



**CASE STUDY:**

# **WATER STORAGE POND**

**MORGAN, SOUTH AUSTRALIA  
DECEMBER 2018**

**CLIENT: SA WATER**

## **BIDIM C CONDUCTIVE GEOTEXTILE**

bidim C Range nonwoven geotextile is the World's first commercial conductive geotextile made possible with imgne® X3 geotextile graphene technology.

It has been designed to provide an effective, lower cost means for designers and installers of lining systems for landfill, tailings dams and water storage facilities to undertake liner integrity surveys in newly constructed containment cells, providing reliable leak detection of liner pin holes down to 1mm in diameter.

Using bidim C Range reduces the need for water in surveys as a circuit can be completed without using water and/or relying on a wet subgrade. This technology is particularly efficient in dual lining applications when installed below the primary liner.

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Smarter Infrastructure

A \$15 million upgrade to SA Water's Morgan Water Treatment Plant was undertaken to help meet future demand and further enhance the quality of drinking water to more than 130,000 regional South Australians.

The upgrade included the construction of a 30 ML earth bank dam with the civil earthworks and construction carried out by Leed Engineering. Geotest was engaged as the lining contractor to install the various layers within the dam liner as well as test for any leaks within the sealed Oasis liner.

The liner system comprised a series of Geofabrics supplied products which included (bottom to top):

- Drainage Layer: M5 Flownet with A14 Geotextile Laminated
- Cushion Layer: A64 Geotextile
- Secondary Liner
- Conductive Layer: bidim A19C
- 30 year Liner: Ethylene Interpolymer Alloy (EIA) Oasis 1.14 mm
- 30 year Floating Cover: EIA Oasis 1.5 mm

The M5 Flownet was chosen as a drainage blanket to enable any leakage or sub liner flows to be channeled towards the dam's subsurface sump and gravity disposal pipe.



> Water Storage Pond



Drone footage of the Morgan Water Treatment plant by SA Water.



A64 Geotextile cushion layer over the drainage layer.



Pictured is the 30 year Liner: Ethylene Interpolymer Alloy (EIA) Oasis 1.14 mm.

The cushion layer, A64 geotextile, was chosen due to its proven capability as a heavy cushion geotextile. Geofabrics' Centre for Geosynthetic Research, Innovation and Development (GRID) has proven through extensive testing that A64 is ideal for cushioning liners in applications such as this one.

bidim C, a graphene coated conductive geotextile, was utilised to enable real time quality assurance testing for existing holes within the liner or welded joins. The process of spark testing can pick up pin holes not visible to the naked eye, and the conductive geotextile, bidim C improves this process as it is 100 times more conductive and effective than the previous method which comprised wetting up of the subgrade. Relying on an evenly wetted subgrade for conductivity and spark testing can be difficult and should not be relied upon to ensure a current is evenly distributed below the liner. bidim C makes this process simple, effective, quick and safe.

The Oasis liner and floating cover consists of an Ethylene Interpolymer Alloy (EIA) and was chosen due to its 30-year design life, its unrivalled chlorine resistance and its ability to be stored for extensive periods (unlike its counterpart CSPE which has a specified shelf life). Furthermore, the installer confirmed it is extremely easy to weld and "looked great", being tan in colour.

The head contractor, Leed Engineering, also expressed their appreciation to Geofabrics for supplying a product that was simple to install.

Geotest installed all the products without any hitches and were extremely pleased with their first use of the Oasis floating cover and liner.

The storage pond is now commissioned and in use, supplying 130,000 regional homes with safe, clean drinking water for at least the next 30 years.