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Calix

RESULTS FY18 PRESENTATION

September 2018

AUSTRALIAN TECHNOLOGIES COMPETITION
Food & Agritech Winner 2015

ABA100 WINNER BEST TECHNOLOGY PRODUCT 2015
BUSINESS INNOVATION & TECHNOLOGY LEADERS

PREMIER'S NSW EXPORT AWARDS
Export Council of Australia
2016 Category Winner
Environmental Solutions

54th Australian Export Awards
2016 NATIONAL FINALIST

AUSTRALIAN TECHNOLOGIES
COMPANY OF THE YEAR 2015

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

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INTRODUCTION VIDEO TO CALIX

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CAPITAL STRUCTURE AND USE OF FUNDS

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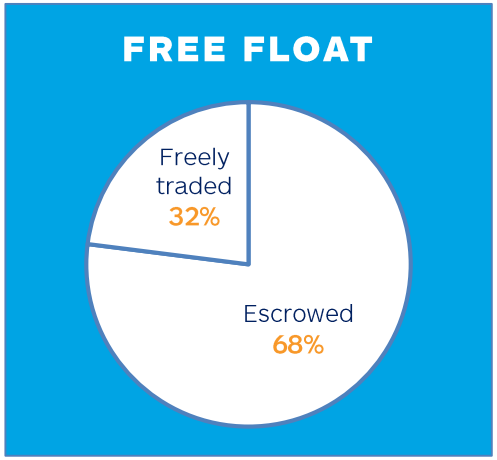
Shares on issue	~122.9m
Share price	$0.82 per share
Market capitalisation	$100.8m
Cash	$8.9m[1]
Enterprise value	$91.9m

Major shareholders	As at Aug 15, 2018
Board & Management	19.7%
Och Ziff Capital Management	22.9%
Nicholas Merriman and associates	8.54%
Paul Crowther	6.74%
Acorn Capital	5.37%
Washington H. Soul Pattinson and Co.	5.15%



USES	$m	%
Advanced batteries development	1.5	12.5%
Booster-Mag licensing support costs	0.5	4.2%
Manufacturing logistics and efficiencies	2.3	16.7%
New market entry and development	2.2	20.8%
Working Capital	1.5	12.5%
Total Uses	8.0	100%

Note:
[1] As at August 15, 2018
The information above is indicative only. Actual use of funds will depend upon a variety of factors as the business strategy is executed, including changing market conditions and competitive response. As with any budget, intervening events and new circumstances have the potential to affect the manner in which funds are ultimately applied. The Board reserves the right to alter the way the funds are applied on this basis.

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INTRODUCTION

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INTRODUCING CALIX

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A fast-growing, cash positive business

- Achieved cash flow positivity in FY15
- **Statutory EBITDA growth >100% last 2 years**
- Core product growth of 25% FY17 to FY18, including 35% growth of core magnesium hydroxide liquid products
- Average gross margin growth from 30% FY17 to 35% FY18

Blue chip customers, easily scalable operation

- Value chain from own mine to customers in waste water and infrastructure
- Blue chip customers
- Exporting to Europe and Asia
- Commencing trials in 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 de-carbonised lime and cement, advanced batteries
- Many more products and applications to be developed
- Multiple touch-points with global chemical companies

Manufacturing facility – Bacchus Marsh, VIC

HEIDELBERGCEMENT, Lhoist, CEMEX, TARMAC, Calix, amec foster wheeler, Quantis, Imperial College London, ECN, CARBON TRUST, PSE

Calix-led R&D consortium - Europe

Commitment

Calix Directors, Management and Staff have invested cash to collectively own ~20% of Calix

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VALUE CHAIN

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

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Calix $MgCO_3$ Mine, Australia

JORC proven and probable reserve 466kT + Indicated Resource 392kT

Located in one of the largest $MgCO_3$ deposits in the world

"CFC" Calcination & CO_2 Separation

Currently ~10% utilised

Replacement cost and capex for additional CFC is ~ A$20m

Satellite Hydration, (close to customer)

3 established

1 planned for market entry US

1 planned for market entry EU

1 planned for SE Asia

ACTI-Mag™

PROTECTA-Mag™

AQUA-Cal+™

BOOSTER-Mag™

All based upon MgO

"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."

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FINANCIAL PERFORMANCE

FY2018 FINANCIAL RESULTS

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Financial Information

Amounts in AU$'000 unless otherwise stated	FY17	FY18	Mvt %
EBITDA (statutory)	901	1,933	102%
Core product revenue	3,104	3,864	24.5%
Gross Profit	1,217	1,412	16.0%
Gross Profit and other income	8,847	9,540	7.8%
Cash flow from operations	*- 1,946*	*2,000*	
*EBITDA (pro forma)**	*225*	*1,681*	

*Certain pro forma adjustments have been made to Calix's Statutory Historical Results to reflect the full year impact of the operating and capital structure that will be in place following the Company's IPO as if it were in place as at 1 July 2014. The nature of these pro forma adjustments are set out on Section 3.3.2 of the Calix Limited Prospectus lodged with ASIC on 25 June 2018. The adjustments represent the removal of a one-off sale of magnesite ore in FY 17 and the addition of an estimate of costs associated with being a listed public company through the historical periods presented.

+ 102%
in EBITDA to $1.9m (FY17 $0.9m)

+24.5%
in core product revenue to $3.86m (FY17 $3.10m)

+16.0%
in gross profit to $1.41m (FY17 $1.22m)

+7.8%
in gross profit and other income to $9.5m (FY17 $8.8m)

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FY2018 FINANCIAL RESULTS – PRO FORMA

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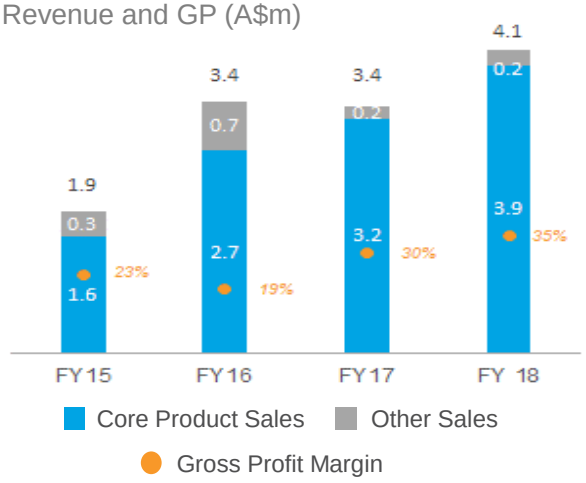
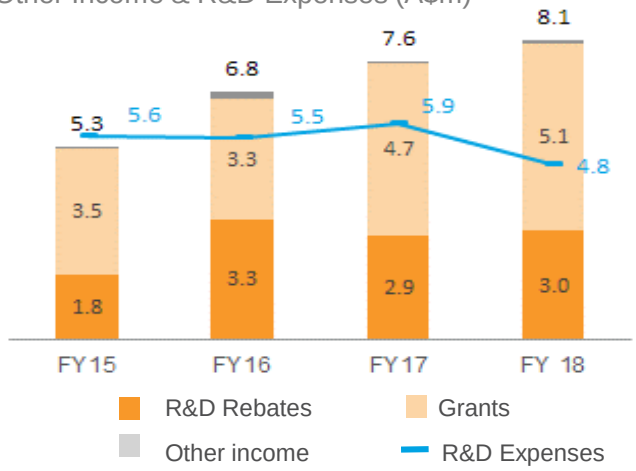
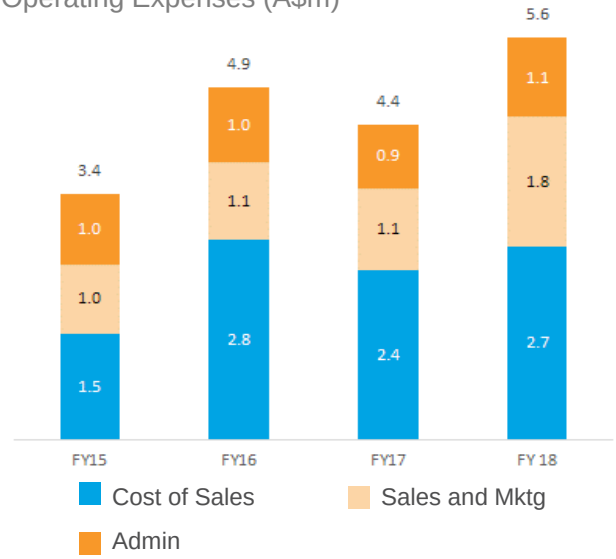
Revenue and GP (A$m)



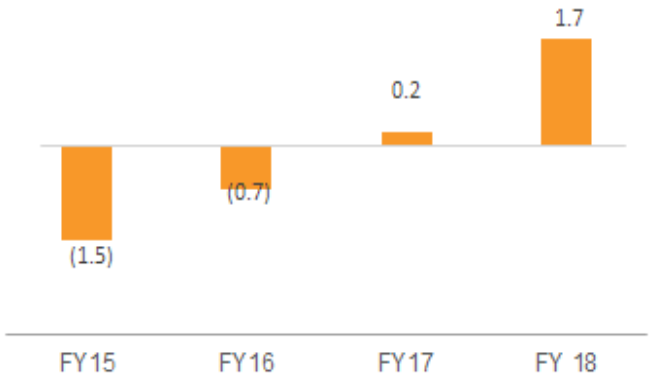
Other Income & R&D Expenses (A$m)



Operating Expenses (A$m)



EBITDA (A$m)



PRO FORMA STATEMENT OF FINANCIAL PERFORMANCE

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	Pro Forma Historical			
$'000	FY15	FY16	FY17	FY18
Core product revenues	1,582	2,745	3,181	3,865
growth (%)	-	73.5%	15.9%	35.0%
Other product revenues	354	702	200	236
Cost of sales	(1,483)	(2,791)	(2,374)	(2,689)
Gross profit	**454**	**656**	**1,007**	**1,412**
Gross Margin (%)	*23.4%*	*19.0%*	*29.8%*	*35.0%*
Other income	5,392	6,783	7,630	8,128
Total operating income	**5,846**	**7,439**	**8,637**	**9,540**
Sales & marketing expenses	(962)	(1,080)	(1,132)	(1,755)
R & D expenses	(5,201)	(5,545)	(5,919)	(4,764)
Admin expenses	(1,211)	(1,466)	(1,362)	(1,340)
Total operating expenses	**(7,373)**	**(8,091)**	**(8,412)**	**(7,859)**
EBITDA	**(1,527)**	**(652)**	**225**	**1,681**
Depreciation & impairment expense	(1,996)	(1,704)	(2,658)	(4,669)
EBIT	**(3,523)**	**(2,356)**	**(2,433)**	**(2,988)**
Other Expenses	-	-	-	(209)
Finance costs	(3)	(2)	(160)	(80)
Profit before tax	**(3,526)**	**(2,358)**	**(2,593)**	**(2,699)**
Income tax expense	-	-	-	-
NPAT	**(3,526)**	**(2,358)**	**(2,593)**	**(2,699)**

PRO FORMA STATEMENT OF FINANCIAL POSITION

$'000	Pro forma 30-Jun-18
Current assets	
Cash & cash equivalents	8,874
Trade & other receivables	7,867
Inventory	181
Total current assets	**16,922**
Non-current assets	
Trade and other receivables	274
Intangible assets	649
Property, plant and equipment	11,784
Total non-current assets	**12,707**
Total assets	**29,629**
Current liabilities	
Trade and other payables	(3.741)
Borrowings	(1,891)
Provisions	(331)
Deferred revenue	(202)
Total current liabilities	**(6,165)**
Non-current liabilities	
Borrowings	(131)
Deferred revenue	(1,093)
Provisions	(470)
Total non-current liabilities	**(1,694)**
Total liabilities	**(7,859)**
Net assets	**21,770**
Equity	
Issued equity	33,397
Reserves	3,015
Retained earnings	(14,644)
Non-controlling interests	2
Total equity	**21,770**

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PRO FORMA STATEMENT OF CASH FLOWS

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$'000	Pro Forma Historical FY15	FY16	FY17	FY18
Cash flows from operating activities				
Receipts from customers & government agencies	8,356	9,701	6,591	12,814
Payments to suppliers and employees	(8,104)	(10,569)	(9,003)	(10,726)
Interest received	13	4	4	12
Net cash from discontinued operations	-	3,035	-	-
Net cash flows from operating activities	**265**	**2,170**	**(2,408)**	**2,100**
Cash flows from investing activities				
Purchases of property, plant & equipment	(1,308)	(270)	(223)	(3,513)
Purchases of intellectual property	-	-	(233)	(245)
Proceeds from sales of assets	88	-	-	-
Payments for investments in associates	(41)	-	-	-
Net cash flows from investing activities	**(1,261)**	**(270)**	**(456)**	**(3,759)**
Cash flows from financing activities				
Proceeds from issues of shares	115	279	479	1,842
Proceeds from/(repayments of) borrowings	500	(1,000)	2,167	519
Payment of interest on borrowings	(3)	(2)	(12)	(80)
Net cash provided by financing activities	**611**	**(724)**	**2,634**	**2,281**
Net increase/(decrease) in cash and cash equivalents	(385)	1,177	(229)	622
Cash and cash equivalents at the start of the year	1,109	722	1,877	1,885
Cash and cash equivalents at the end of the year	724	1,899	1,648	2,507

GROWTH OUTLOOK & KEY MILESTONES

- **Financing Growth:**
  - Calix is fully financed for EU and US market entry and SE Asia expansion following initial growth capital injection
  - Development pipeline will continue to be covered by existing grant funding for 2 years
  - New grant funding will be sought for new applications
- **Grant income secured to provide cash flow** committed, materially covering the costs of running the business
- **Margin expansion and stronger profitability** expected with changing product mix and role out of business models, introduction of new products and achieving production scale at Bacchus Marsh
- **Our product and application development milestones are:**

ACTI-Mag™ *Water*

- Continue role-out of high margin business model – Aus/NZ/Asia
- Initial paid trials in US
- Licensed partner deals
- Initial paid trials in EU
- First repeat sales, contracts, US, EU
- Local MHL facility established US, EU

PROTECTA-Mag™ *Coatings*

AQUA-Cal+™ *Aquaculture*

- AQUA-Cal+ repeat sales achieved in Thailand, Vietnam, Indonesia
- AQUA-Cal+ paid trials, then repeat sales in Southern China

BOOSTER-Mag™ *Agriculture*

- Material Transfer Agreement/s executed
- APVMA submission
- APVMA approval achieved
- Sales and Marketing license/s achieved

Leilac *Carbon Capture*

- Successful start-up / commissioning Q1/2 CY19
- LEILAC next scale-up funding
- LEILAC – first Lime (or Cement) License

SOCRATCES & BATMn *Advanced Batteries*

- BATMn – Construct and commission successful by end-Aug, 2019
- BATMn – first product trials
- SOCRATCES – Construct and commission successful

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PROGRESS SINCE LISTING

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ACTI-Mag™ *Water*

PROTECTA-Mag™ *Coatings*

- Continue role-out of high margin business model – Aus/NZ/Asia
- Initial paid trials in US
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- Initial paid trials in EU
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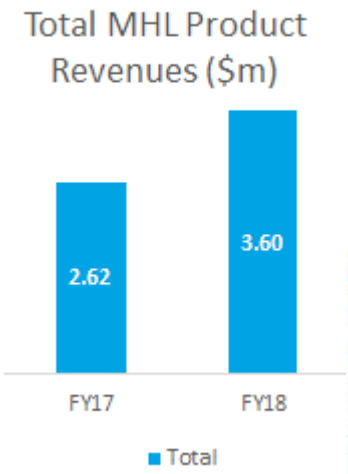


AQUA-Cal+™ *Aquaculture*

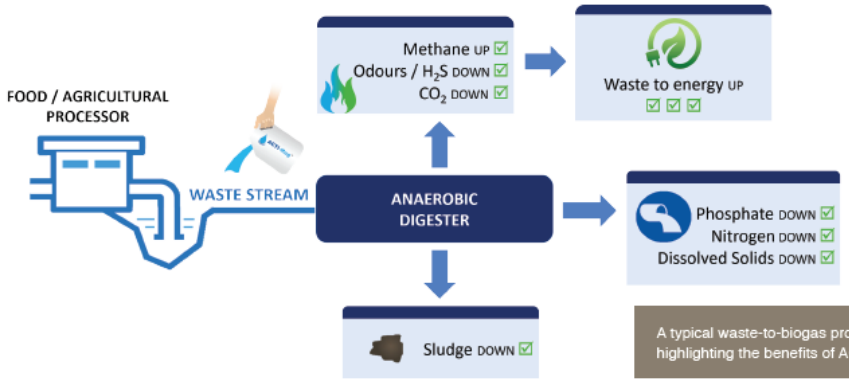
- AQUA-Cal+ repeat sales achieved in Thailand, Vietnam, Indonesia
- AQUA-Cal+ paid trials, then repeat sales in Southern China

OPTIMISING WASTEWATER EFFICIENCY

FURTHER ACTI-MAG BIOGAS TRIALS TO BEGIN IN AUGUST

ACTI-Mag™

In our last Newsletter, we described how our ACTI-Mag product was recently used in a Thai palm oil processing facility to increase biogas power production and improve the environmental performance of the biotreater system. Following this success, Calix has begun a trial in early August with a major Australian water utility on its biotreater-to-biogas power system. Calix is also preparing a test run on a biotreater-to-biogas power plant in the UK, run by a company with multiple biogas power plants across the country.



A typical waste-to-biogas process, highlighting the benefits of ACTI-Mag addition.

MEETING CORE NEEDS IN AQUACULTURE

AQUA-CAL+ CONTINUES TO GAIN MOMENTUM IN CHINA

AQUA-Cal+™

A second container of AQUA-Cal+ is on its way to Southern China following our very first shipment to China in June. China is one of the largest farmed shrimp producers in the world.

Calix looks forward to progressing AQUA-Cal+ trials there, following trial programs already underway in Vietnam, Indonesia and Thailand.

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PROGRESS SINCE LISTING

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BOOSTER-Mag™

Agriculture

- Material Transfer Agreement/s executed
- APVMA submission
- APVMA approval achieved
- Sales and Marketing license/s achieved

2nd MTA Executed July 20, 2018

3rd MTA Executed August 27, 2018

Commercialisation Strategy

1. Initiate contact with the world's largest crop protection companies **(22 engaged)**
2. If high level BOOSTER-Mag results already achieved are of interest - put in place Confidentiality Agreements and disclose more detailed data **(12 in place)**
3. If counter-party wishes to progress - invest in their own DD trials – put in place Material Transfer Agreements (MTAs) to cover Intellectual Property terms and conditions to protect Calix's interests as well as agreed trial scope and protocols **(3 now in place)**

Next steps:

1. Counter-party to conduct their own tests and trials on specific crop / disease / geographic region
2. If deemed successful – commercial license arrangements to be negotiated
3. If agreed – commencement of sales and marketing licenses by crop / disease / geographic region

Leilac

Carbon Capture

- Successful start-up / commissioning Q1/2 CY19
- LEILAC next scale-up funding
- LEILAC – first Lime (or Cement) License

Rendering of the Calix LEILAC Project reactor

Progress

1. All major contracts now locked in except electrical / control
2. Project remains on-track for completion end-March, 2019

SOCRATCES & BATMn

Advanced Batteries

- BATMn – Construct and commission successful by end-Aug, 2019
- BATMn – first product trials
- SOCRATCES – Construct and commission successful

Rendering of the Calix BATMn Project reactor

Progress

1. Awarded Australian Manufacturing Growth fund grant January, 2018
2. Passed Front-end Engineering Design and major HAZOP
3. Detailed design and construction commenced Aug 2018
4. Project remains on-track for completion o commissioning August 2019
5. Calix part of Industrial Transformation Training Centre for Future Energy Storage Technologies, in which Calix is an industrial partner, was recently awarded $4.38m by the Australian Research Council.

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CALIX SUMMARY

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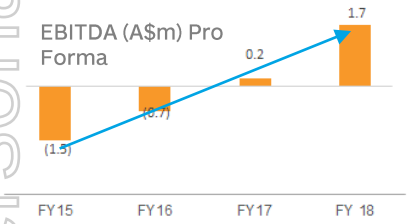
A fast-growing, cash positive business



Blue chip customers, easily scalable operation

ACTI-Mag™

PROTECTA-Mag™

Proven technology platform materials science

HEIDELBERGCEMENT

TARMAC · Lhoist · Calix · CEMEX · Quantis · Imperial College London · ECN · CARBON TRUST · PSE

Huge addressable global markets

AQUA-Cal+™

BOOSTER-Mag™

Calix Directors, Management and Staff collectively own ~20% of the Company

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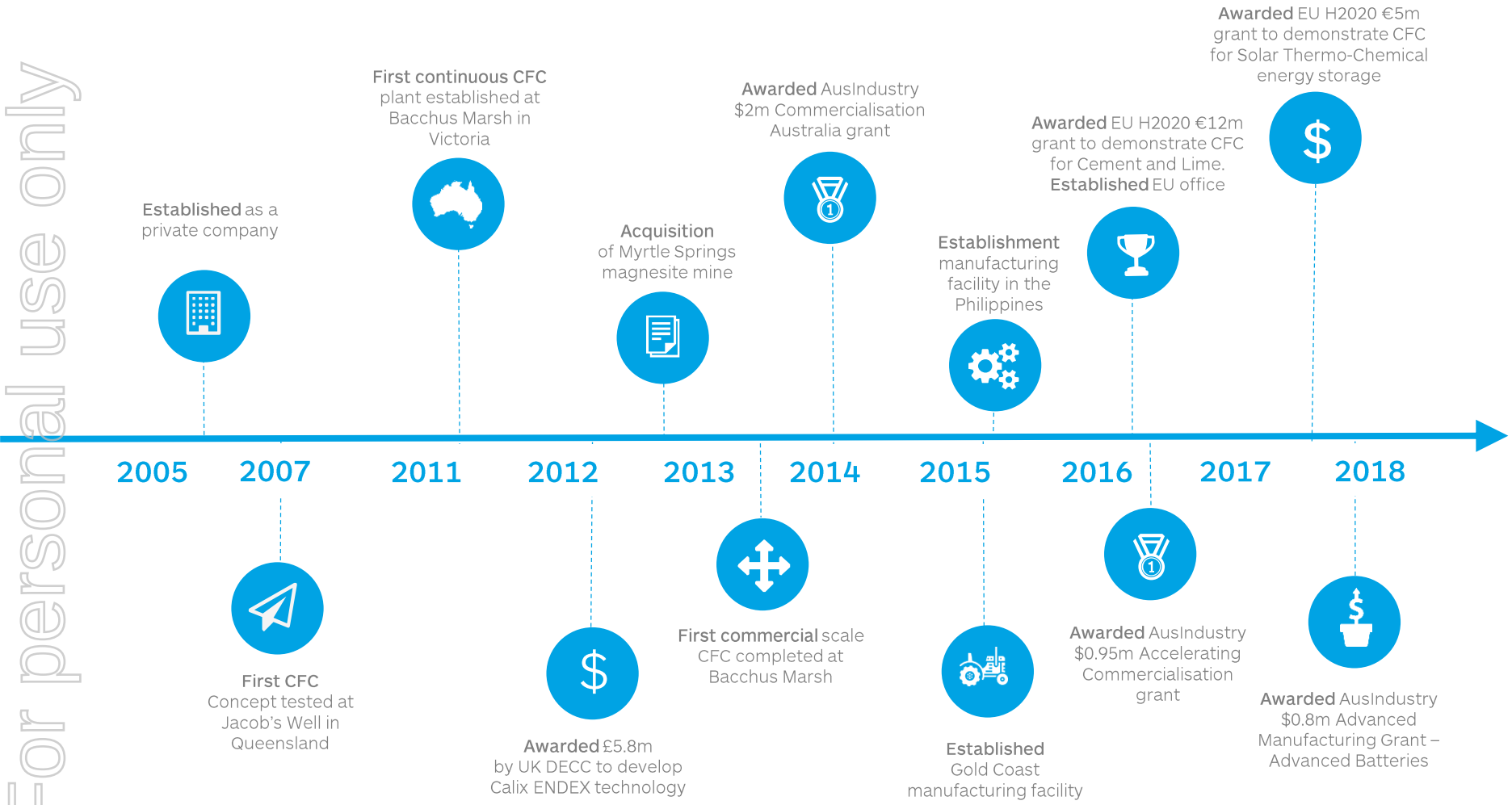
APPENDIX

COMPANY AND INDUSTRY OVERVIEW

CALIX TIMELINE



Calix has proven its technology with the commercialisation of three products and is in the process of commercialising another two, and has pipeline of other applications for its patented "honeycomb" materials and CO_2 capture

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BOARD OF DIRECTORS

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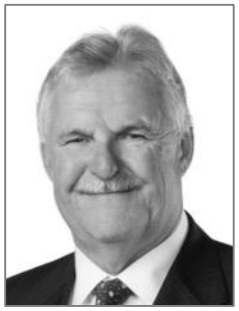
PETER TURNBULL

NON-EXECUTIVE CHAIR

- Experienced chairman and Non-Executive Director with significant board and senior executive experience in resource, energy and technology commercialisation
- Current Chairman of Metallica Minerals (ASX: MLM) and Auxita Pty Ltd, Director of Karoon Gas Australia (ASX: KAR), and Governance Institute of Australia Ltd
- Adjunct-Professor at the University of Queensland



JACK HAMILTON

NON-EXECUTIVE DIRECTOR

- 30 years multidisciplinary experience in local and overseas energy industries, including as a Director of NWS Ventures (Woodside North-West Shelf project)
- Currently the Chairman of Anteo Diagnostics Ltd (ASX:ADO). Previous Non-Executive Director positions include Renu Energy (ASX:RNE), and DUET Group (ASX:DUE)

PHIL HODGSON

MANAGING DIRECTOR & CHIEF EXECUTIVE OFFICER

- 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
- Previously the Managing Director of Jatenergy (ASX:JAT) a clean technology business, including a successful re-listing on the ASX

LANCE O'NEILL

NON-EXECUTIVE DIRECTOR

- London-based director of DFB Australia, with 36 years of experience in international securities and investments in the UK, Australia, USA and Far East

DR MARK SCEATS

EXECUTIVE DIRECTOR AND CHIEF SCIENTIST

- Co-founder of Calix
- Qualified physical chemist with over 46 years' experience, previous roles academic roles, and numerous fellowships and recognitions
- Author of more than 140 academic papers in physical chemistry and inventor of 36 patented inventions

Calix

SENIOR MANAGEMENT

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DARREN CHARLES

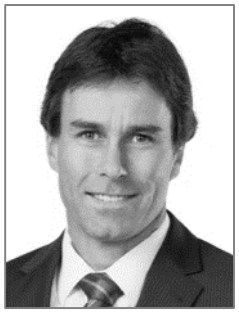
CHIEF FINANCIAL OFFICER, COMPANY SECRETARY

- Experienced CFO with 20 years' work experience in high-growth technology companies
- Previously the CFO and Executive Director of Altium (ASX:ALU) and CFO of Seeker Wireless Pty Ltd
- Fellow of CPA Australia

ANDREW OKELY

GENERAL MANAGER STRATEGY AND COMMERCIAL

- Experienced technology business development professional with over 17 years' experience with Outotec Pty Ltd
- Previous roles include Director – Sales and Marketing for SE Asia for Outotec and a member of the Outotec South East Asia Pacific Executive Management Team



JOHN PHIPPS

GENERAL MANAGER ENGINEERING AND OPERATIONS

- John has 22 years' experience working in the oil and gas, petrochemical and power generation industries in Australia and overseas
- Previously spent 11 years with Linde Group, with roles for project management, construction and commissioning engineering

ADAM VINCENT

GENERAL MANAGER RESEARCH AND DEVELOPMENT

- Adam joined Calix in 2010 and has been responsible for the construction of the Calciner at Bacchus Marsh and project management of the LEILAC Project for the cement-and-lime industry
- Previously spent 15 years in technical and operations roles across diverse chemical and manufacturing industries

BILL KARIS

GENERAL MANAGER SALES AND MARKETING

- Bill joined Calix in May, 2018. Responsible for managing the Sales and Marketing teams to achieve growth and margin targets with our commercialised product range
- Previously 10 years with Shell, as well as 3 years as GM–Wholesale for United Petroleum
- Started-up and grew Self-Drive Pty Ltd into multi-$m business

Calix

CFC TECHNOLOGY

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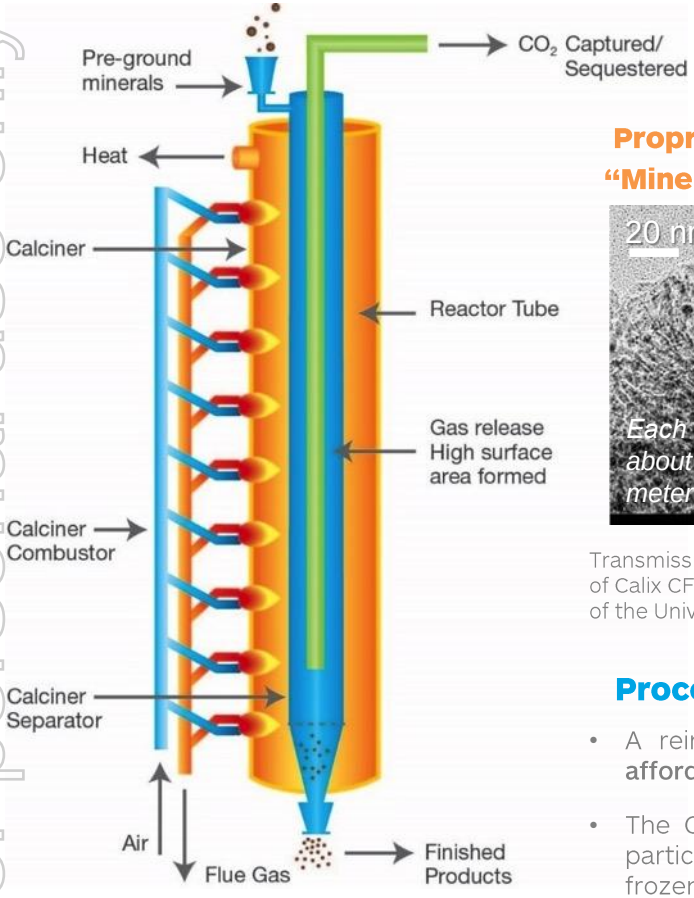
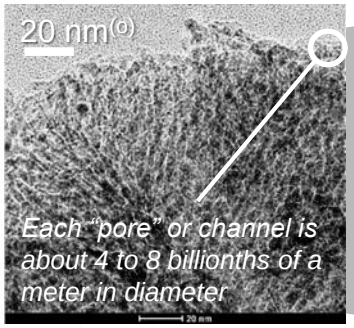


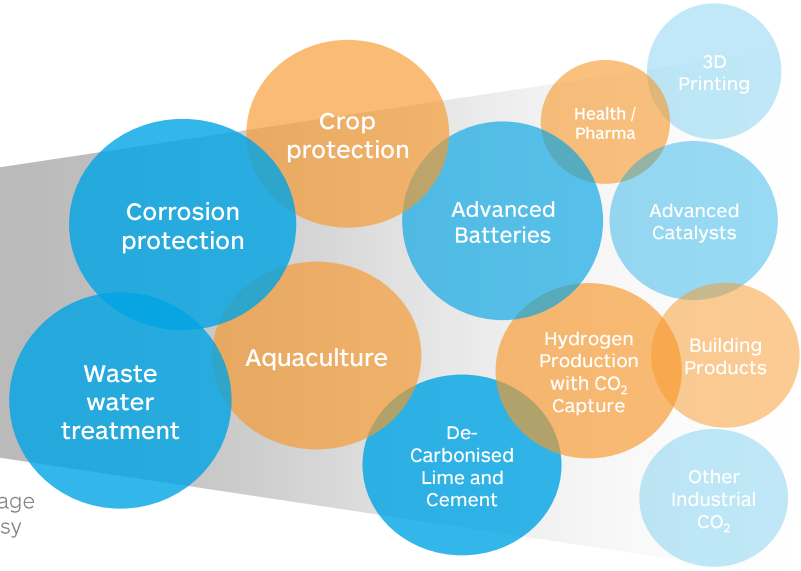
The patented "Calix Flash Calciner" (CFC)

Proprietary Product: "Mineral Honeycomb"



Transmission Electron Microscope image of Calix CFC Magnesium Oxide courtesy of the University of Seville

Commercial | Pre - Commercial | R&D



Process

- A reinvention of the kiln to create nano-active materials at scale, **more safely and affordably** than incumbent nanotech processes
- The CFC technology heats finely ground minerals (1000x bigger than hazardous nano-particles) 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 CO_2** from the processing of carbonate minerals such as limestone or magnesite

Calix

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

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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

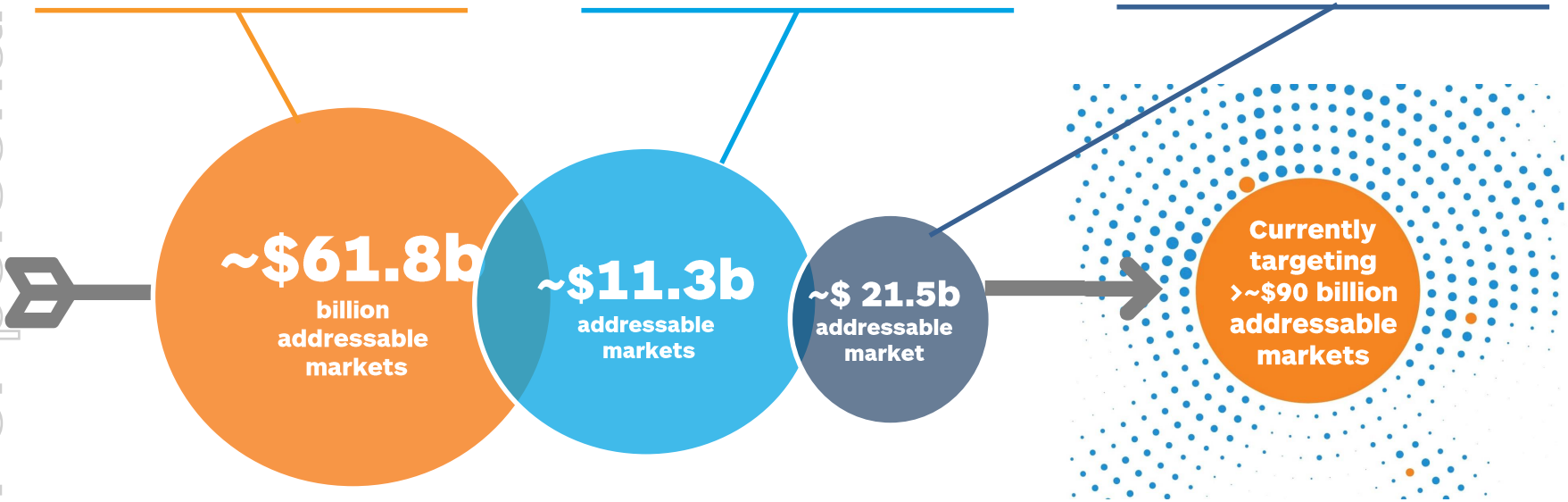
- AQUA-Cal+: Aquaculture water conditioner
- BOOSTER-Mag: Disruptive crop protection product

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



Total addressable markets in AUS$ from Frost & Sullivan: Market Opportunity for Calix Flash Calcination, dated 17 April 2018. Refer to Section 6 of this presentation for risks associated with the competitive environment, retaining and winning customers and market development.

ACTI-MAG: SEWER ODOUR AND FAT CONTROL

ACTI-Mag™

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PROBLEM

- **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 biotreater methane to produce power

Market Response

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

A$36.7b (1) MARKET

Calix Solution...

- ACTI-Mag is dosed into sewers and industrial waste water
- Proven to be more powerful than alternatives and yet completely safe and environmentally friendly
- Helps keep infrastructure free of fat build-up, and aids in bio-treater efficiency, producing better quality and quantity of biogas

Patented manufacturing facility

Calix designed dosing systems

bsi. ISO 9001 Quality Management
FS 634989 Development, Manufacture and Supply of Mineral Products

Quality delivery and production

Customers include...

QUEENSLAND URBAN UTILITIES
BUSH'S MEATS
TASWATER
GOULBURN VALLEY WATER
YARRA VALLEY WATER
SYDNEY WATER

(1) Frost & Sullivan: Market Opportunity for Calix Flash Calcination, dated 17 April 2018. Refer to Section 6 of this presentation for risks associated with the competitive environment, retaining and winning customers and market development.

Calix

PROTECTA-MAG:
Cost-effective, safe sewer asset protection

PROTECTA-Mag™

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PROBLEM

- **Accelerating Corrosion:** H_2S corrosion of aging, global sewer infrastructure due to increasing bio-activity
- **Accelerating Collapses:** Est. US$60 Trillion in replacement cost· few economic solutions

Market Response

- **Epoxy / Plastic Lining**: Expensive, and temperamental
- **Re-cement**: Expensive, requires man-entry & shuts the sewer down

A$25b(1) MARKET

Calix Solution...

- 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

Calix-developed PROTECTA Mag spray trailer ready for delivery to our applicater partner

Uses include spraying council manholes

Calix's automated cleaning and coating applicator

Licensed partners include...

DOWNER GROUP (NZ)

LASER GROUP (NSW / VIC)

SAV'S PLUMBING (Central QLD)

ROTH PLUMBING (Sth QLD)

(1) Frost & Sullivan: Market Opportunity for Calix Flash Calcination, dated 17 April 2018. Refer to Section 6 of this presentation for risks associated with the competitive environment, retaining and winning customers and market development.

Calix

AQUA-CAL+:
An emerging aquaculture water treatment product

AQUA-Cal+™

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PROBLEM

- **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

Market Response

- **Growth of antibiotics:** but this leads to faster evolution of resistance
- **Growth of probiotics:** problems with efficacy and shelf life

A$1.5b(1) MARKET

Calix Solution...

- 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

Asian partners with trials...

MAHACHEM	HONLEX JONES	ACTI-MAG ASIA
Malaysia, Thailand, Vietnam	Indonesia, Southern China	The Philippines

(1) Frost & Sullivan: Market Opportunity for Calix Flash Calcination, dated 17 April 2018. Refer to Section 6 of this presentation for risks associated with the competitive environment, retaining and winning customers and market development.

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BOOSTER-MAG:
An emerging sustainable crop protection product

BOOSTER-Mag™

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PROBLEM

- **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
- **Chemical Pesticide Development Costs:** to find and bring to market new chemical products, is now estimated at US$200m and 10 years per product

Market Response

- **Investment in Ag-tech:** VC investment in Ag Tech has grown 10-fold in the last 6 years
- **Mega-mergers:** Major global chemical companies are consolidating in an effort to mitigate R&D costs

A$9.8b (1) MARKET

Calix Solution...

- BOOSTER-Mag improved yields at over 50 % less pesticide use
- Non-toxic, fertiliser PLUS crop protection
- 1/5th the average price point of existing pesticides / fungicides
- Calix has launched global partnership license "auction" based upon high gross margin ex-gate business model
- 3 Material Transfer Agreements already in place

Pesticide Application - Timing , Treatment and Costs (AU$ / ha including chem. & appl.)

Date	Control - Conventional Treatment (IPM)	Cost	Trial – Treatment (IPM)	Cost
27th Oct	Transplant		Transplant	
10th Nov	-		BOOSTER-Mag	$23
24th Nov	-		BOOSTER-Mag	$23
28th Nov	cypermethrin, phosphoric acid, cuprous ox. iprodione	$73	-	
31st Nov	cypermethrin, maldison, cuprous oxide	$64	-	
7th Dec	-		BOOSTER-Mag	$23
15th Dec	cypermethrin, methomyl, maldison, cuprous ox.	$38	-	
21th Dec	-		BOOSTER-Mag	$23
29th Dec	cypermethrin, maldison, cuprous ox.	$78	cuprous ox., mancozeb	$44
6th Jan	-		indoxicarb, methomyl	$70
7th Jan	-		BOOSTER-Mag	$32
12th Jan	indoxicarb, methomyl, cuprous ox. mancozeb	$103	-	
18th Jan	cypermethrin, methomyl, abimectin, triadimenol	$54	BOOSTER-Mag	$32
5th Feb	abimectin	$33	abimectin	$33
15th Feb	abimectin	$33	abimectin	$33
20th Feb	ethephon	$33	-	
28th Feb	Hand-Harvest		Hand-Harvest	
1st Mar	Mechanical Harvest		Mechanical Harvest	
Total Season Chemical and Application Cost / ha		**$ 509**		**$ 315**
Number of Sprays;		**9 (including ripening agent)**		**10**

APTRC[2] Tomato Trials 2016,17,18 Goulburn Valley

2017 Season Result: 38% reduction in agronomic treatment costs = $194/ha savings PLUS safer, more environmentally friendly

CALIX BACCHUS MARSH NAMEPLATE CURRENT CAPACITY COULD ADDRESS 3% OF GLOBAL DEMAND

(1) *Frost & Sullivan: Market Opportunity for Calix Flash Calcination, dated 17 April 2018. Refer to Section 6 of this presentation for risks associated with the competitive environment, retaining and winning customers and market development.*

(2) *Australian Processing Tomato Research Council*

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FUNDED DEVELOPMENT OF FUTURE GROWTH OPPORTUNITIES
THREE PILOT PROJECTS

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De-Carbonised Lime and Cement

Est **A$10.8B**(1) Addressable Market

1. LEILAC

Low Emissions Intensity Lime & Cement

Calix-led €21m project of the European Union Horizon 2020 Research & Innovation

HEIDELBERGCEMENT · TARMAC A CRH COMPANY · Lhoist · Calix · CEMEX Building a better future · Quantis Sustainability counts · Imperial College London · Leilac · ECN · CARBON TRUST · PSE

***$18m*(2)**
EU Funded

Advanced Batteries

Est **A$10.7B**(1) Addressable Market

2. BATMn

Australian Government | Business business.gov.au

Advanced Manufacturing Growth Fund Awarded Oct 2017, started Jan 18

3. SOCRATCES

H2020 Grant 727348 – Solar Battery
Project Commencement January 2018

SOCRATCES

$8.5m
AU and EU Funded

$1.5m
Funding required

Calix has a pipeline of potential applications for R&D projects in the medium to long term including CO_2 mitigation, building products, pharmaceutical, 3D printing and advanced catalysts

(1) *Frost & Sullivan: Market Opportunity for Calix Flash Calcination, dated 17 April 2018. Refer to Section 6 of this presentation for risks associated with the competitive environment, retaining and winning customers and market development*

(2) *Equivalent to EUR12m in total grant across all the project participants, with Calix receiving EUR7.5m*

Calix

FUNDED DEVELOPMENT PIPELINE

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Grant Name	Total Maximum Value	Start Date	Duration	FY15 ($'000)	FY16 ($'000)	FY17 ($'000)	Commercial Opportunity
Commercialisation Australia	$1.8m	Feb-14	1.5 yrs	1,722	100	-	Novel Satellite MHL Manufacturing Plants
ASCENT (EU)	€0.5m	Mar-14	4 yrs	80	246	-	Fossil Fuel Decarbonisation / Production of Hydrogen with CO_2 Capture
LEILAC (EU)	€7.5m	Jan-16	5 yrs	-	2,656	2,359	Lime and Cement Decarbonisation - CO_2 Capture
Accelerating Commercialisation	$1.0m	Mar-16	2 yrs	-	212	429	BOOSTER-Mag - Australian Registration and Early Commercialisation
SOCRATCES (EU)	€0.9m	Jan-18	3 yrs	-	-	-	Solar-Thermal Energy Storage with Calcium Looping
Advanced Manufacturing Growth Fund	$0.8m	Jan-18	3 yrs	-	-	-	Advanced Battery Materials
TOTAL Grants Won				**1,802**	**3,214**	**2,788**	
Export Market Development Grant		Annual		62	93	76	
R&D Rebate		Annual		3,483	3,252	4,694	
TOTAL All Grants & Rebates				**5,347**	**6,559**	**7,558**	

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