



The Microbiological Quality of Marlborough Freshwater Recreational Sites

2005-2006

May 2006

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Background

District councils are required under the Health Act 1956 to monitor environmental factors affecting public health and to abate conditions likely to be offensive or injurious to health. Regional councils have responsibilities under the Resource Management Act 1991 for planning and management of natural resources including fresh and coastal water. The Marlborough District Council as a unitary authority has responsibility for both district and regional functions.

Water contaminated by sewage and excreta may contain a diverse range of pathogenic micro-organisms such as viruses, bacteria and protozoa. These organisms may pose a health hazard when the water is used for recreational activities such as swimming and other "high contact" water sports. In these activities there is a reasonable risk that water could be swallowed, inhaled, or come in contact with ears, nasal passages, mucous membranes and cuts in the skin, allowing pathogens to enter the body.

In most cases, the ill health effects from exposure to contaminated water are minor and short-lived. However, there is potential for more serious diseases such as Hepatitis A, protozoan infections and salmonellosis.

In Marlborough, the public are generally free to swim wherever they like, but it is not possible to monitor all recreation sites. Up to fourteen freshwater sites are monitored each year to assess baseline conditions, trends and public health risks from contact recreation.

Guidelines

The guidelines for freshwater contact recreation are shown below:

Guideline	Indicator	Guideline values
Microbiological Water Quality Guidelines for Marine and Freshwater Recreational areas 2003	Freshwater <i>E. coli</i>	Suitability for recreation grade (SFRG) assigned to each site based on historical <i>E. coli</i> data and a site risk assessment. Sites graded Very good, Good and Fair are considered suitable for contact recreation. Sites graded Poor and Very poor are not considered generally suitable for contact recreation. Ongoing monitoring for management intervention use the following trigger values: Alert mode - single sample between 260 and 550 <i>E. coli</i> /100 ml Action mode -single sample greater than 550 <i>E. coli</i> /100 ml

Freshwater Sites 2005-2006

Waihopai River at Craiglochart	Taylor River at Riverside
Pelorus River at Pelorus Bridge	Opawa River at Elizabeth Street Bridge
Pelorus River at Totorā Flat	Opawa River at Malthouse Reserve
Rai River at Brown River Reserve	Wairau River at Ferry Bridge
Rai River at Rai Falls	Wairau River at Wairau Rowing Club
Rai River at Carluke Reserve	Wairau River at Blenheim Rowing Club
Taylor River at Hutcheson Street	Wairau Diversion at Neal Road.

Site details are shown in **Appendix 1**. These sites were selected because they are sites where there is frequent recreational use. The rowing club sites on the Wairau River are used throughout the year. The Rai and Pelorus Rivers are used frequently during the summer season, and are also used on a regular basis for rafting and canoeing. Outward Bound students are regular users of the sites at Totorā Flat, the Pelorus Bridge and Rai Falls.

Monitoring Results

The Council reports water quality results each week on the Council website during the summer. This provides up to date information to the public on the suitability of surface waters for contact recreation.

Result charts are shown in **Appendix 1** with site details. The charts show the date of each sampling event and the number of E.coli bacteria compared to the alert (>260<550) and action (>550) mode guideline values.

A table of results for all sites is shown in **Appendix 2**

The following table summarises results, showing the percent of time that each site was not suitable for recreational use.

Water Quality For Marlborough Freshwater Sites monitored November 2005 - March 2006	Water Quality Results. Percent of sampling events that exceeded 550/100mL	Number of sampling events
Waihopai at Craiglochart	7 ☹	14
Rai River at Carluke Reserve	5 ☹	20
Rai River at Brown River Reserve	9 ☹	22
Rai River at Rai Falls	18 ☹	22
Pelorus River at Pelorus Bridge	9 ☹	22
Pelorus River at Totora Flat	5 ☹	22
Wairau River at Ferry Bridge	0 ☺	22
Wairau Diversion at Neal Road Bridge	0 ☺	22
Wairau River at Wairau Rowing Club	5 ☹	22
Wairau River at Blenheim Rowing Club	5 ☹	22
Opawa River at Elizabeth street Bridge	5 ☹	22
Taylor River at Hutcheson Street Bridge	18 ☹	22
Taylor River at Riverside	14 ☹	22
Opawa River at Malthouse Reserve	0 ☺	22

All sites were mostly suitable for contact recreation at the time of sampling events.

The water quality of the Rai and Pelorus River sites was generally very good, with some high results associated with rain events. However, the Rai River at the Falls failed to meet the guideline for four of the 22 sampling events (18%).

Water quality in the Wairau River and Diversion was very good. There was one exceedence at both the rowing club sites, with none at the Ferry Bridge site, or at the Wairau Diversion site. The Wairau sites have previously been allocated "poor" and "very poor" suitability for recreation grades. The water quality results for 2005-2006 suggest it would be timely to reassess the catchment surveys and recalculate the suitability for recreation grades.

This summer the Taylor and Opawa Rivers had the poorest water quality, with Hutcheson Street Bridge and Riverside failing to meet the guideline for 18% and 14% of the sampling events respectively. Rain appears to cause an increase in bacteria numbers at these two sites. However high results occur at times when there is no effect from rain.

The Opawa at Malthouse site showed a great improvement in water quality, with all of the sampling results complying with the guideline. Remedial work was carried out on septic tanks discharging above this site at the end of last summer. This has resulted in no further discharges of domestic wastewater and a great improvement in the water quality.

Suitability for Recreation Grades (SFRG)

The guidelines define low risk sites as those where the only significant source of faecal contamination is from feral animals in largely bush and forest dominated areas. A moderate risk of faecal contamination includes sources such as low intensity agriculture and low-density urban areas. Sanitary inspection categories that are high or very high are where there is a source of faecal contamination from treated and untreated human sewage, or from stock or dense bird populations.

At the end of the 2003-2004 bathing season the Council implemented the new MfE/MoH guidelines to establish "beach grades" for the freshwater recreational areas. The microbiological data of the previous five years monitoring was used to generate the Microbiological Assessment Category for each site.

The sanitary inspection category was based on in-house knowledge of the contamination risk factors likely to affect each site, and then confirmed with an on-site inspection. The site inspections included a survey of each catchment that was as extensive as possible.

Sanitary inspection categories for the monitored sites are very low at the Waihopai River at Craiglochart, and the Pelorus River at Pelorus Bridge

The Opawa River at Malthouse Reserve has been re-graded to low, following remedial works to septic tanks above the site. The health risk factor has been reduced, and this season's monitoring results have all been below the guideline.

Sites with a moderate sanitary inspection category are the Wairau Diversion at Neal Road, the Wairau River at Ferry Road Bridge, the Taylor River at Hutcheson Street the Rai River at Brown River Reserve, the Rai Falls, and at Totorā Flat.

Sanitary inspection categories are high and very high for the Wairau River at the Wairau Rowing Club, and at Blenheim Rowing Club, and for the Opawa Loop at Elizabeth Street. These sites will be reassessed using the latest water quality results.

Table of post-season sanitary inspection categories (SIC), microbiological assessment category (MAC), and suitability for recreation grades (SFRG) at freshwater sites.

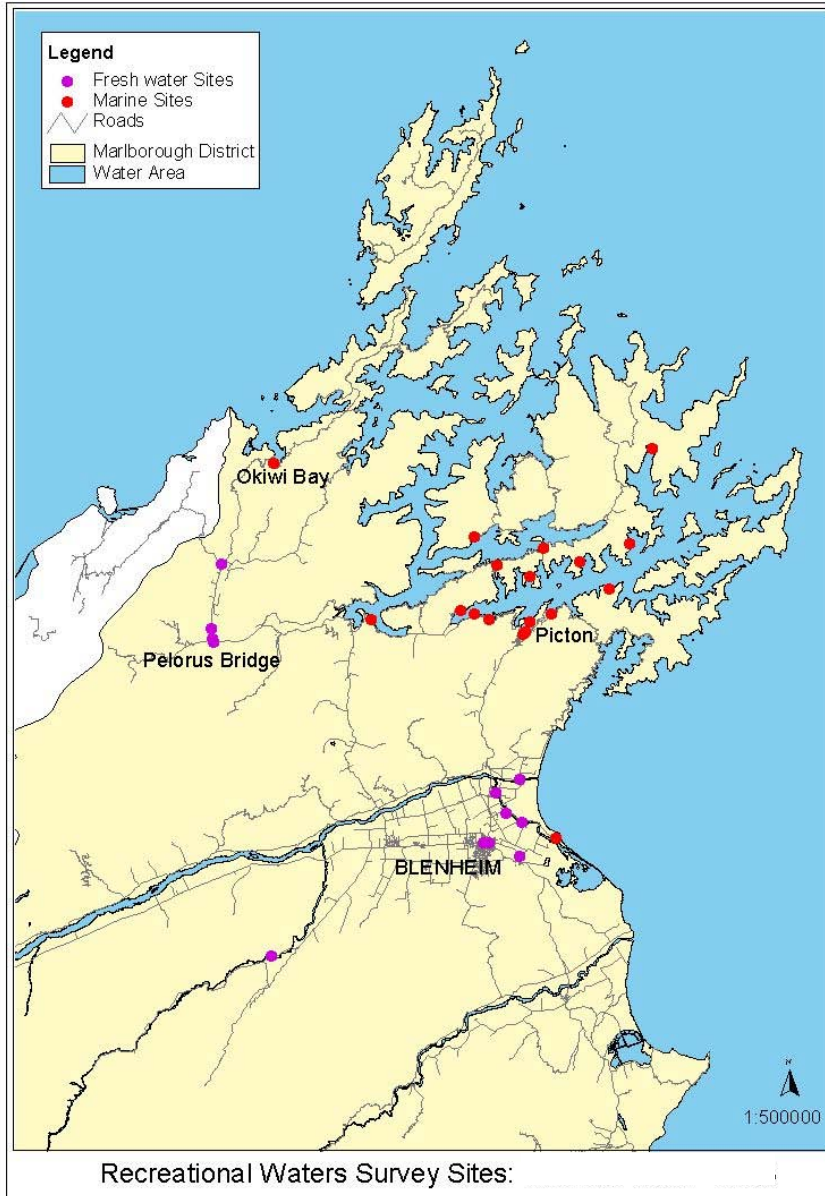
Site	MAC Grade	Primary SIC impact	SIC	SFR Grade
Waihopai - Craiglochart	C	18 – potential for run-off from feral animals	VL	Follow up
Pelorus - Pelorus Bridge	B	18	VL	Very Good
Pelorus-Totora Flat	D	16 - high intensity agricultural/rural activities, incidence and density of feral animal/bird populations	M	Poor
Rai - Brown River Reserve	D	16	M	Poor
Rai-Rai Falls	D	16	M	Poor
Taylor-Hutcheson St Bridge	D	14 - stormwater outlets with potential sewage contamination/combined stormwater outlet	M	Poor
Opawa-Elizabeth St Bridge	D	10 - Incidence and density of birdlife	H	Very Poor
Opawa-Malthouse Reserve	To be calculated	10 - SIC grade changed 2005 -2006 following removal of septic tank discharges	M	Follow up
Wairau-Ferry Rd Bridge	D	3 - Urban stormwater that is protected from sewage ingress	M	Poor
Wairau-Wairau Rowing Club	D	5 - Secondary sewage treatment facilities	VH	Very Poor
Wairau-Blenheim Rowing Club	D	9 - Unrestricted stock access to waterways	H	Very Poor
Wairau Diversion	D	16	M	Poor

Recommendation

- That the Council continues to monitor the freshwater bathing sites in accordance with the Ministry for the Environment Guidelines.

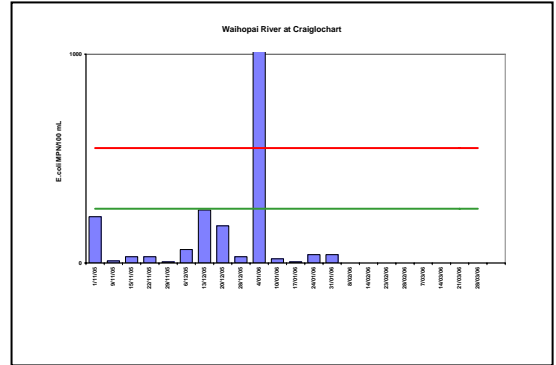
Appendix 1

Site Map

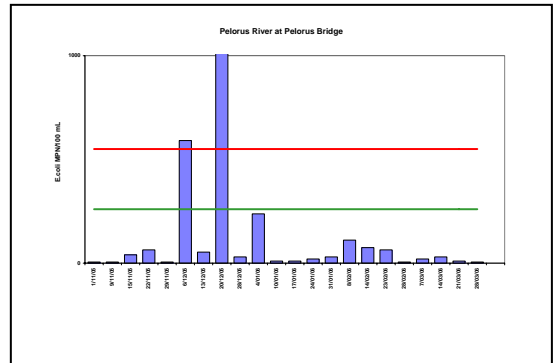


Sites and Result Charts

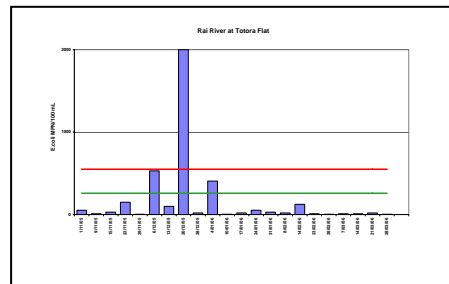
Waihopai River at Craighlochart



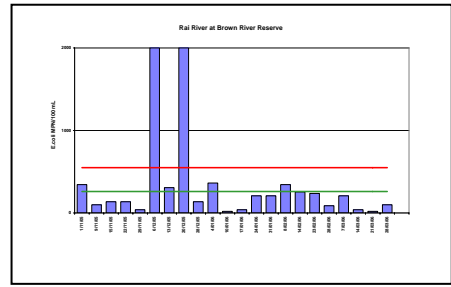
Pelorus River at Pelorus Bridge



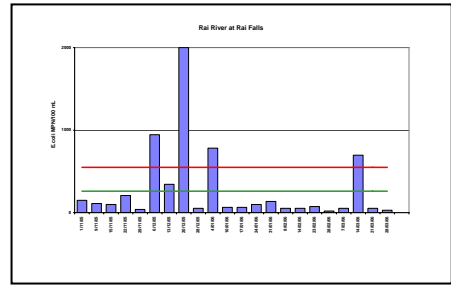
Pelorus River at Totoro Flat



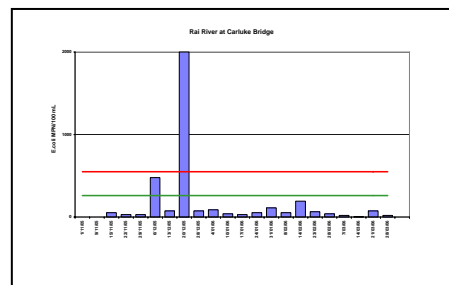
Rai River at Brown River Reserve



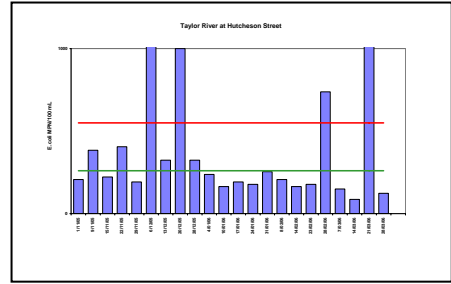
Rai River at Rai Falls



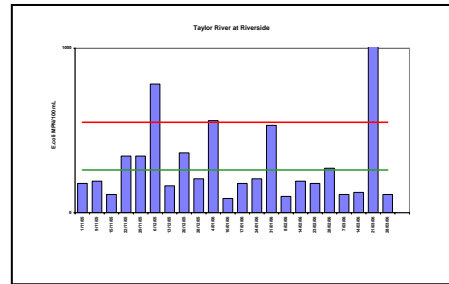
Rai River at Carluke Bridge



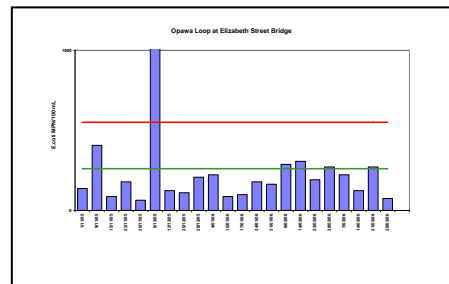
Taylor River at Hutcheson Street



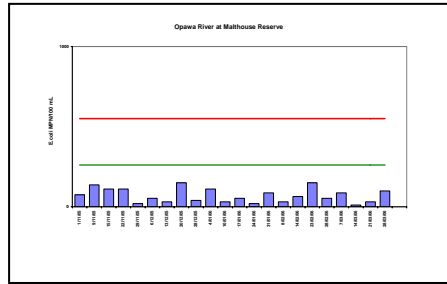
Taylor River at Riverside



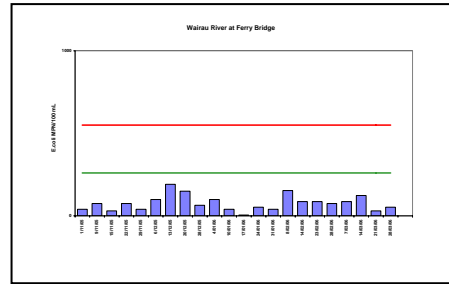
Opawa River at Elizabeth Street Bridge



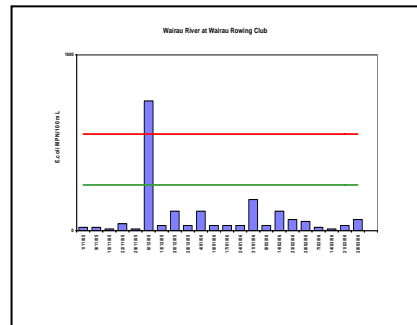
Opawa River at Malthouse Reserve



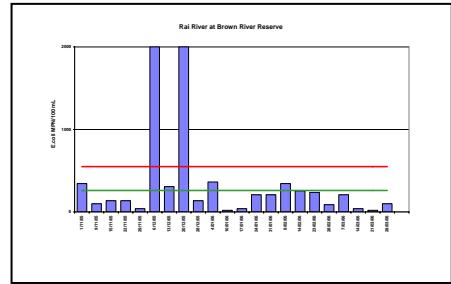
Wairau River at Ferry Bridge



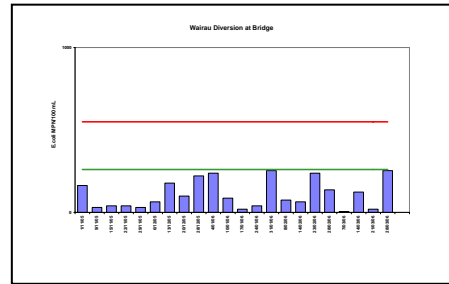
Wairau River at Wairau Rowing Club



Wairau River at Blenheim Rowing Club



Wairau Diversion at Neal Road



Appendix 2

Table of results for freshwater sites 2005-2006

Site	WHR-3	RAR-6	RAR-2	RAR-1	PLR-2	PLR-3	WRR-8	WDV-1	WRR-9	WRR-1	OPL-1	TYR-5		OPR-40
	Craiglochart	Rai River at Carluke Bridge	Brown River Reserve	Rai Falls	Pelorus Bridge	Totara Flat	Ferry Bridge	Diversion @ Bridge	Wairau Rowing Club	Blenheim Rowing Club	Opawa @ Elizabeth	Taylor @ Hutcheson	Taylor @ Riverside	Opawa @ Malthouse
Date														
1/11/2005	222		344	150	5	53	40	164	20	53	137	207	178	75
9/11/05	10		99	111	5	10	75	30	20	30	406	384	192	137
15/11/05	30	53	137	99	40	30	30	40	10	30	87	222	111	111
22/11/05	30	30	137	207	64	150	75	40	40	75	178	406	344	111
29/11/05	5	30	40	40	5	5	40	30	10	5	64	192	344	20
6/12/05	64	478	2000	945	591	531	99	64	738	20	1700	1700	782	53
13/12/05	254	75	306	344	53	99	192	178	30	10	124	324	164	30
20/12/05	178	2000	2000	2000	1400	2000	150	99	111	99	111	1000	364	150
28/12/05	30	75	137	53	30	20	64	222	30	40	207	324	207	40
4/01/06	2000	87	364	782	238	406	99	238	111	64	222	238	560	111
10/01/06	20	40	20	64	10	5	40	87	30	87	87	164	87	30
17/01/06	5	30	40	64	10	20	5	20	30	111	99	192	178	53
24/01/06	40	53	207	99	20	53	53	40	30	40	178	178	207	20
31/01/06	40	111	207	137	30	30	40	254	178	124	164	254	531	87
8/02/06		53	344	53	111	20	154	75	30	20	288	207	99	30
14/02/06		192	254	53	75	124	87	64	111	207	306	164	192	64
23/02/06		64	238	75	64	10	87	238	64	30	192	178	178	150
28/02/06		40	87	20	5	5	75	137	53	20	271	738	271	53
7/03/06		20	207	53	20	10	87	5	20	10	222	150	111	87
14/03/06		5	40	697	30	10	124	124	10	30	124	87	124	10
21/03/06		75	20	53	10	20	30	20	30	782	271	2000	2000	30
28/03/06		20	99	30	5	5	53	254	64	87	75	124	111	99

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