

Low Permeability Cement Bentonite Cut-off Wall - Woodlawn Bioreactor, Goulburn, NSW



A Cut-off Wall was required to prevent the ingress of very low pH groundwater into the Bioreactor.

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Project

In order to maintain correct operation of the bioreactor a groundwater barrier was required to prevent water inflow into the site.

Soil Conditions

On completion of mining the base of the pit was backfilled with mine waste consisting of poorly graded granular material ranging from coarse sand to boulders. The wall was required to extend through the backfill to bedrock at 8m to 10m. The inflowing groundwater was reacting with the mine waste to result in groundwater with a pH of 3.0 to 4.0.

Solution

Following consultation with the engineer and the site owner Keller proposed a cement bentonite cut-off barrier excavated under self setting slurry. By adopting Keller's proven slurry mix the owner saved the time and cost of laboratory testing to design a suitable mix and allowed a rapid start to the project.

Construction

The trench was excavated approximately 600mm wide using a specially modified long reach excavator capable of digging to approximately 12m in the filled soils. The slurry was batched on site using Keller's high capacity proprietary Colcrete colloidal mixers. The thorough mixing provided by these mixers ensures that all particles are properly hydrated, vital in ensuring the low permeability of the slurry mix.

Quality Assurance

Regular testing of the mixed slurry parameters and sampling of the slurry for laboratory testing provided Quality Control and Assurance of the final wall.

Specialist Geotechnical Contractor:

Keller Ground Engineering Pty Ltd

Owner:

Collex Pty Ltd

Consulting Engineer URS