

# 2013 Auckland Region Manual Cycle Monitor

- Orakei Ward -





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Appendix One:           Annual Average Daily Traffic (AADT) Calculation



# 1. ORAKEI WARD SUMMARY OF RESULTS

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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<sup>1</sup>.

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<sup>2</sup>. 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.

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<sup>1</sup> Auckland Regional Transport Authority (2006) *Regional Cycle Monitoring Plan (Provisional Guidelines)*

<sup>2</sup> 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 two sites in the Orakei 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 three pre-determined sites in the Orakei 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 Orakei ward. Note that one site (St Heliers Bay/West Tamaki Road in Glen Innes (Site 20)) lies on the border with the Maungakiekie-Tamaki ward and consequently has been included in both ward reports.

Figure 1.1: 2013 Cycle Monitoring Locations in Orakei 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 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 5<sup>th</sup> of March and be conducted on the first three fine days of the 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup>, or 14<sup>th</sup> of March.

Counts were conducted on the following days:

- Tuesday 5<sup>th</sup> March                      Albany, North Shore, Waitakere
- Wednesday 6<sup>th</sup> March                Howick, Franklin, Manukau, Waitemata & Gulf
- Thursday 7<sup>th</sup> 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 5<sup>th</sup> March**

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

#### **Wednesday 6<sup>th</sup> 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 7<sup>th</sup> 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<sup>3</sup>.

During their shift the surveyor collected data on:

- The total number of cyclists<sup>4</sup> 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<sup>5</sup>.

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<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> 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<sup>6</sup>, 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<sup>7</sup>.

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<sup>6</sup> <http://www.itsa.govt.nz/road-user-safety/walking-and-cycling/cycle-network/appendix2.html>

<sup>7</sup> 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<sup>8</sup>.*

### **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.

### **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.

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<sup>8</sup> Appendix 2 of the Cycle Network and Route Planning Guide (CNRPG) (Land Transport New Zealand, 2004)



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 5<sup>th</sup> 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 three sites surveyed in the Orakei 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 Orakei 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 Four of this report.

Note: Surveying in the Orakei ward was undertaken on Thursday 7<sup>th</sup> of March, 2013. Sunrise was at 7:12am and sunset at 7:52pm; highest temperature was 26.0 degree Celsius.



## 1.4 Morning Peak Summary Results

### Environmental Conditions

- All sites monitored in the Orakei ward had fine weather in the morning.
- At Site 11 Remuera/Orakei/Ascot Road, police officers were at the intersection from 7:30am to 9:00am, monitoring red light running. There were no road works or accidents that would have affected cycle movement counts.

### Key Points

- A total of 423 cyclist movements were recorded across the three sites in the morning peak period in 2013, the highest volume since monitoring began in 2007.
- Site No. 91 Orakei Basin Boardwalk is new this year. There are 14 cycle movement recorded. This figure will be the baseline for future cycle monitoring.
- The two existing sites, Remuera/Orakei Road intersection and St Heliers Bay/West Tamaki Road intersection, were found to have notable increases in cycle traffic (63 per cent and 106 per cent respectively).
- The busiest site in the morning continued to be Remuera/Orakei Road (232 cycle movements, up from 142 movements in 2012, a 63 per cent increase).
- Fifty-one per cent of these movements (n=217) were made by cyclists riding in groups. This compares with 36 per cent (n=83) in 2012.

**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
11	Remuera/Orakei Road	86	100	107	149	173	142	232	63%	170%
20	St Heliers Bay/West Tamaki Road	139	107	61	98	150	86	177	106%	28%
	<b>Average per site (2 sites since 2007)</b>	<b>113</b>	<b>104</b>	<b>84</b>	<b>124</b>	<b>162</b>	<b>114</b>	<b>205</b>	<b>80%</b>	<b>81%</b>
	<b>Total (2 sites since 2007)</b>	<b>225</b>	<b>207</b>	<b>168</b>	<b>247</b>	<b>323</b>	<b>228</b>	<b>409</b>	<b>80%</b>	<b>82%</b>
91	Orakei Basin Boardwalk	-	-	-	-	-	-	14	-	-
	<b>Average per site (3 sites since 2013)</b>	-	-	-	-	-	-	<b>141</b>	-	-
	<b>Total (3 sites since 2013)</b>	-	-	-	-	-	-	<b>423</b>	-	-



- Ninety-one per cent of cyclists that passed this site were adults (stable from 89 per cent in 2012).
- The majority of the morning cyclists were wearing a helmet (92 per cent).
- The majority of morning cyclists this year were male (81 per cent, stable from last year’s result).
- The share of cyclists riding on the road (91 per cent) has remained stable over the last six years of monitoring.
- There is an off-road cycleway at the new site (Site 91 Orakei Basin Boardwalk). All cyclists (n=14) at that site were riding on the cycleway, which comprised 3 per cent of the morning cycle volume in this ward.

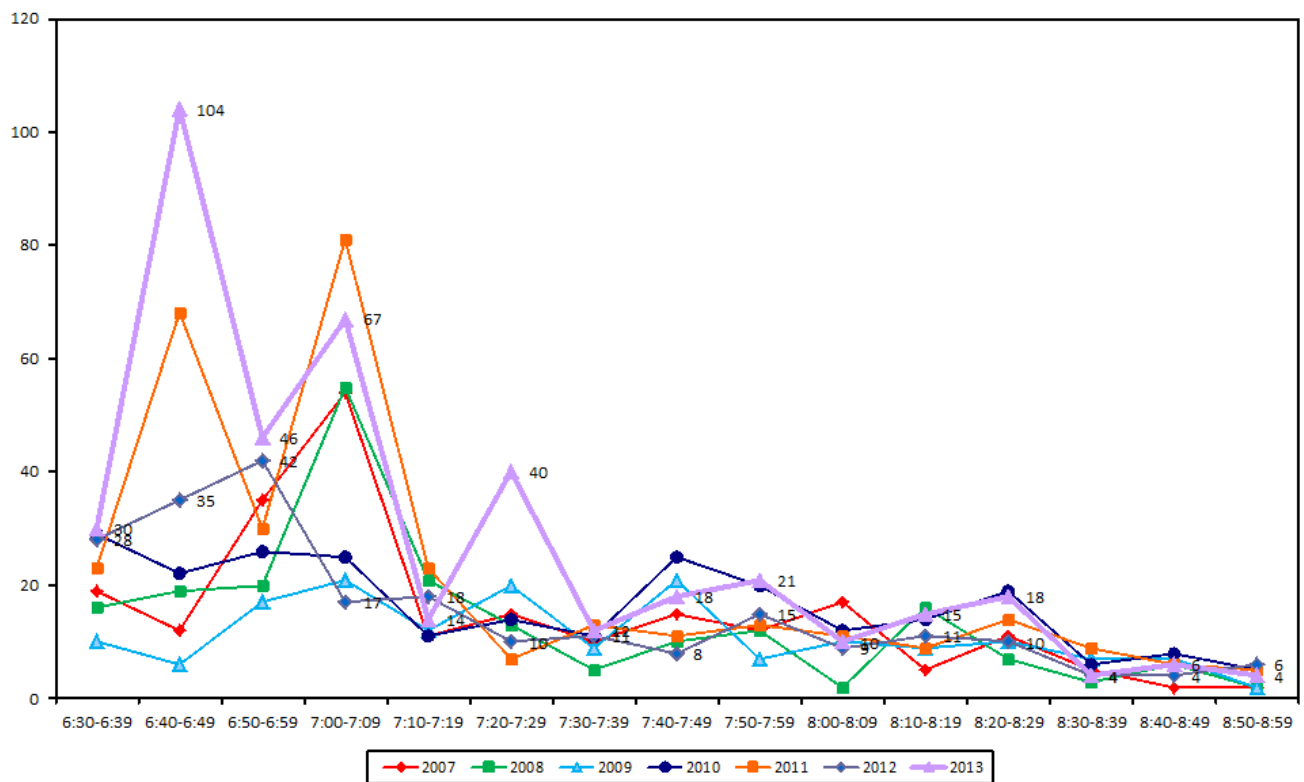
**Table 1.2: Summary of Morning Cyclist Characteristics  
2007 – 2013 (%)**

	2007	2008	2009	2010	2011	2012	2013	Change 12-13
<b>Cyclist Type</b>								
Adult	88	95	93	92	94	89	91	2
School child	12	5	7	8	6	11	9	-2
<b>Helmet Wearing</b>								
Helmet on head	99	98	98	98	99	100	92	-8
No helmet	1	2	2	2	1	0	1	1
Can’t tell	-	-	-	-	-	-	7	-
<b>Gender</b>								
Male	-	-	-	-	70	79	81	2
Female	-	-	-	-	16	14	19	5
Can’t tell	-	-	-	-	14	7	0	-7
<b>Where Riding</b>								
Road	88	92	94	92	92	94	91	-3
Footpath	12	8	6	8	8	6	5	-1
Off-road cycleway	-	-	-	-	-	-	3	3
Unsure	-	-	-	-	-	-	1	1
<b>Base:</b>	<b>225</b>	<b>207</b>	<b>168</b>	<b>247</b>	<b>323</b>	<b>228</b>	<b>423</b>	



- Figure 1.2 illustrates the total number of morning cyclists by time of movement at the three sites in the Orakei ward. The graph shows a sharp peak in cycle volumes between 6:40am and 6:49am (104 movements, with 85 of them being pelotons). After that there were two smaller peaks at 7:00am – 7:09am and 7:20am – 7:29am, but the overall trend was a decreasing one until the end of the shift. The pattern of cycle volumes was quite consistent with that observed in previous years.

**Figure 1.2: Total Cyclist Frequency – Morning Peak  
2007 – 2013 (n)**







## 1.5 Evening Peak Summary Results

### Environmental Conditions

- All sites monitored in the Orakei ward had fine weather in the evening.
- No site had road works or accidents that would have affected cycle movement counts.

### Key Points

- This year the total number of morning cyclist movements in the Orakei ward was 205.
- Site No. 91 Orakei Basin Boardwalk is new this year. Eighteen cycle movement have been recorded this year. The figure will be the baseline for future cycle monitoring.
- The two existing sites, Remuera/Orakei Road intersection and St Heliers Bay/West Tamaki Road intersection, have experienced increases in cycle traffic (63 per cent and 45 per cent respectively).
- The busiest site in the morning continued to be Remuera/Orakei Road (116 cycle movements, up from 71 movements in 2012).
- There were no pelotons riding through this site during the evening shift.

**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
11	Remuera/Orakei Road	109	89	80	95	107	71	116	63%	6%
20	St Heliers Bay/West Tamaki Road	69	60	47	72	74	49	71	45%	3%
	<b>Average per site (2 sites since 2007)</b>	<b>89</b>	<b>75</b>	<b>64</b>	<b>84</b>	<b>91</b>	<b>60</b>	<b>94</b>	<b>57%</b>	<b>6%</b>
	<b>Total (2 sites since 2007)</b>	<b>178</b>	<b>149</b>	<b>127</b>	<b>167</b>	<b>181</b>	<b>120</b>	<b>187</b>	<b>56%</b>	<b>5%</b>
91	Orakei Basin Boardwalk	-	-	-	-	-	-	18	-	-
	<b>Average per site (3 sites since 2013)</b>	-	-	-	-	-	-	<b>68</b>	-	-
	<b>Total (3 sites since 2013)</b>	-	-	-	-	-	-	<b>205</b>	-	-



- Eighty-nine per cent of evening cyclists this year were adults (up from 82 per cent in 2012).
- Most cyclists were wearing a helmet in the evening (96 per cent, unchanged from 2012).
- The majority of evening cyclists were male (84 per cent, a slight increase from 80 per cent last year).
- The majority of evening cyclists were riding on the road (81 per cent, down from 85 per cent in 2012).
- There is an off-road cycleway at the new site (Site 91 Orakei Basin Boardwalk). All cyclists (n=18) at that site were riding on the cycleway, which comprised 9 per cent of the evening cycle volume in this ward.

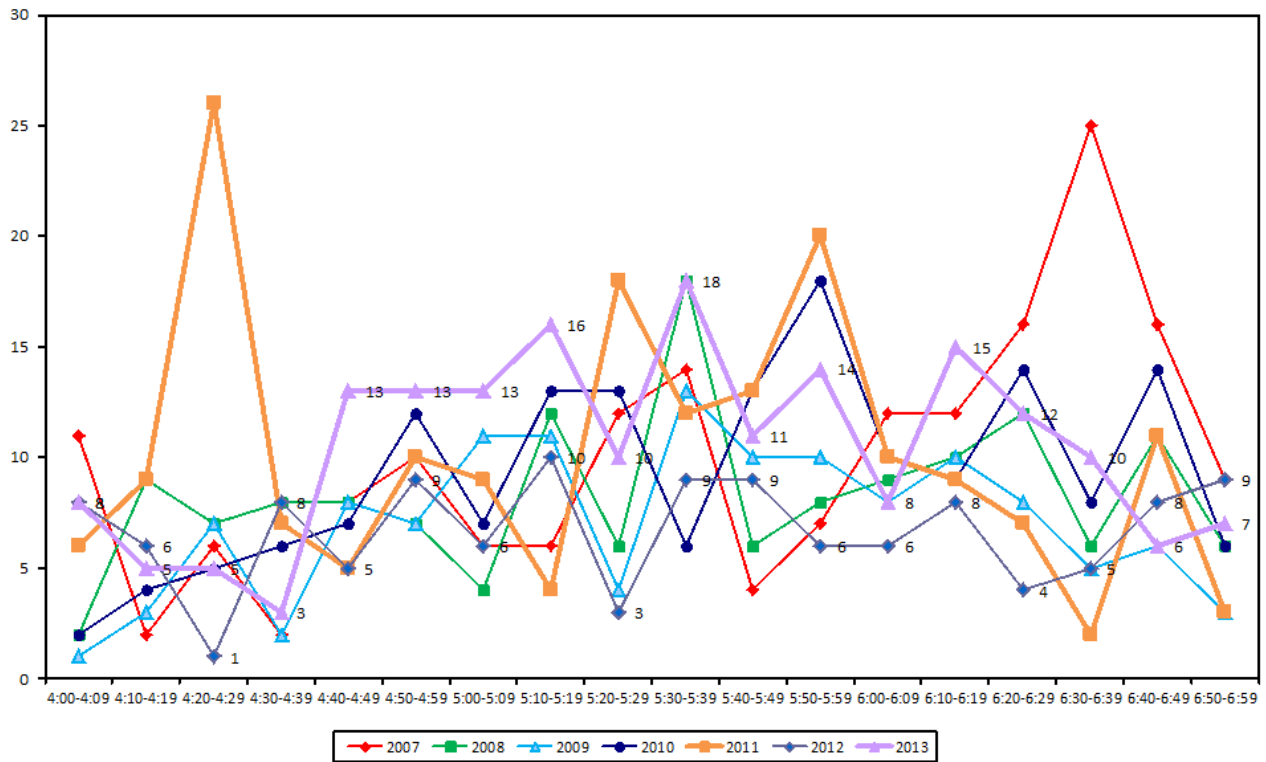
**Table 1.4: Summary of Evening Cyclist Characteristics  
2007 – 2013 (%)**

	2007	2008	2009	2010	2011	2012	2013	Change 12-13
<b>Cyclist Type</b>								
Adult	94	89	95	95	86	82	<b>89</b>	<b>7</b>
School child	6	11	5	5	14	18	<b>11</b>	<b>-7</b>
<b>Helmet Wearing</b>								
Helmet on head	98	94	97	95	95	96	<b>96</b>	<b>0</b>
No helmet	2	6	3	5	5	4	<b>4</b>	<b>0</b>
<b>Gender</b>								
Male	-	-	-	-	83	80	<b>84</b>	<b>4</b>
Female	-	-	-	-	10	19	<b>16</b>	<b>-3</b>
Can't tell	-	-	-	-	7	1	<b>0</b>	<b>-1</b>
<b>Where Riding</b>								
Road	90	88	89	91	86	85	<b>81</b>	<b>-4</b>
Footpath	10	12	11	9	14	15	<b>10</b>	<b>-5</b>
Off-road cycleway	-	-	-	-	-	-	<b>9</b>	<b>9</b>
<b>Base:</b>	<b>178</b>	<b>149</b>	<b>127</b>	<b>167</b>	<b>181</b>	<b>120</b>	<b>205</b>	



- Figure 1.3 illustrates the total number of evening cyclists by time of movement at the three sites in the Orakei ward. Cyclist volumes fluctuated throughout the evening monitoring period. However, it was still possible to identify that the greatest share of movements occurred during the middle part of the evening shift (about 4:40pm to 6:19pm). There was a peak of 18 movements between 5:30pm and 5:39pm.

**Figure 1.3: Total Cyclist Frequency – Evening Peak  
2007 – 2013 (n)**





## 1.6 Aggregated Total Summary Results

- Overall, the Orakei ward has experienced a noticeable increase in cycle traffic over the last 12 months. A total of 628 cyclist movements were recorded across the three sites (two existing sites and one new site) monitored, the highest count since monitoring began in 2007.
- Thirty-five per cent of these cyclists (n=217) were observed as cycling in groups. This compares with 24 per cent (n=83) in 2012.
- Looking at the two previously monitored sites only (Remuera/Orakei Road and St Heliers Bay/West Tamaki Road), the average number of cycle movements per monitoring site was 298, a 71 per cent increase from last year (174).
- The average across all three sites this year was 210 cycle movements.
- Although St Heliers Bay/West Tamaki Road registered a significant increase in cycle movements of 84 per cent this year, the busiest site continued to be Remuera/Orakei Road with a total of 348 movements this year (16 per cent increase from last year and the highest raw count since monitoring began).

**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
11	Remuera/Orakei Road	195	189	187	244	280	213	348	16%	78%
20	St Heliers Bay/West Tamaki Road	208	167	108	170	224	135	248	84%	19%
	<b>Average per site (2 sites since 2007)</b>	<b>202</b>	<b>178</b>	<b>148</b>	<b>207</b>	<b>252</b>	<b>174</b>	<b>298</b>	<b>71%</b>	<b>48%</b>
	<b>Total (2 sites since 2007)</b>	<b>403</b>	<b>356</b>	<b>295</b>	<b>414</b>	<b>504</b>	<b>348</b>	<b>596</b>	<b>71%</b>	<b>48%</b>
91	Orakei Basin Boardwalk	-	-	-	-	-	-	32	-	-
	<b>Average per site (3 sites since 2013)</b>	-	-	-	-	-	-	<b>210</b>	-	-
	<b>Total (3 sites since 2013)</b>	-	-	-	-	-	-	<b>628</b>	-	-



- The majority of cyclists continued to be adults (91 per cent, up 5 percentage points from last year).
- Almost all cyclists were wearing a helmet (94 per cent, compared with 98 per cent in 2012).
- Over four fifths of the total cyclist movements in Orakei ward were made by male cyclists (82 per cent).
- The majority of cyclists were riding on the road (87 per cent, slightly down from 91 per cent in 2012).
- There is an off-road cycleway at the new site (Site 91 Orakei Basin Boardwalk) and all cyclists (n=32) at this site made use of the cycleway. They comprised 5 per cent of the total cycle volume in this ward.

**Table 1.6: Summary of Total Cyclist Characteristics  
2007 – 2013 (%)**

	2007	2008	2009	2010	2011	2012	2013	Change 12-13
<b>Cyclist Type</b>								
Adult	91	92	94	93	91	86	91	5
School child	9	8	6	7	9	14	9	-5
<b>Helmet Wearing</b>								
Helmet on head	99	96	97	97	98	98	94	-4
No helmet	1	4	3	3	2	2	2	0
Can't tell	-	-	-	-	-	-	4	-
<b>Gender</b>								
Male	-	-	-	-	75	79	82	3
Female	-	-	-	-	14	16	18	2
Can't tell	-	-	-	-	11	5	0	-5
<b>Where Riding*</b>								
Road	89	90	92	92	90	91	87	-4
Footpath	11	10	8	8	10	9	7	-2
Off-road cycleway	-	-	-	-	-	-	5	5
Can't tell	-	-	-	-	-	-	1	1
<b>Base:</b>	<b>403</b>	<b>356</b>	<b>295</b>	<b>414</b>	<b>504</b>	<b>348</b>	<b>628</b>	



### 1.7 Average Annual Daily Traffic (AADT) Estimate

Note: A discussion of Average Annual Daily Traffic Estimates is provided in Section 1.1. A full description of the tool, the calculation used, and the limitations of the estimates are provided in Appendix One. Readers are encouraged to review these sections in conjunction with the data presented here.

- Table 1.7 provides the comparative AADT estimates for each site, based on the average of morning and evening peak AADT calculations.
- The highest AADT is at Remuera/Orakei Road (515 daily movements, up from 315 movements in 2012 and the highest count since monitoring began in 2007).
- Both previously monitored sites have recorded significant increases in total AADT estimates this year compared with 2012:
  - St. Heliers Bay/West Tamaki Road – up 85 per cent
  - Remuera/Orakei Road – up 63 per cent.
- The AADT of Site No. 91 Orakei Basin Boardwalk will be the baseline for future cycle analysis.

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

Site No.	Locations	2007 AADT	2008 AADT	2009 AADT	2010 AADT	2011 AADT	2012 AADT	2013 AADT	Change 12-13	Change 07-13
11	Remuera/Orakei Road	282	276	274	359	412	315	515	63%	83%
20	St Heliers Bay/West Tamaki Road	308	246	158	249	331	199	369	85%	20%
91	Orakei Basin Boardwalk	-	-	-	-	-	-	46	-	-

### 1.8 School Bike Shed Count Summary

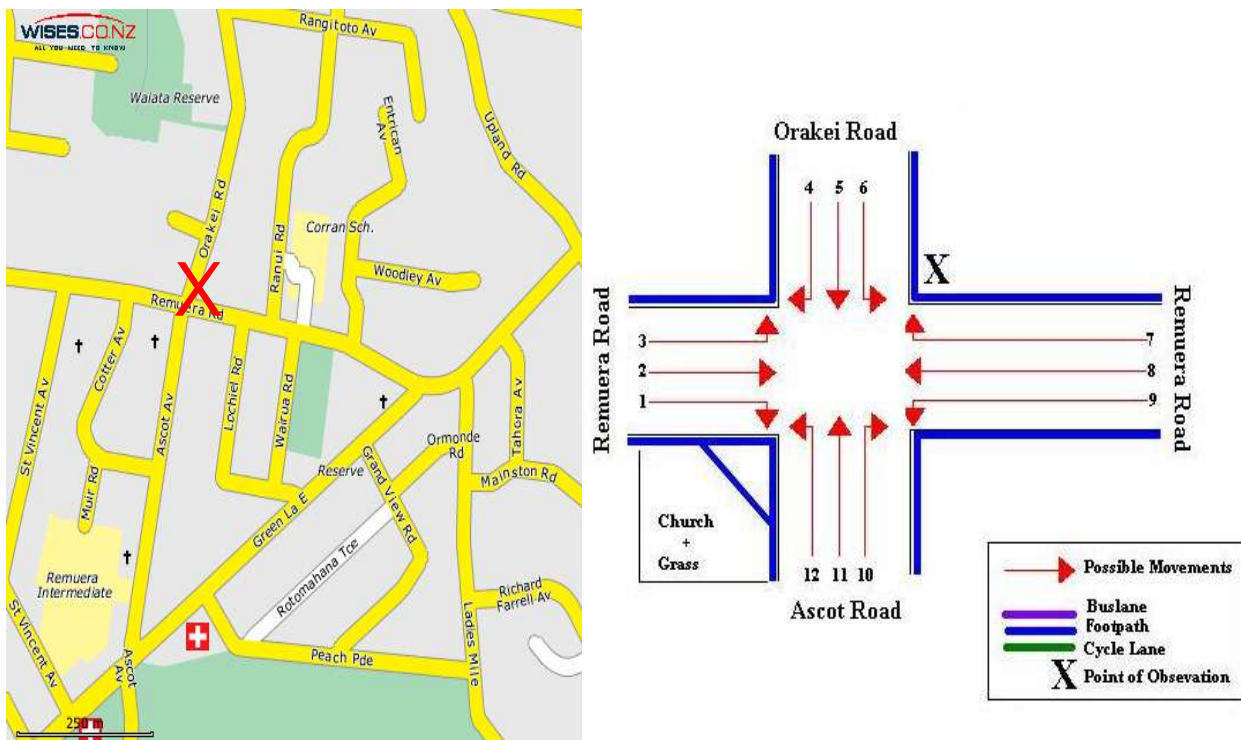
#### Key Points

- Of those eligible to cycle, on average two per cent of students are cycling to their schools (unchanged from 2012).
- Across the 18 eligible schools that responded, n=175 students were reported to cycle to school.
- Churchill Park School and Stonefields School reported the highest share of cyclists – each with 10 per cent of all eligible students currently cycling.
- Of the 18 eligible schools that responded, 4 (22 per cent) had no students cycling to school.
- Rates of cycling to school are highest among intermediate schools (6 per cent, unchanged from 2012). Composite schools had the lowest rates of cycling (no students cycling).

## 2. REMUERA/ORAKEI/ASCOT ROAD, REMUERA (SITE 11)

Figure 2.1 shows the possible cyclist movements at this intersection.

**Figure 2.1: Cycle Movements: Remuera/Orakei/Ascot**



### 2.1 Site Summary

	Raw Counts			AADT
	Morning Peak	Evening Peak	Total	Total
2007	86	109	195	282
2008	100	89	189	276
2009	107	80	187	274
2010	149	95	244	359
2011	173	107	280	412
2012	142	71	213	315
<b>2013</b>	<b>232</b>	<b>116</b>	<b>348</b>	<b>515</b>



## 2.2 Morning Peak

### Environmental Conditions

- The weather was fine throughout the morning shift.
- Police officers were at the intersection from 7:30am to 9:00am monitoring red light running.

### Key Points

- Morning cyclist numbers recorded at the Remuera/Orakei/Ascot intersection in 2013 are the highest since monitoring began in 2007 (232 movements).
- There were eight pelotons passing by during the monitoring period, comprising a total of 116 cyclists. This accounts for half of the cycle traffic (232 cyclists).
- The most common movement at this site continued to be heading west on Remuera Road (Movement 8 = 80 cyclists).
- The most notable change in cyclist volumes was Movement 3 (up by 68 cyclists from 2012).

*Note: Movement 3 was predominantly made by three pelotons (a total of 66 riders) moving through this site between 6:40am and 6:43am.*

**Table 2.1: Morning Cyclist Movements  
Remuera/Orakei/Ascot 2007 – 2013 (n)**

<b>Movement</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Change 12-13</b>
1	0	0	0	0	2	1	19	18
2	19	25	24	56	30	56	42	-14
3	4	1	3	5	3	4	72	68
4	3	9	12	10	70	14	9	-5
5	2	4	3	7	4	4	6	2
6	3	9	1	4	5	1	0	-1
7	0	0	4	2	3	1	1	0
8	52	45	56	63	55	60	80	20
9	0	0	0	2	0	0	1	1
10	0	1	0	0	0	0	0	0
11	1	2	1	0	1	0	0	0
12	2	4	3	0	0	1	2	1
<b>Total</b>	<b>86</b>	<b>100</b>	<b>107</b>	<b>149</b>	<b>173</b>	<b>142</b>	<b>232</b>	<b>90</b>





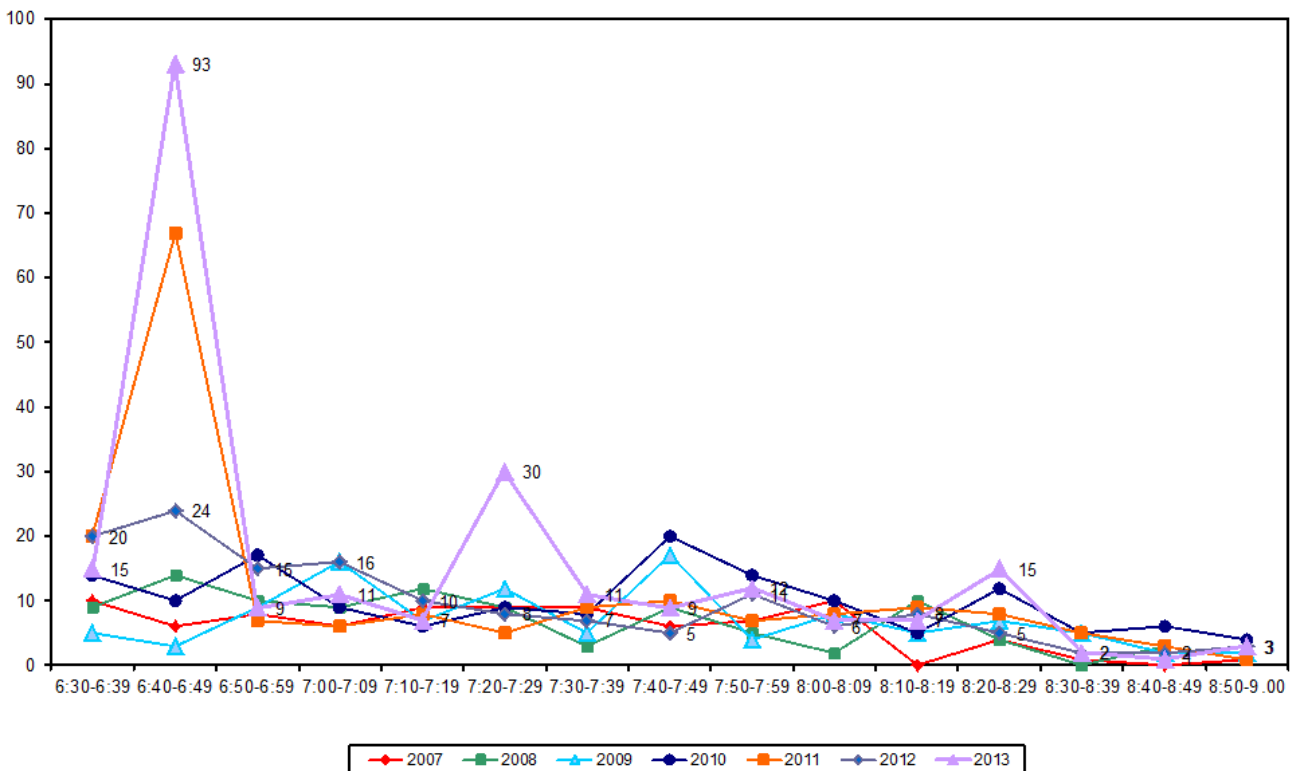
- Ninety per cent of cyclists in the morning at this site were adults (stable from 89 per cent last year).
- Helmet wearing continued to be widespread (92 per cent, down from 100 per cent last year).
- Seventy-eight per cent of the cyclists were male (down from 85 per cent in 2012).
- The share of cyclists riding on the road has remained stable (96 per cent, compared with 95 per cent 12 months ago).

**Table 2.2: Morning Cyclist Characteristics  
Remuera/Orakei/Ascot 2004 – 2013 (%)**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Change 12-13
<b>Cyclist Type</b>											
Adult	89	85	89	91	97	94	91	94	89	90	1
School child	11	15	11	9	3	6	9	6	11	10	-1
<b>Helmet Wearing</b>											
Helmet on head	98	97	99	98	98	98	97	99	100	92	-8
No helmet	2	3	1	2	2	2	3	1	0	1	1
Can't tell	-	-	-	-	-	-	-	-	-	7	7
<b>Gender</b>											
Male	-	-	-	-	-	-	-	58	85	78	-7
Female	-	-	-	-	-	-	-	16	14	22	8
Can't tell	-	-	-	-	-	-	-	26	1	0	-1
<b>Where Riding</b>											
Road	83	79	86	90	92	94	90	92	95	96	1
Footpath	17	21	14	10	8	6	10	8	5	4	-1
<b>Base:</b>	<b>46</b>	<b>78</b>	<b>73</b>	<b>86</b>	<b>100</b>	<b>107</b>	<b>149</b>	<b>173</b>	<b>142</b>	<b>232</b>	

- This year, morning cyclist volume started with a particularly noticeable peak of 93 cyclists between 6:40am and 6:49am. The volume then dropped low for about half an hour and picked up again between 7:20am and 7:29am (30 cyclist movements). From 7:50am onwards, the number of morning cyclist remained at or below 15 until the end of the monitoring period.

**Figure 2.2: Morning Peak Cyclist Frequency  
Remuera/Orakei/Ascot 2007 – 2013 (n)**



Note: In 2013, 50 per cent of the total cycle movements (n=116) at this site were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- 4 cyclists at 6:37am
- 12 cyclists at 6:40am
- 6 cyclists at 6:41am
- Another group of 14 cyclists at 6:41am
- 27 cyclists at 6:43am
- Another group of 27 cyclists at 6:43am
- 12 cyclists at 7:23am
- 14 cyclists at 7:28am.

## 2.3 Evening Peak

### Environmental Conditions

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

### Key Points

- The volume of cyclists recorded between 4:00pm and 7:00pm at this site in 2013 (116 movements) showed an increase from that recorded last year (71 movements).
- The key movement in the evening at this site was east along Remuera Road (Movement 2 = 71 cyclists).
- The most noticeable change in cyclist volumes recorded was at Movement 2 (up 23 cyclists).

**Table 2.3: Evening Cyclist Movements  
Remuera/Orakei/Ascot 2007 – 2013 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>Change 12-13</i>
1	3	3	2	0	1	2	4	2
2	60	49	41	60	78	48	71	23
3	6	4	6	8	2	4	12	8
4	4	0	2	2	1	0	7	7
5	4	0	1	0	1	1	2	1
6	1	5	2	3	2	0	1	1
7	2	5	1	0	2	0	1	1
8	22	16	19	17	17	9	14	5
9	0	0	1	0	1	1	0	-1
10	1	1	0	1	0	1	0	-1
11	5	6	5	3	2	3	2	-1
12	1	0	0	1	0	2	2	0
<b>Total</b>	<b>109</b>	<b>89</b>	<b>80</b>	<b>95</b>	<b>107</b>	<b>71</b>	<b>116</b>	<b>45</b>



- The majority of cyclists in the evening were adults (90 per cent, stable from 87 per cent last year).
- Almost all cyclists were wearing a helmet (stable from 99 per cent in 2012).
- Most cyclists were male (84 per cent, stable from 86 per cent last year).
- Compared with last year, the incidence of riding on the road has increased to 92 per cent (up from 87 per cent). The remaining 8 per cent of cyclists were observed riding on the footpath.

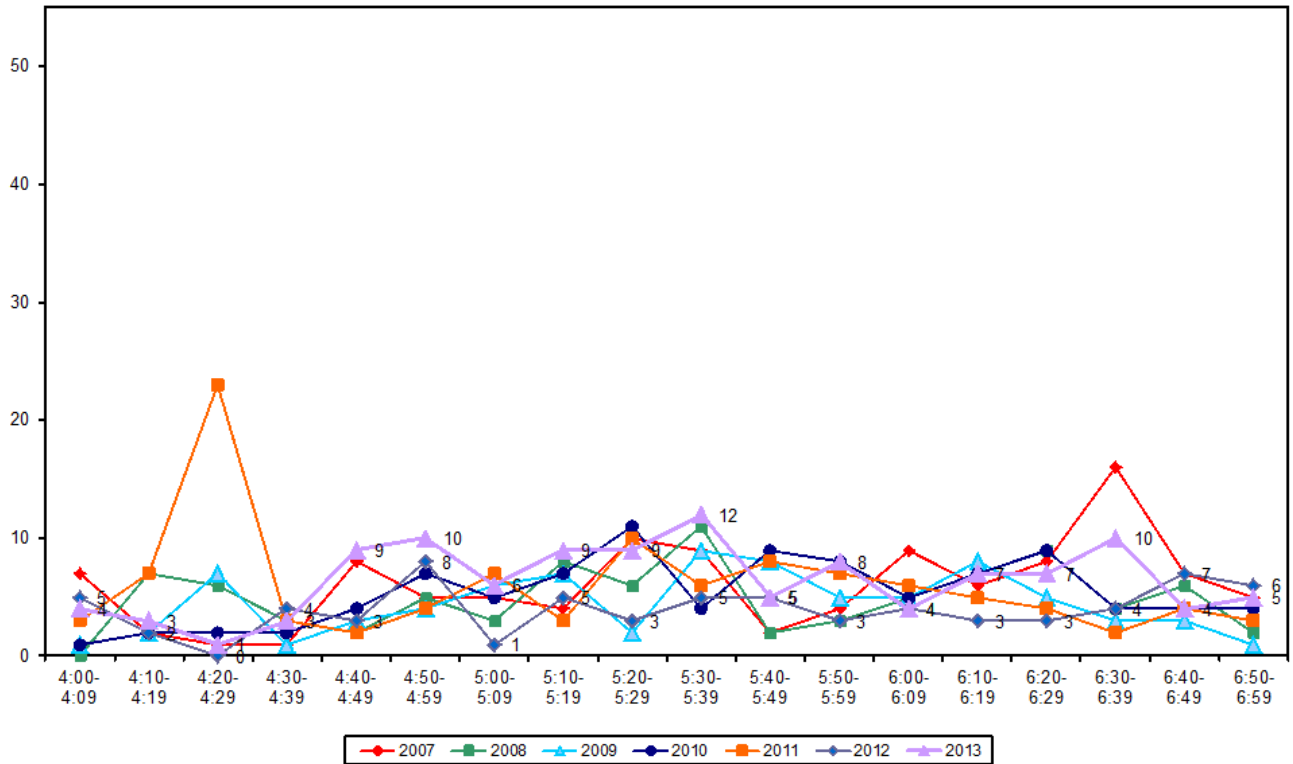
**Table 2.4: Evening Cyclist Characteristics  
Remuera/Orakei/Ascot 2004 – 2013 (%)**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Change 12-13
<b>Cyclist Type</b>											
Adult	73	99	97	94	89	98	94	84	87	90	3
School child	27	1	3	6	11	2	6	16	13	10	-3
<b>Helmet Wearing</b>											
Helmet on head	94	100	100	98	96	98	95	100	99	100	1
No helmet	6	0	0	2	4	2	5	0	1	0	-1
<b>Gender</b>											
Male	-	-	-	-	-	-	-	79	86	84	-2
Female	-	-	-	-	-	-	-	10	14	16	2
Can't tell	-	-	-	-	-	-	-	11	0	0	0
<b>Where Riding</b>											
Road	86	75	84	92	89	90	87	93	87	92	5
Footpath	14	25	16	8	11	10	13	7	13	8	-5
<b>Base:</b>	<b>49</b>	<b>73</b>	<b>32</b>	<b>109</b>	<b>89</b>	<b>80</b>	<b>95</b>	<b>107</b>	<b>71</b>	<b>116</b>	



- This year, evening cyclist volume remained low. There was no obvious peak or trough in cycle movements. The maximum number of cyclists was 12 and occurred from 5:30pm to 5:39pm. No pelotons were evident at this site in the evening.

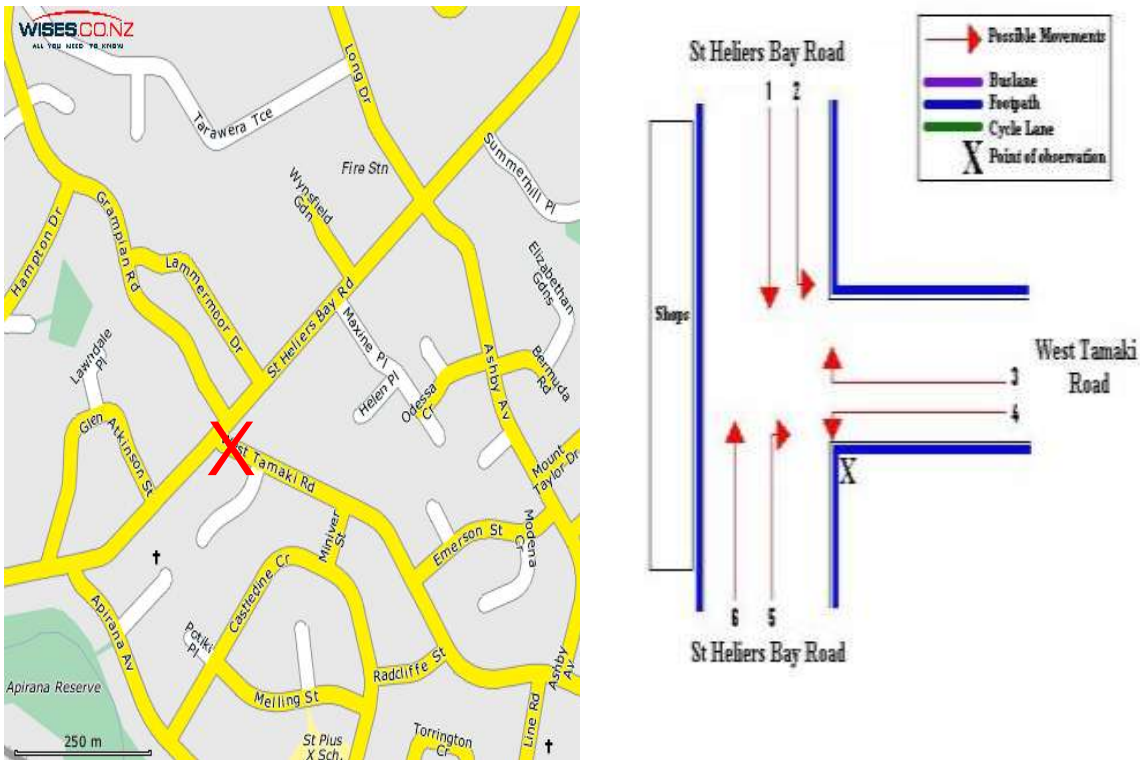
**Figure 2.3: Evening Peak Cyclist Frequency**  
**Remuera/Orakei/Ascot 2007 – 2013 (n)**



### 3. ST HELIERS BAY ROAD/WEST TAMAKI ROAD, GLEN INNES (SITE 20)

Figure 3.1 shows the possible cyclist movements at this intersection.

**Figure 3.1: Cycle Movements: St Heliers Bay/West Tamaki Road**



#### 3.1 Site Summary

	Raw Counts			AADT
	Morning Peak	Evening Peak	Total	Total
2007	139	69	208	308
2008	107	60	167	246
2009	61	47	108	158
2010	98	72	170	249
2011	150	74	224	331
2012	86	49	135	199
<b>2013</b>	<b>177</b>	<b>71</b>	<b>248</b>	<b>369</b>



### 3.2 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 peak cyclists at the St Heliers Bay/West Tamaki Road intersection has increased noticeably from last year – up from 86 to 177 movements this year.
- More than half of the movements in the morning were made by pelotons (101 movements).
- The key morning movement was turning right on to West Tamaki Road from St Heliers Bay Road (Movement 5 = 86 cyclists). There have been 61 more cyclists making this movement this year compared with last year.

**Table 3.1: Morning Cyclist Movements**  
**St Heliers Bay/West Tamaki Road 2007 – 2013 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>Change 12-13</i>
1	17	14	16	20	19	17	24	7
2	4	4	1	5	4	3	3	0
3	21	7	5	7	6	3	28	25
4	5	14	12	12	33	12	19	7
5	69	53	7	21	61	25	86	61
6	23	15	20	33	27	26	17	-9
<b>Total</b>	<b>139</b>	<b>107</b>	<b>61</b>	<b>98</b>	<b>150</b>	<b>86</b>	<b>177</b>	<b>91</b>



- Over the morning peak, adults comprised the greatest share of cycle movements (92 per cent, up from 88 per cent the previous year).
- Nearly all cyclists were wearing a helmet (92 per cent, down from 99 per cent last year).
- Eighty-five per cent of cyclists were male.
- Consistent with last year, the majority of cyclists were riding on the road (93 per cent, unchanged from the last measure).

**Table 3.2: Morning Cyclist Characteristics  
St Heliers Bay/West Tamaki Road 2007 – 2013 (%)**

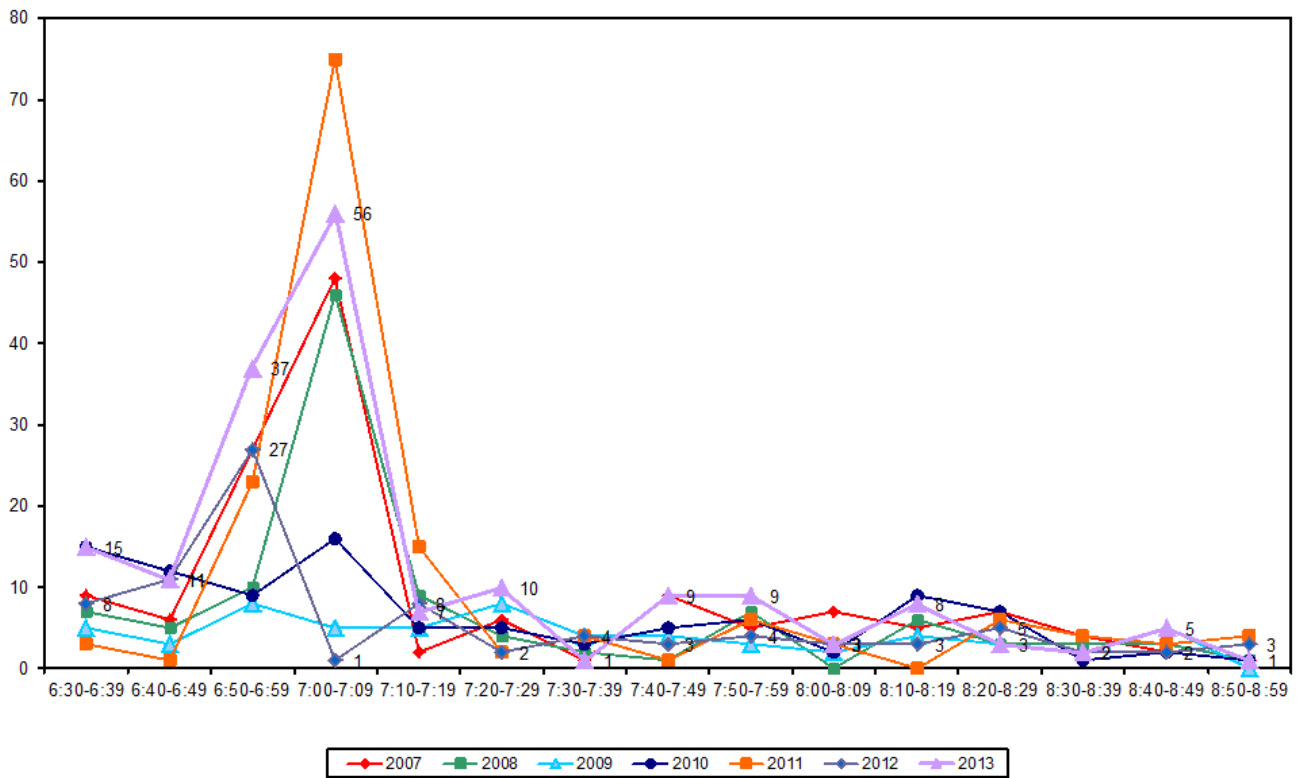
	2007	2008	2009	2010	2011	2012	2013	Change 12-13
<b>Cyclist Type</b>								
Adult	87	93	92	93	95	88	92	4
School child	13	7	8	7	5	12	8	-4
<b>Helmet Wearing</b>								
Helmet on head	100	97	98	100	99	99	92	-7
No helmet	0	3	2	0	1	1	2	1
Can't tell	-	-	-	-	-	-	6	6
<b>Gender</b>								
Male	-	-	-	-	84	69	85	16
Female	-	-	-	-	16	15	15	0
Can't tell	-	-	-	-	0	16	0	-16
<b>Where Riding</b>								
Road	87	92	93	95	93	93	93	0
Footpath	13	8	7	5	7	7	7	0
<b>Base:</b>	<b>139</b>	<b>107</b>	<b>61</b>	<b>98</b>	<b>150</b>	<b>86</b>	<b>177</b>	





- There was a sharp peak between 6:50am and 7:09am (a total of 63 cyclists) which then fell to become a stable volume of movements for the remainder of the monitoring period. This trend was consistent with previous years.

**Figure 3.2: Morning Peak Cyclist Frequency  
St Heliers Bay/West Tamaki Road 2007 – 2013 (n)**



Note: In 2013, 57 per cent of the total cycle movements (n=101) in the morning peak were identified as cycling in groups. Three or more cyclists were observed travelling in groups at this site at the following times:

- 4 cyclists at 6:30am
- 4 cyclists at 6:32am
- 3 cyclists at 6:37am
- 3 cyclists at 6:40am
- 17 cyclists at 6:52am
- 3 cyclists at 6:57am
- 13 cyclists at 6:59am
- 30 cyclists at 7:02am
- 20 cyclists at 7:05am
- 4 cyclists at 7:06am.

### 3.3 Evening Peak

#### *Environmental Conditions*

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

#### *Key Points*

- The number of evening cycle movements recorded at the St Heliers Bay/West Tamaki Road intersection has increased by 22 movements, to a total of 71 movements in 2013.
- The key movement at this site in the evening was straight along St Heliers Bay Road heading north (Movement 6 = 26 cyclists).
- The most noticeable increases were at Movement 5 and at Movement 4, up 7 cyclists and 6 cyclists respectively.

**Table 3.3: Evening Cyclist Movements  
St Heliers Bay/West Tamaki Road 2007 – 2013 (n)**

<i>Movement</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>Change 12-13</i>
1	22	19	15	23	17	9	14	5
2	6	6	7	6	6	5	4	-1
3	4	8	6	2	4	1	1	0
4	5	5	5	6	8	4	10	6
5	3	12	7	9	11	9	16	7
6	29	10	7	26	28	21	26	5
<b>Total</b>	<b>69</b>	<b>60</b>	<b>47</b>	<b>72</b>	<b>74</b>	<b>49</b>	<b>71</b>	<b>22</b>



- Consistent with the morning peak, the greatest share of cyclists using this intersection were adults (86 per cent, up from 73 per cent in 2012).
- Most cyclists at this site were wearing a helmet (92 per cent, unchanged from last year).
- Eighty-three per cent of cyclists were male, up from 71 per cent last year.
- The majority of cyclists were riding on the road (83 per cent, stable from 82 per cent last year).

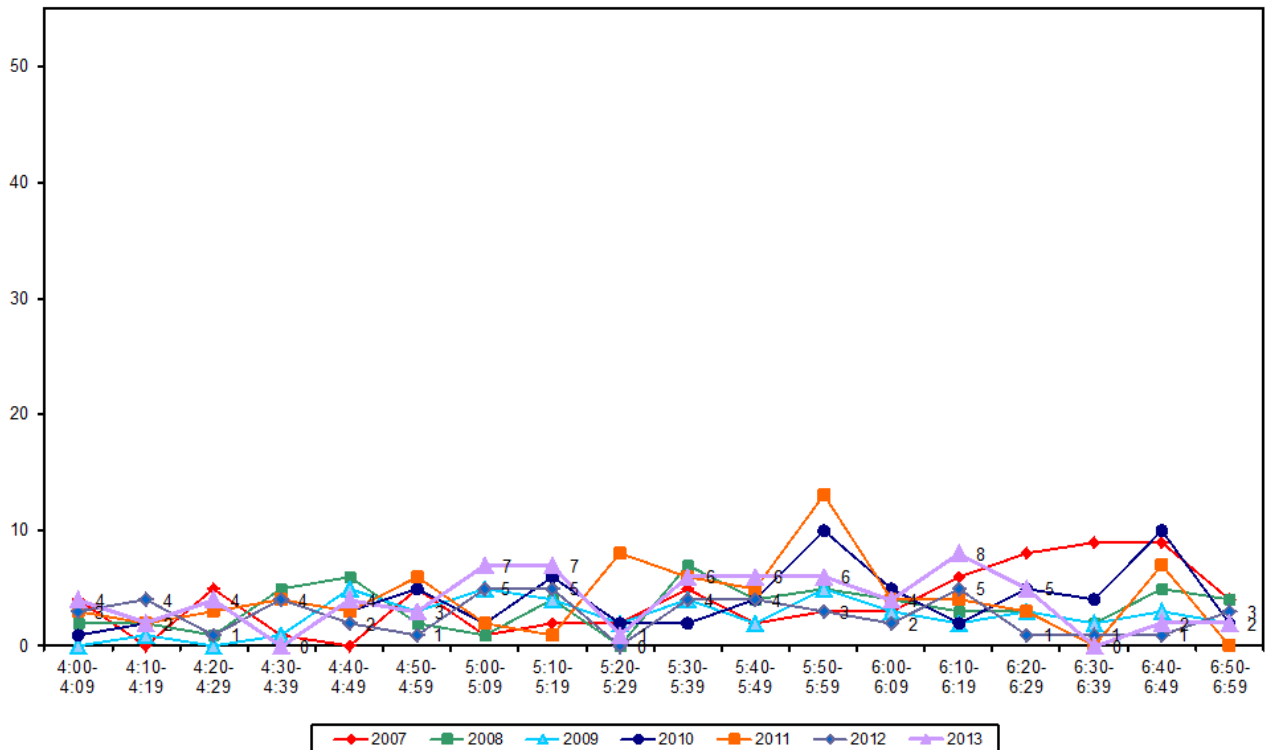
**Table 3.4: Evening Cyclist Characteristics  
St Heliers Bay/West Tamaki Road 2007 – 2013 (%)**

	2007	2008	2009	2010	2011	2012	2013	Change 12-13
<b>Cyclist Type</b>								
Adult	93	88	89	96	89	73	<b>86</b>	<b>13</b>
School child	7	12	11	4	11	27	<b>14</b>	<b>-13</b>
<b>Helmet Wearing</b>								
Helmet on head	99	92	94	96	88	92	<b>92</b>	<b>0</b>
No helmet	1	8	6	4	12	8	<b>8</b>	<b>0</b>
<b>Gender</b>								
Male	-	-	-	-	91	71	<b>83</b>	<b>12</b>
Female	-	-	-	-	9	27	<b>17</b>	<b>-10</b>
Can't tell	-	-	-	-	0	2	<b>0</b>	<b>-2</b>
<b>Where Riding</b>								
Road	88	87	87	96	76	82	<b>83</b>	<b>1</b>
Footpath	12	13	13	4	24	18	<b>17</b>	<b>-1</b>
<b>Base:</b>	<b>69</b>	<b>60</b>	<b>47</b>	<b>72</b>	<b>74</b>	<b>49</b>	<b>71</b>	



- The volume of evening cycle movements was relatively stable throughout the evening period, with a maximum of eight cyclists from 6:10pm to 6:19pm. The trough between 5:20pm to 5:29pm was consistent with previous years.

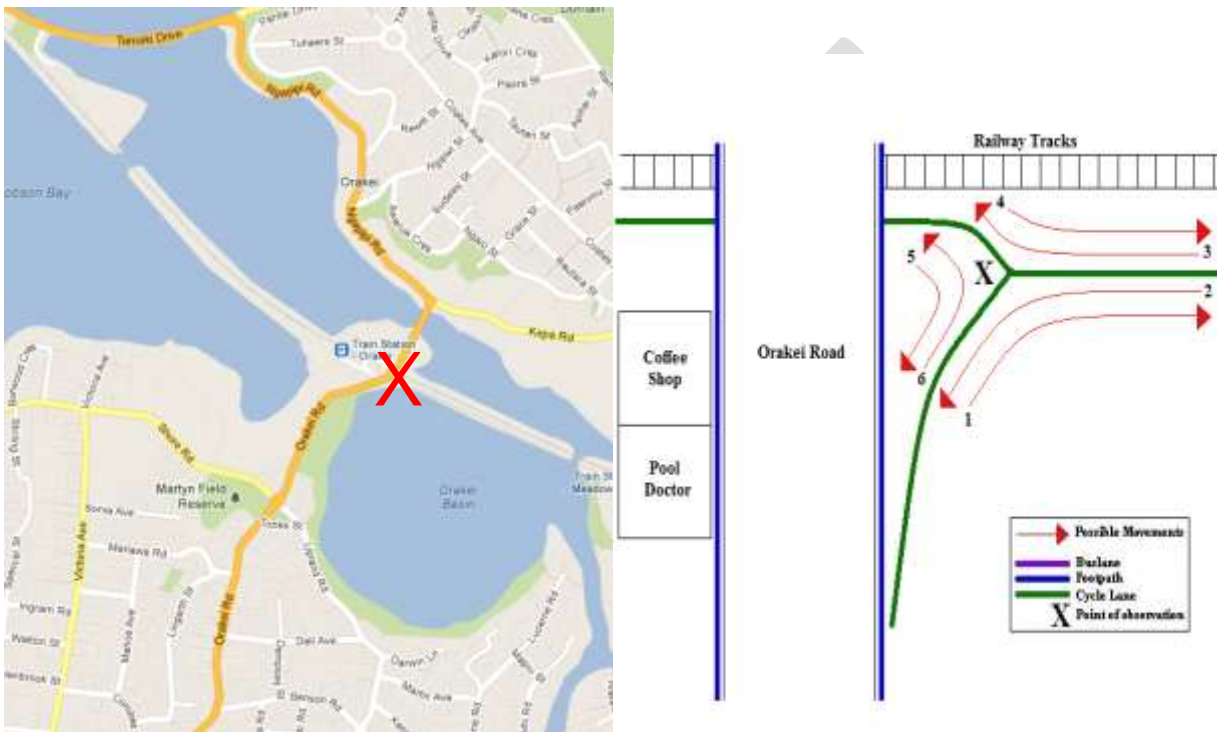
**Figure 3.3: Evening Peak Cyclist Frequency  
St Heliers Bay/West Tamaki Road 2007 – 2013 (n)**



# 4. ORAKEI BASIN BOARDWALK, ORAKEI (SITE 91)

Figure 4.1 shows the possible cyclist movements at this site.

**Figure 4.1: Cycle Movements: Orakei Basin Boardwalk**



*Note: This site was monitored for the first time in 2013, therefore no comparative results are available.*

## 4.1 Site Summary

	Raw Counts			AADT
	Morning Peak	Evening Peak	Total	Total
2013	14	18	32	46

## 4.2 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*

- Fourteen movements were recorded in the morning shift.
- The key morning movement was riding from Orakei Basin towards Ngapipi Road (Movement 3 = 9 cyclists).

**Table 4.1: Morning Cyclist Movements  
Orakei Basin Boardwalk 2013 (n)**

<i><b>Movement</b></i>	<i><b>2013</b></i>
1	3
2	2
3	9
4	0
5	0
6	0
<b>Total</b>	<b>14</b>



- All cyclists at this site were adults.
- All cyclists were wearing a helmet.
- Eighty-six per cent of cyclists were male.
- All cyclists made use of the off-road cycleway.

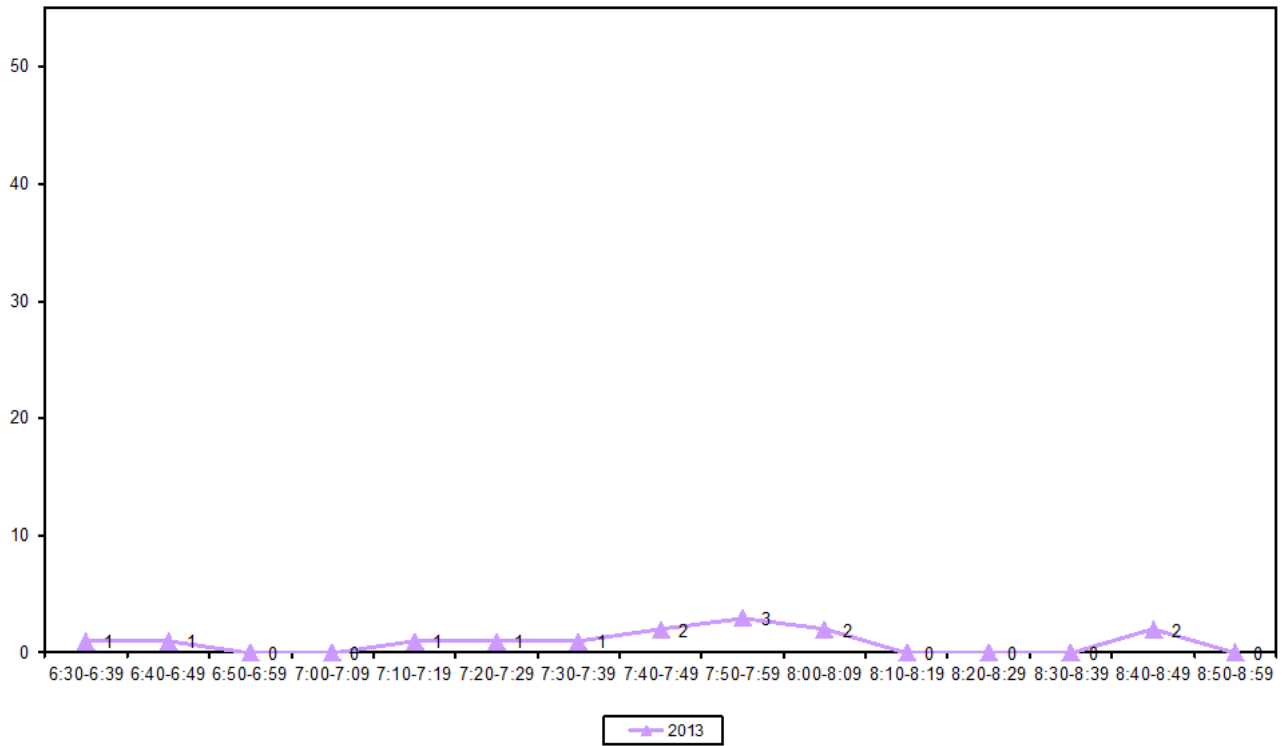
**Table 4.2: Morning Cyclist Characteristics  
Orakei Basin Boardwalk 2013 (%)**

	<b>2013</b>
<b>Cyclist Type</b>	
Adult	<b>100</b>
School child	<b>0</b>
<b>Helmet Wearing</b>	
Helmet on head	<b>100</b>
No helmet	<b>0</b>
<b>Gender</b>	
Male	<b>86</b>
Female	<b>14</b>
Can't tell	<b>0</b>
<b>Where Riding</b>	
Road	<b>0</b>
Footpath	<b>0</b>
Off-road cycleway	<b>100</b>
<b>Base:</b>	<b>14</b>



- Morning cycle volume was very low at this site, with no more than three cycle movements during any ten minute interval.

**Figure 4.2: Morning Peak Cyclist Frequency  
Orakei Basin Boardwalk 2013 (n)**



Orakei



## 4.3 Evening Peak

### *Environmental Conditions*

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

### *Key Points*

- Eighteen cycle movements were recorded in the evening shift.
- The key morning movement was heading from Ngapipi Road towards Orakei Basin (Movement 4 = 9 cyclists).

**Table 4.3: Evening Cyclist Movements  
Orakei Basin Boardwalk 2013 (n)**

<i>Movement</i>	<i>2013</i>
1	7
2	0
3	2
4	9
5	0
6	0
<b>Total</b>	<b>18</b>



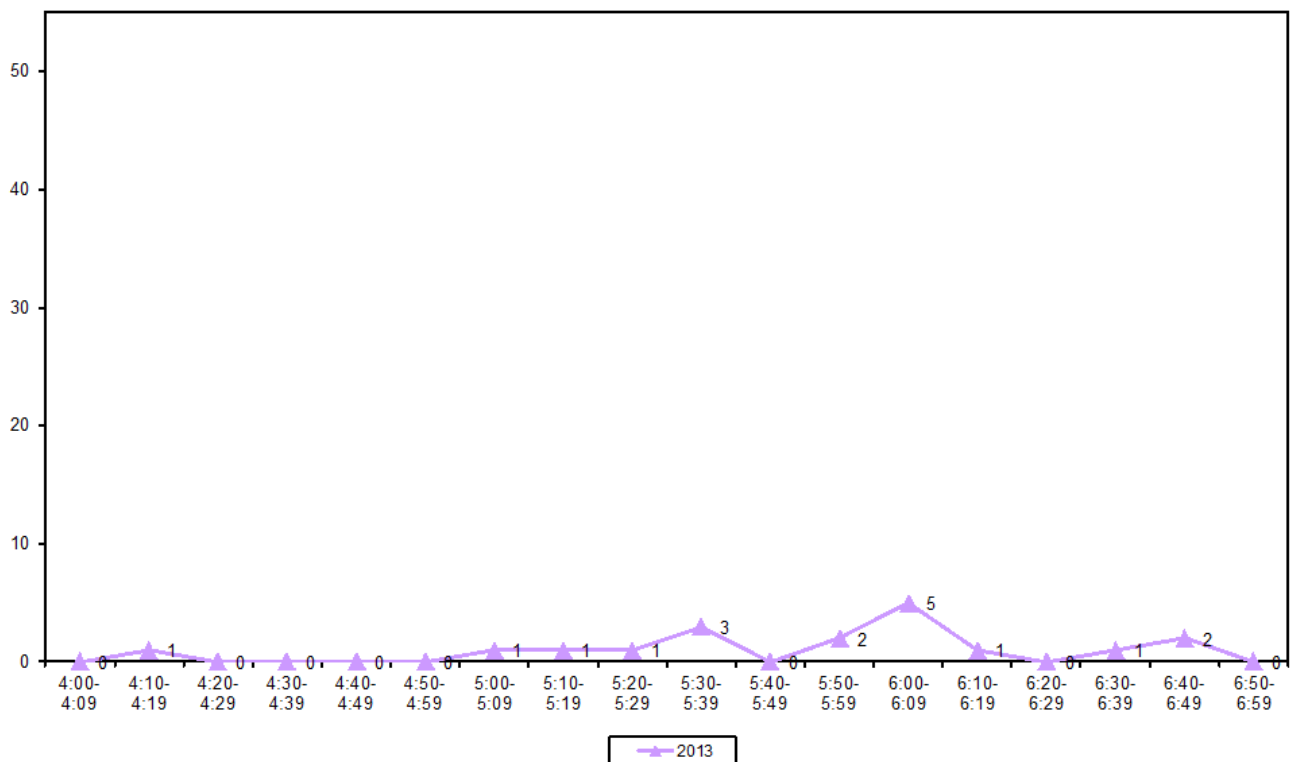
- All cyclists at this site in the evening were adults.
- Most cyclists at this site were wearing a helmet (83 per cent).
- Eighty-three per cent of cyclists were male, 17 per cent were female.
- All cyclists made use of the off-road cycleway.

**Table 4.4: Evening Cyclist Characteristics  
Orakei Basin Boardwalk 2013 (%)**

	<b>2013</b>
<b>Cyclist Type</b>	
Adult	<b>100</b>
School child	<b>0</b>
<b>Helmet Wearing</b>	
Helmet on head	<b>83</b>
No helmet	<b>17</b>
<b>Gender</b>	
Male	<b>83</b>
Female	<b>17</b>
Can't tell	<b>0</b>
<b>Where Riding</b>	
Road	<b>0</b>
Footpath	<b>0</b>
Off-road cycleway	<b>100</b>
<b>Base:</b>	<b>18</b>

- Figure 4.3 illustrates the total number of cyclists by time of movement in the evening shift. The first half of the evening was very quiet. From 5:20pm the site became slightly busier, with three small peaks visible (5:30pm – 5:39pm with 3 cyclists, 6:00pm – 6:09pm with 5 cyclists and 6:40pm – 6:49pm with 2 cyclists).

**Figure 4.3: Evening Peak Cyclist Frequency  
Orakei Basin Boardwalk 2013 (n)**





## 5. SCHOOL BIKE SHED COUNT

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*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 18 schools in the Orakei ward participated in the school bike shed count.
- Of the schools that responded to the survey, most did not have policies that restrict students cycling to school<sup>9</sup>.
- Of the schools that responded to the survey, no school reported any events or issues that may affect cycle counts.
- Although the designated count day was Tuesday 5<sup>th</sup> of March 2013, most schools in the Orakei ward completed their count on an alternative day<sup>10</sup>.

### **Key Points**

- Of those eligible to cycle, on average two per cent of students are cycling to their schools (unchanged from 2012).
- Across the 18 eligible schools that responded, n=175 students were reported to cycle to school.
- Churchill Park School and Stonefields School reported the highest share of cyclists – each with 10 per cent of all eligible students currently cycling.
- Of the 14 schools that participated in the survey in both 2012 and 2013, five schools (Churchill Park School, Stonefields School, Mt Hobson Middle School, Selwyn College and Glen Taylor School) have increased the share of students that cycle.
- Of the 14 schools that participated in the count in both 2012 and 2013, 3 (21 per cent) reported a decrease in the share of students cycling.
- Of the 18 eligible schools that responded, 4 (22 per cent) had no students cycling to school.

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<sup>9</sup> The following schools had policies surrounding riding bicycles to school:

- Churchill Park School *“Students must be aged 10 years or older (Years 6,7,8)”*
- Glendowie Primary School *“Students need permission if under 10”*
- King’s School *“Pupils from Year 5 may ride to school”*
- St Heliers School *“Students from Year 5-8 can cycle to school unassisted, Year 0-4 must be accompanied by an adult if they are cycling to school. All levels are allowed to cycle to school just depends if they are assisted or not”*

<sup>10</sup> The following schools undertook counts on alternative days:

- Churchill Park School – 13<sup>th</sup> March 2013
- Glendowie Primary School – 13<sup>th</sup> March 2013
- King’s School – 28<sup>th</sup> February 2013
- Kohimarama School – 13<sup>th</sup> March 2013
- Orakei School – 13<sup>th</sup> March 2013
- Remuera Intermediate School – 11<sup>th</sup> March 2013
- Sacred Heart College – 14<sup>th</sup> March 2013
- Saint Kentigern Girls’ School – 28<sup>th</sup> February 2013
- Saint Kentigern Primary School (Remuera) – 13<sup>th</sup> March 2013
- Selwyn College – 6<sup>th</sup> March 2013
- Stonefields School – 13<sup>th</sup> March 2013



Table 4.1 shows the results of the 18 schools surveyed in the Orakei ward.

**Table 4.1: Summary Table of School Bike Count  
2007 – 2013 (n)**

School Name	School Type	School Roll Eligible To Cycle	No. of Cycles	Cyclists as share of those eligible <sup>11</sup>						
				2013	2012	2011	2010	2009	2008	2007
Churchill Park School	Full Primary	146	14	10%	6%	2%	-	-	-	-
Stonefields School	Full Primary	250	25	10%	5%	-	-	-	-	-
Mt Hobson Middle School	Intermediate/Secondary	55	4	7%	6%	-	-	-	-	-
Remuera Intermediate	Intermediate	952	54	6%	6%	6%	5%	7%	5%	9%
Selwyn College	Secondary	887	29	3%	2%	2%	2%	2%	1%	-
Glendowie Primary School	Full Primary	630	10	2%	2%	4%	-	-	-	-
Glen Taylor School	Full Primary	234	2	1%	0%	-	-	-	-	-
Glendowie College	Secondary	1020	8	1%	1%	1%	1%	1%	-	-
Kohimarama School	Full Primary	500	5	1%	1%	-	-	-	-	-
Orakei School	Full Primary	142	1	1%	-	-	-	-	-	-
Saint Kentigern Primary School (Remuera)	Full Primary	500	3	1%	-	-	-	-	-	-
Sacred Heart College	Intermediate/Secondary	1200	7	1%	-	1%	-	1%	1%	-
St Heliers School	Full Primary	711	10	1%	2%	-	-	-	-	-
St Thomas School	Full Primary	670	3	<1%	-	<1%	-	-	-	-
Baradene College of the Sacred Heart	Intermediate/Secondary	1057	0	0%	0%	0%	0%	0%	<1%	0%
King's School	Full Primary	400	0	0%	<1%	-	-	-	-	-
Saint Kentigern Girls' School	Full Primary	157	0	0%	0%	0%	0%	-	-	-

<sup>11</sup> This share is calculated by averaging the number of cycles counted over the total number of students eligible to cycle. The figure obtained is rounded to zero decimal places.



School Name	School Type	School Roll Eligible To Cycle	No. of Cycles	Cyclists as share of those eligible <sup>11</sup>						
				2013	2012	2011	2010	2009	2008	2007
The Bridge Academy	Composite	0	0	0%	100%	0%	0%	-	-	-
<b>Total</b>		<b>9511</b>	<b>175</b>	<b>2%</b>	2%	2%	-	-	-	-



Table 4.2 illustrates the rates of cycling to school at different school levels. Rates of cycling to school are highest among intermediate schools (6 per cent, unchanged from 2011). Composite schools had the lowest rates of cycling (no cyclists).

**Table 4.2: Summary Table of School Bike Count by School Type  
2007 – 2013 (%)**

<i>School Type</i>	<i>Number of Schools Responded in 2013</i>	<i>Cyclists as share of those eligible</i>							<i>Change 12-13</i>
		<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	
Intermediate	1	9%	5%	7%	5%	6%	6%	6%	0%
Full Primary	11	-	-	-	-	2%	2%	2%	0%
Secondary	2	-	1%	1%	1%	2%	2%	2%	0%
Intermediate/Secondary	3	0%	<1%	<1%	0%	1%	<1%	1%	0%
Composite	1	-	-	-	0%	0%	100%	0%	-100%



gravitas

## **APPENDICES**

Appendix One: Annual Average Daily Traffic (AADT) Calculation





# APPENDIX ONE: ANNUAL AVERAGE DAILY TRAFFIC (AADT) CALCULATION

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**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<sup>12</sup> 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)<sup>13</sup>, 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.

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<sup>12</sup> Annual average daily traffic

<sup>13</sup> LTSA, 2004



For the Gravitas counts, the following factors apply:

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

D = 14%

W = 0.9

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

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

	Morning	Afternoon
Dry weather	3.06	2.78
Wet weather	4.78	4.35

### Worked Example

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

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



Figure 1: Scale Factors for Auckland Region

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

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

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

Weather	R
Fine	100%
Rain	64%