
9.1 Section 17 RMA

Section 17 of the Resource Management Act (1991) places a duty of all people to avoid, remedy, or mitigate any adverse effect on the environment arising from an activity carried out by or on behalf of that person whether or not that activity is in accordance with a rule in a plan or resource consent.

9.2 Avoiding adverse effects on the environment

Where there are feasible options to avoid adverse environmental effects, this is the primary objective. This does not imply that any activity that may have an adverse effect should be avoided, as this would fail to meet the purpose of the Act, which is the sustainable management of natural and physical resources. Therefore the Act is about managing the effects and enabling people and communities to meet their foreseeable needs.

9.2.1 Management Plans

The construction activities will be controlled through the use of management plans. This is a tried and tested methodology to deal with activities and effects that cannot be defined fully at the time of resource consent application. Typically these plans identify all the sources of nuisance or hazard from a construction area and stipulate controls to avoid, mitigate or remedy these.

The management plans must be produced to comply with the conditions of consent, and will be lodged with Canterbury Regional Council and any other relevant parties (e.g., NZHPT, Transit New Zealand, etc) prior to commencing construction. They build on the requirements set out in any consent conditions and are applied to the specific designs for the project, the staging of its components and the methods of construction, all of which will only be known as the Scheme nears construction. These plans, once approved, then become rules for the contractor's management and operation of the activity.

Contractors involved in the scheme's construction will be required to prepare Construction Management Plans that include the following components:

Land Rehabilitation Plan

The proposed Land Rehabilitation Plan will address land restoration and rehabilitation requirements for the construction zone generally where land has been disturbed, race embankments, and construction storage areas. This plan will detail final contours and finished heights of earthworks; the methods for stripping, storing and re-using topsoil; vegetation removal and replanting requirements; and the rehabilitation of haul roads. In addition, provision will be made for the identification of specific ecological, heritage, cultural or geological features within or immediately adjoining the construction zone which are to be protected, the methods of such protection, and the identification of the features.

A Remediation Action Plan (for contaminated areas)

A Remediation Action Plan for contaminated areas will be prepared and lodged prior to any construction occurring and will be adhered to where construction of the race results in the disturbance of contaminated land (e.g., landfill, farm dump, offal pit, septic tank, silage pits, dairy effluent disposal ponds).

As a minimum the Remediation Action Plan will address

- The earthworks and transport controls to minimise the off-site mitigation of contamination (via air or water during the remedial works).
- Appropriate measures for the control of dust or odour;
- The diversion of stormwater away from the remedial works;
- The treatment of contaminated stormwater or groundwater in the remediation area;
- Sampling and reporting;
- The health and safety requirements for remediation workers.

Hazardous Substances Management and Contingency Plan

These plans shall address storage and management requirements for hazardous substances, and contingencies and responses in the event that these substances are spilled.

Heritage Management Plan

Heritage Management Plans will be prepared to cover any destruction, damage or modification to any archaeological site, or historic site or building classified under the NZ Historic Places Trust Act 1993 and will identify any conditions to be complied with in relation to heritage.

Dust Management Plan

The Dust Management Plan will document:

- methods of dust suppression including use of sprinklers and water carts, and revegetation of stockpiles where appropriate;
- dust monitoring requirements;
- responsibilities for consultation with local residents about dust during construction;
- identification of areas which are sensitive to the effects of dust (eg, houses, specific crops, utilities, orchards) and identification of specific measures to mitigate the effects of dust on these sites;
- regular public road maintenance to ensure optimal surface conditions;

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- proposed methods of providing a cleaning service to residents and businesses affected by dust from construction activities.

Noise Management Plan

The Noise Management Plan will be implemented in tandem with conditions of consent imposing specific noise controls. As such the Noise Management Plan will detail the noise sources associated with the construction of the distribution races and the noise control methods required to achieve compliance with conditions of consent imposing maximum noise levels. The Noise Management Plan will also document contingency plans (in the event that noise limits are exceeded), monitoring procedures, and complaints procedures. Finally, the Noise Management Plan will provide for the monitoring and management of any effects associated with vibration.

Traffic Management Plan

A Traffic Management Plan will be prepared and provided to both the Selwyn District Council and Transit New Zealand. This management plan will primarily address the management of construction traffic on public roads and locations where the distribution races and/or haul roads intersect with public roads. In particular, the Traffic Management Plan will require:

- The erection of signs on all public roads warning motorists of haul road intersections and associated hazards.
- Warning signage prohibiting public access to construction areas.
- Details of stock crossing methods as determined following consultation with local farmers.
- The notification of all temporary local road closures to local emergency services.
- All construction vehicles to be fitted with flashing lights while operating in the construction zone and on haul roads.
- Construction vehicles to comply with the Land Transport Safety Authority requirements for vehicle dimensions and mass on public roads, unless specific over dimension permits are obtained.
- Movement of oversize vehicles and equipment on SH 1, SH73 and SH 77 to comply with Transit New Zealand requirements.
- Road signs to be erected on roads where necessary to warn motorists of the hazard caused by fog or frost.
- Road safety audits to be carried out every six months of traffic signals/stop signs controlling the intersections of all public roads with haul roads and the review of these audits and implementation of any necessary steps to ensure motorists do not suffer unreasonable delays.

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- The use of dust suppressant to mitigate the effects of dust.
 - The maintenance of vehicles and machinery to mitigate the effects of fumes.

In addition to the general provisions of the Traffic Management Plan outlined above, particular measures shall be identified in a Traffic Management Plan dealing with State Highway intersections with haul roads. This plan shall be developed in accordance with the Transit New Zealand Code of Practice for Temporary Traffic Management.

Accidental Discovery Protocols

An accidental discovery protocol will be developed to cover instances where archaeological sites (prehistoric (Maori) and historic) are unearthed during the construction phase. This protocol will require an on-site assessment by a qualified archaeologist, notification of the New Zealand Historic Places Trust and Ngai Tahu, and further excavations, examinations and recording where necessary.

Health and Safety Plan

Whilst of limited relevance in terms of effects on the environment, the Health and Safety Plan will primarily stipulate codes of practice and relevant construction regulations that contractors will be required to follow. In addition, the Health and Safety Plan will also include information on hazard identification, management and mitigation, public consultation and information sharing requirements, emergency protocols and incident reporting.

In addition to the management plans referred to above, draft conditions of consent proposed by the applicant are included in Appendix D to this application. These conditions outline the key requirements and performance measures for the various management plans above, including the methods for avoiding, remedying or mitigating adverse effects on the environment and requirements for monitoring and reporting.

Other management plans

Additional management plans may be prepared covering, for example:

- Risk Management Plan
- Stormwater Management Plan
- Spill Contingency Plan

9.2.2 Sustainable Farming

Many of the potential effects that have been identified as matters of concern during previous consultation have resulted in the development of strategies to avoid adverse effects. In particular the sustainable

management of agricultural systems is paramount for the protection of ground and surface water resources, and this is being addressed particularly through the sustainability code of practice.

9.2.3 Ritso Society Irrigation Sustainability Code of Practice

The Ritso Society, formed in 2002, is named after Mr GF Ritso who in 1883, as engineer for Malvern County, had the vision for an irrigated Central Plains region. The Society has close links to the Central Plains Water Trust, and Central Plains Water Ltd, but is a separately incorporated body. They are currently undertaking a project supported by a Sustainable Farming Fund Grant and with funding from CPWL, the Ritso Society and others, that aims to bring together the wide range of information on irrigation already available and being developed in current projects; identify gaps in this information; and where practicable initiate further work to cover these issues. From this information an Irrigation Scheme Sustainability Code is being developed and tailored to the Central Plains Scheme.

While it is a major task to develop this code, it is also recognised that a vitally important aspect of the process is ensuring that primary producers, business people, and others participate in the development of the code, and embrace its implementation both at the individual on-farm level, and through the governance of the Water Enhancement Scheme by Central Plains Water Trust, and Central Plains Water Ltd.

In developing the code, key stakeholders from both the agriculture sector and wider community will be brought together to develop key aspects related to:

- Water efficiency measures;
- Water quality measures;
- Contractual requirements; and
- Use of economic instruments to achieve efficiency of use.

The key outputs of the project will be:

- A best practice irrigation scheme sustainability code that
 - Enables users to achieve best practice environmentally, and economically (i.e. maximise returns from minimum inputs);
 - Is practical and economically viable for water users;
 - Is dynamic and can be adapted over time to incorporate new technologies, and deal with new issues as they arise;
- The code will seek to ensure that adverse effects of the Scheme can be avoided or managed in both the design and operational phases of the Scheme;

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- A workable framework for water and emissions trading;
 - A process to allow intensification following irrigation to be achieved and monitored in a way that avoids or remedies adverse environmental effects; and
 - Full reporting on processes, outputs, outcomes, and lessons learned. whereby

As a result, the individuals, organisations and networks involved in the code will become more knowledgeable about the key factors that will ensure development of irrigation that is socially and environmentally sustainable and economically viable.

9.3 Mitigating adverse effects on the environment

Where it is not possible to avoid an adverse effect then mitigations should be found. It is expected that the Sustainability code of Practice will be one key tool for mitigation and others will be developed through further consultation related to fishery management, drainage management, property access, etc. At times mitigation can be through compensation such as the creation of other areas of natural, environmental or recreational value. The Central Plains Water Enhancement Scheme is looking for ways in which the community can meet its aspirations for environmental enhancement, while at the same time developing the potential of our fertile plains. It is the intention of CPWL and CPWT to continually search for ways of mitigating adverse effects, and it is anticipated the ongoing consultation required for this project will identify a range of new opportunities.

9.4 Remediating adverse effects on the environment

The final duty imposed by section 17 is to remedy any adverse effects. The focus of these applications is to avoid and mitigate any adverse effects but CPWT and CPWL acknowledge a duty to remedy where required. It is accepted that for some people particularly in the Waianiwaniwa Valley, the scheme will have significant adverse effects as the land will be inundated or lost due to the construction of the dam, and filling of the reservoir. In this situation, should the Scheme be constructed, there is no recourse but to compensate these people fairly for their losses. It is the intention of the Central Plains Water Trust, and Central Plains Water Ltd to undertake this difficult task through open consultative processes.

9.5 Proposed Monitoring

Monitoring needs to be developed within a risk based framework. Where the potential risk of an adverse effect is high, then there should be more monitoring. Where the effects are well understood, easily mitigated, and remedied and minor, then no monitoring may be needed. Monitoring is designed to ascertain the effects of the consented activities and is not to be used to create data bases on the state of the environment – that being a Regional Council function. Monitoring also needs to be developed in conjunction with the resource consent conditions.

It is the intention of CPWL to commit to advance the detail of these applications in consultation with the various stakeholders to identify the monitoring required. For this reason no specific monitoring is proposed in this document, however the areas that CPWL anticipate will require monitoring are identified below.

9.5.1 Water takes

The takes from the rivers will need to be recorded, essentially on a continual basis. Remote telemetry equipment is well suited to this task.

9.5.2 Reservoir levels and water quality

The water surface level in the reservoir will require continuous measurement. The water quality will require monitoring in particular during the early years of operation as it is expected that the water will be anoxic and it will be essential to decant water from an appropriate level in the reservoir depending on the prevailing conditions. For example small flows of anoxic water could be used to supplement flows in the main headrace if flows are sufficiently high, but at time when only reservoir water is being used, water from the upper levels in the reservoir may be required.

9.5.3 Water distribution

The flows throughout the distribution system will be monitored. Each and every take from the system by the water users will be monitored for flow. Flow at the turnout structures will be determined based on gate settings and water surface levels. This information will be used to ensure the appropriate volume of water is discharged down the correct distribution canal.

9.5.4 Land application amounts

Pumping rates will be required from the farmers such that they and others can establish if their use of water is efficient.

9.5.5 Bywash volumes

At the ends of the distribution system there will be bywash discharges to wetlands, surface waters and groundwater. These will be measured through control structures.

9.5.6 Wetland functioning

Wetlands developed for the purpose of bywash filtering or environmental enhancement will require period inspections to ensure sufficient water is provided to maintain a healthy ecosystem.

9.5.7 Groundwater levels

Groundwater levels will require monitoring right across the plains. The CPW scheme will act as a recharge system to dwindling groundwater resources and the benefits from this will require measurement. Similarly the shallow groundwater of the lower plains will require monitoring to establish if any remedial actions are required to reduce land wetness. This is likely to be based on existing groundwater monitoring sites maintained by ECan.

9.5.8 Groundwater quality

Groundwater quality is of major concern to many people. Often the best way to protect public health is to routinely sample to demonstrate that the water is “safe” to drink. In particular trends in nitrate concentrations across the plains will be important to measure. A number of mitigations are available for any increase in nitrate concentrations in groundwater that might have the potential to bring an adverse effect on public health. The foremost will be the adoption of the sustainability code of practice which will be a requirement on farmers drawing water from the scheme. The scheme will also work with other authorities and people to aim for elimination of hot spots, and to ensure that everyone who might be adversely affected within the scheme area and below will have access to safe drinking water.

9.5.9 Environmental monitoring

It is likely that monitoring of the aquatic and terrestrial environment will be required. This would tend to be longer term monitoring programmes designed to investigate particular aspects of the environment, such as fish and bird habitat, geomorphological changes in river beds, plant/weed encroachment on the braided rivers and impacts on the lowland streams. These programmes will be developed on an ongoing basis, not just as part of the consenting process, but continually through the operation of the scheme. The particular relationship that the Central Plains Water Trust has with the consent holder, to Central Plains Water Ltd as the water user is unique in regard to this. The communities’ interests will be furthered through this relationship.

9.6 Resource Consent Conditions

Appendix D presents a draft set of conditions for further consultation with stakeholder groups in the period leading up to the resource consent hearings.