
1.1 Purpose of this Report

This Assessment of Environmental Effects report has been produced to technically support the Central Plains Water Trust's (The Trust) resource consent applications for the development of a water enhancement scheme on the Central Canterbury Plains.

The purpose of this report is to assess the environmental effects of these proposed activities and explain what changes there will be within the natural, social, cultural and economic environment as a result of these activities. The scale and significance of these effects are reflected in the level of detail provided within each section of the report. Measures to avoid, remedy or mitigate any potentially adverse effects of the scheme construction and operation are also indicated.

This report has been prepared under the Resource Management Act 1991 (RMA); Section 88, "Making an Application" and the Fourth Schedule, "Assessment of Effects on the Environment." The report aims to present clear information on the consents applied for by the Trust and the effects on the environment of the proposed activities, so that members of the public and submitters find the information understandable, without detracting from the technical complexity of the proposal. The information has been presented so that people can decide for themselves if they would like to make a submission in support of or opposition to the resource consent applications.

Following application and notification further work will be done to develop technical details of the scheme, and the understanding of its impacts and potential mitigation options. It is expected that this will include interaction with a variety of stakeholders, and will continue throughout the consenting period and beyond.

1.2 Central Plains Water Enhancement Scheme

The area of the Central Plains Water Enhancement Scheme is located between the Rakaia and Waimakariri Rivers. Within this area it has been determined through scoping and feasibility studies that the possible scheme will involve the taking of water from three points, two on the Waimakariri River and another on the Rakaia River. Together these water takes will deliver water through a system of water races and channels, and with adequate storage will be able to irrigate an area of 60,000 ha, with a high level of reliability.

The key elements of the scheme as shown in Figure 1-1 include:

- An intake on the Waimakariri River above the confluence with the Kowai River and an inlet canal feeding water to the Waianiwiwa Reservoir via a tunnel through the Malvern Hills
- An intake on the Waimakariri River at the Gorge Bridge to bring water into the main headrace across the plains
- An intake on the Rakaia River approximately 8 km downstream of the Gorge Bridge to bring water into the main headrace across the plains

- A dam and consequent reservoir in the Waianiwaniwa Valley to provide stored water that will discharge into the main headrace
- A level headrace that will run between the Rakaia and Waimakariri Rivers and deliver water to the distribution network
- A distribution network of water races down the plains providing water to all shareholder properties in the scheme area
- Pump stations to lift water from the headrace and inlet canal to land that is too high to be supplied by gravity in the Windwhistle and Springfield areas
- Bywash, turnout water races, and wetlands at the bottom of the scheme area to discharge surplus water back into surface waterways or groundwater.

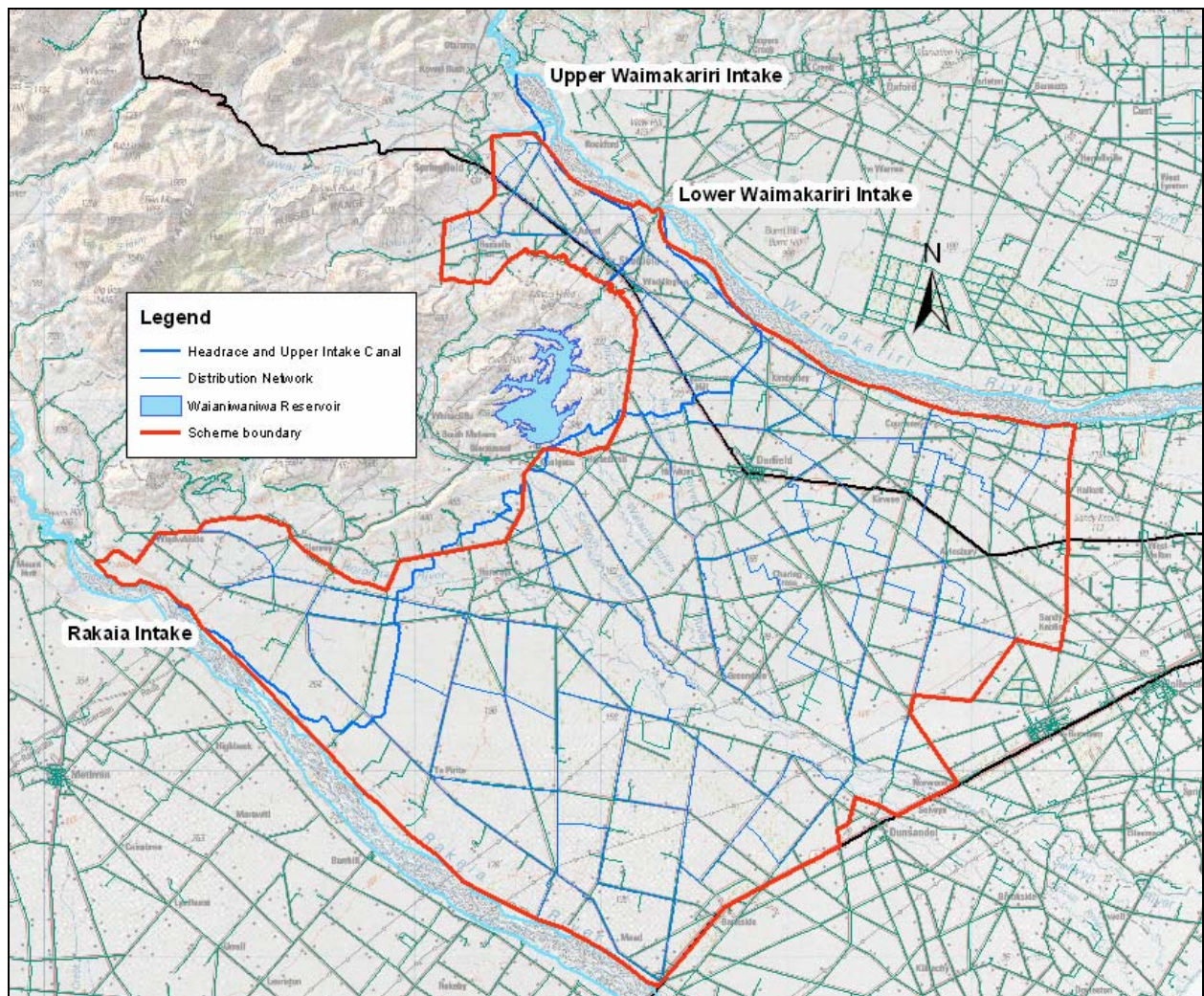


Figure 1-1: Central Plains Water Enhancement Scheme Layout

In addition to these main features, there will be many places where races cross rivers, streams, roads and farm access ways, and crossings will be by bridges, culverts or siphons. There will also be many control structures and turnout devices to deliver the required quantities of water to individual properties.

In general terms the main headrace will follow the alignment of the 235m RL contour across the plains, and the distribution network will as far as practicable follow existing road alignments.

The operation will involve delivering water to the supply area from run-of-river water via a race system when water is available in the rivers with the shortfall in demand being made up with water from storage.

The order of priority of source shall be as follows:

- Supply from available run of river water in the Rakaia River (subject to sharing with the Ashburton Community Water Trust - ACWT),
- Supply from available run of river water in the Waimakariri River,
- Supply from storage during periods when run of river water is not available to meet the demand.

The availability of water will often lead to a combination of these sources being used.

During periods when the supply exceeds the demand, surplus water will be delivered to the storage reservoir to replenish water levels if required.

Excess water will be delivered to bywash canals that will direct the water to either ground soakage, marginal or riparian wetlands or discharges to rivers and streams.

1.3 Background

In March 2000 the Central Plains Water Enhancement (CPWE) Steering Committee was established by the Selwyn District Council (SDC) and the Christchurch City Council (CCC). Its purpose was to improve the security and prosperity of Central Canterbury through water management schemes that enhance ecological and recreational values while providing opportunity for agricultural and horticultural diversity. The Councils' objective in setting up this Steering Committee was "to execute feasibility studies into the viability and practicality of water enhancement schemes in the Central Plains area".

Having achieved its objective, the Steering Committee recommended to the Councils that new mechanisms and funding streams were required to carry the project forward. This led to the formation of the Central Plains Water Trust and Central Plains Water Ltd.

1.3.1 Central Plains Water Trust

The Central Plains Water Trust was formally established on 15 April 2003, being a trust established by the Christchurch City Council and the Selwyn District Council to protect community and environmental

interests in relation to water enhancement within the Central Plains region. The Trust will hold the resource consents for the Central Plains Water Enhancement Scheme.

Thus as consent holders for the scheme, the Trust has as its overriding objective continued public ownership of the resource consents and this will ensure long-term community protection of the Region's scarce water resources. The Trust has not been established purely to pursue commercial objectives, it being the intention that such commercial objectives will instead be pursued through Central Plains Water Ltd.

1.3.2 Central Plains Water Limited

Central Plains Water Limited was incorporated on 23 May 2003 and has been formed by the Central Plains Water Trust to investigate, construct and operate a water enhancement scheme, providing surface water for community irrigation to farmers who farm within the Central Plains area.

The Company has a Memorandum of Agreement with the Trust that sets out the respective roles of the Company and the Trust and, in particular, specifies that the Trust will make the resource consents available to the Company for the purposes of constructing and operating the Scheme. The memorandum is appended to this AEE.

1.3.3 Future development of Central Plains Water Enhancement Scheme

Once the resource consents have been obtained considerably more investment will be required to construct and operate the Scheme. Whilst it is likely that the scale of the capital requirement for the creation of the infrastructure will necessitate significant equity input from commercial investors, other means of funding the construction of the Scheme infrastructure (including a totally debt funded Scheme serviced by the irrigated farmers and supported by the Selwyn District Council) may minimise, or eliminate, any requirement for external investors. For this reason the Trust and the Company are considering a number of structural options to be implemented once the resource consents have been obtained.

A number of scenarios are available, including staging of the construction of critical elements. For example the river intakes and headrace could proceed ahead of the reservoir and dam construction. The distribution network could be staged to provide first water to those areas where demand is highest and farmer uptake is greatest. There have been no decisions made in regard to development staging at this point in time, and therefore these applications should envisage the full range of options from complete development from day one, through to staged development of the intakes, irrigation canals and storage reservoir.

1.3.4 Requiring Authority Status

Central Plains Water Ltd has applied for requiring authority status and in the event that such status is obtained it will be able to give notice to the Selwyn District Council of its requirement to designate any

parcel of land for its specific purposes. An application for a designation is treated much in the same way as an application for a resource consent, in that requests for further information can be made, public notification is required, hearings are held and appeal rights exist. Where there is a particular need to undertake an activity on a particular piece of land, then CPWL may consider making an application for a designation. Any application would be made to the Selwyn District Council and it is not a consideration for the Canterbury Regional Council (ECan).

1.4 Overview of Consents and Designations Required for this Scheme

1.4.1 Previous Resource Consent Applications Relating to this Scheme

In December 2001, the Christchurch City Council, the Selwyn District Council and the Ashburton Community Water Trust (ACWT) jointly applied for resource consents for takes from the rivers. For the Rakaia River takes the applicants are commonly referred to as the Central Plains Water Enhancement Steering Committee (CPWE) and the ACWT. For the Waimakariri River take the applicants are the Christchurch City Council and Selwyn District Council acting as CPWE.

The application, which is sought for a term of 35 years is for the following:

- A take of up to 40 m³/s of water from the Rakaia River at or about map reference NZMS 260 K36:050-393, for irrigation, and water enhancement.
- A take of up to 40 m³/s of water from the Rakaia River at or about map reference NZMS 260 K36:072-391, for irrigation, and water enhancement.
- A take up to 40 m³/s of water from the Waimakariri River, at or about map reference NZMS 260 L35:331-604, for irrigation and water enhancement.

The takes from the Rakaia River will be managed by the applicants through an integrated water management agreement, such that the combined take will not exceed 40 m³/s. Through this integrated approach to water management, CPWE and ACWT would share equal priority for the water abstraction, up to a combined maximum of 40 m³/s which would then not exceed the combined maximum abstraction limit under the National Water Conservation (Rakaia River) Order of 70 m³/s. This would further allow water not required by one scheme to be made available to the other for use. This application is referred to as CRC021091. This application number also covers the 2001 application to take 40 m³/s from the Waimakariri.

Since lodging, the entities involved in these applications have changed. CPWE interests are now transferred to the Central Plains Water Trust (CPWT), which will obtain the resource consents on behalf of Central Plains Water Ltd (CPWL), the entity that will exercise the consents.

In June 2005, the Central Plains Water Trust applied to take up to 40 m³/s of water from the Waimakariri River, anywhere within the map reference range (at or about) NZMS 260 L35:250-677 to NZMS 260 L35:245-690 for irrigation and water enhancement. This application effectively works in parallel with and should be heard with CRC021091, also an application to take up to 40 m³/s of water from the Waimakariri River, albeit at a different location (NZMS 260 L35:331-604). The effect of this application, when exercised at the same time as CRC021091, is that at any one time no more than 40 m³/s of water will be taken from the Waimakariri River. By way of example, should, at a given point in time, 10 m³/s of water be taken at the location subject to this application, then a maximum of 30 m³/s of water would be taken under CRC021091.

There are no applications that have been lodged prior to this current application other than those above.

See Section 3.3.1 for further description of the proposed operation of these consents.

1.4.2 Resource Consents Sought in this Application

Central Plains Water Trust has applied for resource consents as listed in appendix D.

1.4.3 Resource Consents and/or Designations Required from Selwyn District Council

The following table lists the land use consents required from Selwyn District Council. These relate to both the construction and operation phases of the Scheme. Central Plains Water Trust has applied for designations rather than consents for the intakes, headrace canals and reservoir.

Land Use Activity	General Location
Construction, use and maintenance of open channel or waterway to convey water	Headrace & distribution race network
Construction, use and maintenance of utility buildings and structures (e.g. pump station)	Waianiwiwa dam & reservoir
Construction, use and maintenance of utility buildings and structures (e.g. pump stations)	Headrace & distribution race network
Removal of contaminated soil	All
Disturbance of soil in Cultural Sites beyond that previously disturbed	All
Earthworks in flood areas	All
Earthworks in Outstanding Landscape Areas	All
Earthworks within 20 m of waterbody	All
Earthworks exceeding 5000 m ³ per project, and a vertical cut face more than 5 % of the total vertical cut	Headrace & distribution race network

Earthworks exceeding 5000 m ³ per project, and a vertical cut face more than 5 % of the total vertical cut	Waianiwaniwa dam & reservoir
---	------------------------------

1.5 Land Ownership

Land ownership for this application relates to the routes of the inlet canal, headrace canal, water distribution race network, Waianiwaniwa dam and reservoir and other ancillary features associated with the scheme. These are listed in the schedules that accompany the application document.

1.6 Report Structure

The report is structured as follows:

- Section 1 – Introduction
- Section 2 – Central Plains Water Enhancement Scheme
- Section 3 – Description of the Proposed Activities
- Section 4 – Consideration of Alternatives
- Section 5 – Consultation
- Section 6 – Description of the Environment
- Section 7 – Assessment of Temporary Effects on the Environment
- Section 8 – Assessment of Effects of the Operation of the Scheme
- Section 9 – Mitigation, Monitoring and Conditions
- Section 10 – Statutory Framework
- Appendix A – References
- Appendix B – Locations and Maps
- Appendix C – Memorandum of Agreement
- Appendix D – Proposed Consent Conditions
- Appendix E – Assessment of Regional Plan Rules

This report has been structured in a way that intends to:

- Clearly describe the activities;

-
- Explain the statutory framework and policy considerations;
 - Provide a general description of the environment in the scheme area;
 - Describe the aspects of the environment that will be affected by the activities and how they will be changed; and
 - Indicate means of mitigating and monitoring effects on the environment.

1.7 4th Schedule

This AEE has been prepared in accordance with the Fourth Schedule of the Resource Management Act, 1991(RMA)

1. Matters that should be included in an assessment of effects on the environment

Subject to the provisions of any policy statement or plan, an assessment of effects on the environment for the purposes of section 88 should include

(a) A description of the proposal

This can be found in following sections of the report: *Section 1 Introduction, and Section 3 Description of the Proposed Activity.*

(b) Where it is likely that an activity will result in any significant adverse effects on the environment, a description of any possible alternative locations or methods for undertaking the activity:

This can be found in following section of the report: *Section 4 Consideration of Alternatives*

(d) An assessment of the actual or potential effect on the environment of the proposed activity:

This can be found in following sections of the report: *Section 7 Assessment of Temporary Effects on the Environment, and Section 8 Assessment of Effects of the Operation of the Scheme.*

(e) Where the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment, which are likely to arise from such use:

(f) Where the activity includes the discharge of any contaminant, a description of –

(i) The nature of the discharge and the sensitivity of the proposed receiving environment to adverse effects; and

(ii) Any possible alternative methods of discharge, including discharge into any other receiving environment.

This can be found in following section of the report: *Section 2 Description of the Activity, Section 4 Consideration of Alternatives, Section 6 Description of the Environment, Section 7 Assessment of*

Temporary Effects on the Environment, and Section 8 Assessment of Effects of the Operation of the Scheme.

(g) A description of the mitigation measures (safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect:

This can be found in following sections of the report: *Section 9 Mitigation, Monitoring and Conditions.*

(h) An identification of those persons affected by the proposal, the consultation undertaken, if any, and any response to the views of any person consulted:

This can be found in following section of the report: *Section 5 Consultation.*

(i) Where the scale or significance of the activity's effect are such that monitoring is required, a description of how, once the proposal is approved, effects will be monitored and by whom.

This can be found in following section of the report: *Section 9 Mitigation, Monitoring and Conditions.*

2. Matters that should be considered when preparing an assessment of effects on the environment

Subject to the provisions of any policy statement or plan, any person preparing an assessment of the effects on the environment should consider the following matters:

(a) Any effect on those in the neighbourhood and, where relevant, the wider community including any socio-economic and cultural effects:

This can be found in following sections of the report: *Section 5 Consultation, Section 6 Description of the Environment, Section 7 Assessment of Temporary Effects on the Environment, and Section 8 Assessment of Effects of the Operation of the Scheme.*

(b) Any physical effect on the locality, including any landscape and visual effects:

This can be found in following sections of the report: *Section 6 Description of the Environment, Section 7 Assessment of Temporary Effects on the Environment, and Section 8 Assessment of Effects of the Operation of the Scheme.*

(c) Any effect on ecosystems, including effects on plants and animals and any physical disturbance of habitats in the vicinity:

This can be found in following sections of the report: *Section 7 Assessment of Temporary Effects on the Environment, and Section 8 Assessment of Effects of the Operation of the Scheme.*

(d) Any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural, or other special value for present or future generations:

This can be found in following sections of the report: *Section 6 Description of the Environment, Section 7 Assessment of Temporary Effects on the Environment, and Section 8 Assessment of Effects of the Operation of the Scheme.*

- (e) Any discharge of contaminants into the environment, including any unreasonable emission of noise and options for the treatment and disposal of contaminants:

This can be found in following sections of the report: *Section 6 Description of the Environment, Section 7 Assessment of Temporary Effects on the Environment, and Section 8 Assessment of Effects of the Operation of the Scheme.*

Any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.

This can be found in following sections of the report: *Section 6 Description of the Environment, Section 7 Assessment of Temporary Effects on the Environment, and Section 8 Assessment of Effects of the Operation of the Scheme.*