

# Strategic Report

The directors present their Strategic Report for the year-ended 30 June 2020.

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 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 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.

At the core of our product offering is Haydale's patented HDPlas® functionalisation process which tailors advance materials to enhance the quality and performance of our customers' products, through a cost effective and environmentally friendly process. We have the engineering expertise to:

- create nano-material resins and composites to deliver enhanced electrical, mechanical (strength) and thermal performance; and
- formulate proprietary nanomaterial-based inks and coatings for the print and sensor markets, including biomedical and piezo resistive inks and sensors and the PATit anti-counterfeiting eco system.

From our US facility, we manufacture unique, proprietary SiC fibres and whiskers that strengthen ceramics and produce highly wear resistant ceramic 'blanks' for use in the aerospace industry and for abrasion resistant coatings. The Company has not historically functionalised its SiC.

At the year-ended 30 June 2020, the Group has the following operational activities in its five facilities.

<i>Haydale subsidiary</i>	<i>Location</i>	<i>Principal activities</i>
Haydale Limited	Ammanford, Wales	Specialist functionalisation and main manufacturing facility producing inks, resins, 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 Korean and other APAC markets.
Haydale Technologies (Thailand) Company Limited ("HTT")	Bangkok, Thailand	Ink development focused on commercial applications with plasma functionalisation facilities. Services the APAC region.
Haydale Technologies, Inc. ("HTI") and its wholly owned subsidiary Haydale Ceramic Technologies LLC	Greer, SC, USA	Produces and sells SiC microfibres and whiskers, ceramic blends and ceramic blanks to the cutting tool and coatings industries

The Group safeguards its business across these sites and the territories in which it operates through the use of patents 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. At the year-end it had two applications for patents pending.

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## CONSOLIDATION AND COMMERCIAL FOCUS

The financial year-ended 30 June 2020 has been one of consolidation in the wake of the major reorganisation and resetting of commercial priorities which commenced in the second half of FY19. This consolidation has latterly taken place against the backdrop of the Covid-19 pandemic which, whilst restraining revenue, has acted as a further catalyst to deliver on the strategic priorities that the Company set out in 2019.

The Group needed to transform itself from an organisation with a focus on research and development with longer term revenue ambitions to an efficient manufacturing business focussed on commercialising its portfolio of technology and securing profitable outcomes.

Under this broad theme, the Directors identified the following goals that would promote short term benefit whilst creating a sustainable long-term business model:

- Scale up blanks production at the US facility to commercial levels and ensure that the FY19 investment in the blanks machinery increased the Group's revenue and facilitated a move up the value chain for that operating division;
- Focussed R&D Investment on the technology that would support Haydale's commercial proposition and show a pathway to enhancing our core commercial offering;
- Priority in identifying and investing resource in grant funded projects where there is a clear commercial potential realisable in defined time scales;
- Embedding the structures, process and teams set up in FY19 to drive sales and maximise revenue;
- Increasing the manufacturing and functionalisation capability at Ammanford and commencing the process of planning for the medium-term expansion of production capacity to meet anticipated volume demands; and
- Realigning and reducing the Group's cost base to ensure that it supports the operational priorities of the business – cost control as a necessity and cost reduction where prudent.

## SCALE UP OF BLANKS PRODUCTION

Revenue at the Group's US SiC manufacturing facility lagged our initial expectations in the first half of FY20 as the business was subject to the issues that were widely reported during 2019 in the US aerospace and petrochemical sectors. Despite the on-going sector issues, we did see demand increase in the latter part of calendar 2019 and early 2020 and strong traction with customers that had pre-approved the blanks gave us the confidence to move the facility to a double shift pattern in February 2020.

From March 2020, Covid-19 had a significant impact on forecast revenues at this division and we saw a marked slowdown in demand for SiC and blanks as the global aviation industry was

grounded by the pandemic. Against a backdrop of industry predictions of a possibility of long-lasting impact on the civil aviation sector, the Directors took defensive measures to mitigate the immediate revenue impact and put in place plans that will lead towards a reduced reliance on the US civilian aviation sector going forward.

Specifically, the business received a commitment from a long-standing customer to underpin the SiC whisker volume by maintaining its short-term order patterns during the current year despite the general economic uncertainty. Whilst it is likely that this will result in reduced orders in the year-ending June 2022, this support should offer the business valuable time to deliver on the initiatives detailed below. In addition, the US business accessed funds through the US Cares Act which afforded short term support whilst the impact of the Covid-19 pandemic was assessed. Subsequent to this support ending, the division had to reluctantly reduce its workforce and, in July 2020, circa one third of the production team was made redundant at that facility.

The Directors have also taken steps to address the US division's over-reliance on the US civil aviation sector by looking outside of the US for blanks and other cutting tools customers. The Company has contracted with an experienced European agent for the marketing and sale of SiC blanks into parts of the European market and other contiguous markets. Initial samples have been provided to a manufacturer and we are awaiting test results. In the UK specifically, we have established ties with an engineering tooling supplier for the distribution of SiC blanks and subsequent to the year-end they have informed us that they have distributed our blanks to their customers for field trials.

As previously announced, we have been looking to enter the wider carbide tooling market with cost effective lower grade SiC blanks that would serve the automotive and other cutting tool markets. We have been collaborating with an Asian supplier to develop these blank tools and subsequent to the year-end have successfully completed initial tests. We are now looking to commission field trials with tooling customers in the US whilst simultaneously addressing with our supply partner operational challenges involved in scaling production to required commercial levels.

The Company has also diversified from the aviation and cutting tools sector and has looked to take advantage of the enhanced properties that SiC microfibres can deliver for coatings. In July 2020, Haydale was appointed the exclusive UK distributor to the UK water infrastructure market for US based Zirconia Inc for CeramycShield™, a one stop solution that renews and restores old or partly decaying concrete in-situ in certain applications. This product is an advanced Ceramic Surface Treatment technology in a new class of inorganic ceramic polymers, that uses Haydale's SiC microfibre as part of the reinforcement. Haydale is working closely with a UK water utility company and other water facility management companies and is pleased to announce that post

year-end it shipped its first order of the product. We believe there is good potential that this cutting-edge solution could be very important to the UK water industry as it seeks to meet its obligations under the new AMP-7 five-year plan which started in 2020 and we are looking to further extend its uses by securing DW31 (Clean Water) accreditation in the current financial year.

#### FOCUSSED R&D INVESTMENT: PROGRESS ON PLASMA FUNCTIONALISATION

The HDPlas<sup>®</sup> functionalisation process continues to be the cornerstone of the Group's offering and good progress has been made with several new and different treatments enabling more tuneable and enhanced offerings to meet customers' requirements. This enables a much greater range of graphene and other nanomaterial treatments and facilitates potential improvements in dispersal and mechanical strength, electrical conductivity and thermal conductivity. The loaded matrix can and is being added to commercial applications such as pre-preg, compounded into polymers or elastomers, or sold as masterbatch in many ongoing programmes supported by technical datasheets that have been verified by accredited third party testing facilities. We highlight the following step change improvements in the year which have been achieved at the Ammanford and Bangkok centres of excellence. These developments demonstrate the capabilities of Haydale's unique offering:

- An increase in the surface oxygen levels from 20% up to 28%, a level which allows Haydale potential access to the graphene oxide ("GO") market and indirectly elements of the electronics sector. Existing GO is typically manufactured by stripping graphite with hazardous chemicals such as sulphuric acid and leaves a toxic bi-product whereas Haydale's GO production is a clean powder in/powder out process;
- Development of next generation functionalised inks with resistivity reduced to circa 10 ohms. This lower level resistivity potentially allows graphene functionalised 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 friendly application. Existing 'tags' are generally single use and as such are consigned to landfill after use whilst Haydale functionalised inks are manufactured using a clean process and there is reduced waste to landfill on disposal;
- Further to previous work with the English Institute of Sport, Haydale has developed inks to surface coat fabrics and other garment substrates to create anti-microbial and anti-bacterial applications. The resulting fabrics are washable and can be sterilised using UV light without damaging the core properties of the fabric; and
- Further refinement of a range of graphene-enhanced prepreg materials for lightning-strike protection, utilising functionalised nanomaterials to improve the electrical conductivity of aerospace and other resins and polymers.

Developed through the NATEP sponsored GraCELS 2 project, the materials developed potentially replaces the copper mesh in various parts of structures including commercial aircraft which can reduce the unloaded weight of an airliner cost effectively with clear environmental benefits. These applications also extend to other markets such as UAVs (drones), commercial and military aviation, wind generation and other sectors where risk of damage from lightning strikes exists.

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, such as lightning strike protection on commercial aircraft, is governed by the long product life cycle of the end user and high safety thresholds that need to be validated, other developments such as the adoption of inks to surface coat fabric can be delivered to market in a much shorter time horizon. It remains core to our business model that we invest for the long term whilst taking advantage of the numerous short-term commercial opportunities presented by the commercial adoption of our technology.

#### GRANT FUNDED PROJECTS

Collaboration on grant funded projects has continued over the last twelve months with the emphasis that only projects that have a clear commercial pathway or add significantly to the Group's knowledge bank on applications with commercial potential in defined time scales will be undertaken. This rigorous criterion has reduced the number of projects that Haydale has accepted in the year but this has not diminished the importance of this work in support of the R&D investment made by Haydale. In FY20 all grant projects were funded from UK or European quasi-governmental bodies such as Innovate UK or NATEP. Amongst other projects awarded in the year, Haydale commenced the following:

- *HiBarFilm* – is a novel packaging design based on coatings for compostable-recyclable high barrier packaging film with potential applications across food packaging and other consumer products. Current food contact films require multi-layer structures to achieve the barrier performance needed but these structures make them difficult to recycle. HiBar is looking to replace these multi-layer structures with a functionalised single layer that could provide the necessary barrier protection whilst allowing for widespread recycling of these single use films. The project is in collaboration with Bangor University, Parkside Flexibles and Dunbia, the leading meat processor.
- *Affinity* – Analysis of functionalised nanomaterial interactions with polymers to better understand how functionalisation imparts specific functional groups to the nanomaterial surface for improved compatibility with the host polymer. The project is a collaboration between Haydale, the National Physical Laboratory and the Science

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and Technology Facilities Council and will be important in understanding and further enhancing the level and consistency of our functionalisation process and in allowing quick and efficient selection of improved chemistries to optimise the performance of our current portfolio.

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.

### GLOBALISATION OF THE STRATEGIC BUSINESS UNITS

The realignment of the strategic business units and the establishment of a global sales team in the year ended June 2019 created the opportunity for greater cross-selling of products. As noted above, subsequent to the year-end we shipped the first order for CeramycShield™ to a UK water company. The initial contact with Zirconia Inc was made by our US division whilst the introduction of the product to the UK water utility was facilitated by our UK sales and innovation team. They have collaborated through initial workshop trials, technical updates and commercial negotiations to the point where a field asset has been identified for application and the UK technical team will attend that trial.

We further strengthened the sales team in this year with the addition of UK expertise in both the inks and composites sectors. Despite the challenging environment the enlarged team is delivering some excellent business wins and we would highlight the following:

- A four-year exclusive distribution agreement with Uniqe to market Haydale's electrically conductive masterbatch in the Chinese market. The parties will work towards completion of initial testing, securing the requisite licences and final certifications from the relevant authorities before the contract is expected to move to the commercial phase in early 2021. Subject to successful trials, the agreement stipulates minimum annual revenue thresholds which commence at US\$300,000 for the calendar year 2021 and increase annually thereafter.
- In March 2020 Haydale announced that its graphene nanoplatelets were to be incorporated into cosmetic face sheets manufactured by iCraft, a South Korean company. The face mask sheets utilise the thermal and electrical conductivity of graphene to help the skin absorb its contents through bioelectric currents. Subsequent to the year-end, a three-year supply contract was agreed for one metric tonne of functionalised graphene nanoplatelets in the first year, two metric tonnes in the second year, and three metric tonnes in the final year. This is an exclusive agreement for the mask application within the APAC region, excluding Thailand, and represents the largest contract by volume that Haydale has signed for functionalised nanomaterial.

- Shortly after the end of the financial year in early July 2020, the Company announced that it had signed an agreement with IRPC (a Thailand based subsidiary of PTT Global Chemical Public Company Limited) to develop a graphene and functionalised acetylene black conductive inks for RFID, NFC and related applications. The screen-printing inks are to be developed as a collaboration between our Ammanford and Bangkok teams based on initial development work completed at the UK site.

These wins are supported by a strong pipeline of profitable and exciting opportunities and a number of these were listed in our announcement of 9 September 2020. Subsequent to the year-end, the cross selling of group products has continued with the commencement of blanks trials with an EMEA cutting tools end user, sales of SiC whiskers to customers in APAC and the sale of functionalised inks produced at the Ammanford site for the manufacture of anti-microbial masks by IRPC. As announced on 15 September 2020, Haydale has signed contracts for the provision of services to Dowty Propellers which will see the Company assist Dowty in examining the feasibility of various material technologies pertinent to Dowty's future product development. The projects will involve the incorporation of graphene, SiC microfibres and other nano scale materials into applications that may include erosion resistant coatings and functionalised inks for non-invasive strain sensing.

As noted, inter-site cooperation on technology, new product development and sales has created exciting and profitable opportunities for the Group. This collaboration has increased the need for all units to contribute both technically, operationally and financially to the Group. Notwithstanding the previous investment in the Taiwan operation, the Directors could see no realistic prospect of that business unit moving into profitability in the medium term. The Board therefore took the decision during the year to close the Taiwan facility and move production to the Group's Bangkok and Ammanford sites. Haydale moved decisively to fill the gap created by the closure of this facility and recently signed a distribution agreement with U-Win, a specialist materials and technology focused sales organisation, who have a mandate to sell Haydale's specialist inks and composites into biomedical sensor, automotive and sports equipment manufacturers in Taiwan. Management are pleased with the early progress of this arrangement and the collaboration between U-Win and the teams at Ammanford and in Bangkok. Within the wider APAC region, Haydale has established a memorandum of understanding with a Sino-UK facilitator for business development purposes in China. Whilst it is still early days, we are seeing encouraging interest in the region for our PATit anti-counterfeiting product and, subsequent to the year-end, we received two orders for SiC microfibres from customers introduced by this intermediary.

It is perhaps the shift in marketing that concisely sums up how the Group has embedded the one company ethos to support the drive to commercialise the technology portfolio. The focus of the

marketing team has successfully pivoted to trade marketing to support product sales and this move was reinforced during the year when the Haydale website was overhauled and business units in the US and APAC were incorporated to ensure that we had one website supporting the global outlook. The website is not only a window into the Group but an integrated part of the sales process and has product descriptions and the latest technical data specifications available for download.

To underpin the One Company philosophy, in January 2020, Haydale adopted a new EMI share option scheme in the UK to incentivise and retain existing employees and to help recruit new members of the team. Subsequent to the year-end, this scheme was rolled out in the form of a Stock Appreciation Rights plan to our US division and it remains our intention that this will eventually cover most of the wider Haydale team.

#### **INCREASING PRODUCTION CAPACITY AT AMMANFORD**

Haydale has over the last few years gradually increased its capacity to functionalise graphene at its Ammanford facility and in FY18 it successfully introduced an HT200 plasma reactor which offered seven times the capacity of the smaller HT60 reactors. This investment ahead of the production curve is now allowing Haydale to meet the demands of its commercial commitments and in particular will support the manufacturing requirements of the new iCraft cosmetic face sheet supply agreement. To support this increased demand, the Group has approved plans to invest circa £0.05 million in a new gas delivery and piping system to reduce our production changeover times, enhance output consistency and to further improve on our exacting health and safety standards.

Whilst we have a number of options to further increase our functionalisation capacity utilising our existing reactor capabilities in the current year, we anticipate the need to invest in larger capacity reactors in the medium term. Collaboration with our key OEM on plans to design the next generation of HDPlas<sup>®</sup> reactors has continued during the year and no significant technical challenges are foreseen at this time to the introduction of larger capacity plasma reactors when they are required.

#### **REALIGNING AND REDUCING THE GROUP'S COST BASE**

During the year, the Directors have continued to realign the cost base to ensure that the Group focuses resources on achieving its strategic goals. As the Group has reorganised its operations and streamlined its reporting lines, it has achieved both a more efficient and effective operating structure and delivered significant cost savings. The process that started last year has continued during the current year and adjusted administrative expenses have reduced by a further £0.87 million (FY19: £0.85 million reduction on FY18) in the year and we anticipate that costs will reduce further as a result of the annualised impact of reductions made this year and further savings that we anticipate can be realised in the year-ending June 2021.

The main savings have been achieved in the following areas:

- Realignment and reduction in the workforce with the principal savings being achieved by streamlining reporting lines. Overall headcount has reduced by circa one third in the last two years whilst the business has increased its investment in sales resource and commercial support functions;
- Closure of the loss-making Taiwan facility and relocation of the production to the Bangkok and Ammanford sites with minimal loss of revenue or customers; and
- Cost reductions across all areas of the business including reducing travel expenses, professional fees and consulting costs and making numerous smaller and, in themselves, non-material adjustments which taken together have contributed to controlling spend.

The savings secured have been achieved in a timely but not hurried timeframe and the Company has focussed first on operational efficiency and then on achieving that in the most cost-effective manner. This approach has ensured that, despite the savings achieved, Haydale is now operating in a more flexible, responsive and productive manner that supports a can-do culture across the business units.

#### **FUTURE STRATEGIC DIRECTIONS**

FY20 was a year of consolidation in the wake of the reorganisation and resetting of priorities in the second half of FY19. This consolidation has, from March 2020, been in the shadow of the Covid-19 pandemic which has depressed demand, subdued our revenue expectations and obliged the Directors to revisit the priorities set in 2019.

As detailed above, the direction of travel of the Group has not altered and it remains our fundamental priority to commercialise our exciting cutting-edge technology portfolio. Within this overarching goal we have had to refine our operational strategy to ensure that we meet the challenges of the pandemic. The Directors remain mindful that we are in uncertain times, and that the longer-term impact of Covid-19 either directly on sectors such as aerospace and indirectly on the sports and leisure, automotive and other industries may have as yet unforeseen effects on the Group's development. However, the efforts of the Haydale team and the progress made during the year continue to reinforce the Directors' belief that, whilst navigating the challenges ahead will be demanding, it is in the knowledge that the Company is moving purposely 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 as adopted by the European Union and are set out on pages 33 to 70. The

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financial statements of the Company continue to be prepared in accordance with FRS 101 and are set out on pages 71 to 78.

## Statement of Comprehensive Income

In the year under review, the Group's three principal areas of income were sale of SiC fibres, whiskers and blanks; Specialty Inks; and graphene enhanced composites. There is a further category of grant funded income which is included in Other Operating Income and will be discussed separately.

The Group's revenue for the year-ended 30 June 2020 of £2.95 million (FY19: 3.47 million), showed an overall decrease of £0.52 million on that of the prior year. This reduction reflected a fall in the Advanced Materials and RPC&I<sup>1</sup> business units of £0.45 million and £0.08 million respectively which was only partially offset by a £0.01 million increase in APAC sales. Other operating income, which is principally grant funded projects, at £0.76 million (FY19: £0.79 million) is broadly in line with prior year, but has benefitted from the support offered by the US Cares Act during the latter part of FY20.

Notwithstanding the fall in Revenue, the Group's Gross Profit, which excludes Other Operating Income, increased marginally to £2.06 million (FY19: £1.9 million) delivering a Gross Profit margin of 70% (FY19: 55%). The increase in margin was principally due to the reduced level of sales of SiC ceramic blends into the US fracking industry.

The focus on reducing costs continued in the year and adjusted Administrative Expenses fell by £0.87 million 12.7% to £5.99 million (FY19: £6.87 million) on a like for like basis, ignoring the impact of IFRS 16 on the presentation of the results. The adoption of IFRS 16 reduced adjusted Administrative Expenses by £0.63 million to £5.36 million and increased the charge for Depreciation and Amortisation by the same amount. In line with the transitional reliefs available, no adjustments have been made to the prior year figures. Over the last two reporting periods the Company has reduced its operating cost base by £1.72 million. Adjusted administrative expenses exclude non-cash items such as share based payment charges, depreciation and amortisation as well as one-off restructuring and impairment costs and, as such, gives visibility of the ongoing cash impact of our operating cost base. Total administrative expenses for the year were £7.05 million (FY19: £8.53 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 £1.42 million (FY19: £1.84 million<sup>2</sup>), of which £0.25 million was capitalised (FY19: £0.27 million). During the year the Group claimed R&D tax credits of £0.39 million (FY19: £0.44 million) and it is expected that this claim will be received during the current year.

Total comprehensive loss for the year was £4.23 million (FY19: £7.12 million), including the £0.06 million of restructuring costs (FY19: £2.13 million including an impairment of intangible assets of £1.79 million), the loss from trading activities for FY20 was £4.23 million (FY19: £5.85 million). There is no impairment of intangible assets in the year.

The loss per share for the year reduced to £0.01 (FY19: £0.06 loss).

## Statement of Financial Position and Cashflows

As at 30 June 2020, net assets amounted to £7.45 million (2019: £11.25 million), including cash balances of £0.82 million (2019: £4.69 million). Other current assets increased to £3.32 million at the year-end (2019: £3.13 million) and this was mainly related to the increase in inventory of £0.53 million at the US facility during the year. We anticipate reducing inventory levels over the next 12 – 18 months. Current liabilities reduced to £2.92 million as at 30 June 2020 (2019: £3.12 million) due principally to the reduction in loan balances.

Tangible Fixed Assets and non current liabilities were impacted by the adoption of IFRS 16 and the Group recognised a Right of Use Asset in respect of its leased premises of £1.59 million and a Right of Use Liability of £1.65 million. These 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.

Net cash outflow from operating activities before working capital movements for the year reduced to £2.58 million (2019: £4.59 million), the principal contributing factors being the adjusted operating loss of £4.02 million (2019: £7.19 million). Capital expenditure in the year, excluding the IFRS 16 adjustments set out below, of £0.04 million (FY19: £1.2 million) was significantly less than the prior year when the Group invested in the US blanks production equipment. The Group received a R&D tax credit inflow of £0.85 million in FY20 (FY19: £0.08 million), which included repayments for the R&D claims made in both FY18 and FY19.

## Capital Structure and Funding

As at 30 June 2020, the Company had 340,223,848 ordinary shares in issue (2019: 317,723,848). In November 2019, the Company issued 22,500,000 new ordinary shares in connection with an equity subscription at 2 pence per ordinary share which raised £0.45 million (before expenses). No options were exercised into ordinary shares during the year (FY19: none).

The Group repaid borrowings of £0.84 million during the year under review (FY19: £0.50 million), of which £0.58 million related to the full repayment of the £0.75 million loan secured from the Development Bank of Wales in December 2019 and the remainder related to the Group's US borrowing facilities which

<sup>1</sup> Resins, Polymers, Composites & Inks

<sup>2</sup> The method of calculating R&D spend has been changed during the year to align with the calculations submitted to HMRC for the R&D tax credit.

are secured on the Group's US based tangible assets. The Company received £0.05 million under the UK Government's Bounceback loan scheme on 2 June 2020. The Group's \$900,000 working capital facility, which is included in Bank Loans, is secured on the inventory and trade receivables of the US business and was fully utilised at the year-end (2019: fully utilised). The net result was that Group's total borrowings at the year-end were £1.25 million (2019: £1.96 million), of which £0.05 million was in the UK and the balance held by the Group's US subsidiaries. There were no financial covenants extant in respect of either the Group's UK or US borrowings.

Haydale's objectives when managing capital are to safeguard the Group's ability to continue as a going concern in order to provide return to equity holders of the Company and benefits to other stakeholders and to maintain an optimal capital structure to reduce the cost of capital. The Group manages this objective through tight control of its cash resources to meet its forecast future cash requirements.

#### Post Balance Sheet Event

Subsequent to the year-end and in recognition of the general uncertainty created by Covid-19, the Company looked to improve its immediately available liquidity through an issue of new equity shares. On 9 September 2020, the Company raised £2.98 million (gross) through the placing and subscription of 85,055,950 new Ordinary Shares at 3.5 pence per share. The funds raised through the fundraising are being used predominantly as working capital to finance the operations of the Group.

#### Key Performance indicators

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

	FY20 (£m)	FY19 (£m)
Revenue	2.95	3.47
Gross profit margin	70%	55%
Adjusted operating loss <sup>3</sup>	(3.17)	(4.18)
Cash position	0.82	4.69
Borrowings	1.25	1.96

Due to the impact of Covid-19 in the second half of the year some of the Group's KPIs were lower than targeted in particular Revenue.

During the year under review, management has also adopted a key non-financial performance metric to monitor the revenue pipeline of the Group and the business units. The sales tracker

monitors the number of accredited leads and assigns a probability of revenue realisation to those leads.

#### SECTION 172(i) STATEMENT

The Directors acknowledge their duty under s.172 of the Companies Act 2006 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 Chairman's Corporate Governance Statement on page 16.

#### PRINCIPAL RISKS AND UNCERTAINTIES

The Board has ultimate responsibility for risk management throughout the Group and determines the nature and extent of risk that the Company is willing to take to achieve its objectives. The Board considers that the principal risks and uncertainties facing the Group may be summarised as follows:

##### Impact of Covid-19

The Covid-19 pandemic has adversely affected Group revenues during the latter part of the year under review. The Directors accept that there remains a varying degree of uncertainty in all of the countries in which it has facilities and in the markets in which it operates. The potential impact of Covid-19 on the future performance and liquidity of the Group has been considered.

As reported in the Post Balance Sheet Event above, the Group raised further capital after the year-end and it continues to monitor its future funding needs to ensure that it remains a viable operation.

##### Health and Safety

Many of the Group's products of advanced materials 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.

Covid-19 has added a further health and safety risk during the current year. The Group has carried out risk assessments at each of its facilities and continues to monitor these assessments and the procedures that are in place against the latest national, regional and state guidance in the jurisdictions in which it

<sup>3</sup> Adjusted Operating Loss of £3.17 million is on a like for like basis and includes the £0.63 million of rental costs which in line with IFRS 16 has been included within depreciation in the consolidated statement of comprehensive income.

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operates. Special attention has been paid to vulnerable workers and those that are required to shield to protect other members of their household and the Group has embraced video and other technology to ensure that it communicates and monitors the physical and mental wellbeing of colleagues working from home.

### *Client Concentration Risk*

The Company's two largest customers accounted for 49% of revenue in the year (FY19: 50%) and any breakdown in these relationships could damage the business. Notwithstanding that the Company has contracts with or long term commitments from its larger customers it worked hard during challenging trading conditions to maintain good relations with its key customers.

The Company is anticipating that as its customer base expands it will naturally reduce the reliance on any one single customer although it acknowledges that it will take time to reduce its reliance on these two key customers to fully mitigate the current exposure.

### *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 and other synthetically produced graphenes into customers' existing products in order to improve the mechanical, thermal or electrical properties of the customers' existing products.

Notwithstanding the technical merits of the processes developed by the Group, and the extensive 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 sensible timelines for customer engagement 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. Additionally, a change of senior management or a corporate event such as a merger can cause revisions in customer requirements and potentially cessation of product development. The improvement in focus and direction has been a recent change to ensure commercial product sales are 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 types of carbon-based 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.

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 enforcement. The Group retains third party professional experts to assist.

### *Growth Risk*

Expansion of the business of the Group may place additional demands on the Group's management administrative and technological resources and marketing capabilities and may require additional capital expenditure. The Group monitors the additional demands on resources on a regular basis and strengthens resources as necessary. If the Group is unable to manage any such expansion effectively, then this may adversely impact the business, development, financial condition, results of operations, prospects, profits, cash flow and reputation of the Group.

### *Competition Risk*

The Group's current and potential competitors include companies and academic institutions, many of whom have significantly greater financial resources than the Group and management regularly reviews the competitive landscape. There can be no assurance that competitors will not succeed in developing products that are more effective or economic than any developed by the Group or which would render the Group's products non-competitive or obsolete.

### *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 ensure our ability to attract and retain key employees. The EMI scheme introduced in January 2020 demonstrates the Directors' commitment to incentivising and rewarding its employees.

#### *The impact of the UK leaving the European Union*

The UK entering the transition period with the EU on the 1 January 2020 has not had a material impact on the Group's performance in the current reporting period. However, in light of the uncertain progress on agreeing a future trading arrangement, as the country exits the transition period on the 31 December 2020 it is likely that the Company will have to manage some uncertainty in the following areas:

- **Materials:** any hindrance to the ability of the Group to import graphene and export its products, together with fluctuations in the value of Sterling, may have an impact on the Group's operations.
- **Regulations:** the Group is subject to the relevant regulations, including materials handling, within the jurisdictions that it operates, which include the EU. Any material adverse changes to the requirement for UK based business to adopt additional regulations as a result of Brexit may have a detrimental effect on the Group's operations.
- **Grant income:** the Group has previously benefitted from EU grant funds, The Group is seeking to replace EU grant funds with additional grant awards from Innovate UK or other UK national or regional assembly bodies that support inward investment, innovation and research and development work.

By order of the Board

**David Banks**

Chairman

29 October 2020