

# Calix Limited Annual General Meeting 16 November 2023

use only

# **Q** calix

### Introduction to the Lumi platform Darren Charles

only

Ð



# Calix Limited Annual General Meeting 16 November 2023

# **Online Text Questions**

### Select the messaging tab

LUMI

Type your question in the 'Ask a question' box

Press the arrow symbol to submit your message

Select 'My Messages' to view your submitted messages along with any written responses

🔒 номе			6
📕 Messaging			
Ask a question			
ALL MESSAGES	MY MESSAGES	5	
Moderator November 27, 2023 0 Welcome to the me question in the box be moderated or an topic.	99:15AM eeting. If you would lik above and then prese malgamated if there a	e to submit a question, ty s the send button. Questi re multiple questions on t	pe your ons may he same

### • • • • • • • • • • 3

# **Online Audio Questions**





Click 'Request to Speak'

Enter the topic of your question

**Click 'Submit Request'** 

Click 'Join Queue' and follow the audio prompts



# **Online Voting**



### Select the voting tab

Select your voting preference for each resolution

Your selected option will change colour

You can change your vote until the poll is closed

123-456-789				
<b>↑</b> НОМЕ	Ressag	ING		/OTING
Poll Open You have voted on 1 of 2 items Resolution 1 For - Vote Received				
For O	Against	0)(	Abstain	0
Resolution 2 Select a choice.				
For O	Against	0	Abstain	0

# **Q** calix

### Welcome & introduction to the AGM Peter Turnbull, AM

e only



Calix Limited Annual General Meeting 16 November 2023

## **Board of Directors**





Peter Turnbull, AM Non-Executive Chair

Helen Fisher Non-Executive Director



Alison Deans Non-Executive Director



Managing **Director & Chief Executive Officer** 



Dr Mark Sceats Executive **Director And Chief Scientist** 

Experienced Chair and Non-Executive Director with significant board and senior executive experience in the Australian and global resource, energy and technology commercialisation sectors.

Non-Executive Director of Karoon Energy Ltd. (ASX: KAR), Chair of medtech Auxita Pty Ltd, Chair of Airlie Energy, Chair of QADO Group/QADO Ventures and President of the Chartered Governance Institute (London).

Chair of Calix Remuneration and Nomination Committee, and Member of Audit and Risk Management Committee.

CEO and Managing Director of Bio Capital Impact Fund (BCIF), a Non-Executive director and Chair of the Audit and Risk Management Committee of Paradigm Biopharmaceuticals Ltd (ASX:PAR) and Chair of the Victorian branch of AusBiotech.

Previously a partner of Deloitte for over 11 years, and led Deloitte's life sciences practice in Australia for 5 years, specialising in the financial services sector, with significant M&A transactions and strategic tax advice to publicly listed and large multinational companies.

Chair of Calix Audit and Risk Management Committee and member of the Rem and Nom Committee

Chair of Cochlear Limited (ASX: COH), Non-Executive Director at Ramsay Health Care Limited (ASX: RHC), and Non-Executive Director at Deputy Group Pty Ltd. Ms Deans is also a member of the Investment Committee at Main Sequence Ventures (CSIRO's innovation fund) and a Member of the AICD Corporate Governance Committee. Ms Deans' previous directorships include Westpac Banking Corporation, Insurance Australia Group Limited and Social Ventures Australia.

In her executive career, Ms Deans was previously the CEO of eBay Australia and New Zealand, CEO of eCorp Limited, CEO of Hoyts Cinemas, CEO of netus Pty Ltd, and a consultant with McKinsey & Company. Ms Deans holds a MBA from the Stanford Graduate School of Business and a MA (Physics) from Cambridge University.

14 years of multidisciplinary experience with Shell, including as the General Manager and Alternate Director of its subsidiary Fuelink Pty Ltd, a \$700m revenue, 300-employee distribution and sales subsidiary.

7 years running a private consultancy providing strategy and M&A services across energy, food, infrastructure and water sectors.

Joined Calix in 2013 as CEO. became a Director in 2014 and is a member of Calix's Technology Committee.

Co-founder of Calix, and a member of Calix's Technology Committee.

Qualified physical chemist with over 52 years' experience, numerous academic roles, and numerous fellowships and recognitions.

CEO of the Australian Photonics CRC for 14 years.

Author of more than 165 academic papers in physical chemistry and inventor of 55 patented inventions.

• • • • • • • • • 7

# "It is now cheaper to save the world than destroy it."



• • • • • • • • 8

# Policies driving decarbonisation

### Carbon penalties, value & support in Europe, US, & now Australia...



**O** calix

# **Global commercialisation strategy**

**Target applications focus** on the potential to:

- Address a **significant global challenge** consistent with our purpose;
- **Create value** in large addressable markets
- Exploit our technology to sustainable competitive advantage.
- **Capital light licensing, joint ventures and spin-out strategies** are designed to commercialise each application at speed

**Equity investment directly into subsidiary businesses** to accelerate commercialisation

- Investment in single-focused specialist team
- **Application specific** technology development

Licence agreement with subsidiary delivers **royalty income** regardless of Calix's future shareholding

One core platform technology

Multiple environmental business opportunities Flexible capital / funding options



# Global commercialisation strategy

### Strategy in action

### Sept 2021: Carbon Direct Capital Management invests in Leilac:

- €15m for a 6.98% stake
- Leilac spun-off as a standalone entity
- Calix receives 30% of Leilac's royalty income regardless of Calix's shareholding in Leilac

Catalysing growth - Leilac Since Sept 2021

From **8 to > 50 employees** across 12 countries

From **21 to > 76 projects** around the world

### Licence agreements:

- Signed with Heidelberg Materials
- Signed with Heirloom
- Under negotiation with Cemex and others







# FY23 financial update

Balance sheet strength to pursue commercialisation opportunities

### Increased revenues and margins

- 42% increase in revenue
- 19% increase in GP of Water business
- Focused investment in people and capability building

**Balance sheet strength** to support delivery of current project commitments

**Flexibility retained** to pursue the right capital / funding strategy for each application and investment opportunity.

Essentially **debt free** – can control our own destiny as we pursue our "multiple shots on goal".

### Calix Limited FY23 financial result highlights



**\$74.5m** Cash on hand (30 June 2022: A\$25.0m)



\$29.6m up 42% FY23 revenue (FY22: A\$20.8m)



**\$6.2m up 19%** FY23 gross profit (FY22: A\$5.2m)



**33% up 18%** FY23 gross margin (FY22: 28%)

# FY23 BHIGHLIGHTS rsonal





### Decarbonising cement and lime

### Leilac-2

- Lighter, simplified replicable module designed through Value Engineering phase
- **Procurement underway**
- **Commissioning and testing** expected to start by **March 2025**

### **Commercialisation milestones**

- **Licence agreement** signed with **Heidelberg Materials**
- Licence agreement signed with Heirloom

"Carbon Capture and Storage (CCS) plays a major role in decarbonizing the industry sector in the context of 1.5°C and 2°C pathways, especially in industries with higher process emissions, such as cement." – IPCC<sup>1</sup>

# **O** calix

# Market drivers



**Carbon pricing:** 73 carbon pricing initiatives implemented, covering 11.7 GtCO<sub>2</sub>e, or 23% of global emissions<sup>2</sup>



>€100/tonne – EU ETS price reached a record high in Feb 2023



US\$85/tonne US tax credit for stored CO<sub>2</sub>

### **SDG** Impact





# Decarbonising iron and steel

Realising the green iron opportunity

### Value creation:

- iron ore → iron: 3-4x value add
- Green Iron...

Enabling efficient decarbonisation solutions:

- Compatible with **multiple ore types**
- Low waste

3.

- Minimal disruption to supply chains
- Leverage existing assets
- Efficient energy and raw material use
- Minimal hydrogen use



### Climate change and the production of iron and steel. World Steel Association. 2021 https://www.minerals.org.au/news/record-high-resources-export-revenue. Iron Ore Geoscience Australia

# **O** calix

# Iron and Steel Market drivers

~7% of global emissions ~80-85% of emissions from iron ore reduction<sup>1</sup>

> Australian iron ore ~53% of global supply >A\$150b in export earnings<sup>2</sup> 96% of Australian iron ore is hematite<sup>3</sup>

Hematite is not compatible with other H-DRI technologies



**SDG Impact** 

15

# Sustainable lithium joint venture with Pilbara Minerals

Electrification and mid-stream mineral processing

### Joint Venture

3.

- 45% Calix / 55% Pilbara Minerals (ASX: PLS) JV
- **\$20m** in Australian Government **funding** announced under the Modern Manufacturing Initiative<sup>1</sup>
- Targeting an innovative mid-stream process for **sustainable refining of lithium at the mine site**:
- Increase lithia concentration: ~6% → 35%
- **Reduce waste**  $\sim 94\% \rightarrow 0$
- Reduce carbon intensity by 80–90% with electric calcination<sup>2</sup>
- Increase ore recovery

### Successful demonstration may lead to the JV **licensing the** technology to the global spodumene processing industry.



### Sustainable lithium tailwinds

6x

**6x growth** in lithium carbonate & equivalents market by 2030<sup>2</sup>



**Electrification** of industrial manufacturing target by 2035<sup>3</sup>



Increasing demand for sustainable & stable supply of critical minerals

### SDG Impact



Grant funding announced, contract executed ith the Australian Government in April 2023 CXL-PLS ASX announcement. <u>Final Investment Decision for Mid-Stream Demonstration Plant</u>. Aug 2023 Lithium mining: How new production technologies could fuel the global EV revolution – McKinsey April 2022 Electrification in Industrials. Deloitte Insights. August 2020

# Magnesia

Bioactive materials for water treatment, agriculture and marine coatings

US water business gross profit up 28.6%

### Two new hydration plants:

- Lufkin, Texas commissioned
- Ripon, Wisconsion under construction

Trials continue for applications in:

- Agriculture
- Marine anti-foul coatings
- Antimicrobial resistance

# () cali

### Market trends

Demand for non-conventional pesticides predicted to grow at 15% per annum for the next ten years<sup>1</sup>



New IMO emissions reduction strategy<sup>2</sup> & strengthened biofouling measures<sup>3</sup>



Regulation requires sustainable water pH control

### SDG Impact





# **Advanced Batteries**

Developing sustainable, low-cost cathode materials

**Commercial-prototype** Lithium Manganese Oxide battery cells produced

Capability expanded to **new battery chemistries** 

Targeting a battery **chemistry agnostic platform** technology







# Sustainability

# FY23 sustainability achievements:

- Reaffirmed our commitment to the UNGC
- Greenhouse gas assessment baseline completed
- Multi-purpose quiet spaces established

### Our sustainability commitments:

- Science-based **emission reduction** in line with the 1.5 °C pathway.
- **Gender balance** at all levels of the organisation.
  - **100% sustainable material inputs** that are reusable, renewable and recyclable.

### BECAUSE MARS IS FOR QUITTERS.





Calix supports the Sustainable Development Goals







# People and culture



### Dynamic and global workforce

- 120+ employees at end of FY23
- Passionate and purpose-driven team

### Active in:

- 7 countries
- **5** continents
- 9 operational sites

# Ongoing initiatives to **enhance our ways of working** as we grow around the world



# Governance structure and practices

### New Sustainability Board Committee established

Updated charters and policies

### **Board renewal:**

### In FY23:

- Alison Deans appointed as Non-executive Director
- **Dr Jack Hamilton retired** from the board In FY24:
- **Dr Sarah Ryan will join** the Calix board as a Non-executive Director
- Chair Peter Turnbull will retire from the board
- Alison Deans will become Calix Chair





# Thank you

use only

Calix Limited Annual General Meeting 16 November 2023



# Formal items of business

only

USG

Calix Limited Annual General Meeting 16 November 2023

# Items of Business – Item 1



**Financial Report** 

### **Consideration of Financial Report:**

"To consider and discuss the Financial Report, including the Directors' Report and the Auditor's Report, for the year ended 30 June 2023."

There is no vote on this item.

# **Items of Business – Resolution 1**



### **Remuneration Report**

To consider and, if thought fit, to pass the following Resolution as an ordinary resolution:

"That the Remuneration Report of the Company for the financial year ended 30 June 2023, which forms part of the Directors' Report, be adopted."

For Resolution 1, the proxy votes received are as follows:

Proxy votes: Resolution 1

For	71,531,206
Against	1,369,854
Open	743,365
Exclusions	1,133,789
Abstained	96,442

# **Items of Business – Resolution 2**



**Re-election of Helen Fisher** 

To consider and, if thought fit, to pass the following Resolution as an ordinary resolution:

"That Helen Fisher, who retires under the Constitution and being eligible, stands for re-election, be re-elected as a Director."

For Resolution 2, the proxy votes received are as follows:

Proxy votes: Resolution 2

For	74,357,901
Against	177,067
Open	328,661
Exclusions	0
Abstained	11,027

# **Items of Business – Resolution 3**



Election of Alison Deans

To consider and, if thought fit, to pass the following Resolution as an ordinary resolution:

"That Alison Deans, who retires after having been appointed by the Directors as a director to fill a casual vacancy under clause 13.10 of the Company Constitution and being eligible, stands for election, be elected as a director of the Company"

For Resolution 3, the proxy votes received are as follows:

Proxy votes: Resolution 3

For	74,500,412
Against	30,066
Open	333,151
Exclusions	0
Abstained	11,027

# **Items of Business - Resolution 4**



28

Appointment of auditor

To consider and, if thought fit, to pass the following Resolution as an ordinary resolution:

"That, in accordance with section 327B of the Corporations Act, and for all other purposes, KPMG, having been nominated by a Shareholder, and consented in writing to act as auditor of the Company, be appointed as auditor of the Company in accordance with the Corporations Act, with effect from the later of (a) the conclusion of the AGM: and (b) the day on which ASIC gives its consent to the resignation of the current auditor of the Company, and the Board be authorised to agree KPMG's remuneration in connection with the appointment."

For Resolution 4, the proxy votes received are as follows:

Proxy votes: Resolution 3		
For	74,454,714	
Against	79,220	
Open	330,628	
Exclusions	0	
Abstained	10,094	

# **Online Voting**



### Select the voting tab

Select your voting preference for each resolution

Your selected option will change colour

You can change your vote until the poll is closed

123-456-789		
<b>↑</b> НОМЕ		
Poll Open You have voted on 1 of 2 items Resolution 1 For - Vote Received For	Against O	Abstain O
CANCEL Resolution 2 Select a choice. For	Against ()	Abstain O



### Presentation by MD & CEO Phil Hodgson

e only



Calix Limited Annual General Meeting 16 November 2023

### **Important Disclaimer**

**Q** calix

This presentation has been prepared by Calix Limited (ABN 36 117 372 540) ("Company").

### SUMMARY INFORMATION

This presentation contains summary information about the Company and its subsidiaries ("Calix") and their activities current as at 16 November 2023. The information in this presentation is a general background and does not purport to be complete.

### NOT FINANCIAL PRODUCT ADVICE

This presentation is for information purposes only and is not a prospectus, product disclosure statement or other offer document under Australian law or the law of any other jurisdiction. This presentation is not financial product or investment advice, a recommendation to acquire Calix securities or accounting, legal or tax advice. It has been prepared without taking into account the objectives, financial or tax situation or needs of individuals. Before making an investment decision, prospective investors should consider the appropriateness of the information having regard to their own objectives, financial and tax situation and needs and seek legal and taxation advice appropriate to their jurisdiction. Calix is not licensed to provide financial product advice in respect of Calix securities. Cooling off rights do not apply to the acquisition of Calix securities.

### **FINANCIAL DATA**

All dollar values are in Australian dollars (\$ or A\$) and financial data is presented as at or for the full financial year ended 30 June 2021, unless stated otherwise.

### PAST PERFORMANCE

Past performance information given in this presentation is given for illustrative purposes only and should not be relied upon as (and is not) an indication of the Company's views on its future financial performance or condition. Investors should note that past performance, including past share price performance, of Calix cannot be relied upon as an indicator of (and provides no guidance as to) future Calix performance including future share price performance.

### **FUTURE PERFORMANCE**

This presentation contains certain "forward-looking statements". The words "expect", "future", "anticipate", "estimate", "intend", "believe", "guidance", "should", "could", "may", "will", "predict", "plan" and other similar expressions are intended to identify forward-looking statements. Indications of, and guidance on, future earnings and financial position and performance are also forward-looking statements. Forward-looking statements, opinions and estimates provided in this presentation are based on assumptions and contingencies which are subject to change without notice, as are statements about market and industry trends, which are based on interpretations of current market conditions. Forward-looking statements, including projections, guidance on future earnings and estimates are provided as a general guide only and should not be relied upon as an indication or guarantee of future performance. Such forward-looking statements are by their nature subject to significant uncertainties and contingencies and are based on a number of estimates and assumptions that are subject to change (and in many cases are outside the control of Calix and its directors) which may cause the actual results or performance of Calix to be materially different from any future results or performance expressed or implied by such forward-looking statements. The forward-looking statements should not be relied on as an indication of future value or for any other purpose. No representation, warranty or assurance (express or implied) is given or made in relation to any forward-looking statement by any person (including the Company). In particular, no representation, warranty or assurance (express or implied) is given that the occurrence of the events expressed or implied in any forward-looking statements in this presentation will actually occur. Actual results, performance or achievement may vary materially from any projections and forward-looking statements and the assumptions on which those statements are based. The forward-looking statements in this presentation speak only as of the date of this presentation. Subject to any continuing obligations under applicable law, the Company disclaims any obligation or undertaking to provide any updates or revisions to any forward-looking statements in this presentation to reflect any change in expectations in relation to any forward-looking statements or any change in events. conditions or circumstances on which any such statement is based. Nothing in this presentation will under any circumstances create an implication that there has been no change in the affairs of Calix since the date of this presentation.

### INVESTMENT RISK

An investment in Calix securities is subject to investment and other known and unknown risks, some of which are beyond the control of Calix, including possible delays in repayment and loss of income and principal invested. Calix does not guarantee any particular rate of return or the performance of Calix, nor does it guarantee the repayment of capital from Calix or any particular tax treatment. Persons should have regard to the risks outlined in this presentation and appendices.

### NOT AN OFFER

This presentation is not and should not be considered an offer or an invitation to acquire Calix securities or any other financial products and does not and will not form any part of any contract for the acquisition of Calix securities.

This presentation does not constitute an offer to sell, or the solicitation of an offer to buy, any securities in the United States or to. or for the account or benefit of, any 'U.S. person' (as defined in Regulation S under the U.S. Securities Act ("U.S. Person")). The new shares to be offered and sold in the placement ("Offer") have not been, and none of them will be, registered under the U.S. Securities Act or the securities laws of any state or other jurisdiction of the United States. In addition, Calix has not been, and will not be, registered under the U.S. Investment Company Act of 1940, as amended (the "U.S. Investment Company Act") in reliance on the exception from the definition of "investment company" provided by Section 3(c)(7) thereof. The New Shares to be offered and sold in the Offer may not be offered and sold to, directly or indirectly, any person in the United States or any person that is, or is acting for the account or benefit of, a U.S. Person except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the U.S. Securities Act and applicable U.S. state securities laws and pursuant to an exception from the registration requirements of the U.S. Investment Company Act provided by Section 3(c)(7) thereof. This presentation may not be distributed or released in the United States or to any U.S Person. The distribution of this presentation in other jurisdictions outside Australia may also be restricted by law and any such restrictions should be observed. Any failure to comply with such restrictions may constitute a violation of applicable securities laws. Offers in Australia of the shares are only being made to persons who are "sophisticated investors" or "professional investors" (within the meaning of section 708(8) and section 708(11) of the Australian Corporations Act (Act) respectively) or otherwise pursuant to one or more exemptions under Section 708 of the Act so that it is lawful to offer the shares in Australia without disclosure to investors under Part 6D.2 of the Act.

### NO ADVICE

None of Calix's respective advisers or any of their respective affiliates, related bodies corporate, directors, officers, partners, employees and agents, have authorised, permitted or caused the issue, submission, dispatch or provision of this presentation and none of them makes or purports to make any statement in this presentation and there is no statement in this presentation which is based on any statement by any of them. For the avoidance of doubt, the advisers and their respective affiliates, related bodies corporate, directors, officers, partners, employees and agents have not made or purported to make any statement in this presentation and there is no statement in this presentation which is based on any statement by any of them. To the maximum extent permitted by law, Calix and its advisers and their respective affiliates, related bodies corporate, directors, officers, partners, employees and agents exclude and disclaim all liability, for any expenses, losses, damages or costs incurred by you as a result of your participation in the Offer and the information in this presentation being inaccurate or incomplete in any way for any reason. whether by negligence or otherwise. To the maximum extent permitted by law, Calix and its advisers and their respective affiliates, related bodies corporate, directors, officers, partners, employees and agents make no representation or warranty, express or implied, as to the currency, accuracy, reliability or completeness of information in this presentation and Calix's advisers and its affiliates, related bodies corporate, directors, officers, partners, employees and agents, take no responsibility for any part of this presentation or the Offer. Calix and Calix's advisers and their affiliates, related bodies corporate, directors, officers, partners, employees and agents make no recommendations as to whether you or your related parties should participate in the Offer nor do they make any representations or warranties to you concerning the Offer, and you represent, warrant and agree that you have not relied on any statements made by any of them in relation to the Offer and you further expressly disclaim that you are in a fiduciary relationship with any of them. Statements made in this presentation are made only as the date of this presentation. The information in this presentation remains subject to change without notice. Calix reserves the right to withdraw the Offer or vary the timetable for the Offer without notice.

# **About Calix**

Calix is an environmental technology company that is developing a unique platform technology to solve global challenges in industrial decarbonisation and sustainability.

We are building multiple businesses to deliver positive global impact in CO<sub>2</sub> mitigation, sustainable processing, advanced batteries, biotechnology and water treatment.

Because there's only one Earth, and it's already ours.

# MARS IS FOR QUITTERS.



# **O** calix











### A new way to "heat stuff up"





# FY23 achievements



**(**) cali

# FY24 – Off to a great start...

- Strong financial position:
  - Balance sheet strength and flexible capital strategy to pursue commercialisation opportunities
  - Revenue and margin growth supporting investment in people

### Focused on **delivering key decarbonisation projects:**

- **Cement and lime: Site works commenced**...Scaling and retrofitting the Leilac technology with the Leilac-2 Project
- **Green iron and steel: Expanded ore testing program going well**...Designing a demonstration plant for Calix's Zero Emissions Steel TechnologY (ZESTY)
- Critical Minerals: Final Investment Decision
   passed...Building a sustainable lithium processing
   demonstration plant with Pilbara Minerals (ASX: PLS)
- **Direct Air Capture: License signed...** Applying the Leilac technology to the removal of atmospheric carbon dioxide with Heirloom

At the end of Q1, all FY24 KPIs remain on track



# One decarbonisation technology – multiple applications...

### Industries we are working with...









### **Direct air capture**

Zero emissions lime as a sorbent for atmospheric CO<sub>2</sub>

1-10 billion tonnes of

CO<sub>2</sub> per annum removal

likely needed to limit

global warming to 1.5°C<sup>2</sup>



### Lithium

Low-carbon, low-waste, value-add 'mid-stream' processing at the mine site

carbonate &

by 2030<sup>3</sup>

6x growth in lithium equivalents market

**Global Alumina** production on steady growth past 125Mtpa in 2021 <sup>4</sup>

Alumina

Electrifying

Aluminium Oxide

production



### Iron & steel

ZESTY (Flash direct H<sub>2</sub> reduction)

~ 7-9% global  $CO_2$ emissions<sup>5</sup> ~80-85% CO<sub>2</sub> from iron ore reduction<sup>5</sup>

<sup>1</sup> Global Cement & Concrete Association. Concrete Future Roadmap 2/Lithium mining: How new production technologies could fuel the global EV revolution – McKinsey April 2022 <sup>3</sup> Forecasts indicate that Lithium is on a 500% growth curve by 2050 (World Bank 2017)

### <sup>4</sup> Global aluminium oxide production survey, Statista 2021 <sup>5</sup> Climate change and the production of iron and steel. World Steel Association. 2021

36

# FY24 update

only

# Or Son Leilac



# **Leilac** – Scaling up the Leilac technology



A modular design for delivery through a blueprint model

Leilac-1 Pilot plant

CAPTURE CO2

Lixhe, Belgium 2019 CO<sub>2</sub> capacity: 25 ktpa Clinker: 160 tpd ~5% throughput



**Leilac-2** Demonstration plant

Hannover, Germany CO<sub>2</sub> capacity: 100 ktpa Clinker: 640 tpd ~20% throughput





Leilac-3 Full scale

The future CO<sub>2</sub> capacity: 500+ ktpa Clinker: 3000+ tpd 100% throughput





















	Project discussions	Initial scoping	Detailed scoping / MOU	Pre-FEED / BOD	FEED	FID + construction	Operational	Total
Aug 2021	21	7	4	1			1	34
Aug 2022	25	13	9	5		1	1	54
Nov 2023	34	25	8		2	<b>1</b> Leilac-2	<b>1</b> Leilac-1	76

Pipeline growth: as at August 2023 there were **76 projects** in the pipeline.

- Projects are ~ 2/3 cement and 1/3 lime, at average capacity of 500kTpa CO<sub>2</sub> for cement and 80 kTpa CO<sub>2</sub> for lime.
- Leilac pipeline represents potential for over **20 Mtpa of CO<sub>2</sub> abatement projects.**

FY2024 will be focused on moving projects down the pipeline...and increasingly recovering engineering fees as projects advance

# Leilac's fullscale vision

# FOR CEMENT...

we need to mitigate 1.4 billion tonnes per annum of process CO<sub>2</sub> emissions

= up to 3,000 Leilac-3s ~2 built every week from now until 2050!!

### FOR DAC...

potentially a similar scale opportunity !







### Global licence agreement signed with Heirloom



- Heirloom is a **Direct Air Capture (DAC) company** with an objective of capturing 1 billion tonnes of CO<sub>2</sub> by 2035.
- Heirloom part of **Project Cypress**, one of 2 projects selected for the US Department of Energy's US\$1.2b DAC Hubs program.<sup>1</sup>

**Microsoft** has purchased <u>315,000 tonnes</u> of carbon dioxide removal (CDR) from **Heirloom** at an estimated value of US\$200million.<sup>2</sup>

The technology licence fee comprises:

- i. A royalty floor of US\$3 / tonne of CO<sub>2</sub> captured; and
- ii. A **variable royalty rate** based on the prevailing CO<sub>2</sub> price for lime decarbonisation, less the amortised cost of capital of the Leilac kiln / tonne of CO<sub>2</sub> separated.

A collaboration agreement includes **US\$3m in R&D** contribution from Heirloom.





Decarbonising shipping & aviation

### Market tailwinds:

International Maritime Organisation targeting **net zero by 2050 and 10% clean energy use by 2030**.<sup>1</sup>

Maersk now has 25 methanol enabled vessels on order.<sup>2</sup>

Industry, particularly cement, requires **offtake for unavoidable CO**<sub>2</sub> **emissions**.

### <u>Sustainable fuels from captured CO<sub>2</sub> – the Solar Methanol Project:</u>

**Methanol** is an alternative fuel for **shipping** and a precursor to **sustainable aviation fuels**.

**German-Australian HyGATE initiative<sup>3</sup>** is targeting green methanol to be produced from green hydrogen, renewable energy and CO<sub>2</sub> captured by the Leilac technology.



Shipping & aviation are two of the hardest-to-abate transport sectors, responsible for 4.3% of global  $CO_2$  emissions<sup>4</sup>.

42

https://www.imo.org/en/MediaCentre/HotTopics/Pages/Cutting-GHG-emissions.aspx

https://www.maersk.com/news/articles/2023/06/26/maersk-orders-six-methanol-powered-vessels

Calix part of Australian-German consortium awarded funding to manufacture sustainable fuels from captured CO2 4. https://www.iea.org/reports/transport

# FY24 update

only

rson

Sustainable Processing



# Sustainable lithium demonstration plant

### **Financial Investment Decision approved**

- Calix and Pilbara Minerals (ASX: PLS) have **approved the FID** on a **mid-stream lithium-phosphate demonstration plant** 
  - The Demonstration Plant will use **Calix's electric calciner** and be located at **Pilbara Minerals' Pilgangoora Project**
- Project objectives:
  - Reduce carbon intensity, waste and transport costs
  - Demonstrate **lower CAPEX and OPEX** with electric calcination
  - Create a higher value lithium product at the mine site
- Construction expected to **commence in Apr-Jun Qtr 2024**.
- Targeting production of first lithium salt in Apr-Jun Qtr 2025.
- Demonstration Plant CAPEX is ~ AU\$105m
  - Supported by \$20m in Australian Government funding
  - **Calix will receive ~24% free carried equity** in the facility, targeting \$17.5m CAPEX contribution for 45% equity



### **Carbon emissions savings**

A Life Cycle Assessment study<sup>1</sup> found that renewably powered electric calcination of spodumene would reduce emissions by:

- ↓90% vs a coal-fired rotary kiln
- ↓80% vs a natural gas-fired rotary kiln

# Zero Emissions Steel TechnologY

### Potential lowest cost zero emissions iron & steel



About ZESTY

- Hydrogen reduction of iron ore
- Can be easily and efficiently renewably powered
- Targeting theoretical minimum
   hydrogen use simple gas recycle
- **Processes fines** <~0.3mm, no pelletisation
- Targeting zero emissions iron and steel\*



Process flow for 30kTpa ZESTY green steel production



\*in conjunction with Calix's "Leilac" zero emissions lime

ZESTY development to date

### Phase 1 & 2: completed

- Theoretical kinetic studies
- Conversion of electric calciner to run hydrogen
- Confirmation of electric calciner + hydrogen reduction performance
- Successful pilot testing with multiple ores

### Phase 3 underway

Expanded ore test program proceeding well



From phase 2 testing: SEM Images of the different samples after processing @950C;  $H_2/O_{red}$  =2 (above) and metallisation results (right)



		Fe (Wt %)	D50 (µm)	SSA (m²/g)	Pore Volume (cm³/g)
A)	Siderite	43	87	25	0.035
B)	Goethite / Hematite	57	130	15	0.034
C)	Goethite / Hematite	59	129	14	0.039
D)	Magnetite	67.5	38	0.8	0.003



46

# FY24 update





# Magnesia

### Our new focused line-of-business

### Water:

Revenue growth accelerating – up 28% H2FY23 compared with the same period last year.

### Agriculture:

**Continued field trials** in the EU in collaboration an agricultural co-operative, following the banning of the fungicide Mancozeb.

### Marine:

- **Completed phase 2 static tests** with global coatings firms.
- **Dynamic tests and coatings formulation work underway** in sites across North America, Australia, New Zealand and Asia.

### Antimicrobial Resistance (AMR):

- Calix became a Tier 1 partner in Australia's CRC SAAFE<sup>1</sup>.
- **First project** to study application of Calix's bioactive materials in **intensive livestock health** management commenced.

### Magnesium Metal

**Critical mineral – US / EU** – we have a mine and the low carbon technology!



# FY24 KPI dashboard



### **KPI Dashboard for FY24**

Successfully completed

- 🔵 On track
- Watch point

GATEWAY 1 All High Level SHESQ action items completed on time



### CO<sub>2</sub> Capture

- Leilac-2 all permitting and civil works complete
- Continue to move projects down the pipeline
- Basis Of Design for green methanol consortia project



### Sustainable Processing

### Spodumene

- Spodumene Project Construction commenced Iron and Steel - "ZESTY"
- Successful expanded ore program
- Completed FEED study leading to FID

### Alumina

• First successful Pre-FEED study



### Advanced Batteries

- First battery module in consumer product format
- Demonstration facility for cathode production – FEED completed
- Successful commercial format cell with a new Calix electrode chemistry

### Magnesia

### Water

• Continued growth US, Asia

### Mg Metal

• Basis Of Design for Mg Metal plant

### **Specialties**

 Continued commercialisation of Agriculture, Marine and AMR applications

# Valuing the opportunity

### Selected benchmarks – November 2023

### Green iron & steel - similar Technology Readiness Level

### H2 Green Steel

- Multi-billion dollar valuation following US\$1.5b impact investment in Sept. 2023
- **Boston Metals**
- Impact investment of US\$262m in green steel technology in Sept. 2023

### Carbon capture - similar Technology Readiness Level

- Svante Inc.
- Latest cap raise of US\$318m, Dec 2022: Valuation ~<u>US\$1 billion</u>

### **Direct Air Capture**

- **Carbon Engineering** acquired by Occidental for US\$1.1 billion
- Blackrock invests US\$550 million in Direct Air Capture
- Microsoft purchases <u>315,000 tonnes</u> of carbon dioxide removal (CDR) credits from Heirloom. Estimated value of <u>US\$200million</u> > US\$600 / tonne of CO<sub>2</sub>
- Amazon purchases 250,000 CDR credits from 1PointFive, an Oxy subsidiary

Bloomberg US Edi Green Sweden's H2 Green Steel Raises €1.5 **Billion for First Metals Plant** Construction has already begun at site in Northern Sweden Final invesement decision could be taken in next 2-3 months Search businesswire HOME SERVICES NEWS EDUCATION ABOUT US Boston Metal Closes \$262M Series C Funding Round to Decarbonize Steelmaking and Disrupt the Metals Industry Capital will support commercial deployments for high-value metals production and bring Molten Oxide Electrolysis to market for green steel manufacturing Chevron leads \$318M investment round for carbon capture company Svante as sector booms BY LISA STIFFLER on December 21, 2022 at 12:52 pm Microsoft Will Use Carbon-Absorbing Occidental buys carbon air capture tech **Rocks to Meet Climate Goals** firm for \$1.1 billion eal with Heirloom Carbon is one of largest ever purchases of carbon Ry Sabrina Valle and Sourasis Bos emoval credits 🛛 🗛 < August 16: 2023 8-38 AM CMT+10 - Undat Sept. 7. 2023 5:30 am E Amazon follows Microsoft, investing big in carbon capture HARE F 🕊 in 🖾

Source: company websites, businesswire.com, rbccm.com, Calix analysis

# Calix Limited Annual General Meeting

16 November 2023



# Thank you

### Acknowledgement of country

Calix acknowledges the First Nations people and traditional custodians of the lands upon which we live and work. We acknowledge their rich cultures and their continuing connection to land, waters and community. We pay respect to the culture and people, their Elders and leaders, past, present and emerging.

# Social inclusion statement

Calix embraces diversity and inclusion. It is one of our core values. We promote an inclusive and safe space for all and proudly welcome and support people of any race, ability, gender and identity.

# Sustainability statement

At Calix, sustainability means meeting our own needs without compromising the ability of future generations to meet their own needs. It is deeply embedded in our purpose: Mars is for quitters.



# Thank you

Calix Limited Annual General Meeting 16 November 2023

use only

# Calix

Phil Hodgson Managing Director & CEO <u>phodgson@calix.global</u> +61 2 8199 7400

Investor relations Investorrelations@calix.global Darren Charles CFO & Company Secretary <u>dcharles@calix.global</u> +61 2 8199 7400

> Media enquiries media@calix.global



Follow us on Twitter @Calixlimited

www.calix.global



Term	Meaning
Aluminium (Al)	Chemical element with the symbol Al
Anode	The negative electrode of a battery
Antimicrobial	Antimicrobial products kill or slow the spread of microorganisms, including bacteria, viruses and fungi.
AMR	Antimicrobial resistance – the development of resistance in bacteria, viruses, fungi and parasites to antimicrobials.
ARENA	The Australian Renewable Energy A
ASX	The Australian Securities Exchange
APVMA	Australian Pesticides and Veterinary Medicines Authority
BATMn	Calix's core kiln technology – electrified – for battery and catalyst materials production
BOD	Basis of Design
Calcium (Ca)	Chemical element with the symbol Ca
Carbonation	The capture of carbon dioxide by contacting with lime (calcium oxide), to form limestone (calcium carbonate)
Cathode	The positive electrode of a battery
CCS	Carbon Capture and Storage
CCUS	Carbon Capture, Utilisation and Storage
CO <sub>2</sub>	Carbon Dioxide
Copper (Cu)	Chemical element with the symbol Cu
CRC	Cooperative Research Centre – Australian Government supported industry-led collaborative research centres
CRC SAAFE	Cooperative Research Centre Solving Antimicrobial Resistance in Agribusiness, Food, and Environments
DAC	Direct Air Capture – the extraction of carbon dioxide directly from the atmosphere
EAF	Electric arc furnace – a furnace that heats material by means of an electric arc between two electrodes



Term	Meaning
EAP	Employee Assistance Program
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortisation
Electrode	The material that stores the lithium ions in a charged (anode) or discharged (cathode) state in a lithium-ion battery
Electrolyte	The medium that allows ions to move between the battery electrodes, via the separator
ESG	Environment, Social and Governance considerations
FEED	Front-End Engineering Design
FID	Final Investment Decision
Fines	Small particles, which are usually very difficult to handle in kilns etc as they simply get blown out
Green Hydrogen	Hydrogen that is produced from an electrolyser using renewable energy
Goethite	A mineral that is an ore of iron
нві	Hot Briquetted Iron – "bricks" of relatively high purity iron ready for steel-making
H-DRI	The process of reducing iron ore to metallic iron with hydrogen as the reductant
Hematite	A mineral that is an ore of iron
HILT CRC	Heavy Industry Low-carbon Transition Cooperative Research Centre
НРО	"Hierarchical Porous Onion" - a crystal structure of lithium manganese oxide resembling tiny onion layers – allowing both strength and easier passage of lithium ions
Hydrometallurgy	A metal recovery method used to obtain metals from ores and waste materials
Iron (Fe)	The chemical element, represented by "Fe" on the periodic table
Iron Ore	Iron oxide mixed with various other minerals, as mined and "pre-processed" (purified) as best as possible
Leilac	Calix's core kiln technology for Low Emissions Intensity Lime and Cement production with CO <sub>2</sub> capture
LFP	Lithium Iron Phosphate – a battery cathode material



Term	
LHM	Lithium Hydroxide Monohydrate – used in the production of cathode active materials for lithium-ion batteries
Lithium (Li)	Chemical element with the symbol Li
Lithium-phosphate / Lithium Salt / "Mid- Stream" Lithium	A form of lithium that is high in lithium content, to be shipped and utilised by battery producers
Lithium ion	The ionic form of lithium (Li+) – a positively charged atom of lithium
LMO	Lithium Manganese Oxide – a battery cathode material
LNMO	Lithium Nickel Manganese Oxide – a battery cathode material
LTO	Lithium Titanium Oxide – a battery anode material
Manganese Carbonate (MnCO3)	Form of manganese used mainly in agriculture as a fertiliser supplement
Magnesium (Mg)	Chemical element with the symbol Mg
Manganese (Mn)	Chemical element with the symbol Mn
Magnetite	A mineral that is an ore of iron
Metallurgical Coal	Very high carbon coal
MgO	Magnesium Oxide
MHL	Magnesium Hydroxide Liquid
моц	Memorandum of Understanding
Nanoporous	A material with a regular, porous structure, with a pore size generally less than 100 nanometres.
Nickel (Ni)	Chemical element with the symbol Ni
NCA	A battery cathode material made from nickel, aluminium and cobalt
NCM, or NMC	A battery cathode material made from nickel, manganese and cobalt
Pelletisation	The formation of pellets from finer materials to aid in handling



Term	Meaning
Potassium (K)	Chemical element with the symbol K
Process emissions	Process emissions are inherent to the chemical reaction and are released directly and unavoidably from the chemical processing of ra material. They are distinct from energy related emissions that may result from the consumption of fuel to heat the reaction.
SDGs	The UN's Sustainable Development Goals or Global Goals are a collection of seventeen interlinked objectives designed to serve as a " blueprint for peace and prosperity for people and the planet, now and into the future."
Separator	The barrier between the anode and the cathode that prevents them touching, inside the battery
Siderite	A mineral that is an ore of iron
SLP	Single layer pouch cells – a soft battery design where most of the cell components are enclosed in a aluminium-coated plastic film.
Sodium (Na)	Chemical element with the symbol Na
Spodumene	A high lithium-containing ore, and the source of the majority of the world's lithium supply
α-Spodumene	A tight Li-crystal formation, from which extraction of Li is difficult
β-Spodumene	A loose Li-crystal formation, from which extraction of Li is much easier than the alpha-form
Reduce / Reduction	The process by which oxygen is removed
Reductant	A material that, through its chemical properties, carries out reduction
RDF	Refuse-derived fuel – a fuel produced from various types of waste
Sponge Iron	Iron Ore that has been reduced (had the oxygen removed)
Steel	Mainly iron, with some carbon and other trace metals such as nickel, manganese etc depending upon the grade of steel being made
Sulphur (S)	Chemical element with the symbol S
Тра	Tonnes per annum
UNGC	The United Nations Global Compact, the world's largest corporate sustainability intiative
Wh/kWh	Watt-hours / kilowatt-hours - a measure of energy
ZESTY	Calix's Zero Emissions Steel TechnologY

Calix

Phil Hodgson Managing Director & CEO <u>phodgson@calix.global</u> +61 2 8199 7400

Investor relations nvestorrelations@calix.global Darren Charles CFO & Company Secretary <u>dcharles@calix.global</u> +61 2 8199 7400

> Media enquiries media@calix.global



Follow us on Twitter @Calixlimited

www.calix.global