State of the Environment Report

Tasman's Natural Swimming Holes and Beaches

Popularity and Effects on the Recreational Experience

2011

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June 2011

This report presents results of an opinion survey of recreational users of swimming holes in rivers and coastal beaches in Golden and Tasman Bay, as well as sampling the numbers of people using these areas by aerial surveys, traffic counts and on-site counts. Useful feedback for Council was received about the issues that recreational users have that affect their enjoyment of swimming and associated activities. Several recommendations are made about the monitoring and management of this resource.

Prepared by: Trevor James, Tasman District Council

Reviewed by: Kay Anderson and Mary-Anne Baker, Tasman District Council

Report approved for release by: Rob Smith, Tasman District Council

Survey design comment and fieldwork assistance provided by:
Trevor James, Kay Anderson, Mary-Anne Baker, Ben Young, Bettina Koessler, Lisa Gargiulo, Catherine Bryant, Olivia Johnston and Mark Derksen.

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Trevor James, Resource Scientist
Tasman District Council
189 Queen St
Private Bag 4
RICHMOND
Nelson 7050
Trevor.james@tasman.govt..nz

Executive Summary

Swimming in rivers and coastal beaches is a popular recreation activity in Tasman. Information about the popularity of particular sites allows Council to better manage activities in rivers that may adversely affect this recreation and better provide for the safety and enjoyment of these users in a systematic and properly-prioritised way. This information also helps to ensure that monitoring is taking place at sites where the risk of illness from poor water quality is greatest. Risk is calculated by multiplying the number of people affected with the type and frequency/likelihood of discharge of faecal matter to the river.

A survey in the 1985-86 season provide useful information on relative usage of swimming sites in the Waimea catchment (including Lee, Wairoa and Roding Rivers) but the accuracy of actual swimmer count data is open to question. The opinions of people using sites were also useful for determining the. This information has not previously been sought, except in the Waimea catchment in 1985. In 1981 a survey of the whole of Tasman District showed Kaiteriteri/Marahau and Rabbit Island as the most popular beaches and the Lee and Roding were the most popular rivers.

During the 2010-11 summer season Tasman District Council undertook a study of local swimming holes and beaches to determine the relative popularity of particular sites to assist Council to better manage these areas. This study used the following methods: 1. Counts of users of swimming beaches/holes (by aerial survey, on-site counts and traffic counts at selected sites) and 2. Opinion surveys focusing on factors that affect the swimming experience. Aerial surveys were carried out on two days, one of which (6 February) was one of the hottest and most popular swimming days of the season. This method was very useful at assessing the number of users of a site over a large area in a short space of time so time-of-day biases were kept to a minimum, as well as seeing sites previously unknown to Council. A total of 287 people were interviewed at sites on rivers and marine beaches known to be popular on four of the most popular swimming days of the summer. Traffic counts were carried out at 7 sites, 4 in the Roding, Lee and Wairoa catchments, and 3 on Rabbit Island. The three user-count methods correlated well. All these methods were used at sites covering most of the region. Unfortunately, resources were not available to include sites in Abel Tasman National Park, West Coast and the Buller catchments.

This study confirmed the high use of our coast and rivers for swimming and associated recreation such as picnicking and sunbathing. Relative use of most sites was as expected, but a few reasonably popular sites were thought to have low use or were not known to Council prior to this survey. Conversely, some previously thought reasonably popular, had low usage.

The Roding River at Twin Bridges and Busch Reserves had far and away the highest use. The popularity of rivers taken as a whole are listed in order from most popular to least popular: Roding > Lee > Takaka > Motupiko > Wairoa = Waimea > Motueka > *Buller* > Anatoki > Aorere. Rabbit Island Main Beach and Kaiteriteri Beach stood out strongly as being the most popular marine beaches.

The total number of people engaged in swimming in the Waimea catchment between 17 Dec and 27 Feb 2011 was estimated to be 115,000. The number of swimmers on the peak day in the Waimea catchment (6 February) was estimated at 4,000 persons. This was slightly higher than the peak day in 1985-86 and for Rabbit Island.

As expected the greatest use of swimming sites was during hot, dry weather on weekends or public holidays.

The issues of greatest concern to swimmers (starting from the highest level of importance) were: rubbish = concentration of disease-causing organisms = scums/foams/odour > sliminess = water clarity = safe for children and shallow areas = scenery = presence of toilets > peaceful > proximity to where I live or stay = too many other people = water temperature = deep water > power boats> Erosion = Rope swing or place to jump > being able to take dogs.

Rubbish, especially broken glass, was offensive to over 80% of people, but most respondents were very inclined to pick up rubbish. The concentration of **disease-causing organisms** was almost equally important and people expected Council to be managing that issue. Generally people thought that the level of faecal contamination was low and saw Council doing a good job to manage it. **Scums/foams/odour** was an issue that again about 80% of people would be concerned about if it was present at a swimming site.

Swimmers can put up with a little **sliminess in rivers** and slightly **murky water** at some sites, particularly marine beaches (e.g. Rabbit Island where water clarity of less than 1m is common). Obviously parents and grandparents are most keen on a safe environment (both physically and water quality) for children. The need for **shallow areas** was strongly linked to what is considered a safe swimming site for children. The quality of **scenery** was moderately important (65% of respondents). Having toilet facilities at site was thought of as a big draw card for a similar number of respondents.

Over half of all respondents were **prepared to travel** more than 30 minutes for swimming. **Over-crowded** sites were seen as an issue for about half of respondents. Of those people asked at what **water temperature** was the minimum required for swimming, most said 18^{o}C, but there are a few that will still use the site for swimming at temperatures down to 15^{o}C. This has implications for our monitoring as most sites reach this temperature in mid December and continue until late March. However Council's monitoring of bathing beaches starts and finishes about one month earlier than this. One of the reasons for this is that student resources are not available after mid February.

Approximately 40% of people liked **deep water** to swim in or jump into. The presence of **power boats** taking up space and being a threat to the safety of swimming was only a real issue at a few sites (e.g. Tata Beach) but almost 40% of people would be concerned if power boats became more common at swimming sites.

Erosion of the foreshore, or slips into the river, was an issue for about a quarter of respondents. Young people were very keen on **rope swings** and places to jump off into the water. Less than 20% of people wanted to **take their dog** to the swimming site. Most of the 80%+ respondents who did **not want dogs**, sited dog faeces and physical intimidation, particularly directed to children, as the main reasons. Many of those who object to dogs at swimming sites were dog owners themselves.

The idea of producing a guide to swimming spots of Tasman was raised with several site users and staff, and was generally favourably received. However, locals often jealously guard their 'secret spot' and any publicity about the location of the site should probably respect this. Rope swings are very important for youth.

Information from this study will be used to update Schedule 30.1 of the TRMP, review our BWQMP, and assist in upgrading Council parks and reserves.

Acknowledgements

Tasman District Council would like to thank the following people and organisations:

- all the 287 people who took the time to answer the questions in this survey
- Wilsons Abel Tasman Experience and Richmond Action Indoor Sports Arena for providing 50% of the cost of prizes used as incentive for participants
- Rob Greenaway of R&R Consulting (NZ) Ltd and Diana Parr from Department of Conservation for advice and suggestions about the survey design

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Introduction

Tasman District Council (TDC) has functions under the Resource Management Act to monitor and manage the environment, particularly where it is affected by resource use activities that have potential to cause adverse environmental effects on the uses and values.

Swimming in waterways of Tasman District is a very popular activity in summer. However, we have relatively little objective information on the number of people using these areas and the main factors that affect people's enjoyment of swimming at particular sites. In comparison the use of our rivers for angling is reasonably well known as Fish and Game Council undertakes regular angler surveys. Information on the popularity of swimming in rivers and marine beaches is needed in order to more effectively monitor, evaluate risk to swimmers and manage water quality, landscape character, amenity value and quality of Council parks and reserves.

Council has collected water quality data at contact recreation sites (mostly sites used for swimming) across the district since the mid 1990's. Sampling sites are chosen to represent those of highest risk of persons contracting disease. This risk is calculated from both user numbers and risk of discharges from the upstream catchment. Bathing water monitoring has produced useful information that has been used to prioritise investigations into sources of pollution, compliance action and expenditure on sewage infrastructure. While this programme does record the numbers of people using a site, the monitoring occurs during normal working hours, during a normal working week when usage is low. Hence there is a need to collect numbers of people using these sites during the most popular times which are weekday evenings, weekends and holiday periods.

Two catchment-based opinion surveys and censuses of people at water-based recreation sites have been carried out to date, one in the Waimea Catchment in 1985-86 (Fitzgerald & Shaw, 1986) and one in the whole region including Nelson City, Waimea, Motueka, Buller and Golden Bay (Orr, 1982). While these two studies were useful and in the case of the Waimea study, a large amount of information was produced, the methods used did not produce definitive information about the relative use of particular sites. It was found that postal surveys (including one that was sent to 500 randomly-chosen people registered on the electoral roll of Tasman and Nelson) and street interviews cannot be used to compute user/days per annum because respondents were not randomly chosen (only those who were motivated to respond did so), they over-represented some parts of the population (more women and fewer young people) and self-reported frequency of use is over-stated.

Summary of 1985-86 Survey

The Waimea catchment was found to be of high importance for water-based recreation and associated activities (Fitzgerald & Shaw, 1986). Swimming was the main use at the sites surveyed (almost 75% of respondents), with picnicking and sunbathing being very popular. The Lee River was found to be the most important for this recreation, with the Roding and Wairoa having a similar level of use. About 60% of users said swimming was the main activity. The main recreational activities outside the summer swimming season (described as April to October) are passive e.g. picnicking, pleasure driving and enjoying the scenery. This study found the following order of popularity: Lower Lee >> Lower Roding = mid Roding > Upper Lee = Waimea at Appleby = Wairoa at Max's Bush. The most important non-swimming based recreation in the Wairoa River is kayaking, rafting and fishing. The accurate assessment of total use proved too difficult to assess.

Summary of 1981 Survey

About 93% of respondents in the entire Nelson-Tasman region used rivers for some form of recreation and 97% used coastal beaches. Slightly fewer respondents (~85%) from Golden Bay and coastal Tasman Bay (Ruby Bay to Riwaka)

used coastal beaches, probably due to their closest beaches being available for swimming for only a few hours each day at the top of the tide.

Eight coastal beaches were ranked according to usage (visited 1 or more times, 1-5 times, 5-10 times or 10+ times) and "likability". The order of rank of usage (% visited at least once) was: Kaiteriteri and Marahau (78%) > Rabbit Is (76%) >> Mapua & Ruby Bay (62%) >> Kina and Motueka (47%) > Abel Tasman NP (44%) > Golden Bay (39%) >> West Coast (21%) > Waimea Inlet (15%). Kaiteriteri Beach was the most visited and most liked of all the beaches in Tasman. Respondents obviously don't get to the beaches of Abel Tasman National Park as much as they would like; they were only the 5th most visited, but the 2nd most liked. Like Abel Tasman beaches, those of Golden Bay were well liked (ranked 4th) but less visited (ranked 6th with only about half the percentage of respondents visiting one or more times compared to Kaiteriteri). On the other hand, beaches from Kina to Motueka were reasonably well used (ranked 4th) but were not as well liked (ranked 7th). Mapua and Ruby Bay beaches were in this category, being 3rd most visited but only ranked 6th favourite.

Nine rivers in Tasman were also ranked according to usage (same categories as for beaches) and "likability". The order of rank of usage (% visited at least once) was: Lee (51%) > Roding (49%) > Nelson Lakes (47%) > Motueka (45%) > Wairoa (31%) > Waimea (29%) > Takaka (27%) > Buller (23%) > Aorere (14%). Unlike the coastal beaches the ranking of likability of most rivers more closely correlated with its usage ranking. The exceptions were the Buller (9th most visited and 5th most liked) and the Aorere (9th most, the lowest, visited, but 7th most liked). On the other hand, the Waimea River was visited moderately often (ranked 6th) but was not so well liked (ranked 9th). The Maitai River was excluded from the analysis presented here. It ranked highest for usage and ranked 1st for most liked.

In the 1985-86 study the proximity to the respondent's residence was found to be the most important factor in determining the level of use of rivers. That study found that approximately 30% of site users were using the Lee River for the first time, showing relatively high recruitment. Because there is little or no advertising of this site, these people must be attracted to the site by word of mouth.

In 2010 high schools and community boards were asked to list swimming sites they knew of. This led to the identification of several sites previously unknown to Council and a total inventory of over 120 swimming sites.

Aims

This study had the following aims:

- To determine the relative use of bathing beaches/swimming holes and compare to earlier studies.
- Provide information upon which to review Council's Bathing Water Quality Monitoring Programme e.g. is sampling in the right places.
- To determine what are the main factors that affect the quality of the contact recreation experience, both within Council control and natural or human factors.
- To get feedback from the public about how to better manage reserves and waterways at beaches and swimming holes. Establish whether there are any future potential threats we are not currently aware of.

Methods

The procedures used in this study including on-site counts, aerial surveys and traffic counts as well as the opinion survey are all covered in Appendix 1a.

Results and Discussion:

The Relative Popularity of Swimming Sites in Tasman

The 25 most popular freshwater swimming sites, in order from most popular based on median swimmer counts from the survey, were: Roding River at Twin Bridges and Busch Reserves >>>> Lee River at Lee Reserve >>> Takaka River at Paynes Ford (all swimming holes combined) >> *Motupiko at Quinneys* > *Marahau River at Old McDonald's Farm campground* > Roding River at Hackett >> Anatoki River at One Spec Rd > Takaka River at Top Rocks = Wairoa River Bryant Rd > *Lake Rotoiti at Kerr Bay* > *Buller River at Riverview campground* > Wairoa River at Max's Bush > Waimea River (Barlett's Rd to SH60) > Takaka River at Kotinga > Waimea SH60 to mouth > Roding River at White Gates > Wairoa River 300m upstream Lee River = Motueka River at Penninsula Br = Kaihoka Lakes > Lee River at Firestone Reserve = Motueka River at Alexander Bridge > Lee River at 400m downstream Lee Reserve = Motueka River at Durants = Motueka River at Whakarewa St = Motueka River at Blue Gum corner to 200m downstream.

The popularity of rivers taken as a whole are listed in order from most popular to least popular: Roding > Lee > Takaka > Motupiko > Wairoa = Waimea > Motueka > *Buller* > Anatoki > Aorere.

The 25 most popular marine swimming sites, in order from most popular based on median swimmer counts from the survey, were: Rabbit Island Main Beach = Kaiteriteri Beach >>>> Tata Beach > Little Kaiteriteri = Pohara Beach > Stephens Bay >> Mapua Leisure Park > Ligar Bay > Motueka Beach > Breaker Bay > Torrent Bay > Totaranui > Dummy Bay > Patons Rock > Split Apple Rock = Anchorage = Bark Bay > Marahau Beach > Grossi Pt (Mapua) = Ruby Bay and McKee Domain > Tapu Bay > Rabbit Island Back Beach (access via Boat Ramp Road) > Kina Beach = Baigents Reserve = Outwhero Spit.

Key to symbology above: Median swimmer count difference between sites is: >>>> = greater than 15, >>> = 10-15, >> = 5-9, > = less than 5, and = = equal to. Italicised sites indicate lesser confidence in the results.

For maps of these sites see Figure 1 a, b, c and d.

Figure 1a

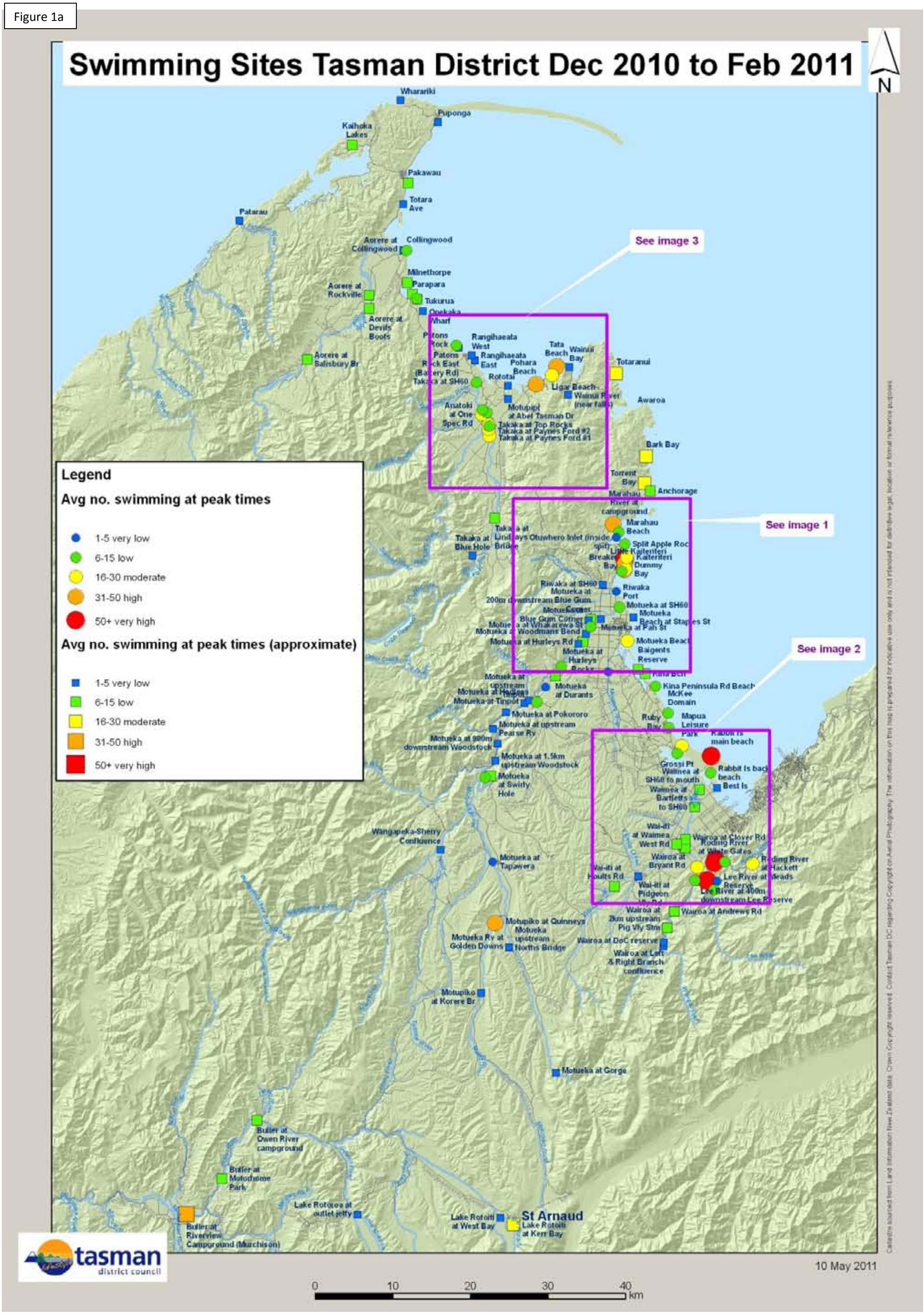

Swimming Sites Tasman District Dec 2010 to Feb 2011
N
Whaririki
Puponga
Kaihoka Lakes
Pakawau
Totara Ave
Patarau
Aorere at Collingwood
Collingwood
Milnethorpe
Parapara
Aorere at Rockville
Tukurua
Aorere at Devils Boots
Aorere at Salisbury Br
Rangihaeata West
Rangihaeata East
Tata Beach
Wainui Bay
Pohara Beach
Totaranui
Rototai
Ligar Beach
Awaroa
Anatoki at One Spec Rd
Motupipi at Abel Tasman Dr
Takaka at Top Rocks
Takaka at Paynes Ford #2
Takaka at Paynes Ford #1
Bark Bay
Torrent Bay
Anchorage
Marahau River at campground
Marahau Beach
Takaka at Blue Hole
Split Apple Rock
Kaiteriteri Beach
Dummy Bay
Riwaka at SH60
Riwaka Port
Motueka at SH60
Motueka Beach at Staples St
Motueka at Pah St
Motueka at Hurleys Rd
Motueka Beach at Baigents Reserve
Motueka at Hurleys Rocks
Motueka at upstream Tinpot
Motueka at Durants
Motueka at Tinpot
Kina Peninsula Rd Beach
McKee Domain
Motueka at Pokororo
Motueka at upstream Pearse Rv
Ruby Bay
Mapua Leisure Park
Motueka at 900m downstream Woodstock
Motueka at 1.5km upstream Woodstock
Motueka at Swifty Hole
Grossi Pt
Waimea at SH60 to mouth
Waimea at Bartletts to SH60
Rabbit Is main beach
Rabbit Is back beach
Best Is
Wangapeka-Sherry Confluence
Motueka at Tapawera
Wai-iti at Waimea West Rd
Wairoa at Clover Rd
Roding River at White Gates
Wairoa at Bryant Rd
Wai-iti at Hoults Rd
Lee River at Reserve
Wai-iti at Pidgeon
Lee River at 400m downstream Lee Reserve
Wairoa at Andrews Rd
Wairoa at 2km upstream Pig Vly Stm
Motupiko at Quinneys
Motueka upstream North Bridge
Motueka Rv at Golden Downs
Wairoa at DoC reserve
Wairoa at Left & Right Branch confluence
Motupiko at Korere Br
Motueka at Gorge
Butler at Owen River campground
Butler at Motorhome Park
Butler at Riverview Campground (Murchison)
Lake Rotoroa at outlet jetty
Lake Rotoiti at West Bay
St Arnaud
Lake Rotoiti at Kerr Bay
See image 1
See image 2
See image 3
Legend
Avg no. swimming at peak times
1-5 very low
6-15 low
16-30 moderate
31-50 high
50+ very high
Avg no. swimming at peak times (approximate)
1-5 very low
6-15 low
16-30 moderate
31-50 high
50+ very high
tasman district council
10 May 2011
0 10 20 30 40 km

Figure 1b

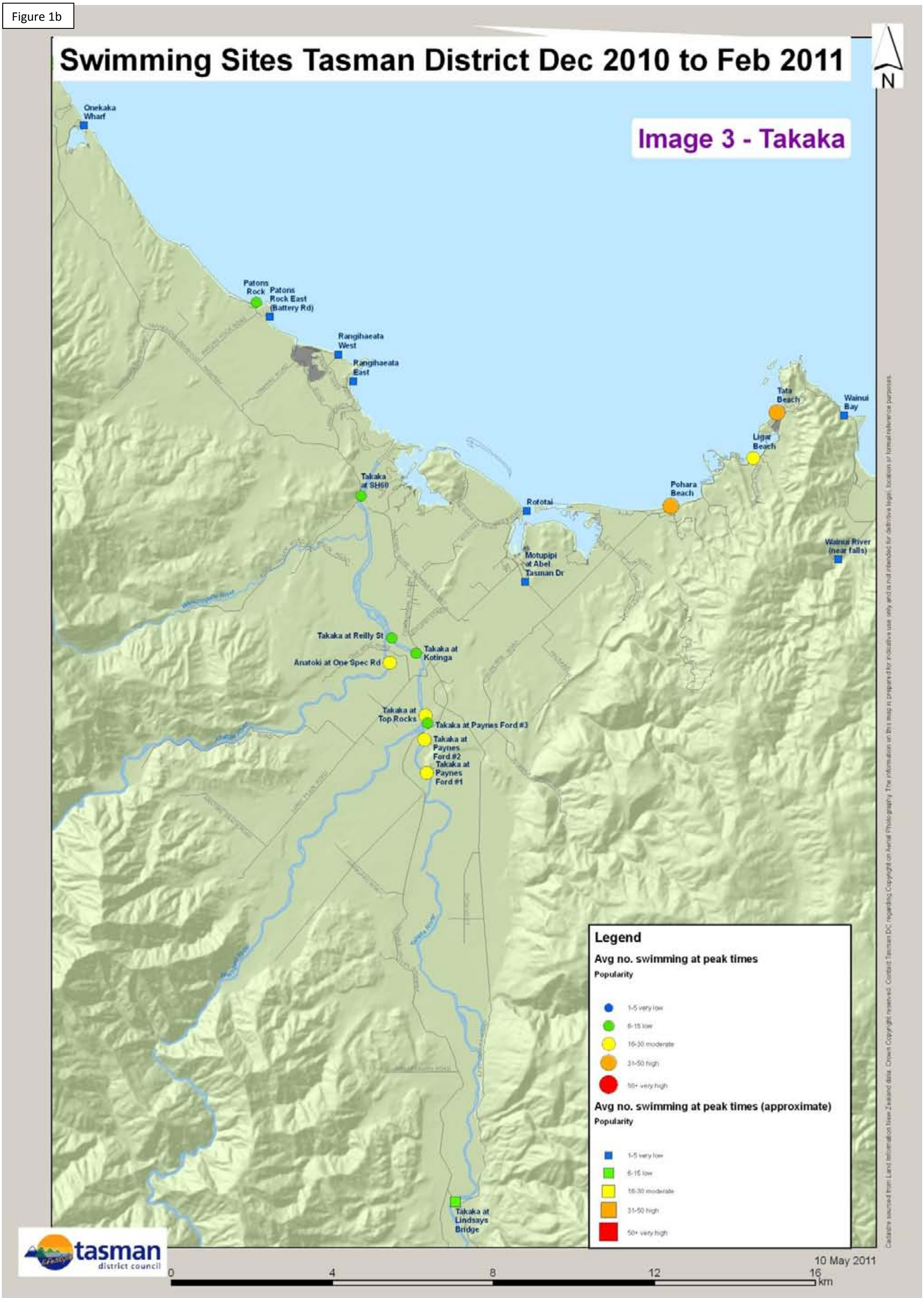

Swimming Sites Tasman District Dec 2010 to Feb 2011
N
Image 3 - Takaka
Onekaka Wharf
Patons Rock
Patons Rock East (Battery Rd)
Rangihaeata West
Rangihaeata East
Takaka at SH60
Takaka at Reilly St
Takaka at Kotinga
Anatoki at One Spec Rd
Takaka at Top Rocks
Takaka at Paynes Ford #3
Takaka at Paynes Ford #2
Takaka at Paynes Ford #1
Takaka at Lindsays Bridge
Rototai
Motupipi at Abel Tasman Dr
Tata Beach
Wainui Bay
Ligar Beach
Pohara Beach
Wainui River (near falls)
Legend
Avg no. swimming at peak times
Popularity
1-5 very low
6-15 low
16-30 moderate
31-50 high
50+ very high
Avg no. swimming at peak times (approximate)
Popularity
1-5 very low
6-15 low
16-30 moderate
31-50 high
50+ very high
tasman district council
0
4
8
12
16
km
10 May 2011

Figure 1c

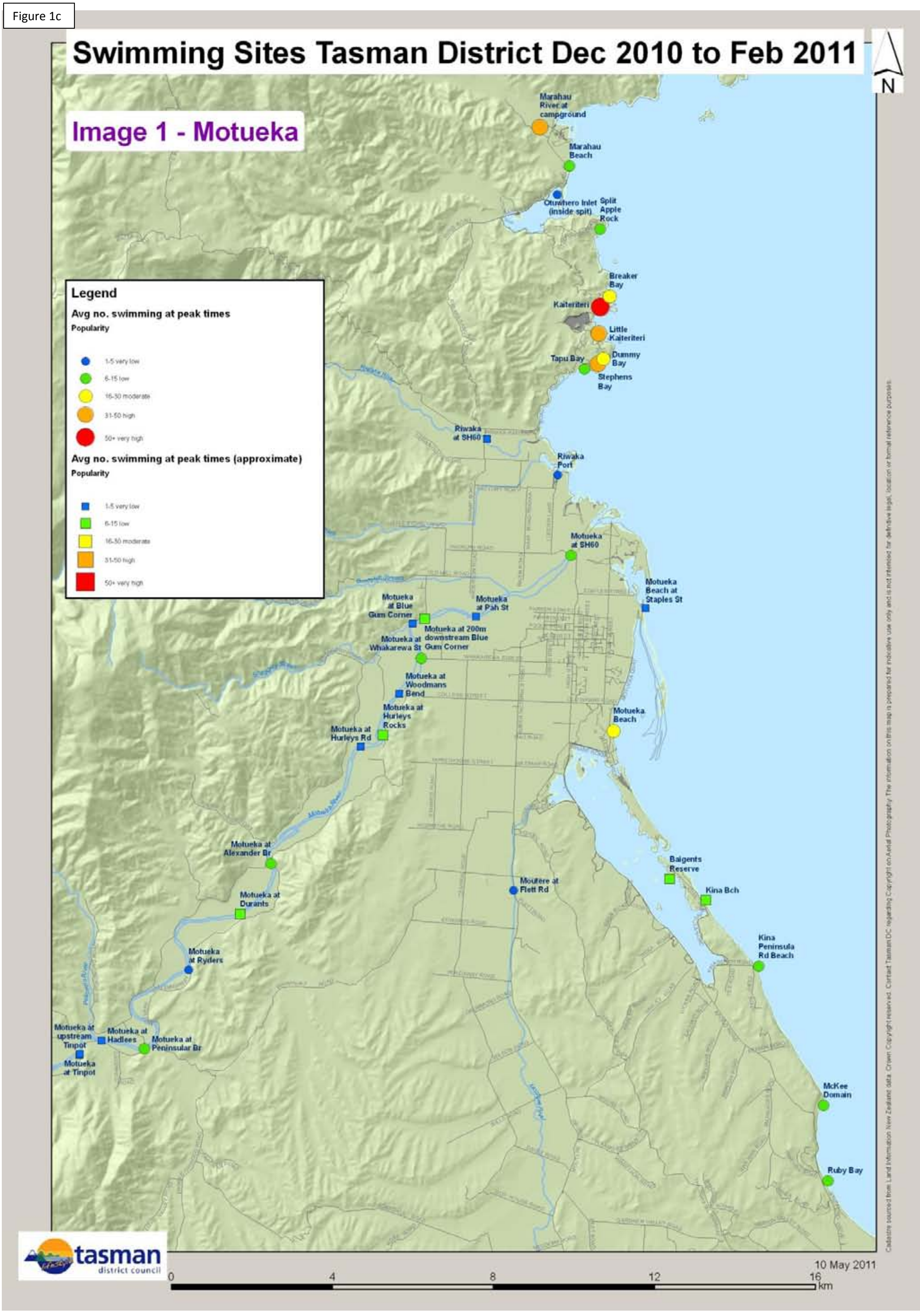
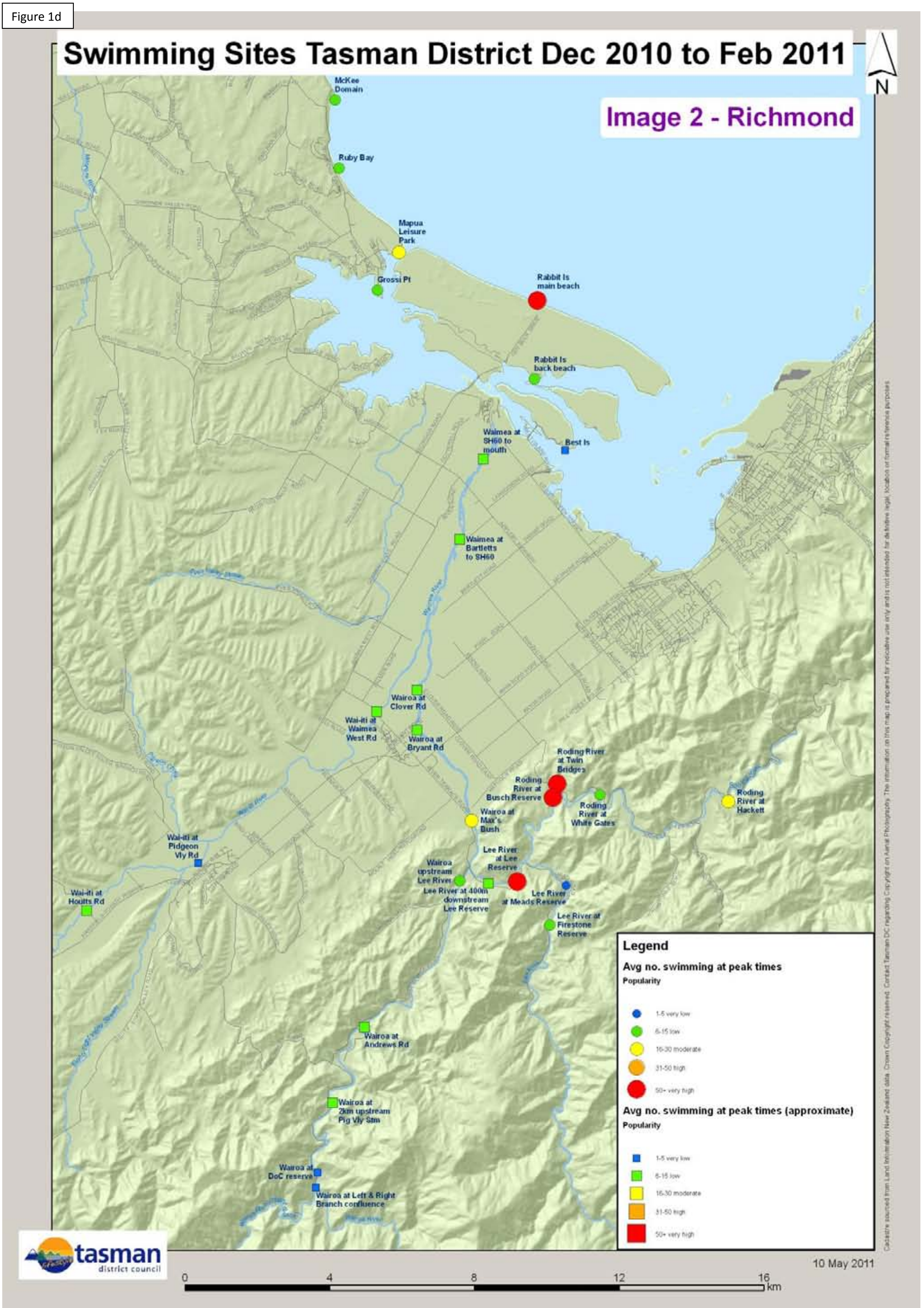

Swimming Sites Tasman District Dec 2010 to Feb 2011
Image 1 - Motueka
N
Legend
Avg no. swimming at peak times
Popularity
1-5 very low
6-15 low
16-30 moderate
31-50 high
50+ very high
Avg no. swimming at peak times (approximate)
Popularity
1-5 very low
6-15 low
16-30 moderate
31-50 high
50+ very high
Marahau River at campground
Marahau Beach
Otuwhero Inlet (inside spit)
Split Apple Rock
Breaker Bay
Kaiteriteri
Little Kaiteriteri
Tapu Bay
Dummy Bay
Stephens Bay
Riwaka at SH60
Riwaka Port
Motueka at SH60
Motueka Beach at Staples St
Motueka at Blue Gum Corner
Motueka at Pah St
Motueka at 200m downstream Blue Gum Corner
Motueka at Whakarewa St
Motueka at Woodmans Bend
Motueka at Hurleys Rocks
Motueka at Hurleys Rd
Motueka Beach
Motueka at Alexander Br
Motueka at Durants
Motueka at Ryders
Moutere at Flett Rd
Baigents Reserve
Kina Bch
Kina Peninsula Rd Beach
Motueka at upstream Tinpot
Motueka at Hadlees
Motueka at Peninsular Br
Motueka at Tinpot
McKee Domain
Ruby Bay
tasman district council
10 May 2011
0
4
8
12
16
km

Figure 1d


Swimming Sites Tasman District Dec 2010 to Feb 2011
Image 2 - Richmond
N
McKee Domain
Ruby Bay
Mapua Leisure Park
Grossi Pt
Rabbit Is main beach
Rabbit Is back beach
Waimea at SH60 to mouth
Best Is
Waimea at Bartletts to SH60
Wairoa at Clover Rd
Wai-iti at Waimea West Rd
Wairoa at Bryant Rd
Roding River at Twin Bridges
Roding River at Busch Reserve
Roding River at White Gates
Roding River at Hackett
Wairoa at Max's Bush
Wai-iti at Pidgeon Vly Rd
Lee River at Lee Reserve
Wairoa upstream Lee River
Lee River at 400m downstream Lee Reserve
Lee River at Meads Reserve
Wai-iti at Hoults Rd
Lee River at Firestone Reserve
Wairoa at Andrews Rd
Wairoa at 2km upstream Pig Vly Stm
Wairoa at DoC reserve
Wairoa at Left & Right Branch confluence
Legend
Avg no. swimming at peak times
Popularity
1-5 very low
6-15 low
16-30 moderate
31-50 high
50+ very high
Avg no. swimming at peak times (approximate)
Popularity
1-5 very low
6-15 low
16-30 moderate
31-50 high
50+ very high
tasman district council
10 May 2011
0
4
8
12
16
km

User Numbers

The total number of swimmers in the Lee and Roding Rivers for the part of the season monitored (18 Dec-27 Feb) was estimated at 74,000 (46,000 on the Roding and 28,000 on the Lee). This was based on the average of estimates from traffic counts and on-site count for 6 February (estimated to be 3670 for the two rivers) and then extrapolating the relationship between this and the traffic count at the two sites. Swimmer numbers in the Roding Valley on 6 Feb were estimated to be approximately 2000 (estimated range from traffic and on-site counts 1960 and 2110 persons respectively). In the Lee Valley on 6 Feb the estimate was approximately 1400 swimmers (estimated range from traffic and on-site counts 1400 and 1440 persons respectively). Appendix 6 shows how this was calculated, including all assumptions such as number of people who actually swam per group and number of people per group. The sites where traffic counters were located are shown in Figure 2.

Traffic counts in the Roding-Lee-Wairoa catchment appear to correlate well with on-site counts. If you assume that base level of vehicles movements (e.g. vehicles accessing residential properties) is that for wet weather days.

We did not use user-number data collected from interviews as it was not accurate. The majority of people were very unsure in their response to the question about typical peak numbers at sites they regularly go to, even to assign broad categories of site popularity.

Important Notes: While the estimates of swimmer numbers above provide a 'ball park' of usage by swimmers, they should not be quoted without clearly stating the assumptions and limitations of the study. Only a relatively small number of counts (5-8 counts for most sites) were taken over the season. With a limited data set there is likely to be some skewing of results, for example when public events coincided with the survey. Public events may have attracted users of these sites to/from the swimming areas. The only such public events were a Mardi Gras in Takaka on 5 Feb and the Motueka Raft Race on 6 Feb. Conversely, a rock concert at Riwaka on the evening of 2 January probably caused an influx of young people into the region (particularly from Motueka to Golden Bay) and many of these chose to swim (and many were respondents to this survey). While vehicle count data is accurate, it was necessary to make several assumptions in order to extrapolate total user numbers for the sites in the Lee, Roding and Wairoa Valleys. The key assumptions include:

- Background traffic counts from residential and commercial traffic. This was taken as the wet-weather count which is probably a fairly true reflection of the situation.
- Number of sightseers driving these valleys and not using the sites was 'guess-timated' at 20% of vehicles.

On-site counts of swimming site users were mostly carried out at peak or near-peak usage periods. While more data would make the assessment more robust, the time and cost of this extra effort is probably difficult to justify for the additional usefulness for resource management purposes. More staff would have been required rather than working longer days as it is very important to sample consistently within the peak afternoon period (13:00 to 17:00).

The background traffic count was assumed as 200, 220 and 170 for the Lee, Roding and Wairoa on each day of the season. The Lee River was, at most, 150 on weekends (minimum daytime usage was 122, with 2nd lowest of 132) and 200, at most, on weekday-workdays (minimum daytime usage was 165, with 2nd lowest of 174). The Wairoa background appeared to have higher non-recreation use, but rainy days did strongly influence vehicle numbers with the exception of Monday, 7 Feb. The reason for this may be more commercial traffic based on the hourly traffic data for that day.

Patterns of use over the season

While use of swimming sites in weekend and public holidays was the most popular time for recreation (as expected), there were some high usage mid-week days during the school holidays, e.g. 24-28 January (Figure 3). Most schools

started back about February 2. The amount of use did not seem to drop off dramatically after school started back, but may have been slightly affected by cooler water temperatures after 13 February.

The 1985-86 survey showed peak summer usage was from 26 Dec to 11 January. Over the 2010-11 season usage was more even and relatively extended in comparison (higher use through late January and February. The rain on 28 December put a slight dent in total usage in the Christmas-New Year period, but then consistent moderately-high use occurred from 29 December to 6 January. The 2nd highest peak day occurred in this period (3 January). The highest usage occurred on 6 February after most schools had commenced for the year. Usage of swimming sites on 6 February was 45% higher than for any other day probably due to particularly hot and sunny weather. For the Roding and Lee Rivers usage dipped to below 200 vehicles/day after 6 January, probably due to wet weather.

The highest use week at Lee River was the week following 31 January when almost 2300 vehicles (24 hour total) used the Lee Valley Road. The second highest usage was the period from 30 December to 5 January inclusive when over 1800 (1650 vehicles total for the 12 hours until 19:00 hours each day). For the Roding River the number of vehicles counted in the peak week was almost 2700 and almost 2800 for these two week periods respectively.

As expected, weather was a major factor affecting the level of use of swimming sites, with warm, sunny days having the highest use and cool rainy days having the least use. Water temperature is also likely also have played a part in lower usage with water temperatures (at Roding River upstream Hackett) dropping to 18^{o}C, or just below, for the majority of the time from 13-27 February (and in the two weeks after 26 February temperatures dropped to 16^{o}C)(Figure 11b).

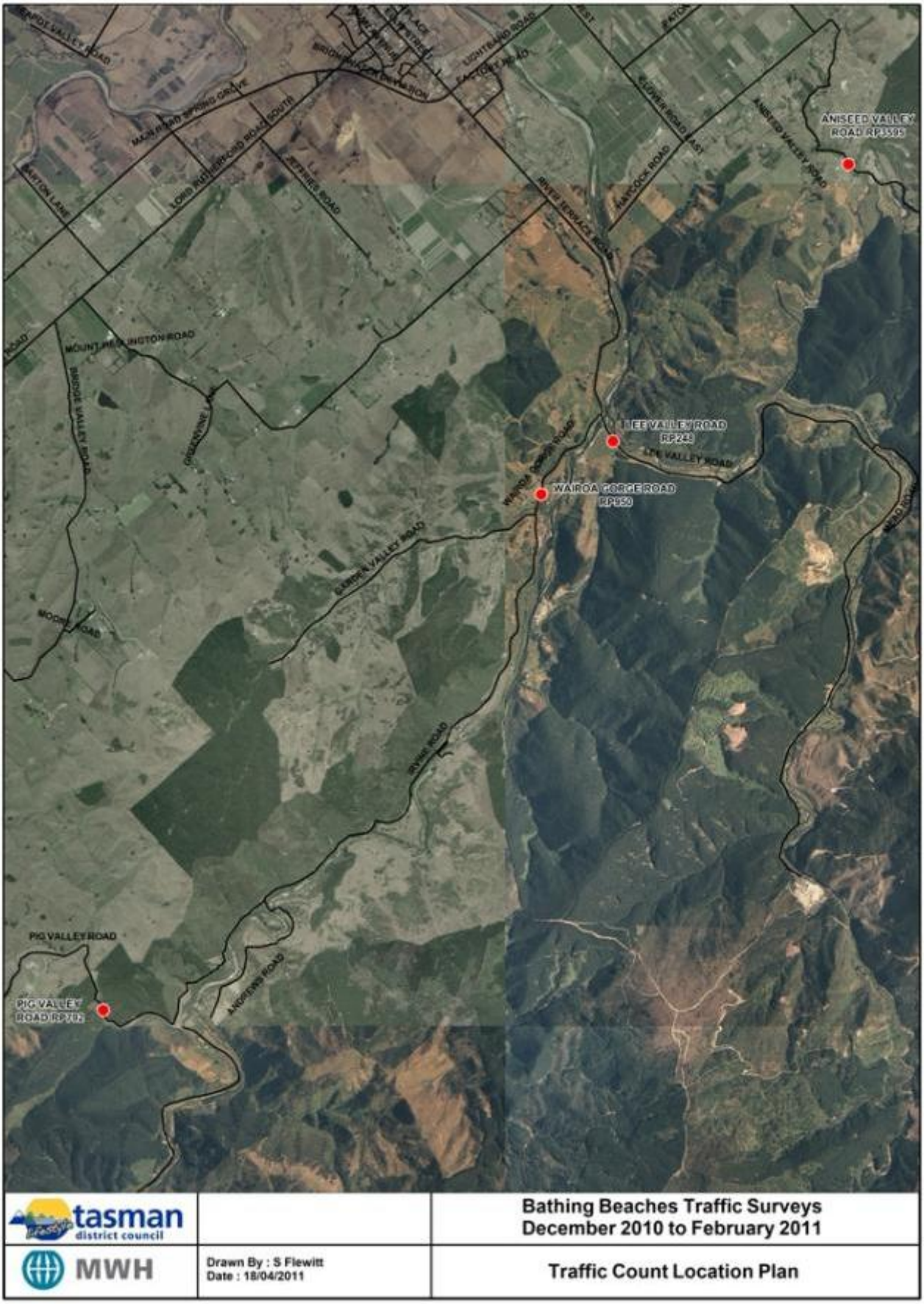


Figure 2: Traffic counter locations in the Waimea catchment

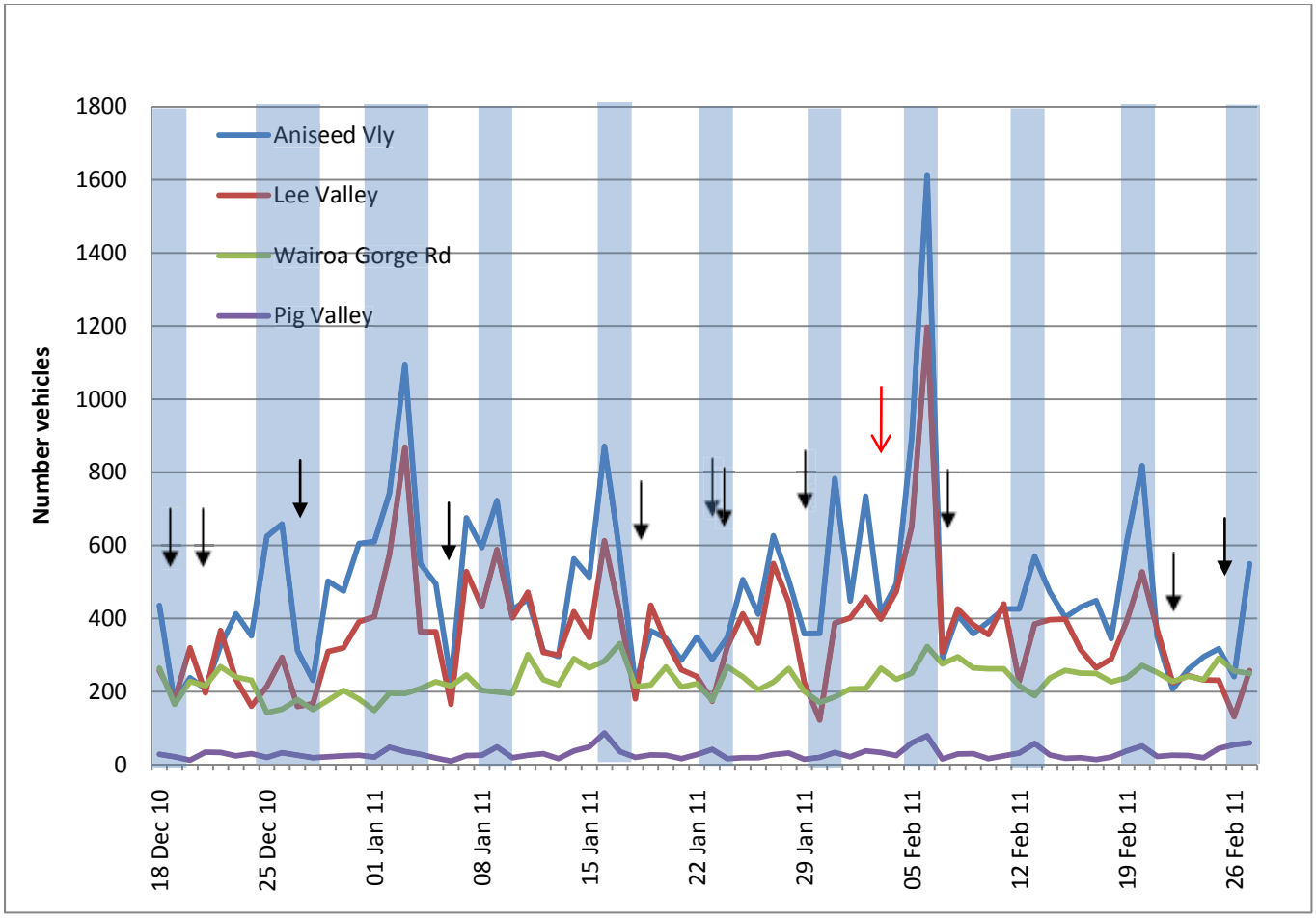


Figure 3: Number of vehicles (total from 7am to 7pm) passing various counters in the Roding-Lee-Wairoa Catchment from 18 December, 2010 to 27 December, 2011. Weekends and public holidays shaded in blue. Black arrows show days with rainfall events greater than 5mm. The red arrow indicates when most schools returned for the year.

Patterns of use over a day – Waimea Catchment Case Study

This 2010-11 study found that the peak was generally later, between 16:00 on weekends and 17:00 on weekdays. From on-site observations at several sites in the Waimea catchment on 6 February estimated numbers of people rose steadily from approximately 440 people at 13:00 to at peak of approximately 1500 people at about 15:30 (Figure 4). Appendix 7 A-C for plots of the highest use days of the season. The 1986 Waimea catchment survey identified 14:00-18:00 as the peak use time for use of swimming areas. This held true again in this survey. Other studies in New Zealand have recorded the peak at 14:00 (Kay Booth, *pers comm*.).

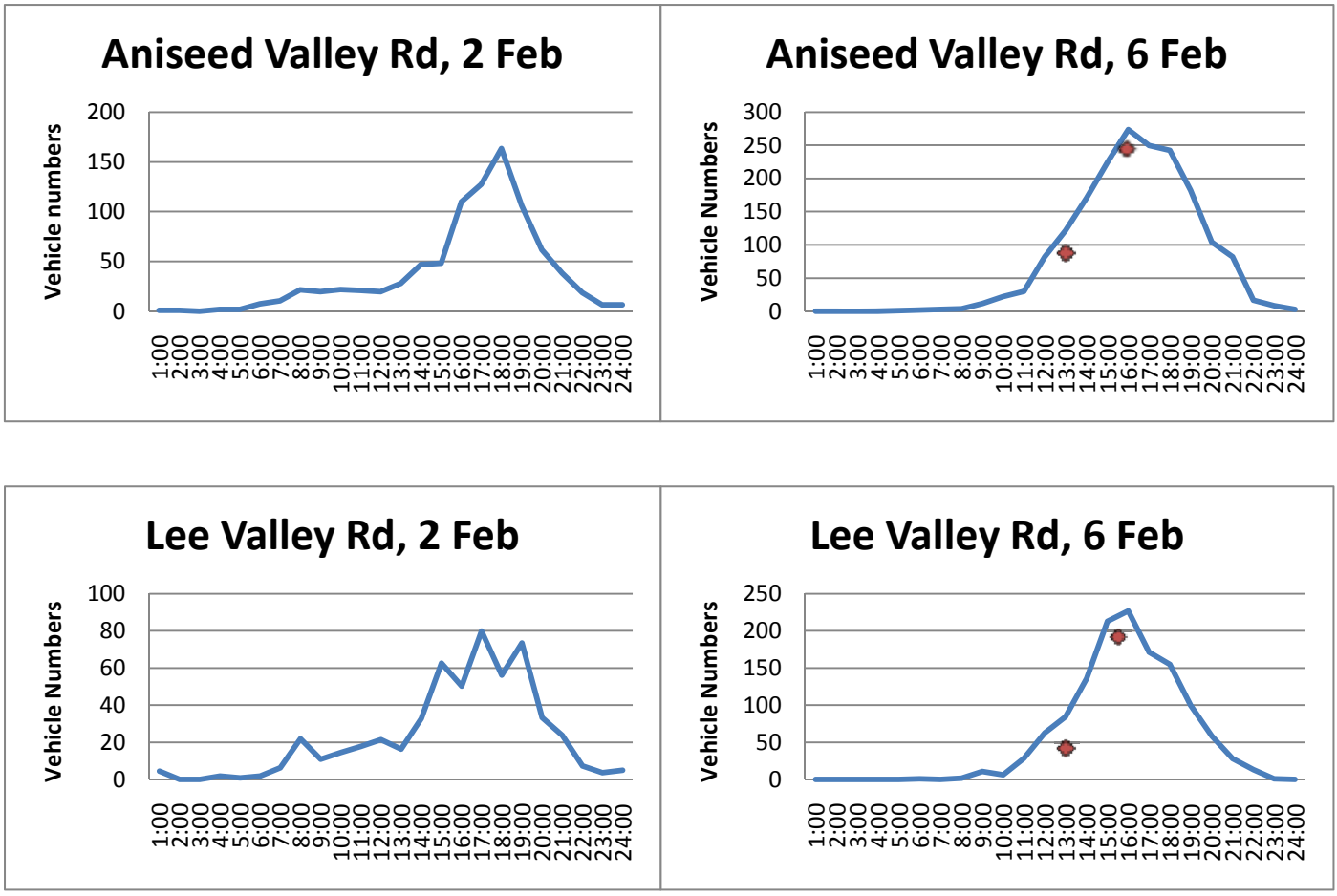


Figure 4: Number of vehicles on passing up the Aniseed (Roding) Valley Road on 2 and 6 February (top) and Lee Valley Rd (bottom). 2 February was the peak weekday and 6 February was the peak weekend day of the season. On-site counts of users of Twin Bridges/Busch Reserve and Lee Reserve site are marked as red diamonds on the graph.

Comparisons of users on various rivers in 1985-86 compared to 2010-11

In 1986 the Lee River was the most popular river swimming site whereas the 2010-11 survey showed the Roding River is clearly the most popular (Table 1). This is probably due to sealing of the roads, acquisition of additional reserves and providing more and better facilities than were present in 1985-86. The following reserves are all new since 1986: Twin Bridges (late 1980's), Busch (late 1990's), and a large part of White Gates Reserves (late 1990's). No new reserves along the Lee River have been acquired since 1986, but there have been minor upgrades.

Unfortunately we cannot compare the rates of usage of swimming sites relative to the population for the Nelson-Richmond-Waimea Plains area for the whole season listed in Table 1 for 1985-86 appears to be inaccurate, probably due to the lack of on-site counts. Also, the methods used to estimate the total user numbers over the season from the 2.5 month vehicle count are not known and the raw data is not available to recalculate. This earlier data is out of proportion to the vehicle count data when compared to the 2010-11 season ie it would appear that swimmer numbers have dropped by about half (115,00 plus another 10,000 for the rest of the season) but raw vehicle counts have risen by almost 1.5 times (see Table 2). We have chosen to In the 1985-86 season there was an average of 5.4 swimmer days per head of population in the Waimea catchment over the whole season. In this study it was estimated that 2.0 swims in this catchment per head of population over the period from 17 Dec – 27 Feb. This was based on population census data for Nelson-Richmond-Waimea plains which in 1986 was 46,383 and in 2006 it was 56,391 (no official census data was available in 2011).

Table 1: Total estimated number of site users at different rivers comparing 1985-86 with 2010-11

Total estimated number of site users	Lee River	Roding River	Wairoa River	Total Waimea Catchment
1985-86 Whole season (5 months)	91,200*	48,000*	47,000*	250,000*
2010-11 Season – 17 Dec-27 Feb	28,000#	46,000#	15,000#	115,000#
1985-86 Peak day (3 Jan)	3,000	810	450	3,500#
2010-11 Peak day (6 Feb)	1400	2,000	300	4,000#

* Data of numbers of people recreating in rivers in the Waimea and Wai-iti catchments is suspect and should be used with caution. No on-site surveys were undertaken in this earlier study, and instead numbers of users of these two rivers were estimated based on proportions of the average (mean) of the electoral roll and postal surveys compared to calculated values for the Wairoa River in the 1985-86 study.

Based on proportion of people using the all sites in the catchment from the aerial count on 6 Feb 2011.

Vehicle Count Comparisons

Raw vehicle count data shows a similar pattern (Table 2). Peak day vehicle counts for the Lee River appear to be 33% lower in the 2010-11 survey than in 1985-86. Commercial usage of the Limeworks in the Lee Valley may have influenced this. It is different on the Roding River where the peak vehicle count three times higher than that recorded in 1985-86. This is likely to be due in part to the upgrade of the Aniseed Valley Road up the Roding Valley. On the Wairoa River the peak vehicle count was about 50% higher in 2010-11 compared to 1985-86.

Table 2: Raw vehicle count data at different rivers comparing the summers of 1985-86 and 2010-11. Note: To get round trip counts, these data would have to be divided by two.

Total estimated number of site users		**Lee River**	**Roding River**	**Wairoa River**	**Total Waimea Catchment**
1985-86	Total Count	28,620	13,800	9,700	52,120
	Mean Count	392	180	180	752
	Peak day (3 Jan,1986)	1,800	500	220	2,520
2010-11	Total Count	25,935	34,250	16,550	76,735
	Mean Count	360	475	230	1,065
	Peak day (6 Feb,2011)	1,200	1,600	332	3,132

Traffic Counts Rabbit Island

The locations of traffic counters on the Rabbit Island approach is shown of Figure 5. The median of the total (24hr) traffic to Rabbit Island (17 Dec- 27 Feb) is about three times greater than for the recreational traffic (total minus baseline count) on the Roding, Lee and Wairoa combined (with assumed background traffic removed from each traffic counter site). Traffic to Rabbit Island is even more dominated by weekend or holiday traffic than the Roding or Lee Valley with weekend peaks being about 2-4 times that of the average for the previous week. Even when the base count (wet weather count of about 400 vehicles per day) is subtracted, usage of Rabbit Island is still much higher than the Roding or Lee Valleys. Non-swimming use of Rabbit Island is probably higher than 20% given the high use of the island for picnicking, equestrian use, dog walking as well as other uses such as mountain biking and firewood gathering. However, the on-site surveys at Rabbit Island beach showed the proportion of beach users who swam were much the same as the average across the region. But if the surveys took place in other recreational areas away from the beach, the proportion of swimmers is likely to be lower than 80%. While cloudy and rainy weather dramatically reduces vehicle traffic, Rabbit Island seems to be slightly less affected by weather than the Roding or Lee Rivers. Again, this probably reflects the more diverse use e.g. walking, picnicking/BBQ, mountain biking.

For the peak swimming day of 6 February the total vehicle count is similar for Rabbit Island compared to the combined total vehicle count for the Lee, Roding and Wairoa. This could suggest that on very hot days, freshwater swimming is favoured over marine beaches.

Traffic counters on the approaches to and on Rabbit Island show a clear pattern that most people (over 80%) are going to the reserve at the main beach (Figure 6).

Water-skiing and boating at Rabbit Island's Back Beach (accessed by Boat Ramp Road): The average proportion of traffic passing Redwood Rd that go to Boat Ramp Rd is only 3.5%. Mid week vehicle round trips only number 5-25 whereas weekend traffic gets above or close to 75-90 vehicles making the round trip in peak weekend days. It is assumed from the generally close relationship of vehicle traffic with tide that most people using this road are boaties (Appendix 9). The tide window for boating could be assumed to be 5-7 hours around the peak of the tide.

Rabbit Island Main Beach: The average proportion of traffic passing Redwood Rd that go on to Rabbit Island's main beach is 78%. This proportion is slightly higher on weekends (81%). Christmas Day and Boxing Day attracted high numbers of people to the Main Beach (Christmas Day was the 2nd highest peak day with Boxing Day 5th highest) probably reflecting the beach's suitability for larger groups and extended families that get together at this time. Traffic is widespread over the daytime period with a wide peak of nine hours from 11:00 to 20:00 (Appendix 8).

Rough Island: Approximately 18.5% of the traffic appears to go to Rough Island. On three weekend and public holiday days over 8% vehicles go to Rough Island (with 90% going to Rabbit Island main beach). Rough Island is used predominantly for dog walking and horse riding and this use is relatively consistent during the week, and throughout the year.

Figure 5: Traffic counter locations on Rabbit Island and approaches.

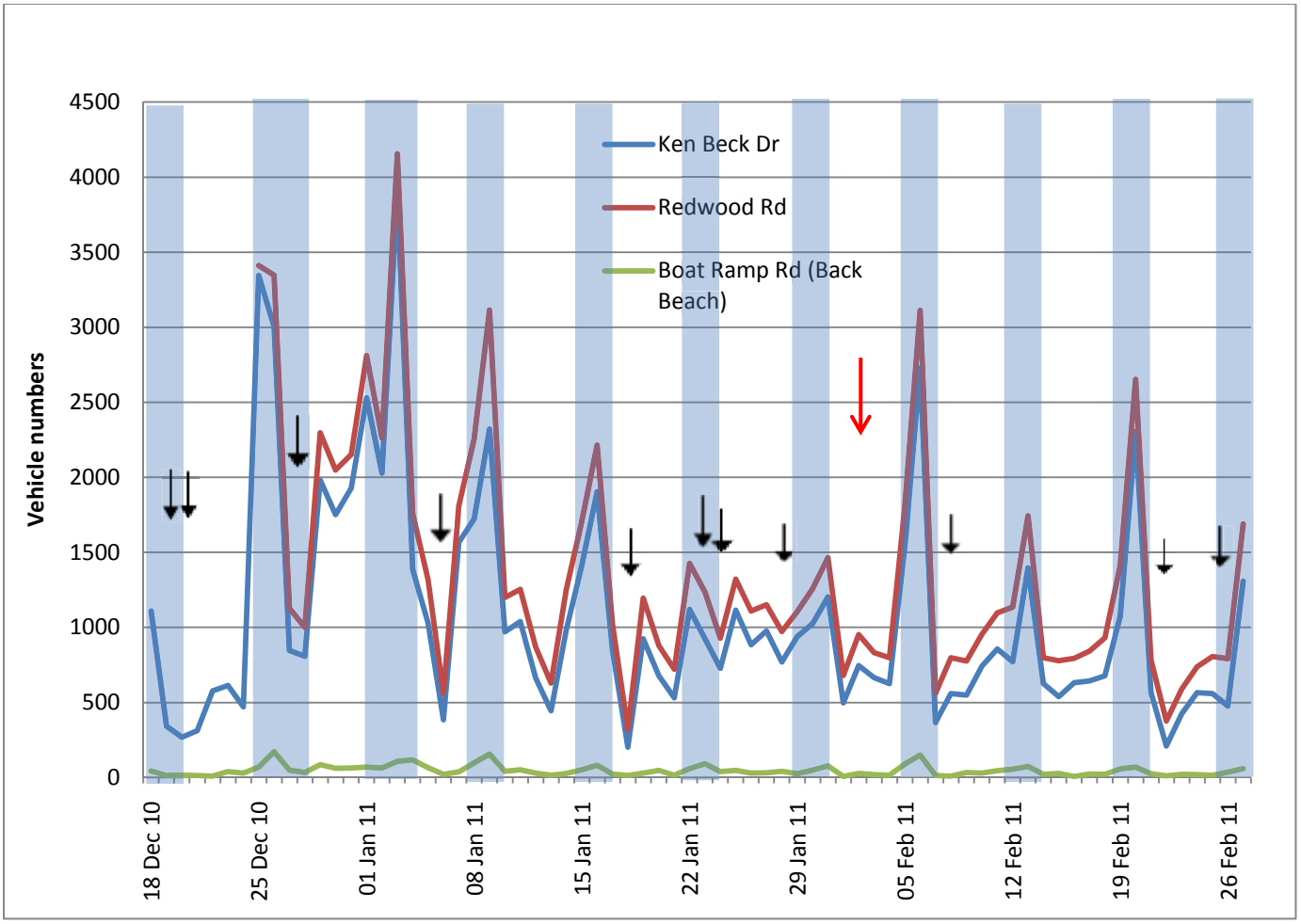


Figure 6: Number of vehicles (total from 7am to 7pm) passing various counters on the approaches to Rabbit Is and Boat Ramp Rd from 18 December, 2010 to 27 December, 2011. Weekends and public holidays shaded in blue. Black arrows show days with rainfall events greater than 5mm. The red arrow indicates when most schools returned for the year.

On-site surveys

Generally there was a very real willingness to participate in interviews prescribed in the survey or fill it out on their own. There was also general gratitude that Council was taking time to listen to them and get feedback. A good deal of very useful information was provided by respondents and many gave a great deal of information about sites around the region.

Pattern of Use and Opinion With Respect to Age and Sex

- Older people (50+), particularly older females, were not as common at river swimming holes compared with coastal beaches where they were well represented.
- For marine beaches the total number of female respondents was much greater, except for males aged 35-49 who are probably coming to the beach with family.
- Young people (<19) tend to swim more often, up to once per week for many. They were also much less concerned than other age classes about water clarity, scums/foams/odour, algae, rubbish or erosion. The majority (40%) of young people were neutral about scenery values, but places to jump off into deep water was "very important" for 40% of this younger age group (55% for "very important" and "important" classes combined). Interestingly no young people thought that crowds of people on beaches or swimming holes were a major problem ("very important") and only 10% thought that it was "important".
- Younger people were much less likely to think that the presence and noise of power boats was a problem (44% said it was "very important" and "important") than older people (50+), 45% of whom thought it was "very important" and "important".
- Older people are more likely to combine swimming with reading or walking.
- Motueka River attracts mostly families and fewer teenagers

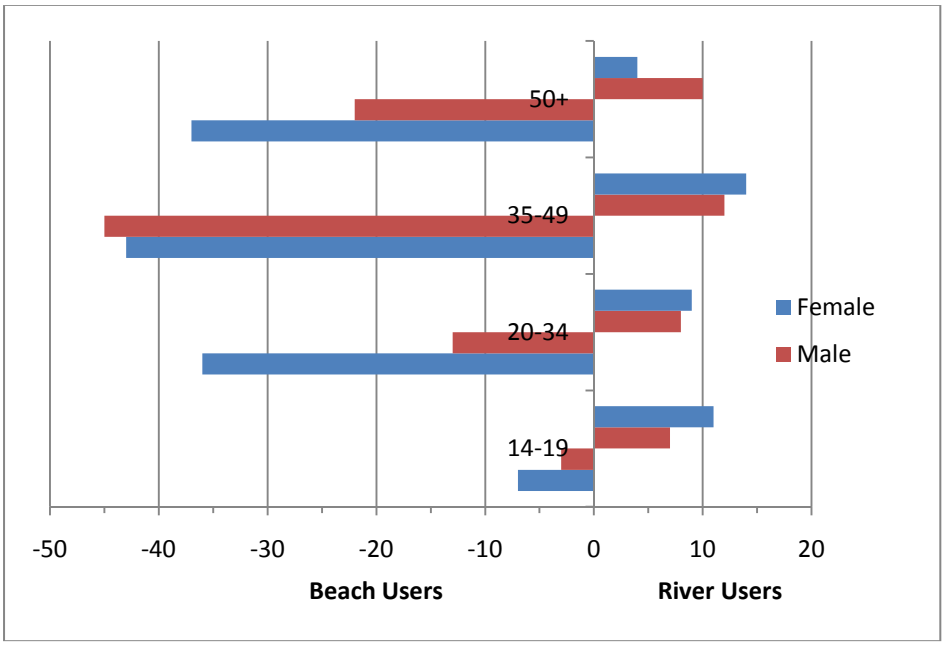


Figure 7: Distribution of respondents with respect to age and sex for marine beaches and river swimming holes

Pattern of Use and Opinion With Respect to Locals Versus Visitors

Of all respondents, locals (people from within the region) only just outnumbered New Zealanders from outside the region (Figure 8). Almost half the number of non-locals were from Christchurch, with about 20% from Wellington. People from Nelson City were considered 'locals'. The rest of the non-local users were scattered from many other locations in New Zealand. Tourists from overseas made up just under 10% of beach users surveyed. Almost half those from overseas were from the United Kingdom, followed by Europe or Australia. However, as overseas people made up such a small number in the survey (26), this sample set is unlikely to be very representative.

Locals made up the clear majority of people using river sites. This is probably due to the need for local knowledge to find many of the river swimming holes.

Before New Year it was mostly locals using the swimming holes, but during the Christmas to New Year period many more were recorded as from Christchurch and Wellington. Tourists are more prevalent at Kaiteriteri, Takaka River at Paynes Ford and Takaka River at SH60, Pohara Beach. Locals were more prevalent at the following sites: Takaka River at Top Rocks and Reilly St, and Anatoki at One Spec Rd. Several tourists commented that they found a swimming site only by looking at their map for where a road ends at a beach or river.

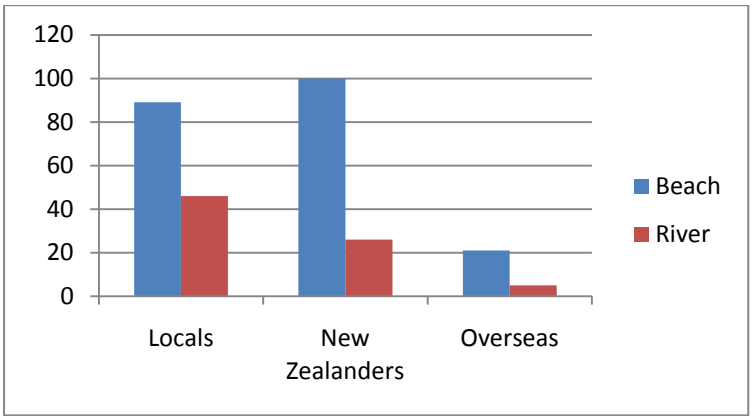


Figure 8: Number of respondents being local, from out-of-region and from overseas for marine beaches and river swimming holes

Recreation type

Swimming was clearly the most important activity at the sites for the people surveyed, but swimming was often done in association with sunbathing, picnicking, and socialising (Appendix 2). Swimming was ranked as the number one reason for coming to the site by 55% of respondents. Sunbathing, picnicking, and socialising ranked number one for about 16%, 13%, and 12% respectively. Males were more likely to rank swimming as number one activity (62%) than females (50%). Across all sites, over 80% of respondents swum at the site where they were interviewed on the day of the interview (<20% onsite but not swimming).

Pattern of Use of Marine Beaches versus River sites

From discussions with respondents, it seems that a large proportion of swimmers using marine beaches did not use freshwater sites. It appears that this is sometimes out of habit and sometimes out of childhood conditioning; people who grew up swimming at marine beaches seem to prefer these sites.

Because sites selected were not random, the proportion of people using marine beaches compared with river sites is not representative. However, it is probable that marine beaches get almost double the numbers on a given day, compared to river sites.

Preferred conditions at sites:

Concentration of disease-causing organisms

The risk of getting sick from swimming was the single-most dominant factor in influencing the respondent's quality of experience with almost two thirds of respondents saying this factor was "very important" and 80% of respondents rating this factor as "very important" or "important" (Figure 9). About 10% of respondents, mostly young (under 19) people, felt this issue was "unimportant" or "very unimportant". This may be due to younger people having greater sense of invincibility and lower propensity for illness.

Many people commented that they expected Council to let them know if and when there was a concerning level of disease-causing organisms. Even though a respondent may have said that this factor was "important", they may still swim if the water looked clear and inviting. This was evident at Kaiteriteri on 30 December, 2010 when signs were put up at the beach warning people that water quality had breached guidelines. Over 200 persons were recorded as using the beach and about 20 swimming in the late afternoon on this day when the survey was undertaken. Floodwaters from the Motueka River on 28 December were the likely cause of very high concentrations of *Enterococci* at this beach over 24 hours after the flood.

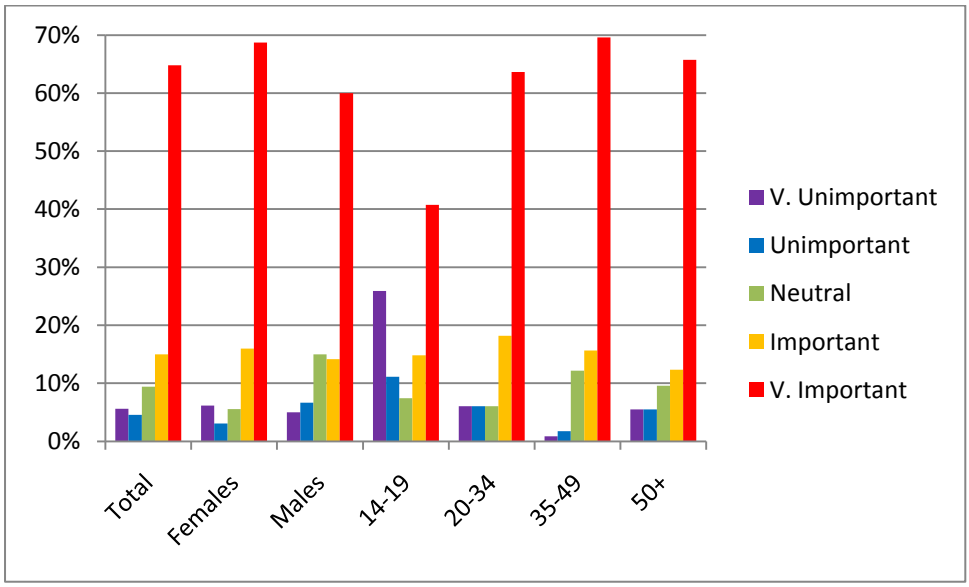


Figure 9: The importance of the concentration of disease-causing organisms influence the quality of the swimmer's experience.

No person interviewed said they, or anyone they know of, ever got sick after swimming in waterways of Tasman District. This is useful information suggesting that poor water quality is not affecting large numbers of people. However, it is likely that only a very small number of people would be become ill after immersion in the water and these are more likely to be those more vulnerable such as the very young and old. It should be noted that the guidelines allow for 8 illnesses per 1000 swimming events which, compared to our sample size is so low that we would not necessarily pick this up in this survey. There is also high potential for people to not link swimming in a waterway with an illness that may occur several days later. Reporting rates in New Zealand to medical professionals for official records on this matter is very low.

Water clarity

Clear water was “very important” or “important” for two thirds of respondents (Figure 10). Less than 10% of respondents, mostly young (under 19) people using marine beaches, felt clear water was “unimportant” or “very unimportant”. This is probably due to marine beaches, such as Rabbit Island, generally having poor water clarity but being popular beaches.

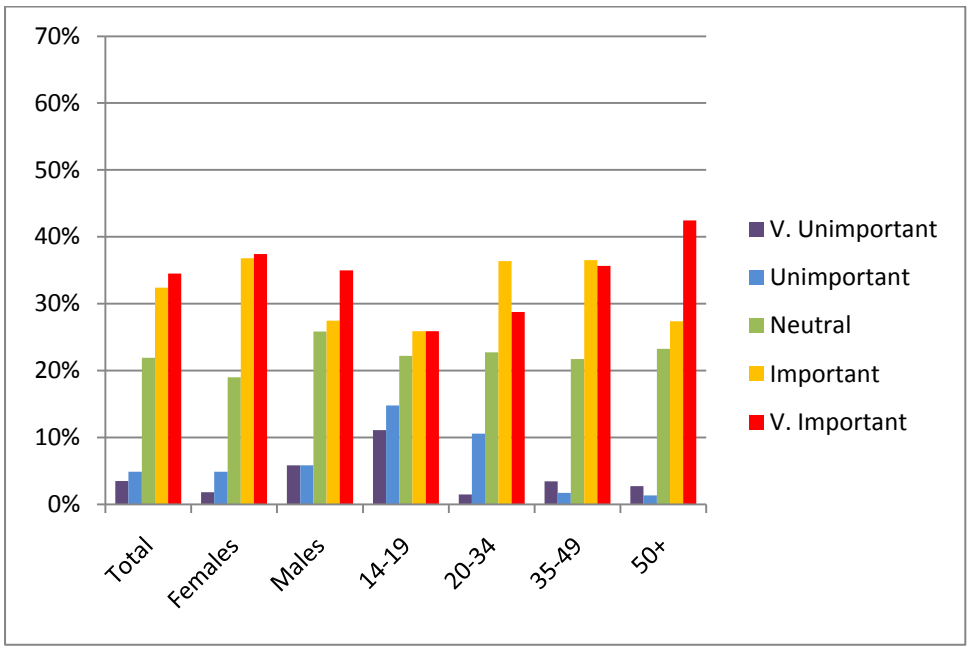


Figure 10: The importance of water clarity to influencing the quality of the swimmer’s experience.

Water Temperature

The slim majority (42%) of respondents thought that water temperature was “very important” or “important” (Appendix 2). However, 38% of respondents were neutral. This probably reflects that in summer the fluctuation of water temperature is relatively low and people will swim most days.

While not everyone was asked their water temperature threshold causing them to avoid swimming, for the majority of people asked it was 18^{o}C. Younger people had a lower threshold than older people, but were reluctant to swim at temperatures below 15^{o}C. This has implications for what we consider is the start and finish of the swimming season. Council’s Bathing Water Quality Monitoring Programme begins in mid November and ends at the beginning of March.

Sea water temperature is only measured continuously at two sites in Tasman which are located close to swimming areas, Port Tarakohe (data record: 2005-11) and Little Kaiteriteri (data record: 2000-11). The temperatures at these sites are likely to be lower than the bathing beach sites nearby as they are in deep water that is relatively well mixed. However, it clearly shows the peak temperature occurs in early February (Figure 11a). Weekly spot measurements at Kaiteriteri Beach, Mapua and Rabbit Island (the sites with the most data) are only available since 2006. This is not enough data to plot average daily temperatures, but it appears that water temperatures are about 2 ^{o}C warmer at Kaiteriteri Beach compared to the continuous sampler off the point at Little Kaiteriteri. Maximum spot water temperatures recorded at Kaiteriteri Beach are 24-26 ^{o}C which occur in January or February. The difference in water temperature at Pohara Beach compared to Tarakohe is likely to be much greater than Kaiteriteri. Low gradient beaches such as Pohara and Rabbit Island are very warm between 1-2 hours after low tide to near full tide as the water is warmed over the sand flats.

Water temperature of the Roding River upstream of Hackett swimming hole (data record: 2003-11) is more variable than sea water sites, but peaks at a similar time of year (Figure 11b).

If 18°C water temperature was used to define the bathing season and we align sampling to this period we would sample from mid December to end of March. However, while starting sampling in early November may not be optimum for swimming, it allows us to get some advance warning of any water quality issues prior to the season beginning. The main reason we finish sampling earlier is that we do not have student labour from mid February.

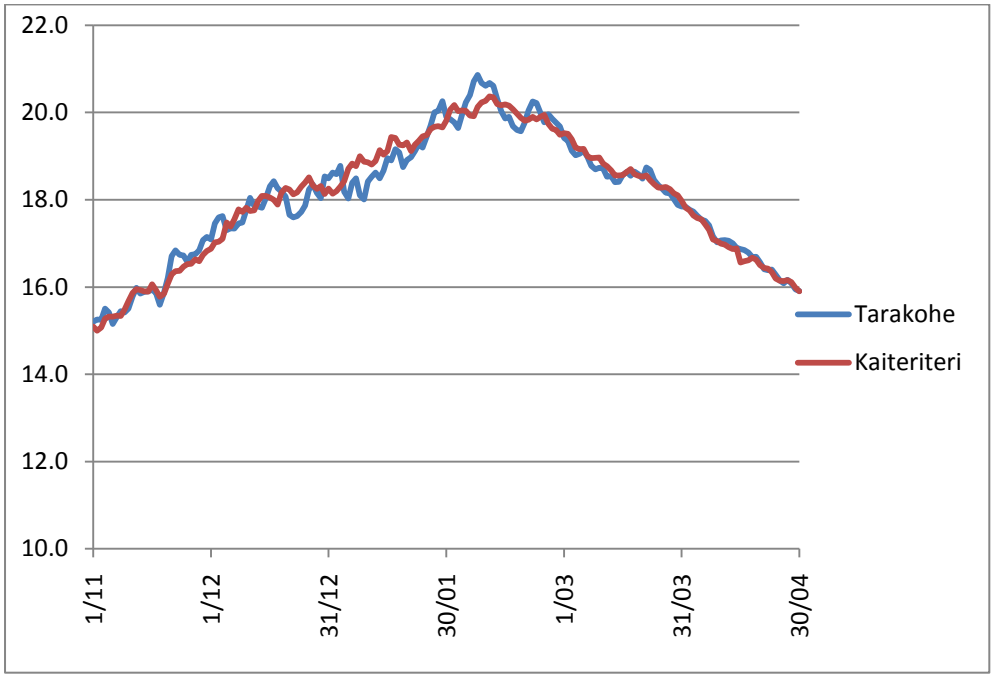


Figure 11a: Average daily sea water temperature for Port Tarakohe and Kaiteriteri from 2005-11 and 2000-11 respectively

Figure11b: Average daily water temperature for Roding River upstream Hackett from 2003-11

Scums/foams/odour and slime

Like disease-causing organisms, scums/foams/odour were a factor that was “very important” or “important” to the majority (80%) of respondents, but fewer (almost 50%) thought it was “very important” (Figure 12).

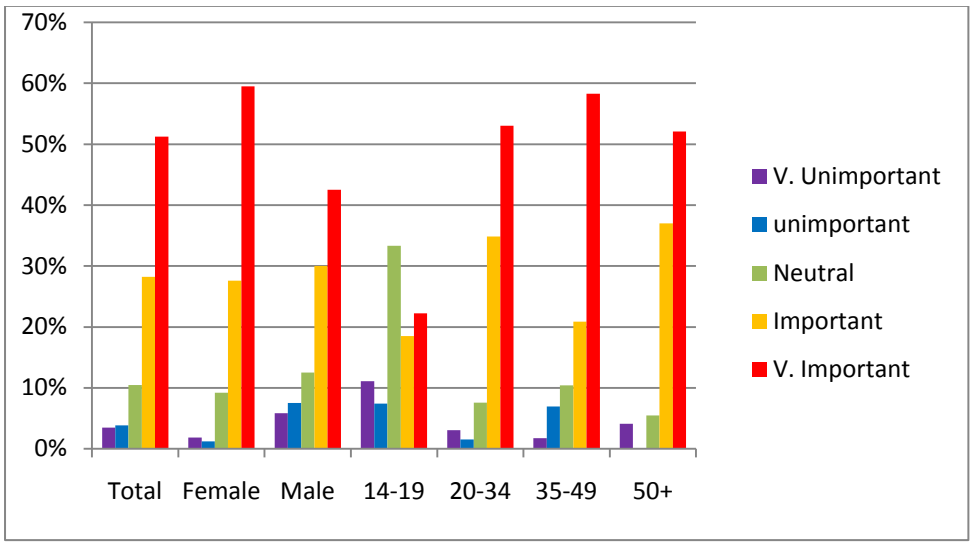


Figure 12: The importance of scums/foams/odour as an influence on the quality of the swimmer’s experience.

Slime was slightly less important than scums/foams/odour (“very important” or “important” for but showed a very similar pattern over the age and sex groupings. Many people commented that they expect a small amount of slime or foam and that this is natural.

Rubbish

The presence of rubbish on or near the beaches/river holes was offensive to most people (>80% thought it “very important” or “important”) and this importance tended to increase with age (Figure 13). Many people made the comment that they would generally take responsibility and pick up rubbish if they saw any.

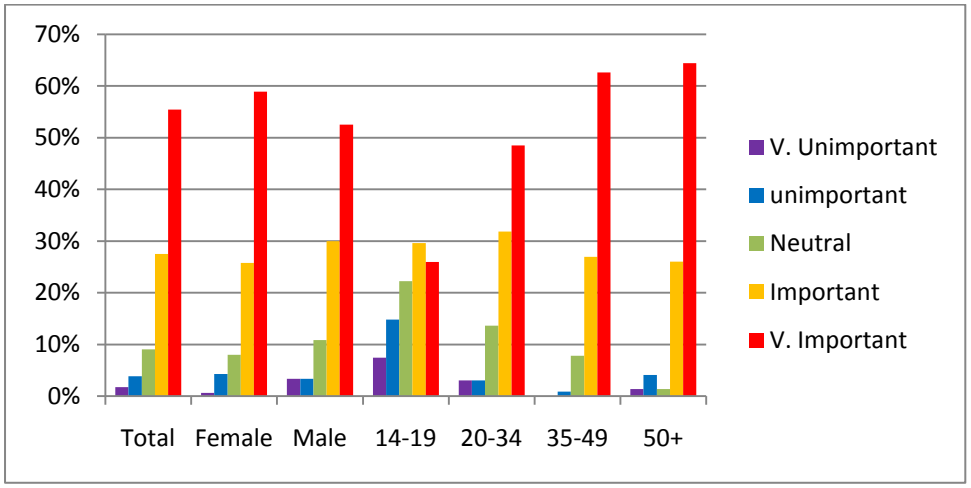


Figure 13: The importance of rubbish in influencing the quality of the swimmer’s experience.

Erosion

Most people were neutral on the issue of erosion (such as cutting into the foreshore or slips into the river), seeing it as a natural process and if it did not affect water clarity, it would generally not influence the quality of their swimming experience (see Appendix Three).

Peacefulness and scenery

The majority of respondents (almost 40%) thought that peacefulness was “very important” or “important”, with the clear minority (~15%) of respondents thought that peacefulness was “very unimportant” or “unimportant” (Figure 14).

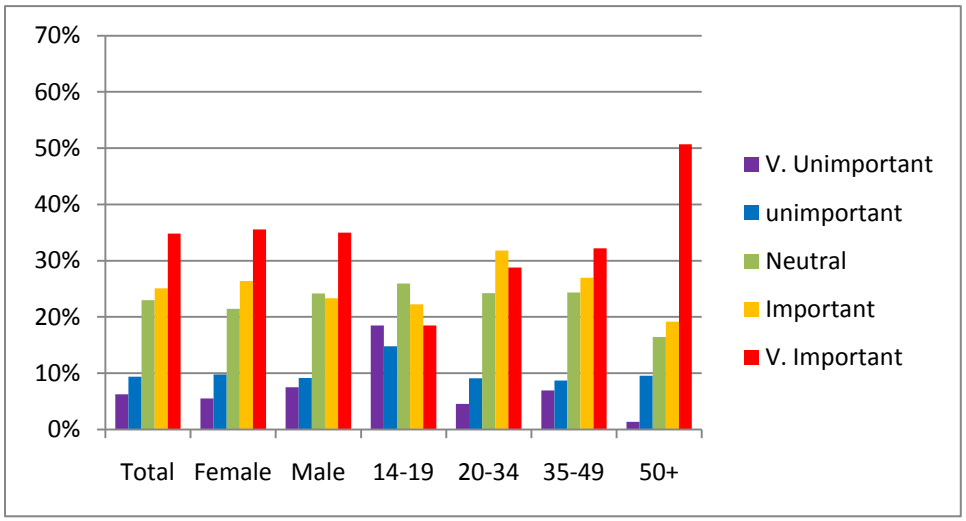


Figure 14: The importance of peacefulness in influencing the quality of the swimmer’s experience.

The pattern for “peacefulness” was very similar to that for scenery except that more young people (40% compared to 25%) were neutral about “scenery” compared to “peacefulness” (Appendix 2). As with the 1985-86 survey, many respondents wished that sites were not developed with buildings degrading the landscape. This was particularly true for the Lee-Roding-Wairoa catchment. It is perverse then that for the most part the reason that Council has been able to secure reserves is through subdivisions that of course allow for housing developments. To have the best of both worlds, it may be possible to ensure that such housing developments do not dominate the view from the river reserves. For those interviewed at Kaiteriteri, many did not want to see high-rise buildings like the Gold Coast of Australia.

Presence of power boats

The presence of power boats making noise, creating real or perceived safety risk or taking up space in the water or on the beach was the most equally divided of any of the factors discussed (Figure 15). Tata Beach was the main beach where this was raised as a major issue with many groups leaving because of boats.

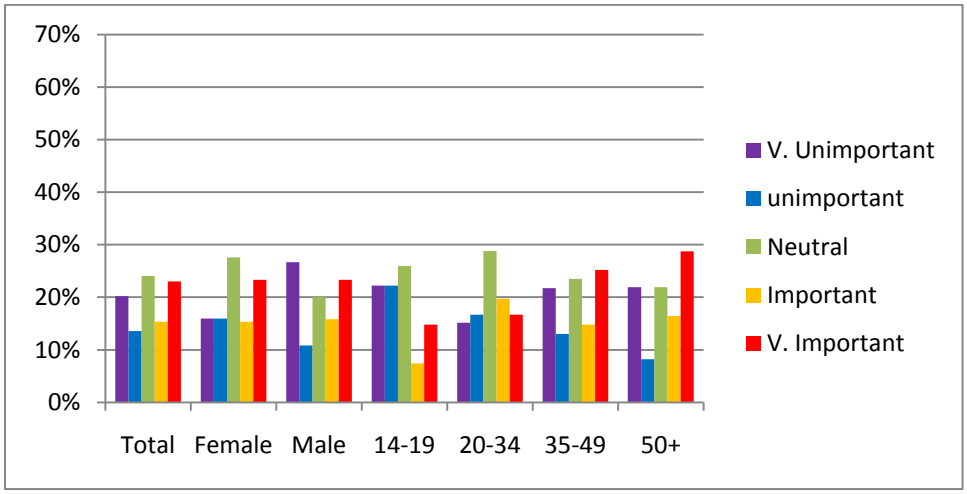


Figure 15: The importance of the presence of power boats in influencing the quality of the swimmer’s experience.

Over-crowding

"Too many other people at the site" was a factor regarded as "neutral" for a large proportion (28%) respondents and a factor affecting the enjoyment (described as "very important" or "important") for the majority (43%) of people (Figure 16). This was only slightly more important for people over 35 but neutral, "unimportant" or "very unimportant" for younger people. As expected, respondents who ranked this factor high generally sought more secluded areas such as upper catchment sites on the Lee and Wairoa rivers and more remote beaches such as those north of Patons Rock.

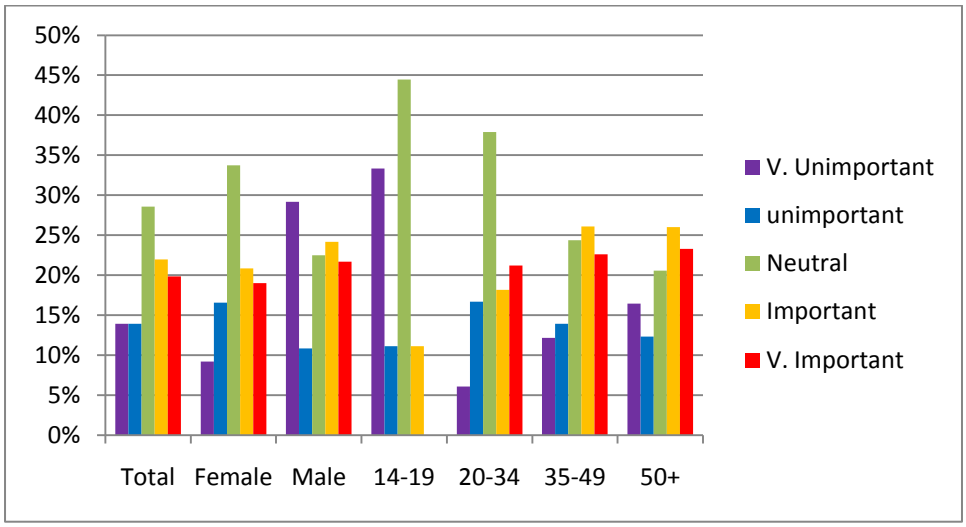


Figure 16: The importance of large numbers of people in influencing the quality of the swimmer's experience.

The presence of facilities nearby - Camping and Toilets

Camping was obviously "very important" of those beaches/holes near campgrounds (e.g. Pohara, Kaiteriteri, Quinney's Bush, Mapua) but was "very unimportant" for more respondents (32%) than any other class (Figure 17).

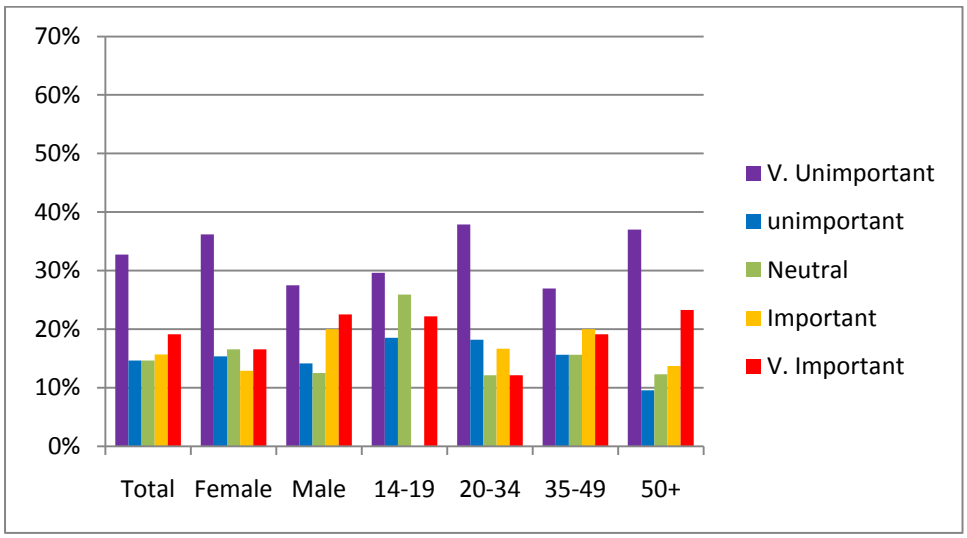


Figure 17: The importance of campgrounds in influencing the quality of the swimmer's experience.

Having toilets nearby was much more important than camping with 63% of respondents saying this is "very important" or "important" (42% thought it was "very important") (Figure 18). Older people and females were more likely to rank this factor of more importance.

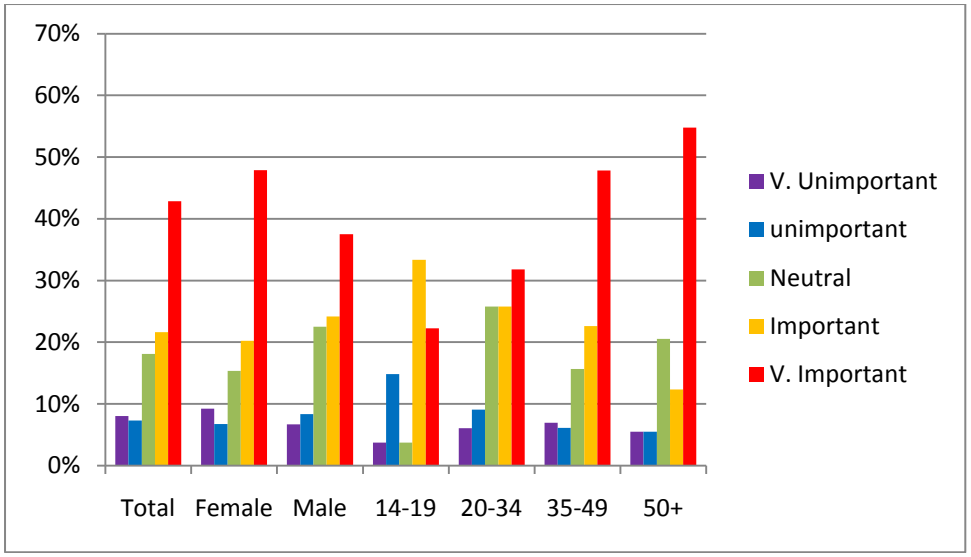


Figure 18: The importance of the presence of toilets in influencing the quality of the swimmer's experience.

Safe place for children to swim

A clear majority of respondents (51%) thought this was "very important". As expected those with families thought this was particularly important (Figure 19).

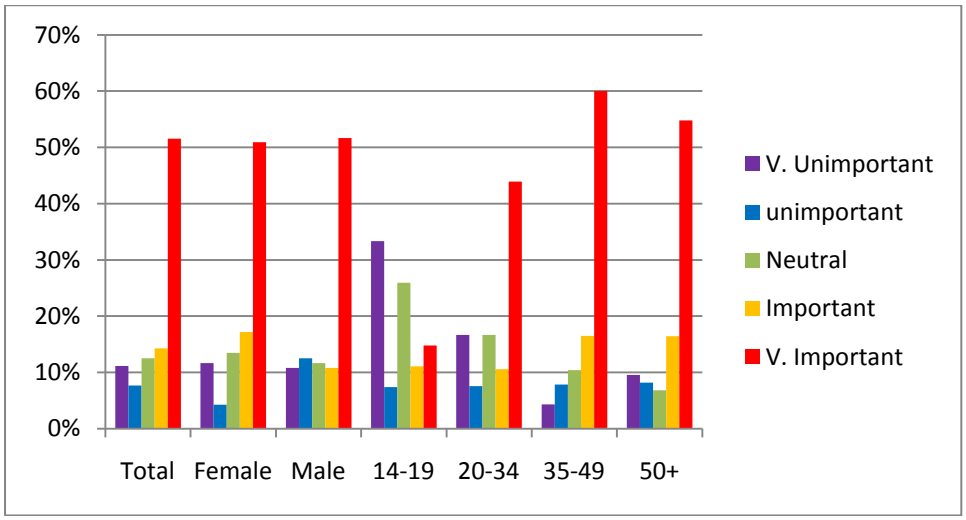


Figure 19: The importance of being a safe place for children to swim in influencing the quality of the swimmer's experience.

The presence of shallow water for children showed a similar pattern but less pronounced – only 38% of respondents thought this was "very important" (Appendix Two).

Rope swing or place to jump from

Rope swings are a feature of many swimming holes in rivers. This, and cliffs and bridges make some sites particularly popular (Figure 20). This was a "very important" factor for young (<19) people and "very unimportant" for almost half those people over 50.

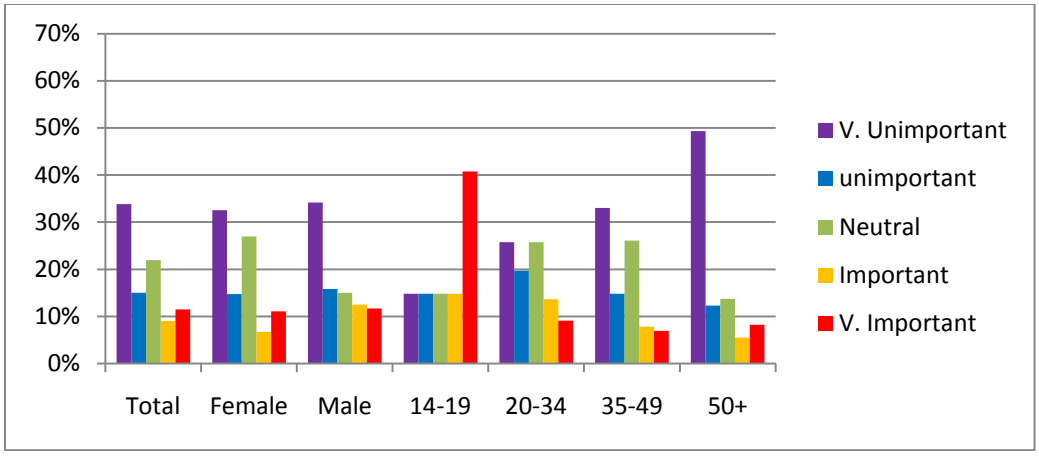


Figure 20: The importance of the ability to jump off high places into water in influencing the quality of the swimmer's experience.

Ensuring the safety of the users of rope swings was not discussed in the survey, but most are put up by private individuals and they are seldom tested or maintained. Hang Dog campground at Paynes Ford do take some responsibility for some of the rope swings into swimming holes at this location and remove the swings when the pools below get too shallow from natural gravel movement. Council's Parks and Reserves Department has a genuine liability for the safety of recreational equipment at its reserves. If rope swings or jumping structures are found on Council reserves, they are removed. In order to dissuade people from jumping off cliffs that may be a safety risk, the promotion of vegetation re-growth is encouraged. From experience, it has been found that fencing off unsafe areas creates more incentive for some people to use the area. If Council were to provide rope swings there is expected to be significant cost for such things as engineering design and testing of load limits and regular inspections (probably weekly as is the case for children's playgrounds). It could even be argued that Council would need to provide supervision on site. This is well beyond the scope of current Council business.

Deep water

Young people again were the most likely to describe deep water as being important, because it is necessary where jumping is done. However, compared to jumping where the clear minority thought it was "unimportant", more people appreciate deep water than those who don't (Figure 21).

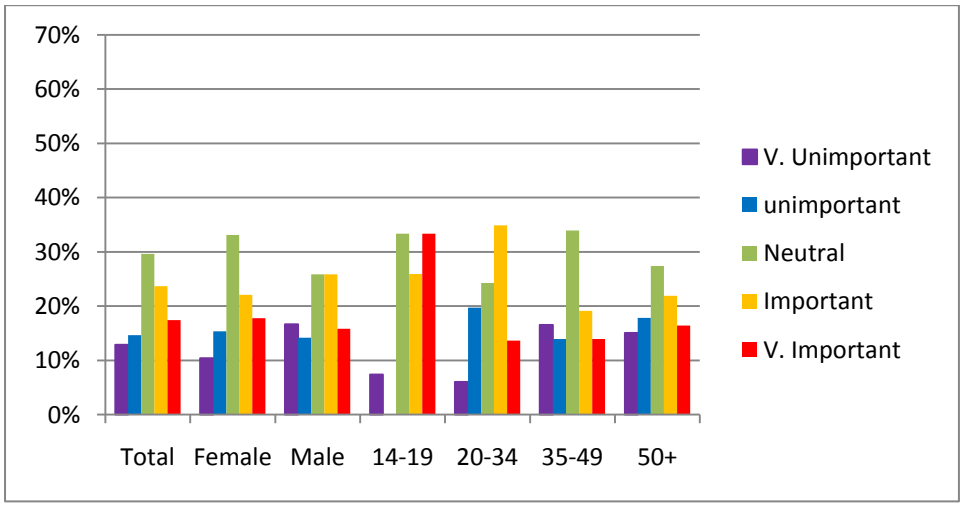


Figure 21: The importance of deep water to influencing the quality of the swimmer's experience.

Proximity to where respondents stayed

Travel distance was important for most respondents (46% thought it “very important” or “important”) but a surprising number of respondents were prepared to travel long distances to go swimming. Several people commented that about 30 minutes was the maximum travel time they would travel just to go for a swim (Figure 22).

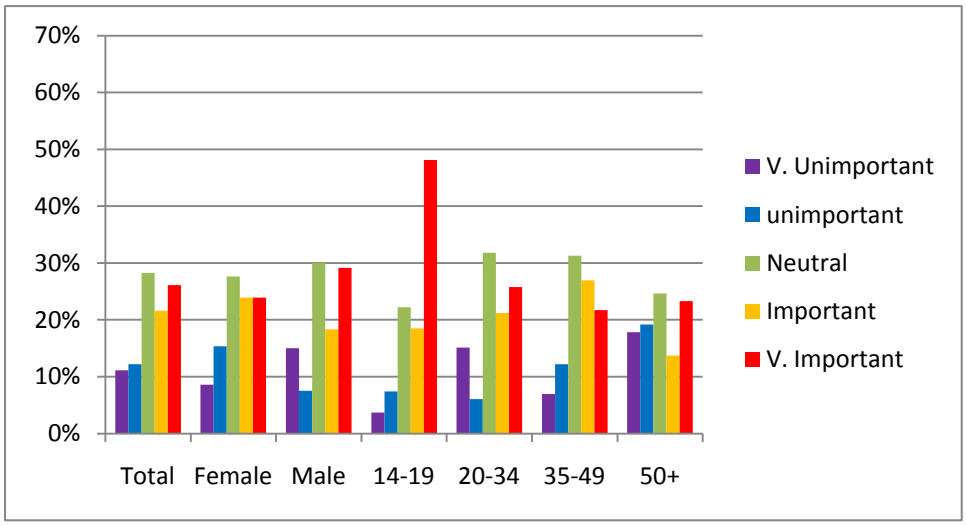


Figure 22: The importance of travel distance to influencing the quality of the swimmer’s experience.

Tide

Tide was found to be less important than previously thought and only limits swimming at a few sites (hours per 12 hour tide cycle in brackets): Grossi Point (1), Marahau (3), Pohara (4), Patons Rock to Parapara inclusive (4), and Collingwood to Puponga (3).

Dogs

The clear majority (60%) of respondents felt that being able take a dog was “very unimportant” (80% if you include the “unimportant” category as well) (Figure 23). The minority of respondents (~15%) thought that taking the dog was “important” or “very important”. When we asked this question however, most people said that they were offended by dogs on the beach. The reasons were deposition of dog poo and harassing people with noise and intimidating behaviour, particularly in upsetting children.

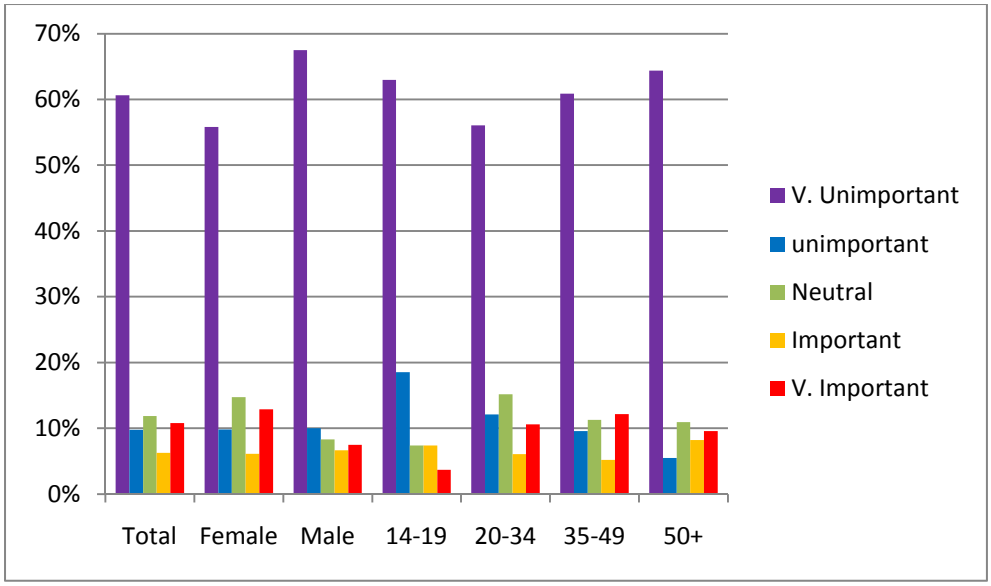


Figure 23: The importance of being able to take dogs as an influence on the quality of the swimmer's experience.

Several of the people who did not want dogs and the beach/hole were dog owners themselves. However, they were keen to have some beaches or areas where they could take their dogs. People often go to the Waimea River because they can take dogs there.

General statistics from the on-site survey:

- 287 valid survey forms were provided from 319 approaches.
- 32 people/groups did not want to participate in the survey and most of those were non-swimmers (particularly walkers on Ruby Bay-McKee Domain).
- Younger males may be slightly under-represented in survey due to a reluctance to take part in the survey. When a group of young people was approached, it was often the females who stayed and the males moved away from the area (Figure 7). Males were also more likely to be active and in the water and therefore surveying was less convenient for both parties. Older males did not make up as high a proportion of marine beach users as females and this is represented in the relative proportions of respondents between male and female over 50+. These are the likely reasons for females making up the overall majority (57%) of respondents.
- Average group size reported was 4.4 persons, compared to the 1985 survey which reported 6-8 people at the Lee and Waimea Rivers, and 5 people per group in the Roding and Wairoa. As with the 1985-86 survey it was found in this survey that there were a number of mini-buses (possibly 3-5% of all vehicles) with groups of 20-25 people.
- 73% of surveys were carried out at marine beaches (27% at river sites).
- Overall, people felt Tasman District Council was doing a good job at managing swimming holes and beaches.
- There was a perception that water quality in Tasman District was good. However, this prevailed even when people interviewed had seen a dead cow on the beach near the same place the previous day (the cow was removed in the intervening period prior to the interview).
- About 70% of respondents travelled to the swimming beach/hole by car and 28% travelled on foot.

Thirty of 287 respondents listed a site they would not go back to either in the medium term or during the most crowded times. The Maitai River was the most frequently listed (8 of 30) due to water quality, slime, odour, hooligans/boy racers and rubbish. Next were the Roding (4 of 30) due to boy racers and broken glass and White Gates being not very "welcoming", Tata Beach (3 of 30) due to boats, and Kaiteriteri and Tahunanui at peak times due to large crowds.

Time of day is more important with the peak time being from 14:00-15:00.

Many people stayed longer if there was shade at a site e.g. Ligar Bay compared to Tata Beach. The length of stay was typically about 1-2 hours but many people stayed 3-4 hours.

Many people seem to go to the same few sites they know and like. Many who use the Roding River along the Aniseed valley do not use the Lee Valley and vice-versa.

Two public events took place on the days of the surveys that may have displaced some people from swimming areas: the' Takaka Mardi Gras' on 5 February and the 'Motueka Raft Race' on 6 February. Conversely, some events such as a rock concert in Riwaka on the evening of 2 January brought many young people to the region and use swimming sites was probably increased during the day prior and afterwards. There were several groups of young concert-goers interviewed in Golden Bay on 2 January.

Proposals or activities that adversely affect swimming

Dams

The affect of the proposed Lee Dam near Waterfall Creek, approximately 11 km upstream of the confluence of the Lee and Roding Rivers, could have little or no affect on cooling river water temperature or sliminess downstream of the discharge. This depends on what depth in the reservoir the off-take water is taken from and the provision of flushing flows to 'clean' up the river of excess slime. Releasing too much cool, nutrient-rich water from nearer the bottom of the reservoir would not be so desirable for swimmers. This is the situation that is upsetting many swimmers we spoke to as part of the survey who use the Maitai River. As proposed under the regime of the Lee River scheme, there will be more water in the lower reaches of the Lee, Wairoa and all of the Waimea Rivers which will be of benefit to swimmers.

The Cobb Reservoir discharging into the Takaka River produces slightly poorer water clarity and rapidly-fluctuating river levels near the Blue Hole swimming area.

The Kainui Dam appears to be providing a real benefit to swimmers using the Wai-iti River by increasing the flows and reducing the frequency that the river dries up.

Dairy effluent Discharges

Comments were received about dairy effluent discharges to the Onahau River depositing effluent solids on Rangihaeata Beach North in Golden Bay. Enforcement action was taken against these discharges and it is expected that this situation will be a thing of the past. The effects of such discharges are not usually so obvious but when they are there is usually a serious risk to the health of swimmers. Another comment received as part of this survey was about a dairy effluent discharge further north along this coast. This was particularly useful as this was not known about by Council and now will be followed up.

Septic tank and sewage discharges

Takaka, Collingwood, Motueka and Bells Island waste water treatment plants are in close proximity to swimming areas and could present a potential threat. However monitoring has shown treatment is obviously sufficient, at least in dry weather. Swimming near the mouth of Tasman Valley stream and Tukurua stream would be a moderately high health risk due to elevated faecal coliform numbers being regularly found in the stream. Council is working to find the cause of these issues.

Publicity about swimming areas

Currently there is little publicity about the location and features of particular swimming areas in Tasman. Several respondents to the survey thought it would be useful to provide more information to the public about the location of swimming areas. However, opinion is divided over whether less-popular swimming holes in rivers or some more-secluded beaches should be publicised or remain for the locals as 'jealously-kept secrets'. Tourists or "non-locals" tend to be more keen on this idea than locals as they do not have access to this information. In order to satisfy many locals some sites could be excluded from publicity.

Publicity could be in the form of signage at the roadside pointing to the access point (like the Fish and Game access sign) or a guidebook like “Walk Tasman” or “Bike Tasman”. In early 2011 Fish and Game produced a guide for Golden Bay and Motueka that includes access areas for fishing, picnicking, and swimming. Fish and Game are working on a guide for Buller and Waimea. This guide is distributed at information centres around the district.

It appears that the Council website is not used much by the swimming public with only 9 of 287 (~3%) respondents having gone to Council’s webpages to access information on bathing water. This is despite these pages being comparable to the best among Councils in the country. About 3% of respondents have checked river flow, tide or water quality prior to going swimming. It seems that weather is by far the most important thing that will influence people to swim on a particular day.

Site Photographs

Golden Bay:

Figure 24a: Golden Bay Sites. From top-left: Pakawau, Parapara, Milnethorpe, Tukurua, Patons Rock, Pohara

Figure 24b: Golden Bay Sites. Clockwise from top-left: Ligar, Tata, Takaka at SH60, Takaka at Reilly St, Kaihoka Lakes, Aorere at Salisbury Bridge

Figure 24c: Golden Bay Sites. Top-left: Anatoki River at One Spec Rd, Middle Two Photos: Takaka River at Paynes Ford #2 (middle) site, Lower Two Photos: Takaka River at Paynes Ford #1 (lower) site.

Paynes Ford:

#1 swimming hole downstream SH60: Department of Conservation will investigate upgrading the track to the hole and have plans to increase the car-parking capacity here. Department of Conservation are concerned that any further publicity about the site may exacerbate the parking issues and cause more of a safety hazard crossing the highway.

Figure 24d: Golden Bay Sites. Top Two Photos: Takaka River at SH60, Lower Left: Takaka River at Paynes Ford #2 (Middle) site. Lower Right: Takaka River at Top Rocks (downstream Paynes Ford)

Tasman Bay

Figure 25a: Tasman Bay Sites: Top left and right: Marahau Beach, Middle-left: Marahau River at Old MacDonald's Farm, Middle right: Breaker Bay, Bottom-left: Kaiteriteri (from Kaka Point) , Bottom-right: Kaiteriteri (south end)

Figure 25b: From Top-Left: Little Kaiteriteri, Dummy Bay, Stephens Bay, Mapua, Rabbit Is,

Figure 26: Motueka River Sites: Top left: Blue Gum Corner, Top Right: Alexander Bridge, Lower: SH60

Figure 27: Motupiko River at Quinney's Bush

Figure 28: Waimea Catchment sites. Top-Left: Roding at Hackett, Top right: Roding at Twin Bridges, Mid-left: Roding at Busch Reserve, Mid right: Lee at Firestone, Lower left: Lee at Meads, Lower right: Lee at Lee Reserve.

Figure 29: Top: Roding at Busch Reserve, Mid-left: Wairoa River at 300m upstream Lee River,Mid-right: Waimea downstream SH60, Lower: Wairoa at Max's Bush (WEIS intake)

Figure 30: Wai-iti River at Arnold Lane – several hand-built dams creating swimming holes on this river.

Comments made by Survey Respondents

The following comments are listed in order from common comments to less common.

Reoccurring General Comments	Access to beaches and swimming areas should be improved and maintained where it currently exists. Access should be open for all. *This was the greatest concern for most people interviewed.*
	Dogs should not be allowed at beaches or swimming holes. Faeces and intimidation/nuisance were sighted as the main reasons. A*pproximately 60% of respondents made this comment, even a majority of those that have dogs.*
	Keep the main sights natural with no development. “Do not want high rise buildings or garish buildings like Little Kaiteriteri or the Gold Coast”.
	Praise for TDC and the work they are doing maintaining river and beach reserves.
	People want access tracks to the beach/swimming hole be repaired. Many tracks are difficult for older or younger people.
	Boy racers or young hooligans are seen as a problem at several sites, mostly rivers
	Noise pollution from boats / jet skis is disliked particularly in Tata and Kaiteriteri
	The amount of rubbish and over-flowing bins during peak periods is unsightly. Broken glass at some sites is a real health issue. *Many people noted that they pick up rubbish after them.*
	Some people would like to see other facilities at site such as toilets, BBQ and tables.
	There are mixed views on freedom campers some saying that they should be charged and others saying access should be free. Toilets and rubbish bins should be installed at popular sites to stop fouling.
	A few of the facilities available need better looking after e.g. Ruby Bay and Mapua.
	People want better signage for walkways and for no dogs. Others suggest that signage is overdone, especially in places like Kaiteriteri. Mixed views
	Farmers should stop impacting on the rivers, particularly farm effluent.
	Designate more sections of beach or adjacent land for dog exercising and publicise these. Not many dog-friendly sites in the district.
	Speed limit at some sites is to high leading to a danger for kids, particularly Kaiteriteri and Paynes Ford. Most of those speeding are younger drivers.
	Charging for parking is a not a good idea as it limits access.
	Need to have areas designated for boats and swimmers, particularly at Tata Beach. Even at Kaiteriteri swimmers and kayakers become dangerously close to boats.
	Bring back more campgrounds e.g. Pakawau
	TDC should charge visitors (not rate payers) to upgrade facilities

Site Specific Comments:

Site:	Comment:
Waimea and Wairoa Rivers	Concerns about the gravel extraction affecting the health of the river and making it feel like an industrial area.
	Upgrade the track on true right to, and provide toilets at, Wairoa at Max's Bush (toilets were also suggested for this site in the 1986 report). The land is on road reserve but a short section at the SE end of Haycock Road accessing this site is in private ownership. A track upgrade is needed because it is very difficult for older people to walk along. The work is only likely to take a person a couple of hours with a spade.
Lee River	Clean Up rubbish
	Farm effluent affecting water quality
	Glass is a recurring problem
	Install BBQs at Lee Reserve
Roding River	Would like to see more riparian planting to improve the water quality
	Hate to see dairy farmers impacting on rivers. Control quantity in river not too much irrigation. Keep naturalness. Not too many signs. Safety
	Glass at river sites
	Well maintained site appreciated
	Everything clean and tidy. Pleasant
	Need to look after cooking and BBQ facilities
	Farming and cows in water. Keep thing natural. Old man's beard, native planting would be good
	Farmers should fence river edge to prevent effluent flowing into river
	Keep access open
	Install BBQs at Hackett Reserve
Rabbit Island	Most against further development at Rabbit Island
	More coastal care at the beach as it is eroding away e.g. more vegetation to protect erosion. Also too much rubbish around the beach
	Maintain access and focus on controlling erosion at rabbit Island - prefer natural
	Also very dangerous at Rabbit Island with kite buggies, kite surfers, land yachts and dune buggies as they do not look out for people around them
	Dogs. More signage is needed so that people do not bring their dogs onto the beach.
	Nudists: Rabbit Island is a family beach not a nudist beach they need to go to Mapua for that. Something needs to be done abot the sex huts at the southern end of the beach
	Install a small playground at Rabbit Island like the one at Tahunanui and

	Kaiteriteri. Beach cafe at Rabbit Island would be good.
Tasman Bay Coast Mapua to Motueka	Removal of pine trees at McKee Domain.
	Need to enforce dogs on the beach.
	Positive improvement over last 20 years. Good toilets and water on hand. Playgrounds good at McKee and Faulkner's bush
	Great infrastructure. Clean and tidy
	Nice and unspoilt
	Motorway has been good for the people at the Mapua campground has made it a lot quieter
	Toilets at the Mapua Grossi Point Ruby Bay area need more regular cleaning and maintenance. No soap or toilet roll holder.
	Seawall at Mapua - Ruby Bay unsightly and unnatural
	Wharf at Mapua needs fencing so it is safer for kids
Kaiteriteri Area (including Stephens, Dummy, Tapu, Split Apple Rock Bays)	Advertising/signs for parking could be better
	Wasps should be better controlled
	Noise pollution e.g. jet skis motorboats
	Restrict further development in national parks.
	Limit commercial activity on Abel Tasman coast.
	Let people build on their own land but not let them develop natural beaches
	Removed glass in water from Kaiteriteri
	Sand Erosion is a concern at Kaiteriteri
	Concerned about the sewage smell on Kaiteriteri Beach as well as debris on beach and erosion
	Would like to see life guards when conditions require it
	Air traffic unpleasant. Close up boats on the beach dangerous
	Boats should be down at boat ramp
	Traffic is sometimes too fast young hooligans. Slow traffic down - speed bumps not very effective.
	Enjoy swimming with the current from under the bridge on an outgoing tide.
	Install some picnic tables at southern end of Kaiteriteri beach
	Don't want dogs on the beaches. Harassment of children and faeces.
	Need better signage to show start of walkways at Kaiteriteri, Stephens-Bay-Dummy Bay. Have a walkway from Tapu Bay to Stephens Bay.
	Needs to be bigger signs and announcements at the campground e.g. when water quality problems occurred.
	Jumping tramp moored in the bay would be good. Existing pontoon is great.
	Kayaks should not be on north side of boat ramp. They already take up a lot of space.

	Commercial companies should not refuel on coast the smell is overpowering at times and ecologically bad for the marine animals.
	Announcements from loud speakers on tour boats are too loud. Announcements could be made several minutes before reaching the beach rather than almost at the beach.
	Jet skis are a problem they are too noisy.
	Aeroplane aerobatics too noisy at times.
	Public access should be maintained
	Trees at Kaiteriteri have been cut, limiting the amount of shade available.
	Keeping tracks and signage at Dummy Bay fairly rudimentary so not many people will make the effort. Want few people there.
	Rubbish and pollution is a problem at peak times during the year
Marahau Area	Noise pollution at beach from powerboats & people
	Numbers should be monitored and managed in national park.
	Would not like resorts/buildings near the beach. Like things natural
	Loss of sightlines. Loss of access. Keep it natural
	Parking at road-end for track to Split Apple is inadequate.
	Part of rudimentary seawall has been partially washed out at Marahau. Sand bags litter the beach.
	Don't want development in natural areas
Motueka River	Walks along Motueka River and public access ways to the 'Queens Chain' need to be better signposted, starting from town up to Alexander Bridge and beyond. Apart from the waterfront at Motueka, there are very few walkways around Motueka.
	Appreciate access to river and good maintenance
	Concerns about the safety and hygiene of river
	More car-parking suggested for Peninsula Bridge swimming area. *This site was at times very congested with cars.*
	Put up better signage indicating access points for swimming holes.
	Want to see better control of the erosion of the banks and monitoring of the bacteria levels
	Keep it natural
	Need to tidy the slash/cuttings after logging of pine forest in Motueka Valley. Has to affect water quality.
Golden Bay	Improve access to Paynes Ford sites, particularly the lower site (swimming hole #1). Overgrown and start of track is not clear. (land at this site owned by Department of Conservation).
	Speed limit along SH60 past Paynes Ford should be lowered. Many people casually crossing the road with cars travelling past at 100km/h.
	Need more parking at Paynes Ford during peak times. Carparks on both sides of the road are regularly full in peak season and spill-over parking along the highway has very little room.
	Disappointed that Hang Dog Campground took rope swing away (*did so*

for safety reasons).

Lots of campers leaving rubbish before or after the (Luminate) festival at Canaan Downs. Would prefer more popular sites to have long drop or toilet to stop fouling

Tata beach should have separate zones for boats and swimmers. Many people not swimming at peak times as it is so dangerous. Have some beaches with no boats

Free camping should be allowed

Would like to see toilets on Selwyn St, Pohara (road along waterfront at west end of built up area) near beach access

Prefer if people did not drive on river bed

Algae has increased over years

Waterborne diseases are a concern

Farms need to control faecal matter or adopt ways to maintain good stream health e.g. Patons Rock

Noise control is an issue, particularly at Tata Beach.

Takaka River has more gravel and mud and is more coloured than a decade ago. Some swimming holes are filling in.

More off-street parking at Kaihoka Lakes would be good at peak times. Public road is very narrow when many cars are parked along it.

Recommendations

Review of Bathing Water Quality Monitoring Programme:

The following changes are recommended to the Bathing Water Quality Monitoring Programme:

Cease sampling at the following sites:
Pakawau
Totara Ave
Parapara

Increase the sampling to 20 samples/year every year at (like Kaiteriteri, Rabbit Is, Mapua, Pohara):
Lee at Reserve
Roding at Twin Bridges
Takaka at Paynes Ford lower (#1)

Install temperature probes at the following river hydrology monitoring sites:
Wairoa at Irvines,
Motueka at Woodmans,
Takaka at Kotinga.

Put Collingwood Boat Ramp in River Water Quality Monitoring Programme

Publicity

Produce a guide to swimming holes and coastal beaches in a similar format to 'BikeTasman' or 'WalkTasman'. Council has already provided information about the location and other details of swimming sites to Fish and Game who are producing an access guide to rivers for all recreation, not just angling.

Tasman Resource Management Plan

As the value of the recreational experience has again been shown to be intimately linked with the scenic quality and natural character of riverscapes, Council should consider a landscape protections zone in areas around river swimming holes, especially in the Lee and Roding catchments.

Access Provision

Take opportunities to add to or improve existing access to coastal and river swimming areas.

Parks and Reserves

Continue to improve parks and reserves, taking on board some of the comments from this survey.

Future Surveys

Repeat this survey in 2020-21 to determine changes over time. For future surveys the following changes to questions in survey are suggested:

Remove:

Variable water depth for children (this variable is unlikely to change over time and is relatively obvious)
Water temperature (this variable is unlikely to change over time)
Rubbish (this variable is unlikely to change over time)
Erosion (not a big issue)
Number of people seen at sites visited in the last few months (the majority of respondents had to think very hard about this, the data appeared very inaccurate and other surveys also suggest that surveying in this way tends to over-estimate numbers).

Add:

How long to spend at the site?
Only in areas with traffic counters .... How many came in your car? This is to determine people numbers.
Do you mind dogs on the beach/swimming hole?
Do you mind the presence of powerboats and jet skis?
Have you ever got sick from swimming at a particular site?
Ask people to rank sites for their usage and order of most favourite to least from a list provided. Compare to 1981 survey.

References

Fitzgerald, G and Shaw, D: 1986. Waimea Catchment: A recreational study. Nelson Water Board March 1986.

James, TI: 2004-2010. End of Season Bathing Water Quality Reports to Council.

Orr, KW: 1982. Recreation Survey: Coastal and Inland Waters Nelson Bays Region. Report prepared for Nelson Bays United Council by Cawthron Institute.

Appendices:

Appendix One A: Methods

The Sites:

Over 120 sites were identified as being used regularly in summer for swimming, with over 80 sites having moderate or high use. Of these, 52 sites with the highest use were used for the opinion surveys. Sites in national parks (e.g. Abel Tasman) were excluded as these are outside the jurisdiction of Council. Sites in the Buller catchment were not included due to the resources available, the whole region could not be covered.

Sampling Proceedures:

On-site surveys

Eight staff were used to survey people, using the form shown in Appendix One (b), at the most popular swimming times (13:00-16:00) on the following dates: 30 Dec, 2 Jan, 22 Jan and Feb 5. These dates were chosen to represent peak and average mid-summer usage. The weather on these days was fine with the exception of 22 January when there were overcast conditions at some sites. Only one programmed sampling day had to be postponed due to weather (29 Dec postponed to 30 December). On 28 December there was widespread rainfall across the district, with the rain being heavy in the Aorere and Buller catchments. This meant that water temperatures were cooler at river sites for the week after this event. The exact time of day the sites were visited was varied to ensure that all sites were visited as close as possible to the mid-afternoon peak usage period. However, it was critical that the timing of surveys at several sites coincided with tides that facilitated swimming ie some beaches with very shallow gradient are only used for swimming a few hours around high tide. Some public events took place that may have displaced some people from swimming areas.

A maximum of 1 hour was spent at each site, with two personnel carring out surveys at the more popular sites (Kaiteriteri and Rabbit Island) simultaneously for one hour. On average the surveys took 15-20 minutes to complete, so 3-4 could be completed per hour. When there were more groups on the beach than there was time to survey, 3-4 groups were chosen randomly (ie if there were about 30-40 groups on the beach, every 10th group was chosen for the survey). Generally one person was asked to fill out the survey per group, but often several people in the group participated in the survey with the interviewer dictating the questions and recording answers. Many respondents preferred to read and write the answers themselves, but all were checked by the interviewer and clarification asked where required. If every group at the site was sampled then the surveyor moved to the next site rather than waiting for more people to arrive.

Aerial survey

Counts of swimmers from an aircraft took place on 23 Jan and 6 Feb. Unfortunately, on 23 January the weather was cool (15^{o}C) and overcast and a much lower number of swimming beach/hole users was recorded.

Photographic surveys from a plane were carried out through the district, apart from the Buller Catchment, from 13:00 to 16:00. Direct counts were recorded from the plane as well as taking photos using a high-quality camera (Canon Powershot SX20 IS, 12 MegaPixel, with Image stabiliser using fast shutter speed, 400-800ASA). Flight paths are shown in Appendix Five.

Traffic counters

VDAS single-tube axle traffic counters were placed at seven sites in the Wairoa catchment and Rabbit Island. One count was recorded for the either direction of traffic movement (either up-valley/outward or down-valley/return). The four sites in the Waimea catchment (the top four listed) were surveyed in 1985-86 from 18 Dec to 27 Feb.

Traffic counter Sites:

- Pig Valley Rd ~500m upstream Wairoa Rv
- Lee Valley Rd upstream of the Wairoa Rv
- Wairoa Valley Rd upstream of the Lee Valley Rd
- Roding River first crossing at base of Aniseed Hill (Eastern side)
- Rabbit Is – start of Boat Ramp Rd
- Rabbit Is – Ken Beck Drive (main road) in just beyond Boat Ramp Road
- Rabbit Is – Redwood Road prior to the bridge to Rough Island

Data was provided in hourly intervals.

Data Analysis Methods

For ranking sites into popularity classes the median was used unless the median was zero, in which case the mean was used. This was justified as these particular sites got high but very intermittent use.

Advertising and Promotion:

A Newsline article about the survey was released (to all residents of Tasman) just prior to Christmas to raise awareness and prime potential respondents. To encourage participation, people were offered to enter a prize draw for vouchers for a boat trip Abel Tasman and two passes to Action Indoor Sports

Appendix One B: Survey Questionnaire Form

tasman district council

Recreation Water Questionnaire 2010-11:

Survey locality: _____

Surveyor: _____

Date: _____ Time: _____

1	Personal Profile (interviewee)							
	a	Age	14-19	20-34	35-49	50+		
	b	Sex	Female		Male			
	c	# people you came with?						
	d	# children under 10yrs						
	e	Where you normally live?						
		i	Within region					
		ii	Elsewhere in NZ					
		iii	Overseas					

2	Level of effort to get here:					
	a	Where have you come from today?				
	b	How did you get here today?				
		Bike		Walk		Car

3	For your main activity (reason for being here) put "1" in the "rank" column, 2 for your secondary reason and so on:		
		Activity:	Rank:
	i	Swimming	
	ii	Picnicking / BBQ	
	iii	Socialising	
	iv	Sunbathing	
	v	Kayaking	
	vi	Tubing	
	vii	Fishing	
	viii	Shell fishing	
	ix	Other i:	
	x	Other ii:	

4	Did you check the following before coming today?		
	a	River flow or level	
	b	Tide state	
	c	Bathing water quality	

5	Have you ever checked the TDC website for information on water quality?			
	YES		NO	

6	Are there any sites you will not go back to due to something affecting your experience? Why?

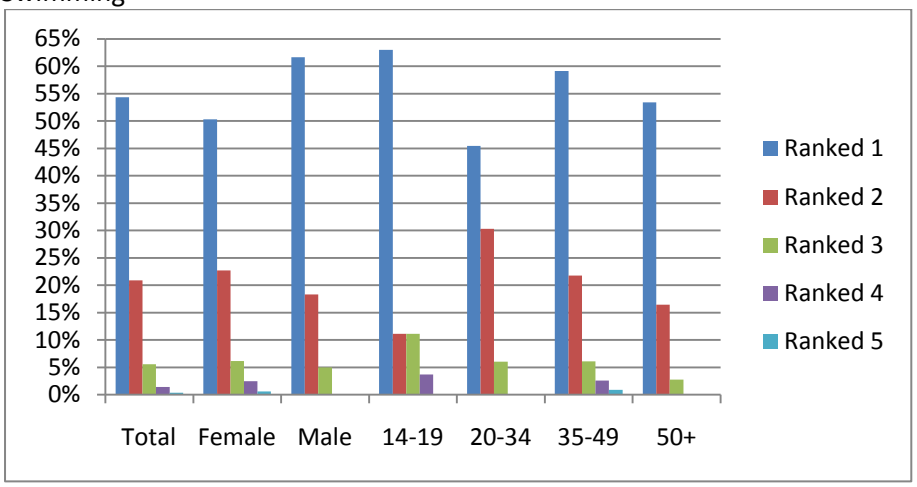
7	On a scale of 1-5, 1 being completely unimportant and 5 is absolutely critical, what influences the quality of your experience for your main activity? (circle)					
	a	Water clarity	1	2	3	4	5
	b	Levels of disease-causing organisms	1	2	3	4	5
	c	Water temperature	1	2	3	4	5
	d	Scums/foams/odour	1	2	3	4	5
	e	Didymo/ other algae (slime)	1	2	3	4	5
	f	Rubbish	1	2	3	4	5
	g	Erosion	1	2	3	4	5
	h	Peacefulness	1	2	3	4	5
	i	Presence of power boats	1	2	3	4	5
	j	Too many other people	1	2	3	4	5
	k	Scenery	1	2	3	4	5
	l	Camping nearby	1	2	3	4	5
	m	Toilets nearby	1	2	3	4	5
	n	Safe for children	1	2	3	4	5
	o	Rope swing / place to jump	1	2	3	4	5
	p	Proximity to where I live/stay	1	2	3	4	5
	q	Deep water	1	2	3	4	5
	r	Variable water depth suitable for kids	1	2	3	4	5
	s	Being able to take dogs	1	2	3	4	5
	t	Other	1	2	3	4	5

8	a	What sites have you used at in the last year?			
	b	How many times at each site?			
	c	How many people do you see at these sites? 0-5, 6-20, 21-50, 50+			
	Site 1:				
	# Visits / year?		# People at site?		
	Site 2:				
	# Visits / year?		# People at site?		
	Site 3:				
	# Visits / year?		# People at site?		
	Site 4:				
	# Visits / year?		# People at site?		
	Site 5:				
	# Visits / year?		# People at site?		
	Site 6:				
	# Visits / year?		# People at site?		

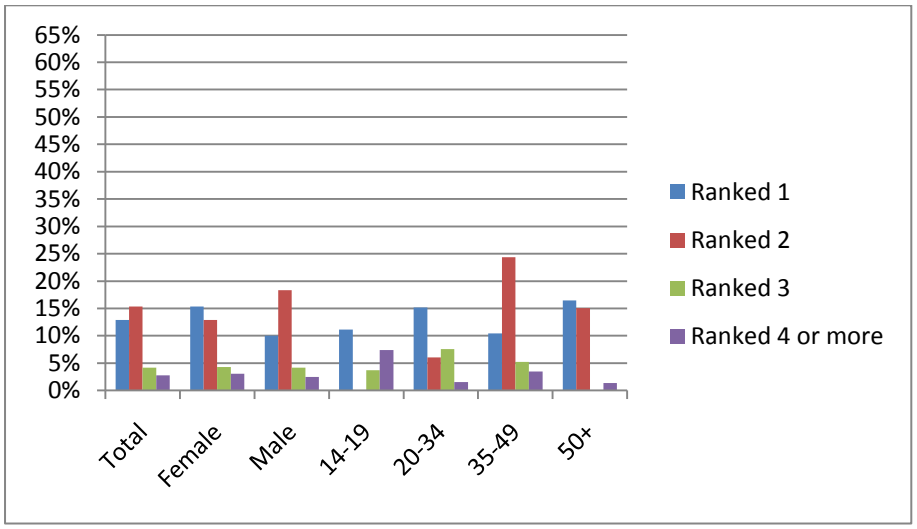
9	Do you have any concerns about development or disturbance along the coast or rivers? Continue PTO

Appendix Two: The main activity carried out by the respondent at the site of the interview

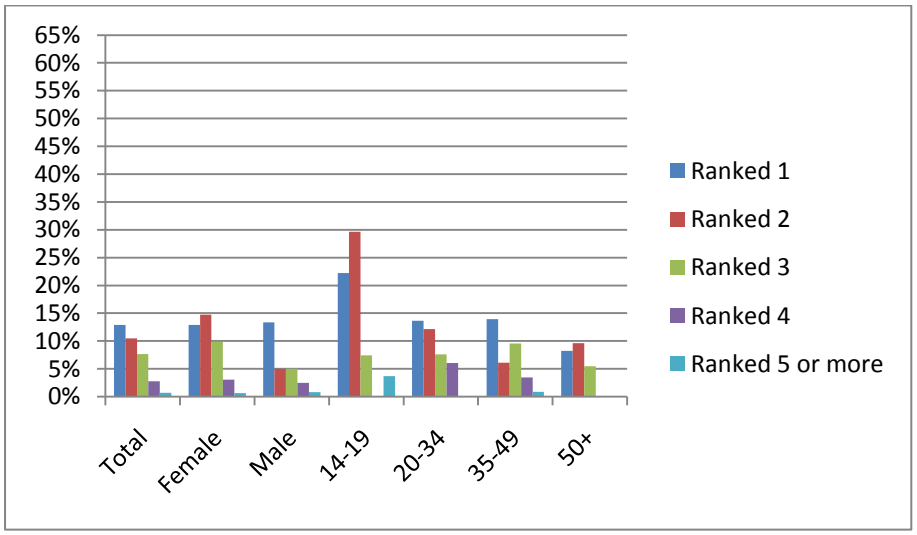
Swimming



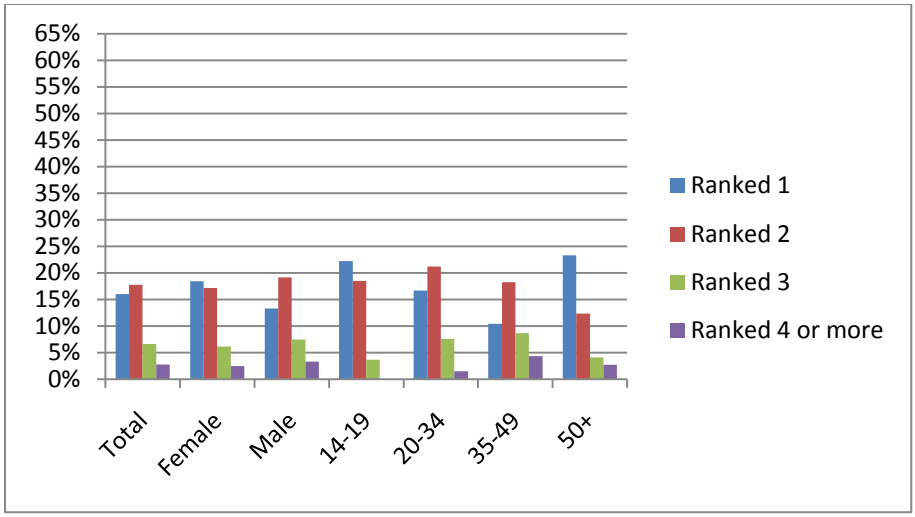
Picnicking



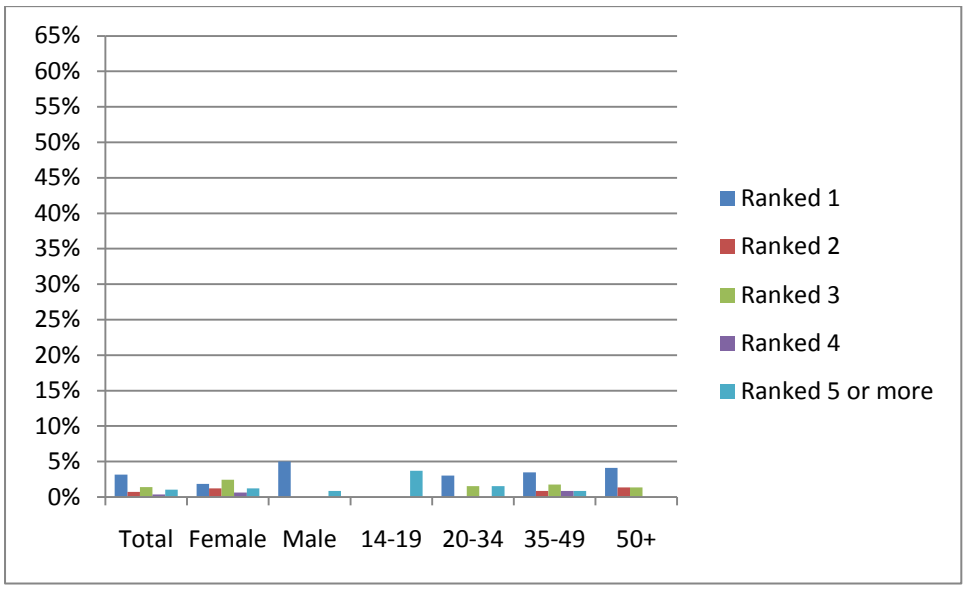
Socialising



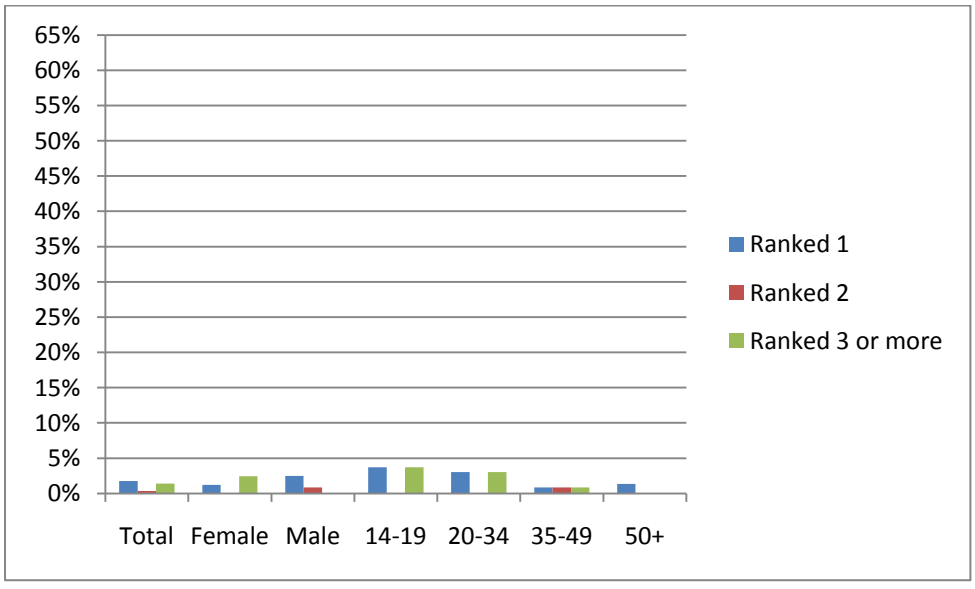
Sunbathing



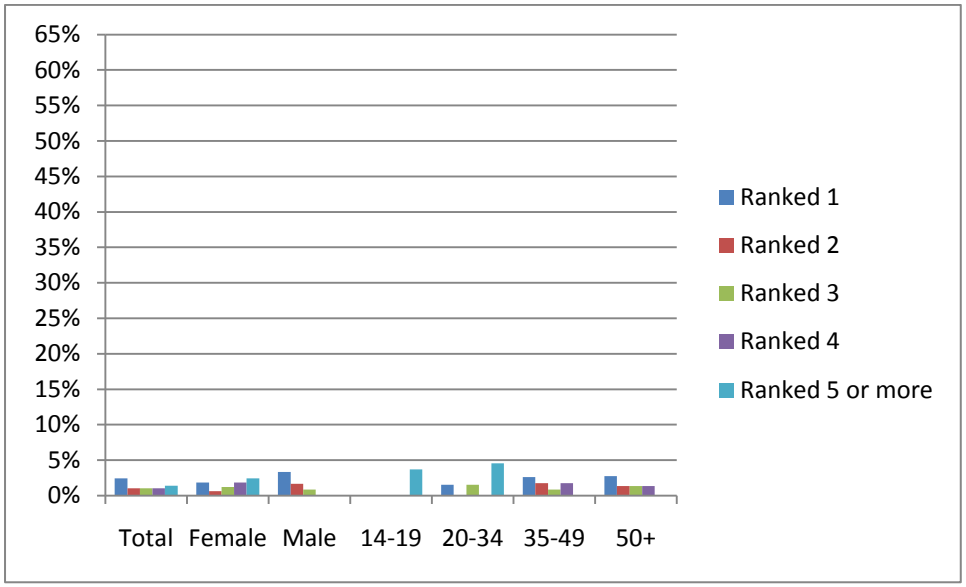
Kayaking



Tubing

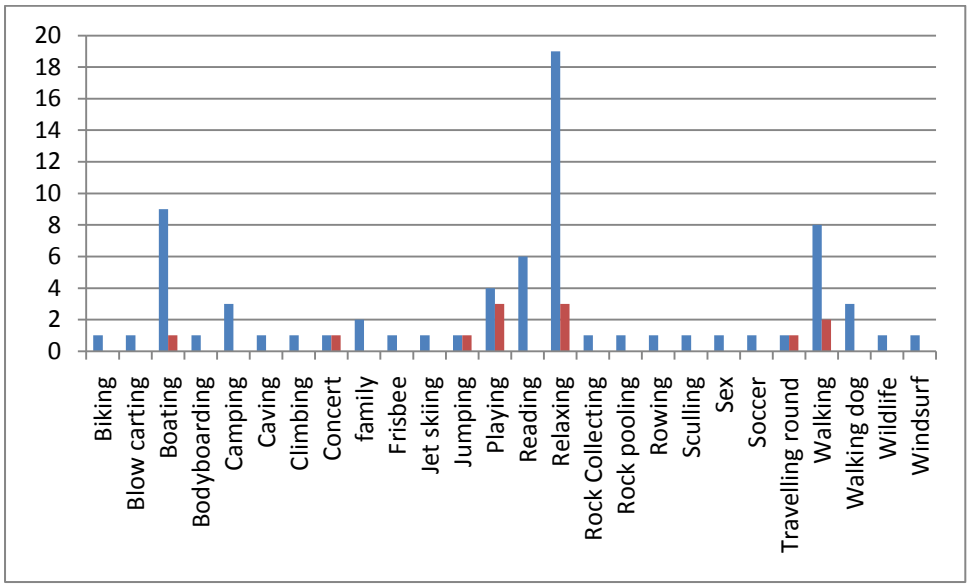


Fishing



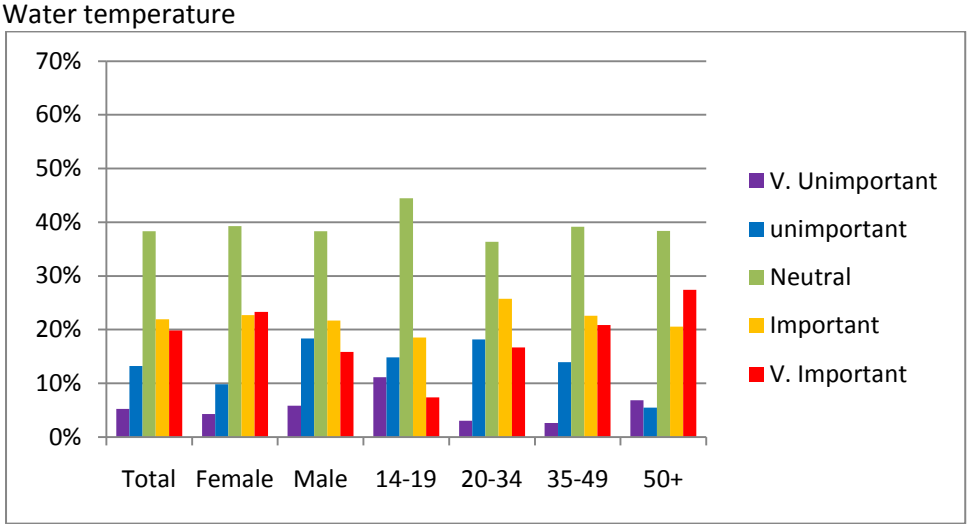
Other important activities

(blue = numbers listing the activity, red = number listing this as main activity)

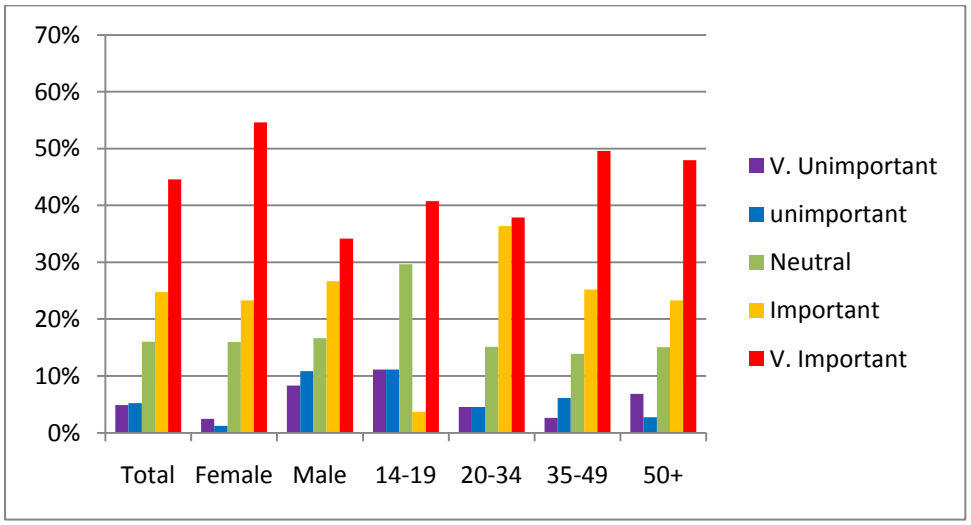


Appendix Three: The importance of various factors affecting the experience of swimmers

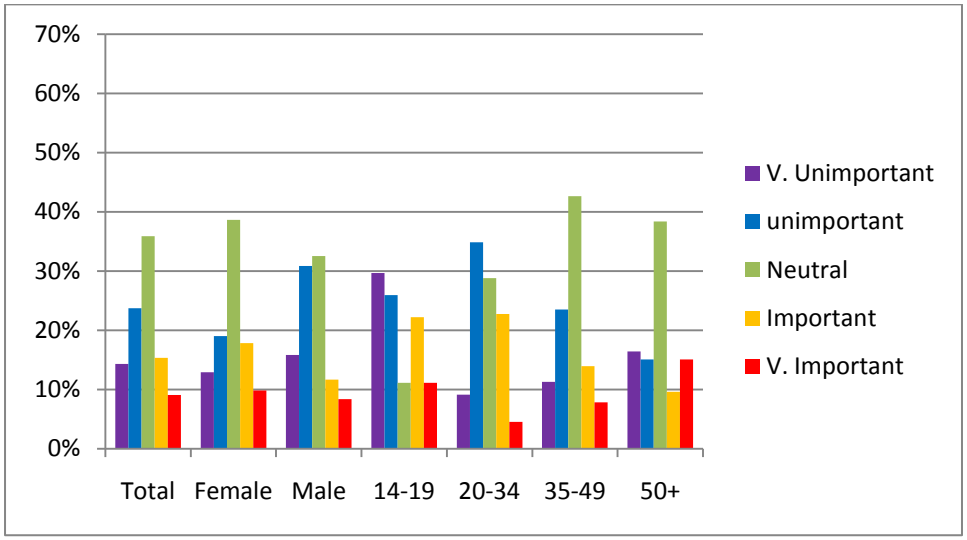
Water temperature



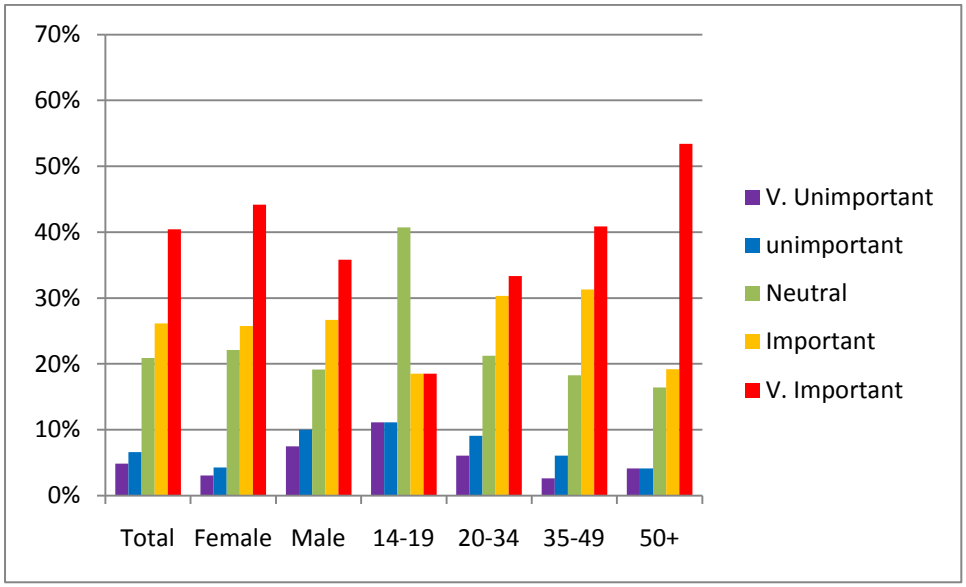
Slime



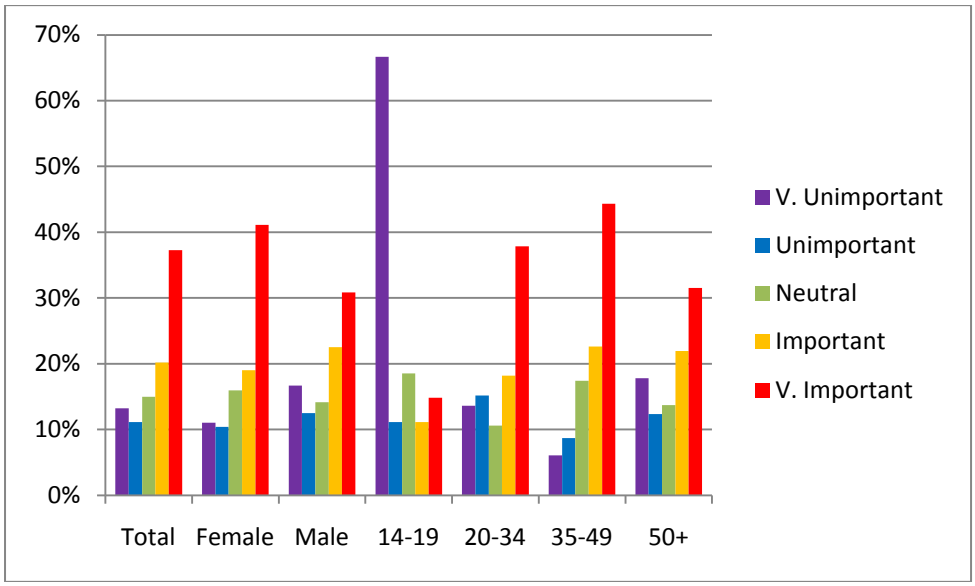
Erosion



Scenery



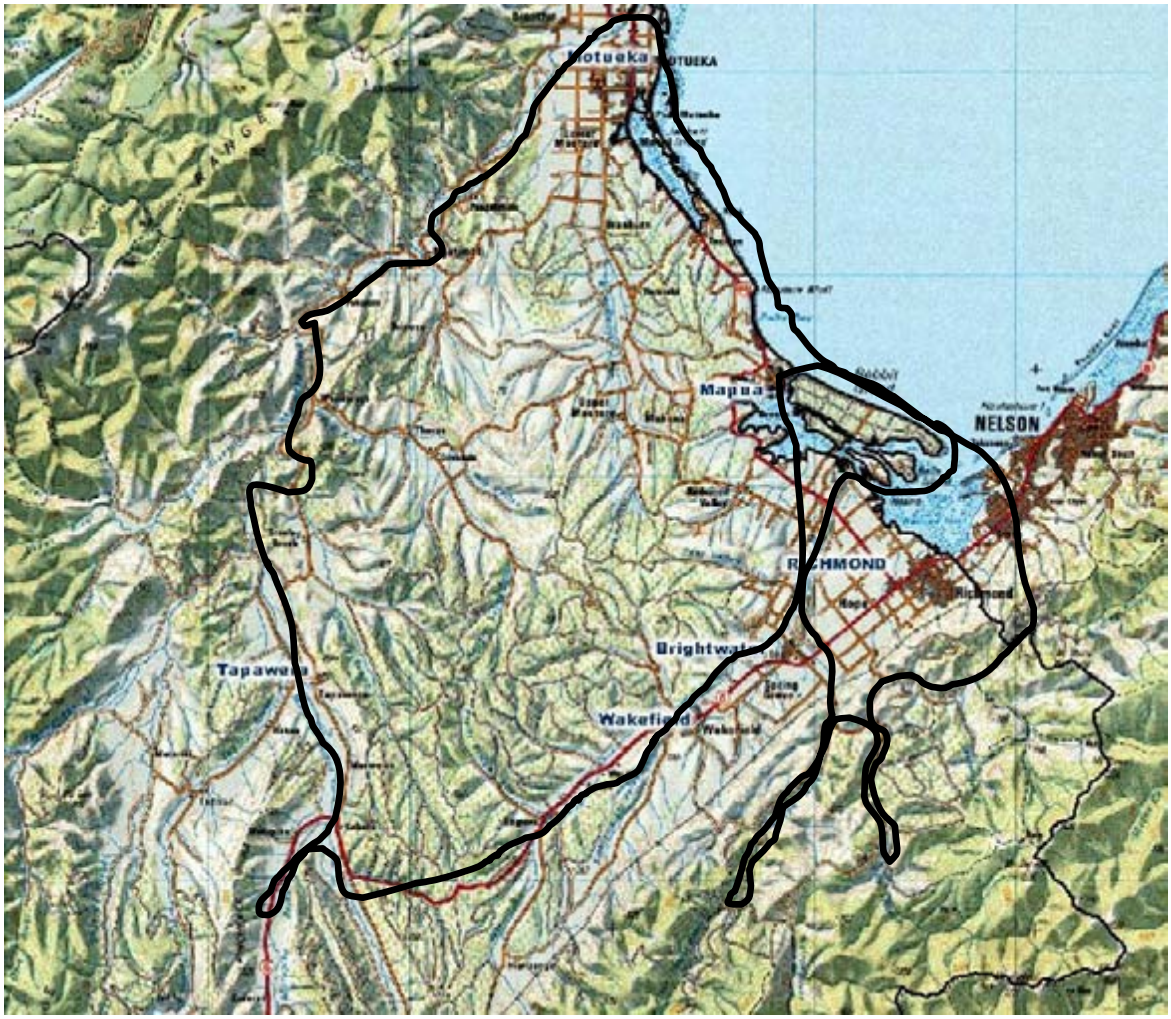
Shallow water for children



Appendix Four: Comments about specific sites

Takaka	Didymo Always check the sign first at Takaka
Kaiteriteri	Too Busy To many Signs Peak times too much rubbish Too much noise at Kaiteriteri with motor boats/jet skis
White Gates	Not very welcoming Hooligans Young crowds – loud and intimidating Boy Racers
Lee Reserve	Young people drinking Loud Boy Racers Drunken people Too busy Broken glass
Twin Bridges	Drunken people Boy Racers Too busy Broken glass
Motueka	Overnight campers leaving rubbish and human waste Boy Racers Didymo Water current Temperature
Rabbit Island	Homosexual Activity Too many crabs
Marahau	Rock wall is not swimmer friendly Litter from the sandbags
Tata	Cold and deep unsuitable for kids Boats close to swimmers and no designated swimming area Noisy with boats and jet skis Too busy at times
Tukurua	People ignoring no dogs sign No side roads
Totaranui	Sand flies
Takaka Blue Hole	Sand flies Current too fast

Appendix Five: Approximate Route of Aerial Survey


Motueka
NELSON
Richmond
Wakefield

Appendix Six: Workings to Calculate Numbers of Swimmers Over a Day

Waimea Catchment on 6 Feb, 2011

Calculation from Traffic Counts

	Traffic Count per day	Background (including residential traffic)[+]	Less return traffic	Less people not using swimming sites^	Persons per vehicle[@]	Less people at site who don't swim[#]	Total swimmers
Roding (Aniseed Valley)	1614	-220/day	-50%	-20%	4.4	-20%	1960
Lee Valley	1196	-200/day					1400
Wairoa from lower end	323	-170/day					215
Wairoa from Pig Valley	79	-15					90
Total Roding/Lee/ Wairoa	3212	-605					3670

^ - Including: sight-seers who, prompted by good weather, just drive around the valleys. This figure is probably conservative.

[#] - 80% was the average percentage of people who swam at a site across the 287 survey responses.

[$] - Vehicle counts counted traffic heading up valley and again when returning. The return traffic is double-counting.

[+] - Background is derived from the average wet-weather count.

[@] - This was the average per vehicle recorded from the survey.

On-site Count:

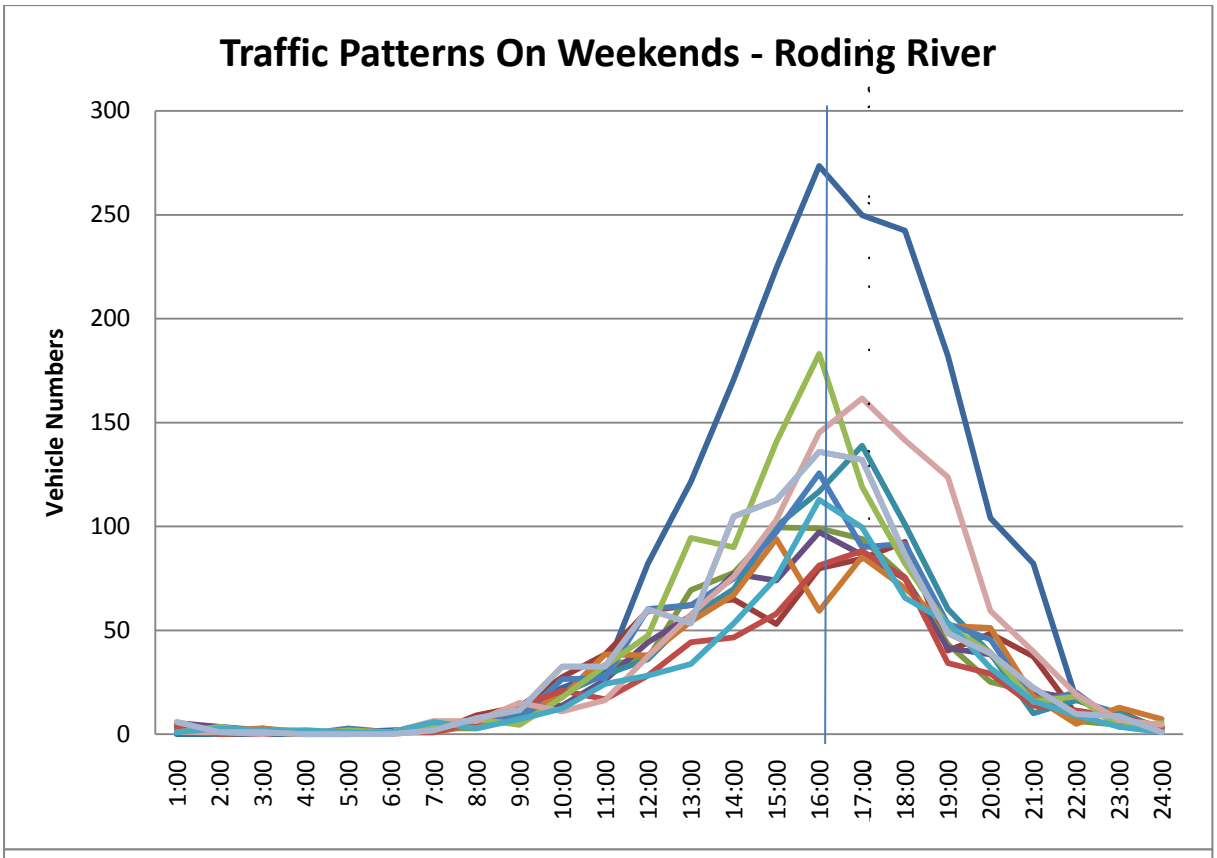
Assume daily count follows a similar pattern as the traffic counts. Only two actual counts available for each site on this day. To extrapolate to a daily total, assume from area under curve is 10% less than for traffic count.

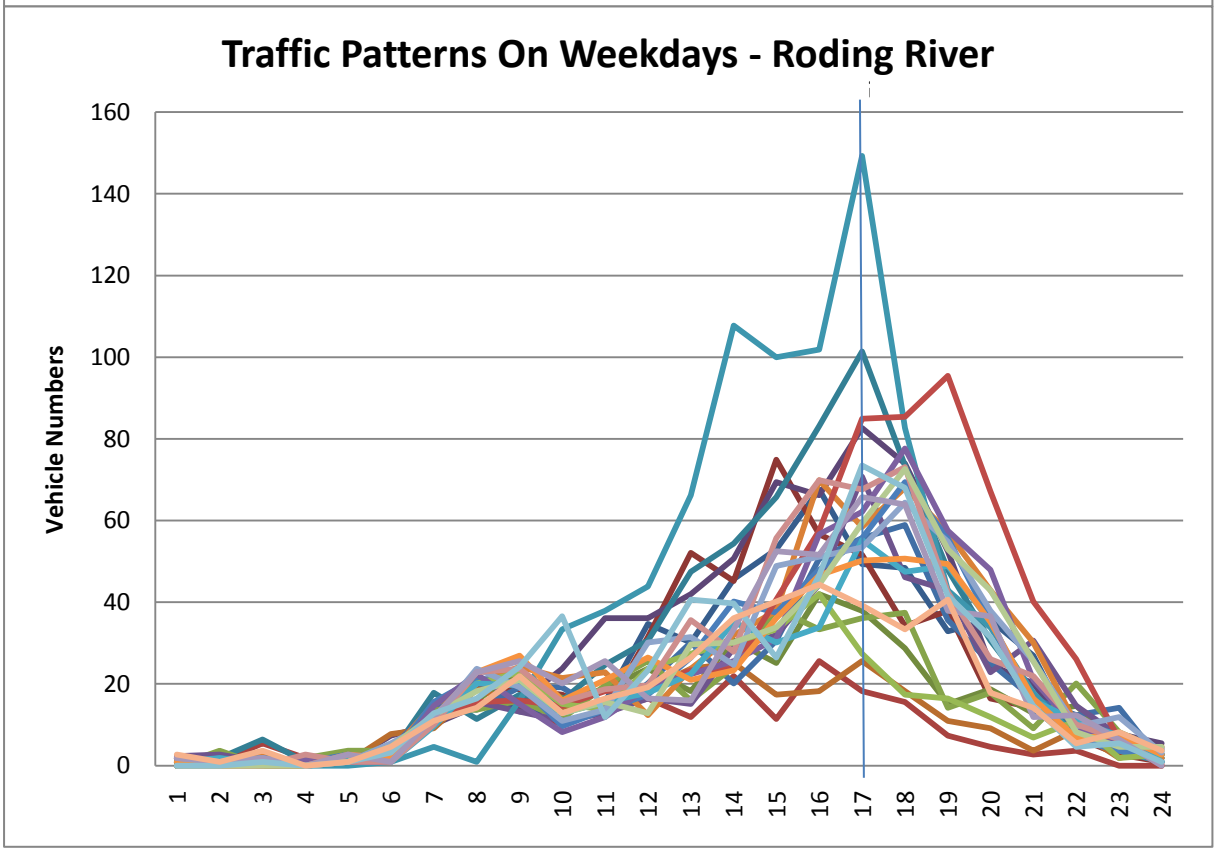
	Persons	Percentage of whole valley *	Less overlap of users[€]	Total Swimmers
Roding Valley	1453 at Twin Bridge & Busch reserves	55%	-20%	2110
Lee Valley	1076 Lee reserve	60%		1440
Total	2889	-		3550

* Assumed from relativity from aerial and ground surveys

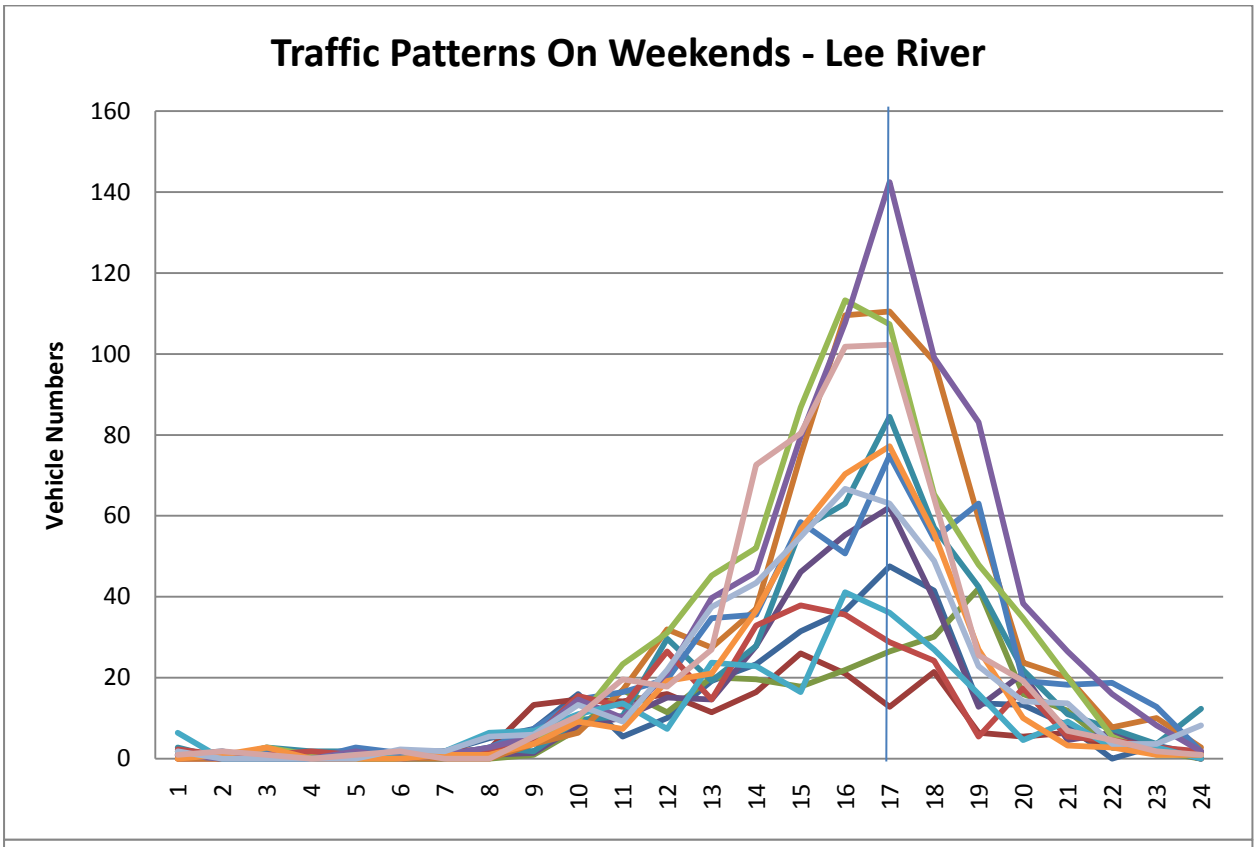
[€] Based on a 1.5 hour average visit to a site and an 8-hour swimming day

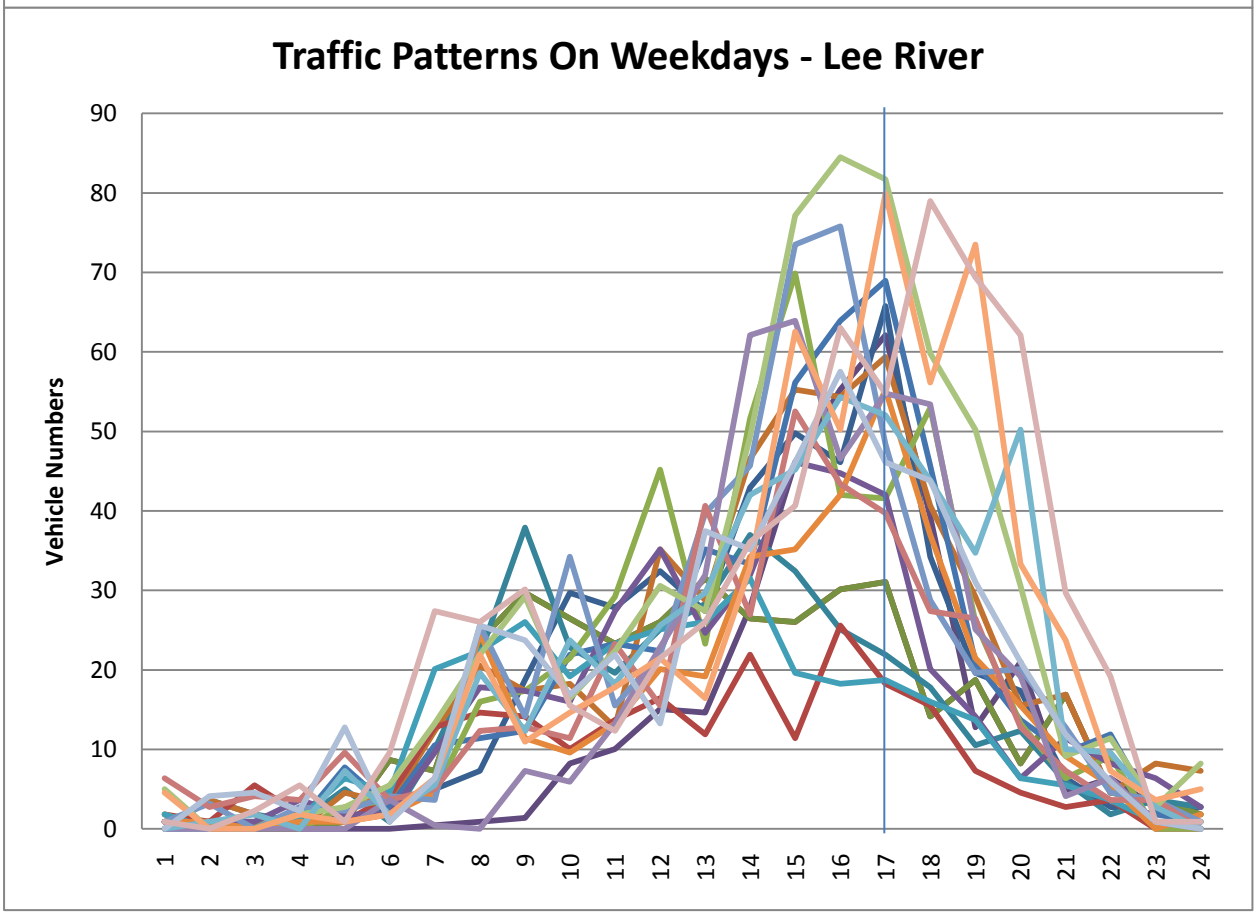
Appendix Seven A: Traffic patterns over weekend (top) and week days (bottom) for the Roding River.



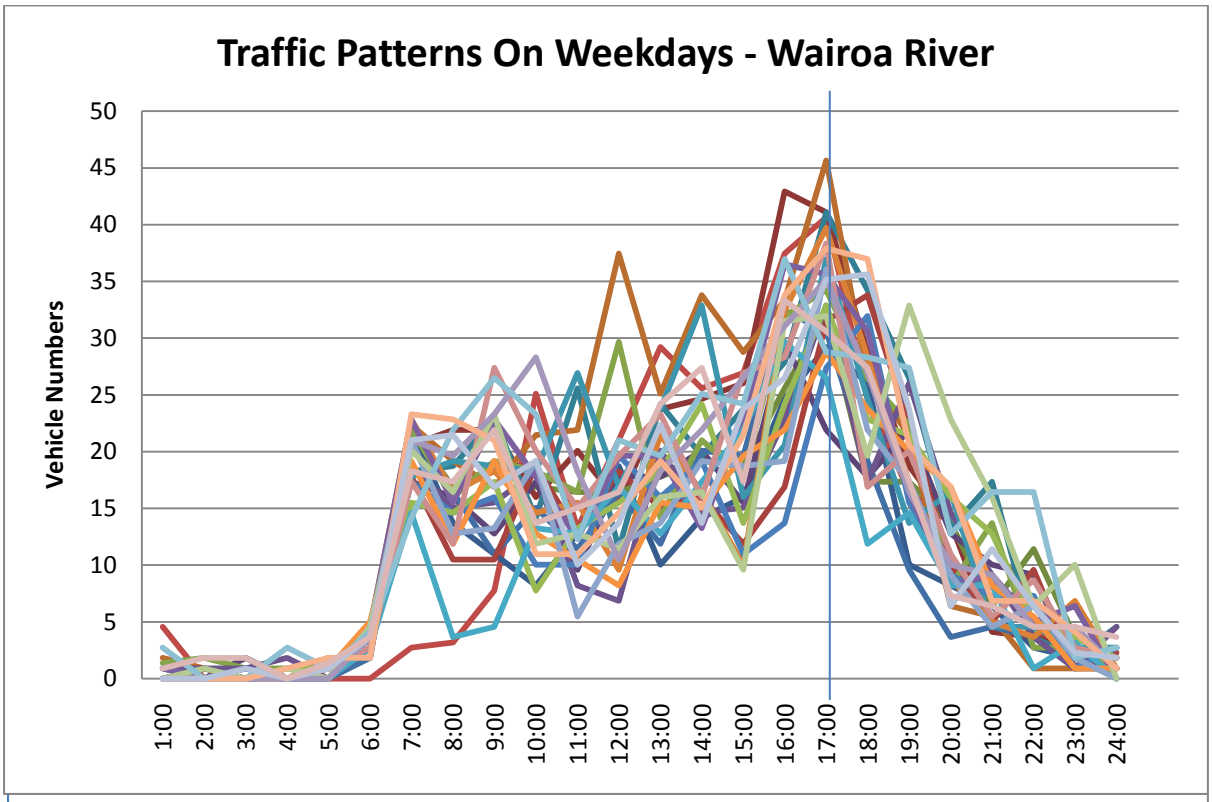


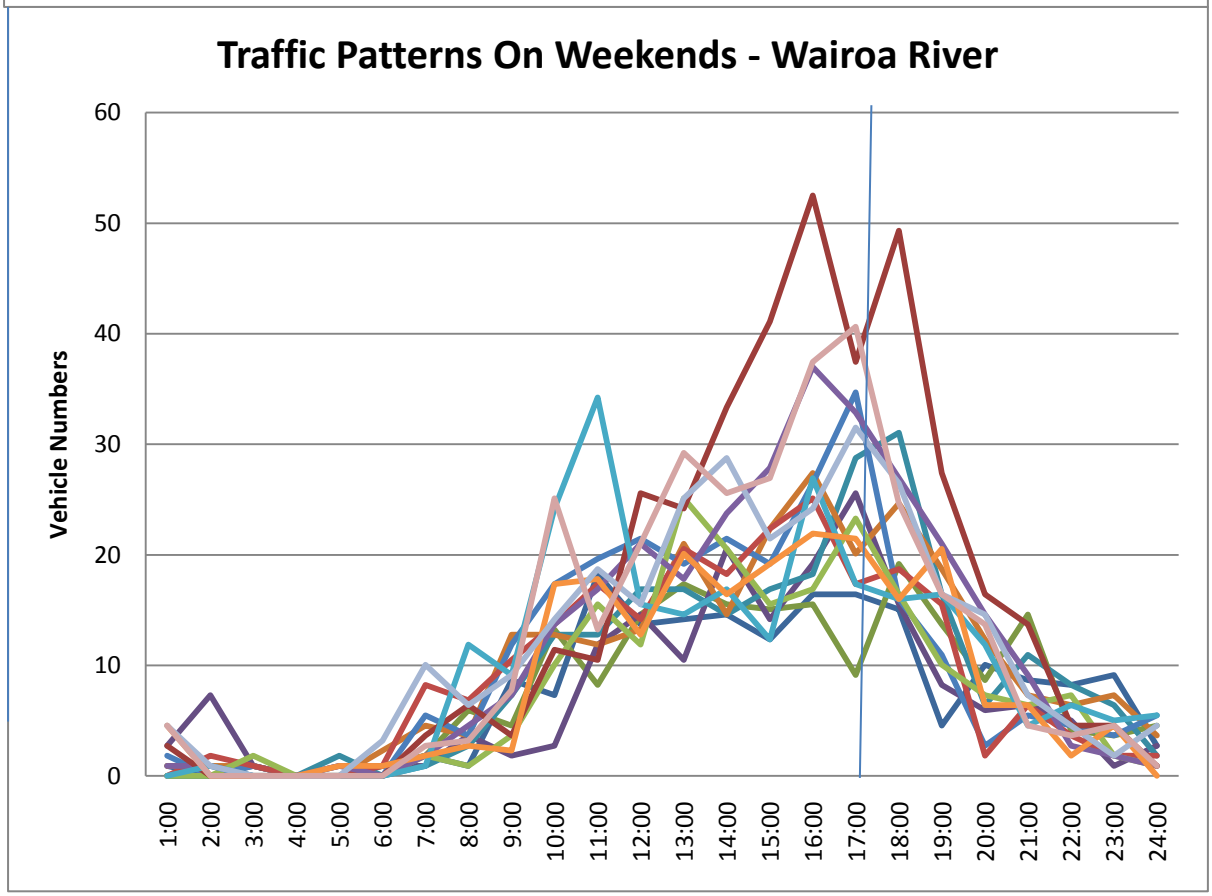
Appendix Seven B: Traffic patterns over weekend (top) and week days (bottom) for the Lee River.



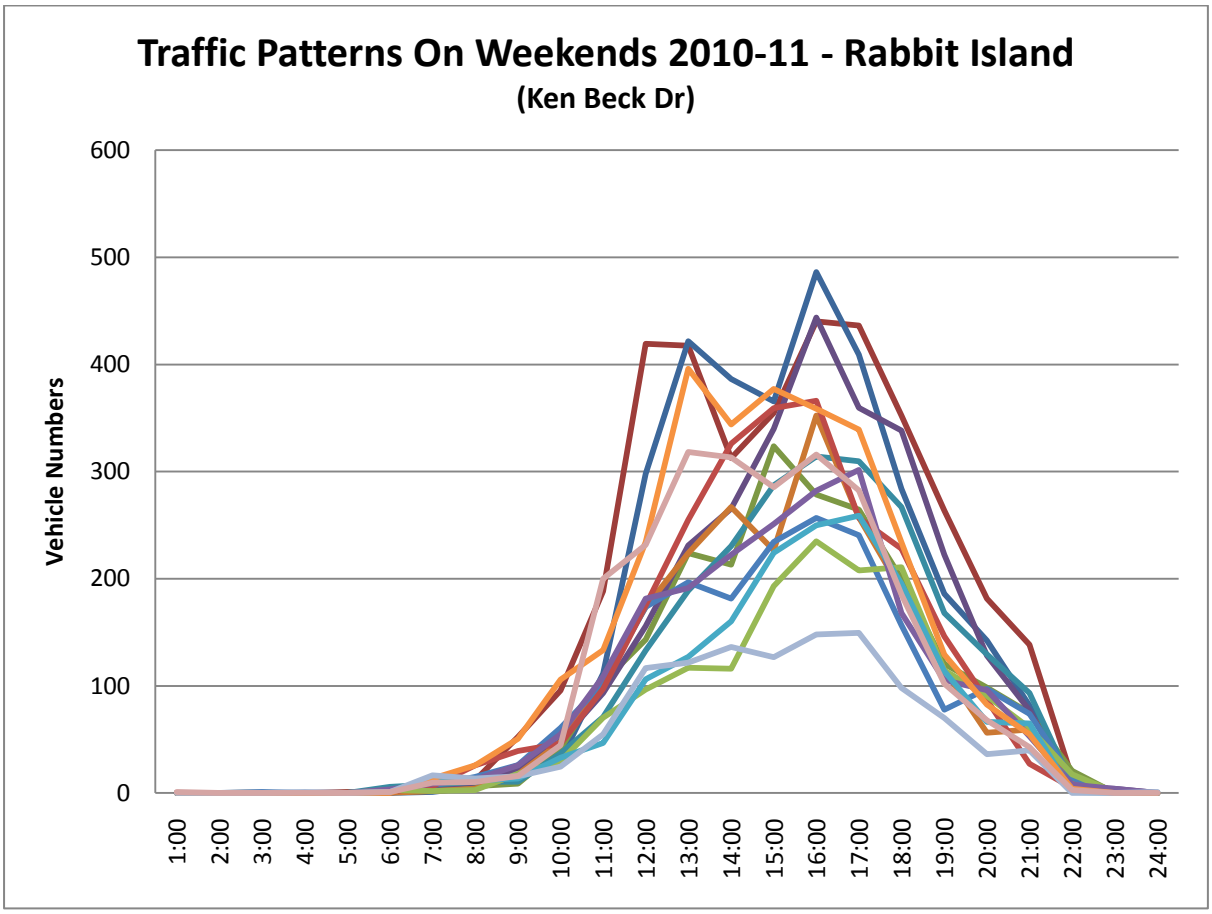


Appendix Seven C: Traffic patterns over weekends (top) and week days (bottom) for the Wairoa River.



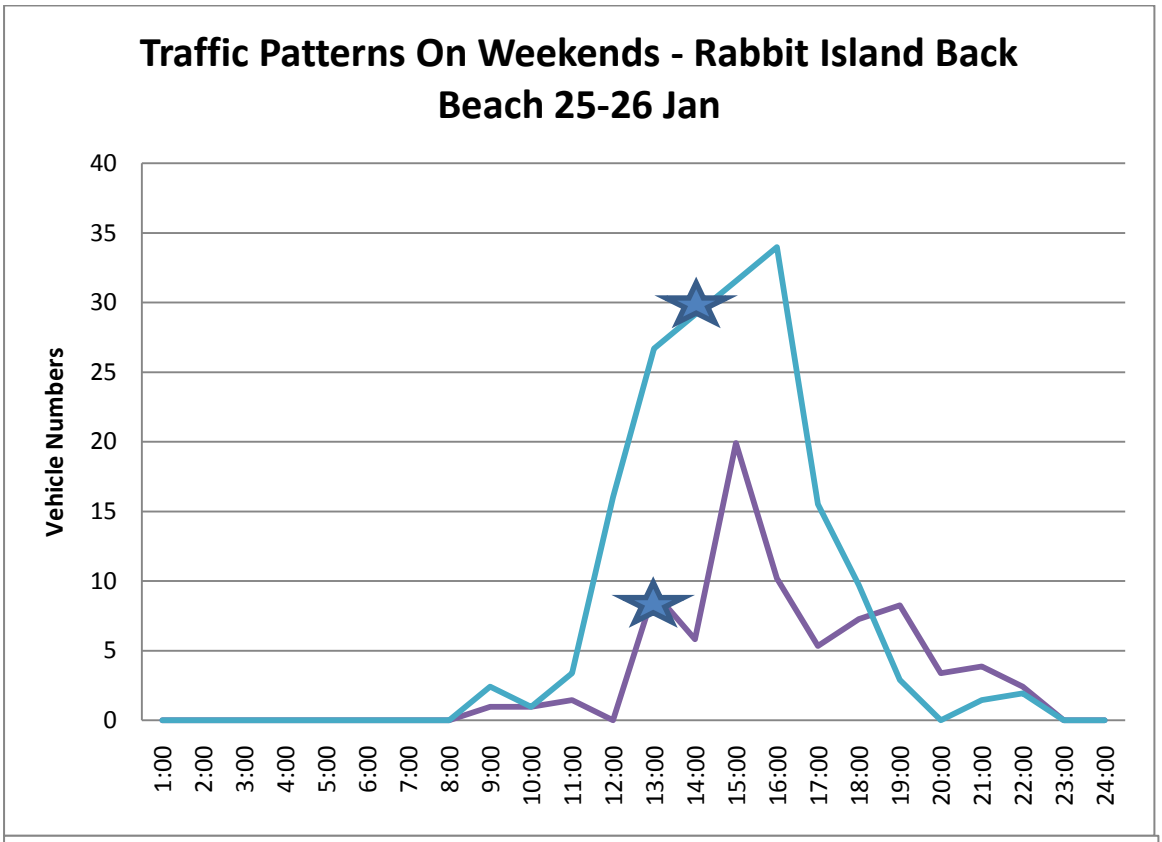


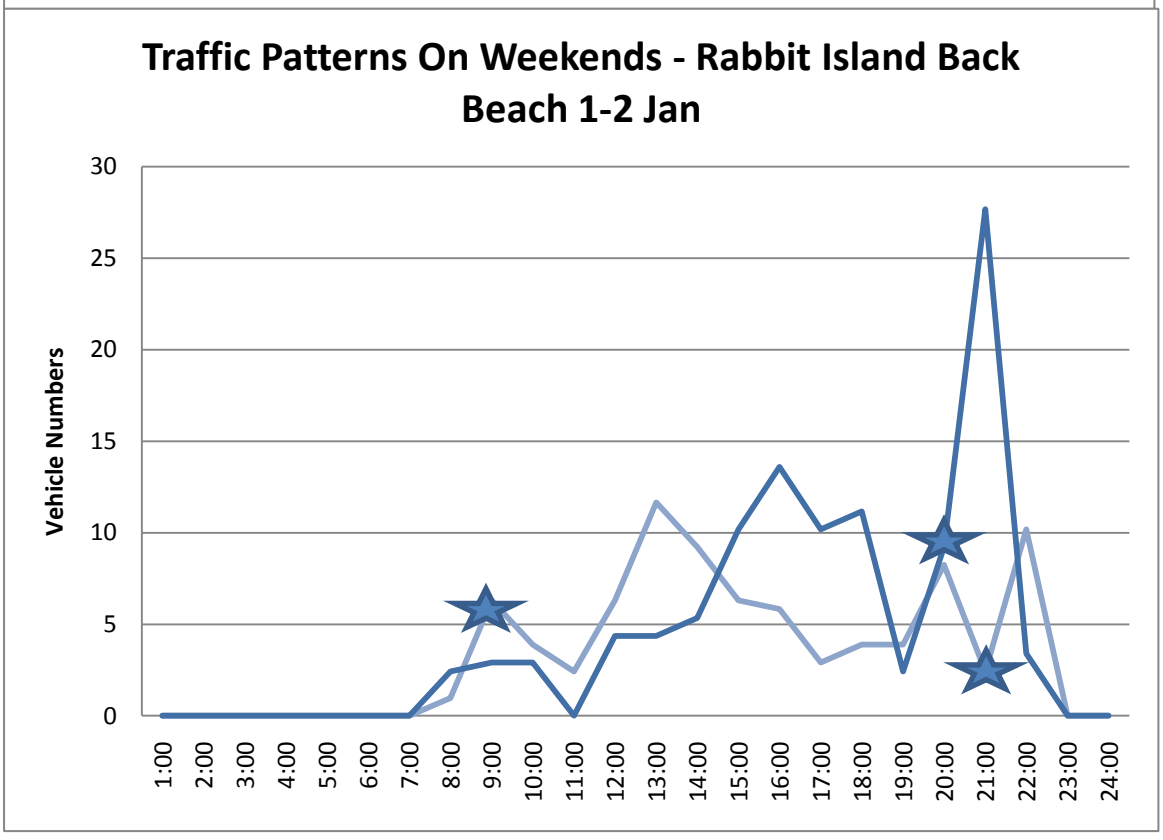
Appendix Eight: Rabbit Island Weekend Traffic for the Six Highest-Use Weekends

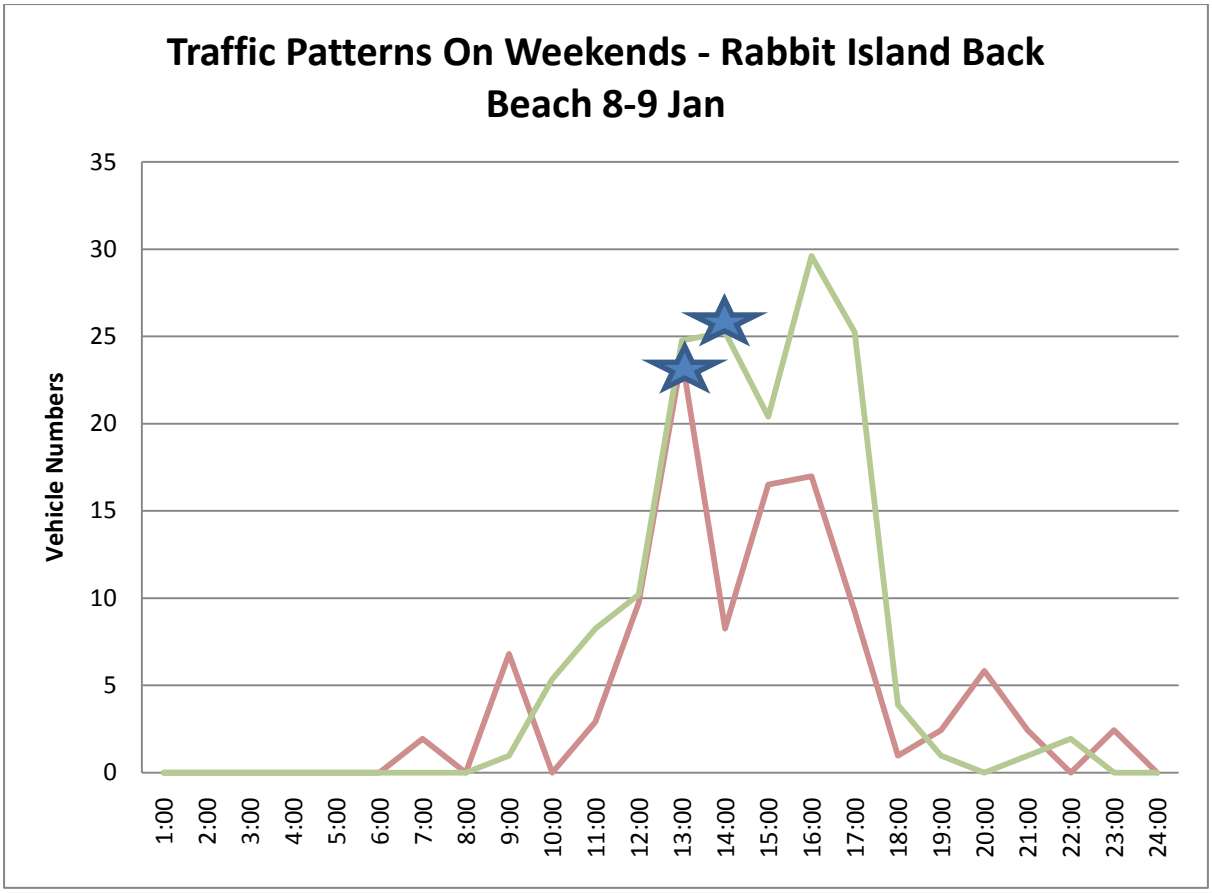


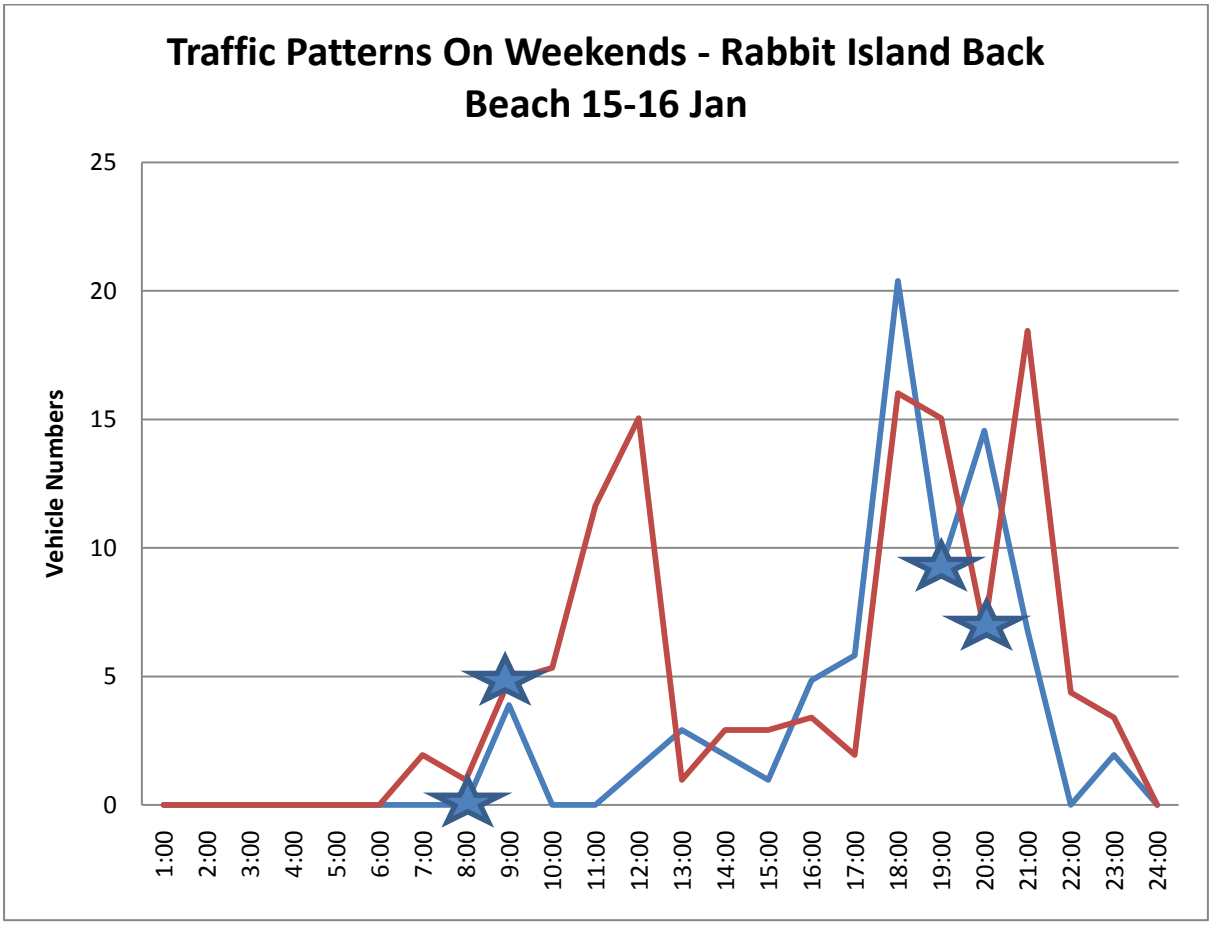
Appendix Nine: Rabbit Island's Back Beach Weekend Traffic and Tide Time for the Six Highest-Use Weekends

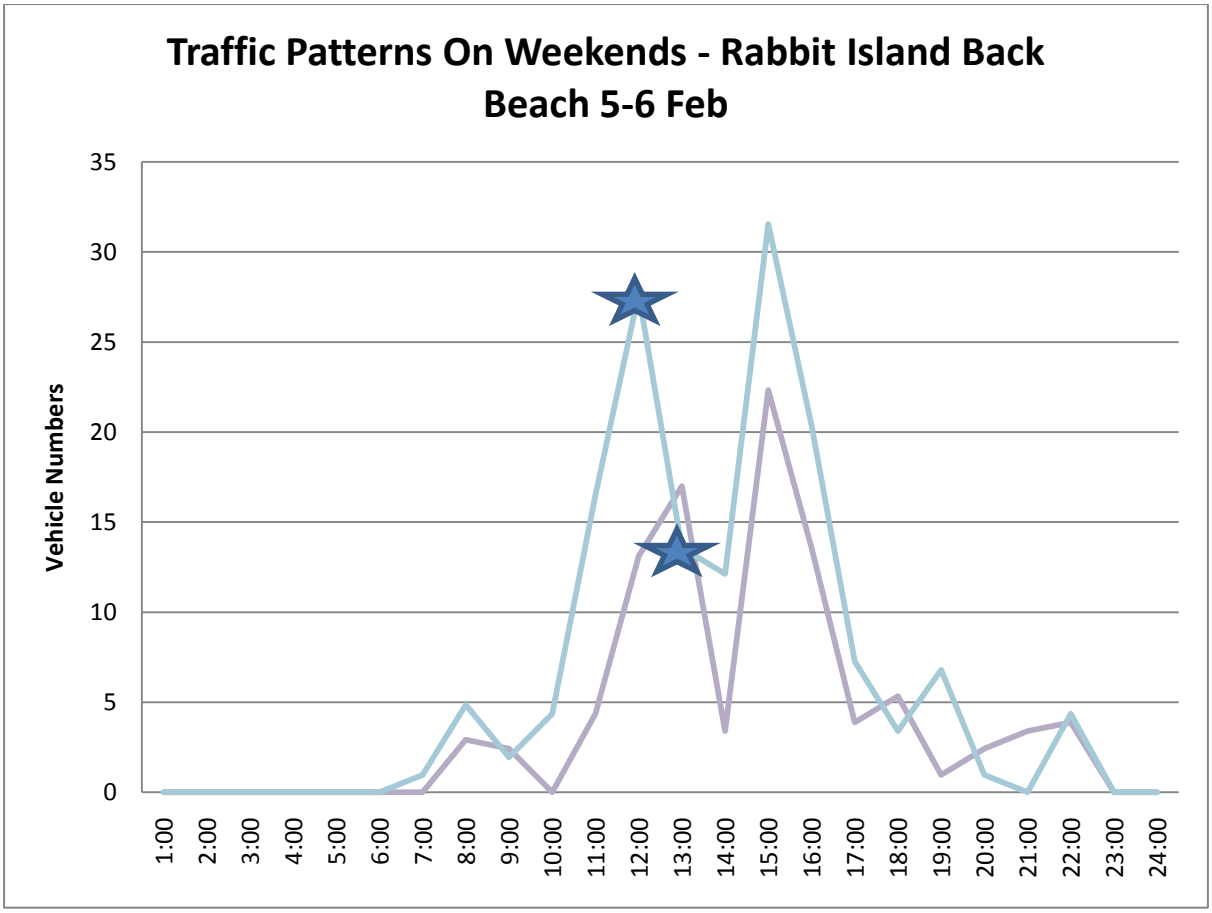
Stars represent the high tide time for each day

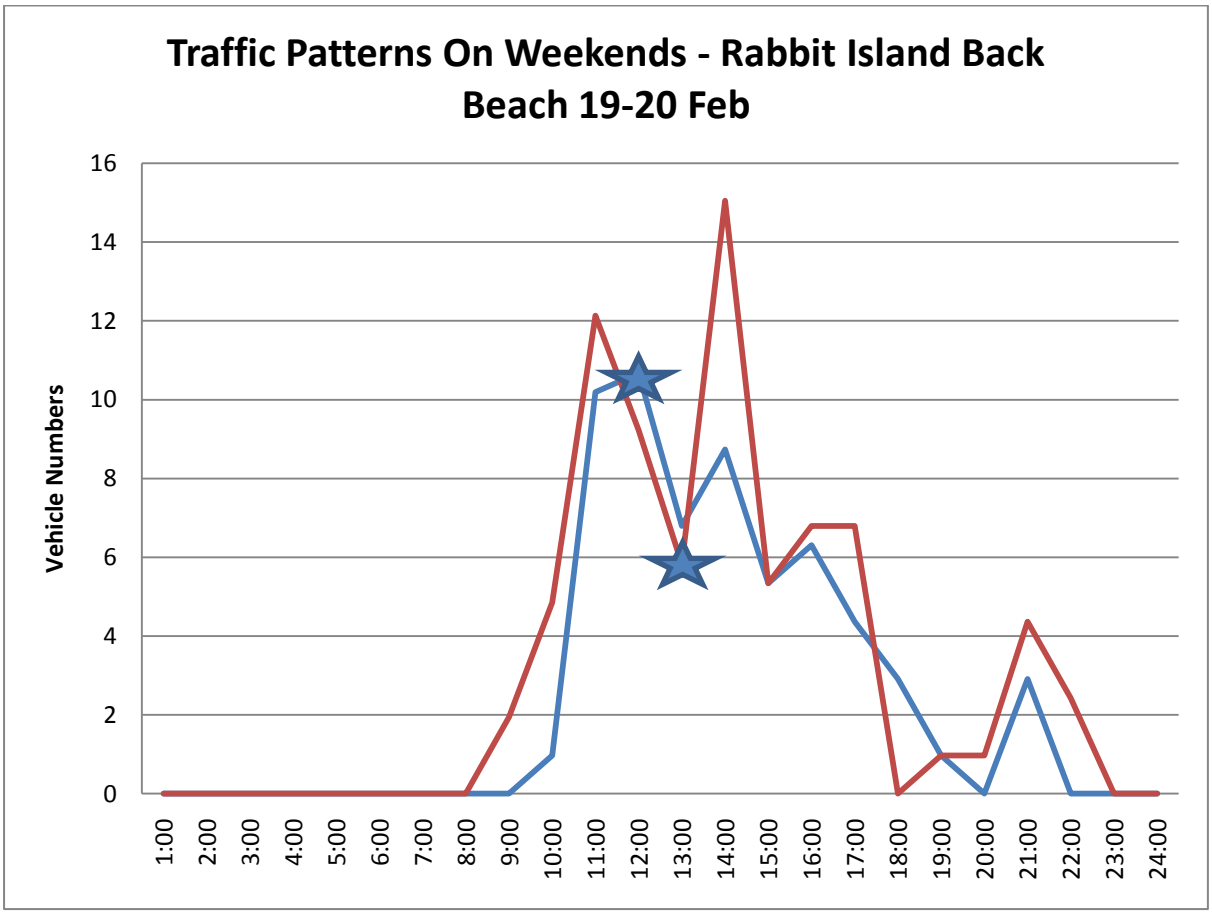





Traffic Patterns On Weekends - Rabbit Island Back Beach 8-9 Jan
Vehicle Numbers
35
30
25
20
15
10
5
0
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
24:00


Traffic Patterns On Weekends - Rabbit Island Back Beach 15-16 Jan
Vehicle Numbers
25
20
15
10
5
0
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
24:00


Traffic Patterns On Weekends - Rabbit Island Back Beach 5-6 Feb
Vehicle Numbers
35
30
25
20
15
10
5
0
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
24:00


Traffic Patterns On Weekends - Rabbit Island Back Beach 19-20 Feb
Vehicle Numbers
16
14
12
10
8
6
4
2
0
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
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22:00
23:00
24:00