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Research Report Prepared for
Auckland Transport

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2013 Auckland Region Manual Cycle Monitor

- North Shore Ward -

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1.1 Introduction

The Need For Reliable Cycle Trip Data

Monitoring cycle movements and cycle traffic is important to Auckland Transport, to identify where investment may be needed to improve infrastructure for cycling. Cycle traffic data will also help Auckland Transport prioritise future funding through the Auckland Land Transport Programme[1].

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 Auckland Transport to track progress against a quality baseline over the coming decade.

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.

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

[2] For example, Manukau and North Shore cities' monitors took place at the same morning and evening peak times, while Auckland city's differs by one hour for the evening peak, and Waitakere's differs for both peaks.

As outlined in the Regional Cycle Monitoring Plan, a consistent methodology would ensure that:

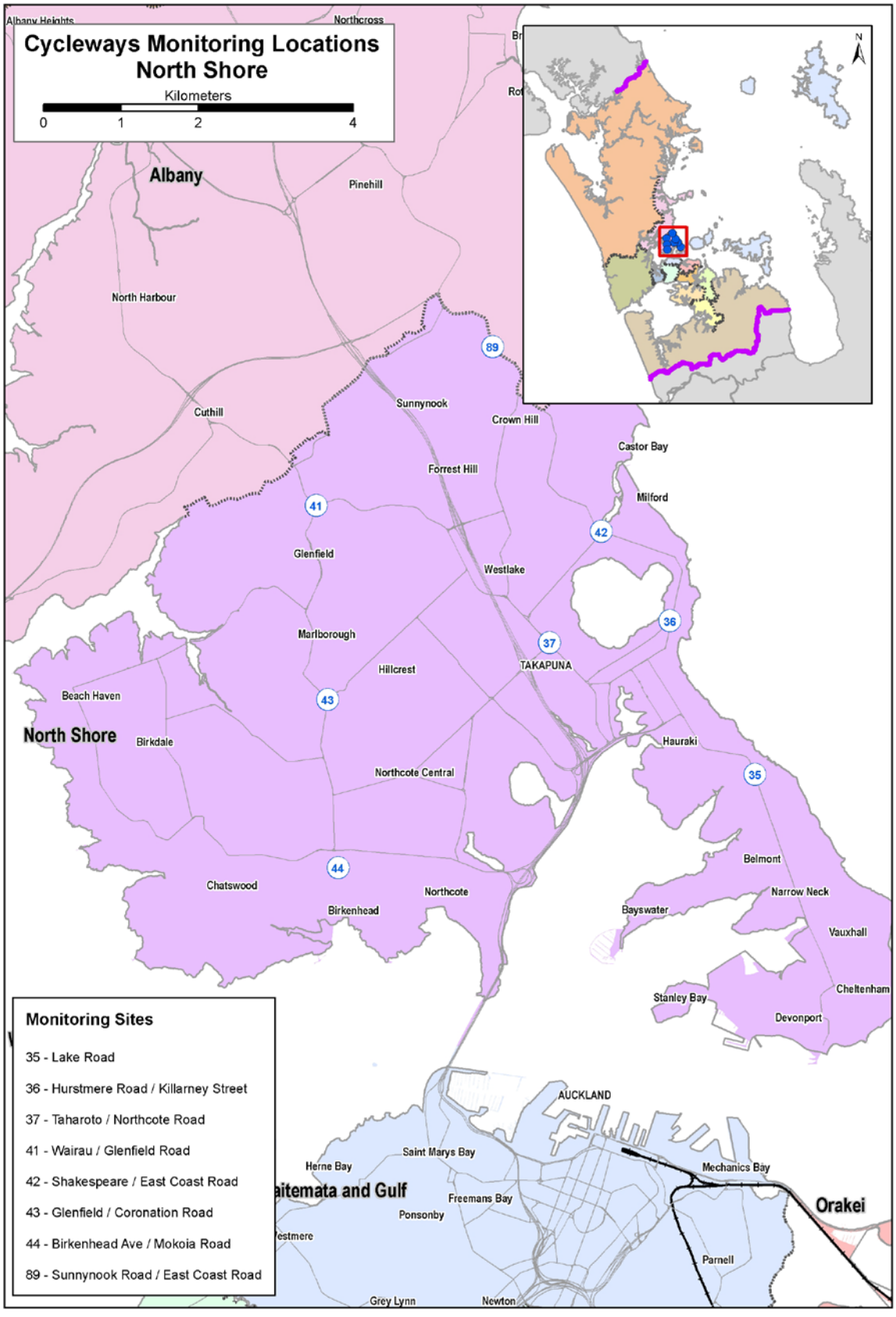
- standard monitoring days are used – that is, school and tertiary holidays, and statutory holidays are excluded and that monitoring preferably takes place at the same time each year to enable reliable year-on-year comparisons to be made. Decisions about whether cycle counts take place on weekdays and 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 8 sites in the North Shore ward following a standardised methodology. Results are presented site-by-site, as well as being aggregated to a ward and region level. For sites also monitored in previous years, comparative results are provided.

Important Note: This report provides the results of manual cycle monitoring conducted at eight pre-determined sites in the North Shore ward only. Site-by-site results and ward summaries for all other Auckland region wards 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.

Figure 1.1 shows the locations of the monitoring sites in the North Shore ward. Note that one site (Sunnynook/East Coast Road in Sunnynook – Site 89) lies on the border with the Albany ward. Consequently results for this site have been included in both ward reports.

Figure 1.1: 2013 Cycle Monitoring Locations in North Shore Ward



1.2 Methodology

Manual cycle counts have been conducted using a standardised methodology across all sites. This methodology is outlined below.

Choice of Sites

Decisions as to which sites were chosen for cycle counts were guided by the planned developments for the Regional Cycle Network.

Manual counts were undertaken at 85 different sites throughout the region. Sites were distributed by ward as follows:

- Albany 15 sites
- Albert-Eden–Roskill 11 sites
- Franklin 2 sites
- Howick 5 sites
- Manukau 10 sites
- Manurewa-Papakura 4 sites
- Maungakiekie-Tamaki 7 sites
- North Shore 8 sites
- Orakei 3 sites
- Waitakere 13 sites
- Waitemata and Gulf 10 sites
- Whau 4 sites

(Note: Seven sites lie on the border of two wards. These sites have been included in both ward reports).

Monitoring Times

Time Of Day

Manual counts in the morning peak were conducted between 6:30 and 9:00 am, with manual counts in the evening peak conducted between 4:00pm and 7:00pm.

Day Of Week

Previous experience conducting cycle and other traffic manual counts 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 Auckland Transport. 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 5th of March and be conducted on the first three fine days of the 5th, 6th, 7th, 12th, 13th, or 14th of March.

Counts were conducted on the following days:

• Tuesday 5th March	Albany, North Shore, Waitakere
• Wednesday 6th March	Howick, Franklin, Manukau, Waitemata & Gulf
• Thursday 7th March	Whau, Albert-Eden-Roskill, Orakei, Manurewa-Papakura, Maungakiekie-Tamaki

Note: Counts in the morning and evening peaks took place on the same day for each site.

Weather and Daylight Conditions

To reduce the impact of weather conditions on cycle numbers, manual counts were conducted on predominantly fine days. 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 four count days in 2013 was as follows:

Tuesday 5th March

- Sunrise: 7:10am; Sunset: 7:55pm.
- Highest temperature: 24.0 degrees Celsius.
- Mostly fine weather with some sites experiencing light drizzle in the morning and some cloud in the evening.

Wednesday 6th March

- Sunrise: 7:11am; Sunset: 7:53pm.
- Highest temperature: 24.0 degrees Celsius.
- Mostly fine weather with clear sky in the morning and evening shifts.

Thursday 7th March

- Sunrise: 7:12am; Sunset: 7:52pm.
- Highest temperature: 26.0 degrees Celsius.
- Mostly fine weather with some clouds for some sites in the morning and evening shifts.

Conducting The Manual Counts

Scoping Visit

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

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

- Great South Road/Campbell Road/Main Highway, Greenlane (Site 21; Maungakiekie-Tamaki/Albert-Eden-Roskill wards).
- Beach Road/Browns Bay Road, Mairangi Bay (Site 45; Albany ward).
- Onehunga Harbour Road (Site 17, Maungakiekie-Tamaki ward).

Three surveyors were used at the ferry terminal site (Site 22; Waitemata and Gulf ward).

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].

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;
- Gender of the cyclist *(collected for the first time in 2011)*; and
- Whether cyclists are riding on the road, footpath or designated off- road cycleway[5].

[3] This letter also contained contact details for Auckland Transport 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 one or two wheels and requiring pedalling to make it move. Note that this definition did not include scooters.

[5] Note: For the purpose of this project, an off-road cycleway is defined as designated off-road path for cycles. This includes exclusive cycle paths, separated paths (such as the footpath on Tamaki Drive) and shared-use paths (available to cyclists and pedestrians). It excludes on-road cycle lanes (that is, designated lanes marked on the road).

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

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

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.

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].

[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.

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].

School Bike Shed Counts

As stated above, manual cycle counts were undertaken during the morning (6:30am to 9:00am) and evening (4:00pm to 7:00pm) 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).

Initially 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. Note however that, to ensure all children of intermediate school age cycling to school were captured, full primary schools (those catering for Years 1 to 8) were included in the school bike shed count from 2011.

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

Methodology

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

1. Gravitas designed an information sheet that was distributed to most full primary, intermediate, secondary and composite (Years 1 to 13) schools in the Auckland region via email (note a small number of schools were omitted due to the special nature of the students e.g. boarding schools, special needs schools). This sheet was designed in consultation with Auckland Transport to ensure all necessary information was collected.

2. This email was then sent to all eligible schools in Auckland region (n=306) to notify them of the bike shed count and to let them know what they would be required to do. Included in this email was a link to an online count form.

3. To enhance the comparability of the school bike shed data with that of the regional cycle monitor, Tuesday 5th March was designated as the bike shed count day. (Most schools reported that they undertook the count on this day).

4. Once the school bike shed count had been completed, schools completed the online count form and submitted it electronically to Gravitas. Gravitas contacted all participating schools who had not returned their sheets after five working days, first by email (two rounds) and then by telephone. All count forms were checked for completeness before being data-entered into Excel. In 2013, 283 responses were received, a response rate of 92 per cent. (This compares with 74 per cent in 2012).

Reporting

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

Manual Counts - Site Level Reporting

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
  - male/female
  - 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 ward 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 ward and regional level. Raw cycle numbers and a "cyclists as a share of total school roll" figure have both been provided.

1.3 Summary of Results

This summary contains the aggregated results of the eight sites surveyed in the North Shore ward. It is split into four sections – a summary of results for the morning peak period (6:30am to 9:00am), a summary for the evening peak period (4:00pm to 7:00pm), a summary of aggregated results (morning and evening combined) and a summary of the results from the school bike shed counts.

While the summaries in this section are useful in giving an overall picture of cycling behaviour in the North Shore ward, they hide much of the specific details of cycling behaviour at individual sites. The site-specific data varies significantly from site to site, and can be found in Sections Two to Nine of this report.

Note: Surveying in the North Shore ward was undertaken on Tuesday 5th of March, 2013. Sunrise was at 7:10am and sunset was at 7:55pm. The highest temperature was 24.0 degrees Celsius.

1.4 Morning Peak

Environmental Conditions

- The weather was generally fine at the beginning of the shift, then gradually turned cloudy as the morning passed. Intermittent light showers were recorded at some sites in the second half of the shift.
- At Wairau Road/Glenfield Road (Site 41), road works were observed across the entire intersection. There were no other road works or accidents that may affect cycle counts.

Key Points

- A total of 849 cyclist movements were recorded across the eight sites in the morning peak period (between 6:30am and 9:00am) in 2013 – including 14 per cent (n=120) observed cycling in groups This compares with 10 per cent (n=82) of group cycle movements last year.
- Over the last 12 months, the number of morning cycle movements observed has increased by six per cent.
- The average volume of morning cyclists across the eight sites monitored in the North Shore ward was 106 cycle movements, up from 100 last year.
- The busiest site in the morning peak was at Hurstmere Road/Killarney Street (176 movements, up from 154 in 2012), whereas Birkenhead Avenue/Mokoia Road had the lowest level of morning cyclist traffic (29 cycle movements, up from 17 last year).
- Five of the eight sites monitored recorded increases this year compared to 2012. The most noticeable increase was at Birkenhead Avenue/Mokoia Road (up 71 per cent).
- The remaining three sites registered declines in cycle volume, with the most noticeable decrease at Wairau/Glenfield Road (down 11 per cent).

Table 1.1: Summary of Morning Cyclist Movements

2007 – 2013 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13	Change 07-13
36	Hurstmere Road/Killarney Street	76	134	186	180	191	154	**176**	**14%**	**132%**
42	Shakespeare/East Coast Road	82	127	177	146	181	145	**172**	**19%**	**110%**
35	Lake Road, by Takapuna Grammar	127	200	166	186	220	175	**159**	**-9%**	**25%**
37	Taharoto/Northcote Road	111	160	98	117	202	141	**152**	**8%**	**37%**
43	Glenfield/Coronation Road	16	36	36	37	27	35	**33**	**-6%**	**106%**
41	Wairau/Glenfield Road	34	39	42	38	41	36	**32**	**-11%**	**-6%**
44	Birkenhead Ave/Mokoia Road	20	20	27	29	22	17	**29**	**71%**	**45%**
	Average per site (7 sites since 2007)	**67**	**102**	**105**	**105**	**126**	**100**	**108**	**8%**	**61%**
	Total (7 sites since 2007)	**466**	**716**	**732**	**733**	**884**	**703**	**753**	**7%**	**62%**
89	Sunnynook Road/East Coast Road	-	-	-	-	81	95	**96**	**1%**	**-**
	Average per site (8 sites since 2011)	**-**	-	**-**	**-**	**121**	**100**	**106**	**6%**	**-**
	Total (8 sites since 2011)	**-**	**-**	**-**	**-**	**965**	**798**	**849**	**6%**	**-**

- Morning cyclist characteristics are shown in Table 1.2 below. Overall, 82 per cent of cyclists were adults, stable from 83 per cent last year.
- Almost all North Shore ward morning cyclists (98 per cent) were wearing a helmet (unchanged from last year).
- The greatest share of morning cyclists in the North Shore ward were male (81 per cent)
- Three in four cyclists were riding on the road (down slightly from 79 per cent in 2012). However, the share of cyclists riding on off-road cycleways has increased to 6 per cent.

Table 1.2: Summary of Morning Cyclist Characteristics

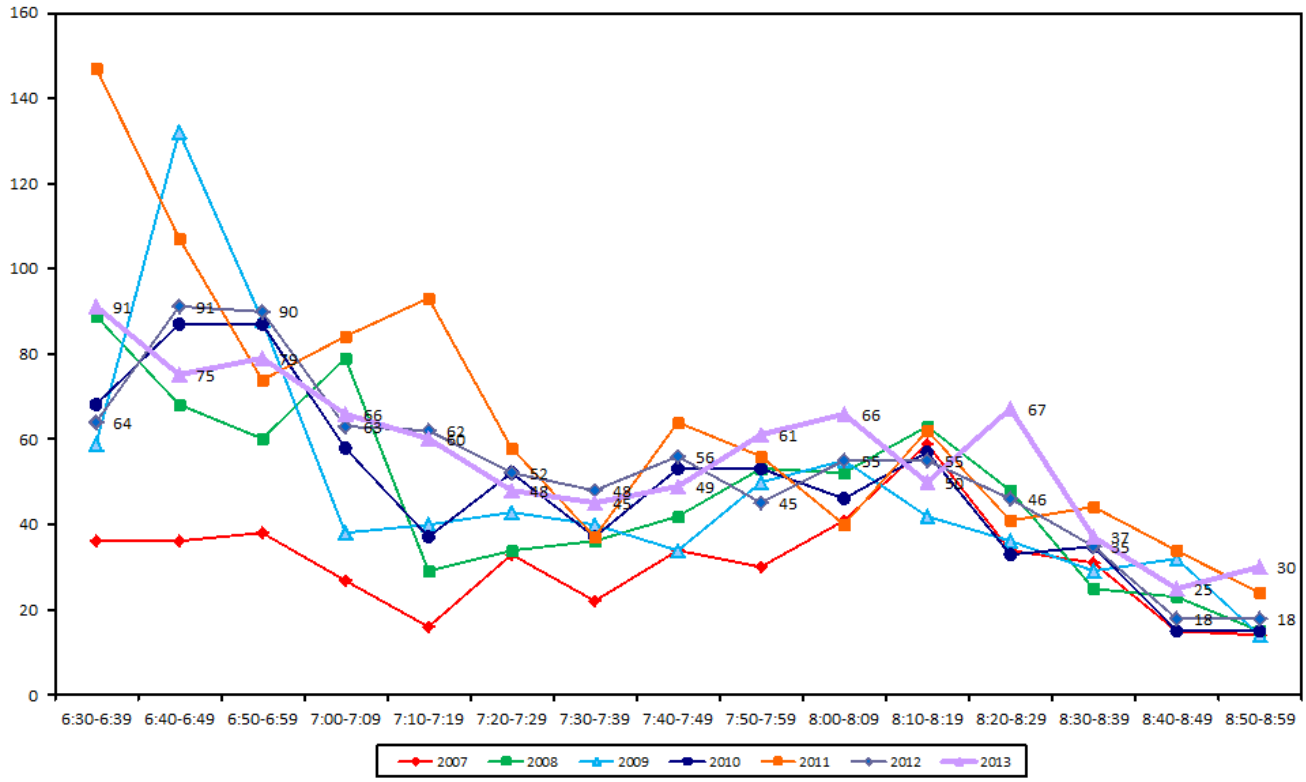
2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	73	79	85	83	85	83	**82**	**-1**
School child	27	21	15	17	15	17	**18**	**1**
Helmet Wearing								
Helmet on head	94	98	97	98	99	98	**98**	**0**
No helmet	6	2	3	2	1	2	**2**	**0**
Gender								
Male	-	-	-	-	65	78	**81**	**3**
Female	-	-	-	-	16	16	**18**	**2**
Can't tell	-	-	-	-	19	6	**1**	**-5**
Where Riding								
Road	71	80	81	81	80	79	**74**	**-5**
Footpath	29	20	19	19	17	18	**20**	**2**
Off-road cycleway	0	0	0	0	3	3	**6**	**3**
Base:	***466***	***716***	***732***	***733***	***965***	***798***	***849***	

- Figure 1.2 illustrates the total number of cyclists in the morning peak by time of movement. The volume of morning cycle movements started off high with 91 movements between 6:30am and 6:39am. Although there was a smaller peak from 8:20am to 8:29am (67 movements, ten minutes later than previous years), cycle volumes followed a generally decreasing trend throughout the shift. This pattern is consistent with previous years.

Figure 1.2: Total Cyclist Frequency – Morning Peak

2007 – 2013 (n)



1.5 Evening Peak

Environmental Conditions

- The North Shore sites had cloudy weather with intermittent light showers throughout the evening monitoring period.
- At Wairau Road/Glenfield Road (Site 41), road works were observed across the entire intersection. There were no other road works or accidents that may affect cycle counts.

Key Points

- A total of 525 cyclist movements were recorded across the eight sites in the evening peak period (between 4:00pm and 7:00pm) in 2013 – including two per cent (n=12) observed cycling as groups. This compares with four per cent (n=25) last year.
- Across the sites monitored in both 2012 and 2013, the number of cycle movements has decreased – down from 626 in 2012 to 525 this year, a 16 per cent decrease over the last 12 months.
- The average volume of evening cyclists across the eight sites monitored in the North Shore ward was 66 cycle movements, down from 78 per cent last year.
- Of the eight sites monitored in the North Shore ward, the site at Lake Road by Takapuna Grammar School was the busiest in terms of the evening cycle activities, with 107 cycle movements recorded (down from 146 movements last year).
- The lowest level of evening cyclist traffic was at Glenfield/Coronation Road (25 movements, down from 38 movements last year).
- Six of the eight sites have recorded decreases this year compared to 2012. The most noticeable increases were at:
  - Wairau/Glenfield Road – down 46 per cent
  - Glenfield/Coronation Road – down 34 per cent; and
  - Lake Road, by Takapuna Grammar – down 27 per cent.
- The two sites that recorded increases this year were Taharoto/Northcote Road (up by 6 per cent) and Shakespeare/East Coast Road (up by 1 per cent).

Table 1.3: Summary of Evening Cyclist Movements

2007 – 2013 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13	Change 07-13
35	Lake Road, by Takapuna Grammar	65	97	129	141	96	146	**107**	**-27%**	**65%**
36	Hurstmere Road/Killarney Street	45	118	132	122	113	108	**95**	**-12%**	**111%**
42	Shakespeare/East Coast Road	55	123	133	159	105	93	**94**	**1%**	**71%**
37	Taharoto/Northcote Road	51	110	104	112	105	77	**82**	**6%**	**61%**
41	Wairau/Glenfield Road	30	34	38	53	52	69	**37**	**-46%**	**23%**
44	Birkenhead Ave/Mokoia Road	20	29	30	46	23	35	**32**	**-9%**	**60%**
43	Glenfield/Coronation Road	12	39	42	56	25	38	**25**	**-34%**	**108%**
	Average per site (7 sites since 2007)	**40**	**79**	**87**	**98**	**74**	**81**	**67**	**-17%**	**68%**
	Total (7 sites since 2007)	**278**	**550**	**608**	**689**	**519**	**566**	**472**	**-17%**	**70%**
89	Sunnynook Road/East Coast Road	-	-	-	-	93	60	**53**	**-12%**	**-**
	Average per site (8 sites since 2011)	**-**	-	**-**	**-**	**77**	**78**	**66**	**-15%**	**-**
	Total (8 sites since 2011)	**-**	**-**	**-**	**-**	**612**	**626**	**525**	**-16%**	**-**

- The majority of evening cyclists were adults (90 per cent, stable from 91 per cent in 2012).
- Ninety-four per cent of evening cyclists were wearing a helmet (stable from 95 per cent last year).
- The greatest share of evening cyclists were male (85 per cent).
- Three in four cyclists were riding on the road in the evening (77 per cent, down from 82 per cent in 2012).

Table 1.4: Summary of Evening Cyclist Characteristics

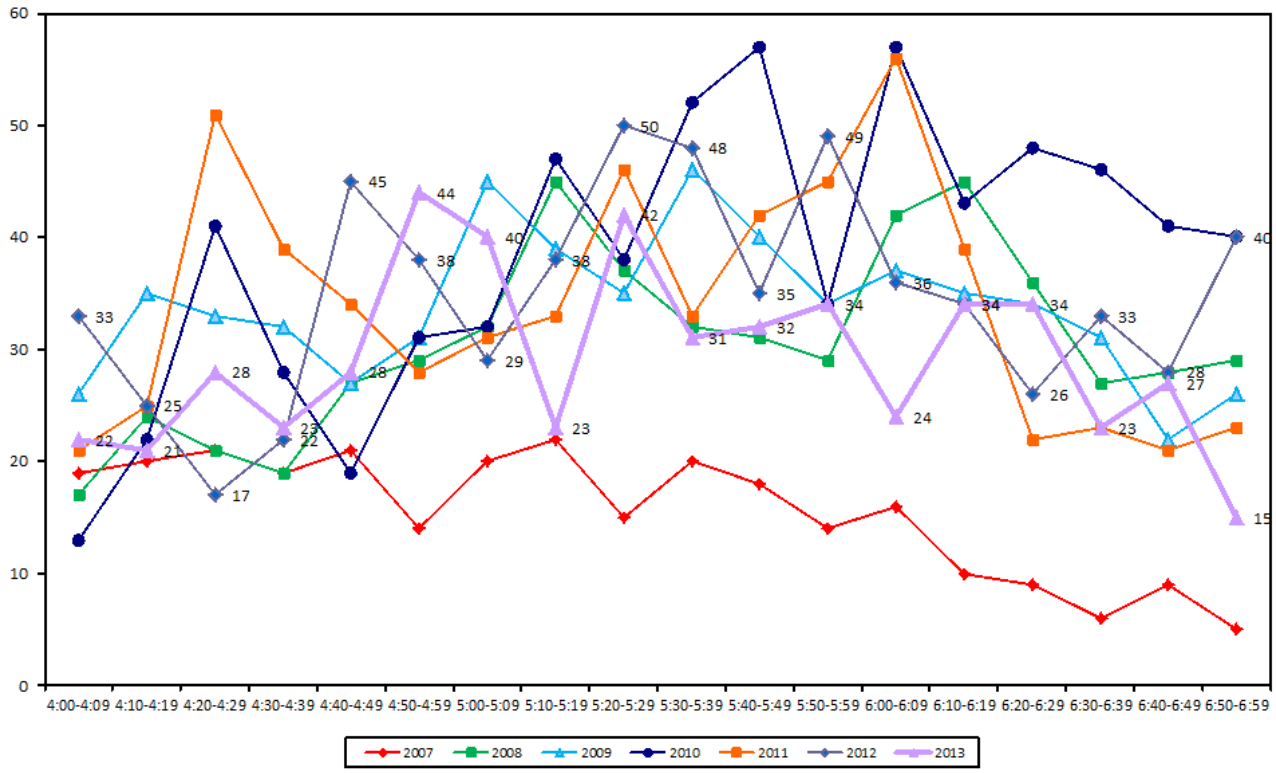
2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	90	85	87	82	85	91	**90**	**-1**
School child	10	15	13	18	15	9	**10**	**1**
Helmet Wearing								
Helmet on head	87	94	94	93	92	95	**94**	**-1**
No helmet	13	6	6	7	8	5	**6**	**1**
Gender								
Male	-	-	-	-	85	81	**85**	**4**
Female	-	-	-	-	11	17	**14**	**-3**
Can't tell	-	-	-	-	4	2	**1**	**-1**
Where Riding								
Road	81	77	78	72	76	82	**77**	**-5**
Footpath	19	23	22	28	18	15	**20**	**5**
Off-road cycleway	0	0	0	0	6	3	**3**	**0**
Base:	***278***	***550***	***608***	***689***	***612***	***626***	***525***	

- The overall pattern of cyclist volumes by time of movement in the evening is illustrated in Figure 1.3. Evening cyclist volumes increased to a peak of 44 movements between 4:50pm and 4:59pm, then followed a generally decreasing trend through to the end of the monitoring period.

Figure 1.3: Total Cyclist Frequency – Evening Peak

2007 – 2013 (n)



1.6 Aggregated Total

- A total of 1,374 cyclist movements were recorded across the eight sites in 2013. Ten per cent (n=132) of the total cycle movements were observed cycling as groups (compared with 7 per cent and n=101 in 2012).
- The total number of cycle movements has declined since last year – from 1,424 to 1,374 this year. This represents a 4 per cent decrease over the last 12 months.
- The busiest site this year was at Hurstmere Road/Killarney Street, with a total of 271 movements recorded, while the Glenfield/Coronation Road intersection continues to have the fewest cyclists (58 movements).
- Cyclist volumes have increased at four of the eight sites since last year, with the most noticeable increase at the intersection of Birkenhead Ave/Mokoia Road (up 17 per cent from 52 movements in 2012 to 61 movements this year).
- The most notable decrease was at Wairau/Glenfield Road (down from 105 in 2012 to 69 this year).

Table 1.5: Summary of Total Cyclist Movements

2007 – 2013 (n)

Site No.	*Locations*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13	Change 07-13
36	Hurstmere Road/Killarney Street	121	252	318	302	304	262	**271**	**3%**	**124%**
35	Lake Road, by Takapuna Grammar	192	297	295	327	316	321	**266**	**-17%**	**39%**
42	Shakespeare/East Coast Road	137	250	310	305	286	238	**266**	**12%**	**94%**
37	Taharoto/Northcote Road	162	270	202	229	307	218	**234**	**7%**	**44%**
41	Wairau/Glenfield Road	64	73	80	91	93	105	**69**	**-34%**	**8%**
44	Birkenhead Ave/Mokoia Road	40	49	57	75	45	52	**61**	**17%**	**53%**
43	Glenfield/Coronation Road	28	75	78	93	52	73	**58**	**-21%**	**107%**
	Average per site (7 sites since 2007)	**106**	**181**	**191**	**203**	**200**	**181**	**175**	**-3%**	**65%**
	Total (7 sites since 2007)	**744**	**1266**	**1340**	**1422**	**1403**	**1269**	**1225**	**-3%**	**65%**
89	Sunnynook Road/East Coast Road	-	-	-	-	174	155	**149**	**-4%**	**-**
	Average per site (8 sites since 2011)	**-**	-	**-**	**-**	**197**	**178**	**172**	**-3%**	**-**
	Total (8 sites since 2011)	**-**	**-**	**-**	**-**	**1577**	**1424**	**1374**	**-4%**	**-**

- Overall cyclist characteristics are illustrated in Table 1.6. In total, 85 per cent of cyclists were adults, stable from 86 per cent in 2012.
- Almost all cyclists were wearing a helmet (96 per cent, stable from last year).
- The greatest share of North Shore cyclists were male (83 per cent, up slightly from 80 per cent in 2012).
- Three in four cyclists were riding on the road (75 per cent, down slightly from 80 per cent in 2012).

Table 1.6: Summary of Total Cyclist Characteristics

2007 – 2013 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Cyclist Type								
Adult	79	82	86	82	85	86	**85**	**-1**
School child	21	18	14	18	15	14	**15**	**1**
Helmet Wearing								
Helmet on head	91	97	96	96	96	97	**96**	**-1**
No helmet	9	3	4	4	4	3	**4**	**1**
Gender								
Male	-	-	-	-	73	80	**83**	**3**
Female	-	-	-	-	14	16	**16**	**0**
Can't tell	-	-	-	-	13	4	**1**	**-3**
Where Riding								
Road	75	79	80	76	79	80	**75**	**-5**
Footpath	25	21	20	24	17	17	**20**	**3**
Off-road cycleway	0	0	0	0	4	3	**5**	**2**
Base:	***744***	***1266***	***1340***	***1422***	***1577***	***1424***	***1374***	

1.7 Average Annual Daily Traffic (AADT) Estimate

AADT Estimate

- Table 1.7 provides the comparative AADT estimates for each site, based on the average of morning and evening peak AADT calculations.
- The highest AADT is at the Hurstmere Road/Killarney Street site (400 daily movements, up by 4 per cent from last year) and the lowest is at Glenfield/Coronation Road (85 daily movements, down from 106 movements last year).
- Four of the eight sites have recorded increases in total AADT estimates this year compared with 2012, with the most notable increase at the Birkenhead Ave/Mokoia Road intersection (up 19 per cent).
- In contrast, the number of total cyclists recorded at the other four sites is lower than last year. The most noticeable decreases are at:
  - Wairau/Glenfield Road – down 33 per cent
  - Glenfield/Coronation Road – down 19 per cent; and
  - Lake Road, by Takapuna Grammar – down 17 per cent.

Table 1.7: AADT Estimates Based on Morning and Evening Cyclist Movements 2007 – 2013 (n)

Site No.	*Locations*	*2007* [9]	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13	Change 07-13
36	Hurstmere Road/Killarney Street	279	368	466	443	448	384	**400**	**4%**	**43%**
42	Shakespeare/East Coast Road	314	364	454	442	422	350	**393**	**12%**	**25%**
35	Lake Road, by Takapuna Grammar	444	440	432	479	469	469	**391**	**-17%**	**-12%**
37	Taharoto/Northcote Road	375	396	293	333	454	322	**346**	**7%**	**-8%**
89	Sunnynook Road/East Coast Road	-	-	-	-	252	228	**211**	**-7%**	**-**
41	Wairau/Glenfield Road	93	107	117	131	134	150	**100**	**-33%**	**8%**
44	Birkenhead Ave/Mokoia Road	58	71	83	108	65	74	**88**	**19%**	**52%**
43	Glenfield/Coronation Road	64	109	113	134	76	106	**85**	**-19%**	**33%**

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

1.8 North Shore Ferry Wharf Bike Count Summary

Key Points

- In the morning, four cycles were observed at the **Devonport Ferry Terminal** at 6:10am and 61 were observed at 9:10am. This suggests around 57 passengers rode to the ferry and parked their cycles in the morning peak. This is up from 40 in 2012 (although a seasonal variance may apply as 2012 counts were conducted in early June).
- In the afternoon, 57 cycles were recorded at the Devonport Ferry Terminal at 3:30pm and 12 were observed at 7:10pm. This suggests 45 ferry passengers collected their bikes after disembarking and cycled home in the evening peak. This is up from 22 last year (although again, a seasonal variance may apply due to the timing of the counts).
- In the morning, no cycles were observed at the **Beachhaven Ferry Wharf** at either 6:10 am or 9:10am.
- Two cycles were observed at the wharf at 3:30pm; both had gone by 7:10 pm.
- Twenty-two cycles were observed at the Bayswater ferry terminal after the morning peak.

1.9 School Bike Shed Count Summary

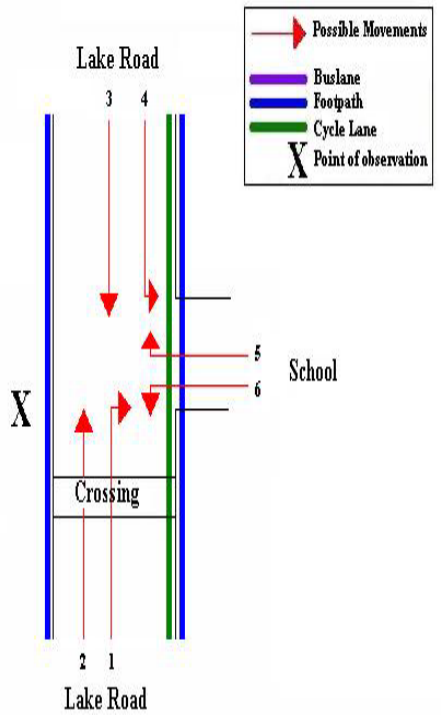
Key Points

- Among the surveyed schools, of those eligible to cycle, on average four per cent of students are cycling to their schools (unchanged from last year).
- Among the 15 participating schools, n=545 students were reported as cycling to school.
- As in previous years, Belmont Intermediate School reported the highest share of cyclists – 25 per cent of all eligible students currently cycling (down from 31 per cent last year).
- Of the 15 schools that responded, one (7 per cent) had no students cycling to school.
- Rates of cycling to school are highest among intermediate schools (11 per cent, stable from 10 per cent in 2012) and lowest for full primary schools (no cyclists).

2. LAKE ROAD, TAKAPUNA (SITE 35)

Figure 2.1 shows the possible cyclist movements at this site.

Figure 2.1: Cycle Movements: Lake Road



2.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	127	65	192	444
2008	200	97	297	440
2009	166	129	295	432
2010	186	141	327	479
2011	220	96	316	469
2012	175	146	321	469
2013	**159**	**107**	**266**	**391**

2.2 Morning Peak

Environmental Conditions

- The weather was cloudy throughout the morning shift, with a few minutes of drizzle reported.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Morning cyclist movements have decreased at the Lake Road site from 175 movements last year to 159 movements this year.
- Key morning movements were straight along Lake Road in both directions (Movement 3 = 105 movements; Movement 2 = 50 movements).
- Movement 3 (down 16 movements) saw the greatest change in cyclist movements over the last 12 months.

Table 2.1: Morning Cyclist Movements

Lake Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	1	0	3	1	2	0	**0**	**0**
2	40	68	50	51	89	51	**50**	**-1**
3	85	132	110	131	122	121	**105**	**-16**
4	1	0	3	3	6	3	**4**	**1**
5	0	0	0	0	1	0	**0**	**0**
6	0	0	0	0	0	0	**0**	**0**
Total	**127**	**200**	**166**	**186**	**220**	**175**	**159**	**-16**

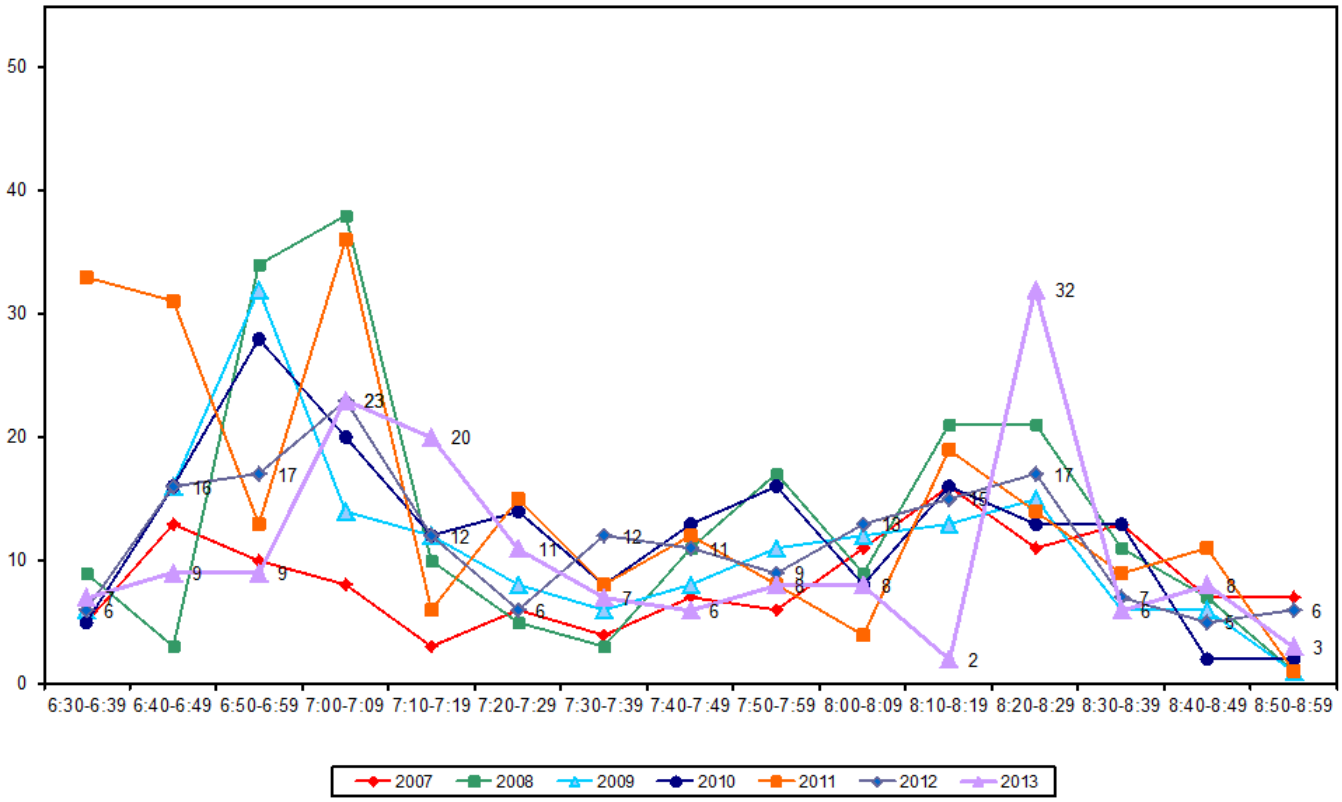
- Over the morning peak in 2013, adults comprised the greatest share of cycle movements (79 per cent, down slightly from 82 per cent in 2012).
- The majority of cyclists were wearing a helmet (98 per cent, unchanged from 2011 and 2012).
- The majority of morning cyclists continued to be male (78 per cent, down 6 percentage points from last year).
- Most cyclists were riding on the road (65 per cent, down from 82 per cent in 2012). However there has been an increase in the share using the cycleway (up from 14 per cent last year to 21 per cent).

Table 2.2: Morning Cyclist Characteristics
Lake Road 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	65	77	83	81	80	82	**79**	**-3**
School child	36	23	17	19	20	18	**21**	**3**
Helmet Wearing								
Helmet on head	98	98	98	97	98	98	**98**	**0**
No helmet	2	2	2	3	2	2	**2**	**0**
Gender								
Male	-	-	-	-	58	84	**78**	**-6**
Female	-	-	-	-	16	14	**21**	**7**
Can't tell	-	-	-	-	26	2	**1**	**-1**
Where Riding								
Road	77	78	77	84	83	82	**65**	**-17**
Footpath	23	22	23	16	17	4	**14**	**10**
Cycleway	-	-	-	-	-	14	**21**	**7**
Base:	***127***	***200***	***166***	***186***	***220***	***175***	***159***	

- The volume of morning cycle movements varied throughout the monitoring period, with two peak periods - from 7:00am to 7:19am (a total of 43 cyclists within two ten-minute intervals) and from 8:20am to 8:29am (32 movements). The overall trend was similar to previous years.

Figure 2.2: Morning Peak Cyclist Frequency
Lake Road 2007 – 2013 (n)



Note: In 2013, 26 per cent of the total cycle movements (n=41) in the morning peak were identified as pelotons. This compared with 10 per cent (n=17) last year. Three or more cyclists were observed travelling in groups at this site at the following times:

- *3 cyclists at 7:00am*
- *3 cyclists at 7:01am*
- *Another group of 3 cyclists at 7:01am*
- *3 cyclists at 7:02am*
- *3 cyclists at 7:05am*
- *7 cyclists at 7:16am*
- *3 cyclists at 7:17am*
- *3 cyclists at 7:19am*
- *7 cyclists at 7:27am*
- *3 cyclists at 8:24am*
- *3 cyclists at 8:27am.*

2.3 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift, with one brief light shower reported.
- There were no road works or accidents that may affect cycle counts.

Key Points

- In the last 12 months, the volume of evening cyclist movements has decreased from 146 movements to 107 movements.
- Consistent with last year, the most common movements in the evening were straight along Lake Road in both directions (Movement 2 = 62 cyclists; Movement 3 = 37 cyclists).
- The most noticeable differences in evening cyclist volumes between this year and last occurred at Movement 2 (down 21 movements) and Movement 3 (down 20 movements).

Table 2.3: Evening Cyclist Movements

Lake Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	0	0	2	0	0	1	**0**	**-1**
2	27	38	64	92	54	83	**62**	**-21**
3	34	56	53	44	32	57	**37**	**-20**
4	1	3	2	3	3	1	**3**	**2**
5	2	0	5	1	4	4	**3**	**-1**
6	1	0	3	1	3	0	**2**	**2**
Total	**65**	**97**	**129**	**141**	**96**	**146**	**107**	**-39**

- The majority of cyclists using this site in the evening were adults (83 per cent, down from 97 per cent in 2012).
- Almost all cyclists were wearing a helmet (97 per cent, unchanged from last year).
- The majority of cyclists continued to be male (82 per cent, stable from last year).
- Four in five cyclists (80 per cent) were riding on the road (down from 87 per cent last year). Seven per cent were recorded riding on the cycleway (stable from last year).

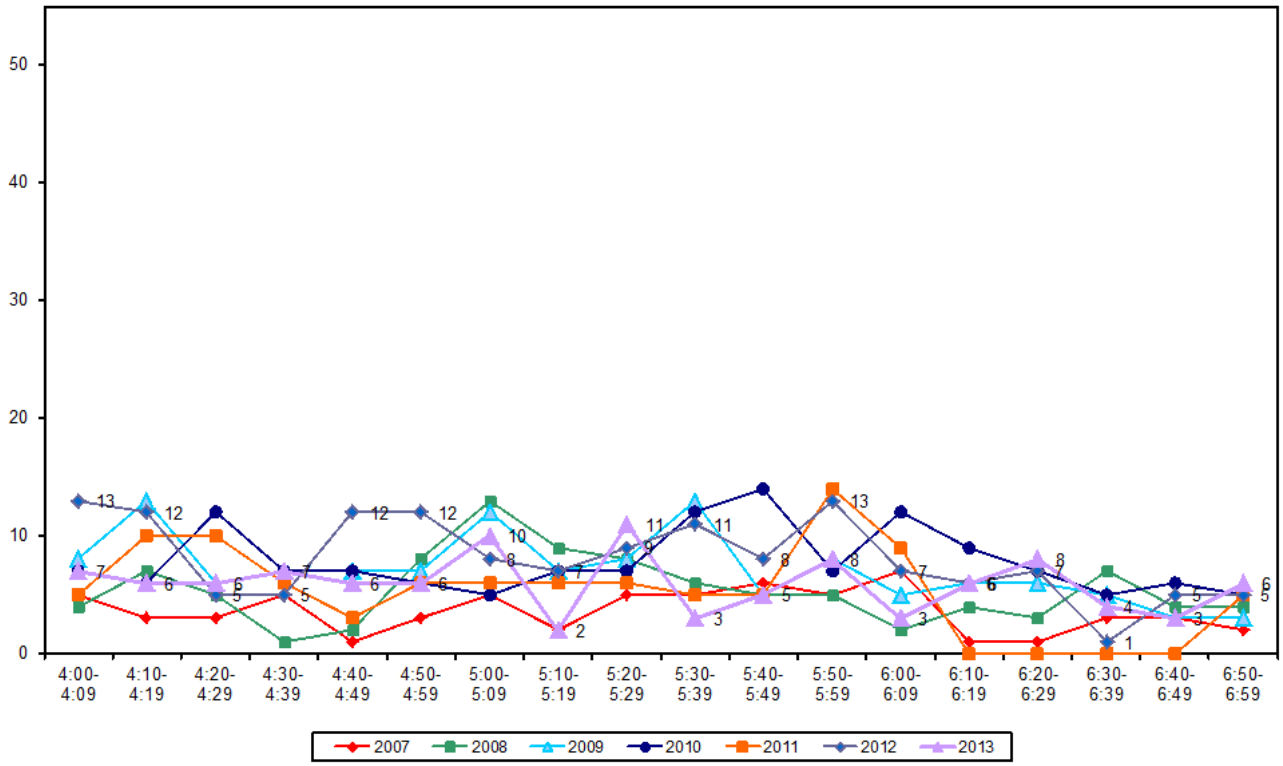
Table 2.4: Evening Cyclist Characteristics

Lake Road 2007 – 2013 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Cyclist Type								
Adult	97	85	85	85	82	97	83	**-14**
School child	3	15	15	15	18	3	17	**14**
Helmet Wearing								
Helmet on head	94	92	94	91	84	97	97	**0**
No helmet	6	8	6	9	16	3	3	**0**
Gender								
Male	-	-	-	-	90	84	82	**-2**
Female	-	-	-	-	9	16	17	**1**
Can't tell	-	-	-	-	1	0	1	**1**
Where Riding								
Road	95	76	74	76	71	87	80	**-7**
Footpath	5	24	26	24	29	5	13	**8**
Cycleway	-	-	-	-	-	8	7	**-1**
Base:	***65***	***97***	***129***	***141***	***96***	***146***	***107***	

- Cycle traffic on Lake Road varied during the evening shift, fluctuating between two and eleven cyclists each ten-minute interval with no noticeable peaks.

Figure 2.3: Evening Peak Cyclist Frequency
Lake Road 2007 – 2013 (n)



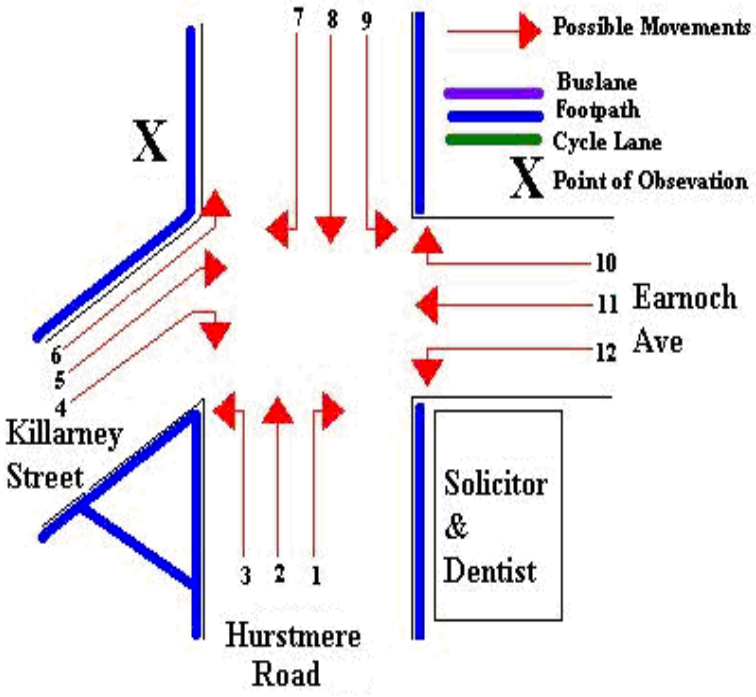
Note: In 2013, 8 per cent of the total cycle movements (n=9) in the evening peak were identified as pelotons. Three or more cyclists were observed travelling in groups at this site at the following times:

- *3 cyclists at 4:57pm*
- *3 cyclists at 5:43pm*
- *3 cyclists at 5:54pm.*

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

Figure 3.1 shows the possible cyclist movements at this intersection.

Figure 3.1: Cycle Movements: Hurstmere Road/Killarney Street



3.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	76	45	121	279
2008	134	118	252	368
2009	186	132	318	466
2010	180	122	302	443
2011	191	113	304	448
2012	154	108	262	384
2013	**176**	**95**	**271**	**400**

3.2 Morning Peak

Environmental Conditions

- The weather was fine at the start of the shift, then gradually turned cloudy. Light drizzle was reported at the end of the shift.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of morning cyclist movements at the Hurstmere Road/Killarney Street intersection was up from 154 movements in 2012 to 176 movements in 2013.
- The key movements in the morning were straight along Hurstmere Road in both directions (Movement 8 = 105 movements; Movement 2 = 23 movements) and the left turn from Killarney Street onto Hurstmere Road (Movement 6 = 33 movements).
- The most noticeable increase in cycle movements occurred at Movement 6 (up 18 movements) and Movement 8 (up 17 movements).
- The most noticeable decrease was at Movement 2 (down 14 movements).

Table 3.1: Morning Cyclist Movements

Hurstmere Road/Killarney Street 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	0	0	2	0	0	0	**0**	**0**
2	15	43	44	33	43	37	**23**	**-14**
3	0	1	1	5	1	1	**0**	**-1**
4	0	3	0	1	0	2	**2**	**0**
5	0	0	0	0	0	0	**1**	**1**
6	9	46	15	42	62	15	**33**	**18**
7	6	6	6	7	6	11	**11**	**0**
8	44	33	117	91	76	88	**105**	**17**
9	2	1	0	1	0	0	**1**	**1**
10	0	1	0	0	3	0	**0**	**0**
11	0	0	0	0	0	0	**0**	**0**
12	0	0	1	0	0	0	**0**	**0**
Total	**76**	**134**	**186**	**180**	**191**	**154**	**176**	**22**

- Over the morning peak, most cyclists using this intersection were adults (91 per cent, unchanged from last year).
- Almost all cyclists were wearing a helmet (99 per cent, stable from previous measure).
- Approximately four out of five cyclists were male (82 per cent, down slightly from 88 per cent in 2012).
- Most cyclists were riding on the road (93 per cent, up slightly from 90 per cent last year).

Table 3.2: Morning Cyclist Characteristics

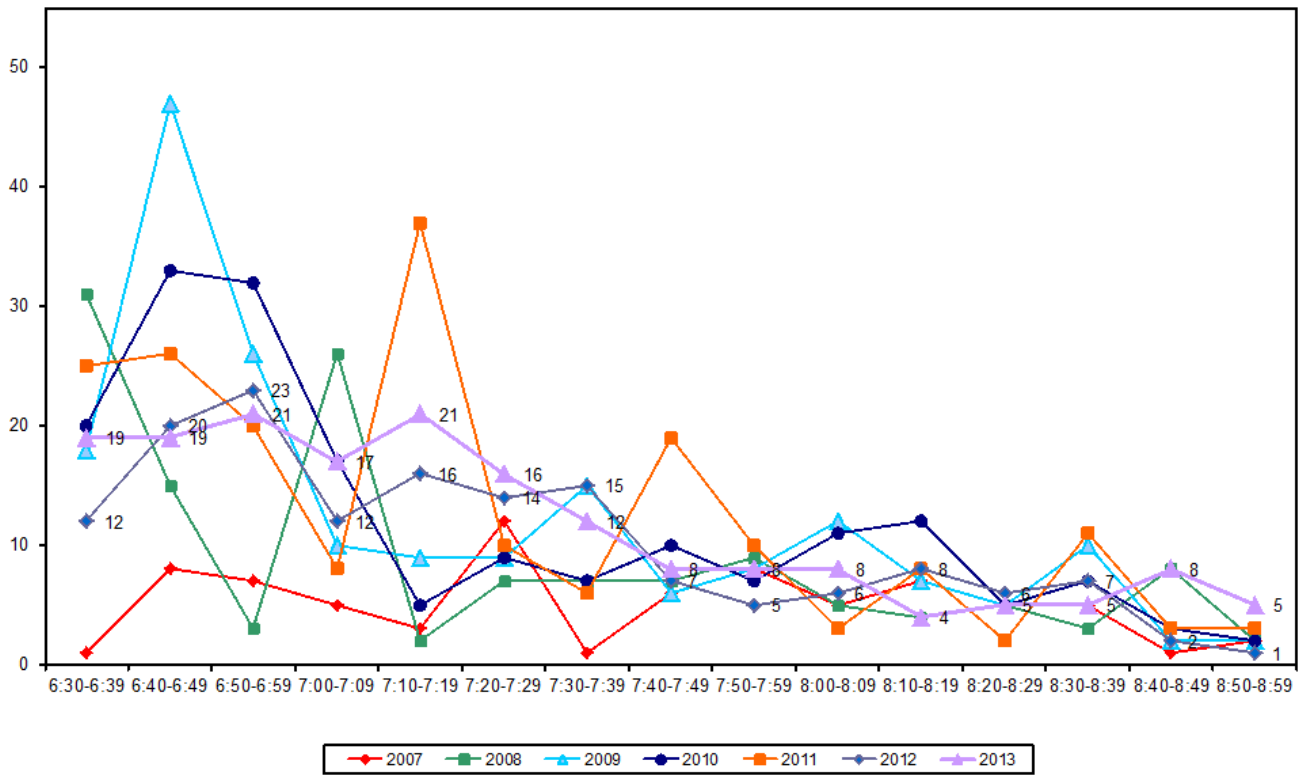
Hurstmere Road/Killarney Street 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	87	75	94	92	95	91	**91**	**0**
School child	13	25	6	8	5	9	**9**	**0**
Helmet Wearing								
Helmet on head	93	99	98	99	100	100	**99**	**-1**
No helmet	7	1	2	1	0	0	**1**	**1**
Gender								
Male	-	-	-	-	80	88	**82**	**-6**
Female	-	-	-	-	20	10	**17**	**7**
Can't tell	-	-	-	-	0	2	**1**	**-1**
Where Riding								
Road	83	93	90	90	94	90	**93**	**3**
Footpath	17	7	10	10	6	10	**7**	**-3**
Base:	***76***	***134***	***186***	***180***	***191***	***154***	***176***	

- The volume of morning cycle movements started off high early in the shift (an average of 19 cyclists per ten-minute interval). Volumes then steadily declined for the remainder of the monitoring period. The trend was similar to last year.

Figure 3.2: Morning Peak Cyclist Frequency

Hurstmere Road/Killarney Street 2007 – 2013 (n)



Note: Peloton movements (n=47) comprised 27 per cent of the morning cycle movements at this site (compared with 14 per cent and n=22 last year). Three or more cyclists were observed riding past at:

- *5 cyclists at 6:31am*
- *4 cyclists at 6:53am*
- *Another group of 4 cyclists at 6:53am*
- *3 cyclists at 6:58am*
- *5 cyclists at 7:09am*
- *6 cyclists at 7:19am*
- *Another group of 3 cyclists at 7:19am*
- *9 cyclists at 7:24am*
- *4 cyclists at 7:25am*
- *4 cyclists at 7:34am.*

3.3 Evening Peak

Environmental Conditions

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

Key Points

- The volume of evening cyclist movements at the Hurstmere Road/Killarney Street intersection was down, from 108 movements in 2012 to 95 this year.
- The key movements in the morning were straight along Hurstmere Road heading in either direction (Movement 2 = 62 movements and Movement 8 = 14 movements) and turning left from Killarney Street onto Hurstmere Road heading north (Movement 6 = 14 movements).
- Movement 2 saw the greatest increase in volume from 2012 (up 6 movements), while Movement 6 and Movement 8 had the greatest decrease (down 9 and 8 movements, respectively).

Table 3.3: Evening Cyclist Movements

Hurstmere Road/Killarney Street 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	0	0	0	0	0	0	**0**	**0**
2	24	42	81	53	62	56	**62**	**6**
3	0	0	2	1	0	0	**0**	**0**
4	0	0	0	1	3	1	**0**	**-1**
5	0	1	0	0	0	0	**0**	**0**
6	7	48	27	31	24	23	**14**	**-9**
7	2	5	3	6	6	4	**2**	**-2**
8	10	20	19	25	18	22	**14**	**-8**
9	2	0	0	0	0	0	**2**	**2**
10	0	2	0	5	0	1	**1**	**0**
11	0	0	0	0	0	0	**0**	**0**
12	0	0	0	0	0	1	**0**	**-1**
Total	**45**	**118**	**132**	**122**	**113**	**108**	**95**	**-13**

- Over the evening peak, the greatest share of cyclists using the Hurstmere Road/Killarney Street intersection were adults (97 per cent, up from 89 per cent in 2012).
- Most cyclists were wearing a helmet (96 per cent, consistent with 95 per cent last year).
- Although the majority of the cyclists were male (84 per cent), the share of female cyclists has been increasing since 2011.
- Nine out of ten cyclists were riding on the road (88 per cent), stable from 90 per cent in 2012.

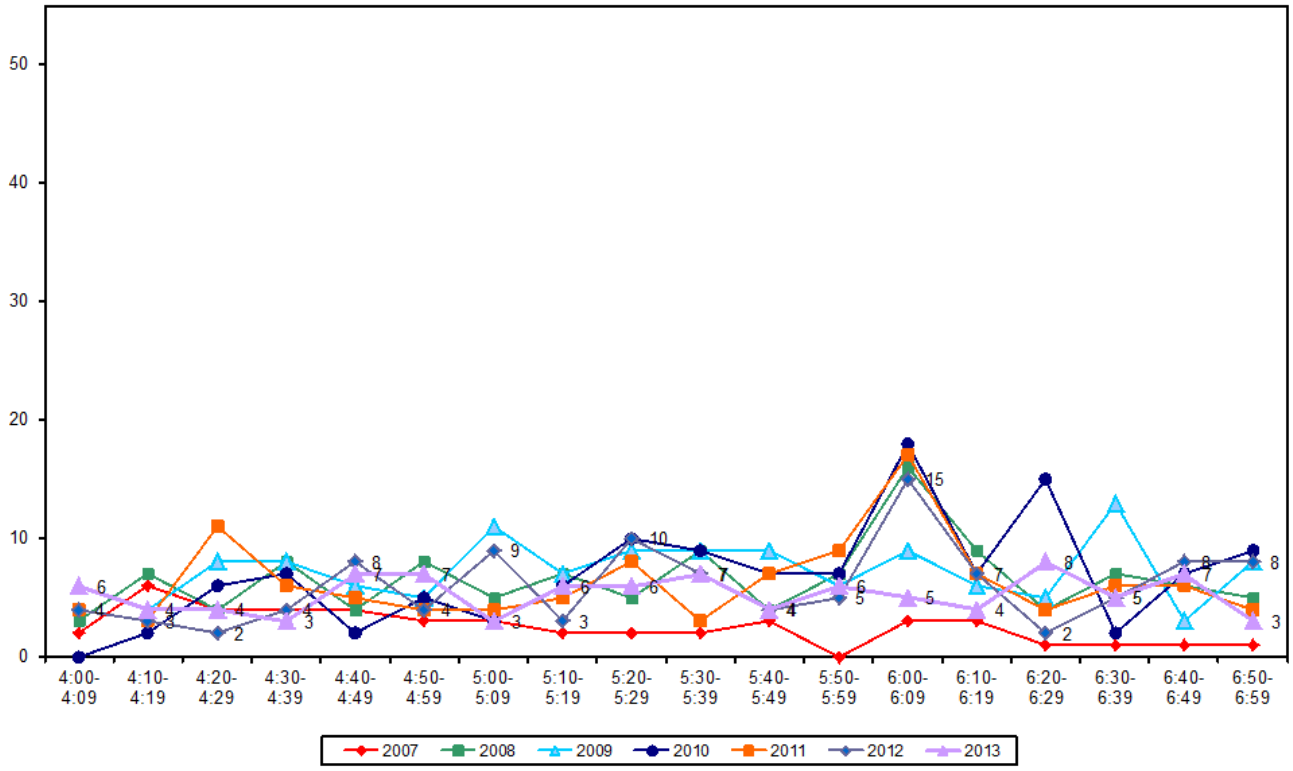
Table 3.4: Evening Cyclist Characteristics

Hurstmere Road/Killarney Street 2007 – 2013 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Cyclist Type								
Adult	89	81	92	78	88	89	**97**	**8**
School child	11	19	8	22	12	11	**3**	**-8**
Helmet Wearing								
Helmet on head	89	92	96	93	93	95	**96**	**1**
No helmet	11	8	4	7	7	5	**4**	**-1**
Gender								
Male	-	-	-	-	92	89	**84**	**-5**
Female	-	-	-	-	8	11	**15**	**4**
Can't tell	-	-	-	-	0	0	**1**	**1**
Where Riding								
Road	82	79	89	72	88	90	**88**	**-2**
Footpath	18	21	11	28	12	10	**12**	**2**
Base:	***45***	***118***	***132***	***122***	***113***	***108***	***95***	

- This year, the volume of evening cyclist movements stayed relatively stable throughout the evening peak period, with no noticeable peaks observed. The overall trend is consistent with previous years, however the peak previously observed between 6:00pm and 6:09pm was not evident this year.

Figure 3.3: Evening Peak Cyclist Frequency
Hurstmere Road/Killarney Street 2007 – 2013 (n)

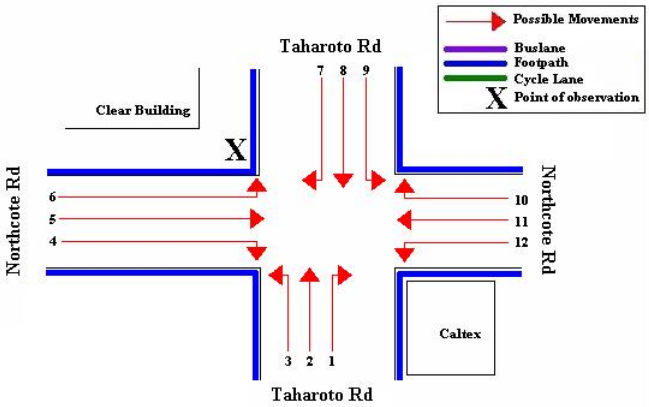


Note: A group of three cyclists rode past at 5:57pm, accounting for three per cent of the evening cycle volume at this site.

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

Figure 4.1 shows the possible cyclist movements at this intersection.

Figure 4.1: Cycle Movements: Taharoto/Northcote Road



4.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	109	50	159	375
2008	160	110	270	396
2009	98	104	202	293
2010	117	112	229	333
2011	202	105	307	454
2012	141	77	218	322
2013	**152**	**82**	**234**	**346**

4.2 Morning Peak

Environmental Conditions

- The weather was overcast throughout the morning shift, with light drizzle recorded at the end of the shift.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Cyclist volumes have increased this year, from 141 movements in 2012 to 152 this year.
- The key morning movement was straight along Taharoto Road heading southeast (Movement 8 = 84 cyclists).
- Movement 4 saw the greatest change in morning cycle activities – up 10 movements from last year.

Table 4.1: Morning Cyclist Movements

Taharoto/Northcote Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	1	4	4	4	5	3	**6**	**3**
2	9	21	21	17	28	31	**26**	**-5**
3	12	3	2	1	5	5	**5**	**0**
4	19	14	14	12	8	4	**14**	**10**
5	3	2	2	5	1	3	**4**	**1**
6	3	7	2	0	6	2	**3**	**1**
7	1	3	4	2	5	3	**7**	**4**
8	42	78	44	69	122	85	**84**	**-1**
9	0	0	1	0	7	0	**1**	**1**
10	0	0	0	0	1	0	**0**	**0**
11	2	1	1	3	1	2	**0**	**-2**
12	16	27	3	4	13	3	**2**	**-1**
Total	**109**	**160**	**98**	**117**	**202**	**141**	**152**	**11**

- Over the morning peak, adults comprise 71 per cent of the cyclist movements (up slightly from 66 per cent last year).
- Helmet wearing continued to be widespread at this site in the morning (96 per cent, stable from 95 per cent in 2012).
- Approximately four in five cyclists were identified as male (82 per cent, up from 74 per cent last year).
- Fifty-seven per cent of cyclists were riding on the road (stable from last year).

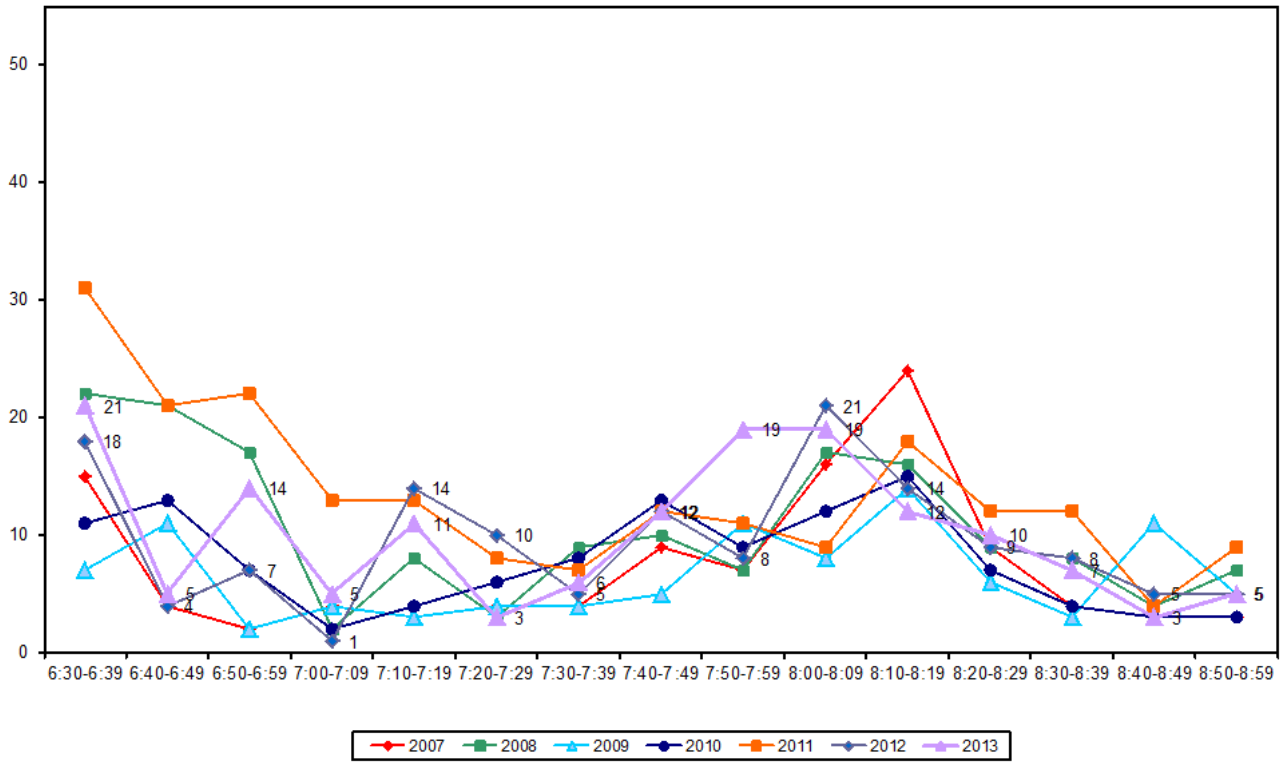
Table 4.2: Morning Cyclist Characteristics
Taharoto/Northcote Road 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	54	78	72	72	77	66	**71**	**5**
School child	46	22	28	28	23	34	**29**	**-5**
Helmet Wearing								
Helmet on head	94	99	93	98	98	95	**96**	**1**
No helmet	6	1	7	2	2	5	**4**	**-1**
Gender								
Male	-	-	-	-	39	74	**82**	**8**
Female	-	-	-	-	7	24	**18**	**-6**
Can't tell	-	-	-	-	54	2	**0**	**-2**
Where Riding								
Road	47	70	68	65	67	56	**57**	**1**
Footpath	53	30	32	35	33	44	**43**	**-1**
Base:	***109***	***160***	***98***	***117***	***202***	***140***	***152***	

- Morning cyclist numbers varied throughout the monitoring period, peaking at the beginning of the shift between 6:30am and 6:39am (21 movements), and again between 7:50am and 8:09am (a total of 38 movements within two ten-minute intervals). The trend was consistent with last year.

Figure 4.2: Morning Peak Cyclist Frequency

Taharoto /Northcote Road 2007 – 2013 (n)



Note: A group of six cyclists (4 per cent of the morning cycle volume at this site) rode past at 6:39am.

4.3 Evening Peak

Environmental Conditions

- The weather was overcast with light rain at the start of the evening shift, then gradually cleared away.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cyclist movements observed at the Taharoto/Northcote Road intersection has increased, from 77 movements last year to 82 this year.
- The key evening movements at this site were straight along Taharoto Road in a south-easterly direction (Movement 8 = 28 cyclists) and straight along Taharoto Road in a north-westerly direction (Movement 2 = 21).
- Movements 3 experienced the largest increase in cycle volume (up 7 movements), while Movement 8 saw the greatest decrease, down by 7 movements.

Table 4.3: Evening Cyclist Movements

Taharoto/Northcote Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	1	4	2	1	1	0	**2**	**2**
2	8	23	20	28	21	20	**21**	**1**
3	12	13	11	7	11	4	**11**	**7**
4	10	3	6	8	7	2	**6**	**4**
5	0	2	1	1	0	1	**0**	**-1**
6	0	3	6	6	7	5	**5**	**0**
7	3	3	2	2	0	2	**1**	**-1**
8	11	52	45	53	45	35	**28**	**-7**
9	0	0	0	0	3	2	**0**	**-2**
10	0	0	0	1	0	0	**0**	**0**
11	3	2	5	2	0	3	**1**	**-2**
12	2	5	6	3	10	3	**7**	**4**
Total	**50**	**110**	**104**	**112**	**105**	**77**	**82**	**5**

- Over the evening peak, the greatest share of cyclists using this intersection were adults (91 per cent, down slightly from 94 per cent in 2012).
- Almost all cyclists at this site were wearing a helmet (91 per cent, down slightly from 95 per cent in 2012).
- The majority of cyclists continued to be male (82 per cent).
- Seventy-two per cent of the cyclists were riding on the road (down from 83 per cent in 2012), while the remaining 28 per cent were riding on the footpath (up from 17 per cent last year).

Table 4.4: Evening Cyclist Characteristics

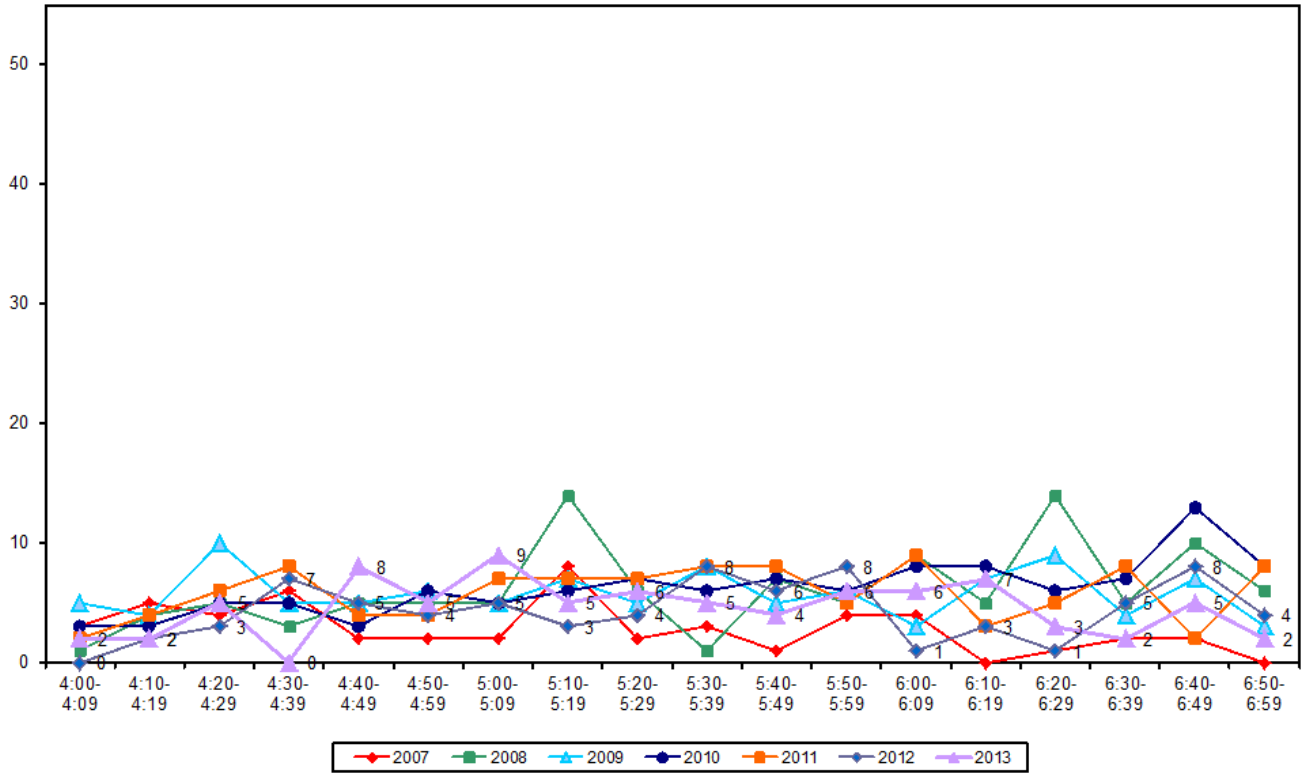
Taharoto/Northcote Road 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	84	90	92	81	84	94	**91**	**-3**
School child	16	10	8	19	16	6	**9**	**3**
Helmet Wearing								
Helmet on head	82	97	94	96	92	95	**91**	**-4**
No helmet	18	3	6	4	8	5	**9**	**4**
Gender								
Male	-	-	-	-	67	79	**82**	**3**
Female	-	-	-	-	10	21	**18**	**-3**
Can't tell	-	-	-	-	23	0	**0**	**0**
Where Riding								
Road	69	75	81	70	73	83	**72**	**-11**
Footpath	31	25	19	30	27	17	**28**	**11**
Base:	***50***	***110***	***104***	***112***	***105***	***77***	***82***	

- Cyclist movement volumes during the evening remained relatively steady, with no evident peak observed. The highest count of cyclists per ten-minute interval was nine, which occurred between 5:00pm and 5:09pm. The overall pattern was consistent with previous years.

Figure 4.3: Evening Peak Cyclist Frequency

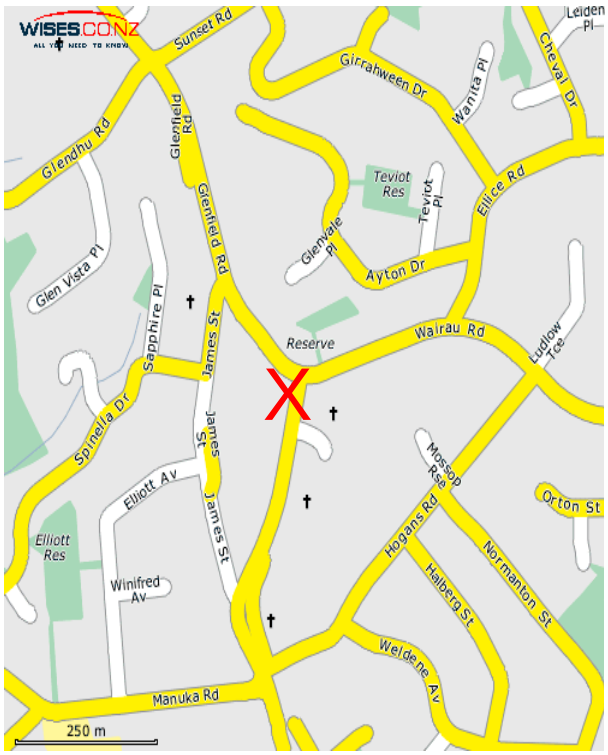
Taharoto/Northcote Road 2007 – 2013 (n)

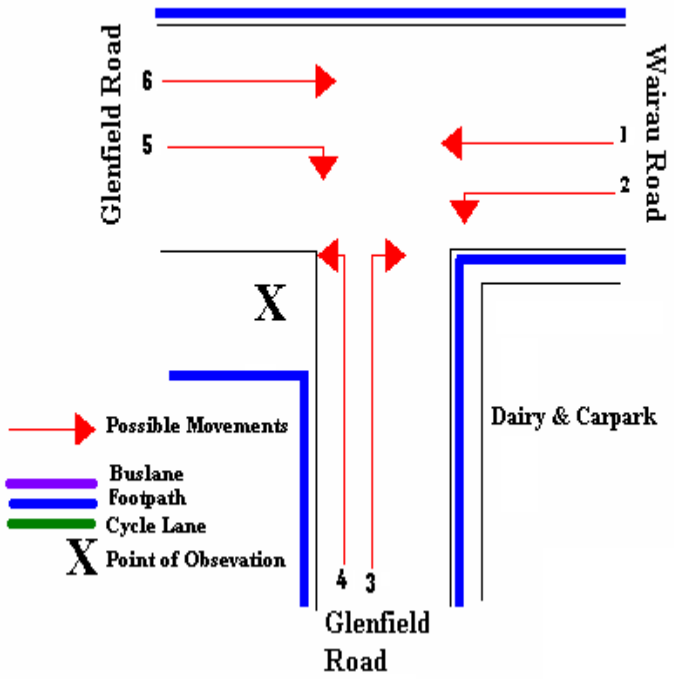


5. WAIRAU ROAD/GLENFIELD ROAD, GLENFIELD (SITE 41)

Figure 5.1 shows the possible cyclist movements at this intersection.

Figure 5.1: Cycle Movements: Wairau/Glenfield Road





5.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	34	30	64	93
2008	39	34	73	107
2009	42	38	80	117
2010	38	53	91	131
2011	41	52	93	134
2012	36	69	105	150
2013	**32**	**37**	**69**	**100**

5.2 Morning Peak

Environmental Conditions

- The weather was fine at the beginning of the shift, then gradually turned cloudy with occasional light drizzle observed.
- Road works were observed across the entire intersection at this site.

Key Points

- Morning cyclist movements decreased in 2013 (32 movements, compared to 36 movements in 2012).
- The most common movement in the morning was travelling northwest along Glenfield Road (Movement 4 = 14 movements).
- Cyclist traffic at Movement 4 has doubled, while the largest decrease in traffic occurred at Movement 1 (down 8 movements).

Table 5.1: Morning Cyclist Movements

Wairau/Glenfield Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	2	6	8	9	6	11	**3**	**-8**
2	2	4	1	1	0	1	**2**	**1**
3	4	2	3	1	6	4	**2**	**-2**
4	11	11	17	17	13	7	**14**	**7**
5	9	8	4	4	8	2	**6**	**4**
6	6	8	9	6	8	11	**5**	**-6**
Total	**34**	**39**	**42**	**38**	**41**	**36**	**32**	**-4**

- Over the morning peak, adults comprised the greatest share of cycle movements (88 per cent). However, there has been a nine percentage point increase in the share of school children cycling at this site.
- Almost all cyclists were wearing a helmet at this site (91 per cent, down from 100 per cent in 2012).
- The majority of cyclists were male (81 per cent, down from 86 per cent in 2012).
- There has been an increase in the share of cyclists riding on the footpath (28 per cent, up from 8 per cent last year).

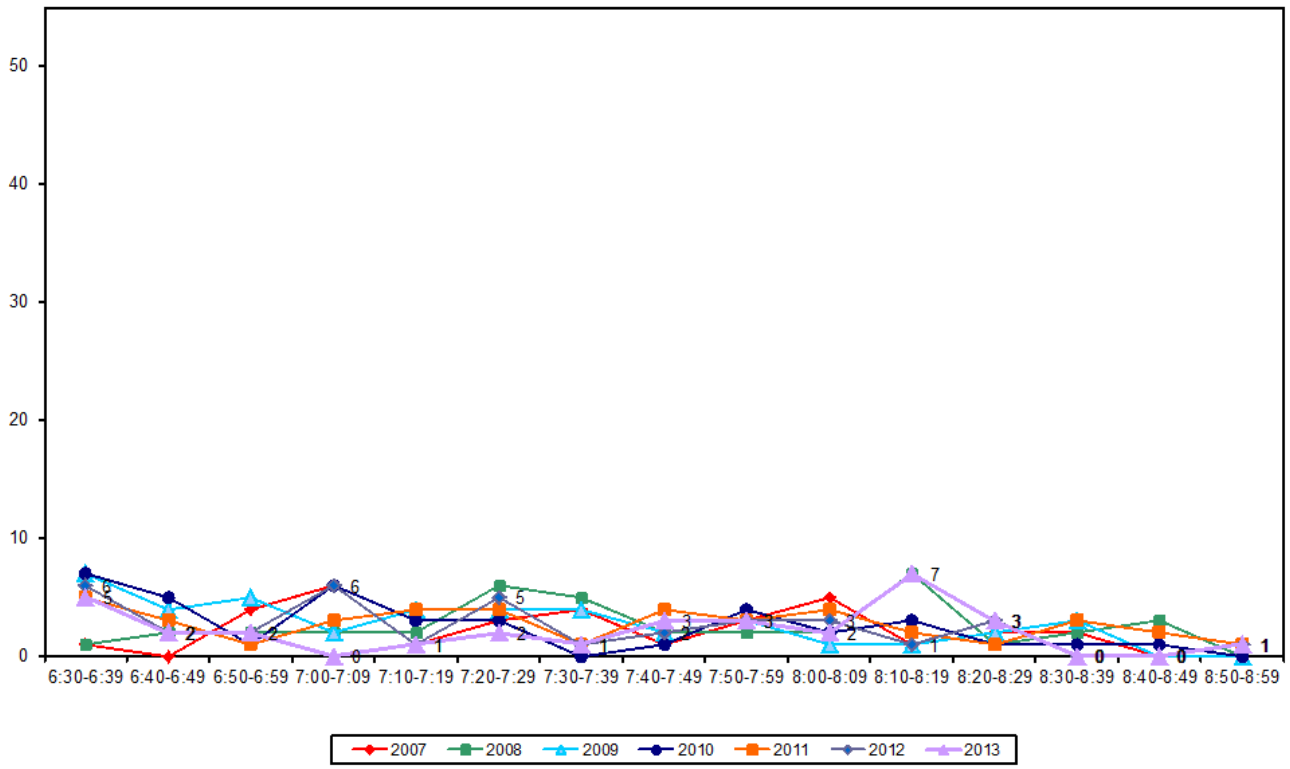
Table 5.2: Morning Cyclist Characteristics
Wairau/Glenfield Road 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	91	87	93	97	98	**97**	**88**	**-9**
School child	9	13	7	3	2	**3**	**12**	**9**
Helmet Wearing								
Helmet on head	82	97	100	95	98	**100**	**91**	**-9**
No helmet	18	3	0	5	2	**0**	**9**	**9**
Gender								
Male	-	-	-	-	93	**86**	**81**	**-5**
Female	-	-	-	-	7	**14**	**0**	**-14**
Can't tell	-	-	-	-	0	**0**	**19**	**19**
Where Riding								
Road	62	82	95	97	83	**92**	**72**	**-20**
Footpath	38	18	5	3	17	**8**	**28**	**20**
Base:	***34***	***39***	***42***	***38***	***41***	***36***	***32***	

- The volume of morning cycle movements remained low throughout the shift, with a small peak of seven movements between 8:10am and 8:19am. This compared with last year's peak between 7:00am and 7:09am (6 movements).

Figure 5.2: Morning Peak Cyclist Frequency

Wairau/Glenfield Road 2007 – 2013 (n)



5.3 Evening Peak

Environmental Conditions

- The weather was overcast with intermittent showers throughout the evening monitoring period.
- Road works were observed across the entire intersection at this site.

Key Points

- This year, the total number of evening cyclist movements observed at the Wairau/Glenfield Road intersection has decreased (37 movements, down from 69).
- The key movements in the evening were straight through Wairau Road into Glenfield Road (Movement 1 = 10 cyclists) and south along Glenfield Road (Movement 5 = 10 cyclists).
- The most noticeable change from last year occurred at Movement 1 (cycle volume down 18 movements).

Table 5.3: Evening Cyclist Movements

Wairau/Glenfield Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	6	4	8	14	13	28	**10**	**-18**
2	2	3	1	6	6	3	**6**	**3**
3	3	1	1	0	1	2	**0**	**-2**
4	7	5	8	11	7	3	**5**	**2**
5	8	16	18	15	22	19	**10**	**-9**
6	4	5	2	7	3	14	**6**	**-8**
Total	**30**	**34**	**38**	**53**	**52**	**69**	**37**	**-32**

- Over the evening period, all cyclists using this site were adults.
- Helmet wearing was less widespread in the evening this year (84 per cent, down from 99 per cent in 2012).
- Almost all cyclists were male (95 per cent, up 21 percentage points from 74 per cent in 2012).
- Approximately three-quarters of the cyclists were riding on the road (73 per cent), the remaining 27 per cent riding the footpath.

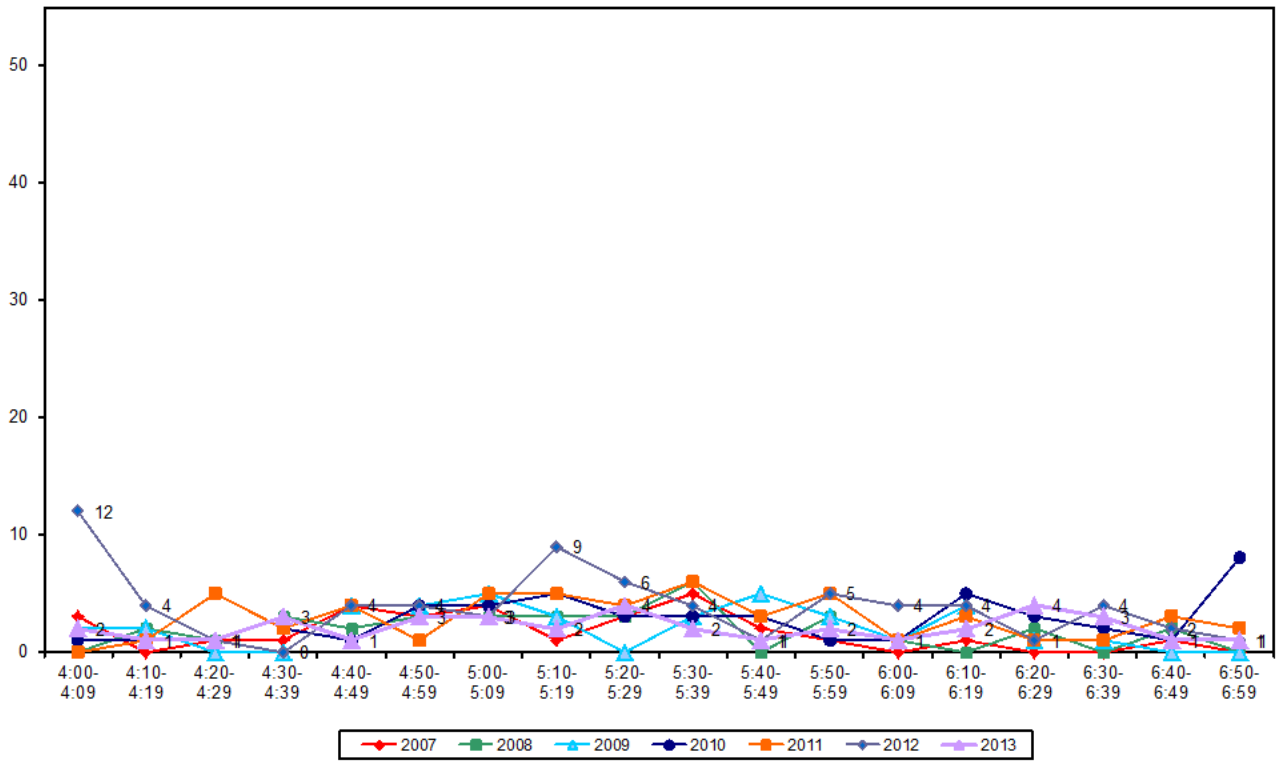
Table 5.4: Evening Cyclist Characteristics
Wairau/Glenfield Road 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	100	91	95	91	92	99	**100**	**1**
School child	0	9	5	9	8	1	**0**	**-1**
Helmet Wearing								
Helmet on head	87	97	92	94	98	99	**84**	**-15**
No helmet	13	3	8	6	2	1	**16**	**15**
Gender								
Male	-	-	-	-	94	74	**95**	**21**
Female	-	-	-	-	6	26	**5**	**-21**
Can't tell	-	-	-	-	0	0	**0**	**0**
Where Riding								
Road	73	85	95	89	83	94	**73**	**-21**
Footpath	27	15	5	11	17	6	**27**	**21**
Base:	***30***	***34***	***38***	***53***	***52***	***69***	***37***	

- The number of evening cyclist movements remained low throughout the monitoring period, with no apparent peak observed. There were no more than four cyclists passing by this site in any ten-minute interval.

Figure 5.3: Evening Peak Cyclist Frequency

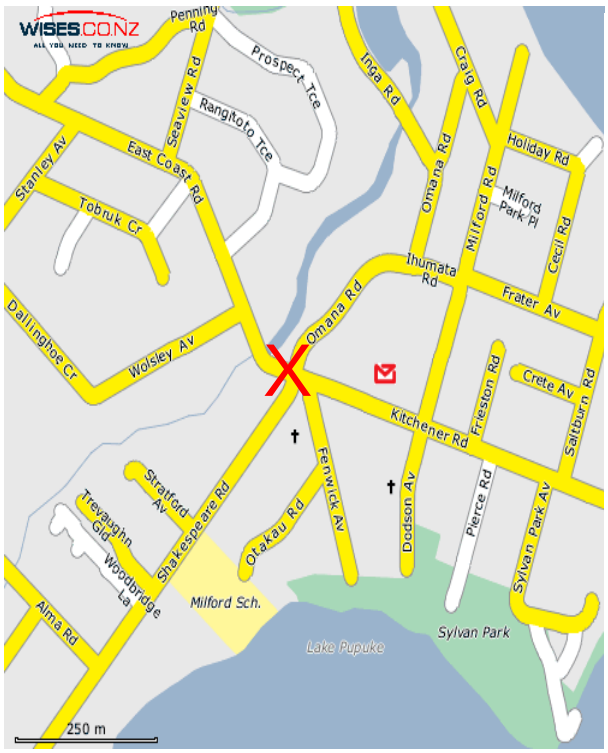
Wairau/Glenfield Road 2007 – 2013 (n)

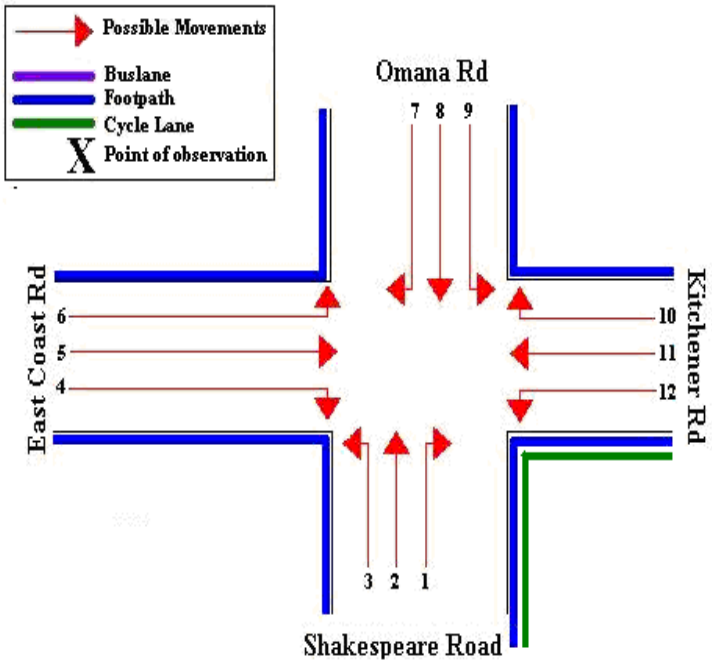


6. SHAKESPEARE ROAD/EAST COAST ROAD, MILFORD (SITE 42)

Figure 6.1 shows the possible cyclist movements at this intersection.

Figure 6.1: Cycle Movements: Shakespeare/East Coast Road





6.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	82	55	137	314
2008	127	123	250	364
2009	177	133	310	454
2010	146	159	305	442
2011	181	105	286	422
2012	145	93	238	350
2013	**172**	**94**	**266**	**393**

6.2 Morning Peak

Environmental Conditions

- The weather was fine at the beginning of the shift. A light shower developed around 7:27am and the morning remained overcast from then.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of cyclist movements recorded at the Shakespeare/East Coast Road intersection has increased since last year (172 movements, up from 145 movements in 2012).
- The most common movements were travelling southeast from East Coast Road into Kitchener Road (Movement 5 = 51 movements) and turning left from Kitchener Road onto Shakespeare Road heading south (Movement 12 = 42 movements).
- The most noticeable changes occurred at Movement 5 (down 16 movements) and Movement 12 (up 12 movements).

Table 6.1: Morning Cyclist Movements

Shakespeare/East Coast Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	13	7	9	6	26	5	**11**	**6**
2	3	0	3	1	5	2	**2**	**0**
3	1	1	0	4	4	0	**2**	**2**
4	5	8	9	16	24	13	**23**	**10**
5	28	26	96	46	22	67	**51**	**-16**
6	1	0	2	1	1	0	**2**	**2**
7	0	0	0	1	0	0	**4**	**4**
8	3	6	15	9	6	15	**18**	**3**
9	2	0	0	2	0	1	**4**	**3**
10	0	0	0	4	0	0	**0**	**0**
11	5	13	16	26	23	12	**13**	**1**
12	21	66	27	30	70	30	**42**	**12**
Total	**82**	**127**	**177**	**146**	**181**	**145**	**172**	**27**

- Over the morning peak, adults comprised the greatest share of cycle movements (76 per cent, down 82 per cent last year).
- Almost all cyclists were wearing a helmet (98 per cent, stable from 99 per cent in 2012).
- The majority of cyclists continued to be male (77 per cent).
- Eleven per cent of the cyclists were riding on the off-road cycleway (compared with zero per cent last year). Consequently, there were fewer cyclists riding on the road (down 6 percentage points to 69 per cent) and on the footpath (down 5 percentage points to 20 per cent) this year.

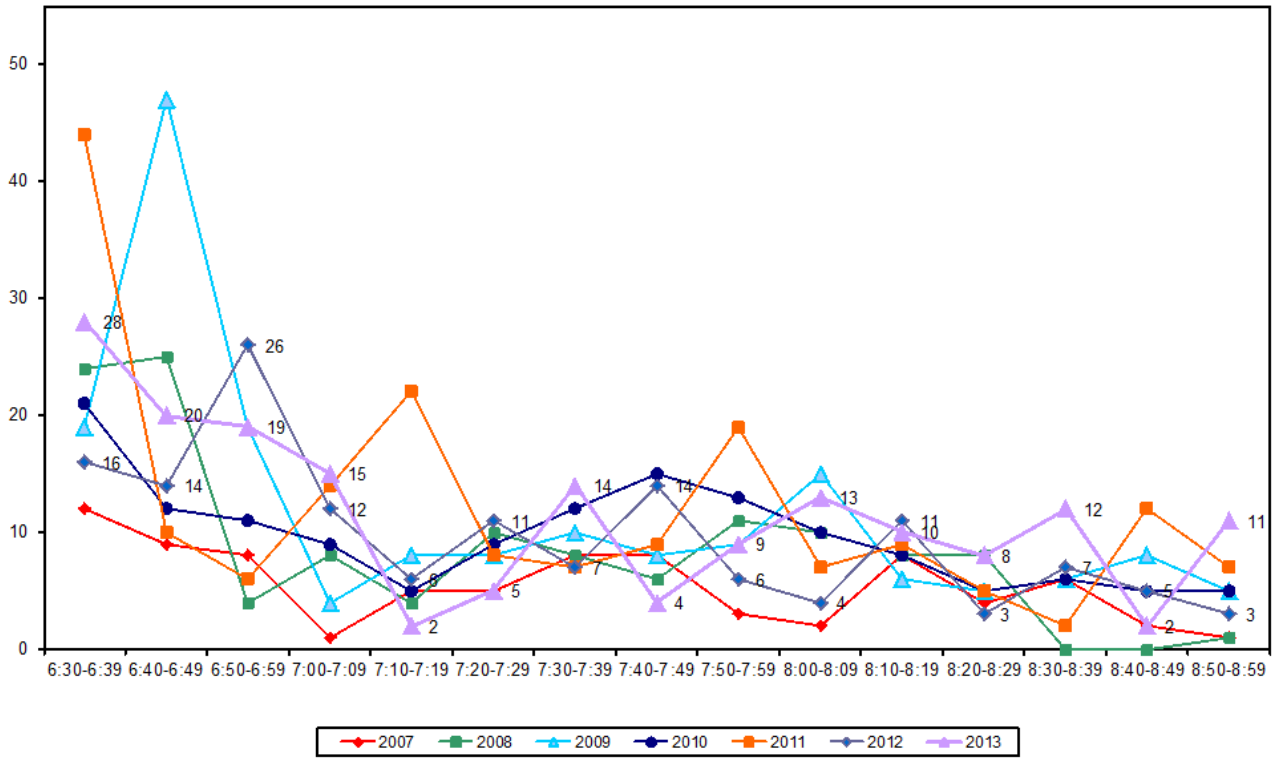
Table 6.2: Morning Cyclist Characteristics

Shakespeare/East Coast Road 2007 – 2013 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Cyclist Type								
Adult	83	82	83	77	85	82	**76**	**-6**
School child	17	18	17	23	15	18	**24**	**6**
Helmet Wearing								
Helmet on head	96	98	98	100	98	99	**98**	**-1**
No helmet	4	2	2	0	2	1	**2**	**1**
Gender								
Male	-	-	-	-	73	56	**77**	**21**
Female	-	-	-	-	23	19	**23**	**4**
Can't tell	-	-	-	-	4	25	**0**	**-25**
Where Riding								
Road	77	81	79	71	76	75	**69**	**-6**
Footpath	23	19	21	29	18	25	**20**	**-5**
Off-road cycle way	-	-	-	-	6	0	**11**	**11**
Base:	***82***	***127***	***177***	***146***	***181***	***145***	***172***	

- Morning cyclist movement numbers started off with a peak between 6:30am and 6:39am (28 movements) then decreased until the end of the monitoring period. This compared with the peak between 6:50am and 6:59am (26 movements) last year.

Figure 9.2: Morning Peak Cyclist Frequency
Shakespeare/East Coast Road 2007 – 2013 (n)



Note: In 2013, six per cent of the total cycle movements (n=11) in the morning peak were identified as cycling in groups. This compared with 12 per cent (n=18) last year. Three or more cyclists were observed travelling in groups at this site at the following times:

- *6 cyclists at 6:38am*
- *5 cyclists at 6:50am.*

6.3 Evening Peak

Environmental Conditions

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

Key Points

- The volume of evening cyclist movements recorded at the Shakespeare/East Coast Road intersection in 2013 has remained stable since last year (94 movements, compared with 93 movements in 2012).
- The most common movements in the evening were straight along Kitchener Road into East Coast Road travelling in a north-westerly direction (Movement 11 = 31 movements) and the left turn from Kitchener Road onto Shakespeare Road travelling south-west (Movement 12 = 25 movements).
- The most noticeable increase since 2012 has been at Movements 5 (up 5 movements).

Table 6.3: Evening Cyclist Movements

Shakespeare/East Coast Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*		Change 12-13
1	5	15	5	28	11	8	**6**	**-2**
2	3	2	8	11	6	6	**3**	**-3**
3	6	1	5	5	7	9	**7**	**-2**
4	2	4	6	3	1	3	**6**	**3**
5	6	11	12	21	7	7	**12**	**5**
6	4	3	3	2	6	0	**3**	**3**
7	0	0	0	2	0	0	**0**	**0**
8	1	3	2	8	10	4	**1**	**-3**
9	0	0	1	1	0	0	**0**	**0**
10	0	0	2	0	1	0	**0**	**0**
11	13	27	47	40	27	27	**31**	**4**
12	15	57	42	38	29	29	**25**	**-4**
Total	**55**	**123**	**133**	**159**	**105**	**93**	**94**	**1**

- Over the evening peak, the majority of cyclists using this intersection were adults (87 per cent, stable from 88 per cent last year).
- Most cyclists were wearing a helmet (96 per cent, stable from 97 per cent in 2012).
- Approximately four in five cyclists were male (81 per cent, stable from last year).
- Nearly two thirds of cyclists were riding on the road (65 per cent, unchanged from last year). The remaining cyclists were riding on either the footpath (30 per cent) or on the off-road cycle way (5 per cent).

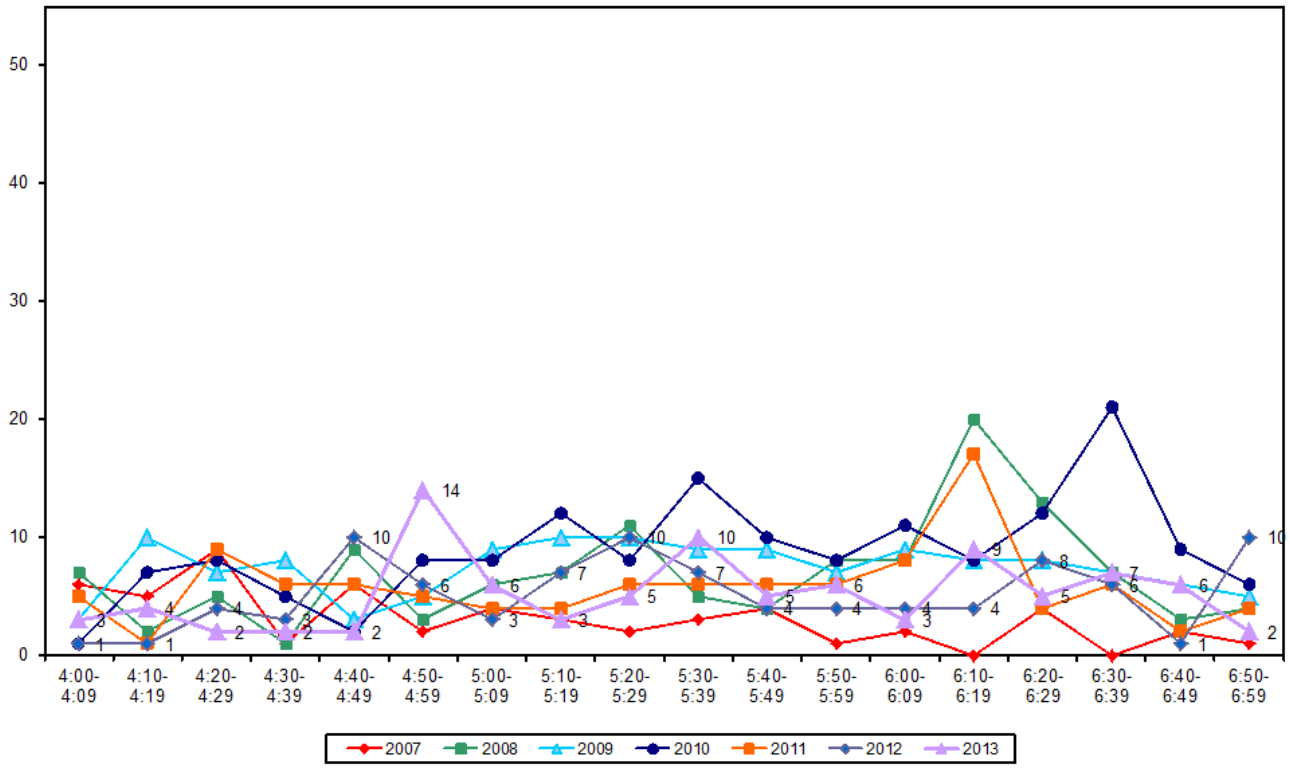
Table 6.4: Evening Cyclist Characteristics

Shakespeare/East Coast Road 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	82	76	81	74	80	88	**87**	**-1**
School child	18	24	19	26	20	12	**13**	**1**
Helmet Wearing								
Helmet on head	82	94	97	99	90	97	**96**	**-1**
No helmet	18	6	3	1	10	3	**4**	**1**
Gender								
Male	-	-	-	-	81	79	**81**	**2**
Female	-	-	-	-	19	21	**18**	**-3**
Can't tell	-	-	-	-	0	0	**1**	**1**
Where Riding								
Road	73	72	69	60	64	65	**65**	**0**
Footpath	27	28	31	40	17	27	**30**	**3**
Off-road cycle way	-	-	-	-	19	8	**5**	**-3**
Base:	***55***	***123***	***133***	***159***	***105***	***93***	***94***	

- The volume of cycle movements remained at or below 10 counts for most of the monitoring period, with exception of a small peak between 4:50pm and 4:59pm (14 movements).

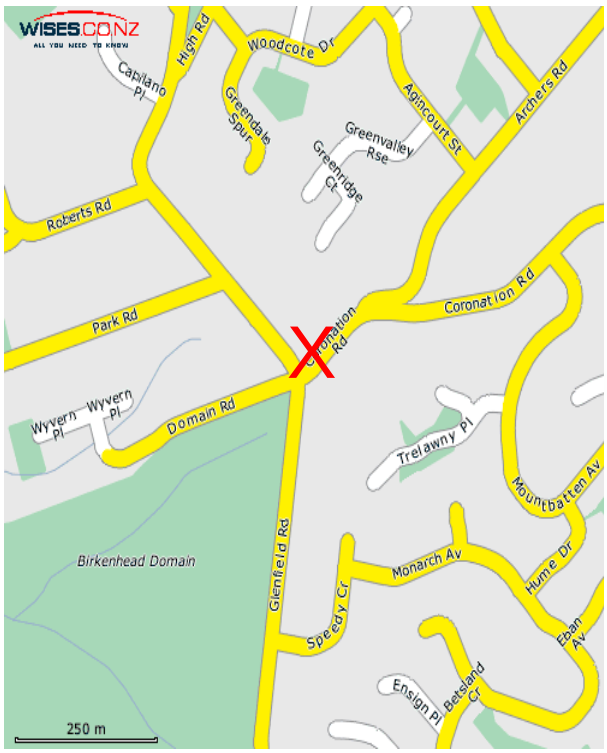
Figure 6.3: Evening Cyclist Frequency
Shakespeare/East Coast Road 2007 – 2013 (n)

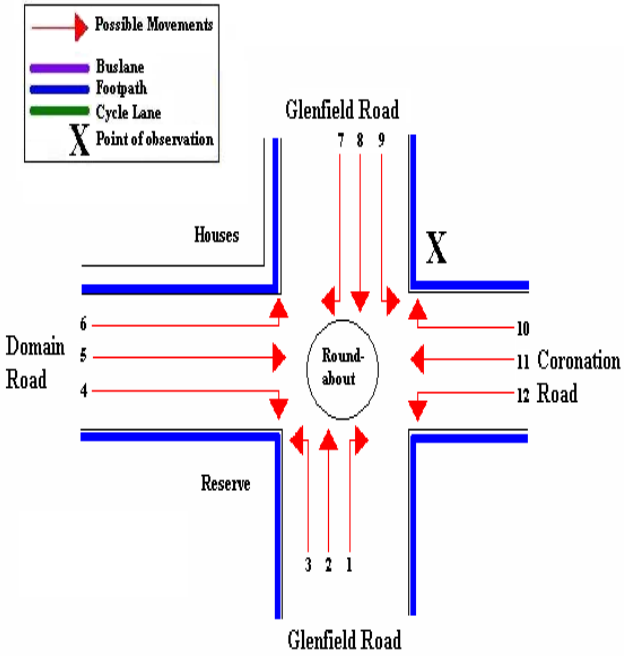


7. GLENFIELD ROAD/CORONATION ROAD, HILLCREST (SITE 43)

Figure 7.1 shows the possible cyclist movements at this intersection.

Figure 7.1: Cycle Movements: Glenfield/Coronation Road





7.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	16	12	28	64
2008	36	39	75	109
2009	36	42	78	113
2010	37	56	93	134
2011	27	25	52	76
2012	35	38	73	106
2013	**33**	**25**	**58**	**85**

7.2 Morning Peak

Environmental Conditions

- The weather was fine at the beginning of the shift. A light shower developed around 7:35am and the weather remained overcast until the end of the shift.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of morning cyclists at the Glenfield/Coronation Road intersection has remained stable from last year (33 movements, compared with 35 movements in 2012).
- The most common movement in the morning was the right turn from Glenfield Road onto Coronation Road (Movement 1 = 10 cyclists).
- Movement 2 saw the greatest change in morning cyclist movement numbers (down 11 movements).

Table 7.1: Morning Cyclist Movements

Glenfield/Coronation Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	2	7	13	6	4	3	**10**	**7**
2	1	5	5	7	10	17	**6**	**-11**
3	0	0	0	0	0	2	**0**	**-2**
4	0	0	0	0	1	0	**0**	**0**
5	0	0	0	0	0	1	**0**	**-1**
6	0	0	0	0	0	0	**0**	**0**
7	0	0	0	0	0	1	**0**	**-1**
8	7	9	6	11	4	3	**5**	**2**
9	6	8	9	9	2	3	**5**	**2**
10	0	5	3	2	2	4	**4**	**0**
11	0	0	0	0	0	0	**0**	**0**
12	0	2	0	2	4	1	**3**	**2**
Total	**16**	**36**	**36**	**37**	**27**	**35**	**33**	**-2**

- Over the morning peak, adults comprised the greatest share of cycle movements (88 per cent, up from 77 per cent in 2012).
- Most cyclists were wearing a helmet (97 per cent, up from 91 per cent in 2012).
- The majority of cyclists were male (82 per cent, down from 91 per cent last year).
- Most cyclists were riding on the road (85 per cent, stable from 83 per cent in 2012).

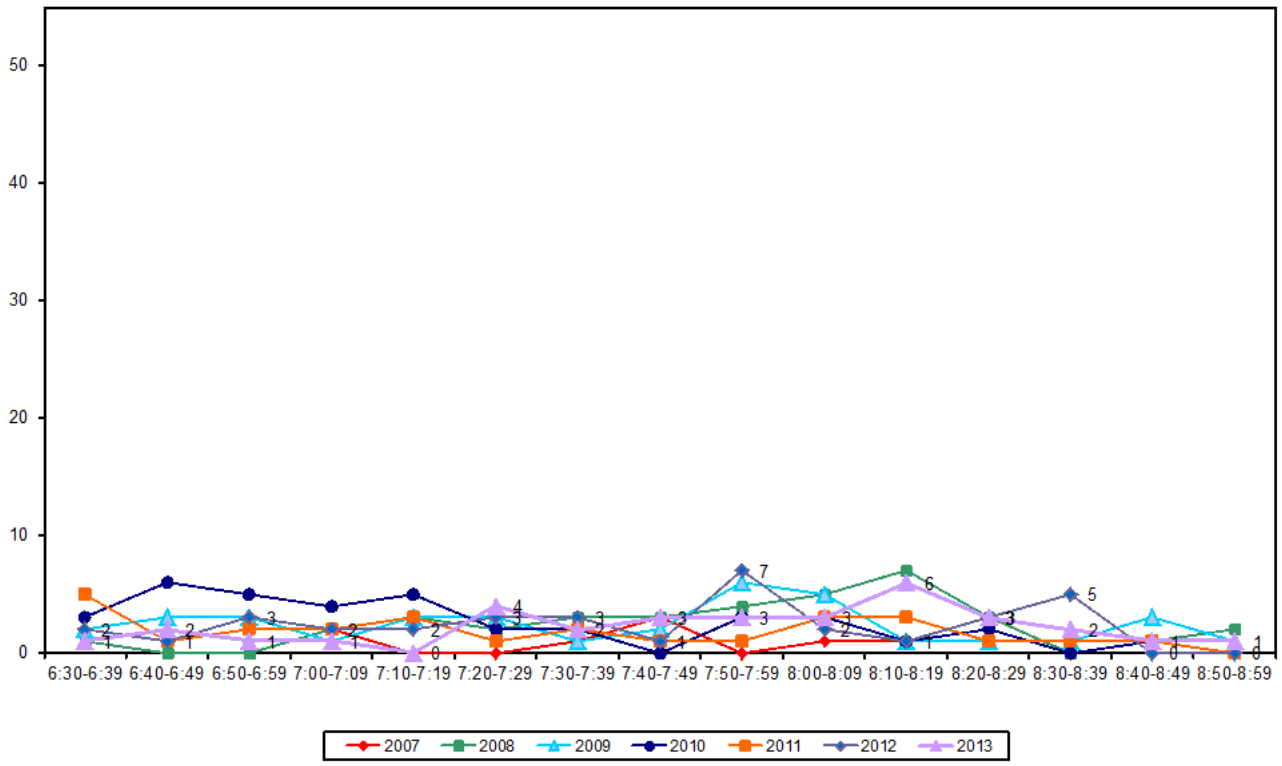
Table 7.2: Morning Cyclist Characteristics

Glenfield/Coronation Road 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	94	83	75	84	85	77	**88**	**11**
School child	6	17	25	16	15	23	**12**	**-11**
Helmet Wearing								
Helmet on head	87	100	97	95	100	91	**97**	**6**
No helmet	13	0	3	5	0	9	**3**	**-6**
Gender								
Male	-	-	-	-	70	91	**82**	**-9**
Female	-	-	-	-	30	9	**15**	**6**
Can't tell	-	-	-	-	0	0	**3**	**3**
Where Riding								
Road	87	83	69	76	81	83	**85**	**2**
Footpath	13	17	31	24	19	17	**15**	**-2**
Base:	***16***	***36***	***36***	***37***	***27***	***35***	***33***	

- As in previous years, morning cyclist volumes were low over the entire monitoring period, with a slight peak was observed between 8:10am and 8:19am (6 movements). This compared with a peak between 7:50am and 7:59am (7 movements) last year.

Figure 7.2: Morning Peak Cyclist Frequency
Glenfield/Coronation Road 2007 – 2013 (n)



7.3 Evening Peak

Environmental Conditions

- Initially the weather was overcast with a light shower observed between 4:41pm to 4:45pm, the weather gradually cleared as the evening passed.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The total number of cyclist movements recorded at the Glenfield/Coronation Road intersection in the evening has decreased from 2012 (25 movements, down from 38 movements last year).
- The key movements in the evening were going from Coronation Road to Domain Road (Movement 12 = 8 movements), travelling along Glenfield Road heading south (Movement 8 = 7 movements) and north (Movement 2 = 6 movements).
- All but one movement (Movement 3 – up 1 movement) saw a decrease or no change in number of movements observed. The most noticeable decreases were at Movement 2, Movement 8 and Movement 9 (down 4 movements each).

Table 7.3: Evening Cyclist Movements

Glenfield/Coronation Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	0	3	6	1	2	3	**2**	**-1**
2	4	6	7	16	9	10	**6**	**-4**
3	0	3	0	0	0	0	**1**	**1**
4	0	0	0	0	0	0	**0**	**0**
5	0	0	0	0	0	0	**0**	**0**
6	0	0	0	0	0	0	**0**	**0**
7	0	0	0	0	0	0	**0**	**0**
8	5	6	8	9	7	11	**7**	**-4**
9	0	4	3	9	0	5	**1**	**-4**
10	1	4	6	11	3	2	**0**	**-2**
11	0	0	0	0	0	1	**0**	**-1**
12	2	13	12	10	4	6	**8**	**2**
Total	**12**	**39**	**42**	**56**	**25**	**38**	**25**	**-13**

- Nearly all cyclists at this location were adults (92 per cent, up from 79 per cent in 2012).
- Almost all cyclists were wearing a helmet (88 per cent, stable from last year).
- All cyclists were male this year.
- Four in five cyclists were riding on the road (80 per cent, up slightly from 76 per cent in 2012).

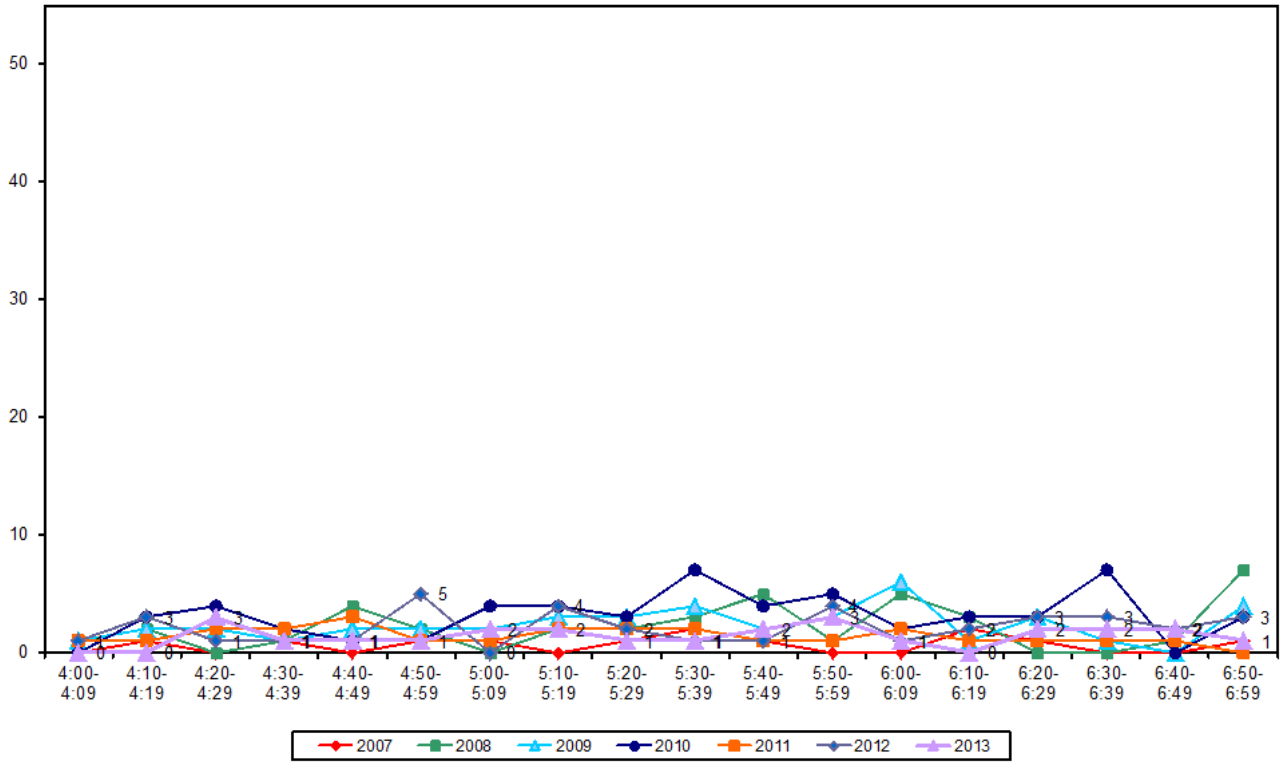
Table 7.4: Evening Cyclist Characteristics

Glenfield/Coronation Road 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	83	95	76	89	100	79	**92**	**13**
School child	17	5	24	11	0	21	**8**	**-13**
Helmet Wearing								
Helmet on head	75	95	81	91	96	89	**88**	**-1**
No helmet	25	5	19	9	4	11	**12**	**1**
Gender								
Male	-	-	-	-	96	89	**100**	**11**
Female	-	-	-	-	4	11	**0**	**-11**
Can't tell	-	-	-	-	0	0	**0**	**0**
Where Riding								
Road	83	77	69	77	100	76	**80**	**4**
Footpath	17	23	31	23	0	24	**20**	**-4**
Base:	***12***	***39***	***42***	***56***	***25***	***38***	***25***	

- Evening cyclist movement volumes remained very low throughout the observation period, with no more than three cyclists riding past the site during any ten-minute interval.

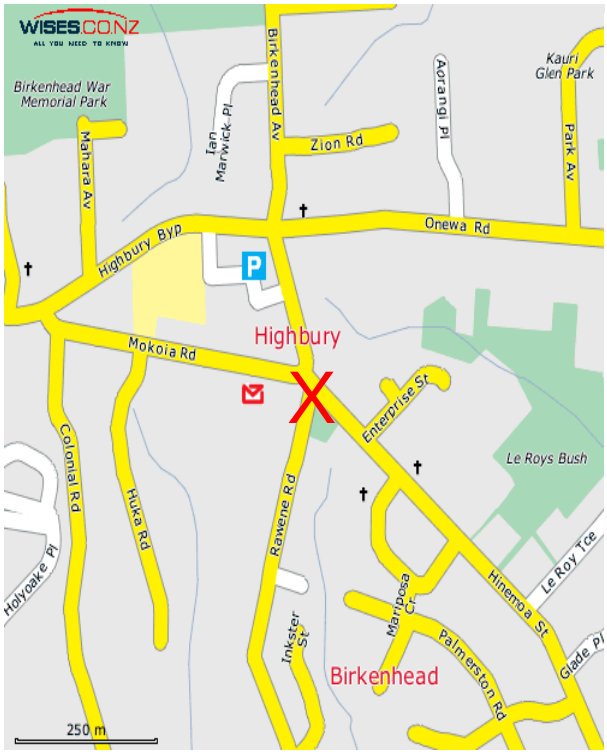
Figure 7.3: Evening Peak Cyclist Frequency
Glenfield/Coronation Road 2007 – 2013 (n)

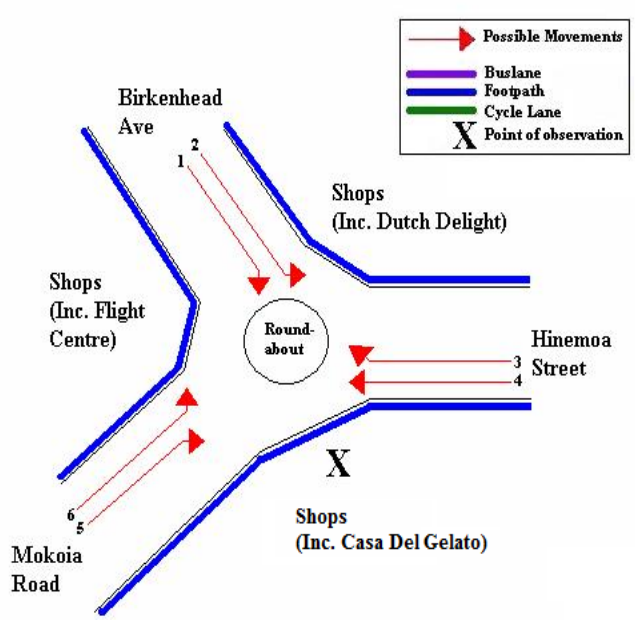


8. BIRKENHEAD AVENUE/MOKOIA ROAD, BIRKENHEAD (SITE 44)

Figure 8.1 shows the possible cyclist movements at this intersection.

Figure 8.1: Cycle Movements: Birkenhead/Mokoia Road





8.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2007	20	20	40	58
2008	20	29	49	71
2009	27	30	57	83
2010	29	46	75	108
2011	22	23	45	65
2012	17	35	52	74
2013	**29**	**32**	**61**	**88**

8.2 Morning Peak

Environmental Conditions

- The weather was overcast during the morning shift. Two spells of light rain were recorded from 7:30am to 7:38am and from 8:45am to 9:00am.
- There were no road works or accidents that may affect cycle counts.

Key Points

- The volume of morning cyclists at the Birkenhead Avenue/Mokoia Road intersection has increased from last year (up from 17 cycle movements to 29 this year).
- The key movement in the morning was the right turn from Mokoia Road into Hinemoa Street travelling in a south-easterly direction (Movement 5 = 12 cyclists).
- All but one movement (Movement 4 – down 1 movement) recorded an increase in cycle volumes. The most noticeable increases since 2012 occurred at Movement 5 (up 5 movements) and Movement 3 (up 4 movements).

Table 8.1: Morning Cyclist Movements

Birkenhead Avenue/Mokoia Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	1	1	0	1	1	0	**1**	**1**
2	7	6	12	16	9	5	**7**	**2**
3	1	4	4	1	6	3	**7**	**4**
4	2	0	0	2	0	1	**0**	**-1**
5	8	7	9	9	5	7	**12**	**5**
6	1	2	2	0	1	1	**2**	**1**
Total	**20**	**20**	**27**	**29**	**22**	**17**	**29**	**12**

- Over the morning peak, all cyclists using the Birkenhead Avenue/Mokoia Road intersection were adults (100 per cent, stable from last year).
- All cyclists wore a helmet (100 per cent, unchanged since 2011).
- The majority of cyclists continued to be male (93 per cent, up slightly from 88 per cent last year).
- All cyclists were riding on the road (100 per cent, up slightly from 94 per cent in 2012).

Table 8.2: Morning Cyclist Characteristics

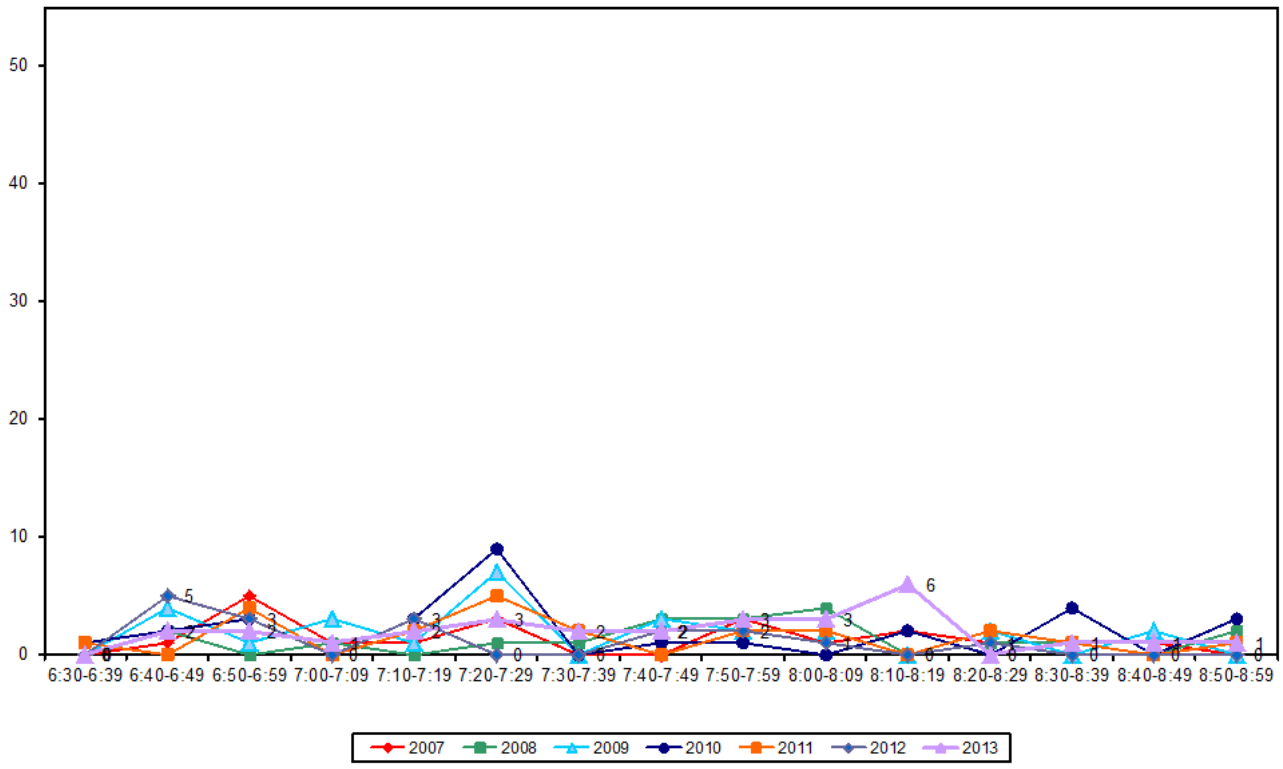
Birkenhead Avenue/Mokoia Road 2007 – 2013 (%)

	2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Cyclist Type								
Adult	100	95	100	100	91	100	**100**	**0**
School child	0	5	0	0	9	0	**0**	**0**
Helmet Wearing								
Helmet on head	80	100	96	90	100	100	**100**	**0**
No helmet	20	0	4	10	0	0	**0**	**0**
Gender								
Male	-	-	-	-	100	88	**93**	**5**
Female	-	-	-	-	0	12	**7**	**-5**
Can't tell	-	-	-	-	0	0	**0**	**0**
Where Riding								
Road	90	90	96	97	86	94	**100**	**6**
Footpath	10	10	4	3	14	6	**0**	**-6**
Base:	***20***	***20***	***27***	***29***	***22***	***17***	***29***	

- The volume of morning cycle movements is low over the entire monitoring period with no more than three movements recorded during all but one ten-minute interval. The exception was six movements recorded between 8:10am and 8:19am.

Figure 8.2: Morning Peak Cyclist Frequency

Birkenhead Avenue/Mokoia Road 2007 – 2013 (n)



8.3 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

- The volume of evening cyclists at the Birkenhead Avenue/Mokoia Road intersection has decreased slightly from last year (down from 35 cycle movements to 32).
- The most common movement in the evening was turning from Hinemoa Road onto Mokoia Road (Movement 4 = 12 movements).
- Movement 1 had two more cycle movements and Movement 6 had five less movements this year. All other movements recorded no change in cycle volume over the last 12 months.

Table 8.3: Evening Cyclist Movements

Birkenhead Avenue/Mokoia Road 2007 – 2013 (n)

Movement	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
1	1	6	2	8	2	4	**6**	**2**
2	1	2	3	4	4	7	**7**	**0**
3	8	8	11	17	9	6	**6**	**0**
4	8	10	12	13	7	12	**12**	**0**
5	2	2	1	1	0	1	**1**	**0**
6	0	1	1	3	1	5	**0**	**-5**
Total	**20**	**29**	**30**	**46**	**23**	**35**	**32**	**-3**

- Over the evening peak, most cyclists using this intersection were adults (88 per cent, down slightly from last year).
- Helmet wearing has increased slightly in 2013 (91 per cent, up from 83 per cent in 2012).
- The greatest share of evening cyclists continued to be male (91 per cent, stable from 89 per cent at the previous measure).
- Eighty-one per cent of cyclists were riding on the road (up 18 percentage points from 63 per cent last year).

Table 8.4: Evening Cyclist Characteristics

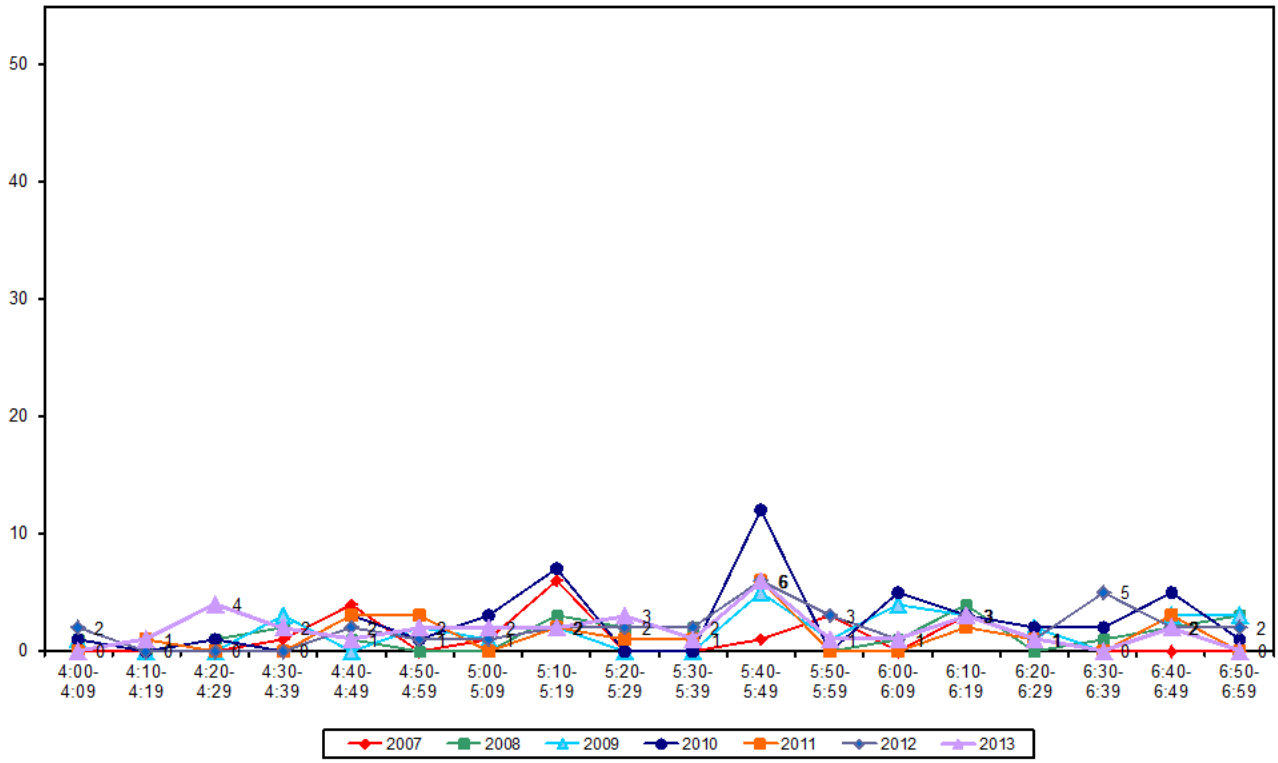
Birkenhead Avenue/Mokoia Road 2007 – 2013 (%)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	Change 12-13
Cyclist Type								
Adult	95	93	93	87	91	91	**88**	**-3**
School child	5	7	7	13	9	9	**12**	**3**
Helmet Wearing								
Helmet on head	95	93	93	80	87	83	**91**	**8**
No helmet	5	7	7	20	13	17	**9**	**-8**
Gender								
Male	-	-	-	-	83	89	**91**	**2**
Female	-	-	-	-	17	11	**6**	**-5**
Can't tell	-	-	-	-	0	0	**3**	**3**
Where Riding								
Road	100	93	80	76	78	63	**81**	**18**
Footpath	0	7	20	24	22	37	**19**	**-18**
Base:	***20***	***29***	***30***	***46***	***23***	***35***	***32***	

- In 2013, the cyclist movement volumes were low and reached no more than four movements per ten minute interval, with the exception a slight peak between 5:40pm and 5:49pm (6 movements).

Figure 8.3: Evening Peak Cyclist Frequency

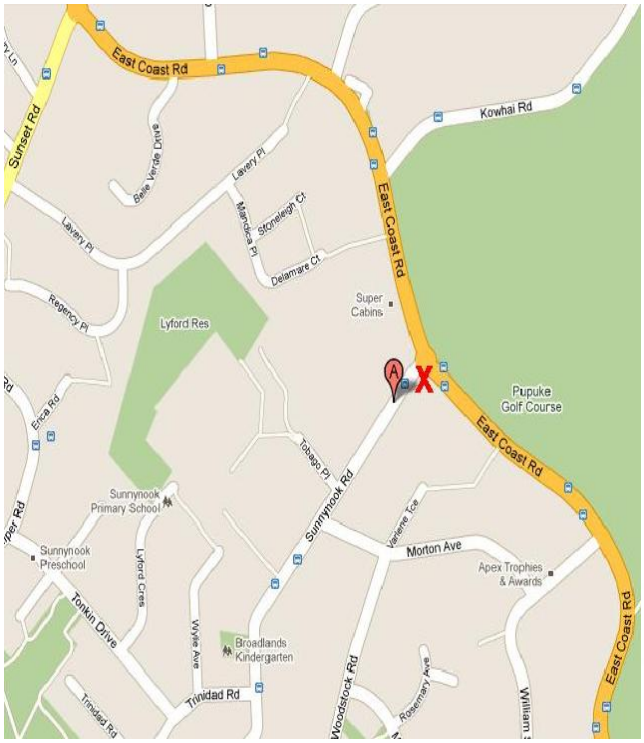
Birkenhead Avenue/Mokoia Road 2007 – 2013 (n)

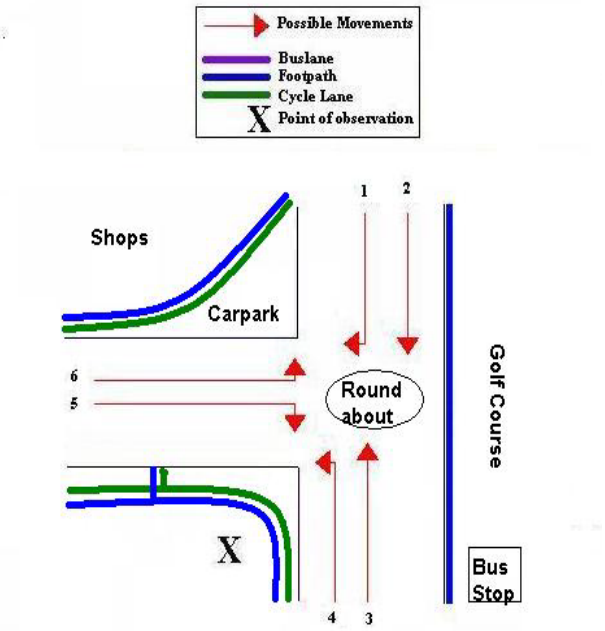


9. SUNNYNOOK ROAD/EAST COAST ROAD, SUNNYNOOK (SITE 89)

Figure 9.1 shows the possible cyclist movements at this intersection.

Figure 9.1: Sunnynook Road/East Coast Road, Sunnynook





Note: This site was monitored for the first time in 2011.

9.1 Site Summary

	Raw Counts			AADT
	Morning Peak	*Evening Peak*	*Total*	*Total*
2011	81	93	174	252
2012	95	60	155	228
2013	**96**	**53**	**149**	**211**

9.2 Morning Peak

Environmental Conditions

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

Key Points

- The volume of morning cyclist movements recorded at the Sunnynook/East Coast Road intersection in 2013 has remained stable since last year (96 movements observed).
- The key morning movement was continuing straight along East Coast Road travelling in a south-easterly direction (Movement 2 = 65 movements).
- The most noticeable change in morning cyclist movements was at Movement 2 (down 9 movements from 2012).

Table 9.1: Morning Cyclist Movements

Sunnynook Road/East Coast Road, Sunnynook 2011 – 2013 (n)

Movement	*2011*	*2012*	*2013*	Change 12-13
1	5	1	**2**	**1**
2	42	74	**65**	**-9**
3	25	17	**22**	**5**
4	6	0	**0**	**0**
5	0	2	**3**	**1**
6	3	1	**4**	**3**
Total	**81**	**95**	**96**	**1**

- Over the morning peak, the majority of cyclists were adults (85 per cent, down from 93 per cent at the previous measure).
- Almost cyclists were wearing a helmet (98 per cent).
- The majority of cyclists continued to be male (84 per cent, stable from 84 per cent in 2012).
- Most cyclists were riding on the road (75 per cent, down from 88 per cent last year).

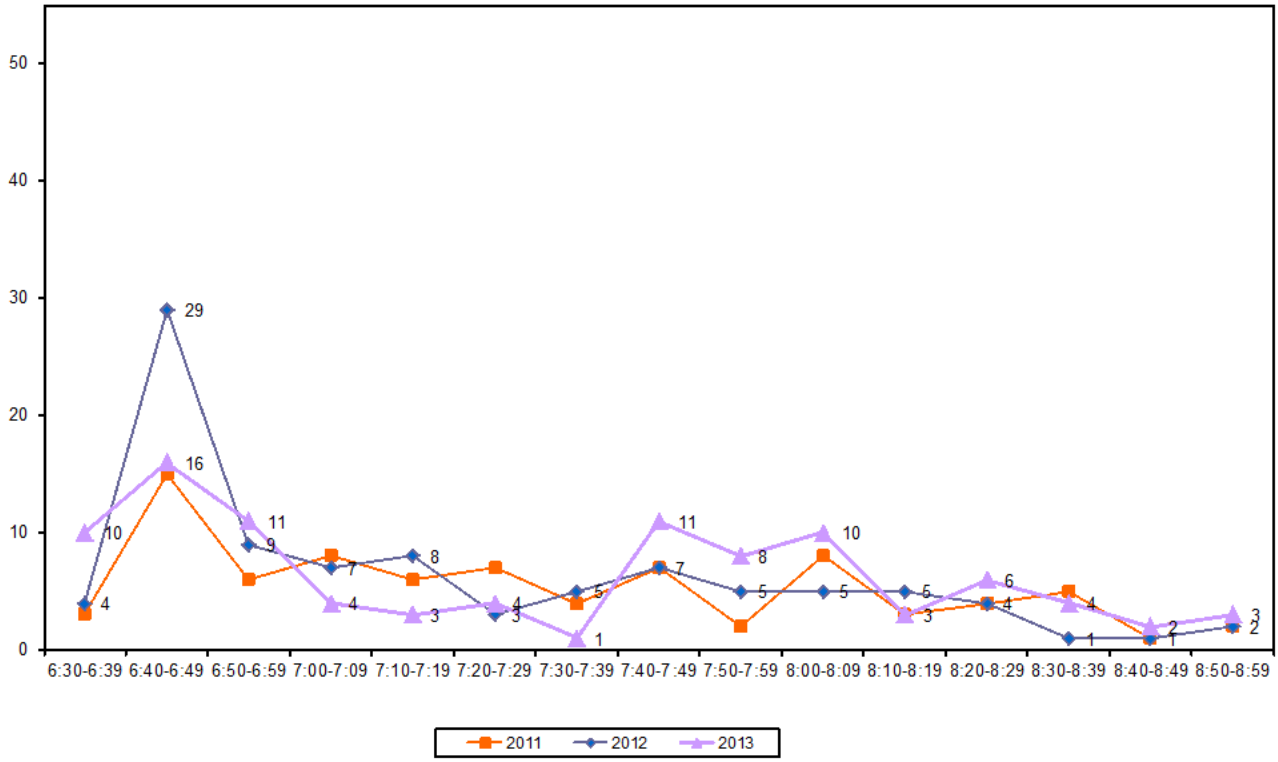
Table 9.2: Morning Cyclist Characteristics

Sunnynook Road/East Coast Road, Sunnynook 2011 – 2013 (%)

	2011	***2012***	***2013***	***Change 12-13***
Cyclist Type				
Adult	88	93	**85**	**-8**
School child	12	7	**15**	**8**
Helmet Wearing				
Helmet on head	99	100	**98**	**-2**
No helmet	1	0	**2**	**2**
Gender				
Male	77	84	**84**	**0**
Female	23	16	**15**	**-1**
Can't tell	0	0	**1**	**1**
Where Riding				
Road	79	88	**75**	**-13**
Footpath	2	12	**25**	**13**
Off-road cycle way	19	0	**0**	**0**
Base:	***81***	***95***	***96***	

- Morning cyclist movement volumes reached the largest peak early in the monitoring period (6:40am and 6:49am = 16 movements), then remain relatively low before climbing up to a second peak between 7:40am and 8:09am (a total of 29 cyclists within three ten-minute intervals). The trend was fairly consistent with previous years.

Figure 9.2: Morning Peak Cyclist Frequency
Sunnynook Road/East Coast Road, Sunnynook 2011 – 2013 (n)



Note: In 2013, 16 per cent of the total cycle movements (n=15) in the morning peak were identified as cycling in groups. This compared with 21 per cent (n=20) last year. Three or more cyclists were observed travelling in groups at this site at the following times:

- *4 cyclists at 6:40am*
- *6 cyclists at 6:42am*
- *5 cyclists at 6:57am.*

9.3 Evening Peak

Environmental Conditions

- The weather was overcast throughout the evening shift with drizzle observed between 4:00pm and 5:00pm.
- There were no road works or accidents that may affect cycle counts.

Key Points

- Cyclist movement volumes have decreased slightly this year, from 60 in 2012 to 53 movements.
- The key movements were continuing straight along East Coast Road in a north/north westerly direction (Movement 3 = 29 movements) and continuing straight on East Coast Road travelling in a south-easterly direction (Movement 2 = 19 movements).
- Evening cyclist volumes have decreased most noticeably at Movements 3 (down 6 movements).

Table 9.3: Evening Cyclist Movements

Sunnynook Road/East Coast Road, Sunnynook 2011 – 2013 (n)

Movement	*2011*	*2012*	*2013*	Change 12-13
1	2	1	**1**	**0**
2	33	22	**19**	**-3**
3	49	35	**29**	**-6**
4	2	0	**2**	**2**
5	4	0	**1**	**1**
6	3	2	**1**	**-1**
Total	***93***	***60***	***53***	***-7***

- Almost all cyclists at this site were adults (92 per cent, up 14 percentage points relative to the previous measure).
- Almost all cyclists were wearing a helmet (98 per cent, stable from 2012).
- The majority of cyclists continued to be male (91 per cent, up from 83 per cent last year).
- Four out of five cyclists were riding on the road (81 per cent, stable from 79 per cent in 2012), while the remaining 19 per cent were riding on the footpath.

Table 9.4: Evening Cyclist Characteristics

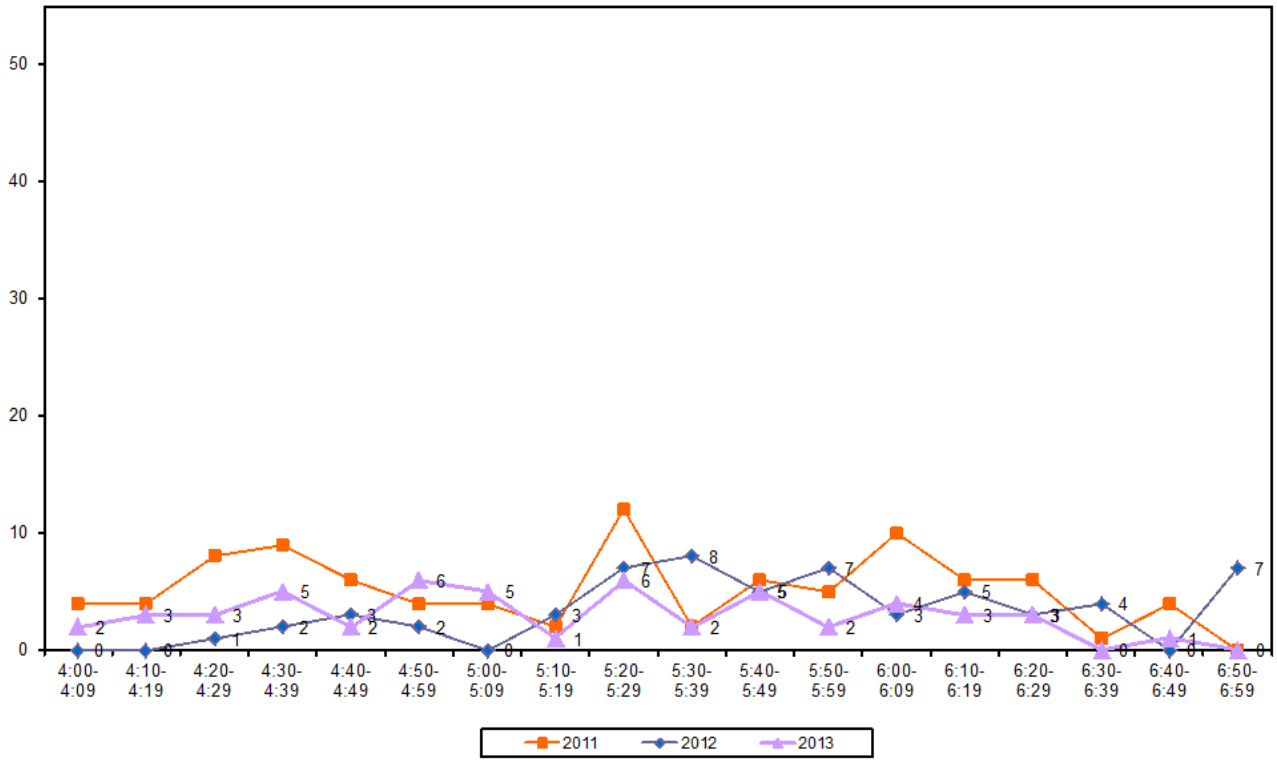
Sunnynook Road/East Coast Road, Sunnynook 2011 – 2013 (%)

	2011	***2012***	***2013***	**Change 12-13**
Cyclist Type				
Adult	82	78	**92**	**14**
School child	18	22	**8**	**-14**
Helmet Wearing				
Helmet on head	97	98	**98**	**0**
No helmet	3	2	**2**	**0**
Gender				
Male	91	83	**91**	**8**
Female	9	17	**9**	**-8**
Can't tell	0	0	**0**	**0**
Where Riding				
Road	78	79	**81**	**2**
Footpath	7	21	**19**	**-2**
Off-road cycle way	15	0	**0**	**0**
Base:	***93***	***60***	***53***	

- Cyclist movement volumes in the evening were low, fluctuating between six to zero cyclists per ten-minute interval.

Figure 9.3: Evening Peak Cyclist Frequency

Sunnynook Road/East Coast Road, Sunnynook 2011 – 2013 (n)



10. NORTH SHORE FERRY WHARVES

Environmental Conditions

- Stationary cycle counts at Devonport and Beachhaven ferry wharves were conducted on Tuesday 5th March 2013 (the same day as the cycle counts in the North Shore ward).
- Counts were conducted at four points in time throughout the day.

Devonport Ferry Terminal - Key Points

- In the morning, four cycles were observed at the Devonport Ferry Terminal at 6:10am and 61 were observed at 9:10am. This suggests around 57 passengers rode to the ferry and parked their cycles in the morning peak. This is up from 40 in 2012 (although a seasonal variance may apply as 2012 counts were conducted in early June).
- In the afternoon, 57 cycles were recorded at the Devonport Ferry Terminal at 3:30pm and 12 were observed at 7:10pm. This suggests 45 ferry passengers collected their bikes after disembarking and cycled home in the evening peak. This is up from 22 last year (although again, a seasonal variance may apply due to the timing of the counts).

Table 10.1: Devonport Ferry Terminal Cycle Counts (n)

	2011	*2012**	*2013*	Change 12-13
Morning Peak				
6:10am	5	3	**4**	**1**
9:10am	47	43	**61**	**18**
Evening Peak				
3:30pm	79	26	**57**	**31**
7:10pm	11	4	**12**	**8**

** Counts conducted in early June 2012*

Beachhaven Ferry Terminal - Key Points

Note: Ferry services from the Beachhaven ferry wharf commenced operation in February 2013. Observation of stationary cycles was conducted for the first time in 2013.

- In the morning, no cycles were observed at the Beachhaven Ferry Wharf at either 6:10 am or 9:10am.
- Two cycles were observed at the wharf at 3:30pm; both had gone by 7:10 pm.

Table 10.2: Beachhaven Ferry Wharf Cycle Counts 2013 (n)

	2013
Morning Peak	
6:10am	**0**
9:10am	**0**
Evening Peak	
3:30pm	**2**
7:10pm	**0**

Bayswater Ferry Terminal - Key Points

- After the morning peak, 22 cycles were observed parked at the Bayswater ferry wharf, up from 11 cycles in 2012.

Table 10.3: Bayswater Ferry Wharf Cycle Counts 2011 – 2013 (n)

	2011	***2012***	***2013***	**Change 12-13**
Bayswater	5	11	**22**	**11**

11. SCHOOL BIKE SHED COUNT

Note: Full primary schools (those taking children through to Year 8) were included in the count for the first time in 2011.

Background Information

- A total of 15 North Shore ward schools participated in the school bike shed count. Of the schools that responded to the survey, most do not have policies that restrict students cycling to school[10].
- Most schools did not report any events or issues that may affect cycle counts[11].
- The designated count day was Tuesday 5th of March 2013[12].

Key Points

- Among the surveyed schools, of those eligible to cycle, on average four per cent of students are cycling to their schools (unchanged from last year).
- Among the 15 participating schools, n=545 students were reported as cycling to school.
- As in previous years, Belmont Intermediate School reported the highest share of cyclists – 25 per cent of all eligible students currently cycling (down from 31 per cent last year).
- Of the 14 schools that participated in the count in both 2012 and 2013, six (43 per cent) schools reported an increase in the share of students cycling to school, the most notable being Takapuna Normal Intermediate (up from 8 per cent in 2012 to 12 per cent this year).
- Of the 14 schools that participated in the count in both 2012 and 2013, two (14 per cent) reported a decrease in the share of students cycling.
- Of the 15 schools that responded, one (7 per cent) had no students cycling to school.

[10] The following schools reported events or issues that had an effect on the cycle count:
- Takapuna Normal Intermediate *"Students have to have a 'licence' and wear high vis vests"*

[11] The following schools reported events or issues that had an effect on the cycle count:
- Belmont Intermediate School *"We currently have an EOTC Week running"*
- Carmel College *"Year 12 at camp but unlikely that many, if any, cycle"*

[12] The following schools conducted counts on alternative count days
- Birkdale Intermediate – 13th March 2013
- Glenfield College – 13th March 2013
- Glenfield Intermediate – 13th March 2013
- Northcote College – 28th February 2013
- Takapuna Normal Intermediate School – 13th March 2013
- Westlake Boys' High School – 14th March 2013

Table 11.1 shows the results of the 15 schools surveyed in the North Shore ward.

Table 11.1: Summary Table of School Bike Count

2007 – 2013 (n)

School Name	*School Type*	*School Roll Eligible To Cycle*	*No. of Cycles Counted*	*Cyclists as share of those eligible*[13]						
				2013	*2012*	*2011*	*2010*	*2009*	*2008*	*2007*
Belmont Intermediate	Intermediate	530	132	**25%**	31%	30%	33%	22%	26%	3%
Takapuna Normal Intermediate School	Intermediate	600	100	**17%**	8%	-	-	-	-	-
Takapuna Grammar School	Secondary	1650	157	**10%**	9%	9%	8%	9%	6%	8%
Birkdale Intermediate	Intermediate	461	21	**5%**	2%	2%	2%	1%	<1%	-
Wairau Intermediate School	Intermediate	278	12	**4%**	3%	4%	6%	5%	7%	4%
Rosmini College	Intermediate/Secondary	1041	33	**3%**	3%	5%	3%	3%	4%	3%
Westlake Boys' High School	Secondary	2230	61	**3%**	2%	4%	3%	2%	<1%	2%
Glenfield College	Secondary	850	10	**1%**	-	-	1%	1%	-	-
Glenfield Intermediate School	Intermediate	324	2	**1%**	0%	1%	1%	3%	2%	4%
Northcote College	Secondary	1209	9	**1%**	1%	<1%	<1%	0%	-	-
Birkenhead College	Secondary	775	1	**<1%**	<1%	<1%	1%	-	-	-
Carmel College	Intermediate/Secondary	1067	3	**<1%**	<1%	<1%	0%	0%	<1%	0%
Northcote Intermediate School	Intermediate	237	1	**<1%**	2%	3%	5%	2%	3%	2%
Westlake Girls' High School	Secondary	2180	3	**<1%**	<1%	<1%	<1%	0%	<1%	<1%
Westminster Christian School	Full Primary	206	0	**0%**	0%	0%	-	-	-	-
Total		**13638**	**545**	**4%**	**4%**	4%	-	-	-	-

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

Table 11.2 illustrates the rates of cycling to school at different school levels. Rates of cycling to school are highest among intermediate schools (11 per cent, stable from 10 per cent in 2012) and lowest for full primary schools (no cyclists).

Table 11.2: Summary Table of School Bike Count by School Type

2007 – 2013 (%)

Year Levels	***Number of Schools Responded in 2013***	***Cyclists as share of those eligible***							
		2007	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	**Change 12-13**
Intermediate	6	11%	8%	7%	9%	10%	10%	**11%**	1%
Secondary	6	4%	2%	3%	3%	3%	2%	**3%**	1%
Intermediate/Secondary	2	2%	2%	2%	2%	2%	1%	**2%**	1%
Full Primary	1	-	-	-	-	0%	0%	**0%**	0%
Composite	-	-	-	-	-	0%	0%	**-**	-

APPENDICES

Appendix One: Annual Average Daily Traffic (AADT) Calculation

APPENDIX ONE: ANNUAL AVERAGE DAILY TRAFFIC (AADT) CALCULATION

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

Purpose

The purpose of this appendix is to document the recommended procedure for estimating a cycling AADT[14] 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)[15], 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.

[14] Annual average daily traffic

[15] 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.

Appendix 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%