

Before the Commissioners
Appointed by the Canterbury Regional Council

Under the Resource Management Act 1991

In the matter of a submission made by Templeton Pegasus Limited on
Proposed Plan Change 7 to the Canterbury Land and Water
Regional Plan

Legal Submissions for Templeton Pegasus Limited

12 November 2020

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**anderson
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May it please the Commission

- 1 These legal submissions are presented on behalf of Templeton Pegasus Limited (**Templeton Pegasus**) in respect of Plan Change 7 (**Plan Change 7**) to the Canterbury Land and Water Regional Plan (**LWRP**).
- 2 Templeton Pegasus owns residual development land in the Pegasus Town development including the artificial Pegasus Lake. The Pegasus Town residual development land was purchased in December 2019 by Templeton Pegasus from Todd Property Pegasus Town Limited (**Todd Pegasus**). Todd Pegasus submitted and further submitted on PC7¹ in relation to Pegasus Lake.
- 3 Pegasus Lake is predominantly fed by groundwater (>90%) and has water quality issues. It was consented 15 years ago by the original Pegasus Town developer for the primary purpose of controlling stormwater. At the time Pegasus Lake was consented, the future water quality was foreseen as being uncertain based on what was known of the nutrient levels and trends in the groundwater. Hard limits for water quality were not set in conditions of consent as this would "set a future consent holder up to fail"².
- 4 PC7 now introduces and amends provisions for the Waimakariri sub-region (being section 8 of the LWRP) to introduce catchment-specific freshwater outcomes, limits and provisions which are proposed to apply to Pegasus Lake. The National Policy Statement for Freshwater Management 2020 (**NPSFM 2020**) came into effect on 3 September 2020 and sets objectives and policies for freshwater management. The NPSFM 2020 framework requires the identification of Freshwater Management Units (FMUs), the identification of the values of FMUs, the setting of environmental outcomes sought for those values, and the setting of target attribute states either at or above the baseline state, so as to achieve those environmental outcomes. The NPSFM 2020 also imposes national bottom lines for water quality which apply to Pegasus Lake.
- 5 Since its construction Pegasus Lake has been routinely monitored for water quality in accordance with conditions of consents. There is a trend of deteriorating water quality. Pegasus Lake has consistently failed to achieve specified performance criteria for water quality for periods over the past six years. The lake has experienced stratification, algal blooms and closures to the public. Critical factors linked to water quality are outside the control of Templeton Pegasus, as consent holder. This includes the nutrient levels in the groundwater which filled the lake,

¹ Submitter 427.

² EIC Andrew Webster, at 16(c).

temperature, rainfall and possibly wind³. Improvements to water quality which can be implemented by the consent holder are limited in nature.

- 6 Pegasus Lake has not been monitored specifically for most of the attributes and outcomes set in PC7. That said, based on the available information from routine monitoring, Pegasus Lake will not meet attributes set in PC7. It will also not meet national bottom lines set in NPSFM 2020.
- 7 Todd Pegasus had been working with Waimakariri District Council, Canterbury Regional Council (**ECan**) and other stakeholders and industry experts to implement measures to improve water quality. There are practical, scientific and technical limits facing the consent holder in respect of improving water quality. The real issue seems to be nutrient inputs, something which is not controlled by the consent holder. Reducing land based nutrient losses to groundwater from the lake's inland source area must occur for Pegasus Lake to achieve PC7 and NPSFM 2020 outcomes and limits in the future. This is acknowledged in the Officer's Report⁴.
- 8 As currently drafted the limits specified in PC7 for Lake Pegasus and the associated directive ("avoid") policy⁵ will be problematic for Templeton Pegasus when existing consents are reviewed or renewed (required in 2021⁶ and 2041). Todd Pegasus submitted requesting Pegasus Lake to be excluded from PC7. It is accepted that this is not a viable relief now. The Commission must give effect to the NPSFM 2020 where it is within scope of PC7 to do so. NPSFM 2020 requires degraded water bodies to be improved over time to targets at or above the national bottom line for the compulsory values and other relevant values identified.
- 9 Templeton Pegasus is live to the uncertainties around the ability for management of the catchment as a whole to improve water quality and is seeking relief that will not be counter-productive to Templeton Pegasus' ability to implement measures on an adaptive basis over time as required to improve water quality.
- 10 For this to occur, some changes are sought to the provisions as drafted. The proposed changes will implement and give effect to the NPSFM 2020 within scope of PC7.

³ EIC Andrew Webster, at 23-26.

⁴ Officer's Report, at 8.64-8.66.

⁵ Policy 8.4.28A, PC7.

⁶ CRC210113 to take and divert surface water expires 25 August 2021.

- 11 Templeton Pegasus seeks:
- (a) that the reference to "Pegasus Lake at Motu Quay Jetty" is removed from Schedule 6 (Areas on rivers or lakes commonly used for freshwater bathing);
 - (b) limits and outcomes set specifically for Pegasus Lake in Table 8b and Table 8-6 of PC7 should be expressed as national bottom lines, but stated as "targets" with appropriate timeframes given; and
 - (c) an additional policy which enables the renewal of existing resource consents for stormwater runoff to Pegasus Lake, and the trial and use of adaptive management techniques for informing possible future water quality parameters in Pegasus Lake which are not consistent with Policy 28.4.28A.
- 12 Templeton Pegasus supports Ecan managing reduction over time of the nutrient inputs that are likely the primary cause of the water quality in Lake Pegasus. For its part, Templeton Pegasus will continue to manage the lake in accordance with its obligations as consent holder:
- (a) technical consultants are actively monitoring water quality and assessing and trialing mitigation options;
 - (b) objectives and mitigation measures for improving water quality are specified in a Lake Management Plan, which was updated in 2016 as a result of deteriorating water quality⁷; and
 - (c) conditions of consent for Lake Pegasus require monitoring and reporting of water quality performance to ECan⁸.
- 13 I will now address the relief sought in detail. The relief sought is also set out in **Appendix B**.

Amendments Sought

Remove Lake Pegasus from Schedule 6 – freshwater bathing sites

- 14 Templeton Pegasus seeks that the reference to "Pegasus Lake at Motu Quay Jetty" is removed from Schedule 6 (Areas on rivers or lakes commonly used for

⁷ EIC Andrew Webster, at 18-19.

⁸ EIC Andrew Webster, at 21.

freshwater bathing). This was rejected by the Officer's Report as "it's known to be used for primary contact recreation activities"⁹.

15 It is submitted:

- (a) Pegasus Lake is not designed as a freshwater bathing site. Pegasus Lake is a privately owned artificial lake consented as part of the Pegasus Town development with a primary purpose and function of controlling stormwater. Use for *secondary* (not primary) contact recreation is incidental¹⁰ and conditions of consent require the quality of the water in the lake to be generally suitable for *secondary* contact recreation¹¹;
- (b) A primary contact site is defined in the NPSFM 2020 and has set outcomes.¹² The removal of Pegasus Lake from Schedule 6 would not be contrary to NPSFM 2020 as it is not intended to be a primary contact site. That the public may confuse Schedule 6 lakes with NPSFM primary contact recreation site has been acknowledged in the Officer's Report¹³; and
- (c) The policies and rules directly associated with Schedule 6 in PC7 are not applicable to the urban environment of Pegasus Lake's Motu Quay Jetty¹⁴. Provisions relevant to Schedule 6 in the wider LWRP apply to rivers and would not apply to Pegasus Lake¹⁵.

16 In my submission there is no purpose or benefit for the inclusion Pegasus Lake's Motu Quay Jetty in Schedule 6. The regional council functions will not be better

⁹ Officer's Report at 9.26-9.27.

¹⁰ EIC Andrew Webster, paragraph 2.

¹¹ Condition 8(b) of CRC210133, CRC210113, and CRC210131.

¹² The NPSFM 2020 defines primary contact site as:

means a site identified by a regional council that it considers is regularly used, or would be regularly used but for existing freshwater quality, for recreational activities such as swimming, paddling, boating or watersports, and particularly for activities where there is a high likelihood of water or water vapour being ingested or inhaled.

Where the Regional Council identifies a freshwater bathing site, it must also identify a bathing season time period (NPSFM 2020, 3.27(3)), monitor for E.coli weekly and notify the public when the site is unsuitable for bathing (540 E.Coli per 100ml or less).

¹³ Officer's Report at 9.26-9.27.

¹⁴ PC7 provisions relating to Schedule 6 (4.31 Livestock Exclusion from Water Bodies, 5.71 Stock Exclusion) and are not relevant.

¹⁵ LWRP provisions relating to Schedule 6 relate to rivers (5.146A Fine sediment removal from rivers, 11.5.46 sediment removal from rivers and streams, 15A.5.29 Habitat Restoration Works).

achieved by the inclusion. The cost of inclusion is confusion, and it should be removed.

Limits and targets for Pegasus Lake

- 17 Table 8b and Table 8-6 in PC7 introduce water quality outcomes, limits and targets specifically for Pegasus Lake. Strategic Policy 4.1 of the LWRP seeks that water bodies will meet the freshwater outcomes set in sub-region sections within specified timeframes. The default timeframe for the Waimakariri sub-region is 2030. PC7 extends actions to achieve the targets in Table 8-6 for Total Phosphorus (**TP**) and Total Nitrogen (**TN**) until 1 January 2040.
- 18 The National Objectives Framework articulated in the NPSFM 2020 requires ECan to¹⁶:
 - (a) identify Freshwater Management Units (**FMU**) in the region;
 - (b) identify values for each FMU;
 - (c) set environmental outcomes for each value and include them as objectives in regional plans;
 - (d) identify attributes for each value and set baseline states¹⁷ for those attributes;
 - (e) set target attribute states... and other criteria to support achievement of environmental outcomes; and
 - (f) set limits as rules and prepare action plans (as appropriate) to achieve environmental outcomes.
- 19 NPSFM 2020 requires that ECan must identify the baseline state of each attribute, for a waterbody using the best information available at the time¹⁸, and set a target

¹⁶ 3.7 NOF Process, NPSFM 2020.

¹⁷ **Baseline state** in relation to an attribute, means the best state out of the following: (a) the state on the date it is first identified by a regional council; (b) the state on the date on which a regional council set a freshwater objective for the attribute under the National Policy Statement for Freshwater Management 2014 (as amended in 2017); (c) the state on 7 September 2017.

¹⁸ Clause 3.10(3) NPSFM 2020.

attribute state which is at or above the national bottom line¹⁹. There are some exceptions to this²⁰ but these don't apply to Pegasus Lake.

- 20 A timeframe for achieving the target attribute state must be identified (on terms set in the NPSFM 2020). When setting target attribute states regard must be had to the environmental outcomes and target attribute states of any receiving environments, connections between water bodies, the connections of water bodies to receiving environments and the best information at the time²¹. Timeframes can be of any length but must include interim target attribute states (set for intervals of not more than 10 years) to be used to assess progress towards achieving the target attribute state in the long term.²²
- 21 Pegasus Lake is a waterbody or FMU regulated by the NPSFM 2020. The monitoring data for Pegasus Lake is limited and is not a complete picture of the existing water quality of Pegasus Lake. Mr Andrew Webster for Templeton Pegasus attaches a Report titled "*Water quality information for Pegasus Lake to support Templeton hearing evidence for Plan Change 7 of the Canterbury Land and Water Regional Plan*" (the **Golder Report**) which compares historical monitoring data collected by Golder to attributes proposed in PC7 and the 2019 NPSFM²³²⁴.
- 22 This is submitted to be the best available information for the purposes of setting a baseline state. Based on the Golder Report, Pegasus Lake:
- (a) does not meet PC7 target attribute states; and
 - (b) does not meet national bottom lines set in NPSFM 2020 Appendix 2A²⁵ and Appendix 2B²⁶.

¹⁹ Clause 3.11(4) NPSFM 2020.

²⁰ 3.31-3.33 – large hydro-electric generation schemes, naturally occurring processes, specified vegetable growing areas.

²¹ Clause 3.11(4) NPSFM 2020.

²² Clause 3.11(6) NPSFM 2020.

²³EIC Andrew Webster, at 28-30 and Appendix 6.

²⁴ In NPSFM 2020 attributes in Appendix 2A are listed across Table 8b and Table 8-6 in PC7 for Pegasus Lake. Two attributes from Appendix 2B are listed in Table 8b of PC7.

²⁵ Attributes total nitrogen, total phosphorus, ammoniacal nitrogen, cyanobacteria – planktonic, chlorophyll a, and trophic level index.

²⁶ Lake-bottom dissolved oxygen and mid-hypolimnetic dissolved oxygen. Other Attributes in Appendix 2B NPSFM 2020 are not specified in PC7 and are outside scope.

23 Templeton Pegasus therefore seeks that:

- (a) Table 8b and Table 8-6 in PC7 be amended to reflect the national bottom lines in the NPSFM 2020;
- (b) the measurements of attributes ammoniacal nitrogen, cyanobacteria-planktonic, chlorophyll a, and dissolved oxygen be amended to be consistent with the measurements for these attributes in the NPSFM 2020;
- (c) E.Coli (Table 22) from NPSFM 2020 not apply as Pegasus Lake is not classified as a primary contact site, and that Table 9 applies instead. E.Coli should be given the same band (C (Yellow)) as other lakes which are not primary contact sites;
- (d) the attributes in Table 8-6 and Table 8b should be specified as "targets" to be implemented by 1 January 2080. This timeframe is consistent with Table 8-5 (Northern Waimakariri rivers with nitrate targets to be implemented by 1 January 2080).

24 The changes proposed are summarised in **Appendix A**.

Policy 8.4.28A – freshwater outcomes for Pegasus Lake

25 When Pegasus Lake was consented its purpose was to receive discharges from rainwater and treated stormwater from the surrounding commercial area.²⁷ Three discharge permits which authorise the discharge of water and contaminants to Pegasus Lake or land in circumstances which may result in those contaminants entering Pegasus Lake are held²⁸. These consents will need to be renewed in 2041 and 2044.

26 Pegasus Lake is located within the Ashley Estuary (Te Aka Aka) and Coastal Protection Zone. Policy 28.4.28A states (with the Officer's Report proposed amendments)²⁹:

8.4.28A For all activities within the Ashley Estuary (Te Aka Aka) and Coastal Protection Zone, discharges of contaminants to surface water or onto or into land in circumstances where contaminants may enter surface water are avoided as a first priority, and only where avoidance ~~if this is not~~

²⁷ EIC Andrew Webster, at 15.

²⁸ Discharge permits held by Templeton Pegasus Ltd: CRC210115 to discharge water (Expiry 25 August 2041); CRC210117 to discharge contaminants to land and to water (expiry 25 August 2041); and CRC210122 to discharge contaminants to water (expiry 2 June 2044).

²⁹ Officer's Report at 8.362-8.367.

~~achievable~~ is impracticable, the best practicable option is used to minimise the loss or discharge of contaminants so as to achieve:

- a. the water quality outcomes in Tables 8a, and 8b;
- b. the limits in Table 8-5 and Table 8-6;
- c. the standards in Schedule 5 for contaminants where a limit is not established in Section 8; and
- d. any relevant water quality limits in a regional coastal plan for any receiving waterbody in the coastal environment.

27 Policy 28.4.28A is a directive policy. Following the Supreme Court decision in *King Salmon* it is clear that words mean what they say. i.e. in Policy 8.4.28A, the use of the word "avoid", means just that – do not do something in the first instance. Then use the best practicable option to minimise the loss and discharge of contaminants so as to *achieve* the water quality outcomes in Table 8b and limits in Table 8-6. This is problematic for Pegasus Lake for a number of reasons:

- (a) The best practicable option alternative is linked to achieving the water quality outcomes and limits set for Pegasus Lake. Templeton Pegasus is unable on its own to achieve the water quality outcomes and limits set for Pegasus Lake in Table 8b and 8-6 respectively, due to the inputs from groundwater and upstream contaminant sources that are beyond its control;
- (b) No single option or combination of options exists for Templeton Pegasus to resolve water quality issues experienced. Some additional mitigation measures have been implemented.³⁰ Even with these measures, there is no sign of the degrading water quality trend reversing;³¹
- (c) Based on Policy 28.4.28A as worded, after expiry of the original discharge consents, new consents for the same purpose would be required to be declined; and
- (d) Having consented Pegasus Lake for the primary purpose of receiving stormwater runoff, creating a framework in PC7 that could restrict that ongoing primary purpose in the near future seems nonsensical.

28 Policy 28.4.28A further highlights why it is critical that the limits and outcomes set specifically for Pegasus Lake in Table 8b and Table 8-6 of PC7 be expressly stated as "targets" with appropriate timeframes.

³⁰ EIC Andrew Webster, at 37-38.

³¹ EIC Andrew Webster, at 32.

- 29 An additional policy would be of assistance which expressly enables:
- (a) renewal of existing resource consents for discharges to Pegasus Lake to continue; and
 - (b) the trial and use of adaptive management techniques for informing possible future water quality parameters in Pegasus Lake.
- 30 Templeton Pegasus seeks the following new Policy 8.4.28AB in PC7³²:

At Lake Pegasus in the Ashley Estuary (Te Aka Aka) and Coastal Protection Zone, enable the renewal of existing discharge permits, and the trial and use of adaptive management techniques for informing possible future water quality parameters as exceptions to Policy 8.4.28A.

Conclusion

- 31 It's acknowledged Pegasus Lake must remain in PC7 to give effect to the NPSFM 2020. However the classification, target and timeframe for Pegasus Lake needs to be realistic given basis on which the consent was first granted, and the limited ability of the consent holder to affect change.

Dated this 12th day of November 2020



Alex Booker
Counsel for the Submitter

³² It is noted for completeness that this new proposed policy has been redrafted since Todd Pegasus' original submission. It is considered within scope of the original submission as consequential relief.

Appendix A

Table 8-6 Water Quality Limits and Targets for Waimakariri Lakes				
Parameter	PC7	NPS-FM 2020 – National bottom line	Pegasus Lake (the Golder Report, EIC Andrew Webster at Appendix 6) Based on the proposed 2019 NPSFM	Amendment sought
Total Nitrogen	Annual average: 0.750 Mg/L (target) Actions to achieve the targets in Table 8-6 will be implemented by 1 January 2040.	Annual median (seasonally stratified and brackish) 750 mg/m3 (Table 3)	Not routinely monitored. Limited data from 2017/2018 does not meet national bottom line.	Actions to achieve the targets in Table 8-6 will be implemented by 1 January 2080.
Total Phosphorous	Annual average: 0.05 mg/L (target) Actions to achieve the targets in Table 8-6 will be implemented by 1 January 2040.	Annual median 50 mg/m3 (Table 4)	Not routinely monitored. Limited data from 2017/2018 does not meet national bottom line.	Actions to achieve the targets in Table 8-6 will be implemented by 1 January 2080.
Ammoniacal Nitrogen	Annual median: 0.03 mg/L Annual maximum: 0.05 mg/L	Annual median 0.24 Mg NH ₄ – N/L, Annual Maximum 0.4 Mg NH ₄ – N/L.	Not routinely monitored.	Amendment sought to reflect NPS-FM 2020

	Based on a pH8 and temperature of 20 C	Based on a pH8 and temperature of 20 C (Table 5). Revised since proposed 2019 NPSFM.	Limited data from 2017/2018 does not meet national bottom line.	Propose as target
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Table 8b Freshwater Outcomes for Waimakariri Sub-region Lakes: Artificial –Other: Lake Pegasus

Parameter	PC7	NPS-FM 2020 – National bottom line	Pegasus Lake (the Golder Report, EIC Andrew Webster at Appendix 6) Based on the proposed 2019 NPSFM	Amendment sought
E. Coli	Median E.coli/100ml – ≤130 95 th percentile E.coli/100ml – ≤540 Determined from a minimum of 60 samples collected on a monthly basis over 5 years	For primary contact sites. National bottom line of 540. (Table 22)	Not routinely monitored by consent holder. E.Coli is understood to be monitored by WDC.	Pegasus Lake is not a primary contact site so does not require an A Band attribute state. A more appropriate measurement would be C Band (Yellow).

	Note Lake given same value in PC7 as primary recreation site in proposed NPS-FM.			
Cyanobacteria – Planktonic	<p>Cyanobacteria [either mm3/L or cells/mL – Lake SPI – Max value</p> <p>10 or 0.5 mm3/L of potentially toxic cyanobacteria</p>	<p>1.8 mm3 /L biovolume equivalent of potentially toxic cyanobacteria OR 10 mm3 /L total biovolume of all cyanobacteria.</p> <p>(Table 10)</p>	Routinely monitored and consistently does not meet national bottom line.	<p>Amendment sought to reflect NPS-FM 2020</p> <p>Propose as target</p>
Visual quality attribute: Colour	Natural colour not degraded by more than 5 Munsell Units	None	2019/2020 monitoring met proposed PC7.	None
Chlorophyll a (the green colour in algae)	<p>Maximum annual average [mg/chl-a/m] 5</p> <p>Annual maximum [mg/chl-a/m]: 25</p>	Annual median 12 Mg chl-a/m3; annual maximum 60 Mg chl-a/m3.	<p>Not routinely monitored.</p> <p>Limited data from 2017/2018 does not meet either national bottom lines.</p>	<p>Amendment sought to reflect NPS-FM 2020</p> <p>Propose as target</p>
Trophic Level Index (TLI)	Maximum annual average mg/L: 4.0		<p>Not routinely monitored.</p> <p>Limited data from 2017/2018 and 2019/2020 does not meet proposed PC7.</p>	Propose as target

Temperature	Temperature [Max] [C]: 19		Data from between 2010-2020 does not meet proposed PC7.	Propose as target
Dissolved oxygen (min saturation)	Minimum Hypolimnion: 70 % Minimum Epilimnion: 90 %	Measured or estimated annual minimum: 4.0 Mg/L (Table 19)	Routinely monitored and consistently does not meet national bottom line.	Amendment sought to reflect NPS-FM 2020 Propose as target

Appendix B – Specific Relief Sought

Note: Templeton Pegasus' proposed changes are shown in **Blue** tracked changes to the Reporting Officer's Consolidated Recommended Changes to PC7 dated 10 July 2020 tracked in **red**.

....

8.4.28 Avoid declines in the ecological health and cultural values of ~~surface waterbodies in~~ the Ashley Estuary (Te Aka Aka) and ~~Coastal Protection Zone surface waterbodies~~ by requiring any property ~~located within the Ashley Estuary (Te Aka Aka) and Coastal Protection Zone~~¹⁶⁵ greater than 5 ha in area that includes or directly adjoins a river or coastal lake, and with winter grazing or irrigation on the property, to prepare, implement, and have audited a Farm Environment Plan.

8.4.28 A For all activities within the Ashley Estuary (Te Aka Aka) and Coastal Protection Zone, discharges of contaminants to surface water or onto ~~or into~~ land in circumstances where contaminants may enter surface water are avoided as a first priority, and **only where avoidance is impracticable if this is not achievable**¹⁶⁶, the best practicable option is used to minimise the loss or discharge of contaminants so as to achieve:

- a. the water quality outcomes in Tables 8a, and 8b.;
- b. the limits in Table 8-5 and Table 8-6;
- c. the standards in Schedule 5 for contaminants where a limit is not established in Section 8; and
- d. any relevant water quality limits in a regional coastal plan for any receiving waterbody in the coastal environment.

New Policy 8.4.28AB: At Lake Pegasus in the Ashley Estuary (Te Aka Aka) and Coastal Protection Zone, enable the renewal of existing discharge permits, and the trial and use of adaptive management techniques for informing possible future water quality parameters as exceptions to Policy 8.4.28A.

~~8.4.28B Provide for the use of an Equivalent Baseline GMP Loss Rate or Equivalent Good Management Practice Loss Rate in those limited circumstances where it is demonstrated that the Farm Portal is unable to generate a Baseline GMP Loss Rate or Good Management Practice Loss Rate or the number generated is demonstrated to be erroneous.~~¹⁶⁷

~~8.4.28C Where resource consent is granted for the use of land for a farming activity and that resource consent restricts the nitrogen loss rate from the farming activity to an Equivalent Baseline GMP Loss Rate or Equivalent Good Management Practice Loss Rate, impose conditions that enable a review of that resource consent when the Farm Portal is able to generate a Baseline GMP Loss Rate or Good Management Practice Loss Rate for that farming activity.~~¹⁶⁸

¹⁶⁴ CCC PC7-337.93 and PC7-337.97

¹⁶⁵ Melbury Ltd PC7-172.5

¹⁶⁶ HortNZ PC7-356, page2

¹⁶⁷ HortNZ PC7-356, page2

¹⁶⁸ HortNZ PC7-356, page2

Schedule 6 Areas on rivers or lakes commonly used for freshwater bathing

Area	River or lake site	Map reference of site (NZTM2000)	The distance upstream from the site where stock are excluded from the river or lake. (metres)
North Canterbury	<u>Irongate Stream at SH1</u>	<u>1663752 mE, 5319096 mN</u>	-
	<u>Hapuku River at intake</u>	<u>1657275 mE, 5315825 mN</u>	-
	<u>Upper Kowhai River at Kowhai Ford Rd</u>	<u>1651030 mE, 5307003 mN</u>	-
	<u>Lower Kowhai River at SH1</u>	<u>1652069 mE, 5303873 mN</u>	-
	<u>Lyell Creek Lagoon</u>	<u>1656307 mE, 5305144 mN</u>	-
	<u>Charwell River at Inland Kaikoura Rd</u>	<u>1629886 mE, 5303395 mN</u>	-
	<u>Kahutara River at SH1 Lagoon</u>	<u>1648429 mE, 5301784 mN</u>	-
	<u>Oaro River at Oaro</u>	<u>1641492 mE, 5293039 mN</u>	-
	<u>Lewis River at Boyle Lodge</u>	<u>1548908 mE, 5292625 mN</u>	-
	<u>Hanmer River below Hanmer Springs Road bridge</u>	<u>1582580 mE, 5286064 mN</u>	-
	<u>Mason River adjacent to campground</u>	<u>1603183 mE, 5278005 mN</u>	-
	<u>Waiau River upstream of Hanmer River confluence</u>	<u>1582093, mE 5285779 mN</u>	-
	<u>Waiau River at Waiau</u>	<u>1602857 mE 5277566 mN</u>	-
	Hurunui River - <u>at</u> SH1	<u>N33:179-121</u> <u>1608328 mE, 5250305 mN</u>	1,000
	Hurunui River - <u>at</u> SH7	<u>N33:909-150</u> <u>1580947 mE, 5253515 mN</u>	1,000
	<u>Hurunui River adjacent to bach settlement</u>	<u>1622468 mE, 5249063 mN</u>	-
	Waipara River - <u>at</u> Boys Brigade Camp	<u>N34:901-929</u> <u>1579297 mE, 5231467 mN</u>	1,000
	<u>Cave Stream at</u> campground	<u>1496843 mE, 5221602 mN</u>	-
	<u>Cave Stream at Cave</u>	<u>1497861 mE, 5216766 mN</u>	-
	Ashley Gorge Picnic Ground	<u>L34:473-752</u> <u>1537355 mE, 5213581 mN</u>	1,000
	<u>Ashley River above Rangiora-Loburn bridge</u>	<u>1564891 mE, 5207477 mN</u>	-
	<u>Ashley River at SH1</u>	<u>1574717 mE, 5208250 mN</u>	-
	<u>Lake Lyndon</u>	<u>1494546 mE, 5204791 mN</u>	-
	<u>Pegasus Lake at Motu Quay Jetty</u>	<u>1575339 mE, 5204681 mN</u>	-

2 Outcomes shall be exceeded in no more than 8% 4-out-of-12 samples for rivers classified as default class in the National Policy Statement for Freshwater Management 2014 (amended 2017), River Environment Classification system, and in no more than 16% 2-out-of-12 samples for rivers classified as productive class. 208A
minimum of 3 years of monthly data is required to determine compliance with the outcomes
3 SFRG = Suitability for Recreation Grade from Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas, Ministry for the Environment 2003
4 Determined from a minimum of 60 samples collected on a monthly basis over 5 years
5 Rivers within land that is administered for conservation purposes by the Department of Conservation

Table 8b Freshwater Outcomes for Waimakariri Sub-region Lakes

Freshwater Management Unit	Lake Type	Lake	Ecological Health Attribute				Eutrophication Attribute			Visual Quality Attribute	Human Health for Recreation Attribute				Cultural Attribute
			Dissolved oxygen (min saturation) [%]		Temperature [max] [°C]	Lake SPI ¹ [min grade]	Trophic Level Index (TLI) ² [maximum annual average]	Chlorophyll a		Colour	Cyanobacteria [either mm ³ /L bio volume equivalent of potentially toxic cyanobacteria or mm ³ /L total bio volume of all cyanobacteria cells/mL] ⁴ [max value]	E.coli [E.Coli/100mL]		SFRG ³	
			Minimum Hypolimnion	Minimum Epilimnion or Measured or estimate annual minimum Mg/L				Maximum annual average [mg chl-a/m ³] 200 [mg chl-a/m ³] [Mg chl-a/m ³]	Annual maximum [mg chl-a/m ³] [Mg chl-a/m ³]			Median [cfu/100mL]	95th percentile [cfu/100mL]		
Ashley River /Rakahuri	Artificial - other	Lake Pegasus ⁴	70	90 4.0 (target)	19 (target)	N/A	4.0 (target)	5 12 (target)	25 60 (target)	Natural colour not degraded by more than 5 Munsell Units	10 1.8 mm ³ /L (bio volume equivalent) or 0.5 10 mm ³ /L (total bio volume) -mm ³ /L of potentially toxic cyanobacteria (target)	130	540 1200	Good	N/A
Northern Waimakariri Tributaries	Coastal lake	Tutaepatu Lagoon	70	90	19	Moderate	5.0	12	60		10 or 1.8 mm ³ /L of potentially toxic cyanobacteria	130	1200	No value set	Freshwater mahinga kai species sufficiently abundant for customary gathering, water quality is suitable for their safe harvesting and they are safe to eat.

¹ Lake SPI = Lake Submerged Plant Indicators from Clayton J. Edwards T. (2002) LakeSPI: a method for monitoring ecological condition in New Zealand lakes (Technical report version 1 Report by NIWA).

² TLI = Trophic Level Index from: Protocol for Monitoring Trophic Levels of New Zealand Lakes and Reservoirs (Report by Lakes Consulting, March 2000)

3 SFRG = Suitability for Recreation Grade from: Microbiological Water Quality Guidelines for Marine and Freshwater Recreational

4 A target is a limit which must be met at a defined time in the future, meaning it only applies in the context of over-allocation. For lakes with water quality (target) against them, the objective is to improve water quality to meet this target over time. Actions to achieve the targets in Table 8-6 will be implemented by 1 January 2080.

208 HortNZ PC7-356, page 2

209 RMA Schedule 1, Clause 16(2) – Minor correction

Table 8-6: Water Quality Limits and Targets for ~~Waimakariri~~ Lakes

Freshwater Management Unit	Lake Type	Lake name and measurement location	NZTM2000 Map Reference	Total Phosphorus [mg/L] ¹	Total Nitrogen [mg/L] ¹	Ammoniacal Nitrogen [mg/L] ^{1,2} mg NH4 - N/L	
				Annual average	Annual average	Annual median	Annual maximum
Ashley River/Rakahuri	Artificial - other	Lake Pegasus	1575421 mE 5204960 mN	0.05 (target)	0.750 (target)	0.03 24 (target)	0.05 4 (target)
Northern Waimakariri Tributaries	Coastal lake	Tutaetapu Lagoon	1576209 mE 5204807 mN	0.05 (target)	0.800 (target)	0.03	0.05

1 A numeric freshwater objective to achieve trophic state outcomes for the lake in Table 8b).

2 Based on pH8 and temperature of 20oC

A target is a limit which must be met at a defined time in the future, meaning it only applies in the context of over-allocation. For lakes with water quality (target) against them, the objective is to improve water quality to meet this target over time. Actions to achieve the targets in Table 8-6 will be implemented by 1 January ~~2040~~ ~~2080~~

