MARDIE SALT AND POTASH PROJECT

SCOPE OF WORK - 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 90km^2, will achieve a production of 4Mtpa salt (NaCl) and 100ktpa 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 has been awarded the Engineering Manager role for the completion of a Definitive Feasibility Study for the Mardie Project. This work includes the co-ordination of study works being carried out by various specialist consultants, selected by BCI, for 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 700t/hr 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 Project timeline has construction of the evaporation ponds and crystallisers commencing in the second half of 2020 and the salt and SOP process buildings to be completed in late 2023. The initial salt crystallisation is expected to progress in stages with first salt production by 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 includes 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 includes the development of the Capital and Operating estimates for the entire project. GR Engineering will complete the final DFS report by June 2020.

GR Engineering has also been awarded the design and construction management of a trial pond which consists of the installation of the main seawater pump station and the seawall and levees for a 32 ha trial evaporation pond. Construction is due to commence Q2 2020.

GR Engineering is anticipating the award of an EPCM design and construct contract following the completion of the final environmental, tenure and financial approvals required for the Mardie Project.

Commodity: Solar Salt and Sulphate of Potash
Region: Australasia
Location: North West Coast, Western Australia
Project type: Definitive feasibility study

Client: BCI Minerals Limited (ASX: BCI)
Award date: March 2019
Completion date: June 2020
Project manager: Geoff Tanner