

2017

BLUGLASS INVESTOR PRESENTATION

JANUARY 2017



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CORPORATE OVERVIEW



BOARD

Bill Johnson
Chairman

Giles Bourne
Managing Director

Chandra Kantamneni
Non Executive Director

Greg Cornelsen
Non Executive Director

Vivek Rao
Non Executive Director



SHAREPRICE

as at 18 Nov. 2016



CORPORATE

Established

2006



ASX:BLG



371.8M

shares issued



AWARDS & GRANTS

2013

Australian Cleantech Competition Winner &
2013 Australian Cleantech Competition
Manufacturing Award

GLOBAL TOP 30

Finalist in GCCA Cleantech Later Stage Award

\$5M

Commercial Ready Grant

\$5M

Climate Ready Grant

\$3M

Cleantech Innovation Grant



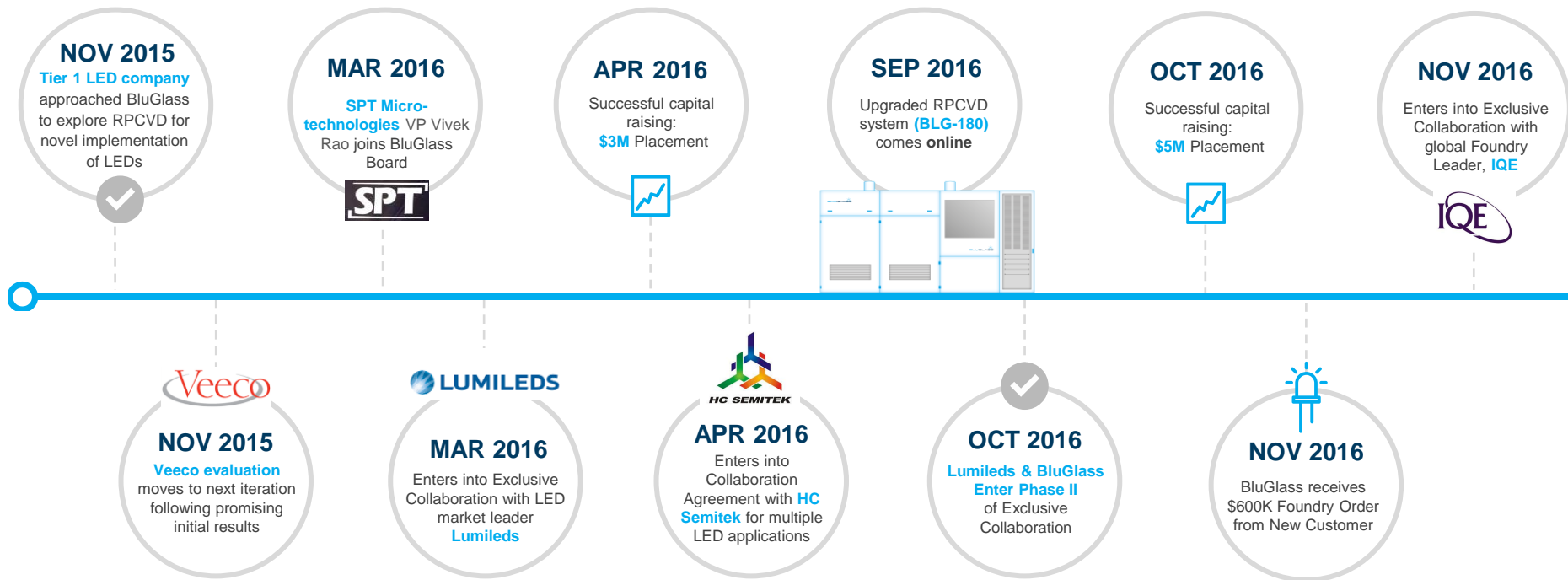


**“2016 HAS BEEN A TRANSFORMATIVE
YEAR IN THE DEVELOPMENT &
COMMERCIALISATION OF THE RPCVD
TECHNOLOGY”**

— GEORGE VENARDOS

2016 HIGHLIGHTS

BluGlass has made significant technical progress in bringing RPCVD towards commercialisation



RPCVD A PLATFORM TECHNOLOGY

BluGlass is targeting the rapidly expanding LED, PV, and Power Electronics markets



Lighting
Mobile devices & TVs
Green & yellow LEDs
UV LEDs



\$216B

Global revenue from LED lighting systems is expected to total **\$216 billion** through to 2024



Consumer electronics
Power supply
Data centers
Auto



\$2.5B

The GaN and SiC power electronics market is expected to be worth **\$2.5 billion** by 2023



Focus on utility scale solar power
(concentrated photovoltaics)



80MWp

Total Installed Market Volume by end of 2015



INDUSTRY CHALLENGE High Temperature Growth

MOCVD – The Industry Incumbent Technology

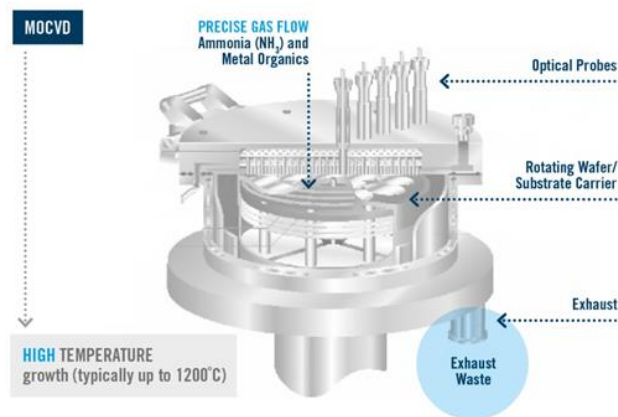


CHALLENGES

High temperature processes limits MQW **performance** (active region of LED)

Uses **ammonia** as nitrogen source, produces toxic waste

High temperatures limit use of large silicon substrates



THE RPCVD SOLUTION Low Temperature Growth

RPCVD – Remote Plasma Chemical Vapour Deposition



BENEFITS



Lower **temperature**
manufacturing processes



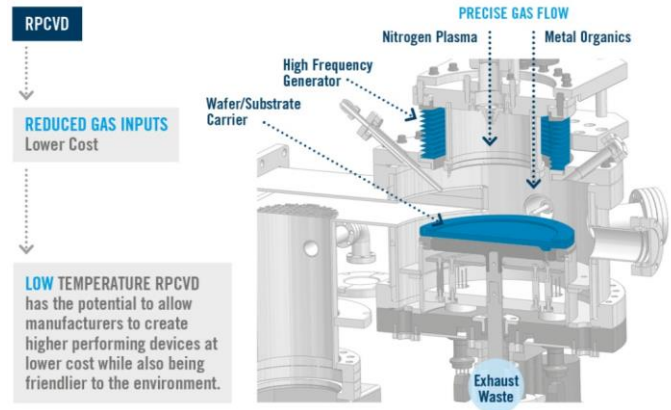
Lower **cost** inputs

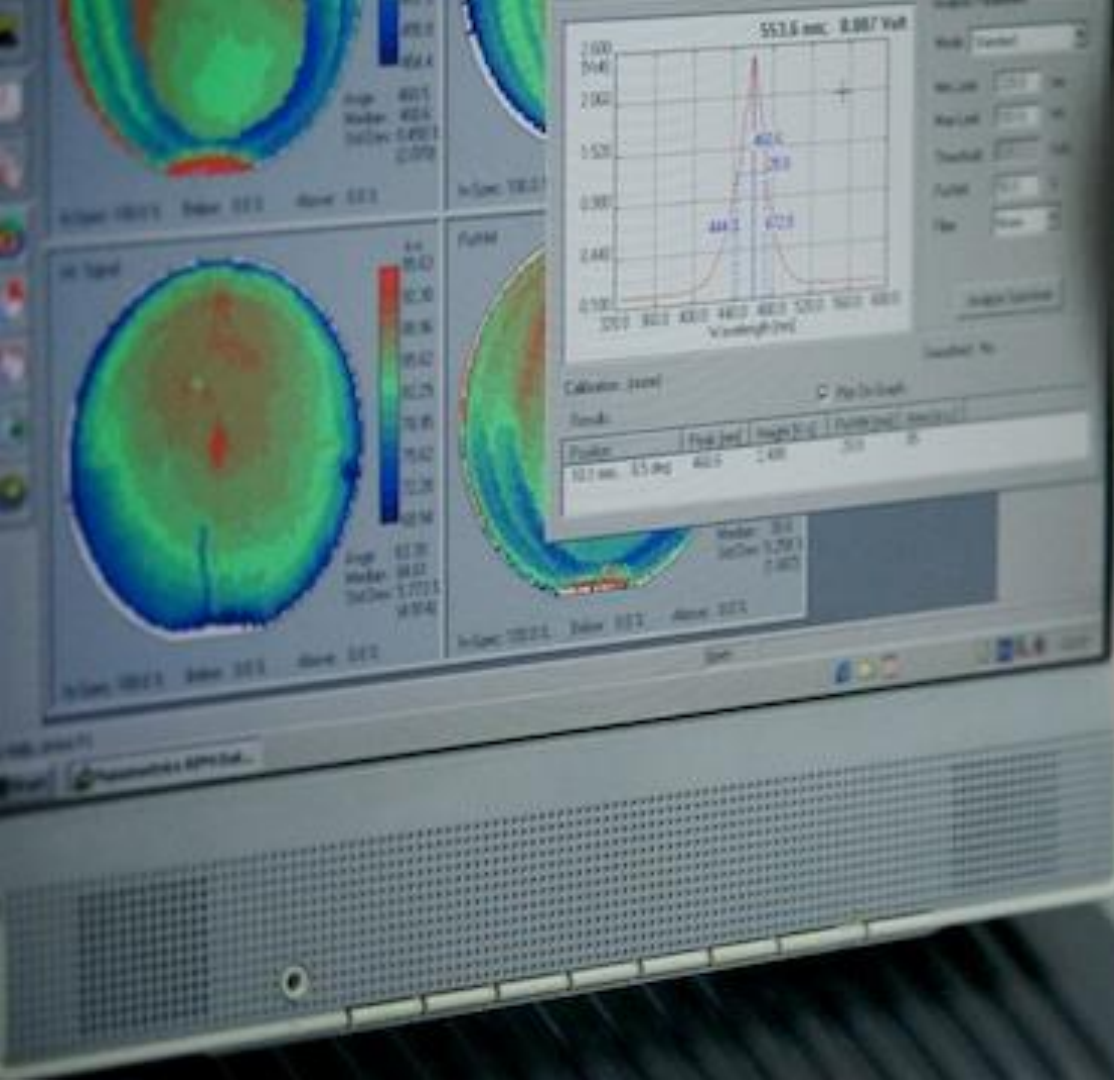


Higher **performing**
devices



More Environmentally
friendly & sensitive





**“THE BLUGLASS
TECHNOLOGY IS TRULY
UNIQUE.
IT IS HIGHLY RELEVANT FOR
DEVICE PERFORMANCE
IMPROVEMENT”**

— INDUSTRY SOURCE

IQE COLLABORATION

Strategic Partnership with world leading foundry manufacturer of advanced semiconductor wafer products to the global semiconductor industry



PARTNERSHIP WITH WORLD LEADING FOUNDRY TO DEVELOP A RANGE OF ELECTRONIC APPLICATIONS



*Exclusive Collaboration Agreement to co-develop nitride films for a **range of electronic devices** on both silicon and IQE's cREO™ technology using BluGlass' unique low temperature RPCVD technology*



***IQE products are used by major global chip companies** to produce the high performance components that enable a wide range of high-tech applications including for the wireless industry*



The initial terms of the collaboration are envisioned to continue for 15 months



LUMILEDS COLLABORATION CONTINUES TO MAKE PROGRESS

World leading LED company evaluating RPCVD



LUMILEDS COLLABORATION – PHASE I



The initial collaboration involved **materials testing of RPCVD wafers grown entirely at BluGlass** which was successfully completed in Oct 2016



The Phase I demonstration of RPCVD involved delivering technical **milestones and advantages previously unachieved by either RPCVD or MOCVD**



Significantly different technology development to what BluGlass has previously demonstrated



NEW IP GENERATED



LUMILEDS COLLABORATION – PHASE II



Phase II will now involve the integration of RPCVD with Lumileds LEDs for the development of novel LEDs



This will involve full device fabrication at Lumileds and performance testing.



Phase II requires development effort by BluGlass and Lumileds and will involve multiple iterations.



BluGlass expects commercial negotiations to commence upon successful completion of Phase II.



HC SEMITEK COLLABORATION

Collaboration Agreement with Leading Chinese LED Device Manufacturer



LEADING CHINESE LED COMPANY EXPLORING RPCVD FOR MULTIPLE APPLICATIONS



Collaborative evaluation with
leading Chinese LED manufacturer



Targeting enhanced performance
and lower cost LEDs using RPCVD



HC Semitek will evaluate two
applications of RPCVD:

- Low temperature p-GaN for **Green LEDs** &
- **Aluminium Nitride** on sapphire substrates
for high brightness LEDs



VEECO EVALUATION ENTERED NEXT ITERATION



Worlds largest MOCVD
equipment
manufacturer

NASDAQ: VECO

\$806M

Market cap

RPCVD Evaluation

STATUS

LED



Positive initial 2 inch trials
for green LEDs

Now progressing to 4 inch
trials and greater collaboration




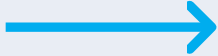

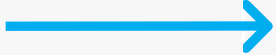

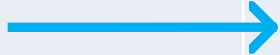


Power
Electronics



Initial materials evaluation of
p-GaN for power electronics has
also shown that p-GaN has the
potential for significant
performance advantage



PROGRESS TOWARDS COMMERCIALISATION

PARTNER	APPLICATION / TECHNOLOGY	DEMONSTRATE APPLICATIONS	COLLABORATION		REVENUE	COMMENTS
			PHASE I	PHASE II		
 LUMILEDS	Exclusive Novel LED Applications					Successful completion of Phase 1 Phase 2 Commenced
 HC SEMITEK	Green LEDs Aluminium Nitride					Good progress producing fully packaged LEDs that combine RPCVD in HC Semitek R&D LEDs
 Veeco	Green LEDs Power Electronics (HEMT)					Next iteration of evaluation commenced
 IQE	Wireless Electronic Applications					Growing pipeline of customers across a range of applications
 xVI TECHNOLOGIES	Foundry Services —Wafer Sales					Growing pipeline of customers across a range of applications



PATH TO MARKET

DEMONSTRATE KEY APPLICATIONS

Improve device
performance
combining RPCVD
with MOVCD

GROW FOUNDRY BUSINESS

Continue to work with
MOCVD & RPCVD customers
at the leading edge of
technology innovation to
grow revenue &
reputation in the
industry

GAIN INDUSTRY ACCEPTANCE

Complete industry
evaluation with multiple
partners in the value chain
(e.g. equipment & device
manufacturers)

DRIVE COMMERCIALISATION

BluGlass is evaluating a
number of commercialisation
options for RPCVD (inc. JV,
Strategic Partner, Licensing
& Foundry)



END MARKETS LED

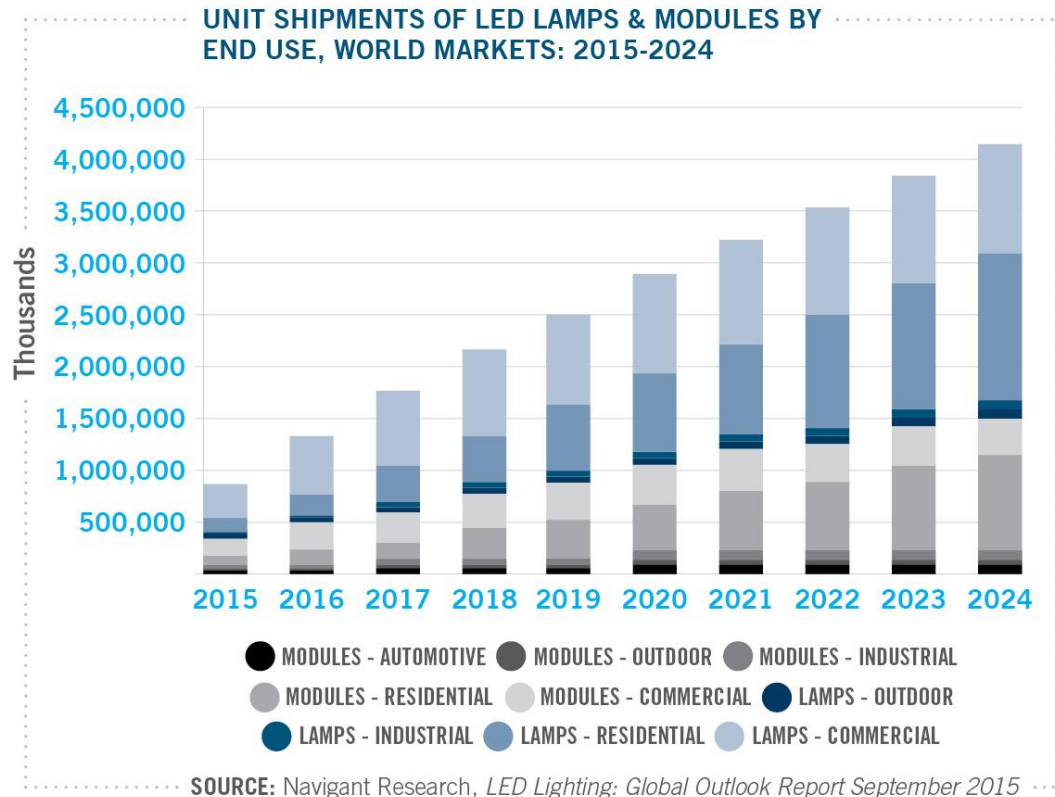
45%

The LED lighting market is anticipated to **grow 45%** per year through 2020



\$216B

Global revenue from LED lighting systems is expected to total **\$216 billion** through to 2024



Source: Navigant Research



END MARKETS POWER ELECTRONICS

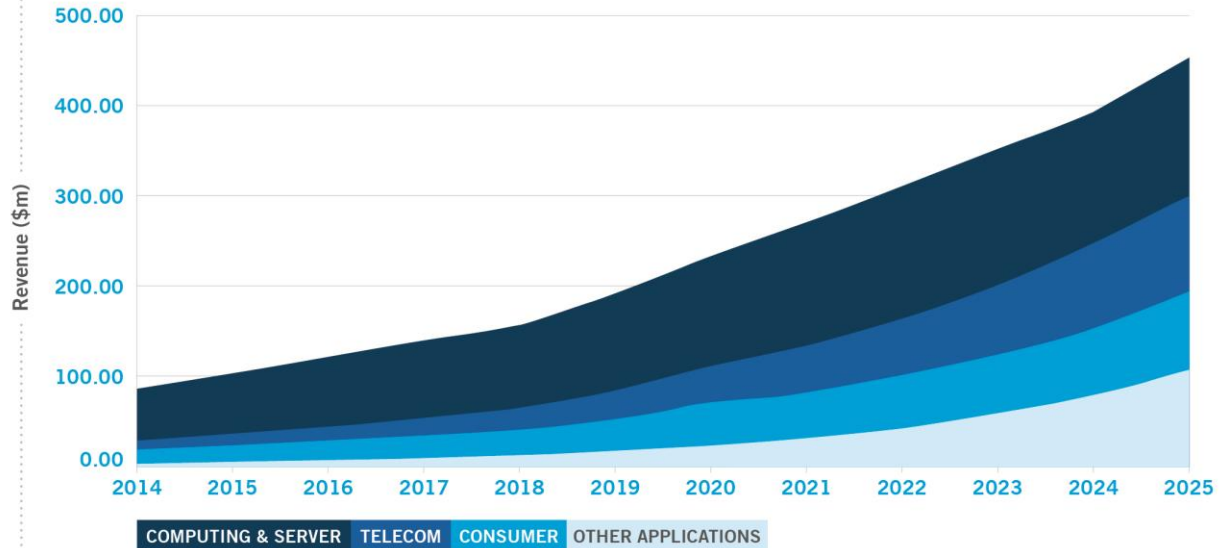
The Power Electronics markets also presents a growing opportunity for the RPCVD technology

\$2.5B

The GaN and SiC power electronics market is expected to be worth \$2.5B by 2023

The emerging global market for SiC and GaN power electronics is expected to grow **17-fold** over the 10 years from 2013 through to 2023

FIGURE 1 – MARKET FORECASTS FOR SiC & GaN POWER DEVICES IN POWER SUPPLIES BY SELECTED APPLICATIONS



SOURCE: SiC & GaN Power Semiconductors Report – 2016



FOUNDRY UPDATE



Multiple foundry customers



Growing pipeline of new customers



Providing both MOCVD & RPCVD services



Conducting services for green and blue LEDs, power electronics, and laser diodes



The foundry business continues to expose BluGlass to new and emerging applications. **We seek to work with the innovators that will be leading the nitrides industry into the future** and those that could benefit from a low temperature RPCVD technology



Hardware & Process Patents



42

GRANTED
PATENTS
*in key markets;
China, Japan, USA
& Europe*



23

PATENT
APPLICATIONS



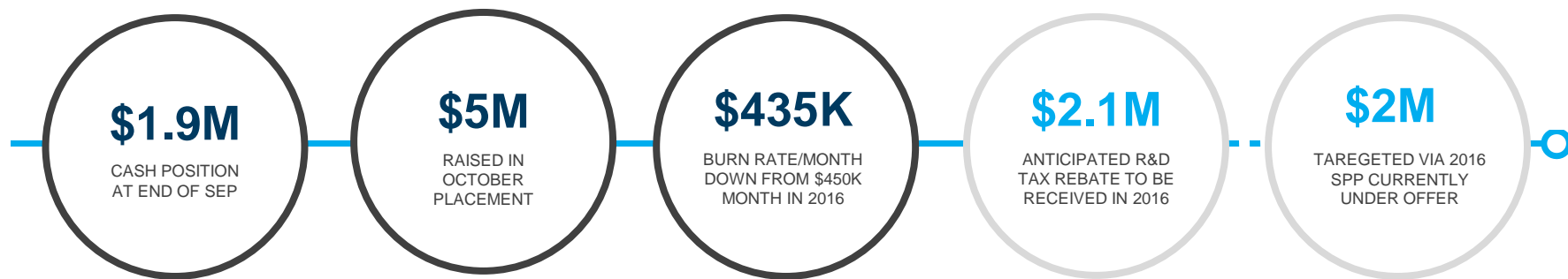
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PATENT
FAMILIES



FINANCIAL PERFORMANCE

CURRENT POSITION



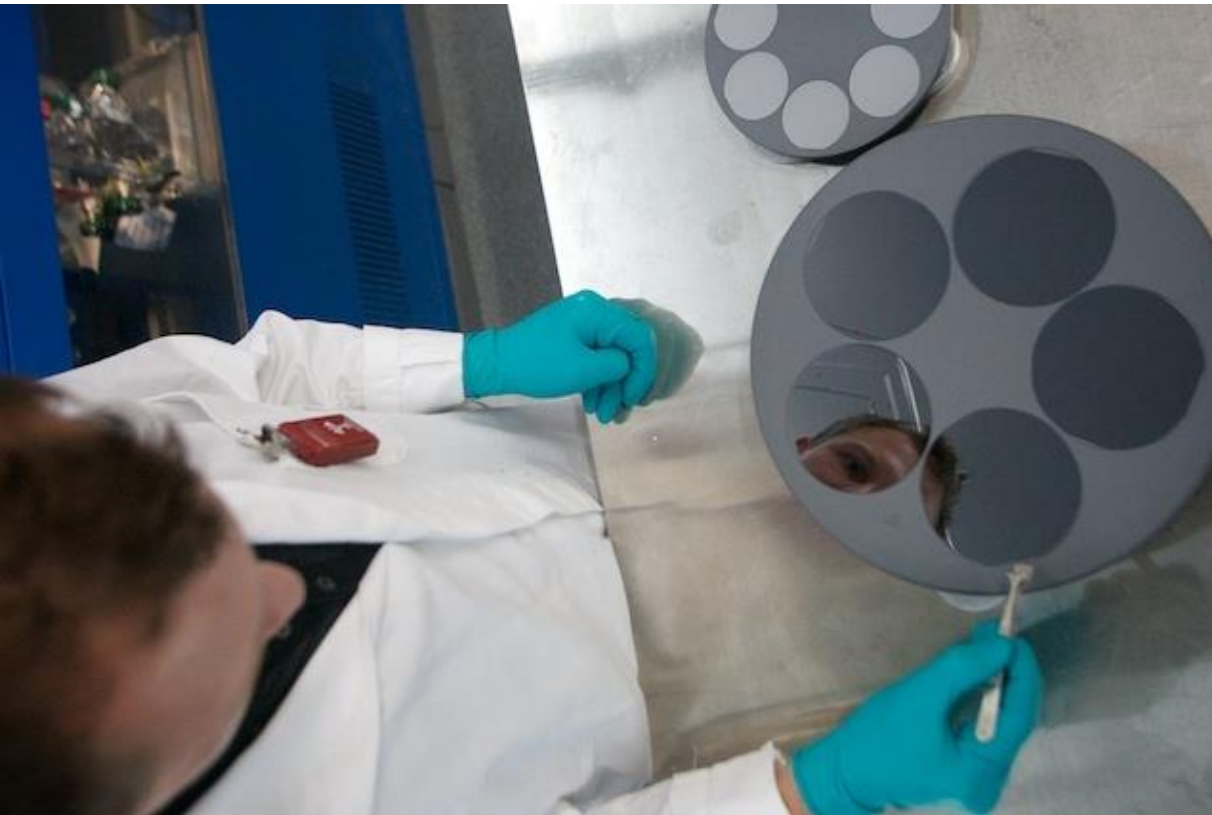
This would provide BluGlass with a robust cash position to expedite commercialisation activity

\$10.5M OVER 2YRS

Giving BluGlass a run-way of greater than 2 years



FACILITY AND WORLD LEADING TEAM



1,200m²

FACILITY in
Sydney, Australia

12

Process Hardware
& Device Team
9PhDs



Currently
generating **REVENUE**
from custom epitaxy
& contract R&D



WORLD LEADING TEAM Board of Directors



**WILLIAM
JOHNSON**

Chairman



Seasoned CEO with extensive technology leadership expertise in the global semiconductor industry

Former President & CEO, SPTS Technologies



**GILES
BOURNE**

Managing Director



20 years experience in clean tech & manufacturing

Business development & commercialisation specialist



**CHANDRA
KANTAMNENI**

Non-Executive Director



30 years experience in global semiconductor industry

Former Technical Director, UCLA Nano Systems

Former VP, Worldwide Fab Operations, Peregrine



**GREG
CORNELSEN**

Non-Executive Director



Economics background

Business development specialist

Former Director MOV

Founder Springbok Natural Waters



**VIVEK
RAO**

Non-Executive Director



21 years in the semiconductor capital equipment industry

Technology leadership specialist

Executive VP and COO of SPT Micro-technologies



WORLD LEADING TEAM Management Team



**GILES
BOURNE**

Managing Director



20 years experience in
clean tech &
manufacturing

Business development
& commercialisation
specialist



**DR. IAN
MANN**

COO/CTO



20 year experience in
product development,
tech team management

IP commercialisation
specialist



**STUART
UHLHORN**

Chief Financial Officer



30 years experience in
finance, M&A and JV
management

Former Head of
Corporate Services, IAG



**DR. MARIE
WINTREBERT**

Chief Scientist



Founding scientist and
co-inventor of the
BluGlass RPCVD
process

Device design,
fabrication, modeling
and measurement
expert



**STEFANIE
WINWOOD**

*Investor Relations and
Marketing Manager*



Strategic marketing and
communications
professional

12 years experience in
technical
communications &
brand management



CONCLUSION INVESTMENT HIGHLIGHTS





bluglass.com.au
