

Central Plains Water Ltd.

Sustainability Protocol

| | | |
|-------|--|----|
| 1. | Introduction | 2 |
| 1.1 | Scheme description | 2 |
| 2. | Sustainability Policy | 2 |
| 3. | Operation of the Scheme | 3 |
| 3.1 | Responsibilities | 3 |
| 3.2 | Information Provider | 3 |
| 3.3 | Reporting Requirements | 4 |
| 3.3.1 | Environmental Outcomes | 4 |
| 3.3.2 | Compliance reporting | 4 |
| 3.3.3 | Sustainability Report | 5 |
| 3.3.4 | Other reporting | 5 |
| 3.4 | Operating Rules and Regulations | 5 |
| 4. | Environmental Management | 5 |
| 4.1 | Approach | 5 |
| 4.2 | Focus Areas for Environmental Management | 6 |
| 4.2.1 | Kaitiakitanga | 6 |
| 4.2.2 | Biodiversity & Ecosystem Management | 7 |
| 4.2.3 | Efficient Water Use | 8 |
| 4.2.4 | Water Quality | 10 |
| 4.2.5 | Water quantity: effects on levels and flows | 11 |
| 4.2.6 | Resource Use – energy and waste | 11 |
| 4.2.7 | Local Communities | 11 |
| 4.3 | Environmental Enhancement Fund | 12 |
| 4.4 | Environmental Risk Management | 13 |
| 5. | CPWL Requirements for water users | 14 |
| 5.1 | Irrigation Management | 14 |
| 5.2 | Soils Management | 14 |
| 5.3 | Nutrient Management | 15 |
| 5.4 | Effluent Management | 15 |
| 5.5 | Waterway, Riparian and Biodiversity Management | 15 |
| 6. | Transfers / trading (within scheme) | 15 |
| 7. | Water Users: Compliance and Enforcement | 16 |
| 7.1 | Promoting water user compliance | 16 |
| 7.2 | Monitoring water user compliance | 16 |
| 7.2.1 | Reviews and audits of farm management plans | 16 |
| 7.3 | Water user non-compliance | 16 |
| 7.4 | Compliance committee | 17 |
| 8. | Glossary | 17 |

1. Introduction

This Sustainability Protocol sets out the protocols, policies and procedures that Central Plains Water Ltd (CPWL) will follow in the development, operation and maintenance of the Central Plains Water enhancement scheme (described below) in order to ensure that both the scheme operators and the water users can achieve high environmental standards and sustainable outcomes.

This Protocol has been developed in conjunction with Central Plains Water Trust and The Ritso Society Inc. It forms part of the Memorandum of Agreement between Central Plains Water Trust (CPWT) and Central Plains Water Limited (4 November 2004) as to roles and responsibilities of each party.

1.1 Scheme description

Central Plains Water Enhancement Scheme is a community irrigation scheme which will provide water to an irrigable area of 60,000 ha within a command area of over 100,000 ha¹. It will take water from the Rakaia and Waimakariri Rivers, and deliver it to farms within the Selwyn District of Canterbury. A storage reservoir will be provided in the Waianiwaniwa valley.

2. Sustainability Policy

The objective of Central Plains Water Ltd is to create sustainable value for our shareholders, employees, contractors, suppliers, business partners and local communities. Sound principles that govern social, environmental, and economic activities are integral to the way we do business.

We will strive to be leaders in sustainable irrigation performance in New Zealand. We will develop, implement and maintain systems for sustainable management to drive continual improvement and ensure that we:

- Meet or, where less stringent than our standards, exceed applicable legal requirements;
- Understand, uphold and respect cultural heritage, in particular respecting the Ngai Tahu values in relation to water, the natural environment and other taonga;
- Promote efficient use of natural resources; including reducing and preventing pollution;
- Enhance biodiversity protection by assessing and considering ecological values and land use aspects;
- Engage regularly, openly and honestly with people affected by our operations and take their views into account in our decision making;
- Develop partnerships that foster sustainability in our local communities and enhance economic benefits;
- Regularly review our performance and report our progress to our shareholders, Central Plains Water Trust and others.

In implementing this policy, we will engage with and support our shareholders, employees, contractors, suppliers, customers, business partners and local communities in sharing

¹ AEE section 3.2

responsibility for meeting our requirements. We will involve both shareholders and the wider community in all aspects of best practice water management.

We will be successful when we achieve our objectives, are valued by local communities and provide lasting social, environmental and economic benefits to society.

For CPWL sustainability is about ensuring that the Central Plains Water Enhancement Scheme is viable and contributes lasting benefits to society through consideration of social, environmental, ethical and economic aspects in all that we do.

3. Operation of the Scheme

3.1 Responsibilities

A scheme manager, appointed by CPWL Board, will be responsible for the day to day operation of the scheme. The scheme manager and the management team will operate the scheme to agreed service levels, and will be responsible for implementing all the environmental management requirements as set out in the Memorandum of Agreement between CPWT and CPWL (4 November 2004) .

During any water-short periods, the scheme manager will reduce the allocations to water users by following fair and equitable processes determined in consultation with shareholders and set out in the Operating Rules.

The scheme manager's responsibilities will include

- ensuring that all water users implement all on-farm environmental management requirements related to achieving sustainable irrigation;
- environmental and compliance monitoring, and record keeping;
- reviewing and reporting;
- provision of education and training initiatives.

CPWL Board will consult with CPW Trust on the position description for the scheme manager regarding environmental management responsibilities.

3.2 Information Provider

CPWL will take on a role to provide water users with information and training relevant to best practice irrigation and environmental management.

CPWL will ensure that the following information is available to all water users so that water requirements can be correctly predicted:

- Access to climate station data (across the scheme) providing daily conditions during the irrigation season
 - Sunlight hours;
 - Wind run;
 - Temperatures;
 - Humidity;
 - Rainfall;
- Predicted rainfall.

Reference soil moisture monitoring sites will be installed within the scheme area, on different soil types, to assist growers to determine irrigation scheduling to meet crop demands. These will be set up on monitor farm/s or as examples but would not replace individual farm water budgeting.

CPWL will be proactive in making information on new technologies for best practice farming available to growers and will provide formal programs for ongoing improvement in on-farm environmental management, including

- CPWL will provide a program of workshops to assist growers prepare their “Farm Plan” as required by their Water User Agreement;
- CPWL will promote training programs including development and/or demonstration of best management practices;
- CPWL will promote training programs for irrigators and potential irrigators about best practices for sustainable irrigation before the scheme is operational;
- CPWL will facilitate provision of information and training relating to riparian management, indigenous biodiversity protection and enhancement etc.

3.3 Reporting Requirements

CPWL will report regularly to CPWT, to ensure that CPWT is well-informed on environmental outcomes resulting from the scheme, as well as statutory and regulatory compliance matters. This reporting is required under the Memorandum of Agreement (4 November 2004) between CPWT and CPWL for the use of the water permits and other consents. Reporting on other matters may be agreed from time to time between CPWT and CPWL.

3.3.1 Environmental Outcomes

CPWL will report annually on the environmental impacts of the scheme including

- environmental outcomes for the scheme area as a whole
- impacts on the natural environment resulting from the implementation of the scheme, including reference to the trends (so far as they are identifiable) for:
 - groundwater quality and for surface water quality;
 - water quantity (levels and flows);
 - nitrates and other contaminants.
- results of the independent audits of Farm Plans under clause xxxx;
- all other matters relating to reporting of environmental outcomes that are required by CPWT under the agreement with CPWL for the use of the water permits and other consents;
- how the information has been obtained and assessed.

This information will include the monitoring information required in section 4.2.4 (Water Quality) of this document.

3.3.2 Compliance reporting

CPWL will report annually on scheme compliance with:

- the Resource Management Act and applicable resource consent conditions;
- other statutory and regulatory compliance requirements;
- all other matters required by CPWT under the agreement with CPWL for the use of the water permits and other consents.

3.3.3 Sustainability Report

CPWT will produce an annual sustainability report that includes environmental, social and cultural performance using

- the information provided by CPWL under clauses 3.3.1 and 3.3.2;
- additional information, based on quantitative and qualitative assessments, that may be collected independently by CPWT or provided by CPWL.

This annual sustainability report will be made publicly available by CPWT. The first Sustainability Report will be prepared once the scheme has provided water for two irrigation seasons.

3.3.4 Other reporting

Monthly reporting

CPWL will report monthly to CPWT, by exception, on all matters relating to non-compliance or to potential non-compliance with Resource Management Act consent conditions, and with other statutory and regulatory requirements, and with any breach or potential breach under any agreement between CPWL and CPWT.

No surprises

CPWL will report, at least monthly, to CPWT on any other matters upon which CPWL should properly keep CPWT informed on a 'no surprises' basis.

3.4 Operating Rules and Regulations

CPWL will prepare and publish a document that will clearly detail the rules and regulations of the scheme. This will include procedures for allocating water, ordering water, and arrangements for water transfers.

CPWL will ensure that the scheme design parameters are attained / maintained during the scheme operation.

The policy and procedures document will be flexible enough to allow the rules to be modified at the sub-scheme level, and to be revised and updated regularly, while maintaining the policies and principles set out in this overarching protocol document.

A contract between CPWL and each water user ('Water Use Agreement') will set out the terms and conditions under which CPWL will supply water to a user, including environmental management requirements.

4. Environmental Management

4.1 Approach

Our approach is to ensure that all activities are carried out with a high standard of environmental care. Our focus will be on active management and prevention of problems. To achieve this goal we are committed to:

- Ensuring that effective governance and risk management processes are in place;
- Taking all practicable steps to minimise adverse effects of obtaining, storing, reticulating and using scheme water;

- Minimising consumption of resources and minimising waste;
- Working with shareholders and the wider community to remedy any adverse environmental effects of providing irrigation water;
- Ensuring a balance between agricultural productivity and environmental protection, both of which are essential for the long term productivity and sustainability of the area.

As a water scheme, our environmental focus is on the effects of obtaining, storing, reticulating and using scheme water. We will

- Establish objectives and Key Performance Indicators (KPIs). These KPIs will be measurable and time-based;
- Require all water users to complete and implement a Farm Plan for Sustainable Irrigation that puts in place measures to avoid or minimise adverse impacts of on-farm activities associated with irrigation, and implement best practice farming methods;
- Carry out regular reviews and audits of environmental performance and act on complaints and incidents;
- Implement and report on monitoring systems so that we can track our environmental performance;
- Use systematic methods of monitoring that are consistent with other water user monitoring requirements e.g. for on-farm quality assurance programmes;
- Adopt an information provider role so that new research results which can help to improve the sustainability of farming are readily available to all farmers;
- Assist CPWT, where appropriate, to implement and run the scheme Environmental Management Fund.

4.2 Focus Areas for Environmental Management

We have identified the key components related to our operations that are critical to achieving good sustainable management outcomes. We will regularly assess our performance against KPIs for each component.

The key components are

- Kaitiakitanga (guardianship);
- Biodiversity & ecosystem management;
- Efficient water use;
- Water quality: surface and groundwater;
- Water quantity: effects on levels and flows;
- Local communities;
- Resource use – energy and waste.

4.2.1 Kaitiakitanga

In order to respect and uphold Ngai Tahu values in relation to water, the natural environment and other taonga we will

- Use Cultural Health Index for monitoring at selected sites (add details);
- Recognise local iwi and hapu policies for freshwater, including Te Runanga o Ngai Tahu Freshwater Policy;
 - Rakaia River;
 - Waimakariri River;
 - Waterways, springs, wetlands in and adjacent to irrigated area;

- Te Waihora;
- Land use.
- Control stock access to waterways, races, drains, wetlands and springs on irrigation scheme farms;
- Manage irrigation by-wash to ensure that all water from the irrigation distribution system passes through land or wetland before entering any natural water body, except in an emergency situation. An emergency situation is one in which, because of factors external to and beyond the control capacity of the scheme management systems, it is not avoidable by all practicable means available to CPWL at the time, for by-wash water from the irrigation distribution system to pass into a natural water body before passing first through land or wetland.

We will maintain an ongoing consultative relationship with Ngai Tahu to ensure that we give effect to these principles.

[This section to incorporate any negotiated agreements with Ngai Tahu e.g. for restoration of streams, wetlands and spring areas]

4.2.2 Biodiversity & Ecosystem Management

We recognise that biodiversity is a critical aspect of environmental management. We note that all the Plains landscapes, including the central plains area, are highly modified, with < 1% of indigenous vegetation cover remaining across the whole Canterbury Plains, in scattered small patches².

The key threats include:

- Further loss of remaining patches of indigenous vegetation;
- Impact of shelterbelt removal where these function as wildlife corridors;
- General lack of understanding and awareness of biodiversity issues.

While the scheme has potential adverse effects, it also provides opportunities to increase awareness and to protect and enhance areas of indigenous vegetation both on-farm and within the wider scheme area.

On-farm

Where shelter belts and other plantings are removed for irrigation development, CPWL will encourage replacement of these with suitable native vegetation plantings in locations that assist to develop a network of native vegetation patches and corridors from the mountains to the sea. Water Users will be able and encouraged to apply to the scheme Environmental Enhancement Fund for assistance for these purposes.

Increasing awareness

CPWL will promote booklets and guides to help people take positive action, e.g. *Native Plant Communities of the Canterbury Plains* (DoC); *Establishing shelter in Canterbury with nature conservation in mind* (ECAN), and will facilitate workshops and scheme specific guidelines on indigenous biodiversity. Water users will be assisted to improve biodiversity as an integral part of their farm businesses with information on suitable plant species, planting plans etc.

² Biodiversity Strategy for Canterbury Region (draft)

Scheme wide

The “Biodiversity Strategy for Canterbury Region” (currently in draft) will identify remaining fragments of indigenous vegetation and prioritise their protection requirements. CPWL will support implementation of the strategy.

CPWL will actively incorporate enhancement of ecological values in managing the open channels and other scheme infrastructure, in ways that do not conflict with scheme operation. Riparian management of these channels will meet, at a minimum, the ECAN guidelines³ for managing riparian margins on streams and drains.

CPWL will assist CPWT to manage the scheme environmental enhancement fund that will support biodiversity restoration or improvement projects (see section 4.3).

4.2.3 Efficient Water Use

Water use will be actively managed by CPWL to ensure efficient and effective resource use.

Off-farm

CPWL will:

- Achieve 80% off-farm water use efficiency
- Ensure losses between the off take and the farms will be minimised through:
 - a high standard of construction of the distribution network; and,
 - regular maintenance of the distribution network to ensure it is as close to the design standard as possible
 - Record continuously the cumulative volumes of water taken and distributed by the scheme

On-farm

- The scheme will achieve an overall annual application efficiency of 80%. Each farm will be required to target at least 80% on-farm application efficiency. If an individual on-farm system has an application efficiency less than 80%, then the seasonal volume provided may be restricted to the amount required at 80% efficiency to ensure reasonable use⁴ of scheme water.
- CPWL will support water users to achieve this through:
 - Ensuring that on-farm infrastructure is designed, constructed and operated to meet Irrigation New Zealand “Irrigation Code of Practice and Irrigation Design Standards” [draft March 2007];
 - Ensuring that the scheme design enables users to receive water at appropriate return intervals to maximise plant uptake and minimise waste;
 - Achieving a supply reliability of at least 90⁵ %;

³ “A guide to managing waterways on Canterbury farms” (2005) and companion guidelines

⁴ **Reasonable use** is defined by NRRP definition of ‘reasonable use test’ (when applied to irrigation use) means ‘a test of the technical efficiency of water use in the particular circumstances of the applicant. It will include consideration of such matters as the intended land-use activity; whether there are already existing consents for the use of water for the same area of land (either partially or totally); on-site physical factors such as soil water-holding capacity, and climatic factors such as rainfall and evaporation’.

⁵ Reliability is expected to be higher than this, maybe 97%, but will depend on final design. Reliability has been assessed as the % of time water would have been available over the period of modelled record, 1967-2001

- Different enterprises will make use of irrigated water from the scheme. CPWL does not intend to restrict activities, but to have suitable measures in place to ensure that growers understand and manage any adverse environmental effects of irrigated agriculture;
- CPWL does not intend to specify on-farm application methods, but will ensure through Farm Plan requirements and Water Use Agreements that highly efficient irrigation controlled systems are installed. The peak rate of supply will be 0.6 l/s/ha. Border strip flood irrigation will not meet the required standards;
- CPWL will ensure that every Water Use Agreement includes a requirement that all land irrigated with scheme water must complete and implement a Farm Plan for Sustainable Irrigation. Enforcement measures for non-compliance with farm plan requirements will be included in water use agreements (see section 7);
- Farm Plans for Sustainable Irrigation will:
 - be required for all land receiving water from the scheme;
 - clearly justify the amount of water used;
 - set out best management practices to achieve high environmental standards.

The plans will be:

- based on a self-management approach;
 - reviewed regularly by the water user and CPWL;
 - audited by an independent assessor. For the first two years of receiving scheme water each farm plan will be audited annually. After that time each plan will be independently audited at least once every 5 years. A programme of incentives will be developed, and those achieving full compliance will have longer periods between audits than those who do not;
 - Following each independent audit the water user will receive an audit report and will be required to remedy any problems that are identified.
- Supply of water
 - CPWL will electronically meter and record all water takes;
 - The maximum rate of supply will be 0.6 l/s/ha/day (at 80% application efficiency this is approx 4 mm/day);
 - The return period required by users will depend on on-farm infrastructure, crop type, weather etc, but water would be readily available to enable irrigation events that apply ‘little and often’ to meet crop demand and soil moisture. The time between irrigation applications will vary according to on-farm design, system operation, crop demand etc. On-demand availability will encourage efficient use⁶.
 - Water users will be required to optimise the use of their available water resources by applying water efficiently at a time, and volume, that meets the needs of their crops and ensures the long term sustainability of their production levels. This will be achieved by
 - Best Management Practices as agreed in the Farm Plan;
 - Planning and scheduling so that water is applied efficiently at times and volumes that meet the needs of their crops and ensures the long term sustainability of their production levels;

⁶ Note that run of river schemes which supply on roster systems may only supply every 10 – 12 days, which can cause over-watering.

- Evaluation of on-farm infrastructure using INZ Evaluation COP;
 - On farm design – machinery return period etc.
- CPWL will provide users with reports that benchmark water efficiency performance across the scheme for different soil types and land uses. If poor efficiencies are noted these will be reviewed;
 - CPWL will minimise deep percolation of water through ensuring design standards include appropriate parameters (e.g. for uniform application of water);
 - CPWL will use an output management approach, rather than input management (e.g. restricting stock numbers or fertiliser amounts) to minimise nutrient losses from fertiliser and stock. Nutrient budgets and management plans, as well as other methods will be required to assist achieve output management.

4.2.4 Water Quality

Key potential adverse effects of the scheme on water quality are increases of nitrate-N, phosphorus and microbiological contamination leaching into surface and groundwater due to land use intensification.

Nutrient and other losses to water from fertiliser and stock will be minimised through output management (e.g. minimising surface runoff and leaching through soil profile to groundwater), rather than input management (e.g. restricting stock numbers or fertiliser amounts) to deal directly with potential problems and enable water users maximum flexibility to be innovative in the management of their own businesses.

Through the Farm Plan requirement, CPWL will require Best Management Practices to manage and reduce water quality problems, particularly nitrate and phosphorous losses, and contamination by stock.

Best Management Practices will include:

- Use of nutrient budgets and nutrient management plans to achieve output management;
- Management of waterways, including riparian buffer strips, limiting stock access and appropriate plantings;
- Effluent management plans for collected animal effluent disposal.

The ‘Dairying and Clean Streams Accord’⁷ will set a minimum standard for dairy farms.

Groundwater quality monitoring

The key potential adverse effects on groundwater water quality are unacceptable increases of nitrate-N, phosphorus and microbiological contamination. Groundwater quality will be monitored against KPI’s as follows. These requirements will be revised expanded and enhanced over time.

[Insert groundwater water quality monitoring details here when they are ready]

⁷ “Dairying and Clean Streams Accord between Fonterra Co-operative Group, Regional Councils, Ministry for the Environment, and Ministry of Agriculture and Forestry” May 2003

Surface Water Quality monitoring

Surface water quality will be monitored against KPI's as follows. These requirements will be revised expanded and enhanced over time.

[Insert surface water quality monitoring details here when they are ready]

4.2.5 Water quantity: effects on levels and flows

Water quantity (affects on and levels and flows) will be monitored against KPI's as follows. These requirements will be revised expanded and enhanced over time.

[Insert level and flow monitoring details here when they are ready]

4.2.6 Resource Use – energy and waste

CPW will have energy and waste objectives that are focused on driving initiatives that promote the efficient use of resources, both in the activities of the company and the activities of water users.

CPWL will

- minimise the volume of waste and consumption of resources such as energy, fuels and raw materials in our day-to-day business activities;
- evaluate the sourcing of materials that are less damaging to our environment and use these wherever possible.

CPWL will promote efficient resource use amongst our water users by:

- encouraging the use of renewable natural resources, so that the use does not exceed the long-term rate of regeneration;
- encouraging the efficient use of renewable forms of fertilizer;
- supporting the Selwyn District Council's Solid and Hazardous Waste Management Plan.

4.2.7 Local Communities

Information

CPWL will provide relevant information so that CPWT can maintain effective, transparent and open communication and consultation with stakeholders associated with scheme activities.

Recreation and Environmental Enhancements

CPWL has an obligation to consider the payment of a "host fee" under clauses 4.1(g) and 7.1(l) of the Memorandum of Understanding agreed between CPWL and CPWT. The establishment of an Environmental Enhancement Fund, and assistance by CPWL to CPWT for the provision of recreation facilities are purposes for the payment of the host fee.

CPWL and CPWT will agree on arrangements for management of recreation facilities and infrastructure that are located within or adjacent to scheme infrastructure.

4.3 Environmental Enhancement Fund

Purpose

The fund will be used to assist groups and individuals in the scheme area, or areas affected by the scheme, to undertake maintenance, restoration and improvement projects or activities that achieve some of the following outcomes:

- protect, enhance or restore native species, habitats, natural features, or historic or cultural heritage;
- improve sustainable land and water management;
- mitigate or remedy adverse environmental, social or cultural effects of the scheme construction or operation;
- improve recreational opportunities for public enjoyment;
- increase community understanding and involvement that contributes to sustainable management and healthy resources;
- promotes information/knowledge exchange of the natural management of rural communities;
- complement landowner contributions and leverage contributions from other sources.

Funds

- After the second anniversary of the scheme commissioning, each water user will pay to the scheme environmental enhancement fund an annual levy of, say, initially \$0.32 per share.
- The amount of the annual environmental levy to be agreed with CPWL will be reviewed by CPWT every 5 years, with reference to its assessment of the likely future demand on the fund and the information provided by CPWL, and from consultation with such interested parties domiciled or operating in the scheme command area as CPWT thinks fit;
- The annual environmental levy will be collected by CPWL, on behalf of CPWT and will be paid annually to CPWT;
- CPWT will manage the fund and its distribution.

Eligibility for Grants

Eligible applicants must reside or operate in the scheme command area, and may include:

- Private land owners and managers;
- Professional and community based organisations working on sustainable land and water management or on protecting and managing indigenous biodiversity;
- Local, regional and national umbrella groups;
- CPWT for activities or projects which it proposes (these will have no greater priority than, and will be treated in all respects in the same way as, other applicants for grants).

Exclusions

The following expenditure will not be funded:

- Reimbursement of costs incurred prior to the application being made or for projects already completed;
- Proposals designed to generate personal or commercial profit;
- Projects more appropriately funded by other organisations;
- Projects or activities outside the scheme area, unless the project is to mitigate or remedy an adverse effect of the scheme.

Criteria

Applications will be judged on the extent to which they will contribute to maintaining and enhancing environmental management within the scheme area.

Criteria that will be considered are:

- The likely outcomes of the project, including ecological outcomes of wider benefit such as:
 - Maintaining ecological processes;
 - Restoring connectivity between existing indigenous vegetation or existing habitats of indigenous species;
 - Providing a buffer for the habitat of indigenous species;
- The extent to which the project benefits important cultural, spiritual, historical or traditional values;
- The extent to which the project broadens the base of community effort and level of support for biodiversity and sustainable land management;
- The contribution to the project from other sources (including in-kind contributions);
- Overall value for money, based on costs and the potential benefits;
- The feasibility of the project to achieve its stated objectives;
- The urgency of threats that the project proposes to alleviate;
- The extent to which the project is likely to generate effective on-going actions so as to avoid future dependency on support from the fund;
- The gains from linkages between the proposed project and other work being carried out in the area.

CPWT will develop:

- The fund's structure and management processes;
- A processes for calling for applications and advertising application procedure and conditions;
- A process for selection of projects, approval of grants, and for notification to applicants;
- Payment & reporting processes.

4.4 Environmental Risk Management

CPWL recognises that not all potential adverse effects of the scheme can be predicted in advance, and avoided or managed. Our risk management approach is to ensure that risks are identified and managed in the best possible way, without stifling innovation and change.

To achieve this we will be pro-active and implement a systematic process of monitoring and continual improvement in our policies and practices by learning from the outcomes of our activities.

Our management will include monitoring and analysis processes that consider

- any potential cumulative effects;
- long term trends;
- unanticipated effects;
- potential risks (e.g. to drinking water supplies in and adjacent to scheme area).

Using the data analysis, other experience from scheme operation and the results of ongoing R&D we will implement active adaptive management to make changes to the scheme operation, including on-farm practices.

For example, CPWL will take an adaptive management approach to best practice riparian management, for issues that may arise with increased surface water flows because of the effects of irrigation.

5. CPWL Requirements for water users

These are the requirements that must be met by water users, under their Farm Plan for Sustainable Irrigation. These standards will be reviewed every five years, or at the time, if conditions relating to RMA consents are changed by the Canterbury Regional Council. Any review will be carried out in consultation with CPWT, and water users. Users will be required to meet any revised standards.

In the event of severe, unanticipated environmental effects, or peer-reviewed research findings that indicate urgent requirements for changes to be made, CPWT may require CPWL to revise the standards immediately and/or incorporate additional requirements into the water user agreement.

5.1 Irrigation Management

Scheme Requirements

- New infrastructure: Designers need to be a Certified Irrigation Designer, and need to be accredited⁸ to design for CPWL;
- Peak supply provided will be 0.6 l/s/ha (this is equivalent to 4mm per day at 80% application efficiency);
- Annual volume – determined by share allocation;
- All users must target an 80% application efficiency. CPWL reserves the right to cap the annual volume supplied to an irrigated area to the amount that would achieve 80% efficiency;
- A water user cannot obtain rights to additional scheme water, either by acquiring shares, or by lease or other arrangement, until that user achieves 80% or better application efficiency with respect to their existing irrigation;
- Water users must avoid ponding or runoff of irrigation water. Breaches will be considered as non-compliance with water users agreement, and will incur penalties (see clause 7.3).

5.2 Soils Management

Design requirements

Design of on-farm systems must minimise or eliminate problems with soil breakdown and movement caused by the impact of irrigation water (e.g. from high volume sprinkler irrigation) on soil particles. To reduce problems it may be necessary to avoid using particular types of irrigation systems.

Management Requirements

- Spray irrigation systems must be operated to apply water at rates that do not result in surface runoff or excessive ponding on the soil surface during irrigation or after irrigation has ceased.

⁸ The process for this will need to be defined e.g. it could include a third party audit of some designs

- To minimise soil (and contaminant) loss in the event of heavy rainfall on land with high soil moisture levels suitable riparian buffers must be provided in accordance with best management practices adjacent to rivers and streams.

5.3 Nutrient Management

Nutrient budget & management plan

- All water users must prepare a nutrient budget and management plan appropriate to their land use activities, keep records of fertiliser applications, and make these records available to CPWL;
- All water users must adopt, as appropriate for their land use activities, the best management practices set out in the ‘Code of Practice for Nutrient Management’;
- All water users must carry out regular soil tests, appropriate to their land use, and make results of these tests available to CPWL;
- Disposal of collected animal effluent to land must be included in the nutrient budget and plan;
- Nutrient budget must include all inputs to the farm, including feed brought in.

5.4 Effluent Management

CPWL notes that individual water users will be required to adhere to Canterbury Regional Council requirements for animal effluent management, and obtain consents if required. CPWL recognises the risks to the environment from poor effluent management.

CPWL will require all water users who have collected animal effluent (e.g. from dairy shed or piggery) to prepare an effluent plan that sets out strategies and information so that all farm workers can readily deal with both day-to-day and emergency situations. This plan must be kept in the farm records and made available to CPW on request. Failure to maintain and adhere to an up-to-date plan will be a breach of water user agreement and dealt with through the compliance procedures. Each effluent plan must identify appropriate storage volumes so that effluent irrigation can be suspended or disposal rate slowed in the event of heavy rain on soils that are already wet and unable to hold further moisture.

5.5 Waterway, Riparian and Biodiversity Management

- Cattle, deer and pigs are to be excluded from waterways and their margins;
- Water users with waterways on or through their properties are required to provide appropriate riparian buffers (as indicated by ECAN guidelines) to reduce runoff to surface water;
- Dairy farmers will be required to meet, as a minimum, the requirements of the ‘Dairying and Clean Streams Accord’⁹.

6. Transfers / trading (within scheme)

Any transfers of water allocation to another person/property will be subject to all the sustainable management conditions of this agreement and approval by CPWL. This includes the completion

⁹ “Dairying and Clean Streams Accord between Fonterra Co-operative Group, Regional Councils, Ministry for the Environment, and Ministry of Agriculture and Forestry” May 2003

of a Farm Plan for Sustainable Irrigation for all land receiving water under a transfer arrangement, even if the transfer is temporary.

7. Water Users: Compliance and Enforcement

7.1 Promoting water user compliance

CPWL will use educational programmes, technical assistance, reduction in audit requirements for good performance and other methods to promote, support and encourage compliance by water users with sustainable irrigated land use requirements.

Issues of possible non-compliance will be dealt with by establishing procedures for responding to such matters and ensuring that these are implemented when necessary.

7.2 Monitoring water user compliance

CPWL will monitor compliance, including:

- Inspections and audits, both internal and independent;
- Responding to complaints of non-compliance.

7.2.1 Reviews and audits of farm management plans

Farm management plans will be reviewed regularly by the water user & CPWL. Each water user will be required to supply a report to CPWL within one month of the end of each irrigation season that sets out:

- Area irrigated and associated land uses
- Proposed area to be irrigated in coming season & land uses
- Summary of fertiliser (and effluent) applied to land.

Farm plan performance will be audited by an independent assessor. For the first two years of receiving scheme water each farm plan will be audited annually. After that time each plan will be independently audited at least once every 5 years. A programme of incentives will be developed, and those achieving full compliance will have longer periods between audits than those who do not.

Following each independent audit the water user will receive an audit report and will be required to remedy any problems that are identified.

CPWL will prepare a report on overall farm plan performance within three months of the end of each irrigation season. This report will be supplied to CPWT, and made available to all water users.

7.3 Water user non-compliance

CPWL will respond to breaches by following through an established protocol e.g.

- Notification of breach or alleged breach – phone call, warning letters, notice of violation, inspections (e.g. notice and order to comply within 10 working days)
- Entering discussions and providing advice to those out of compliance in order to develop a programme to achieve compliance
- Action, where necessary:
 - To compel compliance;

- To impose consequences for violations (e.g. fines/charges, water restricted/cut off);
- To correct damages.

Penalties should take into account:

- the seriousness of the non-compliance ('penalty points');
- recovery of the economic benefit a violator may have gained by non-compliance;
- degree of co-operation;
- history of non-compliance.

7.4 Compliance committee

CPWL will set up a compliance committee to deal with breaches that cannot be resolved through discussion and advice, or may have incurred costs to CPWL or others. This committee would have the power to:

- Impose a penalty charge upon a water user for breach of their agreement with CPWL for supply of water;
- Convene a hearing so that disputes or issues can be presented;
- Restrict or cut off water.

The committee would have a membership of three:

- Two members appointed by the Board of directors of CPWL
- An independent Chairperson, appointed by the Board of CPWT, after consultation with CPWL, to ensure that the committee has a balanced representation that includes both farming and environmental management expertise.

8. Glossary

Waterway

Waterways include both permanent and seasonally wet rivers, streams, creeks, drains and wetlands. Wetlands include bogs, gully bottoms, swamps and seepage areas that contain or channel water at least some of the time. [from Environmental Canterbury "Guide to managing waterways on Canterbury farms"]