

Waihao Downs Irrigation

DRAFT

Scheme Management Plan

Version 1 : July 2008

Attewell Irrigation Consultants Limited

for Waihao Downs Irrigation Limited

DRAFT

Scheme Management Plan

(This draft management plan will be modified after the consenting processes have been completed and prior to commissioning to incorporate all consent requirements, and details developed during detailed design stages)

1. Introduction

This management plan sets out the protocols, policies and procedures that the Waihao Downs Irrigation Limited scheme (WDIL) will follow in the development, operation and maintenance of the scheme (described below) in order to ensure that both the scheme operators and the water users can achieve high environmental standards and sustainable outcomes.

1.1 Scheme description

Waihao Downs Irrigation Limited is a community irrigation scheme that will provide water to an irrigable area of 6,800 ha within a command area of 15,000 ha. The scheme will take water from the Waitaki River and deliver it to farms within the Waimate District of South Canterbury north of the Waitaki River in the basin around Forks area of the Waihao River.

2. Sustainability Policy

The objectives of WDIL will include creating sustainable value for the scheme's water users, employees, contractors, suppliers, business partners and local communities. Sound principles governing social, cultural, environmental, and economic activities will be integral to its business.

WDIL will develop, implement and maintain systems for sustainable management to drive continual improvement and ensure that it will:

- Meet or, where less stringent than scheme standards, applicable legal requirements;
- Understand, uphold and respect cultural heritage, in particular respecting tangata whenua values, 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 the scheme operations and take their views into account in decision making;
- Develop partnerships that foster sustainability in the local communities and enhance economic benefits;
- Regularly review scheme performance and report to water users, Community, Ngai Tahu Liaison.

In implementing this policy, WDIL will engage with and support the scheme's water users, employees, contractors, suppliers, customers, business partners and local communities. WDIL will involve both water users and the wider community in all aspects of best practice water management.

For WDIL sustainability is about ensuring that the scheme is viable and contributes lasting benefits to society through consideration of social, cultural, environmental, and economic aspects in all that it does.

2.1 Implementation of the Sustainability Policy

To help implement its sustainability policy at farm level, WDIL will assist water users to prepare and implement a Farm Management Plan for Irrigated Land Use (Farm Management Plan). The focus will be on active management and prevention of problems, and ensuring that all activities are carried out with a high standard of environmental care.

The requirement for a Farm Management Plan will be set out as part of the contractual arrangements between WDIL and the user for supply of water (water user agreement). This agreement would include environmental management obligations including:

- What user has to do – i.e. prepare, implement and review farm plan;
- What WDIL will do e.g. reviewing, auditing, monitoring

The Scheme Management Plan (this document) will set the policies and protocols at the governance and management levels for whole scheme. It provides leadership and commitment to achieving positive environmental outcomes.

The draft template for the Farm Management Plans is attached as Appendix 1. It covers matters relevant to irrigation and environmental management including:

- Efficient water use;
- Soil management;
- Nutrient management;
- Collected animal effluent management;
- Water quality & waterway management;
- Biodiversity & ecosystem management.

3. Operation of the Scheme

3.1 Responsibilities

A scheme manager will be appointed to supervise the daily 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 the environmental management requirements set out in this plan or required by the consents to operate the scheme.

Water allocation through the distribution network will be managed in an equitable manner to meet on-farm water requirements, as far as possible. During any water-short periods, the scheme manager will reduce allocations by following processes (e.g. roster systems; proportional reductions) determined in consultation with water users and set out in the Operating Rules.

The scheme manager's role will include

- Control of the intake, including disposal of sediment deposits and flood management.
- Distribution and management of irrigation water;
- Maintenance of all off-farm scheme infrastructure;
- Assisting water users to implement all on-farm environmental management requirements

related to achieving sustainable irrigation;

- Scheme environmental and compliance monitoring, and record keeping;

Scheme management will ensure that suitably skilled staff or contractors are available to assist water users meet the scheme requirements to achieve the desired environmental outcomes, including efficient water use.

3.2 Information provided by WDIL

WDIL will assist in the provision of appropriate weather and soil information, so that water users can schedule their irrigation according to evapotranspiration, rainfall and soil moisture status, as well as crop demand.

WDIL will source the following information if it is available, so that it is accessible to water users so that water usage requirements can be efficiently predicted:

- Access to climate station data;
- Sunlight hours;
- Wind run;
- Temperatures;
- Humidity;
- Rainfall;
- Potential evapotranspiration;
- Predicted rainfall;
- Soil moisture monitoring;
- In-scheme water usage.

3.3 Reporting Requirements

WDIL will report annually to:

- Water users (scheme shareholders);
- The Canterbury Regional Council;

On matters regarding:

- Scheme operation;
- Regulatory compliance;
- Other matters, as set out in this plan, or otherwise agreed.

3.3.1 Environmental Reporting

Annual Environmental Report

WDIL will prepare an Annual Environmental Report as may be required by consents and provide it to the Canterbury Regional Council. This report will also be made available to water users, except that no individual farm information will be provided, except in an aggregated form.

The Annual Report will cover all matters required by the consent conditions.

3.4 Operating Rules and Regulations

WDIL will prepare operational rules and regulations for the scheme. This will include responsibility for scheme arrangements including allocating and distributing water, ordering water, and any necessary arrangements for water transfers. Procedures may vary at the sub-scheme level. Operating requirements will be revised and updated regularly, but will be consistent with the overarching principles and policies in this plan.

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

Prior to commissioning this draft plan will be revised to include:

- Operational requirements for the take of water for the scheme from the Rangitata River with respect to water sharing arrangements with other abstractors during times of low flows in the Waitaki River;
- How the proposed fish deflection barrier, constructed in accordance the resource consent to take water from the Waitaki River for the scheme, will be operated and maintained;
- Any other operational matters, as required by the consents.

4. Environmental Management

4.1 Approach

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

- Ensuring that effective governance and risk management processes are in place;
- Taking all practicable steps to minimise adverse effects of obtaining, reticulating and using scheme water;
- Maximising efficiency in the use of resources and minimising waste;
- Working with scheme shareholders, other Waitaki River water users and the wider community to address any adverse environmental effects of providing irrigation water;
- Ensuring a balance between agricultural productivity and environmental protection which are essential for the long term productivity and sustainability of the area.

As a water scheme, the environmental focus is on the effects from obtaining, reticulating and using scheme water. WDIL will

- Establish objectives and performance targets. Where practical, the targets will be measurable and time-based;
- Require all scheme water users to complete and implement a Farm Management Plan for Irrigated Land Use 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;
- Track the scheme's environmental performance

4.2 Focus Areas for Environmental Management

WDIL has identified the key components related to scheme operations that are critical to achieving good sustainable management outcomes and will regularly assess the scheme performance for each component.

The key components are

- Kaitiakitanga (guardianship);
- Biodiversity & ecosystem information and management;
- Efficient water use;
- Water quality;
- Water quantity: flows and levels;
- Local communities.

4.2.1 Kaitiakitanga

In order to respect and uphold tangata whenua values in relation to water, the natural environment and other taonga, WDIL will

- Recognise local iwi and hapu policies for freshwater, including Te Runanga o Ngai Tahu Freshwater Policy, Arowhenua Kati Huirapa
- Limit stock access to waterways, races, drains, wetlands and springs on irrigation scheme farms;
- Manage and minimise irrigation by-wash to ensure that all water from the irrigation distribution system passes through land before entering waterways;
- Maintain an ongoing consultative relationship.

4.2.2 Biodiversity & Ecosystem Management

WDIL recognises that biodiversity is a critical aspect of environmental management, and notes that all the Downs landscapes, including in the WDIL area, are highly modified, with less than 1% of indigenous vegetation cover remaining across the whole Canterbury Plains, in scattered small patches. 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, WDIL 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.

Increasing awareness

WDIL will raise awareness of biodiversity issues and opportunities by:

- Promoting existing information prepared to help people take positive action, e.g. booklets such as 'Native Plant Communities of the Canterbury Plains' (DoC); 'Establishing shelter in Canterbury with nature conservation in mind' (ECan);
- Providing scheme specific guidelines on indigenous biodiversity such as information on suitable plant species, planting plans etc.

Scheme wide

Implementation of the "Biodiversity Strategy for Canterbury Region" will identify remaining fragments of indigenous vegetation and prioritise their protection requirements. WDIL intends to support this Environment Canterbury programme where applicable.

WDIL will actively manage the scheme, especially open channels in the scheme distribution network to enhance ecological values in ways that do not conflict with scheme operation. The ECAN guidelines for managing waterways, including drains, on Canterbury farms will be followed, where appropriate.

4.2.3 Efficient Water Use

Off-farm

- WDIL will minimise water loss in the off-farm distribution network and achieve high off-farm water use efficiency;
- Losses between the intake and the farms will be minimised through:
 - the design and construction of the supply canals and distribution system; and,
 - regular maintenance of the canals and distribution system to ensure they are as close to the design standard as possible;
- Scheme control systems will be designed to supply water on demand and minimise by-wash;
- The cumulative volumes of water taken and distributed by the scheme will be recorded continuously.

On-farm

- The scheme will target an overall application efficiency of at least 80%. 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 use of scheme water;
- WDIL will support water users to achieve high application efficiencies through:

- Ensuring that on-farm infrastructure is designed, constructed and operated to meet Irrigation New Zealand Code of Practice for Irrigation Design;
- Ensuring that the scheme design enables users to receive water at appropriate return intervals to maximise plant uptake and minimise waste;

On farm system must be designed and audited by suitable qualified people. Irrigation New Zealand is currently developing a system of certifying designers and auditor for irrigation systems. WDIL supports this system and would have a preference for certified designers and auditors when they are available.

- Different types of enterprises will make use of irrigated water from the scheme. WDIL 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 farming;
- WDIL does not intend to specify on-farm application methods, but will ensure through Farm Management Plan requirements and water use agreements¹⁰ that highly efficient irrigation systems are installed;
- Every water use agreement will include a requirement that all land irrigated with scheme water must complete and implement a Farm Management Plan for Irrigated Land Use. Enforcement measures for non-compliance with farm plan requirements will be included in the water use agreement (see section 6.3);
- A Farm Management Plan for Irrigated Land Use 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 scheme water user & WDIL;
- audited by an independent assessor. As requested by WDIL.
- Following each audit the water user will receive an audit report and will be required to remedy any problems that are identified.
- Supply of water
 - WDIL will meter and record all water takes;
 - Annual water entitlement (volume) will be set out in individual water use agreements, based on 0.45l/sec per hectare because of the soil types in this locality.
 - Water users will be required to have irrigation systems that can readily apply water at less than 50% of the soil's water holding capacity or profile available water, for their soil type/s;

- 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. On-demand availability and on farm storage will encourage efficient use. Typical return periods are expected to be 7-14 days.
- Water users will be required to maximise 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 Management Plan;
 - Evaluation of on-farm infrastructure and management according to the Irrigation Evaluation Code of Practice;
 - On farm design – machinery return period etc;
- WDIL will provide scheme water users with reports that benchmark water efficiency performance across the scheme for different soil types and land uses. If poor efficiencies are noted these systems will be audited.

4.2.4 Water quality

The 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. Nutrient budgets and management plans, as well as other methods will be used to assist achieve output management.

Best Management Practices will include:

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

The 'Dairying and Clean Streams Accord' will set a minimum standard for dairy farms.

Surface Water Quality Monitoring

Complete this section to reflect consent conditions.

Groundwater Quality Monitoring

Complete this section to reflect consent conditions

4.2.5 Water Quantity: Surface & Groundwater levels

Complete this section to reflect consent conditions

4.2.6 Local Communities

Local communities will face changes as the development of the scheme proceeds. WDIL will maintain effective, transparent and open communication and consultation with stakeholders associated with scheme activities.

The Community may:-

- WDIL will discuss any community concerns regarding the operation of the scheme and how these might be resolved;
- Provide input and feedback into the initial preparation and implementation of the Scheme Management Plan and the template for the individual Farm Management Plans;
- Provide input and feedback into subsequent reviews and amendments of the Scheme Management Plan and the template for Farm Management Plans;
- Receive and discuss the results of monitoring and reporting required by the conditions of the WDIL consents, including the Annual Environmental Report and the annual overall audit report on compliance with the Farm Management Plans;

4.3 Skills and Training

WDIL will actively promote and facilitate an ongoing training and education programme to support water users in on-farm irrigation system design and operational matters that can improve farm performance, maximise environmental benefits and minimise adverse effects. WDIL will also be proactive in making information on new technologies for best irrigated farming practice available to growers.

WDIL may facilitate workshops for water users in association with other water groups. Workshop topics could include:

- Preparation of Farm Management Plans, as required by their water use agreements;
- Understanding design specifications and KPIs in relation to soils, climate, proposed land use and other relevant matters in the scheme area;
- Development of irrigated farms, including efficient use of water;
- Understanding nutrient effects and best management practices.

WDIL will provide relevant available information to irrigators and potential irrigators about best practices for sustainable irrigation both before and after the scheme is operational. Topics could include:

- Scheme specific guidelines on planting and managing native species;
- Other environmental management information.

4.4 Adaptive Management

WDIL recognises that not all potential adverse effects of the scheme can be predicted in advance, and avoided or managed. WDIL will implement an adaptive management process that includes monitoring and analysis of

- any potential cumulative effects;
- long term trends;
- unanticipated effects;

Using the monitoring and analysis, other experience from scheme operation and the results of ongoing Research & Development, WDIL will implement active adaptive management to make changes to the scheme operation, including on-farm practices, if necessary.

5. Water User Requirements

These are the requirements that must be met by water users, under their Farm Management Plan for Irrigated Land Use. They will be reviewed, if necessary, every ten years or at any time when conditions relating to RMA consents are changed by the Canterbury Regional Council.

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

5.1 Irrigation Management

Scheme requirements

- New infrastructure: Designers need to be a suitably qualified Irrigation Designer;
- All new on-farm infrastructure to be designed according to “Irrigation Code of Practice and Design Standards”
 - On farm infrastructure and management must be evaluated when requested by basis by a certified Irrigation Evaluator;
 - Annual volume available to each user will be set in water use agreement, based on an average 0.45 l/sec available over the irrigation season.
 - All scheme users must target an 80% application efficiency, but it is acknowledged that some systems may not be able to meet this. However, WDIL reserves the right to cap the annual volume supplied to an irrigated area to the amount that would achieve 80% efficiency;
 - Water users must avoid excessive or persistent runoff or ponding and minimise the by-wash of irrigation water. Breaches will be considered as non-compliance with water use agreements.

5.2 Soils Management

About 90% of the scheme area comprises moderate water holding capacity soils which require that both the rate and quantity of irrigation applied are very well controlled.

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 cause excessive surface runoff or ponding on the soil surface during irrigation or after irrigation has ceased;
- 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 adjacent to rivers and streams. ECAN “Guidelines for managing waterways on Canterbury farms” will be used to determine current best practice for riparian management.

5.3 Nutrient Management

- Nutrient budget & management plan
 - All water users must prepare and implement a nutrient budget and management plan appropriate to their land use activities, keep records of fertiliser applications and other inputs, and make these records available to WDIL on request;
 - Disposal of collected animal effluent to land must be included in the nutrient budget and plan;
 - 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’.

5.4 Effluent Management

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

requires 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 WDIL on request. Failure to maintain and adhere to an up-to-date plan, where there is collected animal effluent, will be a breach of water use agreements and will be dealt with through the compliance procedures.

5.5 Waterway, riparian & biodiversity management

- Cattle, deer and pigs are to be excluded from waterways including stock water races and riparian margins;
- Controlled sheep grazing, at low stocking rates, is acceptable especially as an option to manage long grass and weeds in riparian areas;
- 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'.

6. Water Users: Compliance and Enforcement for Sustainable Irrigation

6.1 Promoting water user compliance

WDIL will use educational programmes, technical assistance, reduction in audit requirements for good performance and other methods to promote, support and encourage compliance 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.

6.2 Monitoring water user compliance

WDIL will monitor compliance, including:

- Responding to complaints of non-compliance.

6.2.1 Reviews and audits of farm management plans

Farm Management Plans may be reviewed regularly by the scheme water user & WDIL.

Farm Management Plan performance may be audited by an independent assessor at WDIL request. Each plan may 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 audit the scheme water user will receive an audit report and will be required to remedy any problems that are identified.

6.3 Scheme Water User non-compliance

WDIL 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);
- 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 breaches (e.g. cost recovery, water restricted/cut off);
 - To correct damages.

Penalties should take into account:

- the seriousness of the non-compliance ('penalty points');
- degree of co-operation;
- history of non-compliance.
- cost involved.

6.3.1 Compliance committee

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

- Impose a cost recovery to cover all costs incurred by WDIL upon a water user for breach of their agreement with WDIL for supply of water;
- Convene a hearing so that disputes or issues can be presented;
- Restrict or cut off water.