

## Memo

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Date	28 <sup>th</sup> May 2019
To	Environment Canterbury Planning Team
CC	
From	Jarred Arthur (Scientist – Water Quality and Ecology)

## Recommendation for update of LWRP Schedule 6: Areas on rivers or lakes commonly used for freshwater bathing

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### Purpose

Schedule 6 of the Land and Water Regional Plan (LWRP) sets out a list of areas on rivers and lakes commonly used for freshwater bathing. The LWRP policies and rules that refer to Schedule 6 are on the topics of livestock exclusion from waterways and fine sediment removal from rivers. In its current state, Schedule 6 lacks many of the freshwater sites used by the Canterbury community for swimming. The purpose of this memorandum is to update the list in Schedule 6 using three key sources of information:

- Environment Canterbury's recreational health monitoring programme;
- River Values Assessment System (RiVAS) report; and
- Canterbury Water Management Zone Committee feedback.

The memorandum also discusses, in brief, the implications of the National Policy Statement for Freshwater Management (2017) surveillance monitoring requirements for listed primary contact recreation sites in regional plans.

### Background

#### Faecal contamination in freshwaters

Pathogens in waterways can cause humans to become ill, especially when water is ingested during primary contact recreation activities such as swimming. Many of these pathogens are sourced from the guts of warm-blooded animals including humans, birds, farm stock and dogs. Pathogens enter waterways via faecal contamination directly as point source discharges or diffusely when rainfall increases surface runoff. Waterways are particularly susceptible to contamination in urban areas with wastewater and stormwater infrastructure issues. Waterways flowing through agricultural landscapes with high runoff potential (i.e. those with sloping land, heavy soil types and/or unfenced swales or drains) or with poor

stock exclusion are also likely to experience high levels of microbial contamination due to defecation from stock.

Many of New Zealand's lowland rural waterways experience poor microbial water quality. This is particularly true in Canterbury where all monitored primary contact recreation sites with a grade of 'poor' or 'very poor' (according to MfE & MoH (2003) guidelines<sup>1</sup>) are located on the plains (Arthur, 2018). Recent decades of agricultural intensification has resulted in increasing public concern over the health risks associated with poor microbial water quality in streams, rivers and lakes. The term 'swimmable' is now commonly used to reflect bathing sites that have 'fair' or better microbial health (according to MfE & MoH (2003) suitability for recreation grades) and pose a low risk of infection to primary contact recreation users. There is an increasing public demand that all freshwaters in New Zealand be swimmable.

## **Land and Water Regional Plan – Schedule 6**

A key source of faecal contaminants in Canterbury's freshwaters is farmed stock which have direct access to the bed and banks of waterways. To reduce contamination and help achieve 'safe' levels of microbial water quality at contact recreation sites, the LWRP contains policies and rules (e.g. Policy 4.31 and Rule 5.71) that exclude stock from the beds and banks upstream of popular bathing sites. The plan also contains provisions to protect popular bathing sites from adverse effects relating to fine sediment removal. These bathing sites are defined as "*areas on rivers and lakes that are commonly used for freshwater bathing in Canterbury*" and are listed in Schedule 6 of the plan (Appendix 1).

Twenty-eight bathing areas are currently detailed in Schedule 6, but this under represents the true number of known sites that are commonly used for swimming in the region. In order to better protect bathing sites from the effects of stock access and fine sediment removal, it is recommended that Schedule 6 is expanded to more accurately reflect those areas on lakes and rivers that are presently used for primary contact recreation on more than a rare or occasional basis.

## **Surveillance monitoring as a requirement of the National Policy Statement for Freshwater Management (NPSFM)**

In 2014, the New Zealand Government produced the NPSFM, which was later amended in 2017 (MfE, 2017). The NPSFM provides national direction on how local and regional authorities, including Environment Canterbury, should carry out their responsibilities under the Resource Management Act 1991 for managing freshwater. A key focus of the policy is to protect human health for recreation. This is evident throughout various sections of the document including the preamble, objectives, policies and National Objectives Framework

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<sup>1</sup> The Ministry for Environment (MfE) and Ministry of Health (MoH) (2003) microbiological water quality guidelines for marine and freshwater recreational provides guidance to councils and agencies on how to inform communities on health risks associated with swimming at bathing areas. It outlines monitoring and reporting frameworks, and faecal indicator bacteria trigger level values associated with increased human health risks from pathogens. For example, the 'Action' or 'Red' alert mode for monitoring *E. coli* in freshwaters is any single sample collected > 550 MPN/100 mL after which a series of surveillance monitoring, investigation and public health notification protocols must be followed.

(NOF) attribute tables. The NPSFM, for example, lists human health for recreation as a compulsory national value of freshwater, where people are entitled to be able to connect with water through a range of activities including swimming.

Policy A5 of the NPSFM states that a “*regional council making or changing regional plans*” need to “*ensure the plans identify specified rivers and lakes, and primary contact sites*”. The NPSFM further requires that surveillance monitoring is undertaken at all sites identified in a regional plan as a ‘primary contact site’, or a site that is representative of a one or more primary contact sites. The required surveillance monitoring consists of weekly sampling for *E. coli* within a specified range of dates (assumed to be during summer). Sites listed in Schedule 6 of the LWRP (i.e. areas commonly used for freshwater bathing) are synonymous with ‘primary contact sites’ as defined in the NPSFM. It can therefore be assumed that the surveillance monitoring requirements of the NPSFM applies to sites listed in Schedule 6 unless otherwise stated in the plan.

Environment Canterbury has limited resources for the surveillance monitoring of recreational water quality at bathing sites in the region. Currently, a total of 99 primary contact recreation sites (53 freshwater and 46 coastal) are monitored as part of Environment Canterbury’s recreational water quality monitoring programme over each summer. This memo identifies an additional 35 bathing sites for inclusion in Schedule 6 that are not already part of the monitoring programme. If these sites are required to be monitored as per the NPSFM requirements, this will incur a significant cost to the regional council by way of additional staff (time and personnel), laboratory, travel and fuel expenses. For this reason, it is recommended that the primary function of Schedule 6 is to list all known popular bathing sites for the purpose of ensuring good land use practises around stock exclusion and fine sediment removal. Schedule 6 should not be seen as a list of compulsory surveillance monitoring sites unless significantly more funding can be made available for this to be carried out.

## **Methodology for determining Schedule 6 bathing areas**

The bathing sites proposed to be included in Schedule 6 of the LWRP were determined by assessing three key information sources. The following section describes these information sources and how areas that are commonly used for bathing were derived using them.

### **Source 1: Environment Canterbury recreational water quality monitoring programme**

Environment Canterbury currently monitors recreational water quality weekly at Canterbury’s key freshwater and marine primary recreation sites over summer (Arthur, 2018). It achieves this by testing water samples for *E. coli* and/or enterococci, which are faecal bacteria that indicate the presence of harmful pathogens in freshwaters. The monitoring programme follows the national microbiological water quality guidelines for marine and freshwater recreational areas (MfE & MoH, 2003). The science and protocols outlined in the MfE & MoH (2003) guidelines are regarded nationally as the best currently available and are used widely throughout New Zealand.

The programme's recreational freshwater monitoring network consists of 53 sites situated at well-known and well-used bathing sites. This monitoring network has been extensively developed and expanded since the programme first commenced in 1999. While the programme aims to monitor as many primary contact recreation sites as possible, resourcing constraints means it must prioritise sites of the highest importance. This includes sites that are of the highest use, and are of marginal water quality and therefore the most susceptible to posing a public health risk. An exception includes sites where the public are especially concerned about health risks associated with the accidental ingestion of water during secondary (not primary) contact recreation. These include sites located at Avon River at Kerrs Reach and Kaiapoi River at Kaiapoi township, which are used extensively for rowing (Appendix 2). Some freshwater and marine sites that have consistently very poor microbial water quality are not monitored as bathers are permanently warned not to swim there.

The purpose of Schedule 6 is, for the most part, synonymous with the rationale used for selecting monitoring sites for Environment Canterbury's recreational water quality monitoring programme. That is, Schedule 6 aims to list all lake and river sites commonly used for recreational bathing, while the recreational water quality programme aims to monitor and report recreational water quality at as many popular primary contact recreation sites as possible.

At the beginning of the 2018/19 summer monitoring season, 53 river, lake and lagoon sites were monitored for recreational water quality (Appendix 2). Only 23 of the 53 monitored sites are currently represented in Schedule 6 of the plan, while five sites in Schedule 6 are not monitored for recreational water quality (Appendices Appendix 1 and Appendix 2). It is proposed that all but one site monitored as part of Environment Canterbury's recreational water quality programme are included in Schedule 6 of the LWRP. The exception is the Avon River at Kerrs Reach, which is popular for rowing and other secondary contact recreation activities, but not swimming. The Kaiapoi River at Kaiapoi township is recommended to be included in Schedule 6 because it is recommended to be so by the Waimakariri Water Zone ZIPA (ECan, 2018b).

## **Source 2: River Values Assessment System (RiVAS)**

Over recent years there has been a growing public concern over the health and protection of waterways for swimming. To adequately manage swimming water quality in Canterbury, it is important to understand what swimming sites the community value and why. In recognition of this, Environment Canterbury commissioned Lincoln University to undertake a RiVAS assessment to determine the value of Canterbury rivers and lakes as swimming sites (Appendix 3) (Dynes et al., 2017). Hughey and Baker (2010) describe the RiVAS method for assessing river, and in this case lake, swimming values as a step-wise process that involves:

- Clearly specifying the value to be evaluated, in this case swimming;
- Identifying the primary attributes which best describe key features of swimming;
- Identifying a single measurable indicator for each primary attribute;
- Scoring the indicator with the best available (measured data and/or expert panel opinion) information;

- Identifying thresholds for each indicator to convert raw data to a typically 3-point scale (1=low value; 2=medium value; 3=high value);
- Summing the threshold scores across the attributes (and weighting attributes where agreed);
- Ranking the total attribute scores from highest to lowest to identify the most vs least important swimming sites; and,
- Deciding (via expert panel opinion) an agreed threshold to delineate sites considered of regional vs local importance.

The primary attributes considered as important to assessing the value of a site for swimming included ease of bathing access, microbial water quality, frequency of use by bathers, and the types and number of facilities present (e.g. toilets and picnic facilities) (Appendix 4). For the purpose of including RiVAS assessed swimming sites in Schedule 6 of the LWRP, the most relevant attribute is 'level of use' (Appendix 3). Appropriately, the RiVAS assessment assigned 'level of use' a high attribute weighting for determining a site's total attribute score and ranking.

As part of the RiVAS information gathering exercise on swimming site usage and importance to communities, Environment Canterbury implemented an online questionnaire targeted at a wide range of community groups. The survey was conducted in mid-2016 and was initially targeted at schools, but eventually its participation was promoted to all members of the public who currently swim or previously swam in the Canterbury region. A total of 1,371 responses were obtained, 64% of which reported individuals who currently swim in freshwater rivers or lakes in Canterbury. Of these, 635 people identified areas where they swim, however these were often described very generally and were difficult to refine to a specific location. Overall, 14 river or lake catchments were identified as being used for swimming by 10 or more survey respondents. These catchments included the Waimakariri and Ashley / Rakahuri Rivers which, like some other sites, are in the vicinity of large urban populations such as Christchurch. A large number of other swimming locations were also identified as being popular, but by fewer respondents per location. Survey participants also provided information on swimming site amenities (e.g. the presence of toilets and picnicking facilities), frequency of use, access, and sites that they no longer swim at due to poor, or perceived to be poor, water quality. About 50% of respondents swim at sites where on a typical day just a few people (i.e. less than 10) are swimming. The survey reported that approximately half of the identified freshwater bathing sites are predominantly used by local people, while 23% are used by both locals and tourists.

A list of bathings sites was constructed based on public feedback and the opinion of an expert panel whose members had local knowledge of swimming locations and/or experience monitoring them. For all sites, Environment Canterbury water quality and ecological monitoring data was used to determine attribute scores for environmental parameters that influence the quality of the swimming experience. These included data relating to factors that affect aesthetic appeal (i.e. algae/aquatic weed growth and water clarity) and risks to public health (i.e. potentially toxic algae growth and microbial water quality) in accordance with MfE & MoH (2003 & 2009) guidelines. Public survey data was used to determine attribute scores relating to level of use, ease of access, facilities, and for moderating other attribute scores on the basis of, for example, perceived water quality. When either monitoring or public

survey data was limited, swimming site attribute scores were determined using expert panel judgement based on their knowledge of freshwater sites and recreation in the region. This includes the level of use (i.e. estimated number of bathers on a peak day) at each site based on in-field observations.

Appendix 5 details the draft results of the RiVAS assessment including the ranking of swimming sites according to total attribute score. It was agreed by the expert panel that locations would be identified as either regionally or locally significant swimming sites, but not nationally significant. It was noted that swimming as an activity (or value) is nationally important, but it is unlikely that any single river or lake site would be considered a nationally outstanding site for swimming. The expert panel examined the ranked list of river and lake sites to identify a discrete cut off point for assigning regional or local significance to sites. A score of 30 was considered an appropriate threshold based on a judgement of the qualities that sites above this threshold exhibited. In total, 39 sites were identified as regionally significant for swimming. In some cases, locally significant sites, with a total attribute score less than 30 (e.g., Coes Ford and Upper Selwyn Huts), were impeded by poor water quality. Such sites would likely be of greater significance should water quality and quantity issues be overcome.

For the purpose of finding new Schedule 6 sites, any swimming site, whether locally or regionally significant, with a moderate or greater level of swimming use (i.e. typically 10 swimmers or more on a peak day) is considered to be a commonly used bathing site. All sites that were identified as having a moderate or higher level of use are recommended for inclusion in Schedule 6 of the LWRP. Generally, regionally significant sites with low levels of swimming usage (i.e. less than 10 swimmers on a peak day) are not recommended to be included in a revised Schedule 6. Their value as swimming sites can be considered high in terms of providing a quality swimming experience, but they cannot be considered to be commonly used. A notable exception is the Waihi River at Waihi Gorge, which is proposed for inclusion despite a low level of usage as per the RiVAS assessment (Appendix 5). This is because the Waihi River at Waihi Gorge is identified by other information sources (i.e. Environment Canterbury recreational water quality monitoring staff and the OTOP Zone Committee) as being highly valued and used (Appendix 6).

### **Source 3: Zone Committee feedback**

As part of the Canterbury Water Management Strategy (CWMS), ten sub-regions or 'zones' are set up to help manage water resources in a catchment-like approach across Canterbury. Each zone represents distinct geographic areas and key surface water catchments as follows:

- Kaikoura
- Hurunui Waiau
- Waimakariri
- Christchurch West Melton
- Banks Peninsula
- Selwyn Waihora
- Ashburton

- Orari Temuka Opihi Pareora (OTOP)
- Lower Waitaki South Coastal Canterbury
- Upper Waitaki

Several appointed community members, and representatives of local rūnanga and the Environment Canterbury Council, make up a committee for each zone. The role of Water Zone Committees is to make recommendations to Environment Canterbury and local councils on how to best manage land and water resources to meet the outcomes and values of their local communities.

In early 2017, Environment Canterbury sent a letter to all Zone Committees requesting advice on where popular swimming sites are situated in their zones. This was to inform Environment Canterbury on swimming site uses for a variety of management purposes. This includes the recreational water quality monitoring programme, the RiVAS assessment as above, enhancement projects, and sub-regional and regional planning processes including any updates to the LWRP. Zone Committees were made aware of sites that were currently monitored for swimming water quality and already listed in Schedule 6 of the LWRP. They were asked whether swimming was still prevalent at these sites and whether any popular sites were missing.

Four of the ten committees (Kaikoura, Hurunui Waiau, Selwyn Waihora, and Upper Waitaki) replied to the request describing sites that are not currently identified in the recreational monitoring programme, RiVAS assessment or Schedule 6. Overall, a total of 17 new sites were identified with between two and seven sites per zone. Some site locations lacked specificity, but a follow-up and subsequent desktop assessment ascertained discrete swimming site locations. In addition to letter responses, the Waimakariri and OTO Water Zone Committees were undergoing sub-regional plan processes whereby each committee published a Zone Implementation Programme Addendum (ZIPA) document (ECan, 2018a; ECan, 2018b). Both ZIPAs contain recommendations requesting that specific swimming sites be included in Schedule 6. A total of 22 bathing sites are recommended across the two ZIPAs, 18 of which are new sites not currently in Schedule 6 of the LWRP.

Overall, a total of 36 additional bathing sites were identified by the six Zone Committees to be included in Schedule 6 of the LWRP. No bathing sites in the current Schedule 6 have been recommended for removal.

## Recommended Schedule 6 sites

Table 1 details the list of bathing sites proposed to be included in an amended version of LWRP Schedule 6. All 28 sites currently listed in Schedule 6 have been retained, but with minor amendments to some site names and locations<sup>2</sup> (Appendix 7). Sixty-four new sites are proposed to be added to the schedule.

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<sup>2</sup> 'Lake Benmore – Ohau C' has been renamed to 'Lake Benmore at Ohau C camping ground'. The coordinate reference is also proposed to change to better reflect the location of the bathing site.

Twenty-nine of the 64 new bathing sites are currently monitored as part of the Environment Canterbury recreational water quality monitoring programme. Only one monitoring site, the Avon River at Kerrs Reach, is not proposed for inclusion due to its use primarily for secondary contact recreation activities (specifically rowing). In contrast, the Kaiapoi River at Kaiapoi township is included in the proposed Schedule 6 list despite its low level of use for swimming. This is because the Waimakariri Water Zone Committee (WWZC) has requested its inclusion as part of its ZIPA recommendations (ECan, 2018b). The reason for this recommendation is likely due to the local community's desire and the latent potential of the river to be used for swimming again if microbial water quality was to be improved at the site. There is some risk associated with poor microbial water quality and ingestion associated with secondary contact activities, hence why both the sites are included as part of Environment Canterbury's monitoring programme. However, secondary contact recreation is beyond the scope of Schedule 6 in the LWRP.

In total, 61 of the 64 proposed sites were identified by the RiVAS assessment as regionally important or locally important with a moderate to high level of bathing use on peak days (Dynes et al., 2017) (Appendix 5). Six 'regionally important' bathing sites are not proposed to be included in Schedule 6. These are:

- Lake Pearson;
- Loch Katrine;
- Lake Pukaki;
- Otematata River at SH83;
- Upper Clarence River; and
- Other Ashburton Lakes.

The notes in Appendix 6 provides justification for omitting each site, but generally the reason is that all sites have a low level of use. In each case, their RiVAS classification of regionally important is a consequence of having very high physical feature, water quality and aesthetic values. 'Other Ashburton Lakes' and 'Upper Clarence River' are ill-defined in terms of the location of their swimming sites. They are therefore not specific enough to warrant inclusion in Schedule 6 as distinct bathing sites.

Eighteen new bathing sites were suggested by the four zone committees that responded to Environment Canterbury's letter that requested feedback on the location of popular swimming sites. Of these, one site, 'Kahutara River Lagoon', is in the same location as 'Kahutara River at SH1', which is monitored for recreational water quality. As a result 'Kahutara River at SH1 Lagoon' is proposed for inclusion Schedule 6. Another 22 sites were recommended for inclusion by the Waimakariri and OTOP ZIPAs. Eighteen of these sites are new to Schedule 6, while 4 are existing. Overall, 36 of the 40 sites identified by Zone Committees are additional to those currently listed in Schedule 6 (Appendix 6). Appendix 8 contains a map of proposed Schedule 6 sites as they are detailed in Table 1.



Table 1. Proposed list of areas on lakes and rivers commonly used for freshwater bathing for inclusion in Schedule 6 of the LWRP. Existing Schedule 6 sites (highlighted in grey) and new site additions are included.

Area	Site name	NZTM Easting	NZTM Northing
Northern Canterbury	Irongate Stream at SH1	1663752	5319096
	Hapuku River at intake	1657275	5315825
	Upper Kowhai River at Kowhai Ford Rd	1651030	5307003
	Lower Kowhai River at SH1	1652069	5303873
	Lyell Creek lagoon	1656307	5305144
	Charwell River at Inland Kaikoura Rd	1629886	5303395
	Kahutara River at SH1 Lagoon	1648429	5301784
	Oaro River at Oaro	1641492	5293039
	Lewis River at Boyle Lodge	1548908	5292625
	Hanmer River below Hanmer Springs Rd bridge	1582580	5286064
	Mason River adjacent to campground	1603183	5278005
	Waiau River upstream of Hanmer River confluence	1582093	5285779
	Waiau River at Waiau	1602857	5277566
	Hurunui River at SH7	1580947	5253515
	Hurunui River at SH1	1608328	5250305
	Hurunui River adjacent bach settlement	1622468	5249063
	Waipara River at Boys Brigade camp	1579297	5231467
	Cave Stream at camp ground	1496843	5221602
	Cave Stream at Cave	1497861	5216766
	Ashley River/Rakahuri at Gorge picnic ground	1537355	5213581
	Ashley River above Rangiora-Loburn bridge	1564891	5207477
	Ashley River at SH1	1574717	5208250
	Lake Lyndon	1494546	5204791
	Pegasus Lake at Motu Quay Jetty	1575339	5204681
	Cam River at Bramleys Road	1570570	5200985
	Kaiapoi River at Kaiapoi township	1572328	5196530
	Waimakariri River at Gorge bridge	1523049	5198806
	Waimakariri River at Thompsons Road (the Willows)	1545508	5187383
	Waimakariri River as Rock Spur	1566811	5191046
	Waimakariri River between SH1 and old bridge	1571600	5193123
	Otukaikino Ck at swimming hole	1571299	5192832
	Lake Rotokohatu	1565481	5187454
	Selwyn River at Whitecliffs	1510439	5187341
	Selwyn River at Glentunnel	1513817	5184593
	Selwyn River at Chamberlains Ford	1549418	5162592
	Selwyn River at Coes Ford	1552802	5161726
	Selwyn River at Upper Huts	1554816	5159753
	Lake Ellesmere/Te Waihora at Lakeside	1549447	5150492

	Rakaia River at Gorge	1491485	5180812
	Rakaia River at north end of Lagoon	1539017	5140150
Mid Canterbury	Lake Clearwater west of huts	1442211	5169870
	Lake Camp main swimming beach	1442451	5169380
	Ashburton River/Hakatere at SH1	1498726	5137403
	Lake Hood at Bayliss Beach	1501838	5131539
	Lake Hood at main swimming beach	1500748	5130716
	Rangitata River at Peel Forest campground	1461180	5138854
South Canterbury	Orari River at Orari Gorge	1454820	5134629
	Lake Opuha at Ewarts Corner boat ramp	1428803	5128410
	Lake Opuha at Recreation Reserve	1429002	5125325
	Waihi River at Waihi Gorge	1452115	5126224
	Waihi River at Wilson St footbridge	1459501	5116535
	Hae Hae Te Moana River at Gorge	1446617	5121702
	Temuka River at SH1 Bridge	1462349	5098501
	Opihi River at Allandale Bridge	1426634	5115129
	Opihi River at Raincliff Scout Camp	1439324	5106886
	Opihi River at Saleyards Bridge	1451720	5098611
	Opihi River at SH1 Bridge	1461885	5097452
	Opihi River at Waipopo huts	1466368	5096791
	Te Ana Wai River at Belmont Bridge	1436879	5092043
	Pareora River at Lindisfarne	1428733	5088661
	Pareora River at Evans Crossing	1444034	5082031
	Pareora River at Brasells Bridge	1451835	5075469
	Pareora River at Huts	1445304	5080569
	Otaio River at Otaio Gorge	1435458	5067966
	Waihao River at Black Hole	1438445	5037832
	Waihao River at Gum Tree Road (Dons Hole)	1443824	5038032
	Waihao River at Bradshaws Pools	1454090	5040400
Waitaki catchment	Lake Alexandrina at bottom huts	1395022	5128346
	Lake Tekapo at Camp Beach	1396597	5125237
	Lake Tekapo at Lillybank Rd Beach	1399399	5124575
	Lake Wardell	1370054	5102273
	Lake Poaka	1368259	5101180
	Loch Cameron	1364728	5099491
	Twizel River at picnic area	1368788	5096088
	Lake Ruataniwha at camping ground	1366191	5093619
	Lake Middleton	1348609	5092818
	Pond at Old Iron Bridge Rd	1367794	5092249
	Upper Ohau River	1356756	5091947
	Wairepo Arm	1366720	5090733
	Kellands Pond	1365981	5090705
	Omarama Stream at Omarama	1358382	5069524
	Hakataramea River at SH8 bridge	1401259	5044411
	Lake Benmore at Ohau C camping ground	1376350	5085541
	Lake Benmore at Haldon	1378843	5085854

	Lake Benmore at Falstone	1377045	5080251
	Lake Benmore at Glenburn	1365949	5065940
	Lake Benmore at Pumpkin Bay	1367185	5064766
	Lake Benmore at Sailors Cutting	1368493	5063512
	Lake Aviemore at Loch Laird	1376237	5060738
	Lake Aviemore at Te Akatarawa camp	1384179	5057651
	Lake Aviemore at Waitangi	1385954	5057611
	Lake Waitaki at Fishermans Bend	1390823	5050698

## Caveats

A limitation of the proposed amendments to Schedule 6 of the LWRP, as detailed in this report, is that it generally only identifies popular bathing sites as they exist presently and in their current state. What it neglects is the latent potential of other sites to be popular for bathing if it were not for their substantial level of environmental degradation. The public generally avoids swimming in areas that have, or are perceived to have, poor water quality. If managed correctly, these “poor quality” sites may improve to become highly valued and therefore popular for swimming. This is particularly true for those readily accessed sites in and near to urban areas.

Currently the LWRP states specific distances for excluding stock from waterbodies upstream of individual bathing sites listed under Schedule 6 (Appendix 1)<sup>3</sup>. It was beyond the scope of this memo to undertake a detailed analysis to test the appropriateness of these distances. However, in its current state, the LWRP stipulation that stock must be excluded up to 1000 m or more upstream from a lake is not fit for purpose. This is because lake sites do not necessarily flow or possess an “upstream” like that of a stream or river. It is recommended that set distances for stock exclusion at all lake sites are based on shore length from either side of a bathing location. Appropriate stock exclusion rules should also apply to streams and rivers that flow into a lake at close proximity to a bathing site due to the inherent potential that these waterways have for transporting contaminants to the lake site.

## Summary

The proposed schedule of bathing sites as presented in this report (Table 1) has been generated based primarily on expert knowledge and community feedback. An extensive public survey has been conducted to find out where communities swim, and nearly 20 years of the recreational water quality programme has developed a robust monitoring network and understanding of where people swim. Zone Committees, who represent local communities and knowledge, were used to fill in any information gaps that the previous information

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<sup>3</sup> Currently, Schedule 6 details a minimum stock exclusion distance of 1,000 metres upstream for every site, except for Lake Camp where stock exclusion must occur at a distance up to 2,000 metres upstream.

sources did not fill. While the site list may still not be exhaustive, the author considers it to be a fair representation of where the most commonly used river and lake bathing sites are situated throughout Canterbury. It is important to protect the health of communities that swim at all these sites. This includes reducing or maintaining low public health risks resulting from the ingestion of faecal-derived pathogens.

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<b>Reviewed by:</b>	Andrea Richardson	February, 2019
<b>Approved for release:</b>	Tim Davie, Chief Scientist	May, 2019



## Appendix 1

Current LWRP Schedule 6: Areas on rivers or lakes commonly used for freshwater bathing.

Area	River or lake site	Map reference of site	The distance upstream from the site where stock are excluded from the river or lake. (metres)
North Canterbury	Ashley Gorge Picnic Ground	L34:473-752	1,000
	Hurunui River SH1	N33:179-121	1,000
	Hurunui River SH7	N33:909-150	1,000
	Waipara River - Boys Brigade Camp	N34:901-929	1,000
	Selwyn - Upper Huts	M36:648-215	1,000
	Selwyn - Coes Ford	M36:627-234	1,000
	Selwyn - Chamberlains	M36:596-242	1,000
	Selwyn - Glentunnel	L35:242-463	1,000
Mid Canterbury	Ashburton River/Hakatere - SH1	K37:087-990	1,000
	Lake Clearwater	J36:525-315	1,000
	Lake Camp	J36:526-310	2,000
	Orari Gorge	J37:653-951	1,000
South Canterbury	Pareora River - Brasells Bridge	J39:618-371	1,000
	Pareora - Pareora Huts	J39:552-422	1,000
	Pareora - Evans Crossing	J39:540-437	1,000
	Otaio Gorge	J39:454-296	1,000
	Waihao - Bradshaws	J40:643-015	1,000
	Waihao - Black Hole	J40:479-995	1,000
Waitaki catchment	Hakataramea River at the hotel	I40:112-061	1,000
	Lake Benmore – Falstone	H39:870-419	1,000
	Lake Benmore – Haldon	H39:888-475	1,000
	Lake Benmore – Ohau C	H38:772-543	1,000
	Lake Benmore – Sailors Cutting	H39:788-250	1,000
	Lake Benmore - Glenburn	H39:759-276	1,000
	Lake Aviemore – Loch Laird	H39:862-228	1,000
	Lake Aviemore - Waitangi	I40:959-192	1,000
	Lake Aviemore – Te Akatarawa	I40:933-187	1,000
	Lake Ruataniwha – Camping Ground	H38:743-552	1,000

## Appendix 2

Freshwater primary contact recreation sites monitored as part of Environment Canterbury's 2018/19 recreational water quality programme.

District	Primary contact recreation site
Kaikoura	Lyell Creek Lagoon Kahutara River at SH1
Hurunui	Hurunui River at SH1 Hurunui River at SH7 Waiau River at Waiau Waipara River at Boys Brigade Camp
Waimakariri	Ashley River / Rakahuri at Gorge Ashley River / Rakahuri above Rangiora-Loburn Bridge Ashley River / Rakahuri at SH1 Pegasus Lake at Motu Quay Kaiapoi River (township) Waimakariri River at Rock Spur^ Waimakariri River at Thompsons Rd^
Christchurch	Otukaikino Creek at swimming hole Avon River at Kerrs Reach Lake Rotokohatu
Selwyn	Selwyn River / Waikirikiri at Upper Huts Selwyn River / Waikirikiri at Coes Ford Selwyn River / Waikirikiri at Chamberlains Ford Selwyn River / Waikirikiri at Glentunnel Lake Ellesmere / Te Waihora at Lakeside Domain
Ashburton	Ashburton River / Hakatere at SH1 Lake Hood at Bayliss Beach Lake Clearwater west of huts Lake Camp at beach Rakaia River at Gorge
Timaru	Orari River at Gorge Waihi River at Gorge Waihi River at Wilson St footbridge Te Moana River at Gorge Opihi River at Waipopo Temuka River at SH1 Opihi River at SH1 Opihi River at Saleyards Bridge Pareora River at huts Pareora River at Evans Crossing

District	Primary contact recreation site
Mackenzie	Lake Opuha at Ewarts Corner Boatramp Lake Opuha at Recreation Reserve Lake Tekapo Beach Lake Alexandrina at bottom huts Lake Ruataniwha at camping ground Twizel River at picnic area
Waimate	Otaio River at Gorge Waihao River at Bradshaws Bridge Waihao River at Gum Tree Flat Rd (Dons Hole) Waihao River at Black Hole Lake Aviemore at Waitangi Lake Aviemore at Te Akatarawa Camp Hakataramea River at SH82
Waitaki	Lake Middleton at north end of lake Lake Aviemore at Loch Laird Lake Benmore at Sailors Cutting Lake Benmore at Pumpkin Bay



## Appendix 3

Summary of the River Values Assessment System (RiVAS) method (Hughey and Baker, 2010).

Step		Purpose
1	Define river value categories and river segments	The river value may be subdivided into categories to ensure the method is applied at a meaningful level of detail. Rivers are listed and may be subdivided into segments or aggregated into clusters to ensure that the rivers/segments being scored and ranked are appropriate for the value being assessed. A preliminary scan of rivers in the region is undertaken to remove those rivers considered to be of 'no' or less-than-local level significance for the value being considered.
2	Identify attributes	All attributes are listed to ensure that decision-makers are cognisant of the various aspects that characterise the river value.
3	Select and describe the primary attributes	A subset of attributes (called primary attributes) is selected and described.
4	Identify indicators	An indicator is identified for each primary attribute using SMARTA <sup>4</sup> criteria. Quantitative criteria are used where possible.
5	Determine indicator thresholds	Thresholds are identified for each indicator to convert indicator raw data to 'not present', 'low', 'medium', 'high' (scores 0-3).
6	Apply indicators and indicator thresholds	Indicators are populated with data (or data estimates from an expert panel) for each river. A threshold score is assigned for each indicator for each river.
7	Weight the primary attributes	Primary attributes are weighted. Weights reflect the relative contribution of each primary attribute to the river value. The default is that all primary attributes are weighted equally.
8	Determine river significance	Indicator threshold scores are summed to give a significance score (weightings applied where relevant). Rivers are ordered by their significance scores to provide a list of rivers ranked by their significance for the river value under examination. Significance (national, regional, local) is assigned based on a set of criteria or cut off points.
9	Outline other relevant factors	Factors which cannot be quantified but influence significance are recorded to inform decision-making.
10	Identify information requirements	Data desirable for assessment purposes (but not currently available) are listed to inform a river value research strategy.

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<sup>4</sup> Specific, measurable, achievable, relevant, timely, and may be already in use.

## Appendix 4

Primary attributes used (and their indicators) for assessing the importance of freshwater swimming sites in Canterbury using the RiVAS assessment (Dynes et al., 2017). Indicator significance thresholds were determined using survey data and expert panel opinion based on in-field observations and local knowledge. Note that not all attributes were weighted evenly when ranking a site's importance.

Primary attribute	Indicator	Indicator significance thresholds
Level of use	Number of swimmers on a peak use day – separated into categories of 'typically no one', <10, 10-20, >20	0= typically no one 1= <10 (low) 2= 10-20 (medium) 3= >20 (high)
Origin of users	Three categories (other than 'no known users'): - Family/ friends - Locals - Tourists	0= no known users 1= family/ friends and locals (low) 2= tourists (medium) 3= locals and tourists (high)
Presence of facilities	Presence/absence of facilities: toilet(s), camping area, BBQ, playground, swimming hole	1=nothing + Other (if not a toilet) (low) 2=toilet only (medium) 3=toilet + other (high)
Public access	Public or private access and type	0= no public access 1=access across private land (low) 2=public walking (medium) 3=public road and walking (high)
Surrounding environment	Perception from a user perspective of surrounding environment. Scores: Low = odour issues and/or significant presence of rubbish and/or highly modified; Moderate = slightly modified; high= high naturalness, biodiverse	1= low/ poor 2= medium/ moderate 3= high/ excellent
Swimming holes	Maximum water depth (m)	1= <2 m (low) 2= 2-3m (medium) 3= >3 m (high)
Variable water depth	Morphological variability	1= Low 2= Medium 3= High
Algae and or weed (aesthetic appeal)	Compliance with national periphyton guidelines: 1= >50%, 2= 25-50%, 3= <25% (maximum coverage)	1= >50% (low) 2= 25-50% (medium) 3= <25% (high)
Blue-green algae: toxic algae	0= 100% likelihood of toxic algae present (above 20% coverage) 1= either 2-4 times in 5-year period, or more than 2 months in swimming season (low) 2= either once in every five years, or short bloom affecting >1month of swimming season (medium) 3= never been observed above 20% coverage (high)	0= 0 1= low 2= medium 3= high

Primary attribute	Indicator	Indicator significance thresholds
Water clarity	Compliance with ANZECC (2000) guidelines: 1: <1.6 m horizontal visibility when river is below median flow (low) 2= 1.6-3.0 m horizontal visibility when river is below median flow (medium) 3= >3.0 m horizontal visibility when river is below median flow (high)	1= low 2= medium 3= high
Overall water quality	Combination of science monitoring, EP and survey perceptions leading to: 0= consistently very poor or poor (5/5 years) 1= at least 4/5 years fair 2= consistently fair 3= consistently good or very good	0= very poor 1= low 2= medium 3= high

## Appendix 5

Results of significance assessment calculations for the River Values Assessment System (RiVAS) assessment on swimming sites in Canterbury. Sites in bold and highlighted in green are regionally significant as determined by the RiVAS assessment (Dynes et al., 2017).

Catchment, river or lake name	Reach (*= Listed in L&WRP as a swimming site)	Named specific swim location	Environment Canterbury comments about monitoring locations and observations	Physical attributes		Water quality aspects (Note that if a very high corr G&H then just G)				Environment	Users		Facilities & Access		Origin of users *2; Level of use * 3		Comment
				Swimming holes	Variable water depth	Algae and-or weed (aesthetic appeal)	Toxic Algae	Water Quality	Water clarity	Surrounding Environment	Origin of users	Level of use	Facilities	Access			
				Max water depth	Morphological variability	G/lines compliance			Horizontal visibility	Overall rating		No swimmers/ peak day	Presence of facilities	Public or Private			
				1<2m, 2=2-3m, 3>3m	1=low, 2=med, 3=high	1>50%, 2=25-50%, 3<25% (maximum coverage)	0= 100% likelihood of toxic algae present (above 20% coverage); 1= either 2-4 times in 5 year period, or more than 2 months in swimming season; 2= either once in every five years, or short bloom affecting >1month of swimming season; 3= never been observed above 20% coverage	0= consistently very poor or poor (5/5 years); 1= at least 4/5 years fair; 2= consistently fair; 3= consistently good or very good	1<1.6m, 2=1.6-3m, 3>3m	1=low, 2=mod, 3=high	0= no known swimmers 1= family/ friends and locals; 2= tourists; 3=locals and tourists	0= Typically no one; 1=few (<10), 2=mod (10-20), 3=many (>20)	1=nothing, other (but no toilet), 2=toilet only, 3=toilet + other	0= no public access; 1=access across private land; 2=public walking (or off road vehicles); 3=public road and walking			
				EP estimate	EP estimate	ECan data + EP estimate	ECan data + EP input	ECan SFRG assessment (rainfall adjusted) and EP & perceptions (in red)	EP estimate	EP estimate	Survey data + EP	Survey data + EP	Survey data + EP	ECan data and EP	Sum (Maximum score = 42)	Rank (N= 105 'reaches')	Associated values and Hazards - from the EP assessment. Note this is not an exclusive list of either.
Ashley	Gorge*		0.5km either side of picnic spot	2	3	3	3	3	3	3	3	3	3	3	41	1	<u>Other values:</u> Campground, native bush adjacent, kayaking. <u>Hazards:</u> Sand flies
Ashburton lakes	Lake Clearwater*			3	2	3	3	3	3	3	3	3	3	3	41	1	<u>Other values:</u> Trout fishing. <u>Hazards:</u>
Ashburton lakes	Lake Camp*			3	2	3	3	3	3	3	3	3	3	3	41	1	<u>Other values:</u> Boating facilities, camping area. <u>Hazards:</u>
Rakaia River	Gorge	Gorge Bridge		3	3	3	3	3	1	3	3	3	3	3	40	4	<u>Other values:</u> Jet boating, salmon fishing. <u>Hazards:</u> boats, big river
Upper Waitaki Basin	Lake Ruataniwha*			3	3	3	3	3	2	2	3	3	3	3	40	4	<u>Other values:</u> Trout angling. <u>Hazards:</u> Duck itch reportedly present 2016
Upper Waitaki Basin	Benmore - Haldon Arm			3	2	3	3	3	2	3	3	3	3	3	40	4	<u>Other values:</u> Boating and trout fishing. <u>Hazards:</u> boats
Upper Waitaki Basin	Lake Waitaki			3	2	3	3	3	3	2	3	3	3	3	40	4	<u>Other values:</u> Fishing. <u>Hazards:</u>

Upper Waitaki Basin	Lake Tekapo			3	2	3	3	3	1	3	3	3	3	3	39	8	Other values: Hazards: Very cold most of the time, strong wind issues
Upper Waitaki Basin	Lake Benmore*			3	2	2	3	3	2	3	3	3	3	3	39	8	Other values: Boating, fishing, camping. Hazards: boats
Upper Waitaki Basin	Benmore - Ahuriri Arm		Water quality - Combination of Sailors Cutting and Pumpkin Bay	3	2	2	3	3	2	3	3	3	3	3	39	8	Other values: Boating and fishing. Hazards: boats
Upper Waitaki Basin	Lake Aviemore*		Water quality - Based on Waitangi not Te Akatarawa or Loch Laird site	3	2	2	3	2	3	3	3	3	3	3	39	8	Other values: Fishing. Hazards:
Waipara	Waipara - Boys Brigade Camp*	Artificial swim hole		3	2	3	2	2	3	2	3	3	3	3	38	12	Other values: Swimming hole - man made. Hazards:
Waimakari ri River	Upper to & including gorge bridge	Mt White Bridge, Gorge Bridge		3	3	3	2	3	3	3	3	2	3	3	38	12	Other values: salmon fishing, boating. Hazards: boats, big river
Waimakari ri lakes	Lake Lyndon		no data for variables	3	2	3	3	3	3	3	3	2	3	3	38	12	Other values: Fishing and camping and boating. Hazards: boats
Te Moana River	Gorge		Water quality - at Gorge	3	3	2	3	2	3	3	3	2	3	3	37	15	Other values: Hazards:
Waiau	Upper	Above Hanmer River confluence	Above Leslie Hills (focus Ferry bridge and above)	3	3	3	3	3	2	3	3	2	1	3	36	16	Other values:Near tourist town of Hanmer, fishing, boating. Hazards: big river, boats
Upper Waitaki Basin	Twizel River			2	2	2	3	3	3	3	3	3	1	2	36	16	Other values: :Trout fishing. Hazards: Didymo
Rangitata	Gorge to SH72	Adjacent Peel Forest Camp	Toxic algae - not enough data points but no high cover counts so a 3;	3	3	3	3	2	1	2	3	2	3	3	35	18	Other values: Salmon and trout fishing, boating, kayaking. Hazards: Big river
Upper Waitaki Basin	Lake Alexandrina			3	2	2	3	1	3	3	3	2	3	3	35	18	Other values:Trout fishing and boating. Hazards:
Waimakari ri lakes	Lake Pearson		no data for variables	3	2	3	3	3	2	3	3	1	3	3	34	20	Other values: Fishing, boating and camping. Hazards:
Upper Waitaki Basin	Lake Middleton			3	2	1	3	2	2	3	3	2	3	3	34	20	Other values: Boating. Hazards: Boats
Hurunui River	Mandamus to SH7*	Balmoral	SH1	3	3	2	1	1	3	2	3	2	3	3	33	22	Other values:Salmon and trout ishing and boating. Hazards: Boats
Lake Hood			Water quality - Comprmise between Bayliss Beach and main swimming beach site	3	2	1	3	3	2	2	1	3	3	3	33	22	Other values: Hazards: Lot of plant growth in water column; boating
Orari River	Gorge to SH73*			3	3	3	3	2	3	3	1	2	3	2	33	22	Other values: Hazards:
Waihi	Waihi Gorge		Water Quality - Watch due to potential SIC category changing after this year?	2	3	3	3	1	3	3	3	1	3	3	33	22	Other values: Hazards:

Upper Waitaki Basin	Lake Pukaki			3	2	3	3	3	1	3	3	1	3	3	33	22	Other values: Hazards:Very very cold, high suspended silt load from glaciers, exposed
Upper Waitaki Basin	Otematata River			2	2	3	3	3	3	3	3	1	3	2	33	22	Other values: Trout fishing. Hazards:
Kahutara	Lower	Lagoon		2	2	1	1	2	3	3	3	2	3	3	32	28	Other values: Hazards: Algae proliferation
Waimakari ri River	McLeans Is to Old Highway Bridge			3	3	3	2	0	2	2	1	3	3	3	32	28	Other values: Jet boating, salmon and trout fishing, off-road vehicles. Hazards: Rock groynes and willows, vehicle security, boats
Clarence	Upper		At Jack's Pass	3	3	2	3	3	3	3	1	1	3	3	31	30	Other values: Trout fishing. Hazards: Occasional willows, didymo and slippery algae
Waimakari ri River	Mid to above McLeans Is	The Willows		3	3	3	2	1	2	2	1	3	1	3	31	30	Other values: Jet boating, salmon and trout fishing, off-road vehicles. Hazards: Rock groynes and willows, vehicle security, boats
NW CHCH lakes			Lake Roto Kohatu - water quality	3	2	2	3	3	3	2	1	2	2	3	31	30	Other values: Hazards: Boating on one of lakes.
Selwyn River	Glentunnel area			1	3	1	0	2	3	3	3	2	3	3	31	30	Other values: Camping. Hazards: Willows, toxic algae
Lake Opuha			Water quality - Based on Boat Ramp. Grade would be 3 if based on Rec Reserve site	3	1	2	3	2	1	2	1	3	3	3	31	30	Other values: Trout fishing, boating. Hazards: Boats
Hurunui lakes	Loch Katrine			3	2	2	3	3	3	3	1	1	3	3	30	35	Other values: Boating and trout fishing, camping. Hazards: Boats
Lake Pegasus				3	3	1	0	3	1	2	1	3	3	3	30	35	Other values: Hazards: Water quality, Algae
Ashburton lakes	Other Ashburton lakes			3	2	2	3	3	3	3	1	1	3	3	30	35	Other values: Trout fishing. Hazards:
Pareora River	Upper (Evan's Crossing & above)*			3	3	3	2	2	3	2	1	2	1	3	30	35	Other values: Hazards:
Upper Waitaki Basin	Loch Cameron			3	2	2	3	2	3	3	1	2	1	3	30	35	Other values: Hazards:
Hurunui River	Upper			3	3	1	2	3	3	3	1	1	3	3	29	40	Other values: Kayaking and trout fishing. Hazards: big river, willows
Selwyn River	Upper - Glentunnel and above*			1	3	1	0	2	3	3	1	3	3	2	29	40	Other values: Camping. Hazards: Willows, toxic algae
Rakaia River	Above the gorge	Kowhai Flat camp area		3	3	2	3	3	1	3	1	1	3	3	29	40	Other values: Boating and salmon and trout fishing; endangered birds. Hazards: Big river, boats
Rangitata	Above the gorge			3	3	3	3	3	2	3	1	1	1	3	29	40	Other values: Boating and fishing; endangered birds. Hazards: big river, boats

Upper Waitaki Basin	Ahuriri River			3	3	2	2	2	2	3	3	1	1	2	29	40	<u>Other values:</u> Trout fishing and endangered birds. <u>Hazards:</u> Willows
Clarence	Gorge			3	3	3	3	3	3	3	1	1	1	1	28	45	<u>Other values:</u> Rafting and kayaking. <u>Hazards:</u> Undercut banks, willows
Ashley	Upper above gorge		No data but assumed to be of the same high quality as the gorge site?	1	3	3	3	3	3	3	1	1	1	3	28	45	<u>Other values:</u> <u>Hazards:</u>
Waimakariri River	Otukaikino River		Based off Otukaikino River at Dickeys Road. Groynes is no longer swimmable. Toxic algae combination of at Swimming hole and at Dickeys Road. WQ Based off Otukaikino Creek SFRG.	1	2	1	2	0	3	2	1	3	3	3	28	45	<u>Other values:</u> Jet Boating and salmon and trout fishing. <u>Hazards:</u> Boats
Selwyn River	Chamberlains Ford*			1	1	2	2	3	3	2	1	2	3	3	28	45	<u>Other values:</u> Man made swimming hole. <u>Hazards:</u>
Opihi River	Below SH1 to sea			3	2	1	1	3	2	2	1	2	3	3	28	45	<u>Other values:</u> Trout fishing. <u>Hazards:</u> Willows
Upper Waitaki Basin	Lower Ohau River			2	1	1	3	3	2	3	3	1	1	3	28	45	<u>Other values:</u> Trout fishing, endangered birds. <u>Hazards:</u>
Waiau	Hanmer River	Below bridge	No monitoring data	1	2	1	1	2	3	2	1	3	1	3	27	51	<u>Other values:</u> Picnicking. <u>Hazards:</u> Willows
Hurunui River	Waitohi	At camp ground	1.6km up from Hurunui Confluence. Swimming site further upstream.	2	2	2	3	2	3	2	1	1	3	3	27	51	<u>Other values:</u> Camping. <u>Hazards:</u> Willows
Hurunui lakes	Lake Taylor			3	2	3	3	2	3	3	1	0	3	3	27	51	<u>Other values:</u> Boating, Trout fishing, Camping. <u>Hazards:</u> Boats
Selwyn River	Whitecliffs and above			1	3	1	0	2	3	3	1	2	3	3	27	51	<u>Other values:</u> Camping. <u>Hazards:</u> Willows, toxic algae
Selwyn River	Coes Ford *			1	1	2	1	0	3	2	3	2	3	2	27	51	<u>Other values:</u> Camping. <u>Hazards:</u> Willows, Low flows, Toxic algae
Opihi River	Gorge to SH1		Combo of salesyard bridge and SH1. Water Quality - Compromise between SH1 and Salesyards Bridge	3	3	1	1	3	3	2	1	1	3	3	27	51	<u>Other values:</u> Trout fishing. <u>Hazards:</u> Willows
Opihi River	Tengawai			3	2	2	1	3	3	2	1	1	3	3	27	51	<u>Other values:</u> <u>Hazards:</u> Willows
Temuka River				2	2	1	1	3	3	1	1	2	3	3	27	51	<u>Other values:</u> Trout fishing. <u>Hazards:</u> Willows
Upper Waitaki Basin	Lake Ohau			3	2	3	3	3	1	3	1	1	1	3	27	51	<u>Other values:</u> <u>Hazards:</u> Cold water
Clarence	Lower		Above river mouth	2	2	3	3	2	3	2	1	1	1	3	26	60	<u>Other values:</u> Rafting and kayaking. <u>Hazards:</u> Steep rapids, boulders, undercut banks, bridges & other obstructions
Waiau	Mason	Adjacent to camp ground	SH70	1	2	1	3	2	2	2	1	2	3	2	26	60	<u>Other values:</u> <u>Hazards:</u> Willows

Ashley	Below Gorge to Rangiora	Rangiora traffic bridge area	Rangiora/Loburn Bridge	1	2	1	1	2	3	2	1	2	3	3	26	60	<u>Other values:</u> endangered birds, trout fishing. <u>Hazards:</u> Willows, vehicle security
Ashley	Below Rangiora to estuary		SH1	1	2	2	1	3	3	2	1	2	1	3	26	60	<u>Other values:</u> Trout fishing. <u>Hazards:</u> Willows, vehicle security
Coleridge lakes				3	2	3	3	3	3	3	0	0	3	3	26	60	<u>Other values:</u> Trout fishing. <u>Hazards:</u>
Rakaia River	SH1 to sea			3	3	3	3	0	1	2	1	1	3	3	26	60	<u>Other values:</u> Salmon and trout fishing, Jet boating. <u>Hazards:</u> Boats, Willows, irrigation intakes
Opihi River	Above Gorge			2	2	3	3	2	3	2	1	1	1	3	26	60	<u>Other values:</u> <u>Hazards:</u> Willows
Pareora River	Below Evan's to above SH1		suggest changing where State Highway 1 is included. Enables the splitting of WQ info etc.	1	1	2	1	2	3	2	1	2	3	3	26	60	<u>Other values:</u> <u>Hazards:</u> Willows
Waihao River	Upper (Black Hole/Don's Hole)			3	3	1	1	0	2	2	1	2	3	3	26	60	<u>Other values:</u> <u>Hazards:</u> Willows
Upper Waitaki Basin	Tekapo River			2	2	1	2	3	3	3	2	1	1	2	26	60	<u>Other values:</u> Trout fishing. <u>Hazards:</u> Willows, Didymo
Waiau	Leslie Hills to Waiau	Below bridge at Waiau	at Leslie Hills and Waiau	2	2	2	1	2	1	3	1	2	1	3	25	70	<u>Other values:</u> Jet boating. Trout fishing. <u>Hazards:</u> Willows and Boats
Hurunui lakes	Lake Sumner			3	2	3	3	3	3	3	1	0	1	2	25	70	<u>Other values:</u> Trout fishing, Boating. <u>Hazards:</u> Boats
Waimakariri River	Below OHB to sea			3	2	3	2	0	2	2	1	1	3	3	25	70	<u>Other values:</u> Salmon and trout fishing, flat water boating. <u>Hazards:</u> Willows, water quality
Rakaia River	Lagoon	North end lagoon		2	2	3	3	0	1	2	1	2	1	3	25	70	<u>Other values:</u> Salmon and trout fishing, Boating. <u>Hazards:</u> Boats, big river, river mouth
Ashburton River	Above SH 72		Measured at SH72	2	2	2	3	3	2	2	1	1	1	3	25	70	<u>Other values:</u> <u>Hazards:</u> Willows
Otaio River Gorge	Otaio River Gorge*		Toxic aglgae - No warnings issued under summer rec programme but there is SOE max of >20% cover	1	2	2	2	3	3	3	1	1	3	1	25	70	<u>Other values:</u> <u>Hazards:</u> Willows
Hurunui River	Below SH7 to sea*	SH1 bridge and above	SH1	3	3	2	1	1	3	2	1	1	1	3	24	76	<u>Other values:</u> Salmon and trout fishing, Jet boating. <u>Hazards:</u> Willows, Boats
Waimakariri River	Styx River			2	2	1	3	0	3	2	1	1	3	3	24	76	<u>Other values:</u> <u>Hazards:</u> Willow, Water quality
Rakaia River	Below Gorge to SH1		recorded at SH1 in north channel	3	3	3	3	0	1	2	1	1	1	3	24	76	<u>Other values:</u> Salmon and trout fishing, Jet boating. <u>Hazards:</u> Big river, willows, boating, intake and bridge structures



Rangitata	SH72 to sea		Combination of data at SH1 and above mouth	2	2	3	3	0	1	2	1	1	3	3	24	76	<u>Other values:</u> Salmon and trout fishing, Jet boating. <u>Hazards:</u> Big river, willows, boating, intake and bridge structures
Waihao River	Lower - below SH1 (Bradshaws)			3	2	2	1	3	2	2	1	1	1	3	24	76	<u>Other values:</u> <u>Hazards:</u> willows
Conway	SH1 to sea (concentrated around SH1)	Flow recorder above SH1		1	2	1	3	2	3	2	1	1	1	3	23	81	<u>Other values:</u> <u>Hazards:</u>
Waiau	Below Waiau to sea		Includes manmade hole at Waiau township	3	3	2	2	0	1	3	1	1	1	3	23	81	<u>Other values:</u> Salmon and trout fishing, Jet boating. <u>Hazards:</u> willows, big river, boating
Ashburton River	Ashburton nth tribs (incl Bower Stm)		This is an encompassing set of streams with Bower the focus	2	2	2	2	2	3	2	1	1	1	2	23	81	<u>Other values:</u> <u>Hazards:</u> willows
Opihi River	Opuha River			2	2	1	1	3	2	2	1	1	3	2	23	81	<u>Other values:</u> <u>Hazards:</u> Willows
Waihi	Waihi other		not enough data but sampling sites at Te Awa Rd and SH1	2	2	2	1	1	2	2	1	1	3	3	23	81	<u>Other values:</u> <u>Hazards:</u> Willows
Lower Waitaki	Hakataramea River*			2	2	2	1	2	3	2	1	1	1	3	23	81	<u>Other values:</u> <u>Hazards:</u> Willows
Kowhai	Lagoon area			1	1	2	3	3	1	2	1	1	1	3	22	87	<u>Other values:</u> <u>Hazards:</u> Algae proliferation
Waipara	Waipara - other		At Laidmore Road (far above other site)	1	2	1	2	2	3	2	1	1	1	3	22	87	<u>Other values:</u> <u>Hazards:</u> Willows, algae
Orari River	SH73 to sea		at parke rd	2	1	2	1	0	3	2	1	1	3	3	22	87	<u>Other values:</u> <u>Hazards:</u> Willows, algae
Te Moana River	Other			1	2	2	3	1	3	2	1	1	1	2	22	87	<u>Other values:</u> <u>Hazards:</u> willows
Lower Waitaki	Maerewhenua			2	2	1	1	1	3	2	1	1	3	2	22	87	<u>Other values:</u> <u>Hazards:</u> Willows
Lower Waitaki	Lake Waitaki to sea*			3	2	1	3	2	1	2	1	1	1	2	22	87	<u>Other values:</u> Salmon and trout fishing, Jet boating. <u>Hazards:</u> Very large river, didymo, boating, willows
Orari River	Lagoon			3	1	1	3	0	2	2	1	1	1	3	21	93	<u>Other values:</u> Salmon and trout fishing. <u>Hazards:</u>
Lake Forsyth	Catons Bay		Algae: Based off knowledge of visible "pea soup" scup often present; Water quality - 0 for Catons Bay but a 3 at either the recorder or Birdlings Flat	1	2	1	0	0	1	2	2	1	3	3	20	94	<u>Other values:</u> <u>Hazards:</u> Water quality warnings
Pareora River	Lower to sea (including SH1)		Water quality - Called a 1 because SH1 e. coli 95th percentile very high, but also likely to be affected by rainfall like that upstream. Median e. coli is low	1	1	1	1	1	3	2	1	1	1	3	19	95	<u>Other values:</u> <u>Hazards:</u> Willows

Lyell Creek	Lower (below Mt Fyfe Rd)	Lagoon		2	1	2	3	0	3	1	0	0	3	3	18	96	Other values: Hazards: Willows, Steep banks, water quality
Waimakariri River	Kaiapoi River & tribs		Water clarity - at Island Road	2	1	1	1	0	2	1	1	1	2	3	18	96	Other values: Trout and salmon fishing. Hazards: Willows, Steep banks
Ashburton River	SH72 to Sea*		at SH1	2	2	2	1	0	1	1	1	1	1	3	18	96	Other values: Hazards: Willows
Okuti River			Kinloch Rd Bridge	1	2	3	3	0	2	2	1	0	1	1	17	99	Other values: Hazards: Willows
Little River	Okana river - township down			2	1	3	3	0	1	1	1	0	1	3	17	99	Other values: Hazards: Water quality warnings, Steep banks
L2 River	Pannetts Rd		No data?	3	1	2	3	1	2	2	1	0	0	1	17	99	Other values: Hazards: Willows, Steep banks
Heathcote River				1	1	1	3	0	2	1	0	0	3	3	15	102	Other values: Baoting. Hazards: Water quality warnings
Avon River			At Kerrs Reach; Toxic algae - only 6 data points but indicative of 3 otherwise	1	1	1	3	0	2	1	0	0	2	3	14	103	Other values: Boating. Hazards: Water quality warnings
Te Waihora L Ellesmere	Lakeside Domain			1	2	1	0	0	1	1	1	0	3	3	14	103	Other values: Boating. Hazards: Water quality warnings
Selwyn River	Below Coes Ford		Upper huts. Algae and Water Quality - at Lakeside Domain	1	1	1	2	0	1	1	1	0	1	2	12	105	Other values: Hazards: Water quality warnings

## Appendix 6

Canterbury bathing sites identified as important by different information sources and justification why they are or aren't proposed for inclusion in Schedule 6 of the LWRP. Table 1 in the main body of the report details the final list of sites proposed for Schedule 6.

Area	Site name	NZTM Coordinates		Information source				Proposed for inclusion in Schedule 6	Justification
		Easting	Northing	LWRP Schedule 6	ECan recreational WQ monitoring	RiVAS assessment	Zone Committee recommendation		
North Canterbury	Irongate Stream at SH1	1663752	5319096				•	✓	Zone Committee recommended but does not name a specific site. Logical swimming location is just upstream of SH1 bridge.
North Canterbury	Hapuku River at intake	1657275	5315825				•	✓	Zone Committee recommended. Intake location deemed to be in vicinity of Grange Road based on desktop assessment.
North Canterbury	Upper Kowhai River at Kowhai Ford Rd	1651030	5307003				•	✓	Zone Committee specifies site to be located at where 'fords enter gravel fan'. Location deemed to be at Kowhai Ford Rd based on desktop assessment
North Canterbury	Lyell Creek lagoon	1656307	5305144		•	Local		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme.
North Canterbury	Lower Kowhai River at SH1	1652069	5303873			Local	•	✓	Zone Committee recommended but does not name specific site. Logical swimming location is at SH1.
North Canterbury	Charwell River at Inland Kaikoura Rd	1629886	5303395				•	✓	Zone Committee recommended but does not name specific site. Logical swimming location is at Inland Kaikoura Rd.
North Canterbury	Kahutara River at SH1 Lagoon	1648429	5301784		•	Regional	•	✓	Kahutara River Lagoon is a site recommended by Zone Committee, while 'Kahutara River at SH1' is monitored by Environment Canterbury. Each site shares the same location.
North Canterbury	Oaro River at Oaro	1641492	5293039				•	✓	Zone Committee recommended but does not name specific site. Logical swimming location is near Oaro township
North Canterbury	Lewis River at Boyle Lodge	1548908	5292625			Regional	•	✓	Zone Committee suggests 'Waiau River at Boyle Lodge', however waterbody is actually Lewis River at this point.
North Canterbury	Hanmer River below Hanmer Springs Rd bridge	1582580	5286064			Regional		✓	Identified in RiVAS assessment and site also suggested to be popular by Hurunui District Council staff.
North Canterbury	Waiau River upstream of Hanmer River confluence	1582093	5285779			Regional		✓	Identified in RiVAS assessment and site also suggested to be popular by Hurunui District Council staff.
North Canterbury	Mason River adjacent to campground	1603183	5278005			Regional		✓	Identified in RiVAS assessment as regionally important.
North Canterbury	Waiau River at Waiau	1602857	5277566		•	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
North Canterbury	Loch Katrine	1534878	5269583			Regional			Not included in proposed list despite being identified as regionally important in RiVAS assessment. High RiVAS scoring the result of high water quality and attributes other than level of use which is low.
North Canterbury	Hurunui River at SH7	1580947	5253515	•	•	Regional		✓	Already present in Schedule 6 and is regularly monitored. Site is synonymous with 'Hurunui River at Balmoral' as identified in RiVAS assessment.
North Canterbury	Hurunui River at SH1	1608328	5250305	•	•	Local		✓	Already present in Schedule 6 and is regularly monitored.
North Canterbury	Hurunui River adjacent bach settlement	1622468	5249063			Local	•	✓	Zone Committee recommended as "Hurunui River at Bach Settlement Rd". Road name does not exist on maps, therefore site renamed.

Area	Site name	NZTM Coordinates		Information source				Proposed for inclusion in Schedule 6	Justification
		Easting	Northing	LWRP Schedule 6	ECan recreational WQ monitoring	RiVAS assessment	Zone Committee recommendation		
North Canterbury	Waipara River at Boys Brigade camp	1579297	5231467	●	●	Regional		✓	Already present in Schedule 6 and is regularly monitored from recreational water quality. Identified as regionally important in RiVAS assessment.
North Canterbury	Lake Pearson	1500986	5227573			Regional			Excluded from proposed list despite being identified as 'regionally important' in RiVAS assessment. High RiVAS scoring the result of high water quality and attributes other than level of use which is low.
North Canterbury	Cave Stream at camp ground	1496843	5221602				●	✓	Zone Committee recommended as 'Upper Broken River at camp ground'. Although commonly known as this, maps indicate waterbody name is actually Cave Stream by this point.
North Canterbury	Cave Stream at Cave	1497861	5216766				●	✓	Zone Committee recommended. Not used for swimming site, but fits the criteria for primary contact recreation (i.e full immersion a high risk for individuals navigating the cave). Coordinates detailed for upstream entrance of the cave.
North Canterbury	Ashley River at Gorge bridge picnic ground	1537355	5213581	●	●	Regional	●	✓	Very popular swimming site and recognised from all information sources to remain included in Schedule 6.
North Canterbury	Ashley River at SH1	1574717	5208250		●	Regional	●	✓	Monitored by Environment Canterbury for recreational water quality. Regionally important in RiVAS assessment and Zone Committee recommended.
North Canterbury	Ashley River above Rangiora-Loburn bridge	1564891	5207477		●	Regional	●	✓	Monitored by Environment Canterbury for recreational water quality. Regionally important in RiVAS assessment and Zone Committee recommended.
North Canterbury	Lake Lyndon	1494546	5204791			Regional		✓	Identified by RiVAS assessment as regionally important with moderate level of use for swimming.
North Canterbury	Pegasus Lake at Motu Quay Jetty	1575339	5204681		●	Regional	●	✓	Monitored by Environment Canterbury for recreational water quality. Regionally important in RiVAS assessment and Zone Committee recommended.
North Canterbury	Cam River at Bramleys Road	1570570	5200985				●	✓	Included based on Zone Committee recommendation.
North Canterbury	Waimakariri River at Gorge bridge	1523049	5198806			Regional		✓	Identified by RiVAS assessment as regionally important with moderate level of use for swimming.
North Canterbury	Kaiapoi River at Kaiapoi township	1572328	5196530		●	Local	●	✓	Site rarely has a high level of use as a swimming site, but popular for secondary recreation activity (e.g. rowing) where ingestion is a risk. Site is monitored for primary contact recreation and is recommended for inclusion by Zone Committee.
North Canterbury	Waimakariri River between SH1 and old bridge	1571600	5193123			Regional		✓	Identified in regionally significant reach of river by RiVAS report. A well-known bathing location.
North Canterbury	Otukaikino Ck at swimming hole	1571299	5192832		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
North Canterbury	Waimakariri River as Rock Spur	1566811	5191046		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
North Canterbury	Lake Rotokohatu	1565481	5187454		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.

Area	Site name	NZTM Coordinates		Information source				Proposed for inclusion in Schedule 6	Justification
		Easting	Northing	LWRP Schedule 6	ECan recreational WQ monitoring	RiVAS assessment	Zone Committee recommendation		
North Canterbury	Waimakariri River at Thompsons Road (the Willows)	1545508	5187383		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
North Canterbury	Selwyn River at Whitecliffs	1510439	5187341			Regional		✓	Identified as regionally significant in RiVAS report. Also, monitored for presence of cyanobacteria by Environment Canterbury based on its usage by bathers.
North Canterbury	Selwyn River at Glentunnel	1513817	5184593	●	●	Regional		✓	Already present in Schedule 6 and is regularly monitored. Site is identified as regionally significant in RiVAS assessment.
North Canterbury	Avon River at Kerrs Reach	1574228	5181726		●	Local			Not included in proposed Schedule 6 list. Not a popular swimming site due to current levels of contamination, and used primarily for secondary contact recreation.
North Canterbury	Rakaia River at Gorge	1491485	5180812		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
North Canterbury	Selwyn River at Chamberlains Ford	1549418	5162592	●	●	Regional		✓	Already present in Schedule 6 and is regularly monitored. Site is identified as regionally significant in RiVAS assessment.
North Canterbury	Selwyn River at Coes Ford	1552802	5161726	●	●	Regional		✓	Already present in Schedule 6 and is regularly monitored. Site is identified as regionally significant in RiVAS assessment.
North Canterbury	Selwyn River at Upper Huts	1554816	5159753	●	●			✓	Already present in Schedule 6 and is regularly monitored.
North Canterbury	Lake Ellesmere/Te Waihora at Lakeside	1549447	5150492		●	Local		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme.
North Canterbury	Rakaia River at north end of Lagoon	1539017	5140150			Local		✓	Identified as locally significant in RiVAS report, but included in proposed list on the basis that it has a moderate level of usage.
North Canterbury	Upper Clarence River					Regional			Excluded from proposed list despite being identified as 'regionally significant' in RiVAS assessment. High RiVAS scoring the result of high water quality and attributes other than level of use which is low. No specific bathing site identified.
North Canterbury	Upper Selwyn - above Glentunnel					Regional			Excluded from proposed list as 'Selwyn River at Whitecliffs' already included and usage above this site is thought to be less than common.
Mid Canterbury	Lake Clearwater west of huts	1442211	5169870	●	●	Regional		✓	Already present in Schedule 6 and is regularly monitored. Site is identified as regionally significant in RiVAS assessment.
Mid Canterbury	Lake Camp main swimming beach	1442451	5169380	●	●	Regional		✓	Already present in Schedule 6 and is regularly monitored. Site is identified as regionally significant in RiVAS assessment.
Mid Canterbury	Rangitata River at Peel Forest campground	1461180	5138854			Regional		✓	Identified as 'regionally important' in RiVAS assessment.
Mid Canterbury	Ashburton River/Hakatere at SH1	1498726	5137403	●	●	Local		✓	Already present in Schedule 6 and is regularly monitored.
Mid Canterbury	Lake Hood at Bayliss Beach	1501838	5131539		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
Mid Canterbury	Lake Hood at main swimming beach	1500748	5130716			Regional		✓	Valued as a swimming site despite its recent poor water quality. Identified as regionally significant in RiVAS assessment.

Area	Site name	NZTM Coordinates		Information source				Proposed for inclusion in Schedule 6	Justification
		Easting	Northing	LWRP Schedule 6	ECan recreational WQ monitoring	RiVAS assessment	Zone Committee recommendation		
Mid Canterbury	Other Ashburton Lakes					Regional			Excluded from proposed list despite being identified as 'regionally important' in RiVAS assessment. No specific site mentioned, and high RiVAS scoring the result of high water quality and attributes other than level of use which is low.
South Canterbury	Orari River at Orari Gorge	1454820	5134629	●	●	Regional	●	✓	Recognised as a popular swimming location by all information sources. Already included in Schedule 6 list.
South Canterbury	Lake Opuha at Ewatts Corner boat ramp	1428803	5128410		●	Regional	●	✓	Monitored by Environment Canterbury for recreational water quality. Regionally important in RiVAS assessment and Zone Committee recommended.
South Canterbury	Waihi River at Waihi Gorge	1452115	5126224		●	Regional	●	✓	Identified as 'regionally important' in RiVAS assessment, but with a low level of use. Monitored as part of recreational water quality programme and a Zone Committee recommendation, therefore proposed for inclusion in Schedule 6.
South Canterbury	Lake Opuha at Recreation Reserve	1429002	5125325		●	Regional	●	✓	Monitored by Environment Canterbury for recreational water quality. Regionally important in RiVAS assessment and Zone Committee recommended.
South Canterbury	Hae Hae Te Moana River at Gorge	1446617	5121702		●	Regional	●	✓	Monitored by Environment Canterbury for recreational water quality. Regionally important in RiVAS assessment and Zone Committee recommended.
South Canterbury	Waihi River at Wilson St footbridge	1459501	5116535		●	Local	●	✓	Monitored by Environment Canterbury for recreational water quality. Locally important in RiVAS assessment, but Zone Committee recommended.
South Canterbury	Opihi River at Raincliff Scout Camp	1439324	5106886				●	✓	Included based on Zone Committee recommendation.
South Canterbury	Opihi River at Saleyards Bridge	1451720	5098611		●	Local	●	✓	Monitored by Environment Canterbury for recreational water quality. Locally important in RiVAS assessment, but Zone Committee recommended.
South Canterbury	Temuka River at SH1 Bridge	1462349	5098501		●	Regional	●	✓	Monitored by Environment Canterbury for recreational water quality. Regionally important in RiVAS assessment and Zone Committee recommended.
South Canterbury	Opihi River at SH1 Bridge	1461885	5097452		●	Regional	●	✓	Monitored by Environment Canterbury for recreational water quality. Regionally important in RiVAS assessment and Zone Committee recommended.
South Canterbury	Opihi River at Waipopo huts	1466368	5096791		●	Regional	●	✓	Monitored by Environment Canterbury for recreational water quality. Regionally important in RiVAS assessment and Zone Committee recommended.
South Canterbury	Opihi River at Allandale Bridge	1426634	5115129			Local	●	✓	Included based on Zone Committee recommendation.
South Canterbury	Te Ana Wai River at Belmont Bridge	1436879	5092043			Local	●	✓	Included based on Zone Committee recommendation.
South Canterbury	Pareora River at Lindisfarne	1428733	5088661			Regional	●	✓	Zone committee recommended and identified in RiVAS assessment as regionally significant.
South Canterbury	Pareora River at Evans Crossing	1444034	5082031	●	●	Regional	●	✓	Recognised as a popular swimming location by all information sources. Already included in Schedule 6 list.

Area	Site name	NZTM Coordinates		Information source				Proposed for inclusion in Schedule 6	Justification
		Easting	Northing	LWRP Schedule 6	ECan recreational WQ monitoring	RiVAS assessment	Zone Committee recommendation		
South Canterbury	Pareora River at Huts	1445304	5080569	●	●	Regional	●	✓	Recognised as a popular swimming location by all information sources. Already included in Schedule 6 list.
South Canterbury	Pareora River at Brasells Bridge	1451835	5075469	●		Regional		✓	Already included in Schedule 6 list. Identified by RiVAS assessment as regionally significant.
South Canterbury	Otaio River at Otaio Gorge	1435458	5067966	●	●	Local		✓	Already included in Schedule 6 list and monitored by Environment Canterbury for recreational water quality due to its popularity for swimming.
South Canterbury	Waihao River at Bradshaws Pools	1454090	5040400	●	●	Local		✓	Already included in Schedule 6 list and monitored by Environment Canterbury for recreational water quality due to its popularity for swimming.
South Canterbury	Waihao River at Gum Tree Road (Dons Hole)	1443824	5038032		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
South Canterbury	Waihao River at Black Hole	1438445	5037832	●	●	Regional		✓	Already included in Schedule 6 list and regularly monitored by Environment Canterbury. Identified as regionally significant by RiVAS assessment.
Waitaki	Lake Alexandrina at bottom huts	1395022	5128346		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
Waitaki	Lake Tekapo at Camp Beach	1396597	5125237		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
Waitaki	Lake Tekapo at Lillybank Rd Beach	1399399	5124575			Regional		✓	Regionally significant as identified by RiVAS assessment.
Waitaki	Lake Pukaki					Regional			Excluded from proposed list despite being identified as regionally significant in RiVAS assessment. No specific site mentioned and high RiVAS scoring the result of high water quality and attributes other than level of use which is low.
Waitaki	Lake Wardell	1370054	5102273				●	✓	Included based on Zone Committee recommendation.
Waitaki	Lake Poaka	1368259	5101180				●	✓	Included based on Zone Committee recommendation.
Waitaki	Loch Cameron	1364728	5099491			Regional		✓	Regionally significant as identified by RiVAS assessment.
Waitaki	Twizel River at picnic area	1368788	5096088		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
Waitaki	Lake Ruataniwha at camping ground	1366191	5093619	●	●	Regional		✓	Already included in Schedule 6 list and regularly monitored by Environment Canterbury. Identified as regionally significant by RiVAS assessment.
Waitaki	Lake Middleton	1348609	5092818		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
Waitaki	Lake Benmore at Ohau C camping ground (Ohau C)	1376350	5085541	●		Regional		✓	Already included in Schedule 6 list but with incorrect coordinates. Identified by RiVAS assessment as regionally significant.
Waitaki	Pond at Old Iron Bridge Rd	1367794	5092249				●	✓	Zone Committee suggests 'Old Iron Bridge' site which is assumed to be pond at the end of Old Iron Bridge Rd. Included as this location.
Waitaki	Upper Ohau River	1356756	5091947				●	✓	Zone Committee recommendation but no specific site named. Logical swimming location is at a pool with parking area as per coordinates.
Waitaki	Kellands Pond	1365981	5090705				●	✓	Included based on Zone Committee recommendation.



Area	Site name	NZTM Coordinates		Information source				Proposed for inclusion in Schedule 6	Justification
		Easting	Northing	LWRP Schedule 6	ECan recreational WQ monitoring	RiVAS assessment	Zone Committee recommendation		
Waitaki	Lake Benmore – Haldon	1378843	5085854	●		Regional		✓	Already included in Schedule 6 list. Identified by RiVAS assessment as regionally significant.
Waitaki	Lake Benmore – Falstone	1377045	5080251	●		Regional		✓	Already included in Schedule 6 list. Identified by RiVAS assessment as regionally significant.
Waitaki	Omarama Stream at Omarama	1358382	5069524				●	✓	Zone Committee does not name specific site (i.e. Omarama Stream), but logical popular swimming location is in vicinity of holiday park in Omarama township.
Waitaki	Lake Benmore – Glenburn	1365949	5065940	●		Regional		✓	Already included in Schedule 6 list. Identified by RiVAS assessment as regionally significant.
Waitaki	Lake Benmore at Pumpkin Bay	1367185	5064766		●	Regional		✓	Included based on evidence from Environment Canterbury recreational water quality monitoring programme. Identified in RiVAS assessment as regionally important.
Waitaki	Lake Benmore – Sailors Cutting	1368493	5063512	●	●	Regional		✓	Already included in Schedule 6 list and regularly monitored by Environment Canterbury. Identified as regionally significant by RiVAS assessment.
Waitaki	Lake Aviemore at Loch Laird	1376237	5060738	●	●	Regional		✓	Already included in Schedule 6 list and regularly monitored by Environment Canterbury. Identified as regionally significant by RiVAS assessment.
Waitaki	Otematata River at SH83	1378008	5057097			Regional			Excluded from proposed list despite being identified as 'regionally important' in RiVAS assessment. High RiVAS scoring the result of high water quality and attributes other than level of use which is low.
Waitaki	Lake Aviemore at Te Akatarawa camp	1384179	5057651	●	●	Regional		✓	Already included in Schedule 6 list and regularly monitored by Environment Canterbury. Identified as regionally significant by RiVAS assessment.
Waitaki	Lake Aviemore at Waitangi	1385954	5057611	●	●	Regional		✓	Already included in Schedule 6 list and regularly monitored by Environment Canterbury. Identified as regionally significant by RiVAS assessment.
Waitaki	Lake Waitaki at Fishermans Bend	1390823	5050698			Regional		✓	Regionally significant as identified by RiVAS assessment.
Waitaki	Hakataramea River at SH8 bridge	1401259	5044411	●	●	Local		✓	Already included in Schedule 6 list and regularly monitored by Environment Canterbury due to popularity among bathers.
Waitaki	Wairepo Arm	1366720	5090733				●	✓	Included based on Zone Committee recommendation.
Waitaki	Lake Waitaki					Regional			Excluded from proposed list as no specific site identified and 'Lake Waitaki at Fishermans Bend' already proposed.



## Appendix 7

Amendments (underlined) to existing site names in Schedule 6 of the LWRP. Site locations for most sites remain the same, but are detailed as NZTM coordinates in Table 1 of this report. It is recommended that all reference to stock exclusion distance upstream of lakes is removed and replaced with more appropriate stock exclusion distances for shoreline length.

Area	River or lake site	Map reference of site	The distance upstream from the site where stock are excluded from the river <del>or lake</del> , (metres)
North Canterbury	Ashley River/ <u>Rakahuri at</u> Gorge picnic ground	L34:473-752	1,000
	Hurunui River <u>at</u> SH1	N33:179-121	1,000
	Hurunui River <u>at</u> SH7	N33:909-150	1,000
	Waipara River— <u>at</u> Boys Brigade Camp	N34:901-929	1,000
	Selwyn River <u>at</u> —Upper Huts	M36:648-215	1,000
	Selwyn River <u>at</u> —Coes Ford	M36:627-234	1,000
	Selwyn River <u>at</u> —Chamberlains <u>Ford</u>	M36:596-242	1,000
	Selwyn River <u>at</u> —Glentunnel	L35:242-463	1,000
Mid Canterbury	Ashburton River/Hakatere <u>at</u> —SH1	K37:087-990	1,000
	Lake Clearwater <u>west of huts</u>	J36:525-315	<del>1,000</del>
	Lake Camp <u>main swimming beach</u>	J36:526-310	<del>2,000</del>
	Orari River <u>at</u> Orari Gorge	J37:653-951	1,000
South Canterbury	Pareora River <u>at</u> —Brasells Bridge	J39:618-371	1,000
	Pareora River <u>at</u> —Pareora Huts	J39:552-422	1,000
	Pareora River <u>at</u> —Evans Crossing	J39:540-437	1,000
	<u>Otaio River at</u> Otaio Gorge	J39:454-296	1,000
	Waihao River <u>at</u> —Bradshaws <u>Pools</u>	J40:643-015	1,000
	Waihao River <u>at</u> —Black Hole	J40:479-995	1,000
Waitaki catchment	Hakataramea River at <del>the hotel</del> <u>SH8 bridge</u>	I40:112-061	1,000
	Lake Benmore <u>at</u> —Falstone	H39:870-419	<del>1,000</del>
	Lake Benmore <u>at</u> —Haldon	H39:888-475	<del>1,000</del>
	Lake Benmore —at Ohau C camping ground*	<del>H38:772-543</del> H39:863-472	<del>1,000</del>
	Lake Benmore <u>at</u> —Sailors Cutting	H39:788-250	<del>1,000</del>
	Lake Benmore <u>at</u> —Glenburn	H39:759-276	<del>1,000</del>
	Lake Aviemore <u>at</u> —Loch Laird	H39:862-228	<del>1,000</del>
	Lake Aviemore <u>at</u> —Waitangi	I40:959-192	<del>1,000</del>
	Lake Aviemore <u>at</u> —Te Akatarawa <u>camp</u>	I40:933-187	<del>1,000</del>
	Lake Ruataniwha <u>at</u> —Camping Ground	H38:743-552	<del>1,000</del>

\* The site name and location for the former 'Lake Benmore – Ohau C' site have been changed to more accurately reflect bathing location near the Ohau C camping ground.

## Appendix 8

Map of commonly used bathing sites proposed to be included in Schedule 6 of the LWRP. Both new and existing sites are included.

