

4 November 2021

ASX Market Announcements  
Level 6, Exchange Centre  
20 Bridge Street  
Sydney NSW 2000

## INNOVATIVE ENGINEERING SOLUTION FOR ORE DRYING DEVELOPED FOR TRÊS ESTRADAS PHOSPHATE PROJECT

**Sydney, Australia**, - Aguia Resources Limited (ASX: AGR) ('**Aguia**' or the '**Company**') is pleased to report on the ongoing progress of its flagship Três Estradas Phosphate Project ('**TEPP**') with innovative engineering solutions developed for the ore drying.

### Highlights

- **Drying of ore using industrial driers is a significant capital and operating cost of the TEPP.**
- **Aguia has undertaken test work using the energy from the sun and the air to dry the ore in piles that were revolved daily.**
- **The tests were successful in drying the ore to a moisture content of 8% which is commercially acceptable and deemed economically feasible.**
- **Aguia developed a machine known as a *pile revolver* which will be manufactured locally and at low cost to dry out the ore more efficiently.**
- **Aguia anticipates being able to translate the results into substantiated economic benefits as testing is finalised.**

Ore drying is an expensive process in fertiliser production. The process requires the use of industrial driers. Industrial driers are expensive to buy and costly to run. Initial costing indicated a significant increase in capital and very high operating costs which impacted the project's bottom line. The resultant greenhouse gas emissions lead inevitably to an environmental cost.

Aguia's response was to conduct a series of tests to improve the ore drying process by natural convection using the energy of the sun and the air. It led to the design and manufacture of a unique low-cost machine to harness natural convection which will dry out the ore more efficiently and expedite the production of our Pampafos® natural phosphate fertiliser.

It is proposed that the machine, known as a *pile revolver*, will be manufactured locally at Lavras and at a low cost.

The very promising technical results are detailed below and are currently being further refined. It is an example of our capacity to use innovative engineering techniques to achieve both economic and environmental benefits. We anticipate being able to translate these results into substantiated economic benefits as we work to finalise the testing. Naturally it follows that this will further reduce our environmental footprint at the TEPP.

The technical details of the process are as follows.

### **Natural Drying Test-Work**

Agua conducted a series of natural convection drying, or “natural drying” tests of TEPP ore. The principle of the natural drying technique consists of arranging the ore in piles and exposing the material to the solar radiation. Heating of the pile by solar radiation reduces the relative ore moisture. Natural air circulation removes the moisture from the ore.

From January to August 2021, natural drying tests were performed at the TEPP site using distinct ore pile heights and with average solar radiation varying depending on the season. Ore moisture and temperature were measured daily, after the piles were revolved.

### **Drying Results**

Pile B1 was dried during summer, piles B4 and B5 during autumn, and pile B6 during winter. The ore piles, with distinct heights, began with moisture content of around 16% and were revolved daily until the moisture content decreased to 8%, which is commercially acceptable (Table 01).

All tests, regardless of the pile height, were successful in reducing the moisture by natural drying. Pile B1 reached 8% moisture after 20 days, while Piles B4 and B5 reached this threshold after 25 days, and Pile B6 took 50 days (Table 01 and Figure 01). The variation in drying times is attributed to the difference in solar radiation across the seasons.

**Table 01 – Ore piles conditions and results.**

Ore Pile	Height (cm)	Days to reach 8% moisture	Average solar radiation (KJ/m <sup>2</sup> )	Season
B1	30	20	1,600	Summer
B4	50	25	1,200	Autumn
B5	100			
B6	120	50	910	Winter

Natural drying using solar radiation, with piles that are revolved daily, returned excellent results indicating that the process is feasible. Previous hammer milling tests, the same as those planned to be undertaken in the TEPP grinding circuit showed that the ore can be milled with moisture below 11%, however, the optimum performance of grinding was reached with moisture between 7% and 9%.

### **Next Steps**

Agua’s team is committed to the development of innovative engineering solutions which are both economical and environmentally friendly. The Company is developing a prototype pile revolver that will be tested in the natural drying process on an industrial scale.

The pile revolver was named Macanudo-P1 and its design inspired by compost windrow turners which have been developed to produce compost on a large scale. The windrow turner is a machine that straddles a windrow (a pile/row of cut hay or grain) of 1.25 metres or higher. Turners drive through the windrow at a slow rate of forward movement. They have a steel drum with paddles that are rapidly turning. As the turner moves through the windrow, the material is upturned exposing the wet material at the bottom of the pile to the solar radiation, accelerating the drying rate (Figure 02).

The most significant difference between the Macanudo-P1 turner and the regular compost windrow turners is that the Macanudo-P1 is being developed to withstand the conditions of greater stress in

turning over ore piles rather than compost windrows. All engineering of the Macanudo-P1 was done by Aguia's technical staff and it is currently being constructed by a local Lavras do Sul supplier.

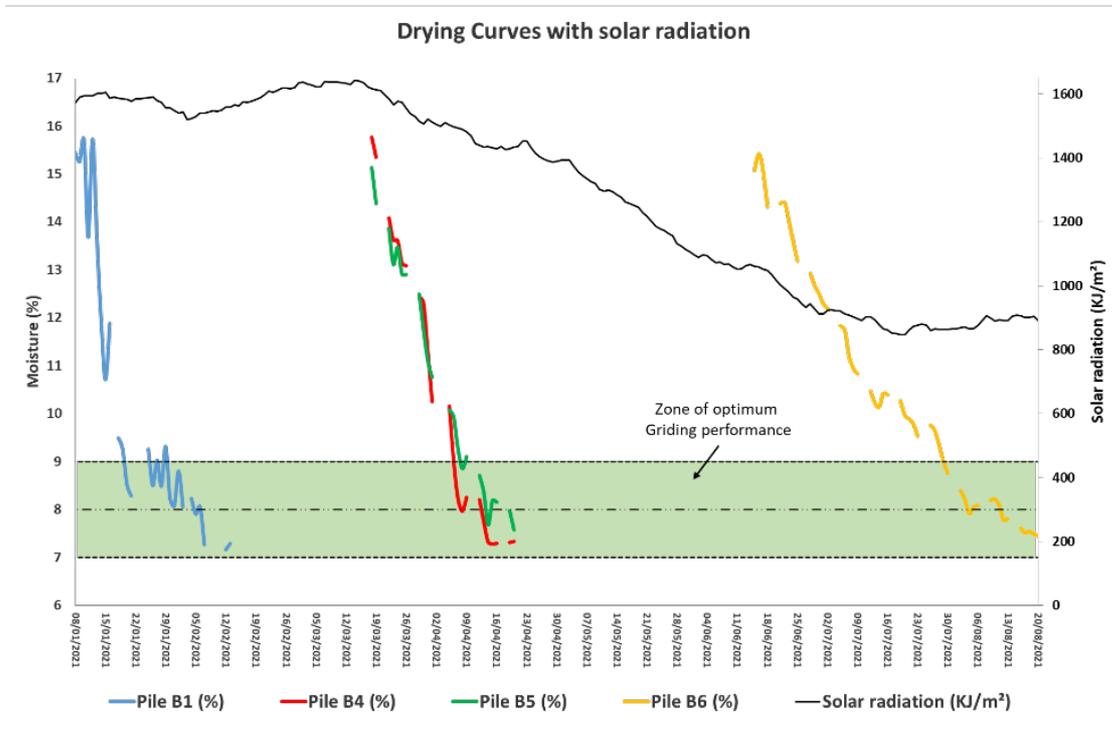


Figure 01 - Drying curve of piles using solar radiation.

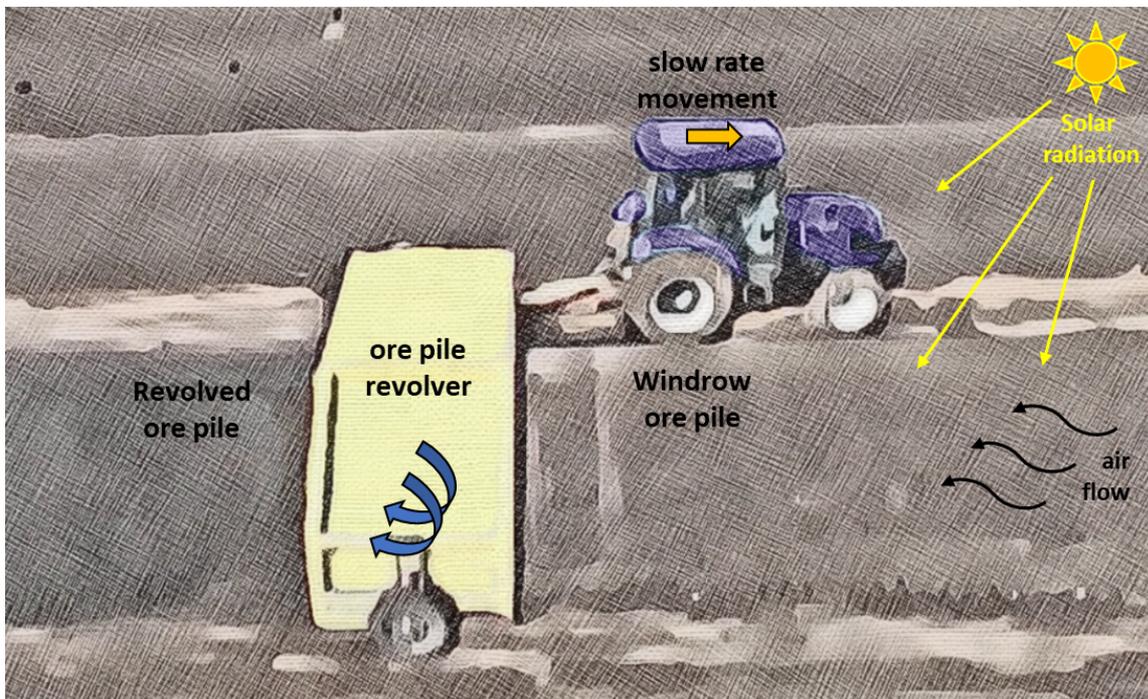


Figure 02 – Schematic view of the natural drying process using a windrow turner machine.

## **Management Commentary**

**Managing Director Dr. Fernando Tallarico said:** *“We are committed to our strategy of building a more efficient and sustainable project for the TEPP. These results demonstrate that drying by natural convection is not only possible but also cost-effective. We are also encouraged by the construction of the Macanudo-P1 prototype using a local Lavras do Sul contractor. We look forward to updating the market on our progress in the near future.”*

## **AUTHORISED FOR ISSUE TO ASX BY FERNANDO TALLARICO, MANAGING DIRECTOR OF AGUIA RESOURCES LIMITED**

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### **About Agua:**

Agua Resources Limited, (“Agua”) is an ASX listed multi-commodity company (AGR:ASX) with pre-production phosphate and metallic copper projects located in Rio Grande do Sul, the southernmost state of Brazil. Agua has an established and highly experienced in-country team based in Porto Alegre, the capital of Rio Grande do Sul. Agua is committed to advancing its existing projects into production whilst continuing to pursue other opportunities within the sector.

### **Caution regarding forward-looking information:**

This press release contains "forward looking information" within the meaning of applicable Australian securities legislation. Forward looking information includes, without limitation, statements regarding the next steps for the project, timetable for development, production forecast, mineral resource estimate, exploration program, permit approvals, timetable and budget, property prospectivity, and the future financial or operating performance of the Company. Generally, forward looking information can be identified by the use of forward-looking terminology such as "plans", "expects" or "does not expect", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved". Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed or implied by such forward-looking information, including, but not limited to: general business, economic, competitive, geopolitical and social uncertainties; the actual results of current exploration activities; other risks of the mining industry and the risks described in the Company's public disclosure. Although the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward looking information. The Company does not undertake to update any forward-looking information, except in accordance with applicable securities law.

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