

CASE STUDY:

CONTAINMENT

Clarence Colliery

LITHGOW, NSW

MAY 2017

CLIENT: CENTENNIAL COAL

ELCOSEAL

ELCOSEAL Geosynthetic Clay Liners (GCLs) are used as a lining system in landfills and waste containment structures, and for liquid containment in effluent ponds, wetlands and canals.

Australian made ELCOSEAL GCLs consist of a layer of bentonite bonded between two layers of woven and nonwoven geotextiles. The needle-punching process reinforces the bentonite layer with thousands of fibres, maximising the product's internal resistance. An additional heat treating process called "thermal locking" secures the needle-punched fibres, further improving strength and performance.

ELCOSEAL GCLs can replace thick, compacted clay layers in composite liners and caps, thanks to the fast swelling sodium bentonite clay liner. This creates a highly effective containment barrier. ELCOSEAL GCLs can self-heal around holes or punctures so there is less chance of leaks due to installation damage.

Centennial Coal at Clarence Colliery, near Lithgow NSW, needed to construct a sludge lagoon for the effluent of their coal washing facility.

Centennial Coal's consulting engineer, GHD, recommended a Geosynthetic Clay Liner (GCL) to line the lagoon as GCLs can be installed by any earthmoving crew and they are easier to lay than HDPE liners which often require welding by specialist contractors.

Clarence Colliery tuned to their onsite contractor, Henry Plant and Equipment Hire, for an installation solution. Henry Plant and Equipment Hire approached Geofabrics for their recommendation. Geofabrics proposed using Elcoseal X1000 which is a high quality Geosynthetic Clay Liner. Elcoseal has bentonite clay in powdered form sandwiched between geotextiles. The Elcoseal is covered by 300 mm of soil. When the bentonite first comes into contact with water, the bentonite swells against the back pressure of the soil cover to create a water proof seal. This solution was accepted by GHD.

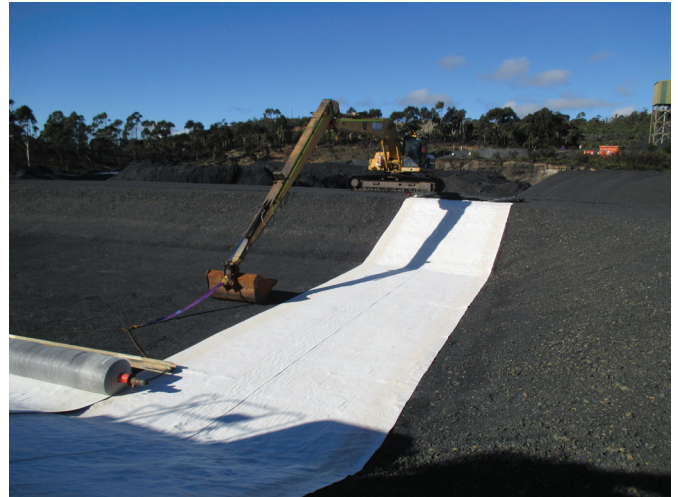
Clarence Colliery ordered 3,000 m² of Elcoseal X1000. Henry Plant and Equipment Hire's team shaped the lagoon basin and compacted the subgrade and installed Elcoseal X1000 GCL per Geofabrics' detailed installation guide. Geofabrics was available to Clarence Colliery, Henry's and GHD to explain the installation procedure and provide onsite advice. The longitudinal joints were simply lapped, as Elcoseal has extra bentonite clay on its edges to ensure a water proof seal. The transverse joints or anywhere the Elcoseal rolls are cut are sealed with a bentonite paste supplied by Geofabrics. This pasting procedure was explained to Henry's crew by the on-site Geofabrics support.

> Steamranger Level Crossing Case Study – Continued.

Geofabrics provided a lifting frame to assist in the installation. Henry's used a long reach excavator as shown on the right to be able to install the Elcoseal from the top of the lagoon batter. Henry's planned the installation around the weather forecast, to ensure that it did not rain on the Elcoseal while it was being installed.

The installation was achieved in the scheduled time, and a water proof sludge lagoon was delivered to Clarence Colliery. The installation was on budget.

For more information, please contact Geofabrics Sydney Office.



Installation of Elcoseal X1000

A long reach excavator, along with Geofabrics' lifting frame, were used to roll out the GCL