

29 April 2022

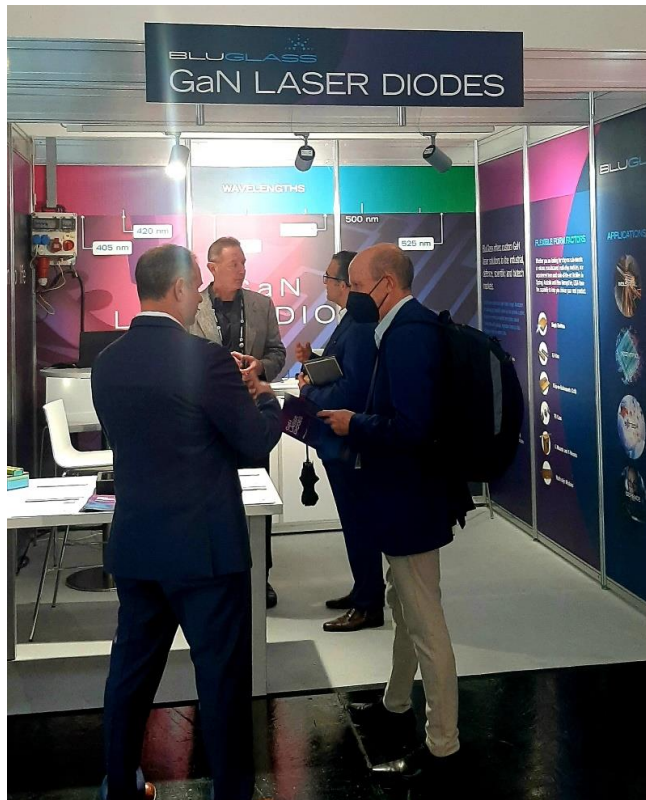
## March Quarter Activities Update

### Highlights

- Demonstrated reliability and performance improvements in several laser diode products
  - Released laser diode performance data at leading laser and photonics conferences
- Acquired Silicon Valley laser diode production fab lease and manufacturing equipment
- Secured A\$7.1 million via Entitlement Offer and Placement to fund fab acquisition and operations

Australian semiconductor developer BluGlass Limited (**ASX: BLG**) provides the following update and Appendix 4C Quarterly Report for the three months ended 31 March 2022 (Q3 FY22).

### Laser diode progress



During the quarter, BluGlass demonstrated further performance and reliability improvements across its 405nm and 420nm single and multi-mode mode laser diode prototypes. These improvements have enabled BluGlass to release multiple product specification sheets to potential customers at leading industry conferences Photonics West in San Francisco in January and Laser World of Photonics in Munich in April 2022.

BluGlass continues to methodically optimise the four key components for reliable laser diodes – epitaxy, metals, facets, and bonds – to resolve its reliability challenges. The latest iterations feature improvements in three of the four elements.

#### Epitaxy

In Q3, BluGlass focused on improving the laser diode design of its high power 450nm prototypes. These prototypes have demonstrated the Company's brightest light-output to date and are now progressing through the fabrication pipeline, ahead of performance validation and reliability testing.

In addition, BluGlass doubled its MOCVD laser diode epitaxy capacity, successfully converting one of the Company's older generation RPCVD systems back into its original MOCVD configuration. BluGlass also demonstrated 'process of record' laser diode wafers – key systems that outline technical processes, parameters and operations to ensure wafer consistency. This achievement means BluGlass now has two identical MOCVD

reactors being used to expedite laser diode development to supply the newly acquired Silicon Valley fab, provide additional capacity for production volumes, and support foundry services without disrupting the Company's laser diode roadmap.

## **Metals**

During the quarter, BluGlass enhanced its metal designs, with the latest iterations demonstrating significantly lower resistance for both negative and positive metal contacts. Low-resistance and high-adhesion metals are essential for the electrical management of the laser diode and are critical to performance and reliability. These metal improvements were implemented, tested and validated in short-loop development cycles with various contract manufacturers, and are now being implemented in full fabrication iterations.

## **Bonding**

BluGlass made significant bonding and packaging improvements during the quarter, successfully demonstrating the Company's first TO-9 Cans (a high demand packaging form factor for customers).

These packaged laser diodes incorporate BluGlass' first successful implementation of 'epi-down' fabrication processing. Epi-down processing is commonly implemented in the industry to significantly improve the heat management in the laser diode. This approach results in a significantly reduced thermal path, better heat management, and paves the way for higher-performance and higher value products.

In addition to better performing laser diodes, improvements to BluGlass' manufacturing process controls with each of its contract manufacturers is resulting in improved product repeatability and manufacturing yields.

## **Acquired Silicon Valley laser diode fab lease**

During the quarter, BluGlass acquired a commercial Silicon Valley laser diode production facility lease and manufacturing equipment for US\$2.5 million. The 19,000 sq ft purpose-built facility accelerates the Company's growth strategy, bringing core fabrication processes in-house, and exponentially increasing manufacturing and revenue generation capacity.

The Silicon Valley fab simplifies BluGlass' manufacturing supply chain to improve laser diode quality and consistency. In-house manufacturing capability also fast-tracks product development timelines, enabling the launch of higher-value products at extended wavelengths sooner.

Jim Haden, BluGlass President, said, "As one of just a handful end-to-end GaN manufacturers, owning the entire wafer fabrication process enables us to compete with the large players and grow our market share. It halves our production costs and increases manufacturing turns, supporting the development and launch of innovative new products in extended wavelengths and flexible form factors. It allows us to capitalise on our competitive advantages to address unmet customer demand for easy-to-use laser light and custom manufacturing. Importantly, this US\$2.5 million investment scales our manufacturing capacity to allow for future potential annual revenues of approximately \$170 million."

## **Secured A\$7.1 million in new capital**

In April, BluGlass secured A\$7.1 million before costs to fund its acquisition of the Silicon Valley production facility lease, manufacturing equipment, and ongoing operations at the facility. The raise comprised a 1:4 non-renounceable Entitlement Offer for existing shareholders to raise A\$3.7m and a A\$3.4 million Placement to US and Australian institutional and sophisticated investors.

Of the funds raised, US\$2 million has been used to acquire the fab. The remaining capital will be used to adapt the Silicon Valley fab for gallium nitride production (A\$3.5 million), invest in advanced manufacturing capabilities (US\$2.5 million), and ongoing operational expenditure and talent hire (US\$2.5 million).

BluGlass Executive Chair James Walker said, "The continued support from our loyal shareholders has enabled us to significantly increase manufacturing and revenue generation capacity, accelerate product development timelines, and provide a clear path to profitability. We have leveraged Jim's extensive industry network to identify and take advantage of a very rare opportunity to acquire a fully operational manufacturing facility at a significant

discount to the US\$40 million it would cost us to build today. This investment will improve the quality and reliability of our products, deliver higher manufacturing margins, and support the development of industry-leading laser diodes to meet customer needs.”

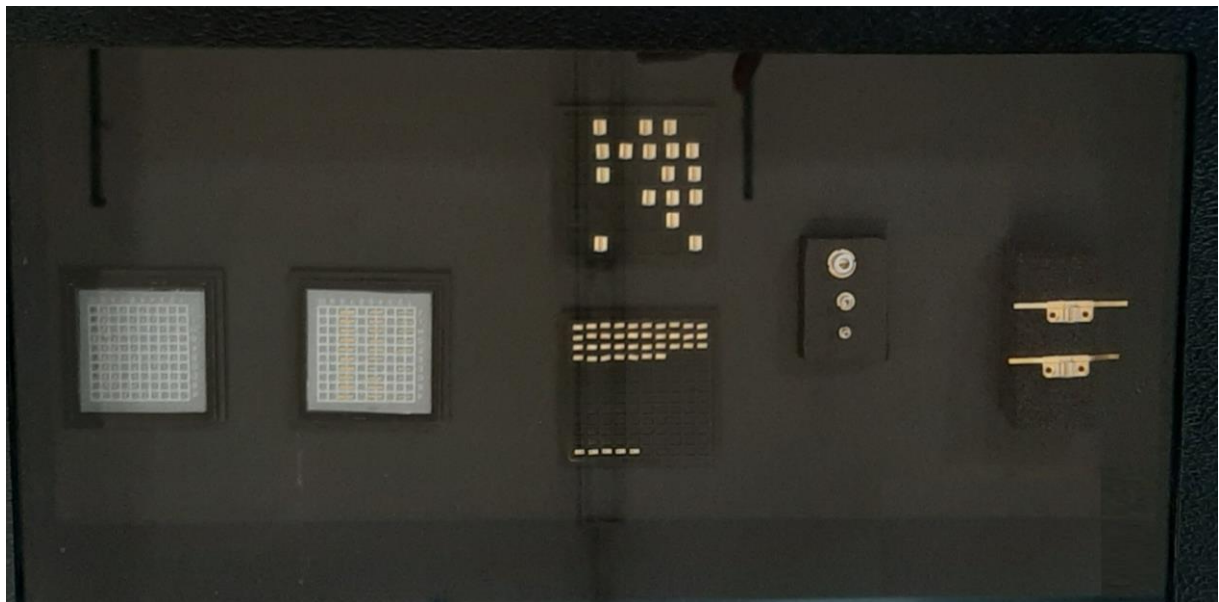
### Presenting new product data at leading global industry conference



BluGlass is presenting its latest laser diode performance data at international laser and photonics conference, Laser World of Photonics. Held in Munich from 26 – 30 April, Laser World is the leading trade fair for photonics components, systems, and applications, and is expected to attract more than 32,000 attendees from 80 countries.

The latest performance data will be available for BluGlass’ 405, 420 and 450nm laser diode prototypes.

Commenting on the performance data BluGlass President Jim Haden said, “For the first time we’ll provide potential customers with performance data for our 450nm single-mode and multi-mode devices. 450nm is an important and frequently requested initial wavelength due to its extensive use across a broad range of industries and applications. We are seeing significant performance improvements in short-loop testing and will shortly commence reliability tests with these iterations. Feedback from potential customers continues to highlight the significant unmet market demand for GaN laser diodes.”



**BluGlass engineering samples in various form factors. (L-R) Single emitters, LD Bars, Chip on Submounts (CoS) (top and bottom), TO-Cans, and F-mounts.**

### Financials

Revenue in Q3 FY22 increased to \$240k, driven by the commencement of MOCVD epitaxy foundry services for a European wafer developer. BluGlass’ paid R&D development contract with the European wafer developer will continue throughout Q4 FY22, and has the potential to become a commercial manufacturing agreement with significant revenues.

BluGlass' total operating expenditure in Q2 FY22 was \$2,010k. Research and development expenses, including materials and fabrication costs, accounted for \$1,704k while non-R&D related staff costs totalled \$185k. Payments to related parties in Q2 FY22 were \$92k, comprising Executive Chair and Non-Executive Director fees. Cash at end of the quarter was \$4,382 million.

Activity Undertaken	Amount paid during the Quarter \$'000
Laser Diode product development	\$1,704k
Micro LED and LED research and development	\$12k
RPCVD equipment development	\$57k
<b>Total direct expenditure</b>	<b>\$1,773k</b>

## Outlook

BluGlass continues to make progress towards delivering reliability ahead of launching its first laser diode products to customers. The Company will continue to work with its contract manufacturers for initial product launches to meet customer demand over the next nine to 12 months. In parallel, BluGlass will commence adapting its Silicon Valley fab for gallium nitride production – a process expected to take several months to complete.

“We are systematically overcoming technical challenges to deliver on our product roadmap, launch reliable laser diodes to market, and secure first commercial orders. Performance data for our initial commercial laser diodes is generating high levels of customer interest and we have prospective customers ready to test sample products. There is significant unmet demand for high-quality laser diodes in our initial wavelengths, and we are targeting applications within the large industrial, scientific and biotech markets – collectively accounting for more than half of the global US\$2.5 billion GaN market. Growth is being driven by increased adoption of smart technology, such as electric vehicles, 3D printing, quantum computing and renewable energy.

“Longer-term, our Silicon Valley fab will fast-track development timelines for next generation products, leveraging our manufacturing flexibility, proprietary RPCVD technology, and novel device architectures to create brighter, higher efficiency and higher power laser light. Control over core fabrication processes will create operational competitive advantages, enabling us to offer unique form factors and integrated packages that significantly reduce customer integration costs. We have a clear, differentiated, value proposition built around providing the industry’s easiest-to-use laser light. Our own in-house end-to-end manufacturing capability enables us to deliver on that proposition much faster than originally planned, and we are well-positioned to take market share within a large and growing market with very few players and high barriers to entry.”

*This announcement has been approved for release by the BluGlass Board.*

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## For more information, please contact:

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## About BluGlass

Developing leading-edge semiconductor manufacturing technology and devices for more than a decade, **BluGlass Limited (ASX:BLG)** is a provider to the global GaN photonics industries, delivering cutting-edge, custom **laser diode** and LED development across the industrial, defence, display, and scientific markets.

Listed on the ASX, we are an Australian public company established to power the smarter, cleaner, more efficient photonics of tomorrow with our proprietary low temperature, low hydrogen, **remote plasma chemical vapour deposition** (RPCVD) manufacturing technology.

Backed by an extensive network of supply-chain partners, BluGlass is developing a suite of laser diode products, from small batch custom lasers through to high-volume and off the shelf products.

## Appendix 4C

### Quarterly cash flow report for entities subject to Listing Rule 4.7B

**Name of entity**

BluGlass Limited

**ABN**

20 116 825 793

**Quarter ended ("current quarter")**

March 2022

<b>Consolidated statement of cash flows</b>	<b>Current quarter \$A'000</b>	<b>Year to date (9 months) \$A'000</b>
<b>1. Cash flows from operating activities</b>		
1.1 Receipts from customers	240	356
1.2 Payments for		
(a) research and development	(813)	(3,133)
(b) product manufacturing and operating costs	-	-
(c) advertising and marketing	(12)	(16)
(d) leased assets	(104)	(334)
(e) staff costs	(904)	(3,440)
(f) administration and corporate costs	(417)	(808)
1.3 Dividends received (see note 3)		
1.4 Interest received	-	-
1.5 Interest and other costs of finance paid	-	(32)
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	-	3,648
1.8 Other (provide details if material)	-	-
<b>1.9 Net cash from / (used in) operating activities</b>	<b>(2,010)</b>	<b>(3,759)</b>
<b>2. Cash flows from investing activities</b>		
2.1 Payments to acquire or for:		
(a) entities	-	-
(b) businesses	-	-
(c) property, plant and equipment	(3,063)	(3,430)
(d) investments	-	-
(e) intellectual property	-	-
(f) other non-current assets	-	-

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (9 months) \$A'000
2.2	Proceeds from disposal of:		
	(a) entities	-	-
	(b) businesses	-	-
	(c) property, plant and equipment	-	-
	(d) investments	-	-
	(e) intellectual property	-	-
	(f) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	-	-
<b>2.6</b>	<b>Net cash from / (used in) investing activities</b>	<b>(3,063)</b>	<b>(3,430)</b>

<b>3.</b>	<b>Cash flows from financing activities</b>		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	3,426	9,836
3.2	Proceeds from issue of convertible debt securities	-	-
3.3	Proceeds from exercise of options	-	-
3.4	Transaction costs related to issues of equity securities or convertible debt securities	(217)	(488)
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	(1,953)
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
<b>3.10</b>	<b>Net cash from / (used in) financing activities</b>	<b>3,209</b>	<b>7,395</b>

<b>4.</b>	<b>Net increase / (decrease) in cash and cash equivalents for the period</b>		
4.1	Cash and cash equivalents at beginning of period	6,246	4,176
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(2,010)	(3,759)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(3,063)	(3,430)

<b>Consolidated statement of cash flows</b>		<b>Current quarter \$A'000</b>	<b>Year to date (9 months) \$A'000</b>
4.4	Net cash from / (used in) financing activities (item 3.10 above)	3,209	7,395
4.5	Effect of movement in exchange rates on cash held	-	-
<b>4.6</b>	<b>Cash and cash equivalents at end of period</b>	<b>4,382</b>	<b>4,382</b>

<b>5.</b>	<b>Reconciliation of cash and cash equivalents</b> at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	<b>Current quarter \$A'000</b>	<b>Previous quarter \$A'000</b>
5.1	Bank balances	420	267
5.2	Call deposits	3,962	5,979
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
<b>5.5</b>	<b>Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>4,382</b>	<b>6,246</b>

<b>6.</b>	<b>Payments to related parties of the entity and their associates</b>	<b>Current quarter \$A'000</b>
6.1	Aggregate amount of payments to related parties and their associates included in item 1	92
6.2	Aggregate amount of payments to related parties and their associates included in item 2	-
<i>Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an explanation for, such payments.</i>		

## Quarterly cash flow report for entities subject to Listing Rule 4.7B

<b>7. Financing facilities</b>	<b>Total facility amount at quarter end \$A'000</b>	<b>Amount drawn at quarter end \$A'000</b>
<i>Note: the term "facility" includes all forms of financing arrangements available to the entity. Add notes as necessary for an understanding of the sources of finance available to the entity.</i>		
7.1 Loan facilities	-	-
7.2 Credit standby arrangements	-	-
7.3 Other (please specify)	-	-
<b>7.4 Total financing facilities</b>	-	-
<b>7.5 Unused financing facilities available at quarter end</b>		-
7.6 Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well.		

<b>8. Estimated cash available for future operating activities</b>	<b>\$A'000</b>
8.1 Net cash from / (used in) operating activities (item 1.9)	(2,010)
8.2 Cash and cash equivalents at quarter end (item 4.6)	4,382
8.3 Unused finance facilities available at quarter end (item 7.5)	-
8.4 Total available funding (item 8.2 + item 8.3)	4,382
<b>8.5 Estimated quarters of funding available (item 8.4 divided by item 8.1)</b>	2.18
<i>Note: if the entity has reported positive net operating cash flows in item 1.9, answer item 8.5 as "N/A". Otherwise, a figure for the estimated quarters of funding available must be included in item 8.5.</i>	
8.6 If item 8.5 is less than 2 quarters, please provide answers to the following questions:	
8.6.1 Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?	
Answer: N/A	
8.6.2 Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful?	
Answer: N/A	
8.6.3 Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?	
Answer: N/A	
<i>Note: where item 8.5 is less than 2 quarters, all of questions 8.6.1, 8.6.2 and 8.6.3 above must be answered.</i>	



## Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

Date: 29 April 2022

Authorised by: The Board  
(Name of body or officer authorising release – see note 4)

## Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.
2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standard applies to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.
4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [name of board committee – eg Audit and Risk Committee]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".
5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.