



Quarterly Activities Report: December 2023

First Graphene Limited (ASX: FGR; "First Graphene" or "the Company") is pleased to provide an update on the financial and operational performance for the quarter ending 31 December 2023.

Highlights

- Rising interest in FGR's product resulting in quarterly revenue of circa A\$171,000 and strengthened revenue pipeline to circa A\$290,000
- World-leading cement trials deliver further positive results, enabling a Joint Development and Commercialisation Agreement with UK cement producer Breedon Cement Ltd
- Further graphene enhanced cement/concrete product trials begin in Thailand and New Zealand
- Collaboration with Senergy creates highly efficient thermally conductive polymers containing PureGRAPH® for use in solar panels
- Strategic distribution deal signed and additional partnerships secured, opening new market opportunities
- JDA signed to deliver graphene-enhanced conveyor rollers to Australian mining industry
- Successful Share Purchase Plan raises A\$2.9 million

Quarterly performance overview

First Graphene achieved significant milestones during the active December quarter, reaffirming its position as a global leader in the manufacture and commercialisation of graphene.

Notably, the Company made substantial progress in the Cement and Concrete sector, headlined by further successful graphene enhanced cement trials and results in collaboration with the UK's largest cement producer, Breedon Cement Ltd ("Breedon") and leading construction company, Morgan Sindall Infrastructure ("Morgan Sindall").

The ongoing collaboration with Breedon was further strengthened during the quarter, with the signing of a Development and Commercialisation Agreement. This represents a significant step forward in FGR's strategy of commercialising graphene at an industrial scale, ultimately setting the stage for potential market penetration of its PureGRAPH® range of products into the high-value and in-demand sector.

In addition to this major partnership, the Company secured multiple new agreements and collaborations across various high-growth sectors, expanding its distribution network and solidifying its profile across global markets. These key milestones and new opportunities lay the foundations for further market expansion and commercial offtake, as industries embrace the benefits of FGR's graphene technology and expertise.

The successful results from the Company's Share Purchase Plan (SPP) further bolsters FGR's financial position, providing additional resources to expedite its commercialisation strategy and solidify its role as a global material technology company.



Financial performance

A quarterly revenue of circa A\$171,000 (unaudited) was recorded, achieving an increase of 18% compared to the corresponding quarter in FY2023.

This delivers a H1 revenue for FY2024 at circa A\$339,000 (unaudited) marking an 11% increase over the H1 sales for FY2023 and the third consecutive increase in H1 results since implementation of the company's commercialisation strategy in 2021.

Supporting this sales revenue was the successful SPP, resulting in a raise of AUD\$2,912,936 following the delivery of more than 45.5 million shares from First Graphene's loyal shareholders.

The proceeds will be used to accelerate the Company's ongoing commercial work on delivering highly successful graphene enhanced solutions to the cement and concrete segment, which has shown increasing prospectivity.

The SPP reinforced the support of First Graphene's strategic and commercial vision by investors and the Company thanks all who participated for their commitment at a time of extraordinary growth in the green cement market.

Segment updates

Cement and concrete

First Graphene expanded its footprint in the cement and concrete sector during this quarter, with extensive research and development collaborations occurring around the world.

The results from multiple trials focused on carbon emission reduction are resulting in commercial turnover, strengthening strides the Company is making on its strategic commercial pathway.

The company demonstrated its commitment to bringing products to market in the construction sector by pursuing trademark registration for PureGRAPH-CEM in several key territories.

During the quarter First Graphene successfully registered PureGRAPH-CEM® in Australia, highlighting its commitment to providing a verified solution for the cement and concrete industry.

PureGRAPH-CEM® is an optimised cement additive, created by leveraging intellectual property developed through First Graphene's ongoing research and development activity in the concrete and cement segment.

The PureGRAPH-CEM[®] trademark is registered in Australia and European Union, with work underway to register the name in the United States. This is an important part of First Graphene's commercialisation strategy and provides protection for the Company's globally renowned product.



World-leading UK cement trials return further positive results

First Graphene received further results from stage two of world-leading graphene enhanced cement trials conducted in the United Kingdom with Breedon, Morgan Sindall and The University of Manchester.

The trial of graphene enhanced concrete slabs delivered an immediate 15% reduction in carbon emissions as a result of its lower clinker factor, and early-stage strength gain was reported.

The slab was created for a temporary wheel washing facility at a UK highway project, and after four months of use it continues to perform well, withstanding exposure to constant heavy vehicle traffic, water and tyre abrasion.

Graphene enhanced CEM II A-L cement was used in the concrete, and ongoing testing showed it performed as well as an equivalent slab made with a higher specification CEM I cement.

First Graphene is continuing to work with Breedon Cement Ltd and Morgan Sindall on further infrastructure projects in the United Kingdom.

The Company is planning additional trials with Breedon Cement Ltd to optimise graphene enhanced grinding aid to further improve the performance of graphene enhanced cement.

Ongoing collaboration continues between First Graphene and Breedon, underwritten by a Joint Development and Commercialisation Agreement.

As the UK's largest cement producer, Breedon produces more than two million tonnes of cement annually and is ramping up investment into integrating CEM II into its concrete mixes.

Together, the companies are developing a range of graphene enhanced solutions with the goal of reducing Breedon's carbon emissions footprint during cement production.

Pioneering graphene enhanced sand trials begin in New Zealand

First Graphene received results from the world-first practical trials of graphene sand in collaboration with partner GtM Action ("GtM") in New Zealand.

The graphene sand was used to create fire retardant concrete panels for a customer, with two tonnes of the mixed blend used to validate strength benefits and determine if graphene was easier to disperse in concrete when mixed with sand.

The concrete poured and handled well, giving similar enhancements in cement strengths as those obtained in the laboratory setting and providing confidence the process is scalable.

The second stage of testing will involve investigating additional benefits including comparative strength testing and reduction of carbon emissions. If successful, graphene sand production could be scaled to a commercial level. Mixing graphene into sand would allow companies within the cement and concrete industry to keep their techniques and processes the same while realising the benefits of graphene.



Carbon reduction trials commence in Thailand

Extending First Graphene's reach into the Asian market, the Company began collaborative trials with one of Thailand's largest cement companies, Siam City Cement Public Company Limited ("Siam City Cement" or "SCCC").

As a large-scale cement producer supplying high-consumption and in-demand markets, SCCC established a roadmap to accelerate emission reduction in its processes.

Lab-scale testing commenced in the quarter, aimed at determining the ideal PureGRAPH® product for their cement composition, targeting lower clinker content while maintaining high cement quality.

This trial marks a significant development for First Graphene's commercialisation strategy, by strengthening relationships in a global market and bolstering awareness of the Company's products.

Energy generation and storage

First Graphene secured a landmark Memorandum of Understanding (MOU) with Abu Dhabi-based EMDAD Group (EMDAD) in October to collaborate and promote hydrodynamic cavitation technology.

The agreement will see First Graphene's Kainos Technology used in the design, build and commission of a small-scale, mobile hydrodynamic cavitation reactor, which will convert petroleum feedstock from oil producers to battery-grade graphite, graphene and hydrogen.

First Graphene has also worked with world leading researchers at the National Physical Laboratory (NPL) in the UK to validate the cavitation process and optimise conditions.

The NPL's test program has helped to underwrite the science behind cavitation chemistry, demonstrating there are optimum conditions to maximise process yield. The Company is actively looking to continue its collaboration with the NPL.

This independent research advances First Graphene's scientific knowledge on the fundamentals of cavitation chemistry, and further studies into the process are expected to enhance final products.

High performing thermally conductive polymers created

First Graphene's collaboration with Senergy Innovations in the UK to develop thermally conductive polymer composites for use in the solar thermal industry gained momentum during the quarter.

Traditional polymers face challenges such as low conductivity and temperature tolerance, but First Graphene and Senergy's graphene enhanced solution will combat those issues.

Senergy has successfully produced polymer materials, which are very efficient at transferring heat, when using First Graphene's PureGRAPH® materials as an additive.

Both companies have successfully processed conductive plastics into complex shapes while maintaining functionally useful properties including strength of the material.



Further work will investigate improvements to the production process, which will remain a focus as the collaboration continues in 2024, with the aim of further scaling manufacturing.

This work provides a clear pathway to commercialisation, with the goal being widespread adaptation of graphene-enhanced solar panels to deliver low-carbon, energy efficient heating solutions.

Graphene potential for hydrogen catalysts confirmed

First Graphene conducted further research into graphene enhanced electrocatalysts, which demonstrated they can reduce the amount of power consumption during "green hydrogen" generation by water-splitting.

PureGRAPH® was found to reduce overpotential by 43%, which is the energy required to drive hydrogen generation reactions. The addition of graphene also resulted in a 64% increase to throughput and 50% reduction in raw material costs.

This development could pave the way for First Graphene's products to provide a high-performing, cost-effective solution for the rapidly growing market of hydrogen production catalysts.

Composites and plastics

During the quarter, First Graphene signed a Joint Development Agreement (JDA) with Australian manufacturer Tribotech, to develop graphene enhanced composite conveyor rollers, suitable for mining operations.

Located in Western Australia, Tribotech creates and supplies high-quality conveyor rollers for a variety of industries, including mining, agriculture and bulk material handling businesses.

The aim of this two-year agreement is to increase durability of the existing range of rollers, extend service life and reduce waste associated with the process.

First Graphene will develop a graphene dispersion designed to simplify the addition of graphene into the composite production process, via the Company's leading PureGRAPH® product.

By incorporating graphene into the rollers, the final product is expected to deliver the benefits of graphene to help meet the constant demand for increased efficiency at mining operations.

Graphene enhanced rollers could be targeted towards major iron ore miners and producers in Western Australia (WA), which is globally renowned as a world-leading mining hub.

WA is the largest iron ore supplier in the world, accounting for 40% of global supply, and demand for the material continues to rise with local exploration expenditure reaching \$648 million in 2022-23¹.

This JDA marks a significant milestone in the expansion of First Graphene's materials to the high-performing, in-demand iron ore mining and production industry in Western Australia.



Update on masterbatch optimisation case study

First Graphene has continued to collaborate with UK-based compounding partner Hubron to further optimise graphene masterbatch properties for injection-moulded HDPE parts.

The most recent study has identified multiple improvements to the flexural properties, including an increase of up to 43% to the stiffness of the masterbatch, which correlates to an increase in strength.

This ongoing research highlights the importance of graphene particle size and masterbatch properties in order to optimise dispersion, and in turn, further improve the performance of thermal plastics.

First Graphene is committed to continued improvement of application methods for PureGRAPH® products, with results from studies like this strengthening the Company's commercial strategy for the composites sector.

Other activities to note

International distribution agreement signed

First Graphene signed a five-year agreement with leading international distribution agent Keyser and Mackay (K&M) providing the specialty chemicals company exclusive rights to distribute PureGRAPH® into sectors across Europe, except the cement and concrete segment.

The distribution model enables First Graphene to use the technical sales expertise of 30 K&M representatives, based in seven European countries, to access a wide-ranging client base.

First Graphene has since conducted two training sessions with the K&M team about graphene performance in coating applications and thermoplastics, as well as loading recommendations.

The programs provide K&M's staff with in-depth knowledge on the Company's products, equipping them with information and additional technical support as they undertake outreach to their clients.

Research conducted to enhance graphene performance

First Graphene undertook a joint venture with the National Physical Laboratory (NPL) and the Universities of Cardiff and Swansea to further investigate level of functionalisation on our graphene platelets.

This involved developing a map of graphene functionality, as well as chemical species present on the surface of graphene sheets.

The research determined low levels of oxygen functionality is present across the surface of First Graphene's material. This is a unique selling point of our materials, as it enables them to be incorporated into a range of systems.



Creating an entire map of graphene's functionalisation provides the scientific knowledge to enable the Company to further enhance performance and capability of our materials. This can be used to support FGR's commercialisation activity by providing customers with unique insights into materials supplied.

First Graphene also worked to improve and understand the optimum chemical conditions to deliver enhanced performance of our graphene via laboratory work and plant trials, delivering better performance in polymer systems.

This will increase longevity and compatibility of the PureGRAPH® product, and work is planned to test this grade to thermoplastics, coatings, foams and other materials to deliver further performance improvements.

Simultaneously, the Company has completed research into improving the conductivity of grapheneenhanced materials, with a focus on coatings.

Results have been positive, with developed coatings being 23 times more conductive through formulating with hybrid systems, which will also further enhance the performance of First Graphene's products.

FGR supports next generation of scientists and technologists

First Graphene had the pleasure of sponsoring the Graphene Hackathon at the University of Manchester in December, providing graphene inks and graphene enhanced 3D-printing filament powered by PureGRAPH® for competitors.

Students and graphene enthusiasts were given 24 hours to design, prototype, and pitch a graphene-enhanced innovative product, with 60 participants split into 10 teams.

The winners of the Graphene Hackathon used First Graphene's ink to create a sensor which can be used across multiple applications including boxing gloves and Virtual Reality equipment.

First Graphene was proud to sponsor the event, which showcased the advanced benefits and creative opportunities for graphene as a highly applicable material for many industries.

It was also a chance for the Company's team to work with very motivated, intelligent and entrepreneurial individuals, demonstrating our commitment to developing the next generation of technologists.

The Hackathon also provided First Graphene with a valuable opportunity to stress-test its next generation of formulated products (inks and 3D filaments) in a very challenging environment.

The materials performed well and the Company will now aim to bring these products to the market.

- ENDS -



This release has been approved for release by the Chairman.

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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.



ASX COMPLIANCE

Information contained within this announcement has been prepared based on the ASX announcement as noted in the table below:

21 December 2023	Security Purchase Plan Results
14 December 2023	Graphene a high-performing catalyst in hydrogen production
13 December 2023	Multiple trials continue to validate graphene use in cement
29 November 2023	Accelerating decarbonisation applications using graphene
14 November 2023	Security Purchase Plan
12 October 2023	FGR secures agreement with UKs largest cement manufacturer
04 October 2023	Early results from world leading cement production trials
03 October 2023	Exclusive distribution deal with European supplier
03 October 2023	FGR attracts Middle East investment support for Kainos

Appendix 4c Item 6: Amounts included in 6.1 of the attached Appendix 4c relate to payment of executive Director salaries and consulting fees.

Appendix 4C

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

Name of entity

First Graphene Limited		
ABN Quarter ended ("current quarter")		
50 007 870 760 31st December 2023		

Con flov	nsolidated statement of cash ws	Current quarter \$A'000	Year to date (6 months) \$A'000
1.	Cash flows from operating activities		
1.1	Receipts from customers	169	754
1.2	Payments for		
	(a) research and development	(64)	(474)
	(b) product manufacturing and operating costs	(178)	(359)
	(c) advertising and marketing	(55)	(130)
	(d) leased assets	-	-
	(e) staff costs	(460)	(948)
	(f) administration and corporate costs	(249)	(594)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	5	13
1.5	Interest and other costs of finance paid	(6)	(13)
1.6	Income taxes paid	-	-
1.7	Government grants and tax incentives	68	98
1.8	Other (provide details if material)	(19)	(41)
1.9	Net cash from / (used in) operating activities	(773)	(1,656)

2.	Cash flows from investing activities		
2.1	Payments to acquire or for:		
	(a) entities	-	-
	(b) businesses	-	-
	(c) property, plant and equipment	-	-

ASX Listing Rules Appendix 4C (17/07/20)

Con flow	solidated statement of cash s	Current quarter \$A'000	Year to date (6 months) \$A'000
	(d) investments	-	-
	(e) intellectual property	-	-
	(f) other non-current assets	-	-
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)	-	-
2.6	Net cash from / (used in) investing activities	(-)	(-)

3.	Cash flows from financing activities		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	2,912	2,912
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	_	-
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	(16)	(16)
3.8	Dividends paid	-	-
3.9	Other (provide details if material) - reduction in lease liability - Cash received from third parties	- (22) -	- (45) -
3.1 0	Net cash from / (used in) financing activities	2,871	2,851

Consolidated statement of cash	Current	Year to date
flows	quarter	(6 months)
	\$A'000	\$A'000

4.	Net increase / (decrease) in cash and cash equivalents for the period		
4.1	Cash and cash equivalents at beginning of period	2,338	5,563
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(773)	(1,656)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(-)	(-)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	2,871	2,851
4.5	Effect of movement in exchange rates on cash held	0	0
4.6	Cash and cash equivalents at end of period	4,438	6,776

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	4,438	6,776
5.2	Call deposits	-	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	4,438	6,776

6.	Payments to related parties of the entity and their associates	Current quarter \$A'000
6.1	Aggregate amount of payments to related parties and their associates included in item ${f 1}$	147
6.2	Aggregate amount of payments to related parties and their associates included in item 2	-

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.

Amounts included in 6.1 relate to payment of executive Director salaries and consulting fees.

Financing facilities 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.	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
Loan facilities	-	-
Credit standby arrangements	-	-
Other (please specify)	-	-
Total financing facilities	-	_
Unused financing facilities available	at quarter end	
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.		
	-	
	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. Loan facilities Credit standby arrangements Other (please specify) Total financing facilities Unused financing facilities available Include in the box below a description of lender, interest rate, maturity date and any additional financing facilities have be entered into after quarter end, include a	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. Loan facilities - Credit standby arrangements - Other (please specify) - Total financing facilities - Unused financing facilities available at quarter end Include in the box below a description of each facility above, lender, interest rate, maturity date and whether it is secured any additional financing facilities have been entered into or a entered into after quarter end, include a note providing deta

8.	Estimated cash available for future operating activities	\$A′000
8.1	Net cash from / (used in) operating activities (item 1.9)	(773)
8.2	Cash and cash equivalents at quarter end (item 4.6)	4,438
8.3	Unused finance facilities available at quarter end (item 7.5)	-
8.4	Total available funding (item 8.2 + item 8.3)	4,438
8.5	Estimated quarters of funding available (item 8.4 divided by item 8.1)	5.7
	Notes if the optity has reported positive not operating each flows in item 1.0	name of the same

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.

- 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

- 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: 30th January 2024

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

release, by

Aditya Asthana

Chief Financial Officer and Company Secretary

Notes

- 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.