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## FARM RECONFIGURATION AND RATIONALISATION

### Overview

A key focus of Water for Rivers infrastructure recovery program is on-farm reconfiguration, and rationalisation.

On-farm projects embody innovative, reconstructive and economic adjustment that aligns with an increase in farm efficiency and productivity, long term irrigation modernisation and catchment management outcomes. There is also a strong emphasis in leaving a positive legacy for regional communities.

Projects are about adjusting the irrigation farm enterprises in marginal and sometimes unreliable areas of irrigation supply and reducing their dependence on irrigation with the aim of improving farming and environmental sustainability. This is occurring in the following ways:

- Partnering with farmers to purchase neighbouring land or reconfigure their current irrigation systems to improve farm irrigation efficiency and capacity.
- Purchasing select properties, implementing changes and then selling the properties as working, viable entities.
- Working in partnership with irrigation companies to rationalise delivery assets to achieve conveyance water savings through property purchase, reconfiguration and rationalisation.

Water saved through property and infrastructure reconfiguration is used by Water for Rivers to enhance environmental river flows.

Examples of projects to date are:

- Purchasing non required water from a landowner to help assist a farmer finance the purchase of an adjoining property.
- Funding the conversion of rice irrigation layouts to border check configuration. This is occurring in the Deniliquin region and is a follow on to the Rice Growers' Projects funded under the Living Murray Initiative.
- Purchase of Madowla Park and the conversion of its rice contour irrigation areas to irrigated winter cropping. The reconfiguration has been developed whereby; in times of abundant water and with minor modifications, these areas can again be still used for rice production.
- Working closely with Coleambally Irrigation to target property and water purchase with positive environmental outcomes. This has enabled farm expansion and diversification.
- Investment in Coleambally's infrastructure and technology improvement in return for water savings produced by the works. A similar project has been completed with NVIRP in Victoria and others are being with the N.S.W Irrigation Corporations.

A component of on-farm reconfiguration is the enhancement of environmental and farming benefits through re-vegetation and biodiversity initiatives.

**Program Goal** – Provide a sustainable farming future in irrigation regions

**Process**

- Consult with individuals and understand their needs
- The program benefits are maximised with concurrent delivery system modernisation
- The solution is to incorporate farm efficiency and reconfiguration into the big picture of integrated valley management solutions
- Provide active project management and facilitators
- Use a network of external experts and consultants
- All project are undertaken in partnership with the Client
- Ensure the project outcomes are founded and designed using best practice principles
- Keep contracts simple but with appropriate governance for timely implementation
- Remain flexible in delivering outcomes as project needs change with its development
- Continual liaison with a client for the duration of their project
- Debrief with client
- Pass on learnings to new potential clients
- Enables community networking
- Encourage project development using local/region expertise and resources
- Encourage the use of new irrigation technology and data management

**Summary of Recovery Costs**

	All Projects	NSW		Vic	
Water Source	All Classes	High Security	General Security	High Reliability	Low Reliability
<b>No. of Projects</b>	45	1	26	18	0
<b>Water Recovered (ML)</b>	24,710	440	14,210	8,510	1,550
<b>Total Cost</b>	35 682 500	981 590	20 038 670	14 662 240	0
<b>Cost /ML</b>	\$1,444	\$2,230	\$1,410	\$1,723	0



## BENEFITS SCORECARD

### Environmental

Positive on farm improvements to water delivery efficiency	✓
Efficiency savings for the environment and irrigators	✓
Reduced salinity impact	✓

### Economic

Alignment of modernisation programs providing farm irrigation efficiency upgrade	✓
Targeted purchase linked to irrigation wind down areas	✓
Avoids marginalising the highly productive irrigation areas supporting positive economic adjustment	✓
Land consolidation of properties that would have otherwise been lost to irrigation	✓
Improves farm irrigation efficiency management	✓

### Social

Positive farm rationalisation	✓
Significant farm/lifestyle benefits for upgraded irrigation farms	✓
Greater regional confidence	✓
A partnership approach to water reform and recovery	✓

## **CASE STUDY 1**

### **SUNNY PINE DAIRY- NORTHERN VICTORIA- NATHALIA**

This 1700 acre dairy farm is adjacent to the main backbone channel system which is being upgraded as part of the Northern Victorian Irrigation Renewal Project.

The farm plan was redesigned in January 2010 to rationalise five farm layouts that includes new irrigation layouts , centre pivot relocation, efficient water transfers and recycling etc. Land development of the lot includes approximately 200 acres of surface irrigation (plus 92 acres new layout), 25 acres under sprinkler, 160 acres under a centre pivot and 75 acres of fenced revegetation. The remaining area consists of dry, storage and other rural land.

The internal water transfer system is a mixture of newly installed underground network of poly pipe and irrigation channel. The system will transfer both GMW channel water and ground water independently or mixed to all irrigation area throughout the lot. The pipeline system has been designed to transfer water around the farm.

Three recycle dams catch all irrigation run off and join the pipe and channel network that transfers water throughout the property to maximise irrigation potential and efficiency. Two of the recycle dams link into the total allotment drainage network which can, in the event of big rainfall, discharge into the Broken Creek using the GMW irrigation infrastructure.

There are three groundwater spear point systems within the lot with licence water capacities. The spears are interconnected with each other and the channel water supplied by GMW.

Additional benefits:

- Retention of all farm houses through concurrent rural residential subdivision and sale with a new stock and domestic water supply, while developing a larger more viable farming enterprise.
- Rationalisation of 5-6 kilometers of leaking spur channels and 12 meter outlets down to one from the backbone channel system

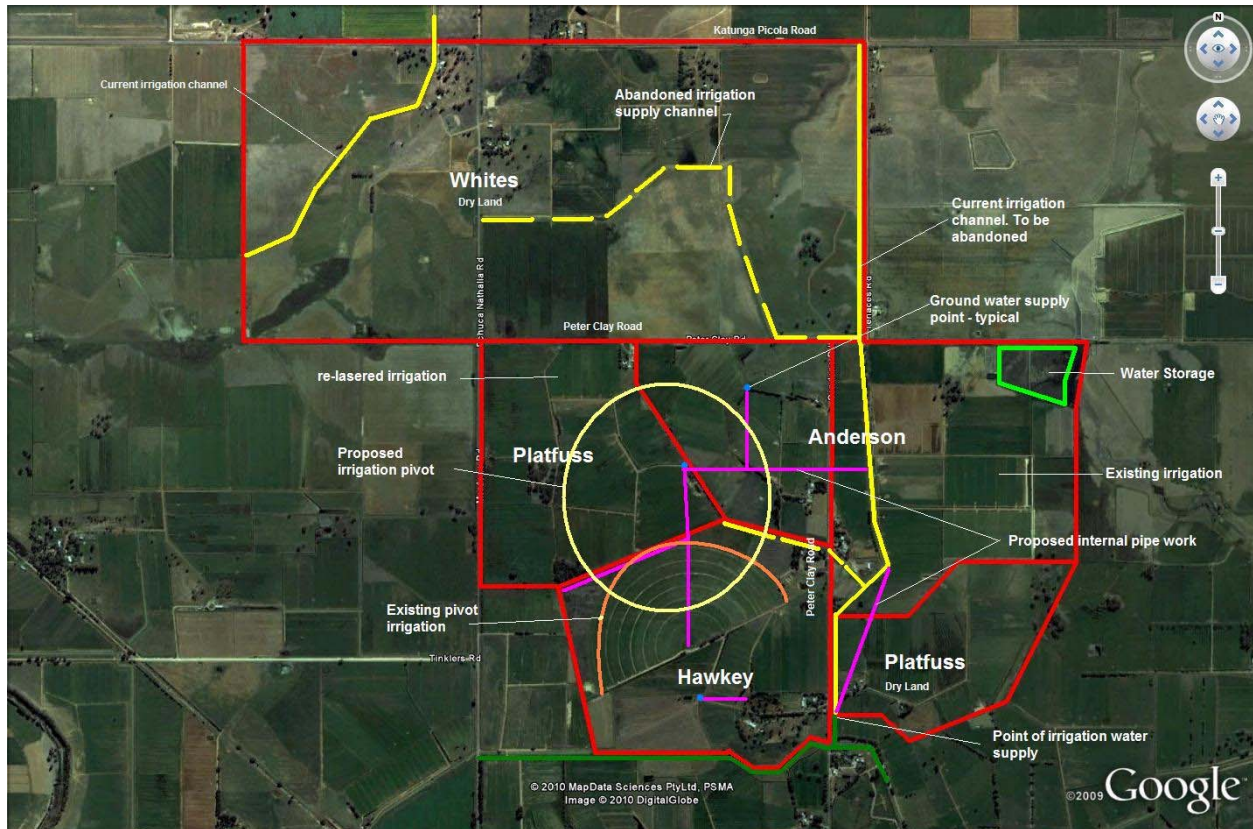


Figure 1 Nathalia Reconfiguration

## CASE STUDY 2

### MADOWLA PARK NORTHERN VICTORIA- ECHUCA

Water for Rivers purchased Madowla Park, bordered by the Murray and Goulburn Rivers east of Echuca and the Picola property in 2008 to reconfigure high capacity water farming practices into winter cropping activities that are less water reliant. The surplus water gained from these reconfiguration programs has been used to refurbish environmental flows in the Murray and Snowy Rivers.

The farm was set up for cereal and grain production with the profile of:

- Irrigated summer crop 1 000ha of rice and maize
- Irrigated winter crop – 450ha of barley, wheat and canola
- Dry land winter crop – 2 220ha of barley, wheat, canola, peas and rye-corn

The low allocations of water in recent years and lack of water reserves at the time indicated that rice cropping was not a short to medium term farming option. Therefore the focus on future operation of



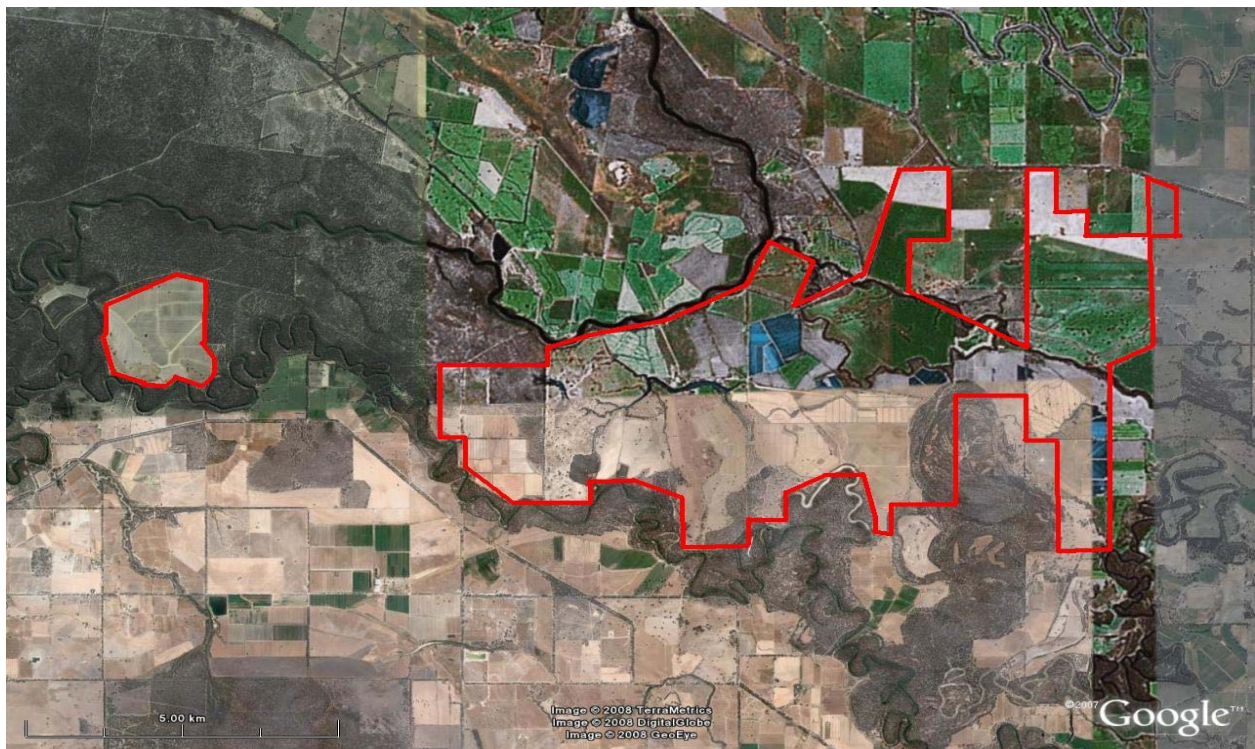
this property centred on winter cropping using minimal amounts of high reliability water. Therefore the proposed strategy was to redevelop the property into a winter cropping enterprise.

435ha of existing rice irrigation areas were reconfigured to border check irrigation profile and replumbed. Also the residual rice contoured land of 600ha was redeveloped so that water can be applied and removed at normal flood irrigation rates.

As a result of this process to maintain a viable and sustainable farming operation 2,000 ML of high security water was left with the property and approximately 8,000 ML was secured for environmental flows.

The twin river frontage allows excellent flexibility in sourcing water (when allocations are available).

Along with the irrigation reconfiguration works Water for Rivers committed to the improvement of the overall environment and biodiversity of its properties. A combined initiative with Goulburn Broken Catchment Authority and Department of Primary Industry was initiated to achieve agreed biodiversity improvement.



**Figure 2 Madowla Park on confluence of Goulburn and Murray Rivers**

## Extract from Water for Rivers Business Plan

### Snowy Water Inquiry Outcomes Implementation Deed - Water Targets

The Snowy Water Inquiry Outcomes Implementation Deed (SWIOID) formalises the water recovery objectives of Water for Rivers. Clause 7.1 outlines the target levels of increased flows including an average annual flow of 212 GL per water year for the Snowy River and an allocation of 70 GL per water year for the River Murray.

The Water for Rivers business objective is:

**To recover 282 GL per water year, sufficient to restore a 'target' average annual flow of 212 GL per annum, or 21 percent of the average natural flow, in the Snowy River and provide an average 70 GL per water year for environmental flows in the River Murray system by June 2012.**

Water for Rivers is to identify, investigate and implement water efficiency projects on diversions from the River Murray (upstream of the South Australian border), and in the Murrumbidgee and Goulburn River systems.

*Section 17 of the Deed stipulates that the reliability of the recovered target water is based on the point of savings or purchase, and that 142GL of the 212 GL savings to provide a target 15% Average Natural Flow (ANF) for the Snowy River must be converted to 'achieve a Snowy River Apportioned Entitlement at a reliability equivalent to the entitlement received by South Australia under the MDB Agreement'. (ie high reliability, Victorian High Reliability Water Share or NSW High Security Licences).*

The reliability of the remainder of the savings to make up the 21% target calculated for the purpose of the Snowy Water Inquiry to achieve further increased target flows of 212 GL per water year was determined (section 1.5 of the Heads of Agreement) to be at the level of reliability at the point of acquisition or purchase, *'not at the reliability level for annual inflows to the Snowy River'*.

When this business objective was formalised by Member Governments in 2002, the historical hydrological information about water entitlement and allocations suggested that the reliability of water entitlements recovered would be sufficient to yield on average 282 GL of water per annum. This information indicated that the agreed approach, within the available funding, would achieve the SWIOID flow targets for the Snowy and Murray Rivers.

Since 2002 there has been a drought of unprecedented severity with the prospects of on-going drier conditions from climate change. Recently, new information has also become available on the risks posed by climate change to future water yields of irrigation entitlements, such as the CSIRO Murray-Darling Basin Sustainable Yields Project completed in October 2008.

Water for Rivers, with the support of its Members, will continue to strive to meet its business objective of recovering 282 GL of water for the Snowy and Murray Rivers as defined in the Deed. However, if dry

conditions continue under a changing climate there will be a reduction to the long term average yield of water entitlements (and hence annual allocations to the river) similar to other river systems and the recovery of 282 GL of entitlements may not be sufficient to yield 212 GL average natural flow to the Snowy River or an average annual volume of 70 GL to the Murray. (Ref: Returning environmental flows to the Snowy River – An overview of water recovery, management and delivery of increased flows NSW Office of Water)

To maximise water recovery from the available budget, the company is aiming to exceed the target in entitlement terms (at less than \$1,500/ML average price), but this may not be sufficient to meet average natural flow targets based on drier climate regimes.

The SWIOID sets out target water saving volumes (Part 2, Clause 7) and sets a timetable for finalisation of the Mowamba Borrowings Account (Annexure 1, Part 2, Clause 7) and the allocation of savings to the River Murray (Part 2, clause 16) as presented below:

TIMING: Years after the Corporatisation Date (28 June 2002)	Volume of water permanently transferred to the Environmental Entitlement - GL per annum			
	Cumulative Target (GL)	Incremental Target (GL)	Incremental Rate per annum (GL)	Reference
Corporatisation Date		Start		SWIOID Cl. 7
To 30.6.2005 (3 years)	57✓	57		SWIOID Cl. 7 & Cl. 16.1
To 30.6.2009 (7 years)	212✓	155	38.75	SWIOID Part 2 Cl. 7, Cl 16.1 & 17
To 30.6.2012 (10 years)	282	70	23.3	SWIOID Part 2 Cl. 7, Cl 16.1 & 17