

Provision	Threshold	Glen Eyrie Downs	WHL Killermont	Ohau Downs	Killermont Station
Objectives and Policies					
Policy 16 of the Waitaki Catchment Allocation Plan This policy requires that the annual volume of the proposed take to be determined on either: <ul style="list-style-type: none"> • Soil-moisture measurements, local rainfall and evapotranspiration modelling for the 1 in 5 year dry season (the year for which seasonal demand is exceeded in 20% of years); or • The difference between peak total seasonal demand as shown in Table A1, Environment Canterbury Report UO5/15 and the effective summer rainfall exceeded 80 percent of the time from an approved rainfall site. 	Water use efficiency. The reasonable use test set out in the policy framework requires one to consider: <ul style="list-style-type: none"> • The land use of the site and the physical characteristics of the site such as soil type, water holding capacity, climatic factors, evapotranspiration and irrigation systems and management; and 	Yes	Yes	Yes	Yes
	<ul style="list-style-type: none"> • Irrigation efficiency which are at least 80% efficient. 	Will be greater than 80% on a seasonal basis over the property	Will be greater than 80% on a seasonal basis over the property	Will be greater than 80% on a seasonal basis over the property	Will be greater than 80% on a seasonal basis over the property
Objective WQL1.1 (1)(a) seeks that where a river is in a natural state, the water quality and the characteristics of the substrate are to be maintained in that state ¹ .	Rivers to be maintained in natural state.	Arguable whether the rivers are in a natural state to begin with on any property, but technically speaking all rivers are listed as being in a natural state and therefore this threshold cannot be met.			
Objective WQL1.1	Rivers to be maintained to achieve following outcomes:	Yes	Yes	Yes	Yes
	(i) They are suitable for contact recreation in those reaches that are valued for this purpose;	Yes	Yes	Yes	Yes
	(ii) Water is suitable for stock drinking water	Yes	Yes	Yes	Yes
	(iii) They are suitable as a habitat for indigenous species or salmonids;	Yes	Yes	Yes	Yes
	(iv) They provide for amenity values;	Yes – on the basis that the amenity will not be reduced from current status and if riparian planting occurs	Yes – on the basis that the amenity will not be reduced from current status and if riparian planting occurs	Yes – on the basis that the amenity will not be reduced from current status and if riparian planting occurs	Yes – on the basis that the amenity will not be reduced from current status and if riparian planting occurs
(v) They provide for Ngai Tahu cultural values, including mahinga kai.	Yes - based on ecological, amenity values also being sustained.	Yes - based on ecological, amenity values also being sustained.	Yes - based on ecological, amenity values also being sustained.	Yes - based on ecological, amenity values also being sustained.	
Objective WQL1.1(2) seeks that water quality is either maintained or enhanced to meet the outcomes contained in Table WQL5, and that there are no visible heterotrophic slime growths in the river.	Thresholds outlined below.				

¹ ECan planning maps identify the rivers within the Upper Waitaki as being natural (in the A series), and either alpine, hill country or inland basin (in the B series).

The planning maps identify Lakes Tekapo, Ohau and Pukaki as being natural (in the A series), and large high country lakes (in the B series). Lake Benmore is identified on the planning maps (both A and B series) as being an artificial lake.

The A series maps identify the water quality classes and the B series maps identify the river and lake types.

Table WQL5 – Alpine River and Rivers of Upper Plains, Inland Basins and River Valleys	<ul style="list-style-type: none"> Algae mats greater than three millimetres thick shall not exceed greater 50 percent cover of wetted river channel. 	Yes	Yes	Yes	Possibly already exceeds this upstream of intake
	<ul style="list-style-type: none"> Filamentous algae longer than two centimetres – there shall be no conspicuous growths in the river system. 	Yes	Yes	Yes	Possibly already exceeds this upstream of intake
	<ul style="list-style-type: none"> Periphyton shall not exceed a mean monthly value of 15 milligrams chlorophyll a per square metre, or a maximum value of 50 milligrams chlorophyll a square metre. 	Possibly already exceeds this at some points	Possibly already exceeds this at some points	Possibly already exceeds this at some points	Possibly already exceeds this upstream of intake
	<ul style="list-style-type: none"> Sedimentation of the riverbed substrate shall not exceed 20 percent. 	Current status has not been assessed but should meet this	Current status has not been assessed but should meet this	Current status has not been assessed but should meet this	Current status has not been assessed but should meet this
The purpose of Objective WQL1.2(1) is to maintain the existing water quality in high country lakes.	Lakes (Ohau, Pukaki) to be maintained in their natural state.	Whether Lake Ohau is in a natural state is debatable influence of existing agriculture and HEPS. Effect is de minimus in any event.	N/A	Whether Lake Ohau is in a natural state is debatable influence of existing agriculture and HEPS Effect is de minimus in any event.	N/A
Objective WQL1.2	Lakes to be maintained to achieve following outcomes:	Yes	N/A	Yes	N/A
	(i) Suitable for contact recreation;				
	(ii) Suitable as a habitat for indigenous species and salmonids;	Yes	N/A	Yes	N/A
	(iii) It provides for Ngai Tahu cultural values, including mahinga kai	Yes	N/A	Yes	N/A
	(iv) The average annual phytoplankton biomass does not exceed five milligrams of chlorophyll a per cubic metre; and	Yes	N/A	Yes	N/A
(v) There is no conspicuous change to the visual clarity of the lake.	Only during construction of intake, not operation	N/A	Only during construction of intake not operation	N/A	
Objective WQL1.2(3)	Lake Benmore shall achieve the following standards:	Yes	Yes	Yes	Yes
	(i) Water quality is suitable for the activities and uses for which the lake and its water is used; and				
	(ii) It does not result in persistent seasonal stratification leading to oxygen depletion in the lake; and	Yes	Yes	Yes	Yes
	(iii) It does not result in toxic or nuisance algal blooms; and	Yes	Yes	Yes	Yes
(iv) The average annual phytoplankton biomass does not exceed five milligrams of chlorophyll a per cubic metre of lake water.	Yes	Yes	Yes	Yes	
Objective WQL2(2) states that in semi-confined, unconfined and other confined aquifers or parts of these aquifers, where the water quality is unaffected or largely unaffected by human activities as reported in 2004, the water quality is to be maintained in that state.	Aquifers to be maintained in natural state.	Not natural now ie modeled to be above 1 mg/l nitrate N. Additional effect – not more than minor	Yes	Not natural now ie modeled to be above 1 mg/l nitrate N Additional effect – not more than minor	Yes

Objective WQL2(2)	(i) For nitrate-nitrogen, the maximum concentration shall not increase by more than two milligrams per litre above the maximum concentration measured between 1996 and 2001, and reported in 2002, and the maximum concentration shall not exceed 11.3 milligrams per litre;	2 mg/L - Not assessed Yes to drinking water standard	Yes, Yes to drinking water standard	2 mg/l Not assessed Yes to drinking water standard	Yes Yes to drinking water standard
	(ii) The water quality shall remain within the guideline value for any aesthetic determined listed in the Drinking Water Standards for New Zealand 2000, except for natural exceedances of the Guideline Value. If the water quality does not meet the Guideline Value, as a result of human activities, the water quality shall be improved so that the Guideline Value is achieved;	Yes	Yes	Yes	Yes
	(iii) The median concentration of Escherichia coli shall be less than one organism per 100 millilitres of water; and	Yes	Yes	Yes	Yes
	(iv) Any other inorganic or organic determined of health significance or pesticide (excluding nitrate nitrogen, or Escherichia coli) listed in the Drinking Water Standards for New Zealand 2000 shall not be detected at a concentration greater than one tenth of the Maximum Acceptable Value for that determined.	Yes, based on compliance with FEMP	Yes, based on compliance with FEMP	Yes, based on compliance with FEMP	Yes, based on compliance with FEMP
Policy WQL4(1) seeks to reduce the impact of non point source discharges on surface water quality by preventing or minimising the entry of contaminants and by encouraging changes to land use practices, including the appropriate management of stock access to waterbodies, management of agrichemical discharges and reducing the volume of runoff from irrigated land into surface water by implementing measures to increase the efficient use and application of irrigation water to land.	Good practice land management.	Yes through the implementation of a FEMP	Yes through the implementation of a FEMP	Yes through the implementation of a FEMP	Yes through the implementation of a FEMP
Policy WQL4(d) relates to agricultural land uses on properties, where all or part of that property is irrigated.	This policy sets out thresholds for annual average concentrations of soluble inorganic nitrogen resulting from land uses in the Upper Waitaki and requires that: (a) agricultural land uses on a property, where all or part of that property is irrigation, and the irrigated land is located in: (b) the Waitaki Basin above Lake Benmore or the Ashburton lakes area, do not result in the annual average concentrations, between the points where a river enters and exits a property, of: (i) soluble inorganic nitrogen in a river increasing by more than 0.01 milligrams per litre; and (ii) soluble reactive phosphorus in a river increasing by more than 0.001 milligrams per litre.	Probably No, but additional data for some streams is coming that will confirm. There are modeled to be both gaining and losing stretches of stream on the property, so it is not as simple as 'any changes to the stream are directly as a result of the on farm activities'	Yes	Yes, probably, but additional data for some streams is coming that will confirm. There are modeled to be both gaining and losing stretches of stream on the property, so it is not as simple as 'any changes to the stream are directly as a result of the on farm activities'	Yes
Policy WQL6(1) sets out the overall approach promoted by ECan for managing point source discharges. The policy requires that a systematic approach is used to reduce the volume and concentrations of contaminants prior to being discharged to land so that any adverse effects on groundwater quality can be reduced.	Discharge does not exceed infiltration capacity of the soil or subsoil at the site of the discharge; and Discharge does not exceed the capacity of physical properties, or chemical and biological processes in the soil or subsoil, to reduce the contaminant concentration in the soil drainage water and to minimise the concentration of any contaminant entering groundwater.	Yes	Yes	Yes	Yes. But no effluent will be discharged to ground on this station
Policy WQL9 relates to non point source discharges that may affect groundwater quality. Policy WQL9(1)(a) seeks that	Good practice land management.	Yes through the implementation of a	Yes through the implementation of a	Yes through the implementation of a	Yes through the implementation of a

landowners use a combination of best management practices to minimise the rate of leaching of nutrients to groundwater from their property.		FEMP	FEMP	FEMP	FEMP
Policy WQL9(1)(b) sets out the matters that of consideration in regards to irrigation use. These matters are set out as follows; that the use of water for irrigation is in accordance with Policy WQN17 (efficient use of water); that the irrigation does not affect any drinking water quality; and maximum concentration of nitrate-nitrogen.	<p>"The use of irrigation...</p> <p>(iii) does not result in the maximum concentrations of nitrate-nitrogen in any part of an unconfined or semi-confined aquifer at the down gradient boundary of a property:</p> <p>1. increasing beyond the range that occurs or would have occurred in the groundwater under extensive grazing of unimproved pasture in the catchment up-gradient of the property. This applies to properties located in the Waitaki Basin above Lake Benmore,..."</p>	Some of the aquifers under these properties are already modeled to exceed that range. Additional effects not more than minor.	No	Some of the aquifers under these properties are already modeled to exceed that range. Additional effects not more than minor.	No
Schedule WQL1 Water Quality Outcomes – possibly relevant because Policy WQL9 states that contaminant concentrations in groundwater shall not result in the surface water quality being reduced below the values of Objective WQL1, or any relevant water quality standard set in this plan.					
Schedule WQ1 – Natural Rivers	The natural quality of the water and the natural quality of the bed substrate shall not be altered.	It is arguable whether the 'natural rivers' identified are in fact in a natural state. Technically this threshold will not be achieved. Additional effect not more than minor.			
Schedule WQL1 – Alpine Rivers Include: Ahuriri River, Manuka Creek, Omarama Stream, Frosty Gully Creek.	(a) No sample of water shall contain more than 260 <i>E. coli</i> per 100 millilitres.	N/A	NA for Ahuriri and Omarama and Frosty Gully. Yes for Manuka Creek (fenced out)	N/A	NA for Ahuriri (no stock on this block) and Omarama Stream. Yes for ephemeral Manuka and Frosty Gully (fenced out when watercourses are flowing)
	(b) The concentration of dissolved oxygen in water shall: (i) Exceed 80 percent of saturation concentration at any time; and (ii) Exceed 90 percent, during daylight hours, and at all times during May to September inclusive.	N/A	Uncertain given ECan's monitoring data for existing environment – which suggests don't meet this now	N/A	Uncertain given ECan's monitoring data for existing environment – which suggests don't meet this now
	(a) The natural water shall not: (i) Be changed by more than three degrees Celsius; or (ii) Exceed 18 degrees Celsius as a daily mean temperature; or (iii) Exceed 20 degrees Celsius as a daily maximum temperature; or (iv) Exceed 11 degrees Celsius as a daily maximum temperature during May to September inclusive.	N/A	Yes	N/A	Yes
	(c) The natural pH of the water shall not vary by more than 0.5pH at any time of the day from the ambient diurnal variation on a continuous basis, and shall be within the range 6 to 8.5pH units.	N/A	Yes	N/A	Yes
	(d) The visual clarity of the water shall not be reduced by more than twenty percent.	N/A	NA for Ahuriri, Omarama and Frosty Gully. Yes for Manuka Creek (fenced out)	N/A	NA for Omarama Stream. Yes for Ahuriri River and ephemeral Manuka and Frosty Gully (fenced out when watercourses are flowing)
	(e) The natural colour of the water shall not be changed by more than five Munsell units.	N/A	NA for Ahuriri, Omarama and Frosty Gully. Yes for Manuka Creek (fenced out)	N/A	NA for Omarama Stream. Yes for Ahuriri River and ephemeral Manuka and Frosty Gully (fenced out when watercourses are flowing)

	(f) The average concentration of: (i) Soluble inorganic nitrogen shall not be increased by more than 0.01 milligrams per litre; or (ii) Soluble reactive phosphorous shall not be increased by more than 0.001 milligrams per litre.	N/A	The Ahuriri , Omarama and Frosty Gully do not cross the property. Yes for Manuka Creek, although this is an ephemeral stream and is often dry in the reach on WHL Killermont	N/A	The Ahuriri does not cross the property but bounds it on 1 side. Nor does the Omarama Stream. Yes for Manuka Creek and Frosty Gully, although these are ephemeral and usually go to ground on the property
	(j) There shall be no conspicuous growths of algal mats greater than three millimeters thick.	N/A	Possibly already exceeded in Ahuriri and Omarara (due to didymo)	N/A	Possibly already exceeded in Ahuriri and Omarara (due to didymo)
	(k) There shall be no conspicuous growths of filamentous algae of greater than two centimetres in length.	N/A	Possibly already exceeded in Manuka Creek	N/A	Possibly already exceeded in Manuka Creek
	(l) For lake sourced rivers and rivers of the inland basins, emergent macrophytes shall not cover more than 50 percent the water surface of the wetted channel.	N/A	Yes	N/A	Yes
	(m) The concentration of total ammonia shall not exceed: (i) 0.05 milligrams of ammonia nitrogen per litre, the average result of ten samples taken every third day; and (ii) 0.5 milligrams of ammonia nitrogen per litre for a single sample.	N/A	NA for Ahuriri , Omarama and Frosty Gully. Yes for Manuka Creek (fenced out)	N/A	NA for Ahuriri (no stock on this block) and Omarama Stream. Yes for ephemeral Manuka and Frosty Gully (fenced out when watercourses are flowing)
	(l) The dissolved organic carbon concentration of the water shall not exceed one gram per cubic metre.	N/A	Yes, but riparian margins might add C	N/A	Yes
	(m) The embeddedness of substrate in gravel or cobble bed rivers shall not exceed 20 percent.	N/A	Current status has not been assessed but future irrigation shouldn't affect this given proposed riparian fencing	N/A	Current status has not been assessed but future irrigation shouldn't affect this given proposed riparian fencing
	(n) The concentration of any toxicant, shall not exceed the concentration specified for the 99 percent level of protection for that toxicant.	N/A	Yes	N/A	Yes
	(o) There shall be no conspicuous oil or grease films, scums, or foams, or floatable or suspended materials.	N/A	Yes	N/A	Yes
Schedule WQL1 – Inland Rivers Include: Six Mile Creek, Wairepo Creek and Serpentine Creek	(a) No sample of water shall contain more than 260 <i>E. coli</i> per 100 millilitres.	Yes, fenced, but note Omarama Stream already exceeds this standard on occasions – Ecan data.	N/A	Yes, fenced, but note Omarama Stream already exceeds this standard on occasions – Ecan data.	N/A
	(b) The concentration of dissolved oxygen in water shall: (i) Exceed 80 percent of saturation concentration at any time; and (ii) Exceed 90 percent, during daylight hours, and at all times during May to September inclusive.	Yes , but note Omarama Stream already exceeds this standard on occasions – Ecan data.	N/A	yes , but note Omarama Stream already exceeds this standard on occasions – Ecan data.	N/A

(c) The natural water shall not: (i) Be changed by more than three degrees Celsius; or (ii) Exceed 18 degrees Celsius as a daily mean temperature; or (iii) Exceed 20 degrees Celsius as a daily maximum temperature; or (iv) Exceed 11 degrees Celsius as a daily maximum temperature during May to September inclusive.	Yes	N/A	Yes	N/A
(d) The natural pH of the water shall not vary by more than 0.5pH at any time of the day from the ambient diurnal variation on a continuous basis, and shall be within the range 6 to 9 pH units.	Yes	N/A	Yes	N/A
(e) The visual clarity of the water shall not be reduced by more than twenty percent.	Yes, fenced	N/A	Yes, fenced	N/A
(f) The natural colour of the water shall not be changed by more than five Munsell units.	Yes, fenced	N/A	Yes, fenced	N/A
(g) The average concentration of: (i) Soluble inorganic nitrogen shall not be increased by more than 0.01 milligrams per litre; or (ii) Soluble reactive phosphorous shall not be increased by more than 0.001 milligrams per litre.	Probably No, but field data to come to confirm or reject. There are modeled to be both gaining and losing stretches on the farm	N/A	Yes, probably, but field data to come. There are modeled to be both gaining and losing stretches on the farm	N/A
(h) There shall be no conspicuous growths of algal mats greater than three millimeters thick.	Yes	N/A	Yes	N/A
(i) There shall be no conspicuous growths of filamentous algae of greater than two centimetres in length.	Yes, but possibly already exceeded in upper Wairepo on occasions	N/A	Yes, but possibly already exceeded in upper Wairepo on occasions	N/A
(j) For lake sourced rivers and rivers of the inland basins, emergent macrophytes shall not cover more than 50 percent the water surface of the wetted channel.	Yes, but possibly already exceeded in upper Six Mile on occasions	N/A	Yes, but possibly already exceeded in upper Six Mile on occasions	N/A
(k) The concentration of total ammonia shall not exceed: (i) 0.05 milligrams of ammonia nitrogen per litre, the average result of ten samples taken every third day; and (ii) 0.5 milligrams of ammonia nitrogen per litre for a single sample.	Yes, fenced	N/A	Yes, fenced	N/A
(j) The dissolved organic carbon concentration of the water shall not exceed one gram per cubic metre.	Yes, but riparian planting might add C	N/A	Yes, but riparian planting might add C	N/A
(k) The embeddedness of substrate in gravel or cobble bed rivers shall not exceed 20 percent.	Current status hasn't been assessed but future irrigation shouldn't affect this given proposed riparian fencing	N/A	Current status hasn't been assessed but future irrigation shouldn't affect this given proposed riparian fencing	N/A
(c) The concentration of any toxicant, shall not exceed the concentration specified for the 99 percent level of protection for that toxicant	Yes	N/A	Yes	N/A
(d) There shall be no conspicuous oil or grease films, scums, or foams, or floatable or suspended materials.	Yes	N/A	Yes	N/A

Schedule WQL1 – High Country Lakes Includes: Lake Ohau	(a) No sample of water shall contain more than 260 <i>E. coli</i> per 130 millilitres.	Yes	N/A	Yes	N/A
	(b) The concentration of dissolved oxygen in water shall exceed 90 percent of saturation concentration at any time measured at any depth, at least 0.5 metres below the surface of the lake.	Yes	N/A	Yes	N/A
	(c) The natural water temperature shall not be changed by more than one degree Celsius.	Yes	N/A	Yes	N/A
	(d) The natural pH of the water shall not be changed by more than 0.1pH at any time of the day on a continuous basis.	Yes	N/A	Yes	N/A
	(e) The visual clarity of the water shall not be reduced by more than ten percent	Yes	N/A	Yes	N/A
	(f) The natural colour of the water shall not be changed by more than five Munsell units.	Yes	N/A	Yes	N/A
	(g) The average concentration of: (i) Total nitrogen shall not exceed 160 milligrams per cubic metre; or (ii) Total phosphorous shall not exceed 9.0 milligrams per cubic metre.	Yes	N/A	Yes	N/A
	(h) The concentration of total ammonia shall not exceed: (i) 0.05 milligrams of ammonia nitrogen per litre, the average result of ten samples taken every third day; and (ii) 0.5 milligrams of ammonia nitrogen per litre for a single sample.	Yes	N/A	Yes	N/A
	(i) The dissolved organic carbon concentration of the water shall not exceed one gram per cubic metre.	Yes	N/A	Yes	N/A
	(j) The concentration of any toxicant listed in Table WQL19, shall not exceed the concentration specified for the 99 percent level of protection for that toxicant.	Yes	N/A	Yes	N/A
	(k) There shall be no conspicuous oil or grease films, scums or foams, or floatable or suspended materials excluding those of natural origin.	Yes	N/A	Yes	N/A
Schedule WQL1 – Artificial Lakes Includes: Lake Benmore	(a) The concentration of <i>E. coli</i> shall not increase by more than 130 <i>E. coli</i> per 100 millilitres and no sample of water shall contain more than 250 <i>E.coli</i> per 100 millilitres.	Assuming that all other thresholds raised above are not exceeded by the individual properties it is anticipated that the thresholds for Lake Benmore will not be exceeded by future farm practices on Ohau Downs, WHL Killermont, Glen Eyrie Downs and Killermont Station.			
(b) The concentration of dissolved oxygen in water shall exceed 80 percent of saturation concentration at any time measured at any depth at least 0.5 metres below the surface of the lake.					
(c) N/A					
(d) The visual clarity of the water shall not be reduced by more than ten percent.					
(e) The natural colour of the water shall not be changed by more than five Munsell units.					
(f) There shall be no toxic or nuisance algal or aquatic plant growths.					
(g) There concentration of any toxicant listed in Table WQL19, shall not exceed the concentrations specified for the 95 percent level of protection for that toxicant.					
(h) There shall be no conspicuous oil or grease films, scums, or foams, or floatable or suspended materials excluding those of natural origin.					