MONITORING REPORT

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

MANUAL CYCLE MONITORING IN THE AUCKLAND REGION

March 2009

Manukau City

Prepared by Gravitas Research and Strategy Limited

Final Version Delivered 2nd June 2009

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1.1 Introduction

The Need For Reliable Cycle Trip Data

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

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

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

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

Manual Cycle Monitoring

Historically, manual cycle monitoring had been carried out in four of the seven Auckland region Territorial Authorities (TAs). However, each monitor had been undertaken using a different methodology[2]. This variability prevented the possibility of comparing the relative popularity of different sites across TA boundaries. In addition, each monitor programme took place at different times of the year, preventing comparability from location to location since factors such as weather, school/tertiary education holidays, seasonal variations and daylight savings each have an impact on the numbers of cyclists. Even within TAs, inconsistencies as to when counts took place from year to year prevented robust comparability over time.

Through the Regional Cycle Monitoring Plan, it was proposed that these manual counts be regionally aligned to ensure better regional consistency. Ideally, cycle count monitoring would be carried out at the same time each year across the region, applying a standard methodology. As outlined in the Regional Cycle Monitoring Plan, a consistent methodology would ensure that:

- standard monitoring days are used – that is, school and tertiary holidays, and statutory holidays are excluded and that monitoring preferably takes place at the same time each year to enable reliable year-on-year comparisons to be made. Decisions about whether cycle counts take place on weekdays and weekends would be made at the outset;
- a consistent set of times are used for monitoring, for the morning, evening and inter-peak periods; and
- a consistent method is used for monitoring direction and location of cyclists, including monitoring how many are on the footpath.

This report presents results from manual cycle counts conducted at 14 sites across the Manukau 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 and 2008, comparative results are provided.

Important Note: This report provides the results of manual cycle monitoring conducted at 14 pre-determined sites in Manukau 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 differed by one hour for the evening peak, and Waitakere city's differed for both peaks.

1.2 Methodology

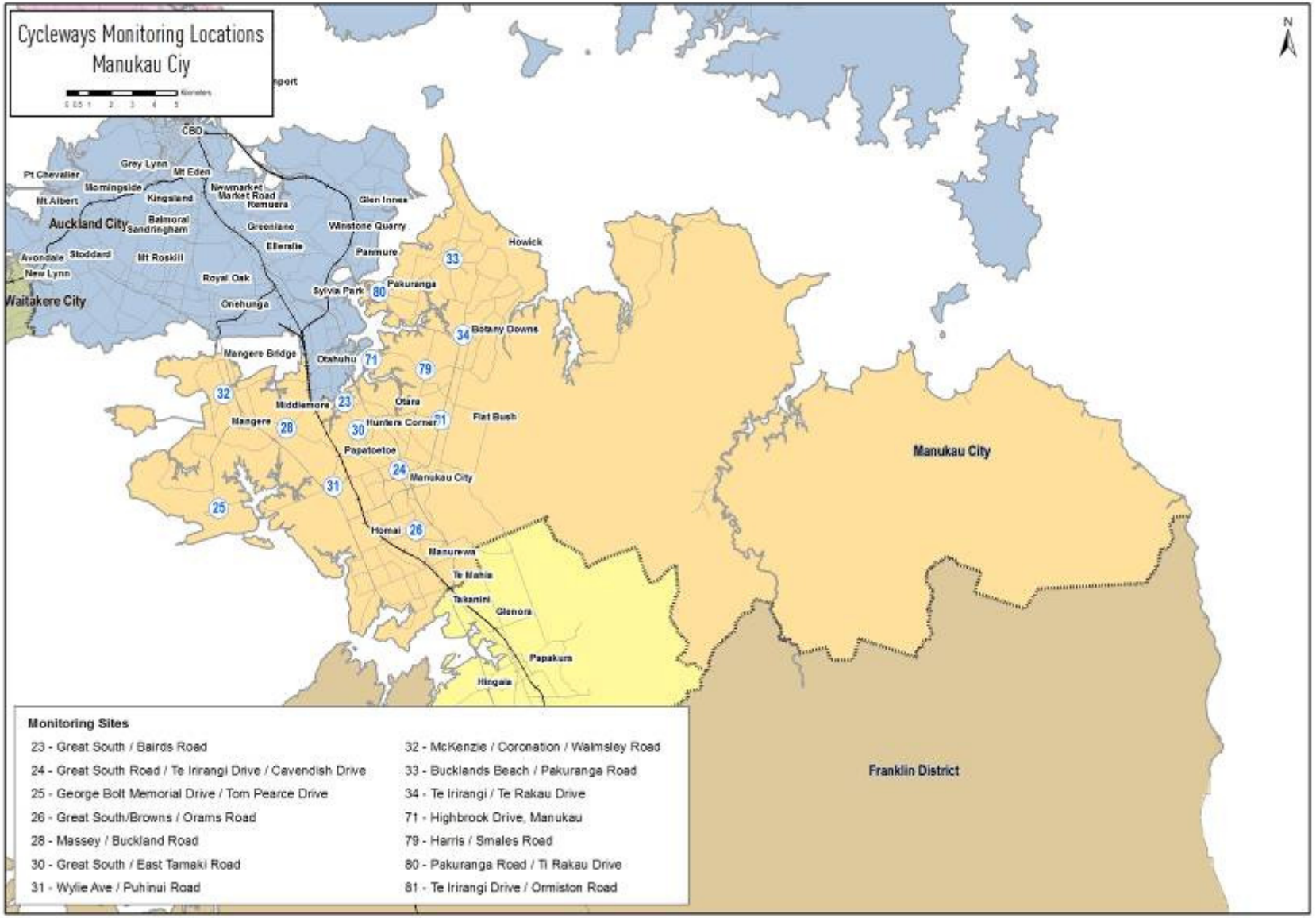
Manual cycle counts have been conducted using a standardised methodology across all sites. This methodology is outlined below. *Note: To ensure the longitudinal comparability of its cycle data, Gravitas have conducted the regional monitoring using a similar approach to that used to collect manual count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

Choice Of Sites

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

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

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


Cycleways Monitoring Locations
Manukau Ciy
N
CBD
Grey Lynn
Mt Eden
Pt Chevalier
Morningside
Newmarket
Market Road
Ramuera
Glen Innes
Mt Albert
Kingsland
Auckland City
Balmoral
Sandringham
Greenlane
Winstone Quarry
Ellerslie
Panmure
Howick
Avondale
Stoddard
Mt Roskill
New Lynn
Royal Oak
Pakuranga
Sylvia Park
Waitakere City
Onehunga
Botany Downs
Mangere Bridge
Otahuhu
Middlemore
Otara
Mangere
Hunters Corner
Flat Bush
Papatoetoe
Manukau City
Manukau City
Homai
Manurewa
Te Mahia
Takanini
Glenora
Papakura
Hingaia
Franklin District
33
80
34
71
79
32
23
30
31
28
24
25
26
Monitoring Sites
23 - Great South / Bairds Road
24 - Great South Road / Te Irirangi Drive / Cavendish Drive
25 - George Bolt Memorial Drive / Tom Pearce Drive
26 - Great South/Browns / Orams Road
28 - Massey / Buckland Road
30 - Great South / East Tamaki Road
31 - Wylie Ave / Puhinui Road
32 - McKenzie / Coronation / Walmsley Road
33 - Bucklands Beach / Pakuranga Road
34 - Te Irirangi / Te Rakau Drive
71 - Highbrook Drive, Manukau
79 - Harris / Smales Road
80 - Pakuranga Road / Ti Rakau Drive
81 - Te Irirangi Drive / Ormiston Road

Monitoring Times

Time Of Day

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

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

Day Of Week

Previous experience conducting cycle and other traffic manual counts on behalf of Auckland city has found that these counts are best undertaken on either a Tuesday, Wednesday or Thursday as travel patterns on Mondays and Fridays tend to be more variable.

Time Of Year

To ensure consistency throughout the region, standard monitoring days were selected and agreed upon by the Regional Cycle Monitoring Working Group. In selecting the days, consideration was given to:

- the timing of school and tertiary holidays/the commencement of term time for tertiary institutions;
- the timing of statutory holidays (particularly Easter);
- the timing of Bikewise Month; and
- daylight saving times.

It was agreed that manual counts would commence on Tuesday the 10th of March and be conducted on the first three fine days of the 10th, 11th, 12th, 17th, 18th or 19th of March.

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

Weather and Daylight Conditions

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

To reduce the impact of weather conditions on cycle numbers, manual counts were conducted on predominantly fine days (although intermittent drizzle was observed at a small number of sites). In addition, if it rained during the morning peak, monitoring in the evening peak on that same day was also postponed, irrespective of the weather (as it can be assumed that cyclists' travel behaviour in the evening peak will have been influenced by decisions they made earlier in the day – for example, the decision to leave their bike at home and use public transport instead). Care was taken to ensure that all manual counts were conducted prior to the conclusion of daylight saving.

The weather on the three count days in 2009 was as follows:

Tuesday 10th March

(Waitakere and North Shore city sites monitored)

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

Wednesday 11th March

(Auckland city sites monitored)

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

Thursday 12th March

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

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

Conducting the Manual Counts

Scoping Visit

Gravitas visited each of the selected sites prior to the first monitoring shift. This scoping visit was used to map the roading network and to identify and map the range of directions that cyclists could travel through the site. This visit was also used to identify any particular features (such as designated cycle ways) or potential hazards that surveyors needed to be aware of when monitoring at the site. As part of the scoping visit, a recommended observation point was identified and mapped (this point chosen on the basis of offering the best trade-off between visibility and safety). The maps prepared for each site have been included in this report – just prior to the count results for each site.

As part of the scoping visit, a small number of sites were identified as requiring two surveyors to accurately capture all cycle movements (due predominantly to the complexity of the roading/cycleway network at the site or poor visibility at the intersection). Two surveyors were used at:

- Great South Road/Campbell Road/Main Highway, Greenlane (Site 21; Auckland city);
- Ferry terminal (Site 22; Auckland city); and
- Beach Road/Browns Bay Road, Mairangi Bay (Site 45; North Shore city).

Briefing Session

Prior to their monitoring shift, all surveyors participated in a briefing session. The session covered:

- the overall aims of the Regional Cycle Monitoring Plan and how the manual monitoring fits with this Plan;
- the aims and purpose of the cycle monitoring and the process to be used;
- review of all materials supplied – how to interpret and use the maps, how to accurately record data on count sheets etc;
- health and safety issues; and
- general administration – shift times, collection and return of materials etc.

This session was interactive, with surveyors being encouraged to ask questions and seek further explanation on issues they were unsure about. Surveyors were also provided with a copy of the briefing notes for reference during their shifts. During the briefing session, all surveyors were also required to conduct a "practice count" for 20 minutes at the Ponsonby Road/Karangahape Road site.

Conducting the Manual Counts

Each site was assigned to a surveyor, who was issued with a map that showed the range of movements a cyclist could make through that site. In addition to the map, surveyors were issued with a clipboard, a safety vest and a letter identifying them as a member of a Gravitas research team[3].

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

- The total number of cyclists[4] passing through the intersection;
- The direction in which cyclists are travelling (using the numbers on the map provided);
- The time at which cyclists pass through the intersection (to the nearest minute);
- Whether cyclists are school children or adults (determined by whether they are wearing a school uniform or clearly of school age);
- Whether cyclists are wearing a helmet; and
- Whether cyclists are riding on the road, footpath or designated off- road cycleway[5].

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

In addition, data was collected on the weather and daylight conditions at the site. Surveyors were also encouraged to record any information that may have affected cycle numbers or cycle movements at the site – for example, construction or maintenance works being conducted on the cycle way or road works at the intersection.

[3] This letter also contained contact details for the client organisation and Gravitas Research and Strategy for any member of the public or local business owners who had queries about the work being undertaken.
[4] To ensure consistency across all surveyors, a "cycle" was defined as being non-motorised, with two wheels and requiring pedalling to make it move. Note that this definition did not include scooters.
[5] Note: For the purpose of this project, an off-road cycleway is defined as disgnated off-road path for cycles. This includes exclusive cycle paths, separated paths (such as the footpath on Tamaki Drive) and shared-use paths (available to cyclists and pedestrians). It excludes on-road cycle lanes (that is, designated lanes marketd on the road).

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

Data Analysis

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

Annual Average Daily Traffic (AADT) Analysis

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

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

By applying the scale factor to the manual count data for each morning and afternoon peak, and averaging the two figures, an average annual daily cyclist flow figure has been obtained for each site. *A more comprehensive overview of the methodology used for this analysis is provided in Appendix One.*

Note: ViaStrada acknowledge that, as cycling volumes fluctuate from day to day depending on the weather, this method should be used with caution. They note that ideally an estimate should be achieved based on the average of the results of several counts, rather than counts from a single day, as in this study[8].

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

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

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

School Bike Shed Counts

As stated above, manual cycle counts were undertaken during the morning (6.30 am to 9 am) and evening (4 pm to 7 pm) peaks. However, it was noted in the design phase of the project that the timing of the evening peak monitoring would mean that the greatest share of students cycling home from school will be excluded from the counts. This was identified as a potential weakness of the monitoring proposed.

Therefore, it was suggested that information on numbers of students cycling to and from intermediate and secondary schools across the region could be collected by counting the number of bikes in school bike sheds on a pre-determined day. Rates of cycling among students could also be assessed by calculating the number of bikes counted as a share of the school's total roll (or share of the school's roll eligible to cycle).

It was decided that school bike shed monitoring would focus only on intermediate and secondary schools (and composite schools which included children of intermediate and secondary school age), since children travelling to primary schools are considered by many parents (and schools) as too young to cycle to school.

Methodology

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

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

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

3. To enhance the comparability of the school bike shed data with that of the regional cycle monitor, Tuesday 10th March was designated as the bike shed count day. (Most schools reported that they undertook the count on this day).

4. Once the school bike shed count had been completed, schools were requested to fax or (free) post the information sheets back to Gravitas. Gravitas contacted all participating schools who had not returned their sheets after five working days. All information sheets were checked for completeness before being data-entered into Excel. One hundred and twenty-four response were received, a response rate of 79 per cent.

Reporting

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

Manual Counts - Site Level Reporting

For consistency with Auckland city's cycle monitor, the following results have been reported for each site:

- Total number of movements through the intersection during each peak;
- Total number of movements through the intersection during each ten-minute interval during each peak;
- Number of cyclists making each directional movement through the intersection during each peak; and
- Share of cyclists through the intersection during each peak who are:
  - adults/school children
  - wearing a helmet/not wearing a helmet
  - riding on the road/riding on the footpath/riding on an off-road path

Manual Counts - Aggregated Reporting

Results have also been reported at an aggregate level (that is, summing up all sites) – by city/district and across the region – to show the total number of cycle movements recorded (both overall and by ten-minute intervals) and the characteristics of the cyclists.

Bike Shed Counts

Results have been provided by school (along with notes explaining why counts for some schools may not be representative), as well as at a TA and regional level. Raw cycle numbers and a "cyclists as a share of total school roll" figure have both been provided.

1.3 Summary Of Results

This summary contains the aggregated results of the 14 sites surveyed in Manukau 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 Manukau 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 Fifteen of this report.

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

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

- "high/heavy" when 43 or more cycle movements are reported;
- "moderate" when between 18 and 42 cycle movements are reported;
- "low/light" when between 0 and 17 cycle movements are reported;
- having "notably" increased/decreased if the change is more than 15% of the data being compared with;
- having "slightly" increased/decreased if the change is less than 5% of the data being compared with;
- being "stable" since last year if the change is less or equal to 3 cycle movements/percentages.

1.4 Morning Peak

Environmental Conditions

- All sites had good weather for most of the morning shift, apart from light drizzle and a temporary shower at:
  - the McKenzie/Coronation Road/Walmsley Road intersection;
  - the Great South Road/Te Irirangi Drive site;
  - Highbrook Drive.
- There were no road works or accidents at most sites during the morning monitoring period, the only exceptions being road works reported along Bucklands Beach Road at the intersection with Pakuranga Road, and footpath maintenance along George Bolt Memorial Drive at the intersection with Tom Pearce Drive.

Key Points

- Across the nine sites monitored in 2007, 2008 and 2009, the number of cyclist movements has remained stable (236 in 2009, compared with 237 in 2008).
- A total of 356 cyclist movements were recorded across the 14 sites in the morning peak period (between 6:30am and 9:00am) in 2009. One per cent (n=3) of the total cycle movements during the morning peak were observed cycling as groups.
- As in 2007 and 2008, the busiest site in the morning peak is the intersection of Bucklands Beach Road and Pakuranga Road (51 movements, stable from 53 movements last year), whereas the site at Tom Pearce Drive/George Bolt Memorial Drive has the lowest level of morning cyclist traffic (6 cycle movements).
- Six sites recorded increases this year compared to 2008. The most notable increases are at:
  - Massey/Buckland Road – up 73 per cent;
  - Highbrook Drive – up 54 per cent; and
  - Wyllie Avenue/Puhinui Road – up 50 per cent.
- In contrast, four sites recorded declines. The most notable decreases are at:
  - Great South/Browns/Orams Road – down 34 per cent; and
  - Great South/Te Irirangi Drive/Cavendish Drive – down 24 per cent.
- The average volume of morning cyclists across the nine sites monitored in 2007, 2008 and 2009 is 26 cycle movements (unchanged from 26 cycle movements in 2008).
- The average volume of morning cyclists across all 14 sites is 25.

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

Site Number	*Locations*	*2007*	*2008*	*2009*	Change 08-09	Change 07-09
33	Bucklands Beach/Pakuranga Road	68	53	51	**-4%**	-25%
30	Great South/East Tamaki Road	36	24	33	**38%**	-8%
34	Te Irirangi Drive/Ti Rakau Drive	36	36	30	**-17%**	-17%
23	Great South/Bairds Road	32	27	29	**7%**	-9%
32	McKenzie/Coronation/Walmsley Road	28	21	22	**5%**	-21%
26	Great South/Browns/Orams Road	25	32	21	**-34%**	-16%
24	Great South Road/Te Irirangi Dr/Cavendish Dr	34	25	19	**-24%**	-44%
28	Massey/Buckland Road	12	11	19	**73%**	58%
31	Wyllie Avenue/Puhinui Road	18	8	12	**50%**	-33%
	Average per site (for 9 sites since 2007)	**32**	**26**	**26**	**0%**	**-19%**
	Total (for 9 sites since 2007)	**289**	**237**	**236**	**0%**	**-18%**
80	Pakuranga Road/Ti Rakau Drive	-	-	46	*	*
79	Harris/Smales Road	-	-	35	*	*
71	Highbrook Drive	-	13	20	**54%**	*
81	Te Irirangi Drive/Ormiston Road	-	-	13	*	*
25	Tom Pearce/George Bolt Memorial Drive	-	-	6	*	*
	Average per site (all sites)	**-**	**-**	**25**	*	*
	Total (all sites)	**-**	**-**	**356**	*	*

- As shown in Table 1.2 below, morning cyclist characteristics this year are very similar to those reported in 2008. Overall, four in five cyclists are adults (82 per cent, stable from 80 per cent last year). Of the 14 sites monitored, the Bucklands Beach/Pakuranga Road intersection has the greatest share of cyclists who are school children (55 per cent).
- The majority of cyclists are wearing a helmet (85 per cent, stable from 83 per cent recorded in 2008). However, more than half of all morning cyclists at the Massey/Buckland Road site are not wearing helmets (53 per cent).
- Approximately three in five cyclists are riding on the road (64 per cent, up from 59 per cent in 2008). The incidence of cyclists riding on the footpath is the highest at the Bucklands Beach Road/Pakuranga Road intersection (61 per cent).

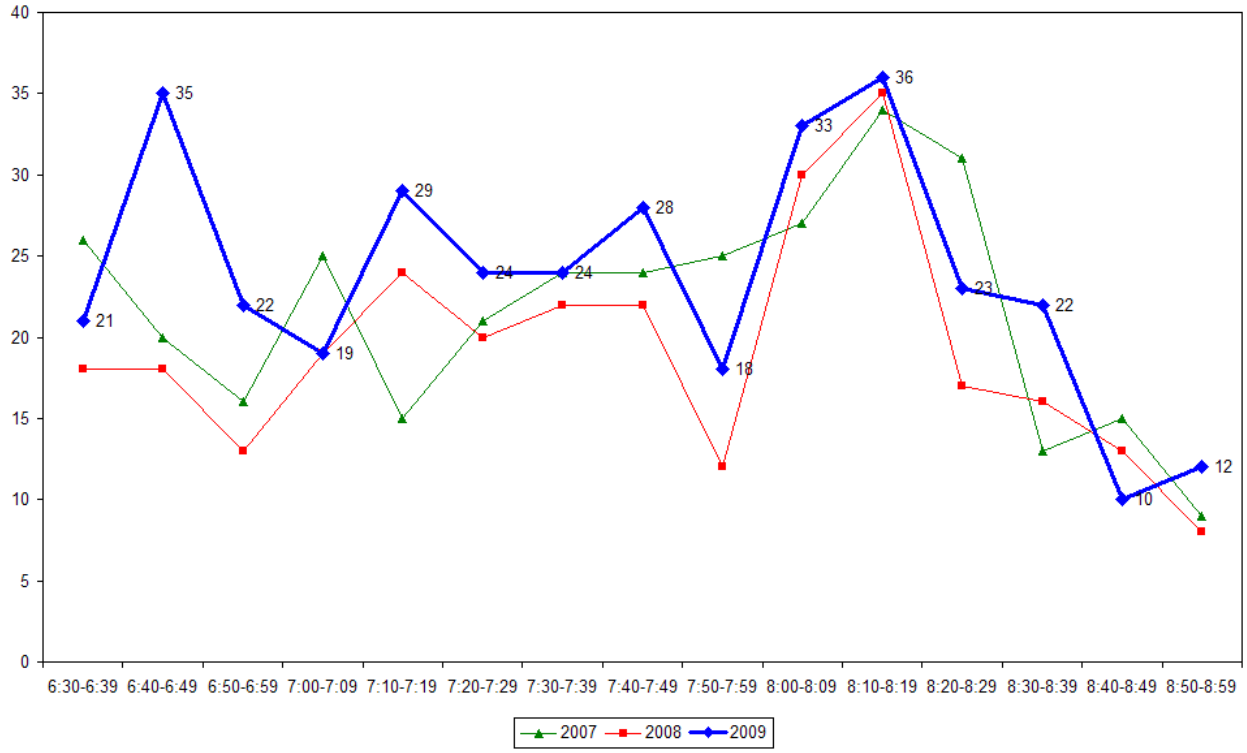
Table 1.2: Summary of Morning Cyclist Characteristics 2007-2009 (%)

	2007	***2008***	***2009***	**Change 08-09**
Cyclist Type				
Adult	76%	80%	82%	2%
School child	24%	20%	18%	-2%
Helmet Wearing				
Helmet on head	82%	83%	85%	2%
No helmet	18%	17%	15%	-2%
Where Riding				
Road	57%	59%	64%	-
Footpath	43%	41%	32%	-9%
Off-road cycleway[9]	-	-	4%	-
Base:	***325***	***287***	***356***	

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

- Figure 1.1 illustrates the total number of cyclists in the morning peak by time of trip. In 2009, morning cyclists numbers peaked twice: once early in the monitoring period between 6:40am and 6:49am (35 movements) and then approximately 90 minutes later between 8:00am and 8:19am (33 and 36 movements recorded over each ten minute interval respectively). The second peak is consistent with that reported last year. *Note that there are three new sites, and two previously monitored sites were not monitored this year.*

Figure 1.1: Total Cyclist Frequency – Morning Peak



1.5 Evening Peak

Environmental Conditions

- Most sites had overcast weather throughout the evening shift, with intermittent drizzle and temporary showers reported at all sites with the exception of the intersection at McKenzie/Coronation/Walmsley Road.
- There were no road works or accidents at most sites during the evening monitoring period, the only exceptions being road works reported along Bucklands Beach Road at the intersection with Pakuranga Road, and footpath maintenance along George Bolt Memorial Drive at the intersection with Tom Pearce Drive.

Key Points

- Across the nine sites monitored in 2007, 2008 and 2009, the number of cycle movements has decreased by 20 per cent to 243. However, this decline is not statistically significant – that is, the decrease falls within the margin of error at the 95% confidence interval.
- A total of 404 cyclist movements were recorded across the 14 sites in the evening peak period (between 4:00pm and 7:00pm) in 2009. Eleven per cent (n=45) of the total cycle movements during the evening peak were observed cycling as groups.
- Of the previously-monitored sites, the Bucklands Beach/Pakuranga Road intersection continues to be the busiest in terms of the evening cyclists' activity (43 cycle movements, down notably from 77 movements last year). The Pakuranga Road/Ti Rakau Drive intersection has the highest level of evening cyclist traffic overall, with 77 movements recorded. The intersections of Great South/Browns/Orams Road and the Highbrook Drive site (18 cycle movements each) have the lowest level of evening cyclist traffic.
- Seven sites recorded declines this year compared to 2008. The most notable decreases are at:
  - Buckland's Beach/Pakuranga Road – down 44 per cent;
  - Te Irirangi/Ti Rakau Drive – down 26 per cent; and
  - Great South/Browns/Orams Road – down 22 per cent.
- In contrast, two sites recorded increases:
  - Highbrook Drive – up 13 per cent; and
  - Great South/East Tamaki Road – up 11 per cent.
- The average volume of evening cyclists across the nine sites monitored in 2007, 2008 and 2009 is 27 cycle movements. This compares with an average of 34 movements in 2008.
- The average volume of evening cyclists across all 14 sites is 29.

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

Site Number	*Locations*	*2007*	*2008*	*2009*	Change 08-09	Change 07-09
33	Bucklands Beach/Pakuranga Road	72	77	43	**-44%**	-40%
30	Great South/East Tamaki Road	37	27	30	**11%**	-19%
32	McKenzie/Coronation/Walmsley Road	42	36	30	**-17%**	-29%
34	Te Irirangi Drive/Ti Rakau Drive	45	39	29	**-26%**	-36%
23	Great South/Bairds Road	36	29	28	**-3%**	-22%
31	Wyllie Avenue/Puhinui Road	20	25	23	**-8%**	15%
24	Great South Road/Te Irirangi Dr/Cavendish Dr	39	26	22	**-15%**	-44%
28	Massey/Buckland Road	31	20	20	**0%**	-35%
26	Great South/Browns/Orams Road	35	23	18	**-22%**	-49%
	Average per site (for 9 sites since 2007)	**40**	**34**	**27**	**-21%**	**-33%**
	Total (for 9 sites since 2007)	**357**	**302**	**243**	**-20%**	**-32%**
80	Pakuranga Road/Ti Rakau Drive	-	-	77	*	*
79	Harris/Smales Road	-	-	25	*	*
25	Tom Pearce/George Bolt Memorial Drive	-	-	21	*	*
81	Te Irirangi Drive/Ormiston Road	-	-	20	*	*
71	Highbrook Drive	-	16	18	**13%**	*
	Average per site (all sites)	**-**	**-**	**29**	*	*
	Total (all sites)	**-**	**-**	**404**	*	*

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

- Overall, the number of evening cycle movements across the 14 sites is 6 per cent lower than the number recorded in the morning shift.
- The number of evening cyclists recorded at five Manukau city sites is higher than in the morning peak. The most notable increases between morning and evening peak are reported at:
  - Tom Pearce/George Bolt Memorial Drive – up from 6 movements to 18 movements; and
  - Wyllie Avenue/Puhinui Road – up from 12 movements to 19 movements.

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

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

Site Number	*Locations*	*AM*	*PM*[10]	Change
25	Tom Pearce/George Bolt Memorial Drive	6	18	66%
31	Wyllie Avenue/Puhinui Road	12	19	37%
80	Pakuranga Road/Ti Rakau Drive	46	64	28%
81	Te Irirangi Drive/Ormiston Road	13	17	22%
32	McKenzie/Coronation/Walmsley Road	22	25	12%
24	Great South Road/Te Irirangi Drive/Cavendish Drive	19	18	-4%
28	Massey/Buckland Road	19	17	-14%
23	Great South/Bairds Road	29	23	-24%
34	Te Irirangi Drive/Ti Rakau Drive	30	24	-24%
30	Great South/East Tamaki Road	33	25	-32%
71	Highbrook Drive, Manukau	20	15	-33%
26	Great South/Browns/Orams Road	21	15	-40%
33	Bucklands Beach/Pakuranga Road	51	36	-42%
79	Harris/Smales Road	35	21	-68%
	Total	**356**	**337**	**-6%**

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

- Evening cyclist characteristics this year are only slightly different from 2008. In particular, slightly more evening cyclists are adults (89 per cent, up from 81 per cent last year). Of the 14 sites monitored in Manukau city, the Massey/Buckland Road intersection has the greatest share of evening cyclists who are school children (35 per cent).
- Just over four in five cyclists are wearing a helmet (82 per cent, up from 74 per cent in 2008). Helmet wearing is least common at the Massey/Buckland Road intersection (65 per cent).
- On average, three in five evening cyclists are riding on the road (64 per cent, up from 59 per cent last year). The Massey/Buckland Road intersection also has the highest share of cyclists riding on the footpath (70 per cent).

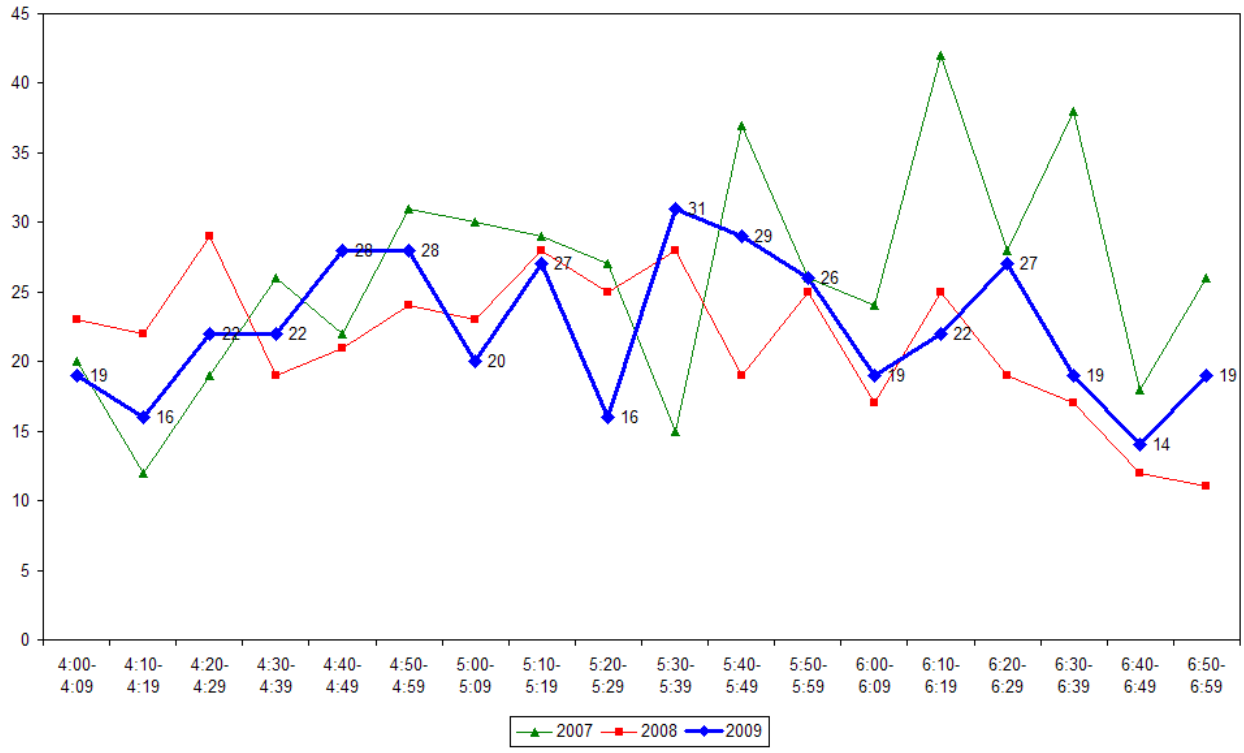
Table 1.5: Summary of Evening Cyclist Characteristics 2007-2009 (%)

	2007	*2008*	*2009*	**Change 08-09**
Cyclist Type				
Adult	86%	81%	89%	8%
School child	14%	19%	11%	-8%
Helmet Wearing				
Helmet on head	79%	74%	82%	8%
No helmet	21%	26%	18%	-8%
Where Riding				
Road	63%	59%	64%	-
Footpath	37%	41%	33%	-8%
Off-road cycleway[11]	-	-	3%	-
Base:	***470***	***387***	***404***	

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

- The overall pattern of cyclist volumes by time of trip in the evening is illustrated in Figure 1.2. Evening cyclist volumes fluctuate throughout the monitoring period, with the peak occurring between 5:30pm and 5:39pm (31 movements). This compares to 2008 where the peaks occurred between 4:20pm and 4:29pm (29 cyclists), and again between 5.10pm and 5.39pm (28 cyclists). *Note that there are three new sites and two previously monitored sites were not monitored this year.*

Figure 1.2: Total Cyclist Frequency – Evening Peak



1.6 Aggregate Total

- Across the nine sites monitored in 2007, 2008 and 2009, the number of cycle movements has declined by 11 per cent to 479 - this decline is not statistically significant at the 95% confidence interval.
- The number of evening cyclists comprises a slightly larger share (53 per cent) of the total number of cycle movements than morning cyclists (47 per cent).
- A total of 760 cyclist movements were recorded across the 14 sites in 2009. Six per cent (n=48) of the total cycle movements were observed cycling as groups.
- The busiest site is the intersection of Pakuranga Road and Ti Rakau Drive with a total of 123 movements (site not monitored in 2008), while Tom Pearce/George Bolt Memorial Drive has the lowest number of cyclist volumes (27 movements).
- Six of the sites have recorded decreases in total cyclist numbers this year compared with 2008. The intersections with the biggest declines are:
  - Great South/Browns/Orams Road (down 29 per cent)
  - Bucklands Beach/Pakuranga Road (down 28 per cent).
- Five sites recorded an increase this year, the most notable being Highbrook Drive (up 31 per cent), the Massey/Buckland Road intersection (up 26 per cent) and the Great South/East Tamaki Road site (up 24 per cent).

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

Site Number	*Locations*	*2007*	*2008*	*2009*	Change 08-09	Change 07-09
33	Bucklands Beach/Pakuranga Road	140	130	94	**-28%**	-33%
30	Great South/East Tamaki Road	73	51	63	**24%**	-14%
34	Te Irirangi Drive/Ti Rakau Drive	81	75	59	**-21%**	-27%
23	Great South/Bairds Road	68	56	57	**2%**	-16%
32	McKenzie/Coronation/Walmsley Road	70	57	52	**-9%**	-26%
24	Great South Road/Te Irirangi Dr/Cavendish Dr	73	51	41	**-20%**	-44%
28	Massey/Buckland Road	43	31	39	**26%**	-9%
31	Wyllie Avenue/Puhinui Road	38	33	35	**6%**	-8%
26	Great South/Browns/Orams Road	60	55	39	**-29%**	-35%
	Total (for 9 sites since 2007)	**646**	**539**	**479**	**-11%**	**-26%**
80	Pakuranga Road/Ti Rakau Drive	-	-	123	*	*
79	Harris/Smales Road	-	-	60	*	*
71	Highbrook Drive	-	29	38	**31%**	*
81	Te Irirangi Drive/Ormiston Road	-	-	33	*	*
25	Tom Pearce/George Bolt Memorial Drive	-	-	27	*	*
	Total (all sites)	**-**	**-**	**760**	*	*

- Overall cyclist characteristics are illustrated in Table 1.7. In total, 86 per cent of cyclists are adults (up from 81 per cent in 2008).
- Most cyclists are wearing a helmet (84 per cent, compared with 78 per cent last year).
- On average, about three in five cyclists are riding on the road (64 per cent, compared with 59 per cent in 2008).

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

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	82%	81%	86%	5%
School child	18%	19%	14%	-5%
Helmet Wearing				
Helmet on head	80%	78%	84%	6%
No helmet	20%	22%	16%	-6%
Where Riding				
Road	61%	59%	64%	-
Footpath	39%	41%	33%	-8%
Off-road cycleway[12]	-	-	3%	-
Base:	***795***	***674***	***760***	

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

1.7 Average Annual Daily Traffic (AADT) Estimate

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 Pakuranga Road/Ti Rakau Drive (176 daily trips) and the lowest is at Tom Pearce/George Bolt Memorial Drive (38 daily trips).
- Half of the 10 sites also monitored in 2008 have recorded increases in total AADT estimates this year, the most notable being:
  - Highbrook Drive – up 31 per cent;
  - Massey/Buckland Road – up 30 per cent; and
  - Great South/East Tamaki Road – up 24 per cent.
- The remaining five sites have recorded decreases this year compared with 2008. The intersections with the biggest decreases are:
  - Great South/Browns/Orams Road – down 30 per cent; and
  - Bucklands Beach/Pakauranga Road – down 27 per cent.

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

Site Number	*Locations*	*2007 AADT*	*2008 AADT*	*2009 AADT*	Change 08-09	Change 07-09
80	Pakuranga Road/Ti Rakau Drive	-	-	**176**	*	*
33	Bucklands Beach/Pakuranga Road	203	187	**137**	**-27%**	-33%
30	Great South/East Tamaki Road	106	74	**92**	**24%**	-13%
79	Harris/Smales Road	-	-	**88**	*	*
34	Te Irirangi Drive/Ti Rakau Drive	117	109	**86**	**-21%**	-26%
23	Great South/Bairds Road	99	81	**83**	**2%**	-16%
32	McKenzie/Coronation/Walmsley Road	101	82	**75**	**-9%**	-26%
24	Great South Road/Te Irirangi Drive/Cavendish Drive	106	74	**59**	**-20%**	-44%
26	Great South/Browns/Orams Road	86	81	**57**	**-30%**	-34%
28	Massey/Buckland Road	61	44	**57**	**30%**	-7%
71	Highbrook Drive	-	42	**55**	**31%**	*
31	Wyllie Avenue/Puhinui Road	55	47	**50**	**6%**	-9%
81	Te Irirangi Drive/Ormiston Road	-	-	**47**	*	*
25	Tom Pearce/George Bolt Memorial Drive	-	-	**38**	*	*

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

1.8 Ferry Wharf Bike Count Summary

Key Points

- In the morning, no cycles were observed at the Half Moon Bay Ferry Wharf at either 6.10am or 9.10am.
- In the afternoon, one cycle was recorded at the Half Moon Bay Ferry Wharf at both 3.30pm and 7.10pm.

1.9 School Bike Shed Count Summary

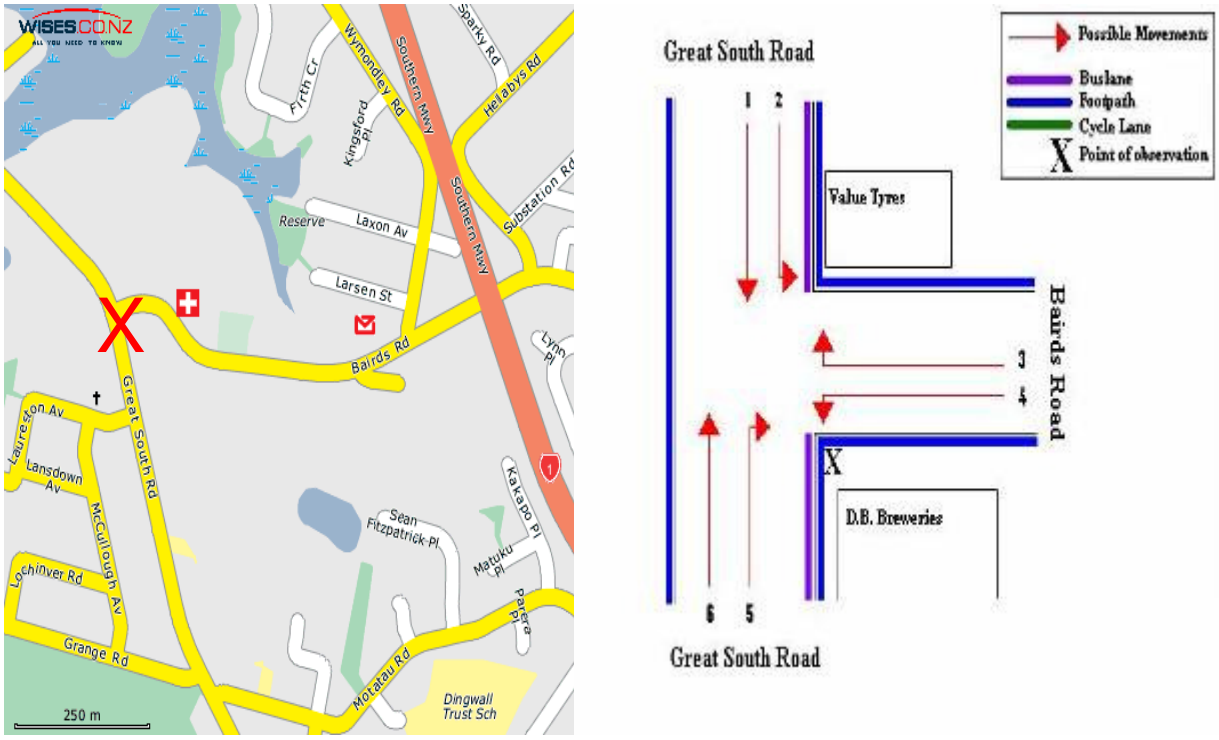
Key Points

- Among the surveyed schools, one per cent of students are cycling to their schools on average. This compares with one per cent in 2008 and two per cent in 2007.
- Across the 31 schools that responded, 438 students were reported to cycle to school.
- This year, Farm Cove Intermediate reported the highest share of cyclists – 9 per cent of all eligible students currently cycling. This is consistent with 2008, where Farm Cove Intermediate also reported the highest share of cyclists (6 per cent).
- Of the 31 schools that responded, six (19 per cent) had no students cycling to school. This compares with 30 per cent in 2008.
- Rates of cycling to school are highest among intermediate schools (3 per cent, unchanged from last year) and lowest for composite schools (1 per cent, compared with 1 per cent in 2008).

2. GREAT SOUTH ROAD/BAIRDS ROAD, OTARA (SITE 23)

Figure 2.1 shows the possible cyclist movements at this intersection.

Figure 2.1: Cycle Movements: Great South/Bairds Road



AADT Estimate

- The AADT for this site is 83 cycle movements per day. This compares with:
  - 81 movements in 2008
  - 99 movements in 2007.

2.1 Morning Peak

Environmental Conditions

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

Key Points

- Compared with last year, the volume of morning cyclists at the Great South/Bairds Road intersection has increased slightly, from 27 movements in 2008 to 29 movements this year.
- The most common movement in the morning is straight along Great South Road heading north (Movement 6 = 11 cyclists, stable from 2008).
- Across the six movements possible at this intersection, there have been no notable changes from the number of cyclists recorded in 2008.

Table 2.1: Morning Cyclist Movements
Great South/Bairds Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	5	7	5	-2
2	7	3	4	1
3	4	4	3	-1
4	0	1	3	2
5	0	1	3	2
6	16	11	11	0
Total	**32**	**27**	**29**	**2**

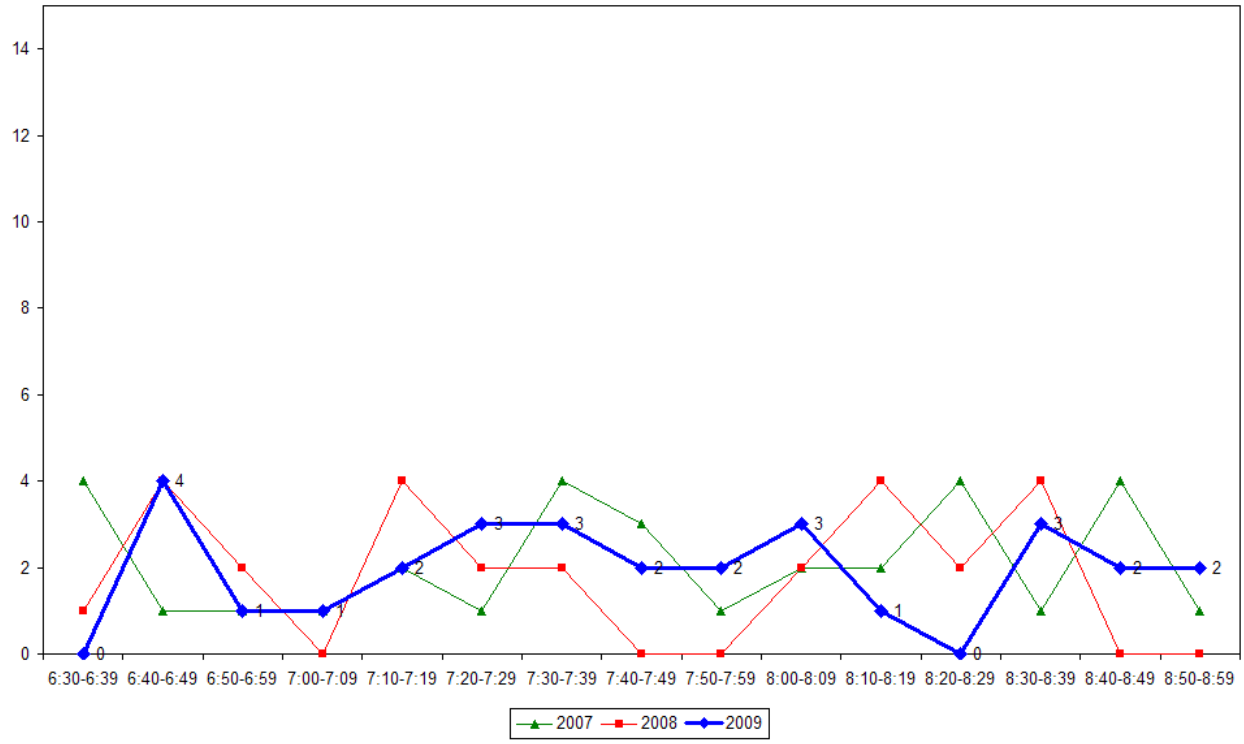
- Over the morning peak, almost all cyclists using the Great South/Bairds Road intersection are adults (90 per cent, stable from last year).
- On average, just over four in five cyclists are wearing a helmet (83 per cent, up from 67 per cent in 2008).
- Just over two-thirds of cyclists are riding on the road (69 per cent, up from 63 per cent last year).

Table 2.2: Morning Cyclist Characteristics
Great South/Bairds Road 2007-2009 (%)

	2007	*2008*	*2009*	**Change 08-09**
Cyclist Type				
Adult	100	89	90	1
School child	0	11	10	-1
Helmet Wearing				
Helmet on head	91	67	83	16
No helmet	9	33	17	-16
Where Riding				
Road	72	63	69	6
Footpath	28	37	31	-6
Base:	***32***	***27***	***29***	

- The volume of morning cycle movements start off with a slight peak (4 cyclists at around 6:40am, the same time as last year), and remains relatively constant throughout the rest of the monitoring period. The exception is a slight drop in cyclist numbers between 6:50am and 7:09am (1 cyclist per ten minute interval) and again between 8:10am and 8:29am (with 1 cyclist and no cyclists in each ten minute interval respectively).

Figure 2.2: Great South/Bairds Road Cyclist Frequency – Morning Peak



2.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with light rain between 4:10pm and 4:17pm, between 5:04pm and 5:10pm and between 6:10pm and 6:15pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- In the evening, the total number of cycle movements recorded at the Great South/Bairds Road intersection has remained stable, with 28 movements this year compared with 29 in 2008.
- As in 2007 and 2008, the key evening movement is straight along Great South Road heading south (Movement 1 = 10 cyclists).
- Evening cyclist volumes at all movements remain relatively stable since last year, with changes most notable at Movement 3 (up 5 cyclists) and Movement 1 (down 4 cyclists).

Table 2.3: Evening Cyclist Movements
Great South/Bairds Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	17	14	10	-4
2	5	5	3	-2
3	5	1	6	5
4	1	2	3	1
5	1	0	2	2
6	7	7	4	-3
Total	**36**	**29**	**28**	**-1**

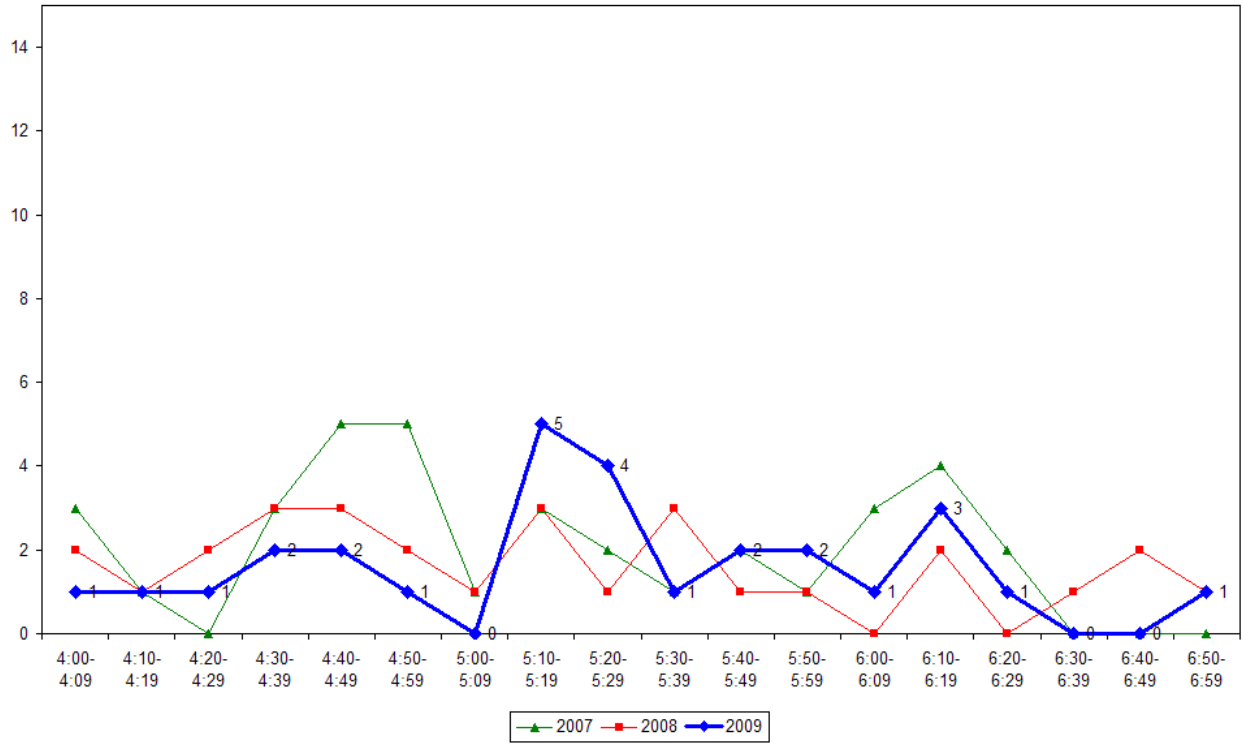
- Consistent with the morning peak, most cyclists using this intersection are adults (93 per cent, unchanged from the previous year).
- Four in five evening cyclists at this site are wearing a helmet (79 per cent, up notably from 66 per cent in 2008).
- Just over half of all cyclists are riding on the road (54 per cent, down notably from 72 per cent last year).

Table 2.4: Evening Cyclist Characteristics
Great South/Bairds Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	100	93	93	0
School child	0	7	7	0
Helmet Wearing				
Helmet on head	86	66	79	13
No helmet	14	34	21	-13
Where Riding				
Road	67	72	54	-18
Footpath	33	28	46	18
Base:	***36***	***29***	***28***	

- Compared with last year, the volume of cycle movements in the evening is more variable. No more than three cyclists were recorded during most ten minute intervals. A peak occurs between 5:10pm and 5:29pm (with 5 and 4 cyclists recorded in each ten minute interval respectively). This compares with four slight peaks which occurred between 4:30pm and 4:49pm, and again at around 5:10pm and 5:30pm (3 cyclists each) in 2008.

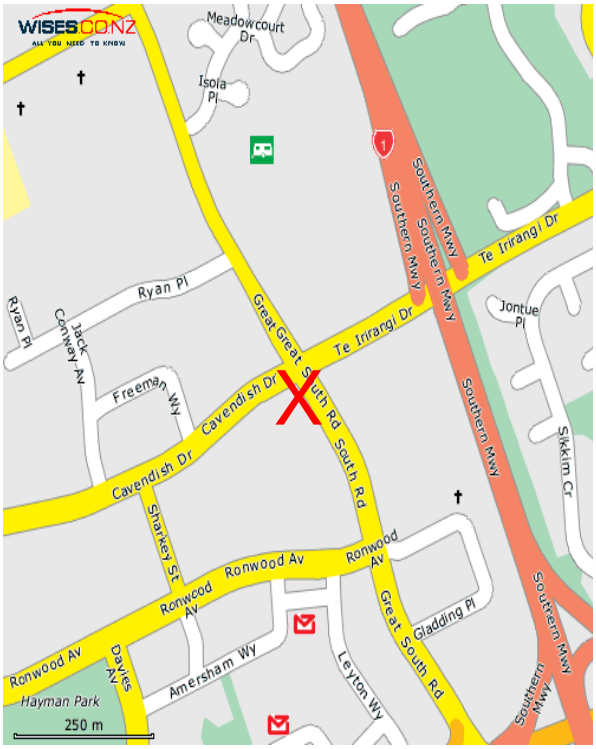
Figure 2.3: Great South/Bairds Road Cyclist Frequency – Evening Peak

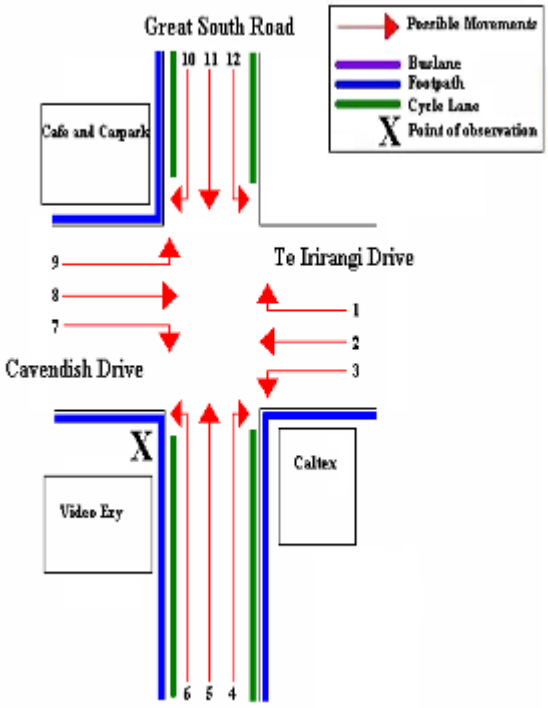


3. GREAT SOUTH ROAD/TE IRIRANGI DRIVE/CAVENDISH DRIVE, MANUKAU (SITE 24)

Figure 3.1 shows the possible cyclist movements at this intersection.

Figure 3.1: Cycle Movements: Great South Road/Te Irirangi Drive





AADT Estimate

- The AADT for this site is 59 cycle movements per day. This compares with:
  - 74 movements in 2008
  - 106 movements in 2007.

3.1 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning peak, apart from light rain at 7:40pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- This year, the volume of morning cyclists at the intersection of Great South Road and Te Irirangi Drive is down from 25 in 2008 to 19 movements this year.
- The key morning movement is straight along Great South Road heading north (Movement 5 = 7 cyclists).
- Morning cyclist volumes at almost all movements at this intersection are stable since last year. The most notable decrease is at Movement 11 (down 6 cyclists).

Table 3.1: Morning Cyclist Movements
Great South Road/Te Irirangi Drive 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	1	1	0	-1
2	6	2	5	3
3	1	3	0	-3
4	1	2	2	0
5	13	8	7	-1
6	0	0	1	1
7	1	0	0	0
8	1	1	0	-1
9	2	0	0	0
10	1	0	1	1
11	7	8	2	-6
12	1	0	1	1
Total	**34**	**25**	**19**	**-6**

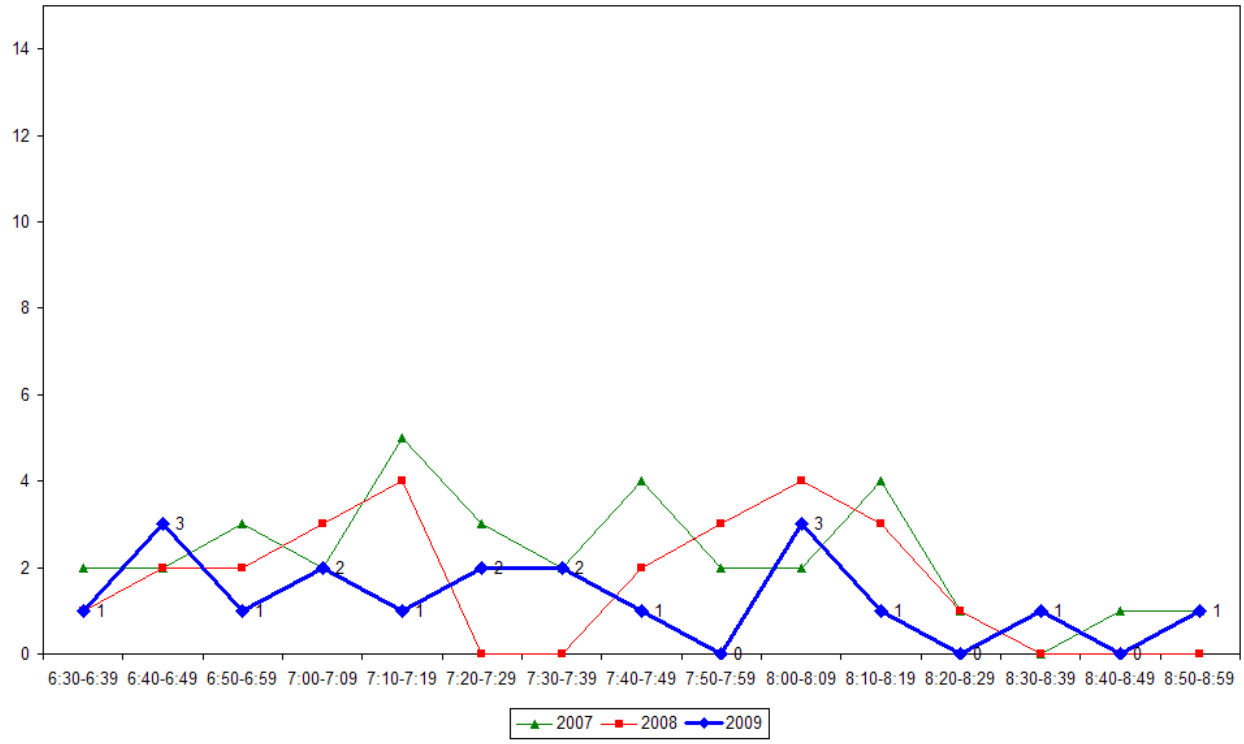
- Over the morning peak, all cyclists using this intersection are adults (100 per cent, up notably from 76 per cent in 2008).
- Helmet wearing is widespread (all cyclists, up from 96 per cent last year).
- The greatest share of morning peak cyclists (79 per cent) continue to cycle on the road (up from 76 per cent last year).

Table 3.2: Morning Cyclist Characteristics
Great South Road/Te Irirangi Drive 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	100	76	100	24
School child	0	24	0	-24
Helmet Wearing				
Helmet on head	85	96	100	4
No helmet	15	4	0	-4
Where Riding				
Road	85	76	79	3
Footpath	15	24	21	-3
Base:	***34***	***25***	***19***	

- The volume of morning cycle movements remains low over the monitoring period, with no more than two cyclists recorded over most ten minute intervals. A slight peak of three cyclists occurs between 6:40am and 6:49am, and again between 8:00am and 8:09am. This compares with 2008 where cyclist volumes peaked slightly between 7:10am and 7:19am (4 cyclists) and again between 8:00am and 8:09am (4 cyclists).

Figure 3.2: Great South Road/Te Irirangi Drive Cyclist Frequency – Morning Peak



3.2 Evening Peak

Environmental Conditions

- The weather was variable throughout the evening shift, with heavy rain between the start of the monitoring period and 4:08pm, and between 4:54pm and 5:10pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- In 2009, the total number of evening cycle movements observed at the Great South Road/Te Irirangi Drive intersection has decreased slightly, from 26 in 2008 to 22 movements this year.
- As in 2008, the key evening movement at this site is straight along Great South Road heading south (Movement 11 = 7 cyclists).
- The most notable decline is reported at Movement 1 (down 5 cyclists).

Table 3.3: Evening Cyclist Movements
Great South Road/Te Irirangi Drive 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	5	0	-5
2	3	1	3	2
3	1	0	2	2
4	2	2	2	0
5	5	6	2	-4
6	5	0	2	2
7	1	1	0	-1
8	3	0	1	1
9	1	0	1	1
10	2	0	2	2
11	15	9	7	-2
12	1	2	0	-2
Total	**39**	**26**	**22**	**-4**

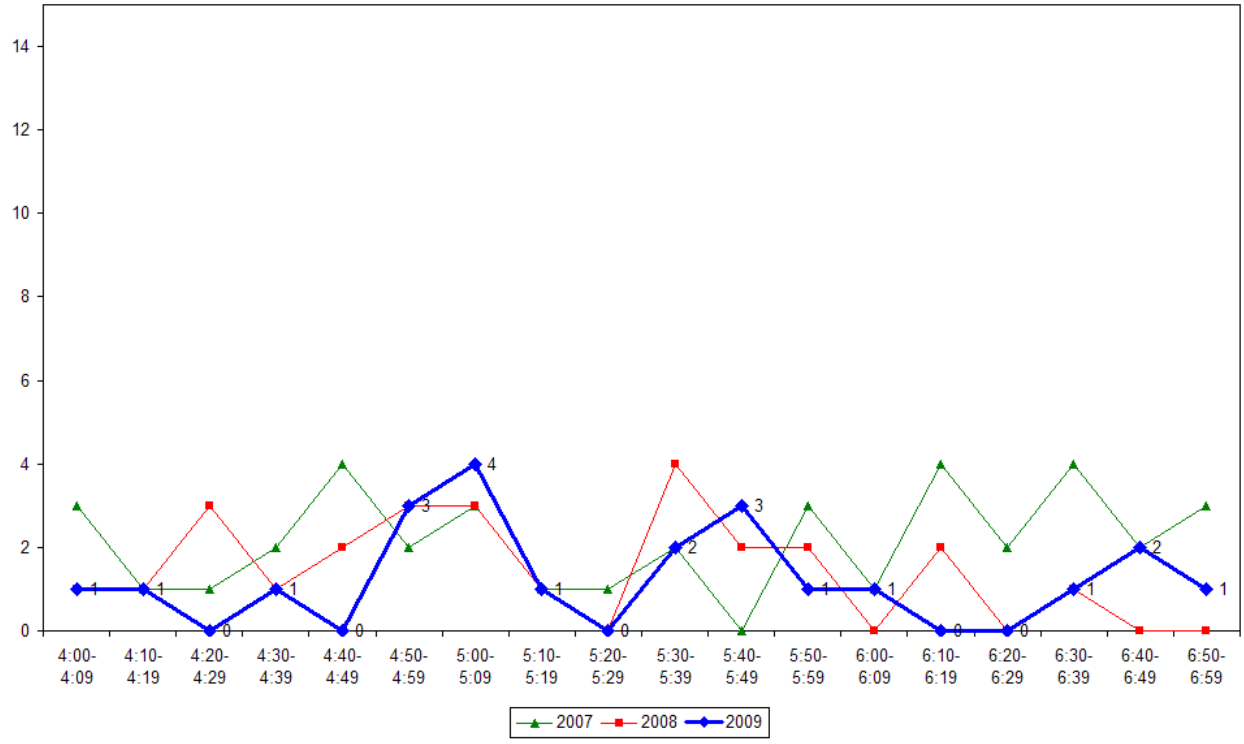
- Over the evening peak, the greatest share of cyclists using the Great South Road/Te Irirangi Drive intersection are adults (73 per cent, down from 88 per cent in 2008).
- Two-thirds of cyclists at this site are wearing a helmet (68 per cent, down notably from 88 per cent last year).
- The share of evening peak cyclists riding on the footpath has increased notably this year – 27 per cent, up from 8 per cent last year.

Table 3.4: Evening Cyclist Characteristics
Great South Road/Te Irirangi Drive 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	95	88	73	-15
School child	5	12	27	15
Helmet Wearing				
Helmet on head	97	88	68	-20
No helmet	3	12	32	20
Where Riding				
Road	79	92	73	-19
Footpath	21	8	27	19
Base:	***39***	***26***	***22***	

- This year, the volume of evening cyclists peaks between 5:00pm and 5:09pm (4 cyclists), half an hour earlier than last year.

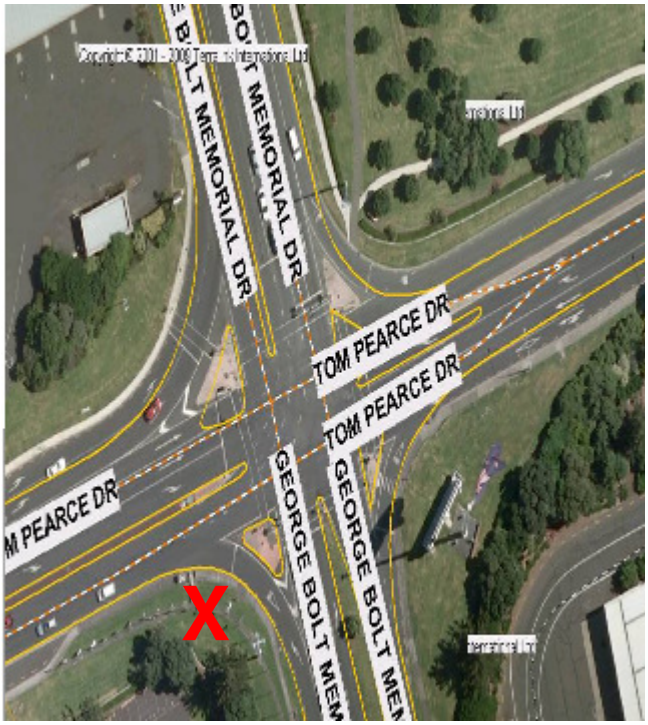
Figure 3.3: Great South Road/Te Irirangi Drive Cyclist Frequency – Evening Peak

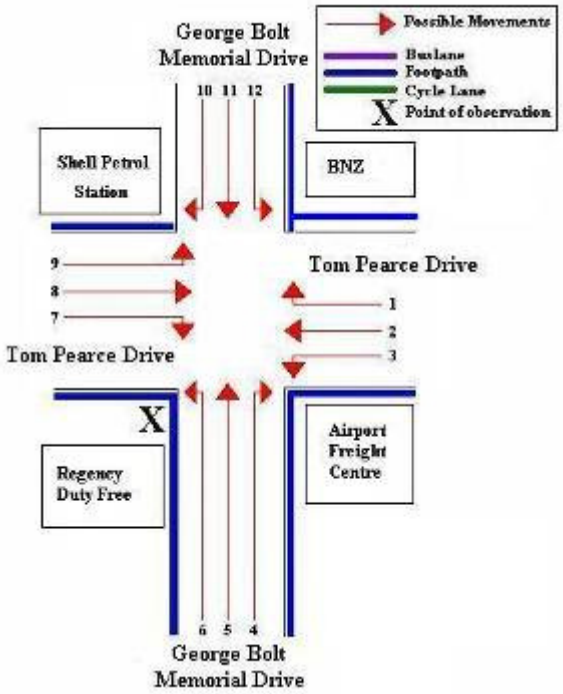


4. TOM PEARCE/GEORGE BOLT MEMORIAL DRIVE, MANGERE (SITE 25)

Figure 4.1 shows the possible cyclist movements at this intersection.

Figure 4.1: Cycle Movements: Tom Pearce/George Bolt Memorial Drive





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

AADT Estimate

- The AADT for this site is 38 cycle movements per day.

4.1 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- The footpath along George Bolt Memorial Drive outside the BNZ Bank was closed due to road works. This may have affected cycle counts.

Key Points

- The intersection of George Bolt Memorial Drive and Tom Pearce Drive has the lowest volume of morning cyclists' traffic in Manukau city, with 6 cycle movements recorded over the monitoring period.
- The key movement in the morning is coming from the east along Tom Pearce Drive and turning right into George Bolt Memorial Drive (Movement 1 = 3 cyclists).
- As this is a new site in 2009, no comparison with previous years can be made.

Table 4.1: Morning Cyclist Movements

Tom Pearce/George Bolt Memorial Drive 2009 (n)

Movement	2009
1	3
2	0
3	0
4	0
5	1
6	0
7	0
8	0
9	0
10	0
11	0
12	2
Total	**6**

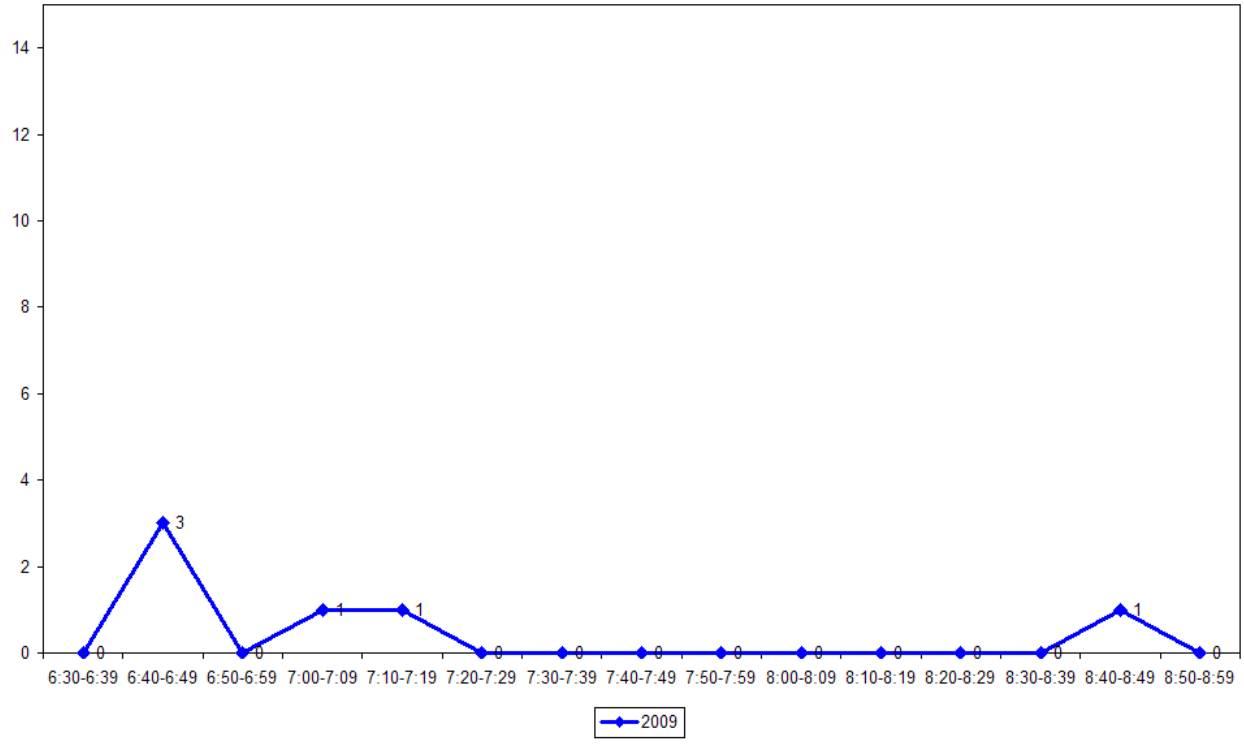
- Over the morning peak, no school children are riding through the Tom Pearce/George Bolt Memorial Drive intersection.
- All cyclists are wearing a helmet.
- All cyclists are riding on the road.

Table 4.2: Morning Cyclist Characteristics
Tom Pearce/George Bolt Memorial Drive 2009 (%)

	2009
Cyclist Type	
Adult	100
School child	0
Helmet Wearing	
Helmet on head	100
No helmet	0
Where Riding	
Road	100
Footpath	0
Base:	***6***

- The volume of morning cycle movements is relatively low over the entire monitoring period, with no more than one cyclist recorded passing during most ten minute intervals. A slight peak (3 cyclists) occurs between 6:40am and 6:49am.

Figure 4.2: Tom Pearce/George Bolt Memorial Drive Cyclist Frequency – Morning Peak



4.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from light showers between 4:05pm and 4:15pm, and between 4:53pm and 5:01pm.
- The footpath along George Bolt Memorial Drive outside the BNZ Bank was closed due to road works. This may have affected cycle counts.

Key Points

- Evening cyclist volumes at Tom Pearce/George Bolt Memorial Drive intersection are moderate when compared with other Manukau city sites, with 21 cyclists recorded over the monitoring period.
- The most common movement in the evening is heading north up George Bolt Memorial Drive (Movement 5 = 13 cyclists. Note however that nine of these cyclists were riding together as a group).
- As this is a new site in 2009, no comparisons with previous years can be made.

Table 4.3: Evening Cyclist Movements
Tom Pearce/George Bolt Memorial Drive 2009 (n)

Movement	2009
1	4
2	0
3	1
4	0
5	13
6	0
7	0
8	0
9	0
10	0
11	0
12	3
Total	**21**

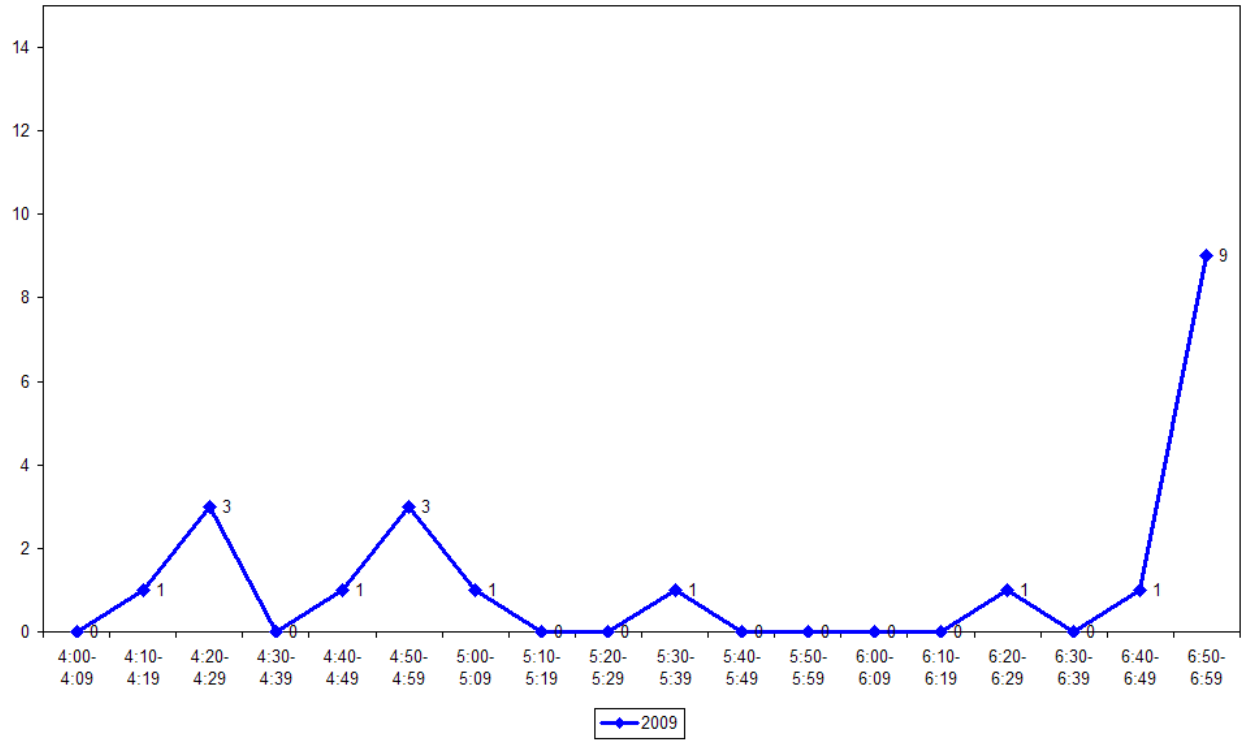
- All cyclists using this site are adults (100 per cent).
- All cyclists are wearing a helmet (100 per cent).
- All cyclists are riding on the road (100 per cent).

Table 4.4: Evening Cyclist Characteristics
Tom Pearce/George Bolt Memorial Drive 2009 (%)

	2009
Cyclist Type	
Adult	100
School child	0
Helmet Wearing	
Helmet on head	100
No helmet	0
Where Riding	
Road	100
Footpath	0
Base:	***21***

- Cyclist numbers are low during the entire evening shift, with no more than one cyclist passing over most ten minute intervals. Two small peaks are evident between 4:20pm and 4:29pm (3 cyclists) and again half an hour later between 4:50pm and 4:59pm (3 cyclists). A sharp, notable peak occurs at the end of the monitoring period between 6:50pm and 6:59pm (9 cyclists. Note that these cyclists were riding together as a group).

Figure 4.3: Tom Pearce/George Bolt Memorial Drive Cyclist Frequency – Evening Peak

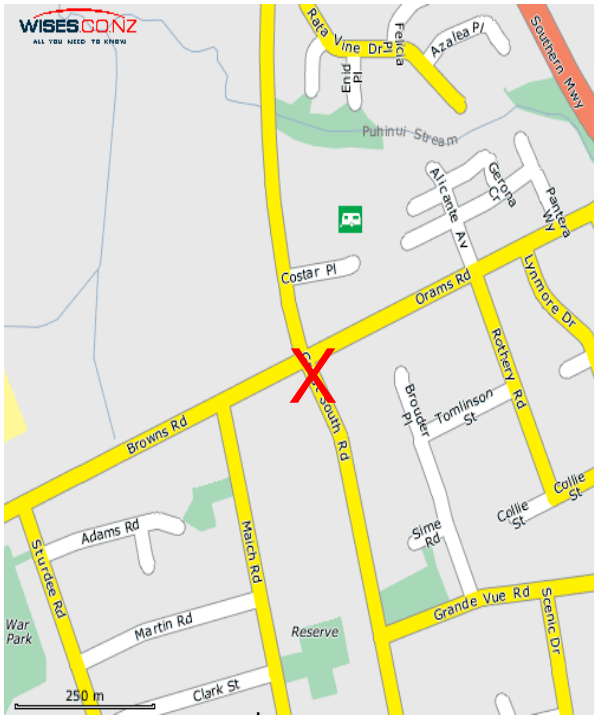


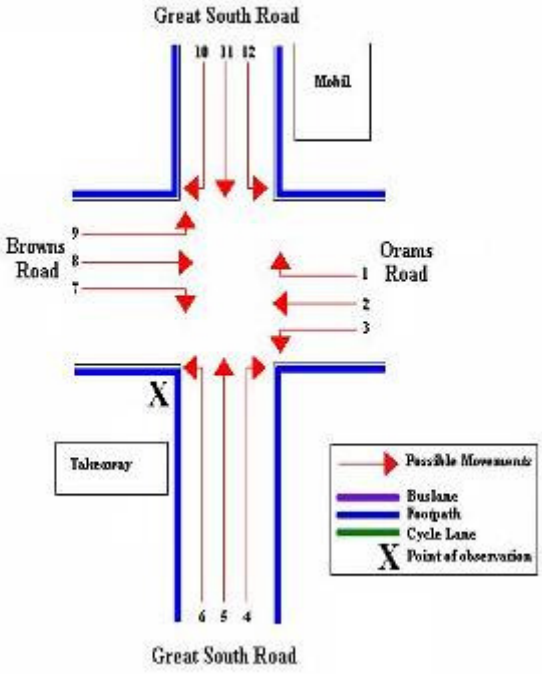
Note: A group of nine cyclists was observed riding together at 6.57pm. This comprises 43 per cent of the total cycle movements recorded in the evening peak.

5. GREAT SOUTH ROAD/BROWNS ROAD/ORAMS ROAD, MANUREWA (SITE 26)

Figure 5.1 shows the possible cyclist movements at this intersection.

Figure 5.1: Cycle Movements: Great South/Browns/Orams Road





AADT Estimate

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

5.1 Morning Peak

Environmental Conditions

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

Key Points

- Compared with last year, the volume of morning cyclists at the Great South/Browns/Orams Road intersection has decreased, from 32 movements in 2008 to 21 movements in 2009.
- The key morning movements are turning right from Orams Road into Great South Road (Movement 1 = 6 cyclists), straight along Orams Road into Browns Road (Movement 2 = 6 cyclists), and straight along Great South Road in a northerly direction (Movement 5 = 6 cyclists).
- Compared with 2008, the most notable declines in cyclist volumes are at Movement 5 and Movement 11, both down 6 cyclists. In contrast, the most notable increase is at Movement 1, up 5 cyclists from last year.

Table 5.1: Morning Cyclist Movements
Great South/Browns/Orams Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	4	1	6	5
2	4	4	6	2
3	0	2	0	-2
4	0	1	0	-1
5	8	12	6	-6
6	3	0	0	0
7	0	2	0	-2
8	0	0	0	0
9	2	2	1	-1
10	0	2	2	0
11	3	6	0	-6
12	1	0	0	0
Total	**25**	**32**	**21**	**-11**

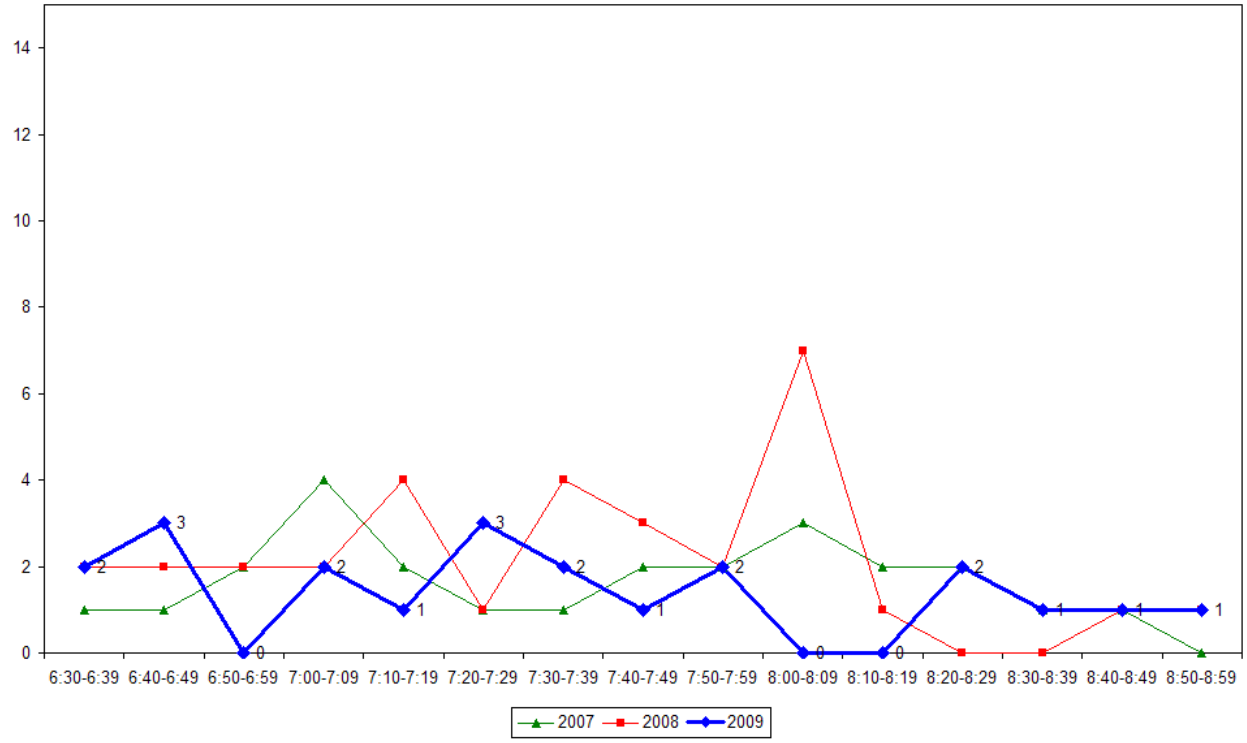
- Over the morning peak, most cyclists are adults (86 per cent, down slightly from 94 per cent last year).
- Consistent with the previous years, helmet wearing is widespread (90 per cent, up from 84 per cent in 2007 and 2008).
- The majority of cyclists are adults (71 per cent, down notably from 91 per cent in 2008).

Table 5.2: Morning Cyclist Characteristics
Great South/Browns/Orams Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	92	94	86	-8
School child	8	6	14	8
Helmet Wearing				
Helmet on head	84	84	90	6
No helmet	16	16	10	-6
Where Riding				
Road	52	91	71	-20
Footpath	48	9	29	20
Base:	***25***	***32***	***21***	

- The volume of morning cycle movements is low throughout the morning shift, with slight peaks between 6:40am and 6:49am (3 cyclists) and between 7:20am and 7:29am (3 cyclists). This compares with a notable peak between 8:00am and 8:09am (7 cyclists) in 2008.

Figure 5.2: Great South/Browns/Orams Road Cyclist Frequency – Morning Peak



5.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from light rain between 4:45pm and 5:00pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of evening cyclist traffic at the Great South/Browns/Orams Road intersection in 2009 (18 movements) is slightly lower when compared with the previous year (23 movements) and is the equal lowest in Manukau city.
- In contrast to the morning shift, the most common movement in the evening is straight along Great South Road heading south (Movement 11 = 8 cyclists).
- Cyclist volumes at each movement are generally consistent with the previous year.

Table 5.3: Evening Cyclist Movements
Great South/Browns/Orams Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	0	0	0
2	0	3	0	-3
3	0	3	0	-3
4	1	1	1	0
5	4	2	4	2
6	0	0	0	0
7	2	2	0	-2
8	2	2	2	0
9	0	0	0	0
10	2	1	0	-1
11	18	5	8	3
12	6	4	3	-1
Total	**35**	**23**	**18**	**-5**

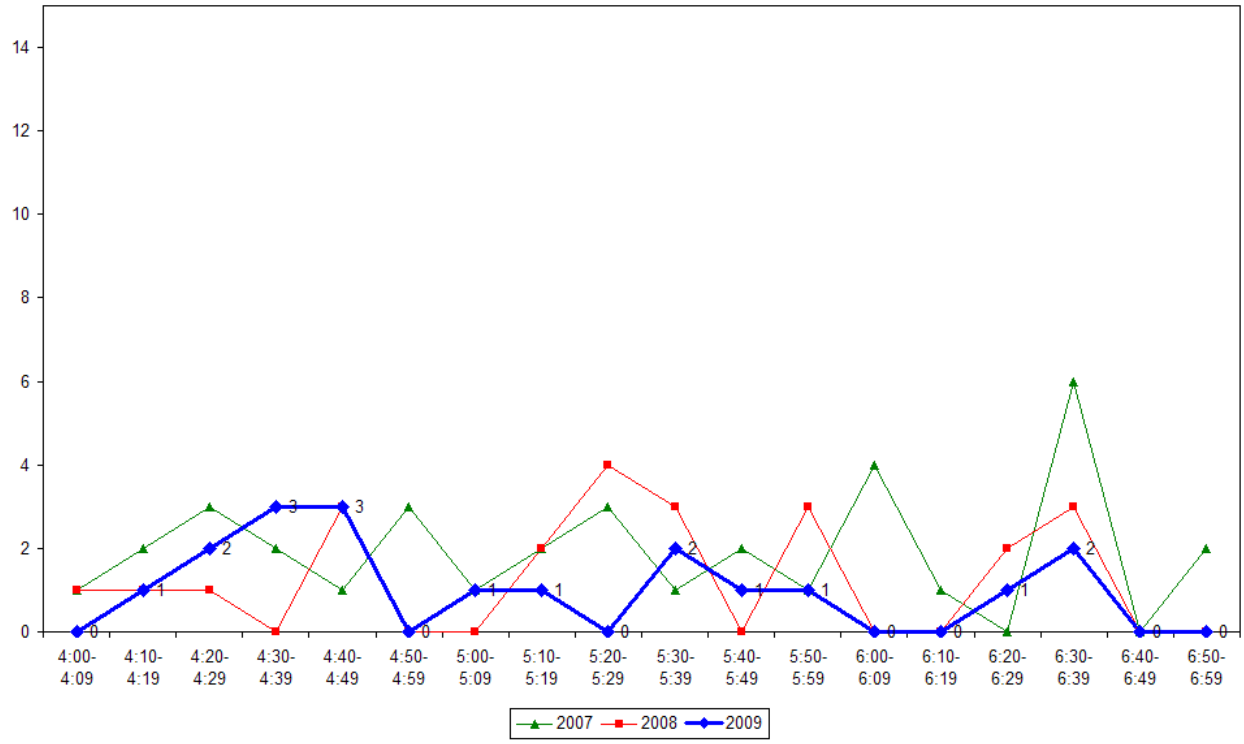
- Over the evening peak, the majority of the cyclists using this intersection continue to be adults (89 per cent, consistent with 87 per cent recorded in 2008).
- Helmet wearing has declined since last year (78 per cent in 2009, down notably from 91 per cent last year).
- Approximately two-thirds of cyclists are riding on the road (67 per cent, down notably from 87 per cent in 2008).

Table 5.4: Evening Cyclist Characteristics
Great South/Browns/Orams Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	86	87	89	2
School child	14	13	11	-2
Helmet Wearing				
Helmet on head	86	91	78	-13
No helmet	14	9	22	13
Where Riding				
Road	54	87	67	-20
Footpath	46	13	33	20
Base:	***35***	***23***	***18***	

- The volume of cycle movements starts off relatively low in the evening and increases, to peak slightly between 4:30pm and 4:49pm (3 movements in each ten minute period). This compares to a slight peak in the middle of the evening period in 2008 (4 movements between 5:20pm and 5:29pm).

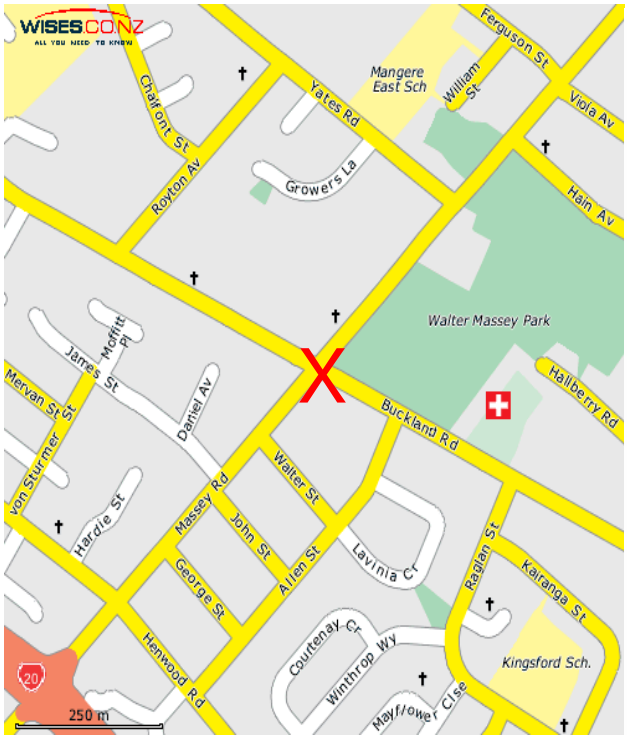
Figure 5.3: Great South/Browns/Orams Road Cyclist Frequency – Evening Peak

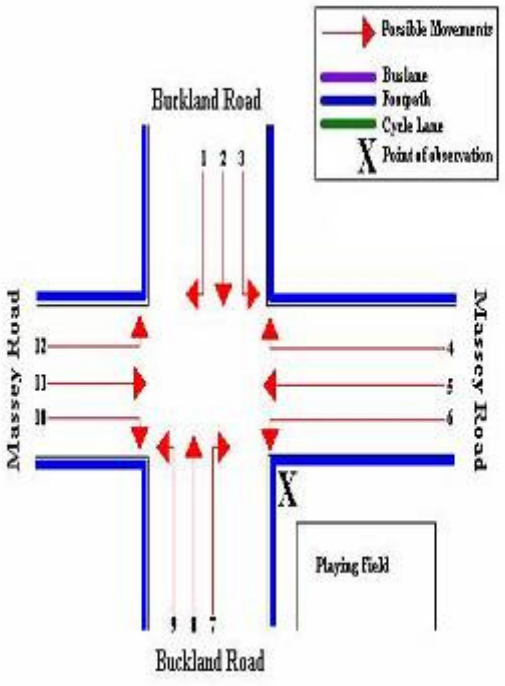


6. MASSEY ROAD/BUCKLAND ROAD, MANGERE (SITE 28)

Figure 6.1 shows the possible cyclist movements at this intersection.

Figure 6.1: Cycle Movements: Massey/Buckland Road





AADT Estimate

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

6.1 Morning Peak

Environmental Conditions

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

Key Points

- In 2009, the volume of morning cyclist traffic at this intersection has increased notably, from 11 cycle movements in 2008 to 19 movements.
- In contrast with previous years, the most common movement is straight along Massey Road heading west (Movement 5 = 6 cyclists).
- The most notable increase has been at Movement 5, up from no cyclists recorded in 2008 to 6 movements this year.

Table 6.1: Morning Cyclist Movements
Massey/Buckland Road 2007-2009 (n)

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

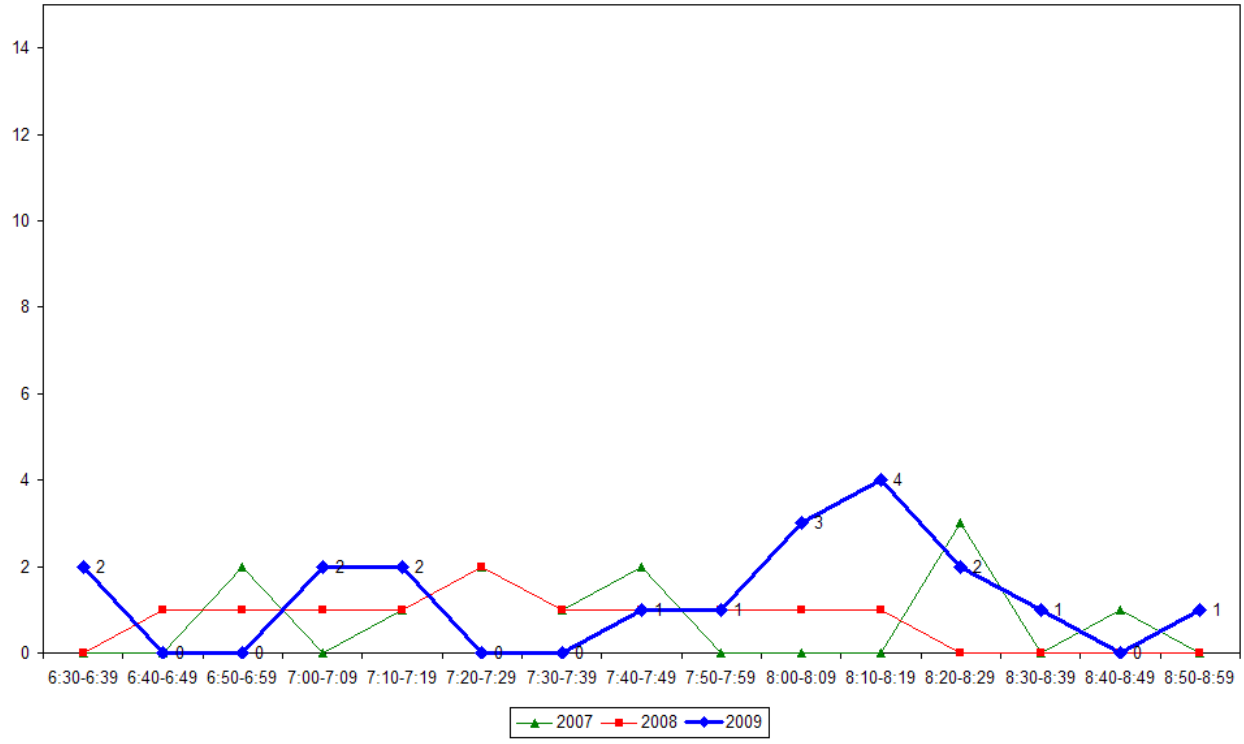
- Over the morning peak, adults comprise almost all of the cycle movements (95 per cent, up notably from 73 per cent recorded last year and 42 per cent recorded in 2007).
- Just over half of cyclists are not wearing a helmet (53 per cent, up slightly from 45 per cent in 2008).
- On average, three in five cyclists are riding on the road at this site (63 per cent, up notably from 30 per cent in 2008).

Table 6.2: Morning Cyclist Characteristics
Massey/Buckland Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	42	73	95	22
School child	58	27	5	-22
Helmet Wearing				
Helmet on head	58	55	47	-8
No helmet	42	45	53	8
Where Riding				
Road	33	30	63	33
Footpath	67	70	37	-33
Base:	***12***	***11***	***19***	

- Morning cyclist volumes are very low over the entire monitoring period, with no more than two cyclists recorded during most ten minute intervals. A slight peak occurs between 8:10am and 8:19am (4 movements) – almost one hour later than last year's slight peak.

Figure 6.2: Massey/Buckland Road Cyclist Frequency – Morning Peak



6.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with showers between 4:07pm and 4:18pm, 5:02pm and 5:10pm, and 6:09pm and 6:15pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cycle movements recorded in the evening at the Massey/Buckland Road intersection is unchanged from last year, with 20 movements recorded.
- In contrast to 2008, the most common movement in the evening is heading south along Massey Road and turning left into Buckland Road (Movement 6 = 5 cyclists).
- All movements at this site are relatively stable since last year, with change most notable at Movement 6 (up 4 cyclists).

Table 6.3: Evening Cyclist Movements
Massey/Buckland Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	2	0	0	0
2	3	4	3	-1
3	4	2	1	-1
4	5	5	2	-3
5	1	1	2	1
6	3	1	5	4
7	1	1	2	1
8	5	3	0	-3
9	0	2	0	-2
10	0	0	3	3
11	5	1	2	1
12	2	0	0	0
Total	**31**	**20**	**20**	**0**

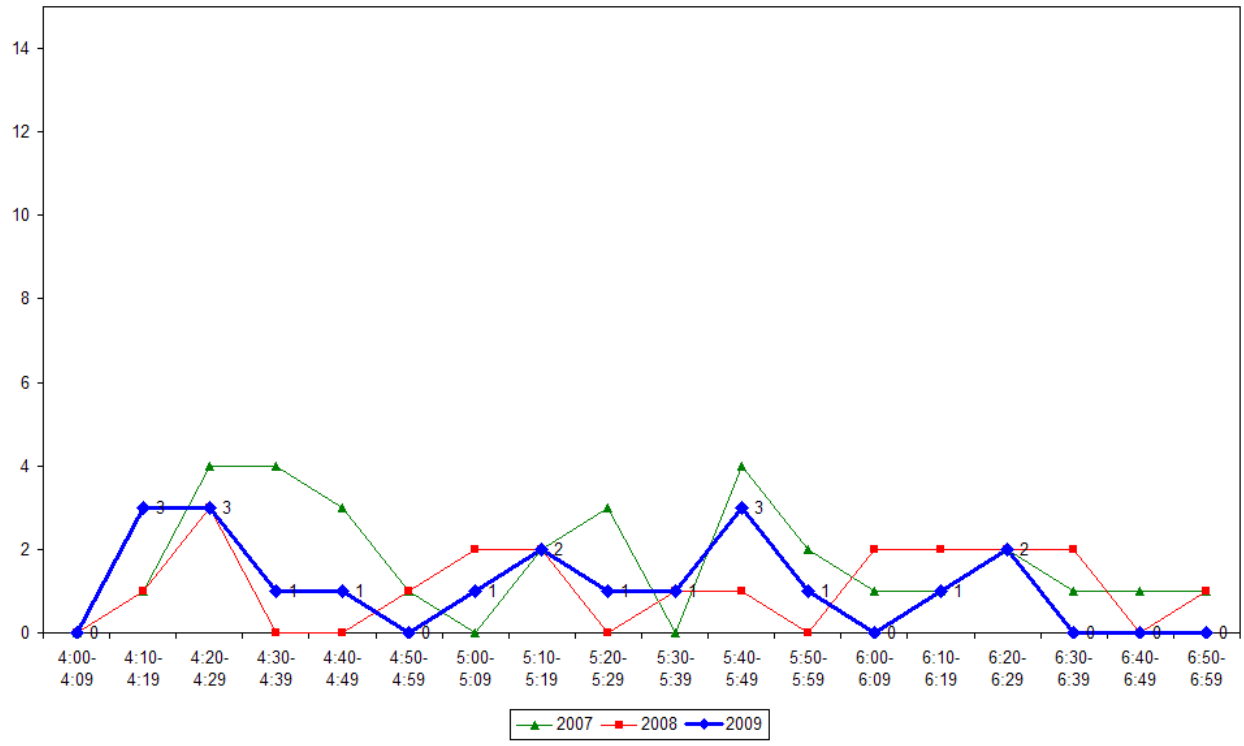
- Adults comprise a larger share of evening cyclists than school children (65 per cent, down notably from 80 per cent in 2008).
- Approximately two-thirds of cyclists are not wearing a helmet (65 per cent, up notably from 35 per cent last year).
- In contrast to last year, a notably higher proportion of cyclists are riding on the footpath (70 per cent, compared with 40 per cent in 2008).

Table 6.4: Evening Cyclist Characteristics
Massey/Buckland Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	61	80	65	-15
School child	39	20	35	15
Helmet Wearing				
Helmet on head	55	65	35	-30
No helmet	45	35	65	30
Where Riding				
Road	39	60	30	-30
Footpath	61	40	70	30
Base:	***31***	***20***	***20***	

- As in 2008, the volume of cycle movements peaks slightly in the early evening (3 cyclists in each ten minute period between 4:10pm and 4:29pm). Another slight peak occurs between 5:40pm and 5:49pm (3 cyclists). These patterns are similar to those observed in 2008. In general, evening cyclist volumes are very low over the entire monitoring period.

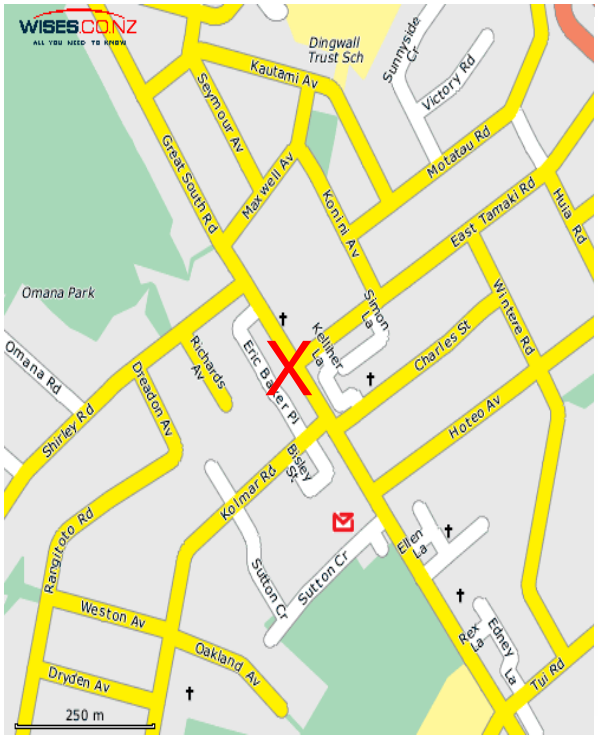
Figure 6.3: Massey/Buckland Road Cyclist Frequency – Evening Peak

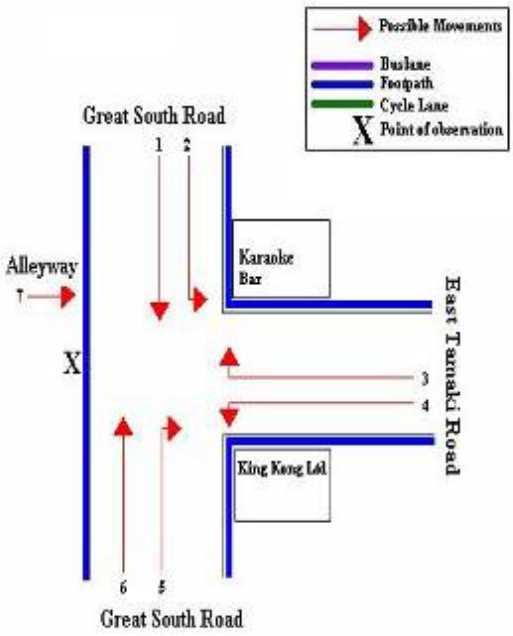


7. GREAT SOUTH ROAD/EAST TAMAKI ROAD, PAPATOETOE (SITE 30)

Figure 7.1 shows the possible cyclist movements at this intersection.

Figure 7.1: Cycle Movements: Great South/East Tamaki Road





AADT Estimate

- The AADT for this site is 92 cycle movements per day. This compares with:
  - 74 movements in 2008
  - 106 movements in 2007.

7.1 Morning Peak

Environmental Conditions

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

Key Points

- Compared with last year, the volume of morning cyclists at the Great South/East Tamaki Road intersection has increased, from 24 movements in 2008 to 33 movements in 2009.
- The most common movement is straight along Great South Road heading northwest (Movement 6 = 15 cyclists).
- The most notable change since 2008 has been at Movement 3 (up 5 cyclists).

Table 7.1: Morning Cyclist Movements
Great South/East Tamaki Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	4	4	3	-1
2	2	3	3	0
3	2	1	6	5
4	0	1	3	2
5	2	2	3	1
6	26	12	15	3
7	-	1	0	-1
Total	**36**	**24**	**33**	**9**

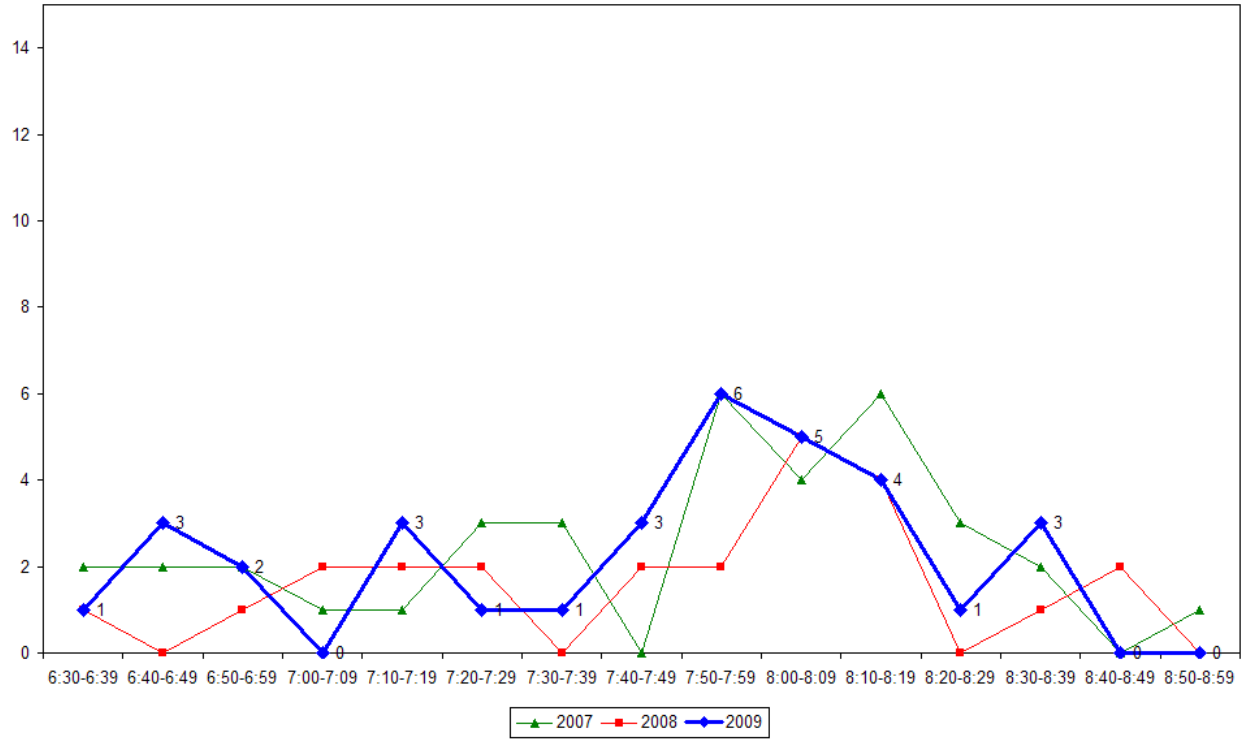
- Over the morning peak, just less than two-thirds of cyclists are adults (64 per cent, stable from last year).
- Three-quarters of cyclists are wearing a helmet (73 per cent, down notably from 88 per cent in 2008).
- The share of cyclists riding on the road at this site has increased notably since last year – up from 25 per cent in 2008 to 82 per cent this year.

Table 7.2: Morning Cyclist Characteristics
Great South/East Tamaki Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	67	67	64	-3
School child	33	33	36	3
Helmet Wearing				
Helmet on head	89	88	73	-15
No helmet	11	12	27	15
Where Riding				
Road	50	25	82	57
Footpath	50	75	18	-57
Base:	***36***	***24***	***33***	

- The volume of morning cycle movements peaks at 6 cyclists between 7:50am and 7:59am (ten minutes later than the peak reported last year). Cyclist volumes are generally low, with no more than three cyclists recorded over most ten minute intervals.

Figure 7.2: Great South/East Tamaki Road Cyclist Frequency – Morning Peak



7.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with patches of intermittent drizzle between 4:06pm and 4:13pm, 5:02pm and 5:06pm, and 6:05pm and 6:08pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Since last year, the total number of evening cycle movements recorded at the Great South/East Tamaki Road intersection has increased slightly (30 movements, up from 27 movements in 2008).
- The key movement in the evening is straight along Great South Road heading south (Movement 1 = 13 cyclists).
- Compared with last year, the most notable decrease is at Movement 6 (down 6 cyclists), while the most notable increase is at Movement 4 (up 5 cyclists).

Table 7.3: Evening Cyclist Movements
Great South/East Tamaki Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	13	10	13	3
2	2	2	3	1
3	8	1	3	2
4	3	1	6	5
5	2	0	1	1
6	9	10	4	-6
7	-	3	0	-3
Total	**37**	**27**	**30**	**3**

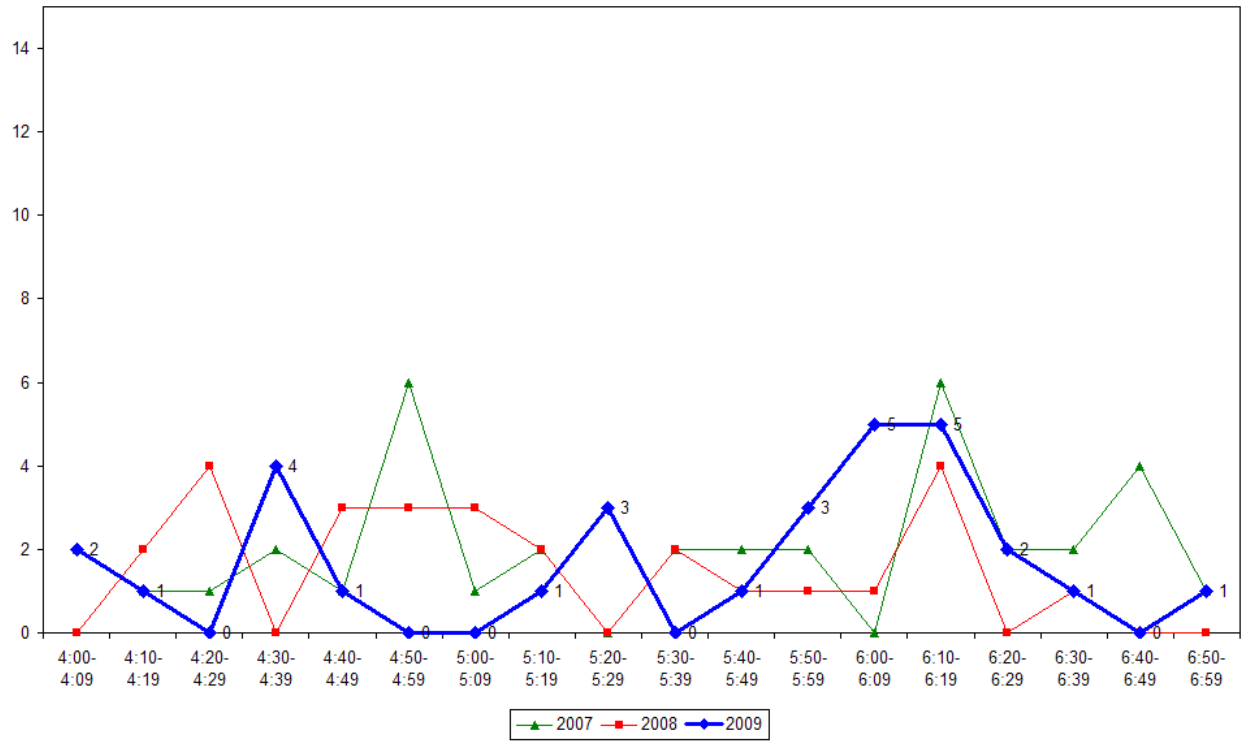
- Over the evening peak, the majority of cyclists using the Great South/East Tamaki Road intersection are adults (77 per cent, stable from 74 per cent last year).
- Approximately three-quarters of cyclists at this site are wearing a helmet (73 per cent, up notably from 56 per cent in 2008).
- Most cyclists are riding on the road (70 per cent, up notably from 44 per cent last year).

Table 7.4: Evening Cyclist Characteristics
Great South/East Tamaki Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	84	74	77	3
School child	16	26	23	-3
Helmet Wearing				
Helmet on head	84	56	73	17
No helmet	16	44	27	-17
Where Riding				
Road	54	44	70	26
Footpath	46	56	30	-26
Base:	***37***	***27***	***30***	

- This year, the volume of cycle movements clearly peaks twice: once between 4:30pm and 4:39pm (4 movements; ten minutes later than the peak last year) and then approximately an hour and a half later between 6:00pm and 6:19pm (with 5 movements over each ten minute interval; the same time as last year).

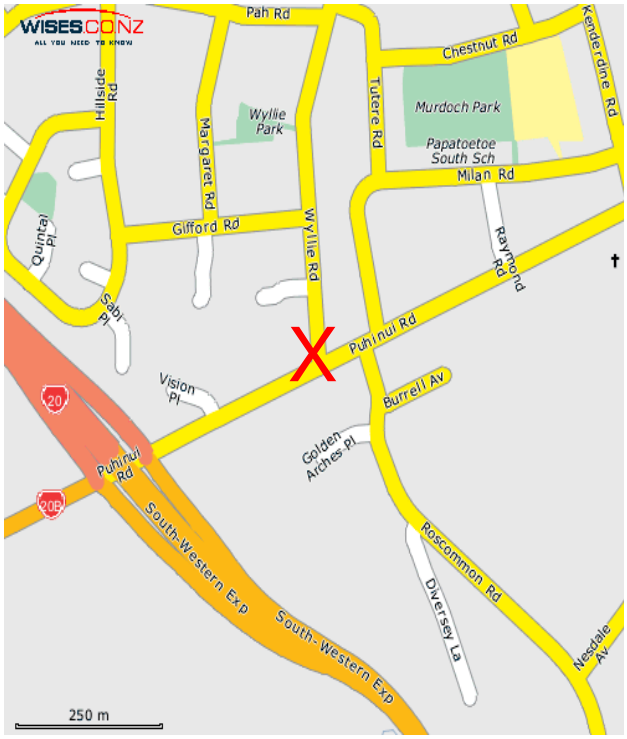
Figure 7.3: Great South/East Tamaki Road Cyclist Frequency – Evening Peak

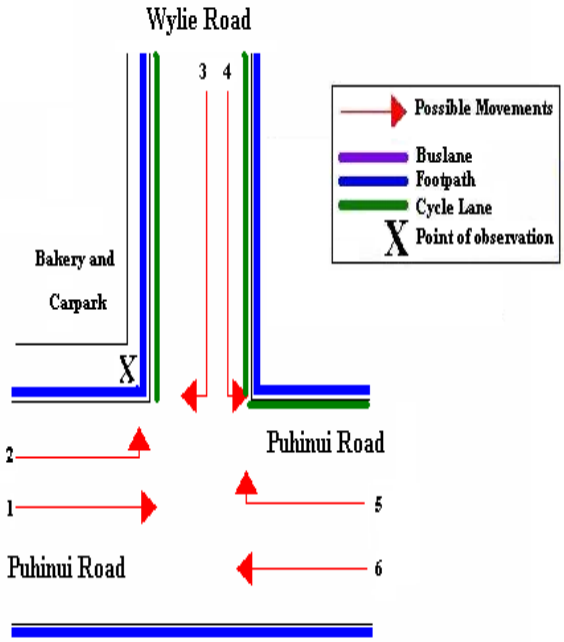


8. WYLLIE AVENUE/PUHINUI ROAD, PAPATOETOE (SITE 31)

Figure 8.1 shows the possible cyclist movements at this intersection.

Figure 8.1: Cycle Movements: Wyllie Avenue/Puhinui Road





AADT Estimate

- The AADT for this site is 50 cycle movements per day. This compares with:
  - 47 movements in 2008
  - 55 movements in 2007.

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 Manukau city, the volume of morning cyclists at Wyllie Avenue/Puhinui Road is the second lightest with 12 cycle movements recorded (up slightly from 8 movements in 2008).
- The most common movement in the morning is straight along Puhinui Road heading west (Movement 6 = 7 cyclists, up 3 cyclists from 2008).

Table 8.1: Morning Cyclist Movements
Wyllie Avenue/Puhinui Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	2	1	-1
2	0	0	1	1
3	0	1	3	2
4	1	1	0	-1
5	0	0	0	0
6	17	4	7	3
Total	**18**	**8**	**12**	**4**

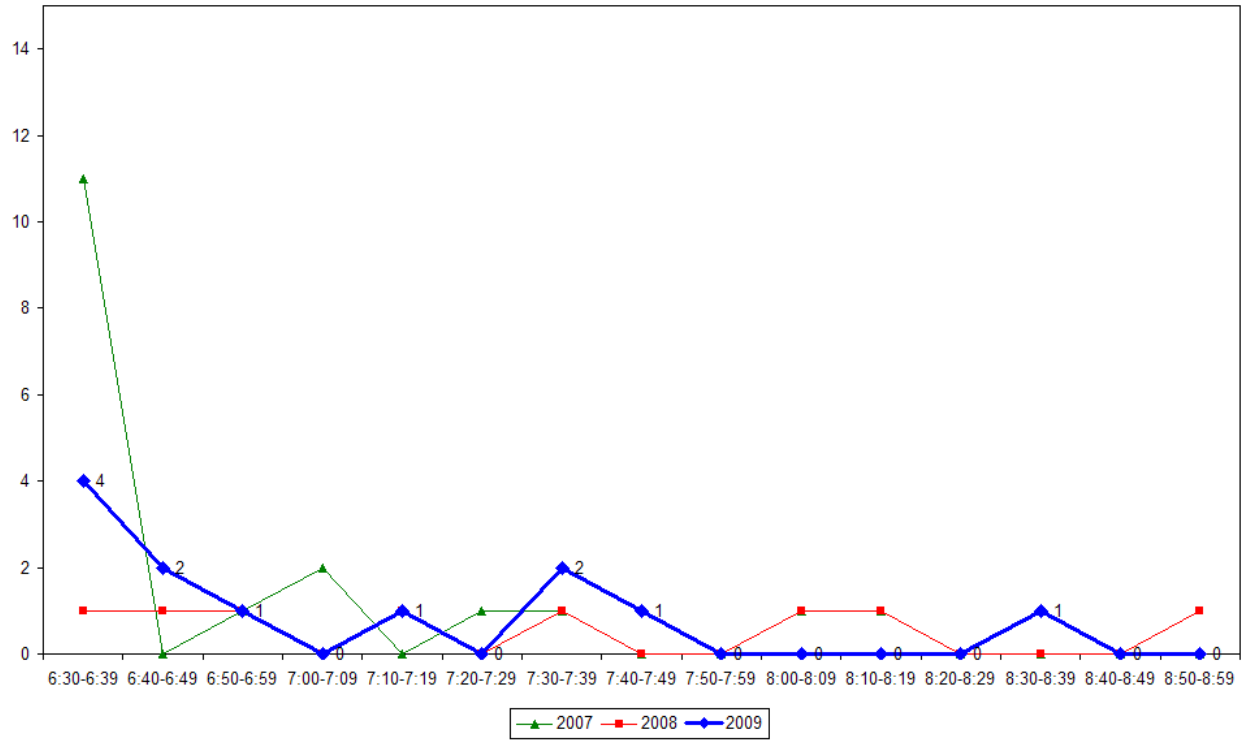
- Consistent with last year, none of the cyclists using this intersection are school children.
- All cyclists are wearing a helmet (100 per cent, up from 88 per cent in 2008).
- No cyclists are riding on the footpath (unchanged from last year).

Table 8.2: Morning Cyclist Characteristics
Wyllie Avenue/Puhinui Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	100	100	100	0
School child	0	0	0	0
Helmet Wearing				
Helmet on head	100	88	100	12
No helmet	0	12	0	-12
Where Riding				
Road	100	100	100	0
Footpath	0	0	0	0
Base:	***18***	***8***	***12***	

- Morning cyclist volumes peak at the start of the morning shift, with 4 cyclists recorded between 6:30am and 6:39am, then continue to be low over the entire morning peak, with no more than two cycle movements recorded during any ten minute interval. This compares with low cycle volumes over the entire monitoring period in 2008, but is consistent with the peak at the beginning of the monitoring period in 2007 (11 cyclists).

Figure 8.2: Wyllie Avenue/Puhinui Road Cyclist Frequency – Morning Peak



8.2 Evening Peak

Environmental Conditions

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

Key Points

- This year, the total number of evening cycle movements recorded at the Wyllie Avenue/Puhinui Road intersection has decreased slightly, from 25 in 2008 to 23 movements.
- In contrast with previous years, the key evening movement is straight along Puhinui Road heading west (Movement 6 = 13 cyclists, up notably by 9 cyclists. Note that 9 of the 13 cyclists were riding together as a group).

Table 8.3: Evening Cyclist Movements
Wyllie Avenue/Puhinui Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	7	11	6	-5
2	3	3	1	-2
3	2	0	0	0
4	3	2	1	-1
5	3	5	2	-3
6	2	4	13	9
Total	**20**	**25**	**23**	**-2**

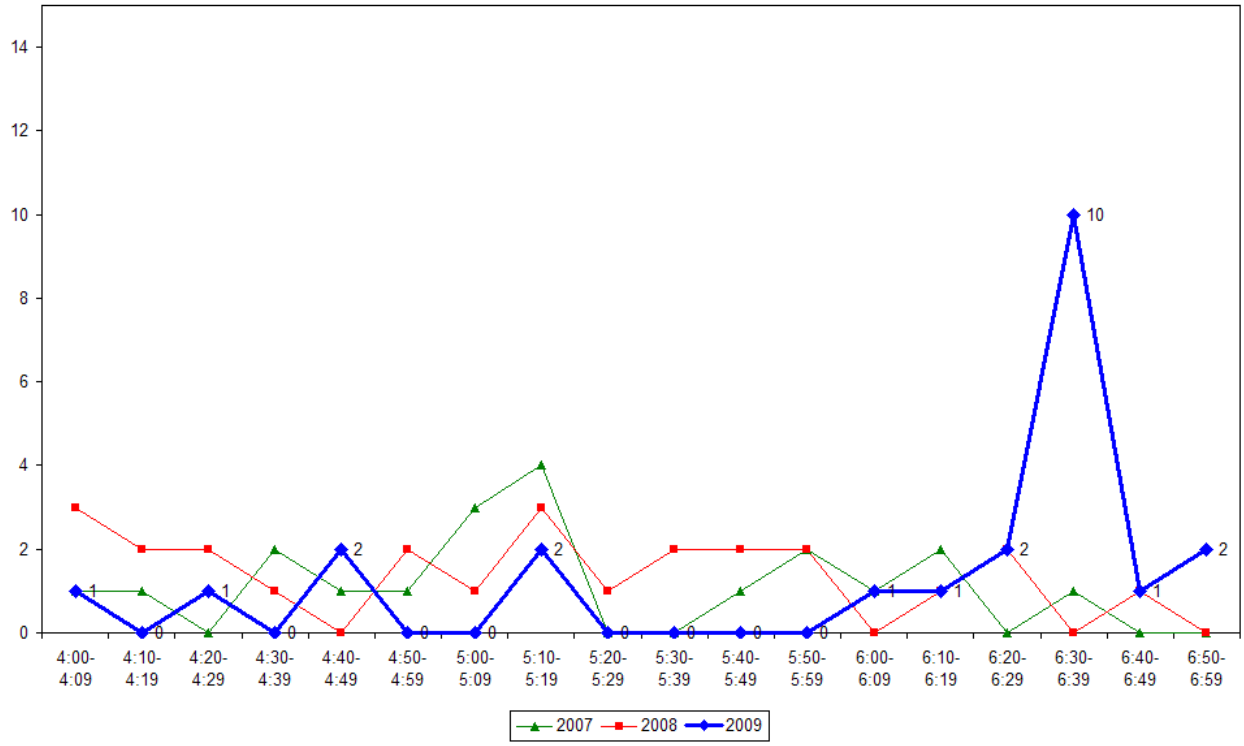
- Over the evening peak, most cyclists using this site are adults (87 per cent, stable from 88 per cent last year).
- The majority of cyclists at this site are wearing a helmet (91 per cent, up notably from 79 per cent in 2008).
- Ninety-one per cent of cyclists are riding on the road this year (up from 84 per cent in 2008).

Table 8.4: Evening Cyclist Characteristics
Wyllie Avenue/Puhinui Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	75	88	87	-1
School child	25	12	13	1
Helmet Wearing				
Helmet on head	70	79	91	12
No helmet	30	21	9	-12
Where Riding				
Road	70	84	91	7
Footpath	30	16	9	-7
Base:	***20***	***25***	***23***	

- This year the volume of cycle movements peaks notably between 6:30pm and 6:39pm (10 movements. Note that 9 of these cyclists were riding together as a group). This compares with slight peaks between 4:00pm and 4:09pm, and between 5:10pm and 5:19pm, in 2008.

Figure 8.3: Wyllie Avenue/Puhinui Road Cyclist Frequency – Evening Peak

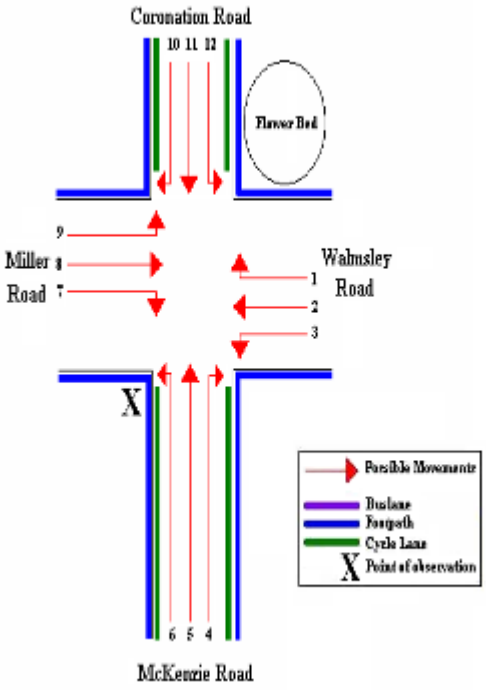


Note: A group of nine cyclists was observed riding together at 6.39pm. This comprises 39 per cent of the total cycle movements recorded in the evening peak.

9. MCKENZIE ROAD/CORONATION ROAD/WALMSLEY ROAD, MANGERE (SITE 32)

Figure 9.1 shows the possible cyclist movements at this intersection.

Figure 9.1: Cycle Movements: McKenzie/Coronation/Walmsley Road



AADT Estimate

- The AADT for this site is 75 cycle movements per day. This compares with:
  - 82 movements in 2008
  - 101 movements in 2007.

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

- In 2009, the volume of morning cyclists recorded at the McKenzie/Coronation/Walmsley Road intersection has remained stable (from 21 in 2008 to 22 movements this year).
- The most common movement in the morning is south down Coronation Road (Movement 11 = 11 cyclists).
- Of the 12 movements possible at this intersection, the most notable changes are at Movements 2 and 11 (each down 3 cyclists).

Table 9.1: Morning Cyclist Movements

McKenzie/Coronation/Walmsley Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	1	0	1	1
2	2	3	0	-3
3	3	0	2	2
4	1	0	0	0
5	8	2	3	1
6	2	1	0	-1
7	2	1	1	0
8	0	0	2	2
9	0	0	0	0
10	0	0	0	0
11	9	14	11	-3
12	0	0	2	2
Total	**28**	**21**	**22**	**1**

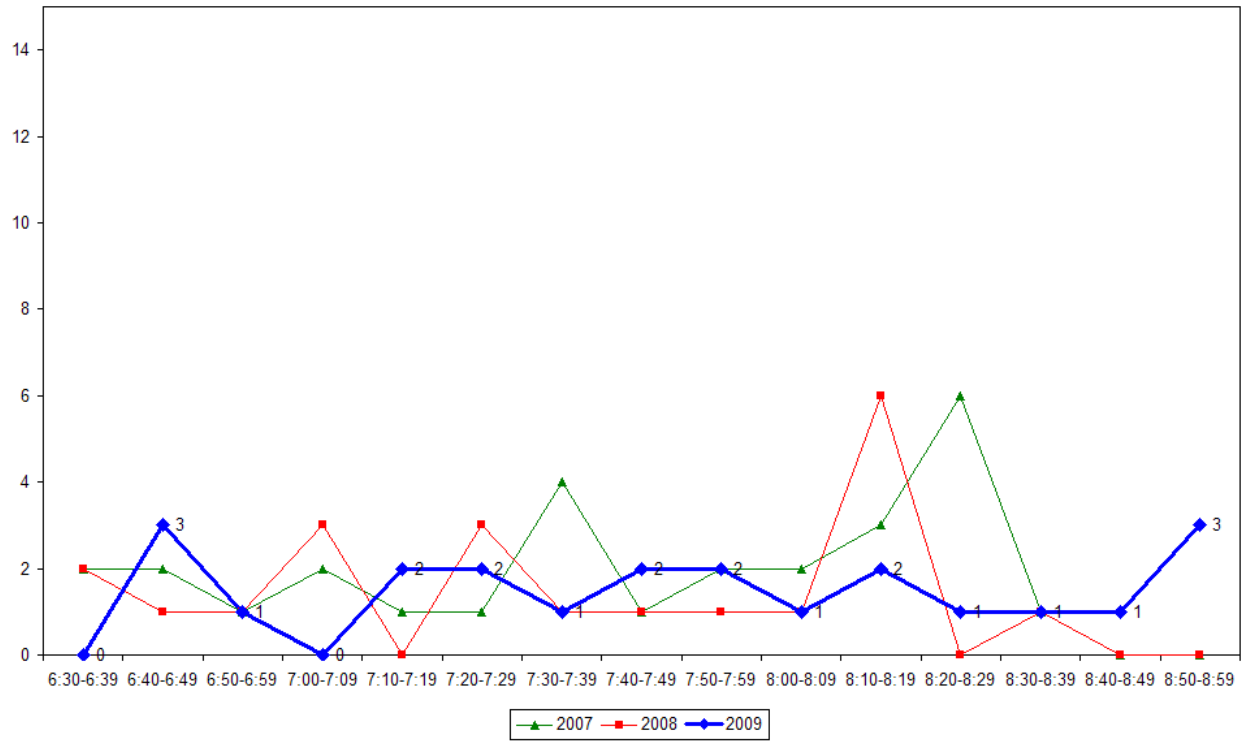
- Over the morning peak, adults comprise the greatest share of the cycle movements (91 per cent, up from 86 per cent last year).
- The majority of cyclists are wearing a helmet (86 per cent, up notably from 2008).
- Approximately four in five cyclists are riding on the road (82 per cent, compared with 67 per cent last year).

Table 9.2: Morning Cyclist Characteristics
McKenzie/Coronation/Walmsley Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	71	86	91	5
School child	29	14	9	-5
Helmet Wearing				
Helmet on head	71	71	86	15
No helmet	29	29	14	-15
Where Riding				
Road	64	67	82	15
Footpath	36	33	18	-15
Base:	***28***	***21***	***22***	

- The volume of morning cyclists peaks slightly between 6:40pm and 6:49pm (3 movements) and again at the end of the monitoring period (3 movements). This compares with a notable peak between 8:10am and 8:19am in 2008.

Figure 9.2: McKenzie/Coronation/Walmsley Road Cyclist Frequency – Morning Peak



9.2 Evening Peak

Environmental Conditions

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

Key Points

- Compared with the previous year, the total number of cycle movements recorded at the McKenzie/Coronation/Walmsley Road intersection has decreased to 30 movements in the evening (down from 36 movements in 2008).
- In contrast to the morning shift, the most common movement in the evening is northbound from McKenzie Road to Coronation Road (Movement 5 = 15 cyclists).
- Evening cyclist volumes at most movements remain stable since last year, with the most notable change being at Movement 1 (down 4 cyclists).

Table 9.3: Evening Cyclist Movements
McKenzie/Coronation/Walmsley Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	2	4	0	-4
2	1	3	1	-2
3	1	3	2	-1
4	0	0	1	1
5	14	14	15	1
6	3	3	1	-2
7	2	0	1	1
8	0	1	1	0
9	3	0	1	1
10	0	0	1	1
11	11	6	5	-1
12	5	2	1	-1
Total	**42**	**36**	**30**	**-6**

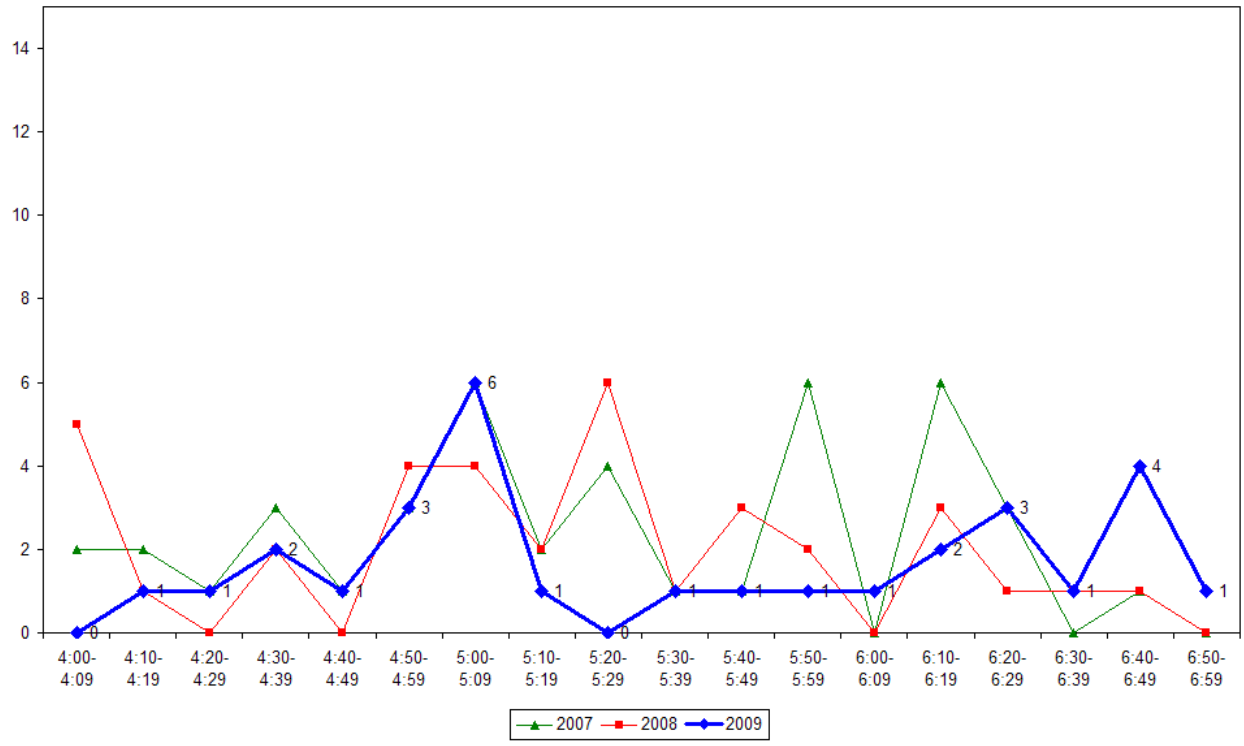
- Over the evening peak, the greatest share of cyclists using this intersection are adults (87 per cent, stable from 89 per cent last year).
- Just less than three-quarters of cyclists at this site are wearing a helmet (73 per cent, compared with 78 per cent in 2008).
- The majority of cyclists are riding on the road (73 per cent, stable from 71 per cent last year).

Table 9.4: Evening Cyclist Characteristics
McKenzie/Coronation/Walmsley Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	76	89	87	-2
School child	24	11	13	2
Helmet Wearing				
Helmet on head	74	78	73	-5
No helmet	26	22	27	5
Where Riding				
Road	81	71	73	2
Footpath	19	29	27	-2
Base:	***42***	***36***	***30***	

- This year, the volume of evening cycle movements increases slowly to peak at 6 movements between 5:00pm and 5:09pm, then decreases before peaking slightly at the end of the monitoring period (4 movements between 6:40pm and 6:49pm). This compares with peaks between 4:00pm and 4:09pm, and again between 5:20pm and 5:29pm, in 2008.

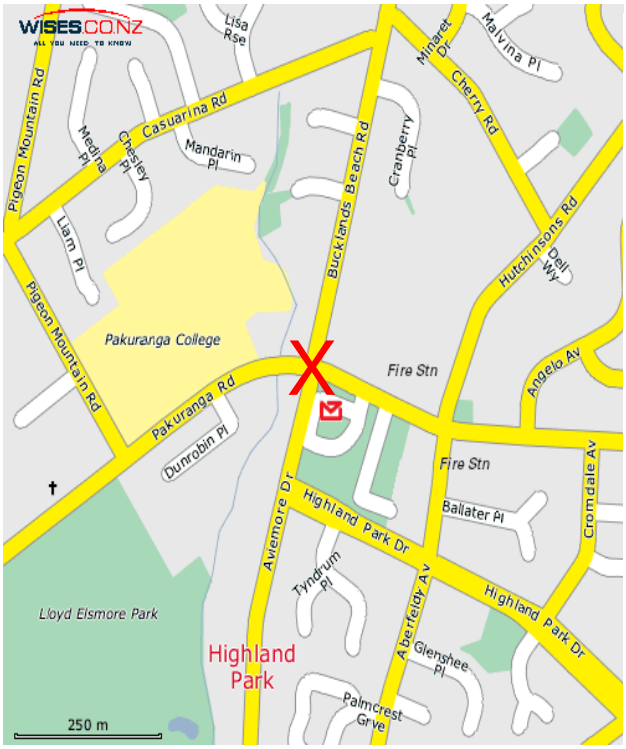
Figure 9.3: McKenzie/Coronation/Walmsley Road Cyclist Frequency – Evening Peak

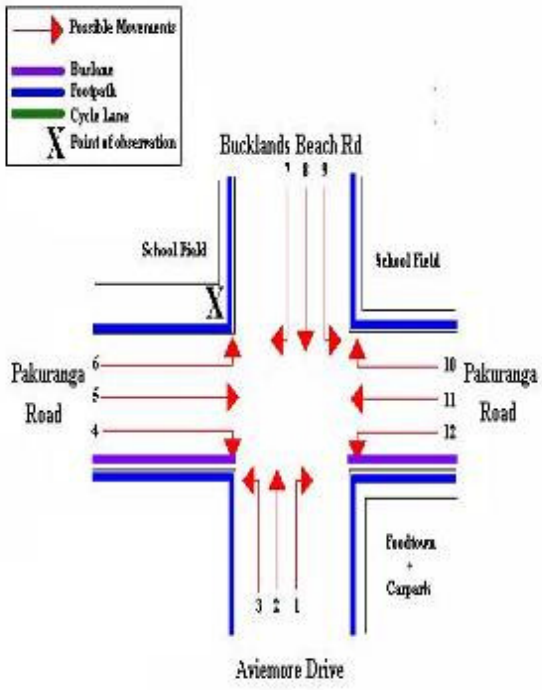


10. BUCKLANDS BEACH ROAD/PAKURANGA ROAD, PAKURANGA (SITE 33)

Figure 10.1 shows the possible cyclist movements at this intersection.

Figure 10.1: Cycle Movements: Bucklands Beach/Pakuranga Road





AADT Estimate

- The AADT for this site is 137 cycle movements per day. This compares with:
  - 187 movements in 2008
  - 203 movements in 2007.

10.1 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift.
- There were road works and resulting speed restrictions along Bucklands Beach Road which may affect cycle counts.

Key Points

- Of the 14 sites monitored in Manukau city, the Bucklands Beach/Pakuranga Road intersection is the busiest in terms of morning cyclist activity, with 51 cycle movements recorded (stable from 53 movements in 2008).
- The most common morning movements are straight along Pakuranga Road heading west (Movement 11 = 14 cyclists) and the left turn from Aviemore Drive into Pakuranga Road (Movement 3 = 12 cyclists).
- The most notable change is reported at Movement 3 (up 4 cyclists).

Table 10.1: Morning Cyclist Movements
Bucklands Beach/Pakuranga Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	0	0	0
2	7	6	3	-3
3	15	8	12	4
4	1	0	2	2
5	3	3	6	3
6	2	3	2	-1
7	5	3	2	-1
8	5	8	9	1
9	5	3	1	-2
10	2	2	0	-2
11	22	16	14	-2
12	1	1	0	-1
Total	**68**	**53**	**51**	**-2**

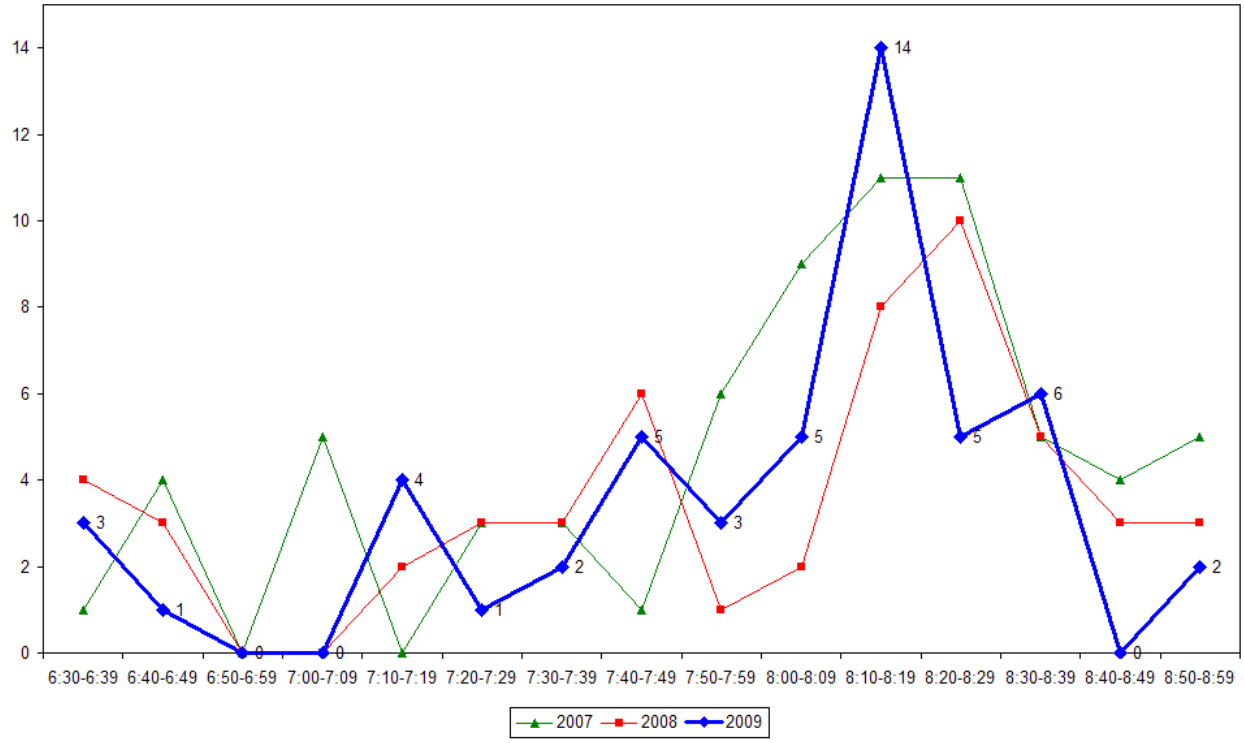
- The share of children cycling at the Bucklands Beach/Pakuranga Road intersection is the greatest across all 14 Manukau city sites (55 per cent, up from 42 per cent in 2008).
- Most cyclists are wearing a helmet (90 per cent, stable from the previous year).
- The incidence of cyclists riding on the footpath is the highest at this site compared with other sites monitored in Manukau city (61 per cent, up from 53 per cent last year).

Table 10.2: Morning Cyclist Characteristics
Bucklands Beach/Pakuranga Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	43	58	45	-13
School child	57	42	55	13
Helmet Wearing				
Helmet on head	75	91	90	-1
No helmet	25	9	10	1
Where Riding				
Road	24	47	39	-8
Footpath	76	53	61	8
Base:	***68***	***53***	***51***	

- This year, the volume of morning cycle movements clearly peaks between 8:10am and 8:19am (14 cyclists), ten minutes earlier than the peak recorded in 2008.

Figure 10.2: Bucklands Beach/Pakuranga Road Cyclist Frequency – Morning Peak



Note: A group of three cyclists was observed riding together at 6.35am; this comprises 6 per cent of the total cycle movements recorded in the morning peak.

10.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with a heavy shower between 5:15pm and 5:25pm.
- There were road works and resulting speed restrictions on Bucklands Beach Road which may affect cycle counts.

Key Points

- The Bucklands Beach/Pakuranga Road intersection has the second highest level of cyclist traffic in the evening, with 43 cycle movements recorded (down notably from 77 movements last year).
- The most common movement in the evening is straight along Aviemore Drive into Bucklands Beach Road (Movement 2 = 11 cyclists).
- Across the twelve movements possible at this intersection, the most notable decline has been at Movement 10 (down 8 cyclists).

Table 10.3: Evening Cyclist Movements
Bucklands Beach/Pakuranga Road 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	0	1	0	-1
2	4	7	11	4
3	4	8	2	-6
4	11	10	4	-6
5	10	9	7	-2
6	7	6	2	-4
7	11	9	5	-4
8	7	7	6	-1
9	4	4	1	-3
10	4	8	0	-8
11	10	6	4	-2
12	0	2	1	-1
Total	**72**	**77**	**43**	**-34**

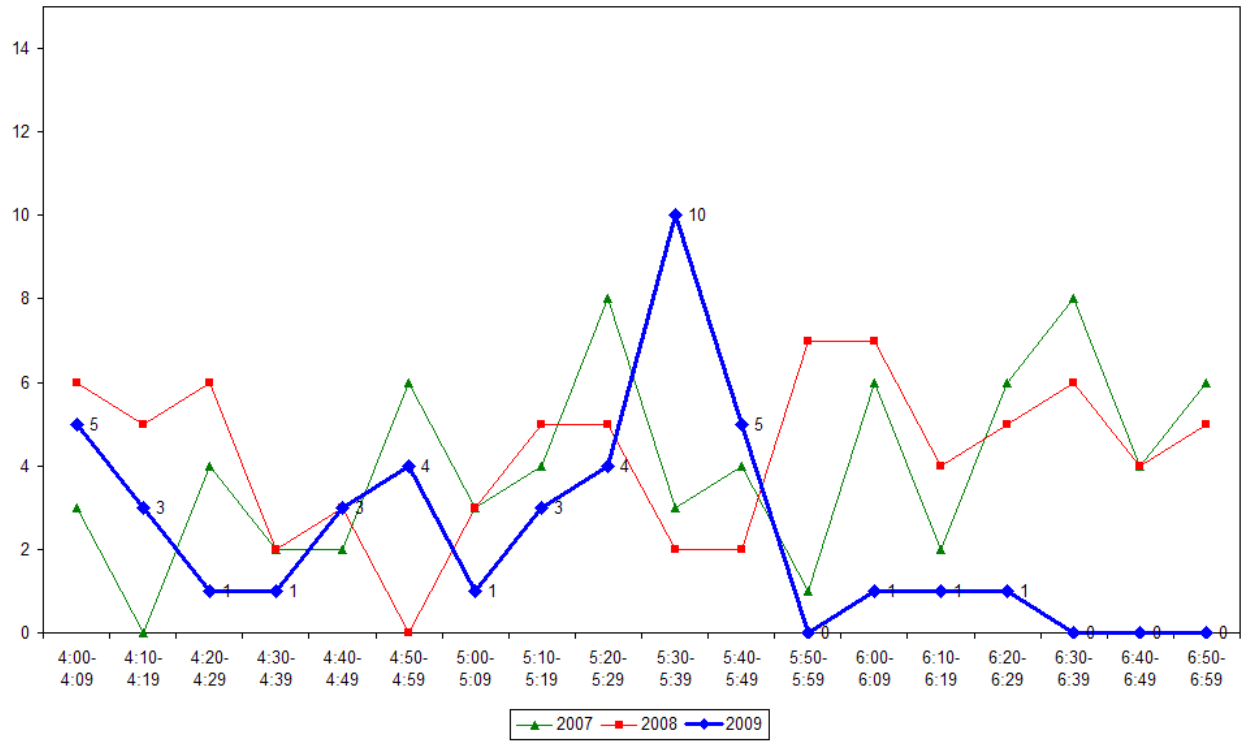
- Adult cyclists comprise the greatest share of cycle movements (91 per cent, up notably from 65 per cent in 2008).
- Most cyclists at this site are wearing a helmet (86 per cent, up from 77 per cent last year).
- Compared with last year, the share of cyclists riding on the road has increased (up from 44 per cent in 2008 to 53 per cent this year).

Table 10.4: Evening Cyclist Characteristics
Bucklands Beach/Pakuranga Road 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	76	65	91	26
School child	24	35	9	-26
Helmet Wearing				
Helmet on head	68	77	86	9
No helmet	32	23	14	-9
Where Riding				
Road	38	44	53	9
Footpath	62	56	47	-9
Base:	***72***	***77***	***43***	

- In 2009, the volume of cycle movements peaks sharply between 5:30pm and 5:39pm (10 movements. Note that this included a group of three cyclists riding together), compared with a peak between 5:50pm and 6:09pm of 7 movements within each ten minute interval in 2008.

Figure 10.3: Bucklands Beach/Pakuranga Road Cyclist Frequency – Evening Peak

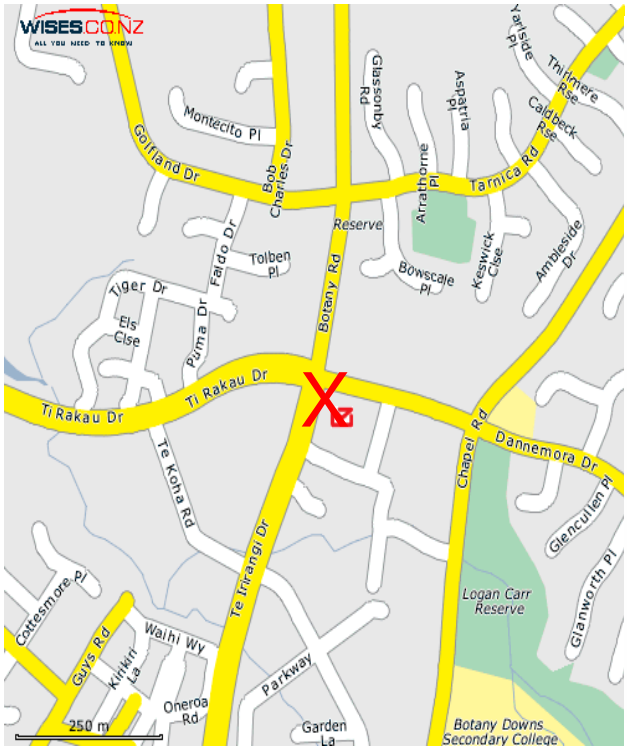


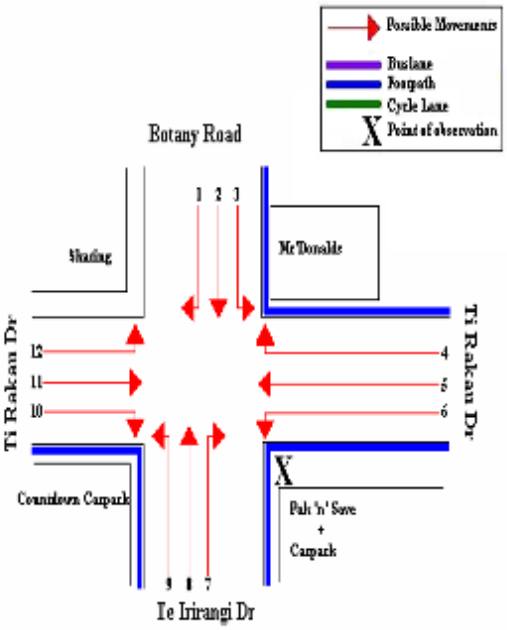
Note: A group of three cyclists was observed riding together at 5.30pm. This comprises 7 per cent of the total cycle movements recorded in the evening peak.

11. TE IRIRANGI DRIVE/TI RAKAU DRIVE, BOTANY DOWNS (SITE 34)

Figure 11.1 shows the possible cyclist movements at this intersection.

Figure 11.1: Cycle Movements: Te Irirangi /Ti Rakau Drive





AADT Estimate

- The AADT for this site is 86 cycle movements per day. This compares with:
  - 109 movements in 2008
  - 117 movements in 2007.

11.1 Morning Peak

Environmental Conditions

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

Key Points

- The number of cycle movements recorded at the Te Irirangi/Ti Rakau Drive intersection has declined slightly from 2008, down from 36 movements to 30.
- The key movement in the morning is straight along Botany Road heading south (Movement 2 = 13 cyclists).
- Morning cyclist volumes are mostly stable from last year, with the most notable change at Movement 1 (down 4 cyclists).

Table 11.1: Morning Cyclist Movements
Te Irirangi /Ti Rakau Drive 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	13	10	6	-4
2	8	12	13	1
3	1	0	2	2
4	0	0	0	0
5	6	6	4	-2
6	1	0	0	0
7	1	0	0	0
8	4	3	2	-1
9	1	1	0	-1
10	1	1	0	-1
11	0	2	3	1
12	0	1	0	-1
Total	**36**	**36**	**30**	**-6**

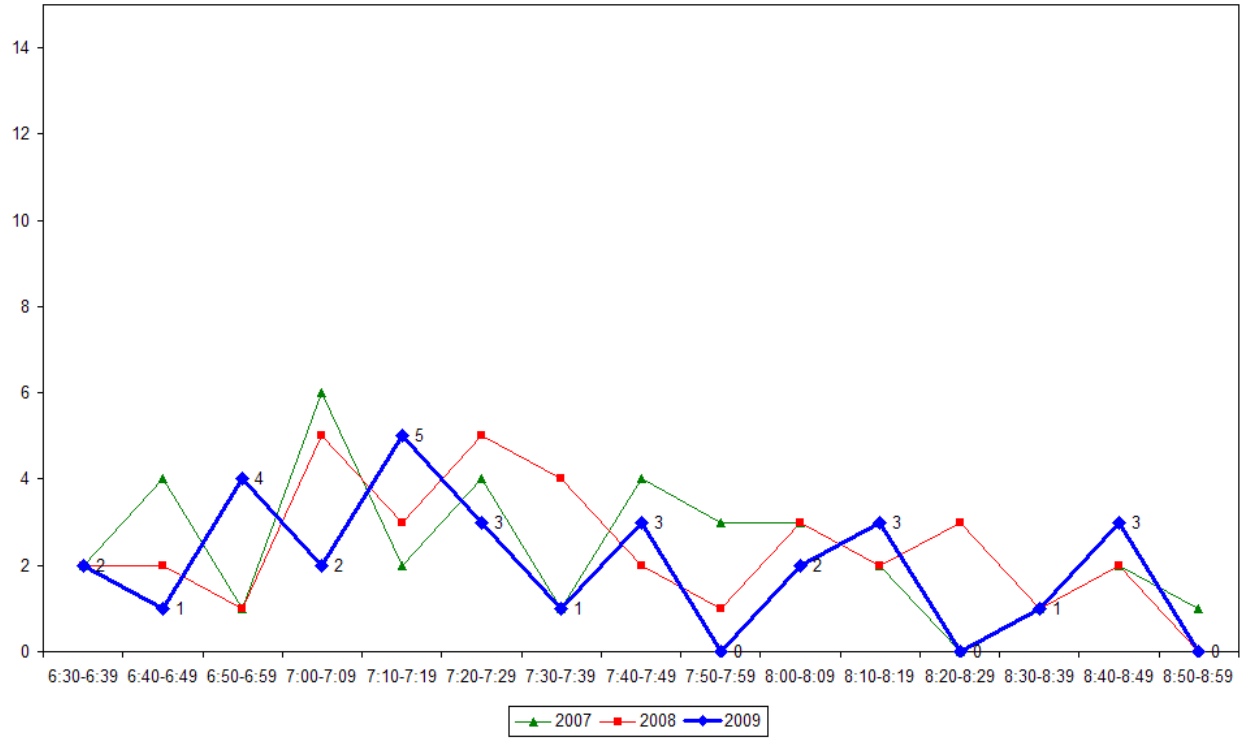
- Over the morning peak, most cyclists are adults (93 per cent, stable from 94 per cent last year).
- Most cyclists are wearing a helmet (90 per cent, down slightly from 94 per cent in 2008).
- Approximately seven in ten cyclists are riding on the road (70 per cent, down slightly from 75 per cent last year).

Table 11.2: Morning Cyclist Characteristics
Te Irirangi /Ti Rakau Drive 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	97	94	93	-1
School child	3	6	7	1
Helmet Wearing				
Helmet on head	89	94	90	-4
No helmet	11	6	10	4
Where Riding				
Road	58	75	70	-5
Footpath	42	25	30	5
Base:	***36***	***36***	***30***	

- This year, the volume of cycle movements peaks slightly early in the morning (5 cyclists between 7:10am and 7:19am) – ten minutes later than the peak recorded in 2008.

Figure 11.2: Te Irirangi /Ti Rakau Drive Cyclist Frequency – Morning Peak



11.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift with heavy showers between 4.50pm and 5.12pm; and 5.31pm and 5.41pm.
- 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 observed at the Te Irirangi/Ti Rakau Drive intersection decreases, from 39 in 2008 to 29 movements in 2009.
- The most common evening movement is straight along Ti Rakau Drive heading west (Movement 5 = 7 cyclists).
- The most notable change is at Movement 8 (down notably by 11 cyclists).

Table 11.3: Evening Cyclist Movements
Te Irirangi /Ti Rakau Drive 2007-2009 (n)

Movement	*2007*	*2008*	*2009*	Change 08-09
1	3	1	0	-1
2	11	3	4	1
3	3	0	0	0
4	5	1	0	-1
5	0	4	7	3
6	0	0	0	0
7	1	2	0	-2
8	11	16	5	-11
9	0	0	0	0
10	4	0	6	6
11	3	7	5	-2
12	4	5	2	-3
Total	**45**	**39**	**29**	**-10**

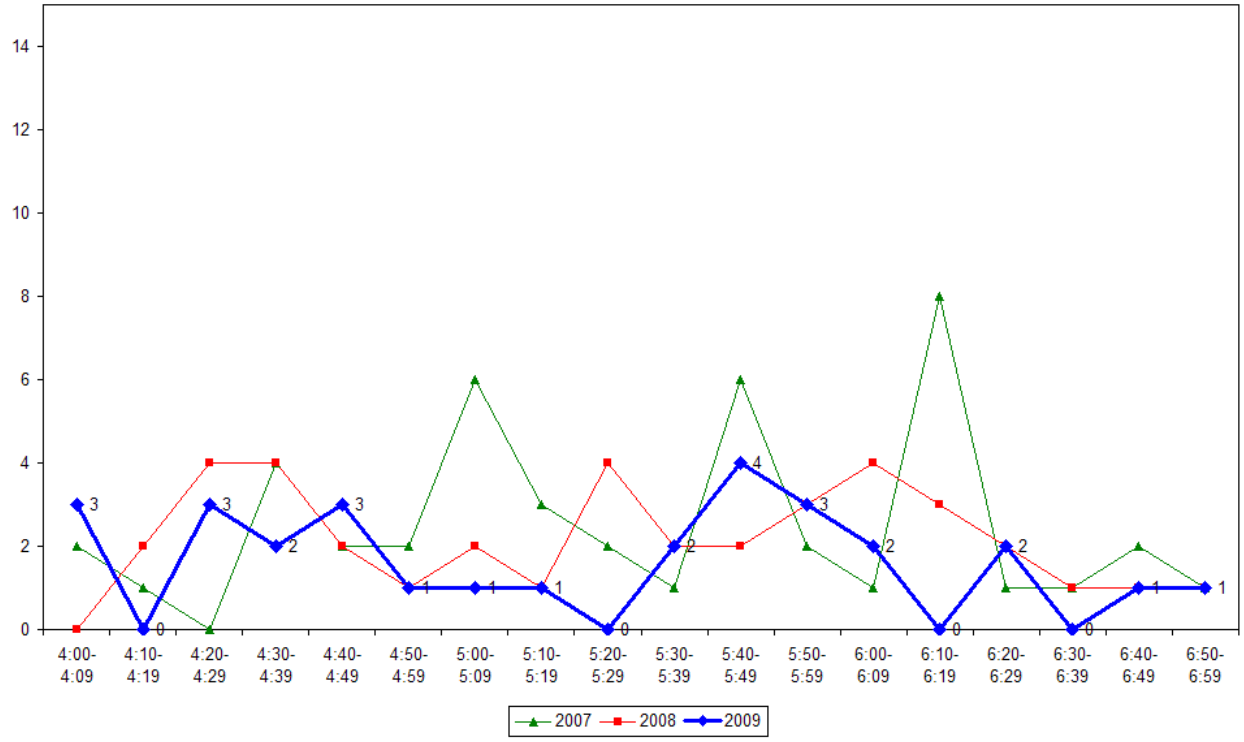
- Consistent with the morning peak, the greatest share of cyclists using this intersection continue to be adults (90 per cent, compared with 95 per cent last year).
- Almost all cyclists at this site are wearing a helmet (97 per cent, up notably from 82 per cent in 2008).
- Just over half of cyclists are riding on the road (59 per cent, unchanged from last year).

Table 11.4: Evening Cyclist Characteristics
Te Irirangi /Ti Rakau Drive 2007-2009 (%)

	2007	*2008*	*2009*	Change 08-09
Cyclist Type				
Adult	98	95	90	-5
School child	2	5	10	5
Helmet Wearing				
Helmet on head	87	82	97	15
No helmet	13	18	3	-15
Where Riding				
Road	58	59	59	0
Footpath	42	41	41	0
Base:	***45***	***39***	***29***	

- The volume of cycle movements peaks slightly (4 movements) between 5:40pm and 5:49pm. This compares with peaks around 4:20pm, 5:20pm, and 6:00pm in 2008.

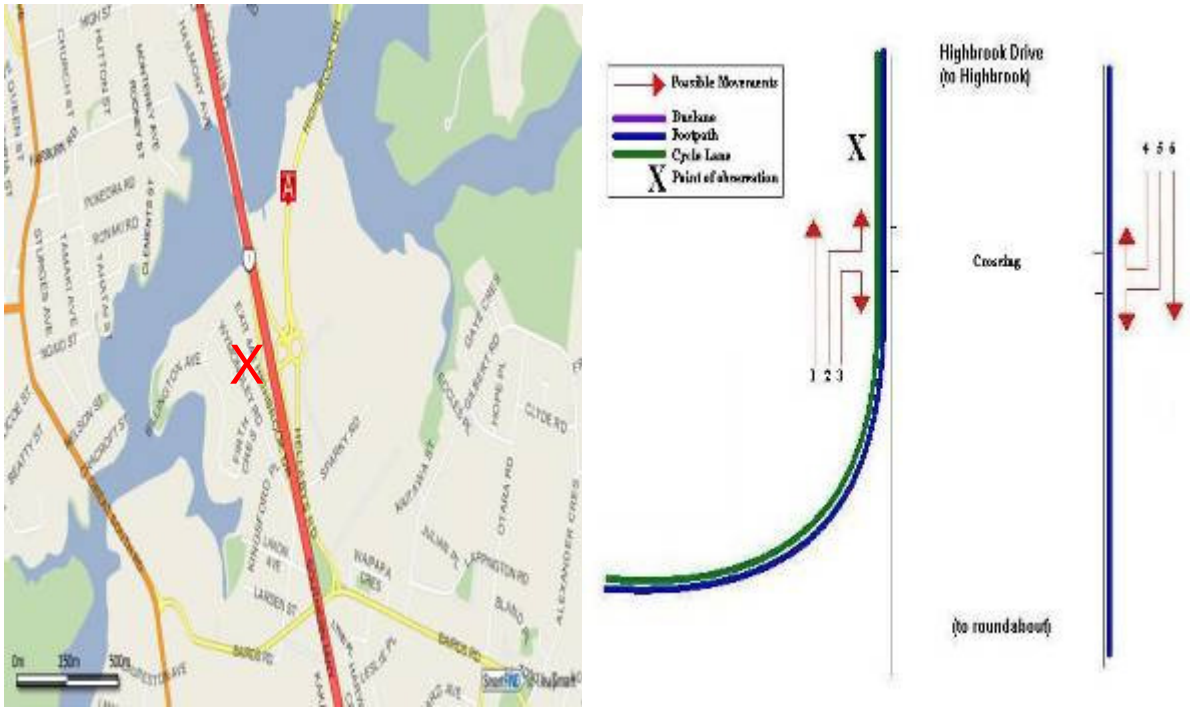
Figure 11.3: Te Irirangi /Ti Rakau Drive Cyclist Frequency – Evening Peak



12. HIGHBROOK DRIVE, EAST TAMAKI (SITE 71)

Figure 12.1 shows the possible cyclist movements at this intersection.

Figure 12.1: Cycle Movements: Highbrook Drive



AADT Estimate

- The AADT for this site is 55 cycle movements per day. This compares with 42 movements in 2008.

12.1 Morning Peak

Environmental Conditions

- The weather was fine throughout the morning shift, apart from some intermittent drizzle.
- There were no road works or accidents that may affect cycle counts.

Key Points

- While the level of morning cyclist traffic at the Highbrook Drive site is low, with 20 cycle movements recorded, this has increased notably from 13 movements in 2008.
- The most common movement in the morning is down Highbrook Drive towards the roundabout (Movement 6 = 9 cyclists).
- The most notable change has been at Movement 6 (up 8 cyclists).

Table 12.1: Morning Cyclist Movements
Highbrook Drive 2008-2009 (n)

Movement	*2008*	*2009*	Change 08-09
1	5	5	0
2	2	2	0
3	2	0	-2
4	0	2	2
5	3	2	-1
6	1	9	8
Total	**13**	**20**	**7**

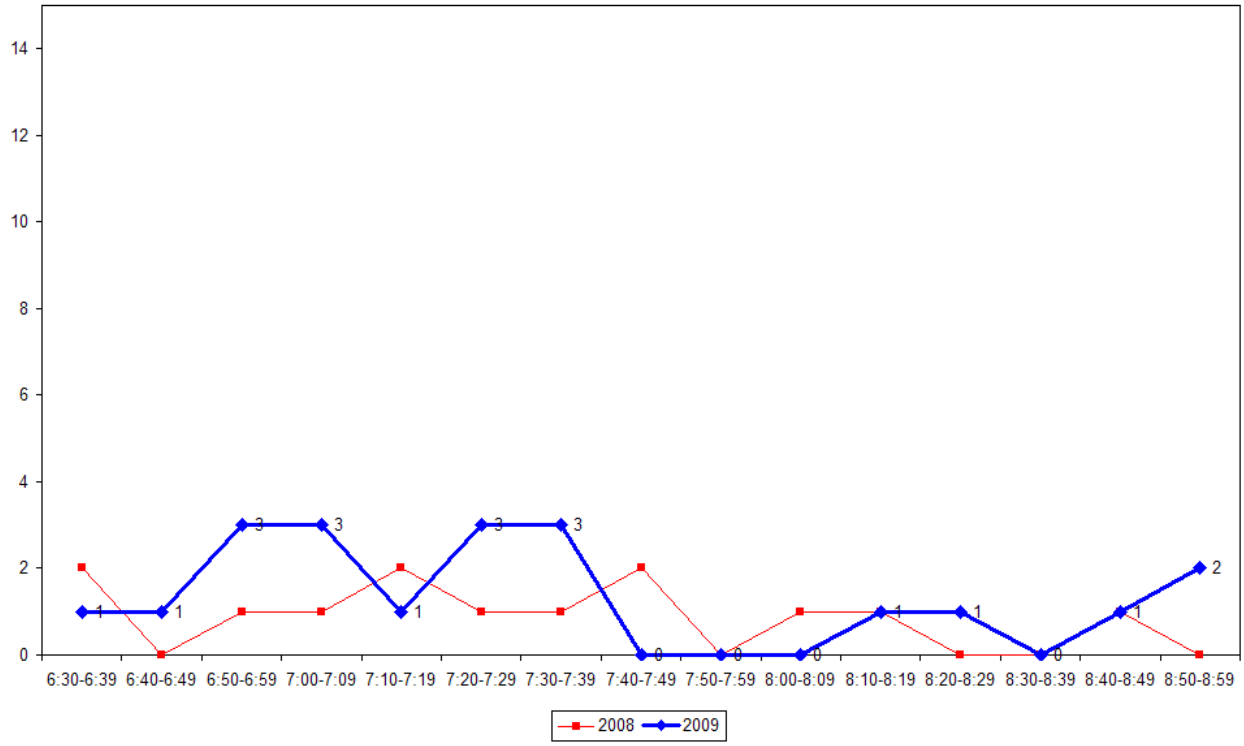
- Over the morning peak, all cyclists are adults (100 per cent, unchanged from 2008).
- Most cyclists are wearing a helmet (75 per cent, down from 85 per cent last year).
- The greatest share of cyclists (80 per cent are riding on the off-road cycleway. Fifteen per cent are riding on the road – up from 8 per cent last year.

Table 12.2: Morning Cyclist Characteristics
Highbrook Drive 2008-2009 (%)

	2008	*2009*	Change 08-09
Cyclist Type			
Adult	100	100	0
School child	0	0	0
Helmet Wearing			
Helmet on head	85	75	-10
No helmet	15	25	10
Where Riding			
Road	8	15	7
Footpath	92	5	
Off-road cycleway	-	80	-
Base:	***13***	***20***	

- The volume of cycle movements is very low over the entire morning peak, with no more than three cyclists during any ten minute interval.

Figure 12.2: Highbrook Drive Cyclist Frequency – Morning Peak



12.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from a few intermittent showers.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cycle movements observed at the Highbrook Drive intersection is low in the evening, with 18 movements recorded, stable from 16 movements last year.
- The most common movement in the evening is down Highbrook Drive towards the roundabout (Movement 6 = 7 cyclists).
- The most notable increase is at Movement 5 (down 8 cyclists) while the most notable increase is at Movement 3 (up 6 cyclists).

Table 12.3: Evening Cyclist Movements
Highbrook Drive 2008-2009 (n)

Movement	*2008*	*2009*	Change 08-09
1	3	5	2
2	2	0	-2
3	0	6	6
4	0	0	0
5	8	0	-8
6	3	7	4
Total	**16**	**18**	**2**

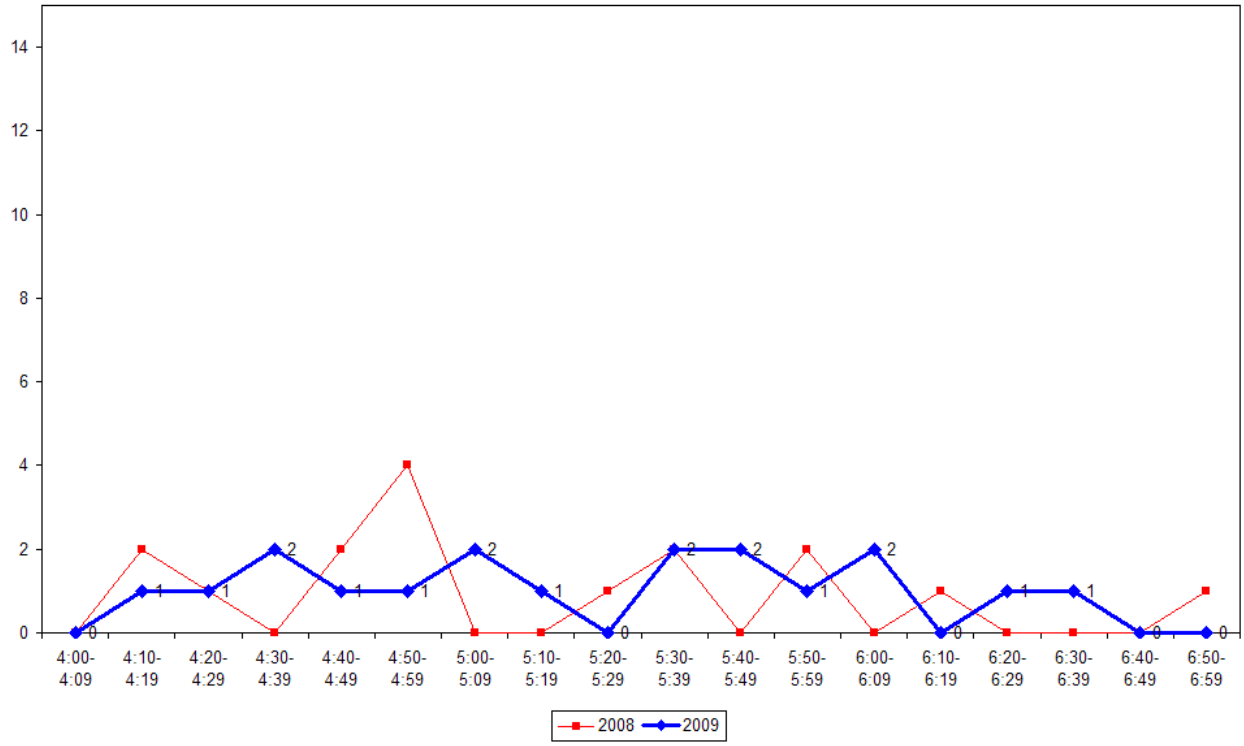
- Consistent with the morning peak, all cyclists using this intersection are adults (100 per cent, unchanged from last year).
- Most cyclists at this site are wearing a helmet (89 per cent, up slightly from 81 per cent in 2008).
- Two-thirds of evening peak cyclists were observed using the off-road cycleway while 22 per cent continue to cycle on the footpath.

Table 12.4: Evening Cyclist Characteristics
Highbrook Drive 2008-2009 (%)

	2008	*2009*	Change 08-09
Cyclist Type			
Adult	100	100	0
School child	0	0	0
Helmet Wearing			
Helmet on head	81	89	8
No helmet	19	11	-8
Where Riding			
Road	6	11	5
Footpath	94	22	-
Off-road cycleway	-	67	-
Base:	***16***	***18***	

- The volume of cycle movements is low over the entire evening peak, with no more than two cyclists recorded over any ten minute interval.

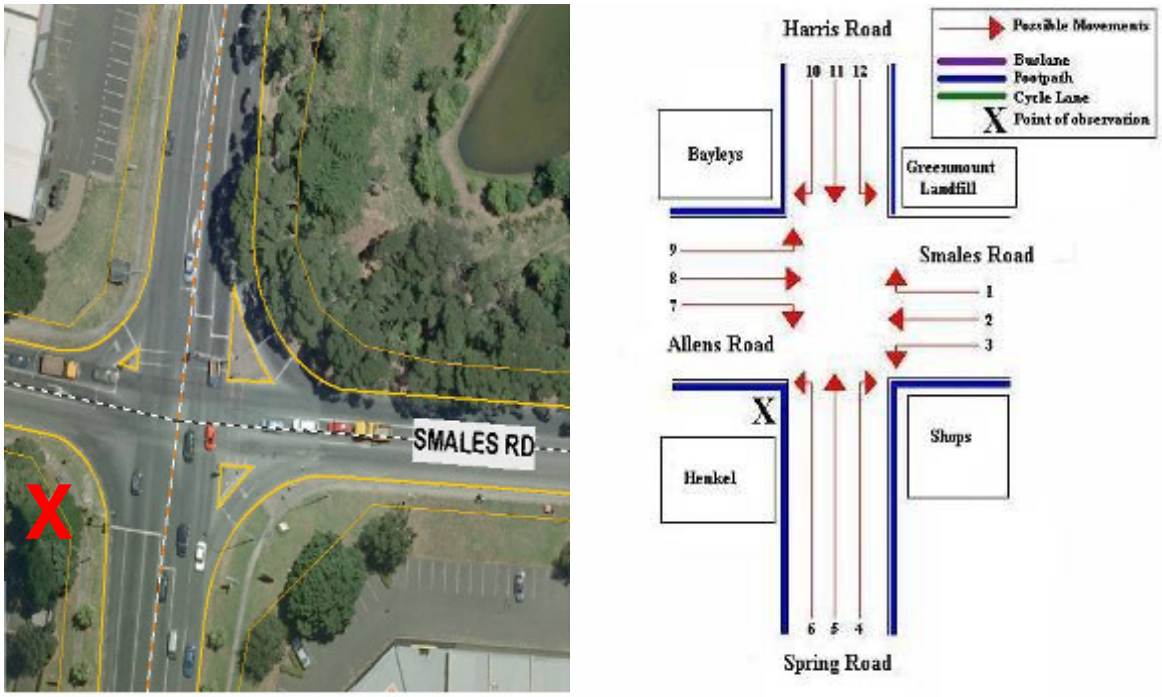
Figure 12.3: Highbrook Drive Cyclist Frequency – Evening Peak



13. HARRIS/SMALES ROAD, EAST TAMAKI (SITE 79)

Figure 13.1 shows the possible cyclist movements at this intersection.

Figure 13.1: Cycle Movements: Harris/Smales Road



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

AADT Estimate

- The AADT for this site is 88 cycle movements per day.

13.1 Morning Peak

Environmental Conditions

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

Key Points

- Thirty-five movements were recorded at the Harris Road/Smales Road site over the morning monitoring period.
- The key movements in the morning are heading north along Spring Road into Harris Road (Movement 5 = 9 cyclists) and heading west along Smales Road into Allens Road (Movement 2 = 8 cyclists).
- As this is a new site in 2009, no comparisons with previous years can be made.

Table 13.1: Morning Cyclist Movements

Harris/Smales Road 2009 (n)

Movement	2009
1	2
2	8
3	3
4	1
5	9
6	1
7	0
8	0
9	2
10	2
11	4
12	3
Total	**35**

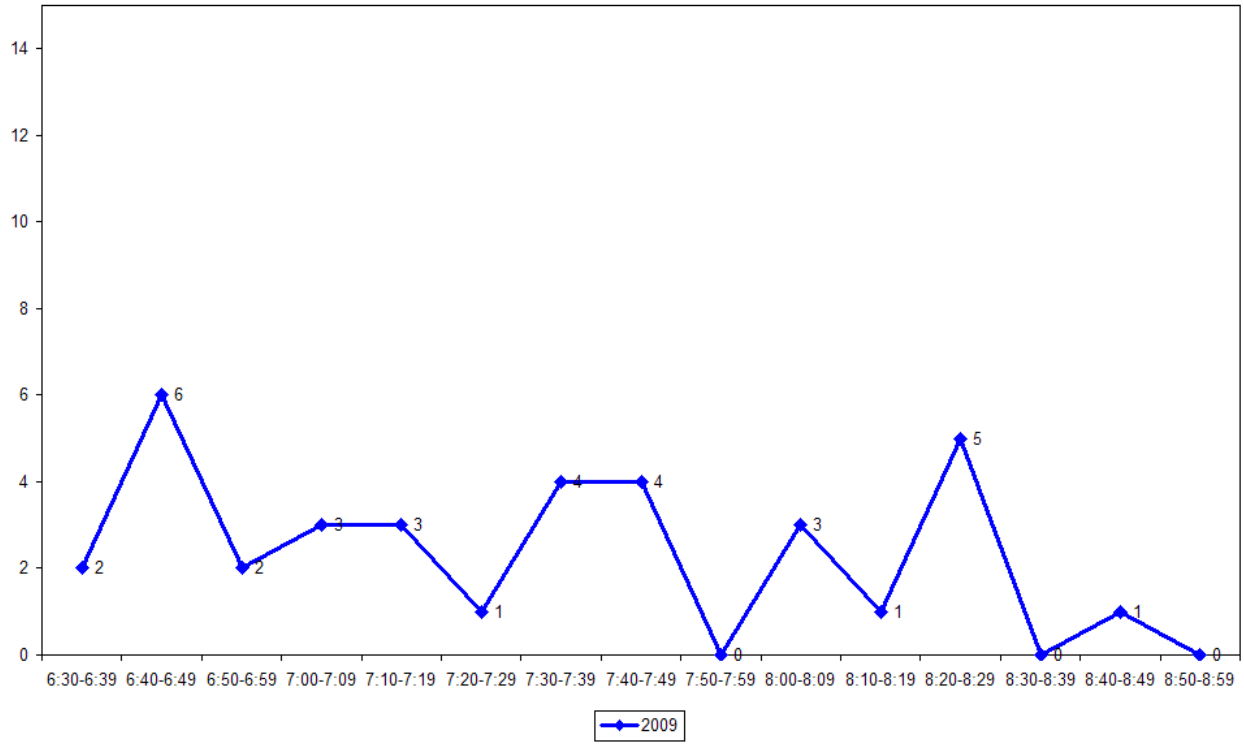
- Over the morning peak, most cyclists riding through the Harris/Smales Road intersection are adults (97 per cent).
- Most cyclists are wearing a helmet (83 per cent).
- Approximately half of cyclists are riding on the road (51 per cent) while the other half are riding on the footpath (49 per cent).

Table 13.2: Morning Cyclist Characteristics
Harris/Smales Road 2009 (%)

	2009
Cyclist Type	
Adult	97
School child	3
Helmet Wearing	
Helmet on head	83
No helmet	17
Where Riding	
Road	51
Footpath	49
Base:	***35***

- The volume of morning cycle movements slightly peaks between 6:40am and 6:49am (6 cyclists) and peaks again slightly between 8:20am and 8:29am (5 cyclists).

Figure 13.2: Harris/Smales Road Cyclist Frequency – Morning Peak



13.2 Evening Peak

Environmental Conditions

- The weather was variable at this site, with intermittent showers occurring throughout the evening shift.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Evening cyclist volumes at Harris/Smales Road intersection are moderate when compared with other Manukau city sites, with 25 movements recorded.
- The most common movement in the evening is heading south along Harris Road into Springs Road (Movement 11 = 6 cyclists).
- As this is a new site this year, no comparison with previous years can be made.

Table 13.3: Evening Cyclist Movements

Harris/Smales Road 2009 (n)

Movement	2009
1	2
2	1
3	0
4	3
5	3
6	0
7	3
8	4
9	1
10	0
11	6
12	2
Total	**25**

- Almost all evening cyclists at this site are adults (96 per cent).
- Most cyclists are wearing a helmet (84 per cent).
- Fifty-six per cent of cyclists are riding on the road.

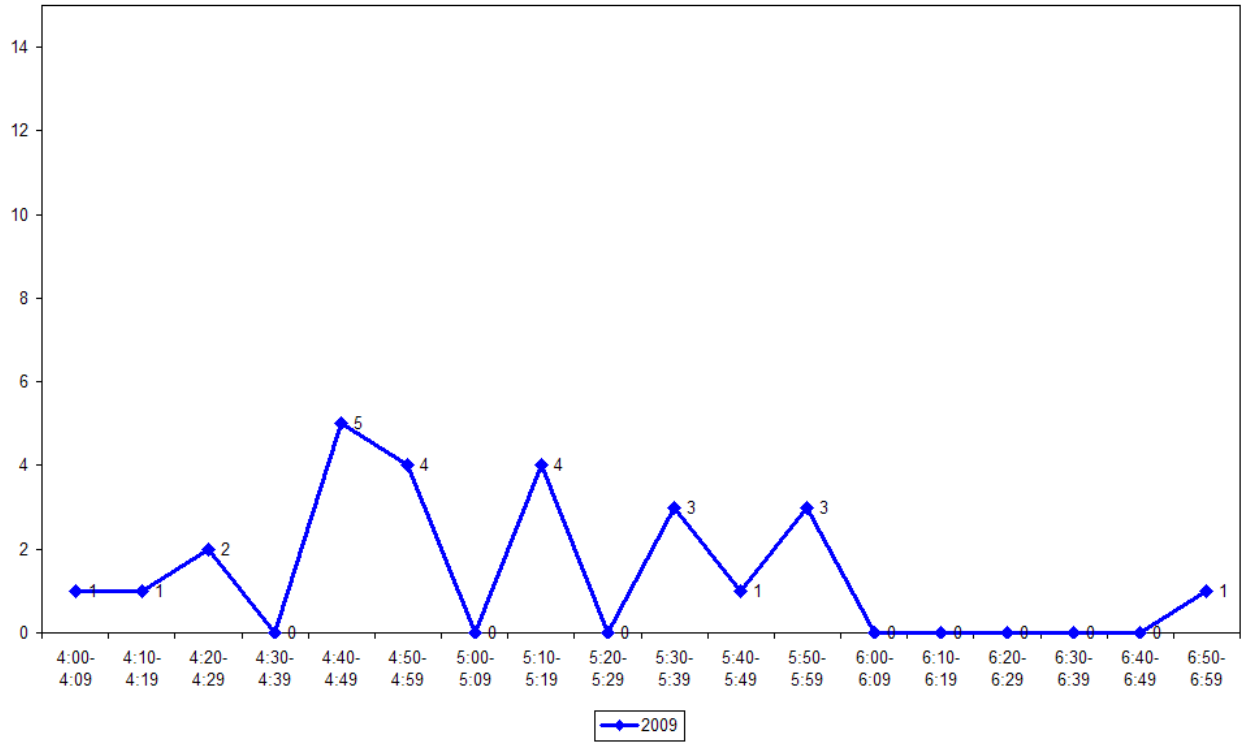
Table 13.4: Evening Cyclist Characteristics

Harris/Smales Road 2009 (%)

	2009
Cyclist Type	
Adult	96
School child	4
Helmet Wearing	
Helmet on head	84
No helmet	16
Where Riding	
Road	56
Footpath	44
Base:	***25***

- Cyclist numbers vary throughout the evening shift, with a slight peak between 4:40pm and 4:49pm (5 movements). Cyclist numbers drop at approximately 6:00pm, with no cyclists recorded until just before the end of the monitoring period (1 cyclist between 6:50pm and 6:59pm).

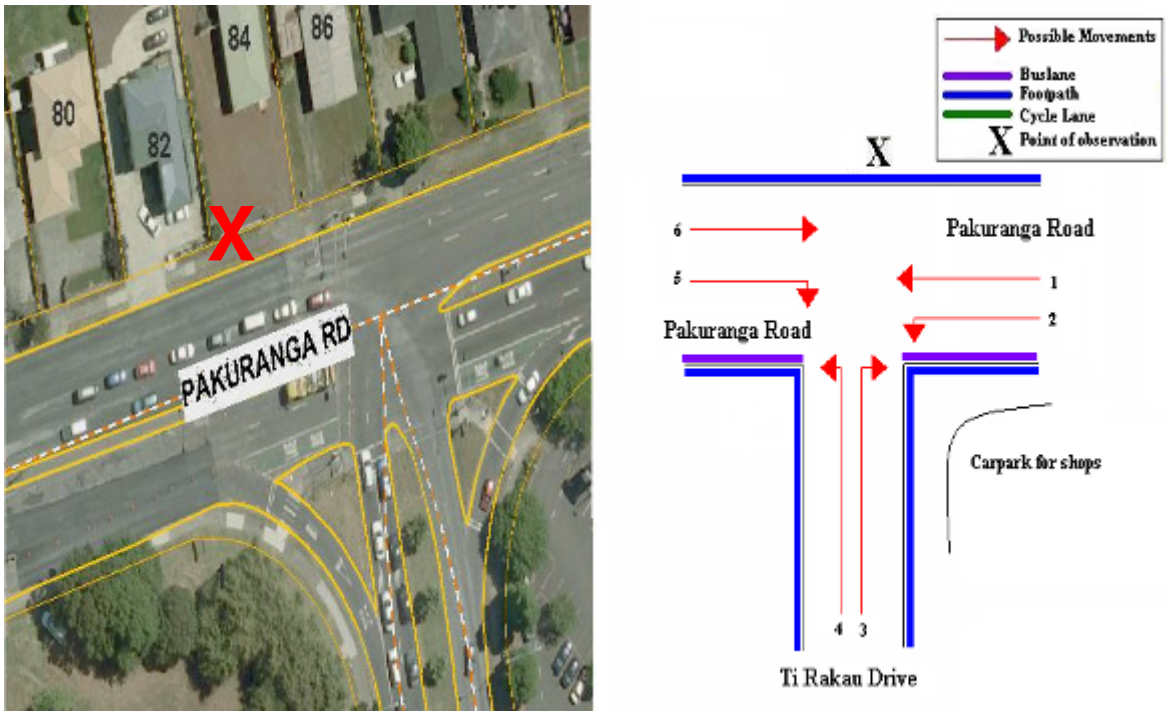
Figure 13.3: Harris/Smales Road Cyclist Frequency – Evening Peak



14. PAKURANGA ROAD/TI RAKAU DRIVE, PAKURANGA (SITE 80)

Figure 14.1 shows the possible cyclist movements at this intersection.

Figure 14.1: Cycle Movements: Pakuranga Road/Ti Rakau Drive



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

AADT Estimate

- The AADT for this site is 176 cycle movements per day.

14.1 Morning Peak

Environmental Conditions

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

Key Points

- Of the 14 Manukau city sites, the Pakuranga Road/Ti Rakau Drive intersection has the second highest volume of morning cycle movements, with 46 cyclists recorded over the monitoring period.
- The key movements in the morning are turning right from Pakuranga Road into Ti Rakau Drive (Movement 5 = 22 movements) and riding straight along Pakuranga Drive heading west (Movement 1 = 10 cyclists).
- As this is a new site in 2009, no comparisons with previous years can be made.

Table 14.1: Morning Cyclist Movements
Pakuranga Road/Ti Rakau Drive 2009 (n)

Movement	2009
1	10
2	4
3	0
4	2
5	22
6	8
7	0
8	0
9	0
10	0
11	0
12	0
Total	**46**

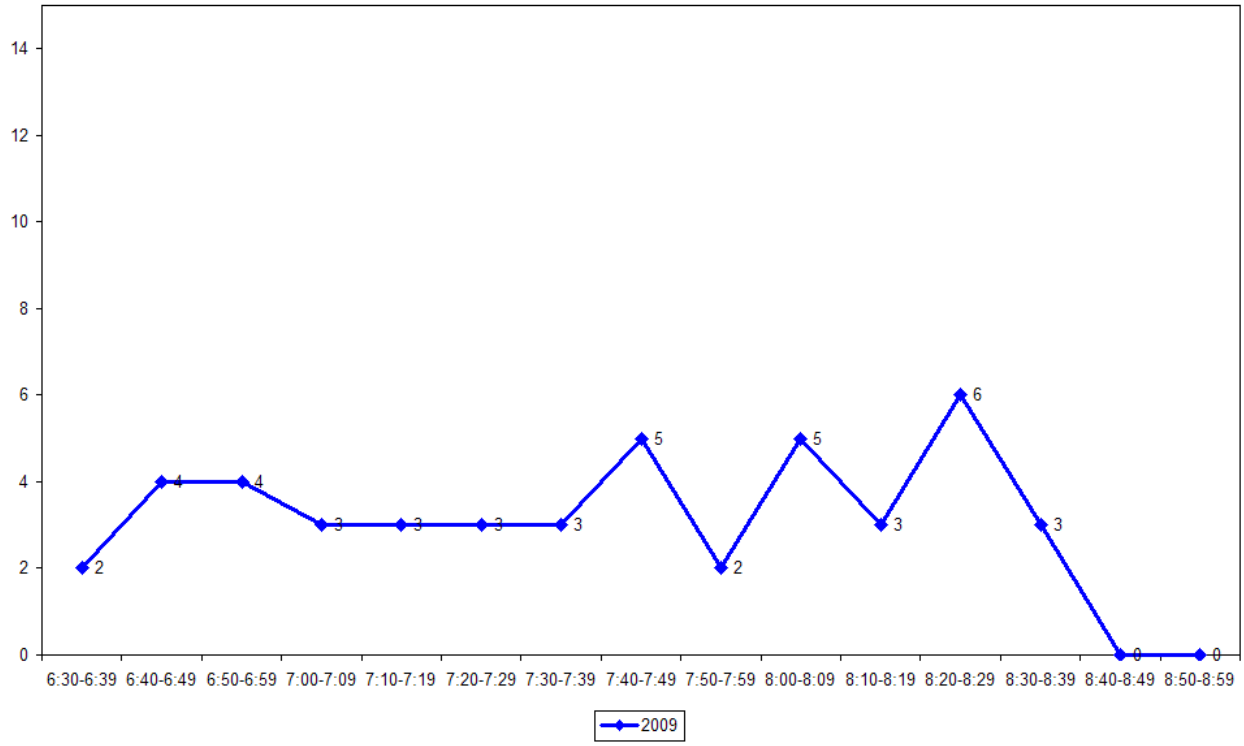
- Over the morning peak, most cyclists riding through the Pakuranga Road/Ti Rakau Drive intersection are adults (85 per cent).
- Most cyclists are wearing a helmet (96 per cent).
- The majority of cyclists are riding on the road (63 per cent).

Table 14.2: Morning Cyclist Characteristics
Pakuranga Road/Ti Rakau Drive 2009 (%)

	2009
Cyclist Type	
Adult	85
School child	15
Helmet Wearing	
Helmet on head	96
No helmet	4
Where Riding	
Road	63
Footpath	37
Base:	***46***

- The volume of morning cycle movements is mostly stable throughout the monitoring period, with between two and four cyclists recorded over most ten minute intervals. A slight peak occurs between 8:20am and 8:29am (6 movements) before cyclist volumes decline, with no cyclists passing through the intersection after 8:40am.

Figure 14.2: Pakuranga Road/Ti Rakau Drive Cyclist Frequency – Morning Peak



14.2 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with intermittent patches of heavy rain evident between 4.15pm and 4.27pm, 5.15pm and 5.20pm and 6.20pm and 6.22pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of evening cycle movements at this site is the highest of the monitored sites in Manukau city (77 cyclists).
- The most common movements in the evening are turning left from Ti Rakau Drive into Pakuranga Road (Movement 4 = 24 cyclists) and riding straight along Pakuranga Road heading east (Movement 6 = 21 cyclists).
- As this is a new site in 2009, no comparisons with previous years can be made.

Table 14.3: Evening Cyclist Movements
Pakuranga Road/Ti Rakau Drive 2009 (n)

Movement	2009
1	19
2	1
3	1
4	24
5	11
6	21
7	0
8	0
9	0
10	0
11	0
12	0
Total	**77**

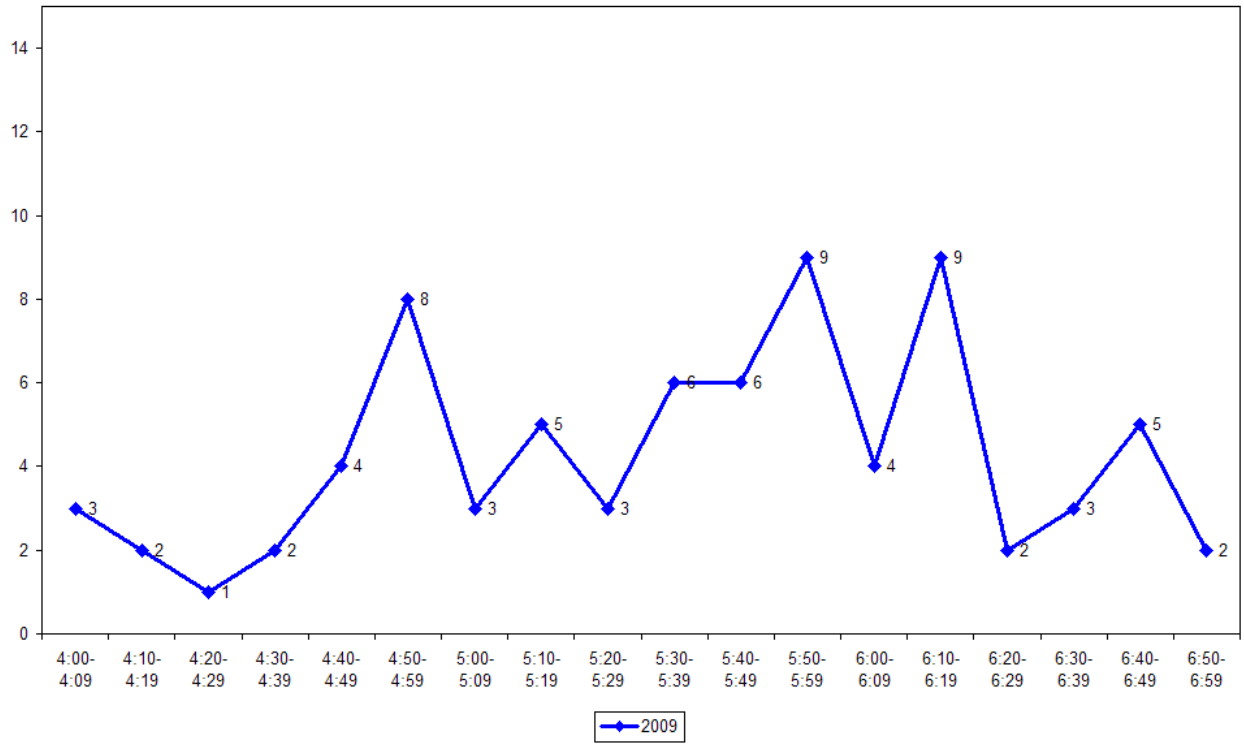
- Most evening cyclists using this intersection are adults (94 per cent).
- The majority of cyclists are wearing a helmet (87 per cent).
- Approximately two in three cyclists are riding on the road (65 per cent).

Table 14.4: Evening Cyclist Characteristics
Pakuranga Road/Ti Rakau Drive 2009 (%)

	2009
Cyclist Type	
Adult	94
School child	6
Helmet Wearing	
Helmet on head	87
No helmet	13
Where Riding	
Road	65
Footpath	35
Base:	***77***

- Cyclist numbers peak three times through the evening shift. The first peak occurs between 4:40pm and 4:49pm (8 movements), the second just over an hour later between 5:50pm and 5:59pm (9 movements. Note that this includes 7 cyclists riding together as a group) and the last peak between 6:10pm and 6:19pm (9 movements. Note that this includes 3 cyclists riding together as a group).

Figure 14.3: Pakuranga Road/Ti Rakau Drive Cyclist Frequency – Evening Peak



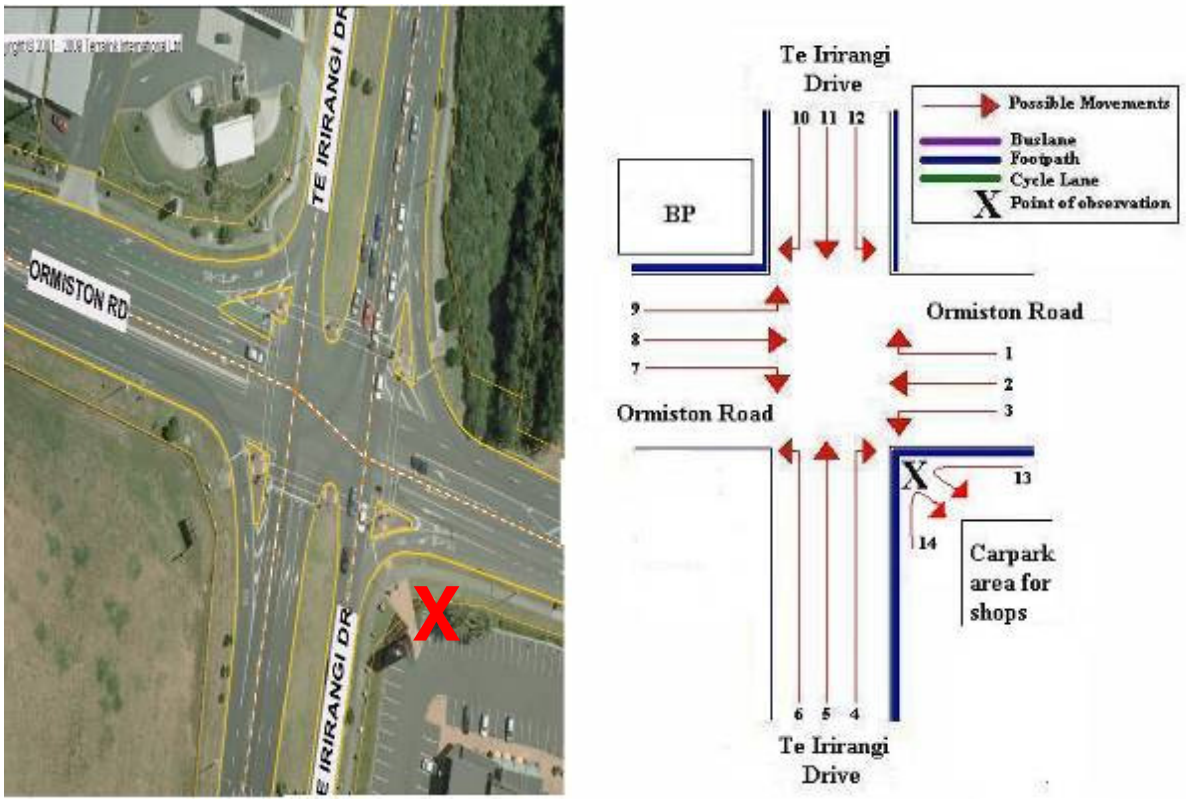
Note: Twenty-two per cent of total evening cycle movements were identified as cycling as groups. The following groups of three or more cyclists were observed riding together at this site:

- *Four cyclists at 4.55pm;*
- *Three cyclists at 5.44pm;*
- *Seven cyclists at 5.59pm; and*
- *Three cyclists at 6.14pm.*

15. TE IRIRANGI DRIVE/ORMISTON ROAD, EAST TAMAKI (SITE 81)

Figure 15.1 shows the possible cyclist movements at this intersection.

Figure 15.1: Cycle Movements: Te Irirangi Drive/Ormiston Road



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

AADT Estimate

- The AADT for this site is 47 cycle movements per day.

15.1 Morning Peak

Environmental Conditions

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

Key Points

- The intersection of Te Irirangi Drive and Ormiston Road has a relatively low level of morning cyclists' traffic, with 13 cycle movements recorded.
- The key movements in the morning are riding west along Ormiston Road and turning right into Te Irirangi Drive (Movement 1 = 4 cyclists), riding straight along Te Irirangi Drive heading north (Movement 5 = 4 cyclists) and riding straight along Te Irirangi Drive heading south (Movement 11 = 4 cyclists).
- As this is a new site for 2009, no comparisons with previous years can be made.

Table 15.1: Morning Cyclist Movements
Te Irirangi Drive/Ormiston Road 2009 (n)

Movement	2009
1	4
2	1
3	0
4	0
5	4
6	0
7	0
8	0
9	0
10	0
11	4
12	0
Total	**13**

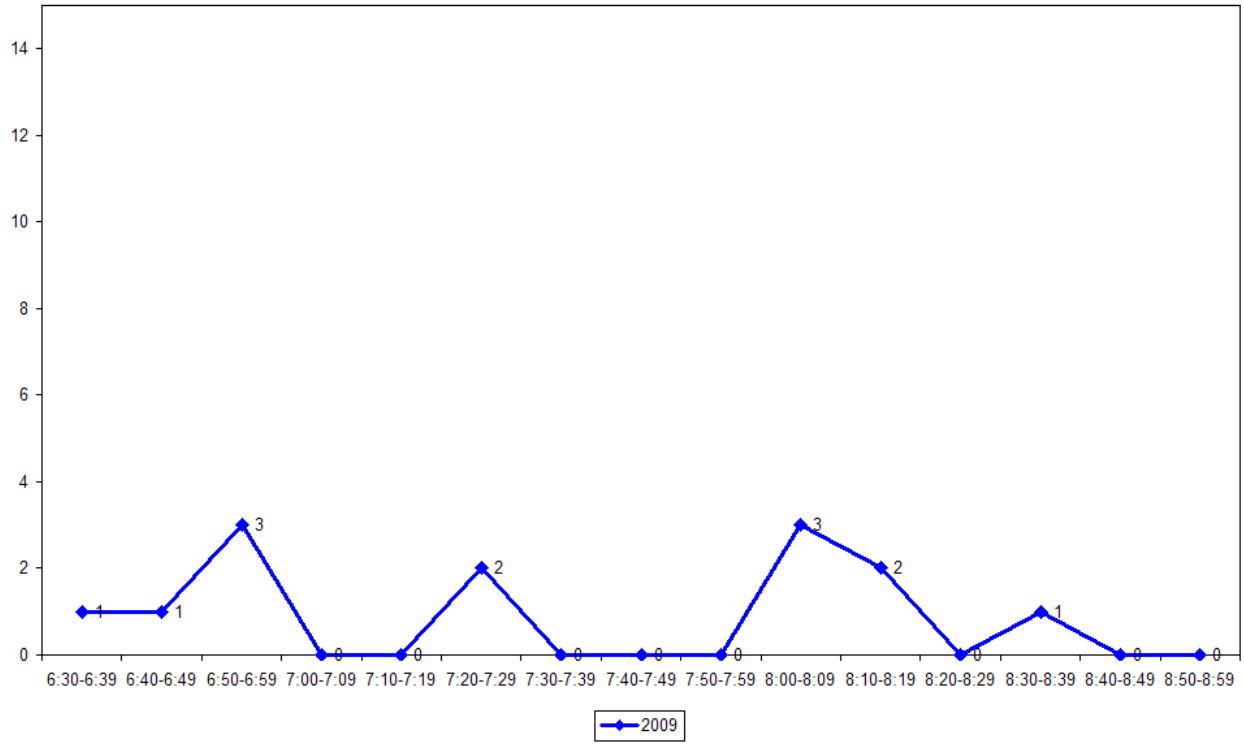
- Over the morning peak, the majority of cyclists riding through this intersection are adults (69 per cent).
- Most cyclists are wearing a helmet (85 per cent).
- The majority of cyclists are riding on the road (69 per cent).

Table 15.2: Morning Cyclist Characteristics
Te Irirangi Drive/Ormiston Road 2009 (%)

	2009
Cyclist Type	
Adult	69
School child	31
Helmet Wearing	
Helmet on head	85
No helmet	15
Where Riding	
Road	69
Footpath	31
Base:	***13***

- The volume of morning cycle movements is relatively low over the entire monitoring period, with no more than three cyclists recorded passing during any ten minute interval.

Figure 15.2: Te Irirangi Drive/Ormiston Road Cyclist Frequency – Morning Peak



15.2 Evening Peak

Environmental Conditions

- The weather was fine throughout the evening shift, apart from short periods of rain at 4:25pm and 5:10pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Evening cyclist volumes at Te Irirangi Drive/Ormiston Road intersection are relatively low, with 20 movements recorded.
- The most common movement in the evening is riding straight along Te Irirangi Drive heading south (Movement 11 = 13 cyclists. Note that this included 7 cyclists riding together as a group).
- As this is a new site for 2009, no comparisons with previous years can be made.

Table 15.3: Evening Cyclist Movements
Te Irirangi Drive/Ormiston Road 2009 (n)

Movement	2009
1	0
2	1
3	0
4	0
5	2
6	0
7	1
8	1
9	1
10	0
11	13
12	1
Total	**20**

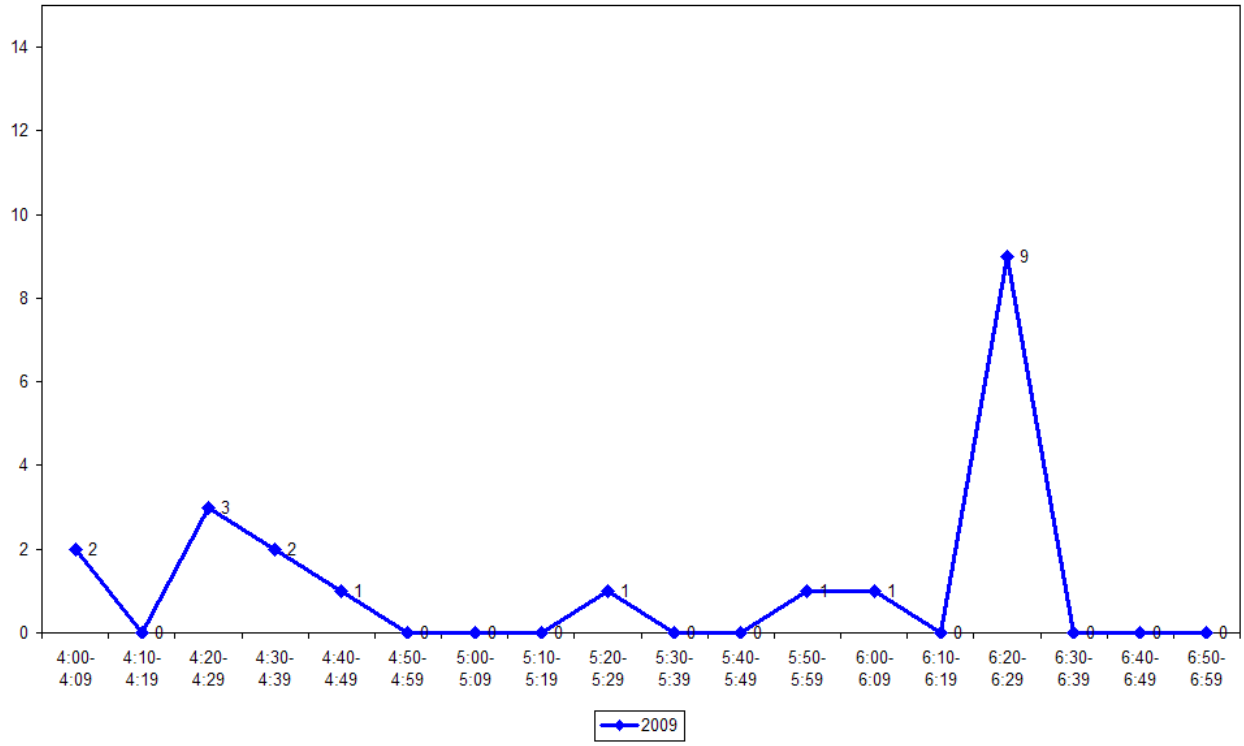
- Almost all evening cyclists using this site are adults (95 per cent).
- Almost all cyclists are wearing a helmet (95 per cent).
- The majority of cyclists are riding on the road (95 per cent).

Table 15.4: Evening Cyclist Characteristics
Te Irirangi Drive/Ormiston Road 2009 (%)

	2009
Cyclist Type	
Adult	95
School child	5
Helmet Wearing	
Helmet on head	95
No helmet	5
Where Riding	
Road	95
Footpath	5
Base:	***20***

- Cyclist numbers are very low during the entire evening shift, with no more than three cyclists passing over any ten minute interval, the exception being a sharp peak between 6:20pm and 6:29pm with 9 movements recorded. (This included seven cyclists riding together).

Figure 15.3: Te Irirangi Drive/Ormiston Road Cyclist Frequency – Evening Peak



Note: Seven cyclists were observed riding together at this site at 6.25pm. This comprises 35 per cent of the total cycle movements recorded in the evening peak.

16. HALF MOON BAY FERRY WHARF

Key Points

- In the morning, no cycles were observed at the Half Moon Bay Ferry Wharf at either 6.10am or 9.10am.
- In the afternoon, one cycle was recorded at the Half Moon Bay Ferry Wharf at both 3.30pm and 7.10pm.

17. SCHOOL BIKE SHED COUNT - MANUKAU CITY

Background Information

- A total of 41 schools were contacted in Manukau city. Of the 31 schools that responded to the survey (76 per cent), most schools surveyed have no policies that restrict students cycling to school.
- The only exceptions were
  - Tyndale Park Christian School which only allows students from Year 5 onwards cycling to school.
  - Manukau Christian School, which prefers only Year 6 to Year 8 children to cycle to school.
- No school surveyed reported events or issues that may affect the cycle counts.
- The designated count day was Tuesday 10th of March[13].

Key Points

- Among the surveyed schools, of those eligible to cycle at school, on average, one per cent of students are cycling to their schools. This compares with one per cent in 2008 and two per cent in 2007.
- Across the 31 schools that responded, 438 students were reported to cycle to school.
- This year, Farm Cove Intermediate reported the highest share of cyclists – 9 per cent of all eligible students currently cycling. This is consistent with 2008, where Farm Cove Intermediate also reported the highest share of cyclists (6 per cent).
- Of the 31 schools that responded, six (19 per cent) had no students cycling to school. This compares with 30 per cent in 2008.

[13] The following schools conducted their counts on alternative days
- De La Salle College – Thursday 5th March
- Aorere College – Wednesday 11th March
- Mangere College – Wednesday 11th March
- Bucklands beach Intermediate – Monday 23rd March
- Somerville Intermediate – Monday 23rd March

Table 17.1 shows the results of the 31 schools surveyed in Manukau city.

Table 17.1: Summary Table Of School Bike Count 2007-2009 (n)

School Name	*Year Levels*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible[14] (2009)*	*Cyclists as share of those eligible (2008)*	*Cyclists as share of those eligible (2007)*
Farm Cove Intermediate	Intermediate	613	55	9%	6%	4%
Elim Christian College	Composite	267	15	6%	5%	-
Bucklands Beach Intermediate	Intermediate	760	35	5%	4%	-
Botany Downs Secondary College	Secondary	1788	80	4%	-	-
Mission Heights Junior College	Secondary	278	9	3%	-	-
Pakuranga Intermediate	Intermediate	442	12	3%	1%	5%
Somerville Intermediate School	Intermediate	951	28	3%	4%	4%
Edgewater College	Secondary	922	14	2%	2%	-
Kedgley Intermediate	Intermediate	711	11	2%	-	-
Macleans College	Secondary	2500	40	2%	1%	-
Manukau Christian School	Composite	107	2	2%	0%	4%
Pakuranga College	Secondary	2050	32	2%	3%	-
Alfriston College	Secondary	1250	9	1%	2%	-
Howick College	Secondary	1888	13	1%	1%	1%
Howick Intermediate	Intermediate	485	4	1%	1%	1%
Mangere College	Secondary	767	4	1%	-	-
Papatoetoe High School	Secondary	1829	22	1%	1%	1%

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

School Name	*Year Levels*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible[14] (2009)*	*Cyclists as share of those eligible (2008)*	*Cyclists as share of those eligible (2007)*
Papatoetoe Intermediate	Intermediate	881	13	1%	-	-
Sancta Maria College	Intermediate/Secondary	920	11	1%	1%	2%
St Kentigern College	Intermediate/Secondary	1650	10	1%	-	-
Weymouth Intermediate	Intermediate	461	4	1%	1%	2%
Manurewa High School	Secondary	2009	5	<1%	1%	2%
James Cook High School	Secondary	1378	4	<1%	<1%	-
Aorere College	Secondary	1445	3	<1%	-	-
De La Salle College	Intermediate/Secondary	1000	3	<1%	<1%	0%
Al-Madinah School	Composite	445	0	0%	0%	-
Sir Douglas Bader Intermediate School	Intermediate	200	0	0%	<1%	0%
Sir Edmund Hillary Collegiate	Composite	1300	0	0%	-	-
The Bridge Academy	Composite	17	0	0%	-	-
TKKM o Mangere	Composite	180	0	0%	-	-
Tyndale Park Christian School	Composite	112	0	0%	0%	0%
Total		**29606**	**438**	**1%**	**1%**	**2%**

Table 17.1a: Summary Table Of Non-Participating Schools 2007-2009 (n)

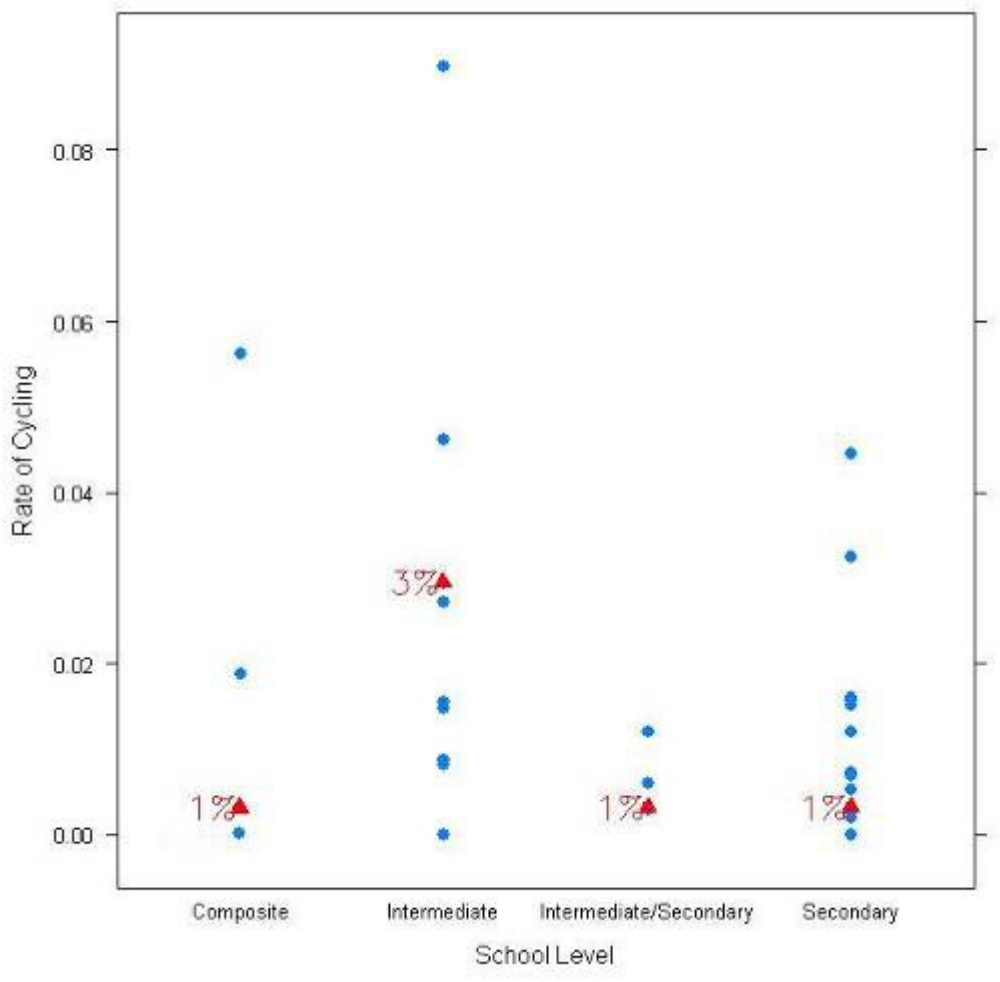
School Name	*Year Levels*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible (2009)*	*Cyclists as share of those eligible (2008)*	*Cyclists as share of those eligible (2007)*
Southern Cross Campus	Composite	1750	-	-	0%	-
Tangaroa College	Secondary	1115	-	-	0%	-
Manurewa Intermediate	Secondary	742	-	-	-	-
Ferguson Intermediate	Intermediate	498	-	-	0%	-
Greenmeadows Intermediate	Intermediate	428	-	-	5%	3%
Auckland Seventh Day Adventist High School	Secondary	284	-	-	-	-
Te Whanau o Tupuranga	Secondary	186	-	-	-	-
Clover Park Middle School	Intermediate	165	-	-	0%	-
Zayed College For Girls	Secondary	68	-	-	0%	0%
Dingwall Trust School	Composite	-	-	-	-	-

- Table 17.2 and Figure 17.1 illustrate the rates of cycling to school at different school levels. Rates of cycling to school are highest among intermediate schools (3 per cent, unchanged from last year) and lowest for composite schools (1 per cent, unchanged from 2008).

Table 17.2: Summary Table Of School Bike Count by Year Levels 2007-2009 (%)

Year Levels	*Number of Schools Responded in 2009*	*Cyclists as share of those eligible - 2007*	*Cyclists as share of those eligible - 2008*	*Cyclists as share of those eligible - 2009*	Change 08-09
Intermediate	9	3	3	**3**	0
Secondary	12	2	1	**1**	0
Intermediate/Secondary	3	1	<1	**1**	-<1
Composite	7	1	1	**1**	0
Total	**31**	**2**	**1**	**1**	**0**

Figure 17.1: Cycling Rates by School Level 2009 (%)



APPENDICES

Appendix One: Annual Average Daily Traffic (AADT) Calculation

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

Appendix Three: School Bike Shed Information Sheet And Cover Letter

APPENDIX ONE: ANNUAL AVERAGE DAILY TRAFFIC (AADT) CALCULATION

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

Purpose

The purpose of this appendix is to document the recommended procedure for estimating a cycling AADT[15] in the Auckland region from any Gravitas manual count.

Method for Estimating AADT

The methodology is based on that published in Appendix 2 of the Cycle Network and Route Planning Guide (CNRPG)[16], adjusted for Auckland conditions based on data collected during March 2007. The aim was to use the published methodology as much as possible, with any necessary departure from it documented below. The following equation yields the best estimate of a cycling AADT:

$$AADT_{Cyc} = Count \times \frac{1}{\sum H} \times \frac{1}{D} \times \frac{W}{7} \times \frac{1}{R}$$

where *Count = result of count period*
H = scale factor for time of day
D = scale factor for day of week
W = scale factor for week of year
R = scale factor for weather conditions on the count day

If more than one set of count data is available (for example, both a morning count and afternoon count), then **the calculation should be carried out for each set of data, and the estimates derived from each averaged**.

The values for the scale factors (*H, D*, *W* and *R*) have been deduced in the ViaStrada report and are included in this report in Figure 1.

[15] Annual average daily traffic

[16] LTSA, 2004

For the Gravitas counts, the following factors apply:

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

$D = 14$

$W = 0.9$

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

These can be combined as a single multiplier to convert the manual count to an AADT estimate as follows:

	Morning	**Afternoon**
Dry weather	**3.06**	**2.78**
Wet weather	**4.78**	**4.35**

Worked Example

If morning and afternoon manual traffic counts are available at a site, the AADT can be calculated using the count summaries for each period. For example, a morning survey of 102 and an afternoon survey of 130 are suggested. It is assumed for this example that the weather was fine in both surveys.

- Thus the AADT from the morning survey is estimated as 3.06 x 102 = 312.
- The AADT from the afternoon survey is estimated as 2.78 x 130 = 359.
- The average of these two estimates is 335; this is the estimate of AADT for this site, based on the two surveys.

Figure 1: Scale Factors for Auckland Region

Period Starting	Period Ending	Interval (hours)	$H_{Weekday}$ Mon to Fri	$H_{Weekend}$ Sat & Sun
0:00	6:30	6.50	5.5%	1.8%
6:30	6:45	0.25	2.3%	0.8%
6:45	7:00	0.25	2.6%	1.5%
7:00	7:15	0.25	3.2%	1.4%
7:15	7:30	0.25	3.7%	2.1%
7:30	7:45	0.25	3.8%	2.8%
7:45	8:00	0.25	4.0%	3.3%
8:00	8:15	0.25	3.9%	3.2%
8:15	8:30	0.25	3.1%	3.8%
8:30	8:45	0.25	2.3%	3.5%
8:45	9:00	0.25	1.3%	3.5%
9:00	10:00	1.00	4.2%	13.6%
10:00	11:00	1.00	3.4%	11.6%
11:00	12:00	1.00	2.6%	9.1%
12:00	13:00	1.00	2.7%	6.6%
13:00	14:00	1.00	2.7%	5.0%
14:00	14:15	0.25	0.7%	1.9%
14:15	14:30	0.25	0.7%	1.3%
14:30	14:45	0.25	0.6%	1.3%
14:45	15:00	0.25	0.6%	1.2%
15:00	15:15	0.25	0.8%	1.1%
15:15	15:30	0.25	1.0%	0.9%
15:30	15:45	0.25	1.3%	1.4%
15:45	16:00	0.25	1.2%	1.3%
16:00	16:15	0.25	2.1%	1.0%
16:15	16:30	0.25	2.3%	1.7%
16:30	16:45	0.25	2.1%	1.0%
16:45	17:00	0.25	2.5%	1.2%
17:00	17:15	0.25	3.3%	1.2%
17:15	17:30	0.25	3.7%	1.2%
17:30	17:45	0.25	4.0%	1.1%
17:45	18:00	0.25	3.2%	1.1%
18:00	18:15	0.25	3.0%	0.9%
18:15	18:30	0.25	2.7%	0.7%
18:30	18:45	0.25	2.4%	0.8%
18:45	19:00	0.25	2.1%	0.6%
19:00	20:00	1.00	5.6%	2.0%
20:00	0:00	4.00	3.0%	1.5%
		24.00	100.0%	100.0%

Day	D
Monday	14%
Tuesday	14%
Wednesday	14%
Thursday	14%
Friday	14%
Saturday	14%
Sunday	16%

Period	W
Summer holidays	1.0
Term 1	0.9
April holidays	1.0
Term 2	1.0
July holidays	1.2
Term 3	1.1
Sep/Oct holidays	1.2
Term 4	1.0

Weather	R
Fine	100%
Rain	64%

APPENDIX TWO: COMPARATIVE 2009 AADT ESTIMATES USING DRY AND WET WEATHER FACTORS

Table 1: Dry Weather Factor AADT Estimates Based on Morning and Evening Cyclist Movements 2007-2009 (n)

Site Number	***Locations***	***2007 AADT***	***2008 AADT***	***2009 AADT***	**Change 08-09**	**Change 07-09**
80	Pakuranga Road/Ti Rakau Drive	-	-	**176**	*	*
33	Bucklands Beach/Pakuranga Road	203	187	**137**	**-27%**	-33%
30	Great South/East Tamaki Road	106	74	**92**	**24%**	-13%
79	Harris/Smales Road	-	-	**88**	*	*
34	Te Irirangi Drive/Ti Rakau Drive	117	109	**86**	**-21%**	-26%
23	Great South/Bairds Road	99	81	**83**	**2%**	-16%
32	McKenzie/Coronation/Walmsley Road	101	82	**75**	**-9%**	-26%
24	Great South Road/Te Irirangi Drive/Cavendish Drive	106	74	**59**	**-20%**	-44%
26	Great South/Browns/Orams Road	86	81	**57**	**-30%**	-34%
28	Massey/Buckland Road	61	44	**57**	**30%**	-7%
71	Highbrook Drive	-	42	**55**	**31%**	*
31	Wyllie Avenue/Puhinui Road	55	47	**50**	**6%**	-9%
81	Te Irirangi Drive/Ormiston Road	-	-	**47**	*	*
25	Tom Pearce/George Bolt Memorial Drive	-	-	**38**	*	*

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

Site Number	*Locations*	*2007 AADT*	*2008 AADT*	*2009 AADT*	Change 08-09	Change 07-09
80	Pakuranga Road/Ti Rakau Drive	-	-	**276**	*	*
33	Bucklands Beach/Pakuranga Road	203	187	**214**	**14%**	5%
30	Great South/East Tamaki Road	106	74	**143**	**93%**	35%
79	Harris/Smales Road	-	-	**137**	*	*
34	Te Irirangi Drive/Ti Rakau Drive	117	109	**134**	**23%**	15%
23	Great South/Bairds Road	99	81	**130**	**60%**	31%
32	McKenzie/Coronation/Walmsley Road	101	82	**117**	**43%**	16%
24	Great South Road/Te Irirangi Drive/Cavendish Drive	106	74	**93**	**26%**	-12%
26	Great South/Browns/Orams Road	86	81	**89**	**10%**	3%
28	Massey/Buckland Road	61	44	**88**	**100%**	44%
71	Highbrook Drive	-	42	**87**	**107%**	*
31	Wyllie Avenue/Puhinui Road	55	47	**78**	**66%**	42%
81	Te Irirangi Drive/Ormiston Road	-	-	**74**	*	*
25	Tom Pearce/George Bolt Memorial Drive	-	-	**60**	*	*

APPENDIX THREE: SCHOOL BIKE SHED INFORMATION SHEET AND COVER LETTER

AUCKLAND REGIONAL CYCLE MONITOR

- 2009 SCHOOL CYCLE COUNT –

ABOUT YOUR SCHOOL (To be completed by staff member)

Name of school: _____

Physical address of school: _____

_____

This school caters for students from Year ☐ to Year ☐

Current school roll (total number of students): ☐

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

☐ No

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

_____

_____

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

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

_____

_____

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

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

AUCKLAND REGIONAL CYCLE MONITOR

- 2009 SCHOOL CYCLE COUNT –

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

Name of school: _____

Date of cycle count: _____

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

Total number of cycles counted: ☐

Name of counter: _____

Postal address: _____

_____

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

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

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

26 February 2009

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

Dear «Staff_Member»

Re: Regional Cycle Monitoring Programme – Student Cyclists

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

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

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

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

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

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

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

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

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

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

Kind regards

Tania Boyer
Project Director
Gravitas Research and Strategy Limited