

# NORTHERN ADELAIDE IRRIGATION SCHEME



**DATE: OCTOBER 2019**

**CLIENT: SA WATER**

**GEOMEMBRANE INSTALLER: GEOTEST**

**CIVIL CONTRACTOR: LEED ENGINEERING**

**LOCATION: KORUNYE, ADELAIDE**

## COOLGUARD® OASIS

### ADVANTAGES

Coolguard® geomembrane is formulated with Dupont Elvaloy® (KEE) as part of a tri-polymer alloy. The Elvaloy® polymers are tough plastics developed for homogeneous blends with other polymers, because they are resistant to hydro-carbons and other chemicals.

Coolguard® provide the engineer and end user with a product for many applications where chemical resistance, high physical strength and other unique properties are necessary.

Coolguard® withstands a broad range of chemicals with little or no deterioration of physical properties. The superior performance coupled with the flexibility of the Coolguard® geomembrane is the result of the combination of select polymer blending, stabilisers and the unique reinforcing mediums.

**PROJECT DESCRIPTION:** The Bolivar Waste Water Treatment Plant is one of the largest of three SA Water sewage treatment plants in metropolitan Adelaide. It produces recycled water which is provided to farmers on the Adelaide Plans near Virginia. The project with Geofabrics was upgrading the infrastructure to deliver and an additional 12 GL per year of recycled water to be suitable for irrigation. Phase 2 was to construct recycled water storage infrastructure to the area north of the Gawler River, which enabled a major new irrigation area to be built.

The recycled water storage included two 200 megalitre earth bank storage ponds. The ponds storage capacity was designed to cater to future growth in the area for at least the next 20 years. As a result of this, the design needed to allow for this design life. Coolguard Oasis 1.14mm geomembrane **typically** this has a 20 year warranty but if used with a 1.52mm floating cover it extends to 30 years. This is unrivalled by any equivalent geomembrane. Improved UV and weathering performance are due mainly to the Elvaloy technology that enables the PVC alloy to be not only highly flexible but also remain flexible and UV resistant for the 30-year life. The extended 30-year warranty is not only 10 years longer than most other equivalent geomembranes, but it comprises a 20 year straight component with the subsequent 10 years being prorated. This means at the 20-year mark, if normal weathering has occurred, 100% of the cost of liner can be replaced at the expense of the manufacturer.

Choosing this geomembrane significantly reduces the risk taken by the stakeholder, SA Water, for the life of the storage ponds. Also, Bidim A64 cushion geotextile was chosen due to its Needle-Free component. Needle punched geotextiles are manufactured by punching continuous filament polyester strands with hundreds of needles. These needles are so thin they can snap off during the process, which is quite common. Geofabrics' manufacturing plant in Albury, NSW can use a detector to identify and manually remove any needles which would inevitably puncture the liner it is specifically designed to cushion. T5 Trinet drainage net was included and chosen in the design to allow any leaks to pass into a sub-liner leak detection system and essentially allow any leaks to be identified and located.

Other products were considered, particularly for the liner; however, it should be noted that not all geomembranes are equivalent. Extensive product testing, product performance and AS4020 approvals were all part of the decision-making process.

Geofabrics were able to support the project and products with manufacturing quality assurance (MQA) on time such that no delays resulted due to supply. Using Australian Made geotextiles was an added bonus to the project with the guaranteed quality that comes with Australian Made, the risk of any future problems from the liner system arising is minimised.

Geotest carried out the liner installation for Leed Engineering. The liner was able to be prefabricated in their yard, undercover and out of the elements. Prefabrication is possible with Oasis due to the flexible nature of PVC-alloy. Its flexibility allowed it to be folded into panels and then further welded onsite without the risk of stress cracking. Prefabricating also significantly minimises time onsite welding and less time on site means reduced risk with less time spent around earthmoving equipment.

The ponds are in full operation and supplying water to the surrounding community and agriculture operations. Should any damage occur during the pond operations and design life, the Coolguard Oasis liner can be easily repaired due to its flexibility and weldability, which will remain for the life of the product. By using premium products like Coolguard Oasis and Australian Made geotextiles, SA Water ensured that maintenance would be minimised throughout the life of the pond. Supporting the Australian economy through Australian manufacturing is a bonus.

