

MARDIE SALT AND POTASH PROJECT

SCOPE OF WORK - DEFINITIVE FEASIBILITY STUDY

BCI Minerals Limited (BCI) is developing the Mardie Project located in one of the world's premium locations for solar evaporation salt production on Western Australia's Pilbara coast, midway between the towns of Dampier and Onslow. The Pilbara coastal region's long dry season and high net evaporation rates, together with Mardie's large area of low permeability mudflats and access to seawater via natural channels, are all ideally suited to the large scale solar evaporation project.

The Mardie Project, which has a footprint of more than 90 km², will achieve a production of 4 Mtpa salt (NaCl) and 100 ktpa sulphate of potash (SOP) via solar evaporation of seawater over an operating life of 60 years. These products will be exported in bulk through a new port facility at the Mardie site.

GR Engineering was awarded the Lead Engineer role for the completion of a Definitive Feasibility Study (DFS) for the Mardie Project. This work included the co-ordination of study works being carried out by various specialist consultants, selected by BCI, including the jetty and port design, SOP process plant design and the salt evaporation and process plant design.

The process flow sheet for Mardie follows conventional production techniques, in which seawater is pumped from the ocean into a series of large evaporation ponds. The water is allowed to evaporate and increase in salinity progressively through the ponds by pumping from one pond to the next. The final concentrated seawater brine is then pumped to primary crystalliser ponds, in which high quality raw salt is precipitated.

The primary crystallisers are periodically drained and dry salt crystals harvested for purification through a 700 tph salt purification plant to produce a high purity industrial salt product (>99.7% NaCl content dry basis) prior to transport and shipping.

Potassium rich salts (KTMS), which would normally be treated as a waste product from salt production, will be directed from the primary salt crystallisers to a SOP production circuit where the KTMS raw salts will be harvested from secondary crystallisers and processed into >50% K₂O content SOP product.

The initial salt crystallisation is expected to progress in stages with first salt production targeted for late 2023. Recycled NaCl will be harvested from the secondary crystallisers, along with KTMS salts, for feed into the SOP plant in late 2024.

GR Engineering's scope of work included the design and costing of the non-process infrastructure, seawater and brine pumping stations and the network of distribution pipelines and access road earthworks. GR Engineering's scope also included the development of the Capital and Operating estimates for the overall project.

BCI is currently tendering the construction packages for the Project.

Commodity: Solar Salt-Sulphate of Potash
Region: Australia
Location: North West Coast, Western Australia
Project Type: Definitive Feasibility Study

Client: BCI Minerals Limited (ASX: BCI)
Award Date: March 2019
Completion Date: July 2021
Project Manager: Geoff Tanner