

Integrated Management of Multiple Water Sources in the Mid-Canterbury Plains

Canterbury Strategic Water Study Steering Group Meeting
24th September 2008

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Introduction

- Project Overview
- Mechanisms for Making Better Use of Available Water
- Description of Scenarios Modelled
- Summary of Results

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Project Overview

- Making better use of available water sources to:
 - Reduce the allocation pressure on groundwater and foot-hills rivers
 - Improve / maintain reliability of supply
 - Meet future water needs
 - Minimise storage development
 - Integrate groundwater and surface water management
- Surface water development and management

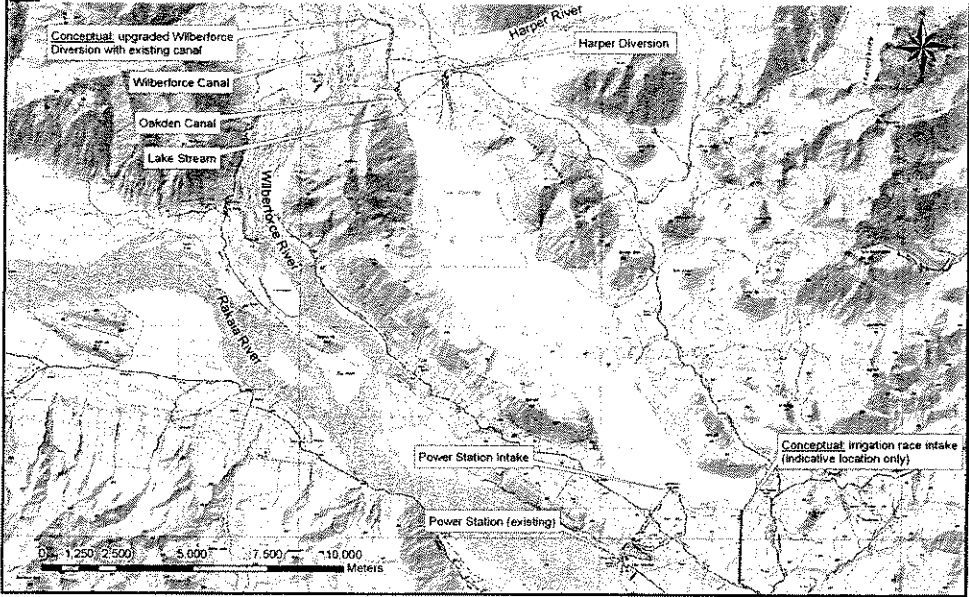
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Mechanisms for Making Better Use of Available Water

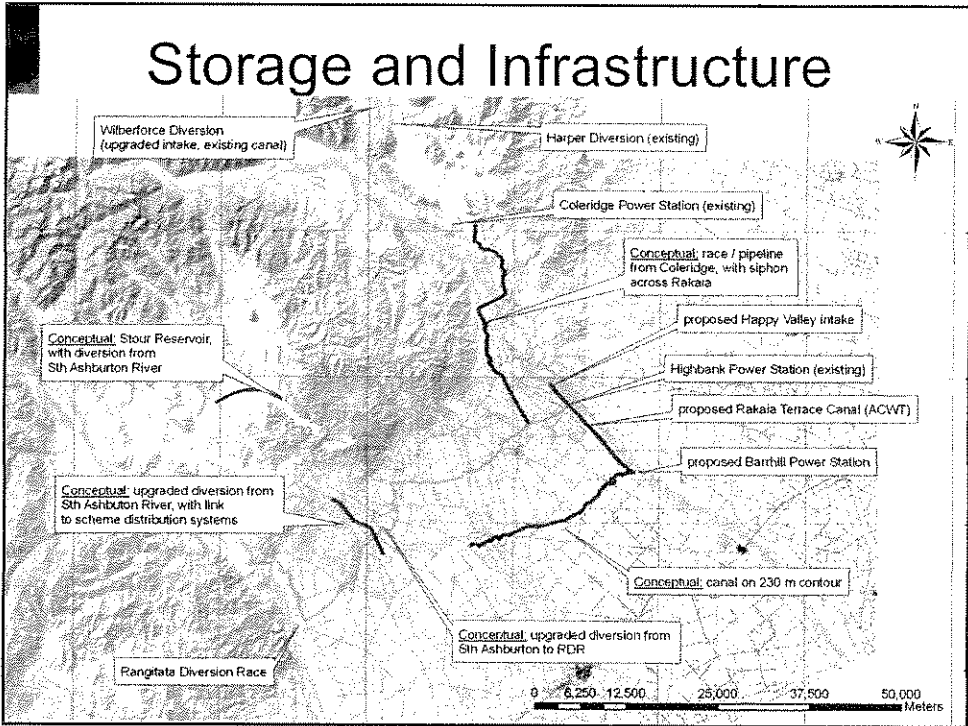
- Storage
 - Stour
 - Coleridge
- Efficiency Gains
 - Irrigation methods
 - Distribution systems
- Re-allocation
 - Balancing groundwater and surface water resources
- Integrating all of the above

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Lake Coleridge



Storage and Infrastructure



Water Use Efficiency

- Spray irrigation and piped distribution networks for new irrigated areas
- Conversion of existing RDR scheme areas to spray
- Conversion of lower Rakaia border-dyke areas to spray

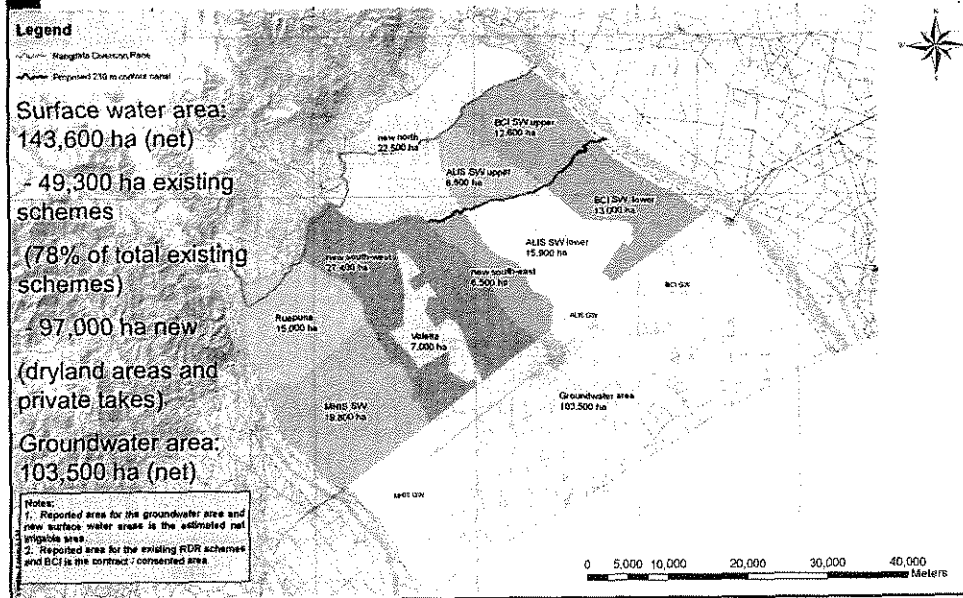
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Re-allocation

- Defined a “groundwater line” based on balancing land surface recharge and groundwater abstraction.
- Assigned priorities to surface water sources in a way that maximises irrigated area

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Potentially Irrigable Areas



Summary of Scenarios

Scenario	Storage	Re-allocation	Efficiency
1. Storage only	1. (a) Coleridge	No re-allocation of water	Status quo for RDR schemes.
	1. (b) Coleridge & Stour		Spray irrigation and piped distribution for new areas.
2. Storage and Efficiency Gains	2. (a) Coleridge	Existing RDR scheme areas supplied from surface water.	Spray irrigation and piped distribution for RDR schemes, new areas and lower Rakaia border-dyke areas.
	2. (b) Coleridge & Stour	Surplus Rakaia band 2/3 water re-allocated to higher bands.	
3. Storage and Re-allocation	3. (a) Coleridge	"Groundwater line" implemented.	Status quo for RDR scheme areas inland of groundwater line.
	3. (b) Coleridge & Stour		Spray irrigation and piped distribution for new areas.
4. Storage, Re-allocation and Efficiency Gains	Coleridge	"Groundwater line" implemented.	Spray irrigation and piped distribution for all irrigated areas inland of groundwater line

Summary of Results

Scenario	Storage	Total Net Irrigated Area (ha)	% of total SW area	Storage Volume Required (Mm ³)
1. Storage only	1. (a) Coleridge	63,500	43%	158.2
	1. (b) Coleridge & Stour	146,300 (63,500 existing; 82,800 new)	100%	312
2. Storage and Efficiency Gains	2. (a) Coleridge	129,600 (63,500 existing; 66,100 new)	89%	158.2
	2. (b) Coleridge & Stour	146,300 (63,500 existing; 82,800 new)	100%	186.6
3. Storage and Re-allocation	3. (a) Coleridge	107,400 (49,300 existing; 58,100 new)	73%	158.2
	3. (b) Coleridge & Stour	146,300 (49,300 existing; 97,000 new)	100%	206.1
4. Storage, Re-allocation and Efficiency Gains	Coleridge	138,000 (44,800 existing; 93,200 new)	94%	158.2
	Coleridge and on-farm storage	146,300 (49,300 existing; 97,000 new)	100%	166.2 (approx)

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