

Evolving landscape of strategic partnerships in the lithium supply chain

Dale Henderson, Chief Operating Officer
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ASX: PLS



...Powering a sustainable energy future



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No new information regarding the Pilgangoora Project

Information relating to the current mineral resource and ore reserve estimates, production targets and forecast information derived from the production targets (including information relating to the proposed expansions of the Pilgangoora Project), each in respect of the Pilgangoora Project, is extracted from the ASX announcement dated 3 August 2018 entitled "Outstanding DFS Results Support Pilgangoora Expansion", the ASX announcement dated 17 September 2018 entitled "Pilgangoora Reserve and Resource Upgrade", the ASX announcement dated 26 March 2019 "Stage 3 Scoping Study Outcomes", the ASX announcement dated 27 August 2019 entitled "Update on Partnering Process and Revised Stage 2", and as updated in the 30 June 2019 Annual Report.

Pilbara Minerals confirms that it is not aware of any new information or data that materially affects the information included in these announcements and that all material assumptions and technical parameters underpinning the resource and reserve estimates, production targets and forecast financial information derived from the production targets in the announcements continue to apply and have not materially changed. The scoping studies and other technical studies referred to in this presentation in respect of the Revised Stage 2 expansion and the Stage 3 expansion have been undertaken to determine the potential viability of those expansions and to reach a decision to proceed with more definitive studies. Each scoping study has been prepared to an accuracy level of $\pm 30\%$. Each scoping study and technical study is based on low-level technical and economic assessments and is insufficient to provide assurance of an economic development case at this stage or provide certainty that the conclusions of the scoping study will be realised. The results of the scoping studies should not be considered a profit forecast or production forecast.

Changing Energy Landscape

Driving the Lithium-Ion battery industry development

Growth Drivers

ENVIRONMENTAL

(ESG, Climate change)

COST REDUCTIONS

(renewable energy enabling, mobility, EV's)

NEW PRODUCT DEMAND

(Drones, EBikes, E buses)

Industry Themes

SUSTAINABILITY

- **Scale** – across supply chain (mines, chemical converters, battery makers and OEM's)
- **ESG focus** increasing
- **Clean energy** focus increasing

COST

- **Vertical integration** of supply chain
- **Scale** developments
- **Minimize feed variation** where possible

QUALITY

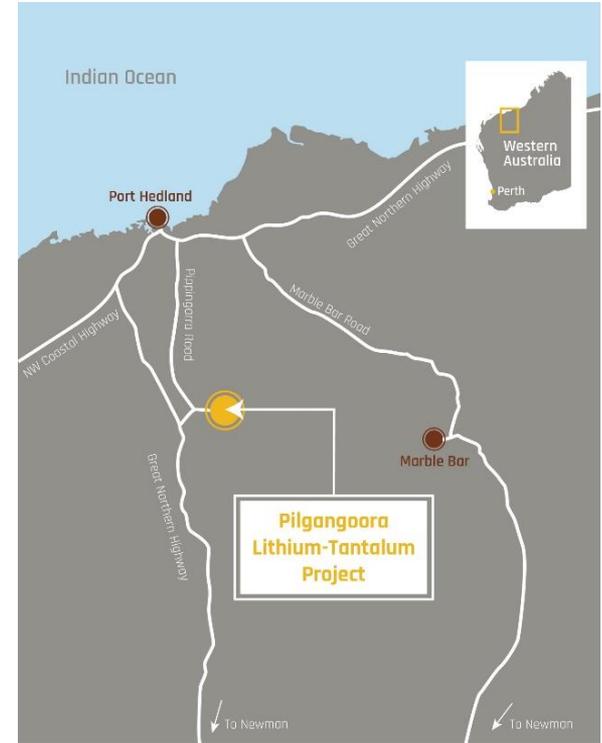
- **Qualification** processes vertically
- **Processing integration** through supply chain



Pilbara Minerals

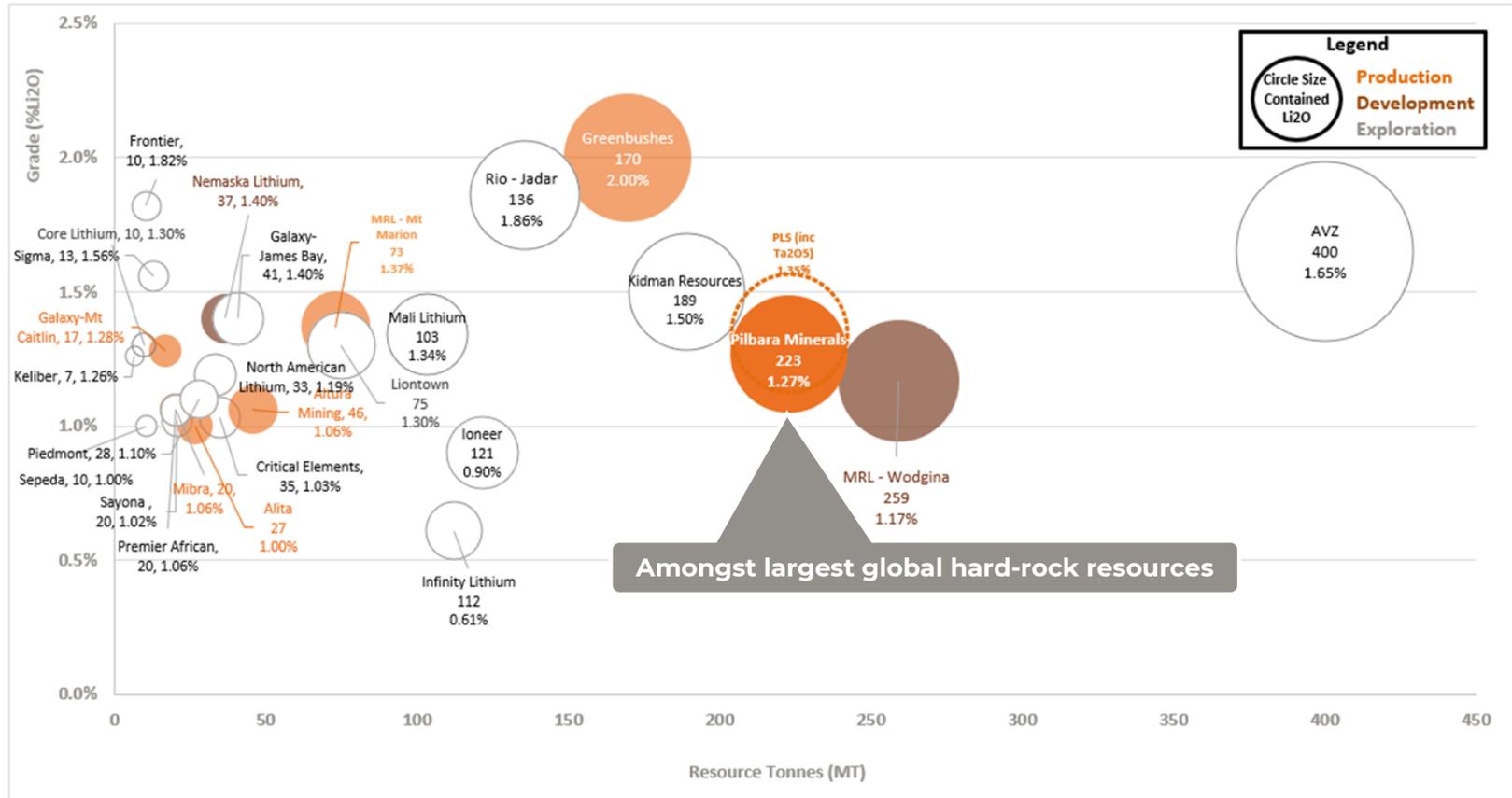
Operating Pilgangoora - one of the largest spodumene-tantalite resources in the world

- ASX200, \$723M¹ market cap
- 100% owned Pilgangoora Lithium-Tantalum project
- **23 year mine life** at 5Mtpa processing capacity
- Products:
 - ~6% Li₂O **spodumene** concentrate
 - +5% primary **tantalite** concentrate
- Multi-stage mine development and downstream:
 - **Stage 1 (330ktpa) in production (moderated)**
 - Stage 2 (800-850ktpa) phased expansion study nearing completion
 - Downstream partnership in negotiation with POSCO
- Leading partners; CATL, General Lithium, Ganfeng Lithium and Great Wall Motors and POSCO



¹ Approximate market capital value as at 11th February 2020.

Pilgangoora – globally significant hard rock lithium resource



Strong relationships with leading, global partners

Strategic Partner	Partnerships	Capacity (Current and Future)
	<p>China's fourth largest lithium producer</p>	<p>Strategic partnership with major Chinese battery industry participants.</p> <p>22kt LCE - Jiangxi and Jiangsu</p> <p>Future: 82kt LCE on construction of Hubei plant (60Kt LCE)</p>
	<p>World's third largest and China's largest lithium compounds producer</p>	<p>Strategic partnerships throughout the supply chain, including; LG Chem, BMW, VW and Panasonic Tesla</p> <p>67.5kt LCE - Jiangxi (two plants)</p> <p>Future: Aiming for 200kt LCE by 2025</p>
	<p>World's fifth largest steel producer</p>	<p>Existing battery raw materials production + diversification into lithium chemical conversion</p> <p>Major partnerships with; LG Chem, Samsung SDI and SK Innovation</p> <p>Approximately 4kt LCE (hydroxide capacity) Other battery raw materials production including cathodes, anodes, nickel and cobalt sulphate</p> <p>Future: 40kt LCE Hydroxide in Gwangyang, South Korea</p>
	<p>China's largest SUV manufacturer</p>	<p>Establishment of battery R&D and manufacturing plant in Jiangsu by SVOLT Energy Technology, GWM wholly-owned subsidiary. Strategic partnership with BMW.¹¹</p> <p>25kt LCE – Guangxi 7 x R&D centres, 4 currently in operation SVOLT Battery Plant in Jiangsu, 4GWH</p> <p>Future: 100GWh - SVOLT intends to build 5 lithium-ion battery plants by 2025 in China, Germany and U.S.</p>
	<p>China's largest lithium battery manufacturer</p>	<p>Strategic partnerships throughout the supply chain, including; Tesla, Toyota, VW, BMW, Honda, Hyundai, Volvo and Daimler</p> <p>40 GWh/yr lithium ion battery capacity 30 GWh/yr battery plant Yibin under construction 100 GWh/yr battery factory in Germany by 2025</p>

Pilgangoora Operation



Pilgangoora Operation



Pilgangoora Operation



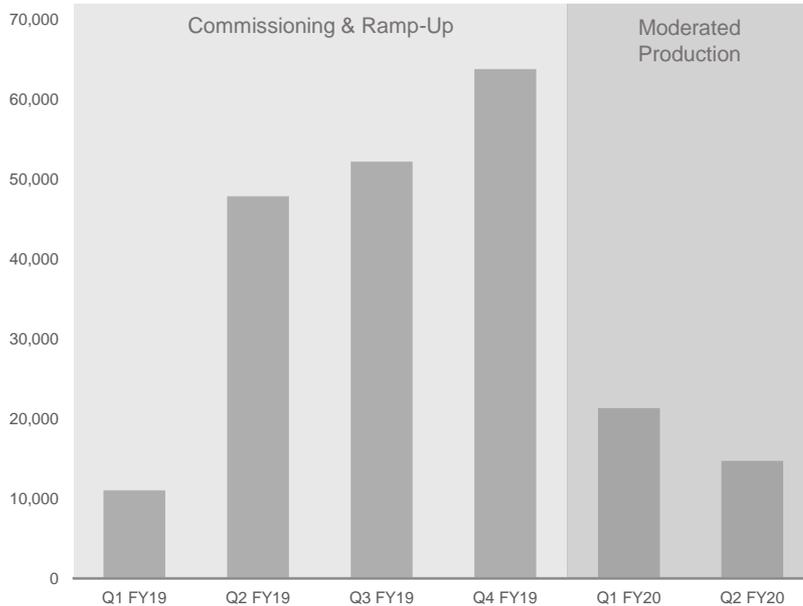
Downstream Participation



Pilgangoora Operation Journey

Explorer to producer and now moving through soft cycle.

Quarterly Production
(dmt)



Nameplate production

- ~330,000tpa, ~6% Li₂O spodumene concentrate
- ~321,000lbspa, +5% primary tantalite concentrate

Current 'Moderated Production'

- Moderated production in response to market conditions
- Prudent cash flow management strategy
- Latest campaign (currently underway)
 - Consistent recovery levels from commencement of campaign with average Lithia recovery of 66%¹ (including start-up). Period includes interval of (36hrs) at an average of 71%¹.

¹ Unreconciled lithia recovery between 3/2/20 to 9/2/20 (campaign currently on-going), with final recovery results subject to change as a result of end-of-month survey reconciliation.

Lithium-Ion supply chain

Strong themes shaping demand

Drivers

ENVIRONMENTAL

- **Increasing discussions on climate events** (e.g. 2019/20 Australian bush fires, climate change protests across globe in September 2019),
- **Government policy** (e.g. UK Government to ban new petrol and diesel car sales by 2035)

COST REDUCTIONS

- **Decreasing cost and superior technologies** to displace incumbent technologies (e.g. \$100/kwhr threshold conversion from Internal combustion engine (ICE) to EV by 2023)

NEW PRODUCT DEMAND

- Electrified vehicles expected to account for between **15-25% of BMW sales by 2025**
- Energy storage – **Tesla power bank trial extended** by Synergy and Western Power in WA.
- **Toyota Invests \$394 Million** in Electric Air Taxi Company Joby Aviation

Recent Examples

Big Industry Moves Continue



Tesla partners with LG Chem, CATL for battery supply

(source www.reuters.com 30 January 2020)



BMW boosts CATL battery order to €\$7.3B, signs €\$2.9B battery order with Samsung SDI

(source www.greencarcongress.com 21 November 2019)



VW breaks ground on massive Tennessee EV plant

(source www.electrek.co 12 November 2019)



Umicore announces strategic supply agreement with Samsung SDI for NMC cathode materials

(source www.umicore.com 24 October 2019)



Commissions first next generation cell-making capacity (4.5GWhrs) in China

China's SVOLT aims to make battery cells in Europe from 2023

(source www.reuters.com 10 September 2019)



Pilbara's Partners making big moves

Long-term, high value contracts being signed throughout the supply chain

	<p>Ganfeng Lithium signs supply agreement with BMW (US\$599M) <i>(source www.metalbulletin.com 12 December 2019)</i></p>
	<p>POSCO Chemical to Supply Anode Materials for EV Batteries to LG Chem <i>(source www.businesskorea.co.kr 21 January 2020)</i></p>
	<p>BMW orders more than 10 billion euros' worth of battery cells from 2020 - 2031 <i>(source www.reuters.com 21 November 2019)</i></p> <p>China's CATL signs battery supply agreement with Tesla, February 2020 <i>(source www.reuters.com 3 February 2020)</i></p>
	<p>SVOLT lining up battery production in Changzhou <i>(source www.electrive.com 1 December 2019)</i></p>

Industry Themes

Evolving landscape of Strategic Partnerships shaped by...

QUALITY

World class Tier 1 Asset

- Resource - 226.0Mt @ 1.27% Li₂O
- Large long-life asset

High Quality Product

- 6% Li₂O spodumene concentrate product

Long Term Offtake Agreements

- Leading global partners
- Downstream Joint Venture opportunities

COST

Resource Grade & Scale

- Stage 1, 330ktpa (in operation)
- Stage 2, 800-850ktpa

Proven Operator

- Demonstrated success

Pilbara region

- Established mining background
- Port infrastructure nearby
- Proximity to Asian markets

SUSTAINABILITY

Location

- Australia represents low geopolitical risk

Safety

- 'Safety Matters' is core to 'What We Stand For'

Social

- Alignment to United Nations Sustainable Development Goals

Environment

- Strong systems and controls – data management and compliance reporting





Pilbara Minerals

...Powering a sustainable energy future

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