

# **Northern Victoria Integrated Irrigation Modernisation Project**

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**A proposal prepared by the community of the Goulburn-Murray  
Region of Northern Victoria**

***Draft for Discussion***

**April 2009**

## Executive Summary

### Background to the Proposal

The Goulburn Murray Irrigation District (GMID) of Northern Victoria is, by a considerable margin, the largest single user of water in the Murray Darling Basin and an integral part of Australia's major food producing region. The Victorian community has responded to the challenges of outdated irrigation infrastructure in the GMID, and more recently the extended drought and climate change by investing \$1 billion in the Northern Victoria Infrastructure Renewal Project (NVIRP).

NVIRP project, represents a once in a generation opportunity to modernise the Northern Victoria irrigation system. However, modernisation of the supply infrastructure alone cannot address the multiple challenges facing the region. To capitalise on the opportunities created through the NVIRP project, this proposal seeks to integrate NVIRP with a strategic program of water buyback, structural adjustment and on-farm modernisation with the objective of establishing an environmental, economic and socially sustainable future for the GMID.

The integrated proposal would be able to commence immediately and conduct significant works within the current year. It would leverage the single entity project management provided by NVIRP, and project delivery and construction resources already mobilised for the \$200 million of works undertaken in this financial year by NVIRP Stage 1 and the Shepparton Modernisation Project.

### An Integrated Program with Four Elements

The integrated program has four related elements:

- **NVIRP Stage 1:** is investing \$ 1 billion to modernise the infrastructure backbone of the GMID channel network to substantially reduce water losses and provide farms with a high standard of water delivery service as a catalyst to on-farm efficiency improvements.
- **NVIRP Stage 2:** is the second stage of the NVIRP project and will consolidate the most viable farm enterprises around a modernised, efficient channel network. The integration of Stage 2 with Strategic Transition also facilitates a premium payment associated with retirement of channels, movement of delivery shares and avoidance of modernisation costs.
- **Strategic Transition:** proposes a co-ordinated investment and adjustment program that will assign priority to Commonwealth water buyback from a range of key long term viability indicators including environmentally damaging areas which do not have a long term sustainable irrigation future. It creates a new option for irrigators
- **On-farm efficiency:** a program of works to support the GMID's 11,000 customers to take full advantage of the modernised service and achieve more productive, sustainable and profitable farm businesses. This will negate the effect of removing this 100 GL from agriculture and encourage future on farm efficiency to soften the loss of 250 GL taken by strategic transition.

### Exempt Commonwealth Investment in these projects from the Cap on Water Trade

Recognising the need to preserve the integrity of the irrigation communities of Northern Victoria, a 4% cap on outward water trade from GMID districts has been put in place with the support of the Victorian Government. However, within the context of the integrated project, it is proposed to exempt Commonwealth water purchases and share of water savings from the cap on outward water trade associated with this proposal.

### The Benefits of an Integrated Program

The proposal recognises that opportunities for Commonwealth water buy-back arise randomly across the irrigation area with consequential risks for NVIRP modernisation investment and the

viability of the region’s irrigated agriculture. An integrated approach will focus buyback and structural adjustments on less environmentally and economically sustainable parts of the GMID. Scarce modernisation investments will be directed to boosting efficiency in the more productive and environmentally sustainable irrigation areas. The benefits of the integrated approach are therefore:

- **Cost savings:** by coordinating the buyback of water entitlements with infrastructure modernisation investment and by providing streamlined program delivery through a single purpose built entity, NVIRP. The strategic consolidation of irrigation related activities will also reduce ongoing operation and renewal costs associated with a modernised system.
- **Maximise water savings:** by consolidating irrigation farming around the efficient modernised backbone.
- **Enhanced food security:** by establishing a sustainable basis for irrigated agriculture production in Northern Victoria in response to environmental concerns and the reality of decreased water availability. This will also underpin the security of a wide range of value adding industries and the jobs they support.
- **Minimised social disruption:** by providing certainty to irrigation communities through coordinated planning and appropriate structural adjustment assistance and ensuring there is only one market value for water entitlement across the GMID.
- **Sustainable environmental outcomes:** by reducing the footprint of irrigation within environmentally sensitive areas of the district and generating water savings for environmental purposes will drive biodiversity and ecosystem service benefits.
- **Investment certainty:** by coordinating the investment made by different branches of Government which will reduce the risk of investments becoming under utilized or abandon to irrigated agriculture.
- **Regional economic stimulus:** by generating numerous jobs across a broad range of manufacturing, supply, service and construction sectors.
- **Program Costs and Water Shares**

The program costs and proposed water shares are set out in the table below. The table also shows the relative reliability of water shares generated by each project element.

	Integrated Modernisation Project - Program Element				
	NVIRP Stage 1	NVIRP Stage 2	Strategic Transition	On-farm Efficiency	Program Total
<b>Program Costs</b>					
Commonwealth		\$1,000 M	\$740 M	\$500 M	\$2240 M
Victoria	\$900 M				\$900 M
GMID Farmers	\$100 M				\$100 M
<b>Water Shares</b>					
Commonwealth Environmental Water Holder		100 GL	250 GL	100 GL	450 GL
Urban Bulk Entitlement	75 GL				75 GL
Environmental Bulk Entitlement	75 GL				75 GL
GMID Farmers	75 GL	100 GL			175 GL
<b>Reliability of Water Shares</b>	Very high	Very high	High & Low	High & Low	

### **Extensive Stakeholder Support**

The integrated project is a joint initiative of the GMID community with input from a broad range of farming, environment and community stakeholders including:

- NVIRP's Community Modernisation Committees across the six irrigation areas
- Northern Victoria Irrigators
- Victorian Farmers Federation
- Foodbowl Unlimited
- Environment Victoria
- Greater Shepparton Shire Council
- Campaspe Shire Council
- Moira Shire Council
- North Central CMA and Goulburn Broken CMA
- Regional Development Victoria.

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## Introduction to the Proposal

The Goulburn Murray Irrigation District (GMID) of Northern Victoria is the single largest user of water in the Murray Darling Basin and an integral part of Australia's major food producing region. However, much of the district's channel infrastructure is up to 100 years old and does not meet the requirements of a modern irrigation system. Moreover, a decade of sustained drought has placed increasing strains on the region's irrigation economy with projections that average water availability will continue to decline over the next century as a result of climate change.

The Victorian community has responded to the problems of aging infrastructure, extended drought and climate change in Northern Victoria by investing \$1 billion in the Northern Victoria Infrastructure Renewal Project (NVIRP). The NVIRP project will modernise the irrigation infrastructure of the GMID to reduce losses in the channel network while enhancing service standards as a catalyst for on-farm efficiency improvements.

### The GMID - 'Engine Room of Australian Agriculture'

The GMID covers an area of approximately 27,577km<sup>2</sup>, and in 2006 was the home to approximately 159,050 residents. The GMID accounts for a very large proportion of the gross value of horticultural and dairy production in Australia, as demonstrated in Figure 1 below. More than half of the gross value of the Australian pear, nectarine, plum and peach crop is produced within the GMID, while the area also accounts for a significant value of the national apple and apricot crop.

**Figure 1. GMID Gross Value of Production in FY 2005-06 (\$'000)**

Shire	Apples	Pears	Apricots	Cherries	Nectarines	Peaches	Plums	Olives	Almonds	Milk	Total
Greater Shepparton	80,125	55,008	5,036	2,703	4,754	15,613	9,299	28	–	138,946	311,512
Moira	13,062	6,412	2,704	6,205	15,992	35,708	3,521	453	47	177,091	261,194
Campaspe	3,654	1,913	749	1	333	310	165	41	–	236,637	243,805
Gannawarra	40	–	0	–	–	58	54	7	2	113,205	113,367
Swan Hill	–	–	2,726	2,363	36,371	15,918	14,254	202	19,807	10,175	101,816
Loddon	69	–	–	147	–	–	–	13,710	–	30,965	44,891
<b>Total</b>	<b>96,951</b>	<b>63,333</b>	<b>11,215</b>	<b>11,419</b>	<b>57,450</b>	<b>67,608</b>	<b>27,293</b>	<b>14,440</b>	<b>19,856</b>	<b>707,019</b>	<b>1,076,585</b>
Total Australian Production	359,900	85,700	23,800	97,900	105,700	107,900	53,600	43,900	104,500	3,341,300	4,324,200
Percentage produced in the GMID	26.94%	73.90%	47.12%	11.66%	54.35%	62.66%	50.92%	32.89%	19.00%	21.16%	

Source: Australian Bureau of Statistics, 2008.

The GMID region produces 21.16% of Australia's milk production from 1,800 dairy farms and also supports significant broadacre and wine grape industries. Northern Victorian food manufacturers are major contributors to the Australian food industry, particularly in the areas of fruit and vegetable processing, dairy products and wine production.

## **An Integrated Approach to Modernisation**

NVIRP represents a once in a generation opportunity to respond to the imperative of water use efficiencies made more urgent by the emerging realities of climate change

However, modernisation of the supply infrastructure alone cannot address these multiple challenges.

To capitalise on the opportunities created through the NVIRP project, this proposal seeks to integrate NVIRP with a strategic program to consolidate a modernised, efficient and affordable channel network in areas suited to the more viable farm enterprises backed up by extensive upgrades to the efficiency of on-farm infrastructure. The program will aggregate opportunities arising from:

- the *Restoring the Balance in the Murray Darling Basin* buyback of water allocation;
- the *Water for the Future* funding of on farm efficiency works;
- the Commonwealth Government agreement in principle to invest in Stage 2 of the Modernisation program of works; and
- the *Northern Region Sustainable Water Strategy* to improve the health of the Murray River and rivers and wetlands in northern Victoria.

### **Stage 1 of NVIRP Modernisation**

Stage 1 of the modernisation project commenced in 2008. The project is investing \$ 1 billion to modernise the infrastructure backbone of the GMID channel network to substantially reduce water losses and provide farms with a high standard of water delivery service as a catalyst to on-farm efficiency improvements.

Water savings of 225 GL will be generated from works completed in Stage 1 of the project. These savings are to be shared equally between GMID customers, the environment and the Melbourne urban supply system.

### **Stage 2 of NVIRP Modernisation**

The proposal builds upon the connections program developed in Stage 1 of the NVIRP project. In Stage 2, where feasible, every farmer in the project area will have the option of a connection to the modernised backbone. The modernised backbone provides a near on-demand, high reliability water supply service which is essential to accommodate precision on-farm irrigation. Stage 2 will also involve the further targeting of leaky channels for remediation.

Investment in Stage 2 of NVIRP is expected to generate 200 GL of water efficiency savings

### **Strategic Transition**

The proposal recognises that under current arrangements opportunities for Commonwealth water buy-back arise randomly across the irrigation area, and at the same time it is uncommercial to modernise 100% of the existing irrigation supply infrastructure. A well co-ordinated approach between both levels of Government will assign priority to water purchase from low productivity or environmentally damaging areas which do not have a long term sustainable irrigation future. The coordinated approach will focus the investment of modernisation funds to the more productive and environmentally sustainable areas thereby minimising the risk to modernization investments

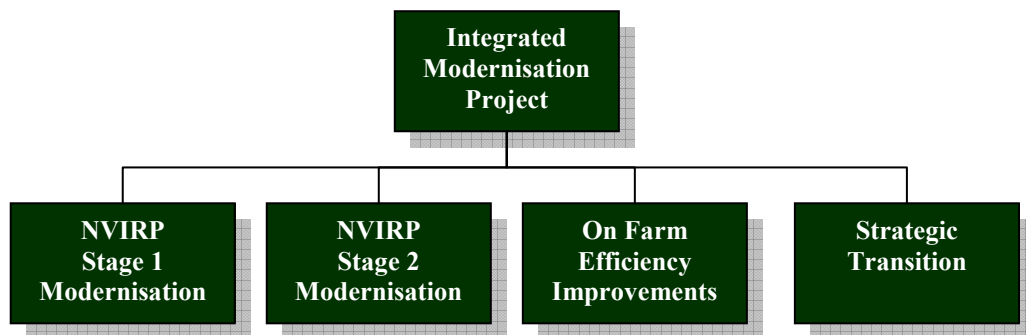
Strategic Transition provides an attractive option for consideration by farmers in lower priority irrigation areas. Such farmers would be able to take up more attractive bids from the Government for the HRWS associated with their farms

## On Farm Efficiency

The proposed program of works supports significant investment on-farm to achieve more productive, efficient and profitable farm businesses. To take advantage of the service provided by the modernised backbone requires significant on-farm investment. This will negate the effect of removing this 100 GL from agriculture and encourage future on farm efficiency to soften the loss of 250 GL taken by strategic transition.

The program will provide for co-investment with farmers to develop on-farm efficiency improvements. In return investors will acquire the resulting water savings through a transfer of water entitlement from participants to the project investors.

This integrated project thus has four key components as shown in the diagram below.



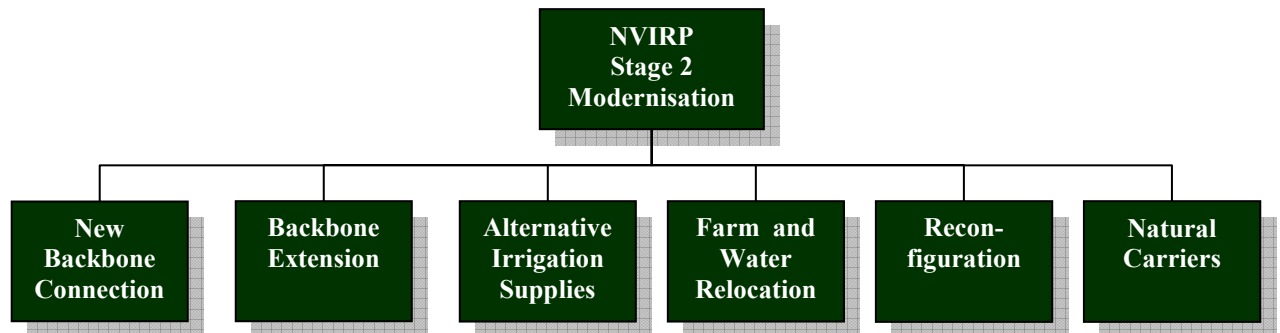
## The Benefits of an Integrated Program

The benefits of the integrated approach are:

- **Cost savings:** by coordinating the buyback of water entitlements with infrastructure modernisation investment and by providing streamlined program delivery through a single purpose built entity, NVIRP.
- **Additional water savings:** by consolidating irrigation farming around the efficient modernised backbone.
- **Enhanced food security:** by establishing a sustainable basis for irrigated agriculture production in Northern Victoria in response to environmental concerns and climate change imperatives. This will also underpin the viability of value adding industries and the jobs they support.
- **Avoided social disruption:** by providing certainty to irrigation communities through community engagement, coordinated planning and appropriate structural adjustment assistance.
- **Sustainable environmental outcomes:** by reducing the footprint of irrigation within environmentally sensitive areas of the district and generating water savings for environmental purposes.
- **Investment certainty:** by coordinating the investment made by different branches of Government which will reduce the risk of investments becoming stranded. Exempting the cap on outward trade for Commonwealth buyback will provide greater certainty that the water acquired can be used for its intended purpose.

## NVIRP Stage 2 Modernisation

Stage 2 of the NVIRP project will complete the modernisation of the GMID channel irrigation supply scheme and provide the opportunity for farmers in the GMID channel system to access an efficient, high standard irrigation supply to their farm gate. Stage 2 of the project comprises a package of modernisation measures, as summarised in the diagram below.



### New Backbone Connection

All farmers in the project area will, where feasible, have the opportunity to access project funding to develop a new efficient, high standard connection from their property to the modernised backbone. Stage 2 connection works would utilise the incentive program refined through practical experience gained in the implementation of Stage 1. As with Stage 1, the works undertaken may include new privately or group owned channel or pipeline connections to transfer the supply point to the backbone as well as the removal of redundant distribution channels.

### Backbone Extension

In specific circumstances it may be economic to extend the modernised backbone beyond the boundaries established in Stage 1. Extensions may be feasible in circumstances where additional demand is shifted up channel from more remote parts of the system. The accumulated knowledge of large scale implementation of TCC and channel remodelling in Stage 1 may realise construction cost savings that make extending the backbone boundary or undertaking further channel remediation more economic.

### Alternative Irrigation Supply

Rather than connect a property to the backbone it may be more effective to supply part, or all of, a landholder's irrigation requirements from a new alternative water supply. Possible alternative water supplies include groundwater bores and pumped river diversion. Any consideration of supplying from an alternative water supply will take into account water losses, energy costs, environmental impacts associated with extracting water from the proposed water supply and compliance with existing management plans. Where providing an alternative supply produces net efficiency benefits, the project will provide financial inducements to the relevant landholder to source water entitlement from the alternative water source and fund the cost of developing diversion and on-farm infrastructure.

### **Relocating Farms and Water Allocation**

Farms located off the backbone on inefficient or underutilised spur channels will be provided with financial incentives to relocate their farm businesses to vacant or retired properties located on or close to the backbone if feasible and desirable. Entitlement transfers from the least viable to the most viable productive farm units will also be encouraged. The overall thrust is that infrastructure modernisation will be far more effective if the more productive irrigation farms are consolidated on or near the upgraded backbone.

In some cases farm relocation could involve the amalgamation of contiguous properties. Depending on the value of water savings achieved through decommissioned infrastructure, it may be feasible to provide financial incentives to offset relocation costs such as property purchase, layout and re-establish irrigation on dried off blocks and the development of on-farm infrastructure such as cool stores, dairies, access tracks, fencing etc. *Rural Finance* has considerable experience in Victoria in developing packages for farmers that provide options that allow rational consideration of their future in the industry. Complementary environmental benefits can also be achieved through this process.

### **Natural Carriers**

At present waterways are used as part of the irrigation supply system in the form of natural carriers. Large losses occur in the use of some of these systems. A parallel program is focussed on rationalising the flow management of natural carriers to restore ecosystem values after the NVIRP program is complete.

## Strategic Transition

The proposal recognises that to improve overall water efficiency within the GMID and to place water allocations onto a sustainable basis, there is an imperative to reduce the scale of the irrigation scheme. A strategic consolidation of irrigation away from areas with low priority for modernisation work to the more productive and water efficient zones is therefore proposed. This program builds on the lessons learned through the Torrumbarry Reconfiguration and Asset Management (TRAMS) initiative.

The priority of areas will be identified by reference to a range of key indicators of regional viability including:

- conveyance efficiency;
- soil suitability;
- salinity risk and other environmental considerations;
- flooding risk;
- asset age and condition; and
- cost of supply.

The classification of the irrigation system will be formulated in terms of a decision tree providing a high level of transparency in the process used to describe a range of possibilities for irrigated agriculture. High priority areas are those attractive for modernisation. Low priority zones are more suited to a resource shift.

Farmers in designated low priority area will be able to participate in an integrated exit package. The exit package will consist of a range of initiatives including water buyback, payment of termination fees, provision of alternative domestic and stock water supplies, and assistance to convert to dryland farming activities. Participation in the exit package will be conditional on the farmer retiring the supply infrastructure to the relevant property. The integration of Stage 2 with Strategic Transition effectively facilitates a premium payment associated with retirement of channels, movement of delivery shares and avoidance of modernisation costs

Deliberately, the exit package will not be offered to farmers supplied through recently modernised infrastructure. The water market will continue to function normally in these areas and no impediments to the market operation are to be imposed by the project.

## Regional Structural Adjustment

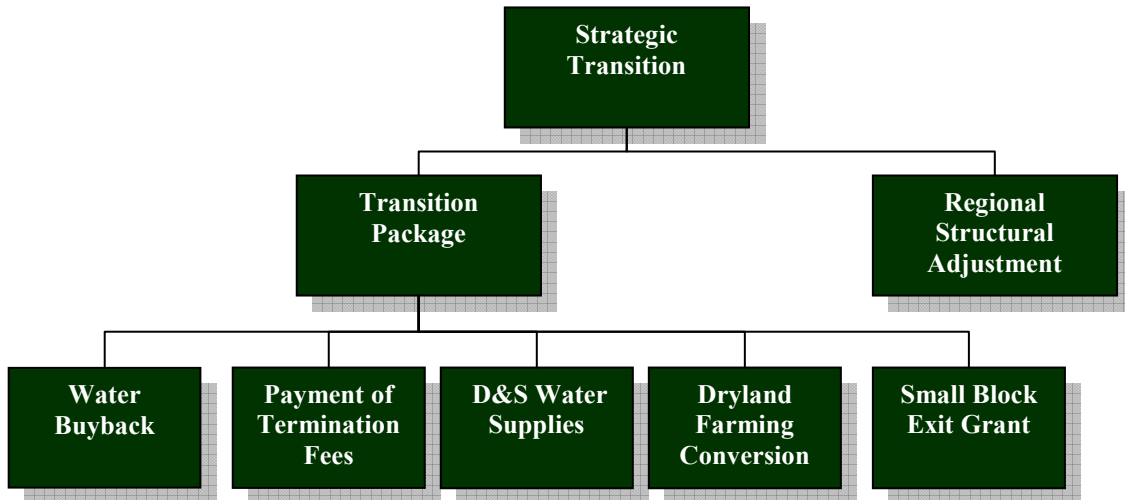
Irrigation farming and food processing account for over half of the region's economic value of production. Transitioning the GMID to a more sustainable basis will necessarily involve dislocation of the economies of some regional towns. For example, the Torrumbarry Reconfiguration and Asset Modernisation Strategy (Torrumbarry is one of the six irrigation areas within the GMID) established that a loss of 40% of the water shares from the area would result in the following social and economic consequences in the Torrumbarry area:

- decline in jobs by 37% from 4,000 to 2,500;
- decline in the gross value of agricultural production by 52% from \$241 m to \$115 m; and
- decline in population by 14% from 14,000 to 12,000.

The decision to buy back water allocation within the GMID is largely driven by government policy and is not a result of autonomous market processes. Accordingly, there is a strong justification for the provision of structural adjustments assistance to manage the consequential social and economic pressures of water buyback. The program thus proposes to provide adjustment assistance to assist the rural communities manage the impacts of the transition program.

## Proposed Initiatives

The elements of the strategic transition program are summarised in the diagram below.



### Water buyback

The integrated program aims to establish a clear and transparent market value for water entitlement across the GMID which will increase investment certainty, minimise social disruption and comply with ACCC requirements.

Water entitlements will be acquired from willing sellers on the condition that the sellers retire some or all of their delivery shares. This program will only be made available to farmers in designated areas with a low priority for modernisation. The program would create water savings by retiring the delivery share associated with water acquired in addition to purchase of entitlement. The water entitlement purchased will be transferred to the Commonwealth Government's *Restoring the Balance in the Murray Darling Basin* program.

The price paid for water will in the first instance be based on the market price so as not to distort the functioning of the water market. It is understood that DEHWA in initial conversations with representatives of the Torrumbarry Reconfiguration and Asset Modernisation Strategy has indicated that the Commonwealth is willing to pay a premium in recognition of structural adjustment needs for communities to adapt and become more able to cope with economic and climatic vagaries.

Where the sale of water entitlements lead to the retirement of delivery share, farmers will receive a payment reflecting the value of water saved.

### Payment of Termination Fees

When delivery share is retired, the holder of the share is required to pay a Termination fee levied by the infrastructure operator on behalf of the remaining irrigators. In low priority areas the project may pay part, or all of, the water seller's Termination Fee. The Termination Fee levied will be discounted to take into account cost savings arising from the retirement of local delivery infrastructure so long as this does not impose additional costs on remaining irrigators.

### Dryland Farming Transition

Farmers on retired irrigation lands will be provided with the opportunity to bring the land back into production as a dryland farm. The transition package will provide assistance to return the land to dryland farming enterprises, re-establish native vegetation or to participate in emerging opportunities such as carbon and ecosystem service markets. Our Catchment Management Authorities are already advancing initiatives in this area.

### **Domestic and Stock (D&S) Water Supplies**

Properties that are no longer supplied with an irrigation delivery service may require a basic D&S water supply. As part of the transition package, cost effective D & S supply will continue to be available to properties that participate through individual or group scheme pipelines supplied from the backbone. Alternative D&S supply sources including groundwater bores may also be considered with appropriate environmental safeguards.

### **Small Block Exit Grants**

The Commonwealth's Water for Future small block buyback program targets the removal of uneconomic small farms from the sector through a grant payment to irrigators to cease irrigation and remove infrastructure and permanent plantings. The project will collaborate with this program to the extent that the exit grant leads to retirement of delivery infrastructure and the generation of water savings.

### **Structural Adjustment Package**

The coordinated package will be supplemented with a regional scale adjustment and restructuring package to assist rural communities affected by the loss of income to towns from the consolidation of the channel network. This program would seek to provide a range of activities and resources to support local communities in need, including investment in employment options, retraining and skills development and relocation assistance.

It is proposed, subject to further assessment, that the structural adjustment package would be funded from the premium paid above the market price by the Commonwealth for water buyback. This would provide a direct link between the buyback program and the structural adjustment funding.

The adjustment fund would be administered by the State under local management arrangements. Regional Development Victoria (RDV) is a key project participant and will develop and implement a range of initiatives to support this project element.

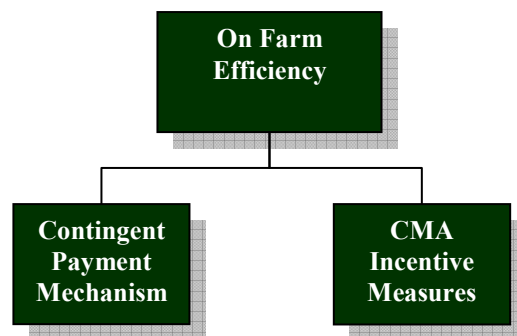
## On-Farm Efficiency

Many farmers in the GMID have made significant investments to improve on farm irrigation efficiency. The provision of enhanced service through the modernised backbone will assist these progressive irrigators to gain further benefits from their existing investments. However, the proposal recognises that there remains significant scope to improve water use efficiency on many farming operations. Accordingly, a key element of the coordinated program is targeted investment to promote best practice in on-farm water use efficiency.

The on-farm program is designed to accelerate on farm efficiency improvements by utilising funds available through the Commonwealth modernising irrigation program. The project will drive efficiency gains by providing a proportion of the capital cost of developing improvements in return for a share of the water efficiency savings

### Proposed Initiatives

A range of innovative methods will be employed to maximise the potential for irrigator participation in the on-farm efficiency program. (see diagram below).



### Contingent Payment Mechanism

A key element of the proposal is the two tiered payment arrangements that provide the irrigator with a strong incentive to spend the funds received on efficiency improvements rather than the purchase of water entitlement. Irrigators participating on the program will initially assess the likely volume of water saved through efficiency improvements in their farm. They will then be paid the market price for the agreed volume of water savings (e.g. \$2,200/ML). Once the on-farm efficiency improvements are installed the local DPI officers will confirm the works are completed. Upon receiving a confirmation the works are completed, the project will pay an additional amount reflecting the actual cost of undertaking the efficiency works (up to \$5,000/ML). If the work is not completed the farmer will only receive the market price for the water. Furthermore the resulting water savings will only be exempt from the 4% cap on outward water trade if the on farm efficiency works are undertaken.

This proposal contains a range of measures to encourage farmers to participate in the program, including retention of the ownership of the water until the works are completed and an option that can be exercised by the farmer of repaying the initial market price to retain the water.

### CMA Water Efficiency Incentive Measures

Catchment Management Authorities (Goulburn Broken CMA and North Central CMA) within the GMID area currently offer a range of incentives to offset the cost of on-farm water use efficiency planning and development.

The CMAs in partnership with the Department of Primary industries are key contributors to the integrated project and will lead the implementation of the on farm incentive program. Other innovative measures for improving on farm efficiency will be developed under the leadership of the CMAs.

## **Water Savings, Program Costs and Cost Shares**

Total irrigated water diversion by the GMID channel network from the Murray and Goulburn regulated systems exceeds 2,600 GL per annum (100 year LTCE average). As such the GMID channel system is, by a considerable margin, the largest single user of water in the Murray-Darling Basin.

The proposal seeks to significantly improve water use efficiency in the GMID system, both within the channel network and on irrigated farms. A key outcome of the efficiency improvement is the generation of water savings. The project will also realise significant volumes of allocation through the strategic water license buyback.

The discussion below provides a summary of the water savings and water allocation volumes generated by the project. A preliminary estimate of the costs of implementing the project is also provided.

### **Water Savings from Improvements in Conveyance Efficiency**

The NVIRP project will substantially reduce the volume of water lost in conveying irrigation water through the GMID channel network. Stage 1 of the NVIRP project is forecast to produce water savings of 225 GL at a cost of \$1 billion. This stage is to be funded jointly by the Victorian Government, Melbourne Water and G-MW.

The integrated proposal, incorporating Stage 2 of NVIRP, will generate further savings of 200 GL from reduced conveyance losses. The savings will be sourced primarily from retiring channels, upgrading inaccurate water meters and channel remediation (i.e. addressing channels with high seepage and leakage losses). Where the backbone is extended, savings will be generated by improving the efficiency of the relevant section of channel through the lining of the channel, bank rebuilding and the automation of channel regulators and outfalls.

The volume of savings expected to be generated by Stage 2 of NVIRP is 200 GL at an estimated cost of \$1 billion. It is understood that 90% of the NVIRP Stage 2 project capital cost will be funded by the Commonwealth Government (conditional on the project passing due diligence).

### **Water Savings from Improvements in On-farm Efficiency**

The on farm efficiency component of the integrated proposal focuses on improving the level of on-farm water use efficiency. Some 2,000 GL of water entitlement is held by irrigators in the channel network of the GMID.

With an investment of \$500 million, it is estimated that savings of approximately 100 GL may be possible on-farm. This represents a 10% improvement in efficiency on 50% of the farms in the district.

### **Water Entitlement Acquired through Buyback**

The proposal supports the buyback of water entitlements in high priority areas and the transition of unviable irrigation properties to other uses. The quantum of water available from this source is expected to be up to 12.5% of the water allocation held within the GMID area or approximately 250 GL.

The price paid for water will in the first instance be based on the market price. The current market price is approximately \$2,200/ML for high security entitlement.

### **Regional Structural Adjustment**

It is understood that DEHWA in initial conversations with representatives of the Torrumbarry Reconfiguration and Asset Modernisation Strategy has indicated that the Commonwealth is willing to pay a premium over and above the market price of water. It is suggested that this premium not be paid directly to water sellers but rather be directed to the program's structural adjustment fund, thus providing a direct link between the buyback program and structural adjustment funding.

The proposal identifies a price of \$500 per ML of water buyback for this preliminary analysis to structural adjustment and other transactional costs. This would generate a fund of \$125 million if 250 GL of entitlement was purchased by the Commonwealth from the GMID region, as suggested in the discussion on water entitlement buyback above.

### **On-going Costs**

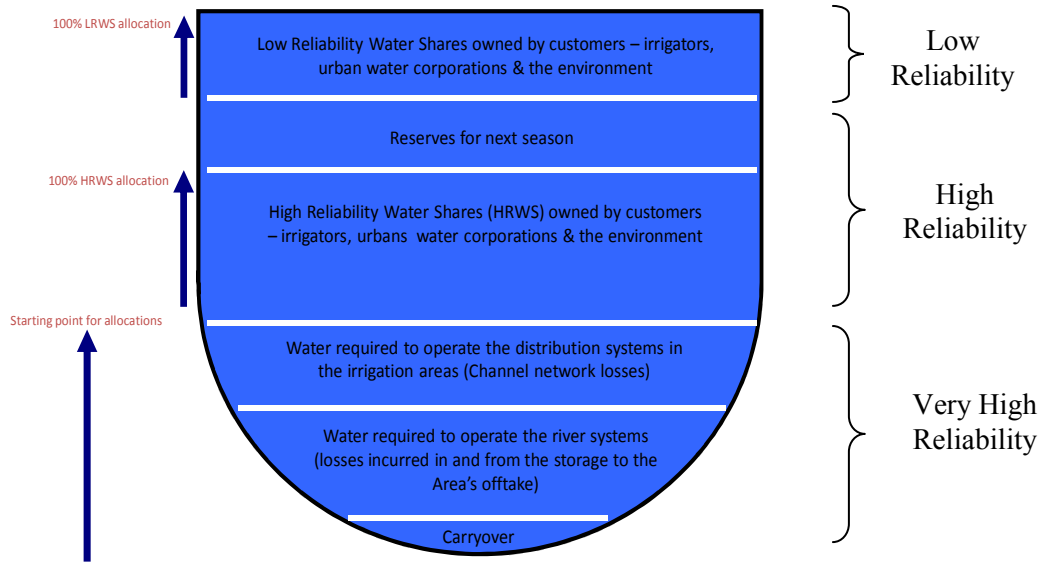
The integrated project investments will create modernised infrastructure that requires long term maintenance and upkeep. The cost of operating, maintaining and replacing (O&M,R) the project infrastructure will be funded by GMID farmers and customers, and accordingly on-going cost affordability is a critical factor in the design of the project. G-MW is currently undertaking a detailed review of the long terms costs of the modernisation program.

### **Reliability of Water Saved**

The relative reliability of the water products available in the GMID is illustrated in the diagram below. It shows that in the annual process used by G-MW in allocating available water to different users in the Goulburn system, channel network losses are allocated prior to high reliability water shares, which in turn are allocated prior to low reliability water shares. The project therefore provides investors with a broad mix of water products comprising:

- very high reliability water share from water savings achieved by improving conveyance efficiency in the channel network; and
- a mix of high reliability and low reliability water shares from water buyback and investments in on-farm efficiency.

**Figure 2.**  
**Reliability of savings in each water category with in GMID**



A summary of the program costs and proposed water shares are set out in the table below. The table also shows the relative reliability of water shares generated by each project element.

**Figure 3. Integrated Modernisation Project - Investment Response.**

	Integrated Modernisation Project - Program Element				
	NVIRP Stage 1	NVIRP Stage 2	Strategic Transition	On-farm Efficiency	Program Total
<b>Program Costs</b>					
Commonwealth		\$1,000 M	\$740 M	\$500 M	\$2240 M
Victoria	\$900 M				\$900 M
GMID Farmers	\$100 M				\$100 M
<b>Water Shares</b>					
Commonwealth Environmental Water Holder		100 GL	250 GL	100 GL	450 GL
Urban Bulk Entitlement	75 GL				75 GL
Environmental Bulk Entitlement	75 GL				75 GL
GMID Farmers	75 GL	100 GL			175 GL
<b>Reliability of Water Shares</b>	Very high	Very high	High & Low	High & Low	

**Cap on Water Trade**

Recognising the need to preserve the integrity of the irrigation communities of Northern Victoria, a 4% cap on outward water trade from GMID districts has been put in place with the support of the Victorian Government. However, within the context of the integrated project, it is proposed to exempt Commonwealth water purchases and share of water savings from the cap on outward water trade associated with this project proposal.

## Environmental Assessment

The integrated proposal will result in net environmental gains for the region and the MDB basin. In this regard Environment Victoria (EV) has indicated strong support for the integrated nature of the project including strategic transition, on farm works and structural adjustment. EV has advised that:

- where possible, water acquired by the Commonwealth government in Victoria is to be used to improve the health of Victorian tributaries and wetlands along the Murray River;
- water savings paid for by the state government are used to meet the environmental flow requirements of Victorian rivers identified in the *Northern Region Sustainable Water Strategy*;
- water recovery targets be set for each catchment and that these targets should be used to inform and prioritise areas for integrated investment, along with analysis of future reliability of supply and land capability assessment;
- the program undertake strategic purchase of properties to achieve sustainable land use practices;
- NVIRP undertake works to allow delivery of environmental water to priority sites, for example providing extra capacity in channels; and
- integrated investment can be used to drive biodiversity and ecosystem service benefits. Whole farm planning and land aggregation and restructure open up a whole range of economic opportunities such as revegetation for salinity and sediment mitigation, water quality control, carbon sequestration and biodiversity provision. Markets are developing for these ecosystem services and governments can enhance the benefit of their investment in water recovery by accelerating these developments.

A full environmental assessment of the integrated project will be undertaken for the future detailed project submission.

## **Economic Analysis**

### **Immediate Stimulus Impacts**

The integrated proposal would be able to commence immediately and achieve significant spend within the current year. It would leverage the single entity project management provided by NVIRP, and project delivery and construction resources already mobilised for the \$200 million of works undertaken in this financial year by NVIRP Stage 1 and the Shepparton Modernisation Project.

The project implementation requires a diverse range of economic activities and job skills, not solely heavy construction inputs typical of major infrastructure projects. The project will:

- engage contractors for civil construction, equipment fabrication, equipment installation, engineering design, stakeholder consultation, on-farm planning and administration;
- due to the specialised nature of the equipment required only being made in Australia or the cost competitiveness of Australian industry, purchase much of the project equipment and materials from Australian manufacturers - a number of whom are located in the region; and
- directly employ, regionally, a significant workforce of administrative and project management staff.

An independent analysis by the Industry Capability Network Victoria of expenditures arising from the early works program for NVIRP found that the project will have a significant local and regional economic impact. Furthermore, the analysis established that the project's only significant imported product was HDPE channel lining with all other inputs being Australian made including control gates, meter outlets, plastic pipes, valves and pipe fittings.

### **Costs Benefit Analysis**

A full cost benefit analysis of the integrated project will be undertaken for the future detailed project submission.