

8 November 2024

## **Commercial outlook for FY2025 strengthens FGR's global position**

First Graphene Limited (ASX:FGR; "First Graphene" or "the Company") is pleased to provide an update on the Company's pipeline of opportunities for FY2025.

Global demand for the Company's world-renowned PureGRAPH® includes commercial opportunities in high-growth and in-demand industries, supported by a growing distributor list.

First Graphene has also finalised preparations for full-scale production trials with UK's largest cement producer Breedon of the Company's PureGRAPH-CEM® product, scheduled to commence in January 2025.

This project, the pipeline of commercial opportunities in FY2025, and ongoing research and development work will further solidify First Graphene's position as a leading global supplier of graphene.

First Graphene's Chief Executive Officer and Managing Director, Michael Bell will provide further details during the Company's Annual General Meeting (AGM) today:

- **1pm AEDT, Friday 8 November 2024 – The Grace Hotel Sydney**

Mr Bell's AGM presentation is available to view below for those unable to attend in person.

For further details about the 2024 AGM refer to the Notice of Annual General Meeting [ASX announcement released 10 October 2024](#).

**-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.*



# AGM Presentation

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

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NOVEMBER 2024



- **Financials** - FY2024 performance commentary and key highlights
- **PureGRAPH® Manufacturing** – key changes to the manufacturing process and what impact will these have
- **Expanding distributor network** – adding established materials additive distributors globally
- **Commercial applications** – growing pipeline for **PureGRAPH®** in polymers, coatings, construction chemicals and textiles
- **Cement/Concrete** – segment update and progress across technologies
- **Research & Development** – significant developments and grant funding
- **Future outlook** – core focus points for First Graphene in the FY25
- **Questions**

# Financial performance

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## Commercial momentum

- Continued to increase sales order volumes and diversify production applications
- Strong outlook pipeline with multiple customer product launches in FY25/26
- Leveraging established distributors to optimise customer quality and speed to market

## Decreasing cash burn

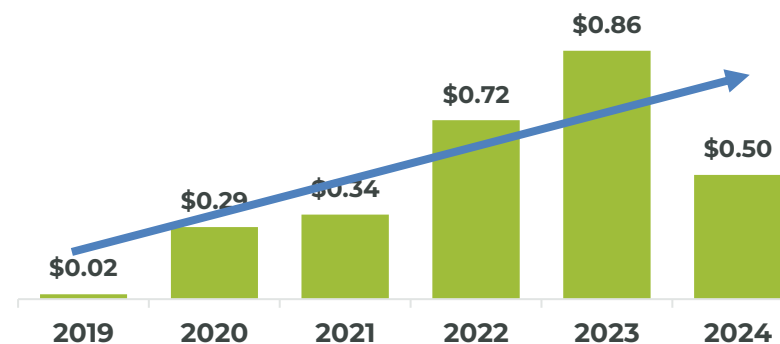
- Ongoing reduction in cash burn materially assisting in improving cashflow
- Recategorised to report **PureGRAPH®** revenue, R&D revenue and grant funded program income separately
- Continued optimisation in FY25, including financial impact of exiting the GEIC, and strong growth in all revenue streams

## Forward outlook FY25

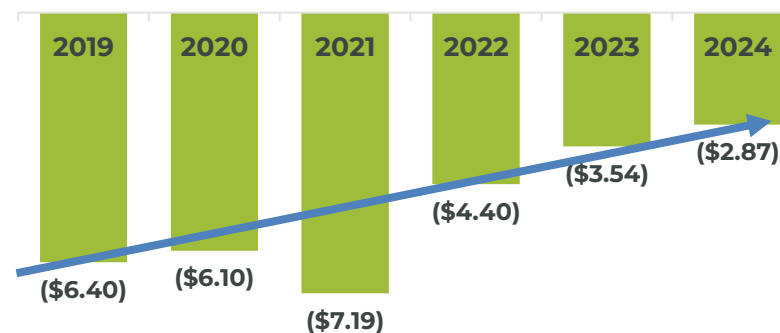
- Forward looking income of circa A\$2.5M from ongoing customer relationships which are now starting to generate recurring revenue, R&D Tax refunds and grant funded programs
- Execution of existing pipeline of opportunities and larger scale developments
- Grant funded programs all supplementing existing customer development activities



### Topline Sales (\$million)



### Operating & Investing Cash-Outflow (\$million)





# PureGRAPH<sup>®</sup> Manufacturing

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✓	<b>Secure supply</b>	<ul style="list-style-type: none"> <li>Secure supply of high-quality raw graphite material</li> <li>Sourced from FGR's graphite mining facilities in Sri Lanka (DSO)<sup>1</sup></li> <li>Alternative feedstock identified from commodity flake graphite</li> </ul>
✓	<b>Established manufacturing</b>	<ul style="list-style-type: none"> <li>Operational facility with 100 tpa capacity in Henderson, WA</li> <li>Minimal capex required to scale plant to 1,000tpa</li> <li>Mature process, continued focus of efficiency and cost reduction</li> </ul>
✓	<b>Proprietary Manufacturing process</b>	<ul style="list-style-type: none"> <li>Single-step electrochemical exfoliation process</li> <li>High-yield graphite-to-graphene conversion rates of &gt;95%, providing significant operating cost advantage</li> <li>Patented/trade-secreted process</li> </ul>
✓	<b>Fully accredited</b>	<ul style="list-style-type: none"> <li>Full quality and product accreditations, including REACH UK &amp; EUROPE, ACIS Australia</li> <li>Pending EPA in the US</li> </ul>
✓	<b>Accessible and growing end market</b>	<ul style="list-style-type: none"> <li>&gt;30 existing customers – with expanding use case</li> <li>Numerous trials with blue chip global partners underway at various development and commercial stages</li> <li>&gt;500 of inbound interest for samples and trials</li> </ul>





# PureGRAPH<sup>®</sup> Manufacturing

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## Electrochemical Cell Optimisation Phase Two Trials

- Increase in production rate by 32% from Phase One Trial, overall increase of ~100% from starting baseline
- Reduced specific power consumption by ~25% from Phase One, overall decrease of ~60% from starting baseline
- Implementation of Electrochemical Cell basket upgrades underway to implement savings

## Retsch Mill Commissioning

- Reduced d90 of Particle Size Distribution (tighter control of size limits)
- Increased overall bulk density and surface area of particles
- Overall d50 Particle Size Distribution created at a far more efficient manner than previous

## Acid Neutralisation of PureGRAPH<sup>®</sup>

- Implemented process to neutralise residual acid content within finished PureGRAPH<sup>®</sup> powder and aqua
- Creates more few-layered, de-agglomerated graphene with high surface area and consistent morphology
- Surface area of PureGRAPH<sup>®</sup> has doubled from original materials, creating a noticeable improvement in performance

**Overall impact - reduced manufacturing cost, higher gross margin, increased capacity, and higher success rate in customer trials**



Left – New process

Right – Old process  
(6gm of PureGRAPH<sup>®</sup> 50)



Commercial Manager Neil Armstrong with the Retsch grinding mill.



# Expanding distribution network

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Extensive distribution strengthening global exposure and uptake of **PureGRAPH®**



■ North America



■ Europe



■ South Africa



■ New Zealand and Australia



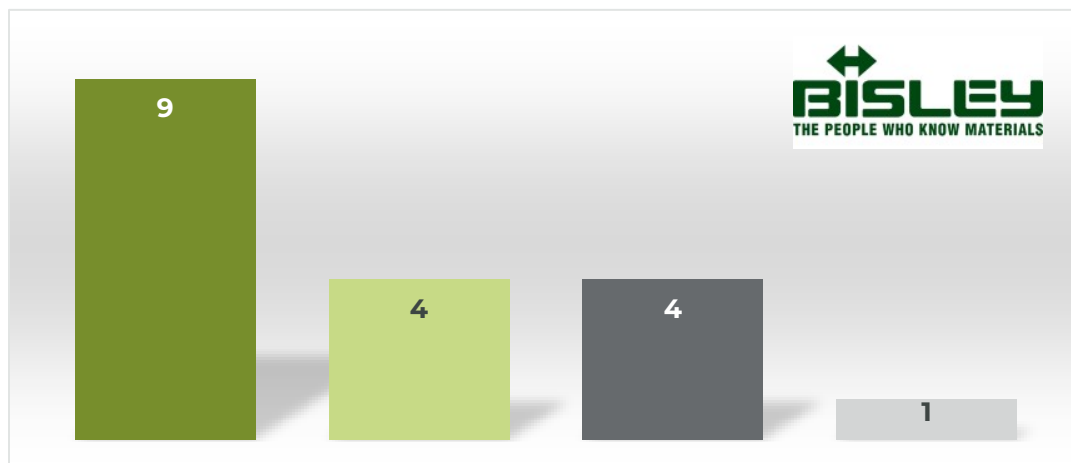
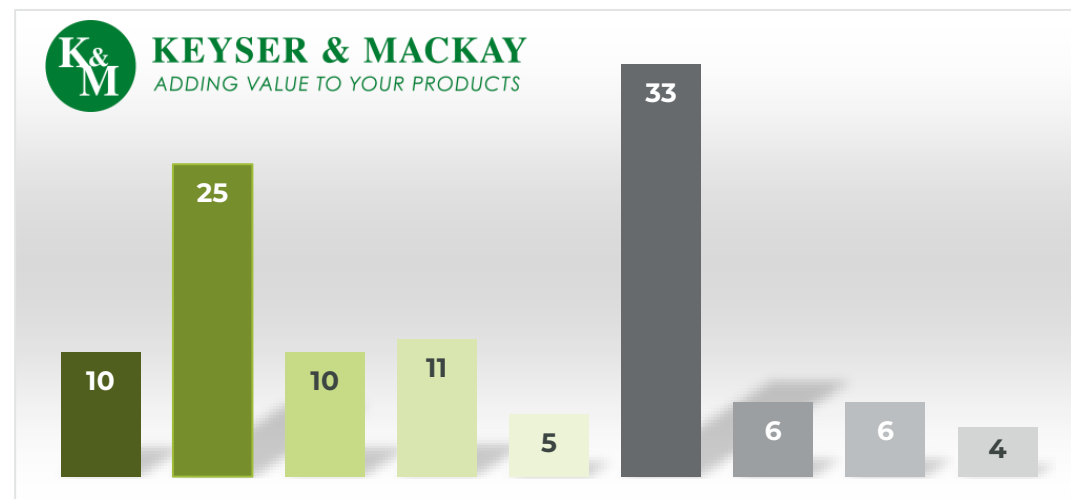
■ New Zealand  
(Cement/Concrete only)



Continued distributorships under consideration in **South Korea, UK, South America, Middle East, SEA, China and Canada**

# Distributor application pipeline

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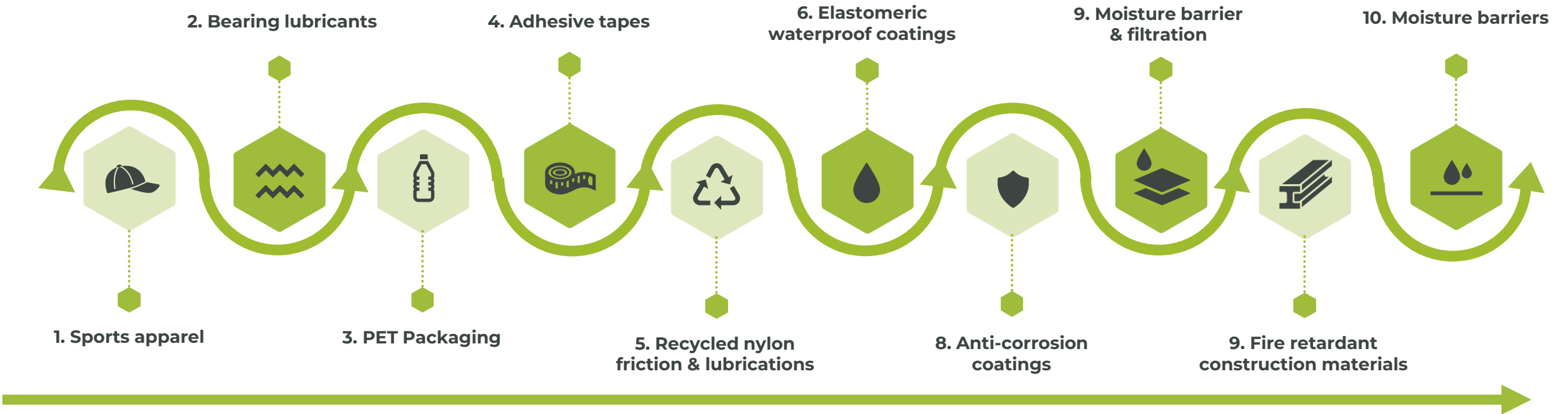
## Legend

- Adhesives
- Composites, Plastics, and Thermosets
- Construction Chemicals / Materials
- Decorative Coatings
- Flooring
- Industrial Coatings
- Inks
- Paper and Foil Coatings
- Other

## Direct pipeline of ~500 opportunities including ~100 in the Cement/Concrete segment

- Well-developed applications across established customer bases in Europe, Australia and New Zealand
- More than 10 opportunities in advanced stage trials or approvals
- Opportunities in United States are all early stage, typically driven by EPA approval process
- Cement/Concrete segments in South Africa and New Zealand are developing

# Global market growth pipeline



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/Q4 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



# Cement/Concrete

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## Cement additive development

- Completed the development of **PureGRAPH-CEM®**, an aqueous dispersed cement additive
- Independently verified results show up to 16% improvement in early-stage compressive strength
- Completed development of a suitably industrialised pump (see Figure 1.) to dispense **PureGRAPH-CEM®**



## Breedon Phase Three Trial (January 2025)

- Full scale production trial involving 3.2 tonnes of **PureGRAPH-CEM®** manufacturing minimum 500 tonnes of cement
- Cement will be used by Morgan Sindall Infrastructure for a UK concrete road project, as well as several precast and paving applications



## Other developments

- Completed development of stabilised liquid admixtures for concrete - current shelf life of several months, with work ongoing to extend this
- Currently working with over 30 cement and concrete companies globally to trial both **PureGRAPH®** and **PureGRAPH-CEM®** in a variety of applications

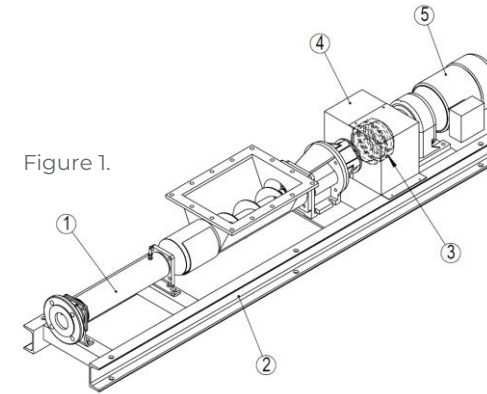
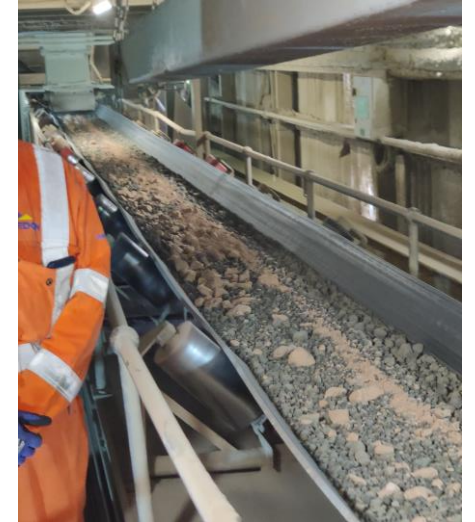


Figure 1.



Slab coring and inspection of wear during Phase Two trials.



Revised conveyor dosing point, ahead of last cement manufacture milling stage



Rotary ball mills for the last stage of milling at Breedon's Hope Works plant.

# Research & Development – Grant Programs

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## HyPStore

- **AUD\$397,000** over 21 months to create a graphene-enhanced polymer binder for Type-V Hydrogen Tanks.
- Supports development of all **PureGRAPH®** polymer opportunities.

## CRCP R2R

- **AUD\$188,000** over 18 months to develop graphene-based electrodes for low-cost photovoltaic cells produced using a roll-to-roll process.
- Supports all coating and electrode opportunities.



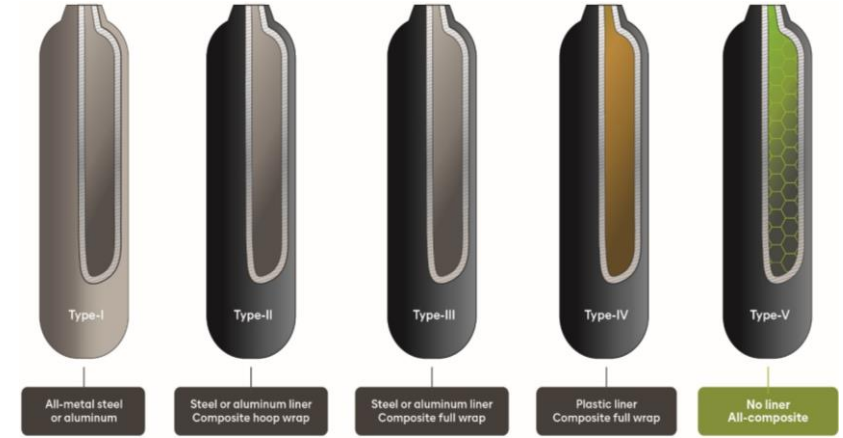
## CEAMS

- Match-funded **AUD\$144,000** to demonstrate use of metal-oxide doped graphene in the generation of green hydrogen.
- Supports all projects using metal-oxide doped graphene, such as supercapacitors, perovskite solar cells and electrocatalysts.

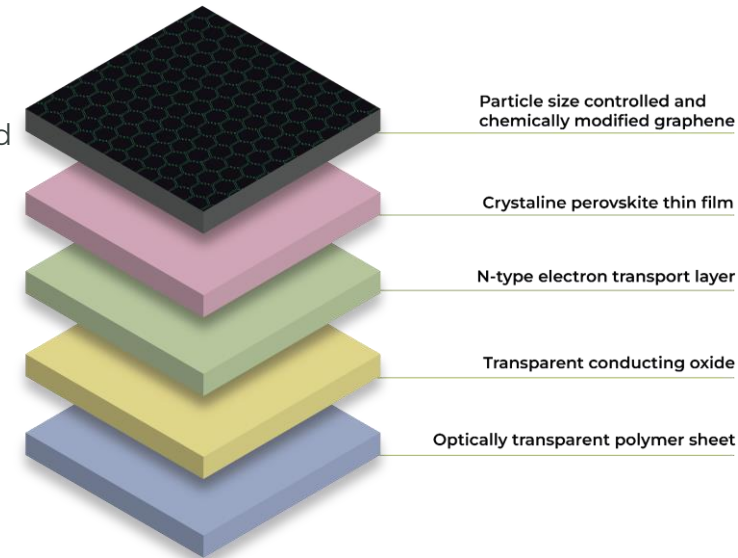


## Kainos Technology

- **AUD\$58,000** over 6 months to design scale-up model of FGR's Kainos Technology, producing graphene, graphite and hydrogen.
- Supports ongoing Kainos Technology development work.



Structure of cryogenic hydrogen tanks produced in HyPStore project.



(L) - Structure of graphene-enhanced perovskite solar cells.



(R) – Perovskite solar cell from Halocell Energy.

# Research & Development – Other

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## New Product Development

- Ongoing product roadmap development and commercial launch
- Revenue generating customer development programs
- Patent management



## Core Research & Development

- Ongoing cost reduction, capacity increase and overall manufacturing efficiencies
- Development and optimisation of electro-chemical exfoliation process
- Drive innovation through functionalised or tailored graphene



## Commercial & Distributor Engagement

- Support clients with material selection, dispersion methods and results analysis
- Training and on-boarding of expanding distributor networks
- Delivering Tier Two technical support for distributors, with direct end client interface



## Transition from GEIC

- Transition into laboratory and office facility in Manchester from 1<sup>st</sup> December 2024
- Forecasted cost reduction of circa AU\$300,000 per annum
- Currently occupying a temporary transitional facility



FGR's UK-based R&D team visiting the Henderson facility in September.



# What does FY2025 hold?

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## 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

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