

# Pilbara and Calix enter into Joint Venture Agreement for Mid-Stream Demonstration Plant

## PARTIES TO JOINTLY DEVELOP A “MID-STREAM” DEMONSTRATION PLANT AT THE PILGANGOORA PROJECT

### KEY POINTS

- Pilbara Minerals and Calix have executed a joint venture (**JV**) agreement for the development of a Demonstration Plant at the Pilgangoora Project with the aim of producing lithium salts via an innovative midstream “value added” refining process utilising Calix’s patented calcination technology, as well as for the potential commercialisation of the process.
- The objective of the Mid-Stream Demonstration Plant Project is to deliver a superior value-added lithium product enabling lower product cost, reduced carbon energy intensity, and reduction of waste product logistics.
- Participating interests in the JV will be 55% Pilbara Minerals and 45% Calix, with each party funding their share of operating and capital costs and Calix licensing their patented technology and calcination knowhow into the JV.
- Pilbara Minerals will manage the Demonstration Plant at the Pilgangoora Project, overseeing both the construction and operational phases.
- Calix will have a 10% in-kind contribution recognised on the budgeted estimated construction costs of the Demonstration Plant in return for Calix providing an exclusive, worldwide, royalty free licence for its innovative calciner technology to the JV for lithium processing applications.
- A successful demonstration of the calcination technology via the Demonstration Plant may then lead to its commercialisation with the JV licensing the technology to the global spodumene processing industry.

Further to Pilbara Minerals Limited’s (ASX: PLS) (**Pilbara Minerals** or **the Company**) announcement dated 1 June 2022, Pilbara Minerals and Calix (ASX: CXL) (**Calix**) (or the **Parties**) are pleased to announce they have executed agreements for the formation of an unincorporated joint venture to potentially develop and operate a demonstration plant (**Demonstration Plant**), as well as for the formation of an incorporated joint venture for the potential future commercialisation of the Mid-Stream process (**Joint Venture** or **JV**).

The formalisation of the JV is an important milestone in the progression of the Mid-Stream Demonstration Plant Project. The Project aims to demonstrate a superior value-added lithium product to the existing industry supply chain, while also potentially delivering a significant reduction in carbon intensity, with potential industry benefits including:

- **Product cost** – the flash calcination technology developed by Calix has the potential to treat very fine spodumene concentrate at lower lithia grades and materially improve overall lithia recovery, thereby enabling a lower cost per lithia unit.



- **Carbon intensity reduction** – substantial carbon emission reduction through the electrification of the Mid-Stream process, including spodumene calcining, enabling the potential to use up to 100% renewable sourced power.
- **Waste reduction/handling** - rationalisation of the carbon footprint via reduced waste movement across transport and logistics supply chains from a more lithium-dense, and near zero-waste final product.

Key commercial terms in relation to the Joint Venture are set out in **Annexure A**.

Pilbara Minerals' Managing Director and CEO, Dale Henderson, said:

*"It's a great privilege to enter this JV partnership with Calix. The Mid-stream project has the potential to be a game changer for our industry. If successful, we will be able to deliver a superior chemical intermediary product to market compared to spodumene concentrate. This intermediate product offers a higher concentration in lithium and less impurities whilst being produced through a new process that reduces CO<sub>2</sub> emissions compared to the traditional process route for hard rock spodumene chemical conversion.*

*This is world-first Australian technology, being developed by two great Australian companies on Australian soil, with the support of the Australian Government – this is an exceptional opportunity for all of us"*

Calix Managing Director and CEO, Phil Hodgson said:

*"Calix is delighted to formally announce our joint venture agreement with Pilbara Minerals for the development of a sustainable, high value mid-stream lithium product. Calix is focused on decarbonising our essential industries, utilising our core technology's ability to electrify industrial processing, and minimise the waste and CO<sub>2</sub> footprint of minerals. We are excited to join forces with Pilbara Minerals and formalise our close working relationship built over the past 18 months. We will apply our combined capabilities to generate a more sustainable and valuable Australian lithium product."*

## **Project Update**

To support a Final Investment Decision (**FID**) in relation to the development of the Demonstration Plant, which is now targeted by the June Quarter 2023, the parties have continued to progress engineering design work and feasibility studies for the Demonstration Plant and have commenced a market engagement program following generation of market samples (lithium salt product) via a pilot test work programme completed in October. This work will continue under the Joint Venture and will further support the final design of the Demonstration Plant leading up to the FID to proceed with its development.

The Parties continue to liaise with the Australian Government to finalise the grant agreement for the \$20M Modern Manufacturing Initiative Grant awarded to the Mid-Stream Project (refer ASX announcement dated 17 May 2022). It is expected this grant agreement will be finalised before FID.

*Release authorised by Dale Henderson, Pilbara Minerals Limited's Managing Director and Phil Hodgson, Managing Director and CEO of Calix Limited.*



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## ABOUT PILBARA MINERALS

Pilbara Minerals is the leading ASX-listed pure-play lithium company, owning 100% of the world's largest, independent hard-rock lithium operation. Located in Western Australia's resource-rich Pilbara region, the Pilgangoora Operation produces a spodumene and tantalite concentrate. The significant scale and quality of the operation has attracted a consortium of high quality, global partners including Ganfeng Lithium, General Lithium, Great Wall Motor Company, POSCO, CATL and Yibin Tianyi.

While it continues to deliver a low-cost, quality spodumene to market, Pilbara Minerals is pursuing a growth and diversification strategy to become a sustainable, low-cost lithium producer and fully integrated lithium raw materials and chemicals supplier in the years to come.

Through execution of this strategy, Pilbara Minerals is positioned to become a major player in the rapidly growing lithium supply chain, underpinned by increasing demand for clean energy technologies such as electric vehicles and energy storage as the world pursues a sustainable energy future.

## ABOUT CALIX

Calix is a team of dedicated people who are urgently developing great businesses, leveraging our patented technology, that deliver positive global impact.

The core technology is being used to develop more environmentally friendly solutions for water treatment, CO<sub>2</sub> mitigation, biotechnology, advanced batteries, and more sustainable mineral and chemical processing.

Calix develops its technology via a global network of research and development collaborations, including governments, research institutes and universities, some of world's largest companies, and a growing customer base and distributor network for its commercialised products and processes.

Because there's only one Earth – Mars is for Quitters.

Website: <https://www.calix.global/>

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## FORWARD LOOKING STATEMENTS AND IMPORTANT NOTICE

This announcement may contain some references to forecasts, estimates, assumptions, and other forward-looking statements. Although the Company believes that its expectations, estimates, and forecast outcomes are based on reasonable assumptions, it can give no assurance that they will be achieved. They may be affected by a variety of variables and changes in underlying assumptions that are subject to risk factors associated with the nature of the business, which could cause actual results to differ materially from those expressed herein. All references to dollars (\$) and cents in this announcement are to Australian currency, unless otherwise stated.

Scoping and other technical studies in respect of the Mid-Stream Project have been undertaken to determine the potential viability of the demonstration plant and to reach a decision to proceed with more definitive studies and enter into a joint venture agreement. Each scoping study has been prepared to an accuracy level of +/-40% (for Capital costs) and +/-30% (for Operating costs). Each scoping 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 studies will be realised. The results of the studies should not be considered a profit forecast or production forecast.



## Annexure A

Key commercial terms on which the Parties have reached agreement in the JVs include:

### **Unincorporated Joint Venture (UJV)**

- Established for the purposes of finalising feasibility studies and making a final investment decision (FID) to develop and operate the Demonstration Plant to demonstrate the commercial and technical viability of the Calix calcination technology in processing spodumene concentrate into lithium phosphate or other "value added" salts.
- Initial participating interests in the UJV will be 55% Pilbara Minerals and 45% Calix, subject to customary dilution mechanisms.
- The Demonstration Plant will be owned by the Parties in proportion to their participating interests.
- Capital and operating costs for the Demonstration Plant will be funded by the Parties as cash calls in proportion to their respective participating interests, however Calix will have a 10% in kind contribution recognised on the budgeted estimated construction costs of the Demonstration Plant in consideration of Calix providing an exclusive, worldwide, royalty free licence for its innovative calciner technology to the UJV in respect of the lithium processing applications.
- Any new intellectual property or technology developed by the parties as part of the UJV that is not an improvement to the Calix IP, including from operating the Demonstration Plant will be owned by the parties in accordance with their participating interests in the UJV.
- Grant funding from the Government received by the Joint Venture or either Party will be applied towards capital costs for the Demonstration Plant.
- Pilbara Minerals will manage the UJV including the construction and day to day operation of the Demonstration Plant which will be located at the Pilgangoora site and will supply up to 30ktpa of spodumene concentrate to the Demonstration Plant on commercial terms consistent with market pricing.
- A management committee will be established in which each party will have representation proportionate to its participating interests. Other than certain reserved matters requiring supermajority resolution ( $\geq 75\%$ ) including approving annual budgets, a FID for the Demonstration Plant, related party matters and approving acquisitions and disposals, matters will be decided by majority resolution ( $> 50\%$ ) by the management committee,
- Following completion of feasibility studies including a work program and budget for construction of the Demonstration Plant, the parties will consider whether to make a FID to proceed with the Demonstration Plant which will require a supermajority decision of the management committee and essentially the approval of both parties. If both parties approve a FID by 30 September 2023, then the UJV will proceed with the development of the Demonstration Plant. If Pilbara Minerals approves a FID for the Demonstration Plant however Calix does not, the UJV will come to an end. However, Pilbara Minerals will be entitled to proceed with the project and be granted an exclusivity period of 5 years in relation to Calix's licensed IP for lithium processing under a commercial licence. The commercial licence will allow Pilbara Minerals to build and operate the Demonstration Plant and any future commercial scale plants either alone or with its joint venture partners. Pilbara Minerals will pay Calix a royalty of 10% of the net operating profit for 15 years starting from 30 months after the earlier of

commencement of commissioning of the Demonstration Plant or of any commercial scale plant. The terms and conditions of the royalty will however be adjusted to be no less favourable than those offered to 3<sup>rd</sup> parties by Calix. After 5 years the commercial licence will become non-exclusive.

- An annual business plan and budget will be agreed as part of the UJV including for the construction and operation of the Demonstration Plant and sale of “value added” lithium salt products produced from the Demonstration Plant with any net positive cash flows to be shared by the Parties in proportion to their participating interests.
- Following the successful validation of the Demonstration Plant, the Parties may seek to commercialise the technology through an incorporated joint venture (**IJV**) having an exclusive worldwide right to licence the technology to third Parties in respect of lithium processing applications. This includes a right for Pilbara Minerals to design, construct and operate commercial scale plants either alone or with its joint venture partners under a commercial licence from the IJV including payment of a 15-year royalty to the IJV of 10% of net operating profit. The terms and conditions of the royalty will however be adjusted to be no less favourable than those offered to 3<sup>rd</sup> parties by the IJV.

### **Shareholders Agreement**

- The UJV contemplates the parties forming an IJV company to exclusively pursue global commercialisation opportunities in lithium processing applications by licensing the technology developed or validated from the Demonstration Plant.
- Upon approval by the management committee of the UJV of a commercialisation proposal by ordinary resolution, a Shareholders Agreement attached to the UJV in an agreed form will be entered into by the parties.
- Initial participating interests in the IJV company will be held as 55% Pilbara Minerals and 45% Calix, subject to any dilution consistent with the UJV.
- A board of directors for the IJV company will be formed with each party having representation proportionate to their respective participating interests. The board will approve each financial year a business plan and budget and other matters as either supermajority or ordinary resolutions.
- The IJV company may make cash calls from the parties as shareholders to fund estimated cash expenditure as approved in the annual business plan and budget.
- All IP and technology either licensed to or developed by the UJV, which has been validated by the Demonstration Plant, will be licensed to the IJV for the purposes of commercialisation.

### **Other Agreements**

- Various other agreements incidental to the UJV have been entered into including technology licensing agreements in respect of Calix’s IP, as well as a spodumene supply agreement, a tenement licence agreement to accommodate the Demonstration Plant on the Pilgangoora site and a management services agreement for Pilbara to act as manager of the UJV.