

25 September 2019

# AUSTRALIAN POTASH LIMITED

## OPTIMISATION PROGRAM UPDATE

### TRIAL PRE-CONCENTRATION POND CONFIRMS LOW BRINE SEEPAGE AND LOW COST BARRIER CONSTRUCTION

#### Highlights

- Pond constructability and seepage barrier trials confirm design efficiency
- All barrier designs proved to be easily installed due to the highly stable working perimeter
- On playa concentrator pond design parameters confirmed with vertical and lateral brine seepage contained within design limits: optimised final design to construct being developed
- Trial pond demonstrated good salt crystallisation even through the low-evaporation winter months



*Figure 1: Commercial benefits of low seepage rates are higher salt crystallisation and lower volume pumping requirements*



*Figure 2: On-playa trial pre-concentration pond demonstrated low-cost, efficient lateral seepage barrier construction techniques, using the highly stable and easily accessible playa perimeter*

Australian Potash Limited (ASX: APC) (**APC** or the **Company**) is pleased to provide an update on its on-playa trial pre-concentration pond at the 100% owned Lake Wells Sulphate of Potash Project (LSOP). Completed in May 2019, the trial pre-concentration pond (Trial Pond) was built to assess earthworks constructability, and efficacy of vertical, sub-grade seepage barrier designs. The Trial Pond further de-risks the design for the on-playa pre-concentration ponds, as determined in the Definitive Feasibility Study (DFS).

**Managing Director and CEO, Matt Shackleton commented:** “Filling of the Trial Pond with approximately 16,000 m<sup>3</sup> of brine commenced in early July and the trial has shown approximately 2% seepage loss through the lateral barriers, which is in-line with our Definitive Feasibility Study (DFS) calculations.

“The trial has shown that the seepage barrier designs, including sheet piles, bentonite mix and geopolymer, were easily and quickly installed.

“At the LSOP we are able to take advantage of the stable dunes surrounding the playa as a working surface to develop pond infrastructure including installing vertical seepage barriers. As a result, we have no need for low-pressure or barge mounted excavators etc. significantly reducing the costs of development and ensuring a simple and fast installation procedure. The dunes also provide good quality borrow material for construction.

“The DFS geotechnical program identified and measured the uniform clay layer beneath the LSOP playas. This clay seals the bottom of the pond. Prior to installing the lateral seepage barriers, the fine sand seepage rates were in the order of 10<sup>-5</sup> – 10<sup>-6</sup> metres per second: after installation this reduced to approximately 10<sup>-8</sup> ms. This is a very good result for the LSOP development strategy.

“We can now confirm the most economically and technically optimal construction method for the pond perimeter walls and internal bunding, which is central to the efficacy and speed of future development plans.”



*Figure 3: Hyper-concentrated brine in depression created at brine discharge point*

## **TECHNICAL DISCUSSION**

The Trial Pond comprised a cross-playa causeway and a perimeter access track built into the surrounding kopai dunes. Using widely available earthmoving equipment (i.e. 20 tonne excavator, articulated dump truck and front end loader), the perimeter access track was formed using simple 'cut to fill' methods with in-situ materials and graded to the design level matching the causeway. The working surface as constructed proved to be very stable, allowing direct access to the pond perimeter. This simple factor – easy and stable access to install commercial scale pond barriers – is considered a strong competitive feature of APC's Lake Wells playa as it avoids the requirement to use specialty equipment such as low-impact excavators.

Similarly, the causeway was constructed of locally borrowed material comprising fine grained soil and gypsum, naturally occurring in the adjacent kopai dunes. The optimised pond design calls for minimal cross-playa causeway development, relying instead on the topography of the surrounding kopai dunes and the effective, cheap and simple to install lateral barriers proven in the trial.



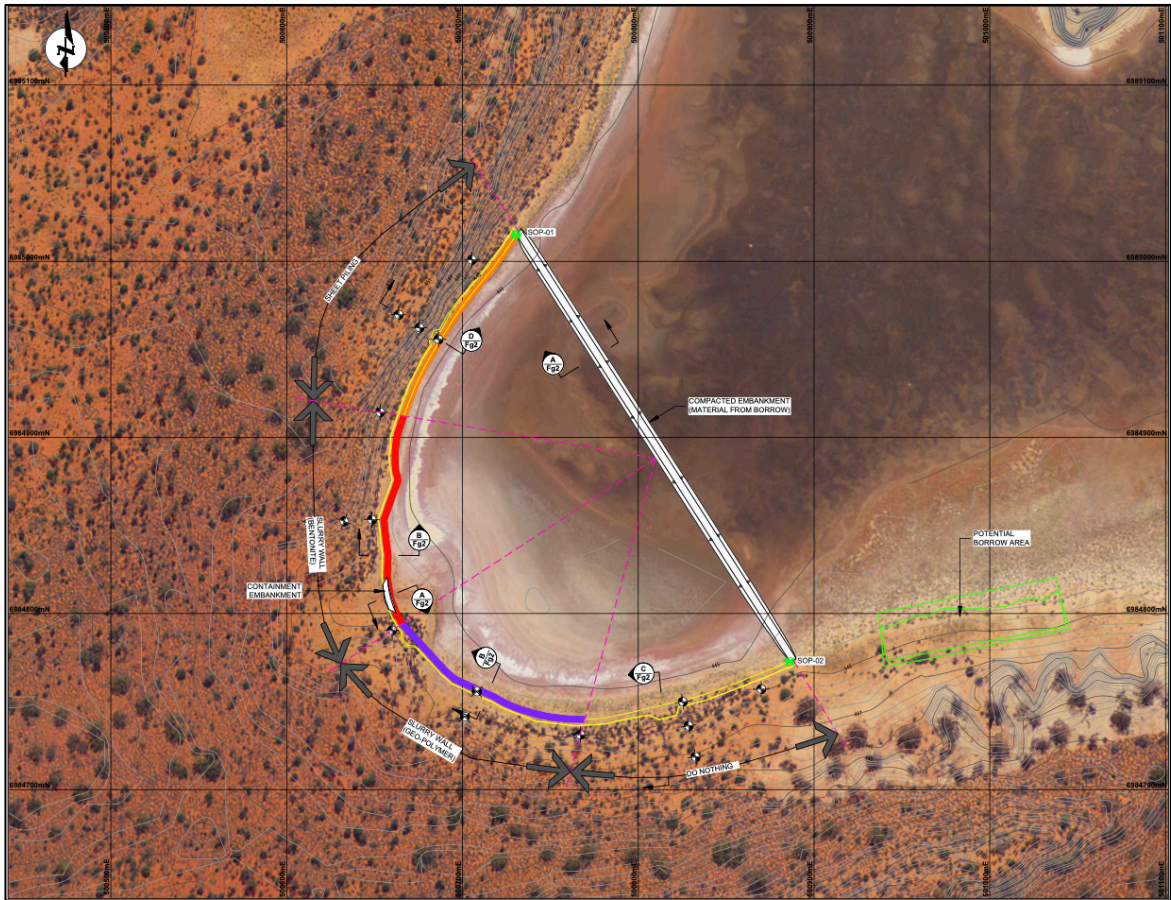


Figure 4: On-playa Trial Pond plan showing causeway and seepage barrier alignments (colour coding showing different barrier method location)

Three seepage barrier designs were trialed, including sheet piles, bentonite mix and a geopolymer. Figure 5 below shows the lateral seepage barriers 'keyed into' the low permeability sub-surface clay layer. Each barrier was easily and quickly installed with the readily available, common earth moving equipment. The Trial Pond was constructed within schedule and under budget. Stand-pipe piezometers were installed around the Trial Pond to monitor pore water pressure prior to, during and after filling of the Trial Pond.

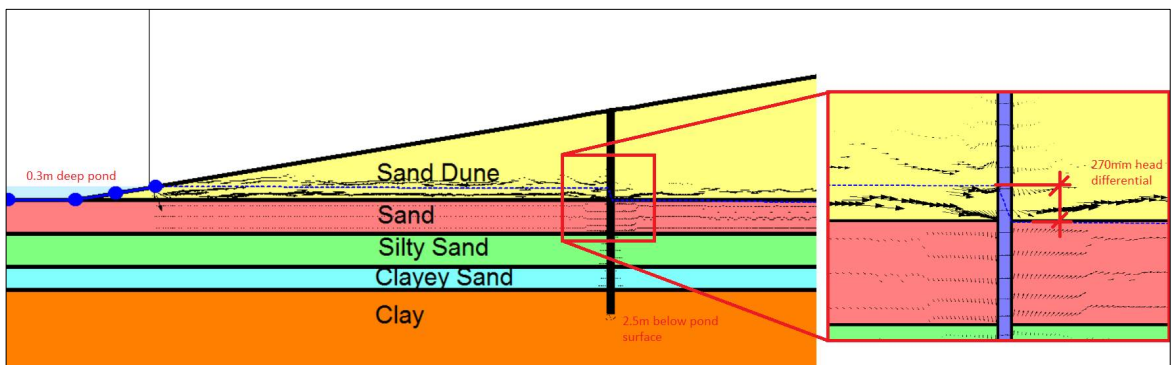


Figure 5: Playa-dunes cross-section schematic showing seepage analysis using vertical barriers installed to minimise lateral seepage

Filling of the Trial Pond aligned with long-term pump testing of a near-by production bore (see ASX Announcement 31 July 2019); the brine in the Trial Pond reached the design level by the end of July and monitoring of the piezometers continued throughout August. Monitoring data was collected and was analysed by APC's consulting geotechnical engineers. The engineers provided earlier seepage assessments based on comprehensive geotechnical investigation data, indicating that vertical seepage through the pond base would be minimal due to the extensive clay layer just below the playa surface, and that lateral seepage would present the most significant potential for brine losses.

The Trial Pond reflects a scale version of the on-playa evaporation (brine concentration and salt crystallisation) pond system presented in the Lake Wells SOP Project Definitive Feasibility Study (ASX Announcement 28 August 2019) and the results support the models developed therein. The DFS presented a network of approximately 10 km<sup>2</sup> of on-playa pre-concentration ponds, and just under 3 km<sup>2</sup> of off-playa HDPE lined harvest ponds. DFS pond designs were developed collaboratively by process engineers Novopro, Knight Piésold and APC. Pond designs combine brine chemistry and flow models with climate and geotechnical data.

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## About Australian Potash Limited

Australian Potash Limited (ASX: APC) is an ASX-listed Sulphate of Potash (SOP) developer. The Company holds a 100% interest in the Lake Wells Sulphate of Potash Project (LSOP) located approximately 500kms northeast of Kalgoorlie, in Western Australia's Eastern Goldfields.

Following the release of the Definitive Feasibility Study (DFS)<sup>i</sup> in August 2019, APC is focused on a 6 month FEED Optimisation Study, finalising offtake discussions and securing financing to develop the LSOP.

The DFS was underpinned by extensive and rigorous testwork, data, and modelling. The DFS confirmed that the LSOP will be a long life, low capital intensity and high margin SOP producer.

Key outcomes from the DFS include:

- 30 year mine life producing 150,000tpa of premium grade SOP
- Long mine life underpinned by 3.6Mt reserve and 18.1Mt Measured Resource estimate
- Pre-tax NPV8 of A\$665m and an IRR of 25%
- Development capex of A\$208M with sector leading capital intensity of A\$1,387/t
- First quartile industry opex of US\$262/t providing high cash operating margins

## Forward Looking Statements

This announcement contains forward-looking statements that involve a number of risks and uncertainties. These forward-looking statements are expressed in good faith and believed to have a reasonable basis. These statements reflect current expectations, intentions or strategies regarding the future and assumptions based on currently available information. Should one or more of the risks or uncertainties materialise, or should underlying assumptions prove incorrect, actual results may vary from the expectations, intentions and strategies described in this announcement. No obligation is assumed to update forward looking statements if these beliefs, opinions and estimates should change or to reflect other future developments.

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<sup>i</sup> Refer to ASX Announcement 28 August 2019 'Definitive Feasibility Study Outstanding Financial Outcomes'. That announcement contains the relevant statements, data and consents referred to in this announcement. Apart from that which is disclosed in this document, Australian Potash Limited, its directors, officers and agents: 1. Are not aware of any new information that materially affects the information contained in the 28 August 2019 announcement, and 2. State that the material assumptions and technical parameters underpinning the estimates in the 28 August 2019 announcement continue to apply and have not materially changed.