

10 September 2024

FGR provides investor update on commercial growth pipeline

First Graphene Limited (ASX:FGR; “First Graphene” or “the Company”) is pleased to present an update on the growing pipeline of opportunities for the Company as it advances its global commercialisation strategy.

There has been an increase in demand for First Graphene’s world-renowned PureGRAPH® in a variety of different applications, resulting in a strong forward-looking order book.

This pipeline will open doors to new global markets, including sports apparel, bearing lubricants, and fire-retardant construction materials.

The upcoming commercialisation opportunities have been secured through ongoing optimisation of the Company’s research and development (R&D) capabilities and further refinement and improvements to the PureGRAPH® product range.

First Graphene’s Commercial Manager Neil Armstrong will provide further details in two presentations at Vertical Events’ New World Metals Investment Series:

- **2.15pm AEST, Tuesday 10th September – Rydges, Melbourne**
- **9.15am AEST, Thursday 12th September – The Fullerton Hotel, Sydney**

To attend Mr Armstrong’s presentation, visit the New World Metals Investment Series [website](#).

A recording of the presentation will be made available on the Company’s website post event for shareholders unable to attend the conference.

-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, sealants and elastomers (CASE); and energy storage applications.

One of the key outcomes 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 where it has a strong R&D capability.



INVESTOR PRESENTATION

PureGRAPH® - revolutionising material performance and providing low carbon solutions for a greener future

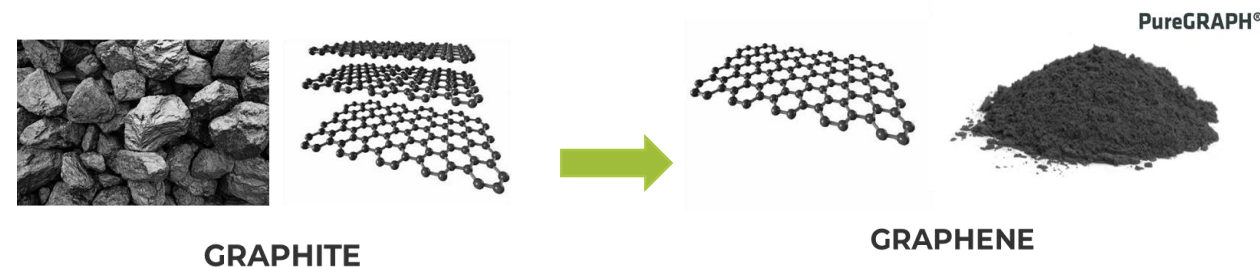
NEW WORLD METALS INVESTMENT SERIES
MELBOURNE & SYDNEY
SEPTEMBER 10 & 12



About First Graphene

FIRSTGRAPHENE

- World leading developer and manufacturer of **high-quality and commercial-scale** graphene products, called **PureGRAPH®**
- **PureGRAPH®** is an **additive that enhances material performance and properties of customers' products**, enabling cost-effective solutions to optimise energy capabilities and reduce emissions
- **Commercial applications** of **PureGRAPH®** include construction and infrastructure, energy and storage, and industrial materials industries
- **Graphene** is an allotrope of carbon which, in its purest form, consists of a single layer of atoms arranged in a 2D honeycomb lattice



Remarkable properties of graphene



Flexible

Stretches up to 20%



Thin

0.345nm or one carbon atom thick



Transparent

Absorbs only 2.3% of visible light



Strong

200 times stronger than steel



Electrically conductive

1 million times more conductive than copper



Thermally conductive

5,000 W/mK in all directions (isotropic)



Impenetrable

Fully impermeable barrier, even to helium gas

- **PureGRAPH®** is a **high performing graphene additive**, used across many consumer and industrial sectors
- Characterised by its **large platelet size, high aspect ratio and low defect levels**
- Batch-to-batch consistency ensured through strict, in-house quality control testing, and **established repeatable manufacturing process**
- **Well defined properties and target application range**
- Product range includes a **growing list of masterbatch (MB) additives, with custom MB available upon request**
 - **PureGRAPH®** powder additives
 - **PureGRAPH®** AQUA dispersed additives
 - **PureGRAPH®** master-batch additives in LDPE, HDPE, EVA etc.



Fully integrated and robust supply chain

FIRSTGRAPHENE

✓	Secure supply	▪ Secure supply of high-quality raw graphite material ▪ Sourced from FGR's graphite mining facilities in Sri Lanka (DSO)¹ ▪ 99% graphite ore used, directly from the ground
✓	Established manufacturing	▪ Operational facility at Henderson, Western Australia ▪ Graphene production capacity of 100tpa ▪ Minimal capex required to scale plant to 1,000tpa
✓	Proprietary Manufacturing process	▪ Single-step electrochemical exfoliation process ▪ High-yield graphite-to-graphene conversion rates of >95%, providing significant operating cost advantage
✓	Fully accredited	▪ Full quality and product accreditations, including REACH UK & EUROPE, ACIS Australia ▪ Pending EPA in the US
✓	Accessible and growing end market	▪ >30 existing customers – with expanding use case ▪ Numerous trials with blue chip global partners underway at various development and commercial stages ▪ >500 of inbound interest for samples and trials ▪ Stable and competitive pricing



Wide variety of applications

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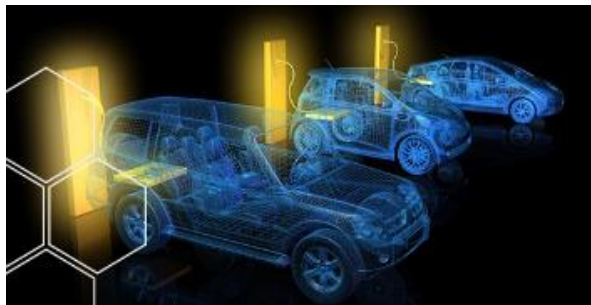
Adding graphene to products enhances properties and performance of industrial materials and technology

- Lightweight, improved strength, optimised energy generation and storage
- Numerous benefits to high-growth and in-demand applications across a range of industries



Cement and concrete

- Cement additives
- Enhanced dry mixing mortar
- Concrete Admixtures



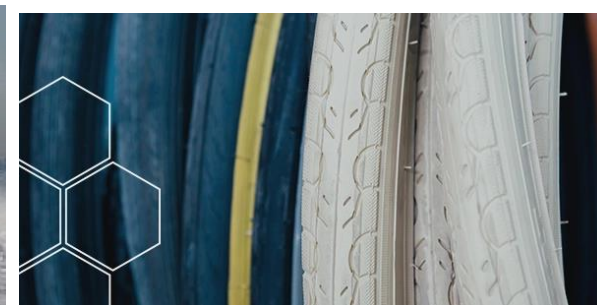
Energy and storage

- Supercapacitors technology
- Hydrogen electrocatalysts
- Hydrodynamic cavitation technology
- Perovskite Solar



Composites and plastics

- Thermally conductive polymer compounds
- Enhanced FRP composites
- Unique heating devices
- Graphene-enhanced masterbatches



CASE and foams

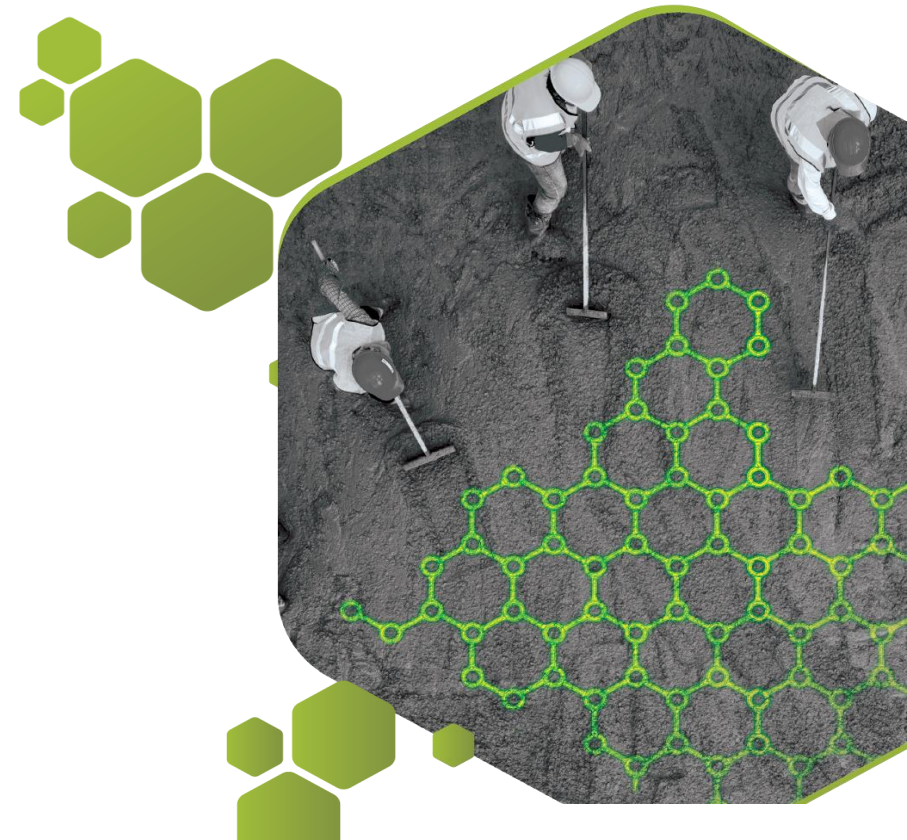
- Electrostatic dissipative coatings
- Sporting apparel and footwear
- Noise and vibration dampening foams

Cement & concrete – priority target market

FIRSTGRAPHENE

Cement production is one of the world's largest industrial carbon polluters – responsible for 8% of global emissions

- **Global consumption of concrete stands at more than 4 billion tonnes per annum¹**, making it the **most consumed material after water** on the planet
- Global manufacturers **committed to cutting CO₂ emissions by 25% by 2030²**
- **Clinker**, the main binding agent in Ordinary Portland Cement, is the primary producer of carbon emissions in cement production
 - For every tonne of clinker produced, 800 to 900kg of CO₂ is emitted
- **PureGRAPH®** is proven to reduce clinker levels, delivering a green cement solution for the industry
- Following successful trials, **FGR secured an agreement with Breedon Group**, the leading cement manufacturer in the UK (Oct 2023)
- **Demand for green cement** continues to grow, with the industry forecast to be **worth US\$56 billion by 2027**



Significant agreement with Breedon

FIRSTGRAPHENE

- Following successful trials, **FGR secured an agreement with Breedon Group**, the leading cement manufacturer in the UK
- World-leading graphene-enhanced cement trials resulted in **15% reduction in carbon emissions** and **10% increase in compressive strength**
- Significant milestone for FGR and validates the quality and industrial scale demand potential for **PureGRAPH®**
- Collective goal of enhancing Breedon's cement properties to improve compressive strength and reduce carbon footprint
- Graphene-enhanced grinding aids and cement admixtures formulated and supplied by FGR along with methods for addition into cement production facilities
- Phase three trials set to commence next quarter



Cement and concrete success

FIRSTGRAPHENE

Actively working with over 30 clients globally



Applications

Features

Benefits

Cement additives	Green cement manufacturing	Reduction of carbon emissions
Enhanced dry mixing mortar	Shotcrete and pumping applications	Durability and strength
Concrete Admixtures	Concrete manufacturing	Strengthen, improve durability and increase corrosion resistance

Energy generation and storage

FIRSTGRAPHENE

- Conductivity and strength of **PureGRAPH®** makes it ideal as an electrode additive in batteries and supercapacitors
- Continued development and evaluation of new material opportunities for graphene-enhanced energy storage devices

Applications

Features

Benefits

Supercapacitors technology

- Metal oxide decorated products

- Improved activated carbon

Hydrogen catalysts

- Fuel cells

- Cheaper production of hydrogen

Hydrodynamic cavitation technology

- Petroleum feedstock conversion to synthetic graphite/graphene

- Cheaper alternatives to platinum

Clients and opportunities

SENERGY

- Government-funded trial on thermally conductive solar water heating and heat exchangers for 2,000 homes in the UK, with aim of expanding to 250,000 homes
- Currently scaling up compounding production of conductive polymer and running commercial trials

 **GREATCELL AUSTRALIA**

- Manufacturing perovskite solar cells at Wagga Wagga facility in New South Wales
- Graphene additive significantly reducing materials costs in manufacturing process
- AUD\$2m CRC-P grant awarded for collaboration to commercialise perovskite technology through the development of industrial scale production processes

 **EMDAD**

- MOU signed to fund, design, build, and commission a small-scale hydrodynamic cavitation reactor using FGR's Kainos Technology
- Process will convert petroleum feedstock to battery-grade graphite, graphene and hydrogen

Composites and plastics

FIRSTGRAPHENE

- **PureGRAPH®**-enhanced composites provide a significant improvement in material performance
- Fibre-Reinforced Polymer (FRP) composites use glass, carbon, aramid or natural fibres, in combination with polymer resins
- **PureGRAPH®** mixed with polymer resin prior to combination with the textile reinforcement

Applications

	Features	Benefits
Thermally conductive polymer compounds	▪ Polymer solar thermal cells	▪ Increased conductivity ▪ Greater efficiency
Enhanced FRP composites	▪ Advanced fibreglass swimming pools	▪ Durability and strength ▪ Reduced water permeability
Unique heating devices	▪ Retrofitted to gas-fired heating units	▪ Greater efficiency ▪ Reductions in nitrous oxide and CO₂
Graphene-enhanced masterbatches	▪ Advanced polymer materials	▪ Improving electrical and thermal conductivity ▪ Increased strength of polymers

Clients and opportunities



- Australia's largest swimming pool manufacturer supplying **PureGRAPH®**-enhanced fibreglass pool basins to international customers



- Anti-static polymers for underground mining applications, as an alternative to carbon nanotubes and carbon fibres



- Utilising **PureGRAPH®** in structural beams to increase fire retardancy, strength, durability, thermal and acoustic performance, with prototype launched in September as R&D phase transitions to validate mass production

Confidential Client

- Graphene enhanced recycled nylon wear parts. Recycled parts now performing better than virgin polymer on low friction application.



- FGR's UK compounding partner manufacturing optimised masterbatches tailored for food safe material packaging

- **PureGRAPH®** used to produce fire retardant foams & coatings, mechanically-enhanced rubbers and elastomers
- Wear linings for specialist footwear with **PureGRAPH®** have increased tensile strength, elongation, abrasion resistance, electrical and thermal conductivity
- **PureGRAPH®** benefits for coatings and ink include anticorrosion, protection from degradation, exceptional electrical conductivity, improved durability and fire retardancy
- Customers can achieve market growth through product superiority and cost savings for end users

Applications

Features

Benefits

Electrostatic dissipative coatings

- Electrostatic dissipative flooring

- Reducing static discharge by increasing conductivity

Sporting apparel and footwear

- Membranes and footwear products

- Increasing compression and reducing abrasion to elongate lifespan

Noise and vibration dampening foams

- Lightweight materials transportation

- Reducing weight while increasing performance

Clients and opportunities



- Protective mining wear liners and elastomer coatings with enhanced abrasion and corrosion resistance, with FGR securing a minimum phased commitment of 4,800 kgs of **PureGRAPH®** (Sept-21)

Confidential Client

- Developing ESD coatings using **PureGRAPH®** which have achieved conductivity targets, working on scale up feasibility

Confidential Client

- Developed **PureGRAPH®**-enhanced coating for increased tribology and wear resistance, with demonstrated performance increased using **PureGRAPH® 5** and scale up trials currently running



- Secured exclusive distribution deal with €160 million turnover organisation, providing deeper market penetration with access to sales expertise of 30 K&M representatives, based in 7 European countries

FGR's distribution network

FIRSTGRAPHENE

Extensive distribution strengthening global exposure and uptake of PureGRAPH®



- **North America** based out of Lakewood, Ohio, US



- **Europe** based out of Amsterdam, Netherlands



- **South Africa** based out of Capetown



- **New Zealand and Australia** based out of Sydney

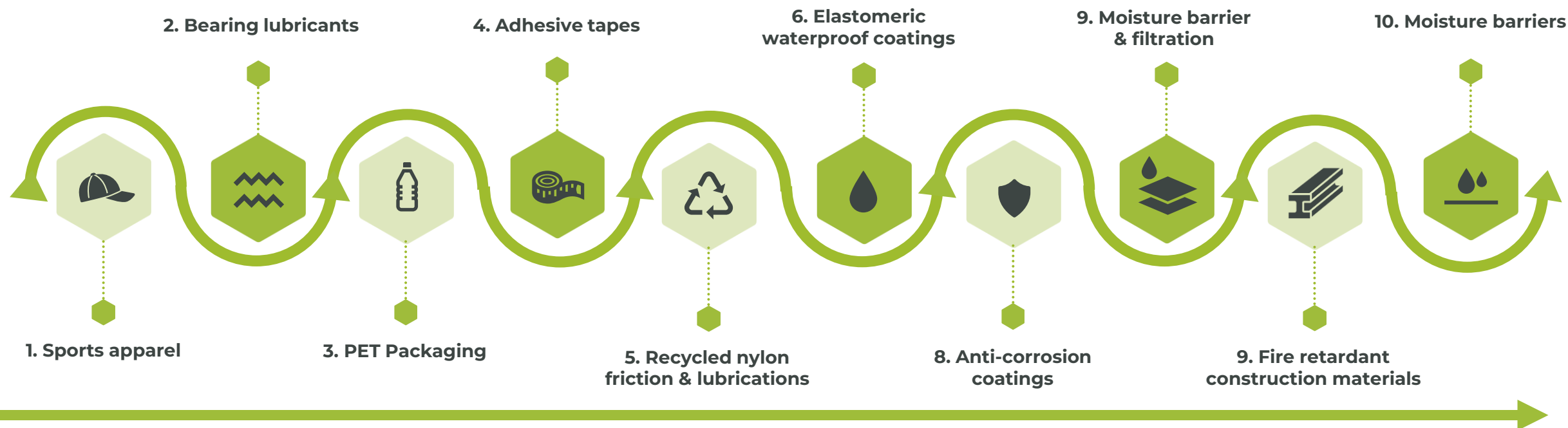


- **New Zealand** based out of Auckland NZ



Global market growth pipeline

FIRSTGRAPHENE



REGION	Brazil	Europe	India	Germany	UK	Australia	UK	Indonesia	UK	Europe
VOLUME	Up to 500kg p.a.	Up to 500kg p.a.	>1,000kg p.a.	Up to 1,000kg p.a.	Up to 1,000kg p.a.	100kg p.a.	Up to 500kg p.a.	>6,000kg p.a.	>500kg p.a.	Up to 500kg p.a.
TIME FRAME	Product launch Q2 FY25	Product launch Q2 FY25	Product launch Q3 FY25	Product launch Q3 FY25	Product launch Q3 FY25	Product launch Q3 FY25	Product launch Q3/Q4 FY25	Product launch Q4 FY25	Product launch Q4 FY25	Product launch Q4 FY25

Financial performance

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Commercial momentum

- Continue to increase sales and consistent revenue growth
- Cement and concrete segment nearing to mature sales profile
- Early adopter's footprint increasing through organic growth
- Diversifying sales through provision of Development services



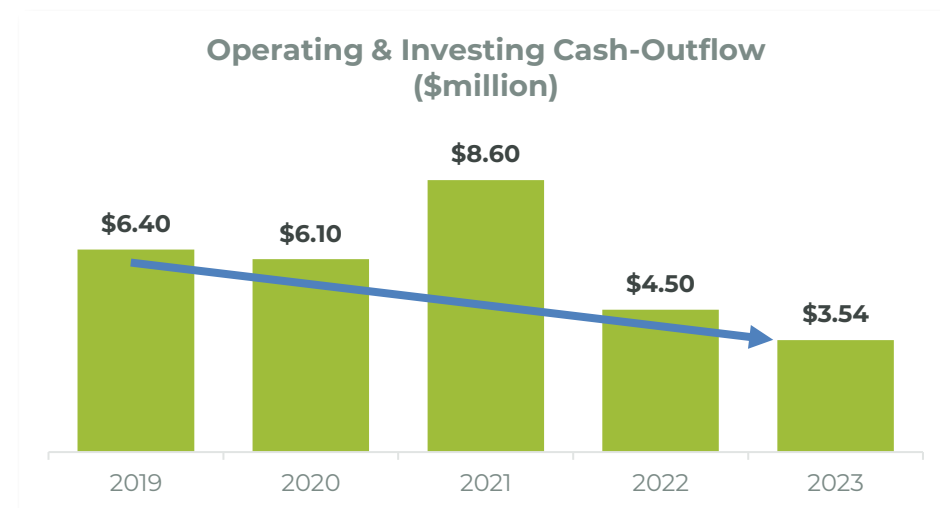
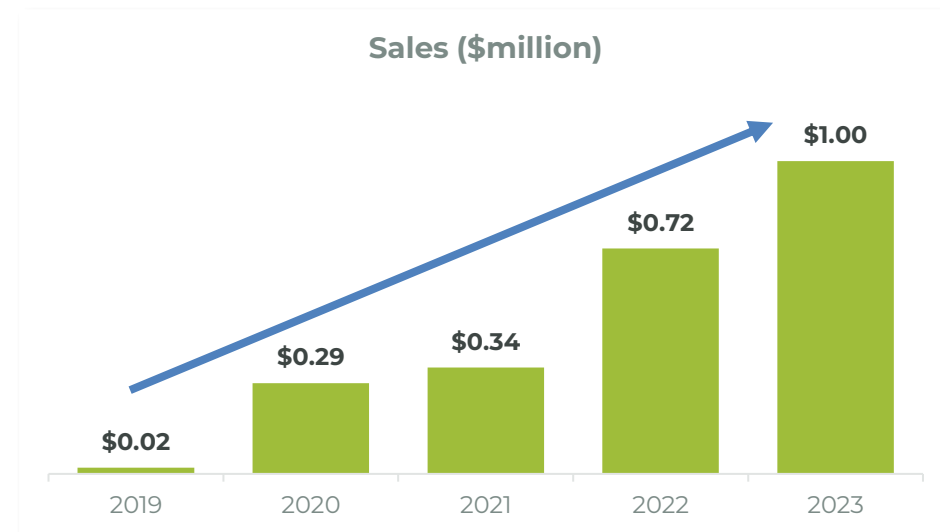
Decreasing cash burden each year

- Reducing non-critical spend
- Utilising non-cash incentive plans



Forward outlook FY24

- Forward-looking order book of circa A\$500,000
- Setting the stage for continued revenue growth and results



Strategic growth focus and pathway

FIRSTGRAPHENE



ACCELERATE COMMERCIAL OPPORTUNITIES

Advance and expand green-materials technology commercial opportunities for **high-growth** and **in-demand** industries



CEMENT MARKET POSITION

Accelerate additional large scale infrastructure projects and maximise **Development and Commercialisation** agreement with UK's largest cement producer, Breedon



ONGOING R&D OPTIMISATION

Further advancing targeted R&D opportunities with global research partners to realise benefits of graphene for commercialisation



EXPAND GLOBAL DISTRIBUTION NETWORKS

Amplify existing networks and secure additional partnerships for distribution and investment



MAXIMISE EXISTING AGREEMENTS

Leverage product research and development services to engage with current and future partners



OPTIMISE SCALABLE PRODUCTION CAPABILITY

Further optimisation to refine production processes, improve efficiencies, reduce carbon footprint and decrease output costs

Investment highlights

FIRSTGRAPHENE



World-leading advanced materials supplier focused on fast-growing graphitic technologies



Established global industry partnerships in place to leverage paths to major markets



World-class production capacity with readily scalable technology



Established **international customer base**, primed for substantial growth



New revenue streams through product research and development services



Targeting **traditional and emerging markets**, critical to decarbonising the global economy

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