

FY2019 1H RESULTS PRESENTATION – MINOR CORRECTION Sydney, Australia | March 5, 2019 – Multi-award-winning Australian technology company Calix Limited (ASX: CXL, 'Calix' or 'the Company'), advises it has reissued its 1H FY2019 presentation, providing detail of the JORC proven and probable reserve at the Myrtle Springs Mine. On slide 4 of the presentation released on 4th March 2019, Calix noted "JORC proven and probable reserve 466kT + Indicated Resource 392 kT". The slide has been updated to set out the amount of Proven ore reserve and Probable ore reserve seperately. This section of the presentation now states "JORC proven ore reserve 163.7 kT + probable ore reserve 302 kT + Indicated Resource 392 kT. he presentation is attached to this announcement. For more information: Darren Charles Phil Hodgson **Company Secretary and CFO** Managing Director and CEO dcharles@calix.com.au phodgson@calix.com.au +61 2 8199 7400 +61 2 8199 7400 Simon Hinsley Michelle Taylor **Investor Relations** Media simon@nwrcommunications.com.au Michelle_Taylor@recognition.com.au +61 401 809 653 +61 2 9252 2266 About Calix Calix is a multi-award-winning Australian technology company that is developing new processes and materials to solve global challenges. The core technology is a world-first, patented kiln built in Bacchus Marsh, Victoria that produces mineral honeycomb, which are very highly active minerals. Calix uses these minerals, which are safe and environmentally friendly, to improve waste water treatment and phosphate removal, help protect sewer assets from corrosion, and help improve food production from aquaculture and agriculture with reduced antibiotic, fungicide, and pesticide use.

Calix's technology has also been adopted overseas, where the company is working with some of the world's largest companies, governments and research institutions on CO₂ capture.

www.calix.com.au

use only For personal



CREATING NEW MATERIALS AND SOLVING GLOBAL CHALLENGES, COMMERCIALISING A UNIQUE TECHNOLOGY PLATFORM

IMPORTANT NOTICE AND DISCLAIMER

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 22^{nd} August, 2017. 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.

FINANCIAL DATA

All dollar values are in Australian dollars (\$ or A\$) and financial data is presented as at or for the year ended 30 June 2017 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", "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.



INTRODUCING CALIX

Calix is a leading Australian technology company that is developing new processes and materials to solve global challenges via its core technology, a world-first, patented kiln in Bacchus March, Victoria that produces very highly active 'mineral honeycomb' that has a wide range of applications in sectors such as waste water, infrastructure and food production.



A fast-growing, cash positive business

- Cashflow positive from operations
- Statutory EBITDA growth >100% last 2 years
- Total revenue up 82% from H1 FY18
- Significant inflow of R&D funding support growth and product improvement



Blue chip customers, easily

scalable operation

Value chain from own mine to

infrastructure

customers in waste water and

Blue chip customers including

Exporting to Europe and Asia

• Key partnerships signed in the

large multinationals and

government agencies

•

•

US

Proven technology platform – advanced materials

- Patent-protected
- ~A\$50 million capital spent to date to develop the technology
- Achieved A\$36 million in grant funding, majority from EU
- Major R&D collaborators internationally
- Multiple technology awards



Huge addressable global markets

- Near-commercial products in agriculture & aquaculture
- Three pilot projects in decarbonised lime and cement, advanced batteries
- Many more products and applications to be developed
- Multiple touch-points with global chemical companies



VALUE CHAIN

Calix is vertically integrated, owning the input and proprietary technology that manufacturers multiple industrial products



"The information in this Presentation that refers to a JORC-compliant resource estimate is based on information prepared by Ric Horn of Hornet Resource Assessment Services Pty Ltd. Ric is a Fellow of the Australasian Institute of Mining and Metallurgy and a Chartered Professional and is bound by and complies strictly with the Institutes codes and recommended practices. Mr Horn has 47 years' experience in the resources industry both in exploration and mining and has sufficient experience relevant to the style of mineralisation under consideration. He has 14 years' experience involved with the deposit under consideration and activities being undertaken to qualify as a competent person as defined in the 2012 Edition of the JORC Code of the "Australasian Code for Reporting of Exploration Results, Mineral Resource and Ore Reserves". Mr Horn consents to the inclusion in this Presentation of the matters based on his information in the form and context in which it appears."



H1 FY2019 FINANCIAL RESULTS

Financial Information Amounts in AU\$'000 unless otherwise stated	H1 FY18	H1 FY19	Mvt %
EBITDA (statutory)	-293	1,282	+\$1,575m
Core product revenue	1,656	1,423	-10.4%
Gross Profit	456	348	-23.7%
Gross Profit and other income	3,160	6,915	118.8%
Cash flow from operations	2,864	4,586	60.1%

- Revenue and EBITDA driven by higher project income mainly LEILAC
- Core product revenue and gross profit impacted by push back of contracted PROTETCA-Mag volumes



5

H1 FY19 FINANCIAL RESULTS



Operating Expenses (A\$m)







LEILAC - A SOLUTION FOR ONE OF THE WORLD'S MOST SIGNICANT ISSUES

AJUO

or personal use

CO₂ reduction is one of the most significant global issues today and estimated to be a A\$10.8 billion market¹ for **Cement and Lime alone**



Global drive to reduce greenhouse gas emissions is sparking intense interest in the negative CO2 market.



For every tonne of lime or cement produced, roughly one tonne of CO2 is emitted directly from the raw limestone







Phase 4 of the EU's CO2 emissions reduction directive is starting in 2021 - accelerating the reduction in "free" CO2 allowances



Innovation programs for industrial CO2 FU reduction. Increased activity in the European cement and lime industry in CO2 reduction technologies



Refinitiv (formerly known as the Financial and Risk business of Thomson Reuters) https://www.refinitiv.com/perspectives/market-insights/will-high-european-carbon-prices-last/



Among materials, only coal, oil and gas are a greater source of greenhouse gases.

"Concrete is tipping us into climate catastrophe. It's payback time" – The Guardian

"Concrete: the most destructive material on Earth" – The Guardian

Calix's LEILAC (Low Emissions Intensity Lime and Cement) Project in Europe is aiming to prove a solution to a global problem

LEILAC Overview

use only

or personal

- Calix leading the LEILAC consortium to demonstrate direct separation of CO₂ for lime and cement
- Awarded €12m in funding from the EU, project commenced in January 2016
- LEILAC on time and budget for commissioning in April 2019, demonstration plant then runs for 21 months

Commissioning in April 2019

- LEILAC construction phase continues on time and budget to be commissioned in April 2019
- Key Milestone achieved in October European Commission review of the project and approval of grant milestone payment of \in 4.8m.
- Commercialisation strategy is to prove application of technology and then proceed to a license/royalty model









Instrumentation and control systems being installed in the new control room – January 2019

The LEILAC tower with the new control room in the foreground – January 2019.

Sind

For personal us





BOOSTER-Mag An emerging sustainable crop protection product in a A\$9.8 billion market¹



THE INDUSTRY IS RECOGNISING THE NEED FOR INNOVATION AND CALIX HAS PARTNERED WITH LEADING MULTI-NATIONAL CROP PROTECTION COMPANIES



Increased Agricultural Demand:

By 2050 agricultural demand is expected to increase 50%, from declining arable land



Increasing Pesticide **Restrictions:** 1993 to 2011: EU

banned three quarters of active pesticide ingredients. Over the next 5 years nearly all remaining substances will come up for review



Chemical Pesticide Development Costs:

to find and bring to market new chemical products, is now estimated at US\$200m and 10 years per product



Investment in Ag-tech:

VC investment in Ag Tech has grown 10-fold in the last 6 years



Megamergers:

Major global chemical companies are consolidating in an effort to mitigate



BOOSTER-Mag



Commercial strategy accelerating with world's largest crop protection companies currently trialling



Progressing towards commercialisation

- Continued to supporting three material transfer agreements for BOOSTER-Mag assessment and trials
- Commercialisation strategy is to pursue sales and marketing licensing model with crop protection companies
- Current milestones in this process are:
 - Initiates contact with 22 of the world's largest crop protection companies
 - 12 Confidentiality Agreements in place currently
 - Three material transfer agreements currently in place
- Next steps are to arrange commercial license and commence sales if the trials are deemed successful



Frost & Sullivan: Market Opportunity for Calix Flash Calcination, dated 17 April 2018. Refer to Section 4 of the Calix Prospectus for risks associated with the competitive environment, retaining and winning customers and market development.

ACTI-MAG Sewer odour and fat control, increased biogas production





PROBLEM

friendly

Key Progress

ACTI-Mag Overview

better quality and quantity of biogas

ACTI-Mag is dosed into sewers and industrial waste water

ACTI-Mag business grew over 40% over pcp

- Worsening odour: Waste water "Rotten Egg Gas" problem worsening with diet changes and tightening EPA standards
- Fat build-up: More frequent sewer blockages due to "fatbergs"
- **Biogas Power:** Increasing need to use bio-treater methane to produce power

• Proven to be more powerful than alternatives and yet completely safe and environmentally

Helps keep infrastructure free of fat build-up, and aids in bio-treater efficiency, producing

Executed two key US partnership agreements for odour mitigation

Progressing advanced discussions with a new strategic partner in Nevada

• Completed three trials in SE Asia for biogas production enhancement, 2 are now regular customers and a third in negotiation, four more trials currently underway

Market Response

- Toxic chemicals: acidic iron salts and caustic soda – dangerous chemicals
- Regular or emergency maintenance: expensive, disruptive

а**\$36.7**ь ⁽¹⁾ магкет

Covered biotreater pond to collect methane



AQUA-Cal+ An emerging aquaculture water treatment product

Market

Response





- **Rapid Growth:** Aquaculture is growing rapidly. More fish are now grown than caught. Rapid depletion of coastal habitats
- Increased disease outbreaks from intensification: Numerous catastrophic crop losses due to disease in last decade

AQUA-Cal+ Overview

- AQUA-Cal+ is simple to use, suppresses iron, nitrates and phosphates, reduces sludge and increases oxygen
- Extends the life of existing ponds and improves yields
- Improved yields on controlled trials have delivered over 20x return on the cost of the product to the farmer

Chinese market expanding

• In collaboration with Calix's local partner Honlex Jones, successful trials continued into Northern China for nitrite control in farmed prawns

Promising results in Malaysia

- In collaboration with Calix's local partners MahaChem and Thalassa Aqua, AQUA-Cal+ is being tested for the treatment of a lake that suffered blue-green algal blooms and strong odours
- The trial is nearing half way through, with results showing substantial improvement in water quality and no evidence of fish kills
- AQUA-Cal+ is also being assessed on its ability to reduce accumulated sludge through accelerating bio-digestion in the lake``

(1) Frost & Sullivan: Market Opportunity for Calix Flash Calcination, dated 17 April 2018. Refer to Section 4 of the Calix Prospectus for risks associated with the competitive environment, retaining and winning customers and market development.



• Growth of probiotics: problems with efficacy and shelf life A\$**1.5**b⁽¹⁾ MARKET



Lake condition - February 2018



Lake condition - January 2019



PROTECTA-MAG Cost-effective, safe sewer asset protection



or personal use

- Accelerating Corrosion: H₂S corrosion of aging, global sewer infrastructure due to increasing bio-activity
 - Accelerating Collapses: Est. US\$60 Trillion in replacement cost, few economic solutions
- Market <u>Re</u>sponse
- Epoxy / Plastic Lining: • Expensive, and temperamental
- **Re-cement**: Expensive, requires man-entry & shuts the sewer down

A\$25b(1) MARKET

PROTECTA-Mag Overview

- PROTECTA-Mag is simply sprayed onto a water-washed sewer surface
- <1/3 of the total cost of alternative methods
- Can be applied without shutting down the sewer and is safe and environmentally friendly

Key Progress

PROBLEM

- New formulation developed which allows for better control of hardening time and stronger adherence to concrete walls
- PROTECTA-Mag shown to be highly resistant to wear and reduce corrosion when dosed at a North East Water pump station that had suffered significant acid damage
- Overall business experienced a slower half, major contracted works pushed to H2 2019, impacting overall revenues and margins.

PROTECTA-Mag success at North East Water



The wet well before application

After application, the new **PROTECTA-Mag formula** adhering well to the walls



ADVANCED BATTERIES The BATMn and SOCRATCES Projects

PROBLEM

- Slow-charging of energy storage devices (batteries) for EV's, electronics etc
- Relative high cost of battery materials
- Ease of recycling
- Use of rarer materials such as cobalt

Advanced Battery Projects Overview

Use of Calix Flash Calciner technology to:

- 1. BATMn explore high surface area formulations for manganese oxide as a li ion battery cathode material - funded 0.8m by AusIndustry AMGF
- 2. SOCRATCES explore solar thermal energy storage via splitting and recombining Ca and CO_{2-} funded €5m by the EU H2020 scheme

Exploring cutting edge technology and new potential markets

- Both advanced batteries projects are proceeding on time and budget, with construction of both projects commencing during the half year
- Calix welcomed Dr. Matt Boot-Hanford from Imperial College onto our staff to spearhead our battery development program
- Calix

or dersonal





Search for cheap, efficient, high performance, highly recyclable battery materials and processes

Market

Response



Calix's BATMn reactor





RESEARCH & DEVELOPMENT

Additional applications continue to be added to pre-commercial product opportunities in major industries ...

- Huge potential market in pharmaceutical and health applications collaboration has commenced with CERTH in Greece. Secured funding from the Australian Academy of Technology and Engineering to support research with CERTH in Greece (<u>https://www.certh.gr/root.en.aspx</u>) into our "mineral honeycomb" magnesium oxide and its ability to control bacterial "superbug" population.
- Shipping : development has commenced (and R&D funding is being sourced) in:
 - SOx and CO₂ emissions reduction processes under project RECAST presentation at the Green Ship Technology Europe (<u>https://maritime.knect365.com/green-ship-technology/</u>)
 - Anti-fouling marine coatings



CORPORATE OVERVIEW

Company Snapshot	As at 22 Feb 2019	
Shares on issue	~122.9m	
Share price	\$0.825 per share	
Fully Diluted Market capitalisation	~\$101m	
Cash	\$8.65m	
Enterprise value	~\$92.7m	

Major shareholders	As at 22 Feb 2019
Board & Management	19.7%
Och Ziff Capital Management	22.9%
Nicholas Merriman and associates	8.54%
Paul Crowther	6.74%
Perennial Value Management	6.51%
Acorn Capital	5.37%
Washington H. Soul Pattinson and Company	5.15%

SHARE PRICE PERFORMANCE SINCE LISTING



SHAREHOLDER PROFILE



Board Institutions Free float

Calix

SUMMARY





Penetrating large global markets



Proven technology platform



Highly scalable operations



Significant R&D funding to finance growth



Highly experienced management



Strong institutional backing



Diversified product range



or personal use only



Phil Hodgson Managing Director and CEO phodgson@calix.com.au +61 2 8199 7400 Darren Charles Company Secretary and CFO dcharles@calix.com.au +61 2 8199 7400 Simon Hinsley Investor Relations simon@nwrcommunications.com.au +61 401 809 653

CFC TECHNOLOGY

or dersonal

Air

Flue Gas

The patented "Calix Flash

Calciner" (CFC)

Finished

Products



- The CFC technology heats finely ground minerals (1000x bigger than hazardous nanoparticles) and as gases trapped in minerals "bubble out" of the tiny particles, they are "snap frozen" in a **highly porous** state, with nano-scale "**honeycomb**" structures
- The use of "indirect" radiant heating through the red-hot walls of a reactor tube stops furnace gases contaminating the products, and allows for the efficient, direct capture of CO₂ from the processing of carbonate minerals such as limestone or magnesite



PRODUCT PORTFOLIO LEVERAGED TO LARGE AND GROWING MARKETS ALREADY DELIVERING COMMERCIAL OUTCOMES

Commercial Products

- ACTI-Mag: Wastewater treatment
- PROTECTA-Mag: Corrosion protection
- HSA MgO: Specialised chemical additive

Producing revenue, Calix is entering new markets (NZ, EU, US) and improving margins in its existing domestic market

Commercialising Products

- AQUA-Cal+: Aquaculture water conditioner
- BOOSTER-Mag: Disruptive crop protection product

In late stages of commercialisation, with successful paid trials being translated into repeat sales

Development Pipeline

- 2 pilot projects Advanced Batteries
- 1 pilot project De-Carbonised Lime and Cement

R&D in Pharma / Medical / Health, 3D Printing, Advanced Catalysts, Advanced Building Products





