

# INVESTOR PRESENTATION

August 2016

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# COMPANY OVERVIEW



***Leaf Resources  
is a green chemical  
company that uses  
plant waste/biomass  
to create industrial  
chemicals to replace  
petrochemicals in  
manufacturing***

- Leaf's Glycell™ process converts plant biomass into industrial sugars (a key component used to create green/sustainable chemicals)
- Large cost advantage over other processes that create industrial sugars
- Glycell™ is well-suited for a low-carbon world as it is sustainable, carbon friendly and cuts carbon emissions

# THE PROBLEM:



The world is actively shifting from petroleum based products



The high cost and environmental impact of burning finite resources has seen industry moving from the 'black economy' to the green economy.



Manufacturers are moving away from petrochem due to environmental concerns.



However, fossil-based petrochemicals are indispensable in our current society.



Chemicals made from petroleum are used to manufacture a variety of everyday items such as:

- Clothes
- Pharmaceuticals
- Food
- Household goods

"It's time for the world to shift! All companies face a direct impact from decreasing natural resources, rising populations and disruptions from climate change."

*Mark Parker*  
CEO Nike

# THE SOLUTION – LEAF'S GLYCELL™ PROCESS



1



Glycell™ is an industry disruptor due to its economic advantage



2



The Glycell™ process can operate at any scale and on many biomass types



3



Reduces the carbon footprint



4



Glycell™ turns plant-waste into industrial sugars – a key ingredient to creating renewable chemicals

# DISRUPTING A MULTI-BILLION DOLLAR INDUSTRY



Petrochemicals

Dirty fossil fuel-based petrochemicals are used to produce thousands of everyday household items.



Virtually every petroleum-based chemical can be replaced by a biomass-derived chemical.



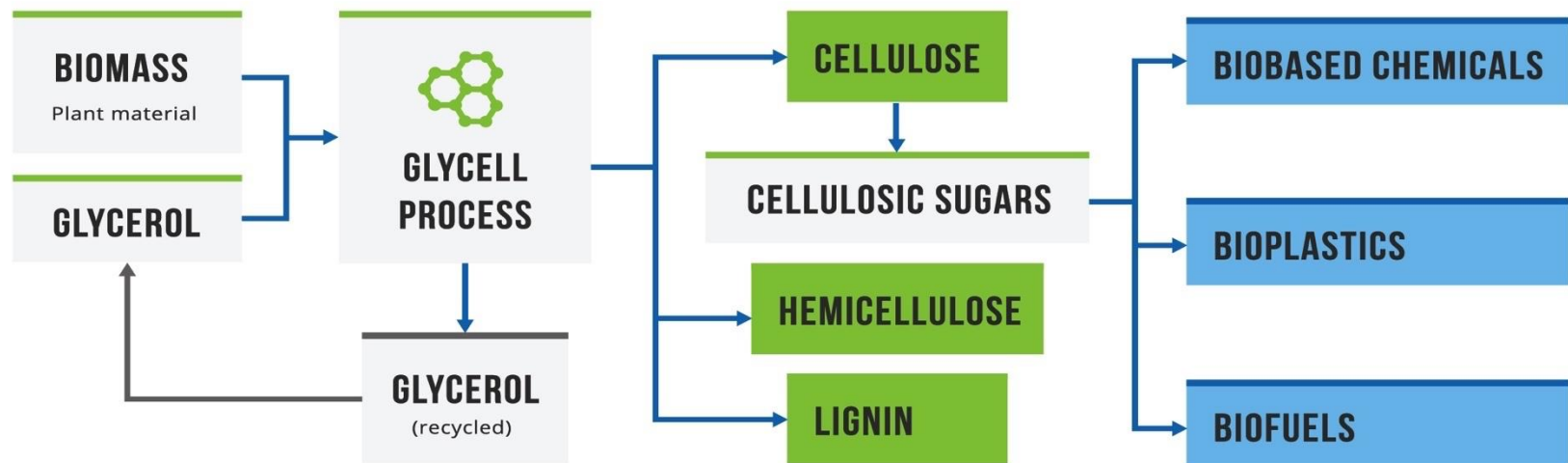


# HOW GLYCELL™ WORKS

# GLYCELL™: PLANTS TO CHEMICALS



THERE ARE OVER FIVE BILLION TONNES OF BIOMASS AVAILABLE IN THE WORLD



The Glycell™ process works with multiple types of biomass: hardwood, bagasse, Empty Fruit Bunch (palm oil waste) , wheat straw, rice husk.



# THE GLYCELL™ ADVANTAGE



## PRODUCT BENEFITS



- Low temperature and low pressure
- 'Off the shelf' equipment
- Operates at any scale
- Quick & Continuous process
- Suitable for wide range of biomass

## ECONOMIC BENEFITS



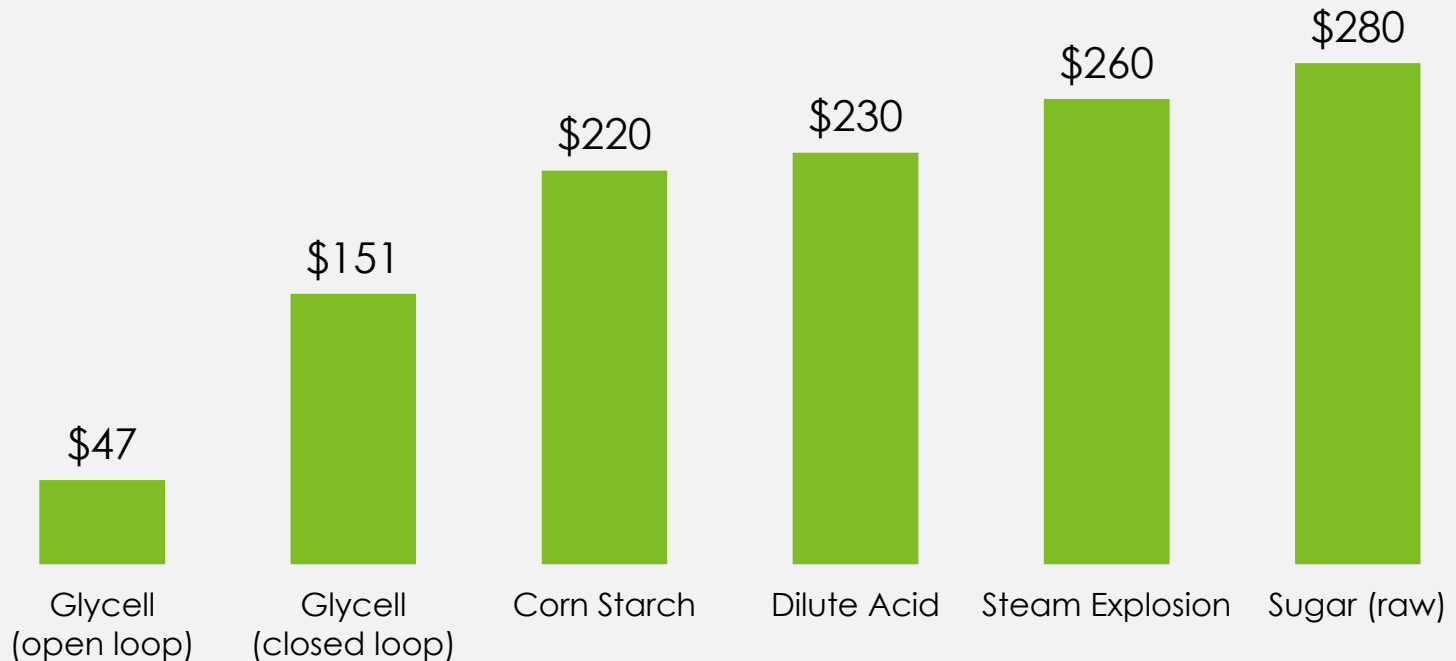
- Lower capital costs
- Lower operating costs
- High cellulose recovery 94%
- Higher conversion of cellulose to sugars 99% in 6 hours for bagasse
- Lower energy use, lower carbon footprint, environmentally friendly

The Glycell™ process has been run at tonnes per day at the Andritz test facility in Ohio

# GLYCELL™: STRONG ECONOMIC CASE



SUGAR COST CURVE, US\$



Industrial sugars are a key component in the cost of producing renewable chemicals

# AWARD-WINNING PROCESS



NOMINATED AS ONE OF 3  
FINALIST 'BREAKTHROUGH BIO-  
BASED TECHNOLOGY PLATFORM'

March 2016  
World Bio Markets Bio Business  
Awards



#32 OF THE 40 HOTTEST SMALL  
COMPANIES IN THE ADVANCE  
BIO-ECONOMY 2015/2016

Awarded at Advance  
Bio-economy Leaders  
conference in San Francisco



FINAL 5 SOFFINOVA  
RENEWABLE CHEMISTRY START-  
UPS AWARDS 2015

Bio World Congress  
(Montreal)



FINALIST BANKSIA SUSTAINABILITY  
AWARDS 2014

Innovator of the Year (Australia)



WINNER CONSENSUS  
GREENTECH AWARDS 2014

(Australia)



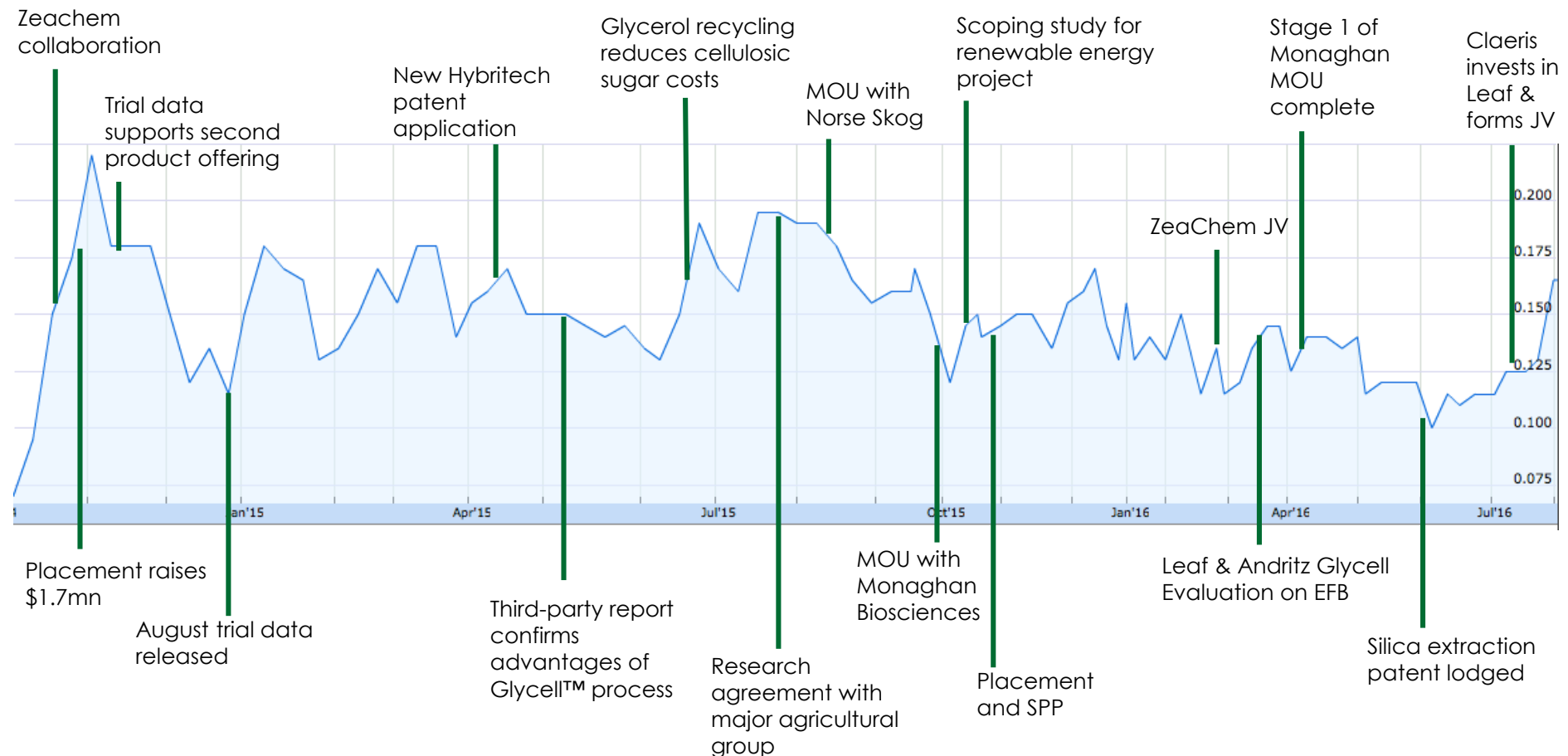
PATENTS

PCT applications lodged  
June 2014

# VALUE CREATION TIMELINE



Leaf Resources has delivering on multiple commercial milestones but these have yet to be reflected in its share price



The background of the slide is a close-up photograph of tall, thin grasses with reddish-brown seed heads, illuminated by warm, golden light. A semi-transparent white horizontal bar is positioned across the middle of the image, containing the text 'CURRENT PROJECTS' in a green, sans-serif font.

# CURRENT PROJECTS



# LEAF RESOURCES AND CLAERIS JV



- JV with Texas-based Claeris to develop up to **five renewable chemical projects** using Leaf's Glycell™ technology
- Claeris has an enviable track record and their principals have over 80 years experience in developing green chemical projects
- Michael Slaney Managing Partner of Claeris:

*"We have reviewed many technologies in the renewable chemical sector, but we have not seen anything quite as revolutionary and potentially profitable as Leaf's Glycell™ process.*

*After a detailed technical and financial review of the Glycell™ technology we are convinced that leaf has the best process on which to base a platform company of renewable chemical projects.*

*We are confident that we can secure the key project partners necessary to quickly develop our first project".*

- Claeris has **invested US\$500,000 via a placement** in Leaf
- Claeris has already identified development opportunities using oil palm biomass in Asia and hardwood in the USA

# BENEFITS OF THE CLAERIS JV TO LEAF RESOURCES



- **Less risk:** Working with an established industry participant like Claeris provides added credibility reducing the risk of securing global projects.
- **Speed:** More expeditious development of projects and partnerships with expertise brought by Claeris.
- **Better commercial outcomes** through leveraging Claeris's expertise and reputation to secure better terms from project partners.
- **Additional opportunities** for the deployment of the Glycell™ process across a variety of biomass sources in a number of jurisdictions.

Leaf has effectively outsourced its new project development to a well credentialed, well connected, successful project developer

# LEAF DEVELOPMENT LLC



- Leaf Resources will own up to 75% of Leaf Development LLC.
- Leaf Resources will provide the funding for Leaf Development;
  - US\$750,000 now from internal resources,
  - If specified milestones are met by October 31<sup>st</sup> 2016 then Leaf Resources will provide a further US\$1m.
- Leaf Development expects to recoup these funds as projects are brought to construction.
- Capital required to support Leaf Development is broadly consistent with that required to support a license transaction.
- Claeris use a Develop, License, and Own model (“DLO model”) .
- Under the DLO model, JV should enjoy license related revenues as well as a “free carry” in each of the operating projects.
- Further funds may be required for engineering, permitting and other costs as projects are successfully identified and advanced.
- Claeris to run the JV with Leaf providing expertise as required.



# ZEACHEM OPPORTUNITIES



## ZeaChem/Boardman



- ZeaChem's Boardman facility has considerable fermentation capacity
- Leaf resources currently owns 13% of ZeaChem with warrants coverage up to 45% ownership
- Leaf has proposed a solution that will see ZeaChem's fermentation capacity profitably utilised.
- Boardman becomes a small, profitable commercial chemical plant

## ZeaChem JV



- Initial non-binding expressions of interest from potential customers for supply of the C6 and C5 sugar streams as well as for the technical grade glycerol produced have been received
- ZeaChem's considerable engineering experience reduces the technical risk for any project
- The ability to offer this comprehensive package presents a more compelling case to potential partners
- A Scoping Study has begun.

# MONAGHAN-GLYCELL SOLUTION



Monaghan's mushrooms produce a significant amount of Spent Mushroom Compost each year which could be an integral part of a viable Renewable chemical project



## **25% more sugars**

Initial results show Monaghan/Leaf approach produces 25% more sugars than the nearest competitive technology



## **Moving to stage 2**

Leaf and Monaghan Biosciences have agreed to move to stage 2 of the JV agreement, which is a larger scale pilot testing program



## **Off-take contract**

Contract for the renewable chemical produced is being sought in order to deliver a complete project that is attractive for financing



## **Bankable feasibility study**

BFS is the next objective for a renewable chemical project



# RICE HUSK: AN EXCITING OPPORTUNITY



Rice husk is a potentially new, large economical source of biomass for Leaf Resources

Rice husk contains silica in a potentially valuable form

Leaf Resources has lodged a provisional patent for a process that extracts the Silica

The remaining biomass is an attractive and cheap input into the Glycell™ process

Further testing is required to evaluate the quality of the Silica

Silica can be used in microchips, specialty metals and alloys, optics, pharmaceuticals and has other valuable uses

There are 770 million tonnes of rice husk in Asia

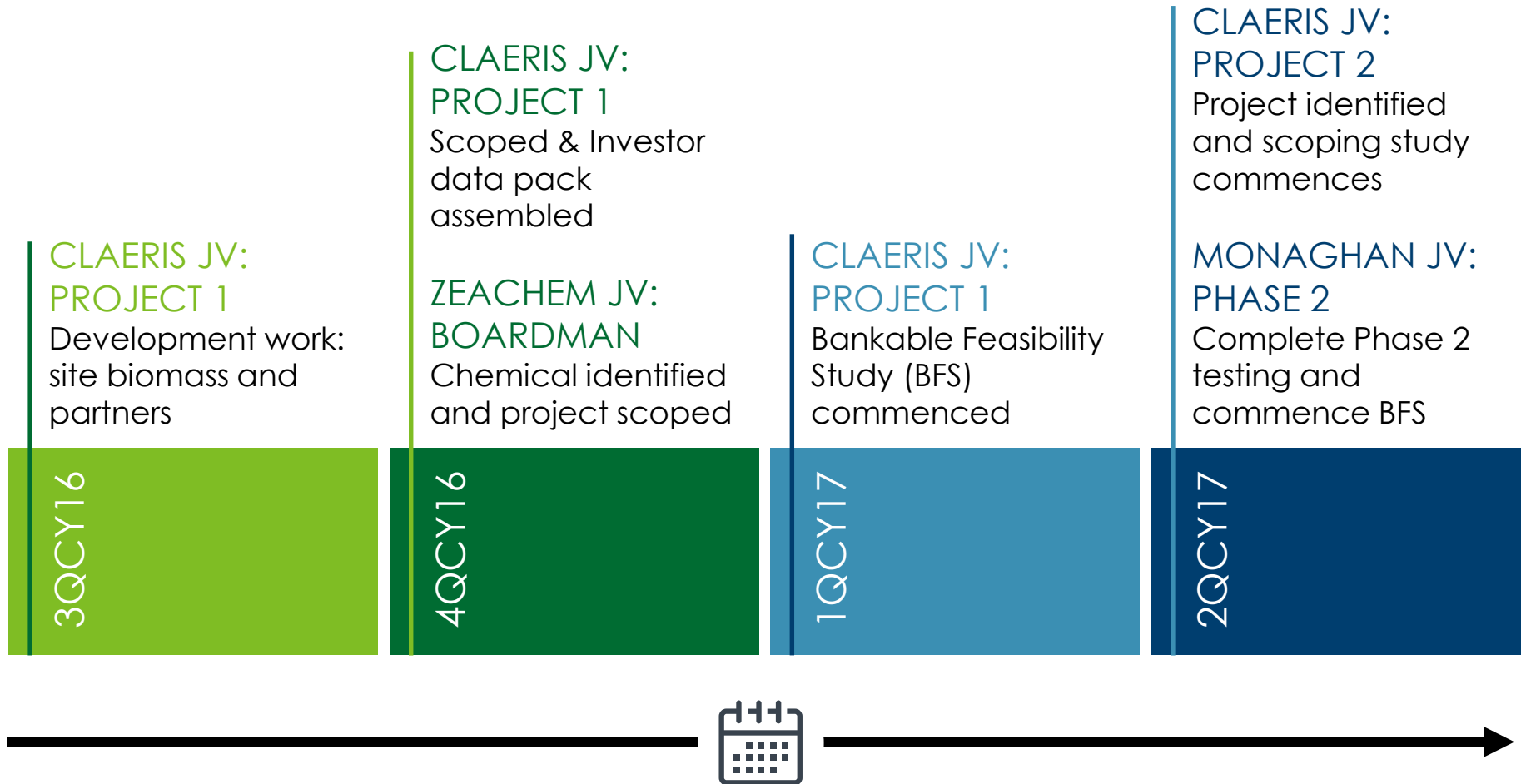


See ASX announcement 2<sup>nd</sup> June 2016



# WHERE TO NOW

# MILESTONES FOR NEXT 12 MONTHS



# PROJECT ECONOMICS - EDISON REPORT



- **Edison report (20/7/2016):** based on 100,000 bone dry tonne p/a project making a “typical” renewable chemical from biomass using Glycell™ process
- Key Assumptions
  - Biomass \$70 per Bone Dry tonne
  - Chemical produced using fermentation & sold at \$1,500 per tonne
  - Other assumptions in Report
- **Results of Scoping Study**
  - NPV (after tax @10%) USD\$336m
  - Capital cost USD\$150m

# COMPELLING INVESTMENT PROPOSITION



1.

## Right time and place

Right time and place due to growing concerns on fossil fuels and Glycell™ green credentials

2.

## Large market opportunity

Consumer goods and chemical companies supporting

3.

## Large Cost Advantage

Glycell™ is an industry disruptor due to its large cost advantage and green credentials

4.

## No Shortage of Biomass

The agriculture industry generates plenty of waste plant biomass – providing **lots of cheap/free inputs** for Glycell™

5.

## Technology proven

Andritz facility in Ohio at tonnes per day

6.

## The right partner

Claeris to accelerate project development. Claeris has invested US\$0.5m in Leaf





# THANK YOU

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# APPENDIX 1 - SCOPING STUDY: AFTER TAX IRR OF 81%



- **Scoping Study** was done by ResourceInvest<sup>1</sup> for a project making a “typical” renewable chemical from biomass using the Glycell™ process.
- Key Assumptions
  - Scale: 210,000 BDT per annum
  - Biomass US\$70 per Bone Dry tonne
  - Chemical produced using fermentation & sold at \$1,500 per tonne
  - Model based on FEL1 engineering estimates using Aspen modeling
  - Other assumptions in ASX announcement date 14/10/2015 dated 20/7/2016
- **Results of Scoping Study**

– NPV (after tax @10%)	US\$720m
– IRR after tax	81%
– Capital (green fields - worse case)	US\$229m

<sup>1</sup> ResourceInvest's principal is Peter Cameron former Director, Head of Research & Client Services, Johnson Taylor & Co. Ltd (later Bell Potter Securities).

## APPENDIX 2: STRONG MANAGEMENT TEAM



### KEN RICHARDS MANAGING DIRECTOR

Track record in managing, growing and transitioning high growth ASX and private companies in a variety of industries. (Bachelor of Commerce, MBA, AICD Fellow)

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### ALEX BAKER CHIEF OPERATING OFFICER

Over 20 years' industry experience, science and technology commercialisation professional including waste stream value creation. CEO of Maverick Biosciences leading that company into the bio-medical product field. Bachelor and Masters degrees in science, biotechnology & technology management

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### DR LES EYDE VP – Research & Development

25 years professional experience in research and development in Australia and in the US. Internationally recognised - since 2007 held the position of National Task leader, International Energy Agency, Bioenergy Task 39 – Commercialising Advanced and Conventional Liquid Biofuels from Biomass. PhD in carbohydrate chemistry, expertise in biofuels production processes and sustainable biomass supply.

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### DR MARC SABOURIN VP – PROJECT DEVELOPMENT & ENG.

29 years professional experience in research & development, process engineering and project execution. Formerly held positions in process and research engineering in the pulp & paper industry, including senior roles at Andritz. Bachelor and Master's degrees in chemical engineering, Ph.D in science specialising in energy reduction mechanisms in thermo-mechanical pulping

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### HELEN PENNISI CFO/Co. Secretary

Track record in managing, growing and transitioning high growth ASX and private companies in a variety of industries. (CPA, Bachelor of Business)

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# APPENDIX 2A: BOARD OF DIRECTORS



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## Dr JAY HETZEL Chairman

Jay holds a bachelor in Agricultural Science (Honours) (University of Melbourne) and a Ph.D in animal Genetics (University of Sydney) He distinguished scientific career with CSIRO for over 20 years in the field of animal genetics and genomics. In 1998 he co-founded Genetic Solutions Pty Ltd to commercialise genomics technology in livestock and the company was sold to Pfizer Animal Health in 2008. Jay has served on a number of industry and government advisory groups including the Queensland Biotechnology Advisory Council, Australian gene technology technical advisory Committee and the Life Sciences Queensland steering committee. Jay is a fellow of the Australian Academy of technological Sciences and Engineering and a Fellow of the Australian Institute of Company Directors

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## CHARLES WILSON Director

Having originally qualified in Civil Engineering (University of New Zealand), Charles has some 40 years of experience in senior project and construction management roles primarily associated with major building and development projects. During his career with a major Australian listed construction/development company, he was based in Canberra, Townsville, Darwin, Sydney and since 1974 in Perth, Western Australia.

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## MATTHEW MORGAN Director Chairman of Audit Committee

Matthew holds a Bachelor of Commerce, a bachelor of Applied Science and Master of Business Administration from Brisbane Graduate School of Business at Queensland University of technology and was the first Australian to be awarded a 2 year Kaufman Fellowship. Matthew has over 10 years of executive management experience in private equity funded portfolio companies and 7 years as a venture capitalist at Queensland Investment Corporation. He is experienced in capital raising, mergers and acquisitions, He is the principal of Millers Point Company, an advisory business that provides consulting and advisory services to emerging companies with high growth or turnaround objectives.

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# APPENDIX 3: CAPITAL STRUCTURE



	4 <sup>th</sup> August 2016
Ordinary shares on issue	149.2m
Options/ performance rights	7.7m
Current Price	\$0.16
Capitalisation	\$23.9m
Top 20 Shareholders	47%
Board and Management	21%
Cash	\$1.5m <sup>1</sup>
Enterprise Value	\$22.4m

<sup>1</sup>Based on 4c released 29/7/2016 and refund due from R& D Tax



# APPENDIX 4 - CHEMICAL PRICES AND MARKETS<sup>1</sup>



Chemical	Price \$/Metric Ton	Market Size US\$	Comment
Butanediol (1,4) (BDO)	\$3,000	\$6bn	Polymers, solvents, specialty chemical
Ethyl Lactate	\$2,000+	\$8bn	Biodegradable solvent – Clean Air act
Furfural	\$1,540	\$415m	Plastics, Solvent, agro-chemicals
Lactic Acid	\$1,300-\$2,300	\$450m+	Food and Building block chemical
Propanediol (1,3)(PDO)	\$1,760	\$220m	Polyesters, polyurethanes and resins
Propylene Glycol	\$1,500	\$1bn	Safe for humans, consumer products
Succinic Acid	\$1,500-\$2,000	\$135m+	Polymers, surfactants and solvents

<sup>1</sup>Source: Chemicals from Biomass; National Renewable Energy Laboratory, USA department of Energy: March 2016  
All products at commercial stage

# APPENDIX 5 – CLAERIS LLC



Since 2005, the founders of Claeris have developed, constructed, and acquired over 620 million gallons per year of renewable fuels and chemicals production capacity. We have partnered with some of the world's leading companies, including:



## Commercial and investment banks



## Financial sponsors



## Strategic partners



# APPENDIX 5 - CLAERIS LLC



## Over the last decade Claeris has:

- Developed and sold ASAAlliances Biofuels, LLC, the world's largest ethanol development project, for US\$725m, generating an equity return of 410% in 18 months;
- Formed Gevo Development, LLC to commercialise Gevo's proprietary isobutanol technology, the success of which helped Gevo float on NASDAQ with an initial market capitalization of \$400m – generating an equity return of 460% return in 17 months;
- Formed Claeris Development, LP to develop and operate facilities for the production of ultra clean base oils, chemicals, and fuels from natural gas and other carbon-based feedstocks;
- Formed Solusyn Development, LLC with Emerging Fuels Technology, Inc. to develop, construct, and operate a series of natural gas/ethane to specialty products (base oils, drilling fluids, and solvents) facilities. Construction on the first facility is expected to start in 2018.