

IN THE MATTER of THE ENVIRONMENT CANTERBURY
(TEMPORARY COMMISSIONERS &
IMPROVED WATER MANAGEMENT)
ACT 2010

AND

IN THE MATTER of AN APPLICATION BY TRUSTPOWER
LIMITED TO AMEND THE NATIONAL
WATER CONSERVATION (RAKAIA
RIVER) ORDER 1988

HEARING COMMITTEE: Hon Peter Salmon QC
Rau Kirikiri
Andrew Fenemor

THE HEARING COMMITTEE'S RECOMMENDATION

Having considered the application from TrustPower Limited to amend the National Water Conservation (Rakaia River) Order 1988 and having considered the submissions received and having heard evidence from the applicant and the submitters, the Hearing Committee recommends that the application be granted in terms of the draft order set out in Attachment 1.

The reasons for the Committee's recommendation are set out in Attachment 2.

ATTACHMENT 1-

AMENDED RWCO

Amendments Underlined

National Water Conservation (Rakaia River) Order 1988

(SR 1988/241)

PURSUANT to section 20D of the Water and Soil Conservation Act 1967, His Excellency the Administrator of the Government, acting by and with the advice and consent of the Executive Council, hereby makes the following order.

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1 Title and commencement

- (1) This order may be cited as the National Water Conservation (Rakaia River) Order 1988.
- (2) This order shall come into force on the 28th day after the date of its

notification in the Gazette.

2 Interpretation

(1) In this order, unless the context otherwise requires,—

Act means the ~~Water and Soil Conservation Act 1967~~Resource Management Act 1991.

Enhancement fund means the fund established as part of the Lake Coleridge Project to contribute funding for projects within the Rakaia River and Selwyn River catchments that are designed to enhance the cultural, ecological, and biological health of, and recreational opportunities within, those catchments, and thereby contribute to the first order priorities set out in the Canterbury Water Management Strategy. The operator of the Lake Coleridge Project will, from the commencement of the first stage of the Lake Coleridge Project until 31 December 2031, contribute funding to the enhancement fund as follows: an initial payment of \$50,000 immediately upon establishment; \$100,000 per annum (CPI adjusted) from the commencement of the Lake Coleridge Project, and a further \$100,000 per annum (CPI adjusted) from the commissioning of any canal described in clause 9A(2) of this order.

"Hapua management fund" means the amount of \$2,250 plus GST (CPI adjusted) that the operator of the Lake Coleridge Project will pay to Environment Canterbury on 30 March of each year that the Lake Coleridge Project is in effect until 31 December 2031. This amount is to be used by Environment Canterbury to assist with the management of the Rakaia River hapua.

Gorge flow means the mean daily flow of the Rakaia River as estimated for the preceding calendar day by the ~~North Canterbury Catchment Board~~Canterbury Regional Council from measurements at—

(a) the recorder site maintained by that ~~Board~~Council at the Rakaia

Gorge Bridge (map reference ~~NZMS1S82:139584~~K35:014424 on Map series NZMS260);_or

- (b) the recorder site maintained by the ~~Department of Scientific and Industrial Research~~National Institute of Water and Atmospheric Research Limited at Fighting Hill (map reference K35:997437 on Map series NZMS260~~NZMS 1 S82: 120598~~);_

and including the mean daily flow of non-Stored Water diverted or discharged into any canal from Lake Coleridge, but minus the mean daily flow of Stored Water discharged from Lake Coleridge into the Rakaia River above the Rakaia Gorge.

Lake Coleridge Project means

- (a) Discharge from the Lake Coleridge Hydroelectric Power Scheme and conveyance by the Rakaia River of Stored Water for use for irrigation and/or electricity generation;
- (b) Discharge, damming, diversion and taking from Lake Coleridge of water (including Stored Water) via conveyance infrastructure connected to the Lake Coleridge Hydroelectric Power Scheme conveyance infrastructure for use for irrigation and/or electricity generation;
- (c) Discharge of water (including Stored Water) from the conveyance infrastructure into the Rakaia River downstream of its confluence with the Wilberforce River;
- (d) Taking or diverting of Stored Water from the Rakaia River or from any conveyance infrastructure constructed as part of the Lake Coleridge Project in accordance with clause 7(5);

provided that the Lake Coleridge Project excludes any damming of the Rakaia River.

Register means the register administered by the Canterbury Regional Council which lists the holders of resource consents to abstract or divert water from the Rakaia River downstream of the Rakaia Gorge Bridge who have obtained the written approval of the holder of the consents for the Lake Coleridge Hydroelectric Power Scheme to take

or divert Stored Water.

Stored Water means water that has been taken or diverted into Lake Coleridge which is no greater than:

- (a) half of the excess gorge flow (the excess gorge flow is that part of the gorge flow that exceeds the minimum gorge flow specified in clause 7 of this order by more than 140 cubic metres per second); plus
- (b) any water that could have been taken or diverted from that part of the Rakaia River between the Rakaia Gorge Bridge and the sea by the holders of resource consents listed on the Register and subject to the conditions of those resource consents listed on the Register, but which was not taken or diverted.

3 Outstanding characteristics and features

- (1) It is hereby declared that the Rakaia River and its tributaries include and provide for—
 - (a) an outstanding natural characteristic in the form of a braided river:
 - (b) outstanding wildlife habitat above and below the Rakaia River Gorge, outstanding fisheries, and outstanding recreational, angling, and jet boating features.

4 Retention of natural waters in a natural state

- (1) Because of the outstanding characteristics and features specified in clause 3 of this order—

- (a) Subject to subclauses (2) ~~and (3)~~ of this clause, the quantity and rate of flow of natural water in the Rakaia River upstream of its confluence with the Wilberforce River and all tributaries of the Rakaia River upstream of that confluence shall be retained in their natural state:
 - (b) The quantity and level of natural water in Lake Heron, and the quantity and rate of flow of natural water in its tributary streams, shall be retained in their natural state.
- (2) A ~~water right~~ resource consent under the Act may be granted or renewed in respect of the natural waters referred to in subclause (1)(a) of this clause if—
- (a) in the case of a grant, the purpose is to replace a ~~water right~~ resource consent in force on the commencement of this order; or
 - (b) in the case of a renewal, the purpose is to renew a ~~water right~~ resource consent in force on the commencement of this order—

and the new ~~water right~~ resource consent or renewed ~~water right~~ resource consent is made subject to similar terms and conditions to which the former ~~right~~ resource consent was subject.

~~(3) A general authorisation pursuant to section 22 of the Act may be issued in respect of the natural waters referred to in subclause (1)(a) of this clause if—~~

- ~~(a) It is authorised for the purpose of renewing a general authorisation in force on the commencement of this order; and~~
- ~~(b) It is subject to similar terms and conditions to which the former general authorisation was subject.~~

5 Partial retention of natural waters

- (1) Subject to subclauses (2) ~~and (3)~~ of this clause, because of the outstanding characteristics and features specified in clause 3 of this order and for their protection downstream of the confluence of the Rakaia River with the Wilberforce River—
 - (a) the quantity and rate of flow of the natural waters in the Wilberforce River and all tributaries of the Wilberforce River, including the Harper River, shall be retained in their natural state:
 - (b) the quantity and level of natural water in Lake Coleridge and the quantity and rate of flow of natural water in its tributary streams shall be retained in their existing state.
- (2) A ~~water right~~ resource consent under the Act may be granted or renewed in respect of the natural waters referred to in subclause (1) of

this clause if—

- (a) in the case of a grant, the purpose is to replace a ~~water right~~resource consent in force on the commencement of this order; or
- (b) in the case of a renewal, the purpose is to renew a ~~water right~~resource consent in force on the commencement of this order—

and the new ~~water right~~resource consent or renewed ~~water right~~resource consent is made subject to similar terms and conditions to which the former ~~right~~resource consent was subject.

~~(3) A general authorisation pursuant to section 22 of the Act may be issued in respect of the natural waters referred to in subclause of this clause if—~~

- ~~(a) It is authorised for the purpose of renewing a general authorisation in force on the commencement of this order; and~~
- ~~(b) It is authorised subject to similar terms and conditions to which the former general authorisation was subject.~~

6 Further partial retention of natural waters

- (1) Subject to subclauses (2) and ~~(3)~~ of this clause, because of the outstanding characteristics and features specified in clause 3 of this order and for their protection downstream of the confluence of the Rakaia River with the Wilberforce River, the quantity and a rate of flow of the natural waters in the Rakaia River downstream of its confluence with the Wilberforce River and upstream of the ~~North Canterbury Catchment Board's Rakaia Gorge Bridgereorder site~~ referred to in clause 2 of this order shall be retained in their natural state.
- (2) A ~~water right~~resource consent under the Act may be granted or renewed in respect of the natural waters referred to in subclause (1) of this clause if—
 - (a) in the case of a grant, the purpose is to replace a ~~water right~~resource consent in force on the commencement of this order; or
 - (b) in the case of a renewal, the purpose is to renew a ~~water right~~resource consent in force on the commencement of this order—

and the new ~~water right~~resource consent or renewed ~~water right~~resource consent is made subject to similar terms and conditions to which the former ~~right~~resource consent was subject.

~~(3) A general authorisation pursuant to section 22 of the Act may be issued in respect of the natural waters referred to in subclause of this clause if—~~

- ~~(a) — It is authorised for the purpose of renewing a general authorisation in force on the commencement of this order; and~~
- ~~(b) — It is authorised subject to similar terms and conditions to which the former general authorisation was subject.~~

7 Further partial retention of natural waters

- (1) For the purposes of this clause, the term minimum gorge flow for each month shall be as follows:
 - (a) January — 124 cubic metres per second:
 - (b) February — 108 cubic metres per second:
 - (c) March — 105 cubic metres per second:
 - (d) April — 97 cubic metres per second:
 - (e) May — 95 cubic metres per second:
 - (f) June — 96 cubic metres per second:
 - (g) July — 91 cubic metres per second:
 - (h) August — 92 cubic metres per second:
 - (i) September — 90 cubic metres per second:
 - (j) October — 106 cubic metres per second:
 - (k) November — 129 cubic metres per second:
 - (l) December — 139 cubic metres per second.

- (2) Subject to subclauses (3) and (4) of this clause, because of the outstanding characteristics and features specified in clause 3 of this order in that part of the Rakaia River between the ~~North Canterbury Catchment Board's Rakaia Gorge Bridge recorder site~~ referred to in clause 2 of this order and the sea, and for their protection, the minimum gorge flow shall be retained in the river and, while the gorge flow does not exceed the minimum gorge flow, the flow in the river shall not be reduced by abstraction or diversion.
- (3) While the gorge flow exceeds the minimum gorge flow by less than 140 cubic metres per second, the flow in the river shall not be reduced by abstraction or diversion by more than half of the excess of the gorge flow over the minimum gorge flow.
- (4) While the gorge flow exceeds the minimum gorge flow by 140 cubic metres per second or more, the flow in the river shall not be reduced by abstraction or diversion by more than 70 cubic metres per second.
- (5) Nothing in this clause 7 restricts the abstraction or diversion of Stored Water from the Rakaia River, or from any conveyance infrastructure constructed as part of the Lake Coleridge Project, by the holders of resource consents listed on the Register and subject to the conditions of the resource consents listed on the Register, provided that the flow in the river and in the canal shall not be reduced by abstraction or diversion by more than 70 cubic metres per second.

8 ~~Right~~ Resource consent to dam not to be granted

- (1) ~~A right~~ Resource consents to dam any of the bodies of water specified in clause 4 of this order shall not be granted under ~~section 21~~ of the Act.
- (2) ~~A right~~ Resource consents to dam any of the bodies of water referred to in clause 5 of this order shall not be granted under ~~section 21~~ of the Act if the effect of such a ~~grant~~ resource consent would be that the provisions of this order cannot remain without change or variation.

9 ~~Water rights and general authorisations~~ Resource consents

- 1) ~~Water rights~~ Resource consents under ~~section 21~~ of the Act shall not be granted, and ~~general authorisations~~ under ~~section 22~~ of the Act shall not be made, in respect of any part of the Rakaia River or its tributary streams for the purposes of constructing or maintaining stock barriers or facilitating agricultural encroachment into those bodies of water.
- (2) ~~Water rights~~ Resource consents under the Act shall not be so granted and ~~general authorisations~~ shall not be so made for any discharge into the Rakaia River downstream of its confluence with the Wilberforce River or any part of the bodies of water specified in clause 4 of this order, if the effect of the discharge would be to breach the following provisions and standards:
 - (a) any discharge is to be substantially free from suspended

solids, grease, and oil:

- (b) after allowing for reasonable mixing of the discharge with the receiving water—
- (i) the natural water temperature shall not be changed by more than 3 degrees Celsius:
 - (ii) the acidity or alkalinity of the water as measured by the pH shall be within the ranges 6.5 to 8.3, except where due to natural causes:
 - (iii) the waters shall not be tainted so as to make them unpalatable, nor contain toxic substances to the extent that they are unsafe for consumption by humans or by farm animals, nor shall they emit objectionable odours:
 - (iv) there shall be no destruction of natural aquatic life by reason of a concentration of toxic substances:
 - (v) the natural colour and clarity of the water shall not be changed to a conspicuous extent:
 - (vi) the oxygen content in solution in the water shall not be reduced below 6 milligrams per litre:
 - (vii) based on not fewer than 5 samples taken over not more than a 30 day period, the median value of the faecal coliform bacteria content of the waters shall not exceed 200 per 100 millilitres.
- (3) Subject to subclause (4) of this clause, ~~water rights~~ resource consents under ~~section 21 of the Act~~ shall not be granted, ~~and general authorisations under section 22 of the Act shall not be made~~, in respect of any part of the Rakaia River or its tributary streams, or of Lake Heron or Lake Coleridge or their tributary streams, where the effect of such ~~rights or authorisations~~ resource consents would be that the provisions of this order cannot remain without change or variation.
- (4) ~~Water rights~~ Resource consents under the Act may be ~~so~~ granted in respect of any part of the waters specified in this clause for all or any of the following purposes:
- (a) research into, and enhancement of, fisheries and wildlife habitats:
 - (b) the maintenance or protection of roads, bridges, pylons, and other necessary public utilities:
 - (c) soil conservation and related matters undertaken pursuant to the Soil Conservation and Rivers Control Act 1941 or the Act:
 - (d) the diversion, taking, and discharging of water from and to the Rakaia River to enable the ~~Ellesmere County~~ Selwyn District Council to continue to provide for its rural water supply in accordance with, and on the same terms and conditions as,

the water rights granted to it and in force on the date of commencement of this order:

- (e) clause 7 shall not apply to any take of water up to 680 litres per second from the Rakaia River at map reference NZTopo50 BX22: 228 547 that is granted to the Ashburton District Council to provide for the continuation of its domestic and stock water supply:-
- (f) the Lake Coleridge Project, as provided for in clause 9A(1).

9A Lake Coleridge Project

- (1) Nothing in this order shall restrict the granting of resource consents, or variation of existing resource consents, to enable the Lake Coleridge Project as defined in clause 2 of this order, provided that the outstanding characteristics and features recorded in clause 3 of the order are recognised and sustained and provided that:
 - (a) the Coleridge HEPS continues to operate,
 - (b) the Lake Coleridge project be operated such that the discharge from the Lake into the Rakaia River at or above the Coleridge HEPS shall not fall below 45% of the inflows to Lake Coleridge, both inflows and outflows being calculated as the 2-yearly rolling average of daily flows and
 - (c) whenever the Coleridge HEPS ceases to discharge water to the Rakaia River for more than 24 hours and the Rakaia River flow is within 30 cumecs of the minimum gorge flow prescribed in this order, the operator shall take immediate steps to shut off the Harper and Wilberforce diversions

- (2) Subject to clause 2A, the maximum rate at which water can be discharged from Lake Coleridge through any canal constructed as part of the Lake Coleridge Project is 25 cubic metres per second, and the total maximum discharge rate from Lake Coleridge through the Lake Coleridge Hydroelectric Power Scheme and any canal constructed as part of the Lake Coleridge Project is 65 cubic metres per second.
- (2A) If the flow as measured at the recorder site maintained by the National Institute of Water and Atmospheric Research Limited at Fighting Hill (map reference K35:997437 on Map series NZMS260 for the preceding day is more than 10 cubic metres per second below the minimum flow set out in clause 7 of this order then, during the next calendar day, only Stored Water may be released from Lake Coleridge along the canal referred to in clause 9A(2) above.
- (2B) Prior to applying for any resource consents pursuant to clause 9A(1), the enhancement fund must be established and an agreement must have been concluded with Environment Canterbury for the receipt, on an annual basis, of the hapua management fund.
- (3) Records shall be kept by the operator of the Lake Coleridge Hydroelectric Power Scheme enabling the calculation of the:
- (a) Stored Water within Lake Coleridge;
 - (b) Stored Water that has been discharged from Lake Coleridge;
 - (c) water (including Stored Water) being diverted into any canal from Lake Coleridge.
- (4) For the purposes of this order, and except as specified in clause 7(5), any abstractions or diversions of any water (including stored water) from any conveyance infrastructure constructed as part of the Lake Coleridge Project (other than water being discharged back into the Rakaia River from any such conveyance infrastructure) shall be treated as if those abstractions or diversions were from the Rakaia River between the Rakaia Gorge Bridge referred to in clause 2 of this order and the sea.

10 Scope

- (1) Nothing in this order shall be construed as limiting the effect of the ~~second proviso to~~ section 21(1)14(3)(a)(b) or (e) of the Act relating to the use of water for domestic needs, for the needs of animals, and for or in connection with firefighting purposes.

11 Restrictions on rules

- (1) No rule in a regional plan shall classify an activity as permitted which, if it required resource consent, would be prohibited by this order.

Explanatory note

This note is not part of the order, but is intended to indicate its general effect.

This order declares that the Rakaia River and its tributaries include and provide for—

- (a) an outstanding natural characteristic in the form of a braided river:
- (b) outstanding wildlife habitat above and below the Rakaia River Gorge, outstanding fisheries, and outstanding recreational, angling, and jet boating features.

The order also includes various provisions to preserve and protect the Rakaia River and its tributaries.

ATTACHMENT 2

INTRODUCTION

1. On the 18th day of July 2011 the Minister for the Environment received an application from TrustPower Limited to amend the National Water Conservation (Rakaia River) Order 1988 (WCO). This application concerned an amendment to a Water Conservation Order in the Canterbury Region so that the provisions of the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010 (the ECan Act) apply. Accordingly, the Minister referred the application to Environment Canterbury to hear and report on under the provisions of S.48 (1)(b)(ii) of the ECan Act.
2. Environment Canterbury appointed a Hearing Committee, the members of which were: Hon Peter Salmon QC (Chair), Mr Rau Kirikiri and Mr Michael Bowden. Shortly before the completion of the hearing Mr Bowden became ill and later, very sadly, died. As a consequence, it became necessary to reconstitute the Committee and rehear the application.
3. Environment Canterbury appointed a new Hearing Committee. The members were: Hon Peter Salmon QC (Chair), Mr Rau Kirikiri and Mr Andrew Fenemor. As will shortly become apparent, due to the co-operation of all parties involved, the new Hearing was completed in a significantly shorter time than had been required for the original.
4. This report outlines the recommendations of the new Hearing Committee.
5. Mr Salmon and Mr Kirikiri undertook a preliminary inspection of various parts of the Rakaia River, including the river mouth, affected by this application and of Lake Coleridge on the 1st day of December 2011 and a further more extensive inspection over two days in March 2012. Mr Fenemor, who already had some familiarity with the Rakaia,

inspected the Rakaia River from Highbank power station up to Lake Coleridge power station and the lake itself on 7 August, and the river down to its mouth on its north bank at Rakaia Huts on the morning of 8 August 2012. These inspections, together with the knowledge imparted to us during the Hearing, gave us a good overview of all features relevant to this application, including the river itself, Lake Coleridge, the Coleridge and High Bank Power Stations, the diversions into Lake Coleridge and the river mouth and hapua.

6. At the opening of the Hearing there were the following appearances by counsel:

Mr Matheson and Mr Minhinnik for the applicant

Ms Kapua for Ngai Tahu

Mr Maw for Environment Canterbury

Ms Dunningham for Central Plains Trust

7. The original Hearing extended over parts or the whole of six weeks in February, March and April 2012. The new Hearing was completed in two weeks, they being the weeks of 23 and 30 July. The remainder of this recommendation will refer only to the second Hearing.

8. We heard submissions and evidence from the applicants, from 16 submitters, and from Environment Canterbury. We also heard from Dr Hicks, a geomorphologist with the National Institute of Water and Atmospheric Research (NIWA), who was called by the Committee to assist us in an understanding of the hapua. We provided the opportunity for submitters who wished to give evidence but not to appear before the Committee to provide that evidence in affidavit form. Four submitted their evidence in this way.

9. Either prior to or during the course of the hearing a number of submitters who had originally asked to be heard, withdrew their opposition to the application. They were Fish & Game New Zealand,

The Rakaia River Irrigators Association Inc, Dairy Holdings Ltd (and related entities), Synlait Farms Ltd, Central Plains Water Ltd and Central Plains Water Trust. A number of others who had originally opposed the proposed amendments or who had offered conditional support in their submissions now support the application. They are: Federated Farmers of New Zealand, North Canterbury Fish and Game, Rangitata Diversion Race Management, Barhill Chertsey Irrigation Ltd, Selwyn District Council and Ashburton District Council.

THE CURRENT NATIONAL WATER CONSERVATION ORDER

10. In June 1983 the Ashburton Acclimatisation Society, the North Canterbury Acclimatisation Association, the Council of South Island Acclimatisation Societies and the National Executive of the Acclimatisation Societies applied for the making of a National Water Conservation Order in respect of the Rakaia River, pursuant to S.20A of the Water & Soil Conservation Act 1967. That application was made to the Minister of Works & Development who referred it to the National Water & Soil Conservation Authority (NWASCA). The Authority appointed a committee to consider the application and all submissions received and in due course made recommendations which were accepted by the Authority. A draft order was prepared in accordance with the provisions of the Water & Soil Conservation Act and that order was publicly notified in April 1984. Submissions on or objections against the draft were received by the Planning Tribunal which held hearings between August and December 1984 and in May 1985 made a report and recommendations to the Minister of Works & Development. Those recommendations were accepted and the National Water Conservation (Rakaia River) Order (the WCO) was made on 10th October 1988. That order was later amended by excluding from its effect any take of water up to 680 litres per second granted to the Ashburton District Council to provide for the continuation of its domestic and stock water supply.

11. As originally gazetted, the order declares that the Rakaia River and its tributaries provide:
- (a) an outstanding natural characteristic in the form of a braided river; and
 - (b) outstanding wildlife habitat above and below the Rakaia River Gorge, outstanding fisheries, and outstanding recreational, angling, and jet boating features.

To protect those characteristics and features, the order requires (subject to the protection of existing water rights) the quantity and rate of flow of natural water in the river upstream of its confluence with the Wilberforce River and all tributaries upstream of that confluence to be retained in their natural state. It also requires the quantity and level of natural water in Lake Heron and the quantity and flow of natural water in its tributary streams to be retained in their natural state.

12. With respect to the river downstream of the confluence of the Rakaia River with the Wilberforce River, the order, again subject to the protection of existing rights, requires that the quantity and rate of flow of the natural waters in the Wilberforce River and its tributaries be retained in their natural state and that the quantity and level of natural water in Lake Coleridge and the quantity and rate of flow of natural water in its tributary streams be retained in their existing state. Further, to protect the outstanding characteristics and features referred to above, the order requires that the quantity and rate of flow of the natural waters in the Rakaia River downstream of its confluence with the Wilberforce River and upstream of the North Canterbury Catchment Board's recorder site be retained in their natural state. Again, this is subject to existing rights. The recorder site referred to is at the Rakaia Gorge Bridge.

13. The order then goes on in cl.7 to define for the purposes of that clause the term “minimum gorge flow”. It sets out a minimum gorge flow for each month of the year:

Month	Minimum flow (m ³ /s)	Month	Minimum flow (m ³ /s)
January	124	July	91
February	108	August	92
March	105	September	90
April	97	October	106
May	95	November	129
June	96	December	139

It is clear from the decision of the Planning Tribunal, and this was acknowledged by Mr Matheson for the applicant, that, at the time of the grant of the original application, the minimum flows were considered to be the appropriate level to provide for the outstanding characteristics.

14. Cl.7 requires that because of the outstanding characteristics and features referred to above in that part of the river between the recorder site and the sea, and for their protection, the minimum gorge flow shall be retained in the river and, while the gorge flow does not exceed the minimum gorge flow, the flow in the river shall not be reduced by abstraction or diversion. Cl.7 then provides that while the gorge flow exceeds the minimum gorge flow by less than 140 cubic metres per second, the flow shall not be reduced by abstraction or diversion by more than half the excess of the gorge flow over the minimum gorge flow and where the gorge flow exceeds the minimum by 140 cubic metres the flow cannot be reduced by abstraction or diversion by more than 70 cubic metres per second. The effect of this is that for the maximum allocation of 70 m³/s to be exercised, the gorge flow must be at least equal to 140 m³/s above the minimum flow for that month. This means that the allocable band is not fully supplied by the river until river flows reach between 245 and 279 m³/s during the irrigation season, well above the river’s mean and median annual gorge flows of 213 and 159 m³/s respectively.

15. There then follow certain restrictions on the right to dam the bodies of water specified in the order and limits on the grant of water rights and general authorisations, including limits on discharge water quality. There are exceptions to those prohibitions for research into and enhancement of wildlife habitats, the maintenance and protection of roads and other necessary public utilities, soil conservation and related matters and, as the result of the amendment referred to above, the taking and discharging of water for the (then) Ellesmere County Council's rural water supply.

THE APPLICATION TO AMEND THE WCO

16. The application seeks to amend the terms and conditions of the current WCO in order to enable the future consenting, construction and operation of the various stages of the applicant's proposed Lake Coleridge project. The Lake Coleridge project involves augmenting the use of the Lake Coleridge hydro-electric power scheme (Coleridge HEPS or scheme) so that the water stored in Lake Coleridge is able to be utilised for both irrigation and hydro-electricity generation. In particular, the Lake Coleridge project involves changing the way in which TrustPower currently operates the Coleridge HEPS so as to enable water stored in Lake Coleridge during defined flow conditions to be exempt from the restrictions in cl.7 of the current WCO upon its subsequent release and use for irrigation on the Canterbury Plains. The Lake Coleridge project also involves further enhancements to the pumping station adjacent to the Highbank Power Station (a power station which will be referred to in more detail later) so as to enable water stored in Lake Coleridge to be utilised for irrigation on either bank of the Rakaia River. The amendments to the present terms and conditions are required in order to enable the future consideration of

Resource Consent applications that will be necessary to allow the development and operation of the Lake Coleridge project.

17. Before proceeding further to summarise the amendments sought, it is necessary briefly to describe the Lake Coleridge project. If the project proceeds, the focus of the Coleridge HEPS will change from being the generation of electricity to that of electricity generation and the provision of water for irrigation. As a result of that amended operational focus, flow releases from Lake Coleridge will occur at different times of the year than they have historically. Furthermore, the times of the year that the lake levels are high and low will also change. However, it is intended that the existing Resource Consent conditions controlling the maximum and minimum levels in Lake Coleridge will remain in place.

18. A critical component of the Lake Coleridge project is the classification of some of the water that is currently diverted into Lake Coleridge as “stored water”. Pursuant to existing consents, water is currently diverted into Lake Coleridge from the Wilberforce River, the Harper River and smaller streams. It is intended that water can only be classified as “stored water” if, when it enters Lake Coleridge, the flow in the Rakaia River exceeds the minimum gorge flow by 140 cubic metres per second or it is water that could have been taken from the river by certain defined holders of resource consents but was not taken. In other words, only when the restrictions specified in clause 7 of the WCO are being met, and the water is not otherwise being used, will water being diverted into Lake Coleridge be able to be classified as 'stored water'. It is proposed that the stored water be available for release from Lake Coleridge at times when flows in the Rakaia River prevent water permits – generally for irrigation - being utilised. The stored water so released can then be abstracted by identified downstream users even if at those times the flows in the Rakaia River are below the minimum flows specified in cl.7 of the WCO.

19. It is intended that the stored water be released either to the Rakaia River via the Coleridge Power Station tail race or conveyed along the true left bank of the river in a proposed canal through four to six new power generation stations totalling about 30MW. The intention is that the availability of stored water will improve the reliability of supply of irrigation water to the identified downstream irrigators. The proposed WCO variation effectively involves fully using already allocated water, by storing that unused water in Lake Coleridge. This 'stored water' will then be released to irrigators at times when irrigation demand exceeds the ability of the river to directly supply within the WCO allocation. TrustPower will be able to identify what proportion of water in Lake Coleridge is 'stored water' and what proportion is 'normal water'.
20. The principal amendments sought to the existing order are:
- (i) An amendment to the definition of "gorge flow" to include the mean daily flow of non-stored water diverted or discharged into any canal from Lake Coleridge but minus the mean daily flow of stored water discharged from Lake Coleridge into the Rakaia River above the Rakaia Gorge.
 - (ii) A definition for the Lake Coleridge project.
 - (iii) A definition of the register of those entitled to take stored water.
 - (iv) The definition of stored water which is a key provision.
 - (v) An addition to cl.7 to provide that nothing in that clause restricts the abstraction of or diversion of stored water from the Rakaia River or from any conveyance infrastructure constructed as part of the Lake Coleridge project.
21. There is a new clause 9A making specific provision for the Lake Coleridge project. In particular, it provides that nothing in the order shall restrict the granting of Resource Consents for that project provided that the outstanding characteristics and features of the order

are recognised and sustained. It limits the maximum discharge through any canal to 25 cubic metres per second and the total maximum discharge from Lake Coleridge to 65 cubic metres per second. A further change offered by the applicant at the hearing would prevent the release of water other than Stored Water down the canal whenever the Rakaia gorge flow is more than 10 cubic metres per second below the minimum flow for that month. Cl.9A requires the keeping of records and provides that abstractions or diversions from any conveyance infrastructure constructed as part of the project shall be treated as if those abstractions or diversions were from the river between the gorge bridge and the sea. There are a number of consequential amendments to enable the project and further amendments to update the order by referring to current applicable legislation in place of repealed legislation. This description of the proposed changes refers to updated amendments developed during the course of the hearing in place of those contained in the application itself.

NOTIFICATION

22. S.48 of the ECan Act applies S.204 of the RMA to the notification of applications for water conservation orders in Canterbury. The application was notified pursuant to S.204 on 15th October 2011. Every resident, ratepayer and water permit holder in the Rakaia Catchment appearing on Environment Canterbury's database was sent a copy of the public notice. Submissions closed on 21 November 2011. There were 224 submissions received; six were in support – two unconditionally and four subject to a specific matter being resolved. The remaining submissions opposed the application and can be classified into three groups:
- (i) Those recorded as conditionally opposing the application seeking resolution of one or two specific matters;

- (ii) Those that support in principle the use of Lake Coleridge to store additional water for irrigation but have concerns with the specific proposal; and
 - (iii) Those who oppose any change to the WCO.
23. A number of the submissions were not in the prescribed form or suffered from other procedural defects. The applicant had no objection to us considering all submissions on their merits and that is the procedure we have followed. Legislation provides for submitters to state preferences for the preservation of the lake and water bodies or different features and qualities. Two submitters attempted to take advantage of this provision. The legislation is clear that such preferences can only be sought where the proposal is to amend the outstanding water bodies, features or characteristics provided by the order. In such a case a preference enables the seeking of an order to preserve a different but related water body or different features and qualities of the water bodies. In this case there is no amendment sought to the water bodies, features or characteristics protected by the order and accordingly we have concluded that we have no jurisdiction to consider such preferences. That conclusion was also reached by ECan's legal advisers and, as a consequence the preferences were not publicly notified as would otherwise have been the case.

A DESCRIPTION OF THE RIVER AND ITS CATCHMENT

24. The headwaters of the river are located within the Southern Alps and extend back to the main divide. Its main tributaries in the upper catchment are the Mathias and Wilberforce Rivers which extend the catchment to the north-west and north respectively. The headwaters are glacially fed and exposed to north-west rainfall which results in regular floods during spring and early summer. This means that at times when conditions are dry on the plains, the flows in the river can still be relatively high. For example, the mean flow in the Rakaia River

over the three months from November to January is typically double that over the three months from July to September. The river has a catchment area of approximately 2,900 square kilometres of which 2,600 square kilometres (90%) is upstream of the Rakaia Gorge.

25. The other main features of the upper catchment are Lakes Heron and Coleridge. Lake Heron is not affected by this proposal. Lake Coleridge, known to Maori as Whakamataua, is a large natural lake inland of Glentunnel and approximately 505 metres above sea level. It is about 120 kilometres west of Christchurch. Lake Coleridge is formed in a rock basin excavated by glacial processes in the Wilberforce Valley and is about 17.8 kilometres long and covers an area of around 39.2 square kilometres. The lake is almost entirely surrounded by mountains. It has been harnessed for hydro-electricity generation since 1914. In order to augment the supply of water for electricity generation, the Wilberforce and Harper Rivers have been diverted and water is conveyed by canals from those rivers into Lake Coleridge. The Acheron River is also diverted via a pipeline and race into the Coleridge Stream which eventually flows into Lake Coleridge. A weir across Lake Stream blocks the natural outflow of Lake Coleridge to the Harper River partly facilitating control of the lake level. The tail race of the Coleridge Power Station discharges into the Rakaia River.
26. Before flowing on to the Canterbury Plains the river briefly loses its braided nature as it enters the Rakaia Gorge. Through the gorge the river narrows and native vegetation lines its margins. The gorge is the location of the principal hydrological recording point for the Rakaia River catchment, at Fighting Hill. Below the gorge the braided formation of the river returns as it opens out beneath a series of low terraces and steep cliffs. The average number of braids increases from 10 near the Rakaia Gorge to approximately 20 near the coast, 64km from the gorge. In the vicinity of the coast the width of the river

is in excess of 2 kilometres. The river has no significant tributaries downstream of the gorge. The only material contribution of flow to the river downstream of the gorge is from the Highbank Power Station (Highbank HEPS or Highbank) but that discharge is intermittent and generally only occurs during winter months. The river discharges into the Pacific Ocean approximately 50 kilometres south-west of Christchurch and 13 kilometres south-west of Te Waihora (Lake Ellesmere).

27. Inland from the coast the river diverges into two channels around Rakaia Island. The main channel flows to the south of Rakaia Island, while the Little Rakaia River flows to the north. The two channels flow into a lagoon or hapua and have a common outlet to the ocean. The river can only be crossed by vehicles at two points along its entire length – at the gorge and at State Highway 1 at the township of Rakaia, approximately 22 kilometres from the coast. Below the gorge the land both north and south of the river is used predominantly for agricultural purposes and its waters, and connected groundwaters, have and continue to be sought after for irrigation, stock watering and water supply purposes.
28. The effect of the diversions into Lake Coleridge is to, at times, significantly reduce the natural flow of water into the Rakaia River from its diverted tributaries. However, currently, that water eventually finds its way into the river via the tail race of the Coleridge HEPS, although the timing of discharges is dictated by the generation regime of the power station. There are minimum low and high levels prescribed for the lake. Once the water exceeds the upper level, lake inflows cease and water flows on naturally down the Wilberforce River and into the Rakaia. The taking of water through Coleridge HEPS must cease when the prescribed minimum level of the Lake is reached.

29. Between the Rakaia River's hāpua (coastal lagoon) and the sea, natural processes have created a gravel bank. The river exits to the sea through a channel carved through the bank by the river. The location of this channel varies significantly, depending partly on the strength of the flow from the river. When the flow is high and powerful the channel is at the southern end of the lagoon. As the flow reduces it moves north to a position opposite the settlement known as the Rakaia Huts. The significance of this movement of the outlet will become more apparent later in this discussion.

EXISTING TAKES FROM AND DISCHARGES INTO THE RIVER

30. Reference has already been made to the natural and man-made discharges into the river. The operation of the Coleridge HEPS is authorised under 16 resource consents granted in compliance with the current WCO. Those consents were renewed in 1996 and expire in December 2031. The Wilberforce/ Oakden and Harper diversions into the head of Lake Coleridge are restricted when suspended sediment loads exceed specified thresholds, and when the lake level is likely to exceed its design flood maximum of 509.6m, with rarely occurring higher levels resulting in return flows to the Wilberforce via Lake Stream, also at the head of the lake.
31. As hydrologist Mr Waugh reminded us, consent CRC960851.2 requires that whenever Coleridge HEPS power station outages cause the HEPS discharge back to the Rakaia to cease for more than 24 hours, and the Rakaia gorge flow is within 30 m³/s of that month's minimum flow, TrustPower is required to shut off the Wilberforce and Harper diversions into the head of the lake. The exercise and conditions of current Coleridge HEPS consents are thus relevant to the long-term effect of the WCO variation on Rakaia river flows, which we come to shortly.

32. Below the gorge is the Highbank HEPS. This is situated at the northern end of the Rangitata Diversion Race (RDR), an irrigation race which runs 67km from the Rangitata River to the Rakaia River taking water from the Ashburton River on the way, and servicing 66000ha of land. Water not needed for irrigation is discharged through the Highbank HEPS at the northern end of the race into the Rakaia river but, as already mentioned, that discharge is principally in the winter 'generation season' 10 May to 9 September when the water is not needed for irrigation.
33. The Highbank HEPS discharge to the Rakaia averages in the range 11-18 m³/s on an annual basis, with a maximum rate of 35 m³/s. However, there is no requirement for a minimum amount of water to be discharged from the RDR into the Rakaia River. Of relevance to our consideration of the effect of the WCO variation below Highbank is the possibility that ALL water in the RDR during the irrigation season 10 September to 9 May could in future be used for irrigation or taken into storage with no discharge during that period into the Rakaia River. TrustPower is also installing high lift pumps at Highbank HEPS to pump water already allocated for irrigation from the Rakaia into the Highbank canal to supplement the available RDR water.
34. The existing order effectively limits the amount of water that can be taken for irrigation purposes and the times when it can be taken. ECan has established a banding system which recognises priorities for water takes based upon when consents were granted. Thus earlier grants of water permits are the first to be able to take water provided the water is above the minimum flows prescribed in the order. In the case of those at the lower end of the priorities, the limitations prescribed by the order effectively prevent the taking of all of the water to which the permits entitle them except when river flows are high. At such times the need to take water is reduced or even non-existent. For this reason those whose priority is at the bottom of the scale, which

include major grants in terms of quantity, have considered various means of storing water so that it can be used for irrigation at times when the need is greatest.

35. There are two major grants that fall into this low priority band. The first is the Barhill Chertsey grant which allows a take of 17 cubic metres per second and the second is the Ashburton Community Trust/ Central Plains Water Trust grants which between them have rights to take 40 cubic metres per second from the river. Together with smaller takes, the maximum abstraction or diversion rights of 70 cubic metres per second have been fully allocated.

THE DECISION-MAKING FRAMEWORK

36. The Water & Soil Conservation Act under which the existing WCO was made has been replaced by the Resource Management Act 1991. Water Conservation Orders are provided for by Part 9 of that Act. This is an application for amendment to an existing order. S.16(2) of the RMA enables applications for amendment and ss.4 provides generally that applications for amendment will be dealt with in the same manner as an application for an order. The definition of a Water Conservation Order in S.200 of the RMA means an order made under S.214 which by virtue of the provisions of S.216(4) applies to applications for amendment.
37. However, as mentioned earlier, the primary legislation in respect of this application is the ECan Act. Sub-part 3 of that Act provides for water conservation orders. S.46(1) provides that except as especially provided in the sub-part, the sub-part applies instead of part 9 of the RMA to every application for a Canterbury WCO. There are some potentially significant differences between the provisions of the RMA and those of the ECan Act in relation to the considerations that must

be taken into account in respect of a Canterbury WCO. However, so far as the application itself is concerned, applications for amendment are dealt with in the same manner as an application for an order. The definition of “WCO application” under the ECan Act means an application:

- “(a) for a Canterbury WCO; and
- (b) to revoke or vary a Canterbury WCO”

Canterbury WCO or WCO is defined as a Water Conservation Order in respect of a water body in the Canterbury region. S.58 of the ECan Act applies to applications to revoke or vary. It provides that S.216(1) and (2) of the RMA apply in respect of an application to revoke or vary a Canterbury WCO.

38. Ss.3 and 4 of S.216 of the RMA are not made applicable by S.58 but the provisions of S.58 and the definitions of WCO application and Canterbury WCO referred to above, make it clear that jurisdiction exists to amend an existing WCO. Once an application for amendment is made and referred to ECan it follows the same procedures as those which apply to an application for a new order. Thus S.208 RMA (as made applicable by S.51 ECan Act) applies to the report on an application and SS.214 and 215 RMA (made applicable by S.56 ECan Act) apply to the making of an order.

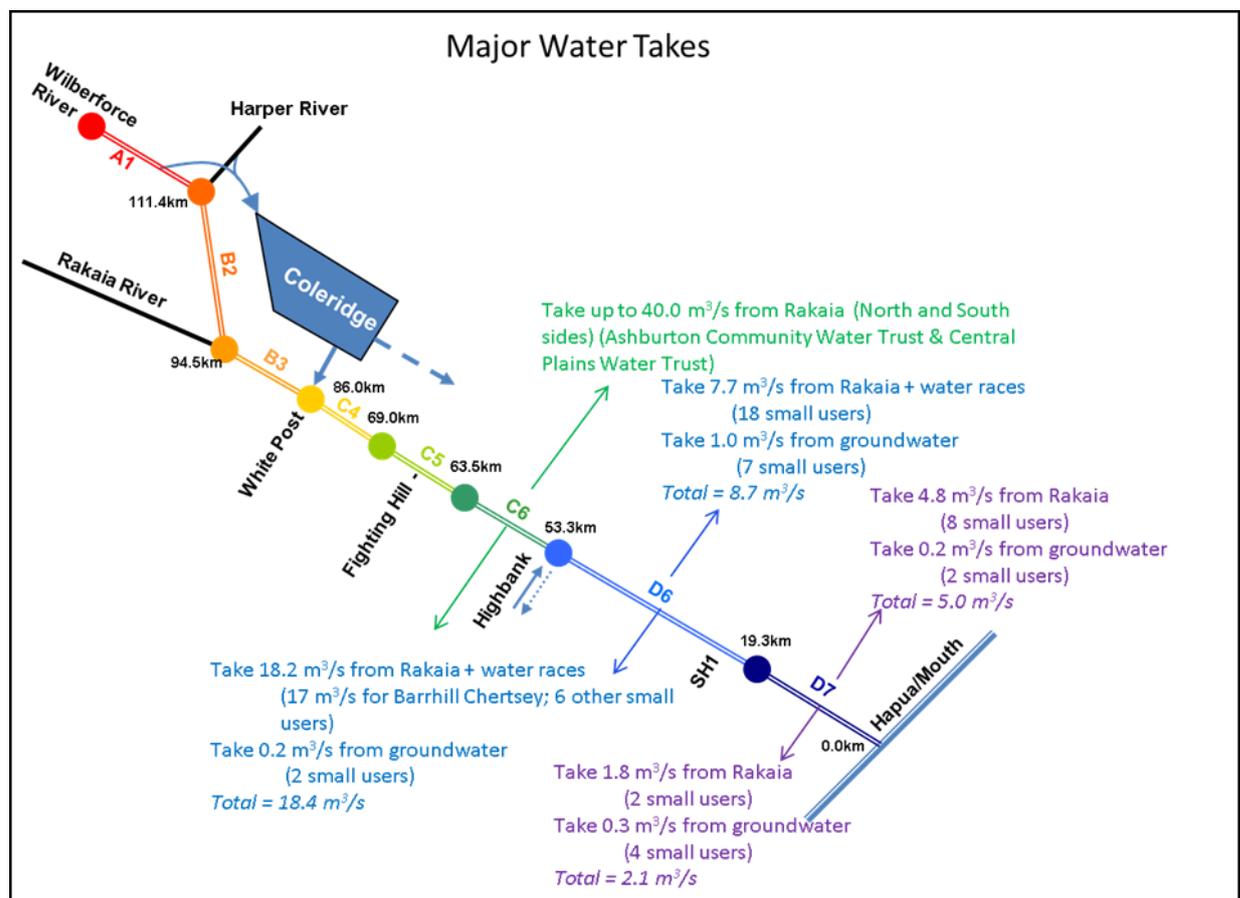
THE APPLICANT’S CASE

39. TrustPower called evidence from 18 witnesses, covering the company’s aspirations, the important hydrological concerns, matters relating to effects on ground water, concerns relating to coastal processes at the hāpua, concerns relating to river braiding, hydraulic habitat, water temperature and suspended sediment and the biological implications of flow regime alteration, aquatic ecology, an assessment of the current state of native fish and fauna and the effects of the variation. Evidence was presented relating to the avian populations of

the river and the hydrological effects of the proposal including lake level fluctuations and changes in river flow regimes, the existing aquatic environment and an assessment of the potential ecological effects of the variation. Landscape issues, effects on recreational and leisure time activities and economic implications were also addressed. Generally the experts claimed that the changes to river flow were unlikely to have more than a minor effect on the number and width of the braids in the river and a relatively minor effect on water levels in the main channel (45mm average) and even less in the minor braids. The evidence was that the groundwater effects of the most extreme changes in flow and level would be not more than minor.

40. All parties and the Committee benefited from the fact that a number of outstanding issues were resolved after the first hearing. We were also able at this hearing to ensure that remaining issues of contention were well aired.
41. Mr Lilley, TrustPower's Engineering Manager summarised three stages of the proposed project development:
- Stage 1: install a pump station at the existing Highbank Power Station to pump already allocated run-of-river water to the consented BCI scheme.
 - Stage 2: incrementally increase the capacity of the Highbank Pump Station to 16 m³/s from the current 5 m³/s, utilising 'stored water' released from Coleridge HEPS into the river, to enhance reliability of supply, including construction of a 12 m³/s siphon across the Rakaia River near the Highbank HEPS to allow supply of water to both sides of the river.
 - Stage 3: increase the size of the Coleridge HEPS intake from 40 to 65 cumecs to also supply a new canal carrying up to 25 m³/s along approximately the 500m contour to irrigation areas on the plains and on to both sides of the Rakaia River and for additional power generation.

42. Together these stages comprise the Lake Coleridge Project. Our role as commissioners is not to authorise these stages, but rather to consider the changes to the Rakaia WCO proposed by TrustPower which would allow resource consents to be applied for. The figure below taken from the joint brief of Messrs Lilley and Levy helps to visualise the project locations in relation to the Rakaia River, and the consented downstream water takes:



43. Mr Levy, a civil engineer, and Mr Leong, a hydrologist, described the modelled changes to river flows down the length of the Rakaia River for a range of scenarios, with and without the Lake Coleridge Project. Mr Leong's hydrological simulations are fundamental to the assessment of effects on the outstanding values in the Rakaia below Lake Coleridge. The modelled flows have been relied upon by other expert witnesses to assess effects of flow changes on the uses and

values relevant to their expertise. These simulated changes in river flows are summarised later.

44. Mr Levy noted that floods are the main channel forming process in the Rakaia. Thus, it is during floods that gravel erosion and deposition create the continual changes in the river braids seen by river users. There was some debate about the significance of lower flows in mobilising gravel movement, which we comment on later.
45. There was considerable focus on potential effects of flow changes at the hāpua. This has been prompted by recent flooding and erosion at Rakaia Huts on the north bank at the river mouth. Mr Levy's analysis of changes in flows suggests that about 1 year in 6, there could be up to 30m³/s reduction (but typically less) in flow over several weeks, but in most years there will be only minor changes in the magnitude and duration of low flows reaching the mouth. We note his assumptions are conservative in that he assumes full use of all irrigation water from the project and has also assumed a generous 25 m³/s flow loss to groundwater between the gorge and the sea compared with Ms Ritson's 18.7 ±7.4 m³/s on behalf of ECan. While occasional reductions in flows of 30 cumecs are significant, the question for us is whether at the hāpua these will exacerbate flooding or affect the ecological processes there.
46. Mr Single, a coastal geomorphologist, claimed that the effects of the variation on physical processes at the river mouth and hapua were likely to be negligible while incidences of flooding of the hapua and changes to outlet behaviour will not be noticeably different to the situation at present. Regarding Lake Coleridge, he said that the effects of the variation on physical shoreline processes and geomorphology can be regarded as negligible.

47. A number of witnesses gave evidence relating to the effects of the proposal on flora, fish and avian populations. As to benthic invertebrates, it was acknowledged that there would be a 7.4% loss in habitat between Coleridge and Highbank and below Highbank a reduction in the average number of days with optimum salmon angling flows from 15 to 12 days per year. The average reduction in habitat for all species was calculated as 6.9% in winter and 2.1% in summer. The evidence was that habitat is not the limiting factor for species in the Rakaia. It is a particularly inhospitable environment for aquatic species because of floods, turbidity and sediment transport. The witnesses said that there would be no effects on the native fish population which is not limited by habitat availability, that water clarity and temperature were unlikely to change and that water quality would be maintained in its current state even though there was potentially a minor increase in nutrient and faecal micro-organism concentrations in the lower river. In Lake Coleridge, benthic invertebrates would not be affected and salmonids would be likely to benefit from the higher lake levels.
48. As to avian species, the evidence was that the proposed variation will continue to protect those outstanding wildlife habitat values of the river catchment. The changes in the level of Lake Coleridge already affect the nesting success of the southern crested grebes, which are considered threatened. Dr Sanders considered the changed pattern of lake level fluctuations would mean the lake will remain a relatively poor habitat for grebes, in contrast to more stable lakes elsewhere in Canterbury. As to wetlands associated with the Rakaia and Lake Coleridge, it was not expected that the relatively minor changes would have any adverse effect on vegetation or habitat values.
49. Mr Brown, who gave landscape evidence, said that the Rakaia River and Lake Coleridge environment, in regard to the distribution and nature of land use activities, landscape structure and its essential

naturalness, has not fundamentally changed since the WCO's implementation. In relation to the applicant's proposal, he said that only minor changes will occur to the wetted area and number of braids and width of braids of the Rakaia River and that such changes would for the most part be diluted by the scale of the river's fairway, and forms and natural fluctuations. He expressed the view that the variation, if implemented, would not affect the natural character values of the Rakaia River which underpin the WCO. As to Lake Coleridge, he concluded that the variation to the WCO would have, at most, a very minor or very low level impact on the Lake's natural character values.

50. Recreation and tourist effects on Lake Coleridge were said to be minor or less. Because there was no predicted effect on salmon or trout ecology the effect on fishing values would be likely to be minor. That was the case too with jet-boating. The evidence was that the variation will not compromise the outstanding characteristics of the river and its catchment for recreation. The economic evidence claimed that the applicant's proposals would bring economic benefits from more efficient and increased areas of irrigation beyond that at present, and that there would be minor but positive effects from the extra electricity generation.
51. There was evidence presented regarding the possible adverse effects of contamination of ground water as a result of increased irrigation along with an increase in the numbers of dairy cows in particular. Mr Callender gave evidence on these issues. He noted that the two main consents that will be utilised for the purpose of using stored water to irrigate land are those held by Barhill Chertsey Irrigation Ltd (BCI) and Central Plains Water Trust (CPW). He noted that the conditions imposed on the BCI consent required irrigation water to be used efficiently by ensuring:

- (1) The average application rate shall be 5.3 mm/day or rates specified in other water use consents.
- (2) Irrigation does not cause the soil moisture level to exceed field capacity.
- (3) Leakage from pipes and structures is avoided.
- (4) The use of water onto non-productive land such as impermeable surfaces, and river or stream riparian strips is avoided.

52. On the north side of the Rakaia, CPW's consent requires water to be used efficiently and sets a maximum average rate whilst not causing the soil moisture level to exceed field capacity and by avoiding any wastage. CPW's consent also has extensive conditions to manage the land in a way that minimises nutrient loss and provides for a review or revision to the consent to achieve consistency with any nutrient discharge allowances that are defined for the catchments where irrigation occurs. Environment Canterbury is working on the preparation of such allowances. The benefit identified was that ground water takes were likely to be reduced in favour of taking irrigation water from the applicant's proposed scheme and that this would represent a positive environmental effect. Along with that, there would be an increased dilution of soil drainage nutrients and a positive improvement in ground water and stream base flow. It was acknowledged that whilst the mass of nutrient leaching may increase, the concentration of nutrients in the drainage water may decrease due to extra drainage water. On this issue, Mr Macfarlane, a farmer and rural adviser, gave evidence that in his view a more reliable supply of water would reduce the total amount of irrigation water used because farmers would move from a "just in case" mentality where land is irrigated in case predicted rainfall does not occur to "just in time" behaviour which is enabled by having water stored as a buffer available for use if rain does not occur or evapotranspiration increases.

53. We also heard evidence as to economic impacts. Mr Macfarlane, who we have already referred to above, calculated an economic return from enhanced reliability to be 12.1% assuming change in land use, and 10.4% if land use was altered to optimise per hectare profitability. Mr Clough, an economist, concluded, based on indicative capital costs for the scheme, that the project would inject expenditure in the regional economy of around \$41M per year on construction and operation over the project's construction period. He calculated net gains in electricity generation output worth around \$5.4M per year, depending on the fuel used in alternative power stations displaced by this output and a small benefit from a reduction in greenhouse gas emissions. He calculated that there would be additional agricultural production of up to \$476M per year if water from the project was used to irrigate currently non-irrigated land area and no less than \$4M to \$5M, plus other gains of indeterminate value from reliability improvements if water is used on land already consented and reliant on run of river or ground water sources. Evidence was also called as to planning matters, which we will refer to later.
54. We note that all the effects referred to in the evidence (other than economic effects and the effects resulting from increased irrigation) have been assessed against the evidence relating to hydrological changes resulting from the applicant's proposal. We have given particular consideration to these changes and our conclusions are as follows.
55. Firstly, we observe that the simulated changes in flows depend on a number of assumptions. Principle among these is the assumption that the Coleridge HEPS will continue operating, and therefore discharging to the Rakaia River at Lake Coleridge in response to market electricity in a similar fashion as at present. The validity of this assumption was questioned in our minute of 15 August 2012.

56. A second major assumption is that the demand for water taken from Lake Coleridge via the proposed 25 cumec canal is the aggregated irrigation water demand of currently authorised schemes and consented takes currently on the Register, including an assumed volume of associated water storage in the Lake. Over time, those patterns of water use may increase, or additional storage requiring filling from the canal may be built. Therefore, in making this decision, we must consider the possible worst case outcome for the river. In the absence of evidence relating to these possibilities or the possibility of the Coleridge HEPS ceasing operation, restrictions on the water taken from Lake Coleridge or a requirement to maintain a specified discharge regime into the Rakaia from the lake may be needed.
57. In its closing submissions, TrustPower offered some mitigation during times when Rakaia Gorge flows are more than 10 m³/s below the relevant WCO monthly minimum flows, i.e. only stored water may be taken via the canal while that situation applies.
58. Accepting for the time being the assumptions behind the applicant's flow modelling, the primary hydrological changes resulting from the Lake Coleridge Project would be these. Based on Mr Leong's analysis of 30 years of actual flow records, from 1980 to 2009, discharges from the Coleridge HEPS would average 13.6 m³/s compared with 26.7 m³/s on average under the current operating regime. The difference of 13.1 m³/s on average will be diverted down the proposed 25 m³/s capacity canal. Of the total canal flow, 14% on average, is 'stored water'. Some 48% of the canal water (6.23 m³/s) would be discharged back into the Rakaia River at Highbank, mainly in winter and spring. The balance of the 13.1 m³/s referred to above goes to irrigation on both sides of the river, either as "stored water" or as normal water being abstracted from the canal under the standard WCO restrictions rather than directly from the river. The 6.23 m³/s average return flow is countered by an annual average 1.28 m³/s pumped from the river up into the RDR

canal to supplement irrigation demand, mainly in summer. We can see that these seasonal changes in operation (high discharges in winter with a maximum of 41 m³/s, low in summer with a minimum of zero, average of 18.4 compared with the current 12.2 m³/s) will create seasonal changes in the current flow regime from Highbank to the sea. Therefore our assessment must consider more than just changes in average flows.

59. Mr Leong's analysis concludes that the net reduction in flow from Highbank to the sea would have been 8.1 m³/s, had the Lake Coleridge Project been operating over the simulated period of 1980 to 2009. However at this point we must note that the historical flow regime is not the one we must base our assessment of effects upon. The appropriate comparison is the consented baseline. Because resource consents have already been granted for the extraction up to the limit of 70 m³/s allowed in the current WCO, albeit with significant restrictions on when that water can be taken, we must base our assessment of the effects of the proposed variation on that consented situation.
60. Mr Leong has presented modelled results for two potential consented baselines. The first scenario is described as "existing consents without storage", in which water is taken from the Rakaia for direct irrigation use but only when the minimum flow and other WCO restrictions applying to the consents allow such run-of-river takes. The second scenario is "existing consents with storage" in which the applicant has allowed for sufficient water storage reservoir capacity (110 million cubic metres) to achieve the same irrigation supply reliability as assumed for the Lake Coleridge Project. This scenario allows for storage of only 56 of the total of 70 m³/s already allocated from the Rakaia, as the times when the last 14 m³/s could be taken under the WCO rules are so restricted (10-30% of the time) that it would not be economic to build sufficient storage for that portion of the allocation if

there were years when that storage simply could not be filled. We agree with that logic, and it also provides a suitable basis for comparing the Lake Coleridge Project outcomes with the "existing consents with storage" scenario.

61. Because in the fullness of time, we think storage would be built to exercise current run-of-river consents (in the absence of the proposed Lake Coleridge Project), we consider the "existing consents with storage" scenario the appropriate consented baseline against which to compare the hydrological and environmental changes that the WCO variation would allow. The major existing consents held by BCI and ACWT/CPW are not yet exercised but comply with the restrictions of the current WCO. Therefore the consented baseline is deemed to protect the outstanding characteristics of the WCO (despite, as Ngai Tahu pointed out, any evidence to confirm this). We note Mr Jowett's evidence that the minimum monthly flows set in the WCO approximately represent the monthly 7-day 5-year low flows in the Rakaia Gorge. There was and still is inevitably a high degree of judgement about the relationship between that flow metric and the maintenance of the outstanding values identified in the WCO.

62. Mr Leong's analysis of TrustPower's modelled operating regime (his Fig A3.4) shows that for about 10% of the time, the canal would be flowing at its 25 cumec capacity. For about 44% of the time, mainly during winter, the canal would be flowing at 12 cumecs which corresponds to the proposed capacity of the siphon across the Rakaia to Highbank. These data highlight to us the importance of the assumptions made by TrustPower about the design and operating regime for the canal. For example, if storage reservoirs were built in conjunction with the canal, or if the siphon capacity is increased beyond 12 cumecs, that would increase the durations of reduced flows in the Rakaia River down to Highbank. We return to this matter later.

63. We note from Mr Levy's evidence that the lake inflows average about 26 m³/s, close to the 25 m³/s capacity of the potential outflow canal. The hydrologists agree that high flows and flood flows will be unaffected by the Lake Coleridge Project. However Mr Leong's evidence included analysis of potential increased capture of freshes into Lake Coleridge, a fresh being defined as flow increases between 1.5 and 2.5 times the median flow. He concluded that approximately 1.5 extra freshes per year of an average of 29 would be diverted into Lake Coleridge. Mr Leong's modelling shows that the mean inflow to Lake Coleridge will increase only marginally as a result of the project being implemented, from 25.4 to 26.7 m³/s.
64. Discharges from the Coleridge HEPS would remain within the existing consented maximum flow of 40.1 m³/s with typical variations of 0 m³/s to 37 m³/s and with more daily variability due to its operation as a 'peaking' station. These discharges compare with a mean annual flow of the Rakaia Gorge at Fighting Hill of 211 m³/s, a median (50th percentile) flow of 159 m³/s and a mean annual 7-day low flow of 90 m³/s. So some 12% of the Rakaia Gorge mean annual flow currently arrives via the Coleridge HEPS.
65. The fluctuations of water levels in Lake Coleridge will have a different pattern with Mr Leong's modelling showing a mean lake level 0.24 m higher than the historical mean level. Essentially the lake level will be higher between June and October and lower for January to April when irrigation water is being supplied down the canal. However, lake level changes will continue to be limited to within the current minimum and maximum operating levels prescribed by Coleridge HEPS resource consent CRC960832.3, i.e. between 505.6 m and 509.4 m above mean sea level. Mr Lilley noted that the normal operating range of 506.4 to 509.4m (a 3 metre fluctuation) is equivalent to a stored volume of about 100 million cubic metres of water.

66. With the variation to the RWCO and with the Lake Coleridge Project in place, the adjusted gorge flow will in effect be re-defined as flow in the river, less any 'stored water' flow in the river, plus any 'normal water' (non-stored water) flow in the canal. Mr Leong notes that in the 30 year modelled record, the virtual flow would have been up to 22.4 % greater than the physical flow, but also that for about 14 % of the time, the virtual gorge flow would have been either the same or lower (by up to 15.7 m³/s) than the physical gorge flow. Counsel for TrustPower, Mr Matheson, summarised by saying that effectively Lake Coleridge will fill two to three months earlier and discharge three months earlier than at present. We accept that summary.
67. Because some of the water able to be taken from Lake Coleridge under the Lake Coleridge Project would be returned to the Rakaia River at Highbank via a proposed north-south siphon and discharged through the Highbank HEPS, it is logical to consider the effects of the WCO variation on four separate parts of the river:
- (1) From the Wilberforce diversion into Lake Coleridge 25km down the Wilberforce and Rakaia to the Coleridge HEPS discharge (TrustPower's Reach B)
 - (2) From the Coleridge HEPS discharge through Rakaia Gorge 33km down to the Highbank HEPS discharge (Reach C)
 - (3) From Highbank HEPS discharge past State Highway 1 down the 53km to the hāpua (coastal lagoon)(Reach D)
 - (4) From the hāpua to the Pacific Ocean through the coastal gravel bar.
68. Upstream of the Coleridge HEPS (Reach B), there will be some temporal change in lake use and hence there may be times when slightly less water is abstracted (as the lake is already full) or slightly more water is taken (as the lake is emptier).

69. Reach C of the Rakaia River between Coleridge HEPS and Highbank HEPS will be the reach most affected by changes to the WCO. Until the canal is built, we understand that more stored water may be released via Coleridge HEPS during the irrigation season to allow up to 16 m³/s to be pumped into the RDR at Highbank to meet increased irrigation demand. However, once the canal is built, water which meets WCO rules would be preferentially routed down the canal through the 4 to 6 new HEPS for irrigation use. The effect would be for that component of flow to have bypassed Reach C of the Rakaia River, although some of that water will be discharged back into the Rakaia from Highbank HEPS, mainly in winter, having been transferred via the siphon to the south bank of the Rakaia.
70. In a temporal sense, the modelling indicates to us that future power generation and hence discharge to the Rakaia River from both Coleridge and Highbank HEPS would be weighted more towards autumn and winter, with Lake Coleridge and irrigation storages being preferentially refilled in spring, and water committed more to irrigation in summer. The effect of the Project is to reduce the *daily mean flow* over this reach by an average of 13.1 m³/s and the median flow from 158.7 m³/s to 148.8 m³/s (9.9 m³/s).
71. In terms of low flows, the most commonly used hydrological metric is the MALF, the *mean annual low flow* which is calculated here as the average of the 30 years of the lowest weekly flow occurring in each year. Changes in MALF are widely used to assess effects of water resource developments on aquatic ecological and recreational values. The modelling shows the Project reducing the MALF at Fighting Hill from 90 m³/s to 79 m³/s (a 12% reduction) and the MALF for the four summer months (Dec-Mar) from 114 m³/s to 104 m³/s (a 9% reduction). Mr Jowett concludes that the reduction in MALF reduces the wetted width by 8 % and the depth and velocity by 2-3 %, and for the summer MALF when biological activity would be higher, the

reductions are of the order of 3%. Considering the shorter term fluctuations in flow releases projected for Coleridge HEPS alongside reductions in summer MALF, he concludes that losses in habitat for benthic invertebrates would be about 7.4% in this reach.

72. To understand the actual changes in river flows at Rakaia Gorge resulting from the proposed variation, Mr Leong's Table 4 abbreviated below summarises the number of days that the Lake Coleridge Project would reduce river flows physically below the current minimum flows, based on 1980 to 2009 data. The average annual number of days below the minimum flow would increase from 24 to 57. Most of this increase (20 days of the 33 day increase) is over the four months from May to August. This is outside the irrigation season and outside the period when the river is most biologically active. Figures A4.2 and A4.3 presented by Mr Leong highlight that even under the *current* WCO regime there are occasional times when the flows are well below the WCO minimum flows – in one February for example, the river flow was more than 40 m³/s below the February minimum flow of 108 m³/s. The data suggests that the Lake Coleridge Project would produce less extreme excursions below the minimum flows even though the number of days below the minimum has increased, and the average excursion below the relevant minimum increases to 11.5 m³/s from 9.9 m³/s observed historically. There would be negligible impact on the flood flow regime and overall morphological processes of the Rakaia River because high flows and floods are unaffected by this level of variability. We emphasize that these data do not include the "normal" water flowing down the canal that would be added back into the Rakaia Gorge flow for the purposes of calculating irrigation restrictions under the varied RWCO.

Month	RWCO minimum flow (m ³ /s)	Average number of days below RWCO minimum flow (days)		
		Historic	With canal	Change

January	124	0.7	1.1	+0.4
February	108	1.7	2.9	+1.2
March	105	2.6	5.3	+2.7
April	97	1.9	4.8	+2.9
May	95	1.0	7.0	+6.0
June	96	2.8	6.3	+3.4
July	91	2.8	7.6	+4.8
August	92	1.6	8.3	+6.7
September	90	2.3	3.3	+1.0
October	106	2.5	3.4	+0.9
November	129	1.9	3.3	+1.4
December	139	2.0	3.9	+1.9
Full Year		24	57	+33.3

73. Effectively what we understand the WCO variation is proposing is to transfer the effect of current consented takes below the gorge up the river reach which starts at the Coleridge HEPS discharge. Put another way, the WCO variation would allow the notional transfer of water, taken downriver under current consents, into storage in Lake Coleridge for later release via the proposed canal. The primary beneficial effect is to increase the amount of water able to be used under current run-of-river consents through the addition of storage. The primary adverse effect of that is to reduce flows in the part of the river from the Coleridge HEPS discharge down to where the consented take would have occurred. What we must assess is whether the reductions in flows such as those summarised in the table above would prejudice the outstanding characteristics of the WCO in the affected parts of the river.

74. In Reach D, the Rakaia River flow below Highbank is affected by discharge from the Highbank Power Scheme, by irrigation abstraction and by discharge of non-irrigation water from the new canal back to the river. Fluctuations in discharge from Coleridge HEPS of course also affect short-term flow variability in the lower river, albeit in a damped

manner. Average travel time for a flow pulse from Coleridge to the coast 86km downstream is about 12 hours.

75. Of the 13.1 m³/s average flow diverted via the new canal about 6.2 m³/s is returned to the river at Highbank, mainly during the winter months. Both the Lake Coleridge Project and the “existing consents with storage” scenarios reduce mean river flow below Highbank by about 8.2 m³/s but seasonality of flows changes, as described earlier. Mr Leong concludes that there would generally be marginally less flow in the river below Highbank in the months May to August (about 4 m³/s), marginally more flow in the months September, October and March (about 4 m³/s), and about the same flow for the other months of the year. In terms of low flow events, Mr Leong’s Table 11 shows the Lake Coleridge project would slightly increase the number of these, but not their average duration, compared with the “existing consents with storage” baseline.

76. The table below from Mr Lilley shows little change in mean and median flows from Highbank to the river mouth, but the reductions in MALF indicate there are changes in the timing of low flows down river. Logically these changes result from the effective relaxation of minimum monthly flows under the proposal to allow ‘stored water’ to be taken via the canal and used for irrigation.

Scenario	Mean flow (m ³ /s)	Median flow (m ³ /s)	MALF all year (m ³ /s)	MALF summer (Dec-Mar)
Existing consents with storage.	194.5	155.2	100	113
Lake Coleridge Project (Stage 3)	194.8	154.8	92	106

77. In our minute of 15 August 2012 we sought further explanation of the reasons for the timing differences. Essentially the Project is reducing July/August flows by 7 to 8 m³/s while filling Lake Coleridge, and increasing October/September flows by a similar amount once the lake

is full. The table shows the Project reducing the MALF of the Rakaia River downstream of Highbank from 100 m³/s to 92 m³/s (an 8% reduction) and the MALF for the four summer months (Dec-Mar) from 113 m³/s to 106 m³/s (a 6% reduction). These are higher MALFs and smaller reductions than in the Coleridge to Highbank reach. Mr Jowett used these data in his modelling to conclude that the average number of days with optimum salmon angling flows (160 to 180 m³/s) would be reduced from 15 to 12 days per season (December-March). Reductions in benthic invertebrate habitat in this reach based on summer changes in MALF are 4.9%.

78. Planning evidence for the applicant was given by Mr Kyle. He evaluated the decision making and planning framework relevant to the application. He concluded that the proposed amendments and the project enabled by the amendments align with the vision and relevant principles of the CWMS and the project has been specifically identified to assist in giving effect to that strategy. Overall it is his opinion that the proposed amendments will achieve the various matters listed in S.50(2) of the ECan Act and, in particular, the outstanding characteristics and features of the Rakaia River catchment identified in the WCO will continue to be recognised and sustained with the proposed amendments in place. He acknowledged, however, that there was nothing in the CWMS which specifically supported the proposed canal.

THE SUBMISSIONS

79. As earlier recorded there were 224 submissions received on the application.
80. One submission requested that the application be replaced with an alternative proposal. That is beyond the jurisdiction of this committee which must deal with the application before it. Several submitters

have requested that Environment Canterbury keep a watching brief over the development of the proposal or that the proposal be approved stage by stage so that a check can be kept on any adverse effects that might arise. If these submissions were allowed, the amendment to the WCO would, in effect, be conditional. This, in our view, is also beyond our jurisdiction. Our task is to consider whether the proposed amendment to the WCO is appropriate.

81. A number of submitters have asked that the application not proceed until Environment Canterbury has imposed nutrient limits, water quality standards, or land use rules in the Selwyn-Waihora or Ashburton catchments. We do not have the power when considering an application under the ECan Act to require either the applicant or Environment Canterbury to undertake actions under a different statutory process. We cannot approve the application on condition that something occurs under another statute nor are we entitled to adjourn it until other statutory processes have been followed. We must take the application as it is in the circumstances that exist at this stage. A summary of matters raised by the submissions is attached as annexure 1.

82. Submitters raised a variety of issues as can be seen from the annexed summary. Some submitters said that the river flow was getting lower every year. We are satisfied on the measurement evidence we have heard that the flow is not reducing except as a result of natural processes and water being taken from the river pursuant to grants made in accordance with the provisions of the WCO. The evidence also suggests that climate change will not be a problem in terms of river flow. A number of submitters were concerned that intensified land use as a result of irrigation, would result in greater nutrient discharge. This issue has been addressed earlier in this recommendation. We would add that there is no evidence to suggest that discharge onto farms resulting in increased leaching of nutrients

into ground water, will have any measurable effect on the river itself. We also are aware that Environment Canterbury is taking steps through its proposed Land and Water Regional Plan to deal with issues of nutrient discharge. We accept that a consideration of the effects of nutrient discharge in weighing up benefits and disbenefits of the proposal is a relevant factor to take into account under Part 2 of the Resource Management Act. We will refer again to this issue when we weigh the benefits and disbenefits against the requirements of Part 2.

83. Submitters claim that the salmon habitat will be reduced by the changes to flow in the river. We accept, on the basis of the expert evidence we have heard, that the salmon habitat will not be adversely affected. There was also concern expressed at the effect on salmon of increased water temperatures resulting from lower flows. It is correct that the evidence shows that water temperatures tend to be higher in the lower reaches of the river, but diurnal temperature changes are much greater than the differences between the higher and lower reaches. It is correct, as submitters noted, that salmon numbers have reduced over recent years. The evidence shows that this has occurred in other rivers as well and the cause is unknown. Insofar as the experts ventured opinions in this area, it seems likely that the reduction in numbers has to do with conditions at sea, rather than in the rivers. Concern was expressed that lower water levels would result in more dydimo appearing in the river. However, we heard no evidence about problems relating to dydimo. It was suggested that lower flows would affect jet boaters. No evidence was presented by jet boaters expressing concern. Mr Greenaway, who gave evidence for the applicant on this issue, told us that the jet boaters he spoke to were not concerned and we heard no evidence to the contrary. Mr Southward, in his evidence to us, expressed his concern that it was becoming increasingly difficult for jet boats to navigate the lower reaches of the river. However, there is no evidence that the proposal

will result in any significant change in the pattern of low flows in the lower reaches of the river.

84. Concern was expressed that gravel was not being transported to the sea and that there was a build-up of gravel in the river itself. We are satisfied that the principal events affecting gravel transport are the major floods, which will not be affected by the proposal. We understand that some gravel build-up is usual in braided rivers. A suggestion that there could be effects on fishing at the river mouth was not supported by evidence. Submitters called for continuous monitoring of river flow in the lower reaches but we agree that it is not possible to continuously and reliably measure river flows in braided rivers with such mobile beds. It was submitted that high water levels in Lake Coleridge would affect shore-line angling but there was no evidence to suggest that that would be so. Further issues raised by submitters will be referred to later in this recommendation, in particular issues concerning flooding of land adjoining the hapua and issues relating to Ngai Tahu.

FURTHER MATTERS RAISED IN EVIDENCE BY SUBMITTERS

85. 16 submitters appeared before the committee to give evidence or to enlarge upon their submissions and another four provided affidavit evidence. We record our gratitude to all submitters and particularly to those who came to the hearing and assisted us with their local knowledge and comments on the applicant's proposals.
86. Mr John Wright, the general manager for the BCI Scheme, a joint venture between Barhill Chertsey Irrigation and Electricity Ashburton, gave evidence of the economic and environmental benefits of storage of water. These include changing the "just-in-case mentality", which results in farmers taking water today, even if not strictly required, in

case water is not available tomorrow. He emphasised the advantages of increased reliability of supply which gave confidence to enter into high output intensive farming.

87. Mr Crombie gave evidence on behalf of the Central Plains Water Trust and Central Plains Water Ltd. He too emphasised the benefits of storage and reliability and advised the Committee that CPW and appellants to all their consents had now reached agreement via consent orders. Their counsel, Ms Dunningham, made submissions on the provisions of the Resource Management Act, the ECan Act and the provision and principles of the CWMS.
88. Mr Rouse, the operations manager for the Ashburton District Council, gave affidavit evidence. He said that his Council acknowledged that the increase in the availability of reliable irrigation will be of benefit generally to the district but noted that the Council's support for the application would be even greater if some of the released stored water were to remain in the Rakaia River to enhance in-stream values and be made available to the community to utilise in meeting a wider range of targets and actions identified in the CWMS and the Ashburton and Selwyn Districts own implementation programme. His Council sought that Trust Power should work more collaboratively with local councils and water zone committees. Affidavit evidence was also provided by Mr England on behalf of the Selwyn District Council. He produced an agreement for water supply for Lake Coleridge Village and access to the Rakaia River and advised that his previous concerns about effects on its infrastructure had been resolved.
89. Mr Lionel Hume gave affidavit evidence on behalf of the Combined Canterbury Provinces Federated Farmers and the Ashburton Community Water Trust. Both parties support the application because of the economic and social benefits which will flow from a more reliable supply of water for irrigation. He said that those he represented would

be opposed to the management of the Lake Coleridge Project in any manner which effectively privatises the water resource and noted that their support for the application was based on certain assurances that they had received from the applicant, including that there would be no adverse effect on reliability of water supply to existing downstream users, the project would be developed and managed in a way which supports the CWMS and would be managed in a transparent manner which does not effectively privatise the water resource.

90. Mr Peter Trolove provided us with detailed and wide-ranging evidence. He is a qualified veterinarian and also has a qualification in fish health. He is also a passionate angler. He was critical of the fact that no evidence had been given regarding the effect of the proposal on fish in the hapua. In response to this concern, Dr Allibone, a witness for the applicant, noted Mr Trolove's concern at the lack of specific assessment on the effects on Stokell's Smelt. Dr Allibone discussed this species and concluded that the activity of Stokell's Smelt in the river (and we assume he included the hapua in this description) would continue unaffected by the project. We are not aware of any way in which fish in the hapua itself would be adversely affected by the proposal and indeed we are satisfied that there would be no adverse effect. There are, of course, possible effects on fish entering the hapua from the sea if the mouth were to be closed for significant periods of time. However, as will appear later, we are satisfied such an event is highly unlikely. Mr Trolove also expressed concern that the abstraction of 70 cubic metres of water from the river for irrigation purposes would affect the low salinity plume in the sea. In our view although the plume is affected by changing river flows, this occurs naturally given the wide natural variation in flows down the river. Mr Trolove was particularly critical of the Instream Flow Incremental Methodology (IFIM) used by Mr Jowett, a witness for the applicant. We acknowledge that there is expert difference of opinion on the appropriateness of that methodology. Nevertheless, it is widely accepted as a useful tool for

habitat modelling, although we would accept that, as with any modelling of its type, we need to be aware of the assumptions and the margins of error associated with it. In his rebuttal evidence, Mr Jowett makes the point that in-stream habitat methods such as he uses, are the second most widely used method of minimum flow assessment in the world and are the only methods he knows of that can assess the effects of flow changes on the habitat of various aquatic species and activities. Considering the whole of the applicant's evidence in this area, we consider it appropriate to accept Mr Jowett's evidence as adequately describing the effects on habitat as a result of changes in flow resulting from the proposal.

91. Mr Todd, the South Island Conservation Manager of the Royal Forest & Bird Protection Society of New Zealand Inc, gave evidence by affidavit. Mr Todd refers to an apparent conflict in reports submitted with the application between Mr Jowett's evidence in relation to the loss of habitat for Wrybill and that of Golder Associates. In his evidence at the Hearing, Mr Jowett said in fact that Wrybill feed almost exclusively on benthic invertebrates in shallow water and that the reduction in flow would increase the area of shallow water. He also noted that this would be offset, to some degree, by the small loss of benthic invertebrate production caused by short-term flow fluctuations. Dr Sanders, who gave expert evidence for the applicant in relation to bird life, concluded that it was very unlikely that the small changes associated with the project would have any effects, detrimental or beneficial, on food availability for river birds. He particularly noted the importance of the Wrybill Plover in the Rakaia. Mr Todd was also concerned regarding the effect of increased nutrients in ground water. We have addressed this issue elsewhere in this recommendation.
92. Mr John Hodgson gave evidence on behalf of the New Zealand Salmon Anglers Association. He was concerned with issues such as the effects of flow reduction on water temperature and river mouth

closure. We have dealt with these issues elsewhere. He also expressed concern about the increased incidence of flows below the minimum flow rates resulting from the proposal. This too is addressed elsewhere in these recommendations.

93. Mr Jules Snoyink is a member of the New Zealand Salmon Anglers Association and has been a keen fisherman for many years. The Rakaia has been his favourite salmon fishing river for the last 50 years. His concerns include increased low flows in the river and at the river mouth with the possibility of more frequent mouth closure and with the use of a public resource for private profit. We do not regard the applicant's proposal as the use of a public resource for private profit, but rather the provision of infrastructure and storage which will allow more efficient irrigation. As we understand it, the charges they intend to make are not for the water itself, but rather as reimbursement for the costs of the infrastructure. He notes the possibility of the Coleridge Power Station closing completely, resulting in a permanent flow loss in the river. This is a possibility that concerns us as well and we refer elsewhere to the applicant's response to queries made by us in relation to this matter.

94. Mr Neville Ellis, whose evidence was presented by Mr Hodgson, is another member of the Salmon Anglers Association who served as its president for four years and is currently vice-president. He has fished in the Rakaia for over 50 years. He too raises issues around reduction or cessation of water flow through the Coleridge Power Station. We note that any water flowing through the canal which is not the subject of permits already granted for irrigation, will be returned to the river at Highbank. Mr Ellis was concerned with the effect that the construction of the siphon across the Rakaia at Highbank would have on adult salmon swimming upstream to spawn and young salmon migrating downstream. These are certainly real concerns but they can

appropriately be left for consideration when consent applications to build the siphon are made.

95. Miss Jacqueline Wright gave evidence on behalf of the South Rakaia Bach Owners Association. Amongst her concerns was the possibility of the increase in Ecoli in the river resulting from run-off from land. We are satisfied that this is one of many matters being addressed by Environment Canterbury through control on farming operations. Miss Wright is also concerned with the effect that lower flows will have on Ecoli concentrations. Dr Ryder addressed issues of water quality in his evidence for the applicant. He noted that recorded Ecoli concentrations exceed recommended contact recreational guidelines although median values are well within the guideline. In his rebuttal evidence, he noted that elevated E-coli levels were associated with high flow events but do not appear to be elevated under low flow conditions. Miss Wright suggests, as do others, that if the application is granted there should be monitoring requirements. We will address this issue later. Her evidence, as does that of others, suggests there has been a lack of consultation. We are satisfied that the applicant has made reasonable efforts to consult with the community. The issues raised by Miss Wright relating to the CWMS are addressed later in these recommendations, as are other issues raised by her in her full and very helpful evidence.
96. Mr Terry Hurford raises a number of issues which have been dealt with generally in other parts of these recommendations.
97. Mr Roger Young gave evidence on behalf of the Water Rights Trust. The Trust is dedicated to upholding the equitable rights of present and future generations to clean sustainable waterways. In common with the other submitters, we found Mr Young's evidence informative and helpful. A number of the issues raised by Mr Young have already been dealt with, or will be dealt with later. We consider that the issues

he raises concerning increased dairy numbers will be addressed when variations to the existing water consents for CPW and BCI are considered. We will, however, also consider these issues when it comes to the general balancing required by Part 2 of the Resource Management Act. We are grateful to the point made by Mr Young in his rebuttal evidence concerning the calculation of a true return on investment and we accept the point that he makes in that respect. We accept, for the reasons outlined by Mr Young, that the economic benefits have been exaggerated by witnesses for the applicant. Nevertheless, we accept that there will be net economic benefits from the Lake Coleridge project. We also acknowledge that Trust Power and the irrigators would not support the proposals unless satisfied that there would be economic benefits to them.

98. Evidence for White Water New Zealand concerning effects on kayaking was presented by Linda Poulsen and Graeme Wilson. Insofar as the issues raised by White Water New Zealand are a result of the proposal, we understand that their concerns were allayed by discussions at the Hearing about the relatively small changes to river depths.
99. Mrs Rosalie Snoyink presented her personal submission. Mrs Snoyink has a lengthy and happy association with the Rakaia River. She expressed a number of the concerns already addressed, including increased nitrate levels in ground water and effects of reduced flows on birds. She has a particular concern for the effects on changes in water levels in Lake Coleridge on the nesting habitat of the Crested Grebe of which there are about 9 pairs on Lake Coleridge, nesting between September and March. Her concern was that the anchored nests could become flooded if the lake level rises rapidly. Mrs Snoyink refers to the effects on recreation, amenity and landscape values. We, of course, must be satisfied if the application is to be granted, that the values required to be preserved by the Order will not

be adversely affected by the proposal. We make the point that it is the braided character of the river that is the subject of protection, rather than the number of channels which will obviously vary from time to time. We accept, as Mrs Snoyink says, that there is no robust evidence of the cost of the scheme. Obviously if it does not stand up in economic terms, it will not proceed.

100. Mr David Denton accompanied Mrs Snoyink and also gave evidence. He too had concerns about the effect on salmon of rising water temperatures and reduced river flows.

101. Mr Bill Southward is a second generation resident of the Little Rakaia Huts on the northern side of the river mouth. We found the historical evidence and the data he had been able to collect very helpful and indeed the evidence that he gave at the first Hearing was instrumental in the then Committee calling evidence from Dr Hicks. The evidence of Mr Southward and Dr Hicks has assisted us in understanding the reasons why floods occur on land adjoining the hapua from time to time. Mr Southward showed us a large collection of photographs that he had taken over many years from about 1950 illustrating changes that had occurred in the hapua and the barrier over that time. He told us that in 2009 there were 12 floods, 11 of them due to low river flow, combined with the opening to the sea being obstructed by large seas. There have been other occasions of flooding since then. During these floods significant areas of land on the northern side of the hapua are flooded, including the lawns of residents, leaving flood debris behind. He was concerned that extended periods of low flow would increase the incidence of flooding. The possibility of this occurring is addressed in the evidence of Dr Hicks and applicant witnesses. He showed us videos of flooding occurrences. Mr Southward supports the conclusions of Dr Hicks.

SUBMISSIONS AND EVIDENCE ON BEHALF OF TE RUNANGA O NGAI TAHU

102. Ngai Tahu was represented by Ms Kapua. In her submissions she raised a number of issues. She submitted that the variation procedure should not be used to add additional conditions to an existing order. She submitted that the proper procedure for the applicant to follow would be to seek to revoke the order. We do not accept that submission. There is nothing in the statutory provisions to suggest that an application for variation of an order should be limited in that way.
103. Ms Kapua submits that there is no consideration in the evidence presented by the applicant of the matters raised by Ngai Tahu in respect of the Cultural Impact Assessment. She further notes that it was unusual that the application was lodged prior to the applicant having the benefit of the Cultural Impact Assessment. In the normal course of events we would expect a cultural impact assessment to be filed with the application. The reasons why this did not happen have been explained to us by the applicant and we accept that in the circumstances of the case the delay in completing the report cannot be laid solely at the door of the applicant. In any case, the rehearing of the application has given ample time for a consideration of the matters raised in the assessment. We do note that prior to and during the original hearing caucusing took place between various experts, including Trust Power and Ngai Tahu experts. As to the suggestion that there was no consideration in any of the evidence called by the applicant of matters raised in the CIA, Mr Matheson in his submissions in reply refers to the evidence of four witnesses. They dealt with matters of effects on native fish, including tuna, bird life, landscape issues and reductions in flow and health and wellbeing of the river in response to matters raised in the CIA. Mr Matheson acknowledged that the applicant did not address cultural and spiritual concerns, but

submitted that Ngai Tahu was not available to meet to discuss those concerns.

104. Ms Kapua relied on the decision of the Environment Court in an application by Talley & Others, Decision No C.102/2007, to support a submission that the changes being proposed must equally or better serve the conservation purpose of Part 9 of the RMA and the Order. As Mr Matheson points out, Talley was a decision made under the provisions of the Resource Management Act. We must consider the application in the light of the provisions of the ECan Act. We accept Ms Kapua's submission that the application must be assessed, taking into account the provisions of the RMA in Part 2 that relate to Maori, as well as the reference to Tikanga Maori in the CWMS. In relation to the evidence presented on behalf of the applicant, Ms Kapua submits that there was no assessment done to determine whether the current restrictions were achieving the purpose of the order. Again, Mr Matheson, in his submissions in reply, was able to point to the evidence of five witnesses who did address this issue. Ms Kapua was critical of the fact that there was very little evidence in relation to the possible location and effects of the canal. In our view this is a matter appropriately addressed when applications are made for the construction of the canal.
105. Ms Kapua was critical of what she described as a change in the position of ECan from its professed stance of neutrality to one of supporting the application. We refer to this issue later in these recommendations.
106. A number of witnesses were called on behalf of Ngai Tahu. The first was Ta Tipene O'Regan, a widely recognised and respected kaumatua of Ngai Tahu. He is, of course, highly knowledgeable on Ngai Tahu tikanga and has made a study of Maori traditional history and culture particularly in relation to Ngai Tahu and Te Waipounanu. His

evidence addressed the history of Maori occupation in the South Island and the role of Ngai Tahu in gaining mana whenua of the West Coast and control of the pounamu trade. The Rakaia River played an important part in this history, providing food for travellers to and from the West Coast. Importantly Ta Tipene supported increasing water storage in Whakamatau (Lake Coleridge). The issue at stake, in his view, was the retention of an adequate volume of water in the Rakaia to ensure that natural processes continue, that Ngai Tahu's traditional mahinga kai is supported and the river is restored to its former abundance. He expressed his view that the health of this important river depends on flows sufficient to keep its mouth continually open and he believes that aim to be non-negotiable. Provided these requirements are achieved, he had no objection to the water stored in Lake Coleridge being used for irrigation and electricity generation.

107. Dr Charlotte Severne is employed by NIWA as chief scientist, Maori Environmental Research and Oceans Research. She was involved in the preparation of the CIA. She noted that the impacts which the CIA highlighted as concerns for Ngai Tahu could be grouped into three main categories:

- (a) Low flows and associated impacts upon cultural values.
- (b) The drafting of amendments to the WCO and
- (c) The lack of recognition of both papatipu runanga and Te Runanga O Ngai Tahu as kaitiaki within the proposal.

A core issue highlighted by the CIA was that the proposal has the potential to increase the frequency, magnitude and duration of low flows within the Rakaia River and this is of particular concern for Ngai Tahu. She referred as well to the concern expressed in the CIA that the proposed amendment would set off a train of consequences not fully explored as part of this process. It is an issue which we have considered carefully.

108. Mr Henderson is a hydrologist. We note that he does not question the reliability of the data provided in evidence for the applicant by Mr Leong. The flow comparisons he makes are between the historic situation and the applicant's proposal with an operative canal. In our view the appropriate comparison is between the fully operative proposal and the consented flow with alternative storage. He expresses concern at the limited monitoring that has taken place since the original order was granted.
109. Mr Duncan is also a hydrologist. He addressed the effect of the project on in-stream values and issues relating to bed load transport. He was critical of the method used by Mr Levy, for the applicant, to calculate bed load transport. However, our understanding is that the adoption of Mr Duncan's method would produce an outcome not very much different to that of Mr Levy.
110. Dr Jellyman is a fisheries biologist and is employed as a fresh water fisheries scientist with NIWA. He agrees with the evidence produced for the applicant to the effect that habitat does not limit native fish populations. Variability and flow is the main influence. Referring to the analysis and evidence of Mr Jowett for the lower river, he described the data used by him as robust. He mentioned two main concerns, the potential of the scheme to exacerbate low variable flow effects and the potential of mouth closure. He also referred to a lack of information on the possible effects of lake level fluctuations on native fish in Lake Coleridge. He said that while a general reduction in minimum flows is unfortunate, it will not be of a magnitude to affect upstream passage of juvenile native fish and the seasonality should not significantly affect recruitment opportunities. Minimum passage depth is not an issue. He agreed that closures in the order of a few hours are unlikely to have any measurable impact on recruitment of native fish but he would be concerned if such closures persisted for several days. He did not expect the small increase in temperature as

a result of reduced flows to have any observable impact on native fish. He summarised his evidence by saying that the changes in terms of effect on native fish should be in the scale minor to less than minor but expressed concern the proposal was a small but incremental erosion of the principle the WCO drew a “line in the sand”.

111. Mr Perenara-O’Connell is employed by Te Runanga o Ngai Tahu as General Manager, Tribal Interests. He referred to content of various iwi plans and it is appropriate that insofar as the content of these plans is in evidence we should have regard to them in our recommendations.
112. Mrs Waaka-Holme gave evidence relating to the mauri (life force) of the Rakaia River. She said that the current level of protection was adequate but she had concerns about any reduction in protection and the effect that this would have on the mauri of the river. She emphasised the responsibilities that she has as tautiaki (guardian –of the river in this instance) to maximise the mauri of the river for future generations of Ngai Tahu, and for the nation as a whole. She also expressed concern at the lack of monitoring of the original WCO. In conclusion, she sought a flow and allocation regime that was able to improve the mauri of the river and ensure that the connectivity between the river, hapua and coastal marine area was maintained.
113. The final witness was Ms Begley who is employed by Ngai Tahu as a senior environmental adviser. She expressed the view that Ngai Tahu was fundamentally opposed to the application, although the evidence of the other witnesses does not suggest that this is so. Rather the opposition is related to concern about particular issues and possibilities. She described the fundamental issues for Ngai Tahu as being the appropriateness of exempting a major new development from compliance with a “live” WCO in terms of:
 - (1) The effect of such an application on the integrity of the WCO;
and

(2) The precedent effect.

She questions whether the Rakaia River will be retained in its natural state above the Rakaia Gorge and whether Lake Coleridge will be retained in its existing state. As to precedent effect, we do not consider that if this application were to be granted it would have precedent effect other than as indicating that the conditions of a WCO may be altered by an application for variation. Other than that, each proposal must be determined on its merits. Obviously the integrity of the WCO is a matter which is central to these recommendations. She refers to concern arising from the effects of the use of the water and addresses the statutory tests for assessing the application. All these matters will be addressed in these recommendations.

114. The Rakaia river is situated in the takiwa (region) of three of the Papatipu Rūnanga (of which there are 18 in total) making up the constituent parts of Te Rūnanga o Ngai Tahu. These are the Ngai Tuahuriri Rūnanga centred at Tuahiwi; Te Taumutu Rūnanga on the shores of Te Waihora; and Te Rūnanga o Arowhenua in the Temuka area. These three Papatipu Rūnanga have proprietary kaitiaki interests over the river, and it is this issue that is at the heart of much of Ngai Tahu's concerns over the TrustPower proposal.
115. Traditionally the Rakaia River was a key mahinga kai (food gathering source) for Ngai Tahu in this part of the country; in particular, the tuna (freshwater eel) fishery. Not surprisingly, therefore, the health of this fishery in Whakamataau, and within the Rakaia River and other natural local waterways is a prime concern for Ngai Tahu, as evidenced by several of the submitters on behalf of Ngai Tahu.
116. The Rakaia River also served as an important traditional route to the valuable pounamu (greenstone) found on Te Tai Poutini (West Coast of the South Island). In this respect the Noti Raureka (Brownings Pass) route at the head of the Rakaia River is a significant historical

landmark for Ngai Tahu. Furthermore, many other Ngai Tahu names associated with the Rakaia river were highlighted during the hearing signifying just how central this part of the hinterland is to them.

117. As mentioned earlier Whakamatau was granted Statutory Acknowledgment status as part of the Ngai Tahu settlement legislation in 1988 demonstrating the importance of this lake to Ngai Tahu. In addition there were two nohoanga (traditional seasonal occupation sites) identified along the Rakaia River included as part of the settlement, one of which is to be found at the hapua.

EVIDENCE OF DR MURRAY HICKS

118. As already mentioned, the Committee who heard the earlier application called evidence from geomorphologist Dr Hicks. As a result, the applicant has addressed issues raised by evidence relating to flooding and to possible river mouth closure. The mechanics leading to flooding are now much better understood as are the processes that lead to partial or full closure of the outlet through the barrier to the sea. Dr Hicks explained to us the morphological behaviour of the river mouth. He explained that short duration lagoon flooding to hazard levels can occur in several situations. Waves may deposit gravel in the outlet channel thus partially or wholly blocking it. During river floods and freshes the outflow may not be able to immediately widen the channel to cope with the arriving waters and storm waves may sometimes wash a flood of sea water into the lagoon. He said that the Rakaia's outlet is likely to be in a constricted state most of the time and it does close from time to time but only on a very transient basis for a few hours. He said that a change in the flow regime such as proposed will increase the risk of transient closure with a consequent increase in the incidence of lagoon flooding, rather than lead to a state change whereby the outlet closes for weeks or months. He referred to

modelling which he had undertaken earlier this year and to tidal gauging and the lagoon survey undertaken in April. He mentioned two occasions this year when there was a partial closure with consequent flooding. His conclusions were that the proposal will in occasional years, about one in six on average, cause periods of lower base flows into the lagoon with in-flows of up to 30 cubic metres less than would be expected with the historic regime or a regime in which the existing Water Conservation Order remained with the consents fully taken up. He said that the overall time averaged increase in flooding risk will be small due to the one in six year recurrence interval and suggested that artificial cuts may offer an affordable means to mitigate the existing and increased hapua flooding hazard. Referring to a recent artificial cut, he said that a pre-cut low point in the barrier might sometimes preempt the need for an emergency cut.

ENVIRONMENT CANTERBURY'S EVIDENCE

119. Mr Maw appeared for the Council (or CRC). He said that the Council neither supports nor opposes the granting of the application and that the evidence the Council called is considered to be relevant and of assistance to the Hearing. He addressed a submission by Ms Kapua for Ngai Tahu questioning whether the Council remained neutral. This submission arose out of the fact that the Council called, as one of its witnesses, Mr Caygill, the deputy chair of the Commissioners appointed pursuant to the ECan Act. Mr Caygill did not give evidence at the first Hearing. Mr Maw pointed out that many of the issues previously identified by the Council since the application was first lodged had now been addressed by the applicant and, as a consequence, it is not surprising that at least some of the Council's evidence could be said to sit on the "supportive side of the ledger".

120. In his legal submission, Mr Maw pointed out that the legal framework within which the application falls to be assessed, is different from previous applications to vary a WCO and this must be borne in mind in considering what was said in cases decided prior to the ECan Act coming into force. He then outlined the various matters which we are required to take into account in determining this application. In the case of the Canterbury Water Management Strategy, he noted that the first primary principle is sustainable management which he defined as a use which can continue on into the future without having irreversible adverse effects. He submitted that the current order already protects the first order priorities, including customary uses, and in that regard he referred us to the evidence of Mrs Waaka-Holmes but acknowledged that we must ensure that the first order priority considerations are preserved. He pointed out that the use of Lake Coleridge for water storage is identified as one of the key short-listed projects in the CWMS. He submitted that the whole of the CWMS insofar as it was in evidence, was relevant in carrying out the Part 2 assessment. The same applied to iwi development plans.
121. In relation to the mechanical opening of the Rakaia River mouth, he said that the Council was not in the position to guarantee on-going mitigation because it will need to obtain resource consent to enable it to continue to open the mouth when required. The submissions went on to outline the approach which should be taken to evaluating the proposal under Part 2 of the RM Act. In supplementary submissions he addressed an issue raised by this Committee. Essentially the question was whether the variation proposed by the applicant would, if approved, amount to a delegation of the Council's functions to the applicant. He concluded that it did not, pointing out that the wording of the variation does not allocate any water to Trust Power, rather it seeks to enable Trust Power to lodge applications for resource consent, and that the Council retained control over the water resource in its capacity as consent authority. He submitted that there was nothing in the

proposed cl.9A(1) that amounted to a delegation of Council's functions or fettered the discretion of decision makers who may, in the future, consider and decide relevant consent applications. We accept that submission.

122. The Rt Hon David Caygill, in his capacity as a commissioner of CRC, has particular responsibility for the Council's functions relating to water. He said in his evidence that latterly these functions have all been directed towards the achievement of the vision, principles and targets encompassed in the CWMS. His evidence outlined the importance of the strategy and pointed out that whilst its targets contained no specific reference to the subject of water storage, there has been widespread acceptance amongst the parties to the strategy that increased storage is essential. He notes that the CWMS strategic framework contains extensive reference to storage infrastructure. He described the manner in which the application met the objectives of CWMS and the ways in which the proposed canal and the storage in Lake Coleridge would form an essential part of the management and use of the fresh water resource from the Waimakariri zone in the north, to the Orari-Opihi-Pareora zone south of Timaru. In conclusion, he said that the Trust Power proposal, including the canal, is aligned with the CWMS and creates an opportunity for an integrated storage solution for the Canterbury Region.

123. It was this expression of support for the proposal that led to the submission on behalf of Ngai Tahu that the Council's position was no longer neutral. In this respect it needs to be recognised that Mr Caygill's evidence is directed at demonstrating the manner in which the proposal supports the objectives of the CWMS. If in that respect the Council can be seen as supporting the proposal, there is nothing wrong with that. There are many other issues to be determined, the central one being of course, whether or not the proposal is able to proceed in a way that will continue to protect the outstanding characteristics and

features set out in the WCO. That is the central issue for us to determine. It also needs to be made clear that we have been appointed to provide an independent assessment of the application.

124. Christina Robb's evidence related to the development and implementation of the CWMS. She outlined the history of the strategy document, the wide public involvement and the acceptance of it. It is her understanding that the priorities set out in the strategy reflect a community desire to ensure that second order priorities are not obtained at the cost of first order priorities. She described the way in which the strategy is being implemented. In summary she described the strategy as having been led by Canterbury local government and developed collaboratively as a partnership between CRC, Canterbury's District and City Councils, Ngai Tahu and key water stakeholders and communities. She said the strategy was widely supported, including by Government Ministers, and many agencies are contributing to its implementation. The strategy drives all water and land work programmes and water policy direction for CRC. She described the Councils programme on nitrate issues:

- (i) To determine nutrient status in each region.
- (ii) The Land and Water Plan will require that from 2017 every user of water must adopt industry best practice.
- (iii) In the worst affected areas controls on new activities will be more stringent.

125. Mr Leftley is a senior hydrological scientist employed by CRC. He analysed the evidence presented by the applicant and concluded that the hydrological information provided by the applicant was based on robust analysis, interpretation and modelling. The greatest effect of the proposal will be on the river flow between the Lake Coleridge Power Station tail race and Highbank and there will be lesser effects lower down the river. He did not attempt to describe and assess the significance of these changes on the outstanding values of the river.

As to the proposals put forward by the applicant for management of the water, he concluded that the management of the gorge virtual flow is feasible and can be managed and administered by CRC as long as measurement of non-stored water in the canal and stored water released upstream of the gorge can be provided by Trust Power.

126. Ms Jenny Ritson is employed by CRC as a water resources scientist. She described gaugings taken between 1971 and 1984 to quantify the losses from the Rakaia River and further stream gauging measurements in which she was involved in 2009, 2010 and 2011. Conclusions were:-

- (a) There is consistently a loss in flow between Fighting Hill and the mouth which is not accounted for by the surface water abstractions and diversions.
- (b) The losses range between 7.5 cubic metres and 29 cubic metres and average 18.7 cubic metres, with a greater proportion of the loss occurring downstream of State Highway 1.

She said that the losses do not exhibit any trend over time and that this fact does not support the hypothesis that ground water abstraction is increasing losses from the river. In the case of Rakaia she said that the results do not show a strong relationship between the losses and either the flow or ground water level. Water takes lower the residual flows at the mouth. Current usage is on average 53% of the consented take for those consents being exercised, and it is likely that residual flows at the mouth will decrease further as usage increases. She expressed the view that the major consents will dominate the water takes out of the Rakaia, albeit at higher minimum flows and could potentially impact the mouth flows.

127. Mr Vesey is employed by the Council as regional engineer. The purpose of his evidence was to provide information regarding the CRC's roles and responsibilities in relation to river and drainage management. One of the matters he addressed was the Council's

ability to reset the Rakaia River mouth, i.e. open a new outlet through the gravel bar to protect users of the lagoon and the ancillary benefit to existing infrastructure, including a boat ramp, and of erosion protection for the Rakaia Huts. He said that the Council will be seeking resource consents to reset selected river mouths throughout the region and the Rakaia would be included in these applications. He saw significant benefits in resetting the river mouth from time to time, including reducing the risk of adverse sea conditions affecting the boat ramp and/or eroding land adjacent to the boat ramp and that might also reduce the risk of flooding.

128. The final witness for the Council was Mr Fietje, a principal planning adviser. As was the case too with Mr Leftley, Mr Fietje based his conclusions on the evidence presented by the applicant. Neither witness took into account evidence produced by submitters. Mr Fietje identified the key issue raised by the application as being whether the proposed amendments to the order will continue to protect the outstanding characteristics and features set out in the WCO. He noted that many of the effects allowed within the scope of the present order have not yet materialised because not all of the water which can be taken from the river has yet been taken. He assessed the application against the relevant national, regional and district planning documents and concluded that the proposed amendments were consistent with the various objectives and policies identified in those documents. Evaluating the application against Part 4 of the RMA, he concluded that the matters referred in SS6 and 7 of that Act will not be significantly adversely affected and that the proposal has significant benefits in the form of renewable energy and the provision of reliable water for irrigation. He acknowledged that he had not attempted to assess the non-bio-physical concerns of Ngai Tahu or to draw conclusions in relation to them. As to the practicality of administering CRC's role in accordance with the terms of the project, he saw no difficulty and said that a very similar scheme has been in operation in

the Opihi catchment for 10 years and works well. He concluded that the application, if implemented, would recognise and sustain the outstanding characteristics and features of the catchment and that none of the freshwater, terrestrial and coastal ecosystems covered by the order were adversely affected to any significant degree by the proposed amendments.

LEGAL CONSIDERATIONS

129. The decision of the Planning Tribunal on the original order made a number of comments which are relevant to a consideration of this current application but subject to the changes to the WCO provisions contained in the ECAN Act. At p.29 of the original decision the Tribunal noted that the overriding objective of the order must be to protect the outstanding features specified in the order and not to provide for actual or competing uses. The Tribunal went on to note that

“While the degree of protection could involve providing for the natural state of the quantity rate of flow or level of natural water as referred to in S.20D(3)(a), that is not necessarily so. It may be sufficient for the purpose of achieving the statutory objective to provide for a lesser degree of protection. ... We think there is a linkage between S.20B(6) and S.20D. Indeed, in our judgment, if that were not so, quite unreal results might follow, leading to the wasting of a valuable natural resource.”

130. The Tribunal went on to record the distinction between the two quite different types of Conservation Order provided for by S.20D - a preservation “as far as possible in its natural state” type order, and a protection of outstanding features type order. The Tribunal noted that discharges from Lake Coleridge could be made only when electricity is being generated and that those discharges depend entirely on the generating regime adopted by the (then) Electricity Division. The Tribunal concluded at p.33 that the evidence did not satisfy them that

any needs for hydro-electric generation beyond the present should be recognised. However, they went on to say,

“We bear in mind, that the storage capacity of Lake Coleridge has not, by any means been fully utilised to date. This capacity will not be adversely affected by what we now propose. It is provided for by notified uses. Also, as will be seen later, the storage capacity of Lake Coleridge assumes considerable importance when considering the protection of values below the Rakaia Gorge.

We have been unable to find the later reference referred to.

The Tribunal made it clear that in their decision they had taken account of the needs of hydro-electric generation and the needs of primary industry. As to needs for irrigation, the Tribunal held that those needs should be confined to quantifiable physical needs for the water resource:

“Matters of farm economics, for example, which involve changing patterns of corporate and individual policy decision-making cannot be weighed adequately.” (p.35)

131. Referring to outstanding features of the lower Rakaia, the Tribunal said the real issue is how to protect these features, not whether they should be protected. The Tribunal referred to the Lower Rakaia as providing the best recreational salmon fishing amenity in New Zealand and that it was the second best jet-boating river in the country. The Tribunal referred as well to the lower Rakaia providing an outstanding breeding habitat for the Wrybill Plover. Importantly, on the question of flows (and this is relevant to the interpretation of the order itself) the Tribunal said at page 37 ...

“It should not be forgotten, that the regime settled upon will be based on gorge flow measurements which, in practice, will be different from downstream flows, with the differences becoming greater the further downstream one goes.”

132. And at page 38 ...

“... in deciding upon the terms of an order pursuant to S.20D any potential conflict between recognising and sustaining amenities by way of protection and other matters recognised by S.20B(6), is to be resolved in favour of the former.”

133. At page 42 the Tribunal referred to the evidence before them to the effect that a minimum flow figure of 90 cumecs at the Gorge would provide low risk to the fishery as far as fish passage, closure of mouth, weighted usable value, and water temperatures are concerned.

134. At page 43 the Tribunal referred again to the future possibility of using the storage capacity of Lake Coleridge and went on to say ...

“The use of Lake Coleridge could well assist in providing for another very important matter raised by the irrigation interests, ... namely the need for a reliable supply of water.”

135. It should be borne in mind that in the comments made about storage in Lake Coleridge there was no suggestion that such stored water would flow other than down the river.

136. The decision of the Planning Tribunal went eventually to the Court of Appeal.¹ The decision was upheld and its approach endorsed. On the question of interpretation of the statute, Cooke P had this to say at page 88 L.12,

“What is pointed out by S.2, clearly enough I think, is an emphasis on sustaining the natural state, that is to say conservation. Although certainly not to be pursued at all costs it has been laid down as the primary goal; and this must never be lost sight of. On an application for a National Water Conservation Order, the matters listed in S.20B(6) are to be weighed, but the effect of S.2 is to require this to be done bearing in mind that the primary object is conservation of waters in their natural state. In particular cases the needs of industry or other community needs or planning schemes may demonstrably outweigh the goal of conservation. But as a general working rule or guideline, preservation of the natural state, either as fully as possible or to the extent of protection of outstanding characteristics or features, is to be aimed at unless clear and clearly sufficient reason is shown to the contrary. The ultimate criteria must be the public interest. The presumption is in favour of conservation. A strong, really compelling case is needed to displace it.”

¹ Ashburton Acclimatisation Society v. Federated Farmers of New Zealand Inc [1998] 1NZLR78.

137. In considering this passage of the Court of Appeal's judgment it needs to be borne in mind that although S.199 of the Resource Management Act is in similar terms to the provisions of the legislation considered by the Court of Appeal there are important amendments made by the ECAN Act which potentially affect what was said by the Court as set out in the above quotation.
138. It is also helpful to consider some of the comments made by the independent commissioners appointed to consider the application by Central Plains Water Trust for Resource Consents to take and use water from the Waimakiriri and Rakaia Rivers. The Rakaia River take is the 40 cumec take referred to earlier in these recommendations.
139. At para 2.3.1 of Part 6 of those recommendations, it was noted that the flow regime prescribed by the WCO was seen at the time it was made as being sufficient to protect the outstanding values identified in the order. The recommendations went on to note that there have been no applications to vary the WCO or any decision by ECan to impose more restrictive provisions by way of regional rules (and that is still the case) and that, accordingly, they were entitled to conclude that the community accepts that the WCO provisions provide adequate protection to in-stream values. We come to a similar conclusion for the same reasons.
140. In a paragraph headed "Assessment of Effects of Proposed Water Take on Flows" and after discussing the maximum potential effects on river flows, the commissioners noted that the restrictions in the order meant in practice that CPW (and ACWT) could only commence their takes at relatively high flows and could only take at the maximum rate at even higher flows. And at para 2.6.1,
"The impact of the proposed ACWT and CPW abstractions on the Rakaia River will barely be noticeable in dry years because there is seldom sufficient flow available for the required abstractions to occur. The greatest impact of the abstractions is in the average years."

141. The Tribunal concluded as follows at para 2.1.20,

“We are satisfied that the proposed taking of water from the Rakaia River (by CPW) will be sustainable and in accordance with the principles set out in Part 2 of the RMA. We are also satisfied that the requirements of the Rakaia River Water Conservation Order will be achieved. These provisions afford a high degree of protection to in-stream values.”

142. We have referred earlier to the fact that the ECan Act makes some important changes to the regime for Water Conservation Orders contained in the RM Act. Perhaps the most significant is the one already adverted to as being relevant to what was said by the Court of Appeal in the passage quoted above. Using words virtually identical to those considered by the Court of Appeal, ss.1 of S.199 of the RMA commences as follows: “Notwithstanding anything to the contrary in Part 2 the purpose of a Water Conservation Order is to recognise and sustain ...” There follows the reference to outstanding amenity or intrinsic values afforded by waters in their natural state and where waters are no longer in that state the amenity or intrinsic values which warrant protection because they are considered outstanding.

The ECan Act and its effect on this Application

143. As mentioned earlier, the ECan Act makes special provision for Water Conservation Orders and provides that part 9 of the RMA does not apply except as otherwise stated. A major departure from the RMA provisions is the removal of the jurisdiction of the Environment Court in relation to Canterbury WCO applications leaving only a right of appeal to the High Court on a question of law. The result of that change is that the hearing before us is the only hearing at which evidence is called and findings of fact made. For that reason we introduced a little more formality into the proceedings than is conventional at commissioner hearings. For example, we required that all witnesses be sworn, or make the affirmation. We also allowed questions to be put

to witnesses through the Chair. Having said that, we were determined that the hearing process should be comfortable for unrepresented submitters and we believe that objective was achieved.

144. S50 of the ECan Act applies to the consideration of WCO applications by ECan. That section provides:

“50 Consideration of applications by ECan

- (1) After considering a WCO application submitted by the Minister under section 48(1)(b)(ii) and any submissions and other information relevant to the application, ECan must determine whether to recommend that the Minister should –*
 - (a) reject the application; or*
 - (b) recommend to the Governor-General that a Canterbury WCO be made under section 214 of the RMA, as applied by section 56.*
- (2) In considering whether to recommend to the Minister that a WCO be made, ECan must, subject to Part 2 of the RMA, -*
 - (a) have particular regard to –*
 - (i) the matters set out in subsections (3) and (4);*
 - and*
 - (ii) the vision and principles of the CWMS; and*
 - (b) have regard to the matters specified in section 207(a) to (c) of the RMA.*
- (3) ECan may recommend to the Minister that a WCO be made to recognise and sustain –*
 - (a) outstanding amenity or intrinsic values that are afforded by waters in their natural state; or*
 - (b) where waters are no longer in their natural state, the amenity or intrinsic values of those waters that in themselves warrant protection because they are considered outstanding.*
- (4) Section 199(2) of the RMA applies to a WCO recommended by ECan.”*

145. The relevant departures from the RMA appear in ss2. S199 of the RMA commences with the words,

“Notwithstanding anything to the contrary in Part 2, the purpose of a water conservation order is to recognise and sustain – “

In relation to WCO's, generally Part 2 of the RMA therefore does not have the overarching relevance that applies to other aspects of the Resource Management regime. However, as can be seen from S50(2) set out above, the consideration of applications in Canterbury is subject to Part 2 of the RMA.

146. Sub clause (a) of ss(2) sets out matters in respect to which ECan must have particular regard. Sub para (i) refers to ss(3) and(4) of S50. Clauses (a) and (b) of ss(3) are in identical terms to clauses (a) and (b) of S199(1)RMA. Ss(4) applies S119(2) RMA to a WCO recommended by ECan. That subsection of S199 provides:

- “A water conservation order may provide for any of the following:*
- (a) The preservation as far as possible in its natural state of any water body that is considered to be outstanding:*
 - (b) The protection of characteristics which any water body has or contributes to, and which are considered to be outstanding, -*
 - (i) As a habitat for terrestrial or aquatic organisms:*
 - (ii) As a fishery:*
 - (iii) For its wild, scenic, or other natural characteristics:*
 - (iv) For scientific and ecological values:*
 - (v) For recreational, historical, spiritual, or cultural purposes:*
 - (c) The protection of characteristics which any water body has or contributes to, and which are considered to be of outstanding significance in accordance with Tikanga Maori.”*

147. Sub clause (ii) of S50(2)(a) requires particular regard to be had to the vision and principles of the CWMS which is attached as a Schedule to the Act. That adds matters for consideration which are not contained in the RMA. The provisions of the CWMS will be referred to later in these reasons.

148. Para (b) of S50 requires ECan to have regard to the matters specified in S207(a) – (c) of the RMA. That section provides as follows:

“207 Matters to be considered

In considering an application for a water conservation order, a special Tribunal shall have particular regard to the purpose of a water conservation order and the [other] matters set out in section 199 and shall also have regard to–

- (a) The application and all submissions; and*
- (b) The needs of primary and secondary industry, and of the community; and*

(c) the relevant provisions of every national policy statement, New Zealand coastal policy statement, regional policy statement, regional plan, [district plan, and any proposed plan].”

149. It can be seen that in that respect the responsibility of ECan is identical to that of a special Tribunal appointed under the WCO provisions of the RMA.

150. Thus, the principal ways in which the consideration of an application under the ECan Act differs from that under the RMA are the requirement that the application be subject to Part 2 of the RMA, the absence from the ECan Act of the statement of purpose contained in S.199 RMA and the requirement that particular regard be had to the vision and principles of the CWMS.

151. The emphasis on the statement of purpose contained in the decision of the Court of Appeal must be considered in the light of these changes. The appropriate course to follow is to disregard the opening words of ss.1 of S.199. The approach we must follow is to have particular regard to the matters set out in ss.3 and 4 and the provision and principles of the CWMS and to have regard to the matters specified in S.207 (a) to (c) of the RMA.

152. S.207 uses the words “have particular regard to”. In *Marlborough District Council v Southern Ocean Seafoods Limited* [1995] NZRMA 220 at 228 the Planning Tribunal said:

“To have particular regard to something in our view is an injunction to take the matter into account recognising it as something important to the particular decision and therefore to be considered and carefully weighed in coming to a conclusion.”

153. Thus, having had particular regard to the matters in para (a) of ss.2 of S.50 ECan Act and regard to the matters referred to in para (b) we must assess the application against the purpose of the RMA. We agree with the submission of the applicant that in a practical sense, the

effect of incorporating Part 2 matters into the assessment of Canterbury WCOs is:

- (1) To broaden the range of matters to which the Commissioners must have regard – both positive and negative effects of the proposed variation – provided that such effects are legally relevant and sufficiently directly causally connected to the application being heard; and
- (2) Imports an obligation on an applicant to demonstrate how the proposed WCO variation would ensure that any effects are appropriately avoided, remedied or mitigated.

The applicant added a third consideration. That was that the incorporation of Part 2 matters allows the variation to provide for a lesser level of protection for the existing outstanding characteristics protected by the WCO if that is necessary to achieve the purpose of the RMA and provided that appropriate mitigation is provided (if required) such that overall a decision maker can conclude that the outstanding characteristics are recognised and sustained, albeit in a slightly modified form. We do not need to consider whether this is an accurate statement of the position because the applicant, in its final submissions, reaffirmed its commitment to ensure that the outstanding characteristics will continue to be recognised and sustained. The evidence called on behalf of the applicant, purports to establish that will be that case. It seems to us, however, that the outstanding characteristics are either recognised and sustained or they are not. But we accept that it is appropriate to consider whether that goal can be achieved in a manner different to that set out in the original WCO. It seems to us that that is indeed what the applicant maintains.

DISCUSSION

154. The central issue is whether the outstanding characteristics and features protected by the WCO will continue to be protected if the

application is granted. If that issue is decided in favour of the applicant, we must assess the effects of the applicant's proposal, having particular regard to the vision and principles of the CWMS and having regard to the matters specified in S.207 (a) to (c) of the RMA. We must then consider the provisions of Part 2, which must be given greater weight or primacy than other relevant considerations and will prevail in the event of a conflict.

155. The vision of the CWMS is

“To enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework.”

The principles are divided into primary and secondary principles. They are set out, together with the vision in Schedule 1 of the ECan Act a copy of which is annexed to these recommendations as Annexure 2. It will be noted that the first primary principle requires water to be managed in accordance with sustainability principles and consistent with the Resource Management and Local Government Acts and that the planning of natural water use is to be guided by two sets of considerations. The first order priority considerations are the environment, customary uses, community supplies and stock water and second order priority considerations: irrigation, renewable electricity generation, recreation, tourism and amenity. There are other important principles, including the exercise of kaitiakitanga by Ngai Tahu.

156. We must also have regard to the matters specified in S.207 (a) to (c) of the RMA. Those matters are:

- (a) The application and all submissions; and
- (b) The needs of primary and secondary industry and of the community; and
- (c) The relevant provisions of every national policy statement, New Zealand coastal policy statement, regional policy statement, regional plan, district plan, and any proposed plan.

157. We have had evidence regarding all of those matters insofar as they are relevant. We also note that when we state our findings on the effects of the WCO variation, we have relied on the evidence of projected effects of the Lake Coleridge Project. However we must be confident that whatever project is ultimately consented, the constraints provided by the varied WCO will not compromise the outstanding characteristics to be protected.

Factual Findings

158. The first outstanding natural characteristic protected by the order is the “form of a braided river”. There is no doubt that the Rakaia is an outstanding braided river in New Zealand terms and some would say, internationally. For our purposes, of course, it is sufficient to accept that such is the case because it is declared to be so in the WCO. In this case, the issue to be addressed is whether the changes in flow of the river will adversely affect this outstanding natural characteristic. For example, if there was a significant change in flow or numbers of braids that could affect the character of the river. Generally the evidence of the applicant is that the effect on flow characteristics will be minor or less, particularly above the outlet from the Coleridge HEPS and below Highbank. The flows between those two points need closer examination although all the applicant’s witnesses classed the effects as minor. Our conclusions and the reasons for them, are as follows.

159. Assessing the risk that the number and nature of river braids could be reduced by the WCO variation and therefore by the implementation of the Lake Coleridge Project, we conclude based on the evidence of Mr Brown, that changes to the wetted area and number of braids and the width of braids of the Rakaia River will be barely perceptible.

160. Changes in the transport of gravel bedload in the river could affect the form of the braided river. There was some debate about the flows at which the gravels are mobilised, with Mr Duncan for Ngai Tahu suggesting that riverbed gravels start to mobilise at flows near the median flow, which is of course reduced by the Project. Through supplementary submissions from both Mr Levy and Mr Duncan, we determined that the dominant driver of bedload transport is still high to flood flows and effects on bedload movement caused through the variation are not likely to be significant.
161. As to the second characteristic and feature, that is to say “outstanding wildlife habitat above and below the Rakaia River Gorge, outstanding fisheries, and outstanding recreational, angling and jet boating features of the river and its tributaries” the applicant’s evidence again was that effects would be minor or less. Submitters have given evidence of the decline in the number of salmon caught in the river and difficulties in its use for jet-boating and there have been concerns expressed about the effect of the proposals on birds, fish life and vegetation. We however find that the evidence called on behalf of the applicant is compelling in its assessment that the changes in flow will be minor, as will the effects on the bird, fish and plant life. As explained earlier, we must consider the effects against the consented baseline, which we have taken as the flow scenarios associated with the applicant’s “existing consents with storage”. The incremental effects on the WCO outstanding characteristics from that consented baseline are relatively small. In hydrological terms, the Lake Coleridge project will have most effect on reducing mean and low flows in the Rakaia River. The greatest effect will be between the Lake Coleridge HEPS tailrace and just below the Rakaia Gorge.
162. The outstanding wildlife habitat (primarily bird life) and fisheries are dependent on available flows which provide a food source, space to live, barriers to predation (in the case of nesting birds), and passage

up and down river. Water quality could also affect these values. We note from Mr Jowett's analysis that compared with the consented baseline, the expected maximum losses of in-river summer habitat are about 3 to 5%. He estimates reductions in salmon holding water and angling opportunity at 3 to 8 %, a matter raised by the salmon anglers (although we also note from the decision on the CPW consents that optimal salmon angling flows are 160-180 m³/s, and according to Mr Levy's summer flow duration curves for the lower river, the Lake Coleridge Project would provide 3% more time when flows would be in that range).

163. What we must weigh up is whether these incremental losses on top of other incremental losses caused by increasing implementation of existing consented takes will tip a balance in terms of cumulative effects. That is a judgement call taking into account all the evidence.
164. Mrs Snoyink and others were particularly concerned about birds which live and breed in the Rakaia braided riverbed. Mrs Snoyink presented a helpful map of a December 2011 DOC survey of the hundreds of birds down the river. Black billed gull and black fronted tern are endangered while wrybill and banded dotterel are nationally vulnerable, so their protection is paramount. We also accept Dr Sander's view that their greatest threat is not the reduced flows under the proposed WCO variation, but predation. We conclude that effects on birdlife in the Rakaia River are likely to be minor. For the southern crested grebes at Lake Coleridge, we note that lake levels already fluctuate and that the numbers of Crested Grebe are small compared with those on other lakes. Should consent applications for the Lake Coleridge Project canal be granted and should it subsequently be found that the changed lake level regime does impact upon these birds, the applicant could consider applying proceeds from its enhancement fund to improve nesting habitat.

165. We conclude from consideration of the evidence of Mr Jowett, Dr Ryder, Mr Unwin, Dr Allibone, Mr Henderson, Mr Duncan and Dr Jellyman that because species populations are not actually limited by habitat but are most influenced by the frequent floods, turbidity, and sediment movement, the changes allowed under the WCO variation will be minor or less. This includes the native fish Stockell's smelt at the hāpua, a matter raised by Mr Trolove.
166. Despite Mr Jowett's modelled further reductions in benthic invertebrate habitat of about 7.4 % between Coleridge and Highbank and 4.9 % below Highbank (compared with the "existing consents with storage" scenario), we were reassured by two mitigating factors. Firstly the studies of minor vs major braids which suggest that the more productive minor braids will be less affected by flow changes because they have more stable flows supplied partly from groundwater underflows in the gravels. Secondly, the fact that the frequency of flood flows remains the primary driver of invertebrate production and that frequency will not be affected by the Project. We conclude that reductions in invertebrate production as a result of the WCO variation are unlikely to affect outstanding wildlife habitat and fishery values.
167. In relation to salmon, Dr Unwin commented at the hearing on the 4 H's potentially affecting salmon populations: Habitat, Harvest, Hydro, Hatcheries. We conclude from his evidence that salmon populations in the Rakaia are most affected by factors at sea rather than in the river – salmon spawning runs have been declining without major changes in river flows or quality – and that changes brought about by the variation will have minimal additional impact on salmon. We do observe that there is a lack of recent research to establish reasons for the decline in salmon runs and this is a knowledge gap in relation to that particular outstanding value.

168. One matter raised by Mr Hodgson on behalf of NZ Salmon Anglers and Mr Ellis, and by Mr Trolove, Mr Snoyink and others was the effect of reduced flows on water temperature, and the barrier that raised water temperatures could pose for salmon migration up river. We looked at some temperature data provided by Mr Southward and measured in conjunction with the Rakaia down-river gauging series of 2009-11. Measurements taken at the same time of day in summer in the upper and lower parts of the river on the plains do indicate increases of 0.5 to 2 degrees down river. The temperature data highlight the major diurnal fluctuations which certainly exceed the downriver increase. As Mr Jowett notes, water temperatures can be affected by wind direction, but the effects of flow on water temperature and possible temperature thresholds for salmon migration probably deserve more research. We are not convinced on the evidence before us that the reduced flows resulting from the WCO variation would be a significant impediment to salmon movement, whether caused by water temperature increases or reductions in salmon holding water.
169. Regarding effects on jet boating, we would not go as far as Mr Greenaway has to conclude that a shift from 4 to 15 days per year of lower flows above Rakaia Gorge when jet boating would be difficult is minor, however we are influenced by the fact that no jet boaters appeared to express concern about this. We conclude that over the full length of the river, the boating experience, whether by jet boat or kayak, would still qualify as outstanding. We conclude also that the variation will have a less than minor effect on angling.
170. We are satisfied that there will be no effects upstream of the confluence with the Wilberforce River. We must also consider the provisions of clause 5 of the WCO, which requires that, subject to the replacement or renewal of existing water rights the flow in the Wilberforce River and its tributaries, including the Harper River, are to be retained in their natural state and the quantity and level of natural

water in Lake Coleridge and the quantity and rate of flow of natural water in its tributary streams are to be retained in their existing state. We conclude that the changes which will result from the implementation of the applicant's proposals will be insignificant in relation to these matters. No one has suggested to us that the proposal to take more water from the Wilberforce and Harper Rivers at high flow times will have any adverse effect on the outstanding characteristics and features. Although concern was expressed about the effects of extending the rates and timing of lake level changes, again, the expert evidence satisfies us that there will be minimal, if any, adverse effects on the outstanding characteristics or indeed on the ecology and features of the lake and the rivers themselves, including wetlands.

171. We must next consider the vision and principles of the CWMS. As to the principles, we must give due weight to the first order priority considerations particularly in the case of this application's effects on the environment and we must, in terms of this application as a second order priority, consider the issues of irrigation, renewable electricity generation, recreation, tourism and amenity. Our concerns about effects on the environment relate to the stretch of the river between Coleridge HEPS and Highbank and in relation to the effects of further low flows on flooding adjoining the lagoon and the eroding of its banks. More generally, the environmental effects of more days of low flows on the natural processes of the lagoon and river mouth must be considered. Our findings on these matters follow.
172. The evidence on groundwater recharge from the Rakaia River has convinced us that over much of the plains, the river is perched above the aquifer and that changes in the flow regime are unlikely to affect groundwater recharge or associated wetlands because of the very small changes in river water level created by the Lake Coleridge Project – less than 0.1m based on Mr Callander's evidence.

173. River water quality parameters addressed by Dr Ryder were nutrients, faecal micro-organisms and water clarity. We are satisfied that the risks of these deteriorating to the extent that they affect the outstanding values are very low. In fact, given the consistent losses of river flow to groundwater below State Highway 1, we think Dr Ryder's conclusion about potential increases in nutrients and faecal microorganisms (and raising concern from Ms Wright for South Rakaia Bach Owners) especially during low river flows is probably cautious. The risks for groundwaters resulting from the Lake Coleridge Project making available higher reliability (and therefore more) irrigation water are higher. However those are matters already considered in the CPW, BCI and other water use consent processes, and will undergo detailed consideration under the ECan's Land and Water Regional Plan and in consent processes required to implement the Lake Coleridge Project. We do not consider those risks unmanageable nor fatal to this decision on the WCO variation.
174. At Lake Coleridge itself, the projected 0.24m average increase in lake operating level is likely to be on balance beneficial for the associated wetlands and fish spawning. We do not believe the changed pattern of lake level fluctuation is likely to have any noticeable effect on shoreline processes or morphology. We heard that eel access to and from the lake is a matter under action by the Whakamatau (Lake Coleridge) Eel Management Trust chaired by Mr Perenara-O'Connell
175. While Ngai Tahu's concerns go well beyond the mauri and wairua of the river, we also note that work carried out by Tipa and Tierney (2003) and by Harmsworth and others (2011) indicates that some of the values identified by Maori are highly correlated with biological and physical measures of stream health. We consider that if the instream values are adequately protected through this variation, that will go

some way to addressing Ngai Tahu concerns about the state of the Rakaia River.

176. Our initial concerns about effects of reduced flows at the hāpua have been addressed with the helpful descriptive evidence from Mr Southward about flooding and changes in the river outlet, and then put into context by Dr Hick's very useful model of the factors affecting river mouth closure and relocation, namely coastal longshore currents, the tidal climate, hāpua water levels, and river flows. We conclude that there is a risk of a small increase in the incidence of flooding, with reduced flows occasioned by the WCO variation. However there is unlikely to be an increase in the duration of mouth closures because these are dominated by coastal processes. In conjunction with the proposal from ECan's river engineer Mr Vesey to "reset" the river mouth to mitigate flooding, and TrustPower's offer to contribute to a fund for this purpose, we do not believe any further mitigation is needed.
177. As to second order priority considerations, there is no doubt that there will be farming and economic benefits from increased irrigation. There will also be some benefits from further renewable electricity generation although the applicant's own evidence acknowledges that these benefits in the context of New Zealand's electricity production will be minor.
178. We accept the substantial economic benefits provided by water storage through the Lake Coleridge Project, both within Lake Coleridge and potentially from additional reservoirs able to be supplied from the proposed canal. Mr Macfarlane estimated that Lake Coleridge by itself could provide high reliability water for some 38% of the 100000ha irrigable land, therefore additional storage and groundwater sources would need to supply the rest at the increased levels of reliability sought. Storage provides increased certainty of supply because

supply is more evenly distributed through the season to match irrigation demand. The canal and those storages would of course require resource consents compliant with the WCO before they can be built but we note that the applicants modelling of effects of the Lake Coleridge Project has not assumed any additional storage beyond that provided by Lake Coleridge itself. This is a matter we return to shortly.

179. Based on the evidence of Mr Lilley and Mr Macfarlane, we also acknowledge that the benefits of improved irrigation reliability and water use efficiency go hand in hand. Reliability improvements from the current 65-75% to more than 90-95% were envisaged for the project. Encouraging efficient use of irrigation water is particularly important because that will minimise the leaching and groundwater mounding impacts addressed under the consents for use of that more reliable water. Mr Crombie for CPW also noted that the canal and associated storage would allow gravity supply of irrigation water to service the scheme area above their proposed headrace – an example of the benefits of an integrated “plumbing system”.
180. The benefits of additional hydroelectricity generation meeting peak load demand provide multiple use benefits for the water made available through the project. We accept also, based on the evidence of Commissioner Caygill and Ms Robb of ECan, that the project is a key component of the water supply infrastructure envisaged for Canterbury under the CWMS. This does provide flexibility to optimise varying water demands and supply reliabilities particularly across the Selwyn-Waihora and Ashburton water zones. The benefits of this more integrated regional approach to water supply and use are significant, but we must of course be assured that they can be delivered while maintaining the outstanding characteristics protected under the WCO.

181. We also observe that the Lake Coleridge project offers the potential through integration with the BCI and ACWT/CPW schemes to avoid some of the very substantial engineering works associated with their downstream river takes – for example, the CPW intake - and conveyance systems. This is because some of their water could be taken via the Coleridge canal, and duplication of canals avoided on both sides of the river.
182. Turning to S.207, we have had regard to the application and all submissions. The needs of primary and secondary industry and of the community have been covered in what has been said above. As to relevant provisions of policy statements and plans, the starting point is the New Zealand Coastal Policy Statement 2010 which, as already mentioned, requires the coastal environment to be safeguarded by *“maintaining or enhancing natural biological and physical processes in the coastal environment and recognising their dynamic complex and interdependent nature.”* Policy 3 (1) is particularly important. It provides, *“adopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown or little understood but potentially significantly adverse.”* There is now a reasonably good understanding of the processes which have led to flooding on land adjacent to the hapua. A relatively inexpensive way of dealing with likely blockages to flows is available. We consider that the effect of the project will be minor in relation to the localised flooding events described in evidence.
183. The National Policy Statement on Fresh Water Management must also be considered. The first objective of that NPS is to safeguard the life-supporting capacity, ecosystem processes and indigenous species, including their associated ecosystems of fresh water, and sustainably managing the use and development of land, and discharges of contaminants. We consider that with the reservations we have mentioned earlier, this objective is met. The NPSFWM also generally

seeks to promote renewable electricity generation and to enable existing hydro-electricity infrastructure to be upgraded.

184. Mr Kyle analysed other relevant planning documents to which we have not yet referred. Generally we agree with the comments he has made on them. The Canterbury Natural Resources Regional Plan establishes management purposes and ecological indicators for large high country lakes, including Lake Coleridge and alpine rivers such as the Rakaia River. The purposes of the management cover matters such as maintaining and improving aquatic ecosystems, protecting the habitat of salmonids, ensuring water quality is safe for contact recreation, and safeguarding Ngai Tahu cultural values. All those matters have been addressed in these recommendations. The Canterbury Regional Policy Statement contains objectives concerning water quality and the need for balancing the enablement of social and economic wellbeing against the safeguarding and protection of key environmental values. The drafting and direction of these provisions generally reflects SS 5, 6 and 7 of the RMA. The Natural Resources Plan contains similar objectives. Again, these issues are discussed in these recommendations and our conclusions generally reflect the provisions of the Plans. The Ashburton District Plan seeks to protect the character and values of outstanding and significant landscapes and the natural character of lakes, rivers and wetlands, together with the natural character of the coastal environment. Our findings are consistent with these objectives. We reach similar conclusions in relation to relevant provisions of the proposed Ashburton District Plan and the partially operative Selwyn District Plan. Several of the Plans provide relevant direction on matters of importance to Ngai Tahu. Those issues have been covered in the comments we have made in relation to Ngai Tahu concerns.

185. Shortly after the hearing concluded the proposed Canterbury Land & Water Regional Plan was publicly notified. As a consequence,

S.207(c) requires that we take it into account. Prior to adjourning after the completion of evidence, we set a timetable for the provision of submissions in relation to this plan. Submissions have been received from the applicant, from ECan and from Ngai Tahu. We accept the submission that an important factor influencing the weighting to be given to a proposed plan is the extent to which it has been through the public submission and appeal process. In *Keystone Watch Group v Auckland City Council*, A7/01, the Environment Court held that the extent to which the provisions of a proposed plan are relevant should be considered on a case by case basis and might include:

- (a) the extent (if any) to which the proposed measure might have been exposed to testing and independent decision making;
- (b) circumstances of injustice; and
- (c) the extent to which a new measure, or the absence of one, might implement a coherent pattern of objectives and policies in a plan.

The Environment Court's decision was upheld on appeal in the High Court - HC Auckland AP24/01 3 April, 2001.

186. The other two parties making submissions on this issue accepted the analysis of Mr Kyle for the applicant of the extent to which the proposed plan is relevant to this application. Importantly, he noted that the plan is intended to establish the mechanisms to enable all the key outcomes of the CWMS. The plan promotes the use of a collaborative approach to deliver community aspirations for water management and either sets water quality and quantity limits, or puts in place methods for the later setting of such limits. Mr Kyle says that at an overall level it is apparent to him that the plan comprises an endeavour to draw together many of the current approaches embodied in the Canterbury Regional Policy Statement, the NRRP, the LVMP and the CWMS and that with respect to water management, many of the approaches adopted in the plan are similar to those already foreshadowed in the various existing plans and strategies. He says

compared with those existing plans, there is a greater focus on setting water quality and quantity limits via collaborative means, ensuring efficiency in the way water is used, placing limitations on nutrient run-off and recognising the importance of infrastructure development, particularly for water storage and irrigation. Mr Kyle analyses the policies of the proposed plan and concludes, having considered the various relevant matters, that he maintains the opinions expressed in his primary statement of evidence.

187. Generally the evidence and submissions of ECan supported that of the applicant.

188. Ms Kapua emphasised the importance of the management of water in the region and said that the proposed plan was a fundamental part of the legislative and statutory matrix concerning water management. We accept that that is so. She submitted that it was clear from Ms Begley's evidence that the matters in the proposed plan are reflected in the almost operative Canterbury Regional Policy Statement and in those matters set out in the CWMS. They are matters that speak of integrated management and identify areas that have been of concern to Ngai Tahu and other submitters. She submitted that the proposed plan supports a decision to decline the amendment to the Water Conservation Order. In her supplementary evidence, Ms Begley elaborated on the points referred to in counsel's submission. She says that the proposal does not comply with the provisions of the proposed plan because it does not provide for integrated management of land and water resources. It does not protect the relationship of Ngai Tahu and their culture and traditions with the water and land of Canterbury and it does not maintain in their existing state, outstanding fresh water bodies and hapua and their margins or restoring them where degraded, as required by the plan.

- 189 Mr & Mrs Snoyink urge us to give weight to the proposed plan. They emphasise the importance of addressing serious issues of nutrient overloading and bacterial contamination, together with the over-allocation of water and they raise the effects of more intensive farming.
- 190 We have considered the submissions made on the proposed plan and are satisfied the while , because it is at such an early stage we should give it little weight, it in fact emphasises strategies and policies in other plans referred to above. We do not accept that its provisions would require us to decline the application.

Part 2 Resource Management Act

191. In considering the overriding effect of Part 2, we adopt the approach set out in *New Zealand Rail Limited v Marlborough DC* [1993] 2 NZLR 641. In that case the High Court said that the application of S.5 involves an overall broad judgment of whether a proposal will promote the sustainable management of natural and physical resources. That approach recognises that the RMA has a single purpose and such a judgment allows for comparison of conflicting considerations and the scale or degree of them and their relative significance or proportion in the final outcome.
192. The starting point is, of course, the definition of sustainable management itself. That definition encompasses many of the matters already considered in these recommendations. The definition is as follows,
- “Sustainable management means managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while -*
- (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*

- (b) *safeguarding the life supporting capacity of air, water, soil, and ecosystems; and*
- (c) *avoiding, remedying, or mitigating any adverse effects of activities on the environment.”*

All those issues insofar as they are relevant, have been addressed above.

193. S.6 sets out matters of national importance which must be recognised and provided for in achieving the purpose of the Act. Relevant to this application, are para (a) which refers to the preservation of the natural character of the coastal environment, including the coastal marine area, wetlands, and lakes and rivers and their margins and the protection of them from inappropriate subdivision, use and development, para (c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna and para (e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, wahi tapu and other taonga.
194. S.7 requires us to have particular regard to the following relevant matters:
- (a) kaitiakitanga
 - (b) the efficient use and development of natural and physical resources
 - (c) the maintenance and enhancement of amenity values
 - (d) intrinsic value of ecosystems
 - (f) maintenance and enhancement of the quality of the environment
 - (h) the protection of the habitat of trout and salmon
 - (j) the benefits to be derived from the use and development of renewable energy
195. There is no question that Ngai Tahu are the kaitiaki of the Rakaia River – this is not in dispute. The issue is whether or not the TrustPower proposal will in any way affect Ngai Tahu’s ability to exercise their

kaitiaki responsibilities with respect to the Rakaia River in the future, and how this might actually be achieved either in collaboration with TrustPower, ECAN and other interested parties, or without. The key is that Ngai Tahu kaitiaki can ensure that at the very least the Rakaia River is not left to succeeding generations worse off than what it might be at the present time. If not then they have failed in their kaitiaki responsibilities.

196. The relationship that Ngai Tahu has with the Rakaia River, Whakamatau and other natural waterways in this Canterbury hinterland reflects their view of the natural world as being a holistic one with all parts interlocking. It is this holistic view that is intimately tied to the concept of mauri that Mrs Waaka-Holme emphasised in her evidence. It is an acceptance of a belief in the metaphysical or spiritual aspect possessed by such things and the obligation to protect or preserve that aspect.
197. S.8 requires us to take into account the principles of the Treaty of Waitangi. There were no submissions made to us in relation to Treaty principles however insofar as the evidence has touched upon the relationship between Ngai Tahu and the Crown or has referred to issues relating to taonga we are satisfied that those matters so far as they are relevant to this application have been adequately addressed.
198. All the Part 2 matters insofar as they are relevant, are discussed above or have been discussed earlier in these recommendations.
199. It is relevant to take into account in the balancing exercise required in relation to Part 2, the consequential effects of the proposal arising from intensified land uses. These effects include increased nutrients, raised water tables and possible potential effects on Te Waihora. In our view these effects are not fatal to the application and are considered in the consents for the irrigation activities as already

outlined above. We conclude that the comprehensive set of conditions attached to the ACWT and CPW consents and the provisions coming through the recently notified Land and Water Regional Plan, especially those to manage drainage and nutrient effects, will address any changes that may occur as a result of the use of stored water. We can also take into account in mitigation of the effects caused by the application, the Enhancement Fund proposed by the applicant. A definition of the Fund and the commitment to it are incorporated in the amended WCO annexed to Mr Matheson's submissions of 3rd August 2012. The purpose of the Fund is to contribute funding for projects within the Rakaia and Selwyn River catchments designed to enhance the cultural, ecological and biological health of, and recreational opportunities within, those catchments and thereby contribute to the first order priorities set out in the CWMS. There is to be an initial payment of \$50,000 into the fund immediately upon establishment and \$100,000 per annum CPI adjusted from the commencement of the project, together with a further \$100,000 per annum CPI adjusted from the commissioning of any canal constructed as part of the project.

200. Additionally, we note from the evidence that Mr Lilley referred to the possibility of wetland creation and kayaking facilities being included as part of the project. We would certainly like to see this done but as the applicant has made no commitment to do this so we cannot take it into account.
201. In making the overall broad judgment required in relation to Part 2 matters, we are satisfied that the proposal will promote the sustainable management of natural and physical resources.

GENERAL

202. We comment now on the rather complex water accounting requirements for TrustPower and ECan involved in the implementation of the proposed variation.
203. TrustPower will need to carefully monitor and record all flows in and out of the system, and keep daily records of the amounts of 'stored water' and 'normal water' in the lake, and discharged either via the canal or via Coleridge HEPS. We questioned Mr Lilley about management of this accounting system in the event of telemetry or datalogger breakdowns. We understand that during any breakdown, no 'stored water' would be able to be taken, and that for any water to be delivered to a user, their flow monitoring system must be functioning. However, these are matters for consideration in conditions of resource consents for the Lake Coleridge Project, not for the WCO. Mr Leftley of ECan was confident that a rigorous monitoring and web-based management regime based on virtual gorge flows can be developed with TrustPower. We concur.
204. The question of whether the changes to Rakaia River flows would at times reduce the reliability of water available for taking under existing consents has been addressed to our satisfaction by the applicant. We were advised that agreement had been reached to include the Rakaia River Irrigators Association in the Register of users able to access project water, and that this group comprises 21.7 m³/s or 99 % of the 21.9 m³/s of water held by consent holders other than CPW and BCI. Holders of the remaining 200 litres per second of allocations remain able either to join that Association or join the project Register directly in order to maintain current reliability of supply. None of those three parties made submissions on this variation.
205. Effects of climate change on future river flows were raised by some submitters. Mr Leong and Mr Levy noted that Rakaia River flows are dominated by weather in the Alps, rather than weather on the Plains.

Mean flow of the Rakaia River is expected to increase by 6 % to 8 % by 2040, which would mitigate to a small extent the changes in flows resulting from the WCO variation. However we also recognise that climate change is likely to increase water demand for irrigation on the plains. Percentage river flow increases also approximately match the inter-decadal variability in flows connected with the Inter-decadal Pacific Oscillation (IPO). On balance, we consider the upsides and downsides of climate change variability do not pose any greater risk to the outstanding characteristics to be protected by the WCO than does current climate variability.

206. In relation to issues raised by Ngai Tahu we record that we were assured by the applicant that it was prepared to engage further with both TRONT and the directly affected hapu. Accordingly we expect and anticipate that the applicant will work with Ngai Tahu in designing, implementing and managing the Lake Coleridge Project.

CONCLUSION

207. We have concluded that the proposal as put to us by the applicant will continue to preserve and protect the outstanding natural characteristics habitats and features . However, we are concerned to ensure that the basis upon which the application was put to us will continue to obtain through changing circumstances, including possible changes of ownership of the Coleridge HEPS. We note that storage additional to that in Lake Coleridge is contemplated but no provision for that is made in the modelling. This is a matter which should be taken into account when consents for additional storage are considered. We expressed our concerns in a memorandum to the applicant and to the submitters and received helpful comments from a number of submitters and proposals from the applicant designed to allay our concerns. In part they have. A principal concern is that the stretch of

river from the Coleridge HEPS outlet to Highbank may be sensitive to further reductions in water flow. We are anxious that what the applicant says through its modelling will be the case, will continue to be the case. The applicant has suggested an amendment to cl.9A(1) with the addition of the words: *“and provided that the Coleridge HEPS continues to operate until at least 19 December 2031”* (which is the date of the expiry of the current HEPS consents). In our view, that provision should continue to operate indefinitely and we propose therefore that the words, *“until at least 19 December 2031”* should be deleted.

208. We also consider it important that the applicant’s frequently expressed intention to continue to discharge water to the Rakaia River through Coleridge HEPS at an average rate of 13.6 m³/s is realised. We do not doubt the applicant’s sincerity in this respect, but it is our responsibility to ensure the protection of the river in the event of unforeseen changes in the future. We have given considerable thought to a way in which this can be done without imposing unreasonable restrictions on the operation of the HEPS.
209. We consider that the proposed change to condition 9A(1) does not go far enough in ensuring the continued discharges from Lake Coleridge to the Rakaia River above the gorge remain within the ranges modelled under the Lake Coleridge Project. It seems to us possible that the way the Coleridge HEPS is operated could change over time, with more water taken down the canal on an annual basis and reduced flows in the river reach between Coleridge HEPS and Highbank.
210. We think it is essential that the variation make provision, for as long as the WCO is in force, for discharges of a similar quantum as modelled through Coleridge HEPS for the Lake Coleridge Project, and for the Rakaia River flows not to substantially differ from those modelled for the Lake Coleridge Project. (Those flows are of course based on

1980-2009 Rakaia gorge data and the modelled flows tell us what the outcomes would have been, had the Lake Coleridge Project been operating over that entire period).

211. We have reviewed hydrological data on the historic versus LCP modelled discharges from Lake Coleridge. As stated earlier, the mean flows from the Coleridge HEPS would reduce from 25.4 m³/s historically to 13.6 m³/s when the Lake Coleridge Project is fully operational. We considered a condition limiting the annual discharge from Lake Coleridge, other than from the canal, to the 13.6 m³/s mean. However we acknowledge that in dry years this would require greater discharges from the lake than water available, resulting in lowered lake levels for longer. The flow data shows that annual discharges from Lake Coleridge comprising this mean of 13.6 m³/s would actually range between 8 and 19.6 m³/s. To the extent possible, the on-going operation of Lake Coleridge inflows and discharges from the Coleridge HEPS within the bounds of current consent conditions is a matter for TrustPower, provided the flows through Rakaia Gorge remain within an acceptable range. We also recognise that this can be achieved not only by controlling discharges through Coleridge HEPS but potentially also through controlling inflows at the head of the lake and discharges from Lake Stream.
212. We have reviewed data provided by Mr Leong on the projected Lake Coleridge discharges, excluding flows via the canal, when the Lake Coleridge Project is in operation. One way to account for the variability of wet and dry years is to calculate moving averages of flows. So a two-year moving average is the average of all flows over the previous two years, recalculated each day. The hydrological data for the Lake Coleridge Project shows that for 90% of the time, the two-year moving average discharges from Coleridge HEPS are 10.9 m³/s or more. Recognising that discharges are also dependent upon lake inflows, it is sensible to relate the 90% exceedance probability to

inflows. Mr Leong's data shows that for 90% of the time, discharges from Coleridge HEPS are 45% or more than lake inflows (lake inflows are calculated from measured outflows and changes in lake level, so are easily accounted for).

213. With the above analysis in mind, we propose a condition requiring that the Lake Coleridge Project achieve a discharge from the Lake above Rakaia Gorge of at least 45% of lake inflows based on the two year rolling average flow. As this figure is linked to inflows into the lake, it does not incentivise maximising diversions into the lake, which a fixed flow would do. Expressing it in terms of discharges from the lake would allow discharges via either the Coleridge HEPS or Lake Stream or anywhere else as long as it is located at or above the Coleridge HEPS discharge. Using the two-year rolling average allows for the variability of dry and wet years.

214. We propose that Cl.9A(1) be further amended by the addition of the words:

“And provided further that the Lake Coleridge Project shall be operated such that the discharges from the lake into the Rakaia River at or above the Coleridge HEPS outlet shall not fall below 45% of the inflows to Lake Coleridge, both inflows and outflows being calculated as the two-yearly rolling average of daily flows.”

215. The applicant has given us another important assurance. That is, that the consent condition relating to the situation that would arise if the Coleridge HEPS ceased operation either temporarily or permanently, would continue to apply. That condition requires that whenever outages cause the Coleridge HEPS to cease discharging to the Rakaia River for more than 24 hours and the river flow is within 30 cumecs of the minimum gorge flow set out in the WCO, TrustPower must take immediate steps to shut off the Harper and Wilberforce diversions. In his submissions, Mr Matheson suggested that if TrustPower was to

shut down the Coleridge HEPS permanently, the diversions into Lake Coleridge would need to be shut off when the above circumstances existed. We are not certain that submission is correct. The dictionary definitions and the common understanding of the term “outage” refers to a temporary cessation of operation, rather than a permanent one. We think it is appropriate to give effect to Mr Matheson’s understanding of the provision by including a condition in the amended WCO which would reflect the consent condition but would ensure that it applied to permanent situations as well as temporary ones. With respect to matters of this sort, Mr Matheson has made the point on several occasions that TrustPower is entitled to exercise its consents in respect of the HEPS in the manner it considers commercially appropriate. The suggested conditions he has proposed are at least a partial concession that in the light of the application for amendment that is no longer a tenable position. Under the provisions of the existing WCO, the Coleridge HEPS would either keep operating, in which case water would be discharged to the river, or it would cease operating, in which case the lake, at least once it was full, would overflow, resulting in water reaching the Rakaia via the Wilberforce. The proposal radically changes that situation and in our view, justifies the conditions we have been discussing.

217. We recommend the application be granted, containing the additional conditions referred to above.

ANNEXURE 1

SUBMISSIONS IN OPPOSITION EITHER FULLY OR CONDITIONALLY

The following issues are raised:

River flow is getting lower every year.

Clarify implications of excluding stored water from the river flow when the river is low.

Require minimum flow be retained at all times except when materially lower. Require that there be no discharge from farms into river or tributaries.

Concern at nutrient discharge from intensified land use.

Salmon habitat will be reduced by change to flow.

More research needed into effects on flow and habitat.

Risk of river mouth closure due to reduced flow.

Does not comply with first-order priorities in CWMS.

River already affected by water takes. Flow reduced - no more should be allowed.

Insufficient bio-diversity investigation and reporting.

Small braids important for small salmon – less water more dydimio.

High water levels in Lake Coleridge will affect shore-line angling.

Since 2000 salmon returns have diminished.

Lower levels will affect jet-boaters.

Shingle not being transported to sea.

The low flows are resulting in an inability of the river to flush itself and dwindling fishers. The mouth was closed in 2010 as a result of lower flows. This leads to gravel build-up and flooding.

Irrigation threats to ground-water quality.

The existing WCO must not be weakened.

There are existing consents not taken up so that the full impact on the river is not known.

Use must not be at expense of existing irrigators.

Low flows at mouth would affect whitebaiting and other fishing.

River metering equipment is needed in the Lower Rakaia.

Lower flows will increase water temperature.

The proposal will adversely affect the cultural values of Ngai Tahu.

A nutrient management plan by ECAN is needed prior to consideration of application.

The application emphasises the economic benefits so adverse environmental impacts from the change of use of land must also be relevant.

The proposal undermines the purpose of the WCO.

Effects on terrestrial and riverine biodiversity has not been adequately taken into account.

The recreational assessment is inadequate.

There are potential effects on public health.

The amendments are not required to achieve the purposes of the WCO.

Schedule 1

Vision and Principles of Canterbury Water Management Strategy - Strategic Framework, November 2009

Part 1 Vision and Principles

Vision

To enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework.

Fundamental principles

Primary principles

Sustainable management

Water is a public resource which must be managed in accordance with sustainability principles and be consistent with the Resource Management and Local Government Acts.

Regional approach

- The planning of natural water use is guided by the following:
 - first order priority considerations: the environment, customary uses, community supplies and stock water
 - second order priority considerations: irrigation, renewable electricity generation, recreation, tourism and amenity
- A consistent regulatory approach to water is applied throughout the Canterbury region, recognising these principles
- Both surface and groundwater are given equal importance
- Further development of scientific knowledge of the region's water resources and the impacts of climate change are given priority
- The actual or potential cumulative effects the taking and using water can have on waterways are recognised and managed within defined standards
- A cautious approach is taken when information is uncertain, unreliable, or inadequate

- The need for efficient use of water in existing and new infrastructure is recognised
- There is strong emphasis on the integration of water and land management including protection of indigenous biodiversity and enhancement of water quality
- Current and potential effects of land use intensification is an integral part of decision-making on water takes. This may mean amending regional and district plans.

Kaitiakitanga

- The exercise of kaitiakitanga by Ngai Tahu applies to all water and lakes, river, hapua, waterways and wetlands, and shall be carried out in accordance with tikanga Maori.

Supporting principles

Natural character

The natural character (mauri²) of Canterbury's rivers, streams, lakes, groundwater and wetlands is preserved and enhanced:

- natural flow regimes of rivers are maintained and, where they have been adversely affected by takes, enhanced where possible
- the dynamic processes of Canterbury's braided rivers define their character and are protected
- environmental flow regimes are established for every waterway where abstraction occurs
- that restoration of natural character and biodiversity, is a priority for degraded waterways, particularly lowland streams and lowland catchments
- the interdependence of waterways and coastal ecosystems is recognised.

Indigenous biodiversity

- Indigenous flora and fauna and their habitats in rivers, streams, lakes, groundwater and wetlands are protected and valued.
- The aims of the Canterbury Biodiversity Strategy are recognised and supported.

² Mauri - the life force. In the environment, mauri is used to describe the intrinsic values of all resources and of the total ecosystem.

Access

- Public access to and along rivers, lakes, waterways and wetlands is maintained and, where appropriate, enhanced. Access may need to be limited in situations including where environmental risk, public safety, security of assets, cultural values, biodiversity and farm management require.

Quality drinking water

- All those living in Canterbury have access to high quality drinking water:
- The region's high quality aquifer-sourced drinking water is protected.
- Where Canterbury's drinking water is currently untreated and safe for drinking, it is maintained at that high standard.

Recreational and amenity opportunities

- Rivers, lakes, groundwater and wetlands provide opportunities for enjoyment, recreation and tourism:
- High quality water ensures contact recreation such as swimming, fishing, boating and other water sports are able to be enjoyed throughout Canterbury.
- Adequate environmental flows should ensure that recreational users and tourists can enjoy Canterbury rivers.
- Eco-tourism opportunities are recognised and encouraged.

Community and commercial use

Water resources are used sustainably to enhance quality of life:

- where water is abstracted, it is used effectively and efficiently:
- land use, industry, and business practices to non adversely impact on natural water quality:
- discharges to waterways are minimised and do not compromise quality:
- land use practices are monitored and best practice approaches are required:
- agricultural stock is excluded from all waterways in catchments where irrigated farming is practiced and all lowland streams:

- where acclimatised wildlife in lowland streams cause contamination, they are appropriate managed:
- degraded waahi taonga are enhanced to restore tangata whenua cultural wellbeing.

Part 2

Status and preparation of Canterbury Water Management Strategy - Strategic Framework November 2009

1. The vision and principles of the CWMS, as set out in Part 1, are reproduced from the Canterbury Water Management Strategy - Strategic Framework, November 2009 (CWMS).
2. The preparation of the CWMS was supervised by a multi-stakeholder Steering Group under the overall leadership of the Canterbury Mayoral Forum.
3. The membership of the Canterbury Mayoral Forum and of the Steering Group is set out in Annex A of the CWMS.