

## Rural Water Use and the Environment: The Role of Market Mechanisms

### **Preamble**

I make this submission as an Irrigated Dairy Farm Owner, in the Macalister Irrigation District of Victoria.

The Wellington Shire has the 3<sup>rd</sup> largest shire area in Victoria, located in the South Eastern portion of the State we have a diverse range of resource based industries operating within or adjacent to us. These industries range from Oil and Gas production, coal resources and the power industry, timber harvesting and processing industries, dryland agriculture (including, Beef, Fat Lambs, & Cropping), irrigated agriculture both flood and spray (including, Dairy, Horticulture & Cropping), a growing Tourism sector and a strong service sector for all these industries.

Our economy is primarily resource based. Water, through surface flows and groundwater drives our economy. From the Great Dividing Range down through the Red Gum Plains, back over the Strezlecki Ranges to the Coastal Plain and the Gippsland Lakes our productivity depends on water flowing from higher catchments, major rivers, the Latrobe, Thomson, Macalister & Avon rivers all flow through our shire and discharge into the the first of the Gippsland Lakes, Lake Wellington. Most of our shire lies within a rain shadow.

Our environment and our industries already suffer from the current diversion of this water, a lack of certainty for innovative investment and a lack of return for its use elsewhere.

### **Comment**

While I would agree wholeheartedly with these objectives, I believe that within our area there is a definite lack of specific economic data of our water using primary industries on which to base any decision making as our "irrigation area" production is not separated from other rain fed production within the Gippsland region. It is also considered that agricultural census data is likely to be unreliable as many small businesses such as farmers are likely to be minimizing production figures declared.

I would particularly like to draw your attention the preceeding statements and give some regard to them and our somewhat unique situation and pressures when considering the bigger picture, water is a driving factor in the economic, social and environmental values within our shire.

With regard to water markets and trading I would wholeheartedly support this but would ask that any loss or increased expense to a particular area should be considered. While there may be a better or higher value use of a specific volume of water there should be some recompense or value passed back to the catchment that has lost its use or amenity.

While it is obvious that the urban areas will always have a higher production value through value adding to nearly all production, there must come a time when urban areas have all the water resource and irrigated primary production ceases.

The proposed water markets are going to cost considerably more to administer than in the past, the primary beneficiary of this is the general public through higher value usage of water. I have some concerns with this concept, are the water authorities and environmental reserves going to pay for their trades on the system or are the irrigators going to have to pay to maintain the system for the public. Further there is some concern that Local Government Authorities will quite likely be a significant user of the proposed databases in valuing properties, with and without water as they trade. Will Local Government have to pay to access the information, will it increase the cost to value property, will it increase the number of objections Local Government have to handle? Who will pay for this, the dwindling number of ratepayers?

## **Issues and questions**

*Given the breadth of water efficiency issues relevant to the study, the Commission seeks guidance on the regions, types of farms and market mechanisms which are likely to offer the greatest potential net benefit from reform. The Commission is interested in information on possible priorities, including reasons for these priorities.*

Wellington's rural enterprises encompass a diverse range of irrigation types & methods, soil types, products and producers.

The Macalister Irrigation District is primarily a gravity flow, flood irrigation area producing Dairy Product for export with an increasing area of Horticultural production mainly in the free draining, fertile soils of the Avon River Valley which has recently been converted to a piped system by Southern Rural Water and is increasingly spray irrigated. There are also pockets of Horticultural production along the Macalister River Flats some vealer and beef production but principally Dairy. The Glenmaggie Dam is an annual fill dam which usually harvests approximately 1/3 of the passing flow in the Macalister river which with traditional rainfall provides about 70% of the irrigators agronomic need. 30% of the water harvested is unfortunately lost prior to delivery due to extremely high hydrological conductivity in the ageing channel system, poor delivery capacity and possibly some evaporation. Southern Rural Water are currently installing radio control automation to some structures within the system which it is hoped will lead to some improvement, they have also recently completed piping a particularly porous section of channel with significant water savings made. This water (about 750 mgl) was recently auctioned and realized an average of \$1850 mgl to local farmers.

Groundwater use is widespread across the shire with pockets of activity mostly defined by the date of introduction of moratoriums on allocation of the resource. Lateral Spray and Center Pivot irrigation was barely recognized in this area when the moratoriums were introduced and only the early investors had a chance to access this water. It is seldom traded and then usually only when a farm is sold. There are some serious issues within the area regarding groundwater, while our farmers are keen to use it there are large competing users such as the Oil and Gas fields where it is a by product of extractions, and the Latrobe Valley Coal Fields where it is also a by product of dewatering the Open Cut Mines, both these uses it appears are not publicly declared and according to the CSIRO's (Hatton Report) draw down the Latrobe Aquifer from each side of our area and the interconnections are only vaguely understood. Though the farmers in the Yarram area are losing 1 mt per year out of the water table. Further actions were recommended by the Hatton Report.

- 1 I would suggest that the greatest initial benefit would come from an open and transparent single public record of all water movement from its natural source.
- 2 That some value should return to the economy of the catchment in which it originated and all costs should be apportioned over all water removed from a catchment in an open and transparent manner.
- 3 That tradable water entitlement will naturally move water to its highest value use over time.
- 4 That rigorous economic studies should be done to ensure that correct decisions are made.
- 5 That the precautionary principle when implemented, should always be qualified by research following its implementation.

### *Farm management decisions*

One task for this study is to identify the main factors that affect water-use decisions on farms. Some factors may include utility charges and the traded price of water, the weather, the cost of alternative inputs, commodity prices, and the applicability and cost of irrigation technologies along with irrigators' awareness of such technologies.

*Given farm operations can be complex and involve managing multiple resources and inputs, how and to what extent, do the factors noted above affect on-farm water use and physical water-use efficiency? How does this vary across regions? What other factors are important?*

While this is not an area of expertise we offer the following comment.

Farmers use water to the best of their ability, it is an expensive input, but a very rewarding one if well managed, each farm is an individual operation and soils, stocking rates, labour availability, climatic variation and level of ownership will all drive how a farmer might manage the land and resources available. Generally the more fiscally constrained the operation the harder the operator will drive the management, higher stocking rates, higher inputs to make the payments. This puts considerable stress on younger farmers who are at high risk. It should also be remembered that timeframes are long in farming so rapid change will bring a high mortality to the at risk group. It should also be noted that this group will often be operating without much capital, often on a run down farm bought cheap because of the poor infrastructure, they are often the best and most progressive farmers.

*How do water-related farm management strategies (e.g. whole farm management plans) and current taxation arrangements or other government and utility policies affect on-farm water use and physical water-use efficiency?*

Whole Farm plans have rationalized infrastructure spending on farm, improve management decisions and lead to improved resource management and productivity. Caution should be used in changing what is defined as a whole farm plan though, as stated earlier time frames are long in farming and whims of government can mean a five year old plan is considered out of date, the farmer seldom thinks so.

Taxation incentives work well to encourage capitalized farmers to invest.

Other Government and utility policies. Caution should be used, some recent changes such as the new outlet structure are being questioned. A dethridge wheel continued to provide some water even if it jammed but the new structures may provide none at all if there is a channel failure, but the farmer will still be charged for the water he didn't receive though he had no control of the situation.

The study will also investigate farmer decisions to invest in irrigation technology and water-related farm management strategies, and whether there are any impediments or distortions in the market that may affect their adoption. Because decisions vary across regions and industries — reflecting factors such as the products being produced, scale of operation, biophysical characteristics of the land being irrigated, the extent and dependability of water supplies and whether water is pressurised — simple comparisons of technological uptake across regions and types of enterprises can be misleading.

*What are the key factors that affect on-farm decisions to invest in new irrigation technology or develop other water-related farm management strategies? To what extent*

*does reduced water use feature in these decisions (compared, for example, with labour or other input savings)?*

Labour is the driving force behind most infrastructure spending, agronomic need dictates water requirement and it is a poor farm system indeed where large savings can be made through on farm water infrastructure.

*Are there any factors restricting the uptake of new irrigation technology or water-related farm management strategies (such as a lack of awareness or information about on-farm effectiveness, or difficulties in accessing finance)? Are there any factors that may restrict irrigators' ability to make decisions regarding water use?*

Without doubt there is still a large gap in awareness, availability and impartiality of information. Farmers and particularly dairy farmers are time deficient and labour is problematic as so much specific expertise is often required. Obtuse issues such as lack of exposure to IT often compound the lack of access to information.

*If irrigation technologies or water-related farm management strategies improve physical water-use efficiency, is total water use reduced and, if so, what happens with the water 'saved'? Under what circumstances might the adoption of new irrigation technologies or water-related farm management strategies increase total water use and is this common?*

Generally improved water use efficiency is translated directly to higher production levels improved profitability and capital flow. Total water use is seldom reduced as 100% of right does not meet agronomic need in this area.

*Are there any regions or types of enterprises where impediments to private decisions regarding water use are especially significant?*

All Groundwater use in this area is potentially under threat from by product wastage from the energy industries.

There is a significant fear of losing further water and security from the Macalister supply to Urban supply, this is quite likely stifling infrastructure spending.

The efficiency of water harvesting, storage and distribution can have implications for water use on farms. In addition, the ability of non-farm users of water to participate in the water market will influence the allocation of resources.

*What impact does the efficiency of water harvesting, storage and distribution have on on-farm water use decisions? How large are these effects and do they vary across regions and, if so, why?*

Being in an area subject to relatively frequent flooding we are extremely conscious of the available water resource, the Glenmaggie Dam is a relatively small annual fill dam, inadequate to fully service the area it currently commands. That area is serviced by a network of earthen channels designed to provide water on a 30 plus day supply regime

and the agronomic need is for a 10 – 12 day supply for the dairy farms and a daily supply to the horticultural enterprises. It is inadequate, everyone would benefit, the public, the environment and the economy if we could just control the annual flows better.

The Macalister's environmental flows appear to be used as an environmental flow balance for the Thomson and Melbournes urban supply. Urban Water Authorities don't have to actually take the water, they are still using it.

### *Water related externalities*

- 4) There can be a number of environmental effects that result from harvesting, storing, distributing and using irrigation water. Examples include changes to hydrological conditions, habitat, water quality and ecological conditions. There can also be non-environmental effects on third parties such as on the reliability of water supplies. These effects can impact on community wellbeing and be favourable, adverse or a mix of both from an individual's or community's perspective. They can also vary across locations and over time.

*What are the major environmental and non-environmental third-party effects of irrigation activity in your region? Are there any differences across types of farming enterprises? What impacts (if any) do these changes have on community wellbeing and what is the size of these impacts?*

The major environmental effects of irrigation are well known and researched with remedial actions in place to rectify and minimise further impacts where possible, these programs should be regionally assessed and continued and expanded where effective.

The non-environmental effects are less well researched and complex to research. The economic benefit to the region from irrigated agriculture is interwoven with non-irrigated agriculture, industrial service industries, tourism and transport, defining which of these maintain a viable critical mass because of the irrigation industry is problematic. There is little doubt that irrigated agriculture is probably the largest single local contributor to Wellington shire residents incomes and the broader shire economy.

*How, and to what extent, are these issues currently being addressed by governments, utilities, irrigators or other parties?*

While other levels of government appear to be focusing on environmental concerns regional areas appear to be disadvantaged by the lack of specific economic and social data on irrigation industries and the flow on benefits of it. There are also some issues creating problems for rural Local Governments, legislation which does not clearly define responsibility for decisions by reference authorities to those reference authorities, this is

simply cost shifting the liability to Local Government.

*Are existing water markets providing clear signals on the 'true' value of water (including its value in social and environmental uses)? If no, why?*

What is the value of water in existing water markets?

This is possibly the problem.

### *Market mechanisms*

The Commission is interested in information that will assist in identifying and assessing market mechanisms that may address some of the impediments to the economically efficient use of rural water. Improving the operation of water markets in Australia, for example, could potentially go some way to increasing the economically efficient use of rural water.

*To what extent do water markets help on-farm water-use decisions? What factors affect decisions to buy and sell either seasonal water allocations or permanent entitlements?*

At this point water markets are too undeveloped to tell. In this area it appears that any water market will have to operate in a fast and efficient way to allow trading as Glenmaggie dam is annual fill with no ability to carry over water and seasonal allocations are unknown until the season is well underway.

*To what extent do water markets assist or hinder the management of any off-farm implications of water use, including impacts on the environment or other third parties?*

Water market is currently embryonic in this area, so it is very hard to tell.

*What impediments are there to trade in seasonal allocations or permanent entitlements?*

Above.

*Within the existing water trading framework, what changes could be made to the water market to improve the economically efficient use of water on-farm? What would be the likely costs and benefits of such changes?*

No comment.

The economically efficient use of water may also be improved by other market mechanisms. These can be targeted to help farmers achieve their goals regarding water use (including maximising profits, reducing risk or improving lifestyle) or to address the

lack of enforceable property rights that might be leading to socially important and undesirable externalities. As noted earlier, market mechanisms can help markets work better (such as by removing barriers or providing information), influence prices in existing markets (such as through taxes and subsidies) or establish new property rights.

In some cases such mechanisms already exist (such as 'cap and trade' markets for water in the Murray-Darling Basin) — although there may be scope for improving them or expanding their use. In other cases, new market mechanisms could be introduced (such as new markets for salinity trading or options contracts in water markets).

*Are there any changes to existing market mechanisms (in addition to reducing barriers to the water market discussed above), or new market mechanisms, that may either (1) help farmers make decisions regarding water use, or (2) address problems associated with a lack of enforceable property rights that might be leading to externalities from water use that reduce the economically efficient use of water?*

*In what regions and for what types of farm enterprises might these mechanisms be most appropriate?*

*What would be the likely costs and benefits of these mechanisms, and what key features could make them workable in Australia? Would they require changes to other existing policies or institutional arrangements and, if so, what changes would be required?*

*How would developments in water markets, such as allowing river managers to trade in water and the development of rural-urban water trade, affect the efficiency of rural water use and the level of rural water-related environmental externalities? Would these effects be positive or negative, small or large? How might any adverse consequences of such developments be addressed?*

In response to the above series of questions I would just state.

That I believe that there is a lack of consistent and complete data available to the public and to authorities in relation to water movements for all purposes, this is hindering good decision making.

There is inadequate social and economic data available at a sub regional level on which to base decisions.

There have been decisions taken under the precautionary principle that require follow up research to ensure they were justified and not the result of using inappropriate data sets or research methods.



### *Moving forward on reform*

The Commission seeks comments on how governments can best move forward to change existing market mechanisms or introduce new mechanisms. Information is especially sought on issues such as institutional arrangements, the appropriate mix of instruments and order of reform, reform priorities, significant adjustment issues that may arise, and appropriate processes for implementation, monitoring and review.