Market Mechanisms for Recovering Water in the Murray-Darling Basin
Submission to the Productivity Commission

Introduction:
This submission argues that a very low surcharge or royalty imposed by the Federal Government on all Murray Darling Basin water users would lead to a vastly more efficient use of the waters of the system, for domestic, irrigation and environmental purposes. It would also stimulate regional economies and employment.

Discussion:
The current water use in the MDB equates to roughly 12,000 gigalitres. However, most of this water is used in high volumes to grow low value crops through flood irrigation. The crops include pasture, fodder, grain and cotton. These are crops that use very large amounts of irrigation water for very small returns. For example, their total value is small compared with the value of similar products from Australia's dryland farming systems.

Various attempts have been made at putting a value on water so that the market would move irrigation to more efficient and higher value practices, but these have been stymied for various reasons including the interference of State Governments and many other vested interests, political and financial.

The Federal Government has been unable or unwilling to take control of the MDB as a whole and rationalise the use of its waters. Instead, it has committed to spending very large amounts of money, probably more than $10 billion, to increase MDB water flows. These mechanisms have been shown to be ineffective, inefficient, or at best, a very poor use of the money.

One option that the Federal Government may be able to take without breaking its convenants with the State Governments is to impose a surcharge or royalty on all water taken from the MDB. A surcharge in the range of 1 cent to 10 cents a kilolitre, or roughly one per cent of domestic water charges in Australia, would create a strong market signal that would be sufficient to substantially change water use from the MDB. A one cent a kilolitre surcharge equates to $10 a megalitre, or $10,000 a gigalitre, or about $120 million for the present estimated irrigation and domestic use of MDB water. Ten cents equates to $1.2 billion. All surcharge moneys would be reinvested in the MDB. The surcharge could be an addition to the present program or an alternative to it.

The surcharge would have a wide range of benefits.

It would change according to the river flows, so that in times of flood, all the present water users could help themselves at little or no charge.
Conversely, in times of drought, the surcharge would increase, to rapidly put a stop to a lot of the most wasteful of water uses. These uses are nearly all annual crops, resulting in the least long term damage to irrigation enterprises in times of drought.

A surcharge would produce an immediate cut in MDB water use.
At present, most water is drawn from the MDB without being metered, and there is a confusion of legal and illegal water uses. Initially, a surcharge would help finance metering, policing, and general control of water use. This would vastly improve our intelligence on the actual uses of the MDB waters.

Farmers, pastoralists and horticulturalists are used to industry-wide surcharges, which are well accepted as for the good of their industries as a whole. Domestic users of MDB waters, such as the

cities of Melbourne, Adelaide and Canberra, are very concerned about the state of the river system. The surcharge would be a very small extra burden on domestic water users.
The surcharge would help finance adjustment within the irrigation industry, particularly in the long term.

These include all the adjustments being discussed under existing plans.
However, the market signals from the surcharge would automatically bring about changes in the efficiency of irrigation systems and the benefits that flow from more careful use of water.
Flood irrigation is the oldest and least efficient of irrigation methods yet it makes up the vast majority of non-environmental MDB water use, estimated at more than 90 per cent. Modern irrigation systems use constant soil moisture monitoring, and optimum applications and timing of irrigation, often through sophisticated subsoil irrigation lines that minimise water loss through evaporation. They are also sustainable and avoid long-term saline poisoning of soils.
Similarly, irrigators would turn to higher value crops to ensure sufficient returns from their water use. There are many and varied niche and specialist markets in agriculture, but the trend would be away from pasture, fodder, irrigated grains and cotton, and towards horticulture, such as vines, fruit and nuts, and seed crops, oilseeds, pulses, and the like.

These are more intensive industries, with higher rates of employment per unit of water use. In the long term they will stimulate regional economies in many parts of the basin. That overcomes a key deficiency in the present approach – the threatened loss of critical mass in regional economies from water buyouts.

The surcharge would finance metering and policing of the entire MDB water use, which is required and is being paid for by the Federal Government in any case. The surcharge, even at a couple of cents a kilolitre, is likely to make a lot of flood irrigation practices uneconomic, providing a very large effect for a relatively small change. It will reinforce the importance of valuing water to the Australian population as a whole. Water use in many other catchments and aquifers in Australia are in urgent need of similar attention. A standard formula for Australia as a whole would make the system more equitable.

The Current Situation
This section argues that changes in flood irrigation technologies leading to vast increases in water use in the basin, where large amounts of water are used to grow low return crops, are recent. The MDB waters are over-allocated for irrigation, a natural result of the State-by-State control over irrigation licences in the system. So many licences were issued that they could never all be used. One mechanism the Federal Government is using to attempt to overcome the deficit in water flows by buying back some of the licences.

The proposal has run into considerable difficulties. The buy-backs are not effective. Only a small part of the water licences that have been redeemed translate into water saved for the system. Only a small part of the water actually saved for the system is likely to find its way to the intended users. The advantages of the buy-back are mainly in improving the condition of the catchment on the properties where the buy-backs took place. The buy-back has damaged local regional communities. By removing the water and therefore irrigated production, there has been a consequent impact on local employment, and in some cases this is seen as destroying a critical mass of employed people in individual towns or communities.

The buy-backs have unfairly rewarded a small number of highly sophisticated investors. Many of the licensees of water rights in the MDB were not charged a market price for the water they were allocated. Other investors have bought water rights cheaply in the knowledge that a buy-back would greatly profit them. The recent payment for water licences by the Federal Government of more than

$300 million to the Kahlbetzer family, one of Australia (and Argentina's) biggest farming enterprises is unlikely to benefit any of the actual residents in the MDB.

The buy-back system is taking far too long to serve the immediate needs of the MDB. The buy-back and associated expenditures on improving the infrastructure, irrigation efficiency and reduction in wasted water are expected to cost the Federal Government more than $10 billion.

The buy-back does not consider the value of the water to irrigators. While some water users are prepared to place very high values on their water, others cannot use the water if they have to pay for it. Others do not even use the water, so have seen little or no intrinsic value in the water.

The MDB is in a state of collapse environmentally. The wetlands along the river systems are badly stressed and the Lower Lakes are facing an environmental disaster, along with the RAMSAR listed Coorong. Despite the collapse of these river system environments irrigation continues in most river regions, and is unaffected in some high security irrigation districts.

The continuation of irrigation and the lack of information about catchments, farm reservoirs and dams and ground water use make it very hard to tease out how much impact the recent drought conditions have had on the MDB.

The damage being done to internationally renowned environments like the Coorong by the current arrangements are reducing Australia's environmental credentials around the world. The collapse of the Lower Lakes and Coorong water supplies has been likened to the Aral Sea disaster in the former USSR. Water quality is so bad in the lower reaches of the River Murray that salinity levels are approaching world health limits and significant outbreaks of blue green algae blooms would shut down the river altogether as a source of domestic water.

The Federal and State Governments are trying to establish a market for trading water, but the system faces many practical challenges and does not work at present.

Owners of water licences who sell water are profiting unfairly from the system if they had no intention of using their allocation in the first place. Other water licence owners are maintaining the viability of their property through water sales at the expense of the buyers who have no choice but to buy water for their perennial crops. Tandou Station, one of the Darling River's biggest users, is a recent example.

Water is an inelastic commodity that on paper suits trading, but not when its "pipeline" is a complex river system where water is lost through many causes and where no effective monitoring or tagging of water is available. Many thousands of kilometres of irrigation channels for MDB water makes the task even more complicated. State Governments are interfering in the free trade of water. Trading in water provides no market mechanism to safeguard environmental flows.

A change in farming practices about two decades ago altered the MDB irrigation equation forever. After almost 150 years of cooperation between states, the MDB has become a disputed resource in the past two decades. This has been due to a range of factors, and the one most popularly ascribed is a set of dry years that has dramatically cut inflows into the system. There is some truth in this, but the situation is not unusual for the MDB, and the history of the river is littered with drought, as well as flood.

The MDB has been widely used for irrigation throughout its history since settlement. Irrigation styles have changed over those years but one of the most inefficient and damaging systems of irrigation has become vastly more widespread since the 1980s. This is flood irrigation on to very

large pans of land that have been graded using laser levelling. The system uses lasers to guide large earthmoving machinery to create a very finely graduated field. Water is allowed to flow into the field and provides an even application for extensive crops, particularly rice, wheat and in a slight variation, cotton.

Previous systems of this style of flood irrigation were so inefficient that it was difficult to use them economically on a large scale even when water was abundant. In the MDB, earlier flood irrigation methods were used mainly for pasture, particularly intensively irrigated dairy farms along the river borders, and for horticulture, where water could be guided down rows. Attempts at large-scale flood irrigation usually resulted in uneven application of water, resulting in salt scours and poor crops.

The change to laser levelled flood irrigation saw much of the previously unused allocations of water licences taken up, particularly in New South Wales. In addition, laser levelling made it possible to prepare large water holding dams that filled and drained efficiently and were large enough to hold water for a season or more.

The history of flood irrigation of extensive crops is exemplified at Tandou Station in the west of New South Wales. This station had some large lakes that were fed by the floodwaters of the River Darling.

More than 30 years ago Tandou pioneered farming the receding waters of the lakes after a flood year and occasionally reaped extremely valuable crops by this method. That kind of incidental use of MDB floodwaters on occasional has evolved into an expectation of taking water for flood irrigation methods every year. Laser levelling provided the tool for the change. The cycle of development became a circle this year when Tandou Station traded away much of its water entitlement for the year in the search for higher returns.

Today, major flood irrigators like Cubbie Station have the capacity to harvest more than 500 gigalitres of water each year, and to store a total of more than 400 gigalitres yet their profitability is marginal. In addition, they can choose to release water back into the basin and replenish their stocks with new inflows without penalty.

The practice is common because the stored water in very large shallow dams suffers from very high rates of evaporation, elevating salinity levels. Saline poisoning is the inevitable outcome of long term flood irrigation practices in low rainfall areas, so large flood irrigators strive to reduce the salinity of their water whenever possible.
Unfortunately, the released dam water increases the overall salinity of the MDB.

Conclusion.
While over-allocation of water licences has been a cause of concern for many decades, the rise and rise of flood irrigation using laser levelling has been a major contributor to the present disastrous shortage of MDB water. A surcharge that would be affordable by most individual users of the MDB would wind back wasteful and damaging flood irrigation practices. It would improve the health of the river systems and stimulate more sustainable economic development.

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