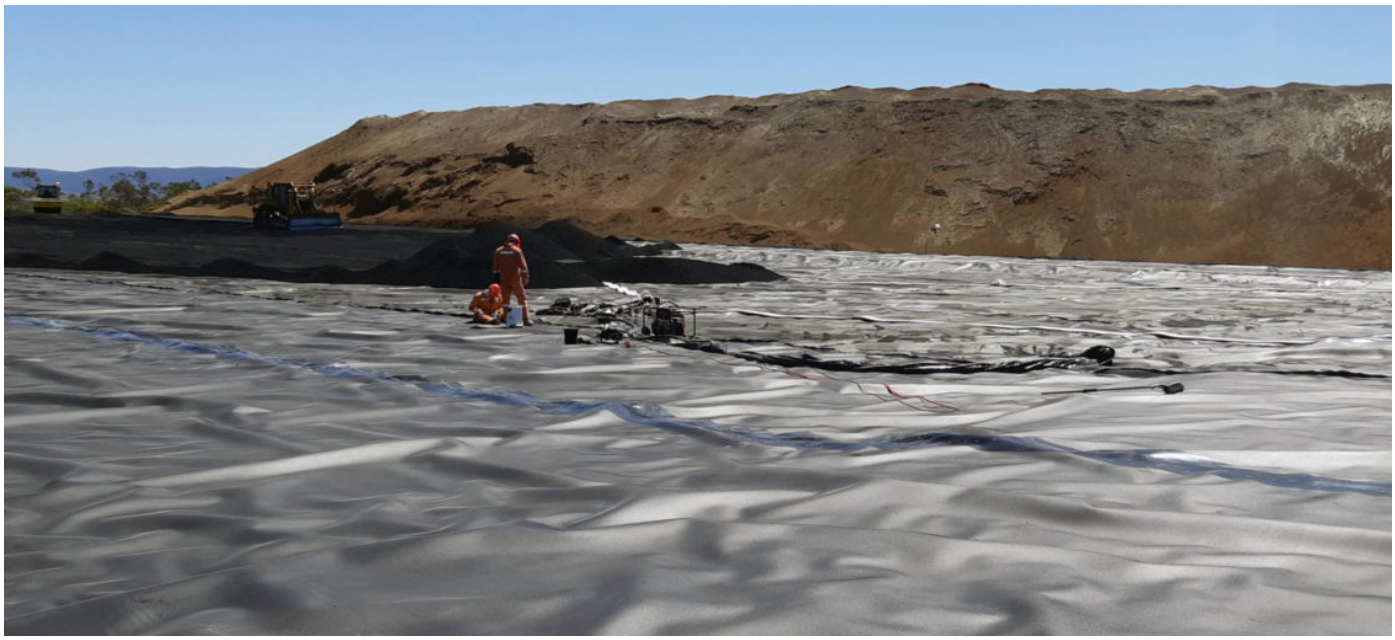
Project Profile

Extension of Paragoethite Product Storage Pad



Client	Beca
Location	Port Pirie, South Australia
Duration	November 2018 to February 2019
Contract	Lump Sum Construct Only
Cost	$1.2 million

Project Overview

Nyrstar Port is a global multi-metals business, with a market leading position in zinc and lead and growing positions in other base and precious metals, such as copper, gold and silver. Nyrstar has six smelters, one fumer and four mining operations, located in Europe, Australia and North America.

Nyrstar's Port Pirie Smelter is located on the eastern shore of the Spencer Gulf in South Australia, approximately 200km north of Adelaide.

In 2018 Nyrstar embarked on the construction of an additional storage pad to increase the storage capacity of the existing Paragoethite Product (PGP) Storage Bunker. Geothite is a dark or yellowish-brown mineral consisting of hydrated iron oxide, occurring typically as masses of fibrous crystals. Paragoethite is a form of goethite made as a by-product of zinc production. The Paragoethite Process removes iron in zinc hydrometallurgy.

Modelling indicated that Nyrstar would be out of storage room from December 2018 and would require the construction of an additional geosynthetic material lined pad with a capacity of a least 54,400t dry storage of paragoethite product, equivalent of 73,500t of wet storage. The storage area was designed to facilitate two cells, Storage Cell D for immediate use and provisions of

an extension for Cell E at a later stage.

McMahon Services were engaged by the project's engineering, procurement and construction management consultants, Beca, to construct Storage Cell D.

Scope of Work

Civil works required for the construction of Storage Cell D included site establishment, traffic management strategies for works inside an operational mineral processing plant, cut and fill to form Cell D levels including the formation of embankments, compaction and proof roll of subgrade and the removal and replacement of unsuitable material. Earthworks totalled 16,000m3.

The next stage of the works comprised the installation of precast concrete pits and backfilling with low permeability clay, installation of 13,550m² of geosynthetic clay liner, installation of 13,550m² of 1.5mm thick geomembrane HDPE liner, and the supply and installation of a 1300m Megaflo slotted drain including connection to a pump out pit. Once the liners were installed, the next stage was to supply, place and shape black sand leachate drainage layer over the liners. The drainage layer, batters and anchor trenchers were then covered with a A49 BIDIM geotextile, totalling an area of 17,750m².

Final works were the construction of a haul and access roads, gravel track around the perimeter of the cell, installation of surface drainage facilities including spillways, open drains, headwalls and a 38m precast concrete pipe drainage system. A pump was installed in the concrete pit and connected into the existing leachate discharge system with a 50mm diameter HDPE pipeline and fittings.

Project Challenges

Provided with a short time frame to construct the cell, McMahon Services devised a methodology to sperate the construction of Cell D into two stages. This allowed one portion of the cell to be constructed rapidly for immediate use by the client to minimise disruption to the smelting operations. McMahon Services was able to meet and exceed the targeted deadlines for the initial portion of the cell as well as the final project deliverable.

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