

## Infrastructure

The CWMS identifies infrastructure as a means to contribute to all CWMS target areas, not just the supply of water for irrigation and hydro-electricity. Infrastructure can also address future-proofing issues such as ecosystem support in a changing climate and water quality management through enhanced reliability and distribution efficiency. While the CWMS is a collaborative process involving all councils across Canterbury, infrastructure development is based on cooperation and coordination, while recognising the commercial goals of the parties involved. Infrastructure options are being considered and progressed with a vision for an integrated water infrastructure across Canterbury.

### Targets

#### By 2015:

A system of regionally distributed rural water infrastructure for the storage and distribution of water that provides reliable water to all irrigated land has been designed, timetabled, costed and staged. The system has been demonstrated to align with the principles and targets of the strategy.

Decide mechanisms for funding infrastructure and the on-going operation of the strategy.

Started on the infrastructure (or reconfiguration of existing consents) that facilitates efficiency improvements and is linked into the regional storage plan.

Specified, for each zone, their infrastructure requirements consistent with the regional storage plan, and the principles and targets of the strategy.

#### By 2020:

Started construction of regional storage and improved reliability of supply for at least 50% of irrigated land.

Started construction of infrastructure identified in zonal implementation programmes.

### Progress to 2020

Not started

Started

Progress

Good progress

Achieving

- Environment Canterbury's CWMS Infrastructure team continues to facilitate the development of a regional infrastructure solution that aligns with all the targets of the CWMS and the recommendations in the zone and regional implementation programmes.
- Most infrastructure investment across the region has been focused on improving in-scheme reliability through piping and storage upgrades. In addition to improving reliability, the in-scheme developments have, in most cases, increased irrigated area and also reduced power consumption related to irrigation.
- There are currently three major infrastructure projects at various stages of development across the region including Hurunui Water Project, Central Plains Water (Stage 2+) and Hunter Downs Irrigation.
- A Regional Distribution Model (RDM) has been completed and supports decision making across the Canterbury network. The model provides a systematic view of the interactions between climate, surface water, groundwater and water infrastructure.
- This 'network' approach to Canterbury's water infrastructure has enabled multiple interests to identify new shared concepts at each node that balance both economic (affordability) and environmental effects (nutrient loads). The nodes are areas where multiple infrastructure concepts

intersect. Interactions between multiple groups and organisations around nodes enable refinement of concepts to address the full range of outcomes anticipated by the CWMS.

- Component parts of South Canterbury and Hurunui infrastructure options still require further work.
- Environmental Infrastructure projects are underway to future proof water quantity and water quality in key groundwater and surface water bodies. The key CWMS target areas supported by these projects are aquatic habitat (native and introduced), biodiversity, drinking water and recreation (e.g., swimming and fishing). A Managed Aquifer Recharge (recharging groundwater through a purpose-built 'leaky' basin) pilot project is underway in the Ashburton Zone. This project receives its water supply via irrigation distribution infrastructure. An expansion of this concept for the Hinds-Rangitata plains is underway. A Targeted Stream Augmentation (solar power supplied groundwater to a spring-fed stream when the springs are dry) pilot project is underway in the Selwyn Waihora Zone. Combinations of these concepts, known as Near River Recharge (where a river system is augmented through basin and/or dry river bed sections), are being considered across multiple CWMS Zones.

Fig 17: Integrated Regional Water Infrastructure – Key Projects

### Hurunui Node

Partners include Ngāi Tahu Farming, Hurunui Water Project (HWP) and Amuri Irrigation Company Limited (AICL).

- Ngāi Tahu Farming are considering options for their land holdings and exploring water supply options.
- HWP continue to investigate options for a 21,000ha mixed land use scheme.
- AICL have constructed a 130km piped distribution, reducing distribution water losses and energy use.

### Ashley Waimakariri Node

- Waimakariri Irrigation Limited (WIL) is developing a proposal to store 8.2Mm<sup>3</sup> that will increase reliability (up to 92%).

### Rakaia Node

Partners include Trustpower, Central Plains Water Ltd (CPWL), Barrhill Chertsey Irrigation Ltd (BCIL) and the Rangitata Diversion Race Management Ltd (RDRML).

- A range of irrigation parties have agreements with Trustpower to store, and supply via Lake Coleridge, improving reliability of supply.
- During the 2015/16 irrigation season, CPWL Stage 1 resulted in 75% of groundwater being replaced by scheme water; electricity disconnections exceeded 7MW.
- Construction of CPWL Sheffield Scheme (4,000ha) and Stage 2+ (20,000ha) commenced in 2017.
- Valetta Irrigation Ltd and Mayfield Hinds Irrigation are merging; Valetta recently completed piped distribution system supplying 13,200ha.

- Ashburton Lyndhurst Irrigation Ltd anticipates completion of a 30,000ha piping project by 2017.

### Rangitata Node

Partners include Rangitata Diversion Race Management Ltd (RDRML), Rangitata South Irrigation Ltd (RSI), Opuha Water Ltd (OWL), and Trustpower.

- RDRML has proposed a 15-60Mm<sup>3</sup> storage option at Klondyke which could open up options to provide water into South Canterbury while improving reliability in mid-Canterbury. A notable feature of the RDRML concept is the commitment to upgrade fish exclusion systems to meet rūnanga, recreational, biodiversity and wider community expectations.
- The Rangitata South scheme has completed construction to provide water to irrigate up to 16,000ha.

### Waitaki Node

- Hunter Downs Irrigation (HDI) is refining a scheme design to meet commercial and environmental objectives.
- Waihao Downs Irrigation has completed construction of a piped network that is supplied from the Morven Glenavy Ikawai scheme to irrigate 3,500ha.

