

Strategic Report

The directors present their Strategic Report for the year ended 30 June 2022.

PRINCIPAL ACTIVITIES

Haydale brings together the cutting-edge technology of the patented HDPlas® process with our engineering expertise to functionalise graphene and other nanomaterials. Our technology has the potential to deliver major benefits across a multitude of sectors helping to increase the technical performance of a wide range of host materials. The Group's vision is *'to be a world leader in the revolutionary development of plasma functionalisation of advanced performance-enhancing materials and nanomaterials across all industry sectors, providing cutting-edge technological solutions to improve people's life experience'*. Operationally we look to use our extensive knowledge of advanced materials and dispersion to be one of the world's foremost creators of material change, enabling our customers to improve the performance of their products. The directors believe the Company is well placed to be in the forefront of nano advanced materials and dispersion, and to become a world leader in the creation of material change through understanding the potential of those materials.

Whilst a significant but reducing level of the Group's revenues to date have been generated by our US operation, at the core of our product offering and underpinning the Group's future prospects and value, is Haydale's patented HDPlas®

functionalisation process which improves the dispersibility of many nanomaterials. Functionalisation allows Haydale to tailor advanced materials to enhance the properties of our customers' products. The process is cost effective and environmentally friendly and our capacity to produce industrial levels of functionalised nanomaterials underpins our business model. Specifically, we have the engineering expertise to:

- functionalise nanomaterials that are blended with resins, composites and fluids to deliver enhanced electrical, mechanical (strength) and thermal performance;
- formulate proprietary nanomaterial-based inks and coatings for the print and sensor markets, including biomedical, RFID and piezo resistive inks and sensors; and
- compound functionalised nanomaterials into a range of elastomers to enable customers to use nanomaterials in elastomeric products.

At our North American site we also manufacture proprietary silicon carbide ("SiC") fibres and whiskers that strengthen ceramics and produce highly wear resistant ceramic 'blanks' for use in the aerospace and automotive industries and for abrasion resistant coatings.

At the 30 June 2022, the Group has the following operational activities in its five facilities.

Haydale subsidiary	Location	Principal activities
Haydale Limited	Ammanford, Wales	Specialist functionalisation and main manufacturing facility producing inks, resins, fluids and masterbatches to be used in composites and polymers for direct sales to customers and for transfer to other Group sites.
Haydale Composite Solutions Limited ("HCS")	Loughborough, England	Sales of masterbatch and pre-preg composites, elastomers and other nanomaterials and the provision of advanced consulting and test services to various parties including the EU and UK national institutions via R&D grants.
Haydale Technologies (Korea) Limited ("HTK")	Seoul, South Korea	Dedicated sales office servicing the fast-moving South Korean and other APAC markets.
Haydale Technologies (Thailand) Company Limited ("HTT")	Bangkok, Thailand	Ink and masterbatch development focused on commercial applications with plasma functionalisation facilities. Assists the UK in servicing the APAC region.
Haydale Technologies, Inc. ("HTI") and its wholly owned subsidiary Haydale Ceramic Technologies LLC	Greer, SC, USA	Large installed SiC manufacturing facility with sales office serving the North American Market and developing the European and East Asian markets.

The Group safeguards its nanomaterials business across these sites and the territories in which it operates through the use of patents and trade secret protocols which protect its intellectual property. It holds licences where that intellectual property is for operational reasons with a third party. Haydale currently has a portfolio of patents that are variously recognised in the following territories – US, UK, Europe, China, Japan and Australia. Haydale works closely with its patent advisors, Mewburn Ellis LLP, and maintains a rolling programme of patent applications. During the year Haydale applied for eight new patents in its own right and one joint patent with Airbus Operations Limited. The patents submitted cover our HDPlas[®] capability with developments such as liquid dosing, barrel temperature control and the use of a step transformer extending both the range and control of the enhancements that our customers are seeking.

REVENUE MODEL

The Group's revenue model is based on the following strands:

- Sale of functionalised material in powder, masterbatch, fluid or pre-preg format;
- Sale of SiC microfibres and whiskers, ceramic blends and ceramic blanks to the aerospace and automotive cutting tool sector and the coatings industries;
- Sale of own brand and third-party products, such as CeramycGuard™, which clearly align with our product or customer base;
- Sale of plasma reactors with appropriate licencing for use of the patented HDPlas[®] functionalisation process; and
- Consultancy services with respect to testing the potential enhancements that our product range and engineering acumen may bring to customer applications.

COMMERCIAL OVERVIEW

The financial year ended 30 June 2022 ("FY22") has seen the Group deliver a resilient performance in the year against a turbulent economic backdrop and the directors are pleased to report that the commercial progress accelerated in the second half of the year within the core graphene and other nano particle operations in the UK. Revenue has been impacted by the slower than anticipated recovery from the pandemic at the Group's US operation and this has weighed on the overall financial performance in the Year.

The Group continues to transform itself from a research and development organisation into a manufacturing business focussed on commercialising its portfolio of technology and securing profitable outcomes. In the latter part of the year the Company successfully commissioned a larger plasma reactor that, when fully optimised, will deliver a significant increase in our functionalisation capacity and provide the means to move production to an industrial level.

UK & EUROPE

The UK division made robust progress towards commercialising its proprietary technology in the year. Total sales (excluding reactor sales of £0.40 million in the prior year) increased by £0.46 million (89%) on FY21. Functionalised product sales (goods) increased by 270% over the prior year and project and other consultancy revenues (services) grew by 19% on a like for like basis.

Product Sales & Consultancy Services

Haydale has been working in the energy, heating and power storage sectors for a number of years. Geopolitical events and closer to home severe weather incidents, when set against the backdrop of the UK Government's net zero carbon strategy, have brought an increased urgency to this work. In January 2022 the Company signed an exclusive supply agreement to manufacture a thermal fluid ("Hi-Therm[®]") for High Tech Systems Limited. Haydale is using its patented plasma functionalisation technology to enhance the thermal conductivity and dispersion of boron nitride in ionised water. Controlled environment tests that maintain a constant heating temperature have shown that the thermodynamic properties of Hi-Therm[®] deliver up to a 30 per cent energy saving compared with energy required to heat untreated water. Initial sales of Hi-Therm[®] have been ahead of contractual volumes and whilst the product is still in a development stage, we anticipate that it will represent a significant step forward in the commercialisation of thermally efficient nanomaterials in the energy sector.

Haydale has also been working with Cadent and the Energy Innovation Centre to develop graphene ink-based heaters to generate low power hot water in off-grid situations where customers are left without the means to economically heat water for an extended period of time. The most recent example was Storm Arwen which brought widespread disruption to the UK and resulted in over one million customers losing power. Approximately 40,000 customers were without supply for more than three days and nearly 4,000 customers were off supply for over a week. The aim of this commercial 15 month project with Cadent is to develop an operational Graphene ink-based heater prototype that would provide cost effective and timely relief in these situations.

The graphene inks used in this solution are flexible enough to be printed onto multiple substrates such as metals, plastics, fabrics, and glass. The Company is working to develop this technology into underfloor heating which may be able to offer an energy efficient, cost-effective and easy to install system that can be used to supplement domestic heating systems. Whilst still at an early stage, the prototypes are demonstrating considerable promise as part of an array of solutions that may improve the energy efficiency and reduce the CO₂ impact of heating commercial and domestic buildings. In addition to this

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application, we are also working with a caravan and motorhome customer with a variation of this heating ink.

Biomedical Inks

We continue to develop our biomedical sensor inks and, in particular, our work during the year with a leader in the glucose monitoring and diabetes management sector on the refining of a bespoke ink has been productive. Haydale's patented plasma functionalisation process allows for the introduction of new chemical substances to the surface of advance materials enabling biomedical inks to have an improved catalytic and electro chemical response. Our tests show that the additions enhance the downstream accuracy of response to analytes and the speed of result. We have collaborated closely with this customer to ensure that the quality control at our Ammanford site meets the stringent requirements for medical products and we are also looking to commence internal tests to validate the shelf life and longer-term efficacy of the product.

Whilst at a less advanced commercial stage, we have worked with a number of other business and academic parties to explore the wider potential for our sensor inks in the field of medical diagnostics. Of particular note in this area is our work with the Wales Kidney Research Unit at Cardiff University to develop a urinary electrochemical microRNA sensor for rapid detection of problems with newly transplanted kidneys. The sensor can potentially accelerate issue detection without the need for an invasive biopsy and potentially opens up a wider and exciting opportunity for the monitoring or detection of other diseases. Haydale was pleased to have directly input into the work of one of the award winners at the Kidney Research UK MedTech Competition earlier this year.

Elastomers and Other Developments

In December 2020 we secured our first sale of our functionalised nano-enhanced rubber masterbatch for use in shoes and the Company continues to progress a number of projects within the leisure footwear and industrial workwear market. Whilst these projects have taken longer than anticipated to move out of the feasibility stage, the work done in this area has been utilised in our collaboration with Vittoria Spa, the leading premium cycle tyre manufacturer, and allowed us to move with speed to prove performance enhancements for functionalised rubber in cycle tyres. We were able to demonstrate substantial improvements in the grip, rolling resistance, puncture resistance and durability of their premium tyres and, in July 2022 we announced that we had received our first order for one tonne of functionalised graphene nanomaterial. Haydale will use its new HT1400 plasma reactor in order to meet Vittoria's production requirements.

The four-year agreement with DLYB¹, which commenced in April 2020, allows them to market Haydale's electrically conductive graphene-enhanced masterbatch in China and Taiwan. The

initial stages of the contract were reserved for product validation and although our product has met the initial requirements, further modification and development has been requested by DLYB. Whilst the Company is continuing to develop this product line for use with DLYB and other customers, it is focussing on those products that can deliver commercial returns more rapidly and, as such, at this stage we do not anticipate this contract moving to the commercial phase in the foreseeable future.

Haydale formed part of a dedicated supply chain to deliver a range of advanced wearable technology to British athletes, at the Tokyo games in August 2021. The garments benefited from temperature regulated panels and were designed using Haydale's printed functionalised graphene ink. The Company remains in discussion with a customer who can access the wider market but our focus remains on other graphene ink products that demonstrate a closer commercial potential.

Sale of Plasma Reactors

In April 2021 Haydale partnered with 401 Tech Bridge, Rhode Island, US, to provide a HT200 Plasma Reactor and advanced materials support for their innovation ecosystem. This was the first sale of a plasma reactor since the year-ended June 2019. As noted in the prior year report, each approach is appraised on its merits with the guiding tenet that reactor sales must be demonstrably in the long-term interests of the Company. To this end, the Company has not made any reactor sales in the year under review.

Collaboration with ProMake Limited

On-going cooperation with ProMake (renamed Atomi Limited post year end) continues to progress positively in a number of directions including the previously noted SynerG 3D printing filament, biomedical inks and more recently on developing cleaner, smarter concrete formulations. The Public Health England National Microbiology Framework has not progressed at this time, although work is still underway in this arena it has been impacted by changing UK government priorities.

NORTH AMERICA

Revenue at our US SiC and blanks manufacturing facility continued to be adversely affected by the lingering impact of the Covid 19 pandemic for much of the year. Reported increases in civilian aviation traffic took time to filter down the aerospace supply chain and it was not until the last quarter of FY22 that we started to see some rebound in demand for our blank tools.

During the year we have looked to drive revenue by expanding our product offering to include certain geometries of finished cutting tools. We have contracted with a third-party company who are taking our blanks and completing the final cut, grind and tool preparation to enable Haydale to sell a finished tool. By taking control of end user sales, we have created a direct dialogue

¹ Dalian YiBang Technology Company Limited ('DLYB')

with a number of important aviation customers, and it has also allowed us to extend our sector coverage into the automotive market where we have achieved finished tool sales post year end. We have seen sales of finished tools in both areas post year end and anticipate that, as general demand grows, this will be a key driver for growth within this business unit. We are following a dual distribution strategy to maximise our coverage with a combination of direct to customer sales and indirect sales through well represented distributors and consolidators. During the year we made an agreement with a large US carbide tool distributor to sell our tools in a number of states on the west coast of the country and we are currently in discussions to give non-exclusive rights to distribute our growing range of tools to selected midwest industrial states.

East Asian Sales

In January 2021 Haydale announced an agreement with Qinhuangdao ENO High-Tech Material Development Co., Ltd (“ENO”) which allowed it to act as a non-exclusive sales representative for Haydale’s ceramic and silicon carbide products in China (including Hong Kong) and Taiwan (the “Territory”) for an initial period of two years ending December 2022. Despite the continuing lock downs and other restrictions that are impacting manufacturers and impeding new business development we have seen sales progress in the year although not to the extent anticipated.

During the year Haydale signed a sales representation agreement with Hainan Hongshida Information Technology Co., Ltd., (“Hongshida”). The agreement is for an initial period of two years and allows Hongshida to act as a non-exclusive sales representative for Haydale’s ceramic and silicon carbide products in the Territory. First year sales to February 2023 were agreed to be limited and, as expected, we did not receive any orders from Hongshida during the year. Outside of these contracts, Haydale is actively collaborating with a number of other parties that may extend our market penetration in East Asia and may also offer some reciprocal product that will expand our offering in the North American market. We remain of the view that the potential for this business unit’s products in East Asia is significant and, whilst results have been less than we would have hoped for to date, we continue to believe that the prognosis is positive.

European Blanks Sales

We continue to make progress with potential European customers and, whilst we remain optimistic that we will secure further sales within this territory, we have recognised that this will take longer than expected and we have therefore adjusted our cost base with our European Sales Manager moving onto a commission basis during H2 FY22.

Product Diversification

As previously noted, the Company has also diversified beyond its traditional product range and agreed exclusive distribution arrangements for the UK market for CeramycGuard™, a one stop solution that can be used in new concrete applications and also renews and restores old or partly decaying concrete in-situ in certain applications as well as preventing water loss. Earlier this year, CeramycGuard™ won the ‘Materials Application of the Year’ category at the prestigious British Engineering Excellence Awards and was recognised for its ability to significantly extend the surface life of concrete assets and its potential to reduce the anthropogenic impact of cement usage.

Haydale continues to work closely with a number of UK water utilities, other water facility management companies and more general civil engineering contractors who require a solution to concrete degradation. Post year end the Group employed a sales manager to specifically drive sales of CeramycGuard™, and this has led to some early positive results. Whilst there is a substantial wider market for this product, we believe that Drinking Water Inspectorate 31 (Clean Water) accreditation is important to securing sales of this product within the water industry and, despite delays outside of our control, we are working towards results by the end of 2022.

Historic Sales

Historically this division has been dependent on SiC whisker sales to two long term customers and, as previously noted, we saw very different responses to the pandemic from these customers. The business received a commitment from its largest customer to underpin the SiC whisker volume by increasing its short-term order patterns during FY21. This was on the understanding that this would likely see a significant reduction in sales through FY22 and FY23. As expected, during the year we have not made any sales to this customer, but we anticipate that sales will resume in FY23 when their inventory levels are brought into balance. We were pleased to reach a settlement with our second largest historical whisker customer over the contractual dispute which adversely impacted revenue in the prior year. The settlement with the US group, which sells silicon carbide tools and wear resistant solutions, secures revenue in both FY22 and FY23 at which point the five-year contract dated September 2018 will come to an end. In FY22 this customer accounted for £0.58 million/20.1% of total group revenue and we expect a similar level of revenue in FY23.

ASIA PACIFIC

Our operation in Thailand was instrumental in securing the first orders from Vittoria for functionalised graphene powder for use in cycle tyres. As announced in July, Vittoria and Haydale have agreed to investigate the possibility of producing functionalised graphene in Thailand and a Letter of Intent was signed post year end between Haydale and Vittoria’s co-owned Thai nanotech subsidiary, Graphene Creations Limited, that will allow the

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parties to assess the merits of combining Haydale's technical expertise with Graphene Creations' market access. This assessment is on-going but should reach a conclusion during the current year. Outside of this, Haydale is actively collaborating with a number of well-known international operations who have shown interest in the potential applications of our product range and the team continues to search for opportunities for the commercialisation of graphene and other nanomaterials into various industries.

Our sales office in South Korea did not meet our expectations this year. The three-year exclusive agreement with iCraft has delivered on the contractual requirement of three tonnes by the end of year two but, subsequent to the year end, we have been informed that it is reviewing its on-going involvement in the nanomaterial sector. We are maintaining a proactive dialogue with iCraft to ensure that it understands its contractual obligations with respect to the final year of the contract. Outside of iCraft, we have started working with a number of new customers and we hope to be able to leverage these opportunities in the current year to improve the financial performance of this sales office.

FOCUSSED R&D INVESTMENT

The HDPlas[®] functionalisation process continues to be the cornerstone of the Group's offering underpinning its future growth prospects. During the year, good progress has been made with several new and different treatments enabling more tuneable and enhanced offerings to meet customers' requirements. This manipulation enables a much greater range of graphene and other nanomaterial treatments and facilitates potential improvements in dispersion and mechanical strength, electrical conductivity and thermal conductivity. Amongst other developments, Haydale has:

- Developed liquid doping technology that allows for graphene to be dosed with microscopic levels of metals which allows us to markedly enhance the conductivity and resistivity of our next generation functionalised inks. This lower level resistivity potentially allows our inks to replace silver, copper and aluminium etch in certain metal antenna elements of the growing RFID and NFC sectors and provides a cost effective and environmentally friendlier application. Existing 'tags' are generally single use and as such are consigned to landfill after use. Haydale functionalised inks are manufactured using a clean process and there is reduced waste to landfill on disposal. Subsequent to the year end this work has directly led to a collaboration with a leading supplier of digital identification solutions who is investing in the RFID of the future; and
- Haydale was awarded funding to develop hydrogen fuel storage tanks by the Advanced Propulsion Centre in 2020 and this work directly led to the signing of a memorandum of understanding with Viritech Limited in September 2021.

Haydale has subsequently worked on two projects to deliver advanced hydrogen powertrain solutions for the automotive, aerospace, marine and distributed power industries and we continue to provide consulting engineering support services, including type IV and V pressure vessel design and material science analysis.

The core thread running through our continued investment in R&D is the focus on creating and maintaining technological advantage where we see a clear commercial pathway. Whilst the gestation period for some of these developments is defined by long product life cycles, we are focussing on areas such as our biosensor inks and other functionalised inks which can be delivered to market in a shorter time horizon. It remains core to our strategy that we invest for the long term whilst taking advantage of the numerous short-term commercial applications presented by our technology.

GRANT FUNDED PROJECTS

Collaboration on grant funded projects has continued over the last twelve months with the continued emphasis that only projects that have a clear commercial pathway or add significantly to the Group's knowledge bank on applications are undertaken. Whilst we give priority to commercial projects, this does not diminish the importance of grant funded work in support of the R&D investment made by Haydale. Grants received were from either UK or European quasi-governmental bodies and 'promoting the green economy' and 'cleantech' were the overarching themes for the funding awarded in the year. Haydale's involvement in several of these projects relates to its long-standing expertise in a number of fields and amongst other projects awarded in the year, the following commenced:

- *HiBar Film 2* – the project aims to develop the next generation of high barrier films for food packaging using HDPlas[®] plasma functionalisation through the redesign of multilayer films into 100% recyclable and compostable mono-material solutions for the food industry. Key project deliverables are intended to reduce the environmental impact of packaging plastics and offer more sustainable barrier solutions to combat food waste. We are already seeing commercial spin offs from this work with the South Korean customer, NeoEnpla; and
- *Anti-Counterfeiting technology* – Haydale was awarded a SMARTCymru grant, part-funded by the European Regional Development Fund, to further develop PATit, its anti-counterfeiting technology that uses graphene-enhanced, high-performance conductive inks and proprietary software codes for brand and security protection that is non-copiable and does not require expensive printing processes or electronic chips (NFC/RFID). PATit aims to provide a mass market anti-counterfeiting technology that addresses the current market need for secure low-cost anti-counterfeiting technologies.

This structured approach to development is facilitating the internal learning experience and creating potential products to fit with the organic growth momentum at the centre of our strategic drive.

During the year the Company successfully completed the European Space Agency (“ESA”) demisable fuel storage project and Haydale was encouraged to apply for further ESA funds to develop proof of concept with phase 2 funds being approved at the end of the financial year. Haydale was awarded funding to develop hydrogen fuel storage tanks by the Advanced Propulsion Centre in FY21 and this work has led to commercial projects for the development of type IV and type V hydrogen storage tanks in FY22 with partners such as Viritech Ltd.

INCREASING PRODUCTION CAPACITY AT AMMANFORD

Haydale has consistently increased its capacity to functionalise graphene ahead of the production curve at its Ammanford facility. In May 2021 we ordered a new HT1400 HDPlas® reactor which has the potential to increase our capacity to functionalise nanomaterial up to 90 tonnes per annum depending on factors such as the bulk density of the material and the specific enhancement required. The new reactor was delivered on site in March this year and has been successfully commissioned. Various plasma treatments and nanomaterials are currently being optimised through the reactor and this process will continue through FY23. In addition to the new reactor, Haydale invested to:

- support the production scale-up and ordered ancillary machinery to increase our powder handling capacity; and
- leased a further unit at the Ammanford site and invested in ink handling facilities that will allow the business to meet the stringent quality assurance standards required for the production of bio medical and other functionalised inks.

As noted previously, we believe that the significant capital expenditure which commenced in FY21 and completed through FY22 will allow us to meet our production requirements for the foreseeable future in the UK but we will, where appropriate, look to make further smaller ‘add on’ investments as production volumes demand in order to lower our cost performance ratio further.

INVESTING IN THE GROUP’S HUMAN CAPITAL

Alongside the investment in physical capacity during the year, the Directors have invested in the human capital across the wider business and have strengthened the teams across all Group sites and across the spectrum of sales, marketing, human resources, quality control and production. Whilst the Group has in the three years to June 2021 secured substantial savings in its administrative costs, some of which were specifically linked to the uncertainty surrounding the length and impact of the Covid-19 pandemic, the Directors saw the need this year to put in place the building blocks that will underpin the Group’s growth plans.

To that end, administrative costs have increased during the year and the annualised impact of this investment should see that trend continue into the next financial year. The cost savings achieved over that three year period were secured in a timely manner and likewise the Directors remain prudent when they are increasing the operational cost base of the business in what have become more turbulent and changeable economic times.

FUTURE STRATEGIC DIRECTIONS

The clear priorities remain to commercialise our cutting-edge technology and the progress we have made during the year and the opportunities that we are seeing gives us confidence that we are on a steady path to more widespread adoption of our technology and the benefits, both performance and environmental, that it can bring.

The Directors remain mindful that the economic backdrop remains uncertain and that risks that could impinge on our operations persist. However, the solid progress made in our core business during the year continues to reinforce the Directors’ belief that, whilst navigating the new industrial landscape will remain challenging and forward momentum is unlikely to be smooth, the Company is moving in the right direction.

FINANCIAL REVIEW

The Financial Review should be read in conjunction with the consolidated financial statements of the Group and the notes thereto. The consolidated financial statements are presented under International Financial Reporting Standards and are set out on pages 29 to 62. The financial statements of the Company continue to be prepared in accordance with FRS 101 and are set out on pages 63 to 69.

Statement of Comprehensive Income

In the year under review, the Group’s principal areas of income were sales of specialty inks, fluids and graphene enhanced composites and associated consultancy services from the UK and APAC operations and sale of SiC fibres, whiskers, particulate and blanks from the US operation. The Group’s revenue for the year ended 30 June 2022 of £2.90 million (FY21: 2.90 million) was consistent with the previous year. Revenue derived from product sales increased by £0.43 million during the year but this was offset by the reduction to reactor sales of £0.40 million (See Note 4 – Segmentation Analysis).

Other operating income, which is principally grant funded projects, was £0.44 million (FY21: £0.58 million). The Group received £0.06 million (FY21: £0.14 million) from US Covid Government Support packages and this is included in Other Operating Income. Excluding US Government support other operating income was comparable with the prior year.

The Group’s Gross Profit, which excludes Other Operating Income declined marginally to £1.75 million (FY21: £1.98 million) delivering a Gross Profit margin of 60% (FY21: 68%).

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Adjusted Administrative Expenses increased by £0.80 million (17.0%) to £5.52 million (FY21: £4.72 million). Total administrative expenses for the year were £7.24 million (FY21: £6.11 million). During the year the Group took the decision to impair the residual intangible assets relating to its 2015 acquisition of Innophene Co Ltd (now Haydale Technologies Thailand Limited) and the non-cash charge of £0.38 million is included in total administrative expenses.

The Loss from Operations was £5.06 million (FY21: £3.56 million). Finance costs, which include interest payable on the Group's debt, for the year were £0.19 million (FY21: £0.21 million).

The Group continued to direct resource to research and development with the focus for that investment on products and process that could develop into sustainable and profitable revenue streams. R&D spend for the year was £1.45 million (FY21: £1.02 million²), of which £0.34 million was capitalized (FY21: £0.26 million). During the year the Group claimed R&D tax credits of £0.43 million (FY21: £0.36 million) and it is expected that this claim will be received during the current financial year.

Total comprehensive loss for the year, including the £0.38 million non-cash charge for the impairment of intangible assets, was £4.54 million (FY21: £3.57 million).

The loss per share for the year was £0.01 (FY21: £0.01 loss).

Statement of Financial Position and Cashflows

As at 30 June 2022, net assets amounted to £7.05 million (2021: £6.76 million), including cash balances of £1.19 million (2021: £1.64 million). Other current assets increased to £3.26 million at the year-end (2021: £3.00 million) and this was mainly related to the increase in inventory of £0.11 million at the US facility during the year. Current liabilities reduced to £2.28 million as at 30 June 2022 (2021: £2.78 million) due principally to the reduction in Bank Loans repayable within 12 months.

The Right of Use Asset in respect of its leased premises increased to £2.70 million (FY21: £2.58 million) due to renewed leases in the UK. The Right of Use Liability which is split between Current and Non-Current Liabilities similarly increased to £2.92 million (FY21: £2.74 million). These movements were non-cash items and did not impact the cash outflow in the year. The Company will amortise these balances over the remaining life of the leases which varies across the sites.

The Group's US Pension Obligations of £1.36 million (FY21: £1.03 million) has increased in the year due to a combination of negative movements on investments and exchange rate movements.

Net cash outflow from operating activities before working capital movements for the year increased to £3.42 million (FY21: £2.04 million), the principal contributing factors being the Loss before Taxation of £4.81 million (FY21: £3.41 million). Cash used in Operations increased by £1.59 million in the year to £3.17 million (FY21: £1.58 million). The Group received a R&D tax credit inflow of £0.37 million in the year (FY21: £0.39 million). Net cash used in operating activities increased to £2.80 million (FY21: £1.19 million).

Capital expenditure in the year, excluding the IFRS 16 adjustments, was £1.00 million (FY21: £0.22 million).

Capital Structure and Funding

As at 30 June 2022, the Company had 510,335,691 ordinary shares in issue (2021: 425,279,798). No options were exercised into ordinary shares during the year (FY21: none).

The Group repaid borrowings of £0.84 million during the year under review (FY21: £0.22 million), which almost wholly related to the Group's commercial US borrowing facilities which have now been fully repaid.

The Company received the remaining £0.30 million of a £1.1 million UKRI Innovation Loan during the year to support scale up capital expenditure in the UK. The US operation secured a loan through the COVID-19 Economic Injury Disaster Loan scheme of \$0.20 million (£0.14 million). The net result was that the Group's total borrowings at the year-end were £1.35 million (2021: £1.73 million), of which £1.18 million was in the UK and the balance in the Group's US subsidiaries. The UKRI Innovation loan has a quarterly liquidity covenant until April 2024. There are no financial covenants extant in respect of the UK bounceback loan of £0.04 million (FY21: £0.05 million) or the Group's US borrowings.

Post Balance Sheet Event

On 12 September 2022, the Company raised £5.51 million (gross) through the placing, open offer and subscription of 275,516,784 new Ordinary Shares at 2.00 pence per share. The funds raised will be principally used to fund the general working capital needs of the business. Following the close of the Open Offer, the Company issued a total of 138,758,392 Warrants to the subscribers of New Ordinary Shares. These warrants are exercisable at a value of 2.00 pence per share in the period to 12 September 2023.

² Based on calculations submitted to HMRC for the R&D tax credit.

Key Performance indicators

The Group has historically reported financial metrics of revenues, gross profit margin, adjusted operating loss, cash position and other metrics as its key performance indicators and these are set out below.

	FY22 (£m)	FY21 (£m)
Revenue	2.90	2.90
Gross profit margin	60%	68%
Adjusted operating loss	(3.33)	(2.17)
Cash position	1.19	1.64
Borrowings	1.35	1.73

During the year under review, management also used a sales tracker, a non-financial performance metric to monitor the revenue pipeline of the business. The sales tracker monitors the number of accredited leads and assigns a probability of revenue realisation to those leads.

SECTION 172(1) STATEMENT

The Directors acknowledge their duty under s.172 of the Companies Act 2006 ("s.172") and consider that they have both individually and together acted in the way that, in good faith, would be most likely to promote the success of the Company for the benefit of its members as a whole, having regard to the matters set out in s.172.

The Directors have set out the ways in which they look to fulfil their duties in the year at section 3 of the Chair's Corporate Governance Statement on page 15.

PRINCIPAL RISKS AND UNCERTAINTIES

The Board considers that the principal risks and uncertainties facing the Group may be summarised as follows:

General Economic Uncertainty

The Directors accept that there remains a varying degree of economic uncertainty in all of the countries in which it has facilities and in the markets in which it operates. The Directors are provided with detailed projections that model future performance and liquidity of the Group and funding decisions are based on these forecasts.

Health and Safety

Many of the Group's products are advanced materials that are nano in size and, although there is little actual evidence of any health risks associated with the handling of the Group's products, there is a theoretical risk that the Group's products could be a danger to health if an individual is exposed to and/or inhales/ingests some of the Group's products. The Group takes health and safety very seriously and manages the potential health and safety risk by regular staff training, well maintained

facilities and restricting activities to only certain qualified individuals. The UK facilities are ISO 9001 and ISO 14001 accredited and the Thailand facility has ISO 9001 accreditation. A detailed health and safety report is provided to the Board each month and is a standing agenda at scheduled Board meetings.

Acceptance of the Group's Products

The success of the Group will depend on the market's acceptance of, and attribution of value to, advanced materials technology developed by the Group based on successfully mixing and dispersing raw, mined graphite, synthetically produced graphene and other nanomaterials into customers' existing products in order to improve the mechanical, thermal or electrical properties of these products.

Notwithstanding the technical merits of the processes developed by the Group, and the market and product research carried out by management to assess the likelihood of acceptance of the Group's products, there can be no guarantee that its targeted customer base for the processes will ultimately purchase the Group's products.

Speed of product adoption

While the Group makes every effort to establish realistic timelines for customer engagement, testing and purchasing of Haydale's products, there are often unforeseen delays (by both parties) in forecasting the commencement of sales. There may be regulatory hurdles to overcome and end-customer risk aversion in accepting a new nanomaterial enhanced product. The focus on commercial product sales remains an absolute priority, notwithstanding that the timing and adoption of Haydale's newly developed product lines remains difficult to predict.

Intellectual Property Risk

The Group's success will depend in part on its ability to maintain adequate protection of its IP portfolio, covering its manufacturing process, additional processes, products and applications, including in relation to the development of specific functionalisation of graphene and other nanomaterials for use in particular applications. The IP on which the Group's business is based is a combination of granted patents, patent applications and confidential know-how.

Internal procedures and controls are in place to capture and exploit all generated IP as well as to protect, limit and control disclosure to third parties and partners. The Group aims to mitigate any risk that any of the Group's patents will not be held valid if challenged, or that third parties will claim rights in, or ownership of, the patents and other proprietary rights held by the Group through general vigilance, regular international IP searches as well as monitoring activities and regulations for developments in copyright/intellectual property law and

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enforcement. The Group retains third party professional experts to advise on all matters relating to IP.

Information and Communications Technology (“ICT”) Risk

The inability to access data for a period of time either due to systems failures or the unauthorised intervention of malicious parties may severely impact the Group’s ability to conduct its day-to-day business, lead to the loss of sensitive information or result in loss of funds in a ransomware attack.

The Group aims to mitigate these threats by maintaining a third-party ICT support agreement with a respected contractor, ensuring industry standard cyber security procedures are followed, setting out clear internal procedures for communicating potential ICT breaches and by providing adequate staff training on the cyber security risk that all users face. In the event that these procedures are inadequate the Group maintains a business continuity plan with our service provider that covers longer term denial of access.

Dependence on Key Personnel

The Group’s business, development and prospects are dependent upon the continued services and performance of its Directors and other key executives. The experience of the Group’s personnel helps provide the Group with a competitive advantage. The Directors believe that the loss of services of any existing key executives, for any reason, or failure to attract and retain necessary additional personnel, could adversely impact on the business, development, financial condition, results of operations and prospects of the Group. The Group aims to mitigate this risk by providing well-structured and competitive reward and benefit packages that allow us to attract and retain key employees.

By order of the Board

David Banks

Chair

5 October 2022