



## Murray Irrigation

Australia



Completion Date  
**AUGUST 2019**

Owner  
**MURRAY IRRIGATION LTD**

Engineers  
**SMEC (SNOWY MOUNTAINS  
ENGINEERING CORPORATION)**

Contractors  
**NATIONAL CONCRETE  
SOLUTIONS**

Products  
**CONCENTRATE, MEGAMIX II**

Project Type  
**DAMS & IRRIGATION**

As the largest privately owned irrigation company in the Southern Hemisphere, Murray Irrigation, Australia, continues to sustain its high performance in water delivery, security, and retention. Producing 1,000,000 mega liters of water annually and irrigating over 700,000 hectares of land, Murray Irrigation is responsible for maintaining over 4,000 bridge and culvert structures and 3,000 km of irrigation canals across the system. Since construction began in 1928, the company has built engineering feats such as The Lawson Siphon system and The Drop, Australia's first hydroelectric plant on an irrigation canal.

### Extending Service Life

After some years of use, it was evident that a large number (217) of bridge and culvert assets of varying age and stages of deterioration needed remediation. The concrete structures typically exhibited spalling and cracking. Therefore, a concrete waterproofing solution was needed that would be resistant to water erosion, cracks, and carbonation; a require-

ment specified in the engineering reports. Additionally, Murray Irrigation required that there was a minimum increase to asset service life of 15 years, thus being able to continue upholding the company's standards. Due to the size and scope of the project, application of the concrete repair products needed to be efficient and completed within 10 weeks due to the irrigation requirements of stakeholders.

Xypex **Concentrate** was chosen as the preferred product to meet the engineer's requirements for an anti-carbonation coating and because of the added benefits of utilizing Xypex Concentrate. Xypex Concentrate, once applied, becomes an integral part of the substrate, it seals static hairline cracks up to 0.4 mm, can be applied to damp surfaces, and is non-toxic. All these features provide added protection and durability through the waterproofing of concrete and were necessary in the reparation of Murray Irrigation's bridges and culverts.

Application-wise, the ability to spray-apply the Concentrate coating meant that the applicator, National Concrete Solutions, could apply the product efficiently and thus increase time savings. Furthermore, since Xypex Concentrate is permanent and does not require re-application, ongoing maintenance costs have been eliminated for Murray Irrigation assets.

**Megamix II** was chosen as the preferred product to meet the engineer's requirements for a repair render for deteriorated concrete surfaces applied at a rate of 20 kg/m<sup>2</sup>. As opposed to competitors' high strength repair mortars, Xypex Megamix II contains Xypex's unique crystalline technology, has high strength yet low shrinkage, and adheres excellently to damp concrete.



*Spray Application of Xypex Concentrate*

### **Fast Application**

During the application process for the bridges and culverts, the ability to dry spray (guniting application) Megamix II resulted in on-site efficiencies. This was a major factor in the overall project success given the volume of product which needed to be applied and the strict timeline.

As a result of using Xypex Concentrate and Xypex Megamix II, 217 structures were repaired and coated in 9.5 weeks. 11,457 m<sup>2</sup> of concrete was treated with Xypex Concentrate and 10,908 kg of Xypex Concentrate was used across the project, with an overall application rate of 0.95 kg/m<sup>2</sup>. 6,661 m<sup>2</sup> of concrete was

repaired using Xypex Megamix II and 134,752 kg of Xypex Megamix II was used throughout the project, with an overall application rate of 20.23 kg/m<sup>2</sup>. Whilst Xypex Concentrate and Megamix II proved to be highly effective in rehabilitating the structures, the planning, productivity and application skills of contractor National Concrete Solutions were essential to the successful and timely execution of this project.