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# QUARTERLY ACTIVITIES REPORT FOR PERIOD ENDING 30 JUNE 2016

# Highlights

#### **Mackay SOP Project**

- Hydrogeological model supports steady-state brine production of 68 million m<sup>3</sup> per year over a nominal 20 year life, exclusively extracted via shallow trenches
- Initial geotechnical testwork indicates that lakebed materials are suitable for the application of unlined evaporation ponds
- Evaporation trial demonstrates the ability to yield potassium sulphate salts which are suitable for a conventional production process
- Process water evaluation identifies an area with potential to host significant volumes of groundwater in close proximity to the proposed plant site
- Scoping Study is on schedule for results to be reported in August 2016
- Field program is planned to commence in August 2016

### Corporate

- Appointment of Mr Brad Sampson as Non-Executive Chairman
- Share placement to institutional and sophisticated investors raised \$2.5 million, before costs

Agrimin Limited (ASX: AMN) ("Agrimin" or "the Company") is pleased to report its activities for the quarter ending 30 June 2016.

## Mackay SOP Project – Western Australia (100% owned)

The Mackay Sulphate of Potash ("SOP") Project comprises seven tenements covering the majority of Lake Mackay which is the low point of an enormous ground and surface water catchment area that combined is approximately 87,000km<sup>2</sup>. The lakebed surface area of Lake Mackay is 3,500km<sup>2</sup>, comparable to major sources



of SOP production at the 4,400km<sup>2</sup> Great Salt Lake in the USA and the 5,500km<sup>2</sup> Lop Nur (Luobupo operation) in China.

The Project has key competitive advantages due to Lake Mackay's hydrogeological setting and significant size. The eastern side of the lake contains higher sand and grit content with suitable flow rates for brine extraction via trenches. In contrast, the western side of the lake hosts a lower energy zone, with predominantly higher clay content suitable for the application of un-lined evaporation ponds.

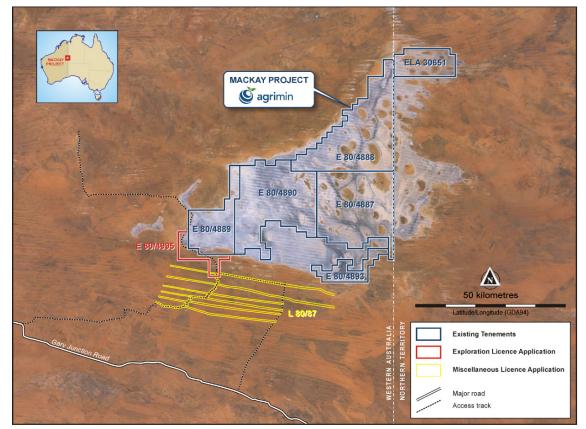


Figure 1. Project Map with New Tenement Applications

The Mackay Project has Mineral Resources of 23.2 million tonnes of SOP based on *specific yield* (or drainable porosity). The resource encompasses an area of 2,201km², being the majority of Agrimin's granted tenements in Western Australia, and does not take into account any natural recharge factor which could increase the amount of drainable Mineral Resources over the life of an operation.

### **Hydrogeological Model**

During the quarter, the hydrogeological model for the Mackay Project was completed and indicates that a steady-state brine extraction rate of 68 million m<sup>3</sup> can be sustained over a nominal 20 year life, exclusively from trenches. The trench design used in the model is based on a depth of only 5.5m. The model was based on permeability and porosity data from field pump tests and laboratory testwork on drill cores.



The hydrogeological model was developed by Groundwater Exploration Services Pty Ltd, an independent consultancy based in Sydney, and has been reviewed by Agrimin's key consulting hydrogeologist, Murray Brooker. The numerical modelling was undertaken using the Groundwater Vistas software interface in conjunction with the MODFLOW-SURFACT program, an advanced version of the MODFLOW code. The trenching network was implemented within the model using the Drain Package to predict extraction over a nominal 20 year period. The model falls within the Class 2 confidence level as classified under the Australian Government's National Water Commission ("NWC") guidelines.

#### **Geotechnical Study**

During the quarter, a geotechnical study for the Mackay Project was completed and indicates that the natural lakebed surface in the south-western area of Lake Mackay has favourable geotechnical conditions for the application of un-lined solar evaporation ponds. The study also indicates that the in-situ lakebed materials are suitable to construct the evaporation pond walls as cut-to-fill structures.

The study was completed by GHD and is based on data collected from a geotechnical sampling program during the 2015 field program in the south-western area of the lake. The sampling was undertaken within 1m of the natural lakebed surface as this material is expected to form the pond walls and floor. The laboratory testwork program included tri-axial permeability, particle size distributions, Atterberg limits, standard compaction and Emerson classifications.

#### **Process Design**

During the quarter, an initial evaporation trial was completed at Independent Metallurgical Operations Pty Ltd's facility in Perth. The evaporation trial used a 460 litre brine sample collected from the Mackay Project during trench pump testing activities. XRD analysis on the harvested salt samples showed that the trial successfully produced the targeted potassium sulphate bearing salts, being Leonite (K<sub>2</sub>SO<sub>4</sub>.MgSO<sub>4</sub>.4H<sub>2</sub>O) and Kainite (KCl.MgSO<sub>4</sub>.3H<sub>2</sub>O). These salts are appropriate for the production of SOP (K<sub>2</sub>SO<sub>4</sub>) using a conventional production process. The Process Design for the Mackay Project has also been completed and incorporates the results from the evaporation trial.

The production process commences with pumping brine from extraction trenches into a series of solar evaporation ponds. The proposed trenches are planned to extract 67 million m³ per year of brine, on the basis of 98% availability. Evaporation within the ponds facilitates fractional crystallisation of the targeted potassium salts. The pond system is estimated to cover a start-up area of 34km² upon commencement of operations, and anticipated to expand to 59km² over a 20 year life.

It is planned to dry harvest the crystallised potassium salts from the ponds and deliver the salt to stockpiles as feed material for the process plant. The pond design incorporates retention and accumulation of waste salts which creates the requirement for expansion of the ponds over time.

Stockpiled potassium salts will be coarsely crushed and screened and fed into a flotation process to separate the bulk of the potassium salts from halite and other minor materials. Concentrated potassium salts will then be sent to the SOP crystallisers where process water is added to dissolve excess magnesium sulphate to produce SOP. Dried SOP crystals will be screened, sized and a potentially granulated to meet desired product specifications.



The block flow diagram presented in **Figure 1** summarises the proposed production process for SOP from the Mackay Project brine.

Brine Extraction Evaporation Potassium Salts Trenches **Pond System** Stockpile Tailings Flotation SOP **Process** Crystallisation Water SOP Drying Standard SOP Loadout & Sizing **Granular SOP** Loadout

Figure 2. Simplified Process Flow Diagram

#### **Tenement Applications**

The Process Design has established the water requirements for the process plant and other uses. An independent hydrogeological study has successfully identified a large target area within 15km of the proposed plant site with potential to host significant groundwater resources suitable to meet process water needs for the Mackay Project. During the quarter, Agrimin lodged an application for a Miscellaneous Licence (L80/87) covering the area considered prospective for groundwater resources.

Also during the quarter, Agrimin applied for an additional Exploration Licence (E80/4995) covering an area of lakebed sediments, plus the area identified as a suitable location for the process plant and the associated site infrastructure.

#### **Planned Activities**

Agrimin has submitted a Programme of Work ("**POW**") application to the WA Department of Mines and Petroleum for its upcoming field program and expects to commence exploration activities in August 2016, subject to approval. The field program is planned to take two months with an additional two month turnaround anticipated for brine analyses and physical properties testwork. The current Mineral Resource of 23.2 million tonnes of SOP will be updated shortly thereafter.

The Company also intends to continue to progress other development work such as further evaporation trials, process testwork and engineering studies. Subsequent to the end of the quarter, Agrimin submitted salt samples generated from the evaporation trial to the Saskatchewan Research Council in Canada for the production of a final SOP product. The primary objective of this testwork program is to demonstrate that the proposed process of crushing, flotation and decomposition of Mackay Project salts can be converted to SOP product.



# **Corporate Activities**

#### **Appointment of Chairman**

On 22 April 2016, Agrimin announced that the Board appointed Mr Brad Sampson to replace Mr Stephen Everett as Non-Executive Chairman, effective immediately. Mr Sampson is an internationally experienced business leader, director and mining professional with 30 years resources industry experience.

#### **Share Issues**

On 2 June 2016, Agrimin announced a share placement to raise \$2,700,500. During the quarter, the Company placed 16,803,333 ordinary shares to institutional and sophisticated investors raising \$2,520,500, before costs.

Subsequent to the end of the quarter, shareholder approval was obtained for the issue of 1,200,000 ordinary shares to directors of the Company raising \$180,000. Shareholder approval was also obtained for the issue of 1,000,000 unlisted options with an exercise price of \$0.15 and an expiry date of 30 April 2018 to Mr Brad Sampson as announced at the time of his appointment.

### **Business Development**

Agrimin has a strategic focus on SOP due to market fundamentals which are supportive of new production. The Company continues to actively assess business development opportunities which would be complementary to its existing project portfolio. As and when acquisitions are completed the Company will make announcements to the market at appropriate times.

#### Tenement Interests

Table 1. Schedule of Tenement Interests as at 30 June 2016

Tenement Ref.	Project	Holder	State	Status	Interest
Exploration Licences					
E80/4887	Mackay	Agrimin Potash Pty Ltd	W.A.	Granted	100%
E80/4888	Mackay	Agrimin Potash Pty Ltd	W.A.	Granted	100%
E80/4889	Mackay	Agrimin Potash Pty Ltd	W.A.	Granted	100%
E80/4890	Mackay	Agrimin Potash Pty Ltd	W.A.	Granted	100%
E80/4893	Mackay	Agrimin Potash Pty Ltd	W.A.	Granted	100%
E80/4995	Mackay	Agrimin Potash Pty Ltd	W.A.	Application	100%
EL30651	Mackay	Agrimin Limited	N.T.	Application	100%
EPM 18616	1	Agrimin Limited	QLD	Granted	6%
Miscellaneous Licences					
L80/87	Mackay	Agrimin Potash Pty Ltd	W.A.	Application	100%

#### Notes:

1. Agrimin retains a 1% net smelter royalty on any and all minerals produced from EPM 18616.



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#### **Forward-Looking Statements**

This announcement may contain certain "forward-looking statements" which may not have been based solely on historical facts, but rather may be based on the Company's current expectations about future events and results. Where the Company expresses or implies an expectation of belief as to future events or results, such expectation or belief is expressed in good faith and believed to have a reasonable basis. However, forwardlooking statements are subject to risks, uncertainties, assumptions and other factors, which could cause actual results to differ materially from future results expressed, projected or implied by such forward-looking statements. Such risks include, but are not limited to Mineral Resource risk, potash price volatility, currency fluctuations, increased operating costs and variances in brine concentrations or recovery rates from those assumed in design plans, as well as political and operational risks in the jurisdictions in which the Company operates or plans to sell products to, and governmental regulation and judicial outcomes. For a more detailed discussion of such risks and other factors, see the Company's Annual Reports, as well as the Company's other ASX Releases. Readers should not place undue reliance on forward-looking information. The Company does not undertake any obligation to release publically any revisions to any "forward-looking statement" to reflect events or circumstances after the date of this announcement, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws.

#### **Competent Person's Statements**

The information in this statement that relates to the Mineral Resource Estimate of December 2015 and to Exploration Results for the Mackay Project is based on information compiled or reviewed by Mr Murray Brooker who is a full-time employee of Hydrominex Geoscience Pty Ltd. Mr Brooker is a geologist and hydrogeologist and is an independent consultant to Agrimin. Mr Brooker is a Member of the Australian Institute of Geoscientists and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as a Competent Person in terms of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code 2012 Edition). Mr Brooker consents to the inclusion of such information in this statement in the form and context in which it appears.