ARROWHEAD
BUSINESS AND INVESTMENT DECISIONS

Due Diligence and Valuation Report

Arrowhead Code:	41-02-01
Coverage initiated:	February 26, 2021
This document:	February 26, 2021
Fair share value bracket: (Blended Valuation)	AUD 0.25 and AUD 0.52
Share price (February 25, 2021):	AUD 0.26[i]

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Company:	First Graphene Limited
Ticker:	FGR
Headquarters:	Henderson, Australia
CEO	Michael Bell
CFO	Peter Youd
Website:	www.firstgraphene.net

Market Data

52-Week Range:	AUD 0.06 – AUD 0.33[ii]
Average Daily Volume (3M Avg.):	1,903,715[iii]
Market Cap (February 25, 2021):	AUD 136.5 million (mn)[iv]

Financial Forecast (in AUD) (FY Ending – June)

AUD	'22E	'23E	'24E	'25E	'26E
High NI (mn)	1.2	10.9	20.4	21.8	26.9
High EPS (cents	0.2	2.0	3.7	4.0	4.9
Low NI (mn)	(2.3)	2.9	9.1	13.6	13.1
Low EPS (cents)	(0.4)	0.5	1.7	2.5	2.4

Company Overview: First Graphene Ltd. (FGR), a publicly listed company in Australia, is the world's largest manufacturer and a leading supplier of high-quality graphene products. The company is also incorporated in the United Kingdom (UK) as First Graphene (UK) Ltd.

The company's product is registered under the trademark PureGRAPH®, with an exclusive IP registered in the United States (US), UK, European Union (EU), Australia, China and New Zealand. FGR has obtained the necessary work approvals under the Department of Environmental Regulation (DER) of Western Australia (WA), the Australian Industrial Chemicals Introduction Scheme (AICIS) and the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) regulation in the EU.

FGR seeks to become the lowest-cost producer of the highest-quality bulk graphene by using a combination of high-quality vein graphite and a proprietary electrochemical exfoliation process. The company has its manufacturing base in Australia with a production capacity of 100 tonnes per annum (tpa).

PureGRAPH® graphene powder is available in sizes of 5 microns (µm), 10µm and 20µm for consistent and repeatable performance and can be manufactured in tonnage volumes.

Key Highlights: (1) FGR is a vertically integrated company operating in three stages: mining and sourcing of raw material, production of graphene, and generating applications & IP; **(2)** FGR states that it has a secure supply of high-quality vein graphite at over 95-99% purity and has stockpiled 500 tonnes of graphite, which should provide sufficient inventory for the next few years; **(3)** An efficient production process results in a high conversion rate of greater than 95%, which aids FGR's positioning in the lowest-cost quartile and supports competitive pricing; **(4)** Application areas include elastomers, composites, fire retardant coatings, concrete and energy storage materials; **(5)** FGR currently has contracts for c. 5.5 tpa with planarTech, Steel Blue and Aquatic Leisure Technologies as customers; it expects to reach full utilization in two years, while manufacturing breakeven is estimated at 6 tpa based on production of 10 tpa; **(6)** Current capacity of 100 tpa can be easily scaled up with low capital investment due to the modular nature of its manufacturing technology. Capacity should be added once utilization reaches 60% to avoid pressure on existing facilities; **(7)** FGR is an active member of the ISO standards committee for graphene registration; Environmental Protection Agency (EPA) registration is in progress; **(8)** FGR's primary focus is on commercialization of the PureGRAPH® range of products and R&D into alternative energy applications; **(9)** FGR is a Tier 1 partner at the Graphene Engineering and Innovation Centre (GEIC) in Manchester, UK.

Key Risks: (1) The industry is at a nascent stage and any delay in market development could hamper FGR from capturing its share; **(2)** Commercial launch after successful qualification trials would be subject to long-term offtake agreements.

Valuation and Assumptions[v]: Based on its due diligence and valuation estimates, Arrowhead believes that FGR's fair share value lies in the AUD 0.25 to AUD 0.52 bracket, calculated using a blended valuation method; with 80% weighting to the DCF method and 20% weighting to EV/Revenue multiple-based valuation. Our DCF model suggests a fair value bracket of AUD 0.29 to AUD 0.62, while a relative valuation provides a fair value of AUD 0.10.

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1. Investment Thesis

Arrowhead is initiating coverage of First Graphene Ltd. (FGR) with a fair value of AUD 0.25 per share in the low-bracket and AUD 0.52 per share in the high-bracket scenario, using discounted cashflow (DCF) and relative valuation methodologies.

First Graphene has a lucrative opportunity for market penetration in a developing and growing industry through its unique proposition of supplying PureGRAPH® graphene at commercial quality and scale…

Graphene is used as an additive due to its unique properties and enhances performance across broad applications, giving it huge potential in the future

FGR's PureGRAPH® graphene, when added in small quantities across products in the fields of elastomers, fibre-reinforced composites, concrete composites, supercapacitors and enhanced fabrics, is proven to improve the performance and efficiency of these products. While much of the hype surrounding graphene's potential is in high-tech applications such as electronics, aeronautics and space exploration, FGR focuses on day-to-day industrial applications and works with product manufacturers to identify prospects for performance improvements. Additionally, it is exploring fullerenes with an aim to enhance the efficiency of both lithium-ion batteries and supercapacitors.

FGR utilizes high-grade raw materials and has inventory stockpiled for the next few years; additionally, it has secured the supply of up to 500 tpa for the next years through in-house mining and imports

The company's manufacturing method at its Henderson facility, WA, utilizes high-quality vein graphite as raw material. To overcome any supply constraints on this high-quality graphite, which is currently found solely in Sri Lanka, FGR is working to develop technologies that use graphite concentrates as an optional feedstock. This could result in profit margin compression but would enable a production capacity of more than 1,000 tpa.

Graphite deposits in WA have a purity of only 6-7% in comparison to raw material sourced from FGR's own mines in Sri Lanka, which is more than 95-99% pure. FGR can also easily source raw material from third parties in times of need. FGR has 500 tonnes of graphite stockpiled and since its mines in Sri Lanka are currently under care and maintenance, the company is importing 100 tpa from the government mine in Sri Lanka. In-house mining activity can be restarted at short notice if required, with supply capacity of up to 200 tpa per mine. Combining in-house supply and imports, FGR can have a secured graphite supply of up to 500 tpa, with the potential for more if more mineshafts are developed.

Efficient proprietary manufacturing process resulting in a graphite to graphene conversion rate of greater than 95% puts the company in the lowest quartile of cost and provides a competitive pricing advantage

The raw material used by FGR is high-quality vein graphite, which is shipped from Sri Lanka to the company's manufacturing facility at Henderson, WA. The superior quality of this raw material contributes to the productivity of the conversion process. It is converted into graphene products using FGR's proprietary process of electrochemical exfoliation at a high-yield conversion rate of greater than 95%. FGR states that this combination of factors - ultra-high-grade graphite directly from the mine and efficient production methods - results in the lowest production costs in the industry.

The production cost for the company's base product of 20 µm diameter is AUD 50,000 per tonne. This is likely to increase to AUD 100,000–150,000 per tonne if the platelet size is reduced to 10 µm or 5 µm. However, the company is continually striving to lower this cost. Most production should involve the 20 µm size.

High-capacity manufacturing plant with low capital requirement for scale-up

The company's 100 tpa manufacturing facility in Henderson, built on a budget of AUD 1 mn, can produce consistent quality graphene at an industrial scale with bulk packaging available to deal with orders in tonnes. The current utilization rate of the facility is 5-10 tpa. However, capacity can be rapidly upscaled as required, and FGR expects to operate at maximum capacity within two years, followed by a backlog of demand in the coming years. Capacity should expand once utilization reaches 60 tpa to avoid stress on the existing facility. The company can add another production line of 100 tpa at the Henderson facility at a cost of AUD 2 mn with a payback period of 6-9 months.

Additionally, manufacturing plants can be replicated in other regions in a short time due to the modular nature of production technology. A new standalone facility in another location, such as the UK, could be set up to meet increased future demand with a capacity of 200 tpa, expandable to 500 tpa, at a cost of AUD 5 mn and a payback period of 12 months.

Research partnerships

FGR has collaborative arrangements with universities and works to develop new applications to open downstream markets and achieve graphene's commercial potential. The company is a Tier 1 participant in GEIC and actively works on projects related to developing applications in industrial composites and rubbers, fire retardancy, construction materials and energy storage. Additionally, FGR has joined the EU Graphene Flagship, a program aiming to transition from R&D to commercialization, as a graphene manufacturer with industrial-scale supply capability.

…however, certain risks could impede growth

Delay in market development could hamper FGR from capturing its share

The graphene market is projected to grow by 38.7% per annum, but the industry is still in an embryonic stage. FGR is a vertically integrated company that not only mines graphite to generate graphene, but also works to identify its application while protecting the relevant intellectual property (IP) and trademarks. The company has invested in R&D for related processes and equipment and is collaborating with potential customers by supplying trial parcels of graphene for the testing and development of application methods across a broad range of products. However, since the industry is at a nascent stage, achieving market penetration is subject to its development.

Successful qualification trials may not necessarily guarantee commercial launch

First Graphene has spent almost four years developing its technology and supply lines but has yet to establish commercial-scale sales. The company needs to accelerate the process of successful testing and prove the significant enhancements offered by graphene to hasten the building of its sales book. Initial sales agreements are expected to lead to evergreen sales contracts as the use of graphene becomes more widespread across applications and industries.

Unforeseen circumstances could hinder capital planning

FGR has c. AUD 4 mn of capital and plans to raise equity capital in March 2021. The company has AUD 20 mn worth of options, at AUD 0.25 each, that can be exercised by August 2021. It would be ideal to have 50% or more of these exercised, obviating the need for debt funding of expansion.

FGR has its trademark registered and protected in Australia, China, New Zealand, the EU, UK and US, and it is pending in three more jurisdictions. It has obtained other necessary work approvals such as DER of WA, AICIS, and REACH in the EU, but the risk of failure in compliance persists. The company is actively working toward IP protection of its technology and related products but runs the risk of being overtaken by new breakthroughs in technological knowhow.

Investment thesis conclusion

FGR has a lucrative opportunity to capture market share in a developing and growing industry where it has secured high-quality input supply, established efficient processing methods and already crossed the hurdle of capital expenditure requirements. The company is ready to embark on a growth journey, but since the market is still at a nascent stage, FGR is working on identifying beneficial applications for its customers in using graphene as an additive, while exploring performance improvements in fields such as energy storage materials. As a next step, the company aims to build its sales book, which is paramount for any company's commercial success.

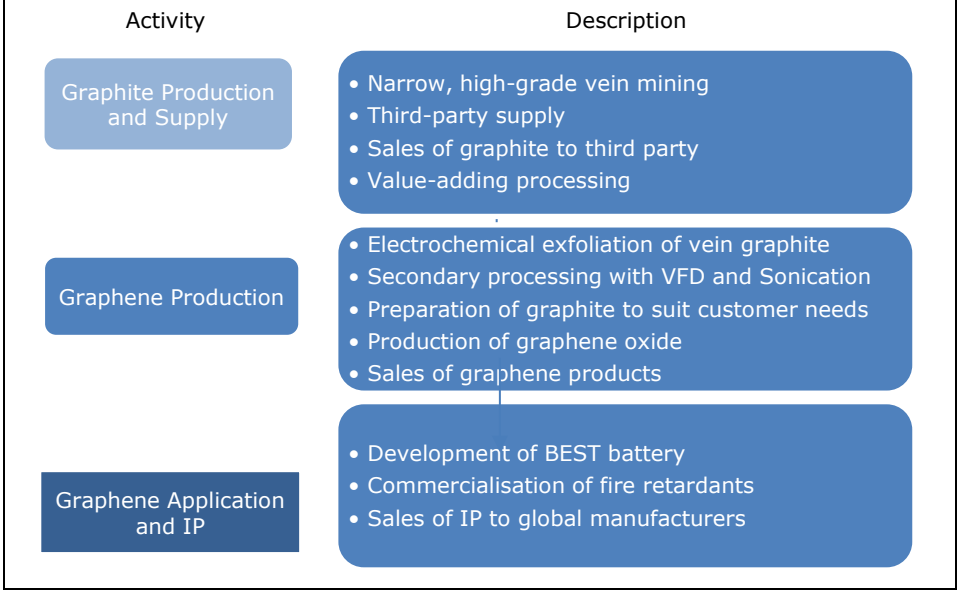
2. Business Overview[vi]

FGR, a publicly listed company in Australia (ASX:FGR), is the world's largest manufacturer and a leading supplier of high-quality, bulk graphene products. The company has an incorporated subsidiary in the UK, First Graphene (UK) Ltd, and is a Tier 1 partner at GEIC located in Manchester, UK. The company's product is registered under the trademark PureGRAPH®, with an exclusive IP registered in the US, UK, EU, Australia, China, and New Zealand.

FGR commenced its business in 2014 as a prospective developer and producer of vein graphite in Sri Lanka. However, it realigned its objectives as it recognized the exponential growth potential of graphene and positioned itself to undertake downstream processing of graphite to produce nanomaterial graphene.

FGR seeks to become the lowest-cost producer of the highest-quality bulk graphene by using a combination of the highest-grade crystalline vein graphite and a single-step, high-yield electrochemical exfoliation process. The company has its primary manufacturing base in Henderson, near Perth, WA, with a production capacity of 100 tpa. The company states that it has a secure a supply of high-quality graphite raw material via a combination of its own mines and third parties, where 95-99% of graphite ore is used directly from the ground.

Exhibit 1: FGR's value chain[vii]



FGR is vertically integrated, processing its mined and sourced raw materials by a proprietary manufacturing method. It works to identify application areas and create a market for its output, while protecting its IP and trademarks. Its core competency lies in downstream processing and product development skills. FGR is training its personnel and recruiting external experts and is focused on the development of IP. Markets need to be established for specialist downstream materials. Hence, commercial applications are under development in various areas such as industrial composites, fire retardancy, construction and energy storage.

The company reported revenue of AUD 289.8 thousand (K) in FY 2020 in comparison to AUD 22.8K in FY 2019. Gross profit in FY 2020 stood at AUD 26.9K vs a loss of AUD 7.3K in the corresponding period of 2019. Other income comprised mainly grants and was reported at AUD 1.4 million (mn) in FY 2020 (AUD 1.7 mn in FY 2019), offset by R&D expenses of AUD 3.2 mn and general and administrative (G&A) costs of AUD 3.0 mn in both years. This resulted in an operating loss of AUD 5.4 mn in FY 2020 (AUD 7 mn in FY 2019), leading to a net loss of the same amount.

2.1 The Product[viii]

FGR offers a range of high-quality graphene nanoplatelet products under the brand name PureGRAPH®. The company states that PureGRAPH® is the highest-performing graphene additive available at tonnage quantities and is characterized by large platelet size, high aspect ratio, low defect levels and absence of metallic contaminants. This combination of features is attributed to the company's access to the highest-purity raw materials and its unique manufacturing process, along with strict quality controls.

Exhibit 2: Why PureGRAPH®

Features	Benefits
• Large platelet size • High aspect ratio • Low defect levels • Free from metallic components • Custom functionalization possible • Secure supply of high-quality precursor • Unique, optimized single-step process • Strict in-house quality controls • 100 tpa capacity plant	• Provides a step-up in performance for polymers and other materials unequalled by any other graphene material • Reliability of supply • High-performing graphene at a commercially viable price • Available on industrial scale

According to a study conducted by the University of Adelaide, FGR graphene demonstrates extremely high electrical conductivity with a resistance of less than 100 Ohm (Ω) in comparison to reduced graphene oxide at 5,000 Ω. Additionally, Adelaide University confirmed the purity of FGR graphene at 99.97% carbon.

Exhibit 3: Composition of FGR exfoliated graphene

Compound Name	Concentration (%)	Absolut Error (%)
Carbon	99.97	
Magnesium	0.01	0.003
Aluminium	0.01	0.003
Silicon	0.04	0.006
Chlorine	0.02	0.004
Calcium	0.00	0.002
Iron	0.04	0.006

PureGRAPH®, in its powder form, is easy to use and disperses readily in a wide range of solvents, polymer resins, elastomers and water-based formulations. Three PureGRAPH® graphene powder grades are available with well-controlled particle sizes of 5 µm, 10 µm and 20 µm for consistent and repeatable performance and are available in tonnage volumes.

Exhibit 4: Image of FGR graphene - PureGRAPH® 20 µm

Exhibit 5: Specifications of FGR graphene - PureGRAPH® 20 µm

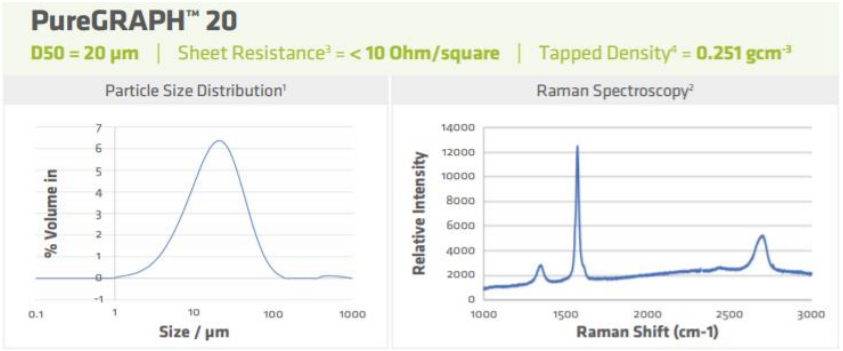


Exhibit 6: Image of FGR graphene - PureGRAPH® 10 µm

Exhibit 7: Specifications of FGR graphene - PureGRAPH® 10 µm

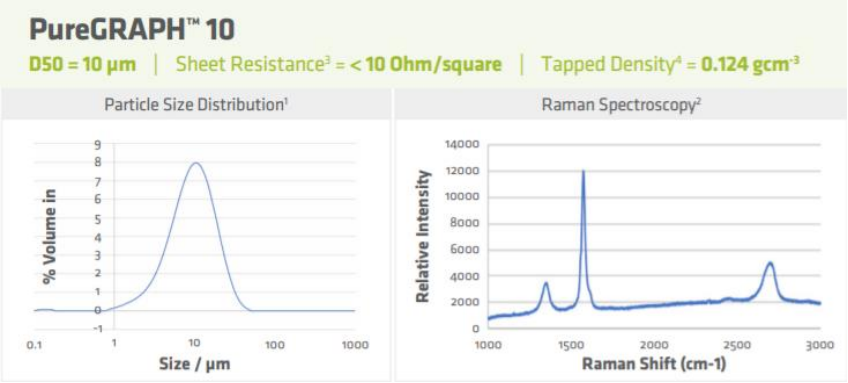
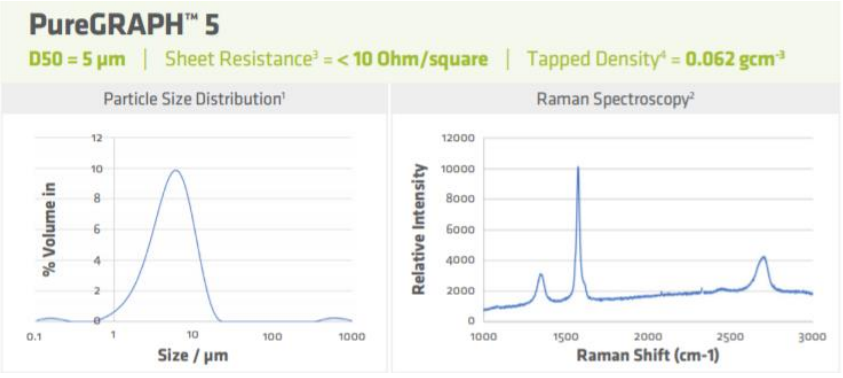


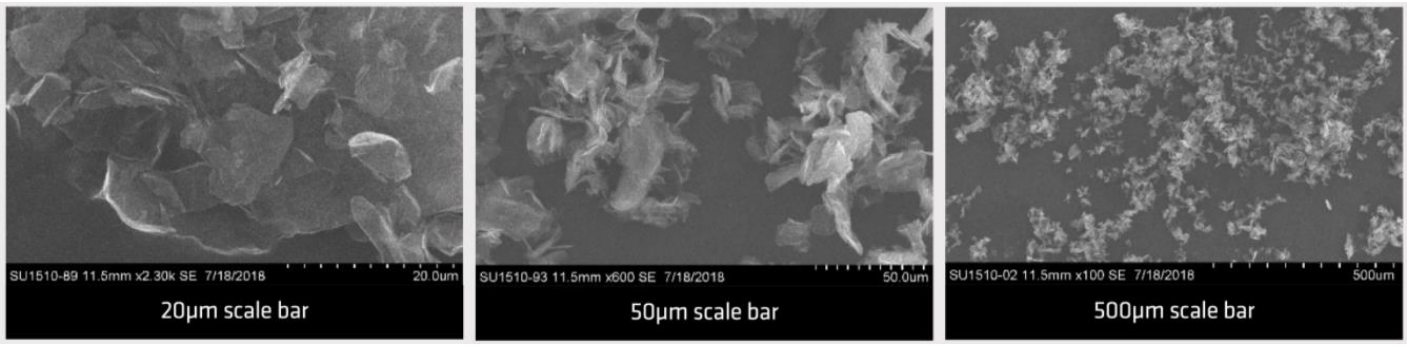
Exhibit 8: Image of FGR graphene - PureGRAPH® 5 µm

Exhibit 9: Specifications of FGR graphene - PureGRAPH® 5 µm



Scanning Electron Microscopy (SEM): Typical SEM analysis of PureGRAPH® 20 powder shows non-aggregated, uniform-sized graphene nanoplatelets.

Exhibit 10: Composition of FGR exfoliated graphene



Graphite products with a particle thickness above 100 nanometres (nm) are of low quality and can be commercialized as graphite, but PureGRAPH® graphene products have average thicknesses of less than 10nm and thus required registration as a new substance. FGR is a member of the REACH consortium for graphene materials and PureGRAPH® graphene products have received approval for manufacture and import within the EU at 10 tpa. The company is currently working toward the 100 tpa band within the EU. PureGRAPH® is also registered for sales in Australia. The certification from AICIS enables the company to manufacture and import graphene products in Australia. In the US, EPA registration is in progress.

2.2 Capabilities[ix]

FGR concentrates on industries where higher volumes of graphene powders can be utilized and it strives to provide volume and quality at an attractive price. Its core capabilities, which drive industrial-scale adoption of graphene, include a) reliable supply and in-house stock of vein graphite, b) a single-step and high-yield electrochemical exfoliation process, c) scalable industrial finishing at controlled quality with low cost and low waste levels, and d) quality assurance with a six-sigma approach and ISO/TC229 alignment.

2.2.1 Production[x]

FGR has an operational 100 tpa primary manufacturing base in Henderson, near Perth, WA. The facility is used to stockpile vein graphite and has the capacity to establish commercial scale graphene production lines with associated finishing and packaging functions. All necessary work approvals were received from the WA DER in July 2017. Currently, customers contracted stand at 5.5 tpa with an operational breakeven level of 6 tpa (based on a production cost of 10 tpa).

Various production methods can be used to manufacture graphene, but FGR's electrochemical exfoliation process results in the highest quality of output. The flake size of the graphene cell has been designed to provide a significant capital cost advantage in comparison to alternative methods of producing bulk graphene by eliminating the need for a) dependency on a central processing facility, and b) shipping the output worldwide. The graphene cell can be placed in the factories of customers utilizing graphene for just-in-time (JIT) manufacturing and delivery of graphene-enhanced products, thus ensuring the quality of graphene along with efficient inventory management.

Transportation costs are saved as it is cheaper to transport graphite ore to the factory floor compared to shipping graphene itself. Transporting graphene in an aqueous solution is expensive, as it constitutes a maximum of 5% graphene with the remainder water. Its powder form has low bulk density with a specific gravity of ca. 0.06 gm/ cm^3 which means that a few tonnes fill a 40-foot shipping container, making shipping costly.

The low capital cost of a graphene cell, owing to its modular nature, provides enormous competitive advantages as there is no need to construct a single, expensive production facility and capacity can be added in sync with customers' order placement.

Exhibit 11: Main methods of making graphene

Method	Approach	Product Type	Flake Sizes	Chemical Purity, Structural Uniformity
Liquid Phase exfoliation	Top-down	FLG, GNP, MLG	300-50,000 nm	Pristine platelets Mechanical attrition reduces aspect ratio
Graphene Oxide reduction	Top-down	FLG	3,000-20,000 nm	Oxidised graphene, with many defects giving high porosity and low electrical conductivity
Electrochemical exfoliation	Top-down	FLG, MLG	500-10,000 nm	Pristine few layer platelets with controlled edge functionalisation High aspect ratio
Direct chemical synthesis	Bottom-up	FLG, MLG	20-6,000 nm	Many defects and metal catalyst residues

GNP – Graphene nanoplatelets; MLG – Multi-layer graphene; FLG – Few-layer graphene; Aspect Ratio – lateral size/ thickness

2.2.2 Research and Development (R&D)[xi]

FGR works on a continuous basis toward strengthening its R&D and process engineering capabilities in both its Henderson and Manchester facilities.

The company has consolidated its position as a Tier 1 member of the GEIC, based at the University of Manchester in the UK, through the addition of a senior development chemist to enhance capability within the R&D team. In-house expertise has been developed at the GEIC in the use of world-class analytical techniques and processing equipment, including SEM, Raman Spectroscopy, thermal conductivity measurements and thermogravimetric analysis. These techniques have helped in understanding the usage of FGR graphene products in real-world applications. Additionally, relationships with counterparts in other commercial R&D teams, focusing mainly on polymer master-batching, have helped with the commercial introduction of graphene-enhanced thermoplastics. FGR's technical team at the Henderson facility is focusing on generating applications data for FGR graphene in a range of polymer systems.

Update on research in energy storage: On December 22, 2020, in collaboration with Kainos Innovation Ltd (UK), FGR provided a progress update on a project for developing innovative routes to green hydrogen and battery-grade materials. The company announced it had successfully completed initial contracting with Innovate UK and had received the initial grant payment. The company plans to use the funding to acquire additional laboratory facilities to accommodate the project. Additionally, the company was strengthening its IP position in relation to the project. It had filed a patent application in the UK, which covered the production of novel battery materials. The UK Patent Office confirmed that the patent application covering the production process was expected to be granted in January 2021 for UK. The company stated that it expected to rapidly evaluate the novel technology for energy storage and hydrogen generation licensed from Kainos Innovation Ltd (UK), supported by the availability of additional laboratory space, the appointment of a research technician and the strengthening of its IP portfolio.

2.2.3 Process Technologies[xii]

2D Fluidics Pty Ltd – Vortex Fluidic Device (VFD)

FGR, through its subsidiary 2D Fluidics Pty Ltd, has developed the VFD, which enables new methods for manufacturing a wide range of materials such as graphene, graphene oxide and customized carbon nanotubes with the objective of easier dispersibility in water and other aqueous mediums. The VFD is used to prepare graphene oxide and carbon nanotube materials for commercial sale and supply to the plastics and electronics industries.

2D Fluidics Pty Ltd was launched as an equally owned venture of FGR and Flinders Institute for NanoScale Science and Technology to commercialize the VFD.

Energy storage materials

Exhibit 12: Graphene-based supercapacitor prototypes

On December 9, 2020, the company announced that it had partnered with 2D Fluidics Pty Ltd. to develop a novel graphene-fullerene composite, using the VFD, for energy storage applications. Graphene-fullerenes could be a suitable replacement for spheroid graphite used in anode manufacturing and FGR was in a unique position to produce a graphene-based spherical product by employing its VFD technology.

Supercapacitors offer high power density energy storage and this market is forecast to grow at 20% per annum to AUD 3.1 bn by 2022. However, growth is challenged by supply constraints on high-performing materials and is currently dominated by microporous carbon nanomaterials with electrical capacity of 50 to 150 Farads/g.

Research at the University of Manchester has demonstrated the possibility of very high capacitance materials of up to 500 Farads/g with a manufacturing process based on the existing electrochemical processing facilities located at FGR's manufacturing site in Henderson.

VFD can produce graphene-wrapped fullerene composites with the potential of an "all carbon" energy storage material. The technology is protected by international patent filings and is currently progressing through national phase filings. The acquired license for a new series of graphene-hybrid materials grants exclusive rights to the patented technology for the manufacture of metal oxide-decorated graphene materials using a proprietary electrochemical process. These new graphene-hybrid materials offer the makers of supercapacitors a new class of high-performance capacitor materials.

2.3 Applications[xiii]

FGR executed various supply agreements in 2020 with companies such as Steel Blue, Aquatic Leisure Technologies, planarTech (Holdings) Limited and newGen.

PureGRAPH® powders are under customer testing and evaluation trials in various applications, including:

a) PureGRAPH®5 – Fabric development, composite materials, energy storage

b) PureGRAPH®10 – Wear linings, marine applications, thermoplastic materials, bulk materials handling, coatings, composite materials, rubber development

c) PureGRAPH®20 – Automotive applications, marine applications, recycled materials, sports equipment, bulk materials handling, coatings, composite materials, wear linings, rubber development, thermoplastic materials, aquaculture, building materials

2.3.1 Elastomers[xiv]

PureGRAPH® can be utilized as an additive in a wide range of rubber formulations to enhance their performance. Existing applications include hot cast urethane wear-lining materials for the mining and mineral handling industries

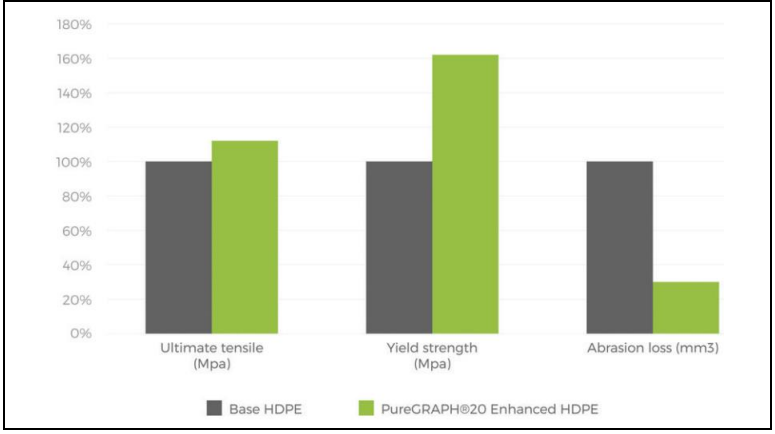
and specialist footwear where improvement in the performance of elastomers has enabled customers to achieve market growth through product superiority and cost savings for end users.

Exhibit 13: Features and benefits of using PureGRAPH® additives in elastomers

Features	Benefits
Disperses well in most rubber formulations	Ease of use and efficient dispersion lead to optimization of enhancements provided by graphene
Increased tensile strength of elastomer (30-40% improvement possible)	Significant step up in performance of elastomers in terms of wear, resistance to damage and extended life
Increased elongation	Improved impact resistance and wear performance over time
Increased abrasion resistance (100-500% improvement possible)	Substantial improvement in wear properties leading to reduced downtime of plants/machines and reduction in parts consumption
Increased electrical and thermal conductivity	Improvement in conductivity and heat dissipation possible for specific applications
Fire retardancy	Potential for improved safety in critical elastomer applications

Additional applications can be found in hot cast polyurethane prepolymers, high-density polyethylene (HDPE), thermoplastic polyurethane (TPU) and polycarbonates (PC). HDPE is a thermoplastic polymer widely used in packaging (cosmetics, food and beverages), corrosion-resistant piping, geomembranes and plastic timbers. Hot cast polyurethanes are used extensively in mining, industrial tires, and the metal manufacturing industries.

Exhibit 14: Hexcyl HDPE trial



The different chemistries of these materials demand ongoing research to maximize the mechanical benefits which can be derived from the use of graphene. For example, HDPE products of Hexcyl Systems Pty Ltd have shown improvements in strength, wear resistance and longevity after using PureGRAPH®.

Onsite trials of graphene-enhanced wear liners at major iron ore mining locations have demonstrated the improved performance and extended lifetime delivered from PureGRAPH® additives.

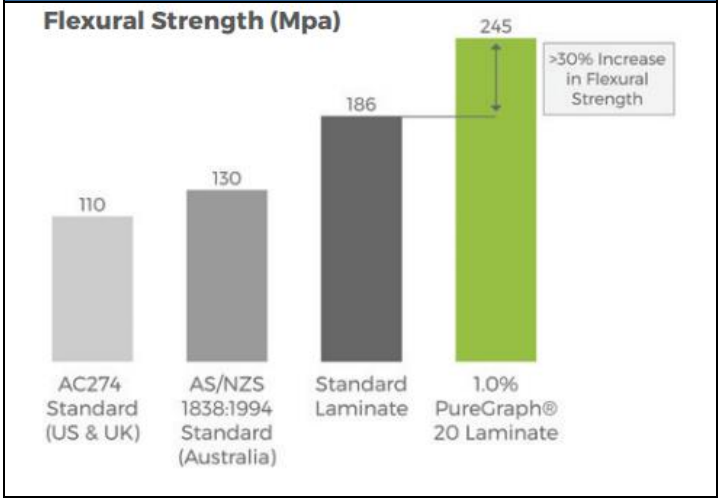
2.3.2 Fibre-Reinforced Composites[xv]

Fibre-reinforced polymer (FRP) composites use glass, carbon, aramid or natural fibres in combination with polymer resins and are employed in place of metal structures and components where reduced weight is required. PureGRAPH® graphene is mixed with resin prior to combination with the textile reinforcement.

Exhibit 15: Features and benefits of using PureGRAPH® additives in composites

Features	Benefits
Disperses well in resins	Ease of use and good dispersion lead to high performance
Increased mechanical strength	Increased composite performance or potential for light-weighting with unchanged performance. Light weighting of composites could lead to reduced fuel consumption, increased vehicle performance, reduced emissions and potential cost savings.
Increased flexural strength of laminates	Potential for thinner and lighter weight composite panels and vandal-proof composite materials
Improved water resistance	Enhanced barrier properties for aquatic applications or where water penetration is an issue
Increased electrical and thermal conductivity	Improved static removal properties and enhanced thermal management characteristics
Fire retardancy	Potential for improved safety in critical applications: • Self-extinguishing • Efficient barrier to oxygen • Suppression of toxic and flammable volatiles • Alternative to harmful chemicals • • May be used as an additive in an existing fire-retardant formulation
Simplified manufacture of composite components	Reduction in localized curing issues

Exhibit 16: Flexural strength results of graphene-enhanced laminates compared with industry standard specifications



In 2020, FGR signed a Supply Agreement with Aquatic Leisure Technologies Pty Ltd (ALT) for the supply of PureGRAPH®20 for the construction of fiberglass pool technology, where PureGRAPH® graphene will be mixed with polymer resin prior to combination with the fibre reinforcement. This resulted in increased flexural strength and water resistance of the fiberglass laminates used in swimming pool shells and a stronger and lighter product with improved resistance to water penetration.

FGR identified an opportunity and enhanced the strength and water resistance of glass-reinforced polymer (GRP) laminates used in boatbuilding and water storage systems. GRP composites are commonly used in marine and leisure applications due to GRP's high mechanical strength, formability and low cost. This suggests a potential opportunity for FGR.

The flexural strength results of graphene-enhanced laminates compared with industry standard specifications demonstrate that a single-layer laminate structure based on PureGRAPH® enhanced resin increases flexural strength by >30% and substantially exceeds international pool standards.

2.3.3 Fire Retardant Coatings[xvi]

Fire retardants currently used in industry rely on toxic halogen, organic-based ingredients which create environmental problems such as soil and water pollution and can cause mutations in human genes and be cancerous in nature. Graphene is synergistic and can be used to enhance existing fire retardancy packages in coatings, resins and foams.

Exhibit 17: Features and benefits of using PureGRAPH® additives for fire retardancy in various polymer composites

Features	Benefits
Disperses well in most solvents, polymer resins, elastomers and water-based formulations	Easy to use for optimized performance
Efficient barrier to oxygen	A new viable, greener alternative fire-retardant additive for coatings and polymers, including FRP composites, elastomers and plastics Can be used to modify and upgrade existing fire-retardant systems
Suppression of toxic and flammable volatiles	
Self-extinguishing	
Prolongs structural integrity	
Environmentally friendly compared to existing fire retardancy solutions	

FGR has partnered with the University of Adelaide to develop a coating formulation based on PureGRAPH® graphene, which is now branded as FireStop™, which can be sprayed or brushed onto surfaces. PureGRAPH® can also enhance the fire retardancy properties of other industrial polymer composites when used as an additive.

2.3.4 Concrete Composites[xvii]

Cement manufacturing is responsible for c. 6% of all CO_2 emissions from human activity. The industry faces a major challenge to reduce the carbon footprint of its cement-based products.

PureGRAPH® graphene additives make concrete structures lighter and stronger, enabling the use of thinner elements, thereby reducing the mass of concrete required for construction projects and reducing the CO_2 contribution of the industry.

Exhibit 18: Features and benefits of using PureGRAPH® additives in mortar and concrete

Features	Benefits
Disperses well in most water-based formulations	Ease of use and good dispersion likely to optimize the final characteristics of the concrete
Stronger and lighter concrete structures	New architectural designs possible; potential for reduction of total building cost
Reduction in material usage and carbon footprint caused by cement-based products	Reduced consumption of earth's resources per m^3 of build Reduced carbon footprint
Potential increase in longevity of concrete structures	Extended life of reinforced concrete structures through reduction in corrosion of steel reinforcements over time

Initial studies conducted at the University of Adelaide have identified an increase in compressive strength of 34.3% and tensile strength of 26.9% when PureGRAPH® is added to cement mortar at very low levels of 0.07% w/w in the cement paste (equivalent to c. 0.01% w/w in concrete).

PureGRAPH® concrete additives are expected to extend the durability of concrete structures through a reduction in water and ion permeability, which in turn reduces the rebar corrosion and alkali–silica reaction, a swelling reaction which causes serious cracking.

PureGRAPH® concrete additives, when used at higher loading levels, produce electrical conductivity, which could enable the development of new smart concrete with built-in sensors to report physical condition, cracks and loading, and provide integrated resistive heating.

Exhibit 19: Water permeability of cement paste containing PureGRAPH® graphene additives

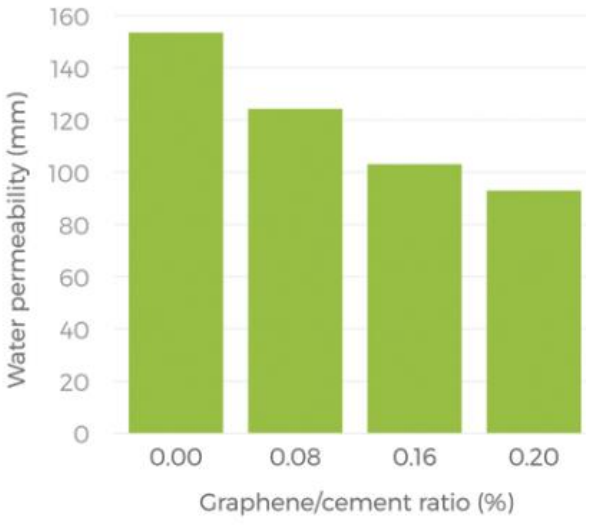
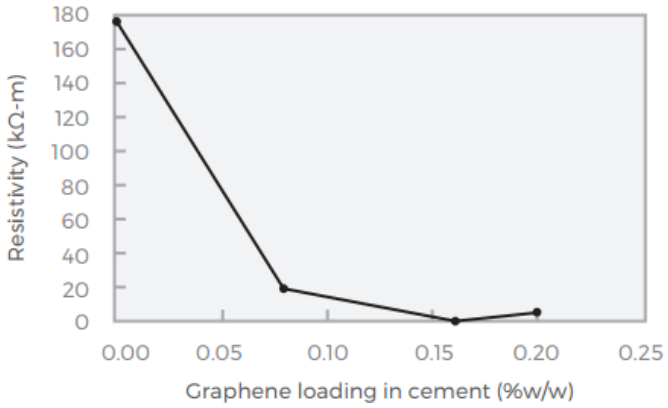


Exhibit 20: Electrical resistivity of cement containing PureGRAPH® graphene additives



2.3.5 Supercapacitors, Anode Material[xviii]

FGR continues to develop and evaluate new material opportunities in energy storage devices. Lithium-ion technology is an established method but potentially dangerous, while supercapacitors are safe from any chemical reaction that could lead to fires and explosions.

PureGRAPH® graphene products are high aspect ratio, easily dispersed, high-conductivity graphene platelets, which are ideal electrode additives for batteries and super-capacitors. Existing supercapacitors make use of activated carbon to house energy but achieve only 10% of the potential storage capacity.

2.3.6 Enhanced Fabrics[xix]

The addition of graphene products to textiles can create a wide range of enhanced properties such as increase in strength and longevity and better wear-resistance and thermal management. The target industries include sports, workwear, and smart textiles.

Graphene can be added directly into the fibre or added as a coating to the textile's surface. Graphene-coated textiles are potentially ideal for wearable technologies. They can improve the resistance to wear, abrasion and tearing, and provide greater thermal and electrical conductivity. This could lead to possibilities for smart textiles, wearable sensors, and applications for data transmission.

2.4 Collaboration with Universities[xx]

2.4.1 University of Manchester

The main areas of research include the development of applications in industrial composites and rubbers, fire retardancy, construction materials and energy storage. Projects are underway and expected to accelerate through partnership with GEIC.

2.4.2 University of Adelaide

The partnership started in May 2015 with the objective of testing if vein graphite could be used for the electrochemical recovery process. This collaboration improved when FGR was invited to be an industry partner on the Australian Research Council (ARC) Graphene Hub to develop applications for commercialization in the industry. The university played a role in formulating FireStop™, a toxin-free, low-cost fire-retardant coating. The university is also focusing on development of concrete-strengthening additives for the construction industry.

2.4.3 Flinders University

FGR collaborated with Flinders in September 2016 for commercial development of VFD and Turbo Thin Film processing technologies. The university is focusing on commercializing novel process tools for the synthesis of graphene oxide in an environmentally acceptable process.

2.5 Company Milestones

Exhibit 21: FGR milestones[xxi]

Year/ Period	Event
1920	• Incorporated in Australia as Prests Ltd
1994	• Listed on Australian Stock Exchange (ASX)
1995 - 2007	• Company name changed to Alliance Properties Limited • Company name changed to Noall Group Limited • Company name changed to Tolhurst Noall Group Limited • Company name changed to Tolhurst Group Limited
2012	• Company name changed to Mongolian Resources Limited • Acquired Robe Australia Ltd, an explorer and developer of resource properties • Acquired 100% shareholding in Kumai Energy Ltd, which owns 70% interest (through its subsidiary Kumai Energy Pte. Ltd) in three coal exploration projects in Mongolia

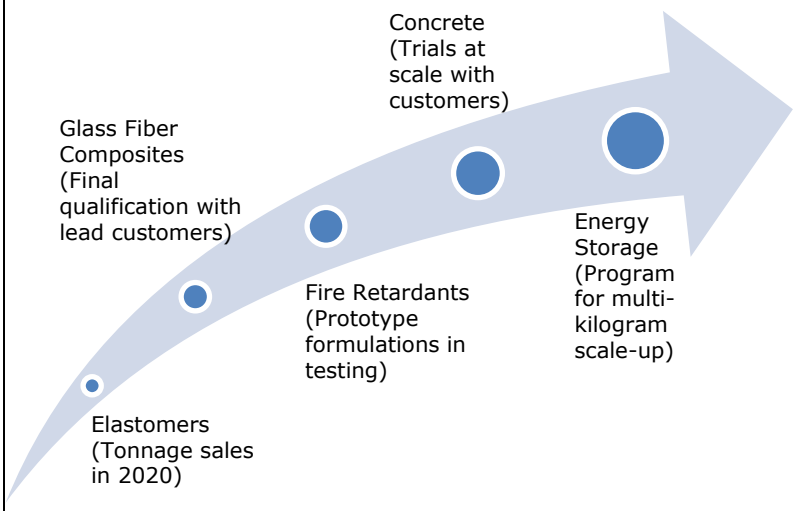
2013	• Acquired shares of the MRL Graphite (Pvt) Ltd from Supreme Solutions and obtained Graphite Exploration Licenses to explore graphite within 45 km2 of land in various locations in Sri Lanka • Company name changed to MRL Corporation Limited
2014	• Purchased the rights of Aluketiya Graphite Mine, a high-grade graphite mine in Sri Lanka • Raised AUD 1.1 mn through private placement for bulk sampling at the graphite project • Launched AUD 1.48 mn entitlement issue to fund graphite drilling programs at the Sri Lankan sites
2015	• MRL Corporation Ltd changed its name to First Graphite Ltd • Signed an agreement with University of Adelaide to test suitability of converting Sri Lankan vein graphite into graphene
2016	• Received Environmental Approval from the Central Environmental Authority (CEA) of Sri Lanka for Pandeniya (the company's graphite project site in Sri Lanka) • Received Industrial Mining License for Pandeniya from the Geological Survey and Mines Bureau (GSMB) • Raised AUD 2.4 mn through private placement to continue its development activities • Commissioned 250 litre, 5 tpa graphene production cell • Collaborated with Flinders University for the commercial development of VFD and Turbo Thin Film Processing • Entered a license agreement with University of Adelaide for a multipurpose graphene-based composite and a fire-retardant IP • Signed a 24-month sales agreement with Kahatagaha Graphite Lanka Limited to procure premium quality graphite up to 1,000 tpa
2017	• Raised AUD 3.52 mn through private placement to continue its development work • Signed an agreement with Swinburne University of Technology to work on a new generation of supercapacitors using graphene oxide, named BEST Battery • Entered into a binding agreement with Kremford Pty Ltd relating to the BEST Battery for AUD 2 mn • Received Work Approval from Department of Environment Regulation (DER) to construct a graphene production facility at Henderson • First Graphite Ltd changed its name to FGR Ltd • Government approval received for Henderson graphene production facility of 90 to 100 tpa • Sent its first graphene shipment from the Henderson facility to a US-based company • Joined Australian Research Council Hub for Graphene-Enabled Industry Transformation as a Tier 1 industry partner • Received approval for funding of AUD 1.5 mn from Cooperative Research Centres Project (CRC-P)
2018	• Started production of the Commercial Graphene Facility at Henderson, WA • Raised AUD 3.2 mn through a limited private placement • Entered a binding Memorandum of Understanding with SupremeSAT (Private) Ltd to develop graphene-enhanced components for the Miniature Satellite Assembly Program • Joined GEIC at the University of Manchester as a Tier 1 partner • Raised AUD 2 mn via private placement to a Sydney-based family office to fund the company's UK operations • Released three PureGRAPH® products and registered PureGRAPH® as a trademark • Received its largest order of 2,000 kg of PureGRAPH® products from newGEN
2019	• Joined the Graphene Reach Registration Consortium, enabling the company to sell up to 10 tpa of its PureGRAPH® products in the EU • Raised AUD 3.5 mn through private placement for working capital requirements and further development of the company's facility at GEIC at the University of Manchester • Received National Industrial Chemicals Notification and Assessment Scheme (NICNAS, now

	AICIS) approval from the Department of Health, allowing the company to sell PureGRAPH® products in Australia • Started sales of PureGRAPH® products to Australian and European customers after NICNAS and REACH approvals
2020	• Signed two-year agreement with Steel Blue to supply graphene or other forms of graphene- or graphite-based products • PureGRAPH® trademark accepted in the US • Joined EU Graphene Flagship as an Associate Member • Raised AUD 6.2 mn through an entitlements issue

2.6 Corporate Strategy and Future Outlook

2.6.1 Strategy[xxii]

Exhibit 22: Strategic roadmap for FGR[xxiii]



FGR seeks to position itself in the lowest-cost quartile of global graphene suppliers. The company holds supplies of high-grade graphite and has the manufacturing capability to convert it into the highest-quality graphene with production in bulk quantities at the lowest cost. The company is actively working toward commercialization of its products by developing applications in various fields such as energy storage devices, coatings and polymers. FGR's aim is to vertically integrate itself in the value chain of graphene production from reliable sourcing of raw material to the development of applications for industry and their commercialization along with relevant IP for licensing and sales.

FGR has a strategic roadmap in place. In 2020, sales in tonnage terms were concentrated on the fields of polymer strengthening and wear resistance. For applications in composites and concrete, the company is at the stage of qualifying trials and is progressing toward the development of supercapacitor and battery materials.

2.6.2 Outlook[xxiv]

FGR could achieve operating breakeven levels soon, as current customers have contracted for 5.5 tpa. Meanwhile, planarTech sourced 200 kg in 2020 and is expected to increase sourcing to 1 tpa in 2021, while Steel Blue and Aquatic Leisure Technologies should begin contracts in February 2021 with quantities of c. 2 tpa and 2.5 tpa, respectively. The manufacturing breakeven for the Henderson facility is 6 tpa, based on production costs of 10 tpa.

FGR is focusing on two main areas of business development:

a) Commercialization of the range of PureGRAPH® graphene products

   The company has commercial production capacity in place and is focusing on building its sales book by engaging customers. It is actively working on developing and deriving the benefits from the addition of graphene in various fields of application, while designing additive methodologies for effective use of graphene for the customer's product range.

b) R&D of alternative energy applications

FGR is working on improving the efficiency of various alternative energy applications, such as solar power collection devices and advanced supercapacitor materials. In collaboration with universities, it is working to develop technologies for alternatives to spheroid graphite in batteries and a new process for manufacturing green hydrogen.

2.7 Company Premiums

a) A developing end-user market and wide-scale usage for graphene

FGR, through its research with experts, has established wide-scale uses for graphene in various industries. The company is committed to market PureGRAPH® as a value-add product in elastomers, fibre-reinforced composites, concrete composites, supercapacitors and enhanced fabrics to improve the performance and efficiency of end products. To support these goals, it has been pursuing research work with universities and its in-house technical team to develop new applications for graphene.

b) Secure supply of high-grade raw material

The company has a robust supply of high-quality graphite, with carbon content of 95-99%, from its 100%-owned mines in Sri Lanka and can easily source raw material from third parties in times of need. FGR has 500 tonnes of graphite stockpiled and since its mines in Sri Lanka are currently under care and maintenance, the company is importing 100 tpa from Sri Lanka. However, mining activity can be restarted at short notice if required, with supply capacity of up to 200 tpa per mine. Combining in-house supply and imports, FGR has a reliable supply of up to 500 tpa, with the potential to increase it further if more mine shafts are developed.

c) Efficient production process leading to operating cost advantage and competitive pricing

FGR says that a combination of factors, including its supply of ultra-high-grade graphite directly from the mine, eliminates the need for a concentration step, thereby simplifying the production method. Taken together with its lowest-cost production methodology, this puts the company in the lowest quartile of cost. The high carbon content of the input material improves conversion process productivity with a graphite-to-graphene conversion rate greater than 95%. This is made possible by an efficient proprietary process of electrochemical exfoliation, which generates high yields.

The production cost for the company's base product of 20 µm diameter is AUD 50,000 per tonne, which can increase to AUD 100,000–150,000 per tonne if the platelet size is reduced to 10 µm or 5 µm. However, the company continually strives to bring down its costs.

FGR is also working to develop technologies with graphite concentrates used as an optional feedstock, as sources of high-grade vein graphite are concentrated in Sri Lanka and are not readily available in other parts of the world. These could result in a smaller profit margin but would enable production capacity of more than 1,000 tpa, as per demand.

d) High-capacity manufacturing plant with low capital requirement for scale-up

The company's manufacturing facility at Henderson, WA has a capacity of 100 tpa and can produce consistent quality of graphene at an industrial scale with bulk packaging capacity to deal with orders in tonnes. Built on a budget of AUD 1 mn, facility utilization is currently 5-10 tpa. However, capacity can be rapidly upscaled as per requirements, as FGR expects to operate at maximum capacity within a duration of two years, followed by a backlog of demand in subsequent years. Capacity will be expanded once utilization reaches 60 tpa to avoid stress on the existing facility. Adding another 100 tpa production line at the Henderson facility would cost AUD 2 mn with a payback period of 6-9 months. Additionally, plants can be rapidly replicated in other regions due to the modular nature of production technology. A new standalone facility in another location, such as the UK, could be established to meet rising demand in the future, with a capacity of 200 tpa, expandable to 500 tpa, at a cost of AUD 5 mn and payback of 12 months.

e) Research partnerships

FGR has collaborative arrangements with universities and works to develop new applications and open downstream markets to achieve graphene's commercial potential. The company is a Tier 1 participant in GEIC and actively works on projects to develop applications in industrial composites and rubbers, fire retardancy, construction materials and energy storage. FGR has joined the EU Graphene Flagship, a program aimed at transitioning from R&D to commercialization, as it is a graphene manufacturer with industrial-scale supply capability.

2.8 Company Risks

a) Delay in development of the market

The graphene market has been projected to grow at the rate of 38.7% per annum, but the industry is still at an embryonic stage. FGR is working with potential customers by supplying trial parcels of graphene for testing and development of application methods across a broad range of products. However, since the industry is at a nascent stage, achieving market penetration is subject to its development.

b) Failure of commercial launches

FGR spent almost four years developing its technology and supply lines, culminating in the commissioning of the Henderson commercial production facility. The plant has the advantage of low-cost manufacturing and its capex requirements have already been fulfilled. However, the company needs to pass two hurdles: it must complete its testing programs and prove to customers the potential for generating appropriate returns by using graphene as an additive, and then secure long-term offtake agreements to build its sales book.

c) Unforeseen circumstances could hinder capital planning

FGR has c. AUD 4 mn of capital and plans to raise equity capital in March 2021. The company has AUD 20 mn worth of options, at AUD 0.25 per option, which can be exercised by August 2021. It would be ideal to have 50% or more of these exercised, obviating the need for debt funding to complete any expansion.

FGR has its trademark registered and protected in Australia, China, New Zealand, the EU, UK, and US, and pending in three more jurisdictions. It has obtained other necessary work approvals such as DER of WA, NICNAS, AICIS and REACH in the EU, but the risk of failure in compliance persists. The company is working for the IP protection of its technology and related products but runs the risk of being overtaken by breakthroughs in technological knowhow.

2.9 Shareholding Pattern[xxv]

On February 26, 2021, the company had 535,444,521 common shares outstanding.

Exhibit 23: Capital structure (as of 26 February 2021)

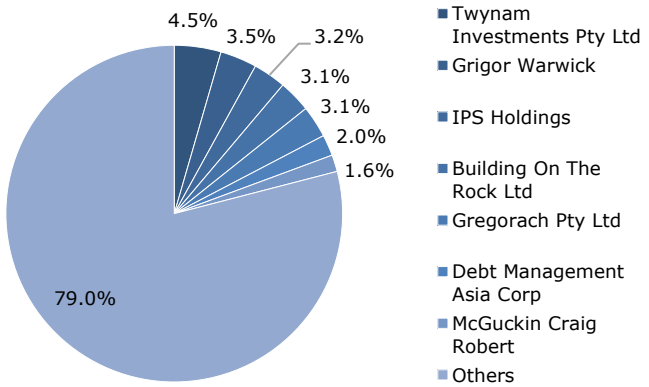


Exhibit 24: Top shareholding pattern

Shareholders	Shares outstanding
Twynam Investments Pty Ltd	24,013,177
Grigor Warwick	18,883,772
IPS Holdings	16,888,011
Building On The Rock Ltd	16,666,667
Gregorach Pty Ltd	16,396,541
Debt Management Asia Corp	10,813,267
McGuckin Craig Robert	8,597,092
Others	423,185,994
Total	**535,444,521**

2.10 Listing and Contact Details[xxvi]

FGR is publicly listed on the Australian Securities Exchange and is traded under the symbol 'FGR'.

Company Contacts

Corporate Headquarters & Manufacturing Plant

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Australia
Telephone: +61 1300 660 448

Website: firstgraphene.net

Global R&D & Marketing

First Graphene (UK) Ltd
Graphene Engineering & Innovation Centre
The University of Manchester
Sackville Street
Manchester
M13 9PL, UK

Telephone: +44 (0)161 826 2350

3. News[xxvii]

- **Update on graphene-based battery material and hydrogen generation:** On December 22, 2020, FGR in collaboration with Kainos Innovation Ltd (UK) provided an update on progress in the project to identify an innovative route toward green hydrogen and battery grade materials. The company announced it had successfully completed initial contracting with Innovate UK and had received the initial grant payment.
- **New chief executive officer appointed:** On December 14, 2020, the company announced it had appointed Michael Bell as the new CEO. Mr. Bell has over 20 years of experience in engineering and business management with significant international experience in driving business growth.
- **New technology for energy storage:** On December 9, 2020, the company announced it had partnered with 2D Fluidics Pty Ltd. to develop a novel graphene-fullerene composite using VFD to be used for energy storage applications. The technology is protected by international patent filings and is currently progressing through national phase filings.
- **Project funded by the UK government:** On November 5, 2020, the company announced that the UK government (Innovate UK) had funded a project by First Graphene UK Limited and Kainos Innovation Limited under the UK's Sustainable Innovation Fund. The project aims to directly convert low-cost hydrocarbon feedstocks to graphene materials and hydrogen gas. The project started in November 2020 and will provide FGR with a manufacturing platform to access the multi-billion EUR energy storage market.
- **Procured supply contract with SpaceBlue**: On October 27, 2020, the company announced that it would supply PureGRAPH® products to SpaceBlue. SpaceBlue will use the PureGRAPH® products to manufacture Spacemat, a graphene enhanced rubber floor mat. Adding graphene to the rubber will double its compression strength and thereby increase the durability of SpaceMat.
- **Collaboration with M&I Materials Ltd**: On October 5, 2020, the company announced that it would collaborate with M&I Materials Limited to develop an extended range of graphene-enhanced products. Both companies are partners at GEIC. M&I Materials Limited is a Greater Manchester based manufacturer of specialist materials and supplies the industrial and scientific markets globally. Clients for its engineered materials include Siemens, Boeing, CERN and NASA.
- **PureGRAPH® products enhance boatbuilding construction material**: On September 22, 2020, the company announced that it had successfully collaborated with Ascent Shipwrights to demonstrate that PureGRAPH® products improve the composite construction materials used in building fiberglass boats. The company stated that Ascent Shipwrights indicated their intention to move towards the use of PureGRAPH® in future operations.
- **New non-executive director and senior process engineer appointed**: On July 1, 2020, the company announced that it had appointed Dr. Andy Goodwin as a non-executive director and Mr. Paul Ladislaus as senior process engineer. Dr. Goodwin had been actively involved in developing the graphene materials industry since 2012 and associated with the company since 2017.
- **Trademark accepted in the US:** On June 29, 2020, FGR announced that its PureGRAPH® trademark had been accepted in the US, opening the North America market to the company. The company's trademark is now registered and protected in Australia, China, New Zealand, the EU, UK, and US, and is pending in three more jurisdictions.
- **Raised AUD 6.2 mn from entitlements issue:** On June 12, 2020, the company announced that it had raised AUD 6.2 mn from an entitlements issue. Shareholders contributed around 70% (AUD 4.4 mn). The issue price was AUD 0.13 per share and eligible shareholders subscribed for around 19 million shares. The total number of shares under the offer was over 47 million.
- **Joined EU Graphene Flagship:** On June 9, 2020, the company announced it has joined the EU Graphene Flagship as an associate member. The EUR 1 bn, EU-funded program is transitioning from R&D to commercialization and requires graphene manufacturers with industrial-scale supply capability. The company joined the program through its UK subsidiary and is the first Australian company in the consortium. The Graphene Flagship aims to bring together academic and industrial research on graphene and commercialize it within the next 10 years.
- **Supply contract with Aquatic Leisure Technologies:** On June 2, 2020, the company announced it had entered a two-year sales agreement to supply PureGRAPH® graphene powder to Aquatic Leisure Technologies, the largest

swimming pool manufacturer in Australia, which plans to use PureGRAPH® products in a new range of fiberglass pools. The initial minimum order of PureGRAPH® for the first two years was 2.5 tpa.

- **Exclusive supplier to Graphene Hackathon 2020:** On May 29, 2020, the company announced that it had signed an MoU to supply conductive inks and 3D printable filaments based on PureGRAPH® graphene technology to Graphene Hackathon 2020. The products are currently in development in partnership with GEIC.
- **Signed a supply contract with planarTECH (Holdings) Limited:** On May 26, 2020, the company announced that it had entered a two-year exclusive contract to supply high-grade PureGRAPH® nanoplatelets to planarTECH (Holdings) Ltd. planarTECH is a global market leader in developing graphene-enabled products and graphene processing equipment. Under the contract, planarTECH will exclusively source graphene additives over a two-year term with a minimum 1,000 kg purchase in the first year. A provision to extend the contract a further two terms after the initial term is included in the contract. planarTECH intends to use PureGRAPH® products in coatings for PPE and face masks.
- **Collaboration with Foster Plastics Industries Pty Limited:** On May 11, 2020, the company announced that it was collaborating with Foster Plastics Industries Pty Limited to develop PureGRAPH® enhanced ethylene-vinyl acetate (EVA) materials. Foster will use these materials in its solar tubes and plastic extrusion systems. The incorporation of high-performance PureGRAPH® graphene should improve the water heat conductivity, tensile strength, compression strength and longevity to UV exposure of the solar tubes.
- **Collaboration with Hexcyl Systems**: On May 5, 2020, the company announced that it would develop PureGRAPH® enhanced HDPE products in collaboration with Hexcyl Systems. PureGRAPH® additives will improve the mechanical properties of HDPE and provide greater longevity to the systems in high-energy farming environments. Hexcyl Systems manufactures shellfish aquaculture products in Australia and sells them globally.
- **Signed a supply agreement with Steel Blue:** On February 11, 2020, the company announced that it had signed a two-year supply agreement with Steel Blue, a global manufacturer of work boots. Under the contract, FGR will exclusively supply graphene and any graphite or graphene-related material to Steel Blue, which will be used to produce soles and other parts of safety boots.
- **Latest versions of PureGRAPH® products launched:** On November 18, 2019, the company announced that it had launched three new versions of its PureGRAPH® graphene powders in the standard lateral platelet sizes of 20µm, 10µm, and 5µm. These new products offer a wide range of industrial applications from reducing weight to increasing strength and improving thermal and electrical conductivity.
- **New sales agreement signed with newGen:** On August 30, 2019, the company announced it had signed an agreement to supply three tonnes of PureGRAPH® graphene products to newGen Group. newGen will use the graphene to manufacture wear linings used in bucket wheels, pipe spools and conveyor applications in the mining industry. FGR expects the worldwide mining and quarrying sector to become an important area of future growth.
- **PureGRAPH® sales commenced:** On July 15, 2019, the company announced it had shipped PureGRAPH® products from its Henderson facility to customers in Ireland, the UK and Germany. Sales of company products commenced after AICIS and REACH approval was secured.
- **Received NICNAS approval:** On May 30, 2019, the company announced that its application to have PureGRAPH® graphene products notified and assessed under NICNAS (now AICIS) had been approved. This makes FGR the only company to have regulatory approval to manufacture and sell graphene products in Australia. It will enable the company to list its PureGRAPH® graphene products on the Australian Inventory of Chemical Substances.

4. Management and Governance[xxviii]

The management and governance team have vast experience in managing operations and finance for multiple businesses.

Exhibit 25: Management and governance

Name	Position	Experience
Warwick Grigor	Non-Executive Chairman	• Respected and experience mining analyst with 40 years of experience in financial and technical analysis • Graduate of the Australian National University • Degrees in law and economics • Previously executive chairman of Canaccord Genuity Australia Ltd
Peter Youd	Executive Director & CFO	• Chartered Accountant with extensive experience in the mineral resources, oil & gas services and mining & technology industries • Over 35 years' experience as a senior manager and in directorships of publicly listed and private companies in Australia and overseas
Dr Andy Goodwin	Non-Executive Director	• Ph.D. scientist with extensive leadership experience in innovation and new business growth specializing in the chemicals industry • Strong technical and financial skills – Ph.D. scientist with business school training • Global science & technology manager – Solar, Dow Corning Corporation in US
Michael Bell	CEO (commencing mid-March 2021)	• Bachelor of Science - Physics, Management Science University of Canterbury, New Zealand • Former senior vice president – ST Engineering Group Singapore
Paul Ladislaus	Senior Process Engineer (Manchester)	• Chartered Chemical Engineer with 20 years' experience in operational, design, project management and R&D roles in the chemicals industry • Master's Degree in Chemical Engineering from the University of Cambridge
David Bennett	General Manager, Process Operations (Henderson)	• Bachelor of Science, Flinders University, Adelaide, SA • Senior management roles in Australian & US based drilling fluid entities • Strong skills in occupational health and safety and operational oversight

5. Industry Overview

5.1 Graphene[xxix,xxx]

Graphene comprises a single layer of carbon atoms arranged in a hexagonal lattice. It was isolated from graphite in 2004 by two Russian scientists – Andre Geim and Konstantin Novoselov. It offers unique properties: it is only 0.345 nm thick - just one carbon atom; 200 times stronger than steel of the same thickness; so flexible it can stretch up to 20% of its length. It is fully impermeable even to helium gas; one million times more conductive to electricity than copper; highly conductive thermally with 5,000 watts per meter-Kelvin in all directions; and so transparent that it absorbs only 2.3% of visible light. Graphene's properties have supported its use in industries ranging from aerospace to water filtration. Demand for graphene is expected to grow at a CAGR of 38.7% to USD 1.08 bn by 2027. Currently, the graphene industry is trying to overcome manufacturing, technological and cost barriers.

5.2 Raw Material – Graphite[xxxi]

Graphite, a grey crystalline allotrope of carbon, is the primary raw material used to manufacture graphene. Graphene is used as an additive in various fields with an objective to improve performance. In 2019, more than 1.1 mn tonnes of graphite was mined globally, out of which China mined c. 700,000 tonnes (63.6%). Around 800 mn tonnes of inferred resources and 300 mn tonnes of graphite reserves have been identified globally. Currently, China dominates the production of graphite, followed by Mozambique, Brazil, Madagascar and Canada.The availability of graphite resources indicates a security of supply for the graphene industry, but the quality of the raw material in terms of its carbon content can pose a challenge and impact the quantity and quality of output generated.

Exhibit 26: Graphite mine production 2019 (tonnes)[xxxii]

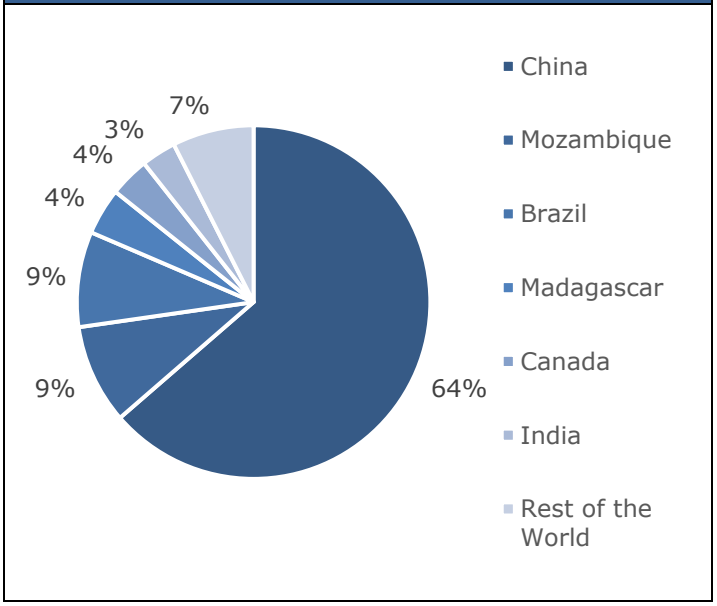
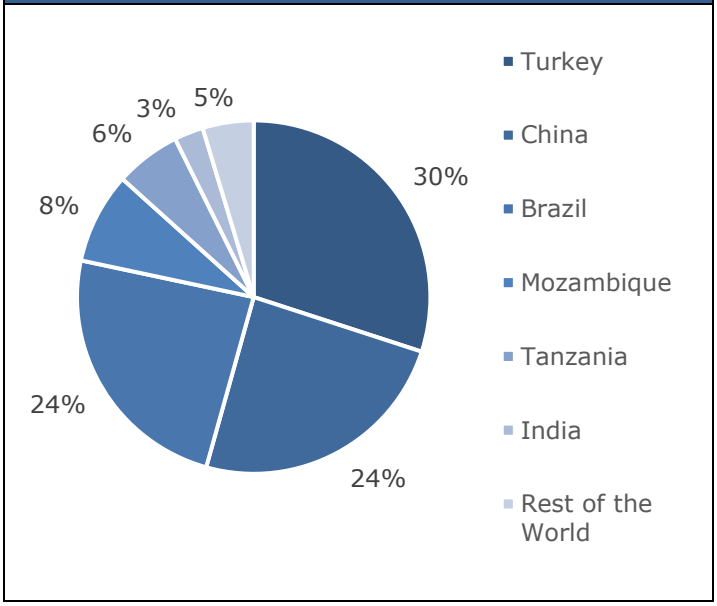


Exhibit 27: Graphite global reserves – 2019 (tonnes)[xxxiii]



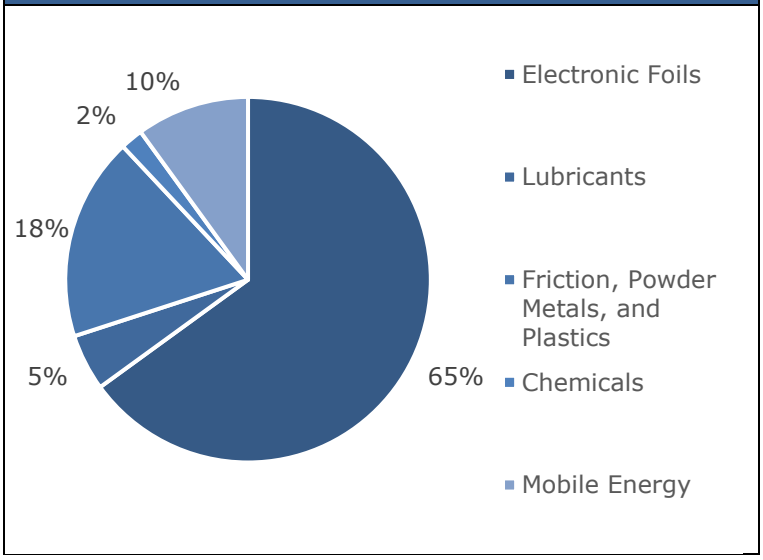
5.2.1 Vein Graphite[xxxiv,xxxv,xxxvi,xxxvii,xxxviii]

Natural graphite can be differentiated into three broad categories –

a. Amorphous graphite (a seam mineral)
b. Flake graphite (disseminated through ore rock)

c. Vein graphite (a true vein mineral found in veins and fractures of the ore rock)

Exhibit 28: Vein graphite applications[xxxix]



Vein graphite is the purest and the most valuable form of naturally occurring graphite, constituting less than 1% of global graphite output. It is popularly known as "Sri Lankan" or "Ceylon" graphite as it is actively mined only in Sri Lanka. Kahatagaha Mine is one of the biggest producers of vein graphite in Sri Lanka.

Vein graphite, also known as lump graphite, can exist with a purity of up to 99.5% in its natural state and has the highest degree of crystalline perfection among other graphite materials. A high degree of purity makes it a very desirable material for producers as it reduces their milling and refining costs.

Apart from its purity, vein graphite is also preferred for other properties such as its high degree of cohesive integrity, high density, enormous thermal and electrical conductivity, resistance to high temperature and oxidation, environmental friendliness, and excellent malleability. These properties enable a wide range of applications including batteries and fuel cells, carbon brushes, lubricants and plastics.

Currently, the automobile sector is seen as the biggest growth driver of the vein graphite market. For instance, lubricants used in automobiles utilize vein graphite. Similarly, lithium-ion batteries employ vein graphite and natural flake graphite in their electrodes. The rising adoption of hybrid vehicles is likely to boost demand for vein graphite. In the next few years, demand for vein graphite should rise across Asia-Pacific, North America, Europe, and the Middle East and Africa.

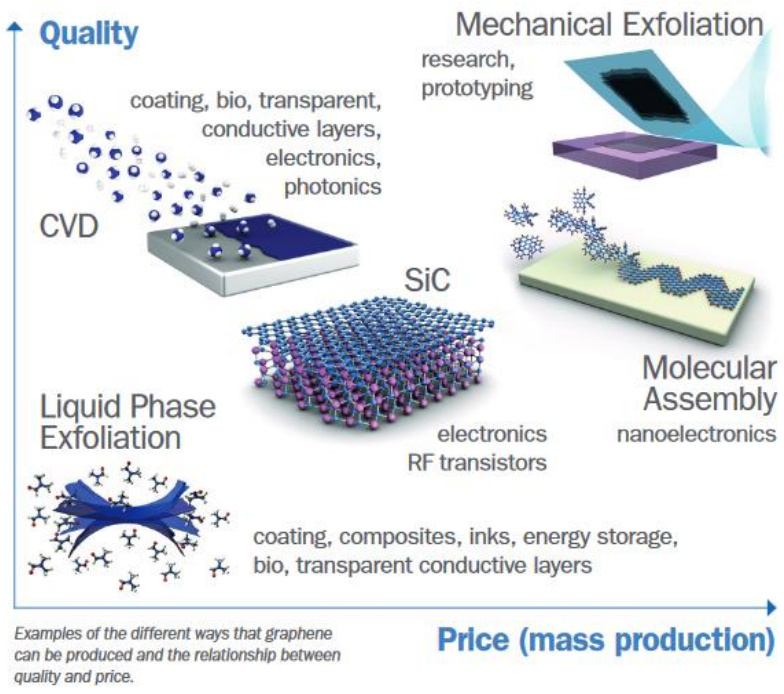
Demand growth in Asia-Pacific should be driven by increased use of vein graphite in grinding wheels and powder metallurgy, whereas demand in North America should come from its use in electrical components. However, the concentration of vein graphite ores in Sri Lanka and limited supply may inhibit industry growth longer term.

5.3 Manufacturing of Graphene[xl]

The manufacturing method employed by Geim and Novoselov could not be used to produce graphene on a mass scale. Therefore, the following three methods were devised to manufacture graphene in industrial quantities:

a) **Liquid Phase Exfoliation:** In this process, graphene oxide is produced by exfoliating monolayers or a few layer flakes of graphene from graphite in a liquid medium. Graphene oxide is used in biomedicine, nanocomposites, energy storage and other areas.

Exhibit 29: Relationship between price and quality[xli]



Examples of the different ways that graphene can be produced and the relationship between quality and price.

b) **Chemical Vapor Deposition (CVD):** Graphene produced through this process is known as CVD graphene. It is extracted by evaporating carbon atoms and then depositing them on a copper foil. CVD graphene finds application in anti-corrosion coatings and the electronics industry.

c) **Mechanical Exfoliation:** Under this process, graphene is grown in a crystallized form on various substrates such as insulators (SiO_2) and close-packed metal surfaces. The crystalline films contain graphene crystals, which can be used for electronic applications.

Graphene produced through mechanical exfoliation offers the best quality but is the most expensive of the three alternatives. Graphene made via liquid exfoliation is the most cost-effective but offers the lowest quality as compared to the other methods.

Exhibit 30: Properties of graphene and its formulations[xlii]

Properties of Graphene

- High specific strength
- High surface area
- High thermal conductivity
- High flexibility
- Lightweight
- Film impermeability
- Atomic thickness
- High carrier mobility
- Optical properties (optical absorption, photo-thermoelectric)
- Photovoltaic, photocatalytic and transparent

Formulations

- Powders
- Nanoplatelets
- Dispersions and inks
- Foams
- Nanosheets
- Aggregate
- Nanoribbon
- Nano-films
- Quantum dots
- Graphene oxide
- Reduced graphene oxide

5.4 Areas of Application[xliiixliv,xlv,xlvi,xlvii]

Graphene's unique properties are the primary reason for increasing demand for the material. Graphene has various formulations such as powders, nanoplatelets, foams, dispersions, oxides, and nano-films and each of these formulations has different applications.

Graphene has found relevance in industries such as aerospace, composites, electronics, biomedical technology and energy. Some of the major application areas include:

1) **Electronics**: The electronics segment comprised over 36% of global demand for graphene in 2019, and its share is expected to grow over the next few years. Graphene is used in technologies such as chips, flexible screens, near-field communication antennas and sensors. Sector growth is expected to be driven by emerging economies such as China, India, Malaysia and Taiwan as they increase their manufacturing activity.
2) **Composites**: Graphene-based composites are widely used in industries such as construction, automotive, batteries, aerospace, metals, coatings and plastics. In 2017-18, the composites market was worth c. USD 20 bn.
3) **Paints and Coatings**: Graphene can be used in this USD 53 bn market (as of 2017-18) in the form of additives for photocatalytic paints, functional coatings and barrier materials.
4) **Conductive inks**: The unique properties of graphene make it a cost-effective solution to fulfill demand for conductive inks in wearables and electronics. In 2017-18, the conductive inks market was worth c. USD 3 bn.
5) **Energy Storage**: Graphene can be used in battery anodes, supercapacitors, solar cells, hydrogen storage and fuel cells. The energy storage market in 2017-18 was c. USD 62 bn, with battery anodes accounting for c. USD 300 mn and supercapacitors c. USD 140 mn. This suggests a major opportunity for graphene to increase its market share.

Exhibit 31: Industrial applications of graphene-based materials - 2017[xlviii]

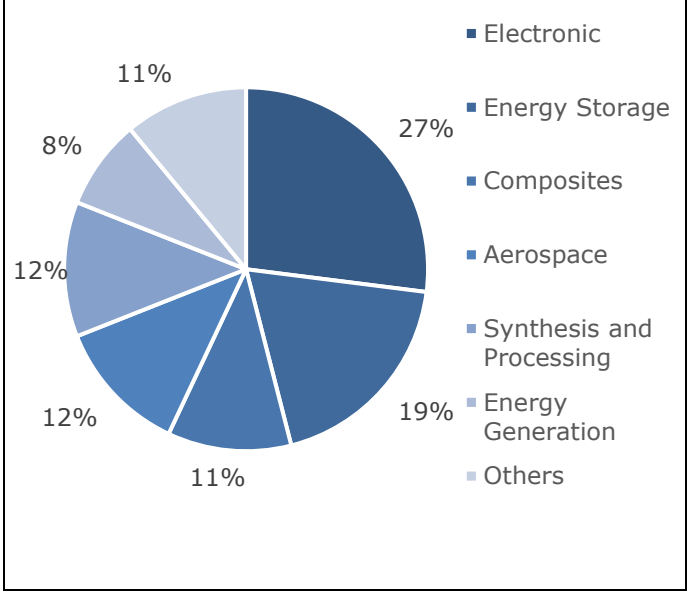


Exhibit 32: Industrial applications of graphene-based materials - 2019[xlix]

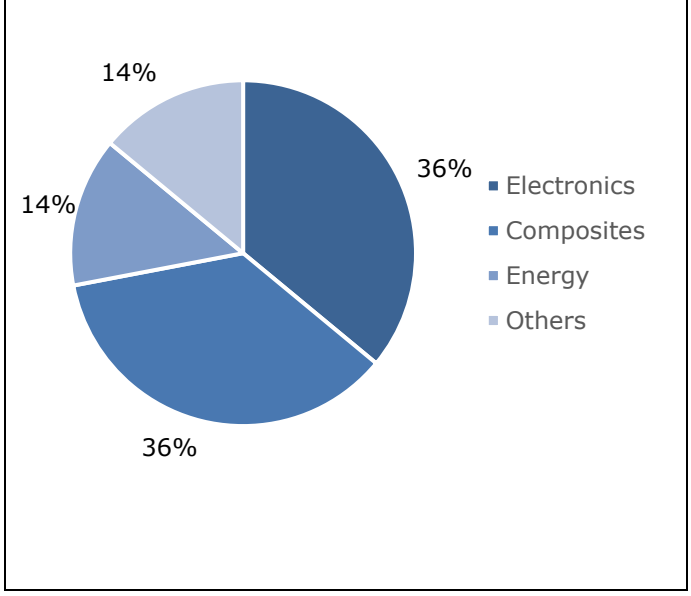
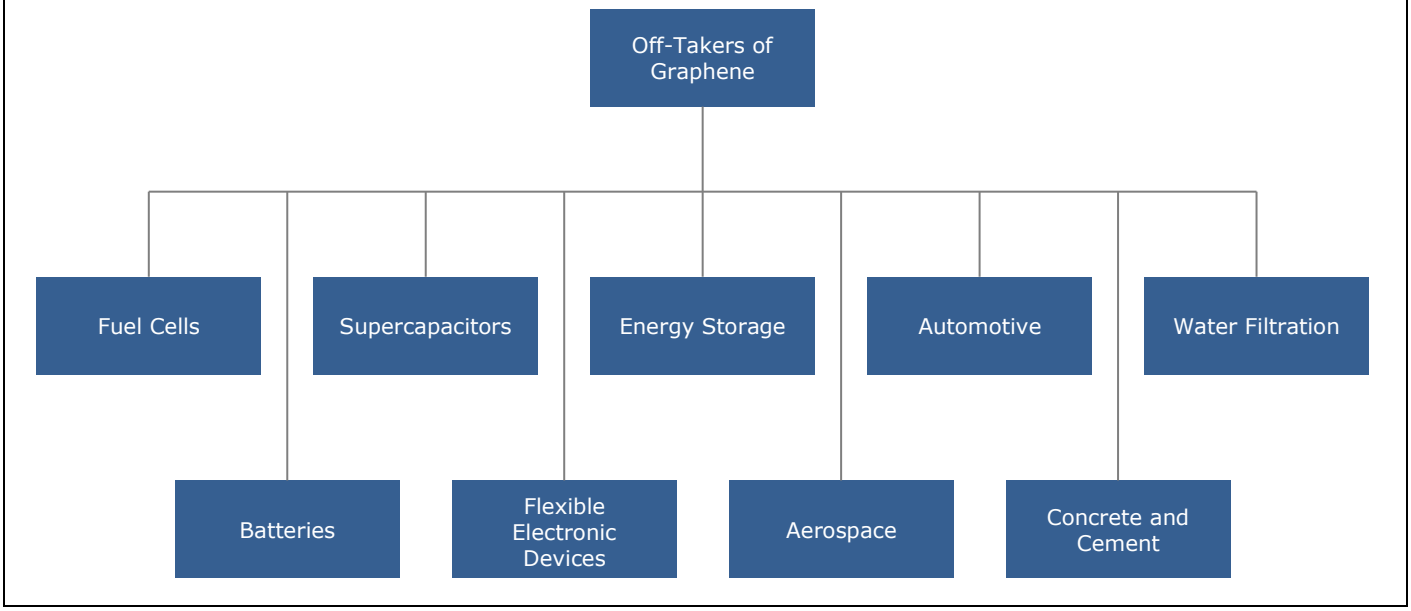


Exhibit 33: End-user applications[l]



5.5 Graphene Value Chain[li]

The graphene industry comprises three main groups:

1) **Primary suppliers**: These include graphite producers, suppliers of graphene producing equipment, and companies producing different forms of graphene (graphene oxide, nanoplatelets, nano-films). Examples of primary suppliers include Graphene Supermarket (US), Graphene Square (US), First Graphene (Australia), Graphenea (Spain), and Applied Graphene Material (UK). These companies supply graphene in various forms such as powder, foam, quantum dots, solutions, dispersions, graphene oxide and nanoplatelets.
2) **Manufacturers**: These are companies that procure graphene from the suppliers and use it to produce advanced materials such as composites, coatings and inks. These materials are then sold to customers who use them to produce final products. Graphene ESD (US), Graphenano (Spain), Graphenex (UK) and GMCC (China) use graphene for various applications such as energy storage, composites and electronics.
3) **System integrators**: These companies produce devices and final products such as batteries, sensors, electronics, solar cells and supercapacitors. Companies have used graphene to produce a range of consumer products, like Tata Steel (India), which produced graphene-coated stirrups; Dassi Bikes (UK), which made graphene-enhanced bikes; and HEAD (US), which manufactured tennis rackets and women's skis.

5.6 Global Graphene Industry[lii,liii,liv]

The graphene industry is currently at a nascent stage and most of the product is used for R&D activities. However, the industry is seeing rapid growth in commercialization and should reach c. USD 1.08 bn by 2027. The market size in 2019 was estimated at USD 78.7 mn, suggesting the industry could register a CAGR of 38.7% over 2019-2027. Graphene has limited applications today and is primarily used in batteries, supercapacitors, anodes and loudspeakers. However, by 2025, graphene's application areas are expected to widen to aerospace, water desalination and automotive. Support from governments, private investments and major markets is expected to fuel the growth of graphene in the future.

The rapid increase in the number of patents filed for graphene-based products provides a good indication of efforts to commercialize the industry. In 2004, 45 patents had been filed based on graphene technology, whereas in 2017, the number stood at 53,644. This steep increase is a testament to graphene's rapid commercialization. As of 2017, most of the patents had been filed in China (c. 61%), followed by Korea, the US and Japan.

5.7 Graphene Demand and Supply[lv,lvi,lvii,lviii,lix,lx,lxi]

Demand is likely to be driven by the following factors:

1) **Renewable energy**: Graphene is used to enhance power generation, energy storage and infrastructure related to renewable energy. According to the International Energy Agency, nearly 30% of the electricity produced around the world is likely to come from renewables by 2023. Renewables are expected to meet 70% of global electricity generation growth. This represents a major and growing opportunity for the graphene industry.
2) **Government support**: Across the globe, governments are supporting R&D related to graphene. For example, the EU created the Graphene Flagship, which is expected to leverage EUR 1 bn to work towards the commercialization of graphene.
3) **Private investments**: Since the discovery of graphene, companies have been investing in this 'wonder material'. The value of investments in graphene start-ups increased from USD 0.3 mn in 2008 to USD 36 mn in 2015, with the number of deals rising from just one to over 10 in that period. The increase in private investments in graphene technology reveals the growing interest of businesses in the new technology. Meanwhile, companies such as Samsung Electronics Ltd (South Korea), Xerox (US) and IBM (US) are hurrying to acquire graphene patents.
4) **Electronics:** The electronics market is the fastest-growing area for graphene technology. It accounted for around 36% of the graphene market globally in 2019 and is expected to exhibit significant growth in the future. Growth is primarily expected to be driven by use in semiconductors, transistors, capacitors and sensors.

Currently, the US is the biggest market for graphene in demand terms. It accounted for over 30% of the global market in 2020, valued at an estimated USD 23.5 mn. It is closely followed by China, which is expected to register a CAGR of 34.7% from 2020-2027. Japan and Canada's graphene markets are expected to grow at CAGRs of 31.6% and 30.8%, respectively, in the period. In Europe, Germany's graphene market is expected to grow at a 25.2% CAGR from 2020-2027, while the rest of the European graphene market is expected to reach USD 112.8 mn by 2027.

The supply of graphene exceeds demand currently because of overproduction by Chinese companies. China dominates graphite production, as well as graphene. Its graphene market was valued at c. USD 18 mn in 2017, a 22.1% share of the global market, and it should reach USD 200 mn by 2023, with growing government support and an increasing number of companies venturing into the graphene market. In 2017, the number of graphene patents in China stood at 32,124. Of these, around 742 were in the emerging state, whereas 31,400 patents were in the growth stage. The UK, China and the US have formed clusters of graphene manufacturers. China has the highest number of manufacturers at c. 4,000. Most of these are small start-ups, but there are also large and medium enterprises, such as Moxi Group, 2D Carbon Tech, and Qingdao HaoXin New Energy Technology. According to a 2017 report by Fullerex, China has around 33 graphene producers, representing more than 20% of the total number of graphene producers. China is followed by the US, UK and Spain. The report highlights that around two-thirds of global production capacity is controlled by China.

5.8 Growth Inhibitors[lxii]

The graphene industry is currently in a nascent stage and faces numerous growth challenges ranging from costs to production to absence of proper infrastructure. Graphene should take around 10-15 years to fully penetrate the market. In the first 2-5 years, graphene is expected to be utilized in structural composites, wearables, coatings, barrier materials and sensors. In the next 5-10 years, it is likely to be utilized in other industries such as energy generation, energy storage, functional composites and flexible electronics. It should take 10-15 more years for graphene to be used in the production of 2D semiconductors commercially. The delay in graphene's commercialization can be attributed to the following reasons:

1) **High cost** – There is a direct relation between the cost of graphene and its quality. High-quality graphene is expensive and complex to produce. More technological development will be needed to produce good-quality graphene at an affordable price.

2) **Scaling issues** – It is difficult to scale the production of high-quality graphene using processing technology methods such as CVD. Also, most of the work on graphene has been carried out in a lab environment or on a small scale and it is difficult to replicate results on a larger scale.

3) **Unestablished supply chain –** The commercialization of graphene has not yet accelerated to a large scale because of an underdeveloped supply chain. Since graphene use is currently limited to a few industries, there has been insufficient effort to establish a global supply chain. Investment in the supply chain would likely speed the industry's growth.

4) **Substitutes:** Among the main substitutes of graphene are carbon nanotubes. Since they are cheaper and readily available, they act as good alternatives. However, graphene offers superior properties when compared to these substitutes.

5.9 Future Trends[lxiii,lxiv]

By 2025, it is expected that graphene will find application in industries such as aerospace, supercapacitors, automotive, electronics and water desalination. Some areas that should drive the future growth of graphene include:

a) **Smartphone industry** – Graphene is more flexible and cheaper than the materials currently used in smartphones. It can enhance existing touchscreen technology and has the potential for widescale commercialization in optoelectronics, liquid crystal displays (LCDs) and organic light emitting diodes (OLEDs).

b) **Next generation technology** – Graphene can be used in intelligent windows, virtual curtains, foldable televisions, foldable telephones, and electronic flexible newspapers in the future. Its ability to absorb light over a large bandwidth makes it suitable for telecom photo detectors. Graphene can play an integral role in the research and development of new and innovative technology.

c) **Water desalination** – Graphene may be used to build filters to desalinate water. With water scarcity becoming a threat, this technology offers a potential solution. MIT researchers have discovered that membranes made of graphene can filter the salt content from water and make it drinkable. In another study, researchers from Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO) used "Graphair", a form of graphene, to make seawater fit for consumption.

6. Valuation

The fair market value for one of the First Graphene's publicly traded shares stands between AUD 0.25 and AUD 0.52 on February 26, 2021, using a blended valuation (DCF and EV/Revenue multiple).

6.1 Discounted Cash Flow Method

Valuation	
Risk free rate (Rf)	1.7%[lxv]
Beta	1.0[lxvi]
Country risk premium	10.8%[lxvii]
Cost of equity	10.6%[lxviii]
Cost of debt (after tax)	0
Terminal Growth Rate	1.0%
WACC (Discount Rate)	10.6%

Year Ending – June	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
FCFF (Low)								
Free cash flow to firm	(6,475)	(6,367)	(2,619)	3,091	8,839	8,266	11,075	14,125
Discount factor	0.97	0.87	0.79	0.71	0.65	0.58	0.53	0.48
Present value of FCF	(6,258)	(5,565)	(2,071)	2,210	5,716	4,834	5,857	6,756
FCFF (High)								
Free cash flow to firm	(6,534)	(4,104)	3,292	11,354	14,400	20,613	26,475	32,057
Discount factor	0.97	0.87	0.79	0.71	0.65	0.58	0.53	0.48
Present Value of FCF	(6,315)	(3,587)	2,602	8,118	9,311	12,054	14,003	15,334

Arrowhead fair value bracket	**Low**	**High**
Terminal Value (TV)	315,619	624,090
Present Value of TV	111,684	220,838
Present Value of FCFF	39,462	108,422
Net Debt[lxix]	-4,033	-4,033
Shares O/S (mn)	535,445	535,445
Fair Share Value Bracket (AUD)	**0.29**	**0.62**
Current Market Price (AUD)[lxx]	0.26	0.26
Upside/(Downside)	14%	144%
Current Market Cap. (AUD mn)	136,538	136,538
Target Market Cap. Bracket (AUD mn)	155,179	333,293

All figures in AUD '000, unless stated differently

6.2 Relative Valuation

The fair market value of one of the First Graphene's publicly traded regular shares stood at AUD 0.10 on February 26, 2021.

Company name	Market Cap (in USD mn)	Current Enterprise Value (in USD mn)	Revenue (in USD mn)	EV/Revenue
Applied Graphene Materials	35.4	30.6	0.1	280.4x
Directa Plus	117.7	112.4	5.1	22.0x
Haydale Graphene Industries	39.3	40.6	3.7	11.1x
NanoXplore Inc.	481.9	482.7	43.9	11.0x
Versarien	117.8	113.9	9.1	12.5x
Average				12.5x

(All figures are in AUD mn, unless stated differently)

Particulars	
First Graphene's FY 2021E Revenue	3,321.0
PEER EV/Revenue	12.5
Relative valuation premium	1.2
Enterprise value	48,338
Net debt	-4,033
Implied equity value	**52,371**
Shares o/s (MM)	535.5
Intrinsic value per share (AUD)	**0.10**
Current market price (AUD)	0.26
Upside/(Downside)	-61.6%

6.3 Blended Valuation

The fair market value of one of First Graphene's publicly traded regular shares stood between AUD 0.25 and AUD 0.52 on February 26, 2021, according to the blended valuation method.

Blended valuation		
	High	**Low**
DCF	0.62	0.29
Relative valuation	0.10	0.10
Weighted average	0.52	0.25

Approach for DCF Valuation

Time Horizon: The time period chosen for the valuation is 124 months (2021E-2031E).

Terminal Value: This is estimated using a terminal growth rate of 1.0%.

Prudential nature of valuation: It should be noted that Arrowhead's fair value bracket estimate is a relatively prudent estimate, as it discounts the eventuality of any new products being launched in the market or any significant change in the strategy.

Important information on Arrowhead methodology

The principles of the valuation methodology employed by Arrowhead BID are variable to a certain extent depending on the subsectors in which the research is conducted, but all Arrowhead valuation research possesses an underlying set of common principles and a generally common quantitative process.

With Arrowhead Commercial and Technical Due Diligence, Arrowhead extensively researches the fundamentals, assets and liabilities of a Company, and builds solid estimates for revenue and expenditure over a coherently determined forecast period.

Elements of past performance, such as price/earnings ratios, indicated as applicable, are present mainly for reference purposes. Still, elements of real-world past performance enter the valuation through their impact on the commercial and technical due diligence.

Elements of comparison, such as multiple analyses may be to some limited extent integrated in the valuation on a project-by-project or asset-by-asset basis. In the case of this First Graphene report, there are no multiple analyses integrated in the valuation.

Arrowhead BID Fair Market Value Bracket

The Arrowhead Fair Market Value is given as a bracket. This is based on quantitative key variable analysis, such as key price analysis for revenue and cost drivers or analysis and discounts on revenue estimates for projects, especially relevant to those projects estimated to provide revenue near the end of the chosen forecast period. Low and high estimates for key variables are produced as a tool for valuation. The high-bracket DCF valuation is derived from the high-bracket key variables, while the low-bracket DCF valuation is based on the low-bracket key variables.

In principle, an investor who is comfortable with the high-brackets of our key variable analysis will align with the high-bracket in the Arrowhead Fair Value Bracket, and likewise in terms of low estimates. The investor will also take into account the Company intangibles – as presented in the first few pages of this document in the analysis on strengths and weaknesses and other essential Company information. These intangibles serve as supplementary decision factors for adding or subtracting a premium in the investor's own analysis.

The bracket should be understood as a tool provided by Arrowhead BID for the reader of this report and the reader should not solely rely on this information to make his decision on any particular security. The reader must also understand that on one hand, global capital markets contain inefficiencies, especially in terms of information, and that on the other hand, corporations and their commercial and technical positions evolve rapidly: this present edition of the Arrowhead valuation is for a short to medium-term alignment analysis (one to twelve months). The reader should refer to important disclosures on page 36 of this report.

7. Appendix

7.1 First Graphene's financial summary

Exhibit 20: Financial Summary

Low Bracket Estimates

Year Ending June	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Revenue (AUD mn)	2.7	8.1	16.4	27.8	33.9	40.1	46.5
Operating Profit (AUD mn)	(6.4)	(2.8)	2.7	9.0	13.5	17.6	21.8
Net Income (AUD mn)	(5.9)	(2.3)	2.9	9.1	13.6	13.1	15.6
EPS (cents)	(1.08)	(0.41)	0.53	1.66	2.48	2.39	2.84
Growth rates (%)							
Revenue	817.2%	204.5%	103.0%	69.2%	21.8%	18.4%	16.0%
Operating Profit	(5.6%)	(56.8%)	(197.3%)	234.9%	49.8%	30.3%	23.4%
Net Income	10.3%	(61.6%)	(227.5%)	215.2%	49.3%	(4.0%)	19.1%
EPS	(1.9%)	(61.6%)	(227.5%)	215.2%	49.3%	(4.0%)	19.1%
EBITDA	(10.7%)	(60.7%)	(237.6%)	200.1%	46.8%	29.0%	23.9%
Margins (%)							
Gross Margins	79.1%	79.3%	79.5%	79.7%	79.9%	80.1%	80.3%
Operating Profit Margin	(241.4%)	(34.2%)	16.4%	32.5%	39.9%	44.0%	46.8%
Net Profit Margin	(222.6%)	(28.1%)	17.6%	32.8%	40.2%	32.6%	33.5%
EBITDA Margins	(228.2%)	(29.4%)	19.9%	35.4%	42.7%	46.5%	49.6%
Ratios							
ROA	(87.7%)	(21.2%)	18.0%	35.2%	37.7%	28.6%	25.2%
ROE	(93.5%)	(56.0%)	41.7%	56.8%	45.9%	30.6%	26.7%
Debt/Equity	0.0x	1.5x	1.2x	0.5x	0.1x	0.0x	0.0x

Exhibit 21: Financial Summary

High Bracket Estimates

Year Ending June	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Revenue (EUR mn)	4.0	12.1	24.6	41.7	50.7	60.1	69.7
Operating Profit (EUR mn)	(5.8)	0.7	10.6	22.8	30.6	38.0	45.5
Net Income (EUR mn)	(5.3)	1.2	10.9	20.4	21.8	26.9	32.2
EPS	(0.97)	0.22	2.00	3.72	3.97	4.91	5.87
Growth rates (%)							
Revenue	1274.9%	204.5%	103.0%	69.2%	21.8%	18.4%	16.0%
Operating Profit	(14.3%)	(111.7%)	1450.1%	115.7%	33.9%	24.1%	19.8%
Net Income	(0.8%)	(122.2%)	824.8%	86.4%	6.7%	23.7%	19.5%
EPS	(11.7%)	(122.2%)	824.8%	86.4%	6.7%	23.7%	19.5%
EBITDA	(19.5%)	(120.3%)	910.6%	111.3%	33.2%	23.7%	20.1%
Margins (%)							
Gross Margins	89.2%	89.3%	89.4%	89.5%	89.6%	89.7%	89.8%
Operating Profit Margin	(146.2%)	5.6%	43.0%	54.8%	60.3%	63.2%	65.3%
Net Profit Margin	(133.6%)	9.8%	44.4%	49.0%	42.9%	44.8%	46.2%
EBITDA Margins	(137.4%)	9.1%	45.5%	56.8%	62.2%	64.9%	67.2%
Ratios							
ROA	(72.7%)	10.1%	47.6%	49.8%	34.4%	29.8%	26.2%
ROE	(77.0%)	14.6%	57.5%	51.7%	35.6%	30.6%	26.8%
Debt/Equity	0.0x	0.4x	0.2x	0.0x	0.0x	0.0x	0.0x

7.2 First Graphene's balance sheet forecast

Exhibit 22: Consolidated Balance Sheet

All figures in AUD '000, unless stated differently

Low Bracket estimates

Year Ending – June	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E
Total current assets	3,072	4,909	7,392	14,577	22,661	29,094	42,400	58,612	79,096
Total non-current assets	3,677	5,805	8,698	11,334	13,514	16,633	19,396	22,374	24,340
TOTAL ASSETS	**6,748**	**10,714**	**16,090**	**25,911**	**36,175**	**45,727**	**61,796**	**80,985**	**103,435**
Total current liabilities	270	1,106	1,786	2,479	2,719	2,789	3,283	3,801	4,343
Total non-current liabilities	153	5,553	7,353	7,353	3,753	153	153	153	153
TOTAL LIABILITIES	**423**	**6,659**	**9,139**	**9,832**	**6,472**	**2,942**	**3,436**	**3,954**	**4,496**
Total shareholder's equity	6,326	4,055	6,951	16,079	29,702	42,784	58,360	77,032	98,939
TOTAL LIABILITIES & EQUITY	**6,748**	**10,714**	**16,090**	**25,911**	**36,175**	**45,727**	**61,796**	**80,985**	**103,435**

Exhibit 23: Consolidated balance sheet

All figures in AUD '000, unless stated differently

High Bracket estimates

Year Ending - June	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E
Total current assets	3,289	5,207	13,088	27,617	47,088	70,899	100,366	135,195	176,826
Total non-current assets	4,033	6,474	9,916	13,335	16,138	19,635	22,760	26,080	28,367
TOTAL ASSETS	**7,322**	**11,682**	**23,004**	**40,952**	**63,226**	**90,535**	**123,126**	**161,275**	**205,193**
Total current liabilities	251	727	1,105	1,350	1,853	2,222	2,609	3,015	3,440
Total non-current liabilities	153	2,853	2,853	153	153	153	153	153	153
TOTAL LIABILITIES	**404**	**3,580**	**3,958**	**1,503**	**2,006**	**2,375**	**2,762**	**3,168**	**3,593**
Total shareholder's equity	6,918	8,101	19,045	39,449	61,220	88,160	120,363	158,107	201,600
TOTAL LIABILITIES & EQUITY	**7,322**	**11,682**	**23,004**	**40,952**	**63,226**	**90,535**	**123,126**	**161,275**	**205,193**

8. Analyst Certifications

I, Ayushi Saraswat, certify that all the views expressed in this research report accurately reflect my personal views about the subject security and the subject Company, based on the collection and analysis of public information and public Company disclosures.

I, Sachin Salian, certify that all the views expressed in this research report accurately reflect my personal views about the subject security and the subject Company, based on the collection and analysis of public information and public Company disclosures.

Important disclosures

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