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	1	0	2	2
2	8	6	13	16	3
3	0	1	1	1	0
4	0	1	0	2	2
5	4	3	1	6	5
6	0	12	2	5	3
7	0	0	0	0	0
8	0	3	3	5	2
9	0	2	0	4	4
10	3	3	3	2	-1
11	0	2	2	4	2
12	0	2	1	1	0
Total	15	36	26	48	22

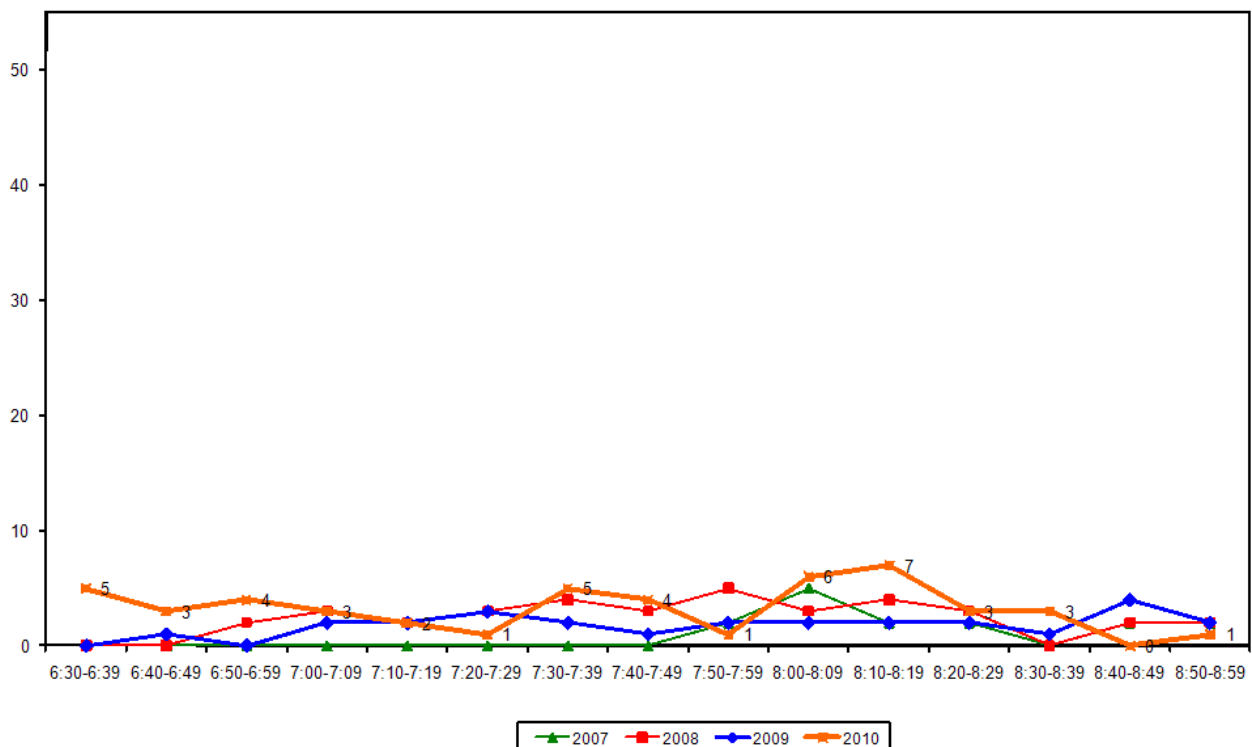
- Over the morning peak, four in five cyclists at this site are adults (81 per cent, unchanged from last year).
- Most cyclists are wearing a helmet (96 per cent, up from 92 per cent in 2009).
- The majority of cyclists are riding on the road (73 per cent, up from 69 per cent last year).

**Table 13.2: Morning Cyclist Characteristics
Rosedale/Bush Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	40	81	81	81	0
School child	60	19	19	19	0
Helmet Wearing					
Helmet on head	100	92	92	96	4
No helmet	0	8	8	4	-4
Where Riding					
Road	33	61	69	73	4
Footpath	67	39	31	27	-4
Base:	15	36	26	48	

- Cyclist volumes are fairly constant throughout the monitoring period with a slight peak between 7:30am and 7:39am (5 cyclists) and another between 8:00am and 8:19am (6 and 7 cyclists per ten minute interval respectively).

**Figure 13.2: Rosedale/Bush Road Cyclist Frequency
– Morning Peak**



13.2 Evening Peak

Environmental Conditions

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

Key Points

- The total number of cycle movements recorded at the Rosedale/Bush Road intersection over the evening shift has increased this measure, from 46 cyclists last year to 61 cyclists this year.
- The key evening movement is travelling straight along Bush Road heading north (Movement 5 = 12 movements).
- The most notable increase since 2009 is at Movement 5 (up 10 cyclists). The most notable decrease since 2009 is at Movement 10 (down 9 cyclists).

**Table 13.3: Evening Cyclist Movements
Rosedale/Bush Road 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
1	1	1	2	0	-2
2	1	10	8	9	1
3	0	5	2	1	-1
4	0	1	1	6	5
5	2	4	2	12	10
6	3	5	0	7	7
7	0	0	3	2	-1
8	4	3	6	4	-2
9	0	1	2	3	1
10	1	3	14	5	-9
11	3	3	3	6	3
12	1	1	3	6	3
Total	16	37	46	61	15

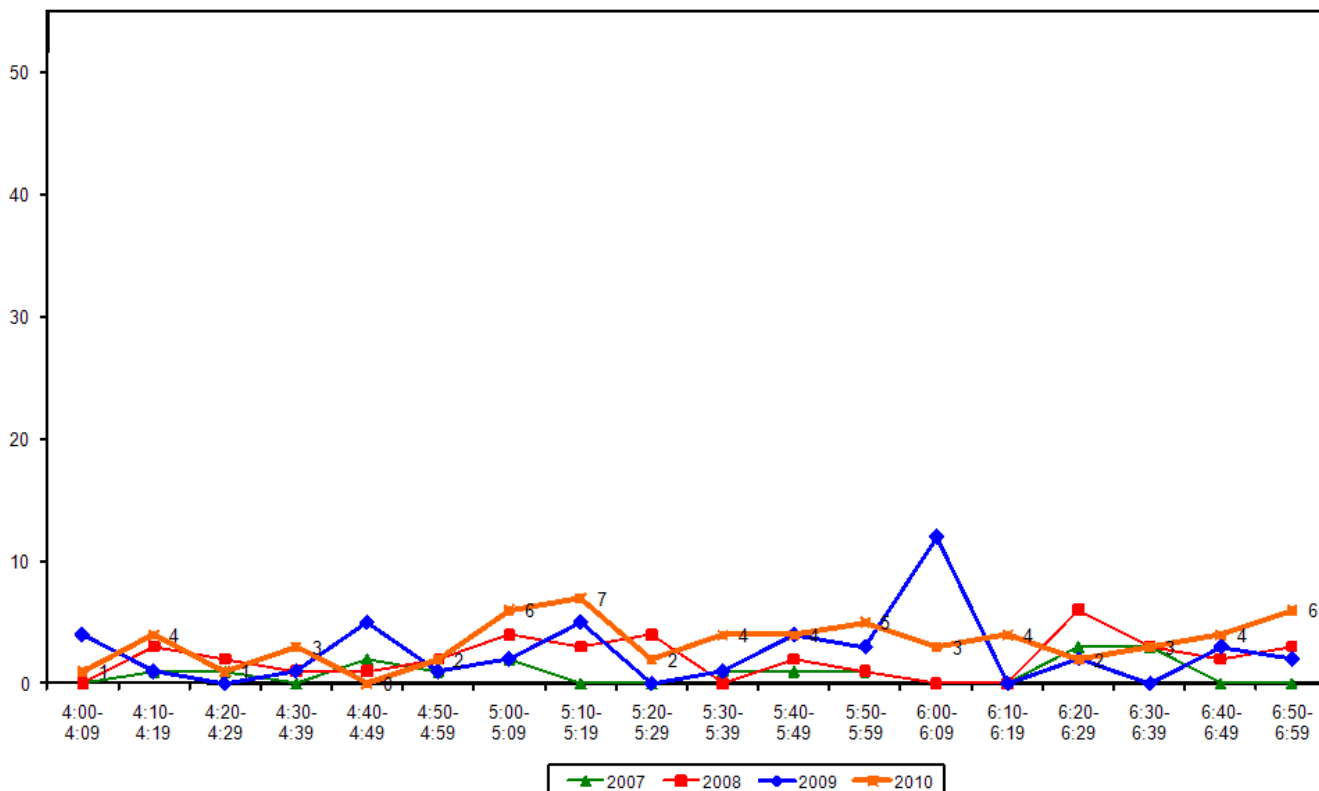
- Consistent with the previous measure, the majority of evening cyclists using this intersection are adults (80 per cent, up slightly from 76 per cent in 2009).
- Helmet wearing has decreased among evening cyclists (84 per cent, down from 93 per cent last year).
- Sixty-nine per cent of cyclists are travelling on the road (up from 61 per cent last year).

**Table 13.4: Evening Cyclist Characteristics
Rosedale/Bush Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	81	78	76	80	4
School child	19	22	24	20	-4
Helmet Wearing					
Helmet on head	94	92	93	84	-9
No helmet	6	8	7	16	9
Where Riding					
Road	62	76	61	69	8
Footpath	38	24	39	31	-8
Base:	16	37	46	61	

- There are two slight peaks in cycle movements recorded during this period, between 5:00pm and 5:19pm (6 and 7 cyclists in each ten minute period respectively) and another between 6:50pm and 6:59pm (6 cyclists). This compares with a notable peak in cyclist volumes between 6:00pm and 6:09pm in 2009.

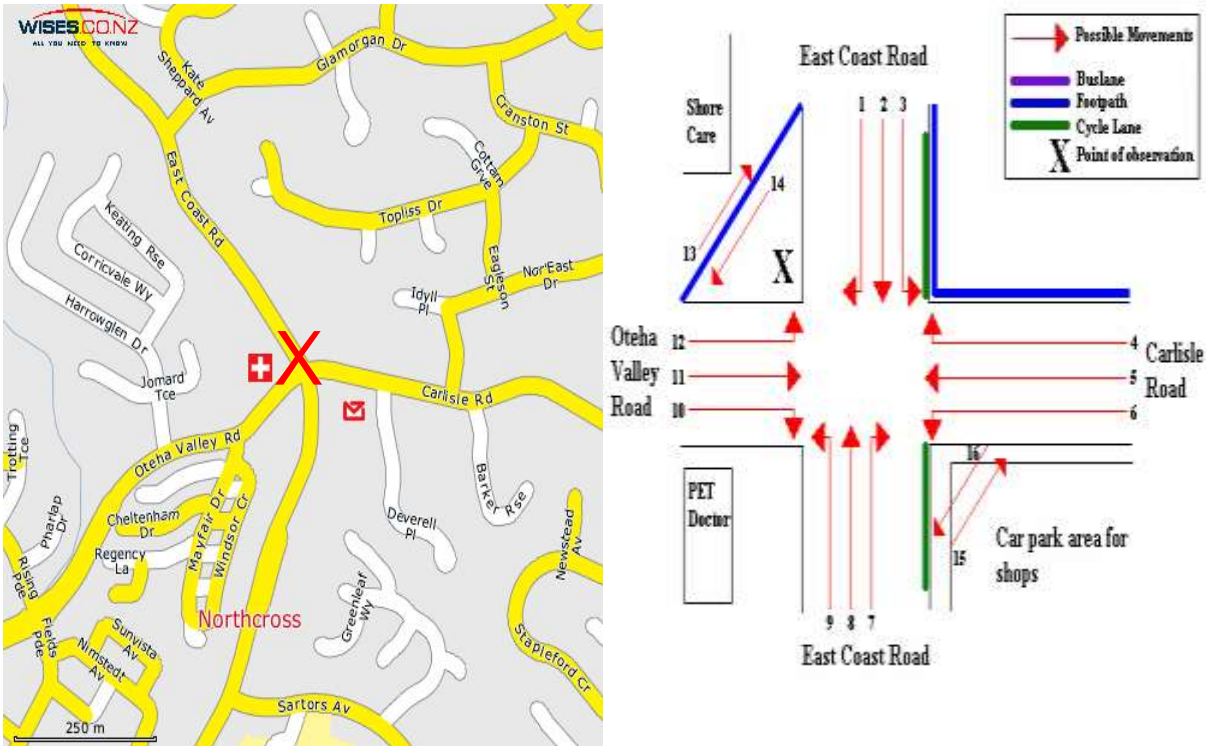
Figure 13.3: Rosedale/Bush Road Cyclist Frequency – Evening Peak



14. OTEHA VALLEY ROAD/EAST COAST ROAD, ALBANY (SITE 47)

Figure 14.1 shows the possible cyclist movements at this intersection.

Figure 14.1: Cycle Movements: Oteha Valley/East Coast Road



AADT Estimate

- The AADT for this site is 245. This compares with:
 - 201 in 2009
 - 163 in 2008
 - 137 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	87	81	168

14.1 Morning Peak

Environmental Conditions

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

Key Points

- Compared with the previous year, the volume of morning cyclists at the Oteha Valley/East Coast Road intersection has increased notably, from 69 movements in 2009 to 87 movements this year.
- The most common movement in the morning is straight along East Coast Road in a southerly direction (Movement 2 = 29 cyclists).
- The most notable increase is at Movement 2 (up 11 cyclists).

**Table 14.1: Morning Cyclist Movements
Oteha Valley/East Coast Road 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	0	1	4	3
2	16	14	18	29	11
3	2	0	0	0	0
4	3	0	3	4	1
5	3	3	4	4	0
6	8	3	15	8	-7
7	0	0	1	3	2
8	1	3	4	8	4
9	1	2	2	7	5
10	0	6	5	8	3
11	0	1	1	4	3
12	0	1	2	0	-2
13	0	0	0	1	1
14	0	0	0	0	0
15	1	1	2	1	-1
16	5	6	11	6	-5
Total	42	40	69	87	18

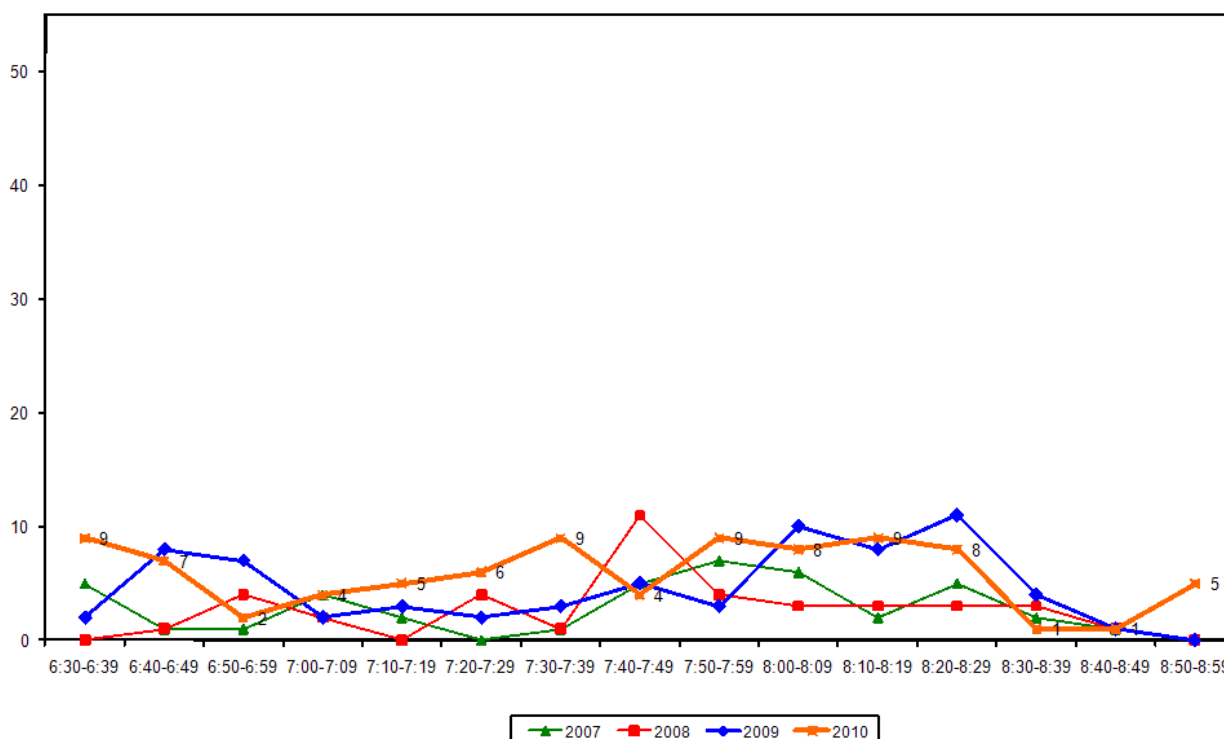
- Over the morning peak, the greatest share of cyclists are adults (64 per cent, up from 59 per cent in 2009).
- Almost all cyclists are wearing a helmet (98 per cent, stable from last year).
- Seventy per cent of cyclists are riding on the road (up from 59 per cent in 2009).

**Table 14.2: Morning Cyclist Characteristics
Oteha Valley/East Coast Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	48	68	59	64	5
School child	52	32	41	36	-5
Helmet Wearing					
Helmet on head	95	90	97	98	1
No helmet	5	10	3	2	-1
Where Riding					
Road	62	60	59	70	11
Footpath	38	40	41	30	-11
Base:	42	40	69	87	

- The volume of morning cycle movements peaks four times in the monitoring period. The first of these is between 6:30am and 6:39am. The second is between 7:30am and 7:39am. The final two peaks are between 7:50am and 7:59am and 8:10am and 8:19am. Each of the peaks in 2010 consisted of 9 cyclists. This compares with a peak between 8:00am and 8:09am and again between 8:20am and 8:29am in 2009.

**Figure 14.2: Oteha Valley/East Coast Road Cyclist Frequency
– Morning Peak**



Note: In 2010, 16 per cent of the total cycle movements in the morning peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- Three cyclists at 6.30am
- Three cyclists at 6.47am
- Three cyclists at 7.25am
- Five cyclists at 8.20am

14.2 Evening Peak

Environmental Conditions

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

Key Points

- The total number of evening cycle movements recorded at the Oteha Valley/East Coast Road intersection has increased from 69 movements last year to 81 movements in 2010.
- The key evening movements are straight along East Coast Road heading north (Movement 8 = 14 cyclists) and the right turn from East Coast Road into Carlisle Road (Movement 7 = 12 cyclists).
- The most notable increase this year is at Movement 2 (up 7 cyclists).

**Table 14.3: Evening Cyclist Movements
Oteha Valley/East Coast Road 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	6	0	2	2
2	3	13	3	10	7
3	1	3	4	3	-1
4	0	2	1	1	0
5	0	3	4	6	2
6	1	3	6	7	1
7	2	6	10	12	2
8	5	15	12	14	2
9	1	3	6	3	-3
10	0	3	2	3	1
11	1	6	7	9	2
12	2	8	4	0	-4
13	0	0	0	4	4
14	0	0	0	0	0
15	1	1	7	4	-3
16	0	2	3	3	0
Total	17	74	69	81	12

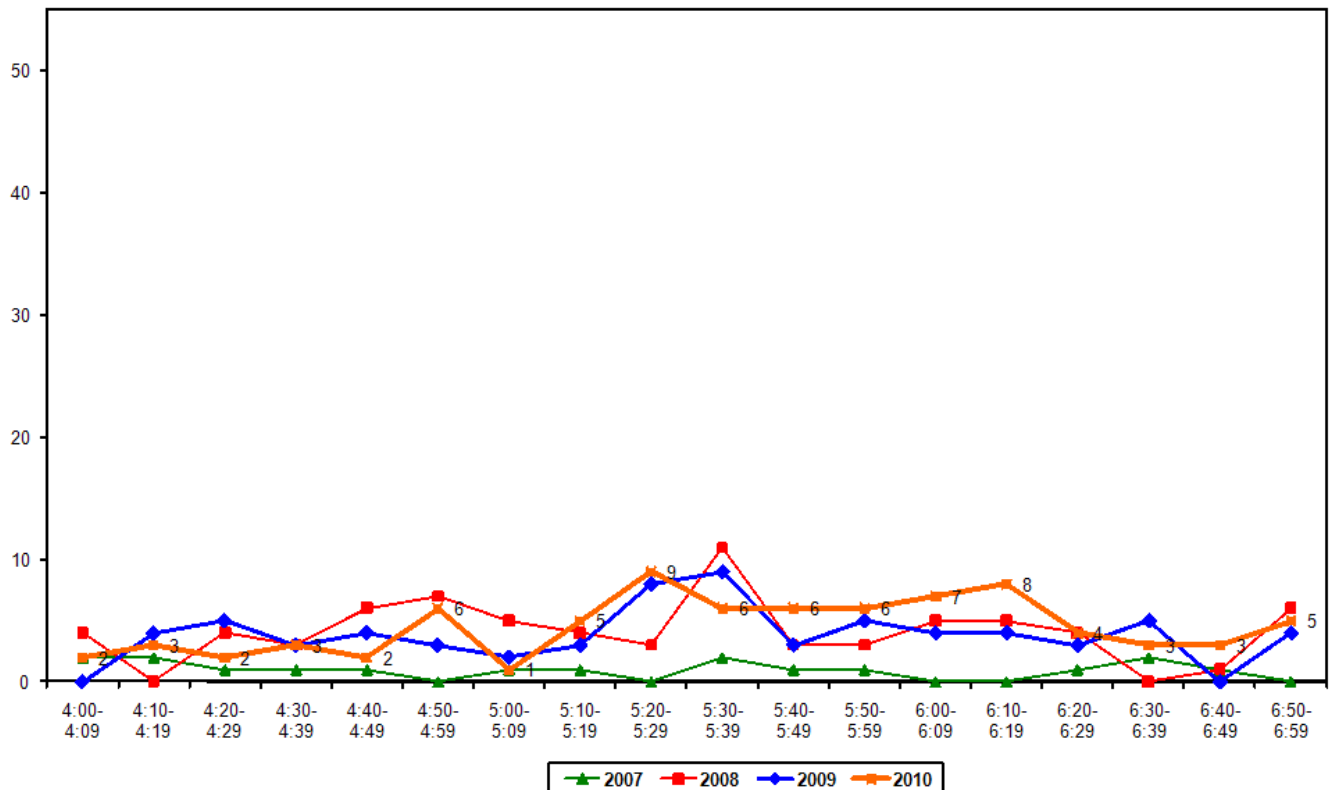
- Over the evening peak, the majority of cyclists using this site are adults (80 per cent, compared with 75 per cent in 2009).
- Most cyclists are wearing a helmet (90 per cent, down from 94 per cent last year).
- Two-thirds of cyclists are riding on the road (67 per cent, down from 74 per cent at the previous measure).

**Table 14.4: Evening Cyclist Characteristics
Oteha Valley/East Coast Road 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	76	81	75	80	5
School child	24	19	25	20	-5
Helmet Wearing					
Helmet on head	88	96	94	90	-4
No helmet	12	4	6	10	4
Where Riding					
Road	71	72	74	67	-7
Footpath	29	28	26	33	7
Base:	17	74	69	81	

- The volume of evening cycle movements peaks between 5:20pm and 5:29pm (9 cyclists), ten minutes earlier than the previous two years. The volume of evening cyclists also peaks between 6:10pm and 6:19pm (8 cyclists).

Figure 14.3: Oteha Valley/East Coast Road Cyclist Frequency – Evening Peak



Note: In 2010, seven per cent of the total cycle movements in the evening peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

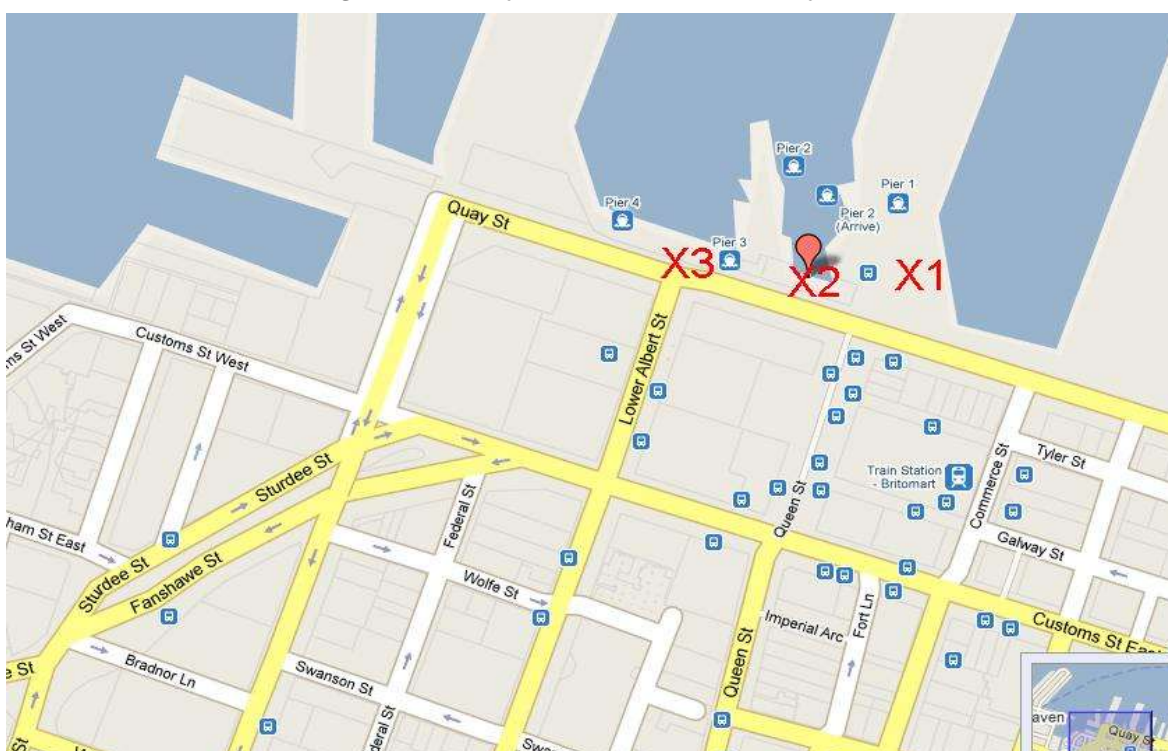
- Three cyclists at 5.19pm
- Three cyclists at 6.31pm

15. FERRY TERMINAL, AUCKLAND CITY (SITE 22)

This is an Auckland City site which has been included in this report for completeness. Results for this site are not included in the calculation of total cycle movements and Average Annual Daily Traffic (AADT) estimates for North Shore City.

Figure 15.1 shows the possible cyclist movements at this site. *Note: Due to the size of this site, three surveyors were used to conduct the cycle counts. One surveyor counted cycle traffic entering and leaving via the actual ferry terminal (Pier 1). The second surveyor counted cycle traffic using the ferries at Pier 2. The third surveyor counted cycle traffic using ferries at Piers 3 and 4.*

Figure 15.1: Cycle Movements: Ferry Terminal



AADT Estimate

- The AADT for this site is 574. This compares with:
 - 363 in 2009
 - 459 in 2008
 - 553 in 2007.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	198	197	395

15.1 Morning Peak

Environmental Conditions

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

Key Points

- Compared with last year, the volume of cycle movements at the Ferry Terminal site has increased notably, from 137 in 2009 to 198 this year.
- The key movement in the morning is disembarking the terminal at Pier One, which provides access to ferry services to and from Birkenhead, Northcote Point, Bayswater and Devonport (134 cyclists).
- The most notable increase is disembarking at Pier One (up 34 cyclists).

**Table 15.1: Morning Cyclist Movements
Ferry Terminal 2007-2010 (n)**

Movement	2007	2008	2009	2010	Change 09-10
Pier One					
Boarding	18	11	10	24	14
Disembarking	136	127	100	134	34
Pier Two					
Boarding	8	5	1	0	-1
Disembarking	18	10	16	28	12
Pier Three					
Boarding	0	0	1	0	-1
Disembarking	4	3	3	8	5
Pier Four					
Boarding	0	0	4	0	-4
Disembarking	11	2	2	4	2
Total	195	158	137	198	61

Pier 1 – departs for Birkenhead, Northcote Point, Bayswater and Devonport

Pier 2 – departs for Waiheke Island and Half Moon Bay

Pier 3 – departs for West Harbour and Pine Harbour

Pier 4 – departs for Gulf Harbour and Stanley Bay

Table 15.1a: Morning Cyclist Movements – Which Ferry Boarded (n)

<i>Ferry</i>	2009	2010	Change 09-10
Pier Two			
Half Moon Bay	0	0	0
Waiheke	1	0	-1
Pier Three			
Pine Harbour	0	0	0
West Harbour	1	0	-1
Pier Four			
Gulf Harbour	0	0	0
Stanley Bay	4	0	-4
Total	6	0	-6

Note: At Pier 1, it is not possible to identify which ferry cyclists are boarding.

Table 15.1b: Morning Cyclist Movements – Which Ferry Disembarked (n)

<i>Ferry</i>	2009	2010	Change 09-10
Pier One			
Bayswater	22	-	-
Birkenhead	34	-	-
Devonport	44	-	-
Pier Two			
Half Moon Bay	4	10	6
Waiheke	12	18	6
Pier Three			
Pine Harbour	2	8	6
West Harbour	1	0	-1
Pier Four			
Gulf Harbour	1	1	0
Stanley Bay	1	3	2
Total	121	40	-

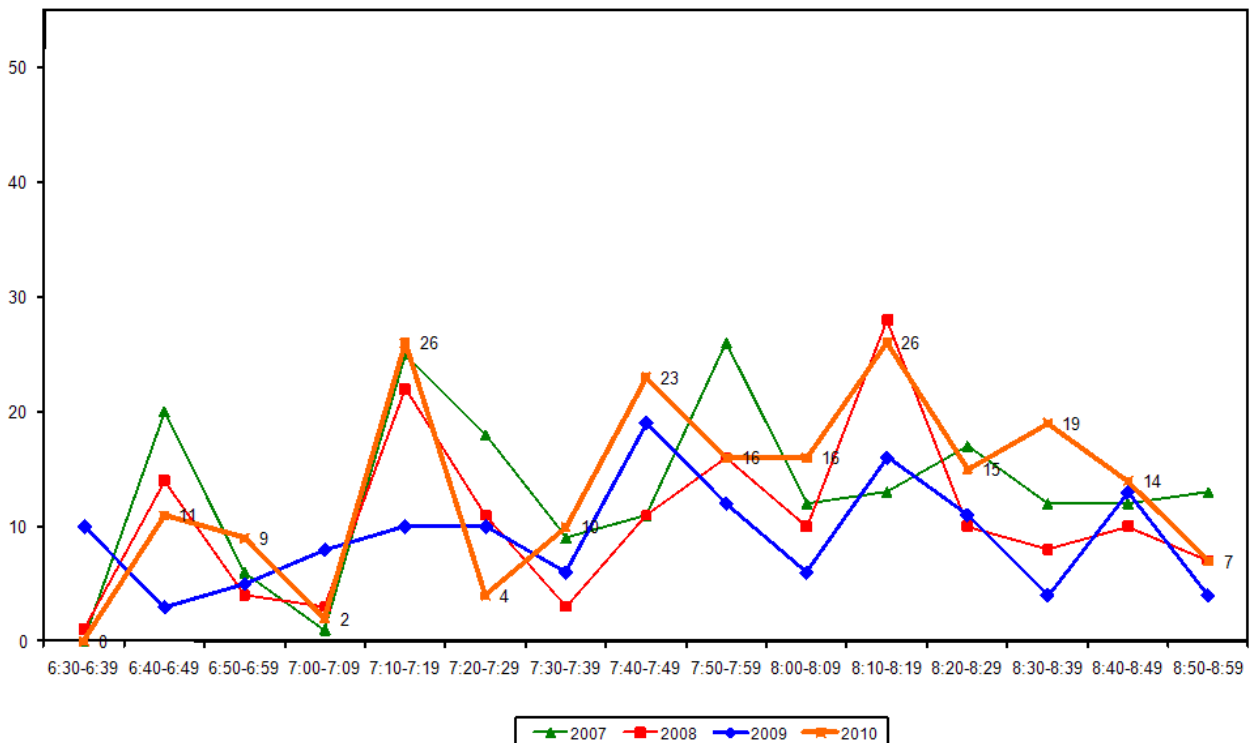
- Almost all cyclists using this site in the morning are adults (99 per cent - stable from 100 per cent last year).
- On average, two in three cyclists are wearing a helmet (69 per cent, down from 80 per cent in 2009).

**Table 15.2: Morning Cyclist Characteristics
Ferry Terminal 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	98	96	100	99	-1
School child	2	4	0	1	1
Helmet Wearing					
Helmet on head	87	70	80	69	-11
No helmet	13	30	20	31	11
Base:	195	158	137	198	

- Morning cyclist volumes peak three times – 26 cyclists at around 7:15am (half an hour earlier than the first peak last year), 23 cyclists at around 7:45am and 26 cyclists at around 8:15am (the same time as the second peak in 2009).

Figure 15.2: Ferry Terminal Cyclist Frequency – Morning Peak



15.2 Evening Peak

Environmental Conditions

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

Key Points

- The volume of evening cycle movements at the Ferry Terminal site has increased from last year – up by 86 to 197 movements in 2010.
- In contrast to the morning shift, the key movement in the evening is boarding the ferries at Pier One (137 cyclists).
- Compared with last year, the most notable increase is boarding the terminal at Pier One (up 49 cyclists).

**Table 15.3: Evening Cyclist Movements
Ferry Terminal 2007-2010 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Change 09-10</i>
Pier One					
Boarding	131	122	88	137	49
Disembarking	15	13	5	25	20
Pier Two					
Boarding	7	15	10	21	11
Disembarking	16	6	0	3	3
Pier Three					
Boarding	0	2	5	6	1
Disembarking	0	0	0	0	0
Pier Four					
Boarding	0	0	3	3	0
Disembarking	16	0	0	2	2
Total	185	158	111	197	86

Pier 1 – departs for Birkenhead, Northcote Point, Bayswater and Devonport

Pier 2 – departs for Waiheke Island and Half Moon Bay

Pier 3 – departs for West Harbour and Pine Harbour

Pier 4 – departs for Gulf Harbour and Stanley Bay

Table 15.3a: Evening Cyclist Movements – Which Ferry to Board (n)

<i>Ferry</i>	2009	2010	Change 09-10
Pier Two			
Half Moon Bay	3	4	1
Waiheke	7	17	10
Pier Three			
Pine Harbour	4	6	2
West Harbour	1	0	-1
Pier Four			
Gulf Harbour	0	0	0
Stanley Bay	3	3	0
Total	18	30	12

Note: At Pier 1 it is not possible to identify which ferry cyclists are boarding

Table 15.3b: Evening Cyclist Movements – Which Ferry to Disembark (n)

<i>Ferry</i>	2009	2010	Change 09-10
Pier One			
Bayswater	0		
Birkenhead	0		
Devonport	5		
Pier Two			
Half Moon Bay	0	0	0
Waiheke	0	3	3
Pier Three			
Pine Harbour	0	0	0
West Harbour	0	0	0
Pier Four			
Gulf Harbour	0	1	1
Stanley Bay	0	1	1
Total	5	5	0

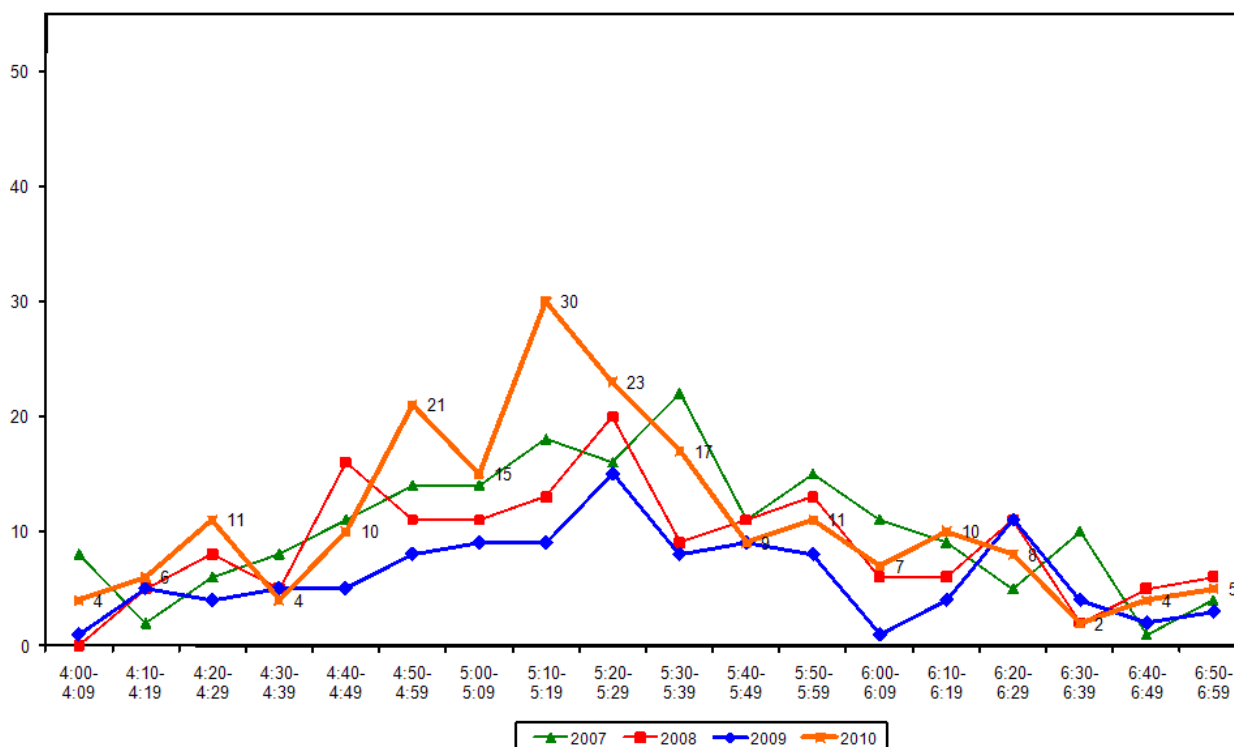
- Over the evening peak, all cyclists using this site are adults (100 per cent, stable from the previous measure).
- Seventy-one per cent of cyclists are wearing a helmet (down from 80 per cent recorded in 2009).

**Table 15.4: Evening Cyclist Characteristics
Ferry Terminal 2007-2010 (%)**

	2007	2008	2009	2010	Change 09-10
Cyclist Type					
Adult	99	98	100	100	0
School child	1	2	0	0	0
Helmet Wearing					
Helmet on head	85	69	80	71	-9
No helmet	15	31	20	29	9
Base:	185	158	111	198	

- Evening cyclist numbers start off low, increase gradually to a peak between 4:50pm and 4:59pm (21 cyclists) and again between 5:10pm and 5:19pm (30 cyclists), and then tail off towards the end of the monitoring period. This compares to peaks between 5:20pm and 5:29pm (23 cyclists), and again between 6:20pm and 6:29pm, in 2009.

**Figure 15.3: Ferry Terminal Cyclist Frequency
– Evening Peak**



15.3 Ferry Terminal – Count of Parked Cycles

Key Points

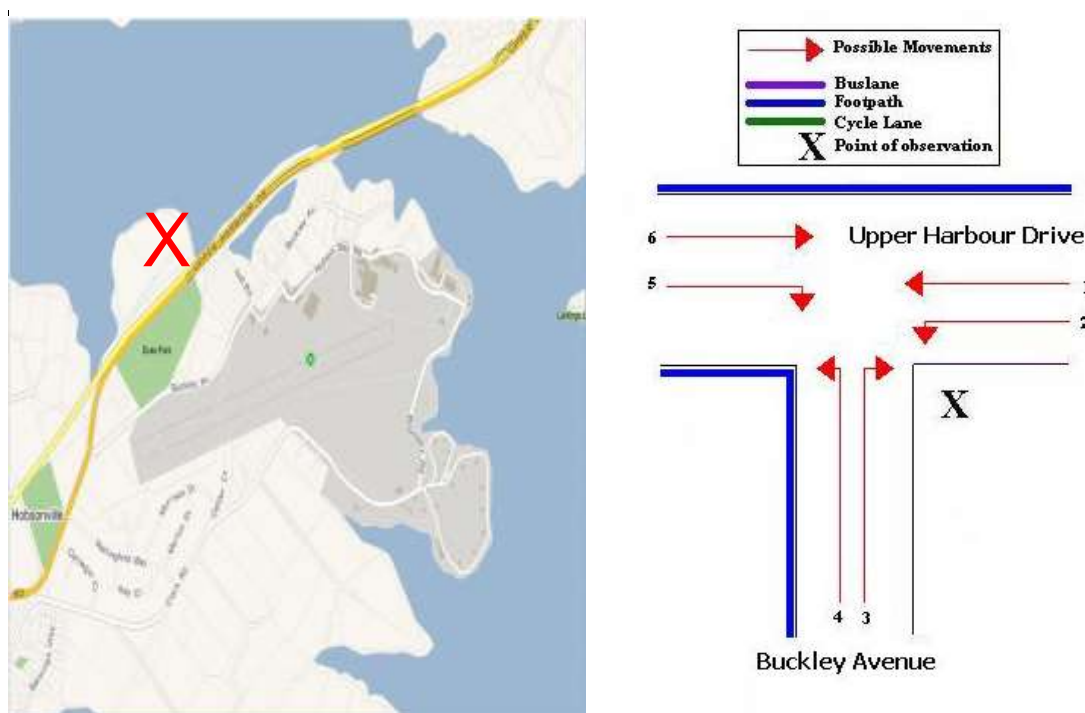
- Cycles were observed at various places around the Ferry Terminal with the main cluster observed outside the taxi-stand entrances/exit to Pier One.
- In the morning, a total of 18 bikes were recorded at the downtown Ferry Terminal at 6.00am and 12 bikes were counted at 9.10am.
- In the afternoon, a total of 11 bikes were recorded at the downtown Ferry Terminal at 3.30pm and 19 bikes were counted at 7.05pm.

16. UPPER HARBOUR DRIVE/BUCKLEY AVENUE, GREENHITHE (SITE 70)

Note: This is a Waitakere city site which has been included in this report for completeness. Results from this site are not included in the calculation of total cycle movements and Average Annual Daily Traffic (AADT) estimates for North Shore city.

Figure 16.1 shows the possible cyclist movements at this intersection.

Figure 16.1: Cycle Movements: Upper Harbour Drive/Buckley Avenue



Note: The original Upper Harbour Bridge observation site was relocated to Upper Harbour Drive/Buckley Avenue, due to road construction. Consequently no movement results are available to compare with this year's results.

AADT Estimate

- The AADT for this site is 135. This compares with
- 97 in 2009
- 51 in 2008.

	AM	PM	TOTAL
Raw Cycle Movement Counts 2010	37	57	94

16.1 Morning Peak

Environmental Conditions

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

Key Points

- Compared with other sites in Waitakere, the cycle volumes at the Upper Harbour Drive/Buckley Avenue site are low, with 37 cycle movements recorded.
- The key morning movement is heading southwest along the Upper Harbour Drive cycleway (Movement 1 = 25 cyclists).

**Table 16.1: Morning Cyclist Movements
Upper Harbour Drive/Buckley Avenue 2010 (n)**

<i>Movement</i>	<i>2010</i>
1	25
2	1
3	0
4	0
5	2
6	9
Total	37

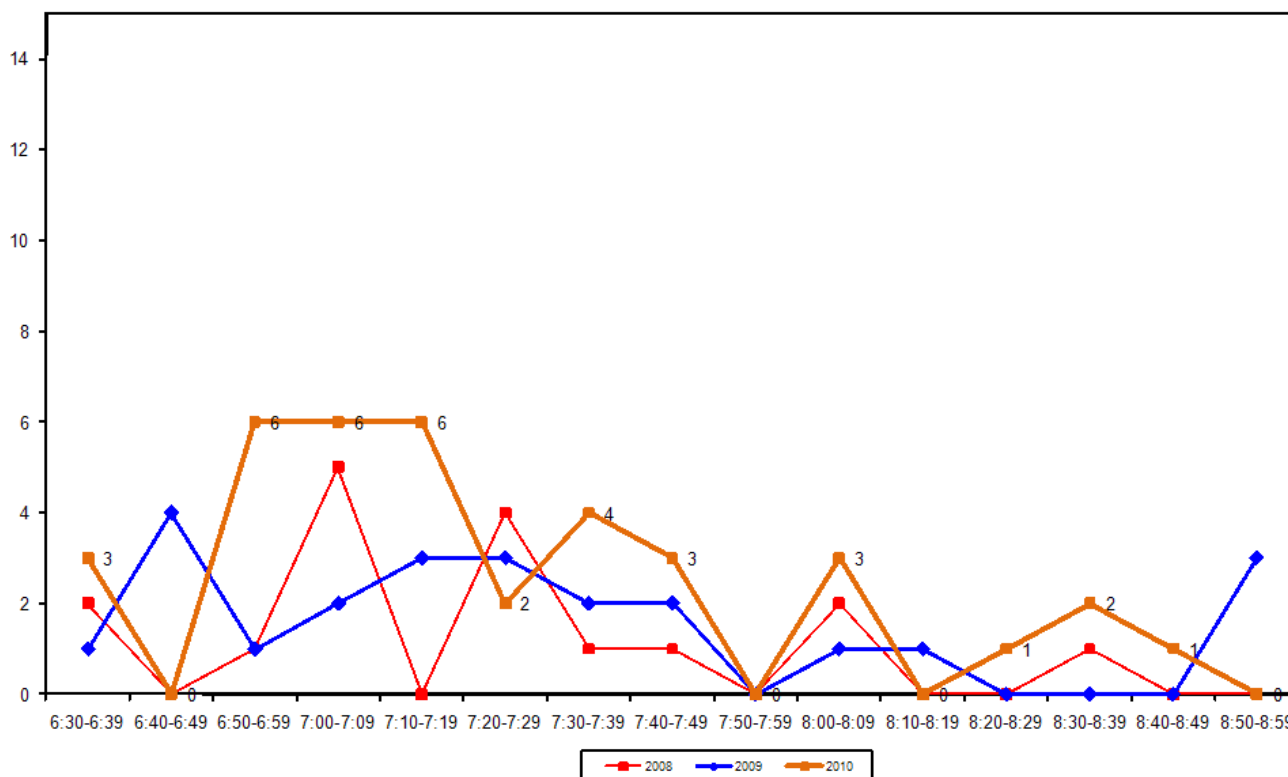
- Approximately two-thirds of the cyclists recorded at this site were adults (65 per cent).
- Most cyclists are wearing a helmet (97 per cent).
- Most cyclists are riding on the off-road cycleway (81 per cent). The remaining 19 per cent are riding on the road.

**Table 16.2: Morning Cyclist Characteristics
Upper Harbour Drive/Buckley Avenue 2008-2010 (%)**

	2010
Cyclist Type	
Adult	65
School child	35
Helmet Wearing	
Helmet on head	97
No helmet	3
Where Riding	
Road	19
Footpath	0
Off-road cycleway	81
Base:	37

- Morning cycle volumes peak fairly early in the monitoring period – between 6:50am and 7:19am (6 cyclists per ten minute interval) before trailing off to the end of the monitoring period.

Figure 16.2: Upper Harbour Drive/Buckley Avenue Cyclist Frequency – Morning Peak



Note: In 2010, three cyclists were observed riding as a group at 6.53am. This comprises eight per cent of the total cycle movements in the morning peak in 2010.

16.2 Evening Peak

Environmental Conditions

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

Key Points

- The total number of cycle movements recorded at the Upper Harbour Drive/Buckley Avenue site was 57.
- The most common movement in the evening is heading northeast along Upper Harbour Drive (Movement 6 = 33 movements).

**Table 16.3: Evening Cyclist Movements
Upper Harbour Drive/Buckley Avenue-2010 (n)**

Movement	2010
1	21
2	0
3	1
4	2
5	0
6	33
Total	57

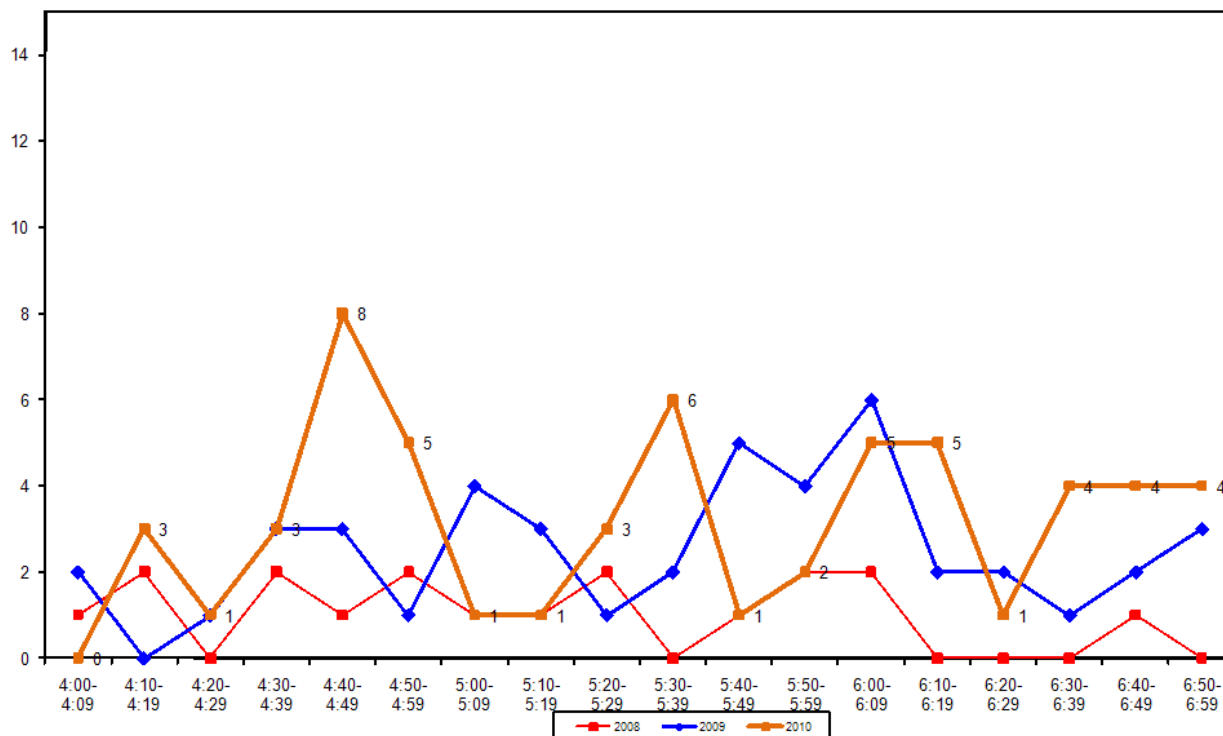
- Over the evening peak, all cyclists using this site are adults (100 per cent).
- All evening cyclists at this site are wearing a helmet (100 per cent).
- Just over two-thirds of cyclists are riding on the off-road cycleway (68 per cent), The remaining 32 per cent are riding on the road.

**Table 16.4: Evening Cyclist Characteristics
Upper Harbour Drive/Buckley Avenue 2008-2010 (%)**

	2010
Cyclist Type	
Adult	100
School child	0
Helmet Wearing	
Helmet on head	100
No helmet	0
Where Riding	
Road	32
Footpath	0
Off-road cycleway	68
Base:	57

- Evening cycle volumes were very variable throughout the monitoring period, with a slight peak occurring between 4:40pm and 4:49pm (8 cyclists).

Figure 16.3: Upper Harbour Drive/Buckley Avenue Cyclist Frequency – Evening Peak



Note: In 2010, 16 per cent of the total cycle movements in the evening peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- Three cyclists at 4.45pm
- Three cyclists at 6.01pm
- Three cyclists at 6.50pm

17. SCHOOL BIKE SHED COUNT – NORTH SHORE CITY

Background Information

- A total of 26 schools were contacted in North Shore city. Of the 22 schools that responded to the survey (85 per cent), most schools surveyed have no policies that restrict students cycling to school.
- The only exception was Pinehurst School which only allows students at Year 4 and higher to cycle to school.
- The designated count day was Tuesday 9th of March¹⁵.

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 (up from 2 per cent from last year).
- Among the 22 participating schools, n=617 students were reported as cycling to school.
- As in previous years, Belmont Intermediate School reported the highest share of cyclists – 33 per cent of all eligible students currently cycling (up from 22 per cent last year).
- Of the 22 schools that responded, two (9 per cent) had no students cycling to school. This compares with three schools (14 per cent) in 2009.

¹⁵ The following schools conducted counts on alternative count days

- Glenfield College, Glenfield Intermediate, Takapuna Normal Intermediate School, and Westlake Boys High School – Wednesday 10th March
- Carmel College – Friday 12th March
- Rangitoto College and Takapuna Grammar School – Tuesday 16th March
- Murrays Bay Intermediate School – Wednesday 17th March
- The Corelli School – Friday 19th March
- Northcote College – Monday 22th March

Table 18.1 shows the results of the 22 schools surveyed in North Shore city.

**Table 18.1: 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 eligible¹⁶ (2010)	Cyclists as share of those eligible¹⁷ (2009)	Cyclists as share of those eligible (2008)	Cyclists as share of those eligible (2007)
Belmont Intermediate	Intermediate	518	170	33%	22%	26%	34%
Takapuna Grammar School	Secondary	1650	139	8%	9%	6%	8%
Takapuna Normal Intermediate School	Intermediate	660	48	7%	8%	16%	-
Wairau Intermediate	Intermediate	250	14	6%	5%	7%	4%
Northcote Intermediate ¹⁸	Intermediate	213	11	5%	2%	3%	2%
Rosmini College	Intermediate/Secondary	1003	35	3%	3%	4%	3%
Westlake Boys High School	Secondary	2182	68	3%	2%	<1%	2%
Murrays Bay Intermediate School ¹⁹	Intermediate	1000	32	3%	2%	2%	5%
Albany Senior High School	Secondary	431	8	2%	-	-	-
Birkdale Intermediate School	Intermediate	490	10	2%	1%	<1%	-
Birkenhead College	Secondary	800	6	1%	-	-	-
The Corelli School	Composite	85	1	1%	-	-	-
Glenfield Intermediate	Intermediate	440	6	1%	3%	2%	4%

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.

¹⁷ 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.

¹⁸ Several classes were away at school camp on count day.

¹⁹ Several classes were away at school camp on count day.

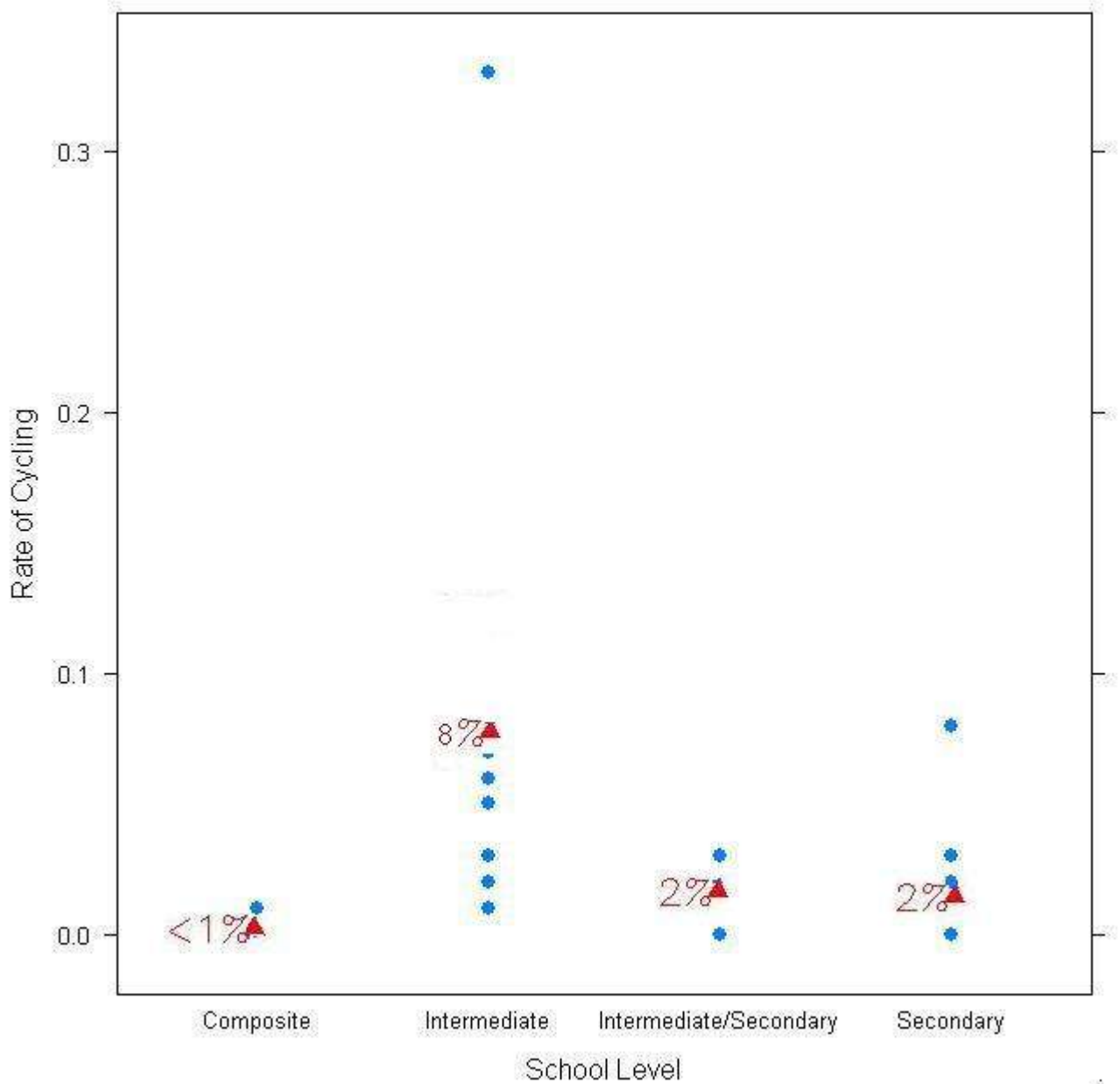
School Name	Year Levels	School Roll Eligible To Cycle	No. of Cycles Counted	Cyclists as share of those eligible¹⁶ (2010)	Cyclists as share of those eligible¹⁷ (2009)	Cyclists as share of those eligible (2008)	Cyclists as share of those eligible (2007)
Glenfield College	Secondary	858	10	1%	1%	-	-
Rangitoto College	Secondary	3000	37	1%	1%	<1%	1%
Pinehurst School	Composite	675	6	1%	0%	1%	1%
Long Bay College	Secondary	1650	8	<1%	0%	1%	-
Northcote College	Secondary	1227	6	<1%	0%	-	-
Kristin School	Composite	1578	1	<1%	1%	-	-
Westlake Girls High School	Secondary	2068	1	<1%	0%	<1%	<1%
Carmel College	Intermediate/Secondary	990	0	0%	0%	<1%	0%
Te Kura Kaupapa Maori o Te Raki Paewhenua	Composite	64	0	0%	-	-	-
Total		21832	617	3%	2%	3%	3%

- Table 18.2 and Figure 18.1 illustrate the rates of cycling to school at different school levels. Rates of cycling to school are highest among intermediate schools (8 per cent, up from 5 per cent in 2009) and lowest for composite schools (<1 per cent, unchanged from last year).

**Table 18.2: Summary Table Of School Bike Count by Year Levels
2007-2010(%)**

Year Levels	Number of Schools Responded in 2010	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 09-10
Intermediate	7	7	5	5	8	3
Intermediate/Secondary	2	2	4	1	2	1
Secondary	9	2	2	2	2	0
Composite	4	1	1	<1	<1	0
Total	22	3	3	2	3	1

**Figure 17.1: Cycling Rates by School Level
2010(%)**



APPENDICES

Appendix One: Annual Average Daily Traffic (AADT) Calculation

APPENDIX ONE: ANNUAL AVERAGE DAILY TRAFFIC (AADT) CALCULATION

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

Purpose

The purpose of this appendix is to document the recommended procedure for estimating a cycling AADT²⁰ 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)²¹, 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.

²⁰ Annual average daily traffic

²¹ LTSA, 2004

Figure 1 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 $3.06 \times 102 = 312$.
- 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%