

## ***Recovering Water for the Environment – The Shepparton Irrigation Area Total Channel Control Project***

A current priority for the Living Murray is feasibility assessments of infrastructure improvement projects for water recovery. This summary provides an overview of the above project and future directions. This is one of nine projects funded.

### **The Shepparton Region**

The City of Greater Shepparton has a population of 60,000 people, which is growing by 1.9% per year. The growth in population is being driven by the demand for rural lifestyle, cheaper housing and the suitability of the area for irrigation industries.

Irrigated horticulture and dairy are the key drivers of the Shepparton regional economy. Around 25% of the total value of Victoria's agricultural production is generated in this area. The irrigation sector supports a host of secondary industries in the Shepparton region, including food processing, equipment manufacturing and transport.

### **The Shepparton Irrigation Area**

The Shepparton Irrigation Area (SIA) is located within the local government areas of the City of Greater Shepparton and the Moira Shire. The SIA is one of six major open channel irrigation areas operated by Goulburn-Murray Water in the northern Victorian region of the Murray-Darling Basin. About 296 GL (billion litres) of water per year is diverted into the SIA from the Goulburn catchment. In delivering water to the 2,000 irrigation, domestic and stock customers, about 30% or 88 GL is lost in the 750 km long SIA channel network.

These losses occur by:

- channel outfall, which is the spillage of water from the channel system into the receiving river at outfall structures;
- leakage, which is the water lost through channel banks (generally above natural ground level), around the sides or under the foundation of channel structures and meter outlets, and through leaking seals in channel outfall gates and meter outlets;
- seepage, which is water lost through the bed or bank of a channel (generally below natural ground level); and
- evaporation.

### **How much water could be recovered?**

The aim of this project is to assess the potential to recover water for the River Murray by reducing the water lost from channel outfall and leakage. The focus is to improve the efficiency of channel irrigation in the SIA, and therefore reduce water demand at the SIA offtake on the Goulburn River.

Currently the majority of open channel irrigation systems are controlled manually with drop bars or gate weirs. A channel operator travels around a section of the channel network once a day, stopping outlets, adjusting regulators and monitoring channel performance. However, a once a day manual operation cannot effectively respond to unpredictable fluctuations in the channel water levels leading to water overflowing from the channel via the channel outfall. An average level of performance for a manual irrigation system is about 70% efficiency (i.e. 30% of the water entering the system is lost within the system or passes out the end of the system into the receiving rivers).

By automating the operation of channels using Total Channel Control™ (TCC) technology, there will be opportunities to recover water from channel outfalls as well reduce leakage and seepage. The system will enable remote operation of channels using battery powered irrigation gates. It is estimated that the automated system will lift efficiency to 80%.

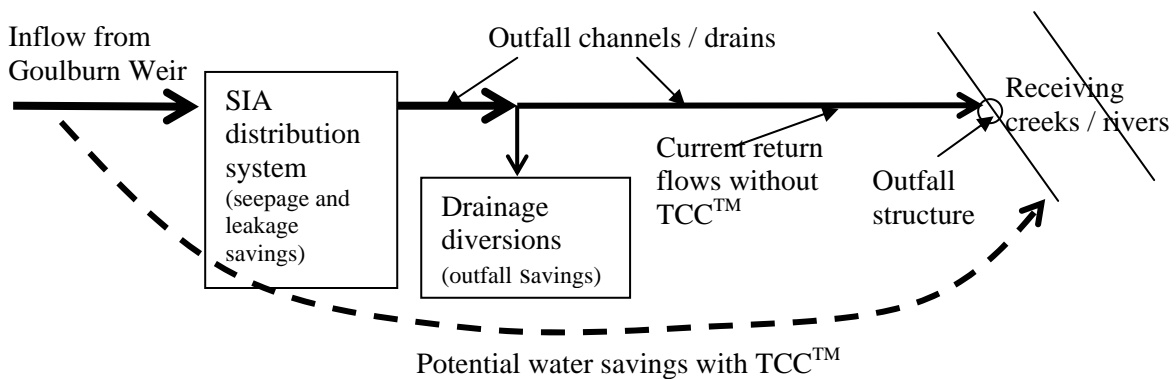


TCC assembly on CG2 pool. Photo: L. Wilkinson MDBC

### Water Savings

Investigations suggest that up to 20.6 GL of water could be saved through the installation of TCC™ in the SIA system. The technology will also be able to quickly detect, and therefore fix leakage at the source of leakage. Of the 20.6 GL, an estimated 9.6 GL of savings is to come from faster leakage repairs, whilst the remaining 11 GL would be recovered by reducing irrigation outfalls to drains. The outfall water that currently flows back to rivers from the SIA system is not considered a water saving, as it contributes to flow targets in the Victorian rivers.

However, this water could be supplied at different times of the year when there would be greater environmental benefit in the Broken Creek, Goulburn River or the River Murray. The figure below illustrates the current SIA operation and the potential water savings accruing from installation of TCC™ in the SIA.



### Project costs

The total cost of the project over a 30-year period is estimated to be \$86.5 million. However, some costs can be avoided given that Goulburn-Murray Water already manages the operation and maintenance of the channel system. Introducing an automated system will bring forward major periodic maintenance of channels and channel structures that would occur even without the project. As a result, it is possible to reduce the total cost of the project by these avoided costs to an estimated \$66.5 million. The unit cost of water recovered, based on the reduced project cost, is \$3,200/ML.

### Benefits and impacts

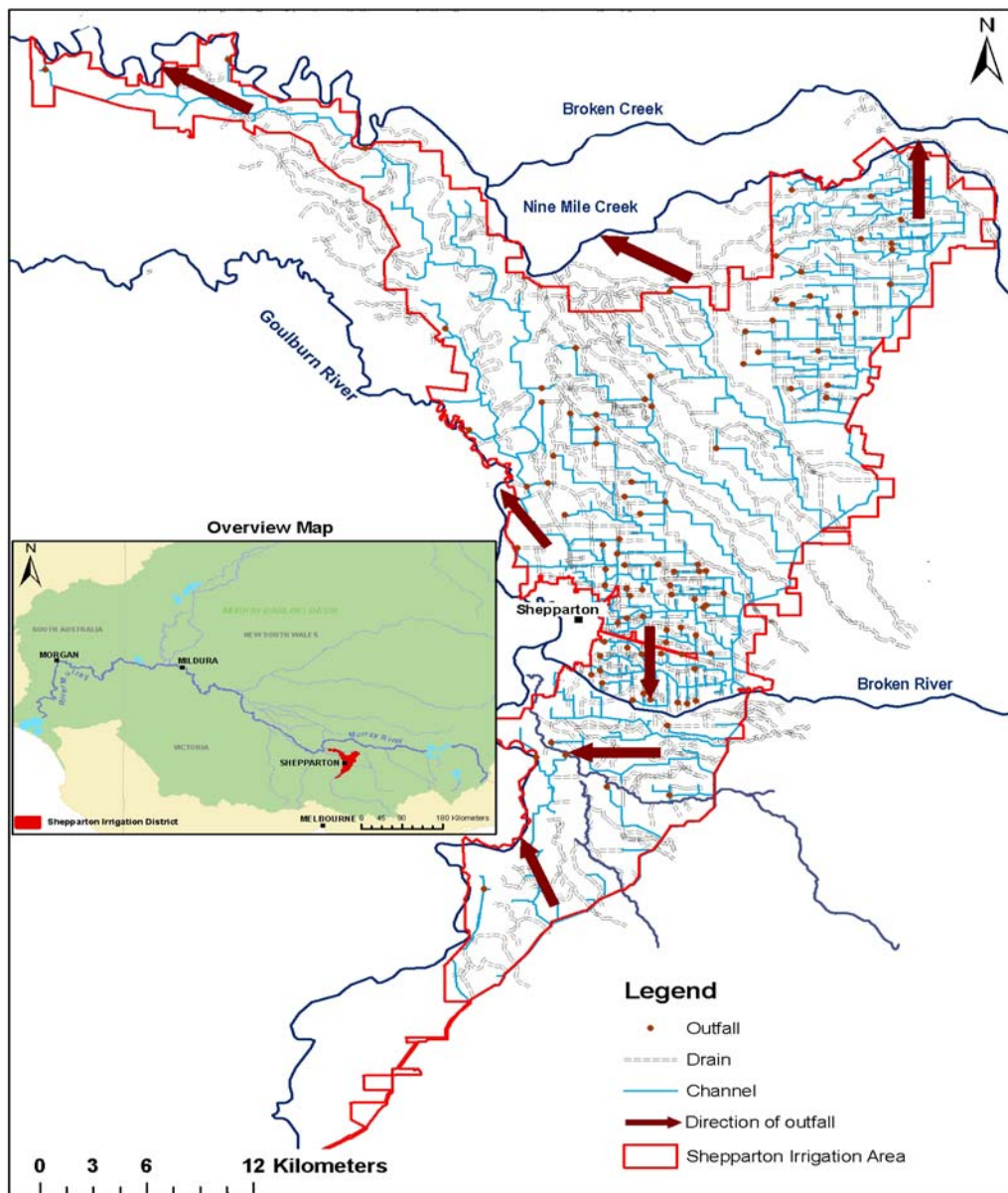
Currently, outfall water mixes with irrigation tail-water and surface runoff and can be quite high in nutrients at the point of outfall. This may be the cause of negative environmental impacts in the rivers and streams immediately downstream. Hence, diversion of some of these outfalls is presently encouraged to minimise risks to the environment. A reduction in outfalls is likely to benefit the downstream environment by reducing the volume of water causing this environmental damage. However, there will be some decrease in irrigation water available for drain diverters.

As well as benefits for the environment, significant benefits exist for irrigators within the supply system. Primarily, TCC allows an improved service through higher and more consistent flow rates, reduced notice of order and the immediate confirmation of orders. The improved responsiveness of the water delivery system will enable more flexible on-farm management.

## Where to from here?

The next step from this pre-feasibility assessment is for Department of Sustainability and Environment, in conjunction with key stakeholders — Goulburn-Murray Water and the Murray-Darling Basin Commission, to develop a detailed business case for the project. Detailed consultation with potentially affected irrigators will be undertaken.

The business case will be informed by a new project titled ‘Strategic Measurement Program – Goulburn System’, which will more accurately measure water movement in the SIA (and other Irrigation Areas in the Goulburn System) to enable a better estimate of potential water recovery.



*Map of the Shepparton Irrigation Area*