

15 Schedule of characteristics and numerical limits and targets for good quality water in Otago lakes and rivers

Table 15.1 Characteristics indicative of good quality water

Characteristic	Description	Contaminant effect
Clarity	When standing in knee-deep water, the bed is easily and clearly seen.	Sediment reduces the clarity of water, and has an adverse effect on freshwater fish and invertebrate habitat.
Colour	Water-colour is not altered by contamination. Some rivers have natural colour such as tannin-stain.	A change in colour can be indicative of contamination by sediment or organic matter, linked to potentially high concentrations of DRP, NNN, ammoniacal nitrogen or <i>E coli</i> .
Sediment	Riffles and runs are free of obvious clay and silt deposits. Walking across a riffle or run should not produce an obvious plume. Some rivers are naturally high in sediment.	Sediment affects the colour of water, and has an adverse effect on freshwater fish and invertebrate habitat, and can result in high concentrations of phosphorus, and allow <i>E coli</i> to persist.
Smell	Water is odourless.	Smell can be indicative of contamination from a source high in ammoniacal nitrogen or <i>E coli</i> or the decay of excessive amounts of algae which limits people's opportunity to appreciate water.
Algae	Filamentous algae in rivers should cover less than 30% of the river bed. Floating algae occurring in lakes and rivers should not reduce water clarity. Algal growth in rivers or lakes should not cause slime on the surface of the water.	Excessive nitrogen and phosphorus contribute to algal growth which has an adverse effect on freshwater fish and invertebrate habitat, amenity and recreation values, and angling opportunities.
Bank appearance	Functioning riparian margins: <ul style="list-style-type: none"> ▪ Vegetation is healthy. ▪ Banks are stable. ▪ No obvious livestock disturbance. 	Healthy riparian margins mitigate sediment and nutrient discharges, and provide habitat for invertebrates.

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Table 15.2 Receiving water numerical limits and targets for achieving good quality water

The limits for Groups 1, 2 and 3 are achieved when 80% of samples collected at a site, when flows are at or below median flow, over a rolling 5-year period, meet or are better than the limits in Schedule 15.

A target date of 31 March 2025 is set when the contaminant concentration does not meet the limit as at 31 March 2012.

Table 15.2.1: Receiving Water Group 1

	Nitrate-nitrite nitrogen	Dissolved reactive phosphorus	Ammoniacal nitrogen	<i>Escherichia coli</i>	Turbidity
	0.444 mg/l	0.026 mg/l	0.1 mg/l	260 cfu/100 ml	5 NTU
Catlins	31 March 2025	31 March 2012	31 March 2012	31 March 2012	31 March 2025
Careys Creek	31 March 2012				
Kaikorai	31 March 2012	31 March 2012	31 March 2012	31 March 2025	31 March 2012
Leith	31 March 2025	31 March 2025	31 March 2012	31 March 2025	31 March 2012
Mokoreta (within Otago)	31 March 2025	31 March 2025	31 March 2012	31 March 2025	31 March 2012
Owaka	31 March 2025	31 March 2025	31 March 2012	31 March 2025	31 March 2025
Pomahaka , downstream of Glenken	31 March 2025	31 March 2025	31 March 2012	31 March 2025	31 March 2025
Tahakopa	31 March 2012	31 March 2012	31 March 2012	31 March 2025	31 March 2025
Tokomairiro	31 March 2012	31 March 2012	31 March 2012	31 March 2025	31 March 2012
Tuapeka	31 March 2025	31 March 2012	31 March 2012	31 March 2012	31 March 2012
Waitahuna	31 March 2012	31 March 2012	31 March 2012	31 March 2025	31 March 2012
Waitati	31 March 2012	31 March 2012	31 March 2012	31 March 2025	31 March 2012
Waiwera	31 March 2025	31 March 2025	31 March 2012	31 March 2025	31 March 2012
Any unlisted tributary on the true right bank of the Clutha/Mata-Au , south of Judge Creek	31 March 2012				
Any unlisted tributary on the true left bank of the Clutha/Mata-Au , south of the Tuapeka catchment					
Any unlisted catchment that discharges to the coast , south of Taieri Mouth					

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Table 15.2.2: Receiving Water Group 2

	Nitrate-nitrite nitrogen	Dissolved reactive phosphorus	Ammoniacal nitrogen	<i>Escherichia coli</i>	Turbidity
	0.075 mg/l	0.01 mg/l	0.1 mg/l	260 cfu/100 ml	5 NTU
Cardrona	31 March 2012				
Clutha/Mata-Au and any unlisted tributary (Luggate to mouth, including Lake Roxburgh, and excluding tributaries described in Group 1)	31 March 2025	31 March 2012	31 March 2012	31 March 2012	31 March 2025
Fraser	31 March 2012				
Kakanui	31 March 2025	31 March 2025	31 March 2012	31 March 2012	31 March 2012
Kawarau downstream of the Shotover confluence	31 March 2025	31 March 2012	31 March 2012	31 March 2012	31 March 2012
Lake Dunstan	31 March 2012				
Lindis	31 March 2025	31 March 2025	31 March 2012	31 March 2012	31 March 2012
Luggate	31 March 2012				
Manuherikia	31 March 2012	31 March 2025	31 March 2012	31 March 2012	31 March 2012
Mill Creek (tributary to Lake Hayes)	31 March 2025	31 March 2012	31 March 2012	31 March 2012	31 March 2012
Pomahaka , upstream of Glenken	31 March 2012				
Shag	31 March 2025	31 March 2012	31 March 2012	31 March 2012	31 March 2012
Shotover	31 March 2012	31 March 2012	31 March 2012	31 March 2012	Exempt
Taieri	31 March 2025	31 March 2025	31 March 2012	31 March 2025	31 March 2025
Trotters	31 March 2025	31 March 2012	31 March 2012	31 March 2012	31 March 2012
Waianakarua	31 March 2025	31 March 2012	31 March 2012	31 March 2012	31 March 2012
Waikouaiti	31 March 2012				
Waipori	31 March 2012				
Waitaki tributaries within Otago	31 March 2025	31 March 2025	31 March 2012	31 March 2025	31 March 2012
Any unlisted catchment that discharges to the coast, north of Taieri Mouth	31 March 2012				

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Table 15.2.3: Receiving Water Group 3

	Nitrate-nitrite nitrogen	Dissolved reactive phosphorus	Ammoniacal nitrogen	<i>Escherichia coli</i>	Turbidity
	0.075 mg/l	0.005 mg/l	0.01 mg/l	50 cfu/100 ml	3 NTU
Clutha/Mata-Au, above Luggate	31 March 2012				
Dart	31 March 2012	31 March 2012	31 March 2012	31 March 2012	Exempt
Kawarau, upstream of the Shotover confluence	31 March 2012				
Matukituki	31 March 2012	31 March 2012	31 March 2012	31 March 2012	Exempt
Tributaries to Lakes Hawea, Wakatipu, & Wanaka	31 March 2012				

The limits for Groups 4 and 5 are achieved when 80% of samples collected at a site, over a rolling 5-year period, meet or are better than the limits in Schedule 15.

A target date of 31 March 2025 is set when the contaminant concentration does not meet the limit as at 31 March 2012.

Table 15.2.4: Receiving Water Group 4

	Total nitrogen	Total phosphorus	Ammoniacal nitrogen	<i>Escherichia coli</i>	Turbidity
	0.55 mg/l	0.033 mg/l	0.1 mg/l	126 cfu/100 ml	5 NTU
Lake Hayes	31 March 2012	31 March 2025	31 March 2012	31 March 2012	31 March 2012
Lake Johnson	31 March 2025	31 March 2025	31 March 2012	31 March 2012	31 March 2012
Lake Onslow	31 March 2012	31 March 2025	31 March 2012	31 March 2012	31 March 2025
Lake Tuakitoto	31 March 2025	31 March 2025	31 March 2012	31 March 2025	31 March 2025
Lake Waipori & Waiholā	31 March 2025	31 March 2025	31 March 2012	31 March 2012	31 March 2025

Table 15.2.5: Receiving Water Group 5

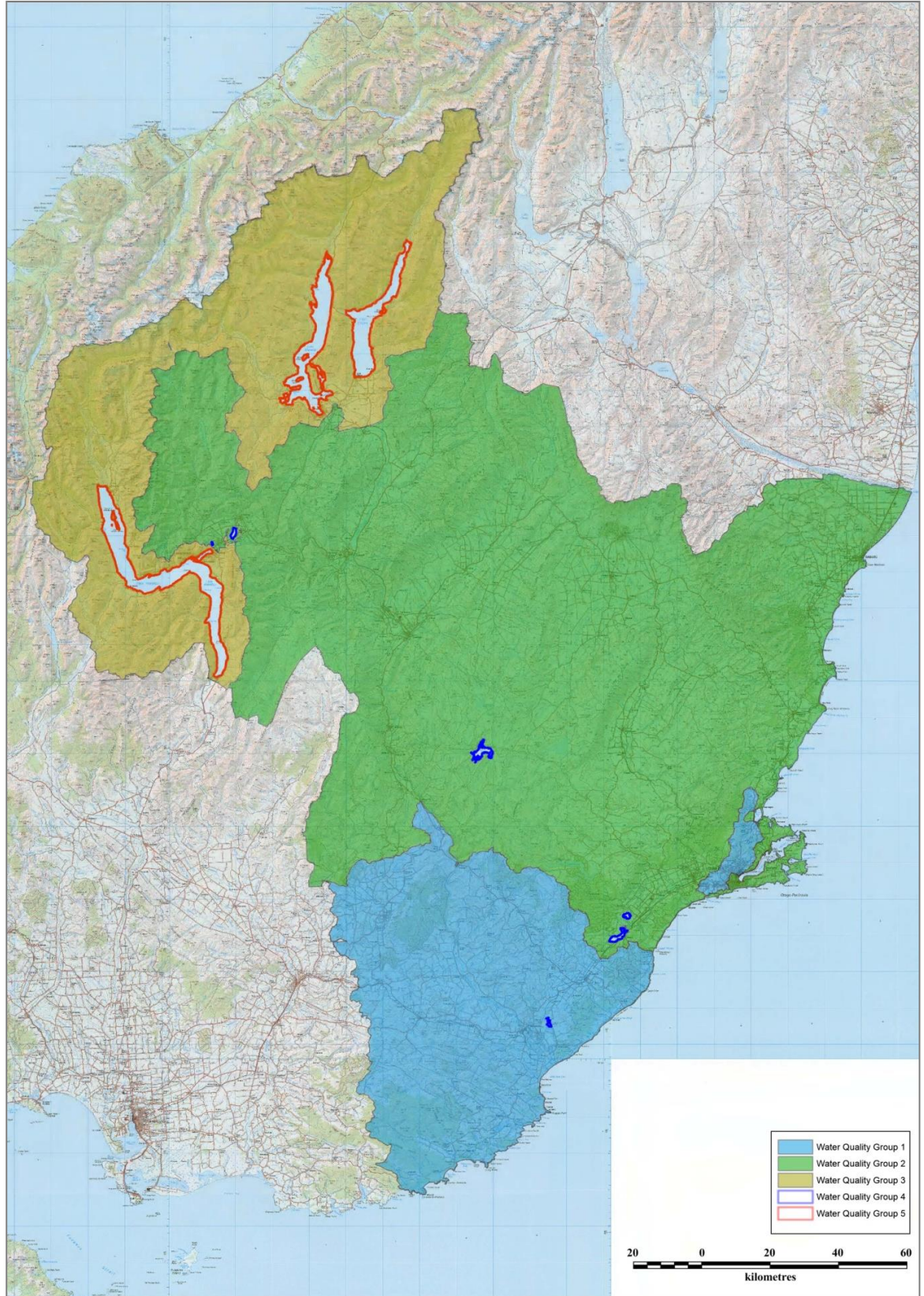
	Total Nitrogen	Total Phosphorus	Ammoniacal nitrogen	<i>Escherichia coli</i> ³	Turbidity
	0.1 mg/l	0.005mg/l	0.01 mg/l	10 cfu/100 ml	3 NTU
Lake Hawea	31 March 2012				
Lake Wakatipu	31 March 2012	31 March 2025	31 March 2012	31 March 2012	31 March 2012
Lake Wanaka	31 March 2012				

mg/l = milligrams per litre

cfu/100 ml = colony-forming units per 100 millilitres

NTU = nephelometric turbidity units

Map 15.1 Receiving Water Groups



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Table 15.3 Aquifer Concentration Limits

Aquifer/Zone	Aquifer N concentration limit (mg/l)	Reason for Limit
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* To be populated following aquifer studies