

# Pilgangoora, a world-class lithium and tantalum production center

Cathodes, 13 November 2019 Ken Brinsden, Managing Director and CEO **ASX: PLS** 



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## **Important Notices and Competent Persons Statement**

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Recipients of this presentation outside Australia should note that it is a requirement of the Australian Securities Exchange listing rules that the reporting of ore reserves and mineral resources in Australia comply with the Australasian Joint Ore Reserves Committee Code for Reporting of Mineral Resources and Ore Reserves ("JORC Code"), whereas mining companies in other countries may be required to report their ore reserves and/or mineral resources in accordance with other guidelines (for example, SEC Industry Guide 7 in the United States). Recipients should note that while Pilbara's mineral resource and ore reserve estimates comply with the JORC Code, they may not comply with the relevant guidelines in other countries, and do not comply with SEC Industry Guide 7. In particular, SEC Industry Guide 7 does not recognise classifications other than proven and probable reserves and, as a result, the SEC generally does not permit mining companies to disclose their mineral resources, including indicated and inferred resources, in SEC filings. Accordingly, if Pilbara were reporting in accordance with SEC Industry Guide 7, it would not be permitted to report any mineral resources, including indicated and inferred resources, and the amount of reserves reported by Pilbara may be lower than its estimates. You should not assume that quantities reported as "resources" will be converted to reserves under the JORC Code or any other reporting regime or that Pilbara will be able to legally and economically extract them. In addition, investors should note that under SEC Industry Guide 7, mine life may only be reported based on ore reserves. Mine life estimates in this presentation assume that a portion of non-reserve resources will be converted to ore reserve resources will be converted to a sufficie

#### Acceptance

By attending a presentation or briefing, or accepting, accessing or reviewing this document you acknowledge, accept and agree to the matters set out above.

### **Competent Persons Statements**

The Company confirms it is not aware of any new information or data that materially affects the information included in the 17 September 2018 Pilgangoora Mineral Resource estimate and that all material assumptions and technical parameters underpinning the estimate continue to apply and have not materially changed when referring to its resource announcement made on 17 September 2018.

The Company confirms it is not aware of any new information or data that materially affects the information included in the 17 September 2018 Pilgangoora Ore Reserve estimate and that all material assumptions and technical parameters underpinning the estimate continue to apply and have not materially changed when referring to its resource announcement made on 17 September 2018.

The information in this presentation that relates to Exploration Results and Exploration Targets is based on and fairly represents information and supporting documentation prepared by Mr John Holmes (full-time Exploration and Geology Manager of Pilbara Minerals Limited). Mr Holmes is a shareholder of Pilbara Minerals. Mr Holmes is a member of the Australasian Institute of Geoscientists and has sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration, and to the activities undertaken to qualify as Competent Persons as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Holmes consents to the inclusion in this report of the matters based on his information in the form and context in which they appear.

### No New Information – Production Targets and Forecast Financial Information

The Company confirms that it is not aware of any new information or data that materially affects the information included in the announcement dated 26 March 2019 "Stage 3 Scoping Study Outcomes" and 17 September 2018 "Pilgangoora Resource and Reserve Upgrade", and that all material assumptions and technical parameters underpinning the production targets, forecast financial information and estimates in those announcements continue to apply and have not materially changed.

# **PROXIMITY TO MARKET** ENVIRONMENT 5 GROWTH DW-COST **WA HARD ROCK** LITHIUM IS THE FUTURE S STABLE GOVERNANCE SOCIAL RELIABLE PARTNERS CONFLICT FREE SAFETY



# LITHIUM EXTRACTED FROM ORE THE FUTURE PROOF SOLUTION FOR VOLKSWAGEN

## Lithium ore to lithium hydroxide

- Commercially more attractive
- More stable to extract and easier to scale
- Better suited to next generation of batteries

# Australia the world market leader for ore-based production

- Stable political system
- High degree of transparency
- Ambitious environmental standards

# Volkswagen focused on lithium supply from mining industry

- Stable prices
- Guaranteed capacity
- Transparent sustainability

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# Pilgangoora Lithium-Tantalum Project

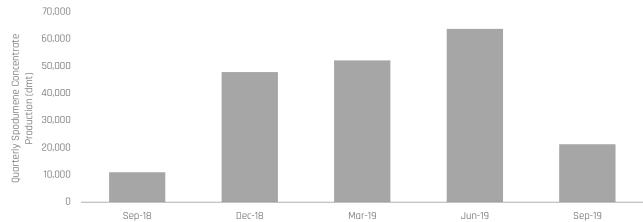
One of the largest spodumene-tantalite resources in the world

- Production ramp up well advanced
- 11 shipments with 13 cargoes of spodumene concentrate during FY19
- Products shipped
  - ~6% spodumene concentrate
  - +5% and +30% tantalite concentrates
- Improved plant performance and product recovery
- Short-term production moderation strategy in response to current market dynamics
- New Stage 1 production offtake agreement with Great Wall Motors
- Term sheet agreed with POSCO for JV, final documents and board approvals December Quarter 2019
- New strategic investor CATL



# **Production update**

- Campaign mining and processing programs underway.
- Material improvement in product recovery performance following the most recent plant modifications:
  - 60% lithia recovery<sup>1</sup> achieved for the December quarter to date, inclusive of all commissioning, optimisation and ramp-up/down production periods; and
  - 66%-71% recovery range (average 68.5% sustained lithia recovery) between 6 10 November during steady-state production.
- Targeting cash operating costs<sup>2</sup> of US\$320 \$350/dmt CFR China (SC6.0 basis) from June 2020 and once steady state name plate capacity has been achieved.





Production moderated from late June 2019 in response to customer demand

- Current production only intending to meet expected demand
- Disciplined approach to minimise cash expenditure in light of difficult market conditions

<sup>1</sup> Unreconciled daily lithia recovery, with final recovery results subject end-of-month survey reconciliation. <sup>2</sup> Cash operating costs include mining, processing, transport, state and private royalties, native title costs, port, shipping/freight and site based general and administration costs and are net of Ta<sub>2</sub>O<sub>5</sub> by-product credits.



## Pilbara Minerals - connected to the entire supply chain



# **Exceptional growth opportunity**

A clear expansion pathway to meet customer growth requirements over time

**UPSTREAM DOWNSTREAM** STAGE 1: 2MTPA STAGE 2: 5MTPA STAGE 3: 7.5MTPA\* POSCO JV STAGE: STAGE: STAGE: **STAGE:** DFS and conditional FID complete Proposed subject to market Term Sheet Operations on original Stage 2 project STATUS: STATUS: **STATUS:** Formal agreements. FID and Board Production (in ramp up) and Revised Stage 2 expansion under STATUS: consideration Scoping study complete approvals expected in December On hold pending customer demand - Feasibility study expected to Ouarter 2019 complete in January 2020 and FID shortly thereafter **PRODUCTION:** FINAL PRODUCTION: **PRODUCTION:** Incremental build out to 800-330,000tpa ~6% spodumene **PRODUCTION:** 40ktpa LCE facility concentrate and Up to 1.2Mtpa ~6% spodumene 21% ownership increasing to 30% 850,000tpa~6% spodumene 321,000lbspa +5% tantalite concentrate and 800.000lbspa +5% concentrate 1.100.000lbspa +5% Commissioning expected from the tantalite concentrate tantalite concentrate March Quarter 2021 **OFFTAKE: OFFTAKE: OFFTAKE: OFFTAKE:** POSCO developing the offtake Stage 1 spodumene Stage 1 and 2 spodumene 100% uncontracted pipeline following final product concentrate ~100% under qualification agreement agreement

## **Proposed POSCO JV**

Very important strategic relationship with POSCO for participation in the rapidly developing South Korean lithium ion battery market

- Up to 30% JV in chemical conversion facility in South Korea with the capacity of 40ktpa (LCE basis)
- Facility to apply Posco's PosLX technology for lithium chemicals purification
  - Outstanding technology creating very high purity products and enabling reagent recycling
  - Hydroxide / carbonate production underway at the Gwangyang demo plant
- Synergy maximisation through development within a larger battery raw materials industrial park
- JV term sheet signed
- FID of both Boards expected in the December Quarter 2019



# **CATL strategic benefits**

New strategic relationship with a strong, experienced, global partner



Combines **CATL's downstream battery and market expertise** with Pilbara Minerals' expertise in upstream lithium mining operations



Further diversifies Pilbara Minerals' **strategic shareholder** base, adding a battery manufacturer to the existing core strategic shareholders



CATL is a key player in the battery market with a **strong balance sheet (US\$4.7bn in cash¹)** 



Connects Pilbara Minerals to one of the **world's largest battery companies**, further integrating Pilbara Minerals' within the lithium ion supply chain



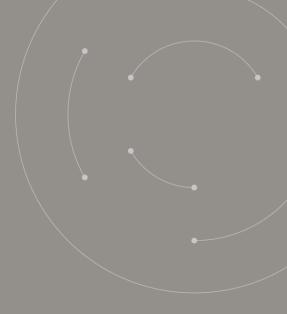
CATL is **supportive of Pilbara's development strategy** (subject to lithium market sentiment and other customer demand) and **the scale and quality of the Pilgangoora project** 



1. As at 30 June 2019

## **Chinese spodumene convertors - 2012**

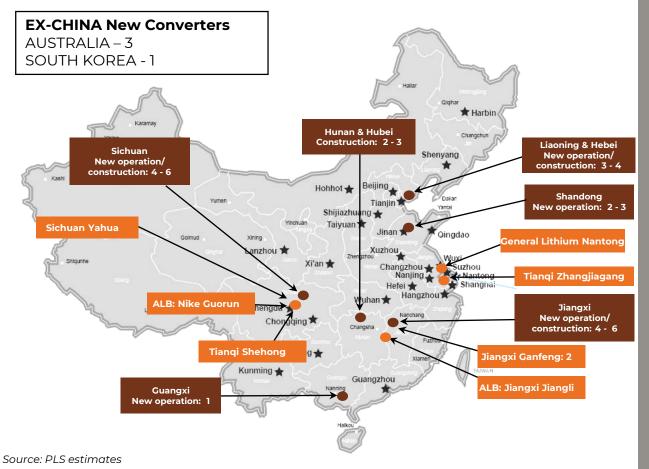




- Eight facilities in operation
- Limited export capacity



## Chinese spodumene convertors - 2019



Approximately 20 facilities already in operation

Export capacity growing

Approximately 15 facilities in varying stages of construction and/or commissioning, including many new operators without existing offtake in place



### PRODUCE

- Achieve annual nameplate production capacity 330,000dmt of high-quality 6% spodumene concentrate and 300,000lbs of tantalite concentrate.
- Complete plant rectification and improvement works to support lower production costs.

## Long term strategy to become a fully integrated lithium raw material and chemical supplier

### GROW

- Increase mine life through exploration
- Complete studies and secure funding for incremental Stage 2 expansion.
- Commence incremental project expansion in line with customer demand.

### DIVERSIFY

- Finalise JV with POSCO to develop and operate a 40,000tpa downstream chemical conversion facility in South Korea.
- Continue to expand and diversify our customer base.





...Powering a sustainable energy future

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