



## Murrumbidgee Irrigation Urban Channel Pipelines

Assessment against Socio-Economic Criteria as part of the Off-Farm Efficiency Program



Murrumbidgee  
Irrigation

April 2023

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## Section 1: Overview

### 1.1. Project Summary

Murrumbidgee Irrigation (MI) is proposing \$62,031,216 of piping and rationalisation of Urban Channels to be funded under the Off-farm Efficiency Program (OFEP). The project will result in 2,612ML of water savings, of which 2,407 ML of water entitlements will be returned for the environment. The project involves replacing 47.4km of aging concrete and earthen urban supply channels, as well as 1.4km of leaking pipeline in the Leeton and Griffith areas, with 47.5km of new pipeline. The project also includes rationalisation of 33 escapes and a reconfiguration of the network for greater water delivery efficiency.

The pipeline projects will reduce the conveyance losses associated with supplying water to irrigators, stock and domestic customers, urban townships, and enhance community socioeconomic outcomes by repurposing open channels to land that benefits the community such as public paths and green spaces.

#### 1.1.1 Project Benefits:

The project will provide value for the communities of Leeton and Griffith, as well as the overall MI network by:

- Significantly increasing customer service levels and system capacity through precise water control and delivery throughout the supply network;
- Enhancing socio-economic outcomes by supplying water for urban green spaces, as well as providing the opportunity for local councils to deliver improved infrastructure in the form of pedestrian paths and community access;
- A reduction in mosquito borne diseases by eliminating open water sources for breeding in and around urban areas;
- Enhanced community, workplace and road safety through the elimination of urban channels adjacent to roads;
- Reduce water losses from the system via escapes, seepage and evaporation;
- Increasing regional productivity through water use efficiency;
- Providing further security of water supply to towns and industry, by allowing residents to connect to a raw water pipeline supply, thus reducing the burden on town water supply;
- Improved roadside drainage, and reduced road maintenance;
- Further enhancing delivery efficiency, building on existing outcomes from funding through the Private Irrigation Infrastructure Operators Program (PIIOP) and the current OFEP project for MI's Automation Finalisation in MI;
- Reduced operating costs; and

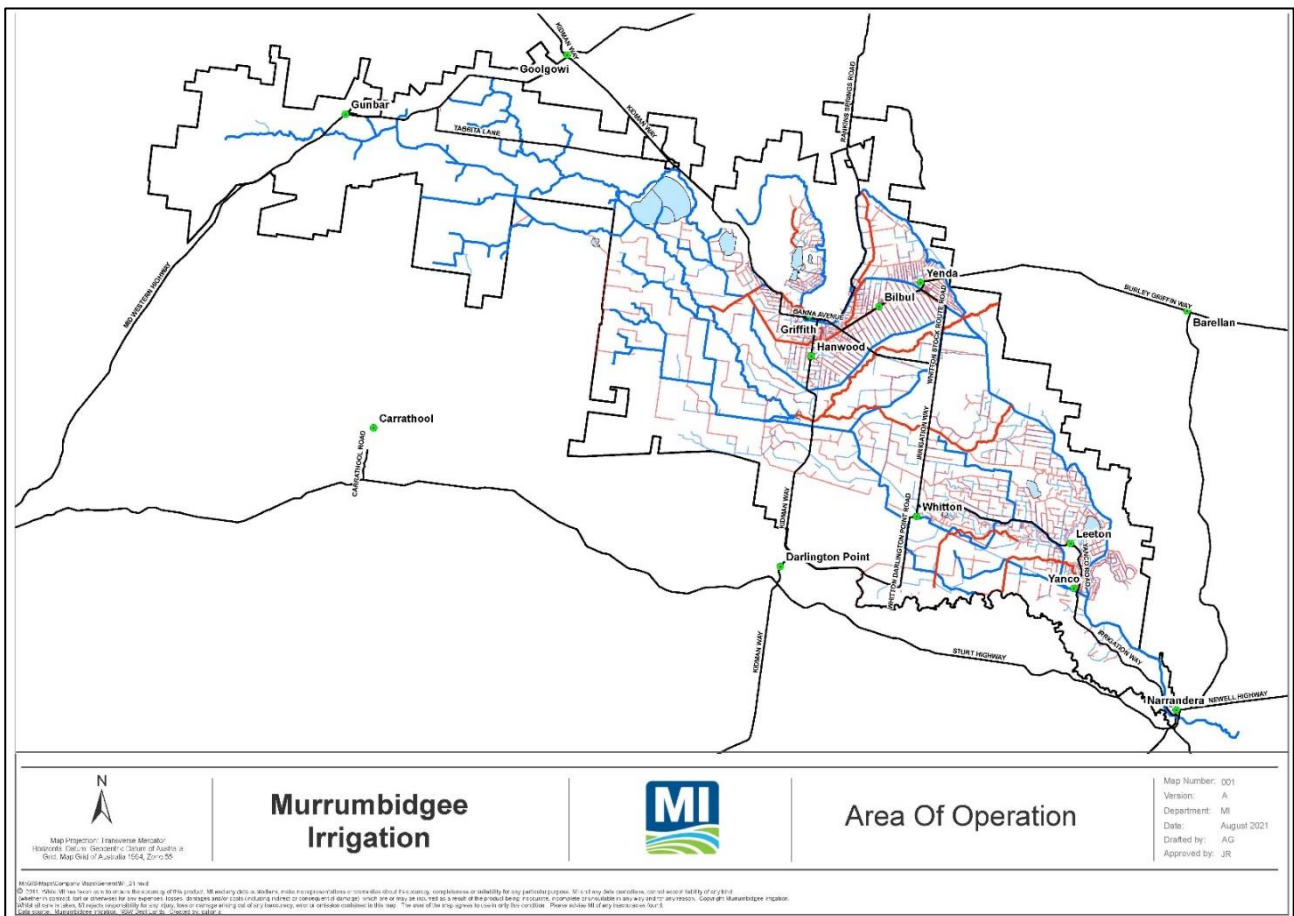
- Using local contractors to deliver enhanced service levels, competitive pricing and consistency across the project. Around 75% of capital expenditure is projected to flow to regional contractors and suppliers, with flow on benefits to regional communities.

## 1.2. About Murrumbidgee Irrigation

MI is one of the largest private irrigation companies in Australia, located within the Murray-Darling Basin in southern central NSW. MI services over 3,093 landholdings that is owned by over 2,300 shareholder customers within an area of 378,911 hectares, as shown in figure 1. MI’s core business is the delivery of water through an extensive integrated supply and drainage network. The irrigation water and drainage services provided by MI have helped create a diverse and highly productive agricultural region known as the Murrumbidgee Irrigation Area (MIA). The vibrant communities of the MIA offer a range of education, arts, entertainment, sports, and recreational activities. The MIA is home to over 50,000 people with the majority of jobs tied inextricably to the water MI supplies to farms and industry.

Established in 1912 following the commissioning of Burrinjuck Dam in the Snowy Mountains, the MIA was conceived by the government of the day as a purpose-built scheme, designed to feed and provide employment opportunities for a growing nation. The original vision for the MIA is as important today as it was over 100 years ago. In 1999 the NSW Government relinquished ownership of the MIA (and Districts) and MI now operates as an unlisted public company (limited by shares), owned by its customers.

Figure 1- MI Area of Operations



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## Section 2: Project Description

### 2.1. Project outputs at a glance



replacement of **47.5km** of aging concrete and earthen urban supply channels and pipeline



rationalisation of **33** escapes and a reconfiguration of the network creating greater water delivery efficiency

### 2.2. Project Scope

The overall proposed area of works is shown in Appendix 1. While broadly defined as the Griffith and Leeton areas, scope for pipelines falls within the Bilbul, Yenda, Beelbangera, Wamoon, Leeton and Griffith Town areas, as well as Lateral 253, southwest of Griffith Town.

While many of the proposed pipelines are replacing existing channel with no changes to the network configuration, there are some opportunities for reconfiguring the system to maximise efficiency.

Reconfiguration of the existing channel system ensures that MI is most effectively utilising resources to achieve the best outcomes.

A total of 27km of new pipeline is designed as gravity pipelines that have minimal ongoing operational and maintenance costs. Two low head pipelines will reconfigure the channel system and include:

- **Leeton Low Head Pump** – 1 x 60-70ML/d pump will supply approximately 13km of pipeline in the Leeton township area. Supply via a low-head pump reduces the required pipe size to supply necessary flow rate, thus making it a cost-effective option when supplying a large area.
- **Griffith Low Head Pump** – 1 x 30ML/d pump will supply approximately 7.5km of pipeline in the Griffith township area. To minimise the required pipe length, approximately 1.25km of existing open channel where no outlets exist, will be rationalised. The remaining channel will be supplied from the newly constructed low head pipeline.

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Images 1 and 2 below show the lined channel and the aging state, whilst Images 3-5 show earthen channels and their proximity to roads.



**Image 1. Lateral 24 – Corbie Hill Rd, Leeton.**



**Image 2. Lateral 54B – Lonnie Rd, Leeton.**



**Image 3: Lateral 25, Almond Rd – Leeton.**



**Image 4: Lateral 25, Almond Rd – Leeton.**



**Image 5: Lateral 27, Petersham Rd – Leeton.**

### 2.2.1 Project Delivery

Concept designs for the pipelines have been developed and utilised for the development of the proposal budget. MI continues to develop the designs and it is anticipated that 90% designs will be completed by May 2023. The costs for planning works have been met by MI, however further investment is required to deliver on-ground works.

MI has consulted with several locally based contractors that have the resources and skillset to deliver the works. The works will be delivered as sub-projects as it will require the engagement of multiple contractors to complete the works within the required timeframes as per funding requirements. The pipe sizes are relatively routine and can be procured in time for construction to commence at the completion of the design process.

If successful in its application, MI will procure and engage contractors for delivery of a portion of the gravity pipelines starting in July 2023. The design has been directed towards maximising the lengths of pipeline to be installed in parallel to the existing channels to be replaced, to ensure that construction may continue during the irrigation season. Construction can continue year-round with limited impact on access to water during peak irrigation demand.

As a mitigation for supply interruption due to construction, MI has invested in multiple portable pumps and associated pipelines ranging from 3ML/d capacity up to 40ML/d capacity to ensure that supply can continue.

MI has also engaged with several customers regarding the potential for outlet amalgamation and channel rationalisation. Amalgamations and rationalisations provide opportunities to enhance the efficiency of the supply system.



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## Section 3: Socio-Economic Criteria

### 3.1. Benefits to community

This project will have significant socio-economic impacts on the urban communities of Leeton and Griffith and their surrounding villages. Broadly, the socioeconomic benefits of this project can be broken into several categories including increased access for customers, local employment, liveability, and safety.

#### 3.1.1. Increased Access for Customers

By installing pipelines, MI will be able to offer a connection to a greater number of residential customers. While specific numbers around increased uptake are not clear yet, a thorough customer engagement plan is being developed to liaise with potential customers and offer them the option to connect to the pipeline when installed. Increasing the numbers of properties utilising MI water supply will increase the beautification of the town, as water will be utilised to water gardens. It is well documented that enhanced landscaping adds value to properties, with sources reporting attractive landscaping adding anywhere from 5% to 20% to a property's value. The benefits of improved landscaping also include the intangible benefits that are associated with increased enjoyments of property, as well as the physical, mental and social benefits that come from outdoors activities such as gardening and outdoor entertaining.

#### 3.1.2. Local Employment

This project will effectively support local communities through employment opportunities. A self-delivery model will be adopted to deliver this program of works. This provides significant benefits in terms of value for money and flexibility of delivery. Importantly, it provides MI with the flexibility to target greater participation of local contractors in delivering the works. In adopting the delivery model, MI has considered several factors:

- The works will primarily involve installation of HDPE pipelines, and civil infrastructure, including pump stations, of which MI and local contractors are skilled at delivering.
- Locally based contractors offer value for money due to local knowledge and the avoided costs of mobilisation/demobilisation.
- MI has accumulated considerable experience in the delivery of pipeline and modernisation projects.

The project will target 75% of capital expenditure (\$46M) directed towards local contractors. This approach will increase local employment and provide upskilling opportunities, with significant flow on benefits to the wider community.

MI will leverage established relationships with suppliers in the MIA and across the wider Riverina area. These relationships extend from procurement of services and products for civil works, including earth moving, gravel supply, concrete, HDPE pipe, formwork, wet hire of heavy machinery, and the supply of automation hardware and software.

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### 3.1.3. Liveability

The project will deliver positive socioeconomic outcomes by enhancing the liveability of rural towns. Enhanced liveability can be considered in the context of how urban channel areas will be repurposed, as well as the aesthetic appeal that this offers. As evident in Table 2, both Leeton and Griffith Shire Councils have placed emphasis on creating safe, active and healthy communities. To achieve this, they are looking to create urban green spaces, as well as build efficient active transport networks that encourage citizens to walk or cycle.

The urban channels included in the scope of works are in areas popular for walking and recreational activities. Green spaces and public paths facilitate an enhanced quality of life for citizens who utilise these, carrying significant physical, emotional, and social benefits. Since the COVID-19 pandemic, society has seen a shift in attitudes with many people relocating to regional areas, seeking alternate lifestyles to those offered in city dwellings. Liveability is at forefront of people's minds when choosing locations in which to live and raise families. Creating communities where there are opportunities to enjoy leisure activities, particularly for those with young families, will no doubt impact the choice of location.

### 3.1.4. Safety

As many of MI's open urban channels are positioned in relatively densely populated areas and near roads, they are an ongoing safety risk to the community, while also increasing maintenance costs to the local road authority.

The channels pose a risk to drivers and pedestrians, in particular children who may have limited knowledge or water safety skills. By either piping or rationalising open channels, the risk of accidents, including drownings, is eliminated. The enhancement of safety is also aligned with the repurposing of land for use as public spaces through increased and networked paths for pedestrian and cyclist safety around the towns.

A key selection criterion for local councils when determining suitable spaces for parks and recreation areas is the proximity to risks, where children will need ongoing supervision. With the elimination of open channels, the range of suitable areas for consideration as public spaces is expanded.

Additionally, open irrigation channels are a breeding ground for mosquitos that are responsible for the spreading of diseases such as Ross River Fever and the recent outbreak of Japanese Encephalitis. This risk would be eliminated through the piping and rationalisation of channels in these areas.

### 3.1.5 Alignment with local strategies

Table 2 below summarises how the project aligns with local and regional community development strategies.

**Table 2. Project fit with regional and local strategies.**

Strategy	Element	Project Fit
<b>Leeton Shire Council – Liveable Leeton 2035</b>	A safe, active and healthy community	Utilisation of space for bike paths and pedestrian networks for leisure and active transport.

Strategy	Element	Project Fit
	A thriving regional economy	Enhancing regional productivity through effective utilisation of water. Providing jobs to the local community.
	A quality environment	Facilitates reduction in resource consumption.
<b>Leeton Shire Council – Envisage 2024</b>	Liveability	Progression of the CBD Enhancement program.
<b>Leeton Shire Council – Ambition 2030</b>	Workforce Economy	Providing opportunities for employment using local contractors.
	Liveability	Allow for the utilisation of space for creation of facilities and opportunities to enable people to connect.
<b>Leeton Shire Council – Pedestrian Access and Mobility Plan</b>	Proposed new walking and cycle path locations.	MI channels are located in areas that have been identified as locations for new walking and cycle paths.
<b>Leeton Shire Council – Playground Strategy 2017-2023</b>	Consideration of potential park locations.	Previously open channels may be considered for public park locations once piped.
<b>Griffith City Council – Evolve Griffith 2021-2025</b>	A Location of Choice for Business Investment, Learning and Living	Supporting local economic growth through use of local contractors and employment.
	Valuing our Environment – Use and manage our resources wisely	The plan states to - <i>Manage Griffith’s water resources responsibly.</i>

Strategy	Element	Project Fit
Griffith City Council – Community Strategic Plan 2022-2032	Love the Lifestyle – Griffith is a great place to live	The project increases water efficiency, effectiveness and contributes to better quality water.  Replacing open channels in favour of pipelines enhances the visual appeal of the area.
	Growing our City – Growing our economy	Pipelined areas can be utilised for public paths and active transport networks.
Regional Water Strategies	<i>‘Deliver and manage water for local communities’</i> by improving water security, water quality and flood management for regional towns and communities.  Infrastructure – such as dams, weirs, pumps, pipes, channels and bores	The project increases water efficiency, effectiveness and contributes towards improving water security and water quality for regional towns and communities.
Future Ready Regions	Sustainable, secure and healthy water resources	The project increases water efficiency, effectiveness and contributes towards improving water quality for regional towns and communities.
Regional Economic Development Strategies	Vision to support the economic development of each region.  Townships of Leeton and Griffith falls under the Western Riverian Regional Economic Development Strategy.	One of the key benefits of this project is to enhance the socio-economic outcomes by supplying water for urban green spaces, as well as providing the opportunity for local councils to deliver improved infrastructure in the form of pedestrian paths and community access.

## 3.2. Preparing for the future

The proposed investment complements the works undertaken with funding provided to MI in previous PIIOP funding rounds and OFEP, which has resulted in approximately 90% of the network now modernised.

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Most importantly, the works will support the communities of the MIA by setting them up for success in a future with less water.

## 3.3. Benefits to industry

### 3.3.1. Building a sustainable irrigation future

The Project will assist the network, region, farmers and community by:

- Ensuring water released from the resource pool is fully utilised;
- Increasing regional productivity through water use efficiency;
- Enhance socio-economic outcomes by enabling councils to transform previously open channels in public access paths, thus maximising community leisure opportunities as well as public safety;
- Decreasing road maintenance costs for councils and ratepayers associated with deteriorating roads due to seeping channels and the removal of road bridges and culverts;
- Investing in regional communities through local contractors, with around 75% of capital expenditure projected to flow to local contractors;
- Significantly increasing customer service levels and system capacity through precise water control/delivery throughout the supply network;
- Providing accurate metering to ensure fair accounting of water extractions from the network; and
- Further enhancing delivery efficiency from the PIOP and Off-Farm Efficiency Program funded automated network.

## 3.4. Secure Water Supply to Towns

Town water supply in Griffith and Leeton is approaching peak capacity. Significant works will be required by councils to increase the town water supply capacity. By providing access to new customers, the project will assist to reduce the burden on the town water supply, and therefore aid in maximising town water supply security. MI has been working with councils to develop this project and will continue to work with them to deliver solutions to increase town water security.

## 3.5. Environmental benefits

This project has significant environmental benefits. By pipelining open earthen and concrete channels, run off from roads into channels will be eliminated, therefore reducing the transport of chemicals downstream. Furthermore, there will be reduced movement of trash and rubbish items in open channels, sometimes blocking structures and impacting flow rates to downstream customers and eliminate breeding grounds for mosquitoes.

Weed management is a large focus at MI, with the implementation of an updated Weed Management Plan in 2022. The Weed Management Plan seeks to reduce the total amount of chemical application by spraying channels at the right time for their specific weed growth. By installing pipelines, chemical application is eliminated. This has the added benefit of minimising any risk of herbicide drift near urban residences. Additionally, the transport of weeds downstream is also significantly reduced, as open channels are positioned near high foot traffic areas and roads which act as mediums for the spread for weeds.

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## 3.6. Supporting the Murray Darling Basin Plan

The project supports the healthy working basin objectives of the Murray-Darling Basin Plan and aligns with the Murrumbidgee Water Resource Plan. The investment in water dependent regional communities also mitigates some of the impacts of reduced water availability resulting from the Basin Plan.

## 3.7. Cultural impacts and benefits

The project has acknowledged the prior use of the land by First Nations People. Leeton and Griffith are located in the country of the Wiradjuri nation. MI will seek to continue the good relationship with local First Nations People created on past projects. Pipeline designs are utilising existing channel reserves and previously disturbed areas which decreases the risk of any impacts to cultural artifacts. Full assessments will be required as part of construction and environmental management plans for each individual sub project.

## 3.8. Community support and engagement

MI has engaged with Leeton Shire Council and Griffith City Council regarding the project. Support has been provided by both councils. Key themes of support that emerged from discussion with councils include:

- Enhanced water security for residents
- Reduced burden on town water system, by allowing connections for non-existing residents
- Enhanced road safety through elimination of channels adjacent to roadsides
- Reduced road maintenance due to seepage.

## 3.9. Positive Economic Outcomes

### 3.9.1. Management of future lifecycle costs

Just as managing current costs is important, so is managing the future costs of MI's asset base. As MI has been implementing its Automation Strategy, it has been able to reduce the forward capital needs of the business whilst reducing its operating costs, increasing the network utilisation and improving our service delivery. This has been achieved while ensuring our asset reserve meets the needs of the business.

MI is a cost recovery business that utilises an Asset Reserve to fund its future capital needs. The revenue that MI derives from financial and water investment funds the ongoing asset renewal program of the business. Robust forward 20-year and 5-year capital planning is utilised to test the adequacy of the Asset Reserve, which is reviewed by Management and the Board on an annual basis.

MI is experienced in not only the assessment of future replacement needs of its infrastructure but also the operational and maintenance costs. MI has approximately 90% of its area automated and is managing three active surge reservoirs as part of its normal operations. MI also operates and maintains 49 pump stations and over 194 km of pipelines. These assets are managed through the implementation of detailed asset management plans and associated maintenance and inspection schedules.

### 3.9.2. No impacts to the water market

Water savings are generated by reducing conveyance losses across the MI channel network. The conveyance losses include escape flows due to pipeline control, evaporation, seepage and leakage in

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open channels and meter accuracy in the conversion of unmetered outlets to metered outlets. Conveyance losses are provided for in MI’s bulk entitlement.

There will be no reduction in the amount of water available for consumptive use and MI’s net water balance will be increased by water savings exceeding the volume of water provided to the environment. This ensures there are no negative impacts on current water allocation enhancements traditionally provided to MI Irrigators.

### 3.10. Water savings shared between the environment and water users

The water savings are shared in alignment with the principle that the region is in a “net” better position regarding socio-economic outcomes as a result of completing the project. The current shared arrangement results in MI retaining 10% of the water savings.

MI will transfer 2,407ML of savings to the environment for funding of \$62M. Water savings by asset type are shown below in Table 3.

**Table 3. Water savings by asset type.**

<b>Asset Type</b>	<b>Water Savings ML</b>	<b>ML Returned</b>
Pipelines	1,685	1,516
Escapes	990	891
<b>Total</b>	<b>2,612</b>	<b>2,407</b>

# Appendix 1 – Project Location

