

23 October, 2017

ASX Release (ASX code: "FYI")

## 99.99% Alumina Achieved from Metallurgical Test Results

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### Highlights

- HPA grade up to 99.99% (Al<sub>2</sub>O<sub>3</sub>) achieved;
- Effectiveness of FYI's HPA process flowsheet demonstrated;
- Extremely low contaminants (particularly Iron and Titanium).

Perth based FYI Resources (the "**Company**" or "**FYI**") is pleased to announce the precipitation and calcination results from the final stage of a two-step metallurgical analysis of samples from the Company's 100% owned Cadoux kaolin project.

Outstanding final results of 99.99% alumina or High Purity Alumina (HPA), have been achieved in the metallurgical test program.

Following the success of initial leach test work (*reported 5 September 2017*), the completion of the HPA test work and achievement of the 99.99% alumina result confirms the amenability of the Cadoux kaolin project for HPA extraction.



*Photograph: FYI's HPA (99.99%) final product*

### Test Work Summary

Initial testing produced in excess of 82% recoverable alumina through conventional leaching. The second stage of selective precipitation and calcination successfully achieved a grade of the targeted **99.99%** alumina.

The metallurgical test work program was undertaken and managed by Independent Metallurgical Operations Pty Ltd (IMO) in Perth. The program comprised: pre-beneficiation, activation, acid leaching, selective precipitation of aluminium chloride and calcination to produce HPA from a composite generated from the Cadoux Kaolin Project.

Not only is the outcome encouraging in terms of technical achievement, the result also supports the Company's strategy to commercially produce HPA from feedstock sourced from the Cadoux kaolin project.

The metallurgical test work sample was selected from composited intervals from the last drilling programme (*refer to ASX Company announcement dated 14 June*

2017). The sample is considered to be representative of the deposit and centred at N6606100 and E518800.

Additional test work information is provided in Appendix A (*attached below*).

### **Outlook**

With the Electronic Vehicle (EV), LED and home power storage markets rapidly expanding, HPA becomes an increasingly important component in the high-quality supply chain required by these products along with lithium, graphite, nickel and cobalt.

### **Next Steps**

On the strength of the successful test work, FYI will proceed to pre-feasibility studies (PFS) to derive a greater level of commercial understanding of the preliminary project engineering, cash-flows and budgets, investigate a number of development options that are available to the Company based on the quality of the feedstock and to undertake a review of the project and strategy risks and fatal flaws.

FYI will keep the market informed with regular updates as the key objectives are achieved.

### **Company Comment**

On reviewing the metallurgical test-work results, FYI Managing Director, Mr Roland Hill commented "The metallurgical test work demonstrates the quality and amenability of Cadoux kaolin as an ideal feedstock for HPA production. We are encouraged by the results and progress to date and will now focus on the next crucial stage of the project which is the delivery of a PFS."

### **Further information:**

Roland Hill  
Managing Director  
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### **About FYI Resources Limited**

FYI is an ASX listed natural resources public company focused on the project development of strategic commodities.

The Company's principal objective is the assembling of a quality portfolio of potash projects in Southeast Asia with the view to long term development and production.

In addition, FYI will also be capitalising on an exceptional opportunity to develop a major HPA (high purity alumina) production project in Western Australia.

## **Competent Person statement**

### Metallurgy:

The information in this release that relates to metallurgy and metallurgical test work is based on information reviewed and compiled by Mr Daryl Evans, a Competent Person who is a Fellow of the Australian Institute of Mining and Metallurgy (AusIMM). Mr Evans is an employee of Independent Metallurgical Operations Pty Ltd, and is a contractor to FYI. Mr Evans has sufficient experience that is relevant to this style of processing and type of deposit under consideration, and to the activity that he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code). Mr Evans consents to the inclusion of the report in the form and context in which it appears.

## **Appendix A October 2017**

# **JORC Code, 2012 Edition – Table 1**

## **Section 1 Sampling Techniques and Data**

<b>Criteria</b>	<b>Commentary</b>
<b><i>Sampling techniques</i></b>	Drilling sampling was previously reported (14 June 2017).  Metallurgical test work applied to the recovered drilling samples is intended to determine aluminium leach and precipitation characteristics of the kaolin. Sample preparation and metallurgical test work was performed by Independent Metallurgical Operations Pty Ltd (IMO) in Perth, Western Australia.
<b><i>Drilling techniques</i></b>	Previously reported (14 June 2017).
<b><i>Drill sample recovery</i></b>	Previously reported (14 June 2017).
<b><i>Logging</i></b>	Previously reported (14 June 2017).
<b><i>Sub-sampling techniques and sample preparation</i></b>	Drilling sampling was previously reported.  Sampling techniques for the metallurgical test work were in line with industry standards in determining composite samples representative of the resource. This included drying and splitting of individual samples from 58 drill-holes and then compositing into a representative sample.  The sampling procedures were under the control of qualified and experienced IMO employees and considered adequate for the intended metallurgical test work.  Sizes and representative nature of the samples is considered appropriate.  Details of sampling techniques are described in the “ <b><i>Other substantive exploration data</i></b> ” section in Table 2.

<b>Criteria</b>	<b>Commentary</b>
<b>Quality of assay data and laboratory tests</b>	Analysis for the precipitation and calcine test work was deemed appropriate for the detailed test work as it was undertaken in a laboratory environment with precision equipment and included worldwide accepted controls.
<b>Verification of sampling and assaying</b>	<p>The metallurgical test work was supervised by suitably qualified personnel under laboratory conditions.</p> <p>Primary data is captured on paper in the laboratory and then re-entered into spreadsheet format by the supervising metallurgist, to then be loaded into the company's database.</p> <p>No adjustments are made to any assay data.</p>
<b>Location of data points</b>	All samples used in the metallurgical test work have been accurately recorded by the laboratory technician and checked by the supervising metallurgist.
<b>Data spacing and distribution</b>	Industry standard sample distribution and source material representation methodology has been applied.
<b>Orientation of data in relation to geological structure</b>	An industry standard sample distribution and source material representation methodology has been applied. The risk of sample bias is considered to be low.
<b>Sample security</b>	All samples were under supervision at the laboratory. All residual sample material is stored securely in sealed bags.
<b>Audits or reviews</b>	Mr Evans has reviewed QAQC results and found these to be acceptable.

## Section 2 Reporting of Exploration Results

<b>Criteria</b>	<b>Commentary</b>
<b>Mineral tenement and land tenure status</b>	Previously reported (14 June and 26 July 2017)
<b>Exploration done by other parties</b>	Previously reported (14 June 2017).
<b>Geology</b>	The project area is underlain by weathered granitoid Archaean rock of the Yilgarn Granites is the likely parent material for the kaolin. Here, deep weathering of the feldspathic and ferromagnesian minerals within the metamorphosed granitic has resulted in the formation of kaolinite. There is no outcrop but recognizable granitoid fragmental rocks are sometimes present just below surface. The crust of the overburden comprises gravel and sands over reddish to off white clay. White kaolin underlies the overburden followed by weathered, partial oxidised and then fresh granitoids at depth. The recent drilling at the property has revealed a weathering profile which is very common in Western Australia with the granitoid rocks, deeply weathered forming a leached, kaolinized zone under a lateritic crust. Analysis at the Laboratory shows particle size distributions are typical of "primary style"

<b>Criteria</b>	<b>Commentary</b>
	kaolins produced from weathered granites. The crust of overburden comprises gravel and sands over reddish to off-white clay to an average depth of 5m. White kaolin then averages approximately 16 m before orange to yellow sandy and mottled clays are intersected which are followed by recognizable rounded granitoid material. The thickness of the kaolin profile varies from less than 1m to a maximum of 22m. Fresh granitoids are found at depths of between 10 and 30m. All kaolin resources are within 4 to 11 metres of the surface. 47 air core drill-holes were completed with a total of 824m drilled. All holes were drilled vertically. Intersected kaolin thickness ranged from 4-11m.
<b>Drill hole Information</b>	Sample and drill hole coordinates are provided in market announcements (14 June 2017). The metallurgical test-work sample was selected from composited intervals from the last drilling programme. The sample is considered to be representative of the deposit and centred at N6606100 and E518800.
<b>Data aggregation methods</b>	The nature of the metallurgical test work did not require data aggregation, however all data points were noted and recorded in an appropriate data base for the purposes of reporting the test-work.
<b>Relationship between mineralisation widths and intercept lengths</b>	Previously reported (14 June and 26 July 2017).
<b>Diagrams</b>	Project related diagrams and graphs are presented in previous ASX announcements (14 June, 26 July and 5 <sup>th</sup> September 2017).
<b>Balanced reporting</b>	The reporting is considered to be balanced and impartial.
<b>Other substantive exploration data</b>	Metallurgical test-work was conducted and completed on composite leach samples by Independent Metallurgical Operations (IMO). IMO designed and implemented a diagnostic flowsheet specific to the Cadoux deposit to determine: feed activation, acid leaching, selective precipitation and calcining characteristics of the kaolin.  The test work was based on the following procedure applied to a composite derived from samples collected during the recent drilling program (see FYI ASX announcement dated 14 June and 26 July 2017).  The sample was initially beneficiated by screening to reject coarse Silica and generate a fine upgraded feed stock for HPA processing.  The upgraded feed stock was then calcined at 700°C for one hour to activate the Kaolin, increasing amenability to downstream acid leaching. The sample was then leached in 26% (w/w) Hydrochloric acid at 20% solids and 100°C for 180 minutes with kinetic samples collected to quantify leach extraction.

Criteria	Commentary
	<p>Batch leaching test work was completed based on Hydrochloric Acid leaching, resulting in an Aluminium rich leach liquor, low in Iron, Silica and other gangue species.</p> <p>HPA preparation test work was completed by sparging the Aluminium rich Hydrochloric Acid leach liquor with Hydrogen Chloride gas in an agitated reactor cooled to maintain the temperature below 30°C.</p> <p>Hydrogen Chloride sparging and Aluminium Chloride precipitation was completed in two stages and a high purity Aluminium Chloride intermediate product recovered via filtration and washing with Hydrochloric acid.</p> <p>The intermediate Aluminium Chloride precipitate was then subjected to prior drying, followed by calcination at 1,000°C for a period of four (4) hours.</p> <p>The final HPA product was assayed via XRF returning an assay in the range 99.80 – 99.99% Al<sub>2</sub>O<sub>3</sub>.</p>
<b>Further work</b>	Further flowsheet development metallurgical test work will be planned scheduled and conducted as part of in-depth feasibility and project economic studies.