



**MARLBOROUGH  
DISTRICT COUNCIL**

# Recreational Water Quality Site Usage Survey 2017

Technical Report No: 17-001  
March 2017





# Recreational Water Quality Site Usage Survey 2017

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## Executive Summary

21 Coastal Beaches and river sites are currently monitored as part of the Recreational Water Quality Program. The location of these sites was established as part of a usage survey carried out in 2012.

In order to ensure that the most popular swimming locations are monitored, it was suggested that the survey be repeated in 3-5 years' time. This report presents the results from the latest site usage survey carried out in January 2017.

At 36 swimming locations the number of persons entering the water was recorded during the four hours, between 12pm and 4pm. The results of this survey showed that recreational usage varied significantly between sites. The most popular swimming locations were Whites Bay, Anakiwa and the Te Hoiere/Pelorus River. The survey also revealed that some sites currently monitored are visited by very few recreational users; these include the Rai River at Rai Falls, Marfells Beach and the Wairau River near State Highway Six.

Based on the survey results, at least two options are available for the choice of future monitoring sites. Option 1 represents the sites with a minimum of 10 swimmers during the survey. Option 2 has a more stringent cut-off at a minimum of 20 swimmers, but with the inclusion of the Taylor River at Riverside (see Table 1).

Type	Option 1	Option 2
Coastal Beaches	Whites Bay	Whites Bay
	Robin Hood Bay - East	Robin Hood Bay - East
	Anakiwa	Anakiwa
	Picton Foreshore	Picton Foreshore
	Waikawa Bay	Waikawa Bay
	Momorangi Bay	Momorangi Bay
	Ngakuta Bay	Ngakuta Bay
	Governors Bay	Governors Bay
	Mistletoe Bay	Mistletoe Bay
	Okiwi Bay	Okiwi Bay
	Shelly Beach	
	Moetapu - DoC Camp	
	Elaine Bay	
River Site	Pelorus River at Totara Flat	Pelorus River at Totara Flat
	Pelorus River at Pelorus Bridge	Pelorus River at Pelorus Bridge
	Ohinemahuta River at Onamalutu Domain	Ohinemahuta River at Onamalutu Domain
	Wairau River at Ferry Bridge	Wairau River at Ferry Bridge
	Wairau River at Blenheim Rowing Club	Wairau River at Blenheim Rowing Club
	Taylor River at Riverside	Taylor River at Riverside
	Taylor River at Henry St	Waihopai River at Chraiglochart #2
	Waihopai River at Chraiglochart #2	

**Table 1: Suggested monitoring sites for the Recreational Water Quality Program based on results of a Site Usage Survey carried out in January 2017.**



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## 1. Introduction

Every summer, from the beginning of November until the end of March, the recreational water quality of twelve coastal beaches and nine river sites is monitored on a weekly basis. The results are used to assess the health risk associated with accidental ingestion of water while swimming and are displayed on the LAWA website ([www.lawa.co.nz](http://www.lawa.co.nz)). More importantly, the monitoring information is used to grade sites. This grading provides recreational users with a classification system which allows judgement about suitability of water quality for swimming.

Significant staff time is required to collect samples. Additionally, samples are analysed by an independent laboratory, which results in added costs. In order to provide the best service for the limited budget, only the most popular sites are monitored. Monitoring of these sites is vital for the management of the risks to public health associated with recreational swimming in rivers and coastal waters.

To identify the most popular swimming locations, site surveys need to be carried out on a regular basis. The sites currently monitored were selected based on a survey carried out in January and February 2012. That survey consisted of an aerial flight and onsite questionnaires that were filled out over several weekends at popular swimming locations. The results were published in the Recreational Water Quality Report 2011-2012. The report recommended, site surveys should be repeated every three to five years. This current report presents the result of the latest site survey carried out in January 2017.

## 2. Method

Although a large area was covered during the 2012 aerial survey, it only provided a snap shot of the number of users at each site. In order to provide a more robust data set, it is necessary to monitor the swimming sites over a longer time period. Therefore, in this survey monitoring of site usage was carried out over four hours during the warmest part of the day, between 12:00 pm and 4:00 pm. The date of the survey, Sunday 29 January 2017, coincided with the last weekend of school holidays and was chosen based on a favourable forecast of sunny conditions and temperatures of up to 29°C.

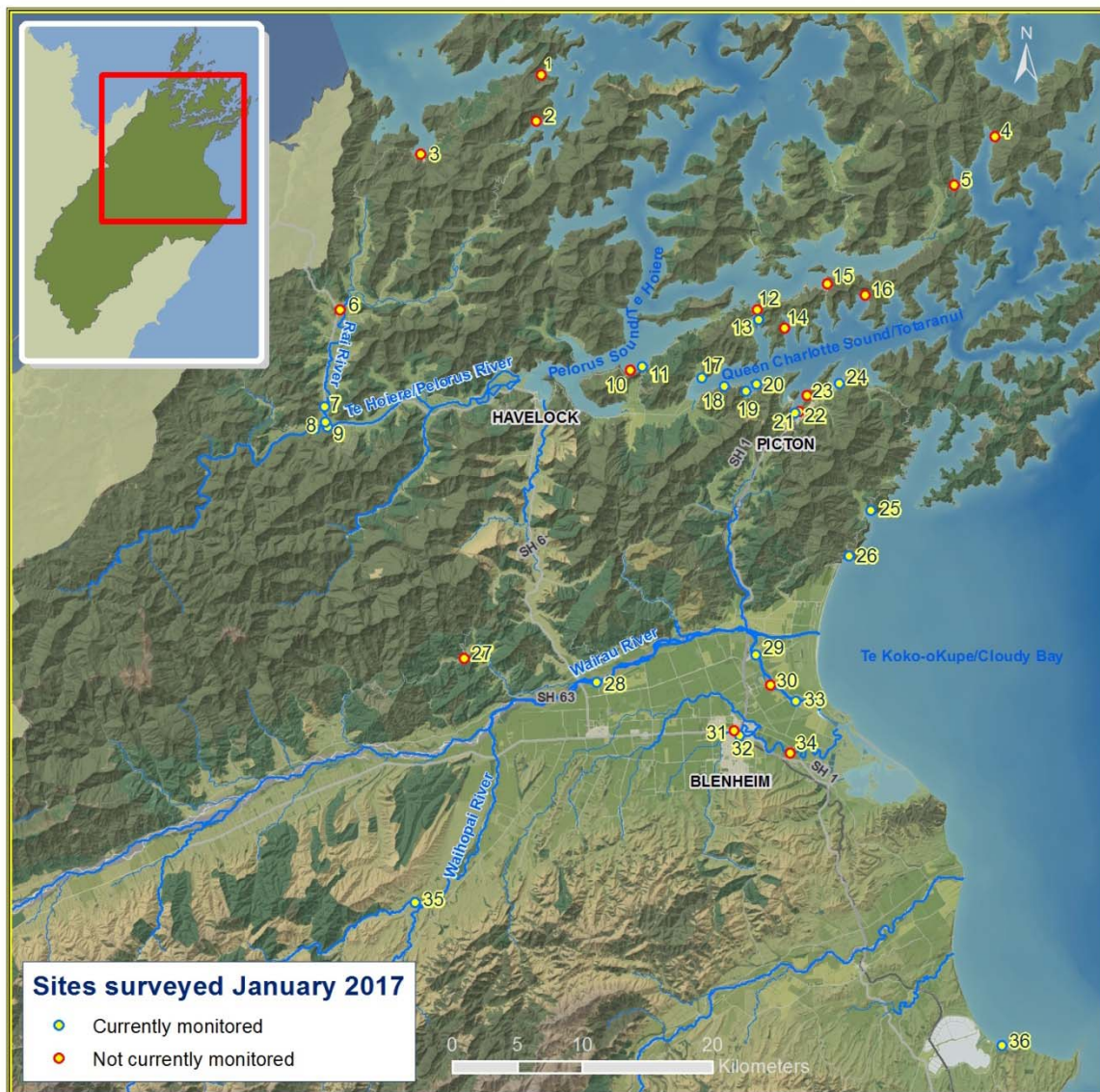
At a total of 36 sites, Council staff and volunteers counted the number of persons entering the water for the duration of the survey. The main focus was on persons at risk of accidental ingestion of water. Therefore, adults had to be in the water above their knees, while children were counted if the water was above their ankles. The different criterion for children was chosen, because they are generally more likely to ingest water in shallower water (ie; splashing and putting their fingers into their mouths). Persons entering the water two or more times during the four hour survey were counted once only.

The location of the 36 sites selected for the survey is shown in Figure 1. All 21 currently monitored sites were included in the survey<sup>1</sup> apart from the Opaoa River at Elizabeth St, which was inaccessible due to earthquake damage. The additional sites were a combination of sites monitored in the past and sites known to be swimming spots based on local knowledge.

The fieldsheet and instructions provided to every person carrying out the survey can be found in Appendix 1.

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<sup>1</sup> The two Robin Hood Bay sites were combined into one site.

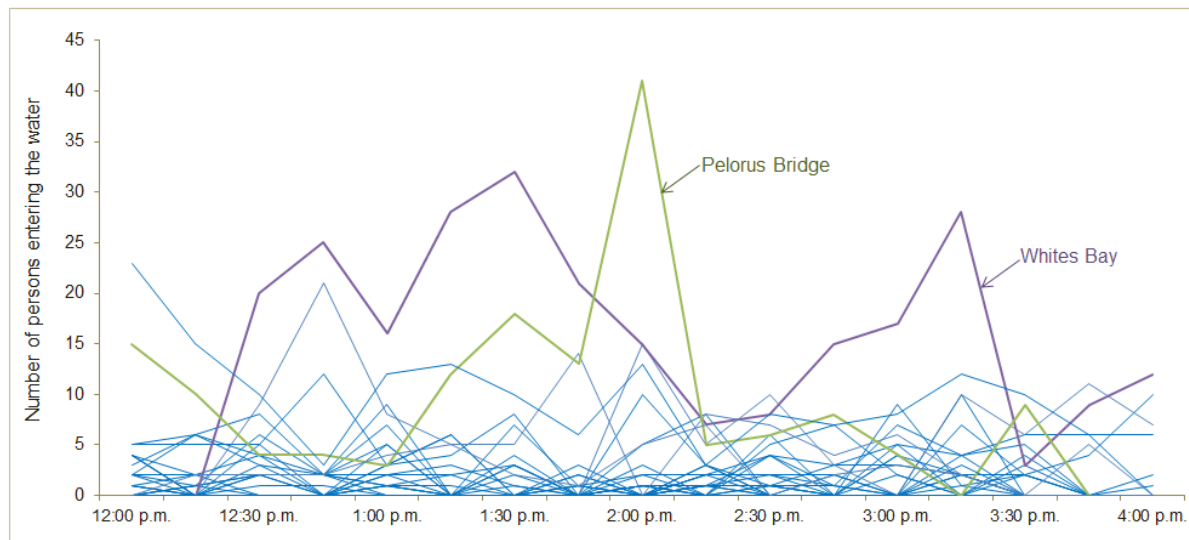


1 Elaine Bay	19 Ngakuta Bay
2 Tennyson Inlet - Penzance Bay	20 Governors Bay
3 Okiwi Bay	21 Picton Foreshore
4 Furneaux - Endeavour inlet	22 Shelly Beach
5 Punga Lodge	23 Bobs Bay
6 Rai River at Brown River Reserve	24 Waikawa Bay
7 Rai River at Rai Falls	25 Robin Hood Bay
8 Pelorus River at Pelorus Bridge	26 Whites Bay
9 Pelorus River at Totara Flat	27 Ohinemahuta River at Onamalutu Domain
10 Moetapu - DoC Camp	28 Wairau River at Boyces Road
11 Moetapu - Double Bay Reserve	29 Wairau River at Ferry Bridge
12 Te Mahia	30 Wairau River at Wairau Rowing Club
13 Mistletoe Bay	31 Taylor River at Henry St
14 Lochmara Bay	32 Taylor River at Riverside
15 Portage	33 Wairau River at Blenheim Rowing Club
16 Kumutoto Bay	34 Opaoa River at Malthouse Reserve
17 Anakiwa	35 Waihopai River at Chraiglochart #2
18 Momorangi Bay	36 Marfells Beach

Figure 1: Sites monitored as part of the Site Usage Survey carried out 29 January 2017.

### 3. Results

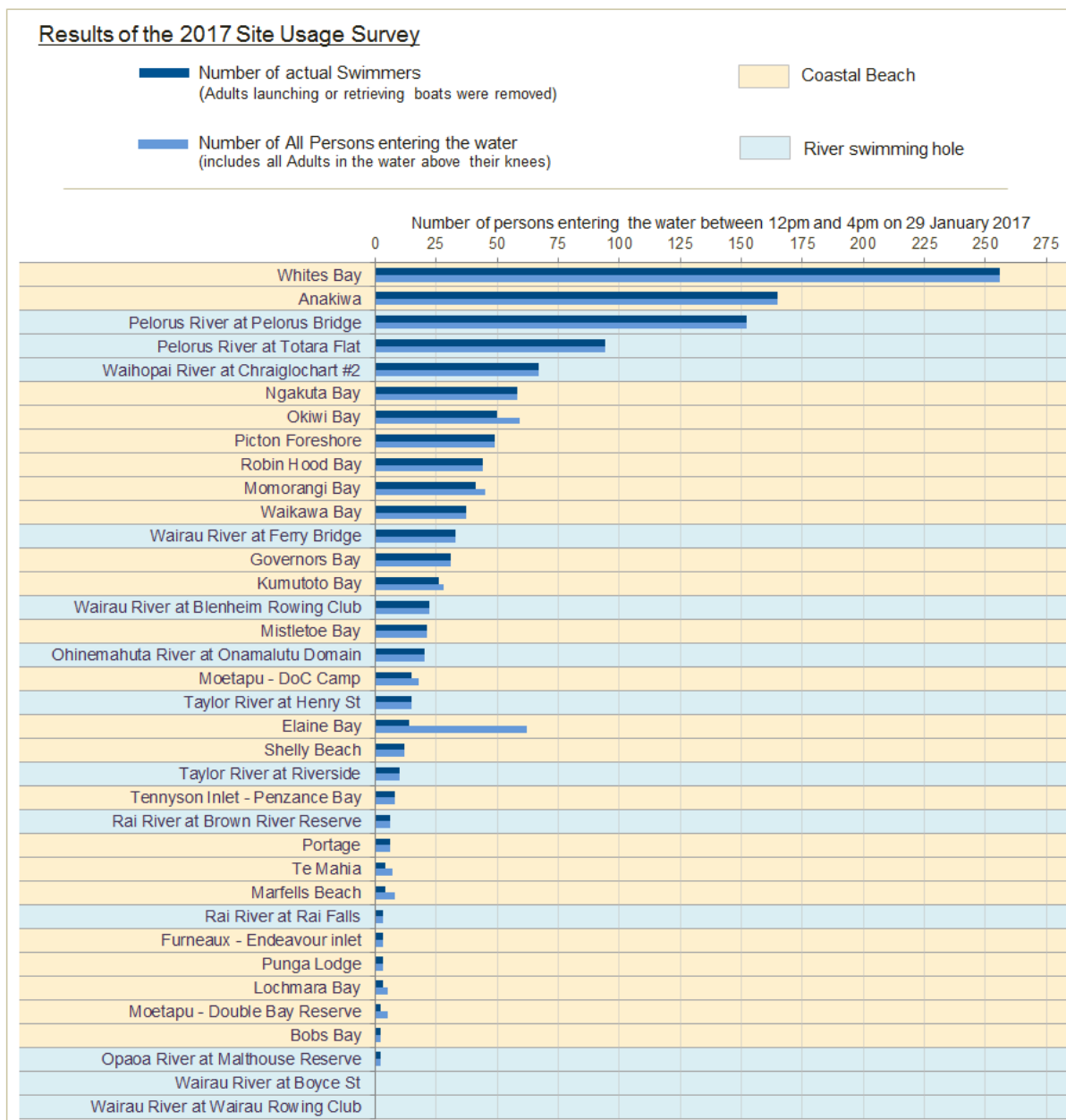
There was no consistently preferred times during which persons were going for swims. The results for the Te Hoiere/Pelorus River at Pelorus Bridge showed a significant peak around 2:00 pm, while the usage at Whites Bay had several peak periods. Most of the sites with lower usages had a relatively even spread of water users throughout the survey period.



**Figure 2: Site usage (number of persons entering the water) split into 15-minute segments for all sites monitored as part of the survey.**

At some coastal sites, comments on the field sheets indicated that a large number of persons were in the water above their knees during launch or retrieval of boats and kayaks. Although accidental submersion could occur, it is not very common and the activity should be considered wading, rather than swimming. Therefore, it was decided to remove these counts from the final results. However, children, who were primarily wading, were not removed from the data set due to their greater risk of accidental ingestion of water (see Section 2). In the following sections, adults and children, who were actually swimming and wading primary school aged children will be referred to as “swimmers”. The site, for which this modification of data had the greatest impact, was Elaine Bay, resulting in a more than four-fold reduction in the number of swimmers (see Figure 3).

The modified results show that there was a large variation of the number of swimmers across the 36 sites monitored. The sites with the greatest number of swimmers were Whites Bay, Anakiwa, and the Te Hoiere/Pelorus River at Pelorus Bridge. At these sites more than a 100 persons entered the water. Sites with more than 50 swimmers were the Te Hoiere/Pelorus River at Totara Flat, the Waihopai River at Craiglochart #2 and Ngakuta Bay. On the other end of the spectrum was the Wairau River at Boyces Road and Wairau Rowing Club, where no one entered the water. Although, a number of persons visited the sites during the survey, none decided to swim. One reason was, that in the later part of the survey wind and cloud cover increased. Comments made on field sheets for a number of sites suggested that this was also the case elsewhere. Consequently, usage might have been slightly higher if weather conditions were more favourable. However, field notes at Momorangi Bay showed that despite an increase in wind speed at around 1pm, the number of persons entering the water did not changed significantly.

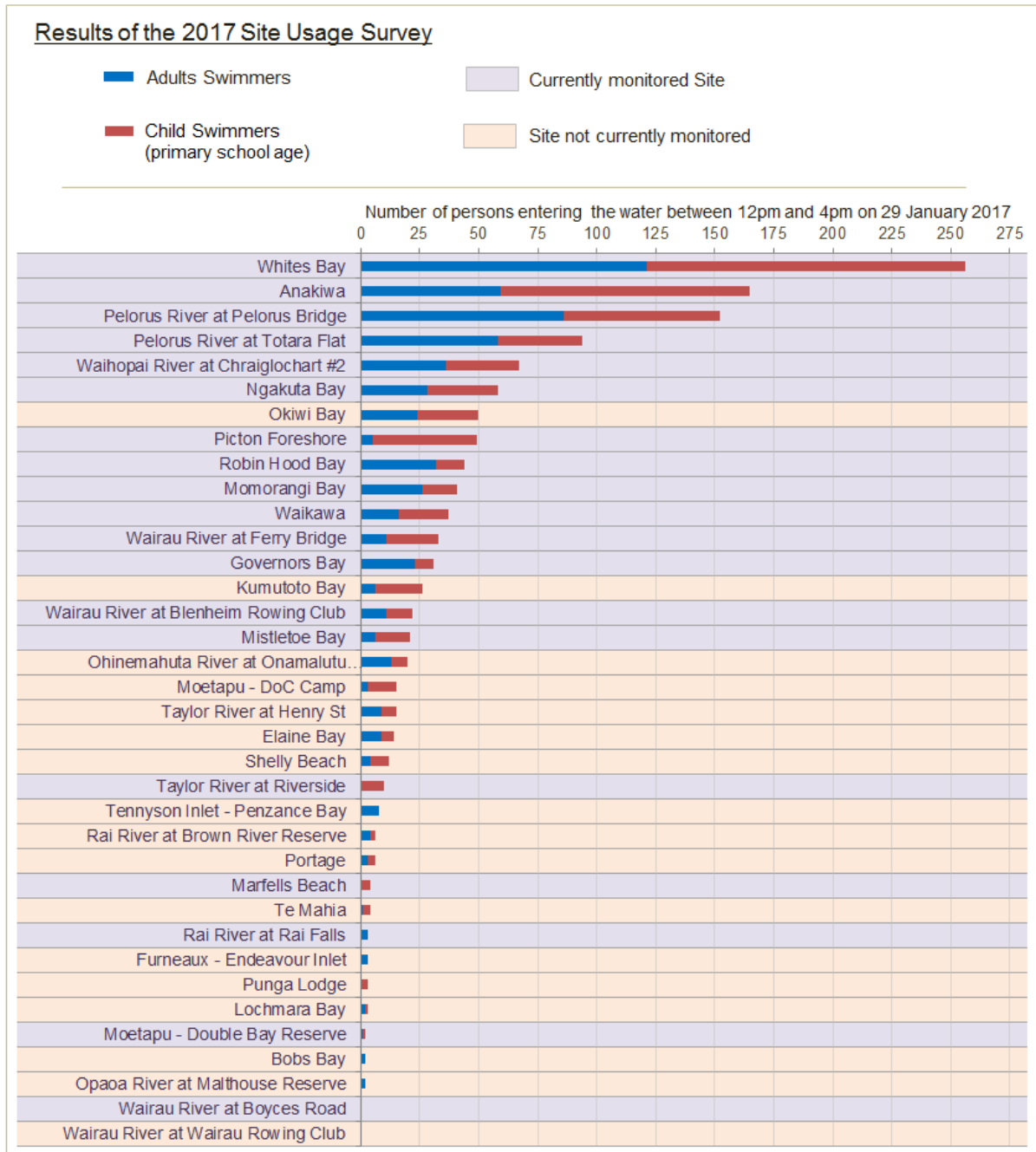


**Figure 3: Results of the 2017 Site Usage Survey showing the number of users swimming at the individual sites. Also shown is the initial count which included persons launching and retrieving boats.**

Robin Hood Bay is currently monitored at two sites at opposite ends of the bay, a swimming beach (East) and a surf beach (West). Water quality monitoring so far has shown no significant differences between the two sites. The person surveying Robin Hood Bay was asked to record on which part of the bay swimming was occurring. The notes showed that the majority, 62%, of persons entered the water on the eastern side, 11% went for a swim in the middle of the bay and the remaining 27% surfed or swam on the western side. Based on these results, future monitoring should be carried out at Robin Hood Bay – East.

Overall the number of children recorded to enter the water was greater than the number of adults. At some sites, this difference was particularly prominent. These sites include Picton Foreshore and Shelly Beach (Figure 4). The extensive children play area at the Picton Foreshore is likely to be a major contributor for the popularity for families with children. However, at other locations, such as the

two sites on the Te Hoiere/Pelorus River, adults, including older children, were more likely to enter the water. The lack of shallow water at these sites is probably the main reason.



**Figure 4: Comparison of the number of adults and children entering the water at surveyed sites. Site currently monitored is part of the Recreational Water Quality program are indicated in purple.**

Figure 4 also shows which of the surveyed sites are currently monitored as part of the Recreational Water Quality Program. Most sites with more than 20 swimmers during the survey period are part of the current monitoring program; the only exceptions are Okiwi Bay and Kumutoto Bay. However, there are a number of sites currently monitored that cannot be considered popular swimming spots

based on the new results. These include Marfells Beach, the Rai River at Rai Falls, Moetapu Bay – Double Bay Reserve and the Wairau River at Boyces Road<sup>2</sup>.

## 4. Conclusions and Recommendations

### 4.1. Monitoring Sites

The purpose of the Site Usage Survey was to provide data to select future monitoring sites. Selection is targeted to minimise the risk to public health while staying within budget constraints. This means a lower cut-off point or threshold of recreational usage needs to be established. If the aim is to monitor a similar number of sites, sites surveyed and found to have a minimum of at least 10 swimmers should be selected (see Figure 5). This would result in 22 swimming locations being selected for monitoring.

Ten swimmers is a relatively small number of recreational users and it needs to be questioned whether such a low usage warrants the expense of regular monitoring. Another option would be a cut-off at 20 swimmers during the survey period. This would result in 17 monitoring sites. However, this would remove the two Taylor River sites from the program. The Taylor River can be considered as a high priority water way. A large proportion of the regional population uses the recreational reserves associated with the Taylor River and good water quality is important for the enjoyment of these reserves.

Combining the user counts for the two Taylor River sites would result in 25 swimmers in the river during the survey period. This would justify future monitoring of the river when the second cut-off option of 20 swimmers is implemented.

There were slightly more swimmers at the Henry Street site compared to the currently monitored Riverside site. However, past investigative monitoring has shown that *E. coli* concentrations are much more variable and often higher at the Riverside monitoring site. Thus, from a public health point of view, the risk of a person becoming ill as a result of swimming in the river is higher at the Riverside site, despite the lower usage compared to the Henry Street site. It is therefore recommended that monitoring should continue at the Riverside monitoring site.

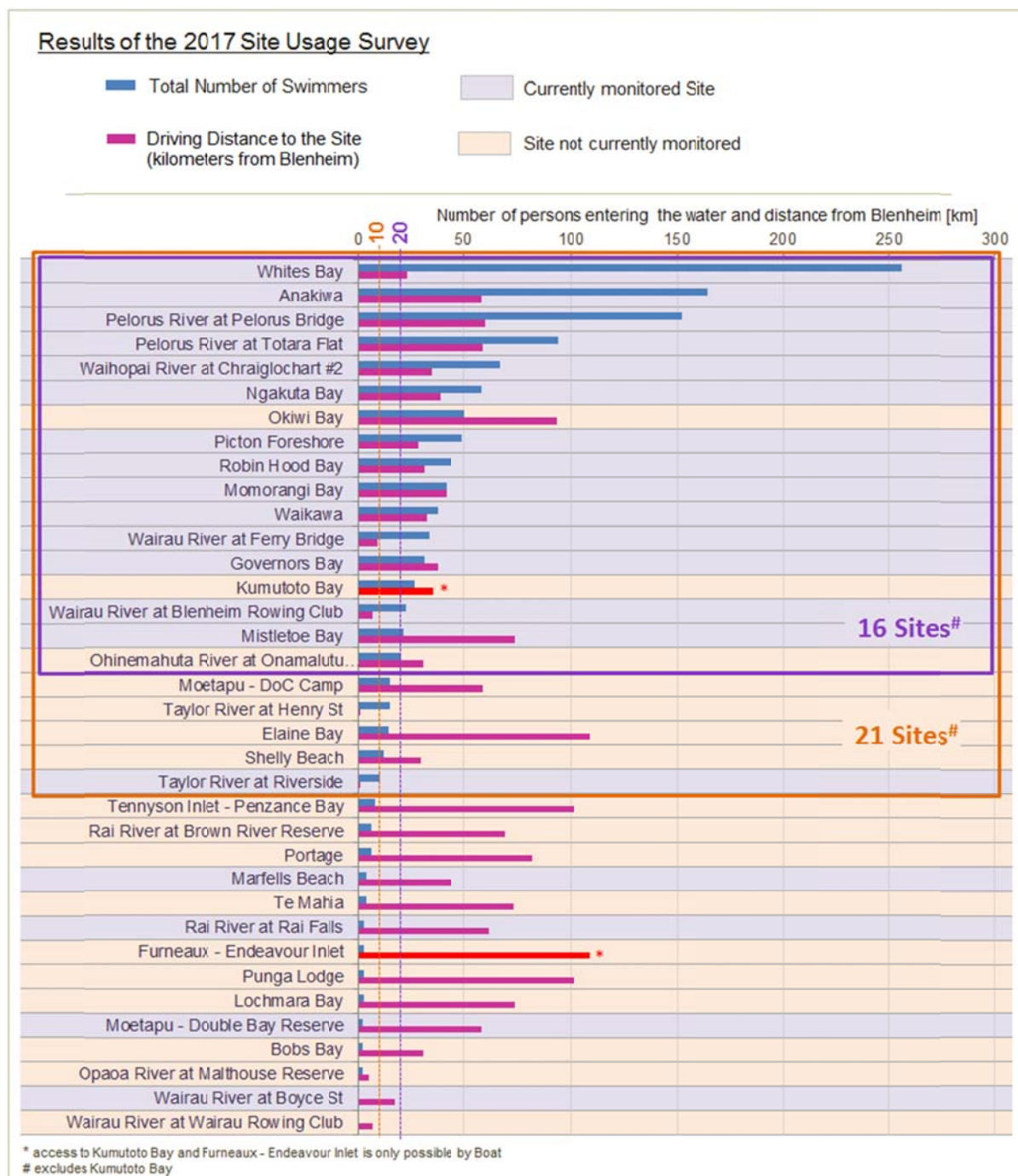
Another consideration is the travel distance to a site. Long distances not only result in additional costs for fuel and increased vehicle wear, but also considerable staff time. Of the sites currently monitored, Mistletoe Bay is the furthest away from Blenheim at 74 kilometres (see Figure 5). If the swimming locations with at least 10 users are chosen as future monitoring sites, Okiwi Bay and Elaine Bay will need to be monitored as part of the program. Although both bays are in close proximity to each other, the driving distance from Blenheim is considerable, at 93 and 109 kilometres, respectively. This could be mitigated by employment of a local contractor to take samples and who then sends the samples to the local laboratory on the weekly courier servicing the area.

Another site for which monitoring could be costly is Kumutoto Bay, because it can only be accessed by boat. One option would be to sample several sites in the Queen Charlotte Sound via boat, which would save time and potentially costs. However, sampling from boats in the past appears to have resulted in better water quality (lower Enterococci counts). This is likely caused by the fact that the samples are taken further away from the beach and therefore potential contamination sources. Although swimming is likely to occur in the deeper water, children, especially the more vulnerable

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<sup>2</sup> The Wairau River at Boyces Road is one of the many swimming locations along the Wairau River in the vicinity of the State Highway Six Bridge. Currently, samples are taken just downstream of the Bridge as a representative site.

young children, tend to play in the shallower parts. Therefore, it is preferable to take samples from the beach rather than from a boat.



**Figure 5: Results of the 2017 Site Usage Survey showing the number of users swimming at the individual sites and the distance of the site from Blenheim. Also shown is whether a site currently monitored as part of the Recreational Water Quality program.**

The fact that Kumutoto Bay can only be accessed by boat points to the small scale of residential development and therefore insignificant sources of anthropogenic faecal contamination in this bay. For this reason, Kumutoto Bay can be considered pristine and risk to human health from accidental ingestion of water during swimming is very low. The most likely source of faecal contamination is illegal dumping of sewage from visiting boats. This is a very difficult source to monitor. However, since most visitors to the bay are likely to also be recreational users, it is unlikely that illegal dumping will

occur. Due to difficult access, combined with low risk to human health, it is suggested that Kumutoto Bay is not monitored as part of the future monitoring program.

Based on the above considerations, Table 2 lists the suggested sites for the future Recreational Water Quality Program<sup>3</sup>.

Type	Site	Easting	Northing
Coastal Beaches	Whites Bay	1688425	5417793
	Robin Hood Bay - East	1690115	5421285
	Anakiwa	1677073	5431495
	Picton Foreshore	1684298	5428815
	Shelly Beach	1684577	5428922
	Waikawa Bay	1687695	5431090
	Momorangi Bay	1678817	5430879
	Ngakuta Bay	1680514	5430489
	Governors Bay	1681310	5431030
	Mistletoe Bay	1681470	5436007
	Moetapu - DoC Camp	1671610	5432097
	Okiwi Bay	1655416	5448701
	Elaine Bay	1664732	5454847
Rivers sites	Te Hoiere/Pelorus River at Totara Flat	1648262	5427731
	Te Hoiere/Pelorus River at Pelorus Bridge	1648077	5428091
	Ohinemahuta River at Onamalutu Domain	1658793	5409898
	Wairau River at Ferry Bridge	1681274	5410163
	Wairau River at Blenheim Rowing Club	1684319	5406605
	Taylor River at Riverside	1680023	5403987
	Taylor River at Henry St	1679557	5404349
	Waihopai River at Chraiglochart #2	1655029	5391098

**Table 2: Suggested monitoring sites for the Recreational Water Quality Program based on the Site Usage Survey carried out January 2017 and a cut-off at a minimum of 10 swimmers during the survey. The sites marked in orange would not be monitored if a more stringent cut-off of a minimum of 20 swimmers was chosen.**

## 4.2. Repeat of the Survey

The usage of swimming beaches and river swimming holes can change over time as new or improved recreational reserves are built or access to a site is improved or left to deteriorate. Additionally, river sites are subject to natural changes of the riverbed during large flood events. It is therefore recommended to repeat this or a similar site usage survey after five years.

If obvious changes at a particular site are resulting in a significant reduction of recreational users, a similar survey should be carried out within a shorter time frame at that site only, to confirm the changes. Based on the results the site may then be removed from the monitoring program.

<sup>3</sup> Of course, there are many other possible site lists based on different usage cut-offs. The two options presented assume a similar level of service as in recent years and minimal changes to the budget for the program.



## 5. Reference

MDC (2012) *Recreational Water Quality Report 2011-12*. Marlborough District Council, Technical Report 12-013

MDC (2016) *Recreational Water Quality Report 2015-2016*. Marlborough District Council, Technical Report 16-003

MfE (2003) *Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas*. Ministry for the Environment

## 6. Appendix 1 – Fieldsheet and Instructions

<b>Time</b>	<b>Number of Adults</b>	<b>Number of Children</b>	<b>Comments/Other water users eg Kayaks, paddle boarders</b>

# Instructions

## Recreational Bathing Programme Site Assessment

Thanks for being part of the team that is helping the Marlborough District Council review the Recreational Bathing Water Programme.

This pack contains 2 maps showing you where the site is that you need to be. The 1st is a topo map with a general overview of how to get to the site and the second is an aerial photograph of the site. Record the people entering or in the water in the area between the two red lines. The red lines are indicative only so if someone entered the water just on the outside of the line still count them.

The survey is going to take place between 12pm and 4pm so you will need to make sure that you are on site by 12pm ready to record the people using the site.

We want to record the number of people who enter the water. This means any adult that goes into the water deeper than their knees or primary school aged or younger (just make an assumption on their age – no need to ask them) that go in above their ankles. If a person goes in and out of the water multiple times just count them once (if you are at a busy site like Whites Bay don't panic if you cannot remember if people have been in or out before – Just do what you can).

Please fill in the sheet in the pack noting down the time when people enter the water. Just the approximate time is all that is required. If a group of 5 people go into the water over a 10 minute period just put down one time and record the number of adults and children against that time.

## Health and Safety

Keeping yourself safe is the most important part of the survey. If for any reason you don't feel safe at a site simply pack and go.

We are not asking you to talk to any members of the public but if people approach you feel free to tell them that you are conducting a survey on recreational bathing usage on behalf of the Marlborough District Council. I have put one of my business cards in the packs if anyone has additional questions that they would like answered just give them my details.

Your packs also include some sunscreen, a water bottle and a snack. Please ensure that you are sun smart and take the appropriate precautions so that you do not get sun burnt.

## Other stuff

We would also like a photo of the site with people using the site if possible (Cell phone quality is fine). Just a general shot of people using the site. If possible have people facing away from the camera.

Feel free to take a book or whatever you want to help you pass the time of day when no one new is entering the water at your site. Also feel free to have a swim yourself (don't count yourself as a swimmer)

If people want to know how to find out about water quality and where it is best to swim direct them to the LAWA website [www.lawa.org.nz](http://www.lawa.org.nz). This is a website where water quality information from all regional councils around the country is presented in an easily understandable way.

## Back home safe

When you have finished at your site and have made it back to civilization (ie home) please email me at [peter.hamill@marlborough.govt.nz](mailto:peter.hamill@marlborough.govt.nz) or txt me on 021383085 and let me know that you have returned safely.

## 7. Appendix 2 – Results

The counts for adults and children at each site have been combined into the nearest 15-minute interval.

### 7.1. Coastal Sites

Location		12:00	12:15	12:30	12:45	13:00	13:15	13:30	13:45	14:00	14:15	14:30	14:45	15:00	15:15	15:30	15:45	16:00	Total	Overall Total
Whites Bay	Adults			9	11	6	10	18	10	7	4	6	6	5	13	1	5	10	121	256
	Children			11	14	10	18	14	11	8	3	2	9	12	15	2	4	2	135	
Anakiwa	Adults	7	4	6		4	1	5	2	4		2	6	3	8	3		4	59	165
	Children	16	11	4	3	8	12	5	4	9	3	6	1	5	4	7	6	2	106	
Ngakuta Bay	Adults	1	2	3	6	2	2	5		1	1	2		3					28	58
	Children	4	3	2	6	1	2	3				2	3	2		2			30	
Okiwi Bay	Adults			1	2	3		5	1			3						5	24	50
	Children	1		1		2		2		2		1		5	1	2	4	5	26	
Picton Foreshore	Adults			1	1			1							2				5	49
	Children	3	6	7	1	9		3		5	8		2						44	
Robin Hood Bay	Adults	1	6	3		1		1		1	2	2	1	5	2	5		2	32	44
	Children	1			2	1	3			1				2	2				12	
Momorangi Bay	Adults	4		2	2	5		2		1		4	4	2					26	41
	Children	1	6	2		2						1	3						15	
Waikawa	Adults		2		2	2	1	1		1	3			1	3				16	37
	Children			2		2	4	1	1	4	4		1		2				21	
Governors Bay	Adults	3				4				10	3					3			23	31
	Children	1		2		3	2												8	
Kumutoto Bay	Adults					3	3												6	26
	Children	4	2	4			3				3					4			20	
Mistletoe Bay	Adults			1					1						4				6	21
	Children	1	2	1		1	1				1	2			6				15	
Moetapu - DoC Camp	Adults				1									2					3	15
	Children		1	2	1	1		3						2	2				12	
Elaine Bay	Adults	2		3	1	1	2												9	14
	Children		1	3	1														5	
Shelly Beach	Adults	1	2									1							4	12
	Children	1				2	2	3											8	
Tennyson Inlet - Penzance Bay	Adults	4						1							3				8	8
	Children																		0	
Portage	Adults		1		1					1									3	6
	Children			2	1														3	
Marfells Beach	Adults																		0	4
	Children	2								1	1								4	
Te Mahia	Adults													1					1	4
	Children													3					3	
Lochmara Bay	Adults									1				1					2	3
	Children													1					1	
Punga Lodge	Adults																		0	3
	Children											1			2				3	
Furieux - Endeavour Inlet	Adults										1	1	1						3	3
	Children																		0	
Bobs Bay	Adults										1	1							2	2
	Children																		0	
Moetapu - Double Bay Reserve	Adults										1								1	2
	Children		1																1	

## 7.2. River Sites

Location		12:00	12:15	12:30	12:45	13:00	13:15	13:30	13:45	14:00	14:15	14:30	14:45	15:00	15:15	15:30	15:45	16:00	Total	Overall Total
Te Hoiere/Pelorus River at Pelorus Bridge	Adults	5	6	4		3	5	17	5	24	2	3	1	4		7			86	152
	Children	10	4		4		7	1	8	17	3	3	7			2			66	
Te Hoiere/Pelorus River at Totara Flat	Adults			7	11	3	5	4	10		8	4	2		2		2		58	94
	Children			2	10	5		1	4			3	2	6			3		36	
Waihopai River at Chraiglochart #2	Adults									4	5	6	1		7	3	7	3	36	67
	Children									11	3	4	2		3	3	4	4	31	
Wairau River at Ferry Bridge	Adults							1		1				3	1	2	3		11	33
	Children							2		2		6		2	3	4	3		22	
Wairau River at Blenheim Rowing Club	Adults	2		1	1						2	1			3	1			11	22
	Children	2										3	1		4	1			11	
Ohinemahuta River at Onamalutu Domain	Adults			1							3			2	3	1	2		13	20
	Children	1		2		1						1	1		1				7	
Taylor River at Henry St	Adults			1		1			2		2	1	2						9	15
	Children			4								1			1				6	
Taylor River at Riverside	Adults																		0	10
	Children					5			1						4				10	
Rai River at Brown River Reserve	Adults					2			2										4	6
	Children										2								2	
Rai River at Rai Falls	Adults								3										3	3
	Children																		0	
Opaoa River at Malthouse Reserve	Adults	1							1										2	2
	Children																		0	
Wairau River at Boyces Road	Adults																		0	0
	Children																		0	
Wairau River at Wairau Rowing Club	Adults																		0	0
	Children																		0	