



ASX ANNOUNCEMENT | PERIOD ENDING 31 MARCH 2023

# QUARTERLY REPORT

ASX:

**FGR**

FSE:

**M11**

OTC:

**FGPHF**

**28 April 2023**

## Quarterly Activities Report: March 2023

First Graphene Limited (ASX: FGR; “First Graphene” or “the Company”) is pleased to provide this update on the financial and operational performance for the quarter ending 31<sup>st</sup> March 2023.

### Highlights

- **Circa 17% revenue growth on the same quarter last financial year and strengthened revenue pipeline to circa A\$440,000**
- **One tonne order of PureGRAPH<sup>®</sup> received for international concrete trial**
- **Secured £89,000 grant to fund Research & Development of low-cost electrocatalysts**
- **Received circa A\$900,000 Research and Development tax credits**
- **Strategic Partnership and Joint Development Agreements signed with ATP India and Blue Snow Consulting respectively**

### Financial performance

First Graphene has reported a consecutive increase in revenue for the third quarter of FY2023, recording quarterly revenue of A\$209,000 (unaudited). This correlates to approximately 17% increase on the same quarter in FY2022. The Company’s revenue for the first three quarters of FY2023 has increased by approximately 40% compared to the same period last year. The growth in revenue over FY2023 is predominantly attributable to new sales and applications in the cement and concrete sector.

Looking forward, the Company has secured a significant sales pipeline, confirming an order book of A\$440,000 (as of 26<sup>th</sup> April 2023). Furthermore, First Graphene has also received circa A\$900,000 through Research and Development (R&D) tax credits as at the end of April 2023. This cash received includes credits received through both the Australian and United Kingdom tax authorities. The combination of these, sets up a strong fourth quarter and a confident start to FY2024.

As First Graphene continues its evolution to become a global materials technology company, the company is further streamlining its cost base to better match its commercial vision. The Company has a clear plan to further reduce expenditure in the range of A\$200,000 to A\$250,000 per annum, which will be redeployed to further accelerate its commercialisation strategy.

#### Registered office

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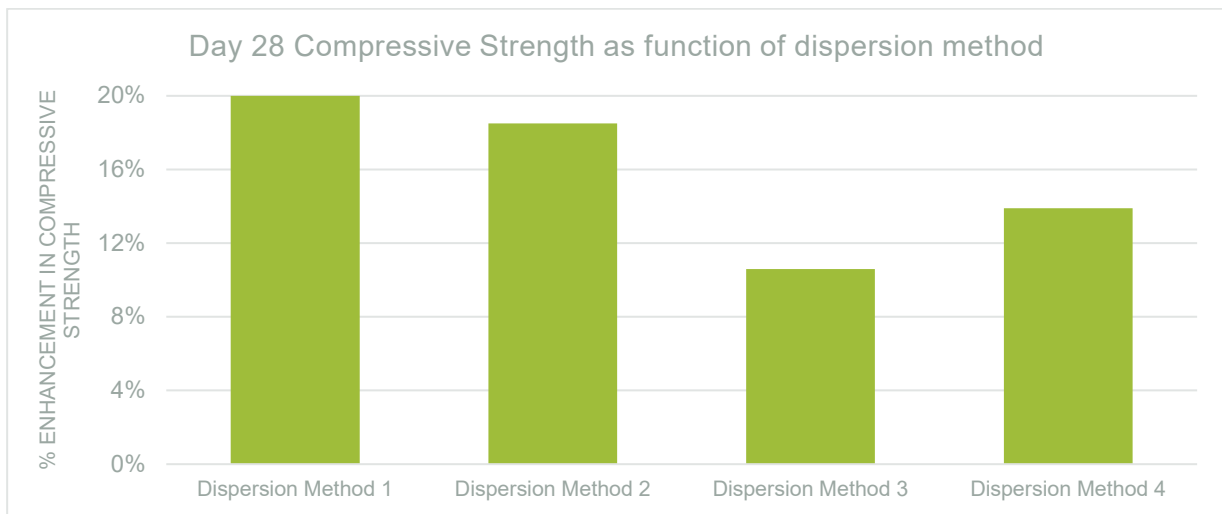
## Segment updates

### Cement and concrete

First Graphene continues to grow its cement and concrete portfolio. The Company realised approximately 54% of its quarterly revenue from new development clients and ongoing commercial scale-up industrial trials in the segment.

The previously announced trials with Breedon Cement Ltd, Morgan Sindall Construction & Infrastructure Ltd and the University of Manchester continues to gain momentum. The Company will soon commence one of the world’s largest graphene enhanced cement trials supported by the UK Government’s £66 million Transforming Foundation Industries (TFI) program. Planning for the full-scale production trial at Breedon Cement’s facility is well underway and scheduled for June 2023. Approximately 2,000 tonnes of graphene enhanced cement will be produced at Breedon, for use in real world demonstrations, utilizing circa 1.3 tonnes of Graphene.

Initial optimisation work has delivered highly positive results across several different dispersion methods, achieving an improvement of up to 20% in compressive strength compared to ordinary Portland cement systems after 28 days cure. As depicted in the graph below, all dispersion methods provide a significant >10% and up to a 20% uplift in compressive strength after 28 days. This is a statistically significant improvement with multiple potential end-user benefits. Ongoing research is now focused on enhancing the Company’s understanding of the fundamental science underpinning these improvements, which will provide world-leading knowledge and capability to inform the design concept for upcoming manufacturing trials.



The project allows the Company to concentrate on PureGRAPH® grinding aids and admixtures, enhancing technical expertise and understanding of its benefits and applications. Ongoing collaborations with leading material technology organisations and interest from industry partners to trial the PureGRAPH® products continue to strengthen the commercialisation pathway.

A trial of this scale is of international significance, unmatched by any other company globally. First Graphene believe the trial of this size is further affirmation of its internal quality controls and the sophisticated approach adopted to manufacturing large volumes of graphene.

Another positive development in the application of graphene in the sector is the data being generated from trials undertaken with Breedon. This is a unique partnership with First

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Graphene, one of only a very small number of graphene suppliers collaborating with a cement producer of this size.

The data has already been analysed by academics from the Tyndall Centre for Climate Change Research at the University of Manchester (UoM), having conducted full life cycle carbon balance analysis, confirming the inclusion of the Company's graphene can off-set the embodied carbon of Ordinary Portland Cement for loadings at <350g per tonne (<0.035%) with a 5% improvement in mechanical properties. This is an industry first that conclusively demonstrates that the achieved CO<sub>2</sub> offset rapidly mitigates any energy costs associated with the graphene manufacturing process.

The Company has continued to develop a unique measurement technique to examine graphene in cement without the requirement to wait 28 days for results. Supported through Innovate UK's Analysis for Innovators (A4I) Program, in collaboration with the National Physical Laboratory, the findings have validated a non-destructive and efficient technique to confirm the presence and effective dispersion of graphene in cement-based systems.

This offers significant productivity gains and expedites the development process, whilst providing a unique methodology that could be offered as a service to customers wanting to measure the dispersion of graphene in cement. This strengthens the Company's leadership within the cement and concrete segment and improves understanding of graphene in grinding aids and admixture compositions.

The forward-looking order book for the segment continues to strengthen as the Company accelerates the drive to reduce CO<sub>2</sub> emissions in cement and concrete. As announced subsequently to quarter end<sup>1</sup>, the Company has secured a one tonne order for graphene enhanced concrete trials, set to take place in Q4 2023. This marks a significant milestone for scaling up to meet the increased requirements of the cement and concrete segment.

## Composites and plastics

Demand from composites and thermal polymer clients was steady through the quarter, with the segment contributing approximately 39% of the quarterly revenue from a combination of early adopter, development and distributor clients.

During the quarter, First Graphene and Blue Snow Consulting and Engineering SDN BHD (Blue Snow) signed a Joint Development Agreement (JDA). The deal will see several thermoplastic polymers developed with a range of enhanced properties that will feed into downstream sectors including the automotive, data processing and cooling sectors.

Blue Snow is an international company that provides specialist energy and building technology services to the building and infrastructure sector. The company assists developers, owners and design teams enhance the energy performance of buildings in its design stage and improve buildings that are already in operation. The JDA will inform a program to jointly develop materials that will be used to enhance heat transfer in a range of applications, combining the technical capabilities of both companies.

The manufacturing trials with UK-based energy technology company Senergy continues, with further refinements made in the use of graphene enhanced polymers for its solar thermal range of products. Pleasingly First Graphene's materials continue to enhance the physical and thermal

<sup>1</sup> *Accelerating the drive to reduce CO<sub>2</sub> emissions in cement and concrete* – ASX release 19 April 2023.

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properties of polymers used for these applications, enabling a more efficient product to be developed. Senergy has commenced implementing the technology into other heat exchange areas, due to the success of the solar program. An indicative schedule has been identified to launch the graphene enhanced solar products to market in the coming year.

An exciting opportunity has been secured to establish a presence in India, the world's fifth largest economy, after First Graphene signed a strategic partnership with ATP India. Initially, the focus will be on the plastics segment, specifically in fire retardant and recycled applications. ATP India has also established strong working relationships within the cement and concrete sector and intends to explore additional opportunities in this space.

## Coatings, adhesives, sealants, elastomers (CASE) and foams

First Graphene continues to leverage from the brand associations and connections of its strategic partnerships and geographical distribution agreements. The focus is to unlock the CASE segment's full potential, that generated approximately 7% of the quarterly revenue in Q3 from production and new development clients.

First Graphene recently attended the European Coatings Show 2023 in Germany, alongside distribution partner Keyser & MacKay. The event is a global benchmark in the coatings market providing an opportunity to network with various industry stakeholders and potential partners looking to take advantage of the emerging graphene technology products, benefits and growing applications.

Building on the recent industry engagement, First Graphene representatives also exhibited at the FutureBuild Expo in London engaging with a number of industry stakeholders and showcasing the unique benefits graphene products can offer the construction industry.

The Company continues to progress additional work with existing clients and partners progressing applications and trials of Electrostatic Discharge Flooring (ESD), Cold Cure Ceramics, Footwear and anti-corrosion coatings.

## Energy generation and storage

During the quarter, First Graphene collaborated with UoM to optimise PureGRAPH® graphene slurries for use in creating foil substrates for supercapacitor applications. This builds on a previous project that demonstrated the effectiveness of these electrodes over 10,000 cycles. Additionally, preliminary research found that ruthenium content in supercapacitor materials can be reduced by 75% when combined with manganese oxide while maintaining appreciable activity, leading to a more cost-effective approach.

This research will contribute to a new Innovate UK project focused on low cost electrocatalysts for hydrogen production, for which First Graphene secured £89,000 in funding. The project, which started on March 1<sup>st</sup>, 2023, leverages novel electrochemistry from UoM professors Dryfe and Kinloch and formulation expertise from the Centre for Process Innovation's National Formulation Centre.

This quarter marks the completion of the Innovate UK EDGE funded project on the formulation of graphene enhanced conductive coatings with the Centre for Process Innovation. This involved a detailed study into the optimisation of hybrid formulations, which combined carbon black and graphene, to produce coatings with an excellent finish and a very low sheet resistance, typically down to 5.6 Ohm/sq. These conductive coatings have the potential to

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replace the gold layer in photovoltaic cells, reducing cost and dependence on rare earth metals. The results of this project will support future funding applications to advance the technology for commercialisation in the energy generation sector.

## Research and development

During the quarter, work continued with joint development partner ZEBCO Heating Ltd, to research unique heating devices, initially targeting the considerable UK commercial and domestic markets. Research to date confirms that graphene enhanced coatings can play a key role in delivering these novel heating systems. As announced in the previous quarter, this application has the potential to reduce natural gas consumption by 20 to 30%<sup>2</sup>, lower Nitrogen Oxide emissions, and be compatible with hydrogen as a “clean” fuel source. This presents a sustainable and economic opportunity to address the energy crisis in Europe.

First Graphene received additional Analysis for Innovators (A4I) grant funding that began on March 1<sup>st</sup>, 2023. The grant will enable a six month collaboration with the National Physics Laboratory, Cardiff, and Swansea Universities to map the topography and identify specific functionality on the surface of PureGRAPH® using advanced analytical techniques. This analysis will provide valuable information on the surface chemistry of PureGRAPH® and improve the company's understanding of its product and process technology, allowing for customisation to meet customer needs in various commercial sectors.

First Graphene UK LTD extended its Tier 1 membership with the Graphene Engineering Innovation Centre (GEIC) by 12 months, reaching a 5-year milestone. This will allow the company to continue utilising the unique facilities and ecosystem to improve its product offerings.

During the quarter, the Company in collaboration with UoM – Department of Mechanical, Aerospace and Civil Engineering published a technical report in the Construction and Building Materials journal titled *‘Effects of using aqueous graphene on behaviour and mechanical performance of cement-based composites’*. The report compared the use, cost effectiveness and overall enhancement of applications and mortar systems between PureGRAPH® AQUA and PureGRAPH®. The paper concluded improved stability and dispersibility of PureGRAPH® AQUA, with the optimal loading for this mortar system found at 0.017%. The result was an improvement in compressive strength by 35% at 3 days, and 13% at 28 days.

A partnership with UK-based PrintCity Network (PrintCity) exploring graphene enhanced 3D print systems for rapid prototyping of polymeric systems also commenced during the quarter. The partnership aims to offer Manchester based companies the opportunity to develop products with customers using the versatility afforded by PrintCity's additive manufacturing capabilities.

## Operations

First Graphene has renegotiated a lease renewal for the main office and factory at 1 Sepia Close in Henderson, Western Australia (WA). The renewal, part of the Company's broader growth strategy, secures its established manufacturing headquarters in Perth until mid-2028. The Company has also decided not to renew the lease of a second warehouse in WA, which is currently used to store graphite feedstock. Instead, the feedstock will be relocated to a cheaper container storage option within WA to reduce cash burn.

<sup>2</sup> Joint development agreement opens path to global heating market – ASX Release 14 October 2022

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First Graphene ordered a new grinding mill from Retsch, a world leading German manufacturer of laboratory mills and crushers. The mill will be used to blend dried graphene cake following a successful milling trial.

The new mill offers significant productivity gains, being more user friendly, considerably less labour intensive and can mill graphene at much faster rates than previous methods. This lays the foundation for faster processing of larger cement and concrete graphene, and ultimately larger capacity. The overall capital expenditure of this upgrade is minimal and does not pose any significant negative impact on overall cashflow.

Stage two of the Electrochemical Cell optimisation trials are currently being planned and, depending on production demands, are scheduled to begin in the fourth quarter of FY2023. Based on the initial trials completed in 2022, further improvements in production rates and power efficiency are expected. The objectives of the trials are to reduce power consumption of the electro-chemical cells, increase overall processing efficiency and capacity, while reducing product costs.

**For further information please contact:**

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## About First Graphene Ltd (ASX: FGR)

*First Graphene Limited is focused on the development of advanced materials to help industry improve. The Company is a leading supplier of graphitic materials and product formulations with a specific commercial focus on large, high-growth global markets including cement and concrete; composites and plastics; coatings, adhesives, silicones and elastomers (CASE); and energy storage applications.*

*A key outcome these advanced materials offer is the reduction of carbon dioxide emissions, whether directly through a reduction in output of these harmful greenhouse gases or lower energy usage requirements in manufacturing, or indirectly due to enhanced performance characteristics and extending the usable life of products. First Graphene has a robust manufacturing platform based on captive and abundant supply of high-purity raw materials, and readily scalable technologies to meet growing market demand.*

*As well as being the world's leading supplier of its own high performance PureGRAPH® graphene product range, the Company works with multiple industry partners around the world as a supplier of graphitic materials and partner to research, develop, test and facilitate the commercial marketing of a wide range of sector-specific chemical solutions. First Graphene Ltd is publicly listed in Australia (ASX:FGR) and has a primary manufacturing base in Henderson, near Perth, WA. The company is incorporated in the UK as First Graphene (UK) Ltd and is a Tier 1 partner at the Graphene Engineering and Innovation Centre (GEIC), Manchester, UK, where it has a strong marketing and R&D capability.*

**With authority of the board, this announcement has been authorised for release by Aditya Asthana, Chief Financial Officer and Company Secretary.**

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## Appendix 4C

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

**Name of entity**

First Graphene Limited

**ABN**

50 007 870 760

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

31 Mar 2023

<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	197	561
1.2 Payments for		
(a) research and development	(198)	(609)
(b) product manufacturing and operating costs	(145)	(495)
(c) advertising and marketing	(74)	(228)
(d) leased assets	-	-
(e) staff costs	(520)	(1468)
(f) administration and corporate costs	(284)	(882)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	11	29
1.5 Interest and other costs of finance paid	(1)	(4)
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	276	276
1.8 Other (provide details if material)	(11)	(49)
<b>1.9 Net cash from / (used in) operating activities</b>	<b>(749)</b>	<b>(2,870)</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	(105)	(109)

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<b>Consolidated statement of cash flows</b>	<b>Current quarter \$A'000</b>	<b>Year to date (9 months) \$A'000</b>
(d) investments	-	-
(e) intellectual property	(44)	(44)
(f) other non-current assets	-	-
<b>2.2 Proceeds from disposal of:</b>		
(a) entities	-	-
(b) businesses	-	-
(c) property, plant and equipment	-	-
(d) investments	-	-
(e) intellectual property	-	-
(f) other non-current assets	-	-
<b>2.3 Cash flows from loans to other entities</b>	-	-
<b>2.4 Dividends received (see note 3)</b>	-	-
<b>2.5 Other (provide details if material)</b>	-	-
<b>2.6 Net cash from / (used in) investing activities</b>	<b>(149)</b>	<b>(153)</b>
<b>3. Cash flows from financing activities</b>		
<b>3.1 Proceeds from issues of equity securities (excluding convertible debt securities)</b>	-	-
<b>3.2 Proceeds from issue of convertible debt securities</b>	-	-
<b>3.3 Proceeds from exercise of options</b>	-	-
<b>3.4 Transaction costs related to issues of equity securities or convertible debt securities</b>	-	-
<b>3.5 Proceeds from borrowings</b>	-	-
<b>3.6 Repayment of borrowings</b>	-	-
<b>3.7 Transaction costs related to loans and borrowings</b>	-	-
<b>3.8 Dividends paid</b>	-	-
<b>3.9 Other (provide details if material)</b>	-	-
- reduction in lease liability	(51)	(151)
- Cash received from third parties	-	-
<b>3.1 Net cash from / (used in) financing activities</b>	<b>(51)</b>	<b>(151)</b>

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (9 months) \$A'000
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<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	4,779	7,005
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(749)	(2,870)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(149)	(153)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	(51)	(151)
4.5	Effect of movement in exchange rates on cash held	0	0
<b>4.6</b>	<b>Cash and cash equivalents at end of period</b>	<b>3,830</b>	<b>3,830</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	3,830	4,779
5.2	Call deposits	-	-
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>3,830</b>	<b>4,779</b>

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<b>6. 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	146
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>	
Amounts included in 6.1 relate to payment of executive Director salaries and consulting fees.	

<b>7. Financing facilities</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>	<b>Total facility amount at quarter end \$A'000</b>	<b>Amount drawn at quarter end \$A'000</b>
7.1 Loan facilities	-	-
7.2 Credit standby arrangements	-	-
7.3 Other (please specify)	-	-
7.4 <b>Total financing facilities</b>	-	-
7.5 <b>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)	(749)
8.2 Cash and cash equivalents at quarter end (item 4.6)	3,830
8.3 Unused finance facilities available at quarter end (item 7.5)	-
8.4 Total available funding (item 8.2 + item 8.3)	3,830
8.5 <b>Estimated quarters of funding available (item 8.4 divided by item 8.1)</b>	5.115
<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

*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.*

## 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: 28th April 2023

Authorised by: With authority of the board, this announcement has been authorised for release, by

Aditya Asthana  
Chief Financial Officer and Company Secretary

## 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.

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