

Thursday 2 September 2021

BEYONDIE SOP PROJECT - OPERATIONS UPDATE

Operational readiness for the Beyondie SOP Project is ramping up as planned and includes:

- Commencement of production ramp-up remains on track for October 2021
- Operations team in place with on-site training of plant operators continuing
- 108,000 tonnes of “plant feed specification” potassium salts harvested and delivered to the ROM pad
- Harvested ponds are immediately placed back into operation for next round of salt production
- Pre-concentrator ponds filled to maximum capacity in preparation for high evaporation rate summer period

“Completing the preparations for the commencement of production is a critical step to ensure a successful start-up and production ramp-up. This includes establishment of the operations team, training and implementation of standard operating procedures, as well as being ready for the high evaporation summer period.”

“Part of the operational mantra involves putting ponds back into operation as soon as harvesting activities are complete. Another vital task is making sure that the pre-concentrator ponds are ‘filled to the brim’ so that we have sufficient brine inventories to keep up with the demands created by those high evaporation rates.”

Rudolph van Niekerk - Chief Executive Officer

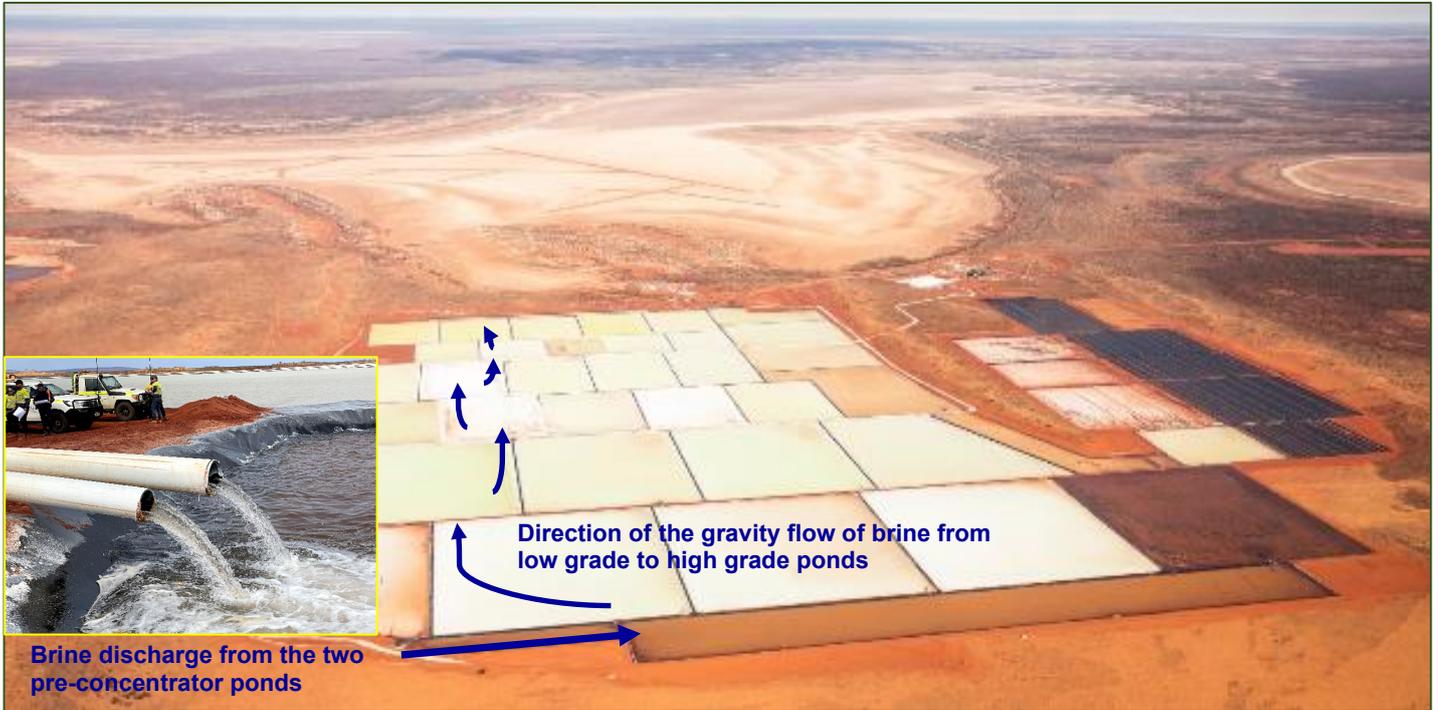


Ten Mile (left) and Sunshine (right) Pre-Concentrator Ponds Currently at Maximum Capacity

Evaporation Pond Operations

Management of brine supply from the bore fields and trenches is critical to the success of running an efficient pond evaporation and salt crystallisation process. The first step is to collect the brine from the various bore and trench pump stations in a central location. The Beyondie SOP Project (BSOPP) has two such locations, with one 28 hectare and one 32 hectare pre-concentrator pond for the Ten Mile and Sunshine resource areas respectively.

The pre-concentrator ponds are designed to allow evaporation only up to the point before salt crystallisation occurs, reducing the brine volume and the transfer pumping requirement by 25% - 28%. From the pre-concentrator ponds, brine is then pumped to the primary ponds, where gravity allows it to flow from the highest elevation to the lowest elevation.



Pond Evaporation and Salt Crystallisation Process

Gravity flow rates between crystalliser ponds need to be managed carefully to ensure the correct types of salt are crystallising in the correct ponds. Sodium chloride (NaCl) is the first salt that forms and crystallises within the first three ponds in the evaporation “train” shown in the image above. By carefully managing the brine concentration, potassium salts in the form of “leonite” and “kainite type mixed salts (KTMS)” then form in the final three ponds of the train. Those ponds are harvested, with the salts transferred to the ROM pad to become feed stock from which the process plant then produces SOP.

Brine flow is controlled by weir gates that are installed between ponds, allowing flows to be increased, decreased or stopped as required. Samples are taken regularly from various locations within the ponds and then analysed at the BSOPP’s onsite laboratory, with results used to make flow rate adjustments where necessary.



Sample Collection



Laboratory Analysis



Weir Gate Adjustment

During the evaporation and crystallisation process, the thickness of the salt floor continues to grow until it reaches a point where it is ready for harvesting. When a pond is ready to be harvested, the brine from the pond is drained, before a combination of an automated harvester and double road train is used to efficiently collect and transfer the salts to the ROM pad.

As a pond being harvested is not in production, Kalium Lakes uses a “multiple train” design, dividing the evaporation ponds into five separate trains, which allows smaller evaporation / crystallisation areas to be taken out of production for harvesting purposes. The arrows in the pond evaporation image on the previous page depict the direction of brine flow in one of the five trains.



Salt Harvesting and Transport to ROM pad

As soon as harvesting activity within a pond is complete, that pond is put back into operation to start growing a new salt layer in preparation for the next harvest.

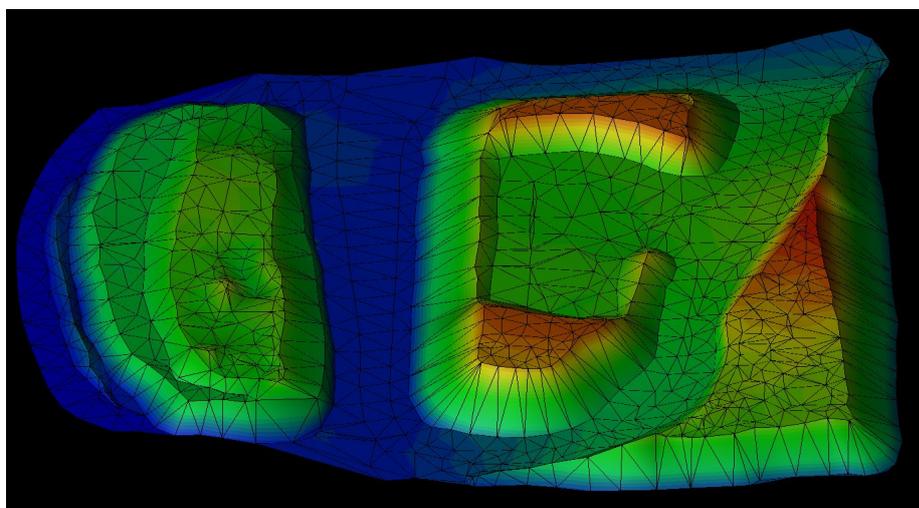


Evaporation Pond Put Back Into Production After Harvesting



Verification of ROM Pad Inventories

On the ROM pad, the plant feed salt is classified into stockpiles based on the salt grade. The SOP purification plant is designed to treat a blend of salt grades, so ongoing stockpile management on the ROM pad is very important. The Kalium Lakes's operations team has all the equipment, systems and procedures in place to manage the stockpiles in terms of both quality and quantity.



3D Render of ROM Stockpile Volume Showing Plant Feed Stockpiles in Excess of 10 Metres High

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*** ENDS ***

This announcement was approved and authorised for release by the Chief Executive Officer of Kalium Lakes Limited.

Kalium Lakes Limited



ABN: 98 613 656 643
ASX: KLL



Board of Directors

Stephen Dennis
Mark Sawyer
Brent Smoothy
Sam Lancuba

Non-Executive Chairman
Non-Executive Director
Non-Executive Director
Non-Executive Director



Contact Details:
Kalium Lakes Limited
Unit 1, 152 Balcatta Road
BALCATT A WA 6021

PO Box 610
BALCATT A WA 6914

Email: info@kaliumlakes.com.au
Web: www.kaliumlakes.com.au
Tel: +61 (0)8 9240 3200



Chief Executive Officer

Rudolph van Niekerk

Chief Financial Officer

Jason Shaw

Company Secretary

Gareth Widger

Share Registry

Computershare Investor Services Pty Ltd
Level 11, 172 St Georges Terrace Perth, WA 6000
Tel: (within Australia): 1300 850 505
Tel: (outside Australia): +61 3 9415 4000