PILBARA MINERALS
LIMITED

ACN 112-425-788

ASX ANNOUNCEMENT **25 May 2015**

PILGANGOORA LITHIUM PROJECT: TEST WORK CONFIRMS POTENTIAL TO PRODUCE HIGH-QUALITY, HIGH-VALUE PRODUCTS

RESULTS SHOW DEPOSIT CAN PRODUCE A HIGH-GRADE SPODUMENE CONCENTRATE WITH LOW IMPURITIES, SUITABLE FOR USE IN HIGH-VALUE GLASS AND CERAMIC APPLICATIONS

HIGHLIGHTS:

- **High-quality spodumene concentrate successfully produced** from 100kg bulk sample of Pilgangoora material by German industrial minerals specialists ANZAPLAN, using **simple flotation and magnetic separation**.

- **Flotation testing of the bulk sample resulted in very high recoveries of spodumene in excess of 90% with two flotation tests producing concentrate grading 5.7% Li_20 (lithium oxide) and 0.37% Fe_20_3 (iron oxide).**

- Magnetic separation after flotation **reduced the iron oxide content of the spodumene concentrate to 0.11% Fe_20_3. This meets the specifications of typical glass-grade spodumene products**, which require low iron oxide content, typically in the range of **0.06 – 0.17% Fe_20_3.**

- **After magnetic separation, the spodumene product was screened** into a **100 – 300µm fraction**, which is a particle size distribution typical in glass applications, with a **final concentrate grade of 6.5% Li_20 and 0.09% iron oxide achieved**. The iron oxide content is at the lower end of the range of typical glass products and the lithium oxide content is at the higher end of the range.

- **The results provide strong support for the commercial potential of the Pilgangoora deposit**, given that production of glass and ceramics represents a key use for lithium compounds and minerals globally, alongside their growing use in the rapidly expanding global battery sector.

Australian strategic metals company Pilbara Minerals Ltd (ASX: PLS) is pleased to advise that its plans to fast-track the evaluation and development of its flagship 100%-owned **Pilgangoora Lithium-Tantalum Project**, located 150km south-east of Port Hedland in WA's Pilbara region, have received an important boost following the receipt of highly encouraging metallurgical test work results for the deposit.

The results – from a test work program undertaken by independent industrial and strategic minerals specialists ANZAPLAN – have confirmed the ability to produce a **high-grade spodumene concentrate** with **low impurities** from Pilgangoora material, suitable for use in high-value **glass** and **ceramic** applications.

This is an important outcome for the Pilgangoora Project given that 35% of lithium minerals and compounds globally are used in the production of glass and ceramics, with their use in rechargeable lithium batteries representing a relatively new (albeit widely publicised) growth area.

The results support the commercial potential of the Pilgangoora Project, which is already well-established as one of the largest hard rock lithium-tantalum deposits in the world. Drilling is continuing at Pilgangoora to expand and upgrade the current JORC resource.

Pilbara Minerals Executive Director, Mr Neil Biddle, said the highly encouraging test work results represented an important breakthrough for Pilgangoora: "These results validate the commercial potential of the deposit by demonstrating the ability to produce a high-quality, high-grade spodumene concentrate with low impurities that would be suitable for use in glass and ceramic applications," he said.

"For many years, the majority of lithium compounds and minerals have been used in the production of ceramics, glass and aluminium. This is now of course changing with the rapid growth in consumption for batteries, including rechargeable lithium-ion and lithium-polymer batteries."

"This new market segment is being driven by portable consumer goods and the start of mass production of hybrid, plug-in hybrid and electric vehicles using lithium batteries used by major automotive manufacturers. It is pleasing to know that our material is capable of producing high-quality products which will be suitable for all market sectors," Mr Biddle said.

"The high quality and broad market appeal of Pilgangoora products will position the project at the premium end of emerging lithium deposits globally and, combined with its enormous scale, will ensure that it continues to emerge as a world-class development opportunity for Pilbara Minerals."

ANZAPLAN Metallurgical Testwork

Pilbara commissioned ANZAPLAN to undertake initial testwork focusing on simple flotation and magnetic separation of Pilgangoora material to produce spodumene concentrate from a 100kg bulk sample. This composite sample was created from several drill-holes from the Priority 1 JORC resource area.

Samples were composited, crushed and homogenised, 5kg split off and assayed. The expected head grade was calculated at around 2.0% Li_2O, a bulk sample of 261kg was created, with 100kg dispatched to ANZAPLAN and the remainder reserved. The spodumene concentrate was evaluated by ANZAPLAN with regard to the impurity levels and potential applications in the glass and ceramic industry, where iron content is the most important quality parameter.

ANZAPLAN is a specialist in the high-purity industrial and strategic minerals and metals businesses, providing a multitude of services, such as materials testing and analysis, industry expertise and market intelligence, basic and advanced engineering services. For further information see www.anzaplan.com.

The objective of the test work program was to produce a spodumene mineral concentrate applying simple flotation and magnetic separation processes. A high level summary of the ANZAPLAN report is provided below, with a full copy of the report and detailed findings attached to this ASX Announcement.

The sample was ground to <0.3mm and de-slimed at 20µm to produce a fraction in the 20 – 300µm size bracket for further processing. Material of this size was purified by mica and heavy mineral flotation, conditioned at high solids content (scrubbing) and de-sliming.

Following purification, spodumene flotation was tested including variation of flotation conditions (collectors) to produce a high-grade spodumene concentrate. Finally, the flotation concentrate was further purified by magnetic separation.

Final product was screened into a glass sand fraction of 0.1 – 0.3mm and a fine fraction of 20 – 100µm. After a purification process and spodumene flotation, a spodumene concentrate with lithium oxide content of 5.4 wt.-% Li_2O (67 wt.-% spodumene) and an iron oxide content of 0.37 wt.-% was achieved.

The lithium oxide content of the spodumene concentrate after flotation is within the typical product specifications in the market, which range between 5 wt.-% Li_2O and up to 7.5 wt.-% Li_2O. For the use of spodumene in glass and ceramics industry iron content is the most important quality parameter. The iron oxide content of typical products in the market ranges between 0.06 wt.-% and 0.17 wt.-% of iron oxide.

After further purification of the Pilgangoora flotation concentrate by magnetic separation, the iron oxide content was reduced to 0.11 wt.-%, which would meet the specifications of typical glass-grade spodumene products.

Finally the spodumene product after magnetic separation was screened into a 100 – 300µm size fraction, which is a particle size distribution being typical in glass applications, and a fine fraction of 20 – 100µm (suitable for ceramics).

The glass sand fraction (100 – 300µm) is enriched in lithium (6.5 wt.-% Li_2O, corresponding to 81 wt.-% spodumene), the iron oxide (0.09 wt.-%) is reduced compared to the feed fraction and vice versa in the fine fraction. Therefore, the purification, flotation and magnetic separation process is more selective at a coarse particle size.

In the glass sand fraction, iron oxide is at the lower end of the range of typical products (0.06 – 0.17wt.-%) and the Li_2O content at the upper end (5.0 – 7.5wt.-%). This indicates that spodumene with low iron content is present in the sample, offering high potential for producing glass-grade spodumene products.

Building on the results of the recent test work, ANZAPLAN has recommended that a more detailed testwork plan be undertaken using diamond drill core samples, which are expected to be available in the near future.

ANZAPLAN proposes test work targeting the exploitation of the full potential of the pegmatitic raw material including recovery of tantalum-bearing minerals and evaluation of the potential of having additional side products such as quartz and feldspar.

Nagrom Testwork

As announced previously, test work is also currently underway at Nagrom, specialist Mineral Processors, on a 150kg sample of the same bulk material supplied to Anzaplan. The proposed test work will include **tantalum recovery plus lithium**, and is designed to establish a suitable flow sheet for the recovery of both tantalum and lithium (Spodumene).

The test flow sheet investigates primary gangue removal via gravity separation (using wet tables) and re-grind of the Middlings stream to liberate locked tantalum. The Rougher and Scavenger Concentrates are then further cleaned via gravity separation (wet tables) to produce a high-grade tantalum concentrate and a lithium concentrate (two product streams).

Preliminary results to date indicate that high recoveries of tantalite can be achieved utilising simple crushing, coarse grinding and gravity separation of tantalite. High grade primary tantalum concentrates can be therefore be produced via a simple gravity flow-sheet. The primary lithium concentrate will be subject to flotation and magnetic separation to produce a clean spodumene product.

Additional Testwork

A one tonne bulk sample derived from the same head sample as the samples sent to ANZAPLAN and Nagrom has been despatched to a large lithium end user in China for metallurgical testwork. The results from their testwork are expected before the end of June.

Pilbara is also investigating technologies for conversion of spodumene to lithium hydroxide and lithium carbonate for use in batteries, pharmaceuticals, lithium greases and as fluxing agents in production of aluminium and polymers. Discussions are underway with a number of parties and representative samples of spodumene concentrate are being prepared by Nagrom for testing by at least two technology providers.

Results Review

The information in this release that relates to metallurgical test results has been reviewed by Mr John Young (Exploration Manager of Pilbara Minerals Limited). Mr Young is a shareholder of Pilbara Minerals. Mr Young is a member of the Australasian Institute of Mining and Metallurgy and has sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration.

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Upcoming Pilbara Investor Presentations

Pilbara's Executive Director, Mr Neil Biddle, will update investors on progress with the Company's key strategic metals projects in the Pilbara region of WA at a *Resources Rising Stars* investor luncheon series to be held in the first week of June in the following cities:

- **Melbourne** – Tuesday, 2 June 2015: 12.00-2.30pm, RACV Club, 501 Bourke Street
- **Sydney** – Wednesday, 3 June: 12.00-2.30pm, Intercontinental Hotel, 117 Macquarie Street
- **Brisbane** – Thursday, 4 June: 12.00-2.30pm, Customs House, 399 Queen Street

For details or additional information, please visit www.resourcesrisingstars.com.au or contact Read Corporate on +61 8 9388 1474.

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About Pilbara Minerals

Pilbara Minerals (Pilbara) is a mining and exploration company listed on the ASX, specialising in the exploration and development of the specialty metals tantalum and lithium. Pilbara is currently developing the Tabba Tabba Tantalum deposit, located approximately 50km south-east of Port Hedland through a 50% Joint Venture. Pilbara is also drilling and developing the advanced 100%-owned Pilgangoora tantalum-lithium deposit close to Tabba Tabba.

The primary source of tantalum is from minerals such as tantalite, columbite, wodginite and microlite contained in pegmatite ore bodies. The largest deposits are located in Australia, Brazil and Africa. Tantalum's **major use is** in the production of electronic components, **especially for capacitors,** with additional use in components for chemical plants, nuclear power plants, airplanes and missiles. It is also used as a substitute for platinum.

The tantalum market is boutique in size with around 1,300 tonnes required each year. However the market is rapidly growing due to capacitor use in wireless and handheld devices. PLS's Tabba Tabba Project could supply approximately 7% of the annual market consumption over two years. There are two major buyers of tantalum raw product worldwide: HC Stark and Global Advanced Metals.

Lithium is a soft silvery white metal and has the highest electrochemical potential of all metals. In nature it occurs as compounds within hard rock deposits and salt brines. Lithium and its chemical compounds have a wide range of beneficial properties resulting in numerous chemical and technical uses. A key growth area is its use in lithium batteries as a power source for a wide range of applications including electric bikes, motor vehicles, buses, trucks and taxis.