

27 October 2017

## **POND DEVELOPMENT PROGRAM IDENTIFIES SURFACE CLAY LAYER, SUPPORTS ON-LAKE UNLINED EVAPORATION PONDS**

### **Highlights:**

- **Recent geotechnical field-programs confirm the continuity of the modelled low-permeability clay layer immediately below proposed evaporation pond area**
- **The ability to utilise unlined on-lake evaporation ponds is a key advantage to the project, allowing the delivery of a low capital expenditure, high returning project. The largest brine operations globally use unlined ponds to avoid the extremely high capital expenditure and technical challenge associated with lining evaporation ponds**
- **Geotechnical results are superior to the conservative assumptions utilised for the evaporation pond design in APC's recently completed Scoping Study and will drive further and ongoing optimisation of costs as part of the Feasibility Study**

**Australian Potash Limited (ASX: APC) (APC or the Company)** is pleased to advise that the recently completed geotechnical survey program has confirmed a continuous layer of low-permeability clay across the lake (or playa) which supports the proposed development of un-lined, on-lake evaporation ponds at the Lake Wells Sulphate of Potash (SOP) project located 280km north-east of the bulk rail freight terminal at Leonora, in Western Australia. (*Refer Figure 1*)

The development of economic unlined pre-concentration and crystalliser ponds (evaporation ponds) on a lake surface requires a low-permeability layer of clay near surface in order to control leakage from the pond network back into the aquifer. Lower leakage rates lead to higher potassium recoveries, with a positive flowthrough to a smaller pond footprint and improved overall project recoveries and economics.

The Scoping Study into the Lake Wells SOP project released in March 2017<sup>i</sup>, included a trade-off study between unlined and lined ponds with unlined ponds delivering the superior economic outcome. Permeability rates of the clay layer were determined to be suitable for on-playa evaporation pond construction, with further programs designed to test the extent and continuity of the clay layer.

This significant step forward in the pond development program, by identifying an extensive, low-permeability layer of clay at the surface of the playa across the entire proposed evaporation pond area, considerably de-risks the evaporation process for the Lake Wells SOP project. Refer Technical Discussion.

**Australian Potash, Executive Chairman, Matt Shackleton commented:** "Our development strategy is focused on delivering the highest returning project in the emerging Australian SOP landscape to capitalise on our expectation for strong SOP demand growth.

"Being able to avoid the significant capital expenditure associated with lining the large evaporation pond network improves on that development strategy. (*Refer Figure 2*)

“This advancement in our pond geotechnical work stream is a very significant step forward in the critical evaporation stage of the SOP production process. We will further advance the geotechnical and pond design program over the coming two quarters.

“In addition, we expect to provide further interim feasibility program updates as key work streams advance and deliver significant results, including;

- Logistics study update re the potential export options via the Port of Esperance taking advantage of the natural logistical advantages provided by having access to rail
- Further results from the (long term) test-pumping program on the already installed production borefield
- Outcomes of cost optimisation programs on the Scoping Study operating costs.”

For further information, please visit the Company’s website at [www.australianpotash.com.au](http://www.australianpotash.com.au) to view the latest management update video, or contact:

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## Technical Discussion

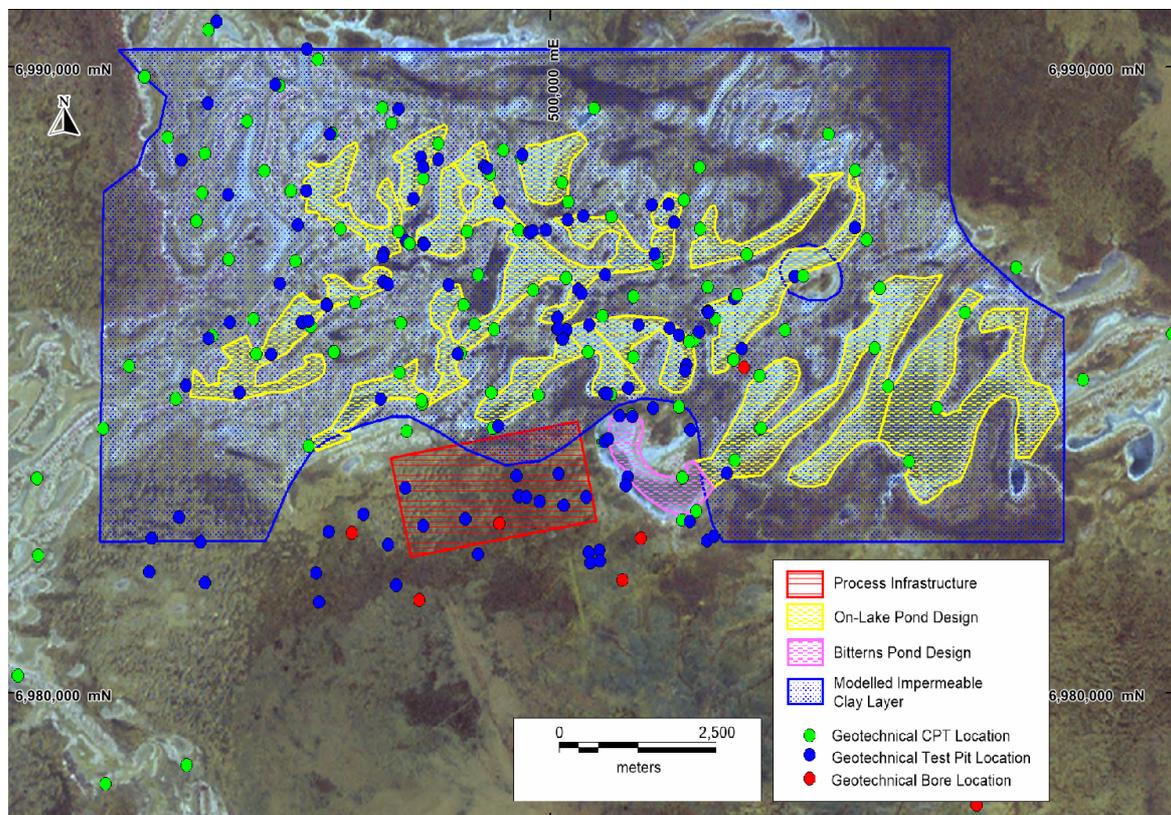


Figure 1: The geotechnical field program has identified an extensive low-permeability clay layer which supports building unlined evaporation ponds on the playa surface

During the Scoping Study which was completed in March 2017<sup>ii</sup>, preliminary geotechnical investigations determined that a clay layer existed below the lake surface and that permeability rates of the clay were adequately low to support unlined, on-playa evaporation ponds. Geotechnical data collected consisted of 40 test pits in and around the playa network with 15 samples being tested for permeability. Of the samples that were identified as being in the clay layer the average permeability across the samples was  $6.12 \times 10^{-10}$  m/s or 0.06 mm/day.

Subsequent to the release of the Scoping Study APC has conducted additional geotechnical programs comprising 106 cone penetrometer test holes (CPT) and flown 500km of airborne LIDAR survey lines over the proposed development area (including the surface lake areas, surrounding palaeochannel areas and access roads down to the Great Central Road c.80km east of Laverton). Perth based Galt Geotechnics completed the Scoping Study assessment and have been engaged by APC to manage the geotechnical work programs for the feasibility program.

This fieldwork demonstrated the consistency of the clay layer across the playa where the evaporation ponds will be built. The clay layer is identified at a starting depth of 0.8m and extends to 1.7m depth over an extensive area of the total playa surface. See Figure 1.

Sample Name	Depth (m)	Gravel %	Sand %	Fines %	LL	PL	PI	LS	SMDD (t/m <sup>3</sup> )	OMC (%)	Permeability	
											(m/s)	(mm/day)
TP06	2.2-2.4	-	29	71	38	18	20	10	1.68	18.9	$6.0 \times 10^{-10}$	0.05
TP08	2.0-2.4	1	10	89	43	21	22	9.5	1.616	23.3	$9.8 \times 10^{-10}$	0.08
TP16	1.5-1.8	-	23	77	57	23	34	14	1.558	25.2	$5.2 \times 10^{-10}$	0.05
TP23	1.3-1.7	-	10	90	53	21	32	15	1.476	27.7	$4.5 \times 10^{-10}$	0.04
TP28	0.8-1.2	-	8	92	51	22	29	10	1.64	22.4	$4.7 \times 10^{-10}$	0.04
TP30	1.3-1.7	-	17	83	47	21	26	9	1.66	22.1	$8.7 \times 10^{-10}$	0.08
TP37	1.9-2.3	-	11	89	44	21	23	11	1.546	24.5	$7.5 \times 10^{-10}$	0.07
TP41	2.2-2.6	-	8	92	51	23	28	13	1.532	25	$7.4 \times 10^{-10}$	0.06
TP43	1.5-1.8	-	24	76	40	15	25	9.5	1.72	19.5	$1.2 \times 10^{-9}$	0.1

Table 1. Summary of Geotechnical Sample Test Results of Clay Layer

For the scoping study a conservative seepage rate of 0.1mm/day was assumed which is almost double the average clay permeability measured at the time. APC is confident that ongoing geotechnical work will permit a lower permeability to be realised supporting smaller ponds than those modelled in the Scoping Study and therefore reduced capital expenditure and higher recoveries. Current permeability assumptions result in a potassium recovery through the pond system of approximately 76-77% and an overall pond and process recovery of 71-72%. With the inclusion of the MOP conversion circuit in the process plant, the overall recoveries of the ponds and plant improve to almost 80%.

#### Further Evaporation Pond Work Programs

- Geotechnical program to obtain undisturbed core samples of the playa clays for laboratory permeability testing to further refine clay layer permeability data and develop a relationship between the CPT data and the laboratory permeability information;
- Additional CPT program across the playa;
- Development of a 3D model of the playa clay layer which will tie into a 3D terrain model of the project area. This will be used in defining permeabilities of each individual evaporation pond, pond embankment design and associated material take offs for the Feasibility Study, and in the calculation of initial pond volume filling requirements;
- Pond embankment wall constructability program to trial different wall construction techniques and identify the optimum technique for Feasibility Study designs and costings;
- Construction of demonstration ponds to facilitate project implementation funding.

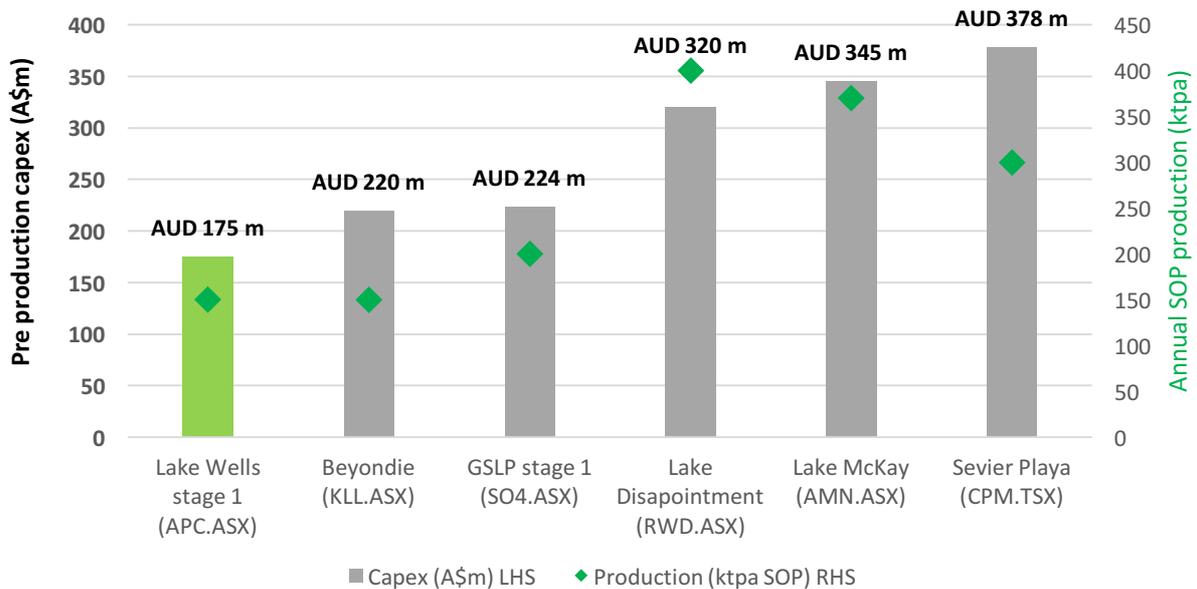


Figure 2. Relative pre-production CAPEX and production targets of Australian SOP brine aspirants

### 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 Potash Project located approximately 500kms northeast of Kalgoorlie, in Western Australia's Eastern Goldfields.

The Lake Wells Potash Project is a palaeochannel brine hosted sulphate of potash project. Palaeochannel bore fields supply large volumes of brine to many existing mining operations throughout Western Australia, and this technique is a well understood and proven method for extracting brine. APC will use this technically low-risk and commonly used brine extraction model to further develop a bore-field into the palaeochannel hosting the Lake Wells SOP resource.

A Scoping Study on the Lake Wells Potash Project was completed and released on 23 March 2017<sup>ii</sup>. The Scoping Study exceeded expectations and confirmed that the Project's economic and technical aspects are all exceptionally strong, and highlights APC's potential to become a significant long-life, low capital and high margin sulphate of potash (SOP) producer.

Key outcomes from the Scoping Study are as follows:

- Stage 1 production rate of **150,000tpa** of premium-priced sulphate of potash (years 1 – 5)
- Stage 2 production rate of **300,000tpa** of premium-priced sulphate of potash (years 6 – 20)
- Upgraded JORC 2012 Mineral Resource Estimate comprising 14.7m tonnes of SOP, including 12.7mt in the Indicated category<sup>ii</sup>
- Operating expenditure of A\$368/US\$283 tonne SOP in the first 5 years and A\$343 tonne SOP over the life of mine
- At a SOP price of A\$795 per tonne SOP, the Project generates LOM annual operating pre-tax cashflow<sup>iii</sup> of A\$118m/US\$81m
- Pre-production capital expenditure (Stage 1) of A\$175m/US\$135m and Stage 2 of A\$163m/US\$125m
- Life of Mine (LOM) is 20 years (inc. Stage 1 & Stage 2) –upside to LOM through continued exploration



### **Forward looking statements disclaimer**

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.

### **Competent persons statement**

The information in this announcement that relates to Exploration Targets and Mineral Resources is based on information that was compiled by Mr Jeffery Lennox Jolly. Mr Jolly is a principal hydrogeologist with AQ2, a firm that provides consulting services to the Company. Neither Mr Jolly nor AQ2 own either directly or indirectly any securities in the issued capital of the Company. Mr Jolly has over 30 years of international experience. He is a member of the Australian Institute of Geoscientists (AIG) and the International Association of Hydrogeologists (IAH). Mr Jolly has experience in the assessment and development of palaeochannel groundwater resources, including the development of water supplies in hypersaline palaeochannels in Western Australia. His experience and expertise is such that he qualifies as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Jolly consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

The Hydrogeological information in this announcement has been prepared by Carsten Kraut, who is a member of the Australasian Institute of Geoscientists (AIG), and International Association of Hydrogeologists (IAH). Mr Kraut is contracted to the Company through Flux Groundwater Pty Ltd. Mr Kraut has experience in the assessment and development of palaeochannel groundwater resources, including the development of water supplies in hypersaline palaeochannels in Western Australia. His experience and expertise is such that he qualifies as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Kraut consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

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<sup>i</sup> Refer to ASX announcement 31 January 2017 'Scoping Study on Lake Wells Potash Project set for completion in March Quarter following strong flow rates from test bores, December 2016 Quarterly Activities Report'. 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 31 January 2017 announcement, and 2. State that the material assumptions and technical parameters underpinning the estimates in the 31 January 2017 announcement continue to apply and have not materially changed.

<sup>ii</sup> Refer to ASX announcement 23 March 2017 'Scoping Study Confirms Exceptional Economics of APC's 100% Owned Lake Wells Potash Project In WA'. 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 23 March 2017 announcement, and 2. State that the material assumptions and technical parameters underpinning the estimates in the 23 March 2017 announcement continue to apply and have not materially changed.

<sup>iii</sup> Operating cashflows include all revenue and operating expenditure, but exclude capital expenditure.