



# Investment into infrastructure – is it a viable option?

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## IN A NUTSHELL

- A pilot project in the Border Rivers-Gwydir region has road tested a program of Federal Government supported infrastructure investment in return for water entitlement.
- Tenders for infrastructure improvements ranged in value from \$50,000 to \$1.2 million, and \$4.6 million was awarded to support \$5.8 million worth of infrastructure modernisation.
- Projected total water savings are 2264 ML in total; and 1274 ML will be transferred to the Commonwealth Environmental Water Holder.
- One participant believes that infrastructure modernisation will keep water in the valley, enable irrigators to improve productivity and efficiency, and provide flow-on benefits to local communities.

*Irrigation can be a tough business and irrigators have made significant improvements in water management over the past decade. However, modifying and upgrading irrigation infrastructure to improve efficiency is a high risk, high capital expenditure option in these uncertain times.*

The pilot project NSW Sustaining the Basin: Border Rivers-Gwydir (the project) has focussed on the value of using infrastructure modernisation as an alternative to traditional 'buy-back' to return water to the environment.

The project provided an opportunity for irrigators in the Border Rivers-Gwydir region to upgrade irrigation infrastructure, improve productivity and water use efficiency, and adapt to reduced water availability, to help ensure the long-term sustainability of their irrigation industries and local communities.

The project also measured irrigator responsiveness to government funded infrastructure modernisation programs aimed at water recovery.

The outcomes of this project will assist in guiding the development and implementation of future infrastructure programs in other NSW Murray-Darling Basin catchments.

## Project background

The NSW Sustaining the Basin: Border Rivers-Gwydir project was implemented by Industry and Investment NSW (I&I NSW) in partnership with the Border Rivers-Gwydir Catchment Management Authority and funded through the Australian Government's Water for the Future initiative. The Australian Government provided a subsidy of up to 80% of the cost of the infrastructure investment in return for 50% of the saved water entitlements to be transferred to the Commonwealth Environmental Water Holder. The remaining water savings will stay with the participating irrigators to boost farm productivity.

The project was not simply a funding process, but a rigorous and robust program that included a significant training component,

technology demonstrations and on-farm water use planning, as well as a competitive tendering process to give irrigators confidence to take steps towards modernisation.

The project was also supported by an integrated communication plan and an extensive monitoring and evaluation plan.

Initially the program was to be delivered over a 12-month period, beginning October 2009, which proved to be a barrier to some irrigators participating in or proceeding to the tender stage. During this time irrigators were encouraged to attend training, complete an Irrigation Farm Water Use Efficiency Assessment (the assessment), develop and submit their tenders, and install the infrastructure.

The weather patterns experienced during 2010 and the time required to administer the overall process, in particular the transfer of water entitlement, meant the end date of the project was extended to 29 April 2011.

Despite time and administrative limitations, the feedback and participation numbers indicated a lot of interest in on-farm infrastructure modernisation to improve water management.

## Outcomes of the project

There have been a number of positive outcomes from the pilot project.

### Expressions of Interest

Even with tight project timelines, the response was favourable with 53 farm businesses representing 44 irrigators, or 55% of the eligible irrigators, registering a formal expression of interest.

Not all formal expressions of interest undertook an assessment or proceeded to tender; the main reasons being that the proponents did not want to give up water allocation, the timelines were too tight or they had changed their mind on the value of their project.

### **Irrigation Farm Water Use Efficiency Assessments**

These were rigorous assessments of farm irrigation system performance and management and provided essential information for managing the risk involved with major infrastructure changes.

A maximum subsidy of \$6000 was provided for the development of the assessment. Thirty-five were completed, representing 30 farm businesses, with an average cost of \$4420. The assessments encompassed 23,500 ha of irrigation land and 79 GL of Regulated River General Security Entitlement.

The assessments identified \$12 million of potential irrigation infrastructure investment and annual water savings of 5.9 GL or around 0.25 ML/ha per annum at a farm level.

The project provided clear evidence that the assessments:

- were highly valued by irrigators
- assisted in identifying infrastructure investment opportunities now and for the future
- increased awareness of the importance of on-farm water measurement and record keeping
- improved the quality of tender applications
- provided confidence to financiers when considering the financial arrangements.

The project has shown that independent professional advice, like that contained in the assessments, greatly assisted irrigators to identify current irrigation system performance, infrastructure improvement options and potential water savings; all prerequisites for sound financial decision making.

In a number of cases, participating irrigators decided against proceeding with modifying infrastructure based on the results of their water use efficiency assessment – they could not identify any opportunities to significantly improve their water management for the investment they would make.

### **Improving knowledge & skills**

#### **Training**

Through several initiatives irrigators had the opportunity to gain or improve their knowledge and skills to help decide whether or not to proceed with modernising infrastructure, as well as improving their ability to manage new infrastructure effectively.

A training program delivered in conjunction with some technology demonstrations was offered to irrigators to support the preparation of the assessments and tender applications. Thirteen workshops aligned to the types of infrastructure projects being proposed were attended by 177 irrigators and irrigation consultants.

The workshops offered addressed:

- centre pivot lateral move (national training course)
- drip irrigation systems
- surface irrigation performance assessment
- storage & distribution systems
- irrigation benchmarking
- water trading and security.

Feedback from irrigators indicated that, while they were interested in attaining new skills and knowledge, generally they lacked the time to attend the wide range of opportunities available to them. Despite this, the high number of irrigators and irrigation consultants who participated in the training events indicated there was a clear demand for information.

Of the tender applicants surveyed, 45% found that training delivered by I&I NSW assisted them in developing their tender application. Irrigators who attended one or more events found the information useful, giving them an improved understanding of irrigation best management practice to assist them develop future infrastructure projects.



*Peter Smith, Project Leader delivering the Centre Pivot Lateral Move National Training Program to irrigators in the Moree district.*

### Technology demonstrations

The Australian Government supported the demonstration of four irrigation technologies which had been recently developed by the CRC for Irrigation Futures:

1. IrrisatSMS
2. automation of furrow irrigation
3. evaporation mitigation (monolayer application system)
4. SISCO surface irrigation model.

The demonstrations were well received by irrigators with four field days attracting a total of 79 participants.

Despite some disappointment with the technologies not being commercially available, the feedback was that the project provided an opportunity to progress the technologies and gave irrigators the opportunity to observe the progress of these important advancements. In addition, the field days included a number of guest speakers on related topics, so participants were provided with information on industry best practice relating to surface irrigation and storage evaporation management.

A full report on the technology demonstrations can be accessed at: [www.dpi.nsw.gov.au/agriculture/resources/water/irrigation/sustaining-the-basin/resources](http://www.dpi.nsw.gov.au/agriculture/resources/water/irrigation/sustaining-the-basin/resources)

### Tenders

Thirty eight tenders were received in the two tender rounds and from these, 12 projects were recommended for funding and were successful.

Each tender was assessed by an independent Technical Assessment Committee (TAC) according to a set of criteria on technical soundness and value for money. The tenders were then prioritised and recommended to the Australian Government for funding.



Heath Estens at the bore and filtration site, which will supply water to a high-tech irrigation system that has been installed to maximise water use efficiency.

Unsuccessful tenderers from round one were given the opportunity to access technical assistance from I&I NSW extension staff to revise and resubmit their original tenders. This proved to be a success with most re-submitted tenders being accepted and the TAC reporting a significant improvement in their quality.

### Examples of projects undertaken

The types of infrastructure projects tendered for, ranged from fairly simple to very complex, and included:

- the installation of sub-surface drip systems
- storage cell construction to reduce evaporation losses
- repairing leaky storages
- channel works to prevent losses and improve recirculation capabilities
- the installation of lateral move, centre pivot and towable pivot systems
- the upgrading of sprinklers on existing centre pivot systems.

Projects ranged in value from \$50,000 to \$1.2 million with the total value of the tenders being \$5.8 million, and \$4.6 million (80% of the total) being paid in subsidies. The projected total water savings are 2264 ML, of which 1274 ML will be transferred to the Commonwealth Environmental Water Holder.

### The Estens Family, Moree

Until recently, the Estens family were primarily cotton growers. However, cut-backs to bore water entitlements meant cotton production was no longer an economic option for their business. They were looking for alternative enterprises for their farm 'Beela', to remain viable into the future.

Consequently, the Estens are currently developing a 160 ha citrus orchard with the assistance of funding through the pilot



The Estens' development includes a 10.5 km pipeline to pipe bore water to the orchard, which will significantly reduce transmission losses on the lighter soils.

project. The newly established orchard is being developed with a high-tech drip irrigation system to maximise water use efficiency and includes a 10.5 km pipeline to pipe their bore water, which will significantly reduce transmission losses on the lighter soils.

### Mark & Peter Winter, Moree

Mark and Peter Winter currently irrigate up to 1300 ha of cotton, wheat and pulse crops each year on two farms.

Peter Winter said his accounting of water at the beginning and end of the season showed there were significant losses that were worth investigating and recovering.

The funded project will allow water to be fully shared between their two properties and significantly reduce losses, particularly from evaporation by having the ability to move water from a large storage into a smaller storage.

In addition to this, works to minimise seepage will be completed and structures will be installed including piping for moving water around the farm more efficiently.

### Socioeconomic benefits

The impact of the NSW Sustaining the Basin: Border Rivers-Gwydir project on local communities looks very positive, so far.

All participating irrigators report their infrastructure projects will create more secure employment for their current staff, as well as inject a significant amount of funds into the local irrigation supply and contractor businesses. Dick Estens of Moree fully supports the project for these reasons.

He agrees that certainty of a reliable water supply is the next major challenge for irrigators and the only way to make more out of the declining water resource is to increase water use efficiency.



Mark and Peter Winter installed large pipe to allow water to be shared between their two properties, and reduce evaporative losses by being able to move water from large to small storages.

He believes this project has come at the right time for the region because it provides the opportunity to fast track the necessary infrastructure development needed to remain viable.

Regardless of enterprise or region, Dick believes that progressing with infrastructure modernisation keeps water in the valley, enabling irrigators to improve productivity and providing flow-on socio economic benefits to local communities.

### Infrastructure investment is win:win

The NSW Sustaining the Basin: Border Rivers-Gwydir project has shown that irrigators are interested in considering infrastructure modernisation as a way of improving on-farm water management and potentially, are willing to return water to the environment if there is adequate time to assess the options and make the decision in an informed way.

This project has also shown that infrastructure programs cannot be just financial incentives in isolation. They need to be supported by robust on-farm assessments and targeted training events to assist irrigators in their decision making. 🌞

### Further information

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Dick Estens of Moree participated in the NSW Sustaining the Basin: Border Rivers-Gwydir project and fully supports infrastructure modernisation projects.