



XAAR

Group

XAAR
Aquinox

Welcome to our 2022 Annual Report



**A world where you
can print anything
you can imagine**

About us

We are a world leader in the development of digital inkjet technology. We design and manufacture printheads which we sell globally to Original Equipment Manufacturers (OEMs) and User Developer Integrators (UDIs).

Our technology drives the conversion of analogue printing and manufacturing methods to digital inkjet, which is more efficient, more economical and more productive than the traditional methods it replaces.

In addition to printheads (Xaar), we develop print systems for product decoration (EPS) which use our inkjet technology, as well as fluid management systems (Megnajet) which are robust, reliable, easy to integrate. We also produce high performance digital imaging technology (FFEI) for two main applications – inkjet printing and digital pathology.

We put innovation and collaboration at the core of our global partnerships, helping our customers to unleash the true power of our technologies and open up a world of opportunities for their business, today and into the future.

Sustainability at the heart of our business

We are investing for sustainability and long-term growth



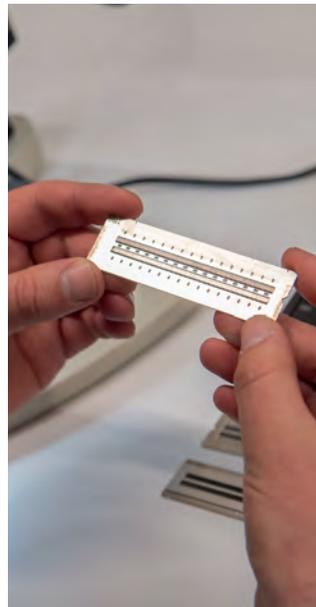
+ Environment

Leading the way in environmental sustainability for the industrial inkjet technology sector.



+ People

Be employer of choice by putting our people, their potential and wellbeing at the heart of all we do.



+ Innovation

Encouraging more sustainable approaches to design, manufacture, technology and collaboration across the whole product lifecycle.



+ Community

Actively engaging with our communities to provide practical, effective, lasting support that benefits society.

What's new?

New acquisitions

In March, Xaar completed the acquisition of Megnajet, one of the market leaders in the design and manufacture of industrial fluid management systems for digital inkjet.

New products

In November, we launched our revolutionary printhead – the Xaar Aquinox – delivering exceptional reliability, creativity, and sustainability for printing aqueous fluids.

New technology

We also launched aQ Power Technology which provides a radically new approach to how water-based fluids are jetted reliably, delivering a truly transformational industrial printhead.

Our business units

Printhead

Xaar

Our Printhead business unit focuses on the design, manufacture, marketing and sales of printheads and associated products which are used in a variety of applications such as Ceramic Tile Decoration, Graphics, Décor, Textiles, Labels and Packaging as well as 3D Printing and Additive Manufacturing.

Highlights

- Xaar Aquinox launched successfully with excellent customer response
- New technology centre opened in Sweden; new inkjet printing lab in China

 [Read more about Printhead on page 20](#)

Fluid Management Systems

Megnajet

Fluid management systems specialist Megnajet provides robust, reliable, easy to integrate products so that OEMs can get to market quickly with reduced development costs.

Highlights

- Integration into the Group completed successfully
- First phase of site improvements completed

 [Read more about Megnajet on page 23](#)

Digital Imaging

FFEI

Our digital imaging company, FFEI Ltd, focuses on high performance digital imaging solutions – from digital inkjet label presses to digital pathology scanners.

Highlights

- Growth in demand for printbars for label embellishments
- Life Sciences Microscan and Sierra showing strong demand

 [Read more about FFEI on page 24](#)

Product Print Systems

EPS

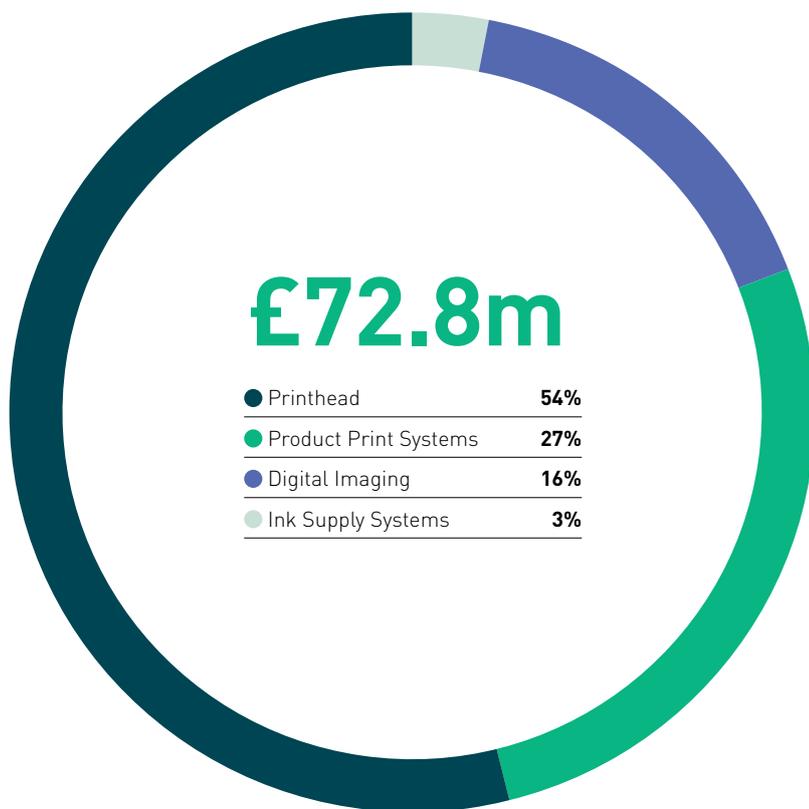
Product Print involves printing all kinds of industrial and promotional objects such as medical equipment, automotive parts, tools, apparel, appliances, sports equipment and toys. Xaar company EPS manufactures and sells a range of highly customised print systems for these applications, including some using Xaar's inkjet printheads.

Highlights

- New and strong leadership
- Excellent growth in sales

 [Read more about EPS on page 25](#)

Our performance



Revenue – continuing operations

£72.8m

2022	£72.8m
2021	£59.3m

Achieved through both strong organic growth and new acquisitions

Gross margin – continuing operations

39%

2022	39%
2021	34%

Increased from 34% in 2021, benefiting from operational leverage in the business

R&D spend

£6.7m

2022	£6.7m
2021	£5.7m

By continuing operations of £6.7 million, up £1.0 million on 2021 with investment focused on the ImagineX platform and product roadmap

Net cash (outflow)/inflow

(£16.5m)

2022	(£16.5m)
2021	£5.0m

Current year includes £5.3 million outflows for business acquisitions and 2021 benefited from £9.3 million of inflows from the sale of subsidiaries.

Refer cash flow statement on page 120

Cash & Treasury Deposits

£8.5m

2022	£8.5m
2021	£25.1m

Strong closing balance sheet with net cash including benefit of invoice discounting facility of £0.4 million (2021: nil)

Strategic Report

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Our progress in 2022

Our business strategy for Xaar plc is to sell more printheads – by extending our range of products to access all digital print markets, and by making it easier for customers to use our printheads by supplying the supporting systems components.

To ensure we are successful we carefully manage how we invest resources in the business and take a proactive approach to handling external challenges.

Extending our product range

In March we launched the Xaar Versatex print engine which provides users who have limited inkjet experience with the ability to fast track the digital inkjet development and integration process, allowing a speedy, cost effective and agile way for manufacturers to explore new potential applications.

The product is manufactured by FFEI and sold under the Xaar brand. Also launched in March was the Xaar Nitrox Elite GS3 printhead, a small drop variant delivering improved print uniformity and drop placement, creating high-definition image resolutions for smoother skin tones, gradients and colours. This product was produced for OEMs developing print systems for label and graphic applications, and also functional fluid applications, such as PCB printing.

The acquisition of Megnajet, also in March, has given Xaar easy access to a much wider range of fluid management systems which make it easier for OEMs and UDLs to adopt Xaar as a long-term development partner.

During the second half of 2022 customer feedback guided the development of the Roadmap for the Versatex print engine to ensure that we develop and manufacture according to customer requirements. In October we released an updated inkjet development kit which included new components (such as bracketry) which make it easier to use for first time developers.

In November, we launched the most significant new printhead for around 20 years – the Xaar Aquinox. The Aquinox is the latest development from Xaar's ImagineX platform, with revolutionary aQ Power Technology which provides a radically new approach to how water-based fluids are jetted reliably, delivering a truly transformational industrial printhead.

See page 10 for a full overview

With its unique technologies, exceptional print speeds, a high native resolution of 720dpi and compatibility with multiple aqueous fluid types, the Aquinox is a versatile printhead, which is ideal for printing textiles, highly absorbent substrates, or thick film coatings. In addition, thanks to Xaar's Ultra High Viscosity Technology the Aquinox is capable of jetting fluid viscosities of up to 100cP. By enabling a wider colour gamut and fluids with larger particles and more pigment for higher opacity, colours are more vibrant and whites and blacks stronger, ensuring the Xaar Aquinox can bring the latest imaginative designs and finishes to life.

In November, in Shenzhen, China, Xaar opened a state-of-the-art inkjet printing laboratory, comprising the latest printhead test equipment and print process experimentation platforms. Utilising Xaar's printheads, fluids and fluid management systems, the new lab focuses on providing our customers and partners in China, including scientific research institutions, with a variety of services such as sample printing, application development, printhead nozzle status detection and waveform adjustments for new applications. The lab also provides a way to showcase applications and provide technical consultations to drive a greater use of inkjet technologies. Sectors supported include ceramics, glass, PCB, textiles, 3D printing, packaging and labels. A key priority is to provide support to our customers in China, helping them to develop more targeted application solutions and achieve faster innovation cycles, all whilst reducing their R&D investment.

New markets and customers

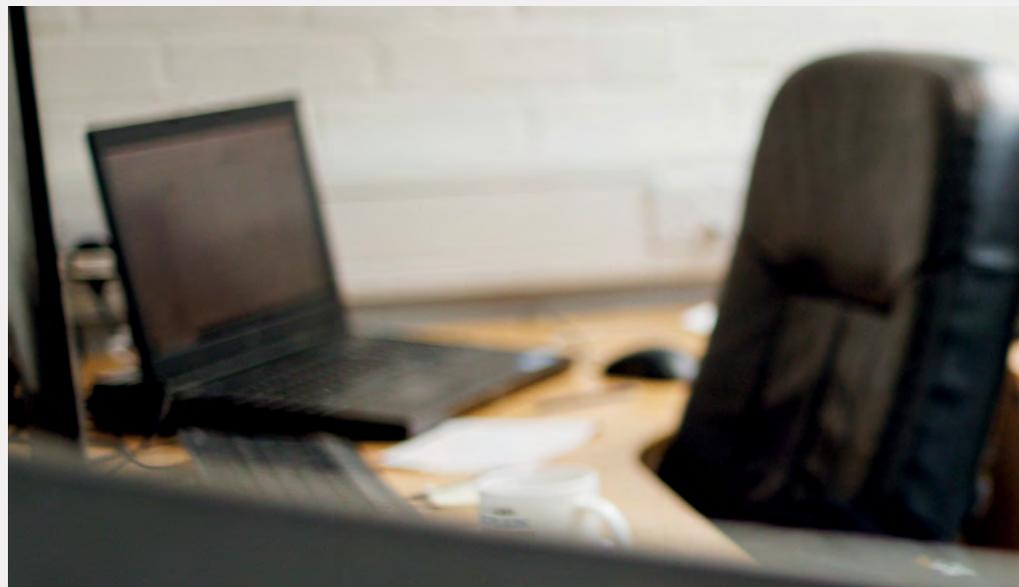
The new products launched during 2022 open up a number of new markets for Xaar's printhead business including textile printing and packaging, and have broadened our opportunities in existing markets such as ceramics, where there are new opportunities to explore such as printing glazes.

We have also been working with customers in PCB markets (legend printing in particular, with an opportunity to explore solder mask printing in the future) and our Ultra High Viscosity Technology gives us advantages for 3D printing which are of interest to new OEMs in China.

See pages 12 to 15 for more information

In addition, we have added 91 new customers this year across a broad range of applications, most of whom are in early stages of development, with five launching new machines this year.

Printbars manufactured at FFEI, which use Xaar 2002 printheads, delivered growth in the labels embellishment market in Italy.



Reshaping R&D

The acquisition of Megnajet (2022) and FFEI (2021) presented an opportunity to review our inkjet R&D capabilities across the Group. With a rich new product and technology roadmap, ensuring that our inkjet Group R&D operates at high output in an efficient and innovative manner is key. The consequent reshaping has delivered a new Group R&D structure of Technology, Print Head and Print Systems. R&D within the FFEI Life Science business unit remains important to us, as does the R&D team within the EPS business unit.



By enabling the sharing of R&D best practice and technologies across the Group, our team will continue to develop best-in-class printheads and systems to meet our customers' needs for today and tomorrow.

Focused investment in the business

We have invested in our senior leadership team to strengthen our capabilities and drive strategy in Operations, HR and R&D and the team has a proactive focus on delivering on our profit goals which drives decision making across the Group.

During the year we invested £10.0 million in inventory for the Printhead business to successfully secure materials to meet 2022 production requirements and to increase our holding of finished goods. This enabled us to deliver on customer demands throughout 2022 and also into 2023. We believe we are winning business through a competitive advantage of offering shorter lead times than our competition. We have taken further proactive actions to adapt product designs to accommodate alternative components, increasing our resilience to supply chain constraints.

We have continued to actively manage costs and take appropriate action in response to the significant cost inflation that is prevalent globally. Our electricity unit costs are fixed into H2 2023 and we have invested in raw materials to further mitigate against rising costs. Where possible we have passed cost increases on to our customers through increased sales prices.

Substantial time has been spent planning for the upgrade of our Huntingdon facility which started in January 2023, now reopened and involves a significant modernisation of our manufacturing capabilities. Benefits will be much improved efficiency, yields and reduced product costs in the longer term.

The investment in working capital we have made ensured we are able to meet fully all customer demands whilst the factory was closed for the work to be carried out.

With the launch of our Sustainability Roadmap in March, Xaar has committed to achieving some key sustainability goals which will determine the focus of our investment in the business over the coming years. The Roadmap was covered in the 2021 Annual Report and Accounts, and can be found here:

ESG
Xaar plc Annual Report and Accounts 2021



With one pillar of our Roadmap centred on 'Community', we announced our charity partnership with Break in the UK and Manchester Machines in the US. See ESG update on pages 30 to 41. To drive the fundraising for our chosen charities, we put in place a cross functional team of charity champions who have volunteered to create and drive our fundraising activities, working in close partnership with charities. To date, in the last nine months the UK business has raised almost £11,539. The Company will match the funds raised by Xaar UK employees. In the US, Xaar company EPS has donated \$2,500 to a 4-H club that competes in a robotics competition. We provide additional support such as engineering, project reviews and internships for older students. EPS also recently started donating food to the local community food cupboard.



Chairman's introduction

Strong performance and good momentum



Strategic and operational highlights

- + Customer engagement accelerated due to expanded vertically integrated product range
- + Phase 1 of operational efficiency programme with factory re-organisation completed on time and on budget
- + Ongoing delivery of product roadmap with successful Aquinox product launch
- + Investment in working capital has allowed Xaar to successfully mitigate supply chain constraints and deliver on customer demand
- + Further operational progress made in Engineered Printing Solutions (EPS), delivering strong revenue growth
- + Expanding business capability and vertically integrated product offering: acquisition of Megnajet and successfully completed FFEI integration
- + Sustainability Roadmap embedded in business with clear strategy to reach 'net zero' by 2030

Into my third year as Chairman, I am delighted with the progress that the business has made, operationally, commercially, and strategically.

We are well positioned in growing markets, with a high quality leadership team, strong R&D and manufacturing capabilities, and with technology that differentiates us from our competitors. In addition, strong capital discipline is enabling continued investment in growth opportunities.

Our central focus remains on our core competence of designing and manufacturing world leading printheads. The continued rebuilding and strengthening across all areas of our business has resulted in a platform from which we can deliver reliable business performance and meet the requirements of our customers.

We also have a clear focus on the value chain, placing our customers at the centre of our business. We offer integrated solutions in a wide number of market sectors, enabling more consistent financial performance. The technical and competitive advantages of the Xaar Bulk piezo product range has progressed well with the launch of our latest printhead, Aquinox. This product opens new markets to Xaar with its water-based capability, and we were pleased to see the product launched to plan and on time, reaffirming the expertise and focus we have across different teams in the Group.

The Board is delighted with the progress that the management team has made in re-energising the business and would also like to thank our teams and partners worldwide for their commitment and adaptability.

Continued strategic progress

This year's strong trading performance has been driven by all elements of the business and momentum continues to build. A clear strategy is now embedded across the Group with a focus on customer needs and a drive to highlight the benefits delivered by adoption of Xaar digital print technology.

This focus, along with our well-defined product roadmap, has increased the quality and responsiveness of the business, and meaning we are well placed for further performance improvements. We believe a significant opportunity exists in market sectors and applications where Xaar technology provides commercial and technical performance advantages.

Operational improvements have also been made. We have previously discussed investing in our manufacturing facilities to improve efficiency and lower costs, and the first phase of this programme has now been completed. The Huntingdon factory reorganisation was completed in early 2023 on time and on budget. This will enable us to operate more efficiently, increase capacity and crucially generates significant cost savings, especially in reducing our energy consumption.

The acquisitions of FFEI and Megnajet have been successfully integrated, adding capability and broadening our product range. This has increased our market opportunity and means Xaar is better placed to support customers with the integration of our printhead technology.

Our product print systems business, EPS, has had an excellent year, with increased customer engagement leading to significant revenue growth, higher gross margins and strong profitability.

Strong financial results

In what has proven to be another challenging year for the global economy, the Group delivered strong sales growth of 23% (8% organic) and achieved profitability for the year. We have taken actions to build organisational strength and resilience, while focusing on cost control and careful cash management.

Additionally, there has been investment to increase efficiency and ensure consistency of operational performance. This will mean the business is well placed to further deliver on the significant opportunities ahead as external pressures ease.

As has been the case for many businesses, over the past year we have been faced with unprecedented supply chain issues coupled with rising global inflation. Through taking proactive measures with a focus on managing our supply chain, investing in both raw materials and higher levels of finished goods, we have been continually strengthening our business resilience and maintaining uninterrupted supply to our customers.

The Printhead business made good progress both commercially and operationally during the year despite the ongoing impact of COVID-19 related restrictions in China. Whilst sales volumes have grown in the USA and remained stable in EMEA, they declined significantly in Asia. The Printhead business has nevertheless performed well and responded to these difficulties in a proactive and controlled manner.

As I discussed in my report last year, following challenges in market demand and performance, a new management team was appointed in EPS. This has led to a recovery in performance during 2022 with a strong order book profile and excellent results. Revenue grew 41% (24% in local currency USD), gross margin is back at pre-pandemic levels and a full year profit delivered.

We are pleased with the progress made at FFEI and Megnaget. Having only joined the Group in July 2021 and March 2022 respectively, the integration of each business has been completed, and performance is in line with our expectations.

Cash of £8.5 million and a robust balance sheet provide a platform for further investment. This is after investment in working capital movements of £12.2 million as we managed supply chain constraints and ensured continued customer supply throughout the factory shutdown in Q1 2023.

The Board has not declared a dividend in 2022. We continue to believe that prioritising cash for investment in the business will deliver more compelling returns for shareholders in the medium term.

Committed to sustainability

We have made significant progress on ESG and the Group's Sustainability Roadmap. The Board remains committed to the business being carbon net zero by 2030. The Sustainability Roadmap demonstrates clear industry leadership and establishes a firm pathway for a more sustainable future. Decarbonisation remains a key objective and we have started work on Scope 3 and TCFD Climate Modelling for all Xaar Group sites which will be completed by early 2023.

We are passionate about delivering solutions and products for our customers that are cleaner and healthier. Our products are well placed to deliver significant benefits environmentally for our customers through greater efficiency in power consumption and reduction in water usage.

The continued rebuilding and strengthening across all areas of the business has generated a strong platform for reliable business performance.

Andrew Herbert
Chairman

We also seek to have a wider positive impact on society by understanding and prioritising employee needs, doing business responsibly, and reaching out to our local communities. The majority of our sites in the UK have moved to 100% renewable energy. We aim to switch all contracts in the UK to renewable electricity by the end of 2023. All printhead product packaging is fully recyclable. Our Apprentice Programme is well developed across the business, and we continue to support activities promoting STEM (Science, Technology, Engineering and Maths) subjects amongst young people as well as several sponsorship programmes supporting young university students and industry placements.

Driven by our people

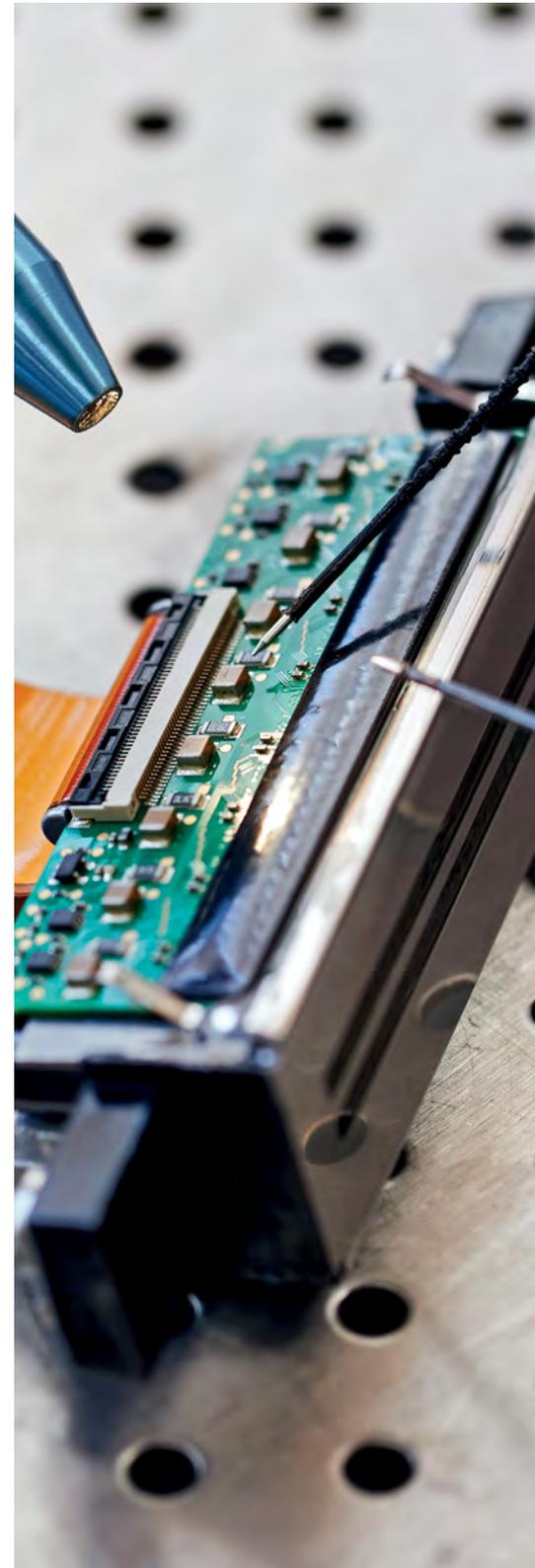
The Board is delighted with the progress made by the Group this year, in the context of a volatile external environment for both businesses and individuals. I would like to thank all our employees who have worked tirelessly to innovate, deliver for our customers, and inspire and support each other with passion and integrity. Xaar is a great company, and I am excited about what we can achieve in the future.

Outlook

With strong foundations in place as a result of the progress in our strategy over the last three years, the Board is optimistic about the opportunities that lie ahead for the Group and for all our stakeholders including employees, customers, and shareholders.



Andrew Herbert
Chairman
27 March 2023



Why invest

1 Market opportunity

We focus on markets where we have a competitive advantage, where we can offer a number of benefits over incumbent technologies.

- A unique recirculation technology past the back of the nozzle as well as inside the nozzles which offers substantially better printhead reliability and nozzle open time
- Patented technology which enables printing fluids which have a high pigment content and high viscosity. This gives us a wider window of opportunity because we can handle a wider range of fluids to deliver richer, more vibrant colours, or add functionality like scratch resistant or anti-slip surfaces, or value add embellishments and print effects
- An open internal printhead design which produces industrial levels of printhead reliability and consequently higher production uptime.

Sectors where we focus include Ceramics and Glass, Coding and Marking and Direct-to-Shape, 3D and Advanced Manufacturing, Packaging and Textiles, as well as Graphics and Labels.

2 Proven technology and product roadmap with a strong value proposition

We have a product roadmap based on our new generation ImagineX technology platform that will develop our range to offer advantages over the competition and open new markets. Our unique technologies and products are the leading enabler for innovation and creativity, and for driving production efficiencies for many industries.

3 Experienced and focused management team

As the only leading independent printhead manufacturer we are able to have a flexible, collaborative approach. Our experienced management team is committed to remaining customer-centric with a focus on Xaar's profitable growth strategy of offering our customers a vertically integrated solution.

4 A clear strategic vision

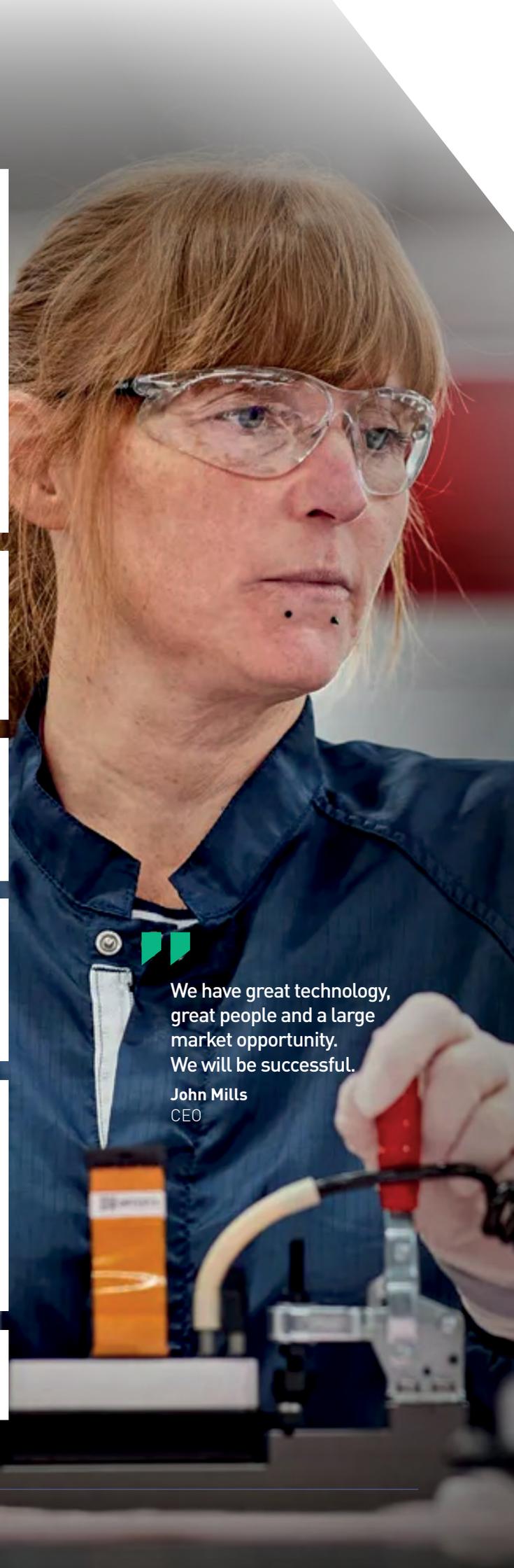
Our customer-centric business model places the OEM and UDI at the heart of everything we do. We continue to execute on our plan to become more vertically integrated to drive printhead sales. Our ability to supply electronics, software, fluid management systems and print engines alongside application support, combined with a disruptive technology, sets us apart from our competition.

5 Roadmap to deliver the opportunities

Our ImagineX platform (launched September 2020) is driving our progress, enabling the business to increase its addressable markets whilst establishing market leading products across all our sectors. ImagineX has already delivered significant enhancements to the current portfolio; these include substantially improved speed and throughput as well as high throw distance and viscosities of over 100cP at jetting temperature. We have now launched three new printheads on this platform (Xaar Aquinox, Xaar Nitrox and Xaar Irix). Future product launches focus on increased robustness to improve the life of the printhead and even higher resolutions.

6 Strong balance sheet position

We have the resources necessary to implement our strategy. This provides the platform for security and a great foundation for future growth.



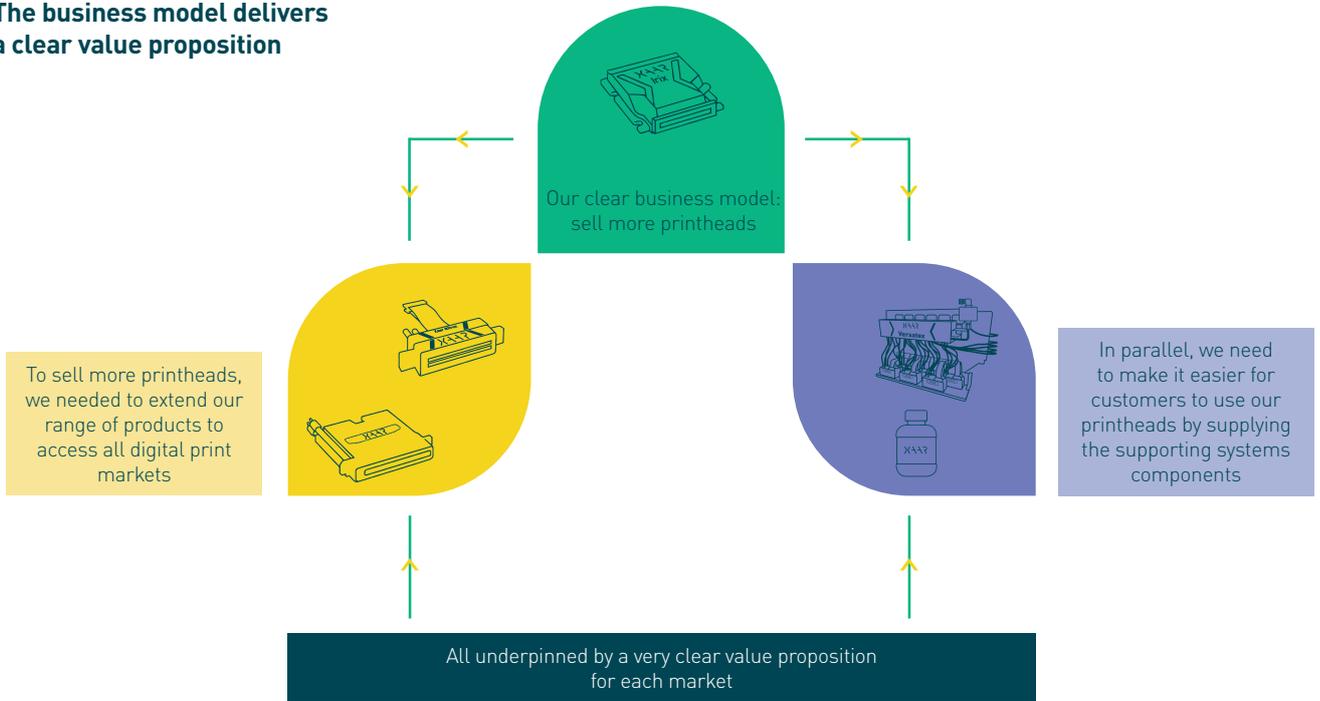
We have great technology, great people and a large market opportunity. We will be successful.

John Mills
CEO

Our strategy is to sell more printheads

For this to occur we need to extend our range of products to access all digital print markets, as well as make it easier for customers to use our printheads by supplying the supporting systems components. To drive this we need to ensure that our customers understand what Xaar has to offer and why it is the right choice for them.

The business model delivers a clear value proposition



Business model and strategy

Xaar's business is focused on inkjet technology, which together with our partners and customers, we have been transforming for over 30 years.

Xaar plc is structured into business units: Xaar Printhead, the largest BU, focuses on printhead technology; our other three business units concentrate on fluid management systems, product print systems and digital imaging.

Our printhead business sells our inkjet technology in component form (the printhead, branded Xaar) to OEMs who produce and sell the complete digital printing solution. We also work with User Developer Integrators (UDIs) who are building their own digital system. We work collaboratively with leading fluid manufacturers to fully optimise the fluids beyond a lab setting to ensure optimum print performance in real world applications. We also sell Xaar branded fluids to UDIs (manufactured by our ink partners) which helps to build a long-term relationship with our customers. In addition, we actively partner with hardware and software integrators as well as substrate suppliers to deliver a robust and attractive total solution to our customers.

In March 2022 we completed the acquisition of Megnajet, market leader in the design and manufacture of industrial fluid management systems for digital inkjet. The company provides robust, reliable, easy to integrate products which are sold to a range of OEMs in USA, Europe and Asia. Our digital imaging company, FFEI Ltd, manufactures high performance digital imaging solutions – from digital inkjet label presses to digital pathology scanners. Its inkjet products (print engines) use Xaar printheads. Our product printing business, EPS, designs and develops complete industrial printing machines which are sold to end users.

Our business model

Xaar designs



We have R&D facilities in Cambridge and Stockholm (printhead business), and Hemel Hempstead (print systems) and Vermont (EPS).

We invest a substantial proportion of our product revenue in R&D to remain a world leader in inkjet technology (2022: approximately 12%).

We continually add to our Intellectual Property (IP) portfolio, and currently, across the Xaar Group, we have around 355 patents and patent applications. Our R&D staff totals 85 which is approx. 20% of the total workforce (at the end of 2022).

Xaar manufactures



Xaar manufactures its printheads in Huntingdon, UK. Xaar's manufacturing is capital intensive.

The Group has invested over £70 million in assets and production facilities in Cambridgeshire, UK since the plant opened in 2007.

EPS, our product printing business, manufactures customised and bespoke printing solutions in Vermont, USA.

FFEI, our digital imaging business, manufactures imaging solutions in Hertfordshire, UK. Megnajet manufactures supply systems in Northamptonshire, UK.

Xaar markets



Xaar offers a wide range of industrial inkjet printheads and print systems which are designed and produced to meet the customer-driven requirements for a range of manufacturing applications.

Primary markets include:

- 3D Printing
- Ceramic Tile Decoration
- Coding & Marking
- Decorative Laminates
- Direct-to-Shape
- Functional Fluid Deposition
- Glass Printing
- Graphics
- Primary Labels
- Packaging
- Product Printing
- Textiles.

Xaar sells



Xaar's printhead business sells direct to OEMs and UDIs around the world through its global sales team. Xaar's highly skilled application engineers offer technical support to assist OEMs and UDIs in the successful design, build, commissioning, and ongoing maintenance of printing systems.

We export over 95% of our printheads to customers around the world, within the Europe, Asia and North America regions.

Xaar company EPS sells product printing equipment, services and consumables. The majority of sales are to US customers.

FFEI sells via three routes to market: as a full system to one OEM, as a ready to integrate print engine via distribution, and as a Xaar branded print engine for our UDI customers. Megnajet sells its products directly to customers and via Xaar.

We create value for all our stakeholders

Customers

OEMs, User Developer Integrators and end users are able to innovate in their manufacturing methods and their products as well as benefit from a shorter distribution chain; they can take products to market more quickly, implement more precise and efficient processes, easily produce short batches, improve productivity, reduce waste and deliver more creativity.

Shareholders

A key goal at Xaar is to maximise the long-term growth in value delivered to shareholders via sustained, consistent growth in earnings per share. This is delivered through continued investment in R&D and producing a pipeline of new products which deliver a sustained return on capital employed.

Our employees

Our success depends on the skills, capability and engagement of our people. We want to create an environment where everyone can come to work and share our values and passion for developing and manufacturing world leading technology.

We are building a culture where our employees are passionate about what they do, and where integrity, innovation, creativity and collaboration are a way of life. To foster this, we have a cross-functional project team which is committed to embedding our values throughout the whole Group, looking at ways to highlight our EPIICC values awards and driving the Company-wide acknowledgement of the nominated employees. During 2022 we had 572 nominations across the Group for our values awards.

To build up team collaboration and provide an opportunity for employees to socialise away from their desks, we regularly provide a coffee van or lunch. In addition, we have continued with forums where employees have the opportunity to meet and chat with all our Non-Executive Directors along with the Exec Xchange where our employees get to meet members of the senior management team in smaller groups to ask questions and exchange ideas.

We like to build long-term relationships with all our employees by helping them grow and develop and by making Xaar businesses interesting places to work as well as great companies to be involved with. Internal promotions are an important part of this, and in 2022 we promoted over 32 people.

Environment

Digital print methods are inherently more environmentally friendly than the analogue techniques we seek to replace. Our research shows that, compared to analogue alternatives, digital has a huge impact in reducing energy consumption (by up to 55%), water consumption (by up to 60%) and CO₂ emissions (by up to 95%), but also in reducing pollution and waste materials. Xaar is committed to reducing its impact on the environment wherever possible. Our actuator technology consumes less energy than competitor alternatives and our industrial printheads can remain in use for many years. In addition, we use a continuous improvement methodology and we have adopted a manufacturing ethos of 'reduce, reuse and recycle'. Environmental best practice and our investment in sustainable manufacturing and operational efficiencies remain key areas of business focus.

Our Sustainability Roadmap, launched in our 2021 Annual Report, continues to drive and shape all business decisions via the ESG Committee. The Roadmap has four key pillars – Environmental, People, Innovation and Community; its purpose is to drive our ESG goals beyond the energy reduction scope to a Group-wide activity. We continue our focus on moving to solar energy. One more of our buildings in Huntingdon will be switched over to green energy in January H1 2023, and our Megnajat facility in Northamptonshire will move over to green energy in September 2023 once the current contract expires. Whilst we have more work to do, over 99% of our UK consumption is already green. We completed the installation of our planned EV infrastructure, with ten new 22 kW chargers installed across the Huntingdon and Waterbeach facilities, joining the 27 kW chargers that were already in place at FFEI. We are planning to undertake a major energy reduction project through January and February 2023 leading to an expected 40% reduction in electrical energy consumed in the Huntingdon manufacturing facility from the end of Q1 2023. This includes the installation of LED lighting. Planning for solar installation continues for the Huntingdon factory and our goal is for installation to start end of Q3 2023, assuming successful contractual discussions.

Digital printing compared to analogue reduces consumption by up to:

CO₂ emissions

95%

Energy consumption

55%

Water consumption

60%

Source: Xaar.

A radically new approach for jetting water-based fluids reliably

In November we launched our new and revolutionary industrial aqueous compatible printhead, the Xaar Aquinox. Built on our ImagineX platform, this printhead has been developed to respond to market requirements for a truly reliable, robust printhead that can print a much wider range of inks including high viscosity and high pigment loading.

This is our first printhead to feature our new, patented aQ Power Technology to deliver enhanced reliability when printing with water-based inks. aQ Power is a combination of technologies, which work together to increase lifespan and durability:

- an updated internal printhead architecture
- a new advanced material set
- a novel technique for ejecting the ink droplets.

The Xaar Aquinox offers a radically new approach to how water-based inks are jetted. It also incorporates our industry-leading TF Technology fluid recirculation and Ultra High Viscosity capability. This means that Aquinox can reliably jet inks at viscosities at ten times more than a typical printhead allows.

Fluids of up to 100cP at jetting temperature can be reliably jetted therefore overcoming current constraints on ink formulations, so our customers can develop and print with the ink they want.

Xaar Aquinox

Markets

The Xaar Aquinox and our Ultra High Viscosity Technology is of interest to OEMs developing machines for a broad range of applications, which include:

Textiles

- Being able to jet high pigment loaded inks with high viscosities means water usage, energy consumption and CO₂ emissions can be reduced
- These benefits, combined with the long-life span of the printhead, increase the efficiency of end user businesses while delivering a more sustainable solution at a lower total cost of ownership.

Packaging

- The Xaar Aquinox enables a new generation of inks that achieve the required colour saturation with less fluid, allowing increased print speeds
- Xaar's Ultra High Viscosity Technology opens new possibilities for ink formulation, improving adhesion, reducing drying time and energy consumption whilst controlling dot spread on even the most challenging of substrates.

Ceramics

- Aquinox supports printing aqueous glaze as well as colour, providing the opportunity for a truly digital end to end aqueous solution.

Across many markets we see Aquinox and our Ultra High Viscosity Technology breaking new ground, enabling new applications that were previously not possible with inkjet.



XAAR
Aquinox

Marketplace

Xaar's digital inkjet technologies are transforming print processes in a wide range of markets.

Industrial markets

Ceramic Tile Decoration

The majority of the tile decoration market uses digital inkjet technology because, compared to traditional analogue techniques, it is superior in terms of image quality and is lower in cost. In addition, it offers the advantages of flexibility, inventory reduction and larger tile size capability. This is a mature market for Xaar with strong competition. However, with an average useful life of five to six years, several hundred new ceramics printers are required each year for the foreseeable future. Xaar's unrivalled 720 dpi print resolution is starting to attract the attention of tile manufacturers looking to print large slabs for kitchenware (such as table tops).

Decorative Laminates

Realistic wood finishes or creative design are the key features which sell the board/ plank/ finished item. The digital quality that can be produced with Xaar printheads matches the quality produced by the analogue process, thereby offering the opportunity for more economic short run work to be undertaken whilst reducing inventories and improving time-to-market.

Functional Fluid Deposition

Xaar's focus on functional fluid is to promote our inkjet technology, which offers an unrivalled method of non-contact, fluid deposition with incredible precision, control and speed. Typically applications are challenging, pushing our technology to and beyond known limits in markets such as Flat Panel Display, Semiconductors, Printed Electronics and Optics.

3D Printing

3D Printing is a manufacturing methodology that encompasses a range of processes and applications, with a common theme of building parts up, usually layer-upon-layer. This additive approach ultimately enables manufacturers to eliminate the need for tooling. There are significant advantages, including superior geometric freedom, giving designers much more capability, and a substantial reduction in lead time for products. In addition 3D Printing provides the facility to tailor unique products to consumers, enable de-centralised manufacturing and shrink spare part storage.

Glass Printing

Architectural glass is increasingly used to complement ceramic tiles in modern commercial design, and is starting to be used in residential projects also. Functional glass, such as car windscreens or glass tops used in induction hob cookers, is predominantly printed using analogue screen techniques, but is increasingly moving to digital to provide production flexibility and inventory reduction. This is an emerging sector for digital inkjet and the Xaar 2002 is the leading printhead for this market due to technology advantages.

Packaging markets

Coding & Marking

Coding & Marking is an application which relates to printing product identification codes such as batch numbers, use by dates and barcodes. Xaar's technology is used to print barcodes and logos on outer case/secondary packaging of consumer goods. This is an established and stable business, and competes with alternative technologies including print and apply, and thermal inkjet.

Labels

Labels are used for many different applications, including product identification, name tags, warning and hazard identification, promotions and as decals for product decoration. There is a large range of substrates and inks in this application which adds complexity to the conversion process. Xaar excels in two areas of label printing: colours (including white) and varnish based finishing effects using Xaar's High Laydown Technology.

Direct-to-Shape

Direct-to-Shape is the application where bottles and containers have the image printed directly onto their surface without the need for a label. The solution is aimed at reducing unit costs versus the application of a label. This approach can also be used as part of the identity of a brand, and provides differentiation versus other products that use paper or plastic labels. Xaar printheads are the best at printing in a vertical mode (a frequent requirement for these applications), thanks to TF Technology.

Packaging

The Packaging market is a broad sector covering flexible packaging, bottles, pouches, sachets, food packaging and more. Most packaging is printed using conventional analogue methods, but digital inkjet has the potential to revolutionise this part of the manufacturing process. Xaar printheads for the packaging industry facilitate cost-effective print runs and rapid production turnaround in what is a fast-moving industry. In addition, Xaar's unique Ultra High Viscosity Technology helps customers to print bright bold colours, ultra-thin layers for more flexibility, and a wider range of fluids and textures.

Other markets

Product Printing

Product Printing covers printing onto all kinds of industrial objects, including consumer and promotional items, packaging, medical, automotive, apparel, appliances, sports equipment and toys. Xaar's printheads are particularly suitable to these applications because the printhead design enables the use of a wide range of fluids as well as configurations options. In addition, Xaar company Engineered Printing Solutions (EPS) is a leader in this sector, providing best-fit custom printing solutions for many different applications, including promotional, packaging, medical, automotive, apparel, appliances, sports equipment and toys.

Grand- and Wide-Format Graphics

Grand- and Wide-Format Graphics includes both indoor and outdoor signage and advertising, including billboards, posters and point of sale advertising. It is the most mature industrial inkjet market, active for over 15 years. Xaar's early product range was instrumental in the growth of the digital graphics industry around the world.

Textiles

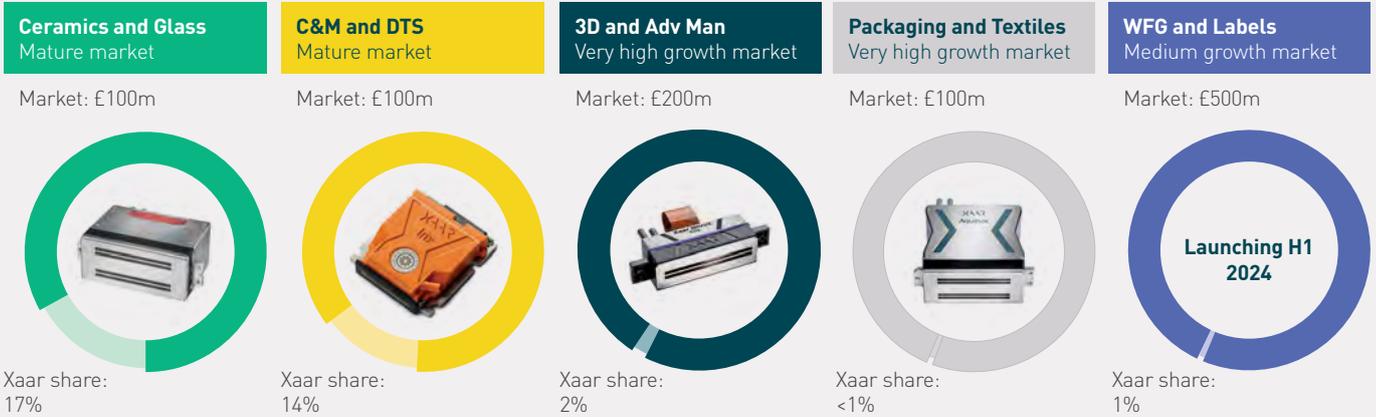
The Textiles sector is a growing market which covers a broad range of applications from fashion, sports, signage and display textiles, to home furnishings and technical textiles, for example for automotive or medical use. Sustainability is becoming a significant consideration, with industry challenges which include supply chain and raw materials pressures and a shift away from Asia ('near shoring'). Other drivers for a move to digital include desire for economic short print runs for faster and more frequent design changes as well as an increased demand for customisation. Whilst Xaar is later to the market than some competitors, the Aquinox has been developed to fix the need for a more reliable inkjet solution. In addition, Xaar technology offers the capability to lay down more pigment and reduce the carrier fluid, meaning richer, more vibrant colours can be printed reliably and more sustainably, and less energy is used in the drying process.

New inkjet applications

Xaar's Ultra High Viscosity Technology enables jetting of fluids around 100 centipoises (cP) at jetting temperature, equating to approximately 1000cP at ambient temperature – going well beyond average jetting capabilities of 10-12cP. This opens up inkjet to a wider range of applications including printing adhesives and solder masks.

Product roadmap delivers a significant total addressable market

We focus on a number of core market sectors where our technology offers a competitive advantage. We group these sectors together as shown here because they require the same functionality from the printhead. This is largely driven by requirements for ink type, speed, resolution and robustness.

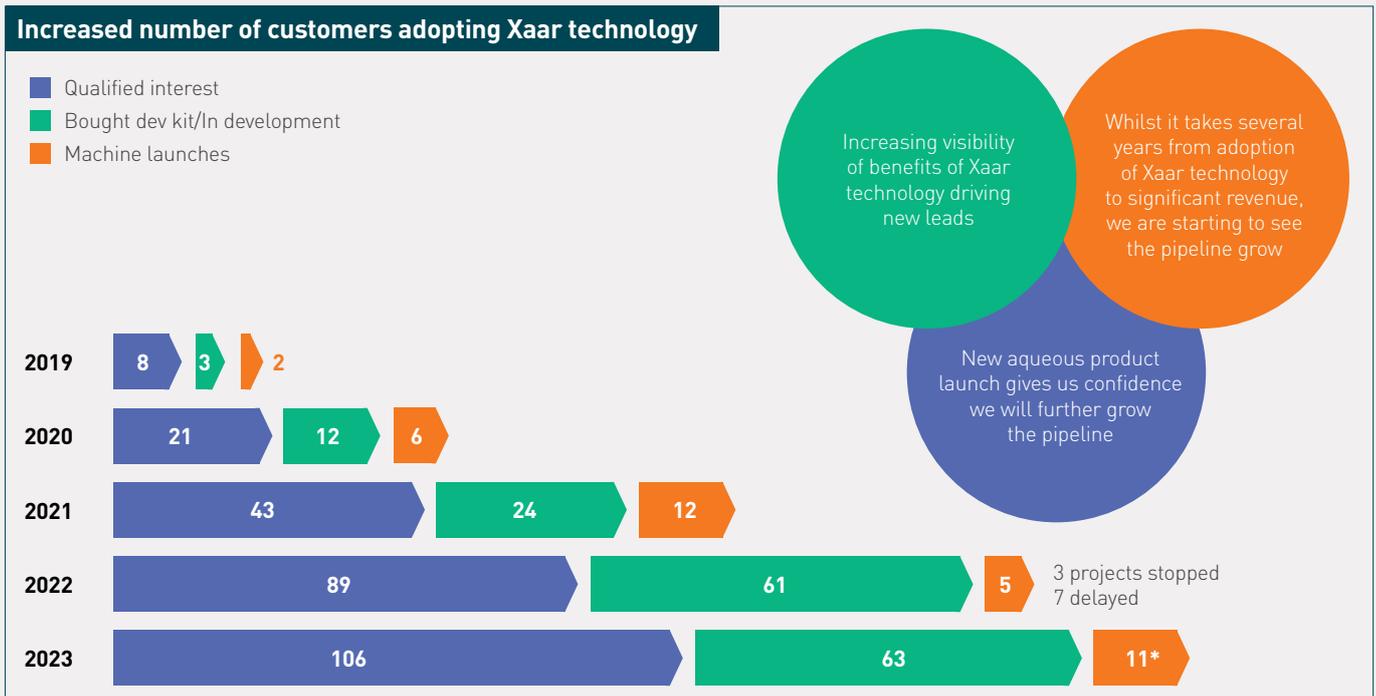


Source: Xaar's internal market sizing model built using data from range of market reports looking at markets up to 2027 including from PIRA: The Future of Inkjet Printing to 202, Smithers: Global Industrial Inkjet Printhead Market Insights, Forecast to 2028, Information Center: The Future of Digital Textile Printing to 2026, Smithers.

Increased number of customers adopting Xaar technology

Our new business model, product roadmap and value proposition have already had a very positive impact on our customer engagement.

It can take several years from adoption of Xaar technology to significant revenue as you can see in the table below. Since 2019 the pipeline has grown substantially, and future pipeline growth will be driven by us having the right products in our core markets (which you can see in the diagram above). With the recent launch of our aqueous printhead and the next launch to help us re-enter the Graphics market, we expect to see an acceleration in the pipeline with revenue growth following 1-3 years behind.



Source: Data taken from Xaar's CRM software reports

*Projected machine launches in 2023.

3D printing is an important focus for Xaar's printhead business with the needs of the sector supported by our extensive product portfolio and strong partnership approach to working with customers.

Xaar works with OEMs in three different types of 3D printing: Material Jetting, Binder Jet and Powder Bed Fusion.

Material Jetting

Material jetting creates objects in a similar method to a two dimensional inkjet printer. Liquid-based 3D material is jetted onto a build platform using inkjet printheads.

Example: Xaar customer dp Polar manufactures 3D printing systems which use Xaar 1003 printheads to produce parts on a continuously rotating print platform with a build area of just under 1 square metre. This system was designed to deliver scalability and productivity and has been developed for the automotive, aerospace and consumer markets.

▶ www.dp-polar.de

Binder jetting

The binder jetting process uses two materials; a ceramic or metal powder-based material and a binder. The binder is usually in liquid form and the build material in powder form. A printhead moves horizontally along the x and y axes of the machine and deposits alternating layers of the build material and the binding material.

Example: Linc Solution is in the process of developing a system for metal binding for manufacturing of automotive parts.

▶ www.lincsolution.com

The Powder Bed Fusion

Of the different types of Powder Bed Fusion, Xaar's involvement is with High Speed Sintering which uses polymer powder-based 3D materials, with Xaar printheads jetting the infra-red absorption fluid into the powder bed, which is exposed to infra-red energy. The printhead causes the powder to melt and fuse together.

Example: The H350 from Stratasys uses Xaar 1003 printheads within its SAF technology to reliably produce end-use production parts with a wide spectrum of part properties.

▶ To learn more visit: stratasys.com/en/3d-printers/printer-catalog/saf/h350/

Dive deep into 3D printing



Why is inkjet so relevant for 3D printing?

Inkjet technology offers some significant technical and commercial advantages for 3D compared to the standard manufacturing methods.

- Inkjet can be used to make parts with a range of materials – polymers, metals and ceramics. This means that once a manufacturer has learned how to jet, there are a wider range of applications they can address
- There are sustainability advantages too – you only print the fluid you need to use. Also as it is a contactless technology standard digital advantages apply – less breakages and less waste. And, it is possible to design a whole solution since consolidating many parts into one 3D part is possible. This saves time to market, reduces the materials needed and saves on tooling costs for multiple parts
- Additive manufacturing with inkjet provides the opportunity to use a single process but has multiple material types: materials of different properties can be used in different areas of a product, for example tough and flexible, (mimicking bone and cartilage). Mixing material families (metal and plastic) is not impossible but not usual
- Distributed manufacture: parts can be made customised to the local market in the local market using local market economies of scale. Key know how/components are shipped. Everything else is logistically optimised
- Spares can be created for obsolete equipment from legacy drawing
- Mass customisation: similar to Ceramic tiles or graphics, if you want one part or one million parts, it is the same unit price and each part can be different.

Why does Xaar have unique advantages in this market?

- Materials: Xaar's Ultra High Viscosity Technology widens the range of material properties that can be introduced because Xaar's printheads can reliably jet fluids with high viscosities and high particle loading. For the end user this means that material properties can improve, such as toughness, flexibility and elasticity, so that, for example optically clear parts (such as lenses) can be printed, or part breakages can be reduced. This is a significant advantage
- Xaar's TF Technology ensures our printheads are extremely reliable; they self prime and their open architecture means that blockages are minimised
- Xaar printheads have the highest nozzle open time which means less purging at startup and therefore less wastage of expensive 3D material.

High Laydown

High laydown enables the same technology that can produce very detailed, high resolution models to address low resolution, large scale models, such as investment casting models (motor housings or large scale framework). This increase in productivity results in reduced build time. Where resolution is not required, we offer the same benefits (particle and viscosity) but with up to five times the productivity.

Strategy update

Significant strategic progress



Financial highlights

£72.8m

Revenue – Continuing operations
in line with management expectations
(2021: £59.3 million)

39%

Gross margin – Continuing operations
increased from 34% in 2021, benefiting
from operational leverage in the business

£6.7m

R&D spend
by continuing operations of £6.7 million,
up £1.0 million on 2021 with investment
focused on the ImagineX platform and
product roadmap

(£16.5m)

Net cash outflow – Total operations
During 2022 we acquired businesses
resulting in an initial net cash outlay
of £3.5 million as well as a further
deferred payment for FFEI of £1.7
million. Additionally, we invested £5.4
million on key infrastructure and product
development and a further £9.5 million
in inventory.

2021: £5.0 million inflow – benefitting
from an inflow of £9.3 million on the
sale of Xaar 3D.

Introduction

Over the last three years the Group has been transformed, implementing a new strategy across the business, with a new commercial model shifting our focus to very attractive end markets; expanding our technology capabilities; and creating a growth platform. This strategy is now delivering growth across the business, and we are delighted the Group has returned to full year profit.

At the same time we have also invested significantly in expanding our product and technology capabilities and updating our infrastructure, strengthening our key resource – people – and ensuring we have a robust platform to deliver future profitable growth.

Despite the external macro challenges, we have delivered an impressive performance in 2022 which is borne out in the financial metrics. Our core Printhead business grew in all regions except China which was impacted by COVID-19 restrictions for much of the year, and we have successfully launched our new product Aquinox with a commercial response that has exceeded our expectations.

During the year our US product print business, EPS, delivered its best ever result and with the acquisition of Megnajet we now have a resilient, diverse business well placed to meet the significant market opportunity that exists.

Excellent strategic progress

The turnaround we have described is now at the end of the first phase. We have established a clear strategy and we are ready for the next stage to achieve enduring profitable growth.

The first phase was focused on stabilising the business and establishing a clear strategy. Commercially this has seen the Printhead business reduce complexity in its routes to market by eliminating third party distributors and selling directly to OEMs and UDIs. Our principal objective is to sell more printheads. We provide an integrated solution for customers whereby they can access more of the printing ecosystem, to include supporting elements such as fluid management systems and the electronics required for printing. We help our customers take advantage of the inkjet opportunity, demonstrating to them that working with Xaar means a higher chance of success by being faster to market, making our customers' investment more profitable.

Our strategy is working, we are delivering on what we promised, and the future remains exciting. With phase 1 of the business transformation now complete, the business is stabilised, with a strong management team, delivering profitability and a strong platform on which to build.

Strong revenue growth, improved margin and full-year profitability

We have delivered a strong performance in 2022 in line with our expectations, further demonstrating the operational and strategic progress across the Group. We have improved resilience and have achieved the key milestone of delivering an adjusted profit before tax for the year.

Despite the global macroeconomic and political uncertainties, we are successfully mitigating external challenges, principally the cost of inflation and the ongoing COVID-19 impact in China.

Revenue for the year was £72.8 million representing growth of 23%. Organic growth, before the impact of FFEI and Megnajet acquisitions was 8%.

Revenue grew in the US region by 54% and in EMEA by 20%. This demonstrates the resilience we are developing in the business and helped offset the decrease in revenue from Asia of £3.8 million (32%).

Reduced revenue in China has impacted our Ceramics sector printhead sales, however, we are confident in returning to previous levels of trade with our customers in the region as COVID-19 restrictions continue to be lifted. Our commercial and technology proposition still remains compelling, and we have not lost retained market share in the region.

We have been able to demonstrate the strength of our technology in markets sectors beyond Ceramics and continue to see strong customer engagement in these areas where we have a competitive advantage by enabling customers to reduce their own development times.

Our new product, Aquinox, was launched in November 2022. We have received excellent feedback and significant customer engagement, and early promising success indicators through strong sales of development kits.

EPS has delivered an excellent performance. Revenue increased 41%, with growth across all its product lines, and digital inkjet sales at the core of the success growing 54%. The proactive decisions taken in the last two years to strengthen the management team and rationalise the product range are delivering excellent results and demonstrate the continued importance of the business.

Our recent acquisitions, FFEI and Megnajet, are performing ahead of our initial expectations. We are delighted with these acquisitions and as a result we have an expanded product range providing us real traction and opportunity in the printbar and print engine markets, along with Fluid Management Systems.

With this revenue growth and the strong operational performance, we have increased gross margins in Printhead and EPS, and overall for the Group to 39% (2021: 34%).

While profit before tax from continuing operations of £0.8 million includes some underlying business unit losses (consisting of Printhead £0.3 million loss, EPS £2.8 million profit, FFEI £0.3 million loss and Megnajet £0.4 million profit) we can report positive adjusted EBITDA in each of our businesses for 2022. Group adjusted EBITDA of £6.2 million consists of Printhead adjusted EBITDA of £2.0 million, EPS adjusted EBITDA of £3.1 million, FFEI adjusted EBITDA of £0.5 million, and Megnajet adjusted EBITDA of £0.6 million. This has enabled delivery of full year profitability for the Group.

Investing for future growth

There has been further investment in capability and capacity enabling us to take advantage of the opportunities which we expect to drive our future growth ambitions.

During the year we acquired our fluid management system business, Megnajet, for an initial consideration of £5.1 million. The net cash outflow on acquisition was £3.5 million. This acquisition further strengthens our ability to deliver to customer needs, enhances our technology capability and expands the vertically integrated product offering. It is already delivering profitable growth ahead of expectations, enabling a quick payback on the original investment.

We have invested in inventory, holding higher levels of both raw materials and finished goods. This investment has been undertaken in a controlled, proactive manner to enable continued production of our products and customer supply. This is a vital part of our strategy to ensure we meet customer demand.

As supply chains improve, we can look to reduce our raw materials holding although we will do so in a cautious, well-managed way. Higher levels of finished goods have enabled us to meet customer demand whilst the factory is closed for reorganisation and will leave us well placed to meet any increase in market demand.

R&D investment is critical to the ongoing success of the business, and we will continue to invest in our R&D capabilities across the Group to ensure our technology remains market leading. During the year we increased R&D investment by £1.0 million.

Our underlying positive cash generation in the core business has also enabled us to spend £5.4 million on maintenance and asset improvement across the business during 2022.

Additionally, we have invested approximately £1.2 million in our factory reorganisation project in Q1 2023. We expect a rapid return on this investment due to the energy savings it will provide, coupled with increased manufacturing efficiency.

This is the first phase of our transformation programme which will result in modern, efficient and more environmentally beneficial manufacturing facilities across the business.

Significant market opportunity

We have a strong proposition across our five key market sectors. Our digital inkjet technologies provide compelling propositions to transform print processes across a wide range of applications, and the medium and long-term opportunity for the business remains significant. Whilst we have already grown market share in core, mature markets such as Ceramics and Coding & Marking, further growth opportunities exist as our technology is best-in-class and we have a clear competitive advantage over our competitors.

We can capitalise on a number of sectors which need further digitisation of printing to secure increased market opportunities. These opportunities are typically in areas where fluid applications are challenging, such as Flat Panel Display, Semiconductors, Printed Electronics and Optics. We are well placed to succeed in these markets as Xaar technology offers an unrivalled method of non-contact, fluid deposition with incredible precision, control and speed.

Other markets that already use digital printing such as architectural glass printing and 3D printing are tremendously exciting as our technology has unique benefits that can give our customers commercial advantage in reducing costs and lead times for their products.

By providing an integrated solution for customers whereby they can access more of the printing ecosystem, we help our customers take advantage of the inkjet opportunity and working with Xaar means a higher chance of success by being faster to market, and therefore making our customers' investment more profitable. Ultimately this will help us in our overriding strategy to sell more printheads.

We have seen increased customer engagement as our printhead product range has expanded and our ability to offer a broader solution to customers with fluid management systems and printbars, which is evidenced by the increasing number of customers developing machines with our products. Both our current product offering and our product development programme will help drive our success in meeting customer demand in these fast growing sectors.

Expansion of vertically integrated product offering

The acquisition of FFEI in July 2021 and Megnajet in March 2022 further widened our product offering for our OEM and UDI (User Developer Integrator) customers with a broader product range including print engines for adding effects and embellishments digitally. FFEI has been successfully integrated and strengthens Xaar's capabilities and skills and has seen the launch of a new print engine product, the Xaar Versatex. This will accelerate Xaar's existing growth strategy and widen the product portfolio further engaging UDI customers. We have a growing pipeline with a significant number of opportunities thanks to our technology advantages. This platform provides further opportunities for vertical integration, and we will strengthen our offering with more products in the pipeline for 2023.

Megnajet is a global leader in the manufacture of ink supply systems. We are delighted with the acquisition of the business which has been successfully integrated into the Group, and we are already benefiting from the expansion of our product offering.

The latest product powered by our ImagineX platform, our aqueous printhead, Aquinox, was launched in November 2022. This is a significant and tremendously exciting product for the Group and enables us to compete in new sectors, such as Packaging and Textiles, with a product that we believe will deliver superior performance to any currently on the market. We have received positive feedback from customers, evidenced by high engagement and good sales of development kits.

EPS, our product print system business, is performing well, delivering high quality products to a variety of customer sectors. As we explore further opportunities in the US, EPS can play an increasing part in our strategy.

This approach has seen us deliver a more vertically integrated product offering to a wider group of customers in more market sectors.

Significantly improved operational capability

We have made further progress in building a world class leadership team, making key appointments which will drive the business in the next phase of our transformation. This has strengthened our capability and experience across the business, most notably in our Operations, R&D, Finance and Human Resources functions. This improved operational capability also includes further and continued investment in infrastructure such as IT, manufacturing, and supply chain management. Our strong and experienced leadership throughout the organisation is focused on delivering a clearly articulated strategy.

During the year we have continued to work on ensuring our values are embedded into our culture. This ongoing focus on our values is important to ensure we have a supportive culture with employees who are engaged and empowered to succeed.

Continued commitment to sustainability

Xaar has made significant and positive progress to drive forward its ESG commitments across our operations. We uphold the highest of standards across our business and comply with all relevant regulations in the territories in which we operate whilst enhancing the working environment for our employees and minimising the environmental impact of our products and operations.

During the year, Xaar launched its Sustainability Roadmap to 2030 which is a principal driver for positive change and investment within the business. Led by our ESG Committee and a Sustainability team which is comprised of colleagues from across our business operations, chaired by the Group Sustainability Manager, we have been working hard to achieve our goals and ambitions across all four sustainability pillars: Environment, People, Innovation and Community.

Environment

Decarbonisation remains a key objective for us as we move towards our goal of net zero operations by 2030. We are pleased to report that we are working with an external partner to support us with Scope 3 and TCFD Climate Modelling. This year we have offset our regulatory Scope 1 and 2 carbon impact, making the Group a carbon neutral inkjet manufacturer in 2022. We are committed to continuing this practice on our journey to achieve complete carbon neutrality in line with our 2030 goal.

We set a target to source 100% of our power from renewable sources by the end of 2023 and excellent progress has been made. Our move to green energy is now complete in the UK, and we are pleased to confirm that EPS is now also supplied with power generated from renewable sources. We will continue to assess ways to bring our remaining office locations in line with green tariff power.



With the fundamental advantages our products possess, I believe that within the next decade Xaar will be the number one supplier of industrial inkjet printheads.

All printhead packaging is now fully recyclable and we are working towards complete packaging recyclability. Xaar is committed to supporting decarbonisation of staff and visitors' vehicles. In early 2022 we launched a salary sacrifice scheme, supported by the UK government, to allow all UK staff the ability to order electric vehicles (EV) through a company scheme. We have also completed the installation of EV charging infrastructure across our sites.

People

Supporting young people and nurturing their skills is key to our ESG strategy and for this reason we have placed significant emphasis on our Early Careers programme. As part of this, Xaar's new Apprenticeship scheme is operational and our first intake is working within our Logistics team. Further efforts are underway to connect with local schools and colleges to allow future work experience programmes to be developed. In the UK, Xaar supported Learning at Work Week in May, which attracted 109 attendees across nine events and resulted in 131 hours of learning.

We will further strengthen this approach in 2023 and plan to hold Xaar Group workshops bringing together a cross functional group of people with the aim of understanding what makes Xaar an 'employer of choice'. This will help to inform and shape our talent attraction and retention strategies feeding into our wellbeing programmes.

Innovation

We are currently researching ways to use biodegradable structural parts in the manufacture of our products. An area of focus is to find an alternative, more sustainable material than Polylactic Acid (PLA) which is a biodegradable plastic used to print the majority of our jigs and fixtures. Our Operations team has successfully trialled the use of recycled PLA filaments generated from returned and waste PLA. These are supplied in 100% plastic-free sustainable packaging with easy to recycle cardboard spools.

Digital inkjet printing is inherently more sustainable compared to traditional analogue printing with a smaller carbon footprint. It reduces and prevents excessive waste and uses less energy due to the ability to print short runs or Direct-to-Shape. With TF Technology ink recirculation, Xaar printheads are capable of printing very viscous fluids, which in the Textiles sector, for example, results in a reduction in energy used in intensive drying processes. We are passionate about continuing further adoption and understanding of the environmental benefits our products can bring to customers.

Product development and increased capability

Overall, the market opportunity for Xaar printheads is significant. We have a unique roadmap of product development to ensure we offer an increasingly vertically integrated commercial strategy to capitalise on this market opportunity.

The, already successful, ImagineX platform will deliver a number of features over the next few years which will provide significant enhancements to the current portfolio, including:

- substantially improved speed and throughput (frequencies up to 150kHz, equivalent to a threefold increase in speed compared to current products),
- increased throw distance to improve image quality on curved surfaces,
- increased robustness to improve the life of the printhead and maintain image quality,
- higher viscosities enabling a broader range of fluids to be printed (above 100cP), and
- higher resolutions (up to 1440 dpi).

These features will help strengthen our position in markets where we are already well represented and will drive improved adoption in several markets where we are currently not, such as Wide Format Graphics and Labels. The recently launched Aquinox is positioned to drive our adoption in Packaging and Textiles. The performance enhancements in our product roadmap give a clear path for OEMs to upgrade their products and maintain their product differentiation.

We have made strategic bolt-on acquisitions to the Group that enable us to strengthen our customer offering and we will continue to adopt this approach in the future as we look to continue increasing our capability and become a fully integrated inkjet product provider.

The strong operational gearing that exists in the business, which has already delivered good margin growth, has greater capacity to support further margin improvement in the medium term. The business is well placed to move into the next phase of its transformation and to deliver sustainable profitable growth in the medium term.



Outlook

We have maintained our policy of increased investment in inventory during H2 2021 and throughout 2022 which means we are well placed to satisfy customer demand in 2023 and we believe we have the supply chain resilience to withstand most disruption. We are continuing to invest in the business adding skills, capability and capacity and continue to work on delivering efficiency gains aimed at improving gross margins and business profitability in the medium term.

Sales volumes in the Printhead business continue to be affected by the uncertainty in China, which is expected to continue in the short term as COVID cases increase. At this stage it remains unclear when normal levels of business will return, however we can look forward to the medium-term future with confidence.

There is a positive momentum in the business, as is reflected in our 2022 results. Customer engagement and sales orders have been maintained in the first quarter of 2023, in line with our expectations. As previously communicated, we expect the Huntingdon factory reorganisation to impact the first half, however, given continued progress and exciting product launches ahead, the Board remains confident in delivering an outturn for the full year in line with its expectations.

John Mills
Chief Executive
Officer

27 March 2023

Ian Tichias
Chief Financial
Officer

27 March 2023

Our business units

Printhead

Our Printhead business unit focuses on the design, manufacture, marketing and sales of printheads and associated products which are used in a variety of applications such as Ceramic Tile Decoration, Graphics, Décor, Textiles, Labels and Packaging as well as 3D Printing and Additive Manufacturing.

Revenue segment



Markets

● Industrial	54%
● Packaging	33%
● Graphic Arts	12%
● Royalty	1%

“
The Xaar Aquinox launch is a significant achievement for the Company.



2022 update

A significant amount of time and resource across the Printhead business has been dedicated during 2022 to the launch of the Xaar Aquinox, Xaar's first bulk aqueous printhead which represents a great achievement for the entire Company.

The enabling technologies, grouped together under the aQ Power Technology brand, aQ Power, work together to increase printhead lifespan and durability when printing water-based fluids. Every single process in the production line, for example, has required some change or investigation of change to be able to manufacture the printheads. Investment in the launch campaign was focused on delivering impact, targeting three main sectors – Textiles, Packaging and Ceramics. The commercial team used a deep dive into the industry drivers in these sectors, alongside market research to determine the key players to underpin the launch strategy and campaign messaging. As a result we achieved over 450 sign ups to watch the launch presentation, with early engagement and lead generation metrics from the launch campaign much higher than those from previous launches.

 **See page 10 for fuller information on the Xaar Aquinox**

Over the course of the year, the printhead business has made good progress, for example, our customer base has increased by 91 customers, and the launch of the Xaar Aquinox gives us access to new markets, particularly textiles and packaging (such as corrugated packaging), and will help us to develop existing markets such as ceramics (printing water based glazes).

We have also been working with customers in PCB markets (legend printing in particular, with an opportunity to explore solder mask printing in the future). Our Ultra High Viscosity Technology gives us advantages for 3D printing and we have projects ongoing with new OEMs in China.

 **See pages 12 to 15**

In addition to the Aquinox, we have also launched the Xaar Versatex print engine, for inexperienced UDIs, and the small drop Xaar Nitrox Elite GS3 printhead for OEMs developing print systems for label and graphic applications, and also functional fluid applications, such as PCB printing.

The upgrade of our printhead manufacturing facility in Huntingdon has also been a major focus in the second half of the year. Substantial time has been spent planning for the upgrade which started in earnest in January 2023 and will deliver modernisation of our manufacturing capabilities as well as improved efficiency, yields and reduced product costs in the longer term as a result. We have invested in working capital to ensure we are able to meet fully all customer demands whilst the factory is closed for the work to be carried out.

Other developments in the Printhead business included opening a new Technology Centre in Sweden which houses our Advanced Applications and Technologies team.

Based at Campus Solna in Stockholm, and at nearly 400 m², it is twice the size of the previous facility and houses a state-of-the-art laboratory with new equipment, offices, and meeting spaces for engineers, scientists and visitors to work within. The expansion provides Xaar with the ideal environment for its continuous research into the transformative potential of inkjet technologies and opportunities.

Xaar's base in Sweden has played a key role in its R&D projects for many years, as well as supporting customers in the development and use of inkjet technologies. From their new site, the team will continue to work closely across both internal and external projects, liaising with manufacturers, fluid formulators and specialist printer makers to help bring new processes to market using Xaar's printheads and technologies across numerous markets.

In China, we opened a new state-of-the-art inkjet printing laboratory in Shenzhen, comprising the latest printhead test equipment and print process experimentation platforms. The focus of the lab is to provide Xaar's customers and partners in China, including scientific research institutions, a variety of services such as sample printing, solution development, printhead nozzle status detection and waveform adjustments for new applications, providing a printing solution showcase and technical consultation for the greater use of inkjet technologies. Sectors supported include Ceramics, Glass, PCB, Textiles, 3D printing, Packaging and Labels, with inkjet printing support provided locally to help customers develop more targeted application solutions and achieve faster innovation cycles, all whilst reducing their R&D investment.

Our business units continued

Printhead continued

The Inkjet Opportunity

The principal focus of our strategy is selling printheads. We can do this more effectively by providing an integrated service to our UDI and OEM customers.

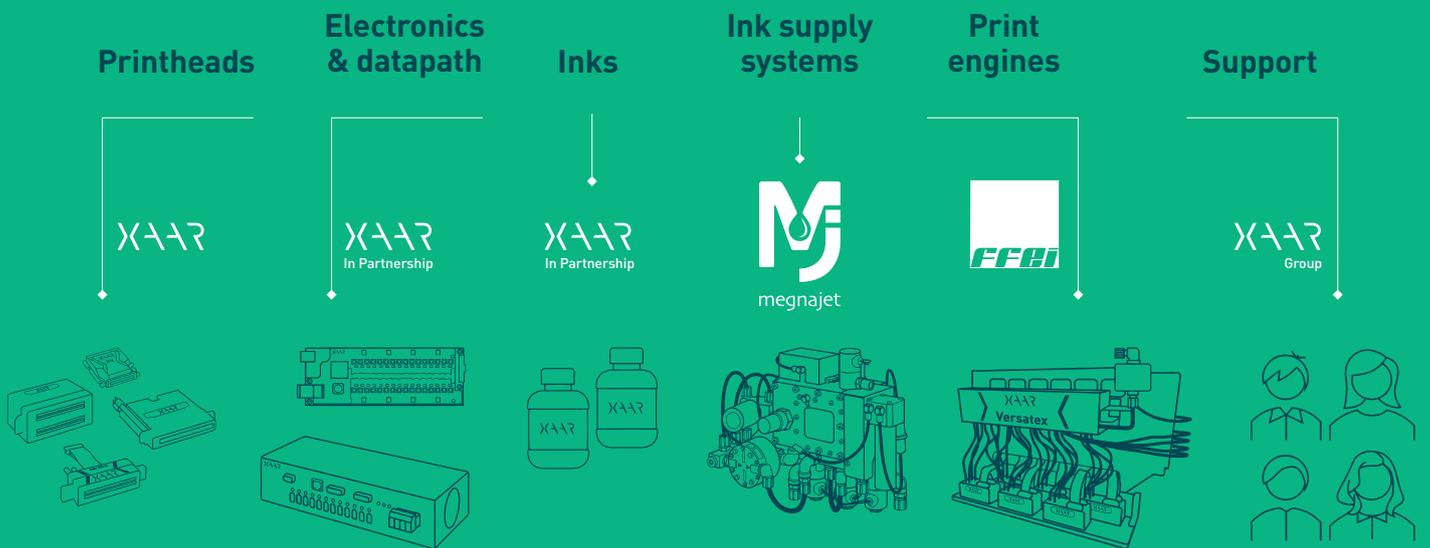
Their success depends in part on a cost effective product development process, getting their products successfully and quickly to market, and maintaining product stability throughout the product lifetime.

Customers who have less experience of inkjet development projects, such as the User Developer Integrators, or OEMs moving into a new application area, are looking for a dedicated, experienced inkjet partner for printheads, sub systems (electronics, software and ink supply systems) and ink, as well as for print engines right up to fully customised solutions.

We are therefore focused on providing an integrated solution whereby our customers can access more of the printing ecosystem (the supporting elements such as ink supply systems and the electronics required for printing) – as well as the print technology (the printheads). This will help us to sell more printheads.

Through a combination of organic growth and acquisitions, we now have the capability to supply all of these components to our customers.

With the acquisitions of Megnajet and FFEI, alongside close strategic partnerships with electronics and ink suppliers, we have become a one-stop shop for our customers, making Xaar the best choice for performance and also ease of adoption, helping to shorten OEMs' development time.



Based in Northamptonshire, UK, fluid systems specialist Megnajet provides robust, reliable, easy to integrate products so that OEMs can get to market quickly with reduced development costs.

Revenue segment



Revenue by region

Americas	51%
EMEA	35%
Japan	6%
Other	8%



HV LFR fluid management system is for wider printing applications, capable of supplying fluid for up to five individual outlets.



Labjet Gravity is a syringe-based gravity fed fluid management system, ideal for evaluating small volumes of fluids in a laboratory environment with industrial components.

2022 progress

Since acquisition by Xaar in March 2022, Megnajet has made good progress, despite supply shortages for the first half of the year. This was proactively managed through a combination of build prioritisation and setting customer expectations.

We also embarked on the first phase of the site improvements, with the focus on the employee facilities. Phase 2 is currently underway moving our assembly operation into a larger space at the rear of the facility, increasing our future capacity and efficiency in preparation for 2023. We recovered the backlog of work caused by supply issues, hitting record production volumes and revenues in Megnajet's 11-year history.

Collaboration with the wider Xaar Group has been key for Megnajet this year as we aligned ourselves with Group systems, software and methodologies.

IT infrastructure changes enabled wider communications; operational processes allowed for better planning, team awareness and training; Epicor integration has given us increased control and structure to our business; and centralisation of R&D within Group allows Megnajet to focus on customer requirements, product management and service. We presented our first Monthly Operations Review in April thereby aligning with Company reporting fairly early after acquisition, supported by regular commercial and financial updates to track the health of the business.

Our business units continued FFEI

Our digital imaging company, FFEI Ltd, based in Hemel Hempstead, UK, focuses on high performance digital imaging solutions – from digital inkjet label presses to digital pathology scanners.

Revenue segment

£11.6m

Markets

Inkjet

52%

Life Sciences

48%

2022 progress

This year has seen a significant amount of change for FFEI not least in the leadership team, following the departure of Andy Cook and Julian Payne, after many years of much valued service to the company.

FFEI spent much of the year making good progress with adopting the Xaar Group business practices such as embracing the Company values, the adoption of the Tier 1 & 2 meetings which has improved the communication across teams, management reviews with the leadership team, Monthly Operating Reviews and delivering on a product sales plan to more than double the number of units being built and sold by the team compared to 2021. We are delighted to see that the printbars manufactured and sold by FFEI continue to deliver growth particularly in the labels embellishment market in Italy.

On the Life Sciences side of the business, the digital pathology scanner manufactured at FFEI surpassed a milestone of more than 12 months of successful installations and with demand continuing into 2023. In addition, Microscan has shown strong demand in 2022 vs 2021, with Sierra on-boarding new customers across the digital pathology and AI market whilst engaging with return business.

In October 2022 FFEI celebrated its history with a 75th Anniversary celebration of the inception of Crosfield Electronics. FFEI can trace its roots back through FujiFilm, Dupont and De La Rue to 1947 and the formation of Crosfield Electronics. A great day was had by all, including some past employees, and over £900 was raised for the Xaar charity partner, Break.

Xaar company EPS manufactures and sells a range of highly customised print systems for product print applications, including some using Xaar’s inkjet printheads. Examples of product printing include all kinds of industrial and promotional objects such as medical equipment, automotive parts, tools, apparel, appliances, sports equipment and toys.

Revenue segment



Markets

● Digital	66%
● Analogue	34%

2022 progress

2022 has seen great progress at EPS, with excellent growth in sales, stronger margins, and excellent profitability.

Under new leadership since April 2021, EPS has this year focused on building a new and strong leadership team.

Restructuring also took place with the Tech Services functions being split into three distinct groups – Production Techs, Field Service Techs, and Applications teams. As part of this plan, the company is developing its team of regional service technicians based strategically across the US to provide better service to customers.

From August EPS added a second production shift for the Machine Shop and Assembly teams to keep up with our growing production volumes, turning around custom build projects faster to minimise the impact of space constraints.

We have been able to significantly invest in the business this year; we added a new Haas CNC machine, a new digital cutter for the plate room, and invested in our XD70 sampling equipment, and many systems upgrades. We’ve added a new computer server, upgraded our Sage 100c financial software to the 2022 version and implemented the MS Project for our production planning system.



Business performance

Revenue

Revenue for the Group of £72.8 million is an excellent performance for the year, representing a year-on-year increase of £13.5 million (2021: £59.3 million) of which organic growth was 8% (£4.8 million).

This result demonstrates momentum across the business, mitigating short-term challenges due to the ongoing restrictions in China arising from COVID-19. Printhead revenue was down £1.1 million year-on-year, although outside China it increased 10%, and EPS increased revenue by 41% (24% in USD). This performance across the business demonstrates the positive customer engagement and trust that is being regained across our customer base.

Group revenues were £36.6 million in the first half of the year and £36.2 million in the second half. This reflects the consistent performance of EPS, which has offset the impact on Printhead revenue of the restrictions in China in the second half of the year.

Revenue from the Americas grew year-on-year across the Group, rising £12.6 million (2022: £36.2 million, 2021: £23.6 million). The increase, driven by the recovery in EPS revenue, along with strong growth in US printhead sales demonstrates the wider geographic opportunity that exists for the business.

Performance in Asia, and China in particular, has been impacted by the ongoing COVID-19 restrictions in China, which has resulted in revenue declining from £12.0 million in 2021 to £8.2 million. The restrictions have delayed product development and sales for our customers and consequently sales of printheads for Xaar. As this region has been a key driver for growth in Printhead in the previous two years, the impact in the second half of 2022 has been significant. However, the work we have done in the last two years to re-engage Chinese Ceramics OEM customers means they understand and are interested in our new products and roadmap. Accordingly, we are well placed to meet the high demand in the region as the COVID restrictions are lifted.

Revenue in EMEA has increased from £23.7 million to £28.4 million driven by our wider product offering through FFEI and Megnajet, contributing to an increase for the Group of £4.7 million (20%).

Table A – Group revenue growth

£m	2022	2021	Var %
Printhead	39.0	40.1	-3%
EPS	19.6	13.9	41%
FFEI	5.5	5.3	4%
Organic growth 2022 vs 2021	64.1	59.3	8%
FFEI	6.1	-	-
Megnajet	2.6	-	-
Inorganic growth 2022 vs 2021	8.7	-	-
Total growth	72.8	59.3	23%

Printhead revenue for the year fell by £1.1 million to £39.0 million (2021: £40.1 million). The second half of 2022 saw revenue decrease by 8% (£1.6 million) compared to H2 2021 (£19.9 million), following growth of £0.5 million in the first half of the year. This is due to the impact of customers based in China predominantly in the Ceramics sector. Our technology offering proved successful in a wider number of other sectors, which has partially mitigated this decrease.

Growth in the year was achieved in 3D Printing, Coding and Marking (C&M) and Décor sectors. This is pleasing as it further proves our core technology can be successful in many applications and our customers increasingly benefit from the advantages our technology brings. Despite revenue in the Ceramics and Glass sector declining £2.0 million (11%) we have not lost market share during the year as the fall can be attributed to the reduction in orders received by our OEMs in China themselves. We have been able to consistently demonstrate our clear technology advantages in the Chinese Ceramics market, where we have regained trust with our customers. We have also established a market leading position in the Glass sector. Together with our extended product portfolio we expect to return to growth in this sector during 2023 as the negative external market factors subside.

Coding and Marking (C&M) and Direct-to-Shape (DTS) revenues have grown by £1.5 million (14%), further demonstrating our ability to expand our market reach with a wider product offering.

An increasingly exciting opportunity for us is the 3D printing market, and we expect this sector to grow significantly in the future. Revenue in 3D Printing and Advanced Manufacturing (AVM) together grew £1.5 million (62%) in 2022.

Both 3D Printing and AVM are markets where we are well positioned to take advantage of growth opportunities, and although development cycles can be long, which means extended timescales for a customer to reach full production, the market opportunity is significant.

Wide Format Graphics (WFG) and Labels revenue fell in the year from £6.2 million to £4.8 million. This is an area which has also been impacted with delays in orders, largely COVID-19 related, and we also need further product development.

Revenues from Packing & Textiles remain modest. Our ability to target this sector effectively has been somewhat limited by our product range, although the launch of the Aquinox printhead will start to address this. However, advancements in the product portfolio driven by the ImagineX platform should make this large sector more accessible in the future. Full year revenue of £0.5 million was down year-on-year (2021: £0.8 million).

Revenue from the EPS business increased by £5.7 million to £19.6 million (2021: £13.9 million) as the new commercial approach has seen some significant customer order wins.

Growth has been achieved across all product groups with a particularly strong performance in the core area of digital inkjet machine sales which have grown £4.4 million (54%). This is particularly pleasing as it continues to be the focus for the business in the future. Pad print machine revenue has also risen 22% and the increased focus on consumables and accessory sales have also contributed to the growth as a result of the change in commercial approach, with increased revenue from ink, plates and parts. The order book remains strong and we are well placed to deliver further growth in 2023 as companies increasingly invest in capital equipment.

Table B – Group revenue by geographic region

£m	2022 H1					2022 H2					FY 2022					FY 2021			
	PH	EPS	FFEI	Meg*	Total	PH	EPS	FFEI	Meg*	Total	PH	EPS	FFEI	Meg*	Total	PH	EPS	FFEI	Total
Americas	5.0	9.2	2.4	0.4	17.0	5.8	10.1	2.4	0.9	19.2	10.8	19.3	4.8	1.3	36.2	7.3	13.9	2.4	23.6
Asia	4.5	-	0.1	-	4.6	3.0	0.2	-	0.4	3.6	7.5	0.2	0.1	0.4	8.2	11.9	-	0.1	12.0
EMEA	11.2	-	3.6	0.2	15.0	9.5	0.1	3.1	0.7	13.4	20.7	0.1	6.7	0.9	28.4	20.9	-	2.8	23.7
Total	20.7	9.2	6.1	0.6	36.6	18.3	10.4	5.5	2.0	36.2	39.0	19.6	11.6	2.6	72.8	40.1	13.9	5.3	59.3

* Megnajet was acquired on 2 March 2022, figures reflected in the table above are ten months of post-acquisition revenue.

Gross profit

Gross profit for the year increased by £8.4 million to £28.6 million (2021: £20.2 million) with an increase in the gross margin to 39% (2021: 34%). This was primarily the result of an improvement in the Printhead business unit's gross margin which grew from 38% to 43%, and EPS which moved from 23% to 40%.

In Printhead we increased utilisation of the factory as production volumes were increased during the year resulting in better overhead cost recovery, supporting margin gains.

There was also continued investment to secure raw materials to reduce further supply chain risks. Although there are indications of easing in the global supply chain, we remain cautious and have continued to focus on meeting customer demand. We have increased our working capital with inventory rising £10.3 million (2021: £9.1 million increase in inventory). The higher level of finished goods will ensure continued supply to customers during our factory reorganisation shutdown and enable us to capitalise on any uplift in demand across all our market sectors. This higher level of both raw materials and finished goods is a deliberate, prudent approach which we believe will see us well placed to both manage customer requirements and further insulate the business from external supply chain risks.

We remain focused on cost saving initiatives which will continue to deliver efficiency gains and support our gross margin.

Gross profit for the EPS business grew £4.6 million in the year to £7.8 million (2020: £3.2 million). The actions taken to refocus the business which impacted 2021 results (non-cash write down adjustments totalling £0.7 million), left the business in a good position to meet the increased market demand for capital equipment in the US which has driven this much improved performance.

Both FFEI and Megnajet have performed ahead of our expectations made when we acquired the businesses. They are strong contributors to the performance of the Group, with FFEI delivering gross profit of £3.5 million (at 30% gross margin), and Megnajet £0.8 million (gross profit of 33%).

Research & Development spend

R&D spend of £6.7 million was up £1.0 million on 2021 (2021: £5.7 million). This spend reflects further investment in the ImagineX platform which continues to be central to our long-term growth and ongoing product roadmap. We increased spend in FFEI to £1.2 million (2021: £0.4 million) which enhances the support for our vertically integrated product offering. The total increase maintains our spend/revenue ratio in the desired range of 8-11% and is broadly in proportion with our revenue growth.

Table C – Printhead revenue by sector

£m	2022 H1	2022 H2	FY 2022	FY 2021	Var	Var %
Ceramics & Glass	9.8	7.2	17.0	19.0	(2.0)	(11%)
C&M and DTS	6.8	5.8	12.6	11.1	1.5	14%
WFG & Labels	1.8	3.0	4.8	6.2	(1.4)	(23%)
3D Printing & AVM	1.9	2.0	3.9	2.4	1.5	62%
Packaging & Textiles	0.1	0.4	0.5	0.8	(0.3)	(38%)
Royalties, Commissions & Fees	0.2	-	0.2	0.6	(0.4)	(67%)
Total	20.6	18.4	39.0	40.1	(1.1)	(3%)

Figures (£m) and percentages (%) are subject to rounding.

Table D – EPS revenue by sector

£m	2022 H1	2022 H2	FY 2022	FY 2021	Var	Var %
Digital inkjet	5.7	6.7	12.4	8.0	4.4	54%
Pad printing	3.3	3.4	6.7	5.5	1.2	22%
Other	0.2	0.3	0.5	0.4	0.1	34%
Total	9.2	10.4	19.6	13.9	5.7	41%

Figures (£m) and percentages (%) are subject to rounding.

Operating expenses

Sales and marketing spend for the year was £6.7 million (2021: £6.3 million). The increase in spend of £0.4 million year-on-year reflects the increased business size along with the focus on sales and business development in the Printhead business. This has seen some increase in commercial travel expenses although we are taking a focused, targeted approach to managing these costs.

General and administrative expenses increased £4.0 million from £10.1 million in 2021 to £14.1 million in 2022. The increase largely relates to planned investment in key areas of the business and infrastructure, including Operations, IT and Finance, partially offset by £1.2 million related to trading foreign exchange gains in 2022. This largely relates to key appointments in the senior management team and infrastructure upgrades.

Restructuring and transaction costs of £0.5 million (2021: £1.4 million) predominantly relate to reorganisation costs and acquisition-related professional fees.

Profit for the year

The profit before tax from continuing operations under IFRS was £0.8 million in 2022 (2021: £1.0 million profit). Basic earnings per share from continuing operations was 2.3p (2021: 0.9p).

The performance of the Printhead business moved from a £2.2 million profit in 2021 to a £0.3 million loss in 2022. Despite a much-improved gross margin, and a close control in operating expenditure, the revenue reduction and external inflationary pressures resulted in a small loss. The EPS business moved from a £0.9 million loss in 2021 to a £2.8 million profit in 2022 due to the improved performance.

FFEI delivered a loss of £0.3 million (2021: profit of £0.4 million).

Megnajet contributed a profit before tax of £0.4 million since acquisition on 3 March 2022.

In calculating the adjusted loss before tax we have adjusted for gains on derivative financial liabilities of £nil (2021: £2.9 million) and fair value loss on financial assets of £8,000 (2021: £1.0 million gain) alongside restructuring costs of £0.5 million, foreign exchange gains on intra-group loans of £0.8 million, and share-based payments of £1.7 million with an R&D expenditure credit of £0.4 million and amortisation of acquired intangible assets of £1.0 million.

The adjusted profit before tax from continuing operations was £2.8 million, compared to £0.6 million loss in 2021. This is a significant step forward for the business, emphasised by the delivery of adjusted profit in the year.

The adjusted EBITDA for continuing operations in the year was £6.2 million (2021: £3.2 million).

The Group profit for the year was £1.6 million (2021: £14.2 million profit) all of which is attributable to the owners of the Company, (2021: £16.2 million profit with a £2.0 million loss to non-controlling interests). Group profit for the year from continuing operations was £1.8 million (2021: £0.7 million). The total basic earnings per share attributable to shareholders is 2.1p (2021: profit 20.9p).

Business performance continued

Cash generation

The Group retained a healthy cash balance of £8.5 million at the year end, representing a decrease of £16.5 million during the year. Operating cash flow, before working capital, was positive by £6.6 million driven by the improved aEBITDA across the business of £6.2 million.

As a result of the managed investment in inventory, working capital saw an outflow of £12.2 million, mainly due to the £9.5 million increase in inventory.

During 2022 we purchased Megnajet for an initial net cash outlay of £3.5 million as well as a further deferred payment for FFEI of £1.7 million. This investment in the business is enhancing our capabilities and supports the strategy of selling more printheads through offering a more vertically integrated solution to customers. Additionally, we invested £5.4 million on key infrastructure and product development.

The business has a clear plan and strategy which the strong balance sheet and cash position will support. There remain external development opportunities which, if they can expand our capabilities and expertise, we will look to potentially add to the Group. We will also continue to invest internally to ensure we have the operational capacity and efficiency to meet future demand, alongside investment in our product roadmap development.

The Group maintains a strong disciplined focus on cash, and this will continue throughout 2023.

Strong balance sheet

Non-current assets increased £5.2 million in the year from £46.8 million to £52.0 million. This was driven by the increase in goodwill following the acquisition of Megnajet of £1.3 million, along with an increase in intangible assets of £4.7 million. The recognition of financial assets at fair value arising from the sale of 3D assets was £11.1 million (2021: £11.9 million). Additionally, there was a £0.1 million reduction in property, plant and equipment as new purchases were controlled in with line with the Group's cash focus and a decrease in right-of-use assets of £0.8 million.

Current assets decreased £4.1 million from £54.6 million in 2021 to £50.5 million. A significant proportion of this decrease is attributable to the decrease in cash and cash equivalents holding of £16.5 million. The increase in inventories of £10.3 million to £29.1 million (2021: £18.8 million) was associated to the managed investment in our supply chain capability. Trade and other receivables increased by £1.3 million to £11.5 million (2021: £10.2 million).

Table E – Cash flow – total operations

	2022 £'000	2021 £'000
Operating cash flows before movements in working capital	6,571	(2,240)
Movement in working capital	(12,188)	36
Taxes received	112	150
Net cash (used in)/provided by investing activities	(8,634)	7,813
Net cash used in financing activities	(2,915)	(674)
Effect of foreign exchange rate changes on cash balances	549	(110)
Net (decrease)/increase in cash and cash equivalents	(16,505)	4,975

Overall, current liabilities of £20.5 million (2021: £20.5 million) remained flat year-on-year. A reduction in trade and other payables of £1.1 million to £14.9 million (2021: £16 million) was offset by increases in provisions for restructuring and warranties by £0.1 million, an increase in current lease liabilities of £0.3 million to £1.0 million (2021: £0.7 million) and a £0.3 million increase in contract liabilities. The Group also arranged an invoice financing facility in the year and as at 31 December the balance borrowed was £0.4 million.

Non-current liabilities reduced by £2.0 million to £10.2 million (2021: £12.2 million), which mainly relates to lease liabilities recorded under IFRS 16 for property which reduced by £0.7 million to £7.8 million (2021: £8.5 million) in the year. Additionally, further deferred consideration payments due in 2023 have now become current, reducing the balance of other financial liabilities from £3.4 million to £2.1 million.

Dividend

No dividend has been declared for 2022 as the Board believes that prioritising cash for continued investment in the business will deliver more compelling returns for shareholders in the medium term.



John Mills
Chief Executive
Officer

27 March 2023

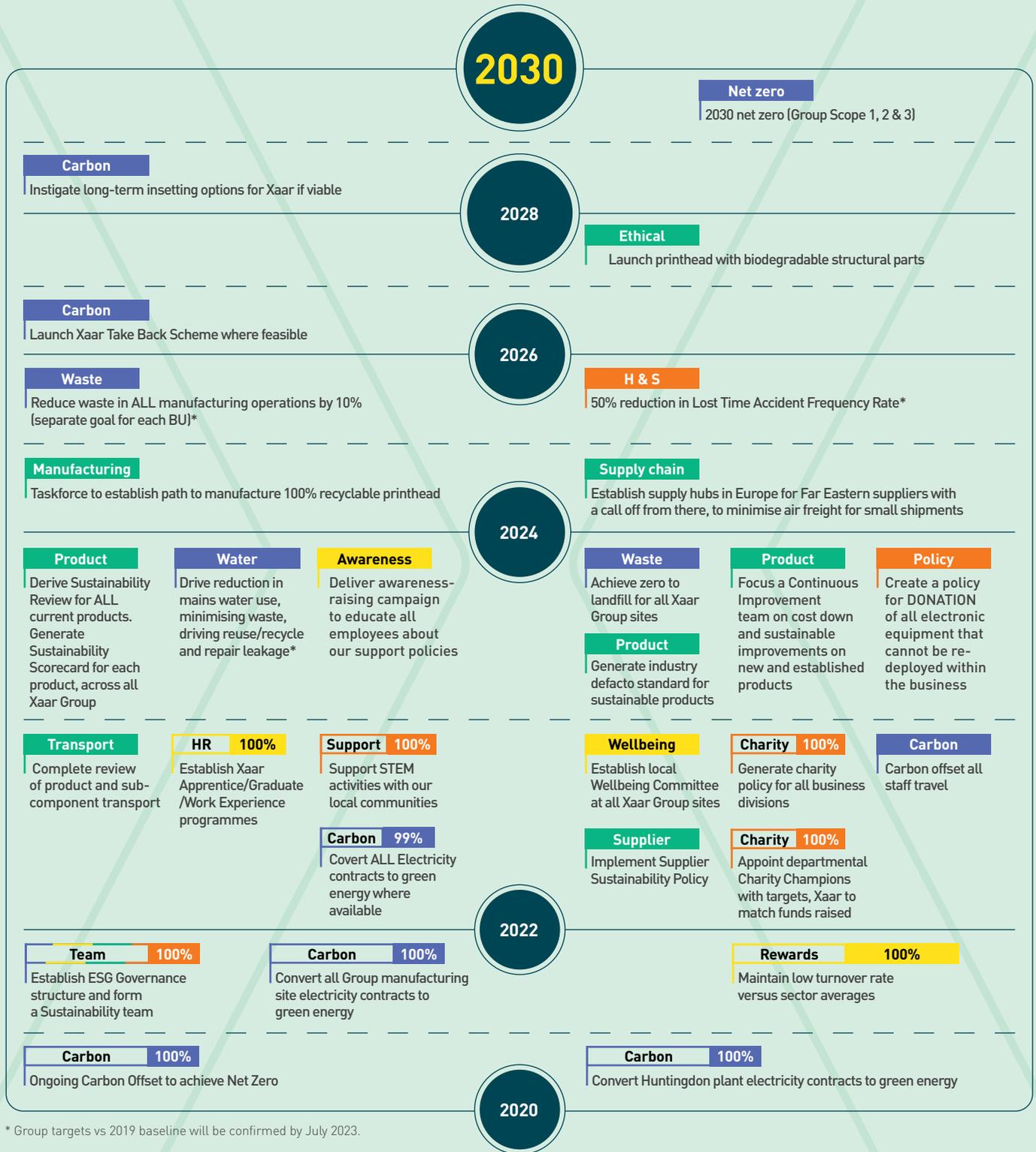


Ian Tichias
Chief Financial
Officer

27 March 2023

Sustainability Roadmap

We all need to play our part to reach our goals



* Group targets vs 2019 baseline will be confirmed by July 2023.

Our Sustainability Pillars

Environment

Leading the way in environmental sustainability for the industrial inkjet technology sector.

People

An employer of choice by putting our people, their potential and wellbeing at the heart of all we do.

Innovation

Encouraging more sustainable approaches to design, manufacture, technology and collaboration across the whole product lifecycle.

Community

Actively engaging with our communities to provide practical, lasting support that benefits society.

Sustainable and responsible business

The Group strongly believes that effective management of the ESG agenda is integral to business success.

The Group is not only compliant with all relevant regulation and legislation but has increasingly focused on enhancing the working environment for our employees and minimising the environmental impact of our manufacturing processes.

There is internal reporting of key metrics to ensure continuous improvement throughout the business, and each member of staff is expected to take individual responsibility for their contribution and to work together to achieve shared goals.

Digital print methods are inherently more environmentally friendly than the analogue techniques we seek to replace.

Our research shows that, compared to analogue alternatives, digital has a significant impact in reducing energy consumption (by as much as 55%), water consumption (by up to 60%) and CO₂ emissions (by up to 95%), in addition to reducing pollution and waste materials.



Sustainability governance structure

Xaar benefits from a strong ESG governance structure. Our cross-functional Sustainability team has accountability to the Board. This group brings together a wide range of skill sets as well as a shared determination and passion for a more sustainable future. This team developed our ESG Roadmap and continues to take a leading role in driving internal change and progress to ensure we meet our ambitions by the timeline we have set ourselves.

The Roadmap has four key pillars – Environment, People, Innovation and Community; its purpose is to drive our ESG goals beyond the energy reduction scope to a broader Group wide activity. Our Roadmap will provide an essential backbone for much of Xaar’s future investment and activity.

Xaar is committed to reducing its impact on the environment wherever possible, with Senior Independent Director Alison Littley having specific responsibility for ESG matters.



Environment

Environmental best practice, our investment in sustainable manufacturing and improving operational efficiencies remain key areas of business focus.

The Group fully complies with local and national regulatory requirements in respect of the environment relating to its use, storage, handling and disposal of materials, chemicals, and waste products.

Xaar maintains a Certified Environmental Management System that meets the requirements of ISO 14001:2015, helping us to manage our environmental aspects and impacts, which complements our commitment to continual improvement. It is readily available to view for interested parties. We carry out environment management reviews and audit programmes designed to measure our progress in relation to our policy statement and objectives.

Climate change

We have escalated climate change from an emerging risk to a principal risk as part of our risk management process. Working with an external partner we have investigated, and now understand the climate risks at all Xaar sites and our top ten critical supplier sites. Our Corporate Risk Register has been updated with mitigation plans based on this new understanding.

 [See Risk management on pages 48 to 57](#)

Our aspiration is to lead our industry in environment and sustainability, in order to minimise the impact we and our products have on the world around us. We have set the aspiration to be 'Net Zero by 2030' and to drive sustainable growth and innovation for the zero carbon economy.

 [See Innovation on pages 38 and 39](#)

In 2022 we started the process of assessing the risks and opportunities of climate change to deliver activities that improve our resilience by either mitigating or adapting against physical and transitional risks. We are pleased to report that with our appointed external partner to support us with Scope 3 and TCFD Climate Modelling, we have now completed climate assessments and expect to complete Scope 3 assessments by early 2023.

Our ESG Roadmap has been evaluated against the UN Sustainable Development Goals (SDG) and we believe we touch almost all of the SDGs through our operations, our research and development and our sustainability vision and have mapped and ranked our focus to the SDGs to where we have the greatest potential to positively contribute.

Our major contributions are to SDGs 9, 12 and 13, however we have significant impacts on SDGs 3, 4 and 8.



In 2023 we will review our decision on making a commitment to an external validation methodology such as Science Based Targets initiative, UN Global Compact, B-Corp or Climate Disclosure Project (CDP).

Carbon/greenhouse gas emissions

A key Group activity at Xaar has been to identify opportunities and drive continual improvement in energy efficiencies. We have seen reductions in non renewable energy usage and the related greenhouse gas emissions of the Company recorded in Scope 1 and 2 since 2015.

 [See Greenhouse gas emissions statement on page 45](#)

In 2021 Xaar entered into a supply contract for the supply of green electricity from a renewable source in the UK. The target was to achieve 100% from renewable sources in the UK and to investigate methods to roll this out to other subsidiaries and locations throughout the Group.

All Group UK manufacturing locations with the exception of the newly acquired Megnajet facility are now supplied with certified carbon free electricity. All UK locations, along with the Megnajet site, are expected to move over to a single green power contract in September 2023. EPS, our US manufacturing site, is supplied with power generated from renewable sources.

Energy resilience

We are very conscious that social and political factors are impacting the energy markets. To help mitigate the increase in energy prices and enhance our business resilience, we are working hard to implement projects that will deliver a reduction in electricity demand. This includes a major reconfiguration of our PHBU cleanrooms in Huntingdon. This should yield a 40% electricity reduction by end of Q1 2023, and an overall Group reduction of around 35%.

To further reduce our reliance on the Grid, discussions have been initiated to drive the installation of a solar array at Huntingdon before September 2023.

Sustainable and responsible business continued

Carbon offset

In our printhead business, we are extremely proud to be a carbon neutral inkjet manufacturer, thanks to the offset of regulatory 2020 Scope 1 & 2 carbon impacts (1,815 tCO₂e). We continue to offset our residual 2021 Scope 1 & 2 carbon emissions (212 tCO₂e) and are committed to offsetting our Scope 1 & 2 emissions for 2022 whilst we investigate the full extent of our Scope 3 emissions, which may be added to the offset in the future.

As outlined above, to achieve carbon neutrality for 2021 we offset supported biomass power generation in Brazil and solar power generation in India.

We are pleased to confirm the appointment of an external consultant to support us with Scope 3 and TCFD Modelling. This has helped us to identify key hot spots for action, we have also started a programme of Supplier engagement on Scope 3.

Decarbonisation

A major win for our decarbonisation journey this year has been to switch our UK pool cars to electric. In addition we are facilitating the same electric vehicle switch for employees through a salary sacrifice scheme which is proving popular. At the time of writing, ten electric vehicles (EV) have already been delivered and eight more are on order.

As more of our staff move to EVs, we recognise the need to invest in charge-points infrastructure. We now have ten chargers in place at our printhead sites. The two charge-points available at FFEI are under review for upgrade in 2023.

Waste

We have set out to set, measure and disclose a zero waste to landfill target – with any waste not recycled being sent to a waste to energy recovery process.

Our PHBU and FFEI operations are certified zero waste to landfill by our waste treatment partners Veolia/Crawleys, with any non-recycled waste being sent to waste to energy recovery.

In 2023, we will undertake a review of our other business units to drive this goal. We are aware that the new acquisition, Megnajt, is not a zero to landfill site and it will be a priority to correct this situation in 2023.

Waste diverted*

34,320 kg

Waste recycled*

21,540 kg

* These are the combined figures for Printhead and FFEI businesses.

Plastics and packaging

Reducing plastics in our packaging was achieved in 2022; and all secondary printhead packaging is now fully recyclable. We removed plastic adhesive tapes and have removed plastic bubble wraps, replacing these with recyclable paper alternatives. As a result, plastic consumption has reduced by more than 1.2 tonnes since 2020.

In 2023 we are going to eliminate as much as possible of the primary printhead protection while maintaining Electrostatic Discharge (ESD) protection in the packing. In doing so, we hope to remove more than 50% of the plastic ESD packaging in 2023 and are looking for alternatives that do not use plastic.

Biodiversity

We recognise the relationship between biodiversity and the wellbeing and health of our colleagues. We are looking to support and promote local employee campaigns, starting with the introduction of beehives on site in Huntingdon, UK, and the distribution of wildflower seeds to employees.

In 2023, having introduced two beehives on site in Huntingdon, UK, we hope to offer a training course in managing bees to a few of our employees. We also look forward to the production of Xaar branded honey by summer 2023.

In the coming years, as part of the Great Place to Work scheme, we will develop outside spaces and garden areas for employees to actively promote physical and mental health.

None of our sites are located in or adjacent to protected areas.

Water

Our operations are considered as low water usage, and we do not have any operations in any regions with high water stress. However, within our Huntingdon factory location we need to be cognisant of the risk of flooding in the North of the Cambridgeshire region and the Fens, as well as the stress on the chalk streams and water aquifers in the South Cambridgeshire region. Xaar therefore considers water management throughout all activities of the Company and that water should be treated in a manner that will protect it for future generations.

We regularly monitor and record water usage and utilise water efficient taps and cisterns.

- **Emissions:** Xaar has a permit to discharge issued by Anglian Water; the effluent discharge is checked monthly by external consultants to ensure conformity to site discharge levels and content and reports show discharges are below permitted levels. There are no reported incidents in the last 12 months with regards to emissions to water.

Air

- **Quality:** We regularly monitor the air quality, temperature and relative humidity levels within the Huntingdon cleanroom facility. All cleanroom air supplies are fitted with HVAC filters. Xaar also remains conscious of the need for good indoor air quality, working hard to ensure adequate air circulation and routine maintenance of the systems.

There are smoking areas located away from Huntingdon building entrances.

- **Emissions:** Xaar has a permit issued by Huntingdon District Council due to the business using more than two tonnes of solvent for surface clean down each year. To comply with the permit any waste gases must not exceed total VOCs per room of 75mg/Nm³. This has been audited and confirmed via an external UKAS accredited company. There are no reported incidents in the last 12 months with regards to emissions to air. There are no significant air emissions in relation to NO_x/SO_x.

Printhead water usage	2022	2021	2020
Freshwater usage (m ³)	6,180	5,000	5,087
Intensity ratio (m ³ /£m turnover – excl. royalties)	158	127	146
Effluent and waste water (m ³)	4,649	4,542	4,984

Hazardous materials

All substances handled and used by Xaar are in accordance to the CoSHH regulations and industry best practice, by risk assessment and evaluation in their usage, storage and disposal. Care is taken to look for any less harmful alternative substances where possible to minimise any potential impacts in their use beforehand.

Environmental summary	
Focus, commitments and action	Progress in 2022
Offsetting: Offset all UK regulatory Scope 1 and 2 carbon impacts	In 2022 we completed the offset of the Scope 1 and 2 emissions of our 2021 footprint and we plan to do the same next year.
Climate risks: Identify targets, metrics and climate risks applicable to Xaar Group	Travel Scope 3 emissions are now being tracked monthly. SBTi and other validation methodologies are being considered for 2023 implementation. Climate risks have been assessed for all Xaar Group sites, and at our top ten critical supplier locations.  Please see Risk section on pages 53 to 54
Scope 3 GHG impacts: Examination of Xaar Scope 3 emissions	We have undertaken an examination of Xaar Scope 3 emissions from our supply chain by identifying key Tier 1 suppliers and their GHG emission disclosures. Travel Scope 3 emissions are now being tracked for the Printhead business unit (PHBU). Plans are in place to offset the travel carbon impact as part of the booking process for PHBU and Megnajet travel. We are delighted to add the option of booking train travel for business use, thereby lowering impacts from traditional air or road travel options. Modelling of our Scope 3 impact is underway. This will help us to identify key hot spots for action, and we have also started a programme of supplier engagement on Scope 3.
Xaar Product Return Policy: Assessment of opportunity for used printheads to enable reclaim	We aim to enable responsible consumption in production and remanufacturing of products, reduction in plastic use, reclaiming raw materials, recovery of any heavy metals, copper, lead etc. This was identified as part of Sustainable Roadmap activities and these significant actions are planned as part of sustainable product development and circular economy. A focused activity will define actions in 2023.
Waste management: Set, measure and disclose a zero waste to landfill target	We have set out to set, measure and disclose a zero waste to landfill target – with any waste not recycled being sent to a waste to energy recovery process. PHBU and FFEI operations are certified zero waste to landfill by our waste treatment partners Veolia/Crawleys, with non-recycled waste being sent to waste to energy recovery. In 2023, we will undertake a review of other business units to drive this goal.
Energy efficiency: Upgrade(s) to LED lighting & reconfiguration of cleanroom spaces	Energy reduction projects at our PHBU facility in Huntingdon include a conversion from fluorescent tubes to LED lighting in all buildings where this is not already completed. We expect a 70% reduction in energy associated with lighting. A major energy reduction project at the PHBU facility in Huntingdon is planned for January/February 2023. This should yield a 40% electricity reduction by end of Q1 2023, and an overall Group reduction of around 35%.
Energy resilience: Investigate solar panel installation in Huntingdon	A renewable energy project to install roof mounted solar panels is expected to add resilience and further reduce reliance on grid generated power through a planned PPA. Discussions have been initiated with District Network Operator (DNO) and contract discussions have started between our landlord, PPA supplier and Xaar to drive the installation of a solar array before September 2023.
Greener fuel use: Remove natural gas as an energy and heat source	We have worked with our landlords to complete an assessment of opportunities to reduce gas consumption for heating of our UK sites. At FFEI, the central heating controllers have been updated to allow more efficient use of the system to control temperature in the offices in Hemel Hempstead.
Greener transport: Launch EV charging & incentive schemes	We have installed ten new EV chargers at our Huntingdon and Waterbeach sites. This adds to the two charge-points already in place at FFEI. Our Salary Sacrifice EV scheme continues to grow in popularity – with ten EVs delivered and eight more on order for delivery in 2023/24.
Plastics and packaging: Identify and eliminate non-product based single use plastics	Reducing plastics in our packaging was achieved in 2022; and all secondary printhead packaging is now fully recyclable. We removed plastic adhesive tapes and have removed plastic bubble wraps, replacing these with recyclable paper alternatives. As a result, plastic consumption reduced by more than 1.2 tonnes in 2022.
Focus areas for 2023	<ul style="list-style-type: none">  Drive all UK sites to a single green energy framework deal, minimising cost increases and maximising energy flexibility.  Install solar at Huntingdon facility to reduce reliance on the grid.  Achieve 10% reduction in mains water use.  Plan Bee: Beekeeping training for in-house volunteers.

People

Human rights

The Group respects all human rights and regards those rights relating to non-discrimination, fair treatment and respect for privacy to be the most relevant and to have the greatest potential impact on its key stakeholder groups of customers, employees and suppliers.

The Group undertakes extensive monitoring of the implementation of all of its policies and has not been made aware of any incident in which the organisation's activities have resulted in an abuse of human rights.

Xaar is committed to only supplying products that contain conflict free materials. Suppliers of parts containing tin, tantalum, tungsten or gold to Xaar are sent and required to complete an EICC- GeSI declaration providing evidence that parts supplied do not contain minerals sourced from areas of conflict – DRC or adjoining areas.

The Board has overall responsibility for ensuring that the Group upholds and promotes respect for human rights. The Group seeks to anticipate, prevent and mitigate any potential negative human rights impacts as well as enhance positive impacts through its policies and procedures, in particular, through its policies regarding employment, equality and diversity, treating customers fairly and information securely. Group policies seek both to ensure that employees comply with the relevant legislation and regulations in place in the UK and other operating locations and to promote good practice. The Group's policies are formulated and kept up to date by the relevant business area, authorised by the Board and communicated to all employees.

Code of Conduct

All new employees complete an induction process that outlines the expectations of the Company, its employees, customers and suppliers for the way in which business is conducted and helps to avoid situations that might lead to adverse legal issues or damage to our reputation.



The Group's most important corporate policies are incorporated into the Xaar Code of Conduct, and should be complied with at all times:

- Anti-bribery and Corruption Policy
- Confidential Information Policy
- Corporate Criminal Offence Policy
- Data Protection Policy
- Employee Share Dealing Code
- Email and Internet Policy
- Gifts, Entertainment and Hospitality Policy
- HS&E Policy Statements
- Sanctions Policy
- Whistleblowing Policy.

Each year the Group requires all employees to read and confirm that they understand and comply with these policies.

 See Group policies outlined in the Non-financial information statement on page 58

Whistleblowing

We have a Whistleblowing Policy that encourages open and honest communication where incidents of non-compliance are seen in our business. Whistleblowing issues are reported directly to management, and any significant issues, should they arise, are reported to the Audit Committee. In each instance, cases are investigated in detail and appropriate action taken. There have been no whistleblowing incidents or reports by senior management to the Audit Committee.

Modern slavery

The Group is committed to acting ethically and with integrity in all our business dealings and relationships, implementing and enforcing effective systems and controls to ensure modern slavery in all its forms (including human trafficking, forced labour and child labour) is not taking place anywhere in our Group businesses or in any of our supply chains. The Group has published a Group-wide Modern Slavery Policy and a statement on the steps taken to prevent slavery, which is available on the Group's website.

Health & safety and environment

Xaar has manufacturing sites in Huntingdon, Hemel Hempstead, Kettering and the USA, supported by R&D laboratories in Cambridge and Sweden, alongside head office functions in Cambridge, plus sales offices worldwide.

It is always Xaar's intention to conduct business in a manner that protects the public, the environment, and employee safety.

Xaar's Environmental and Health and Safety policies provide a framework for the setting and reviewing of Occupational Health, Safety and Environmental Objectives. This demonstrates Xaar's continued commitment to the prevention of injury and ill health and also the continual improvement in our Environmental and Occupational Health and Safety Performance. Xaar believes that the combination of a safe place of work and safe working practices, together with a productive and innovative environment, are critical to the continued success of the Company.

UK Health & Safety reports	2022	2021
RIDDORs*	0	0
Accidents	22	9
Incidents	11	11
Near misses	8	5

* Reporting of Injuries, Diseases and Dangerous Occurrences Regulations.

The Group undertakes R&D activities and manufactures products in the UK and the USA. The Group complies with all local and European legislation. The Group's manufacturing facility in Huntingdon is both ISO 9001:2015 and ISO 14001:2015 certified and as a minimum complies to HSG65. It is the Group's policy to maintain this level of certification for its Huntingdon manufacturing facilities and to comply at all times with all relevant environmental and other legislation in the territories in which the Group operates. The Group is compliant with REACH ('Registration, Evaluation, Authorisation and restriction of Chemicals'), WEEE ('Waste Electrical and Electronic Equipment') and RoHS ('Restriction of the Use of Certain Hazardous Substances') directives, as required under UK and European legislation. The Group has a proactive Health and Safety System modelled on OHSAS 18001/HSG65 in Cambridge, Huntingdon and Hemel Hempstead.

Equality and diversity

The Group is committed to providing a working environment in which employees feel valued and respected and are able to contribute to the success of the business. Employees are requested to co-operate with the Group's efforts to ensure that the policy is fully implemented.

The Group's aim is that its employees should be able to work in an environment free from discrimination, harassment and bullying, and that employees, job applicants, customers, retailers, business introducers and suppliers should be treated fairly regardless of:

- race, colour, nationality (including citizenship), ethnic or national origins;
- gender, gender reassignment, sexual orientation, marital or civil partnership status;
- religious or political beliefs or affiliations;
- disability, impairment or age;
- real or suspected infection with HIV/AIDS;
- membership of a trade union;
- pregnancy, maternity and paternity;

and that they should not be disadvantaged by unjust or unfair conditions or requirements.

The Group aims to ensure that applications for employment from people with disabilities, and other under-represented groups, are given full and fair consideration and that such people are given the same training, development and job opportunities as other employees. Every effort is also made to retrain and support employees who suffer from disabilities during their employment, including the provision of flexible working to assist their re-entry into the workplace.

The Group places considerable value on the involvement of its employees and has continued to keep them informed of the various factors affecting the performance of the Group. This is achieved through written communications shared through the Company intranet and email, and formal and informal meetings. All employees participate in a bonus scheme based on individual performance and Group business targets and, in the UK, have the opportunity to participate in an HMRC approved Share Save Scheme.

Based on the closing headcount at 31 December the split of employees (excluding the Non-Executive Directors) by gender was as follows:

	2022 Male/Female	2021 Male/Female
All employees	346/98	350/105
Executive Directors	2/0	2/0
Managers	39/15	39/7
Employees	305/83	307/97

A value-led culture



Everything with Passion

We care about our technology, our products, our partners and each other.

Innovative

We always look for new, better solutions.

Integrity

We deliver on our promises.

Creative

We push the boundaries of what's possible.

Collaborative

We work together as a team and with our clients.

CEO pay gap ratio

The following table sets out the ratio of the CEO's total remuneration in respect of FY22 (taken from the single figure table on page 96) to the 25th percentile, 50th percentile (i.e. the median) and the 75th percentile full-time equivalent (FTE) of the Group's UK employees. In line with the applicable regulations, the corresponding ratios for 2021 are also included.

	2022	2021
Method	Option A	Option A
25 th percentile	61:1	16:1
Median pay ratio	40:1	11:1
75 th percentile	28:1	7:1

Further information is provided in the Remuneration Committee report on pages 101 and 102

Gender pay gap

Gender pay reporting is required for companies with over 250 employees. Xaar is reporting as Xaar plc, including all UK subsidiaries. The snapshot date for Xaar's data is 5 April 2022. At that point Xaar had 320 relevant employees: 255 male and 65 female.

It is fundamentally important to understand that a gender pay gap does not necessarily mean men are paid more money for doing the same job. At Xaar we are committed to ensuring we pay based on merit not gender and we regularly monitor our pay awards to ensure that we pay the same rate for similar roles.

Sustainable and responsible business continued

Gender pay gap continued

Xaar's mean gender pay gap stands at 13.61% (2021: 14.38%). As with many companies we do have a gender pay gap, though our results are consistent with other companies who operate within the technical, manufacturing or engineering sector.

There has been a shift across the quartiles with more movement for female employees from lower middle quartile to higher middle. This is a reflection of more female employees being promoted and appointed to senior roles.

We appreciate that improving our diversity will improve our results, and we continue to work on improvements over the longer term. A large part of Xaar's gender balance gap is due to the challenges of recruiting women into science and technology roles. Nevertheless we are continuing to work on increasing our gender balance in the following ways:

- Xaar operates in a male dominated industry and we are working to ensure that our hiring managers are trained to understand and recognise gender bias. We do, however, receive significantly fewer applications from females for technical roles.
- Our Talent Acquisition team assists hiring managers by giving practical advice, support and monitoring for gender bias. We seek to have both female and male candidates as part of the hiring pool whenever possible and we constantly review our processes to ensure we are encouraging more female applicants.
- Xaar is supporting Cambridgeshire *Engineers of the Future* by sponsoring local schools' Imagineering Clubs, which is designed to introduce children to engineering and hopes to inspire young people and especially girls to take up STEM subjects. A number of our women from Engineering participate in these endeavours.
- We support all employees to achieve their potential with a talent management programme and we offer flexible working arrangements to support working parents.

Pension

The Group Personal Pension scheme is administered by Scottish Widows. The Company pension contribution for Directors (or cash allowance equivalent) does not exceed the contribution available to the majority of the workforce, currently 6% of base salary.

All the equity assets in the Pension Portfolio Funds now track indices, which exclude certain stocks on environmental, social and governance (ESG) grounds.

The funds, managed by their strategic partners State Street Global Advisors (SSgA) and BlackRock, track new benchmarks, which reflect exclusions policies, aligned with Scottish Widows' own policy introduced in 2020. The new benchmarks are amended versions of existing FTSE indices. They incorporate all of the stocks in the original indices, for example the FTSE All-Share, minus the excluded stocks.

Companies excluded from the indices include those that are severely violating international standards in relation to human rights, labour rights, the environment and corruption, known as the UN Global Compact (UNGC), controversial weapons manufacturers and those involved in thermal coal or oil sands.

Flexible benefits

In addition to the pension contributions, employees are also offered a range of flexible benefits each year, against which they can obtain individual and family cover including income protection and life assurance. Within the UK, there are a number of salary sacrifice schemes for employees including an electric vehicle scheme for employees to lease a new electric vehicle and a cycle to work scheme where employees can obtain finance and discounts on new bikes including electric options.

Employee health and wellbeing

Employee health and wellbeing remains a keen priority for the Group.

In line with this approach, the businesses within the Group have prioritised different initiatives that best reflect their workforce, such as volunteering and employee wellbeing policies, regular wellbeing weeks, step challenges, weekly Yoga sessions, qualified mental health first-aiders and other activities to encourage and promote a healthier workforce.

As part of the Flexible Benefits programme, employees have access to:

- **Health Shield**, a health benefit solution offering access to discounts and reimbursement of healthcare costs such as dentists, opticians, physiotherapists and health checks.
- **Fitness**, employees can pay for gym membership or gain access to gym discounts via a website, that also offers discounts on items such as fitness trackers, experience days and sports clothing.
- **Wellbeing** via an **Employee Assistance programme**, a positive preventative programme of information, advice and services that can help individuals deal with events in their everyday work and personal life, including bereavement assistance, manager consultation and coaching, and immediate crisis intervention, through telephone counselling teams 24/7.

Training, development & retention

The role of Training and Development Manager was added to the HR function in 2022 with key enhancements to the offering including:

- An updated suite of Learning and Development tools being developed to ensure key skills are developed and enhanced.
- 1,850 hours of professional development being undertaken.
- Internal courses are developed in conjunction with the Institute of Learning and Management (ILM) to support key manager development.

- An Apprenticeship Programme was embedded with four engineering apprentices joining the programme across the Group.

The Group operates an online performance management and appraisal system providing opportunity for individual discussions on training needs and career planning. This is supported by a talent management and succession planning process from which the Executive Management Team assesses the outcomes, formulates action plans and reviews progress. Two talent Development Cohorts have been established with individual and group learning planned for 2023.

The Board is kept informed of the results. The loss of key personnel is identified by the Board as a key risk and is set out in further detail in the principal risks and uncertainties table on page 51. Voluntary labour turnover was 10.4% across the Group in 2022 (2021: 5.5%).



People summary

Focus, commitments and action	Progress in 2022
<p>Early years engagement Proactive engagement with young people</p>	<p>We continue to support activities that promote STEM subjects amongst young people. Next year, we plan to expand our activities to reach out to multiple schools (primary, secondary and higher education).</p> <p>Our Apprenticeship Programme in PHBU, FFEI and EPS is working well – and we can report that we now have a Framework across the Group. We enrolled four new apprentices onto programmes in 2022 bringing our total to 13 live apprenticeship programmes in Xaar Group.</p> <p>Our graduate framework is in place, however we have no active graduate participants this year.</p> <p>We have three new industry placements across the Xaar Group in 2022 from Huddersfield University, Queen Mary University of London and Leipzig University.</p> <p>We have entered into three Sponsorship Programmes, supporting an A-Level and two PhD level individuals at Kings school, Peterborough, Oxford and Sheffield respectively.</p>
<p>EPIICC: Relaunch of Xaar Values across the Group</p>	<p>Following the launch of our EPIICC values in 2021, these were further embedded across the Group during 2022.</p> <p>During the year there were 598 peer nominations for an EPIICC award with the winning employees receiving Group-wide recognition for their commitment to living the values.</p>
<p>Talent attraction & retention: Prioritising our focus on people</p>	<p>Attraction and retention remain critically important in a challenging employment market. In 2022 voluntary turnover remained low at 8.2% which resulted in relatively low levels of external recruitment. In 2023 we will be updating our employee value proposition, refreshing our careers website and looking at using additional channels to attract future employees. To focus on retention, two future talent cohorts have been launched to support the development of future leaders and managers. Throughout 2022 we have continued to engage with our employees by running Exec Exchange sessions and Meet the NEDs sessions to ensure all employees have the opportunity to discuss areas of the business and the strategy directly with leaders.</p>
<p>Wellbeing: Supporting our employees' physical & mental health</p>	<p>We continued through 2022 to embed a positive intervention programme with advice and support available to all employees.</p>
<p>Health & Safety: Ensure zero harm across our operations</p>	<p>New accident and near miss reporting process has been integrated into all the Xaar Group locations.</p> <p>No RIDDOR level accidents have been reported this year.</p>
<p>Investing in our people: Learning, development & skills building</p>	<p>We supported Learning at Work Week in May 2022 through several initiatives - which were attended by 109 of our colleagues across the nine events. This resulted in 131 hours of learning.</p> <p>We have achieved 1,850 CPD (continuous professional development) hours for Xaar. Tracking of the wider Group hours will start in 2023.</p>
<p>Communications: Establishing regular dialogue with internal stakeholders</p>	<p>We continue to use a wide range of channels to communicate with our internal stakeholders. This includes:</p> <ul style="list-style-type: none"> • Xaar Connected (fortnightly) • CEO's email update (weekly) <p>We plan to undertake an Employee Survey in 2023 as part of the work we are doing for the Great Places to Work Programme.</p> <p>We also communicate our sustainability and ESG progress through a regular series of blogs (shared internally and externally). We have commissioned a Group level sustainability video which will be completed in Q1 2023.</p>
<p>Equality, Diversity & Inclusion</p>	<p>We continue developing policies and practices in all areas of our business to ensure that our values in this area are fully embraced.</p>
<p>Focus areas for 2023</p>	<ul style="list-style-type: none"> ✔ Complete Great Place to Work Programme and roll out key actions. ✔ Continue to amplify internal communications around our Roadmap. ✔ Examine Xaar Group working patterns to drive a more diverse applicant pool.

Innovation

Xaar recognises that innovation is key to achieving many of the sustainability goals across all four pillars that support our Sustainability Roadmap. For 30 years, we've been reinventing inkjet and reimagining what's possible for printheads.

In 2022 we relaunched the Product Lifecycle Management process in all parts of the Xaar Group. It is used to develop new and innovative print related products; this now includes Design for Environment as part of the development considerations. Eco-design is the systematic application of environmental lifecycle considerations at the product design stage. The aim of eco-design is to avoid or minimise significant environmental impacts at all stages of the lifecycle of a product, from sourcing of raw materials and purchased components, design and manufacture, to distribution, use and end-of-life disposal.

We are researching ways to use biodegradable structural parts in the manufacture of our products. An area of focus is to find an alternative, more sustainable material than Polylactic Acid (PLA) which is a biodegradable plastic used to print the majority of our jigs and fixtures. Our Operations team has successfully trialled the use of recycled PLA filaments generated from returned and waste PLA. These are supplied in 100% plastic-free sustainable packaging with easy to recycle cardboard spools.

We are also examining the properties of Fishy Filaments, a printing filament manufactured from end of life fishing nets recovered from Cornish fishery fleets.

In addition, we have high hopes that a new material in development at Fishy Filaments may be resistant to ink fluids, and therefore be a candidate for manufacture of printheads.

Precautionary principle

The Company supports the precautionary principle by avoiding materials and production methods that pose environmental and health risks when suitable alternatives are available.

Xaar continues to review changes in the Restriction of Hazardous Substances Directive (2011/65/EU). As a result we are working hard to eliminate Substances of Very High Concern (SVHC) from the manufacturing process.

Resource efficiency and circularity

Our products and processes are designed in such a way that energy and raw materials are used efficiently, and waste and residual products are minimised over the product lifecycles.

We have implemented a successful circular and resource efficient approach to the recovery of key electronic and piece parts from printheads that do not meet our high standards. This innovative approach, along with considerable sourcing efforts, has enabled us to continue production despite global shortages and has enhanced our business resilience.

Environmental performance

The Company routinely audits, follows up and reports on its environmental performance, with particular emphasis on evaluating the potential risks of present and future products and operations.

Product quality

We issued a number of Technical Bulletins throughout the course of 2022, advising customers on product updates, system improvements and product end of life announcements. No product recalls were initiated in 2022.



Innovation summary

Focus, commitments and action

Progress in 2022

Sustainable supply chain:

Undertake supplier review, sustainability policy and partnership to enhance sustainable opportunities

In order to baseline our Supplier Scope 3 GHG emissions we have partnered with external consultancy CO2A. Their experts will model our carbon footprint due to upstream activities. The model is based on financial transactions but includes typical transport carbon impacts from the countries each supplier works within.

In addition, we have started discussions with our key suppliers to validate the model and to enable actions for what we foresee as our likely highest carbon impacting supply chain partners.

As part of all new part supply contracts we are now looking for the carbon footprint to allow a selection on the basis of quality, cost and sustainability for all future decisions.

We have already taken the decision for some Far East suppliers to order months in advance and ship by boat to dramatically reduce the carbon impact of transport, where previously we used air.

Sustainable materials:

Investigate & explore new opportunities

While we transition to recycled PLA for all of our jigs and fixtures the use of the current Fishy Filaments materials is proving difficult. Development by this innovative company continues and we remain hopeful that a new material may provide an easier option for printing jigs and fixtures, and potentially structural printheads parts.

Critical supplier climate risks

Undertake full review of top ten suppliers

With our partner CO2A we are undertaking a climate risk analysis of each of the Group's top ten critical supply partners. Our intent is to work with each to mitigate the perceived risk as climate temperatures increase and the environment becomes more susceptible to extreme weather events.

Focus areas for 2023

- ✔ Develop a generic Printhead Sustainability metric that can be used across the industry to inform customers and allow comparisons between competitors.
- ✔ Establish Continuous Improvement team to look at cost down and Sustainable Improvements on New and Established products.
- ✔ Develop a future roadmap towards a sustainable printhead.
- ✔ Investigate rationale and business case for projects that explore participation in circular economy of printhead reclaim and solvent recycle.

Community

Xaar is proud to play an active role in the communities in which it operates.

As part of our commitment to social value and community we have an active programme of sponsorship for projects and initiatives that are aligned to our business values.

For example our Printhead business sponsors an Imagineering Club within a local primary school (Stukeley Meadows School). Imagineering Clubs are designed to introduce children to engineering through fun activities. Our employees provide their time to support these within work hours.

In June 2022 we welcomed ten pupils from Stukeley Meadows School in Cambridgeshire on site for a day of activities and learning. This was not simply a great way to add value and connect with our local community, it was a valuable and energising way to inspire the next generation of youngsters through STEM-based activities ('Science, Technology, Engineering and Mathematics').

Charities

At a strategy and policy level, we have updated and published a Group Charity Policy. Moving forward, it will help us to define how we select and work with our charity partners. We think this is an important part of our ESG/Sustainability agenda and will be a useful framework.

Xaar contributes annually to charitable causes through three funds:

A chosen charities fund: with our three-year affiliation to Break the chosen charities fund in the UK has promised to match-fund up to £20,000 raised by staff each year from April to April.

In the US, EPS continues to support Manchester Machine Makers, a club that is dedicated to promotion of STEM subjects.

A Sponsorship fund: for staff and their families engaging in charity events or team activities, Xaar will provide up to £100 towards an event (e.g. charity golf days, sporting events, donations to community foodbanks) or team sponsorship. Wherever possible the Xaar logo should be incorporated (e.g. in a team sports kit). There is a fixed annual budget to cover all sites.

A Central fund: Xaar will donate monies as appropriate to disasters and emergencies or other local causes not covered by the other funds. This will be at the discretion of the executive team. In total, the Group made charitable contributions to local and national charities during the year totalling £2,966. (2021: £5,060).



Charitable sponsorship

Chosen with input from our colleagues, our charity work inspired us to enter into a three-year partnership with the East Anglian children's charity 'Break' to help change the lives of vulnerable young people on the edge of care, in care and leaving care (www.break-charity.org/charity/). We have set ourselves a fundraising target of £20,000 – we aim to reach this figure with the help of our internal Charity Champions and Break.

While our fundraising activities are clear we hope that mentoring and potentially employment opportunities may also be offered as a result of this longer-term union.

Volunteering

Our senior leadership team recognises the benefits to Xaar, our employees and to the wider community of a framework within which volunteering can take place. Managed well, volunteering can raise our profile within the community and support our social responsibility plans.

Xaar supports employees' voluntary work/ activities by providing 'holiday matching' of up to two and a half days a year. We believe this will help them get involved in their community, support employee mental health and wellbeing through positive activities and additionally assist them in developing new skills and hone existing ones.

Xaar has donated and grant matched time off to an employee in 2022 to travel overseas and support construction of a school/facilities building in Africa. That employee was so enthused by the effect of his contribution that Xaar intends to support grant matched time off for a follow up project in 2023.

Political donations

The Company has a longstanding global policy against making contributions to political parties, political committees or candidates using Company resources (including monetary and in-kind services), even where permitted by law.

No political donations were made in the current or previous year.

Taxation

We aim to manage our tax affairs in accordance with national legislative provisions and within the guidelines set down by the Organisation for Economic Cooperation and Development (OECD). Our objective is to structure our operations tax efficiently and take advantage of available incentives and exemptions provided by governments for eligible capital investments, R&D and similar expenditure.

We do not enter into any artificial tax arrangements.

We have not received any fines or penalties from any government tax agencies.

Community summary

Focus, commitments and action	Progress in 2022
<p>Charity partnerships: Alignment of values & fundraising activities</p>	<p>This year, we released a new Group-wide Charity Policy. This is designed to help us align our chosen charity partnerships with our Company values. This policy clarifies our commitment to work with organisations that support young people and vulnerable groups in society.</p> <p>Our Charity Champions network is now established across the Xaar Group with several fundraising activities completed and more planned.</p> <p>In the UK, we have established a three-year partnership with East Anglia based charity Break. In the USA, we continue to support Manchester Machine Makers.</p> <p>Xaar has committed to match-fund up to £20,000 of our fundraising activities in the UK.</p>
<p>Volunteering: Increase volunteering opportunities</p>	<p>Our Volunteering Policy has been fully rolled out across the Group. This allows a matched period for time taken by an employee to volunteer with a recognised charity up to 2.5 days a year.</p> <p>In 2022, one of our team volunteered to help build a school in Africa, and will return in 2023 to continue this valuable work.</p>
<p>Supporting STEM subjects: Working with local communities & schools</p>	<p>In the UK, we are working with Stukeley Meadows STEM Club. Ten of their students visited Xaar Huntingdon for the day in 2022 to take part in tours and activities to inspire their interest in technology-focused careers. We plan to run taster sessions in a second primary school and support a STEM activity day in a third primary school in January 2023. We also intend to support industry focused lessons to support the curriculum in a local secondary school in 2023.</p>
<p>Electronic equipment reuse: Exploring options for redeployment for schools & local social projects.</p>	<p>Xaar Group has taken delivery of our first 15 remanufactured laptops from our partner Circular Computing. This order has avoided over 4tCO₂e when compared with ordering new laptops. It is hoped that in three years' time this will form a closed circular route with these laptops being remanufactured and reused again.</p> <p>Any waste electrical equipment that is beyond use for schools and local social projects is being sent for precious metal recovery. We continue to review all end of life electronics for opportunities to support schools or local projects.</p>
<p>Focus areas for 2023</p>	<ul style="list-style-type: none"> ✔ Continue to increase awareness of the work of UK Charity Partner Break and provide support for fundraising in 2023. ✔ Drive quarterly site-based activities through Charity Champions network, and support Break by promoting additional activities such as firewalks and skydiving. ✔ Initiate mentoring support for Break's young people with help and engagement from our UK staff. ✔ Create a Volunteering Diary to encourage staff engagement and publish this across UK Xaar Group.

Task Force on Climate-related Financial Disclosures (TCFD)

In meeting the requirements of Listing Rule 9.8.6 R, the Board has concluded that:

We comply with the recommended disclosures across each of the provisions. See below for details.

Disclosures	Recommended disclosures	Response
A. Governance		
Disclose the organisation's governance around climate-related risks and opportunities.	1. Describe the board's oversight of climate-related risks and opportunities.	<p>The Xaar plc Board reviews key climate-related risks and opportunities and oversees mitigation strategies as part of the bi-annual review of principal and emerging risks.</p> <p>Alison Littley, Senior Independent Director, has specific responsibility for ESG matters, including climate change and sustainability.</p>
	2. Describe management's role in assessing and managing climate-related risks and opportunities.	<p>Executive management receives reports from an ESG Committee whose members consist of senior managers across the Group.</p> <p>The ESG Committee meets on a quarterly basis to assess the opportunities and proposals developed by the Sustainability Working Group.</p> <p>The Sustainability Working Group meets regularly and is driving our roadmap whilst also receiving information from both the Carbon Net Zero team and Energy Efficiency team.</p> <p> See governance structure on page 60</p>
B. Strategy		
Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning where such information is material.	3. Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.	<p>We completed climate scenario planning out to 2100 across two climate scenarios (e.g. RCP 2.6, RCP 8.5).</p> <p>The review examined all Xaar sites globally and our top ten critical supplier sites using 12 separate climate models, in each case the RCP 8.5 model was used to assess risks at the most extreme expected temperature rises (4.5oC).</p> <p>The report concluded physical risks are low to very low in almost all cases.</p> <p>There are two Xaar sites at risk of flooding:</p> <ul style="list-style-type: none"> • Bayes Street Kettering – surface water high risk • Fuzhou Avenue, Bao'an District Shenzhen – one metre above sea level <p>There are three supplier sites of ten analysed with risks:</p> <ul style="list-style-type: none"> • Site 1 IPRO PID five metres above sea level near coast • Site 4 Fabrinet five metres above sea level protected by Bangkok (7km inland) • Site 5 CTS Tianjin China 0 metres above sea level near coast <p>Mitigations</p> <p>China is expected to create one metre coastal defences to protect its major population centres and both the Xaar and CTS sites are part of major population centres and should be part of these coastal actions.</p> <p>IPRO PID at five metres will not be affected for a long time, so there is plenty of time to monitor actual sea level rise before making any risk judgement.</p> <p>Fabrinet at five metres, and 70km inland will not be affected for a long time, so there is plenty of time to monitor actual sea level rise before making any risk judgement. We expect coastal defences to be put in place to protect Bangkok which will also protect Fabrinet.</p> <p> See Risk management on pages 53 to 54</p>

Disclosures	Recommended disclosures	Response
B. Strategy continued		
	4. Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.	<p>In managing these financial climate-related risks our business model would not require material change, except for increasing inventory levels of components to account for transport delays arising from exceptional weather events, and to consider mitigation for potential business disruption, e.g. flood defences.</p> <p>Opportunities exist in the transition to a low carbon manufacturer, by reducing both energy usage and utilising renewable energy sources to deliver lower costs to the business. Product development will incorporate sustainability as a central objective, to transition manufacturing from a linear to a circular process and to being a process to reduce, reuse and recycle materials, all to be undertaken as part of Xaar's overall Sustainability Roadmap.</p> <p> See Risk management on pages 53 to 54</p>
	5. Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	<p>We have undertaken a high-level review of the likely impact of 2°C and 4.5°C global warming scenarios (see section 3 above), an independent external climate related scenario review in 2022 to identify physical and transition risks and opportunities in delivering carbon neutral manufacturing leading to 'Net Zero by 2030'. The review identified very low to low risks in most cases with five sites identified with slightly higher risk scenarios.</p> <p> See Risk management on pages 53 to 54</p>
C. Risk management		
Disclose how the organisation identifies, assesses, and manages climate-related risks.	6. Describe the organisation's processes for identifying and assessing climate-related risks.	<p>The Group has processes in place for identifying, evaluating and managing the principal risks, which could have an impact upon the Group's financial performance. Climate change has been disclosed as an emerging risk in recent years, and has been escalated to a principal risk category in 2021.</p> <p>With new inputs from an independent report the Board has considered the potential impact of climate change that could occur in the short, medium and longer term.</p> <p> See Risk Management on pages 53 to 54</p>
	7. Describe the organisation's processes for managing climate-related risks.	See above – A. Governance – Xaar has introduced a new structure to identify climate-related risks to be reported to the Board bi-annually including making decisions to mitigate, transfer, accept, or control those risks.
	8. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.	As part of the Group's risk management, within the detailed risk register, climate-related risks are determined alongside other principal risk areas, e.g. manufacturing facility, inventory and supply chain risks. The assessment is quantified via a Likelihood/Magnitude matrix to determine the overall net risk after mitigation.
D. Metrics & Targets		
Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	9. Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.	<p>Metric updates for 2022:</p> <ul style="list-style-type: none"> Investigate metrics and targets to be defined as part of Science Based Targets initiative Continuing improvement/reduction in Scope 1 & 2 emissions along with intensity measurement Scope 1 & 2 emissions are being offset to become 'carbon neutral' Analysis completed to recognise and begin to action travel, commute and upstream Scope 3 emissions Set, measure and disclose waste to landfill target, any waste not recycled being sent to a waste to energy recovery process. We are aware that the new acquisition, Megnajet, is not a zero to landfill site and it will be a priority to correct this situation in 2023. <p> See page 29 for Sustainability Roadmap</p>

Task Force on Climate-related Financial Disclosures (TCFD) continued

Disclosures	Recommended disclosures	Response
D. Metrics & Targets continued		
	10. Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	<p>GHG emissions are disclosed as per the SECR requirements for Scope 1 and Scope 2.</p> <p>An initial assessment has been completed for Printhead business unit Scope 3 emissions, and a boundary developed.</p> <p>We have recognised Scope 3 emissions arising from employee travel and commuting; a model has been generated to allow an estimate of the upstream value chain and direct interaction with suppliers to validate the quality of this modelled data has been initiated. Downstream value chain activities have not yet been examined, and with the initial upstream results being approximately 100 times our own internal Scope 1 & 2 footprint we intent to focus on upstream value chain activities for a number of years before moving to downstream review.</p> <p> See GHG/SECR disclosure on page 45</p>
	11. Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	<p>Xaar has committed short-term targets:</p> <ul style="list-style-type: none"> • To achieve a net zero target by 2030 • 100% renewable (green) electricity at UK facilities by Sep 23 • Zero waste to landfill • Offset of all Scope 1 & 2 Group emissions as we continue to drive reductions in energy use. <p> See page 33 for progress summary</p>

Greenhouse Gas Emissions statement

Xaar plc has calculated its global greenhouse gas (GHG) emissions statement using an operational control consolidation approach

Scope 1 emissions

Scope 1 emissions occur from sources that are owned or where Xaar plc has operational control. This includes direct emissions from gas combustion in our buildings, fuel used in leased Company vehicles and for the first time we have chosen to include impacts from refrigerant leaks (not currently required).

Actual and estimated gas consumption data has been collected from each of the leased properties under the control of the Xaar Group, from data sources including direct meter readings, meter readings from suppliers included on invoices and estimations where required based on available information from property management suppliers and other sources. Actual mileage data has been collected from the leased Company vehicle fleet.

Scope 2 emissions

Scope 2 refers to indirect emissions from the consumption of purchased electricity (also including any purchased heat, steam or cooling) from facilities owned or under the operational control of Xaar plc. Actual and estimated data has been collected from each of the leased properties under the control of the Xaar Group, from data sources including direct meter readings, meter readings from suppliers included on invoices and estimations where required based on available information from property management suppliers and other sources.

Scope 3 emissions

Scope 3 emissions are all indirect emissions – not included in Scope 2 – that occur in the value chain of the reporting company, including both upstream and downstream emissions.

Scope 3 CO₂ emissions currently represent calculated and estimated CO₂ emissions from travel and employee commuting as well as modelled totals from our upstream emissions. Our financial records were reviewed to extract purchased product data which was then used to calculate the carbon footprint of the matched products using MRIO data from CenSA (now University of Leeds as used by DEFRA). As the Group's Sustainability Roadmap progresses, we aim to collaborate with the supply chain to validate our upstream model data and reduce CO₂ emissions. We will continue to disclose ongoing progress in our Annual Report. Activities on downstream Scope 3 have not yet been initiated, but plans are in place to understand these in the future.

 Please refer to page 32 for actions that Xaar is undertaking to offset its carbon emissions

Assessment parameters	
Baseline year	1 January 2013 to 31 December 2013
Consolidated approach	Operational control
Boundary summary	All entities and all facilities under operational control included subject to the materiality threshold applied
Consistency with the financial statements	The only variation is that leased properties deemed to be under operational control have been included in Scope 1 and 2 emissions
Materiality threshold	Materiality has been set at Group level at 5%*
Assessment methodology	Greenhouse Gas Protocol and ISO 14064-1 (2006)
Intensity ratio	Emissions per £'000 turnover exc. royalties

* The total of any excluded emission sources is estimated to be less than 5% of Xaar plc's total reported emissions.

Greenhouse gas emissions		Renewable	Non-renewable	2022 Total	Renewable	Non-renewable	2021 Total (restated)
Global energy use	KWh	10,525,987	1,022,484	11,548,472	10,610,069	1,741,835	12,351,905
	%	91.1%	8.9%		85.9%	14.1%	
UK	KWh	10,292,374	509,164	10,801,538	10,205,766	962,135	11,167,901
Non-UK	KWh	233,613	513,321	746,934	404,303	779,701	1,184,004
Absolute values							
Scope 1	tCO ₂ e	–	220	220	–	98	98
Scope 2	tCO ₂ e	–	21	21	–	116	116
Scope 3	tCO ₂ e	–	479	479	–	150	150
Total	tCO ₂ e	–	720	720	–	364	364
– Scope 1 & 2 emissions of which UK	tCO ₂ e	–	156	156	–	198	198
Normalised values							
Scope 1	tCO ₂ e/£'000	–	302	302	–	165	165
Scope 2	tCO ₂ e/£'000	–	29	29	–	198	198
Scope 3	tCO ₂ e/£'000	–	658	658	–	254	254
Total	tCO ₂ e/£'000	–	989	989	–	617	617

* UK energy certified by EON, by Guarantees of Origin from renewable wind sources. US energy (Green Mountain) 100% carbon free, 68% renewable (balance being nuclear). Significant site based emissions improvements since 2021. The Nottingham site (carbon impact of 35 tCO₂e) was sold in 2021. A 45 tCO₂e reduction as FFEI moved to a green electricity source. Our 2022 figures show an emissions increase because we have chosen to disclose refrigerant leaks across the Group. The leaks generated a total Scope 1 impact of 124 tCO₂e (2021 0). 2021 energy figures have been updated to include gas kWh.

Historic greenhouse gas emissions	2020	2019	2018	2017	2016	2015
Scope 1 – tCO ₂ e	75.0	108.3	124.8	147.7	167.0	162.2
Scope 2 – tCO ₂ e	1,741.0	2,622.8	3,128.1	4,088.0	4,432.0	4,475.2
Total – tCO₂e	1,816.0	2,731.1	3,252.9	4,235.7	4,599.0	4,637.4

Key performance indicators

Measuring our success

We monitor progress against the delivery of our strategic goals using financial key performance indicators (KPIs).

The Company uses a number of alternative performance measures (APMs) in addition to those reported in accordance with IFRS. The Directors believe that these APMs, shown, are important when assessing the underlying financial and operating performance of the Group and its divisions, providing management with key insights and metrics in support of the ongoing management of the Group's performance and cash flow. A number of these align with KPIs and other key metrics used in the business and therefore are considered useful to also disclose to the users of the financial statements.

The following APMs do not have standardised meaning prescribed by IFRS and therefore may not be directly comparable with similar measures presented by other companies.

 See note 4 of the Group's Consolidated Financial Statements, for reconciliation between adjusted and statutory items

2022 figures and 2021 comparative figures are based on continuing operations (where relevant), and are subject to rounding.

Revenue

Statutory

£72.8m

Continuing operations

Total revenue for the Group was £72.8 million, an increase of £13.5 million year-on-year (2021: £59.3 million). Revenue increased 23% year-on-year.

Revenue by sector £m

Industrial

2022	£54.9m
2021	£40.8m

Packaging

2022	£12.9m
2021	£11.9m

Industrial sector growth incorporates the acquisition of Megnajet (£2.5 million), the effect of a full year of FFEI revenue (£6.4 million) and improvements to EPS performance (£5.7 million).

Graphic Arts

2022	£4.7m
2021	£6.2m

Royalties

2022	£0.3m
2021	£0.4m

Declines in the wide format graphics and labels markets are behind the reduction in the graphic arts sector. Royalties from the single remaining licensee declined in the year and are expected to cease in 2023.

Revenue by region £m

EMEA

2022	£28.4m
2021	£23.7m

Asia

2022	£8.2m
2021	£12.0m

Americas

2022	£36.2m
2021	£23.6m

The increased revenue in Americas is primarily due to the continued sales turnaround in the EPS business and a key US printhead customer increasing stock holding in the year.

The Asia market was significantly impacted by the COVID-19 lockdown measures in China, which prevented OEMs from assembling machinery in the region.

EMEA growth was predominantly driven by inorganic growth related to the FFEI and Megnajet acquisitions.

Profit

Statutory

39%

Gross margin – Continuing operations

2022	39%
2021	34%

The increase in gross profit for the Group can be attributed to the performance of the Printhead business, driven by operational leverage and cost-saving initiatives, and the continuing turnaround of the EPS business. (2021: 34%).

£0.8m

Profit before tax £m – Continuing operations

2022	£0.8m
2021	£1.0m

Profit before tax represents operating profit after investment income and finance costs (2021: £1.0 million). Impact of COVID reduced Printhead profitability but offset by turnaround in EPS.

2.1p

Basic earnings per share (Total)

2022	2.1p
2021	20.9p

The calculation of basic EPS is based on the weighted average number of ordinary shares outstanding during the period (2021: 20.9p). See Financial Statements – note 14 for further information.

Alternative Performance Measures (APMs)

£6.2m

Adjusted EBITDA £m – Continuing operations

2022	£6.2m
2021	£3.2m

Adjusted EBITDA is defined as operating profit before separately reported items. It is one of the Group's KPIs and is used to assess the trading performance of Group businesses. It is also used as one of the targets against which the annual bonuses of certain employees are measured. Refer note 4.

£2.8m

Adjusted profit before tax £m – Continuing operations

2022	£2.8m
2021	(£0.6m)

Adjusted profit before tax from continuing operations represents the loss before tax adjusted for recurring and non-recurring items. Reconciliation of adjusted financial measures is provided in note 4.

4.8p

Adjusted basic earnings / (loss) per share – Continuing operations

2022	4.8p
2021	(1.0p)

Earnings per share adjusted for the impacts of adjusting items and share-based payment expense. This measures the growth and profitability of the Group operations.

Cash

Statutory

£8.5m

Cash & treasury deposits £m

2022	£8.5m
2021	£25.1m

Cash and cash equivalents comprise cash at bank of £8.5 million (2021: £25.1 million).

(£16.5m)

Net (decrease)/increase in cash and cash equivalents £m

2022	(£16.5m)
2021	£5.0m

During 2022 we acquired businesses resulting in an initial net cash outlay of £3.5 million as well as a further deferred payment for FFEI of £1.7 million. Additionally, we invested £5.4 million on key infrastructure and product development and a further £9.5 million in inventory. 2021: £5.0 million inflow – benefitting from an inflow of £9.3 million on the sale of Xaar 3D.

Alternative Performance Measures (APMs)

£6.7m

R&D investment £m

2022	£6.7m
2021	£5.7m

Group R&D investment (continuing operations) excluding capitalised costs. Reflects the ongoing investment in Xaar's ImagineX platform as well as increased investment in FFEI (2021: £5.7 million).

(£16.3m)

Cash outflow from continuing operations £m

2022	(£16.3m)
2021	(£2.3m)

Net cash outflow (including £0.3 million benefit from invoice discounting facility) was £16.3 million as a result of acquisition related payments of £5.3 million and the investments in inventory and key product development as explained on the left. Excluded from this figure is a cash outflow of £0.2 million relating to settlements for the discontinued Thin Film business. 2021 figure is excluding the discontinued operations outflows of £2.0 million and proceeds from 3D disposal of £9.3 million.

Risk management

Managing our risks

Key risk areas

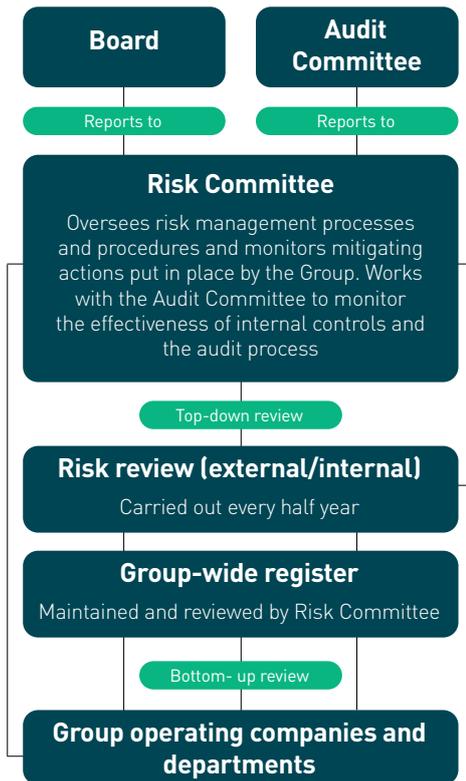
The risks around our business are set out in more detail on pages 52 to 57, but the key risk areas can be identified as being associated with the following:

Market		Risk owner: CEO John Mills	
<p>1. Competition Monitoring and adjusting to competitive dynamics such as pricing/promotion, innovation, resource investments and market share changes.</p>	<p>2. Identification of market requirements Successfully developing products with the characteristics that meet market requirements within the necessary timescale.</p>	<p>3. Commercialising and maintaining products with cutting edge technology Creating value by generating innovative products that deliver significant customer benefit.</p> <p>4. Merger and acquisition opportunities Seek opportunities to expand, create synergies and generate greater shareholder value.</p>	<p>5. Coronavirus (COVID-19 and variants) – External Tracking and adjusting to the potential global impact and external risks arising from pandemic response and impact on customers/supply chain.</p>
Operational		Risk owner: COO Graham Tweedale	
<p>6. Climate change Identifying risks and scenario planning of physical and transition impact upon operations and developing mitigating actions.</p> <p>7. Organisational capability Having the right people in the right roles.</p>	<p>8. Partnerships and alliances Working with the right companies, at the right time on the right terms to deliver long-term value.</p>	<p>9. Supply chain Optimising sourcing and supply chain relationships to drive performance and minimise operational issues.</p> <p>10. War in Ukraine and the world economy Staying resilient in the face of challenging world economy and a recession in the UK.</p>	<p>11. Laws and regulations Compliance with key laws and regulations in all countries Group operates in.</p>
IT		Risk owner: CFO Ian Tichias & Group IT Director Graeme Smith	
<p>12. IT systems and control environment Strengthen IT infrastructure and key IT systems. Enhance and build resilience by investing in and implementing new IT infrastructure or IT systems.</p>	<p>13. Cyber security risk Loss of systems or confidential data due to a malicious cyber-attack, leading to disruption to business operations and loss of data.</p>		
Financial		Risk owner: CFO Ian Tichias	
<p>14. Ability to access sufficient capital Ability to access sufficient capital to fund growth opportunities.</p>	<p>15. Customer credit exposure Offering credit terms ensuring recoverability is reasonably assured.</p>	<p>16. Inventory obsolescence Holding excess inventory levels when compared to demand, that leads to increased risk of obsolescence and write-off before consumption.</p>	<p>17. Exchange rates Monitoring global economic events and mitigating any resulting significant exchange rate impacts.</p>

Risk management

Effective risk management is key to our success against the dynamics of the industry that we operate in and the characteristics of our chosen business model.

Risk management responsibilities



Risk management strategy and framework

To safeguard the assets of the Group and to ensure the Group's resources are appropriately managed, we should have effective processes to identify key risks and mitigate them. This is achieved through having appropriate policies and internal control frameworks.

Starting from 2022, the structure and the processes around risk management have been formalised. A formal Risk Committee has been created, which comprises the CEO, CFO, COO and Director of Risk, Controls and Audit. The Risk Committee meets twice a year and reviews the principal risks and key changes within the past six months.

Before each Risk Committee meeting, all departmental risk meetings take place, where all relevant risks are discussed, ratings re-evaluated, and current and future mitigating actions are considered. The risk register updated after all these meetings is reviewed and considered by the Risk Committee as part of its principal risks evaluation.

This year, a risk benchmarking exercise has also been performed to identify any key risks not already covered in the principal risks of the Group. FTSE 100 and FTSE 250 companies in similar industries have been analysed and their risks were compared against the existing risks reported by the Group. As a result of this exercise, the risk around laws and regulations has been introduced as a principal risk.

Please note that this risk had already been captured in the risk register, but was not disclosed as a principal risk before.

Another risk which was added to principal risks as a result of the benchmarking exercise is the risk around the loss of key entity personnel. Although there is an existing wider risk referred as Organisational Capabilities, the Risk Committee considered it necessary to explicitly state the 'loss of key entity personnel' within the wider risk to acknowledge a significant dependence of the Group on its key leaders.

After all risks and proposals are approved by the Risk Committee, the principal risks are then presented to the Board and the Audit Committee for their final review and approval.

Key updates since Half-year

Coronavirus (COVID-19) – Internal/ Operations – removed

As already indicated in the Half-year report, this risk has significantly reduced due to a mature vaccination programme in the countries Xaar operates in, as well as well-established and well-functioning hybrid working arrangements which have been operating for many months by now. We do not consider this risk to be key for our operations any longer.

IT transformation – removed

As already indicated in the Half-year report, the risk around IT transformation has become very low considering we're far advanced in this journey. The second half of the year demonstrated continued success and meeting of timetables, which led us to downgrade this risk to removal.

Laws and regulations – new risk

There is a risk that the Group may not be compliant with existing laws and regulations in the UK and other countries the Group operates in. This could be manifested through liabilities around employee accidents or consequences of environmental damage, breaches of export controls and customs, lack of awareness of economic sanctions and product liability claims.

We must continually review and update our operations and procedures, and ensure our colleagues are fully informed and educated in all applicable legal requirements.

Breaching any of these laws or regulations could have serious consequences for the Group.

Climate change – update

The risk was introduced in 2021 and in 2022 we have conducted a formal assessment of climate-related scenarios to identify risks and opportunities and the potential impact of both physical and transition risks on the Group's operations, strategy and financial planning. After the analysis was performed, our assessment of the risk for the Group is medium to low. Physical risks are low based on the locations where we operate and transition risks will also remain low assuming we meet our target of Net Zero by 2030, which will be much sooner than most of the industry.

Cyber security – update

Cyber risks continue to be a significant area of focus for the Group following the cyber security incident in October 2020 (systems were recovered without disruption to Operations and Customer Shipments, and costs and damages were disclosed in the Annual Report in 2021). There have been no known incidents since 2020.

All mitigating actions to this risk are disclosed in the relevant section of this report. The key updates in 2022 were establishing an independent external audit of Xaar IT Security & IT Security Technical Controls on an annual basis and achieving compliance with the Xaar Security Standard (Minimum Baseline), or acceptable alternatives, across all business units.

Additional plans for 2023 are establishing a more comprehensive IT Security and Data Protection training and education programme for all employees and reviewing cyber security insurance policy proposals with the Board of Directors.

Emerging risks

The Board periodically reviews emerging risks, to consider and evaluate the potential impact of newly identified risks against current principal risks, and monitor developing issues. The most recent report from Gartner (Q4 2022) highlighted the Top 5 emerging risks relevant for the UK, and these were mapped against existing principal risks (please see below).

Compliance

The Board has applied principle O of the 2018 UK Corporate Governance Code by establishing a continuous process for identifying, evaluating, and managing the significant risks the Group faces which has operated throughout the year and up to the date of this report. The internal control and risk management system is designed to manage rather than eliminate the risk of failure to achieve business objectives and can only provide reasonable and not absolute assurance with respect to the preparation of financial information and the safeguarding of assets against material misstatement or loss.

This also complies with FRC guidance on risk management, internal control and related financial and business reporting (September 2014).

Risk name	Link to our risk/relevance
1. Escalation of Conflict in Europe	10. War in Ukraine and world economy
2. Critical Infrastructure Failure	9. Supply chain and 13. Cyber security risk
3. ESG Implementation Challenges	6. Climate change
4. Cloud Concentration Risk	Not applicable, mostly relevant for financial institutions
5. China Trade Tensions	5. Coronavirus (COVID-19) - External

For all those risks, we were able to identify identical risks in the principal risks we disclose in this report.

Approach to risks

The first approach to managing these risks is to have high quality leaders and teams within the business functions that proactively monitor and adjust to risks that could impact effectiveness.

Probability rating

The probability rating is the likelihood of an event occurring based on previous experiences, historical information and professional judgement with respect to the incident in the territory or industry. Probability can be subjective and is not an exact science. The probability of an incident occurring can be estimated to give a probability rating. This gives an overall view of the risk exposure faced by the business.

Impact rating

The impact of an incident can be measured in terms of human suffering, damage to assets, interruption to operations or business, effect on customers, impact on reputation/brand and financial loss. The calculation of the impact rating should be taken as the worst case in respect of these categories.

The financial element of the impact rating is the amount of money that is 'at risk'.

This 'at risk' means that it is either revenue at risk, or the cost of rebuilding a system, or replacement cost of hardware. This must be taken in the context that there are limited recovery capabilities and that revenue at risk is not a daily amount, but the amount of revenue that would be lost until the process, system or business function can be reinstated.



Risk management continued

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Market			
1. Competition	<p>Failure to continually improve may mean that we lose market share or have to reduce prices. Since there are fixed factory costs, reductions in sales volumes may substantially reduce profit margins.</p> <p>We are the only true independent printhead company in the world and we are competing with vertically integrated large scale multinational companies.</p>	<p>Competitive pricing policies are employed and product portfolios and pricing are constantly monitored. The re-alignment of our go-to-market capabilities allows us to focus more on our customers and to deliver requested products into the OEM marketplace.</p> <p>Production efficiency improvement programmes are established to ensure that cost bases remain competitive within the marketplace.</p> <p>Regular communication and sharing of information with customers and partners to enhance 'peer-to-peer' relationships. Market reports and other reliable sources are reviewed to improve demand forecasting.</p> <p>Continued investment in innovative technical solutions for development of new applications from existing technologies and launch new technologies.</p>	<p>Unlikely Very high </p> <p>Given recent acquisitions and strategic progress, there is a well-defined value proposition and product development roadmap focused on competitive/market leading product features. This greatly reduces the likelihood of emerging technology outpacing our own development.</p>
2. Failure to identify market requirements	<p>Products need to meet the changing demands of the market, including regulatory changes.</p> <p>Failure to meet future market requirements/specifications could impact on long-term revenue and profit.</p>	<p>Regular, specific and detailed reviews are held to assess current and anticipated market requirements, including expected regulatory changes.</p> <p>These reviews include regular customer visits between senior executives, technical experts and R&D team members to develop a culture of innovation that focuses on delivering technical solutions to original equipment manufacturers' (OEMs) requirements.</p> <p>Product developments are selected on appropriate criteria. Product development activity is properly managed with regular reviews of progress against project plans, and gated milestone reviews. We have a rigorous product lifecycle management process which ensures we deliver against our customers' requirements.</p>	<p>Unlikely Very high </p> <p>Xaar's product development process and roadmap setting is now heavily anchored to end use case customer requirements, and together with the recent successful launch of Aquinox this reduces the risk further.</p>
3. Commercialising new products	<p>Failure to test new products under all relevant application conditions could lead to unexpected cost and loss of reputation due to quality failures.</p>	<p>New products are thoroughly tested before launch.</p> <p>Xaar's manufacturing facilities are ISO 9001 accredited. We proactively engage with customers for all new products to ensure all incompatibilities are reviewed quickly using a consistent and thorough investigation process.</p>	<p>Possible High </p> <p>Although we endeavour to work with beta partners at the development stage, it is not possible to test all application conditions pre-launch.</p> <p>This risk is foreseen to stay at this level.</p>
4. Merger and acquisition opportunities	<p>Our strategy is predicated primarily on organic growth.</p> <p>Failure to realise the expected benefits of an acquisition or post acquisition performance of the acquired business not meeting the expected financial performance at the time acquisition terms were agreed could adversely affect the strategic development, future financial results and prospects of the Group.</p>	<p>The Board reviews the Group strategy annually. Each acquisition is thoroughly reviewed by the Board at each stage.</p> <p>Whenever a potential for M&A is identified, robust modelling of the opportunity is undertaken through involving third party subject matter experts. The competence and independence of the third party involved gets assessed separately by the Board. Professional due diligence is a required step in any acquisition.</p> <p>Senior management and the Board monitor customer and supplier activity through regular meetings and other sources such as industry gatherings.</p> <p>Senior management reviews any relevant M&A activity in the market and decides on specific actions to defend Xaar's position. The overall landscape is constantly reviewed with assistance from external advisors.</p>	<p>Probable Medium </p> <p>Multiple acquisitions over the past five to six years have been a significant learning experience, which together with a strengthened senior team leads to a reduced possible impact.</p>

Key of change

-  Increase
-  No change
-  Decrease
- NEW

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Market continued			
<p>5. Coronavirus (COVID-19) – External</p>	<p>In the uncertain environment of a global pandemic, the impact of COVID-19 can be felt within the entire customer base and supply chain.</p> <p>We operate in a global environment with significant exposure as part of the new business model to OEM customers in China, Europe and USA.</p> <p>Any slowdown in the global economy could lead to delays in capital investment for new equipment that utilises Xaar printheads.</p> <p>Temporary disruption to the supply chain and further workplace restrictions may threaten to slow down production.</p>	<p>Whilst it is difficult for a company individually to mitigate against a global economic slowdown, taking a portfolio approach on risk factors enables Xaar to spread the risk throughout its customer base, rather than previously relying upon distribution as a business model.</p> <p>We are carefully monitoring our own supply chain and are in regular contact with our suppliers. We hold a sufficient buffer stock of critical components and at present we do not foresee any supply issues.</p> <p>Xaar has improved its customer relationships and remains close to its customers to be able to respond quickly to any slowdown; the opening of the China subsidiary will enable an agile response specifically in this market.</p> <p>Order books and manufacturing processes are closely aligned with goods manufactured to customer order.</p> <p>Newly developed printheads will enable Xaar to diversify into a broader customer base and new vertical markets.</p> <p>Scenario planning alongside stress testing and reverse stress testing to identify and develop alternative solutions, as guidance and requirements change during an evolving event.</p>	<p>Virtually Certain High </p> <p>Remains very high and is one of the key risks the Group is going to face over the next 12-18 months, until China, a key market for Xaar, recovers from Coronavirus. We have plans in place to cope with this period, which include a longer-term plan of expansion into alternative regions (i.e. Americas) and shorter-term measures of advance purchasing of materials and components to protect the supply chain.</p>
Operational			
<p>6. Climate change</p>	<p>Climate change is not only a future challenge. The IPCC report in 2021 was declared a “code red for humanity”.</p> <p>The IPCC, IEA & COP26 have re-enforced the changes that are required to re-wire the economy to a low carbon manufacturing one – and the climate impacts that are expected in a range of scenarios.</p> <p>The impact of climate change can be specified as:</p> <p>a) the physical risks that may impact the assets of the business, and cause business disruption (e.g. flooding), and extreme weather events that may negatively impact the supply chain, to the increases in temperature that will impact human activity and the global supply chain, at an extreme level this could negatively impact the global economy and cause mass emigration from emerging economies</p> <p>b) the transition risks in managing the shift to a low carbon economy, and investment/expenditure to manage the transition and remain viable – the potential for reputation damage should the transition be poorly executed or risk of ‘greenwashing’ if announcements are not supported by actions that are measurable.</p>	<p>Investigating and reporting on climate-related risks and opportunities in adherence to internationally accepted recommendations, such as those published by the Financial Stability Board’s Task Force on Climate-related Financial Disclosures (TCFD).</p> <p>The assessment of the risks associated with climate change can also identify opportunities that arise to help potential customers reduce their emissions and increase efficiencies by using digital printhead solutions.</p> <p>Physical risks:</p> <ul style="list-style-type: none"> • Major incident plans are in place with specific provisions for areas most exposed to potential risks (flood, fires, hurricanes etc) • Geographic spread of the business limits the impact to our customers. Our sourcing strategy takes into account risks associated with our key suppliers • We completed climate scenario planning across two climate scenarios (e.g. RCP 2.6, RCP 8.5), using RCP 8.5 to identify risks and recommendations for key mitigation measures and resilience consideration: • The review examined ALL Xaar sites globally and our top ten critical supplier sites using 12 separate climate models, in each case the RCP 8.5 model was used to assess risks at the most extreme expected temperature rises (4.5°C). <p>The report concluded physical risks are low to very low in almost all cases. The remaining risk is not material, however the actions are being developed to address those further.</p>	<p>Possible Medium </p> <p>The risk is reduced due to the now known low impact upon completion of scenario planning.</p>

Risk management continued

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Operational continued			
6. Climate change continued		<p>Transition risks</p> <ul style="list-style-type: none"> • Develop Sustainability Roadmap to deliver 'Net Zero by 2030' • Outline metrics and targets in support of reducing greenhouse gas emissions and developing Science Based Targets to 1.5°C across Scope 1, 2 & 3 emissions. Carbon pricing presents a £1.3 million risk if no actions were taken to reduce the supplier Scope 3 impact before 2030 (model suggests it is around 21,000 tCO₂e in 2022) • Continue reducing carbon use to minimise impact, and to become a low carbon manufacturer • Analyse Supply Chain Infrastructure Risk Exposure • Identify 'spend to save' projects that are cash generative • Continue GHG mitigation actions to maintain a carbon neutral position • Develop transparency and credibility in 'net zero' commitments with verifiable plans and progress in both near-term and medium-term action plans. 	
7. Organisational capability	<p>Our people remain key to our business. Ensuring the right people are in the right roles is critical to our future success and growth.</p> <p>Operations in remote locations or highly competitive markets make attracting and retaining skilled employees challenging.</p> <p>We need to attract and retain the right talent to enable achievement of our strategic aims. Failure to do this risks delivery and growth.</p> <p>Key management personnel are critical to success of our business. Losing them without adequate succession planning could have a significant impact on the Group's performance.</p>	<p>Our focus is to minimise the voluntary turnover of employees, through better hiring for fit, improved induction procedures and employee engagement initiatives.</p> <p>The Group reviews remuneration to ensure that the appropriate reward packages accompany a fulfilling work environment.</p> <p>Annual performance management reviews for the majority of employees to identify talent and develop key employees.</p> <p>Investment to build a learning organisation with focus on culture, reward and recognition.</p> <p>Succession plans are being developed to highlight key personnel risks with mitigation plans being developed.</p> <p>Campaigns to increase performance and development of communication between managers and employees to ensure alignment to Company objectives.</p>	<p>Possible Medium </p> <p>We have significantly increased the strength of the senior team to deliver the strategy, our voluntary turnover is below the industry average and the analysis of our actions proves they have been effective. So the probability of this risk should be reduced.</p>
8. Partnerships and alliances	<p>If key partners we have alliances with are acquired, this can change the relationships they have with us.</p>	<p>The IP and Legal team focuses on the extensive review of legal agreements and in particular IP with such partners.</p> <p>Partnerships are constantly reviewed both internally and with those partners at the most senior level to develop long-term partnerships and supply agreements to the benefit of both parties.</p> <p>Where significant investment and research is undertaken there will be contractual arrangements to ensure appropriate governance and Board structure to support the business and product development.</p>	<p>Possible Medium </p>

Key of change

-  Increase
 -  No change
 -  Decrease
- NEW

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Operational continued			
9. Supply chain	<p>The Group is dependent on retaining its key suppliers and ensuring that deliveries are on time and the materials supplied are of appropriate quality.</p> <p>There has been a shift from a finished goods risk to a component materials risk particularly where components have a single source of supply.</p> <p>There are challenges with the supply of some key components that are used in production and global logistics routes have experienced some disruption.</p>	<p>Focused on monitoring and securing continuity of supply of components necessary to maintain production and the supply of printheads for the following 18 months.</p> <p>We conduct regular audits of our key suppliers and in addition keep large amounts of safety inventory of key components, which we also regularly review.</p> <p>Dual sourcing for critical components is in place for some suppliers, and there is ongoing work to extend this to the full list of critical suppliers.</p> <p>We will continue to diversify and localise our supply chains, and investigate developing a circular manufacturing approach by recovery of materials from finished goods to be re-utilised in production.</p>	<p>Unlikely High </p> <p>The risk in the last year was very high due to global shortages in the electronics manufacturing sector. During the past year we have been working with all of our supply chain partners and since the beginning of 2022 we have significantly removed risks from areas of the supply chain through multiple methods such as long-term supply contracts, consignment stock and increased inventory investment as well as re-design on some high risk materials.</p>
10. War in Ukraine and world economy	<p>The war in Ukraine has materially altered the near-term outlook for the UK and global economies and increased uncertainty over the path ahead. Energy prices are by far the greatest concern for the UK economy which also result in further upward pressure on inflation and a potential hit to GDP growth over the next two years.</p>	<p>We have fixed our unit electricity costs and will continue to do so in future.</p> <p>We have been proactive in buying materials and components to enable continued production.</p> <p>We have no direct operations in Ukraine or Russia.</p> <p>We have planned a factory restructuring in 2023, which will make the production process more efficient, driving reductions in cost of sales.</p> <p>We have secured some key long-term contracts (both sales and procurement) and supply chains outside of unstable countries and regions.</p>	<p>Probable High NEW</p>
11. Laws and regulations	<p>There is a risk that the Group may not be compliant with existing laws and regulations in the UK and other countries the Group operates in. This could be manifested through liabilities around employee accidents or consequences of environmental damage, breaches of export controls and customs, lack of awareness of economic sanctions and product liability claims.</p>	<p>We have relevant certifications in respect of quality management and environmental management with the appropriate bodies including ISO.</p> <p>The quality of supplies is constantly monitored. Quality performance is regularly reviewed by senior management who apply appropriate resources to systematically address recurrent problems. New products are thoroughly tested before launch.</p> <p>All contracts go through legal review before signing. For all complex transactions relevant third party experts are engaged to evaluate all legal risks and adequately respond to them.</p> <p>In January 2023 a new Company Secretary joined the Group who is going to be responsible for managing wider and higher-level legal risks.</p>	<p>Possible Medium NEW</p>

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
IT			
<p>12. IT systems and control environment</p>	<p>IT networks, infrastructure, and business systems resilience is not sufficient causing access issues for end users.</p> <p>Inability to operate effectively or loss of operating capability.</p> <p>Loss of information, incurring financial or regulatory penalties.</p> <p>Fraud committed through manipulation of IT business systems or data.</p>	<p>Investment has been made to move to a hybrid cloud model, strengthen the resilience and security of our IT infrastructure, rationalise and modernise our business systems, and re-align systems with improved operational business processes.</p> <p>Developed the IT Service Delivery maturity and increased capacity in the Group IT function.</p> <p>Access to systems and data is only provided on a 'need-to-know' and 'least privilege' basis consistent with the user's role and requires the appropriate authorisation.</p> <p>Key business systems are being developed to strengthen IT system controls and further reduce the burden from manual controls.</p>	<p>Possible High </p> <hr/> <p>The recent IT controls gap analysis has identified areas for further improvement, which we are going to continue to work on.</p>
<p>13. Cyber threat and information security</p>	<p>Malicious cyber-attack breaches IT security potentially leading to:</p> <p>A loss of IT infrastructure, business systems, or data.</p> <p>Disruption to business operations, ranging from inability to operate effectively to a complete loss of operating capability.</p> <p>Unauthorised access to confidential or personal data and disclosure externally.</p> <p>Breach of information security and data protection regulations incurring financial penalties from regulators.</p> <p>Reputational impact and potential deterioration in customer and supplier relationships.</p> <p>Loss of Intellectual Property or exposure of commercially sensitive information.</p> <p>Extensive resources expended in responding and recovering.</p>	<p>Implemented a Multi-Factor Authentication solution for VPN. MFA rolled out to protect key business systems including CRM and HR.</p> <p>Enterprise Backup Solution provides an immutable copy of all key business systems and data enabling complete systems and data recovery within an acceptable timeframe.</p> <p>Implemented a risk-based security testing approach across IT infrastructure and systems to identify ongoing vulnerabilities and prioritise remediation.</p> <p>Included a security workstream in the IT Transformation Programme.</p> <p>Group IT Director provides an Information Security update to the Executive on a monthly basis and to the Board of Directors every six months.</p> <p>Established Xaar Security Standards (Minimum and Enhanced Baselines) to measure current levels of defence and recovery and track progress.</p> <p>Established a process of undertaking an independent external audit of Xaar IT Security and IT Security Technical Controls on an annual basis. This started in 2022.</p>	<p>Possible Medium </p> <hr/>

Key of change

-  Increase
 No change
 Decrease
 NEW

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Financial			
14. Ability to access sufficient capital	<p>Our ability to access sufficient capital/liquidity may restrict growth opportunities for our organisation, as well as the strategic plan and vision.</p> <p>Significant investment is required to bring new products to market and ramp up to meaningful volumes.</p>	<p>The Group has sufficient cash available for execution and delivery of the strategy within agreed timescales.</p> <p>The Group has implemented cost reduction actions to focus resources on key initiatives.</p> <p>We work with third parties to realise the full potential of research and development activities.</p> <p>We have established partnerships with our banks who understand our strategic plans. We have a strong, well capitalised balance sheet.</p> <p>We returned to profitability which transformed our ability to raise less expensive financing.</p> <p>We have secured an invoice facility which helps support short-term cash management.</p>	<p>Unlikely High </p> <p>We secured external financing recently which further reduces this risk.</p>
15. Customer credit exposure	<p>The Group may offer credit terms to its customers which at times could be extended beyond what are considered normal terms for products in early stages of their lifecycle. The Group is at risk to the extent that a customer may be unable to pay the debt on time, thus impacting working capital.</p>	<p>This risk is mitigated by strong ongoing customer relationships.</p> <p>Where possible, a full credit check of all new customers is carried out prior to trading. Payment terms are agreed depending upon credit assessment and review of credit history. For all customers with higher risk, payments in advance are requested.</p> <p>Overdue receivables are closely monitored and credit limits are managed rigorously.</p> <p>Credit insurance is in place to protect against payment default for most of the customers.</p>	<p>Possible Low </p> <p>Strong customer credit controls together with continued history of low bad debts demonstrate that the probability of this risk is going down.</p>
16. Inventory obsolescence	<p>Holding excess inventory levels when compared to demand leads to increased risk of obsolescence and write-off before consumption, and working capital restrictions.</p>	<p>There are appropriate stock holding policies, ensuring these are reviewed frequently and change dynamically in line with market/business conditions.</p> <p>Obsolete or slow moving stock items are identified and written off monthly.</p> <p>Enforcing lead times for customer orders to ensure we have the most accurate forecast in place as far out as possible.</p> <p>Continually develop forecasting techniques so that stock requirements can be predicted with great accuracy.</p> <p>Ongoing supplier negotiation to reduce minimum order quantities to prevent obsolescence and inflated inventory.</p>	<p>Probable High </p> <p>The risk has gone up due to the increased levels of inventory as at the end of 2022. The inventory levels have been increased to minimise the effect of the factory shutdown in 2023.</p>
17. Exchange rates	<p>Global economic events and uncertainty may cause currencies to fluctuate and currency volatility contributes to variations in our sales of products and services in impacted jurisdictions.</p>	<p>There is a partial natural hedge for foreign currency movements, with sales companies and manufacturing spread across the globe.</p> <p>Cash flows are constantly reviewed and action is taken when appropriate. FX exposure is tracked monthly starting from September 2022.</p>	<p>Probable Medium </p> <p>Due to the state of the current world economy, the impact of this risk is higher.</p>

Non-financial information statement

This Annual Report contains the information required to comply with the Companies, Partnerships and Groups (and Non-Financial Reporting) Regulations 2016, as contained in sections 414CA and 414CB of the Companies Act 2006. The table below provides key references to information that, taken together, comprises the Non-Financial Information Statement for 2022*.

Reporting requirement	Group policies that guide our approach	Information and risk management, with page references
Environmental matters	<ul style="list-style-type: none"> Environmental Policy statement Environmental Sustainability statement Health & Safety Policy statement Quality Policy statement. 	<ul style="list-style-type: none"> Risk management & principal risks, pages 48 to 57 Sustainable and responsible business, pages 30 to 41 Section 172 statement, pages 71 to 72 Company purpose, pages 73 to 74 Our business model, pages 8 to 9
Employees	<ul style="list-style-type: none"> Absence Policy Alcohol & Substance Abuse Policy Annual Leave Policy Bullying & Harassment Policy Capability Policy Code of Conduct COVID-19 Policy statement Disciplinary Policy Equal Opportunities Policy Family Leave Policy Flexible Working Policy Gender pay gap report Gifts & Entertainment Policy Grievance Policy Health & Safety Policy Performance Planning Policy Referral & Reward Policy Retirement Policy Whistleblowing Policy Working time regulations. 	<ul style="list-style-type: none"> Risk management & principal risks, pages 48 to 57 Sustainable and responsible business, pages 30 to 41 Section 172 statement, pages 71 to 72 Company purpose, pages 73 to 74 Our business model, pages 8 to 9
IT, cyber security & data protection	<ul style="list-style-type: none"> Confidential Information Policy Data Protection Policy Email and Internet Policy Mobile Phone Policy. 	<ul style="list-style-type: none"> Risk management & principal risks, pages 48 to 57
Social matters	<ul style="list-style-type: none"> Human Rights Policy Charitable Donations Policy Employee Volunteering Policy. 	<ul style="list-style-type: none"> Sustainable and responsible business, pages 30 to 41
Respect for human rights	<ul style="list-style-type: none"> Human Rights Policy Sanctions Policy Modern Slavery Policy Modern Slavery Act Compliance Statement. 	<ul style="list-style-type: none"> Risk management & principal risks, pages 48 to 57 Sustainable and responsible business, pages 30 to 41 Section 172 statement, pages 71 to 72 Company purpose, pages 73 to 74
Anti-corruption and anti-bribery matters	<ul style="list-style-type: none"> Anti-Bribery & Corruption Policy Anti-money Laundering Policy Conflict Materials Policy Corporate Criminal Offence Policy Employee Share Dealing Code Gifts & Entertainment Policy Whistleblowing Policy. 	<ul style="list-style-type: none"> Risk management & principal risks, pages 48 to 57 Sustainable and responsible business, pages 30 to 41 Our business model, pages 8 to 9 Section 172 statement, pages 71 to 72 Company purpose, pages 73 to 74
Description of the business model		<ul style="list-style-type: none"> Our business model, pages 8 to 9
Description of the principal risks in relation to the above matters, including business relationships, products and services likely to affect those areas of risk, and how the company manages the risks		<ul style="list-style-type: none"> Risk management & principal risks, pages 48 to 57 Sustainable and responsible business, pages 30 to 41 Climate change, pages 53 to 54
Non-financial key performance indicators		<ul style="list-style-type: none"> Sustainable and responsible business, pages 30 to 41 Greenhouse gas report, page 45 Key performance indicators, pages 46 to 47

* The policies listed above are available to employees via our intranet, alongside corporate policies being available on our website (<https://www.xaar.com/en/about/corporate-policies/>). Compliance with our policies is monitored through the implementation of annual compliance statements, through our internal audit function, and locally by our General Managers.

Board approval of the Strategic and Annual Reports

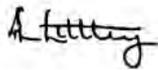
The section 172 statement forms part of this Strategic Report – please see pages 71 to 72.

The Strategic Report, Annual Report and Financial Statements, taken as a whole, are fair, balanced and understandable and provide the information necessary for shareholders to assess the Company's position, performance, business model and strategy.

The Strategic Report was approved by the Board on 27 March 2023 and is signed on its behalf by:



Andrew Herbert
Chairman



Alison Littley
Senior Independent Director



John Mills
Chief Executive Officer



Chris Morgan
Non-Executive Director



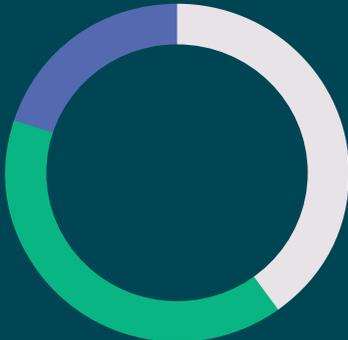
Ian Tichias
Chief Financial Officer

Governance at a glance

An experienced leadership team

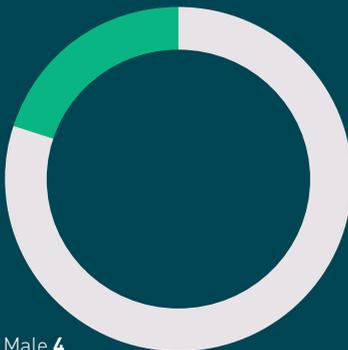
Board composition

Composition



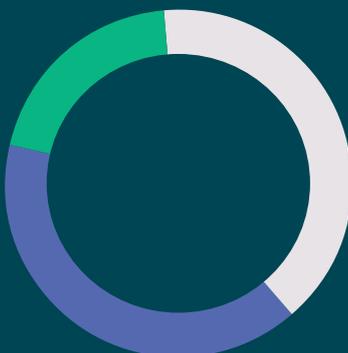
- Executive Director 2
- Non-Executive Director 2
- Chair 1

Diversity



- Male 4
- Female 1

Tenure



- 0-3 years 2
- 3-6 years 1
- 6-9 years 2

Governance framework

Board of Directors

The Board's responsibility for leading the Group towards achievement of its purpose is supported by a robust governance framework.

The Board has established a corporate governance structure with clearly defined responsibilities, designed to safeguard and enhance the long-term sustainable success of Xaar, creating value and benefit for its shareholders and other stakeholders.

Biographies

[Read more about the Board on page 63](#)

Corporate Governance

[Read more about Corporate Governance on pages 73 to 78](#)

The Board delegates certain matters to its Principal Committees

Audit Committee

The Audit Committee is responsible for monitoring and reviewing the integrity of the financial reporting process, including the appropriateness and effectiveness of the Internal Controls and Risk Management procedures of the Group.

Chris Morgan Chair
Appointed 1 April 2020

[Read more on page 79](#)

Nomination Committee

The Nomination Committee is responsible for reviewing the size, structure and composition of the Board and providing advice to the Board on Board and senior management appointments and succession planning, monitoring of the Board and its Committees.

Andrew Herbert Chair
Appointed 1 April 2020

[Read more on page 82](#)

Remuneration Committee

The Remuneration Committee is responsible for the development and implementation of the Group's remuneration framework and policies for Directors including all incentives and bonuses.

Alison Littley Chair
Appointed 1 July 2020

[Read more on page 84](#)

Division of responsibilities

Director	Responsibilities
Andrew Herbert Chairman	<ul style="list-style-type: none"> Primary responsibility is to lead the Board to ensure the Board functions properly to meet its obligations and responsibilities, by facilitating efficient Board discussion, challenge and debate Nomination Committee Chair.
John Mills Chief Executive Officer	<ul style="list-style-type: none"> Leads the Executive Committee responsible for proposing and implementing Group strategy, and managing the operational and financial performance of the Group Engages with various stakeholders of the Group, providing feedback to the Board.
Ian Tichias Chief Financial Officer	<ul style="list-style-type: none"> Evaluates the financial performance of the business in line with strategy implementation, operational objectives, forecasts and budgets Ensures integrity of reported financial information, and maintaining robust accounting systems and internal controls.
Chris Morgan Non-Executive Director	<ul style="list-style-type: none"> As an independent Non-Executive Director, provides constructive challenge and strategic guidance to the Board, monitors achievement of objectives and Executive Director performance Audit Committee Chair.
Alison Littley Senior Independent Director	<ul style="list-style-type: none"> As the Senior Independent Director, acts as a sounding board for the Chairman and an intermediary for other Directors, and is available to discuss any concerns with shareholders that cannot be resolved through communication with the Chairman or Executive Directors Remuneration Committee Chair.

Board meeting attendance

The Board held 11 scheduled Board meetings in 2022, with one additional unscheduled meeting held to cover a specific item.

Chairman, Non-Executive and Independent Directors	Scheduled Board meetings attended	Additional Board meetings attended
Andrew Herbert – Chairman	100%	100%
Chris Morgan – Non-Executive Director	100%	100%
Alison Littley – Senior Independent Director	100%	100%
Executive Directors		
John Mills – Chief Executive Officer	100%	100%
Ian Tichias – Chief Financial Officer	100%	100%

Highlights

Key governance activities

During 2022, the Board undertook the following key governance activities:

- + Undertook a review of the Company's Articles of Association and proposed changes for approval at the 2023 AGM
- + Ensured compliance with the 2018 UK Corporate Governance Code, agreeing actions to address any areas of non-compliance
- + Reviewed the Remuneration Policy for approval at the 2023 AGM

 **Read more on pages 73 to 78**

- + Conducted an internal review of Board and Committee effectiveness and performance during the year

Board focus areas

During 2022, the Board focused on the following key operational and strategic activities:

- + Megnajet acquisition and integration implementation
- + Capital and equity strategy
- + Investment in manufacturing efficiencies at Huntingdon, UK Printhead ImagineX product
- + Development of the Sustainability Roadmap
-  **Read more about the Sustainability Roadmap on page 29**
- + IT infrastructure and roadmap Information/cyber security
- + Printhead's ImagineX product roadmap progress and customer engagement
- + Mitigation of supply chain constraints
- + Strategy progress and operational improvements at EPS



Our focus on customers and a product roadmap that reflects current and potential customer needs has increased the quality and responsiveness of the business, and means we are well placed for further performance improvement.

Andrew Herbert
Chairman

Dear Shareholder

I am pleased to introduce this year's Corporate Governance report for the financial year ended 31 December 2022.

The Board recognises that the way that the Company does business is as important as what it does. A strong governance framework with robust supporting processes across Xaar is a key factor in delivering sustainable business performance, generating value for shareholders and contributing to wider society.

A key part of the Board's role is to provide entrepreneurial leadership, with appropriate oversight, challenge and support to the management team.

Board focus and oversight

Key areas of the Board's focus during the year included financial stability, the acquisition and integration of Megnajet, investment in product development, the upgrade to our Huntingdon manufacturing site, strengthening our senior management team with new skills and diverse talent, and advancing our Sustainability Roadmap.

UK Corporate Governance Code 2018 and s.172 reporting

Our report demonstrates the way that we have applied the principles and complied with the provisions of the UK Corporate Governance Code 2018 during the year and our approach to governance in practice. Our Code compliance statement can be found on page 73. Further details on the way that our Directors discharged their duties under s.172 of the Companies Act are set out on pages 71 to 72.

Board composition

Succession planning is an important part of our governance processes. Furthermore, as our strategy evolves, so do the skills and experience required for the Board to help drive the execution of Xaar's strategy. Further details of the work undertaken by the Nomination Committee during 2022 on succession planning are on pages 82 to 83.

Board effectiveness review

An internal evaluation of the Board was undertaken in December 2022. The findings of the review and our progress against the actions from 2021 can be found on page 76.

Stakeholder engagement and support

Building and nurturing strong working relationships with our stakeholders is critical to our success and the development of our strategy and is intrinsic in our day to day activities. With the lifting of the majority of the restrictions related to the COVID-19 pandemic in 2022, the Company has actively engaged with its customers to deal with disruption in supplies and inventory shortages. Further details of how we engage with stakeholders are set out on page 74.

Business conduct

Xaar aspires to the highest standards of conduct. The Code of Conduct is applied throughout the Company and helps to ensure that good governance extends beyond the Boardroom. This Code, which works alongside our values, relates to the Company's policies and procedures, which outline the responsibilities of our employees and Xaar as an employer. These policies have been devised to protect our employees and stakeholders, as well as the business interests of Xaar, to ensure that we maintain high standards both legally and ethically. The Board receives relevant updates on how the application of the Group's culture and values are embedded for colleagues and the Group's wider stakeholders. More details are set on pages 73 to 75.

Engagement with shareholders

We believe that communication with our shareholders is key. In addition to the comprehensive programme of investor relations led by John Mills and Ian Tichias, I proactively seek periodic engagement with institutional investors. Both Alison Littlely, the Senior Independent Director, and I am available to meet with shareholders as appropriate. Our AGM also provides an important opportunity to meet with and answer questions from shareholders.

On behalf of the Board, I would like to thank all of our shareholders and stakeholders for their continued support of the Company.

Andrew Herbert
Chairman

27 March 2023

Board of Directors

Andrew Herbert

Chairman

Appointed to the Board: 2016



Qualifications

- FCMA Chartered Management Accountant
- BA (Hons) in Business Studies.

Skills and experience

- Extensive experience in the global digital printing industry following a 30-year career with Domino Printing Sciences plc, working both in the UK and the US
- Group Finance Director/Chief Financial Officer of Domino Printing Sciences plc from 1998 to 2015 during which time he played an instrumental role in expanding the business geographically through acquisition and creation of sales channels, and in broadening the product range via acquisition of technology based businesses
- Previously held a number of line director roles in Finance, Operations, Planning and Business Development.

External appointments

- Non-Executive Chairman of Midwich Group plc.

Alison Littley

Senior Independent Director

Appointed to the Board: 2020



Skills and experience

- Over 25 years' experience within international blue chip organisations, including multinational manufacturing, supply chain and marketing services roles
- Strong international leadership background of building effective management teams and third-party relationships gained through a variety of senior management positions in Diageo plc, Mars Inc and an Agency to HM Treasury, where she was Chief Executive Officer
- For the past 11 years Alison has been a Non-Executive Director (NED) of both international PLCs and privately owned businesses.

External appointments

- Non-Executive Director and the Remuneration Committee Chair at Norcross plc
- Senior Independent Director and Remuneration Committee Chair at musicMagpie plc.
- Non-Executive Director and Employee Engagement and ESG Committee Chair at Eurocell plc

John Mills

Chief Executive Officer

Appointed to the Board: 2019



Qualifications

- Ph.D Physics.

Skills and experience

- Five years as CEO at Inca Digital
- Previously CEO at DataLase and COO at Plastic Logic
- Wealth of experience in inkjet, having started career at Domino Printing Sciences as Development Scientist rising to Director of Development after four years in various technical roles.

External appointments

- None.

Chris Morgan

Non-Executive Director

Appointed to the Board: 2016



Skills and experience

- Wealth of expertise in managing complex international technology businesses, having spent 25 years at HP Inc.
- Strong background in global marketing, sales and general management senior executive roles including global accountability for HP's multibillion dollar graphics/industrial portfolio of digital 2D and 3D printing businesses from 2009-2012
- Extensive experience in Asia and Japan having spent more than a decade in senior APJ leadership roles
- Led strategic investments in key growth markets and has been involved in a number of mergers and acquisitions at both the strategic and operational levels
- In depth 3D printing/additive manufacturing experience: Chief Marketing Officer for Stratasys from 2014 to 2015 and senior executive roles including Senior Vice President of Americas, at 3D Systems Inc. from 2016 to 2018.

External appointments

- Non-Executive Director for San Diego based additive manufacturing company, Intrepid Automation.

Ian Tichias

Chief Financial Officer

Appointed to the Board: 2020



Qualifications

- ACA Institute of Chartered Accountants in England & Wales
- BSc (Hons) Economics & Maths, University of Leeds.

Skills and experience

- Over 20 years' experience in senior financial roles
- Previously, Ibstock plc Group Finance Director and Deputy CFO, with direct responsibility for the Group's Clay division business
- Other past roles include Senior Director, Finance & Global Pricing Lead – Europe, Africa and Middle East for Zoetis and before that, Head of Finance for Pfizer Diversified Businesses (PDB) UK
- Proven track record of delivering business focused finance operations that drive efficiency and commercial performance beyond finance.

External appointments

- None.

Committee key

- A** Audit Committee
- N** Nominations Committee
- R** Remuneration Committee

- Chair
- Member

Directors' report

Report on the affairs of the Group

The Directors present their Annual Report together with the financial statements and auditor's report for the year ended 31 December 2022.

The Company has chosen, in accordance with section 414C(11) of the Companies Act 2006, to include matters of strategic importance in the Strategic Report which otherwise would be required to be disclosed in the Directors' report. An indication of likely future developments in the business of the Company and details of research and development activities and important events since the financial year-end are included in the Strategic Report. The following cross-referenced material is incorporated into this Directors' report.

Non-financial information statement – Subject Matter	Section/Page
Principal risks and uncertainties	Risk management on pages 48 to 57
Business model	Strategic Report on page 8
Employee engagement	Strategic Report on page 9 Stakeholder engagement on page 71 Directors' Remuneration report on page 86
Equality, diversity, inclusion and human rights	Sustainable and responsible business on pages 34 to 37
Disabled employees	Sustainable and responsible business on page 35
Supplier engagement	Stakeholder engagement on page 72
Engagement with customers and other business relationships (including community engagement)	Stakeholder engagement on page 72 Sustainable and responsible business on page 40
Greenhouse gas emissions and environmental policies	Sustainable and responsible business (TCFD) on pages 42 to 44 GHG statement on page 45
Political donations	Sustainable and responsible business on page 40
Ethics and governance, including Code of Conduct, anti-bribery and corruption policies	Sustainable and responsible business on page 34 Corporate Governance section on page 73

Branches

In addition to the subsidiaries disclosed in note 11 of the Company's separate financial statements on page 168, there is a branch in Stockholm, Sweden through which research and development activities are conducted.

Dividends

No interim or final dividend was proposed or paid for the year ended 31 December 2022.

 Details on dividends are set out in note 8 on page 167

Capital structure

Details of the issued share capital, together with details of the movements in the Company's issued share capital during the year, are shown in note 26. The Company has one class of ordinary shares which carries no right to fixed income. Each share carries the right to one vote at general meetings of the Company, except for shares held in the Xaar Share Incentive Plan trust, which hold no voting rights.

There are no specific restrictions on the size of a holding nor on the transfer of shares, which are both governed by the general provisions of the Articles of Association and prevailing legislation. The Directors are not aware of any agreements between holders of the Company's shares that may result in restrictions on the transfer of securities or on voting rights.

There are a number of employee share schemes, namely, Employee Share Option Schemes (ESOP), Long-Term Incentive Plans (LTIPs), Share Incentive Plans (SIP), and Share Save Schemes (SAYE). There is a Deferred Bonus Plan for the Executive Directors, as introduced in 2020.

- Details of the shareholding held in trust by Xaar Trustee Ltd and held by the Xaar plc ESOP trust are provided in note 28. These have voting rights exercised by the Trustees
- Details of other share-based payment schemes are set out in note 32. Shares held in Xaar plc SIP do not hold voting rights.

No person has any special rights of control over the Company's share capital and all issued shares are fully paid.

The business of the Company is managed by the Board, which may exercise all the powers of the Company subject to the Articles and the Companies Act.

 The powers of Directors are described in the Main Board terms of reference, copies of which are available on request, and the Corporate Governance statement, division of responsibilities on page 75

Capital allocation policy

The Company is committed to investing in the growth strategy of the business. This investment includes both capital investments within existing operations as well as pursuing inorganic growth opportunities that align with the Company's strategy, investing in capability and capacity to accelerate our strategy and future growth. The Company's objective is to maximise long-term shareholder returns through a disciplined deployment of capital and resources, and it has adopted the following capital allocation policy in support of this:

- **Organic growth:** The Company invests in capital projects and R&D relating to ongoing and new technology development to support demand in our chosen and target markets and product innovation;
- **Inorganic growth:** The Company continues to explore complementary inorganic growth and acquisition opportunities consistent with the growth strategy and supplementary to our existing innovation and product pipeline; and
- **Treatment of excess capital and shareholder distributions:** The Board keeps under review the Company's balance sheet and cash position in line with this policy and medium-term investment requirements. The Company returns excess capital to shareholders if and when the Board considers it appropriate by means of a dividend or a share repurchase. The Company assesses the underlying profitability and the future cash requirements of the business at least annually, as well as the distributable reserves available, to determine the appropriateness of paying a dividend to shareholders, and to review the appropriate policy to adopt.

At this current time, capital resources are focused on and deployed to supporting organic growth and inorganic growth. The Board keeps the Company's capital structure under regular review.

Treasury

The Group's policy enables it to use financial instruments to hedge foreign currency exposures. The main trading currency of the Group is GBP Sterling. The Group's use of financial instruments and the related risks are discussed further in notes 21 and 22.

At the 2022 AGM held on 25 May 2022, the Company's shareholders granted the Company authority to make one or more market purchases (within the meaning of section 693(4) of the Companies Act 2006) of ordinary shares of 10 pence each in the capital of the Company.

The Company did not purchase any shares for cancellation or to be held as treasury shares in 2022 or 2021.

Directors and their interests

The Directors who served during the year, and subsequent to the year-end, unless otherwise stated, were as follows:

Andrew Herbert

Chairman

John Mills

Chief Executive Officer

Ian Tichias

Chief Financial Officer

Chris Morgan

Non-Executive Director

Alison Littley

Senior Independent Director

 Brief biographical descriptions of the Directors are set out on page 63

Shareholdings in the Company

The interests of the Directors in the shares of the Company and its subsidiaries (all of which are beneficial) as at 31 December 2022 are as follows:

	Number of ordinary shares of 10p each 31 December 2022	Number of ordinary shares of 10p each 31 December 2021
Andrew Herbert	100,000	100,000
John Mills	125,000	125,000
Ian Tichias	50,000	50,000
Chris Morgan	-	-
Alison Littley	-	-

There have been no changes in the Directors' interests in shares of the Company between 31 December 2022 and 29 March 2023. Directors' interests in options in the Company and in deferred bonuses (in shares) are shown in the Directors' Remuneration report. The Executive Directors are required to receive a portion of their bonus in deferred shares.

Directors' liabilities

Xaar plc, the ultimate parent company, and its subsidiaries have granted an indemnity to all of the Directors of Xaar plc and of its subsidiaries against liability in respect of any potential proceedings that may be brought by third parties, subject to the conditions set out in the Companies Act 2006. Such qualifying third party indemnity provision was in place during the year and remains in force as at the date of approving the Directors' report.

Share capital

As at 31 December 2022 the Company had been notified in accordance with Chapter 5 of the Financial Conduct Authority's (FCA's) Disclosure and Transparency Rules of the following material interests in its share capital:

Top ten shareholders (by holding) – at 31 December 2022	Number of ordinary shares held	Percentage of issued share capital
Schroder Investment Mgt	22,327,769	28.45%
Odyssean Investment Trust	8,500,000	10.83%
Aberforth Partners	7,402,509	9.43%
Invesco OppenheimerFunds	6,099,203	7.77%
Columbia Threadneedle Investments	4,491,840	5.72%
Hargreaves Lansdown Asset Mgt	3,108,560	3.96%
Interactive Investor	2,589,831	3.30%
BMO Global Asset Mgt	1,745,108	2.22%
A J Bell Securities	1,394,013	1.78%
Barclays Wealth	1,304,775	1.66%
Total	58,963.608	75.13%

During the period 31 December 2022 to 28 March 2023, the Company had been notified in accordance with Chapter 5 of the FCA's Disclosure and Transparency Rules of the following material interests in its share capital:

Changes in material shareholdings since 31 December 2022	Number of ordinary shares held	Percentage of issued share capital
Odyssean Investment Trust	9,415,000	12.00%

Annual General Meeting

 The notice convening the Annual General Meeting is set out on pages 170 to 174

Resolutions 1 to 8 set out in the notice of the meeting deal with the ordinary business to be transacted at the meeting. The special business to be transacted at the meeting is set out in Resolutions 9 to 15.

Re-election of Directors

Resolutions 4 to 8

The Company's Articles of Association require the Directors to retire by rotation at least once every three years, with the number to retire by rotation at each Annual General Meeting being the number nearest to but not exceeding one third of the Board. However, the 2018 UK Corporate Governance Code provides that all Directors should be subject to re-election by their shareholders every year. In accordance with this provision of the 2018 UK Corporate Governance Code and in keeping with the Board's aim of following best corporate governance practice, all Directors retire at each Annual General Meeting and offer themselves for re-election.

The Board has considered succession plans and is actively seeking to appoint a new Non-Executive Director with a view to that person succeeding Chris Morgan as Chair of the Audit Committee. Chris is standing for re-election this year but, subject to a successful handover, has indicated his intention to stand down from the Board by the end of 2023.

Directors' Remuneration Policy

Resolution 9

This Resolution seeks shareholder approval for the Directors' Remuneration Policy.

 The Directors' Remuneration Policy can be found on pages 87 to 95 (inclusive) of the Annual Report and Financial Statements

Directors' Remuneration report

Resolution 10

This Resolution seeks shareholder approval for the Directors' Remuneration report.

 The Directors' Remuneration report can be found on pages 84 to 104 (inclusive) of the Annual Report and Financial Statements

In accordance with regulations which came into force on 1 October 2013, Resolution 10 offers shareholders an advisory vote on the Directors' Remuneration report.

Power to issue securities

Resolutions 11, 12 and 13

Under section 551 of the Companies Act 2006 (the 'Act'), the Directors may only allot shares or grant rights to subscribe for or convert any securities into shares if authorised by the shareholders to do so.

Resolution 11, which complies with guidance issued by the Investment Association, will, if passed, authorise the Directors to allot ordinary shares or grant rights to subscribe for or convert any securities into ordinary shares, up to an aggregate nominal value of £2,614,874 (corresponding to approximately one third of the issued share capital at 28 March 2023) and up to an additional aggregate nominal value of £5,229,749 (corresponding to approximately two thirds of the issued share capital at 28 March 2023) in the case of allotments only in connection with a fully pre-emptive rights issue. The Directors have no present intention to exercise the authority sought under this Resolution. However, the Directors may consider doing so if they believe it would be appropriate in respect of business opportunities that may arise consistent with the Company's strategic objectives.

This authority will expire no later than 15 months after the passing of the Resolution. It is the Board's current intention to seek renewal of such authority at each future Annual General Meeting of the Company.

Disapplication of pre-emption rights

Resolutions 12 and 13

Under section 561(1) of the Act, if the Directors wish to allot equity securities (as defined in section 560 of the Act) they must in the first instance offer them to existing shareholders in proportion to their holdings. In addition, there may be occasions when the Directors will need the flexibility to finance business opportunities by the issue of shares without a pre-emptive offer to existing shareholders. This cannot be done under the Act unless the shareholders have first waived their pre-emption rights.

Resolutions 12 and 13 seek authority from shareholders in line with the Pre-Emption Group's Statement of Principles (as updated in March 2015 (the '2015 Statement of Principles'), and the template resolutions published by the Pre-Emption Group in May 2016.

The Board notes that the Pre-Emption Group published a revised statement of principles and template resolutions for the disapplication of pre-emption rights in November 2022, which include increased thresholds in relation to the disapplication of pre-emption rights. At this time, the Board considers it appropriate to follow the 2015 Statement of Principles but will continue to keep this under review.

Under Resolution 12, to be proposed as a Special Resolution, authority is sought to allot shares:

- (i) in relation to a pre-emptive rights issue only, up to an aggregate nominal amount of £5,229,749 (being the nominal value of approximately two thirds of the issued share capital of the Company); and
- (ii) in any other case, up to an aggregate nominal amount of £392,231 (representing 5% of the issued share capital of the Company).

The Directors do not currently have an intention to exercise the authority.

In addition, Resolution 13, which is also to be proposed as a Special Resolution, asks the shareholders to waive their pre-emption rights in relation to the allotment of equity securities or sale of treasury shares up to a further aggregate nominal amount of £392,231 (representing 5% of the issued share capital of the Company), with such authority to be used only for the purpose of financing (or refinancing, if the authority is to be used in the six months after the original transaction) a transaction which the Directors of the Company determine to be an acquisition or other capital investment of a kind contemplated by the Pre-emption Group's Statement of Principles on Disapplying Pre-Emption Rights.

The Directors will also have regard to the guidance in the 2015 Statement of Principles concerning cumulative usage of authorities within a three-year period. Accordingly, the Board confirms that it does not intend to issue shares for cash representing more than 7.5% of the Company's issued ordinary share capital in any rolling three-year period other than to existing shareholders, save as permitted in connection with an acquisition or specified capital investment as described above, without prior consultation with shareholders.

If Resolutions 12 and 13 are passed, the authorities will expire at the conclusion of the next Annual General Meeting of the Company, or, if earlier, the date which is 15 months after the date of passing of the Resolutions. It is the Board's current intention to seek renewal of such authorities at each future Annual General Meeting of the Company.

Authority to purchase own shares

Resolution 14

It is proposed by Resolution 14, by Special Resolution, to authorise the Company generally and unconditionally to purchase its own shares at a price of not less than the par value of the shares and not more than the higher of:

- (i) 5% above the average of the middle market quotations of the shares as derived from the London Stock Exchange Daily Official List for the five dealing days immediately preceding the day on which the purchase is made; and
- (ii) the higher of the price of the last independent trade and the highest current independent bid on the trading venue where the purchase is carried out (in each case exclusive of any expenses payable by the Company).

The authority will be for a maximum of 10% of the Company's issued share capital and will expire at the earlier of the next Annual General Meeting of the Company or within 15 months from the date of the passing of this Resolution. The Directors currently have no intention to exercise the authority and will only purchase shares if it is in the best interests of shareholders as a whole.

The total number of ordinary shares under option, which remain unexercised and outstanding as at 27 March 2023 (including options awarded under LTIP which may be satisfied by subscription for new shares), was 4,763,782. This represents 6.7% of the issued ordinary share capital at that date. If the Company was to buy back the maximum number of ordinary shares permitted pursuant to the passing of this Resolution, then the total number of ordinary shares under option which remain unexercised and outstanding as at 31 December 2022 would represent 6.1% of the reduced issued ordinary share capital.

Articles of Association

Resolution 15

It is proposed by Resolution 15, by Special Resolution, to adopt new articles of association. Further details of the proposed changes to the Articles of Association are set out on page 174.

 **Further details on the proposed changes to the Company's articles of association are set out in the Notice of Annual General Meeting on pages 170 to 174**

Action to be taken

As detailed in the notes to the notice convening the Annual General Meeting, you will not receive a Form of Proxy for the Annual General Meeting in the post. Instead, you can vote online at www.signalshares.com. To register, you will need your Investor Code, which can be found on your share certificate; once logged on, click on the 'Vote Online Now' button to vote. Proxy votes should be submitted as early as possible and in any event, no later than 48 hours before the start of the meeting (excluding weekends and public holidays). Shareholders attempting to attend the meeting will be refused admission.

You may request a hard copy proxy form directly from the registrars, Link Asset Services on 0871 664 0300. (Calls cost 12 pence per minute plus your phone company's access charge. If you are outside the United Kingdom, please call +44 371 664 0300. Calls outside the United Kingdom will be charged at the applicable international rate.) Lines are open between 9.00a.m. to 5.30p.m., Monday to Friday, excluding public holidays in England and Wales.

Additional information for shareholders

The following provides the additional information required for shareholders as a result of the implementation of the Takeovers Directive into UK law.

The structure of the Company's issued share capital is shown in note 26.

Details of ordinary shares held in trust owned by the Company can be found in note 28.

The Company is not aware of any agreements between shareholders that may result in restrictions on the transfer of securities and/or voting rights.

The Directors are authorised to issue and allot shares and to undertake purchases of the Company's shares. Appropriate resolutions to renew these authorities are proposed to be passed at the Annual General Meeting as detailed above and notice of which is on pages 170 to 174.

 **The notice of the Annual General Meeting is on pages 170 to 174**

Ordinary shares

On a show of hands at a general meeting of the Company every holder of ordinary shares present in person and entitled to vote shall have one vote for every ordinary share held and, on a poll, every member present in person or by proxy and entitled to vote shall have one vote for every ordinary share held. The notice of the Annual General Meeting on pages 170 to 174 specifies deadlines for exercising voting rights either by proxy notice or present in person or by proxy in relation to resolutions to be passed at the Annual General Meeting.

All proxy votes are counted and the numbers for, against or withheld in relation to each resolution are made available at the Annual General Meeting and are published on the Company's website after the meeting. No person holds securities carrying special rights with regard to control of the Company.

Restrictions

There are no restrictions on the transfer of ordinary shares in the Company other than:

- certain restrictions may from time to time be imposed by laws and regulations (for example, insider trading laws and market requirements relating to close periods); and
- pursuant to the Listing Rules of the FCA whereby all employees of the Company require the approval of the Company to deal in the Company's securities.

Articles of Association

The Company's Articles of Association may only be amended by a Special Resolution at a general meeting of the shareholders. Directors are reappointed by Ordinary Resolution at a general meeting of the shareholders.

Appointment and replacement of Directors

With regard to the appointment and replacement of Directors, the Company is governed by its Articles of Association, the UK Corporate Governance Code, the Companies Act and prevailing legislation.

The Board can appoint a Director but anyone so appointed must be elected by an Ordinary Resolution at the next general meeting. All Directors are required to submit themselves for reappointment every year at the AGM (see: Re-election of Directors, above) in line with the UK Corporate Governance Code.

A Director may be removed by the Company in certain circumstances set out in the Articles of Association or by an Ordinary Resolution of the Company.

Significant interests

 Directors' interests in the share capital of the Company are shown in the table on page 99

 Major interests (i.e. those greater than 3%) of which the Company has been notified are shown on page 66

Company share schemes

The Xaar plc ESOP Trust holds 0.9% (2021: 0.9%) of the issued share capital of the Company in trust for the benefit of employees of the Group and their dependants. The voting rights in relation to these shares are exercised by the Trustees.

Change of control

The Company is not party to any agreements which take effect, alter or terminate upon a change of control of the Company following a takeover bid. There are no agreements between the Company and its Directors or employees providing for compensation for loss of office or employment (whether through resignation, purported redundancy or otherwise) that occurs because of a takeover bid. Depending on the achievement of performance conditions, share-based payment arrangements may vest on change of control but this is subject to the approval and exercise of the discretion of the Remuneration Committee.

Going concern

 The Group's business activities, together with the factors likely to affect its future development, performance and position, are set out in the Strategic Report on pages 16 to 25 and business performance on pages 26 to 28

The Group's business activities, together with the factors likely to affect its future development, performance and position, are set out in the Strategic Report on pages 16 to 25. Notes 21 and 22 include a description of the Company's objectives, policies and processes for managing its capital; its financial risk management objectives; details of its financial instruments and hedging activities; and its exposure to credit risk and liquidity risk. The Group's day-to-day working capital requirements are expected to be met through the current cash and cash equivalent resources (including treasury deposits) at the balance sheet date of 31 December 2022 of £8.5 million. As set out in note 22, the Group has a £5 million invoice discounting facility, of which £0.4 million was drawn as at the balance sheet date.

The Group has prepared and reviewed monthly profit and cash flow forecasts which cover a period up to 30 June 2024, the going concern period. This base case forecast position has been compiled by considering the performance of the different businesses across the Group and each of their funding requirements which represents the current Board approved forecasts. These forecasts reflect existing technologies and products, existing OEM adoption, the committed order pipeline, an increasing customer install base and demand for consumables such as fluids across the customer base and no specific risks around creditworthiness. This creates a high degree of predictability within the short-term cash flows, which have been factored into the level of sensitivity testing and reverse stress testing performed below. As set out in note 6, there is no concentration of revenues from an individual customer. The operational steps described in the Strategic Report also provide increased predictability over future margins, which have been incorporated in this base case forecast. Using this base case, liquidity compliance has been assessed across the going concern period and is sufficient to enable the Group to settle its obligations as they fall due.

To support the going concern conclusion, a sensitivity analysis has been performed which models a 10% reduction in revenue and 2% reduction in gross margin in comparison to the base case and is below the reported FY22 actual result. The outcome of this sensitivity analysis is that the Group maintains liquidity across the going concern period and is able to meet all forecasted obligations as they fall due. A reverse stress scenario has also been performed to model the circumstances required to eliminate available liquidity during the going concern period. This includes reducing revenues and reducing gross margin. This reverse stress scenario requires a reduction in revenue in excess of 25% in comparison to the base case and is below the reported FY22 actual result, as is the assumed margin. The Directors believe the possibility of this combination of severe downsides arising to be remote given the recurring revenue base and predictability of forecasts, and that there are numerous controllable mitigating actions such as deferring non-committed capital expenditure and reducing performance related pay which could be taken to avoid a liquidity breach.

Should extreme downside scenarios occur, the Group has further options within their control to mitigate a cash shortfall which have not been factored into the above forecasts and stress testing, such as staffing reductions, further delaying/stopping capital and research and development expenditure and aligning performance related pay to actual results. The Group has also received credit pre-approval for a £5 million revolving credit facility. No drawdowns have been assumed during the going concern period, nor are they required in the sensitivity or reverse stress scenarios described above and as such the facility would provide additional liquidity headroom to the Group across the going concern period.

Based on the above, the Directors have a reasonable expectation that the Group has adequate resources to continue in operational existence for the period to 30 June 2024. For this reason, we continue to adopt the going concern basis in preparing the financial statements.

Viability Statement

The long-term viability of the Group is assessed by the Directors as part of the risk management process and regular strategic reviews.

The Company has undertaken thorough strategic planning of all four business units which has resulted in a three-year plan which takes into consideration the principal risks, product portfolios and R&D roadmaps, the market opportunities, our competitive position, core capabilities, and the cost structure, effectiveness and efficiency of the organisation.

Details of which are outlined in the strategic review on pages 16 to 28

The plan forms the basis for strategic actions to be taken across the Company and the key objectives for each business. These objectives, and the key performance metrics associated with these, are regularly reviewed by the Directors.

The Company is aware that it operates in an uncertain environment and faces risks both internally and externally that could potentially impact on the Company's ability to achieve its strategy.

The principal risks and uncertainties faced by the Company are included on pages 48 to 57

As part of the process of reviewing these risks, and other potential risks, the Board assigns responsibility for these to members of the Executive Committee. It is the responsibility of the Executive Committee members to manage the risk and the mitigating actions. This ensures that the Company manages the risks it faces appropriately and that these are considered in all financial models.

The Board has assessed the viability of the Group over a three-year timeframe based on the development cycles of our competitors and those of our customers and the probability this could lead to technological advancements that disrupt the markets that Xaar operates in.

The Board has considered plausible principal risks and the financial impacts that these could have over a three-year period were conservatively assumed in the Group's mid-term planning exercise. The principal risks considered were: 5. Coronavirus (COVID-19), 9. Supply chain and 10. War in Ukraine and world economy and the further potential impacts of these were used to model a 'severe but plausible' scenario. The outcome of this scenario is an 8.4% reduction in revenue over the three-year period.

Taking account of the Company's current financial position, operating performance, and the principal risks and uncertainties, the Directors have assessed the prospects of the Company, and confirm that they have a reasonable expectation that the Company will be able to continue in operation and meet its liabilities as they fall due for the next three years, to December 2025.

Auditor

Ernst & Young LLP were re-appointed in 2022 and have expressed their willingness to continue in office as auditor and a resolution to reappoint them will be proposed at the forthcoming AGM.

Directors' statement as to disclosure of information to auditor

The Directors who were members of the Board at the time of approving the Directors' report are listed on pages 63

Having made enquiries of fellow Directors, each of these Directors confirm that:

- To the best of each Director's knowledge and belief, there is no information relevant to the preparation of their report of which the Group's auditor is unaware
- Each Director has taken all the steps a Director might reasonably be expected to have taken to be aware of relevant audit information and to establish that the Group's auditor is aware of that information

This confirmation is given and should be interpreted in accordance with the provisions of section 418 of the Companies Act 2006.

Approval

The Directors' report was approved by the Board on 27 March 2023 and is signed on its behalf by:



John Mills
Chief Executive Officer

Section 172 statement

The Companies Act 2006 (the 'Act'), as amended by the Companies (Miscellaneous Reporting) Regulations 2018, requires companies to include a 'Section 172(1) Statement' in the Strategic Report describing how directors have had regard to the matters set out in Section 172 (1) (a) to (f) of the Act when performing their duties.

Section 172 of the Act requires directors of a company to act in a way they consider, in good faith, would be likely to promote the success of the company for the benefit of its members as a whole, and in doing so have regard (amongst other matters) to:

1. Likely consequences of any decision in the long term,
2. Interests of the company's employees,
3. Need to foster the company's business relationships with suppliers, customers and others,
4. Impact of the company's operations on the community and the environment,
5. Desirability of the company maintaining a reputation for high standards of business conduct, and
6. Need to act fairly as between members of the company.

The Directors' duties under Section 172 are embedded in all of the decisions that the Board and its Committees make, together with a range of other factors, including alignment with our strategy and our values. Accordingly, information on how s.172 matters have been considered during the year are detailed throughout this Annual Report.

The Board understands the importance of effectively engaging with the Company's key stakeholders, in order to better understand their views and interests, and the potential impact of the Directors' decisions on them.

The Board is aware that the interests of stakeholders may not always align with each other and that it may not always be possible to provide a positive outcome for all stakeholders from a given decision.

The Board strives to follow best corporate governance practice and has a governance framework in place that allows it to make reasoned and informed decisions. Further information on how the Board and its Committees operate can be found in the Corporate Governance statement on pages 73 to 78 of this Annual Report.

The identification and assessment of risk is an integral part of the Board's decision making process, particularly when it comes to considering the longer-term consequences and the sustainability of the Company's business model and strategy. The Group maintains a risk register, which the senior leadership team maintain, which is presented to the Board on an annual basis.

 **More details of our approach to risk management are set out on pages 48 to 57**

Stakeholder engagement

The Directors have ongoing engagement with all of our key stakeholders:

- our Investors
- our People
- our Communities
- our Partners.

The Directors continually review the impact that any decisions will have on these key stakeholders.

The Board regularly reviews the Company's principal stakeholders, and how it engages with them. This is achieved through information provided by management and by direct engagement with the stakeholders themselves.

Shareholders

All Board decisions are made to promote the long-term success of the Group for the benefit of our shareholders.

We maintain strong relationships with shareholders, ensuring they understand our strategy, the progress and performance against key milestones and that we understand how they view our business. We engage with our shareholders through Investor Roadshows and webinar presentations led by the Chief Executive Officer and Chief Financial Officer, in addition to written communication from and meetings as required with the Chairman, Committee Chairs and Executive Directors.

The Group's brokers provide independent feedback to the Board on shareholder opinions and their views on our meetings with investors. Regular trading updates are provided as well as the Annual Report and Interim Report.

Information provided at analysts' meetings and financial press releases are made available on the Group's website. We engage with investors to gain and maintain support for our strategy, and feedback received has informed the Board's discussions and decisions on Group strategy.

 **More details of our engagement with our shareholders and the results of those engagements are set out in the Corporate Governance statement on page 74 and Directors' Remuneration report on page 86**

Employees

Our people are a highly skilled, technical, and valued workforce. They are essential to the Group's ability to stay ahead in a fast-moving world.

Our people play a crucial role in helping us pursue our strategic goals and are core to the success of the business. We engage and support them to achieve their full potential. There are regular internal communications from the management team and feedback from employee working and representative groups, such as the Sustainability team, Exec Exchange and Meet the NEDs. Regular engagement with employees improves open dialogue channels, collaboration, visibility of achievements and progress across the business, as well as transparency.

 **The health and safety of our employees is of the highest importance to us. More details of our engagement with our employees and the results of those engagements are set out in Sustainability and responsible business on page 35 and the Directors' Remuneration report on page 86**

Community

As a Group, we have a wide-reaching indirect impact on the communities and environments we interact with and are committed to making sure that this impact is as positive as possible.

Xaar is a responsible citizen within our communities, offering local recruitment, supporting educational institutions and the local economy. Xaar offers a range of employment opportunities for apprentices and we work closely with educational establishments. We look to minimise our impact on the environment. We are investing to reduce greenhouse gas emissions and have transferred electrical supply over to 100% renewable source, invested in electric vehicle charges and installed LED lighting.

 **More details of our engagement with our communities and the results of those engagements are set out in Sustainability and responsible business on page 40**

Customers

Our customers depend on us to supply high quality products in a timely manner. We also support them in the development of their next generation products. They expect us to operate in a responsible manner maintaining the highest standard of business ethics.

The Board is regularly updated on the timeliness and quality of product deliveries to our customers as well as developments with targeted customers, new customer wins and a sales pipeline, including how the product roadmap aligns. Our sales and engineering teams engage with our customers and solicit feedback which is used to inform our technology roadmaps.

The key account management structure across the business encourages meaningful, consistent and ongoing engagement with OEM and UDI customers. There are regular exchanges with our customers on their new programmes especially through engineer to engineer interactions so that we can better understand their emerging needs.

We worked hard to ensure our factories could continue to operate and supply our customers even at the height of the pandemic.

We invested £6.7 million in R&D during 2023, focusing on those areas where we see the opportunity to support our customers' next generation product developments.

 **More details of our engagement with our customers and the results of those engagements are set out in our business model on pages 8 to 9 and individual business unit updates on pages 20 to 25**

Suppliers

Our relationships with our suppliers and partners are integral to the delivery of quality products to our customers and the operational success of our business.

The supply of goods and services to our operations is critical to our overall success. We regularly review the performance of our suppliers and work with them to implement improvement programmes.

The Group has established a comprehensive set of policies covering the areas of business ethics. We require our suppliers to operate to the same high standards and these are set out in our Supplier Code of Conduct which they are required to adhere to. Thus ensuring high standards throughout our Tier 1 supply chain, by measuring and auditing our key suppliers against specific criteria, including human rights (human trafficking, anti-slavery, prohibition of child labour) and conflict minerals policies.

Corporate Governance statement

The Board's primary objective remains ensuring long-term, sustainable growth for the benefit of the Company's shareholders and wider stakeholders. This includes an ongoing commitment to the highest standards of corporate governance as set out in the Financial Reporting Council (FRC) 2018 UK Corporate Governance Code ('the Code').

The 2018 UK Corporate Governance Code is a set of principles and provisions that emphasise the value of good corporate governance to long-term sustainable success and achievement of wider objectives. The Code can be found on the FRC's website at www.frc.org.uk.

Application of the main principles of the Code

The Board has considered and implemented the provisions of the Code effective 1 January 2019.

We are pleased to confirm that throughout the year ended 31 December 2022, the Company has followed the principles and provisions of the UK Corporate Governance Code 2018, which applies to all companies with a premium listing on the London Stock Exchange, and has either complied with the provision or explained why the provision has not been followed.

The governance report gives:

- Disclosure of Board discussions and the resulting actions
- A clear and honest view of progress throughout the year
- The outcome of our Board evaluation
- Our approach to ensuring long-term viability of the business
- Our approach to risk and mitigation.

Statement of compliance with the Code

Throughout the year ended 31 December 2022 the Company has followed the provisions set out in the Code and has either complied with the provisions of the Code or explained why the provision has not been followed, as outlined below. The FRC expects companies to provide a clear and meaningful explanation for any departures from the Code. This report on the Company's compliance with and application of the Code has been approved by the Board and includes this Statement, the Directors' report on pages 64 to 70, the report of the Audit Committee (see pages 79 to 81), the Nomination Committee report (see pages 82 to 83) and the Directors' Remuneration report set out on pages 84 to 104.

A copy of the Code can be found on the FRC website at www.frc.org.uk.

Provision 36: The current policy on post-employment shareholdings does not comply fully with the Code, as it does not include a minimum two-year post-employment holding. This is partially mitigated through applying the leaver provisions under the Company's share plans. A post-employment shareholding for future LTIP grants from 2023 onwards will be introduced as part of the new Remuneration Policy. Details are set out on pages 94 to 95.

The disclosures in respect of the Takeovers Directive (as implemented in the UK) are included in the Directors' report and form part of this report.

1. Board Leadership, Culture and Company Purpose

The Board is responsible for leading the Group, focusing primarily upon strategic and policy issues, and is responsible for ensuring the long-term sustainable success of the Group. It is responsible for effective risk assessment and management. In performance of these duties, the Board has regard to the interests of the Group's key stakeholders, generating value for the shareholders and contributing to the benefit of wider society.

In order to achieve this the Board has established a clear vision: "A world where you can print anything you can imagine", with our mission being "we help companies and industries be more colourful, creative and productive through our world-class technology and printheads".

The Board has updated the core values which shape our culture and contribute to our success, which are EPIICC:

- We do Everything with Passion
- We are Innovative
- We have Integrity
- We are Creative
- We are Collaborative.

The Board is responsible for establishing, assessing and monitoring the Company's purpose, values, strategy, and culture. In doing so, the Board ensures the alignment of the Company's culture and the transformation programme. The Board receives regular updates on the work being undertaken by the senior management team to align the operations and policies of the Group with its culture and values. Other than their normal attendance and participation in discussions at Board meetings, the Executive Directors are responsible for the day-to-day running of the Group and the implementation of the agreed strategy.

 Refer to page 16 for the Strategy review and page 35 for Company values and culture

1. Board Leadership, Culture and Company Purpose continued

The Group has four main locations. The head office functions, R&D, marketing, human resources, legal and finance are based in Cambridge, UK. The Group has four manufacturing facilities with offices: one in Huntingdon, UK, one in Hemel Hempstead, UK, one in Kettering, UK and the other in Vermont, USA. The Group also has representatives in other global locations including Italy, Spain, China, Hong Kong, and Sweden.

Refer to pages 8 to 9 for the Xaar business model

In accordance with the Directors' duties in Section 172 of the Companies Act 2006, the Board considers the likely consequences of any decision in the long term. The Board incorporates the basis on which the Company generates and preserves value in formation of the strategy and strategic decision-making.

Refer to page 71 for the s.172 disclosure

The key focus this year has been on returning the Group to profit while developing capability and opportunity to deliver future growth. It has been a priority to maintain the progress made by the business in recent years during a period of macroeconomic uncertainty with inflationary pressures in energy costs and continued challenges in the supply chain following the end of the pandemic. The Board has ensured there is a focus on our core competence of the design and manufacture of world leading printheads. It has continued to ensure the financial position of the Company is secured whilst also looking forward to the longer-term strategic options for the Group, including identifying potential further acquisitions that would bring additional value and synergies. In particular, the main Board decisions during the year were:

- Continuing to invest in R&D and the product roadmap, with the launch of Aquinox in November 2022.
- Agreed the reorganisation of the factory in Huntingdon as part of the project to improve efficiency and reduce costs in manufacturing.
- Completed the acquisition of Megnajet, one of the leading designers and manufacturers of industrial ink management and supply systems for digital inkjet, to accelerate Xaar's growth strategy by creating a more integrated inkjet solution whereby customers can access more of the printing ecosystem (such as ink supply systems and the electronics) from Xaar.
- Continued the strengthening of the Group's senior management team with key appointments in operations, R&D, HR and Finance.

The Board worked closely with executive management to redefine the Group's mission, vision and values which will underpin the Group's evolving culture under the executive leadership team. Further information is in the Directors' Remuneration report on page 84 and Sustainable and responsible business on page 30.

Engagement with shareholders

The Board and Directors seek to build on a mutual understanding of objectives between the Group and its institutional shareholders by providing the opportunity to meet at least twice per year, following interim and annual results, to provide an update on trading and obtain feedback.

See Shareholder communications as part of the Directors' Remuneration report on page 84

The Board uses the AGM to communicate with investors and to encourage their participation.

Following a general meeting, voting results are published on the Company's website. If the votes against a resolution exceeded 20%, an explanation would also be published on the website. At the most recent AGM in 2022, the majority of resolutions had less than 1% of votes cast against the Board's recommendation. The exception being Resolution 10 (the power to issue shares by the Directors) with 11.3% of votes cast against the Board's recommendation.

The Company engaged with shareholders both throughout the year and specifically in respect of resolutions where noteworthy votes were against the Board's recommendation, in order to better understand shareholders' thoughts and align resolutions with the members' views.

Feedback from brokers and financial PR

The Group's financial public relations advisors and lead brokers give all investors and potential investors who have met with the Group's investor relations team the opportunity to provide feedback on the meetings. Additionally, the Chief Executive Officer and the Chief Financial Officer provide feedback to the Board at the meeting following shareholder meetings to ensure that the Board, and in particular the Non-Executive Directors, possess an understanding of the views of the Company's major shareholders. Both the Chairman and the Senior Independent Director are available to meet with shareholders as required.

Annual Report and Accounts

We review feedback from shareholders and other stakeholders and take this into consideration when drafting our Annual Report and Accounts. We make our Annual Report and Accounts available on our website as soon as it is practicable following our final earnings release. Shareholders can access up-to-date Company information, including video presentations, from the Investors section of the Xaar website at www.xaar.com.

Workforce engagement

The Board continued to hold employee engagement sessions which are held recurrently throughout the year with the three Non-Executive Directors being responsible on behalf of the Board for workforce engagement. Topics discussed were wide ranging but focused mainly around the strategy and direction of the business, acquisitions and divestments, sustainability, executive remuneration and alignment with the wider workforce, employee training, opportunities for development, and the workings of the Board and governance, i.e. a total of six sessions in total.

1. Board Leadership, Culture and Company Purpose continued

Conflict of interest and time commitment

Following the changes made to the Company's Articles of Association to incorporate the provisions of section 175 of the Companies Act 2006 which gave boards the statutory power to authorise conflicts of interest, any potential conflict of interest is approved by the Board in advance of any action or appointment that could result in a conflict of interest arising. Internal controls are in place to ensure that any related party transactions involving Directors, or their connected parties, are conducted on an arm's length basis. Each member of the Board is familiar with the procedure to follow in relation to conflicts of interest and the process is operated efficiently. There were deemed to be no such conflicts of interests in 2022.

The only change to Directors' outside commitments during 2022 related to the appointment of Alison Littlely as a non-executive director of Eurocell plc on 1 July 2022.

Each Director devoted significant time to their Xaar Board responsibilities during 2022, with all Directors attending all Board meetings (see page 61).

2. Division of Responsibilities

The Board discharges its responsibilities by providing strategic and entrepreneurial leadership of the Company, within a framework of strong governance, effective controls and a strong culture emphasising openness and transparency, which enables opportunities and risks to be assessed and managed appropriately. In addition, the Board sets the Company's strategic direction; ensures that the necessary financial and human resources are in place for the Company to meet its objectives; and reviews management performance.

The Chairman, Andrew Herbert, was deemed independent on appointment in 2020. There exists a clear division of responsibilities between the Chair and the Chief Executive Officer, John Mills. The Chair's primary role includes ensuring the Board functions properly, that it meets its obligations and responsibilities, and that its organisation and mechanisms are in place and are working effectively.

The responsibilities of the Chair, Chief Executive, Senior Independent Director, Board and Committees are clear, set out in writing, agreed by the Board and made publicly available, with terms of reference for the Committees available on request.

The Board delegates management of the business to the Executive Committee, comprising Executive Directors and senior operational managers, headed by the Chief Executive Officer. The Executive Committee meets weekly and is responsible for implementing Group strategy, monitoring business performance, preparing the operating and capital expenditure budgets for recommendation to the Board, and ensuring efficient management of the Group.

The Non-Executive Directors attend the Board meetings, and form the Audit, Remuneration and Nomination Committees. They are responsible for scrutinising the performance of management and determining appropriate levels of remuneration of Executive Directors. They also have a key role in appointing and, where required, removing Executive Directors.

The Non-Executive Directors are identified on page 63 of the Annual Report with a short biography provided. The Board has determined that each Non-Executive Director is independent in character and judgement; commits sufficient time and energy to the role; and continues to make a valuable contribution to the Board and its Committees. The Board keeps under review whether there are relationships or circumstances which are likely to affect, or could appear to affect, their independence.

The Company Secretary is the secretary to the Board and its Committees. All Directors have access to the services of the Company Secretary and Directors may take independent legal and other professional advice at the expense of the Company. Camila Cottage resigned as Company Secretary on 22 October 2022 and Ian Tichias was appointed in her place on the same day. Ian Tichias resigned as Company Secretary with effect from 16 January 2023 and Julia Crane was appointed on the same day.

3. Composition, Succession and Evaluation

Board composition

The Board of Directors comprises the Chairman, two Executive Directors and two Non-Executive Directors.

The Board considers Alison Littlely, Chris Morgan and Andrew Herbert to be independent within the meaning of the Code. To be considered independent each Non-Executive Director is sufficiently separate to management and free from any business or other relationships which could affect their judgement, impartiality or objectivity.

All the Non-Executive Directors are deemed to be independent members of the Board having no financial relationship or significant links with related parties. Chris Morgan maintained his independence, having departed Stratasys in 2015. All Non-Executive Directors complete a disclosure document prior to appointment and submit an annual declaration.

Succession

The Nomination Committee is responsible for regularly reviewing the composition of the Board. In recommending appointments to the Board, the Nomination Committee considers the range of skills, knowledge and experience required, with due regard for the benefits of diversity on the Board, including gender. When recruiting, search firms are appointed to secure a strong and diverse list of candidates.

The appointment of new Directors is led by the Nomination Committee. There were no changes to the Board during 2022.

The Committee has considered succession planning and the good progress made on building an executive management team and focusing on senior management development during the past three years. In 2022, the Committee recommended that during 2023 the Board be broadened and that the number of independent Non-Executive Directors be increased to four including the Chair. In making any future appointment the Nomination Committee will consider both diversity and succession as a matter of course as it seeks to further equip the Board in its role of overseeing future business growth and expansion.

3. Composition, Succession and Evaluation continued

Diversity

The Board continues to consider that diversity quotas at Board level are inappropriate, and is committed to recruiting the best talent available, assessed against objective criteria of skills, knowledge, independence and experience. All candidates are therefore considered on merit. The Company does not apply any established measurable objectives in respect of diversity quotas (e.g. age, gender, ethnicity, disability, religion or educational and professional background) but with reference to the Company's Diversity Policy. More information on the Group's gender profile is set out in the report on Sustainable and responsible business on pages 35 to 36.

As the Company grows, the Board will keep under consideration the requirements of the Parker Review (2017) to improve the ethnic and cultural diversity of UK boards to better reflect their employee base and communities they serve.

A Board Diversity Policy was adopted by the Directors, on the recommendation of the Nomination Committee. A copy of the policy is available on the Company's website.

Board evaluation

The Board conducted an internal review of the effectiveness of itself, with each Non-Executive Director, the Chairman and the Board Committees in December 2022. A questionnaire was completed by the Directors which looked at all areas of the operation and management of the Board and its Committees. The Chairman held discussions with each Director on the results of the evaluation. The outcome of the review was discussed by the Nomination Committee and actions agreed by the Board. From the review and conclusions drawn, areas of improvement were identified as follows:

1. To review the composition of the Board as part of the succession planning process specifically taking into account the skills and expertise required as the business grows while also seeking to enhance the diversity and experience of Board members and ensure that the Remuneration and Audit Committees are meeting the objectives of the business.
2. To consider holding at least one Board meeting each year at a subsidiary location.
3. To increase the frequency of Board review to quarterly of the identification and management of risk across the Company.
4. To improve the evaluation and consideration of the longer-term implications of changes to strategy.

Areas of improvement identified in 2021 were addressed and actions taken and implemented during 2022 as follows:

2021 Recommendations	Action taken in 2022
Board membership diversity, skills and experience to be reviewed and an additional NED appointment to be considered.	The Nomination Committee undertook a comprehensive review of the composition of the Board during the year and has commenced the process to appoint a new NED.
Improve the balance of time spent in Board meetings considering strategic as compared to operational issues, allowing sufficient time for in depth discussion, debate and challenge.	The Board agenda was revised in 2022 to allow more time for discussion on strategic issues. A strategy session will be held in 2023.
Further develop the approach to succession planning and talent management in the business to create greater opportunity for progression and increased diversity among the senior management and the Board.	The Nomination Committee reviewed the succession plan for the senior management team during the year and changes to the plan were approved.

Further details of the activities of the Nomination Committee can be found on pages 82 to 83

As part of the selection process for any potential Directors, any significant external time commitments are considered before an appointment is agreed. All Directors are required to consult with the Chair of the Board and obtain the approval of the Board before taking on additional appointments.

Executive Directors are not permitted to take on more than one significant appointment as a director of a FTSE 100 company or any other substantial appointment.

The Board's policy for individual Director performance review is for a formal and rigorous appraisal process based on performance by the individual Director against specific targets. Individual Director performance is reviewed at least annually.

- The Senior Independent Director, in consultation with the other Non-Executive Directors and taking into account the views of the other Directors, appraises the performance of the Chairman.
- The Executive Directors, in consultation with the Chairman, appraise the performance of the Non-Executive Directors.

It is the Board's intention to review its own performance, and that of its Committees, at least once a year. All Directors were subject to shareholder re-election at the 2022 AGM.

The biographies of the Directors, set out on page 63, contain the evaluation of skills and experience beneficial to the Company so that the Board recommends the re-election or election of each Director

4. Audit and Risk and Internal Controls

The role and responsibilities of the Audit Committee are set out in the Audit Committee section on pages 79 to 81

- The Audit Committee review of the effectiveness of the external audit is set out on page 81.
- The auditor Ernst and Young LLP were appointed following a tender process in July 2019, and provide no non-audit services; the Audit Committee assessment of the auditor's independence is disclosed on page 81.

The Directors' assessment of the Group's internal control environment as required under the UK Corporate Governance Code is set out on pages 80 to 81 under 'Internal controls and compliance'

The Audit Committee, led by Chris Morgan, plays a key role in monitoring and evaluating our compliance and risk management processes, providing independent oversight of our external audit and internal control programmes, accounting policies and business transformation projects, and in assisting the Board in establishing arrangements to ensure that we are reporting in a fair, balanced and understandable manner to our shareholders. The Board has satisfied itself that Chris Morgan has recent and relevant financial experience and that the Audit Committee as a whole has competence relevant to the sectors in which the Company operates.

The significant accounting judgements and estimation uncertainties that the Audit Committee has considered in relation to the financial statements are set out in the Audit Committee report on pages 79 to 80 and in note 3 to the accounts on pages 122 to 129

All of the Audit Committee members are independent Non-Executive Directors and have financial and/or related business experience due to the senior positions they hold or have held in other listed or publicly traded companies and/or similar large organisations.

The Board has established arrangements to ensure that reports and other information published by the Group are fair, balanced and understandable. The Strategic Report, set out on pages 1 to 59, provides information about the performance of the Group, the business model, the Group's strategy and the risks and uncertainties relating to the Group's future prospects.

Principal and emerging risks

As set out on page 48, the Board confirms that it has carried out a robust assessment of the principal and emerging risks facing the Company during the year, including those that could threaten its values, reputation, business model, future performance, solvency or liquidity.

As a consequence of the risk assessment review:

- IT transformation risk, following the progress of the transformation programme, has been removed.
- The impact of the COVID-19 pandemic – Internal/Operations has been removed as a risk, following the lifting of the majority of the restrictions.
- The potential non-compliance with laws and regulations has been added as a new risk.
- Changes have been made to the impact of the risk from climate change.
- The risks from cyber security threats have been updated following improvements made in 2022.
- The impact of the war in Ukraine on the global economy has been added as a new risk.

Descriptions of principal and emerging risks and how they are mitigated and any changes are set out on pages 52 to 57

The Group's policies relating to risk management and internal control can be found in the 'Risk management' section of the Strategic Report on pages 49 to 51

The Board explains on pages 69 of the Annual Report how it has assessed the prospects of the Company over the longer term and why it considers a three-year period to be appropriate for the purposes of this assessment. The Board confirms that it has a reasonable expectation that the Company will be able to continue in operation and meet its liabilities as they fall due over this period.

The Committee has formally identified the Chief Executive Officer as responsible for health and safety and the Chief Financial Officer as responsible for risk assessment.

5. Remuneration

The Remuneration Committee sets levels of remuneration which are designed to promote the long-term success of the Group and structures remuneration so as to link it to both corporate and individual performance, thereby aligning management's interests with those of shareholders.

The Remuneration Committee's primary role is to recommend to the Board the senior management remuneration strategy and framework, giving due regard to the financial and commercial health of the Company and to ensure the Executive Directors and senior management are fairly rewarded for their individual contributions to the Company's overall performance. The remit of the Committee also includes considering the appropriateness of the senior remuneration framework when reviewed against arrangements throughout the rest of the organisation, determining the terms of employment and remuneration for Executive Directors and senior managers, including recruitment and termination arrangements, approving the design, targets and payments for all annual incentive schemes that include Executive Directors and senior managers and agreeing the design, targets and annual awards made for all share incentive plans requiring shareholder approval. During 2022, the Remuneration Policy was reviewed ahead of being put to a shareholder vote at the forthcoming AGM, and as part of this review we have considered and agreed how our ESG priorities should be reflected in the reward framework. Further details are set out on page 84. The Remuneration Committee has not exercised any discretion in relation to remuneration outcomes in 2022.

Details of the activities of the Remuneration Committee can be found in the Directors' Remuneration report on pages 84 to 104.

- The alignment of executive remuneration with Company purposes and values is set out on page 87
- The award of long-term incentives and their performance conditions are set out on page 98
- How the Remuneration Committee addresses the principles set out in the UK Corporate Governance Code in respect of the Directors' Remuneration Policy is set out on page 87
- The discretionary powers of the Remuneration Committee are on page 86
- The alignment of executive pensions with those of the workforce are on page 86
- Recovery and withdrawal provisions (malus/clawback), and the circumstances under which the provisions may apply, are on page 91.

Summary of Board meeting attendance in 2022

11 Board meetings were held in 2022, with two additional unscheduled meetings for specific items:

Name	Scheduled Board meetings	Additional meeting
Andrew Herbert	11 (11)	2 (2)
Alison Littlely	11 (11)	2 (2)
Chris Morgan	11 (11)	2 (2)
John Mills	11 (11)	2 (2)
Ian Tichias	11 (11)	2 (2)

Board Committees

Summary of Committee membership:

Name	Audit Committee	Remuneration Committee	Nomination Committee
Andrew Herbert	No	Yes	Chair
Alison Littlely	Yes	Chair	Yes
Chris Morgan	Chair	Yes	Yes
John Mills	No	No	Yes
Ian Tichias	No	No	No

Summary of Committee meeting member attendance in 2022:

Name	Audit Committee ¹	Remuneration Committee ¹	Nomination Committee ¹
Andrew Herbert	n/a	5 (5)	4 (4)
Alison Littlely	4 (4)	5 (5)	4 (4)
Chris Morgan	4 (4)	5 (5)	4 (4)
John Mills	n/a	n/a	3 (3)

¹ The Committees may invite Board Directors who are not Committee members to attend Committee meetings when the subject matter deems their presence appropriate.

² John Mills stood down as a member of the Nomination Committee in November 2022.

Figures in brackets denote the maximum number of meetings that could have been attended.

Approval

The Board confirms the 2022 Annual Report and Financial Statements, taken as a whole, is fair, balanced and understandable, and provides the information necessary for shareholders to assess the position, performance, strategy, and business model of the Company.

The Corporate Governance statement, which incorporates the Directors' Report, the Audit Committee report, the Nomination Committee report and the Directors' Remuneration report, was approved by the Board on 27 March 2023 and is signed on its behalf by:



John Mills
Chief Executive Officer

Audit Committee

The Audit Committee (the 'Committee') is appointed by the Board from the Non-Executive Directors of the Company. The Chair of the Committee is Chris Morgan.

Audit Committee composition and meetings

Chris Morgan's previous roles have given him senior executive and financial experience working across a number of technology and digital printing sectors and across a number of jurisdictions. Alison Littley, Audit Committee member, also brings a breadth of experience including executive experience in complex, international business operations. Additional information on our skills and experience can be found in the Board biographies set out on page 63.

The Audit Committee met formally on four occasions during the year and details of the attendance at meetings by members of the Audit Committee are set out on page 78. Please see the tables on page 78 for details of the Committee members in the year and the number of Committee meetings attended. At the Committee's request, other members of the Board and senior management may be invited to attend the Audit Committee's meetings based on the meeting agenda.

Report from the Committee Chairman

I am pleased to present the Audit Committee's report describing our work during the past year. Ernst & Young LLP (EY) was reappointed as the Group external auditor at the Annual General Meeting and Ruth Logan is the engagement partner.

The Audit Committee's primary responsibilities are the following:

- To approve and monitor key financial and accounting policies and practices
- To monitor the integrity of the financial statements, announcements and review significant financial reporting judgements contained therein
- To keep under review the adequacy and effectiveness of internal controls
- To review procedures, systems and controls for whistleblowing, fraud detection and bribery prevention
- To review, approve and monitor internal audit activities
- To monitor and review the Group's external auditor's independence, objectivity and effectiveness
- To monitor and approve any non-audit services provided by the external auditor
- To conduct any tender process and make recommendation to the Board on the appointment, remuneration and terms of engagement of the external auditor.

The Committee is not responsible for the identification of key risks or the review of the adequacy of arrangements to mitigate those risks, which remains the responsibility of the Board.

The Committee is required to report its findings to the Board at least annually, identifying any matters on which it considers that action or improvement is needed, to make recommendations on the steps to be taken, and to ensure that the required actions are implemented.

The Committee shall review its terms of reference annually and may recommend to the Board any amendments. The Committee's terms of reference include all matters indicated by Disclosure and Transparency Rule 7.1 and the 2018 UK Corporate Governance Code. The terms of reference of the Committee are available on written request from the Company Secretary.

Significant issues considered by the Committee

The Committee has a work plan that is designed to ensure its responsibilities are fully discharged over the annual reporting cycle. Specific items are added to the agenda for individual meetings as required. There were a number of significant accounting matters considered during the year including:

- Megnajet acquisition
- Impairment of goodwill, intangible assets and PPE
- Alternative performance measures.

Key areas of management judgement

The Committee has reviewed, discussed with and challenged management in respect of the approaches taken for the following areas of key accounting judgement and estimation:

Accounting judgements

Capitalisation of development costs – note 16

The Group capitalises development expenditure as an intangible asset where the criteria under IAS 38 Intangible Assets are met. This requires management to make judgement on when all of the criteria for capitalisation are met and when to cease capitalisation and start amortising the asset. In the current year, £1.7 million of external development costs were capitalised after the initial research phase, which were incurred in 2021 and expensed in the income statement, the feasibility of the project was established and the development work commenced. No internal development costs have been capitalised since most of internal labour was minor administration with clearly trivial time incurred. There were no capitalised development costs for the prior year.

Key areas of management judgement continued

Accounting judgements continued

Revenue recognition – note 5

EPS and FFEI recognise revenue on the stage of completion for some of the customer contract and performance obligations in the manufacture of bespoke machinery and equipment as well as some of the research and development services for delivery to the customer. Each month an assessment is undertaken of the work in progress and stage of completion in both supply of individual components and labour hours allocated to the project against the expected project manufacture costs. The revenue determined is recognised upon the proportion and stage of completion of the performance obligations. This assessment enables an estimate to be undertaken for the expected profitability of the customer contract, costs incurred to date, and costs to complete, but is subject to a level of uncertainty until the work in progress is finalised and the completed machinery and services are available for final delivery and acceptance by the customer. The transaction price allocated to partially satisfied and unsatisfied obligations at 31 December 2022 is set out in note 5.

Estimation uncertainty

Contingent consideration – notes 11 and 22

In November 2021, Stratasys Solutions Limited acquired the remaining 55% of Xaar 3D Limited for an initial consideration of US\$13.5 million or £9.9 million in cash and a milestone consideration and 3% earn-out consideration which are contingent on the achievement of certain milestones in respect of the future revenue stream of Xaar 3D and should be estimated using a statistical simulation model. This contingent consideration is measured at fair value using a Monte Carlo Simulation model and the use of a recognised third party. The Monte Carlo Simulation model uses a number of inputs that require estimation. The key ones are the risk-adjusted discount rate and revenue volatility. The milestone consideration and 3% earn-out consideration are calculated based on the terms of the proposed transaction and by reference to simulated revenue. This is then discounted back to the valuation date using a discount rate over a period commensurate with the year in which payments are payable. The Group considers this model to be appropriate, given the complex conditions associated with the milestone consideration and 3% earn-out consideration. A sensitivity analysis is provided in note 22.

Acquisition of Megnajet Ltd and Technomation Ltd – note 36

There is a high level of judgement surrounding the valuation of goodwill and acquired intangibles for any material acquisitions and this applies to the acquisition of Megnajet and Technomation in the year. An additional judgement was required around the classification of Technomation as an asset purchase rather than a business purchase and was concluded as such as a result of the applied concentration test under IFRS 3:B7(A)a. Management involved a third party valuation expert to estimate the value of the acquired intangibles and goodwill to ensure the judgements are appropriately considered.

Impairment of goodwill and intangibles (estimation uncertainty) – notes 15 and 16

The Group tests goodwill and intangibles annually for impairment or more frequently if there are indications that goodwill might be impaired. Having performed appropriate testing, no impairment has been identified and therefore no impairment loss has been recognised in 2022 (2021: £nil). Management has performed sensitivity analysis on its reasonably worst case scenario for EPS, FFEI and Megnajet and it has been completed on each key assumption in isolation. Reasonably possible change sensitivities are included in note 15.

 **Additional disclosure in relation to key sources of estimation uncertainty and critical accounting judgements is provided in the Group financial statements – note 2 on pages 121 and 122**

Key activities

In discharging its responsibilities, the Committee has completed the following activities:

Financial statements and reports

- Reviewed the Annual Report, financial statements and the half-yearly financial report including disclosures made therein, and confirms that taken as a whole, they are fair, balanced and understandable, and provide the information necessary for shareholders to assess the position, performance, strategy, and business model of the Company
- Reviewed Going Concern and Viability Statements and supporting assessments
- Reviewed reports from the external auditor on their work and findings
- Reviewed the effectiveness of the Group's internal control environment.

Internal controls and compliance

To assist the Board with its responsibilities to effectively determine the nature and extent of the Group's significant risks (as described on pages 52 to 57), the Committee carries out a robust annual assessment of the principal risks and uncertainties facing the Group.

The Board remains ultimately responsible for determining the nature and extent of the effectiveness of the risk management and internal controls systems which mitigate potential impacts on shareholder investments and the Company's assets. The Corporate Risk Register is reviewed and challenged bi-annually by the Audit Committee.

The Committee having performed the annual review of the Group's internal control processes considers the systems to be effective and in accordance with the Guidance on Risk Management, Internal Control and Related Financial and Business Reporting as issued by the FRC. In order to support the growth of the business and the implementation of Company strategies, the Committee recognises the need to continue to review the adequacy and effectiveness of our control framework.

The Committee undertakes this evaluation having:

- Reviewed the internal financial controls and risk management systems
- Reviewed fraud detection and the systems and controls for the prevention of bribery including employee confirmation of abiding by the Code of Conduct, Anti-bribery & Corruption, and Whistleblowing policies

Key activities continued

Internal controls and compliance continued

- The Committee considered the revised internal audit plan which was reviewed and amended during the year. A separate risk, control and audit function has been established headed by the Director of Risk, Control and Audit to oversee the planning and implementation of the Group's internal audit programme. Measures were put in place to co-source the internal audit function with an external specialist to undertake timely internal audits for all the controls which had been formalised and implemented.

Additional attention was given to EPS considering deficiencies identified in past. Due to their prior engagement and accumulated knowledge, RSM was hired to assist the Director of Risk, Controls & Audit with the identification of key controls and gaps for main business cycles within EPS. Whilst full implementation and formalisation of the controls framework is still in progress, all significant deficiencies identified have been addressed.

In addition to the controls work described above, 2022 was the first full year when the new leadership of EPS was present. The finance department of EPS has been supported and peer-reviewed by the Group finance team throughout the year and all discrepancies between Group policies and EPS policies have been identified and brought into alignment. Management has also closely worked with EY, Group auditors, to ensure all findings from the 2021 audit have been addressed. The improvements have been evidenced and acknowledged by the Group auditors as part of their planning and interim procedures. In summary, we believe that all significant deficiencies have been addressed at EPS while still acknowledging continuing work is required to formalise the wider controls framework.

In line with the provisions of the UK Corporate Governance Code 2018, the Committee monitors and reviews the effectiveness of the Company's internal audit function or, where there is not one during a period, considers annually whether there is a need for one. The Committee considered the revised internal audit plan which was reviewed and amended during the year. Measures were put in place to co-source the internal audit function for 2023 with an external specialist to undertake timely internal audits for all the controls which have been formalised and implemented.

The Committee remains of the view that the statement made regarding the Company's viability period continues to be an accurate assessment of the Company's viability as at the date of the report. The Viability Statement can be found in full on pages 69 and 70.

External audit

- The Audit Committee provided a forum for reporting and discussion with the Group's external auditor in respect of the Group's full-year results. The Committee had dedicated time for these activities and reviewed the audit work with emphasis on significant risk areas identified and discussed by the external auditor in their report
- The scope of the audit work to be undertaken by the auditor was reviewed and agreed on 19 December 2022
- The Committee agreed the fees to be paid to the external auditor relating to their services rendered for the annual audit
- The independence and objectivity of the external auditor was assessed by the Committee
- The Chairman of the Audit Committee will be available at the AGM to answer any questions about the work of the Committee.

External auditor

This was the third year for Ernst & Young LLP (EY) as the Company's auditor having first been appointed in July 2019 after a competitive tender. Ruth Logan was appointed as the senior statutory auditor during the year. The Committee has met with the auditor on at least three occasions during the year and it is expected that the Committee will continue to meet with the auditor a minimum of two times each year. The Chief Executive Officer and Chief Financial Officer, and other relevant managers and Board members, may attend these sessions by invitation, except for a period of each meeting where the Committee members may meet with the auditor without any member of executive management present.

The Committee is required to assess the qualifications, expertise, resources, and independence of the external auditor, and the objectivity and effectiveness of the audit process. The Committee reviews the type of work, effectiveness of, and level of fees charged by the auditor on an annual basis and recommends to the Board the appointment, reappointment, term, remuneration, and terms of engagement of the external auditor.

The Committee safeguards auditor objectivity and independence through maintaining a dialogue with the auditor and by monitoring all fees paid. It is the policy of the Group not to engage the statutory auditor in any non-audit related services. This includes tax services. Specifically, the policy states that the preparation of tax forms, payroll tax, calculation of indirect tax and the provision of tax advice cannot be provided by the statutory auditor. Note 2 to the consolidated financial statements includes disclosure of the auditor's remuneration during the year.

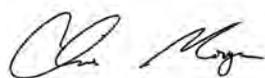
The Committee, taking into consideration relevant UK professional and regulatory requirements, regularly considers the independence and objectivity of the auditor. The Committee receives an annual statement from the auditor detailing their independence policies and safeguards, and confirming their independence, taking into account relevant ethical guidance regarding the provision of non-audit services by the external auditor.

The Committee considers the effectiveness of the external audit and the Group's relationship with the external auditor on an ongoing basis. In completing the review of the effectiveness of the annual audit in 2022, the Committee was able to conclude the audit undertaken by Ernst & Young LLP was effective. This review consisted of considering a number of key points together with the senior financial management of the Group. A similar exercise will be undertaken following completion of audit procedures on the 2022 results and reported on in next year's Annual Report.

Review of the Audit Committee's effectiveness

The Committee has reviewed and considered the effectiveness of its performance during the year. The review included the views of members of the Committee and of regular attendees at the various meetings (including the Executive Directors).

I am satisfied that the degree of rigour and challenge applied in performing the Committee's responsibilities is appropriate and effective.



Chris Morgan
Chair of the Audit Committee

Nomination Committee

The Nomination Committee is appointed by the Board from the Non-Executive Directors of the Company and the Chief Executive Officer. The Chair of the Committee is Andrew Herbert.

The Committee met four times during 2022. When specific issues or changes need to be addressed, such as the appointment of a new Board member, the Committee may meet on additional occasions on the request of any member of the Committee. Please see the tables on page 78 for details of the Committee members in the year and the number of Committee meetings attended.

Responsibilities

The Nomination Committee's main responsibilities, as outlined in its terms of reference, are:

- Reviewing the size, structure, composition and independence of the Board and its Committees
- Identifying and nominating candidates to fill Board vacancies as the need arises
- Ensuring adequate succession planning is in place for Executive Directors, Non-Executive Directors and members of the senior management team
- Making recommendations to the Board on the appointment of new Executive and Non-Executive Directors and their reappointment following retirement by rotation
- Reviewing the results of the annual Board performance evaluation process.

The Committee Chair will not chair the Committee when it deals with the appointment of a successor to that role. The Committee shall review its terms of reference annually and may recommend to the Board any amendments. The terms of reference of the Committee are available on written request from the Company Secretary.

The Nomination Committee's role in the composition, succession and evaluation of the Board is disclosed in the Corporate Governance statement.

Boardroom diversity

The Committee is committed to ensuring that recruitment and promotion of individuals throughout the Group, including those at Board and senior management level, always consider relevant skills, experience, knowledge and ability without gender or ethnicity bias. Succession planning is performed and all appointments are made on merit and suitability against objective selection criteria with due consideration of, amongst other things, the benefits of diversity, including gender and ethnicity. Details of the workforce split by gender are set out on page 35.

The Board approved a Diversity Policy in respect of its membership in February 2023. It is cognisant of the benefits of a rich mix of backgrounds, experience and skills. The present Board is 20% female versus 80% male (one female and four males). The Board has not set any measurable objectives in respect of a diversity quota but appointments made to the Board in the past four years have demonstrated our inclusive approach, which the Nomination Committee expects to maintain for any and all future appointments.

Further disclosure of information in respect of diversity and equal opportunities policies for the Group is in the Sustainable and responsible business report on pages 35 and 36.

Key issues and activities

In 2021 and further to implementation of a new strategy and the good progress made on building an executive management team, the Nomination Committee recommended that the Board be strengthened and that the number of independent Non-Executive Directors be increased to four including the Chair. The process of recruitment was commenced during 2022 but, in support of other cost actions taken elsewhere in the business, the Committee took the decision to defer recruitment to the first quarter of 2023. This action is now in hand as the Board develops succession plans. In making any future appointment the Nomination Committee will consider both diversity and skills mix as a matter of course as we seek to further equip the Board in its role of overseeing future business growth and expansion.

The Committee has considered organisational development and succession planning, Board diversity, and, in association with the Remuneration Committee, has worked alongside executive management in reviewing senior management development.

The Committee has facilitated the review of the annual performance evaluations of the Board and its Committees. For further information with regards to the evaluation, see the Corporate Governance statement. As the Company is not a member of the FTSE 350, it is not required by the 2018 UK Corporate Governance Code to have regular externally facilitated Board evaluations, however the Committee will consider the use of an external evaluator for future annual performance evaluations.

Board appointments

The process adopted by the Committee in respect of any appointment to the Board is, firstly, to identify the specific skills and experience sought and then, secondly, to conduct a search to determine whether any external individuals known to the Committee or internal candidates would be suitable for the role. If no compelling candidates can be identified through this process then an external search consultancy is engaged. Even if a suitable internal candidate exists, an external mapping process may be used.

Members of the Committee and other Executive and Non-Executive Directors interview shortlisted candidates, as the Committee deems appropriate. Upon identifying a suitable candidate, the Chair of the Nomination Committee will recommend to the Board that the Company makes a formal offer of employment to the candidate.

As part of the recruitment process the Committee ensures appropriate disclosure of other demands on Directors' time. The Board of Directors' profiles disclose any external appointments on pages 63. No Executive Directors have a non-executive role, or other significant appointment. All Directors are required to submit themselves for reappointment every year at the AGM.

Review of the Nomination Committee's effectiveness

The Committee has reviewed and considered the effectiveness of its performance during the year. The review included the views of members of the Committee and of regular attendees at the various meetings (including the Executive Directors).

I am satisfied that the degree of rigour and challenge applied in performing the Committee's responsibilities is appropriate and effective.



Andrew Herbert

Chair of the Nomination Committee

27 March 2023

Directors' Remuneration report

Statement from the Chairman of the Remuneration Committee

Dear Shareholder

On behalf of the Board, I am pleased to present the Directors' Remuneration report for 2022, which explains the work of the Committee, how we implemented our Remuneration Policy in 2022, our approach to our new Remuneration Policy, and how we propose to implement our Remuneration Policy in 2023.

Following my statement, there are two sections to this Directors' Remuneration report.

- Our proposed new Directors' Remuneration Policy, for which shareholder approval will be sought at the 2023 AGM. Our current Directors' Remuneration Policy was approved at the 2020 AGM and in line with the usual timetable shareholders will be asked to approve a new policy at the forthcoming AGM.
- The Annual Report on Remuneration sets out how we implemented in 2022 the Directors' Remuneration Policy which was approved at the 2020 AGM. The Annual Report on Remuneration will be the subject of an advisory shareholder vote at the 2023 AGM.

Remuneration in the context of our business performance and our approach to wider workforce remuneration

During the year we have continued to ensure our approach to remuneration is aligned to our strategy and supports the delivery of long-term sustainable performance, to benefit all stakeholders.

Under the leadership of the CEO and CFO, we are making strong progress on our journey to transform the Group, in line with our growth strategy of exploiting the fundamental strength of our bulk piezo inkjet technology. The business is re-energised following a restructuring, rebranding and a new business model, all of which are now delivering results.

We have continued to deliver a strong performance, which despite challenging market conditions, demonstrates the success of our strategy and underlying strength of the business. By way of context, our strong performance includes the following:

- the continued successful implementation of the new strategy with the expansion of a new commercial model and our technological offering to better serve our target markets delivering growth
- Delivery of a solid performance in the year with strong revenue growth, improved margin and a return to profitability
- The mitigation of external challenges including supply chain issues and inflationary pressures
- The successful launch of new products including Aquinox which has demonstrated great interest from customers
- Significant investment in the Company's infrastructure and manufacturing base to drive operational efficiencies and reduce energy costs
- As part of our continued commitment to sustainability, the launch of the Sustainability Roadmap to 2030
- The acquisition and integration into the Group of the Megnajet businesses
- For 2023, we have implemented a tiered pay increase from 1 January 2023 for UK employees ranging from an 8% base salary increase for the most junior employees cascading to 3% for the senior employees
- This ensures that our UK starting base salary rate for production operatives will be above the new National Living Wage which is effective April 2023
- We made a £500 cost of living payment paid in January to all employees (excluding executive team members)
- We have retained an additional budget to address any further inflationary pressures and any further in year increases excluding new and replacement roles and previously agreed promotions.

This performance is a testament to the proactive management and leadership of our CEO, CFO and Board and the commitment of all our people.

The above represents a combined overall budgeted increase for 2023 of circa. 7% (of which 5.39% denotes the UK base salary increase effective 1 January 2023 and £500 cost of living payment). We believe this to be the most equitable and sustainable approach to supporting our team through the current period. As a responsible business, we continue to support our people with the challenges they're facing as a result of the cost-of-living crisis.

Annual bonus and LTIP outturns for the year ended 31 December 2022

2022 Annual bonus

For the financial year ended 31 December 2022, the CEO and CFO were eligible for a maximum annual bonus of up to 125% and 100% of base salary respectively. At the start of the year annual bonus targets were set based on performance against adjusted Group profit before tax (70%) and cash flow improvement (30%).

Reflecting the strong business performance the annual bonus outcomes for the CEO and CFO were 39.51% of maximum (49% of salary and 40% of salary respectively). Full details of the targets and performance achieved can be found on page 97. In line with our Remuneration Policy, 30% of the bonus earned will be deferred in shares and subject to a two-year deferral period, with the balance delivered in cash.

Long-Term Incentive Plan (LTIP) awards vesting in respect of 2022

The following awards granted to the CEO and CFO vest in respect of performance periods ending in the 2022 financial year. These awards are therefore included in the single figure of remuneration details on page 96.

- When the CEO, John Mills, joined the business in 2019, he was granted an LTIP award over 180,328 shares on 3 October 2019. This was a joining award made at the first opportunity following his start date in August, having joined the Board on 26 September 2019. This award was based 50% on adjusted basic EPS for the year ended 31 December 2022 and 50% based on Company's total shareholder return (TSR) relative to the total shareholder return of the companies constituting the FTSE Small Cap Index over the performance period October 2019 to October 2022. Adjusted EPS for the year ended 31 December 2022 was 4.8p therefore this element of the award vested at 97%. Xaar's relative TSR over the performance period was above upper quartile therefore the TSR element vested in full. One third of the vested award can be exercised immediately with one third exercisable from 3 October 2023 and one third from 3 October 2024.

Annual bonus and LTIP outturns for the year ended 31 December 2022 continued

Long-Term Incentive Plan (LTIP) awards vesting in respect of 2022 continued

- Ian Tichias joined the Group as CFO on 1 March 2020. As detailed in the 2020 Remuneration report, he was granted an LTIP award over 50,000 shares on 29 April 2020 to compensate for options forfeited when he left his previous employer. This award was subject to the Company achieving a positive adjusted profit before tax for the year ended 31 December 2022. Adjusted profit before tax for the year ended 31 December 2022 was £2,822,000 therefore this award vested in full. The award can be exercised in full from 29 April 2023.
- As detailed in the 2020 Remuneration report, John Mills and Ian Tichias were also granted 2020 LTIP awards over a fixed number of shares: 365,000 shares and 170,000 shares respectively on 4 June 2020. The 2020 LTIP grants were based 60% on Adjusted EPS for the year ending 31 December 2022 and 40% on relative TSR performance against the companies in the FTSE SmallCap Index measured over the three-year performance period to 31 December 2022. The maximum EPS target was exceeded and Xaar's relative TSR over the performance period was above upper quartile therefore these awards vested in full. In line with the UK Corporate Governance Code, there is a further two-year holding period following the end of the performance period therefore vested awards cannot be exercised until 4 June 2025.

When considering the outturns the Committee has taken a holistic view, including in relation to the employee and wider stakeholder experience, in addition to performance relative to the targets and objectives set. The Committee believes that the outcomes are an appropriate reflection of wider performance and the Committee has not exercised any discretion in relation to remuneration outcomes.

LTIP awards granted in 2022

The 2022 LTIP awards were granted at 150% of base salary for the CEO and 100% of salary for the CFO. 2022 LTIP awards are based on Cumulative Adjusted EPS performance (60% of the award) and relative TSR performance against the companies in the FTSE SmallCap Index (40% of the award). Cumulative Adjusted EPS and relative TSR performance will be measured over a three-year performance period to 31 December 2024. Full details of the targets are set out on page 97. Each award will be subject to a further two-year holding period following the end of the performance period.

Directors' Remuneration Policy

The Committee conducted a thorough review during the year of the Directors' Remuneration Policy which was last approved by shareholders in 2020 with over 99% of votes in favour. As part of the review of the Policy, we consulted with our major shareholders and voting agencies, having regard to feedback received when finalising our proposals. The Committee concluded that the Policy approved by shareholders in 2020 remains largely fit for purpose, supports the strategy of the Group and is aligned with stakeholder interests, and takes into account the requirements of the 2018 Code as far as they relate to remuneration. Therefore, the new Policy only introduces minor changes to the Policy approved in 2020, which are proposed so that the new Policy has sufficient flexibility for the next three-year lifecycle. The full new Policy is set out on pages 85 to 91. The principal changes compared to the Policy approved in 2020 are as follows.

Post-employment shareholding requirement	New policy	Rationale
Maximum annual bonus <ul style="list-style-type: none"> • 125% of salary for the CEO • 100% of salary for any other Executive Director 	No change for the CEO. Maximum annual bonus opportunity for any other Executive Director is increased to 110% of salary.	The current incentive opportunities for the Chief Financial Officer (CFO) are positioned at the lower end of the market when compared to the FTSE SmallCap. Given the CFO's role in supporting the strong performance of the business, the Committee considers it appropriate to introduce this headroom in the new Policy.
Maximum LTIP <ul style="list-style-type: none"> • CEO – 365,000 shares (150% of salary maximum) • Any other Executive Director – 170,000 shares (100% of salary maximum). 	The fixed share limits are removed. There is no change to the 150% of salary maximum for the CEO. The maximum for any other Executive Director is increased to 125% of salary.	For 2023, the additional headroom in the Policy will not be used such that the CFO's maximum annual bonus and LTIP award will each be at the level of 100% of salary. The flexibility introduced with the headroom will enable the Committee to grant higher maximum incentive opportunities if strong business and personal performance continues over the three-year life of the new Policy.
Policy approved in 2020 Under the current Policy, our approach to post-employment shareholding requirements is to apply the 'leaver' provisions in our share plans.	For the first year after cessation, Executive Directors must retain such of their relevant shares as have a value equal to 200% of salary, reducing to 100% of salary in the second year. Relevant shares are those acquired from LTIP and deferred bonus awards granted from 1 January 2023 onwards. The 'leaver' provisions will continue to apply to vested and unvested awards.	We have enhanced the approach having regard to developing market practice. We consider that this 'tapered' approach is a fair balance taking into account the size of the business and the size of LTIP awards that are granted.

Implementation of the Policy in 2023

A summary of our approach to pay increases for the wider workforce for 2023 is set out above.

In last year's report we set out our proposed approach to the Executive Directors' salaries with effect from 1 January 2023, being the second part of a phased two-stage approach to their salary increases. The Committee considered those originally proposed increases in the context of the strong performance of the Company and the Executive Directors as well as the actions being taken to support the wider workforce, as referred to above.

Directors' Remuneration report continued

Implementation of the Policy in 2023 continued

The Committee believes that it is appropriate to recognise our continued strong performance and ambitions in the future, including our return to sustained profitable growth, by implementing the increases as proposed. Therefore, in line with that proposal, the base salaries for the CEO and CFO have been increased as set out below with effect from 1 January 2023. The increases move the CEO and CFO's base salaries towards the mid-point of the market competitive range.

	Salary effective from 1 January 2022	Salary effective from 1 January 2023
CEO – John Mills	£360,000	£390,000
CFO – Ian Tichias	£240,000	£260,000

No other changes are proposed to the Executive Directors' package for 2023.

- Pension/cash in lieu – in line with wider workforce (currently 6% of salary)
- Maximum annual bonus for 2023 is 125% of salary for the CEO and 100% for the CFO. 50% of the maximum bonus can be earned for on-target performance. 30% of any bonus will be deferred in shares and subject to a two-year deferral period. The balance is delivered in cash. Further information in relation to the performance measures is set out on page 97
- Long-term incentive maximum 150% of salary for the CEO and 100% of salary for the CFO. LTIP awards vest after three years subject to the achievement of appropriately stretching performance conditions. A further two-year holding period applies in line with the UK Code. Further information in relation to the performance measures is set out on page 97
- The Committee retains discretion to override formulaic outcomes if these do not reflect underlying Company performance or other circumstances as determined by the Committee. As part of this assessment the Committee will take into account progress against Xaar's Sustainability Roadmap that will push Xaar towards its Net Zero by 2030 goal and our wider ESG commitments.

Looking ahead – key focus areas for the Committee for 2023

During the course of 2023 we will concentrate on the implementation of the new Remuneration Policy and we will consider the extent to which we should enhance the focus on ESG targets in the reward framework.

Board Chair and Non-Executive Directors

Board Chair

In last year's Directors' Remuneration report, we explained that the Board Chair's fee was reduced to £90,000 with effect from 1 January 2020, reflecting the smaller scale and profitability of the business at that time. As we explained last year, we were mindful that the strong performance delivered has required a significant time commitment and contribution from the whole Board and that the successful turnaround of the business has been achieved with a very effective, albeit smaller, Board. Therefore, and as set out last year, consistent with the approach being adopted for the Executive Directors, and reflecting both the time commitment and contribution of the Chairman, the Committee agreed to increase the Chairman's fee on a phased basis. The first stage of the increase to £120,000 took effect from 1 January 2022. We explained last year that subject to the continued performance of the Company, including a return to sustained profitable growth, the second stage of the increase to £130,000 would apply with effect from 1 January 2023. The Committee has confirmed this increase will apply.

Non-Executive Directors

Under delegated authority from the Board, the Executive Directors and the Chair have reviewed fees for the other Non-Executive Directors. The outcome was that the base fee of £47,500 for the Non-Executive Directors' fees is broadly market competitive (positioned around the mid-point). The base fee will be increased by 3%, in line with the lowest rate of increase for the wider workforce for 2023, to £48,925. The additional fee in respect of acting as a Committee Chair or Senior Independent Director will not be increased, remaining at £7,500 and £3,000 respectively.

Employee engagement

As explained in the Annual Report last year, our workforce engagement sessions are held at least three times a year. These include regular business forums with Non-Executive Directors and senior management update calls to all employees. These have provided an upward channel for views, comments and debate, as well as an opportunity to provide positive feedback on the Group's focus on the wellbeing and health and safety of our employees. The Committee also took into account the pay policies across the Group and themes from our workforce engagement activities as part of the development of the new Remuneration Policy.

Shareholder engagement

The Committee consulted with major shareholders and the main proxy voting advisory agencies to outline the proposed changes to the Remuneration Policy and our remuneration proposals for 2023 and invited their feedback. Our major shareholders who provided feedback were very supportive of the proposals and welcomed the Committee's explanation of our approach to supporting our people with the challenges they are facing as a result of the cost-of-living crisis.

We remain committed to a responsible approach to executive pay, as I trust this Directors' Remuneration report demonstrates. We believe that the Policy operated as intended and consider that the remuneration received by the Executive Directors in respect of 2022 was appropriate, taking into account Group and personal performance and the experience of shareholders and employees. On behalf of the Board, I would like to thank you, our shareholders, for your engagement, and I hope that we will continue to receive your support at the forthcoming AGM on 31 May 2023.

Alison Littley

Chairman of the Remuneration Committee

27 March 2023

Directors' Remuneration Policy

Our approach to the new Directors' Remuneration Policy

Introduction

The proposed new Directors' Remuneration Policy is set out below. In the statement from the Committee Chair on pages 102 to 103, the approach to the determination of the new Policy is addressed, along with a summary of the principal changes compared to the Policy approved in 2020.

In determining the new Policy, the Committee had regard to the following key principles.

- We remunerate people in a manner that allows for stability of the business and the opportunity for sustainable long-term growth
- We seek to remunerate fairly and consistently for each role with due regard to our assessment of what is competitive and appropriate according to the size and complexity of the business, the calibre and experience of individuals in each role, internal consistency and the Company's ability to pay
- A significant element of the total package rewards near and longer-term achievements that are clearly linked to performance and Company strategy.

The table below details how the Remuneration Committee addresses the principles set out in the UK Corporate Governance Code in respect of the Directors' Remuneration Policy.

Provision	Approach
<p>Clarity</p> <p>Remuneration arrangements should be transparent and promote effective engagement with shareholders and the workforce.</p>	<p>The Committee engages directly with major shareholders and their representative bodies where it considers there to be material changes to the Policy or our executive remuneration framework to ensure there is transparency on our Policy and its implementation, including in relation to the formulation of the new Policy for which shareholder approval will be sought at the 2023 Annual General Meeting.</p> <p>Employees have a forum where they can raise questions and give feedback about the Remuneration Policy directly to the Non-Executives.</p>
<p>Simplicity</p> <p>Remuneration structure should avoid complexity and its rationale and operation should be easy to understand.</p>	<p>A core reward principle of our Policy is to operate a simple and transparent framework which can be readily cascaded.</p> <p>The remuneration framework is made up of three key elements: fixed pay (including base salary, retirement and benefits); annual bonus; and a separate long-term incentive.</p> <p>The structure is simple to understand for both participants and shareholders, and is aligned to the strategic priorities for the business.</p>
<p>Risk</p> <p>Remuneration structures should identify and mitigate against reputational and other risks from excessive rewards, as well as behavioural risks that can arise from target-based incentive plans.</p>	<p>Annual bonus and LTIP targets are set at levels which reward high performance, but which do not encourage inappropriate business risk.</p> <p>Both the annual bonus and LTIP are subject to malus and clawback provisions. This allows the Committee to have appropriate regard to risk considerations.</p> <p>Annual bonus deferral and the application of the two-year holding period to awards under the LTIP provide longer-term alignment with shareholders' interests.</p> <p>The Committee also has discretion to override formulaic outcomes, which may not accurately reflect the underlying performance of the Group.</p>
<p>Predictability</p> <p>The range of possible values of rewards to individual Directors and any other limits or discretions should be identified and explained at the time of approving the Policy.</p>	<p>The range of possible pay awards available to Executive Directors under the new Policy are clearly set out in the new Policy on page 85.</p>
<p>Proportionality</p> <p>The link between individual awards, the delivery of strategy and the long-term performance of the Group should be clear and outcomes should not reward poor performance.</p>	<p>We believe total remuneration should fairly reflect performance of the Executive Directors and the Group as a whole, taking into account underlying performance and shareholder experience.</p> <p>The Committee considers the approach to wider workforce pay and policies when determining the Directors' Remuneration Policy to ensure that it is appropriate in this context</p>
<p>Alignment with culture</p> <p>Incentive schemes should drive behaviours consistent with the Company's purpose, values and strategy.</p>	<p>The Board is focused on ensuring a healthy culture exists across the entire Group which supports our focus on delivery of commitments, innovation, continuous improvement and being open and transparent. We believe that the Executive Directors and wider management team set the standards for behaviour and conduct across the Group.</p> <p>Our incentive schemes are aligned with our strategy to return to sustainable long-term growth and profitability.</p>

This part of the report sets out the Company's Directors' Remuneration Policy, for which approval will be sought at the 2023 AGM. The Policy is determined by the Remuneration Committee (the 'Committee'). The Directors' Remuneration Policy is not audited.

Policy table for Executive Directors

The table below describes each of the elements of the remuneration package for the Executive Directors.

Base salary	
Objective	Core element of fixed remuneration that provides the basis to recruit and retain talent necessary to deliver the business strategy.
Operation	<p>Normally reviewed annually and any increases generally apply from 1 January (but may be reviewed more frequently if required).</p> <p>When determining base salary levels, consideration is given to the following:</p> <ul style="list-style-type: none"> • Role, responsibility and experience of the individual • Corporate and individual performance • Market conditions including typical pay levels for comparable roles in companies of a similar size and complexity • The range of salary increases awarded across the Group.
Opportunity	<p>No maximum salary opportunity has been set out in this policy report to avoid setting expectations for Executive Directors and employees.</p> <p>Whilst there is no maximum, increases will normally be within or below the range of salary increases awarded (in percentage of salary terms) to other employees in the Group. However, higher increases may be awarded in appropriate circumstances, such as:</p> <ul style="list-style-type: none"> • on promotion or in the event of an increase in scope of the role or the individual's responsibilities; • where an individual has been appointed to the Board at a salary set at a level that is lower than the Committee's view of a market salary to allow for growth in the role, in which case larger increases may be awarded to move salary positioning to a market level as the individual gains experience; • change in size and/or complexity of the Group; and/or • significant market movement. <p>Such increases may be implemented over such time period as the Committee deems appropriate.</p> <p>The base salaries effective as at 1 January 2023 are shown on page 86.</p>
Performance measures	Not applicable.
Benefits	
Objective	<p>Provide a market-competitive benefits package to recruit and retain Directors of the calibre required for the business.</p> <p>Participation in the Company's Share Incentive Plan (SIP) and Share Save Scheme (SAYE) encourages share ownership and alignment with the wider workforce.</p>
Operation	<p>Executive Directors receive base benefits including car allowance, private medical insurance, and basic levels of other insurances (such as income protection cover).</p> <p>All UK staff, including Executive Directors, are also provided with a benefit allowance which they can apply to a range of benefits, including pension contributions. In some circumstances, and subject to Committee approval, the allowance may be paid in cash rather than utilised to purchase benefits.</p> <p>The SIP and SAYE are tax qualifying share plans for all employees facilitating the acquisition of shares in the Company at a discount.</p> <p>Other benefits may be provided based on individual circumstances, such as, but not limited to: housing or relocation allowances, travel allowance or other expatriate benefits.</p>
Opportunity	<p>Whilst the Committee has not set an absolute maximum on the level of benefits Executive Directors receive, the value of benefits is set at a level which the Committee considers to be appropriately positioned taking into account relevant market levels based on the nature and location of the role and individual circumstances.</p> <p>The flexible benefits allowance is currently up to 5% of base salary. The Committee may review and amend this rate as appropriate.</p> <p>Individuals have the choice to invest all or part of this amount in their pension scheme, in addition to the benefits outlined in the 'Retirement benefits' section of this table.</p> <p>SAYE and SIP limits as permitted in accordance with the relevant tax legislation.</p>
Performance measures	Not applicable.

Policy table for Executive Directors continued

Retirement benefits	
Objective	Provide market competitive post-employment benefits to recruit and retain Directors of the calibre required for the business.
Operation	Executive Directors are eligible to participate in the defined contribution pension scheme (or such other pension plan as may be deemed appropriate). In appropriate circumstances, Executive Directors may take a salary supplement instead of some or all of the contributions into a pension plan.
Opportunity	6% of base salary subject to any increase to reflect increases in the pension opportunity for the wider workforce.
Performance measures	Not applicable.
Annual bonus	
Objective	Rewards performance against annual targets which support the strategic direction of the Company.
Operation	Targets are set annually and any pay-out is determined by the Committee after the period-end, based on performance against those targets. The Committee has discretion to vary the bonus pay-out should any formulaic output not produce a fair result for either the Executive Director or the Company, taking account of the Committee's assessment of overall business performance or be inappropriate in the context of circumstances that were unexpected or unforeseen at the start of the bonus year, or in the event of other circumstances determined by the Committee. 30% of any bonus will ordinarily be deferred in shares and subject to a two-year deferral period with the balance delivered in cash. However, if the amount to be deferred would be below £5,000, the Committee has discretion to pay the whole amount of the bonus in cash. On the exercise of a deferred bonus award, the Committee has the discretion to decide that Executives can receive additional shares to reflect the dividends paid or payable on the award shares over the period ending on vesting of the award. This amount may assume the reinvestment of dividends (on such basis as the Committee determines).
Opportunity	Overall maximum annual bonus is 125% of salary for the Chief Executive Officer and 110% for any other Executive Director. For 2023, the annual bonus opportunity for the CFO will be capped at 100% of salary.
Performance measures	Stretching performance targets are set each year reflecting the business priorities that underpin Group strategy. Performance may be based on operational targets (which may be financial or strategic measures) and/or individual objectives. The majority of the annual bonus opportunity will be based on financial measures. Subject to the Committee's discretion to override formulaic outturns, for financial measures, normally up to 20% of the maximum for any financial element is earned for threshold performance, normally rising to up to 50% of the maximum for any financial element for on target performance and 100% of the maximum for the financial element for maximum performance. Subject to the Committee's discretion to override formulaic outturns, vesting of the bonus in respect of strategic measures or individual objectives will be between 0% and 100% based on the Committee's assessment of the extent to which the relevant metric or objective has been met.

Policy table for Executive Directors continued

Long-Term Incentive Plan continued	
Objective	<p>Drive and reward the achievement of longer-term objectives aligned closely to shareholders' interests.</p> <p>Support longer-term sustainable profitability.</p> <p>Provide alignment with shareholders' interests.</p> <p>Support retention and promote share ownership.</p>
Operation	<p>LTIP awards take the form of performance shares (zero priced share options) which vest subject to satisfaction of performance conditions, ordinarily assessed over a period of three years. Following the end of the performance period, there is a further two-year holding period which may be operated on the basis that either (1) the Executive Director can acquire shares following the end of the performance period but that other than as regards sales to cover tax, may not sell shares until the end of the holding period; or (2) the Executive Director may not acquire shares until the end of the holding period.</p> <p>On the vesting/exercise of an LTIP award, the Committee has the discretion to decide that Executives can receive additional shares to reflect the dividends paid or payable on vested shares between the date of grant and the date on which the vested shares can first be acquired.</p> <p>The Committee has discretion to vary the vesting outturn should any formulaic output not produce a fair result for either the Executive Director or the Company, taking account of the Committee's assessment of overall business performance or be inappropriate in the context of circumstances that were unexpected or unforeseen at grant, or in the event of other circumstances determined by the Committee.</p> <p>The Committee may at its discretion structure awards as Approved Long-Term Incentive Plan (ALTIP) awards. ALTIP awards enable the participant and Company to benefit from tax qualifying tax treatment in respect of part of the award, without increasing the pre-tax value delivered to participants. ALTIP awards may be structured either as a tax qualifying option for the part of the award up to the applicable limit in the tax legislation with a non-qualifying option for the balance and a 'linked award' to fund the exercise price of the tax qualifying option, or as a tax qualifying option and an LTIP award, with the vesting of the LTIP award scaled back to take account of any gain made on the exercise of the tax-qualifying option. Other than to enable the grant of ALTIP awards, the Company will not grant awards to Executive Directors under the Executive Share Option Plan.</p>
Opportunity	<p>The maximum award in respect of any year will be:</p> <ul style="list-style-type: none"> • as regards the Chief Executive Officer, an award over shares with a value of 150% of salary; and • as regards any other Executive Director an award over shares with a value of 125% of salary. <p>For 2023, the LTIP award for the CFO will be capped at 100% of salary.</p> <p>These limits do not include the value of shares subject to any tax-qualifying option granted as part of an LTIP award.</p>
Performance measures	<p>Performance will be based on operational targets (which may be financial or strategic measures). Ordinarily at least 75% of the LTIP will be based on financial measures.</p> <p>Subject to the Committee's discretion to override formulaic outturns, up to 25% of the maximum for any element is earned for threshold performance.</p>

Shareholding guideline

In-service guideline

To align the interests of Executive Directors with those of shareholders, the Committee has adopted formal shareholding guidelines in accordance with which Executive Directors are required to build and maintain a shareholding with a value of at least 2x salary. Executive Directors are required to retain half of the after tax number of shares they acquire pursuant to the LTIP or deferred bonus until this level of holding is achieved.

Post-employment requirement

The Committee has adopted a post-employment shareholding requirement. Shares are subject to this requirement only if they are acquired from share plan awards (LTIPs and deferred bonus awards) granted after 1 January 2023.

Following employment, an Executive Director must retain:

- for the first year after employment, such of their shares which are subject to the post-employment requirement as have a value for these purposes equal to the shareholding guideline that applies during employment; and
- for the second year after employment, such of those shares as have a value for these purposes equal to 50% of the shareholding guideline that applies during employment
- or in either case and if fewer, all of those shares.

The Committee retains discretion to vary the application of the in-service guidelines and/or the post-employment requirement in exceptional circumstances.

Malus, clawback and underpin provisions

The Committee has the right to:

- Reduce any LTIP awards which have not yet vested or annual bonus opportunity (i.e. a malus provision); and
- Recover any vested LTIP awards, paid cash bonuses or deferred bonus awards (i.e. a clawback provision).

Malus and clawback provisions may be applied in the event of: (1) a material misstatement of the Company's financial results; (2) a material loss for the Company, any Group member or a relevant business unit; (3) reputational damage to the Company, any Group member or a relevant business unit; (4) corporate failure in any Group member or a relevant business unit; (5) serious misconduct on the part of the participant; and (6) an error in assessing any performance condition.

Clawback may ordinarily be applied until the second anniversary of vesting in the case of an LTIP award, until the normal vesting date in the case of a deferred bonus award and until the second anniversary of payment in the case of a cash bonus.

Operation of share plans

The Committee may amend the terms of awards and options under its share plans in accordance with the plan rules in the event of a variation of the Company's share capital or a demerger, special dividend or other similar event or otherwise in accordance with the rules of those plans. Awards may be settled, in whole or in part, in cash, although the Committee would only settle an Executive Directors' award in cash in appropriate circumstances, such as where there is a regulatory restriction on the delivery of shares, or in respect of any tax liability arising in respect of an award.

Awards under the Company's share plans may vest in the event of a change of control (or other relevant event) as follows:

- unvested awards under the LTIP will be released to the extent determined by the Committee taking into account the relevant performance conditions (and the Committee may vary the weightings of the applicable performance measures) and, unless the Committee determines otherwise, the extent of vesting so determined shall be reduced to reflect the proportion of the vesting period that has elapsed;
- vested awards under the LTIP which remain subject to a holding period will be released to the extent they vested;
- deferred bonus awards will vest in full;
- SAYE and SIP awards will vest to the extent determined in accordance with the rules of the relevant plan, to the same extent as for all other participants.

Chairman and Non-Executive Directors

The table below sets out an overview of the remuneration of Non-Executive Directors:

Alignment with strategy/purpose	Approach of the Company
<p>Chairman and Non-Executive Directors' fees</p> <p>Provide an appropriate reward to attract and retain Directors of the calibre required for the business.</p>	<p>The remuneration of the Chairman of the Board is set by the Committee. Fees are set at a level which reflects the skills, knowledge, and experience of the individual, whilst taking into account appropriate market data.</p> <p>The Chairman and the Chief Executive Officer are responsible for deciding Non-Executive Directors' fees. Fees are set taking into account several factors, including the size and complexity of the business, fees paid to Non-Executive Directors of UK listed companies of a similar size and complexity, and the expected time commitment and contribution for the role. Fees include a base fee plus additional fees for holding the Chairmanship of a Board Committee or the office of Senior Independent Director. Additional fees may be paid to reflect additional roles and/or time commitments.</p> <p>The fees may be paid wholly or partly in cash or Company shares. Overall fees paid to Directors will remain within any applicable limit as referred to in our Articles of Association.</p> <p>Non-Executive Directors do not participate in any incentive scheme.</p> <p>Directors may be eligible to receive benefits such as the use of secretarial support, travel costs or other benefits that may be appropriate. Reimbursed expenses may include a gross-up to reflect any tax or social security due in respect of the reimbursement.</p>

Explanation of performance metrics chosen

Performance measures for the LTIP and annual bonus are selected to reflect the Group's strategy. Stretching performance targets are set each year by the Committee taking into account a number of different factors.

Annual Bonus

For 2023 the measures will be based on profit and cash generated from operations. This incentivises Executive Directors to focus on delivering the key financial goals of the Company. These targets therefore ensure that the interests of the Executive Directors are aligned with those of the shareholders.

LTIP

For 2023, LTIP performance measures will be based on EPS and TSR, which are considered to be the key measure of success of the execution of our long-term strategy.

The Committee retains the discretion to adjust the performance targets and measures for the annual bonus and/or the LTIP where it considers it appropriate to do so (for example, to reflect changes in the structure of the business and to assess performance on a fair and consistent basis from year to year).

Pay policy for other employees

The Company values its wider workforce and aims to provide a remuneration package that is market competitive, complies with any statutory requirements, and is applied fairly and equitably across the wider employee population. Where remuneration is not determined by statutory regulation, the key principles of the compensation philosophy are as follows:

- We remunerate people in a manner that allows for stability of the business and the opportunity for sustainable long-term growth
- We seek to remunerate fairly and consistently for each role with due regard to the marketplace, internal consistency and the Company's ability to pay
- The Company operates a tax qualifying SAYE and invites all employees to participate, therefore encouraging wider workforce share ownership.

Illustrations of application of Remuneration Policy

The charts set out below give an illustration of the Remuneration Policy, in line with the policy above and include base salary, pension, benefits and incentives in four different scenarios. The charts provide an illustration of the proportion of total remuneration made up of each component of the policy and the value of each component.

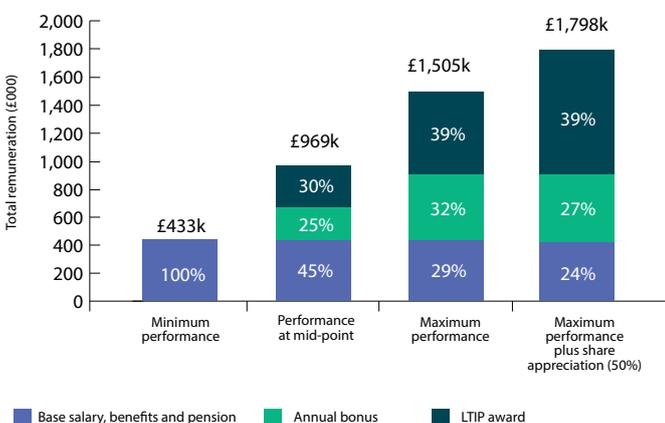
For these purposes:

- base salary reflects the salary at 1 January 2023. Bonus is based on those salaries;
- benefits are calculated as 5% of that salary for each of the Chief Executive Officer and Chief Financial Officer;
- pension is calculated as 6% of that salary for each of the Chief Executive Officer and Chief Financial Officer; and
- variable pay assumes a bonus opportunity of 125% of salary for the Chief Executive Officer and 100% of salary for the Chief Financial Officer and an LTIP award of 150% of salary for the Chief Executive Officer and 100% of salary for the Chief Financial Officer, with vesting as set out below.

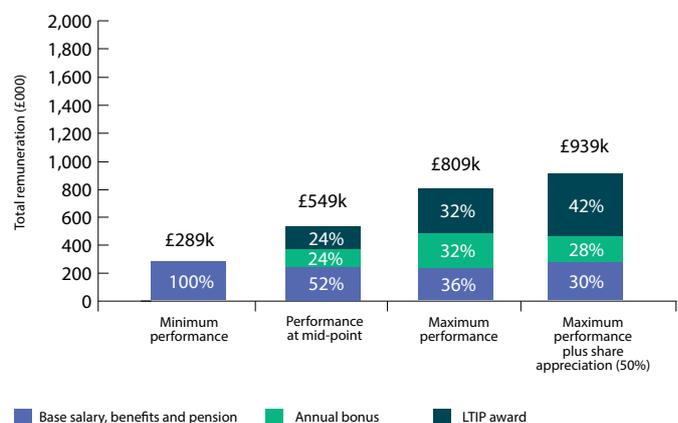
Four scenarios have been illustrated for each Executive Director

Minimum performance	<ul style="list-style-type: none"> • Salary, benefits and pension as set out above • No bonus pay-out • No vesting under the LTIP.
Performance at mid point	<ul style="list-style-type: none"> • Salary, benefits and pension as set out above • 62.5% of salary pay-out under the annual bonus for the CEO, 50% for the CFO • 50% of shares vesting under the LTIP (75% of salary for the CEO, 50% of salary for the CFO).
Maximum performance	<ul style="list-style-type: none"> • Salary, benefits and pension as set out above • 125% of salary pay-out under the annual bonus for the CEO, 100% for the CFO • 100% of shares vesting under the LTIP (150% of salary for the CEO, 100% of salary for the CFO).
Maximum performance plus share appreciation (50%)	<ul style="list-style-type: none"> • Salary, benefits and pension as set out above • 125% of salary pay-out under the annual bonus for the CEO, 100% for the CFO • 100% of shares vesting under the LTIP (150% of salary for the CEO, 100% of salary for the CFO), and an assumed 50% increase in the share price for the purposes of the LTIP element.

John Mills



Ian Tichias



Approach to recruitment remuneration

When appointing a new Executive Director, whether with an internal or external candidate, the Committee will typically seek to use the policy detailed in the table on pages 88 to 90 to determine the Executive Director's ongoing remuneration package.

To facilitate the appointment of candidates of the appropriate calibre required to implement the Group's strategy, the Committee also retains the discretion to include any other remuneration component or award which is outside the policy. The Committee will not use this discretion to make a non-performance related incentive payment (for example, a 'golden hello'). In determining appropriate remuneration, the Committee will take into consideration all relevant factors (including the quantum and nature of remuneration) to ensure that the arrangements are in the best interests of the Company and its shareholders. This may, for example, include (but is not limited to) the following circumstances:

- An interim appointment being made to fill an Executive Director role on a short-term basis
- Exceptional circumstances require that the Chairman or a Non-Executive Director takes on an Executive function on a short-term basis
- An Executive Director is recruited at a time in the year when it would be inappropriate to provide a bonus or long-term incentive award for that year as there would not be sufficient time to assess performance. The quantum in respect of the months employed during the year may be transferred to the subsequent year so that reward is provided on a fair and appropriate basis
- The Executive received benefits at his previous employer which the Committee considers it appropriate to offer
- If the Director will be required to relocate in order to take up the position, it is the Company's policy to allow reasonable relocation, travel and subsistence payments. Any such payments will be at the discretion of the Committee.

The Committee may also alter the performance measures, performance period, vesting period and holding period of the annual bonus or long-term incentive, subject to the rules of the scheme, if the Committee determines that the circumstances of the recruitment merit such alteration. The rationale will be clearly explained.

In determining appropriate remuneration arrangements on hiring a new Executive Director, the Committee will take into account relevant factors such as the calibre of the individual, local market practice, the existing remuneration arrangements for other Executives and the business circumstances. It will seek to ensure that arrangements are in the best interests of both the Company and its shareholders and not seek to pay more than is appropriate.

The Committee may make an award or payment to 'buy-out' remuneration arrangements forfeited on leaving a previous employer. In doing so the Committee will take account of relevant factors regarding the forfeited arrangements which may include the form of any forfeited awards (e.g. cash or shares), any performance conditions attached to these awards (and the likelihood of meeting those conditions), and the time over which they would have vested. It will generally seek to structure buy-out awards and payments on a comparable basis to remuneration arrangements forfeited. These awards or payments are excluded from the maximum level of variable pay referred to below; however, the Committee's intention is that the value awarded or paid would be no higher than the expected value of the forfeited arrangements.

Appropriate costs and support will be covered if the recruitment requires the relocation of the individual. All buy-out awards and payments will normally be liable to forfeiture or 'clawback' on early departure. For Executive Directors, early departure is typically defined as being within the first two years of employment although the Committee has the ability to amend this definition in appropriate circumstances.

The maximum level of variable pay which may be awarded to new Executive Directors, excluding buy-out arrangements, would normally be in line with the maximum level of variable pay that may be awarded under the annual bonus plan and LTIP, but in any event the Committee would not make awards of variable pay in respect of any year above:

- In the case of the CEO – a bonus of 125% of salary and an LTIP award of 150% of salary; and
- In the case of any other Executive Director – a bonus of 125% of salary and an LTIP award of 125% of salary.

The Committee may determine that such awards will be forfeited if performance or continued employment conditions are not met and it is deemed appropriate to do so.

Any share awards referred to in this section will be granted as far as possible under the Company's existing share plans. If necessary, and subject to the limits referred to above, in order to facilitate the awards mentioned above, the Committee may rely on exemption 9.4.2. of the Listing Rules which allows for the grant of awards to facilitate, in exceptional circumstances, the recruitment of a Director.

Where a position is fulfilled internally, any ongoing remuneration obligations or outstanding variable pay elements shall be allowed to continue according to the original terms.

Fees payable to a newly-appointed Chairman or Non-Executive Director will be in line with the fee policy in place at the time of appointment.

Directors' Remuneration report continued

Service contracts

Executive Directors

It is the Group's policy that Executive Directors should have contracts with an indefinite term, providing for one year's notice.

	Date of contract	Date of appointment	Notice from the Company	Notice from Director
John Mills	31 May 2019	1 August 2019	12 months	12 months
Ian Tichias	26 November 2019	1 March 2020	12 months	12 months

Non-Executive Directors

All Non-Executive Directors are appointed for an initial three-year term with provision for two further three-year terms, subject to satisfactory performance.

	Date of letter of appointment ¹	Date of appointment	Remaining term of contract on 31 December 2022
Andrew Herbert	15 April 2016	1 June 2016	29 months
Alison Littlely	22 April 2020	1 May 2020	76 months
Chris Morgan	2 December 2015	4 January 2016	24 months

¹ The dates above refer to the dates of the latest service agreements for each of the Non-Executive Directors.

All Directors offer themselves for annual re-election at each AGM in accordance with the UK Corporate Governance Code 2018.

Letters of appointment are available for inspection at the registered office address of the Company.

Payments for loss of office

The principles on which the determination of payments for loss of office will be approached is set out below. Where the Committee retains discretion, as outlined below, it will be used to provide flexibility in certain situations, taking into account the particular circumstance of the Director's departure.

Notice period on termination by employing company	12 months. The Committee has the discretion to determine what proportion of the notice period will be utilised in active service.
Termination payment	<p>Payments in lieu of notice are limited to no more than one year's salary plus benefits in kind (including company car or car allowance and private health insurance) and pension contributions (which may include salary supplements).</p> <p>Benefits provided in connection with termination of employment may also include, but are not limited to, outplacement and legal fees and payments in respect of accrued but untaken holiday.</p>

Leaver provisions

	Reason for cessation	Calculation of vesting/payment	Timing
Annual bonus	Termination with cause.	No bonus paid.	Not applicable.
	Resignation.	No bonus is paid unless the Committee in its absolute discretion (and on a case-by-case basis) determines otherwise. Any bonus paid will typically be pro-rated to reflect time served in the performance period.	If a bonus is paid, it is paid at the usual time including with deferral applied in accordance with the Company's usual arrangements.
	Redundancy, disability, illness, injury, death or any other reason as determined by the Committee.	Typically bonus amounts will be determined by reference to the applicable performance targets, pro-rated for time served in the performance period.	<p>The bonus will normally be paid at the usual time including with deferral applied in accordance with the Company's usual arrangements.</p> <p>The Committee retains discretion to pay the bonus early (and to assess performance accordingly) and to pay the full bonus in cash in compassionate circumstances.</p>
Deferred bonus shares	Termination with cause.	Shares forfeited.	Not applicable.
	All other reasons.	Award retained.	<p>Ordinarily, the deferred bonus shares will vest following the end of the originally anticipated deferral period.</p> <p>The Committee has discretion to permit early vesting.</p>

Leaver provisions continued

	Reason for cessation	Calculation of vesting/payment	Timing
LTIP	Termination with cause.	Lapse.	Not applicable.
	Resignation before vesting.	Normally lapse but with Committee discretion to determine otherwise; if the award continues, its vesting will be subject to the satisfaction of the applicable performance condition and a pro-rata reduction to reflect the proportion of period worked during the vesting period. The Committee can decide not to pro rate.	If an award is retained, it will vest at the usual time and the post-vesting holding period will continue to apply.
	Redundancy, disability, illness, injury, death or any other reason as determined by the Committee.	Performance condition applies (with early assessment if applicable) and vesting then pro-rated to proportion of period worked during vesting period. The Committee can decide not to pro rate.	The award will ordinarily vest at the usual time. The post-vesting holding period will continue to apply other than in the case of death, ill-health, injury or disability, when it will cease to apply unless the Committee decides otherwise. The Committee retains discretion to vest the award before the usual vesting date (and to assess performance accordingly) and/or to disapply the post-vesting holding period in circumstances where the default would be for it to apply.
	Leaving during the holding period.	If employment is terminated for cause, the award is forfeit. If employment terminates in any other circumstances, the award is retained to the extent vested.	The post-vesting holding period will continue to apply unless the Committee determines otherwise (other than in the case of death, ill-health, injury or disability, when it will cease to apply unless the Committee decides otherwise).
SIP and SAYE	Governed by the plan rules which reflect the applicable legislation and which cover certain leaver provisions.		

Non-Executive Directors

Under the terms of their engagement, the notice period to be given by the Non-Executive Directors on the Company is six months and the Company is obliged to give the same length of notice. Discretion is retained to terminate with or without due notice or paying any payment in lieu of notice dependent on what is considered to be in the best interests of the Company in the particular circumstances.

Statement of consideration of employment conditions elsewhere in the Company

Salary, benefits and performance related reward provided to employees is taken into account when setting policy for Executive Directors' remuneration (although employees are not formally consulted in relation to the setting of the policy). This includes consideration of:

- Salary increases for the general employee population
- Company-wide benefit (including pension) offerings
- Overall spend and participation levels in the annual bonus and LTIP
- Relevant ad-hoc information.

Existing contractual arrangements

The Committee reserves the right to make any remuneration payments and payments for loss of office notwithstanding that they are not in line with the policy set out above where the terms of the payment were agreed:

- before the policy came into effect (provided that, in the case of any payments agreed on or after 14 May 2014 they are in line with any applicable shareholder approved Directors' Remuneration Policy in force at the time they were agreed or were otherwise approved by shareholders), or
- at a time when the relevant individual was not a Director of the Company (or other person to whom the Policy set out above applies) and, in the opinion of the Committee, the payment was not in consideration for the individual becoming a Director of the Company (or such other person).

For these purposes 'payments' includes the Committee satisfying awards of variable remuneration and, in relation to an award over shares, the terms of the payment are 'agreed' at the time the award is granted.

Statement of consideration of shareholder views

In the interests of ensuring ongoing and transparent dialogue with shareholders, the Committee consulted major shareholders over its base salaries and proposed new three-year policy outlined in this report.

Annual Report on Remuneration

This part of the report sets out the actual payments made by the Company to its Directors with respect to the year ended 31 December 2022.

The information provided in this part of the Directors' Remuneration report is subject to audit.

Directors' Remuneration report continued

Single figure table

The aggregate remuneration provided to Directors who have served as Directors in the year ended 31 December 2022 is set out below, along with the aggregate remuneration provided to such Directors for the financial year ended 31 December 2021.

Year ended 31 December 2022

	Salary/fees ^(a) £'000	Benefits ^(b) £'000	Bonus ^(c) £'000	Long-term incentives ^(f) £'000	Pension ^(f) £'000	Total remuneration £'000	Total fixed remuneration £'000	Total variable remuneration £'000
Executive								
John Mills	360	31	178	988	22	1,579	413	1,166
Ian Tichias	240	24	95	405	14	778	278	500
Non-Executive								
Andrew Herbert (Chairman)	120	-	-	-	-	120	120	-
Alison Littlely	58	-	-	-	-	58	58	-
Chris Morgan	55	-	-	-	-	55	55	-

Year ended 31 December 2021

	Salary/fees ^(a) £'000	Benefits ^(b) £'000	Bonus ^(c) £'000	Reduction ^(d) £'000	Long-term incentives ^(f) £'000	Pension ^(f) £'000	Total remuneration £'000	Total fixed remuneration £'000	Total variable remuneration £'000
Executive									
John Mills	315	28	103	(11)	-	19	454	362	92
Ian Tichias	221	23	58	(5)	7	13	317	257	60
Non-Executive									
Andrew Herbert (Chairman)	92	-	-	-	-	-	92	92	-
Alison Littlely	50	-	-	-	-	-	50	50	-
Chris Morgan	50	-	-	-	-	-	50	50	-

The figures in the single figure table above are derived from the following:

(a) Salary/fees	The amount of base salary/fees received in the year.
(b) Benefits	This is the taxable value of benefits and the flexible benefits allowance received in the year. This includes any relocation allowance claimed in 2021.
(c) Bonus	The value of the bonus earned in respect of the year. 30% of the bonus earned will be deferred in shares and subject to a two-year deferral period with the balance delivered in cash.
(d) Reduction	In line with the reporting regulations, the reduction of the bonus reported for the year ended 31 December 2020 is included in the 2021 single figure table, as described in the 2021 Directors' Remuneration report.
(e) Long-term incentives	The value of LTIP awards vesting is in respect of performance periods which ended in the relevant year. The value of SAYE options granted is based on the fair value of the options/shares at grant.
(f) Pension	The value of the employer contribution to the defined contribution pension plan in the UK (or the value of a salary supplement paid in lieu of a contribution to this pension plan).

Individual elements of remuneration

Base salary and fees

The CEO's salary was increased to £360,000 from 1 January 2022 and the CFO's salary was increased to £240,000 from 1 January 2022.

Benefits

UK benefits principally comprise a car allowance, private medical insurance and basic levels of other insurances (such as income protection cover). In addition, UK Executive Directors are provided with an allowance of 5% of base salary which they can apply to a range of benefits such as life insurance and critical illness insurance.

Pension

The Company operates a self-administered, defined contribution, HMRC approved pension scheme. UK Executive Directors participate in this scheme. In appropriate circumstances, Executive Directors may take a salary supplement instead of contributions into a pension plan. This salary supplement does not form part of salary for the purposes of calculating any other entitlement under the policy. Non-Executive Directors do not receive pension contributions.

Individual elements of remuneration continued

Annual bonus

For the financial year ended 31 December 2022, the CEO and CFO were eligible for a maximum annual bonus of up to 125% of base salary and 100% of base salary respectively. Annual bonus targets were set based on performance against adjusted Group profit before tax pre bonus (70%) and cash flow improvement (30%).

	Weighting	Threshold (0% of maximum vests)	Target (50% of maximum vests)	Maximum (100% vesting)	Actual	% of maximum vesting
Adjusted Group PBT (pre bonus)	70%	1,652	3,073	5,951	3,443	56.44%
Cash flow from operations	30%	3,570	6,344	9,119	(5,438)	0%
Overall outturn	100%					39.51%

The bonus outturns for 2022 are detailed in the table below.

	% of maximum opportunity vesting	% of salary	Total	Cash	Deferred shares*
John Mills	39.51%	49%	£178k	£124k	£53k
Ian Tichias	39.51%	40%	£95k	£66k	£28k

* 30% of the bonus earned will be deferred in shares and subject to a two-year deferral period with the balance delivered in cash.

Long-term incentives vesting in respect of 2022

As explained in the statement from the Chairman of the Committee, joining awards granted to John Mills and Ian Tichias in 2019 and 2020 respectively and 2020 LTIP awards each vested by reference to performance over the period ending 31 December 2022. In line with the applicable regulations, the estimated vesting value of those awards is included in the 2022 single total figure of remuneration. Details of the performance measures, the outturns against them, and the basis of the calculation of the values included in the single total figure of remuneration are set out below.

When considering the outturns the Committee has taken a holistic view, including in relation to the employee and wider stakeholder experience, in addition to performance relative to the targets and objectives set. The Committee believes that the outcomes are an appropriate reflection of wider performance and the Committee has not exercised any discretion in relation to remuneration outcomes. In particular, the Committee considered the current share price relative to the share prices when the awards were granted and took into account the quantum of the awards granted (including that the 2020 LTIP grants were capped as fixed numbers of shares with face values equating to circa 72% of salary and 48% of salary for the CEO and CFO respectively). The Committee noted the growth in the share price over the relevant periods reflected the strong performance of the business and could not be considered to be delivering a 'windfall gain'.

Award	Performance condition ¹	Threshold vesting (25%)	Maximum vesting	Performance outturn	Vesting percentage	Shares under award	Vested shares
John Mills' joining award	TSR (50% weighting) ¹	Median	Upper quartile	Above upper quartile	100%	90,164	90,164
	EPS (50% weighting)	2022 adjusted basic EPS more than 0 pence	2022 adjusted basic EPS 5 pence	4.8 pence	97%	90,164	87,459
Ian Tichias' joining award	Adjusted PBT (100% weighting)	N/A	Positive adjusted profit before tax for the year ended 31 December 2022.	Pass	100%	50,000	50,000
2020 LTIP award	TSR (40% weighting)	Median	Upper quartile	Above upper quartile	100%	146,000 (John Mills)	146,000 (John Mills)
	EPS (60% weighting)					68,000 (Ian Tichias)	68,000 (Ian Tichias)
		2022 adjusted basic EPS more than 0.1 pence	2022 adjusted basic EPS 2.4 pence	4.8 pence	100%	219,000 (John Mills)	219,000 (John Mills)
						102,000 (Ian Tichias)	102,000 (Ian Tichias)

¹ Total shareholder return relative to the TSR of the companies constituting the FTSE SmallCap Index over the three-year performance period – October 2019 to October 2022 in the case of John Mills' joining award and 1 January 2020 to 31 December 2022 in the case of the 2020 LTIP award.

² Due to a typographical error, in the 2019 Directors' Remuneration report, the performance period for this award was wrongly stated to be 1 January 2019 – 31 December 2021. The correct performance condition and performance period is summarised above.

Directors' Remuneration report continued

Individual elements of remuneration continued

Long-term incentives vesting in respect of 2022 continued

In the 2022 single total figure of remuneration, the value of these awards is calculated as follows.

Award	Vested shares	Value of vested shares ¹	Value of vested shares attributable to share price at grant of award ²	Value of vested shares attributable to growth in shares price ³
John Mills' joining award	177,623	£323,273	£80,286	£242,988
Ian Tichias' joining award	50,000	£91,000	£20,500	£70,500
John Mills' 2020 LTIP award	365,000	£664,300	£215,350	£448,950
Ian Tichias' 2020 LTIP award	170,000	£309,400	£100,300	£209,100

1 In accordance with the applicable regulations, this is calculated by reference to the average share price over October, November and December 2022 being £1.82.

2 This is calculated by reference to the share price at the date of grant being £0.452 in the case of John Mills' joining award, £0.41 in the case of Ian Tichias' joining award, and £0.59 in the case of the 2020 LTIP award.

3 This is calculated by reference to the difference between the price at the date of grant and the average share price over October, November and December 2022.

Long-term incentives and deferred bonuses awarded during the financial year

The table below outlines awards made under the LTIP to Executive Directors in 2022:

	Award basis	Performance condition	Number of shares	Face value of the award £'000	Vesting at threshold	Performance period	Vesting date
6 April 2022	John Mills	Performance Share Plan awards	207,932	540	25% of award	1 January 2022 to 31 December 2024	March 2025 (2024 Results)
		Deferred Bonus Plan	11,944	31		N/A	March 2024 (2023 Results)
6 April 2022	Ian Tichias	Performance Share Plan awards	92,414	240	25% of award	1 January 2022 to 31 December 2024	March 2025 (2024 Results)
		Deferred Bonus Plan	6,689	17		N/A	March 2024 (2023 Results)

1 The share price used to calculate the face value of the Performance Share Plan award and the Deferred Bonus Plan share award granted on 6 April 2022 was £2.597 being the closing average share price on the five business date preceding the grant award date.

The 2022 LTIP grants were based on Cumulative Adjusted EPS performance for the three-year performance period commencing with the 2022 financial year (60% of the award) and relative TSR performance against the companies in the FTSE SmallCap Index (40% of the award) measured over a three-year performance period commencing with the 2022 financial year. In line with the UK Corporate Governance Code, there is a further two-year holding period following the end of the performance period.

The Deferred Bonus Plan award is a grant calculated as 30% of the 2021 bonus earned.

Given the turnaround position of the Company, the Board considers the EPS performance targets for the LTIP awards granted in 2022 to be commercially sensitive information at this time but, as in past years, will fully disclose the exact measurements retrospectively. The portion of the awards based on TSR will vest subject to the satisfaction of the following performance conditions.

Company's TSR performance relative to the comparator group	Portion of the TSR element that vests
Median	25%
Between median and upper quartile	Pro-rata between 25% and 100%
Upper quartile	100%

Long-term incentives and deferred bonuses awarded during the financial year continued

Shareholding guidelines and total shareholdings of Directors

On 16 May 2017, the Remuneration Committee introduced a shareholding guideline of 200% salary. Executive Directors are required to retain half of the after tax number of shares they acquire pursuant to the LTIP or deferred bonus until this level of holding is achieved. The extent to which each Executive Director has met the shareholding guideline is shown in the table below:

Name	Shareholding guidelines	Current shareholdings (% of salary)	Type	Owned outright	Vested	Unvested		Total as at 31 December 2022
						Subject to performance conditions	Not subject to performance conditions	
Executive Directors								
John Mills	200% of salary	77%	Shares	125,000				1,212,225
			LTIP options			1,046,738		
			DBP and SAYE options				40,487	
Ian Tichias	200% of salary	48%	Shares	50,000				531,641
			LTIP options			449,371		
			DBP and SAYE options				32,270	
Non-Executive Directors								
Andrew Herbert			Shares	100,000				100,000
Alison Littley			Shares	-				-
Chris Morgan			Shares	-				-

Shares that count towards the guideline are those owned outright and the net of tax shares subject to DBP awards (the vesting of which is not subject to the satisfaction of any further performance condition). The shares are valued at closing price on 31 December 2022 (£1.94) with the percentage of salary determined by reference to salaries at 31 December 2022 (CEO £360,000 and CFO £240,000).

There have been no changes in the Directors' holdings in the share capital of the Company, as set out in the table above, between 31 December 2022 and 28 March 2023. Andrew Herbert holds no options in Xaar plc. Chris Morgan and Alison Littley hold no shares or options in Xaar plc.

Outstanding Directors' share awards

The awards held by Executive Directors of the Company under the LTIP are shown below:

LTIP

The outstanding awards granted to each Executive Director of the Company under the Xaar plc 2017 LTIP are as follows. All options under the LTIP are nil-cost options such that no exercise price is payable.

Name	As at 1 January 2022	Granted during the year	Exercised during the year	Lapsed during the year	As at 31 December 2022	Grant date	Share price at date of grant	Earliest date of exercise	Expiry date
John Mills	180,328	-	-	-	180,328	4 October 2019	£0.452	4 October 2022	4 October 2029
	365,000	-	-	-	365,000	4 June 2020	£0.59	4 June 2025	4 June 2030
	293,478	-	-	-	293,478	14 October 2021	£1.61	March 2026*	14 October 2031
	-	207,932	-	-	207,932	6 April 2022	£2.70	March 2027*	6 April 2032
	838,806	207,932	-	-	1,046,738				
Ian Tichias	50,000	-	-	-	50,000	29 April 2020	£0.41	29 April 2023	29 April 2030
	170,000	-	-	-	170,000	4 June 2020	£0.59	4 June 2025	4 June 2030
	136,957	-	-	-	136,957	14 October 2021	£1.61	March 2026*	14 October 2031
	-	92,414	-	-	92,414	6 April 2022	£2.70	March 2027*	6 April 2032
	356,957	92,414	-	-	449,371				

* The options vest on the dealing day following the announcement by the Company of its annual results or, if later, the date on which the Remuneration Committee determines whether the performance condition and any other condition has been satisfied (in whole or in part), and are exercisable two years after this date.

Directors' Remuneration report continued

DBP

The outstanding awards granted to each Executive Director of the Company under the Xaar 2020 Deferred Bonus Plan are as follows. All options under the DBP are nil-cost options such that no exercise price is payable.

Name	As at 1 January 2022	Granted during the year	Exercised during the year	Lapsed during the year	As at 31 December 2022	Grant date	Share price at date of grant	Earliest date of exercise	Expiry date
John Mills	23,249	–	–	–	23,249	14 October 2021	£1.61	March 2023*	14 October 2031
	–	11,944	–	–	11,944	6 April 2022	£2.70	March 2024*	6 April 2032
	23,249	11,944	–	–	35,193				
Ian Tichias	10,849	–	–	–	10,849	14 October 2021	£1.61	March 2023*	14 October 2031
	–	6,689	–	–	6,689	6 April 2022	£2.70	March 2024*	6 April 2032
	10,849	6,689	–	–	17,538				

* The options vest on the dealing day following the announcement by the Company of its annual results.

All employee share plan

The Executive Directors may participate in the Company's all employee share plan, the Xaar plc SAYE Scheme (SAYE Scheme), on the same basis as other employees. The SAYE Scheme provides an opportunity to save a set monthly amount (up to £500) over three years towards the exercise of a discounted share option, which is granted at the start of the three years. Options and awards are not subject to performance conditions.

The outstanding awards granted to each Executive Director under the SAYE Scheme at 31 December are as follows:

Name	As at 1 January 2022	Granted during the year	Lapsed during the year	Exercised during the year	As at 31 December 2022	Grant date	Exercise price	Earliest date of exercise	Expiry date
John Mills	5,294	–	–	–	5,294	2 November 2020	£1.02	1 December 2023	2 May 2024
	5,294	–	–	–	5,294				
Ian Tichias	5,294	–	–	–	5,294	2 November 2020	£1.02	1 December 2023	2 May 2024
	5,581	–	–	–	5,581	4 November 2021	£1.29	1 December 2024	4 May 2025
	–	3,857	–	–	3,857	3 November 2022	£1.40	1 December 2025	3 May 2025
	10,875	3,857	–	–	14,732				3 May 2025

Payments for loss of office and payments to past Directors made during the year

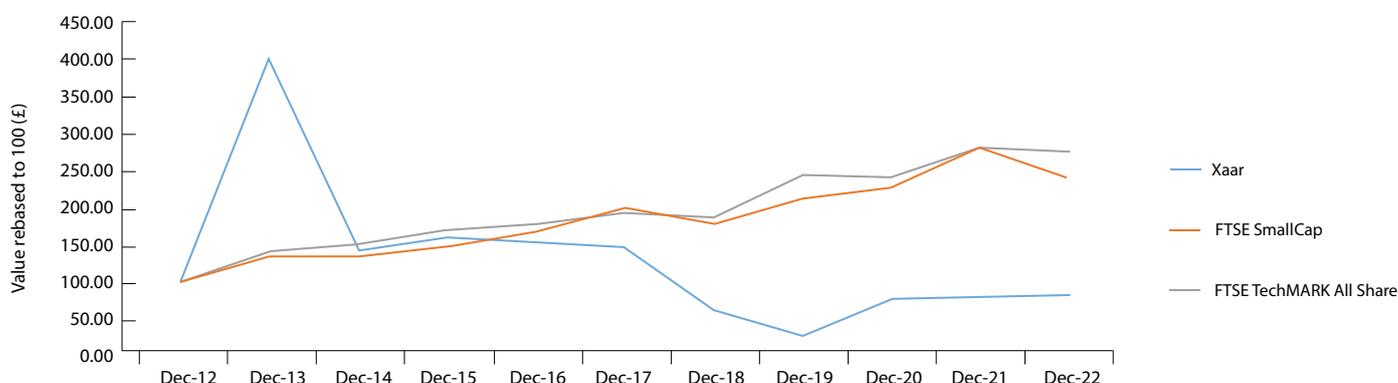
No payments for loss of office or payments to past Directors were made in 2022.

The information provided in this part of the Directors' Remuneration report is not subject to audit.

Performance graph and table

The graph on this page shows the Company's performance measured by total shareholder return (TSR), compared with the performance of the FTSE TechMARK All Share Index and FTSE SmallCap Index (of which Xaar is now a member), which the Remuneration Committee considers to be the most appropriate indices for comparison because they illustrate the Company's TSR performance against a broad equity market index of similar UK companies.

Total shareholder return



Source: Datastream (Thomson Reuters).

This graph shows the value, by 31 December 2022, of £100 invested in Xaar on 31 December 2012, compared with the value of £100 invested in the FTSE TechMARK All Share and FTSE SmallCap Indices on the same date on a yearly basis. The other points plotted are the values at intervening financial year-ends.

Payments for loss of office and payments to past Directors made during the year continued

Total shareholder return continued

The table below shows details of the total remuneration, annual bonus (as a percentage of maximum opportunity) and LTIP vesting percentage for the Chief Executive Officer over the last ten financial years.

	Total remuneration	Annual bonus as a % of maximum opportunity	LTIP as a % of maximum opportunity
Year ended 31 December 2022	1,579	39.51%	99.50%
Year ended 31 December 2021	454	26.26%	n/a
Year ended 31 December 2020	511	43.27%	n/a
Year ended 31 December 2019 – John Mills ¹	122	0%	0%
Year ended 31 December 2019 – Doug Edwards ²	357	0%	0%
Year ended 31 December 2018	502	12%	0%
Year ended 31 December 2017	594	0%	50%
Year ended 31 December 2016	429	12.5%	0%
Year ended 31 December 2015	571	48%	0%
Year ended 31 December 2014	562	0%	100%
Year ended 31 December 2013	1,379	83%	100%

1 John Mills did not earn a performance bonus in respect of 2019. He received a buy-out bonus to compensate him for loss of income to join Xaar.

2 Doug Edwards was CEO from 1 January until 10 October 2019, and John Mills was CEO from 11 October to 31 December 2019.

Percentage change in Directors' remuneration

The table below shows the percentage change in each Director's salary/fees, benefits and bonus and average remuneration of full-time employees on a full-time equivalent basis between the year ended 31 December 2021 and the year ended 31 December 2022, and the average percentage change in the same remuneration over the same period in respect of the employees of Xaar plc on a full-time equivalent basis. For the purposes of the table below, and in line with the regulations, the comparator employee group average employee within the UK is the employees of Xaar plc. This comparator group was chosen because it is the most relevant sub-set of employees and can be used consistently.

Year	Salary/fees					2022	Benefits					2022	Bonus				
	2022	2021	2021-2022 % increase	2020-2021 % increase	2019-2020 % increase		2021	2021	2021-2022 % increase	2020-2021 % increase	2019-2020 % increase		2022	2021	2021-2022 % increase	2020-2021 % increase	2019-2020 % increase
John Mills	360,000	315,000	14%	5%	-	30,648	28,000	9%	4%	-	177,773	103,399	72%	-36%	-21%		
Ian Tichias	240,000	220,500	9%	5%	-	24,020	23,000	4%	-36%	-	94,800	57,903	64%	-24%	-		
Andrew Herbert	120,000	92,250	30%	15%	70%	-	-	-	-	70%	-	-	-	-	-		
Alison Littlely	58,000	50,125	16%	3.9%	-	-	-	-	-	-	-	-	-	-	-		
Chris Morgan	55,000	50,125	10%	3.9%	10%	-	-	-	-	10%	-	-	-	-	-		
Comparator employee group	87,550	60,000	46%	11.2%	2.5%	13,354	2,250	494%	10%	2.5%	10,376	4,163	149%	5.8%	n/a		

1 Average employee – Full-time equivalent median employee of Xaar plc. Benefits calculated as the cost of benefits provided by Xaar to all employees at no cost to each employee (life cover etc) plus 5% flexible benefits allowance for Executive Directors, and 3% flexible benefits allowance for comparator employee and any car allowance where applicable. Previous years have been restated on this basis. In previous years, the benefits referred to here have included pension. In accordance with the regulations pension is no longer included and the percentage changes for previous years have been updated to reflect this and to ensure that the basis of the calculation is consistent year on year.

2 Owing to the restructuring noted in the Chairman's letter, during 2022 a significant proportion of the roles historically employed by Xaar plc, which were typically junior roles, were transferred to subsidiaries of Xaar plc. At the same point a number of senior roles within these subsidiaries (where these roles were typically aligned to Group activities) were transferred to Xaar plc. This has resulted in a fundamental change in the employees employed by Xaar plc, which is demonstrated by the comparator employee information shown for 2022.

CEO pay ratio

The following table sets out the ratio of the CEO's total remuneration in respect of FY22 (taken from the single figure table on page 96), the 25th percentile, 50th percentile (i.e. the median) and the 75th percentile full-time equivalent (FTE) of the Group's UK employees. In line with the applicable regulations, the corresponding ratios for 2020 are also included.

Year	Method	25 th percentile	Median pay ratio	75 th percentile
2022	Option A	61:1	40:1	28:1
2021	Option A	16:1	11:1	7:1
2020	Option A	15:1	11:1	8:1
2019	Option A	17:1	12:1	8:1

The median and quartile figures have been determined based on Option A as this was stated in government guidance as the most statistically accurate method. Remuneration for other employees for the purposes of the calculations was as at 31 December in each year.

Directors' Remuneration report continued

CEO pay ratio continued

In line with the applicable regulations, we have set out below for the same employee percentiles (and for the CEO) their total remuneration in respect of 2021 and 2022 and the salary component of that remuneration. The change in the CEO pay ratio is largely driven by the end of the performance period for two separate LTIP awards held by the CEO. Owing to his tenure this is the first period when LTIP awards have been recognised as part of the CEO pay ratio. In addition this was also impacted by Printhead performance for 2022 which did not reach the required threshold for any bonus payment to be made for this business area.

Year	CEO total remuneration (salary component of total remuneration)	25th percentile employee total remuneration (salary component of total remuneration)	Median employee total remuneration (salary component of total remuneration)	75th percentile employee total remuneration (salary component of total remuneration)
2022	£1,579k (£360k)	£26k (£24k)	£39k (£34k)	£56k (£51k)
2021	£454k (£315k)	£28k (£24k)	£43k (£34k)	£62k (£55k)
2020	£511k (£300k)	£33k (£29k)	£46k (£34k)	£64k (£50k)
2019	£479k (£338k)	£28k (£26k)	£39k (£33k)	£57k (£52k)

The Committee believes the median pay ratio is consistent with the pay, reward and progression policies for the UK employees taken as a whole.

Spend on pay

The table below sets out the Group's distributions to shareholders by way of dividends and total Group-wide expenditure on pay for all employees (including employer social security, pension contributions and share-based payments), as reported in the audited financial statements for the financial year ended 31 December 2022.

	2022 £'000	2021 £'000	Change %
Dividends paid to shareholders	–	–	0%
Group-wide expenditure on pay for all employees (note 9)	28,274	24,660	14.6%

Implementation of Directors' Remuneration Policy for the financial year commencing 1 January 2023

Information on how the Company intends to implement the Policy for the financial year commencing 1 January 2023 is set out in the statement from the Chairman of the Remuneration Committee and is summarised below.

Basic salary and fees

Details of the Executive Directors' salary arrangements and the Chairman and Non-Executive Directors' fee arrangements for 2023 are set out in the statement from the Chairman of the Committee.

Annual bonus

The maximum opportunity for the CEO and CFO will be unchanged at 125% and 100% of base salary respectively for 2023. The performance metrics for the bonus for 2023 are adjusted Group profit before tax (70%) and cash generated from operations (30%).

30% of any bonus earned will be deferred in shares and subject to a two-year deferral period. The Committee has discretion to amend formulaic outputs such that in addition to overall business performance, circumstances that were unexpected or unforeseen (or any other reasons at the discretion of the Committee) will be considered. As part of this assessment, the Committee will take into account progress against Xaar's Sustainability Roadmap that will push Xaar towards its Net Zero by 2030 goal and our wider ESG commitments.

The Board considers the Group profit and cash targets for 2022 to be matters that are commercially sensitive and should therefore remain confidential to the Company. They provide our competitors with insight into our business plans, expectations and our strategic actions.

However, the Remuneration Committee will disclose on a retrospective basis how the Company's performance relates to any annual bonus payments made.

Long-term incentives

The maximum LTIP award in 2023 will be capped at 150% of base salary for the CEO and 100% of salary for the CFO. 2022 LTIP awards will be based on:

1. Cumulative Adjusted EPS performance (60% of the award); and
2. Relative TSR performance against the companies in the FTSE SmallCap Index (excluding investment trust and financial service companies) (40% of the award).

Cumulative Adjusted EPS and relative TSR performance will be measured over a three-year performance period to 31 December 2024 with a further two-year holding period following the end of the performance period.

As for 2022, given the turnaround position of the Company, the Board considers the EPS performance targets for the LTIP awards to be granted in 2023 to be commercially sensitive information at this time but, as in past years, will fully disclose the exact measurements retrospectively. We will revert to publishing any measurement targets in advance as we have done in the past as soon as possible.

The TSR performance condition will be the same as for the awards granted in 2022, as set out on page 97.

Consideration by the Directors of matters relating to Directors' remuneration

Membership

The Company has established a Remuneration Committee which is constituted in accordance with the recommendations of the UK Corporate Governance Code. The terms of reference of the Remuneration Committee can be obtained by contacting the Company Secretary. Please see the tables on page 78 for details of the Committee members in the year and the number of Committee meetings attended.

The Remuneration Committee is currently chaired by Alison Littlely. The other members during the year ended 31 December 2022 were Andrew Herbert and Chris Morgan. All members of the Remuneration Committee are considered independent within the meaning of the UK Corporate Governance Code 2018.

Role and responsibilities of the Remuneration Committee

The Remuneration Committee's primary responsibilities are:

- To make recommendations to the Board on the Group's policy for executive remuneration, and review the ongoing appropriateness and relevance of the policy taking into account workforce related pay and policies and the alignment of incentives and rewards with culture
- To determine, on behalf of the Board, the specific remuneration and other benefits of Executive Directors, senior management and the Company Secretary (including pension contributions, bonus arrangements, long-term incentives and service contracts)
- To review the design of all share incentive plans and oversee any major changes in employee benefit structures
- To ensure appropriate stakeholder input into the work of the Committee with specific focus on employees through regular employee engagement.

The fees paid to the Non-Executive Directors are determined by the Chief Executive Officer and the Chairman. The fees paid to the Chairman are determined by the Chief Executive Officer and the Non-Executive Directors.

The members of the Remuneration Committee have no personal financial interest, other than as shareholders, in the matters to be decided, no actual or potential conflicts of interest arising from other directorships and no day-to-day operational responsibility within the Company. Executive Directors are not entitled to accept more than one non-executive directorship outside the Group.

Key issues and activities

The key activities of the Remuneration Committee during 2022 are shown below:

Remuneration Committee's key activities in 2022

Executive Directors' and senior management remuneration	Undertook a consultation on the proposed Directors' Remuneration Policy
Share incentive plans	Review eligibility for LTIP awards Approve grant of LTIP awards Approve grant of SAYE awards
Governance	Consider and approve the Annual Report on Remuneration
Wider workforce	Review proposed annual pay increases for the wider workforce Review proposed bonus payments for the wider workforce Agree improved processes for the Remuneration Committee to monitor wider workforce pay and policies

Advisors to the Remuneration Committee

The Remuneration Committee is assisted in its work by Xaar's human resources department. The Chief Executive Officer is consulted on the remuneration of those who report directly to him and also of other senior executives. No Executive Director or employee is present or takes part in discussions in respect of matters relating directly to their own remuneration.

During the financial year, the Committee received independent advice from Deloitte LLP, which was appointed by the Committee, in relation to the Committee's consideration of matters relating to Directors' remuneration. Deloitte LLP was appointed in 2019 following a formal tender process. Fees for advice provided to the Remuneration Committee during the year were £36,100. Fees were charged on a time and disbursements basis.

Deloitte LLP is a member of the Remuneration Consultants Group and voluntarily operates under its code of conduct in its dealing with the Remuneration Committee. The Remuneration Committee continued to review the appointment of Deloitte LLP and is satisfied that all advice received was objective and independent.

Deloitte also provide advice to the Company on the operation of its employee share plans.

Shareholder voting

The following table sets out actual voting in respect of the resolution to approve the Directors' Remuneration report for the year ended 31 December 2022 at the 2022 AGM and in respect of the resolution to approve the Directors' Remuneration Policy at the 2020 AGM.

Number of votes	For (including discretion)	Against	Withheld
Resolution 9 – Directors' Remuneration report for the year ended 31 December 2021	55,726,493 (97.5%)	1,450,136 (2.5%)	2,776
Resolution 13 at the 2020 AGM – Directors' Remuneration Policy	50,592,544 (99.41%)	299,077 (0.59%)	21,445

Approval

This report was approved by the Board on 27 March 2023 and signed on its behalf by:



Alison Littley

Chairman of the Remuneration Committee

Directors' responsibilities statement

The Directors are responsible for preparing the Annual Report and the Financial Statements in accordance with applicable law and regulations.

Company law requires the Directors to prepare financial statements for each financial year. Under that law the Directors are required to prepare the Group financial statements in accordance with UK adopted International Accounting Standards and have also chosen to prepare the parent Company financial statements in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards and applicable law), including Financial Reporting Standard 101 Reduced Disclosure Framework ('FRS 101'). Under company law the Directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and the Company and of the profit or loss of the Group for that period.

In preparing the parent Company financial statements, the Directors are required to:

- Select suitable accounting policies and then apply them consistently
- Make judgements and accounting estimates that are reasonable and prudent
- State whether FRS 101 has been followed, subject to any material departures disclosed and explained in the financial statements
- Prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Company will continue in business.

In preparing the Group financial statements, International Accounting Standard 1 requires that Directors:

- Select and apply accounting policies in accordance with IAS 8
- Present information, including accounting policies, in a manner that provides relevant, reliable, comparable and understandable information
- Provide additional disclosures when compliance with the specific requirements in IFRSs are insufficient to enable users to understand the impact of particular transactions, other events and conditions on the entity's financial position and financial performance
- Make an assessment of the Group's ability to continue as a going concern.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Group's and Company's transactions and disclose with reasonable accuracy at any time the financial position of the Group and the Company and enable them to ensure that the financial statements comply with the Companies Act 2006. They are also responsible for safeguarding the assets of the Group and the Company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Under applicable law and regulations the Directors are also responsible for preparing a strategic report, Directors' report, and Directors' remuneration report that comply with that law and those regulations.

Website publication

The Directors are responsible for the maintenance and integrity of the corporate and financial information included on the Company's website. Legislation in the United Kingdom governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Responsibility statement

We confirm that to the best of our knowledge:

- The financial statements, prepared in accordance with the relevant financial reporting framework, give a true and fair view of the assets, liabilities, financial position and profit or loss of the Company and the undertakings included in the consolidation taken as a whole;
- The Strategic Report includes a fair review of the development and performance of the business and the position of the Company and the undertakings included in the consolidation taken as a whole, together with a description of the principal risks and uncertainties that they face; and
- The Annual Report and Financial Statements, taken as a whole, are fair, balanced and understandable and provide the information necessary for shareholders to assess the Company's performance, business model and strategy.

 **The Directors of Xaar plc are listed on page 63**

This responsibility statement was approved by the Board of Directors and is signed on its behalf by:



John Mills
Chief Executive Officer

27 March 2023

Independent auditor's report to the members of Xaar plc

Opinion

In our opinion:

- Xaar plc's group financial statements and parent company financial statements (the "financial statements") give a true and fair view of the state of the group's and of the parent company's affairs as at 31 December 2022 and of the group's profit for the year then ended;
- the group financial statements have been properly prepared in accordance with UK adopted International Accounting Standards (UK IAS);
- the parent company financial statements have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- the financial statements have been prepared in accordance with the requirements of the Companies Act 2006.

We have audited the financial statements of Xaar plc (the 'parent company') and its subsidiaries (the 'group') for the year ended 31 December 2022 comprise:

Group	Parent company
Statement of financial position as at 31 December 2022	Balance sheet as at 31 December 2022
Consolidated income statement for the year then ended	Statement of changes in equity for the year then ended
Consolidated statement of comprehensive income for the year then ended	Related notes 1 to 11 to the financial statements including a summary of significant accounting policies
Consolidated statement of changes in equity for the year then ended	
Consolidated statement of cash flows for the year then ended	
Related notes 1 to 38 to the financial statements, including a summary of significant accounting policies	

The financial reporting framework that has been applied in the preparation of the group financial statements is applicable law and UK adopted international accounting standards. The financial reporting framework that has been applied in the preparation of the parent company financial statements is applicable law and United Kingdom Accounting Standards, including FRS 101 "Reduced Disclosure Framework" (United Kingdom Generally Accepted Accounting Practice).

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We are independent of the group and parent in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard as applied to listed public interest entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

The non-audit services prohibited by the FRC's Ethical Standard were not provided to the group or the parent company and we remain independent of the group and the parent company in conducting the audit.

Conclusions relating to going concern

In auditing the financial statements, we have concluded that the directors' use of the going concern basis of accounting in the preparation of the financial statements is appropriate. Our evaluation of the directors' assessment of the group and parent company's ability to continue to adopt the going concern basis of accounting included:

- We walked through the process undertaken by management to perform the going concern assessment, including any impacts of the macroeconomic environment on the Group and the Group's access to available sources of liquidity;
- We obtained management's going concern assessment, including the cash flow forecasts for the going concern period to 30 June 2024;
- We challenged the key assumptions underpinning the Group's forecasts. This has been performed by:
 - Checking the arithmetical and logical accuracy of management's model;
 - Reconciling opening cash to the audited position as at 31 December 2022;
 - Testing the historical forecasting accuracy of the Group by comparing actual revenue and operating profit to forecast for the previous four years;
 - Challenging the revenue and margin forecasts compared to the recurring revenues and margins generated in 2022;
 - Understood and challenged the factors leading to the fluctuations in the monthly cashflow analysis, compared these fluctuations to the order book. We performed sensitivity analysis to determine the impact on liquidity of not achieving these monthly forecasts;
 - Tested the credit ratings and other indicators of credit worthiness of key customers to determine the robustness of cash inflows; and
 - Confirmed the consistency of the forecasts with other areas of the audit including the impairment assessment.
- We compared 2023 year to date trading performance to management's going concern forecast by obtaining the latest available management accounts to challenge and identify any issues with current trading and cashflows;
- We reviewed the terms and conditions of the existing debt facilities to establish their availability across the going concern period. We have also reviewed the terms of the revolving credit facility that has received credit preapproval subsequent to the year end along with the associated covenants and other conditions which must be complied with to maintain that availability;
- We considered the impact of Xaar's climate commitments on the cash flow forecasts;
- We performed sensitivity analysis to determine the impact of reasonably possible fluctuations in key assumptions on the Group's available liquidity and covenant compliance for the credit approved revolving credit facility;
- We considered the results of management's reverse stress test scenario and independently calculated what changes to key assumptions would result in the Group having insufficient cash and cash equivalents. We also challenged the mitigating actions such as reducing non-essential capital expenditure and performance related pay, assessing whether they were within management's control and whether they were supported by the actual mitigation achieved in response to recent economic crises such as COVID-19. We considered whether the combination of changes to key assumptions that would lead to the Group's liquidity being eliminated within the period assessed were plausible or remote; and
- We assessed the appropriateness of the Group's disclosures concerning the going concern basis of preparation.

We observed that the Group reported a profit before tax for the year ended 31 December 2022 of £0.8m (2021: £1.0m profit). This includes an increase in revenue from continuing operations from £59.3m for the year ended 31 December 2021 to £72.8m for the year ended 31 December 2022. The reverse stress testing performed by management demonstrates revenue would need to reduce by more than 25% compared to the base case for the cash and cash equivalents to be fully consumed over the going concern period and would require both revenues and margins to be below the current year actuals. This is considered remote by management given the nature and size of the order book and the trading experience of the printhead and EPS segments during COVID-19 conditions to date.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the group and parent company's ability to continue as a going concern for a period to 30 June 2024.

In relation to the group and parent company's reporting on how they have applied the UK Corporate Governance Code, we have nothing material to add or draw attention to in relation to the directors' statement in the financial statements about whether the directors considered it appropriate to adopt the going concern basis of accounting.

Our responsibilities and the responsibilities of the directors with respect to going concern are described in the relevant sections of this report. However, because not all future events or conditions can be predicted, this statement is not a guarantee as to the group's ability to continue as a going concern.

Overview of our audit approach

Audit scope	<ul style="list-style-type: none"> • We performed an audit of the complete financial information of four components and audit procedures on specific balances for one further component. • The components where we performed full or specific audit procedures accounted for 96% of Revenue, 85% of Adjusted Profit Before Tax and 77% of Total Assets.
Key audit matters	<ul style="list-style-type: none"> • Revenue recognition • Impairment of non-current assets • Contingent consideration (3D) • Acquisition accounting (Megnajet and Technomation)
Materiality	<ul style="list-style-type: none"> • Overall group materiality of £364k which represents 0.5% of revenue.

An overview of the scope of the parent company and Group audits

Tailoring the scope

Our assessment of audit risk, our evaluation of materiality and our allocation of performance materiality determine our audit scope for each company within the Group. Taken together, this enables us to form an opinion on the consolidated financial statements. We take into account size, risk profile, the organisation of the group and effectiveness of group-wide controls, changes in the business environment, the potential impact of climate change when assessing the level of work to be performed at each company.

In assessing the risk of material misstatement to the Group financial statements, and to ensure we had adequate quantitative coverage of significant accounts in the financial statements, of the 12 reporting components of the Group, we selected 5 components covering entities within the UK and US, which represent the principal business units within the Group.

Of the 5 components selected, we performed an audit of the complete financial information of 4 components ("full scope components") which were selected based on their size or risk characteristics. For the remaining 1 component ("specific scope component"), we performed audit procedures on specific accounts within that component that we considered had the potential for the greatest impact on the significant accounts in the financial statements either because of the size of these accounts or their risk profile.

The reporting components where we performed audit procedures accounted for 96% (2021: 100%) of the Group's Revenue, 77% (2021: 89%) of the Group's Adjusted Profit Before Tax and 85% (2021: 100%) of the Group's Total assets. For the current year, the full scope components contributed 96% (2021: 82%) of the Group's Revenue, 77% (2021: 73 loss%) of the Group's Adjusted Profit Before Tax and 73% (2021: 78%) of the Group's Total assets. The specific scope component contributed 0% (2021: 18%) of the Group's Revenue, 0% (2021: 16%) of the Group's Adjusted Profit Before Tax and 11% (2021: 22%) of the Group's Total assets. The audit scope of these components may not have included testing of all significant accounts of the component but will have contributed to the coverage of significant accounts tested for the Group.

The remaining 7 components together represent 4% of the Group's revenue. For these components, we performed other procedures, including analytical review, testing of consolidation journals and intercompany eliminations and foreign currency translation recalculations to respond to any potential risks of material misstatement to the Group financial statements.

Changes from the prior year

Due to the level of revenue recognised in the current year FFEI has been included as a full scope entity, whereas in the prior year this was treated as a specific scope component only given the entity was only part of the Group for part of the year in 2021 (due to the timing of its acquisition by the Group).

Following the acquisition of Megnajet Limited during the year, this was included as a review scope component in the 2022 audit.

Involvement with component teams

All audit work performed for the purposes of the audit was undertaken by the Group audit team.

Climate change

Stakeholders are increasingly interested in how climate change will impact Xaar plc. The Group has determined that the most significant future impacts from climate change on their operations will be from risks of flooding at Group and supplier sites. These are explained on pages 42 to 44 in the Task Force on Climate related Financial Disclosures and on pages 48 to 57 in the principal risks and uncertainties. The Group have also explained their climate commitments on pages 29 to 41. All of these disclosures form part of the "Other information," rather than the audited financial statements. Our procedures on these unaudited disclosures therefore consisted solely of considering whether they are materially inconsistent with the financial statements or our knowledge obtained in the course of the audit or otherwise appear to be materially misstated, in line with our responsibilities on "Other information".

In planning and performing our audit we assessed the potential impacts of climate change on the Group's business and any consequential material impact on its financial statements.

The Group has explained in its Risk Management Report how they have considered the impact of climate on the Group.

Our audit effort in considering the impact of climate change on the financial statements was focused on evaluating management's assessment of the impact of climate risk, physical and transition and their climate commitments. As part of this evaluation, we performed our own risk assessment to determine the risks of material misstatement in the financial statements from climate change which needed to be considered in our audit.

We also challenged the Directors' considerations of climate change risks in their assessment of going concern and viability and associated disclosures.

Based on our work we have not identified the impact of climate change on the financial statements to be a key audit matter or to impact a key audit matter.

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) that we identified. These matters included those which had the greatest effect on: the overall audit strategy, the allocation of resources in the audit; and directing the efforts of the engagement team. These matters were addressed in the context of our audit of the financial statements as a whole, and in our opinion thereon, and we do not provide a separate opinion on these matters.

Risk	Our response to the risk	Key observations communicated to the Audit Committee
<p>Revenue recognition (£72.8 million – continuing operations, 2021: £59.3 million – continuing operations)</p> <p><i>Refer to the Audit Committee Report (page 79); Accounting policies (page 121); and Note 5 of the Consolidated Financial Statements (page 131)</i></p> <p>We consider there to be a risk in relation to the manipulation by central management of the amount of revenue recorded through manual journal entries.</p> <p>Management reward and incentive schemes are based on achieving profit targets which may also place pressure on management to manipulate revenue recognition.</p> <p>As part of the financial statement close process, certain manual adjustments are required to account for contracts with customers. There is risk that the manual adjustments are incorrectly recorded in the period.</p> <p>In the product print segment (EPS) and Digital Imaging (FFEI's) R&D revenue, judgement is required to determine whether revenue should be recognised over time or at a point in time. Where revenue is recognised over time, estimation is required to establish how much of the performance obligation has been satisfied and how much is recorded as a contract liability.</p>	<p>We understood the group's revenue recognition policies and how they are applied, including the relevant controls, and performed a walkthrough to validate our understanding.</p> <p>In respect of the main UK trading entity, which comprised 54% of the group's revenue, we used data analytics to analyse the whole population of transactions from invoicing to cash journals, including adjustments to arrive at revenue recognised in the year.</p> <p>Where the journal postings did not follow our expectation, we investigated and assessed the integrity of these entries and tested a sample to assess their validity by agreeing the transactions back to source documentation.</p> <p>We performed tests of detail for a sample of revenue transactions to confirm the transactions had been appropriately recorded in the income statement in accordance with IFRS 15 and corroborated that control of the products had been transferred to the customer by:</p> <ul style="list-style-type: none"> analysing the contract and/or terms of the sale to determine that the group had fulfilled the requirements of the contract; confirming revenue could be reliably measured by reference to underlying documentation; and confirming collectability of the revenue was reasonably assured by considering recent collection history and the ageing of receivables. <p>We performed cut-off testing by tracing a sample of revenue items recorded either side of year-end to delivery note to determine whether revenue was recognised in the same period in which the performance obligations have been fulfilled.</p> <p>We selected a sample of post year-end credit notes to assess whether, where the credit note relates to the audit period, these credit notes were appropriately provided for in the financial statements.</p> <p>We tested journal entries posted to revenue accounts, applying parameters designed to identify entries that were not in accordance with our expectations. This included analysing and selecting journals for testing which appeared unusual in nature either due to size, preparer or being manually posted. To assess their validity, we verified the journals to validate originating documentation.</p> <p>We performed full and specific scope audit procedures over this risk area in 3 components which covered 96% of the revenue from continuing operations.</p>	<p>Revenue was recognised in accordance with the Group's accounting policies and we identified no evidence of management override in respect of inappropriate manual journals recorded in revenue.</p> <p>In respect of the revenue recognised over time we identified the IFRS 15 criteria were fulfilled for each item selected and the stage of completion was appropriately reflected within the accounting entries.</p>

Risk	Our response to the risk	Key observations communicated to the Audit Committee
<p>Revenue recognition (£72.8 million – continuing operations, 2021: £59.3 million – continuing operations) continued</p>	<p>Revenue recognised over time</p> <p>For a sample of revenue transactions, we reviewed the respective sales contract to determine whether the contract met the criteria in IFRS 15 for being revenue recognised over time.</p> <p>For the sampled transactions, we evaluated judgements and estimates made by management regarding the expected costs to complete and the timing and recognition of variation orders, by obtaining and reviewing the variation order and comparing the cost assumptions to similar projects. We also verified a sample of actual costs incurred to date through to purchase invoice or timesheet records.</p> <p>To further assess the stage of completion at year end we also physically inspected a sample of work in progress projects within the EPS business and reviewed the impact of post year-end changes on labour hour and cost estimates.</p> <p>Where the criteria for over time recognition were not met, we confirmed management has recognised revenue at a point in time, when the relevant performance obligation has been satisfied.</p> <p>We performed full scope audit procedures over this risk area covering 100% of the risk amount.</p>	

Risk	Our response to the risk	Key observations communicated to the Audit Committee
<p>Impairment of non-current assets (£40.0 million, 2021: £34.5m)</p> <p><i>Refer to the Audit Committee Report (page 79); Accounting policies (page 121); and Note 15 of the Consolidated Financial Statements (page 140)</i></p> <p>IFRS requires impairment testing to be undertaken when there are indicators that an impairment may exist, and in the case of goodwill at least annually. Given the significant balances in respect of goodwill and recent trading losses, there is a risk that the Group's cash generating units ('CGUs') may not achieve the anticipated business performance to support their respective carrying values.</p> <p>In particular the Group has goodwill of £7.2 million attributed to EPS (£5.8m), FFEI (£0.7m) and Megnajet (£0.7m).</p> <p>We have designated impairment as a key audit matter for EPS given the limited headroom in the impairment testing model in prior year.</p> <p>For FFEI and Megnajet, given they are recent acquisitions with limited track record of performance within the Xaar Group to date we have also designated impairment of goodwill for these CGUs as a key audit matter for the 2022 audit.</p>	<p>We examined management's impairment assessment methodology and model to understand the composition of management's future cash flow forecasts, and the process and related controls undertaken to prepare them. This included confirming the underlying cash flows were consistent with the Board approved budget and strategic plan, did not include reorganisations and enhancements not committed at the balance sheet date. We also assessed the identified CGUs for appropriateness. We also re-performed the calculations in the model to test the mathematical integrity.</p> <p>We assessed the cash flow forecasting models, including consistency with the strategic plans for the group and assessment of historical forecast accuracy and impact of COVID-19 to date and over the forecast period.</p> <p>We tested the key inputs to management's impairment models by:</p> <ul style="list-style-type: none"> • analysing the historical accuracy of budgets to actual results to determine whether forecast cash flows are reliable based on past experience; • assessing the discount rate used by obtaining the underlying data used in the calculation and benchmarking it against an EY range derived from comparable organisations and market data, involving EY internal specialists to assist us with this assessment; and • comparing the forecast growth rates to the order backlog/pipeline, using observable market data to validate the addressable market and challenging whether the forecast growth rates have been appropriately adjusted to reflect the changes in the group's strategy. <p>We calculated the degree to which the key inputs and assumptions would need to fluctuate before an impairment was triggered and considered the likelihood of this occurring. We performed our own sensitivities on the FFEI forecasts and determined whether adequate headroom remained.</p> <p>We assessed whether there were any other indicators of impairment, which would give rise to the impairment of an individual asset.</p> <p>We audited the related disclosures with reference to the requirements of IAS 36 and confirmed their consistency with the audited impairment models.</p>	<p>We agree with management's conclusion that no impairment of goodwill is required in the current year.</p> <p>We have concluded that the methodology applied is reasonable, that the forecast period is appropriate and that management's models are mathematically accurate.</p> <p>The additional sensitivity disclosures in Note 15 of the Group financial statements adequately reflect that a reasonably possible change in certain key assumptions could lead to a different conclusion in respect of the recoverability of goodwill.</p>

Risk	Our response to the risk	Key observations communicated to the Audit Committee
<p>Contingent consideration (3D) (£11.6 million, 2021: £11.9 million)</p> <p><i>Refer to the Audit Committee Report (page 79); Accounting policies (page 121); and Note 22 of the Consolidated Financial Statements (page 147)</i></p> <p>Stratasys Solutions Limited acquired the remaining 55% equity stake held by Xaar 3D Holdings Limited in Xaar 3D on 6 October 2021. The consideration included £9.3m paid in cash and a further amount of up to up to \$21.2m which is contingent on the achievement of certain milestones and a 3% earn-out consideration in respect of the future revenues of Xaar 3D.</p> <p>The Group recorded a financial asset of £10.9m on the date of the transaction which was remeasured to £11.6m at 31 December 2022 (£11.9m at 31 December 2021) in respect of the contingent consideration. The estimation of the fair value of this consideration is complex and relies on significant unobservable inputs. The Group engaged an external specialist to estimate the fair value of the contingent consideration.</p> <p>For this valuation, management's external specialist used a Monte Carlo Simulation model given the complex conditions associated with the contingent consideration.</p> <p>As at 31 December 2022 the Group has recorded a financial asset of £11.6m with the movement from the prior year due to an earn out payment received of £0.2m.</p>	<p>We have used EY internal valuation specialists to review the methodology and reasonableness of key assumptions used within Management's Monte Carlo Simulation.</p> <p>We have engaged a separate EY internal specialist to assess the discount rates assumed within the Monte Carlo Simulation, by obtaining the underlying data used in the calculation and benchmarking it against an EY range derived from comparable organisations and market data.</p> <p>We have assessed the consistency of the forecasts with the strategic plans for the Xaar 3D and impact of COVID-19 through validating the forecast with Stratasys management.</p> <p>Given the contingent consideration is held at fair value, we have performed these procedures at both the date of disposal and at year end and recalculated the fair value movement recorded in the income statement.</p> <p>We have audited the related disclosures with reference to the requirements of UK IAS and confirmed they are consistent with the specialist's valuation report.</p>	<p>The methodology used by management to establish the fair value of the contingent consideration is appropriate and the resulting valuation based upon key inputs is within our independently established range.</p>

Risk	Our response to the risk	Key observations communicated to the Audit Committee
<p>Acquisition accounting (Megnajet and Technomation)</p> <p><i>Refer to the Audit Committee Report (page 79); Accounting policies (page 121); and Note 36 of the Consolidated Financial Statements (page 159)</i></p> <p>Megnajet Limited was acquired in March 2022 for £2.5m. (£2.3m million cash consideration with the remaining £0.2m to be paid out as a deferred consideration over three years).</p> <p>The acquisition price of Technomation Limited which was acquired in March 2022 was £3,038,000.</p> <p>Management have up to 12 months from the date of acquisition to finalise the acquisition accounting in accordance with IFRS 3 – Business Combinations. Our risk focus is around:</p> <ul style="list-style-type: none"> • Classification and measurement of deferred consideration and conditions attached • Fair value estimation for acquired intangibles • Opening balance sheet testing • Transition from FRS 102 to UK adopted international accounting standards • Resulting updates to tax and deferred balances 	<p>We have reviewed the sale and purchase agreement and due diligence report to determine the completeness of the identified acquired assets and liabilities.</p> <p>We have reviewed the journals posted to transition the opening balances from FRS 102 to UK IAS. We have also performed a walkthrough of the significant processes to determine any further areas that require consideration in terms of GAAP transition adjustments that were not previously considered by Management.</p> <p>We have reviewed management’s accounting paper and reporting received from management’s specialist in relation to the fair value of intangible assets and useful economic life assigned as part of the Purchase Price Allocations.</p> <p>We reviewed the sale and purchase agreement for Technomation Limited, audited the net assets of the entity and compared the separately identifiable balances to the total consideration paid. This demonstrated that the assets were concentrated within a single asset and the optional IFRS 3 concentration test was appropriately applied by management.</p> <p>We have engaged our EY internal valuation specialists to review the methodology and key assumptions in respect of the Purchase Price Allocation.</p> <p>We have engaged our EY internal tax specialists to assess the tax methodology and rates applied by management when calculating the associated deferred tax adjustments arising from the acquisition accounting.</p> <p>We have audited the disclosures within the annual report and accounts in relation to the business combination and resulting changes.</p>	<p>We concluded that the transaction was properly accounted for in accordance with IFRS 3, and the fair value adjustments and Purchase Price Allocation were appropriate. The relevant tax considerations have been recorded and disclosed appropriately in the financial statements.</p>

In the prior year, our auditor’s report included a key audit matter in relation to inventory provisioning within the EPS business. In the current year, this no longer represents a key audit matter given the steps management have taken to remediate the previously reported significant control deficiencies.

Our application of materiality

We apply the concept of materiality in planning and performing the audit, in evaluating the effect of identified misstatements on the audit and in forming our audit opinion.

Materiality

The magnitude of an omission or misstatement that, individually or in the aggregate, could reasonably be expected to influence the economic decisions of the users of the financial statements. Materiality provides a basis for determining the nature and extent of our audit procedures.

We determined materiality for the Group to be €364k (2021: €300k), which is 0.5% (2021: 0.5%) of Group revenue. We believe that revenue provides us with the most appropriate basis given it is the main KPI for the Group, and given the Group's recent history of losses.

We determined materiality for the Parent Company to be €364k (2021: €300k), which we capped at the Group materiality.

During the course of our audit, we reassessed initial materiality and updated for final result for the year.

Performance materiality

The application of materiality at the individual account or balance level. It is set at an amount to reduce to an appropriately low level the probability that the aggregate of uncorrected and undetected misstatements exceeds materiality.

On the basis of our risk assessments, together with our assessment of the Group's overall control environment, our judgement was that performance materiality was 50% (2021: 50%) of our planning materiality, namely €182k (2021: €150k). We have maintained performance materiality at this percentage reflecting our observations of the Group's systems and processes, susceptibility of the financial statements to management override and historical audit findings.

Audit work at component locations for the purpose of obtaining audit coverage over significant financial statement accounts is undertaken based on a percentage of total performance materiality. The performance materiality set for each component is based on the relative scale and risk of the component to the Group as a whole and our assessment of the risk of misstatement at that component. In the current year, the range of performance materiality allocated to components was €68k to €130k (2021: €30k to €112k).

Reporting threshold

An amount below which identified misstatements are considered as being clearly trivial.

We agreed with the Audit Committee that we would report to them all uncorrected audit differences in excess of €18k (2021: €15k), which is set at 5% of planning materiality, as well as differences below that threshold that, in our view, warranted reporting on qualitative grounds.

We evaluate any uncorrected misstatements against both the quantitative measures of materiality discussed above and in light of other relevant qualitative considerations in forming our opinion.

Other information

The other information comprises the information included in the annual report, other than the financial statements and our auditor's report. The directors are responsible for the other information contained within the annual report.

Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in this report, we do not express any form of assurance conclusion thereon.

Our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the course of the audit or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether this gives rise to a material misstatement in the financial statements themselves. If, based on the work we have performed, we conclude that there is a material misstatement of the other information, we are required to report that fact.

We have nothing to report in this regard.

Opinions on other matters prescribed by the Companies Act 2006

In our opinion, the part of the directors' remuneration report to be audited has been properly prepared in accordance with the Companies Act 2006.

In our opinion, based on the work undertaken in the course of the audit:

- the information given in the strategic report and the directors' report for the financial year for which the financial statements are prepared is consistent with the financial statements and those reports have been prepared in accordance with applicable legal requirements;
- the information about internal control and risk management systems in relation to financial reporting processes and about share capital structures, given in compliance with rules 7.2.5 and 7.2.6 in the Disclosure Rules and Transparency Rules sourcebook made by the Financial Conduct Authority (the FCA Rules), is consistent with the financial statements and has been prepared in accordance with applicable legal requirements; and
- information about the company's corporate governance statement and practices and about its administrative, management and supervisory bodies and their committees complies with rules 7.2.2, 7.2.3 and 7.2.7 of the FCA Rules.

Matters on which we are required to report by exception

In the light of the knowledge and understanding of the group and the parent company and its environment obtained in the course of the audit, we have not identified material misstatements in:

- the strategic report or the directors' report; or
- the information about internal control and risk management systems in relation to financial reporting processes and about share capital structures, given in compliance with rules 7.2.5 and 7.2.6 of the FCA Rules.

We have nothing to report in respect of the following matters in relation to which the Companies Act 2006 requires us to report to you if, in our opinion:

- adequate accounting records have not been kept by the parent company, or returns adequate for our audit have not been received from branches not visited by us; or
- the parent company financial statements and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns; or
- certain disclosures of directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit
- a Corporate Governance Statement has not been prepared by the company.

Corporate Governance Statement

We have reviewed the directors' statement in relation to going concern, longer-term viability and that part of the Corporate Governance Statement relating to the group and company's compliance with the provisions of the UK Corporate Governance Code specified for our review by the Listing Rules.

Based on the work undertaken as part of our audit, we have concluded that each of the following elements of the Corporate Governance Statement is materially consistent with the financial statements or our knowledge obtained during the audit:

- Directors' statement with regards to the appropriateness of adopting the going concern basis of accounting and any material uncertainties identified set out on page 69;
- Directors' explanation as to their assessment of the company's prospects, the period this assessment covers and why the period is appropriate set out on page 69;
- Directors' statement on whether they have a reasonable expectation that the Group will be able to continue in operation and meets its liabilities set out on page 69;
- Directors' statement on fair, balanced and understandable set out on page 78;
- Board's confirmation that it has carried out a robust assessment of the emerging and principal risks set out on page 50;
- The section of the annual report that describes the review of effectiveness of risk management and internal control systems set out on page 49; and
- The section describing the work of the audit committee set out on page 79.

Responsibilities of directors

As explained more fully in the directors' responsibilities statement set out on page 105, the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the directors are responsible for assessing the group and company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the group or the company or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Explanation as to what extent the audit was considered capable of detecting irregularities, including fraud

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect irregularities, including fraud. The risk of not detecting a material misstatement due to fraud is higher than the risk of not detecting one resulting from error, as fraud may involve deliberate concealment by, for example, forgery or intentional misrepresentations, or through collusion. The extent to which our procedures are capable of detecting irregularities, including fraud is detailed below.

However, the primary responsibility for the prevention and detection of fraud rests with both those charged with governance of the company and management.

- We obtained an understanding of the legal and regulatory frameworks that are applicable to the group and determined that the most significant are those that relate to the reporting framework (IFRS, FRS 101, the Companies Act 2006 and the UK Corporate Governance Code) and the relevant tax compliance regulations in the jurisdictions in which the Group operates. In addition, we concluded that there are certain significant laws and regulations which may have an effect on the determination of the amounts and disclosures in the financial statements being the Listing Rules of the UK Listing Authority, and those regulations relating to health and safety and employee matters.
- We understood how Xaar plc is complying with those frameworks by making enquiries of management, the Company Secretary, and those responsible for legal and compliance procedures. We corroborated our enquiries through our review of board minutes, papers provided to the Audit Committee, discussion with the Audit Committee and any correspondence received from regulatory bodies.
- We assessed the susceptibility of the group's financial statements to material misstatement, including how fraud might occur by audit. We also considered performance targets and their influence on efforts made by management to manage earnings or influence the perceptions of analysts. We considered the programmes and controls that the Group has established to address risks identified, or that otherwise prevent, deter and detect fraud and how senior management monitors those programmes and controls. Where the risk was considered to be higher, we performed audit procedures to address each identified fraud risk including revenue recognition as discussed above. These procedures included testing manual journals and were designed to provide reasonable assurance that the financial statements were free from fraud or error.
- Based on this understanding we designed our audit procedures to identify non-compliance with such laws and regulations. Our procedures involved journal entry testing, with a focus on manual consolidation journals and journals indicating large or unusual transactions based on our understanding of the business; enquiries of the Company Secretary, head of legal, audit committee, management; and focussed testing, as referred to in the key audit matters section above. In addition, we completed procedures to conclude on the compliance of the disclosures in the Annual Report and Accounts with the requirements of the relevant accounting standards, UK legislation and the UK Corporate Governance Code.

A further description of our responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at <https://www.frc.org.uk/auditorsresponsibilities>. This description forms part of our auditor's report.

Other matters we are required to address

- Following the recommendation from the audit committee, we were appointed by the company on 28 June 2022 to audit the financial statements for the year ending 31 December 2022 and subsequent financial periods.
- The period of total uninterrupted engagement including previous renewals and reappointments is 4 years, covering the years ending 31 December 2019 to 31 December 2022.
- The non-audit services prohibited by the FRC's Ethical Standard were not provided to the group or the parent company and we remain independent of the group and the parent company in conducting the audit.
- The audit opinion is consistent with the additional report to the audit committee.

Use of our report

This report is made solely to the company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the company and the company's members as a body, for our audit work, for this report, or for the opinions we have formed.

Ruth Logan

Senior statutory auditor
for and on behalf of Ernst & Young LLP, Statutory Auditor
Cambridge

27 March 2023

Consolidated income statement for the year ended 31 December 2022

	Notes	2022 £'000	2021 £'000
Revenue	5	72,782	59,254
Cost of sales		(44,138)	(39,064)
Gross profit		28,644	20,190
Other income	7	139	-
Research and development expenses		(6,718)	(5,706)
Research and development expenditure credit		379	270
Sales and marketing expenses		(6,669)	(6,342)
General and administrative expenses		(14,050)	(10,070)
(Impairment)/impairment reversals on financial assets		(28)	388
Restructuring and transaction expenses		(450)	(1,404)
Fair value (loss)/gain on financial assets at FVTPL	22	(8)	987
Gain on derivative financial liabilities	22	-	2,919
Operating profit		1,239	1,232
Investment income	10	38	4
Finance costs	10	(453)	(242)
Profit before tax		824	994
Income tax credit/(expense)	12	967	(299)
Profit for the year from continuing operations		1,791	695
(Loss)/profit from discontinued operations after tax	11	(159)	13,533
Profit for the year		1,632	14,228
Attributable to:			
Owners of the Company		1,632	16,219
Non-controlling interest	35	-	(1,991)
Profit for the year		1,632	14,228
Earnings per share – Total			
Basic	14	2.1p	20.9p
Diluted	14	2.0p	20.6p
Earnings per share – Continuing operations			
Basic	14	2.3p	0.9p
Diluted	14	2.2p	0.9p

There were no dividends paid during the current and preceding year.

Consolidated statement of comprehensive income for the year ended 31 December 2022

	Notes	2022 £'000	2021 £'000
Profit for the year		1,632	14,228
Items that may be reclassified subsequently to profit or loss:			
Exchange differences on retranslation of net investment	29	617	143
Other comprehensive income for the year		617	143
Total comprehensive income for the year		2,249	14,371
Total comprehensive income attributable to:			
Owners of the Company		2,249	16,366
Non-controlling interests	35	-	(1,995)
		2,249	14,371

Consolidated statement of financial position

as at 31 December 2022

	Notes	2022 £'000	Restated 2021 £'000
Non-current assets			
Goodwill	15	7,163	5,894
Other intangible assets	16	8,681	4,043
Property, plant and equipment	17	16,104	16,226
Right-of-use asset	18	8,068	8,829
Financial asset at fair value through profit or loss	22	11,089	11,850
Deferred tax asset	23	726	–
Other non-current assets	21	136	–
		51,967	46,842
Current assets			
Inventories	20	29,148	18,839
Trade and other receivables	21	11,527	10,161
Current tax asset	21	735	531
Financial asset at fair value through profit or loss	22	517	–
Cash and cash equivalents	21	8,546	25,051
		50,473	54,582
Total assets		102,440	101,424
Current liabilities			
Trade and other payables	24	(14,862)	(15,971)
Provisions	25	(405)	(264)
Contract liabilities	5	(3,799)	(3,541)
Borrowings and financial liabilities	22	(379)	–
Lease liabilities	18	(1,032)	(692)
		(20,477)	(20,468)
Net current assets		29,996	34,114
Non-current liabilities			
Deferred tax liabilities	23	–	(1)
Lease liabilities	18	(7,800)	(8,499)
Provisions	25	(300)	(300)
Other financial liabilities	24	(2,094)	(3,354)
Total non-current liabilities		(10,194)	(12,154)
Total liabilities		(30,671)	(32,622)
Net assets		71,769	68,802
Equity attributable to owners of the parent company			
Share capital	26	7,844	7,844
Share premium	27	29,427	29,427
Own shares	28	(775)	(1,923)
Translation reserve	29	1,628	1,011
Other reserves	30	23,379	21,820
Retained earnings	30	10,266	10,623
Total equity		71,769	68,802

The financial statements of Xaar plc, registered number 3320972, were approved by the Board of Directors and authorised for issue on 27 March 2023. They were signed on its behalf by:



John Mills
Chief Executive Officer



Ian Tichias
Chief Financial Officer

Consolidated statement of changes in equity as at 31 December 2022

	Notes	Share capital £'000	Share premium £'000	Own shares £'000	Translation reserves £'000	Other reserves £'000	Retained earnings £'000	Total £'000	Non-controlling interest £'000	Total equity £'000
Balance at 1 January 2021 (as restated)		7,833	29,328	(1,957)	864	21,167	(5,564)	51,671	3,771	55,442
Profit/(loss) for the year		-	-	-	-	-	16,219	16,219	(1,991)	14,228
Tax on items taken directly to equity		-	-	-	-	-	-	-	-	-
Exchange differences on retranslation of net investment		-	-	-	147	-	-	147	(4)	143
Total comprehensive loss for the year as reported		-	-	-	147	-	16,219	16,366	(1,995)	14,371
Own shares sold in the period	28	-	-	34	-	-	-	34	-	34
Share option exercises		11	99	-	-	-	(32)	78	-	78
Credit to equity for equity-settled share-based payments	32	-	-	-	-	653	-	653	-	653
Derecognition of non-controlling interest	35	-	-	-	-	-	-	-	(1,776)	(1,776)
Balance at 31 December 2021		7,844	29,427	(1,923)	1,011	21,820	10,623	68,802	-	68,802
Profit for the year		-	-	-	-	-	1,632	1,632	-	1,632
Tax on items taken directly to equity		-	-	-	-	-	-	-	-	-
Exchange differences on retranslation of net investment		-	-	-	617	-	-	617	-	617
Total comprehensive income for the year		-	-	-	617	-	1,632	2,249	-	2,249
Own shares purchased in the period	28	-	-	(1,000)	-	-	-	(1,000)	-	(1,000)
Own shares sold in the period	28	-	-	2,148	-	-	-	2,148	-	2,148
Share option exercises and settlements	30	-	-	-	-	-	(1,989)	(1,989)	-	(1,989)
Credit to equity for equity-settled share-based payments	32	-	-	-	-	1,559	-	1,559	-	1,559
Balance attributable to owners of the parent company at 31 December 2022		7,844	29,427	(775)	1,628	23,379	10,266	71,769	-	71,769

The nature of retained earnings and other reserves in equity is described in note 30.

Consolidated cash flow statement

for the year ended 31 December 2022

	Notes	2022 €'000	2021 €'000
Profit before tax from continuing operations		824	994
(Loss)/profit before tax from discontinued operations	11	(159)	13,503
Total Profit/(loss) before tax		665	14,497
Adjustments for:			
Share-based payments	32	1,748	758
Depreciation of property, plant and equipment	17	2,654	3,318
Depreciation of right-of-use assets	18	1,071	871
Amortisation of intangible assets	16	1,067	475
Impairment of assets	17	147	-
Research and development expenditure credit		(379)	(582)
Investment income		(38)	(4)
Interest expense		453	252
Unrealised foreign exchange gains		(797)	(23)
Gain on remeasurement of derivative liability	22	-	(2,919)
Payment of cash settled share-based payments		(249)	-
Fair value loss/(gain) on financial assets at FVTPL	22	8	(987)
Loss on disposal of property, plant and equipment		80	77
Profit on disposal of investment in subsidiary		-	(17,899)
Increase/(decrease) in provisions	25	141	(74)
Operating cash flows before movements in working capital		6,571	(2,240)
Increase in inventories		(9,462)	(7,964)
Decrease/(increase) in receivables		(812)	(1,525)
(Decrease)/increase in payables		(1,914)	9,525
Cash utilised by operations		(5,617)	(2,204)
Net Income taxes received		112	150
Net cash used in operating activities		(5,505)	(2,054)
Investing activities			
Investment income		38	13
Treasury deposits (deposited)/withdrawn		-	161
Purchases of property, plant and equipment		(2,456)	(1,876)
Proceeds from disposal of property, plant and equipment		17	209
Purchases of Intangible assets		(2,933)	(38)
Cash earn-out received from financial assets at FVTPL	22	236	-
Proceeds from disposal of investment in subsidiary		-	9,272
Cash attributable to subsidiary sold		-	(96)
Acquisition of subsidiary (Megnajt) net of cash acquired (2021: acquisition of FFEI)		(1,202)	168
Asset acquisition (Technomation), net of cash acquired		(2,334)	-
Net cash (used in)/provided by investing activities		(8,634)	7,813
Financing activities			
Proceeds from sale of own shares		408	150
Payment for own shares acquired	28	(1,000)	-
	31		
Payment of lease liabilities and interest	31	(914)	(824)
Net inflows from invoice discounting facility	31	346	-
Other interest paid		(22)	-
Net cash used in financing activities		(2,915)	(674)
Net (decrease)/increase in cash and cash equivalents		(17,054)	5,085
Effect of foreign exchange rate changes on cash balances		549	(110)
Cash and cash equivalents at the beginning of the year		25,051	20,076
Cash and cash equivalents at the end of the year		8,546	25,051

Cash and cash equivalents (which are presented as a single class of asset on the face of the consolidated statement of financial position) comprise cash at bank and other callable deposits with a notice period of three months or less. The carrying amount of these assets is approximately equal to their fair value.

Notes to the consolidated financial statements for the year ended 31 December 2022

1. General information

Xaar plc ('the Group') is incorporated in England and Wales under the Companies Act 2006. The address of the registered office is given on the inside back cover. The nature of the Group's operations and its principal activity are set out in the Strategic Report on pages 4 to 59.

 **The Strategic Report can be found on pages 4 to 59**

2. Key sources of estimation uncertainty and critical accounting judgements

The key assumptions concerning the future and other sources of estimation uncertainty at the date of the statement of financial position that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are as follows:

Accounting judgements – The Group applies judgement in how it applies its accounting policies, which do not involve estimation, which could materially affect the numbers disclosed in these financial statements. The key judgements, without estimation, that could have the most significant effect on the amounts recognised in these financial statements are as follows:

Capitalisation of development costs (accounting judgement) – note 16

As described in note 16, the Group capitalises development expenditure as an intangible asset where the criteria under IAS 38 'Intangible Assets' is met. This requires management to make judgement on when all of the criteria for capitalisation are met and when to cease capitalisation and start amortising the asset. In the current year £1.7 million of external development costs were capitalised and no internal development costs were capitalised. There were no capitalised development costs for the prior year. The technical feasibility criteria is only typically achieved at the end of a project for most of internal projects. During a printhead product development programme many sub-systems are evaluated in parallel and all of these systems carry their own risk.

Significant estimates – The preparation of financial statements in accordance with UK-adopted international accounting standards (IFRS) requires the use of estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting year. Although these estimates are based on management's best knowledge of the amount, events or actions, actual results ultimately may differ from those estimates. The estimates and underlying assumptions are reviewed on an ongoing basis. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances. Revisions to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

Climate change is a global challenge and an emerging risk to business, people and the environment across the world. We have a role to play in limiting warming by improving our energy management, reducing our carbon emissions and by helping our customers and suppliers do the same. Growing awareness of climate change will provide the impetus for business growth as we provide products, services and solutions that increase efficiency and reduce customers' energy use and carbon emissions.

Our plans allow for the upgrade, modification and improvements to our assets, to enable us to achieve our climate change strategy. We do not envisage any specific impact to the useful economic life of assets as a result of these changes.

Based on the results of the recent formal climate-related scenario planning, the climate risk for the Group has been assessed to be medium to low. Assuming we meet our target of becoming Net Zero by 2030, which is significantly sooner than most of the industry, the risk will be downgraded to low. So at this point of assessment, in our view climate change does not create any further key sources of estimation uncertainty. For further detail see the Risk management and Sustainability sections of the Strategic Report.

The Directors consider the following to be the key estimates applicable to the financial statements, which have a significant risk of resulting in a material adjustment to the carrying amounts of assets and liabilities within the next financial year or in the longer term:

Contingent consideration (estimation uncertainty) – notes 11 and 12

In November 2021, Stratasys Solutions Limited acquired the remaining 55% of Xaar 3D Limited for an initial consideration of US\$13.5 million or £9.9 million in cash and a milestone consideration and 3% earn-out consideration which are contingent on the achievement of certain milestones in respect of the future revenue stream of Xaar 3D and should be estimated using a statistical simulation model. This contingent consideration is measured at fair value using a Monte Carlo Simulation model and the use of a recognised third party.

The Monte Carlo Simulation model uses a number of inputs that require estimation. The key ones are the risk-adjusted discount rate and revenue volatility. The milestone consideration and 3% earn-out consideration are calculated based on the terms of the proposed transaction and by reference to simulated revenue. This is then discounted back to the valuation date using a discount rate over a period commensurate with the year in which payments are payable.

The Group considers this model to be appropriate, given the complex conditions associated with the milestone consideration and 3% earn-out consideration. A sensitivity analysis is provided in note 22.

Impairment of goodwill and intangibles (estimation uncertainty) – notes 15 and 16

The Group tests goodwill and intangibles annually for impairment or more frequently if there are indications that goodwill might be impaired. Having performed appropriate testing, no impairment has been identified and therefore no impairment loss has been recognised in 2022 (2021: £nil). Management has performed sensitivity analysis on its reasonably worst case scenario for EPS, FFEI and Megnajt and it has been completed on each key assumption in isolation. Reasonably possible change sensitivities are included in note 15.

Revenue recognition – note 5

Engineered Printing Solutions and FFEI recognise revenue on the stage of completion for some of the customer contract and performance obligations in the manufacture of bespoke machinery and equipment as well as some of the research and development services for delivery to the customer.

Each month an assessment is undertaken of the work in progress and stage of completion in both supply of individual components and labour hours allocated to the project against the expected project manufacture costs. The revenue determined is recognised upon the proportion and stage of completion of the performance obligations. This assessment enables an estimate to be undertaken for the expected profitability of the customer contract, costs incurred to date, and costs to complete, but is subject to a level of uncertainty until the work in progress is finalised and the completed machinery and services are available for final delivery and acceptance by the customer.

The transaction price allocated to partially satisfied and unsatisfied obligations at 31 December 2022 is set out in note 5.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

2. Key sources of estimation uncertainty and critical accounting judgements continued

Acquisition of Megnajat Ltd and Technomation Ltd – note 36

There is a high level of judgement surrounding the valuation of goodwill and acquired intangibles for any material acquisitions and this applies to the acquisition of Megnajat and Technomation in the year. An additional judgement was required around the classification of Technomation as an asset purchase rather than a business purchase and it was concluded as such as a result of the applied concentration test under IFRS 3:B7(A)a.

Management involved a third party valuation expert to estimate the value of the acquired intangibles and goodwill to ensure the judgements are appropriately considered.

3. Significant accounting policies

Basis of accounting

The Group financial statements have been prepared in accordance with UK adopted International Accounting Standards (IAS). The financial information has been prepared on the basis of all applicable IFRS, including all International Accounting Standards (IAS), Standing Interpretations Committee (SIC) interpretations and International Financial Reporting Interpretations Committee (IFRIC) interpretations issued by the International Accounting Standards Board (IASB) that are applicable to the financial period.

The financial statements have been prepared on the historical cost basis, except for the revaluation of financial instruments. The Group financial statements are presented in Sterling and all values are rounded to the nearest thousand pounds (£'000) except when otherwise indicated. The principal accounting policies adopted are set out below.

Basis of consolidation

The consolidated financial statements incorporate the financial statements of Xaar plc ("the Company") and entities controlled by the Company ("its subsidiaries") made up to 31 December each year. Control is achieved where the Company has the power to govern the financial and operating policies of an investee entity so as to obtain benefits from its activities. An investor controls another entity, an investee, if and only if the investor has all of the following: it has power over the investee, exposure or rights to variable returns from its involvement with the investee, and the ability to use its power over the investee to affect the amount of the investor's returns. To have power, an investor must have existing substantive rights that give it the current ability to direct the relevant activities. The investor reassesses whether it controls an entity if facts and circumstances indicate changes to one or more of the elements of control.

The results of subsidiaries acquired or disposed of during the year are included in the consolidated income statement from the date of acquisition or up to the date of disposal, as appropriate. Where necessary, adjustments are made to the financial statements of subsidiaries to bring the accounting policies used in line with those used by the Group.

All intra-group transactions, balances, income and expenses are eliminated on consolidation. Foreign exchange gains and losses arising on the retranslation of trading balances with subsidiaries with different functional currencies are reported in the income statement.

Profit or loss and each component of other comprehensive income are attributed to the owners of the Company and to the non-controlling interests. Total comprehensive income of subsidiaries is attributed to the owners of the Company and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

Changes in the Group's interests in subsidiaries that do not result in a loss of control are accounted for as equity transactions. The loss of control of a subsidiary results in the recognition of a gain or loss on the sale of the interest sold and the derecognition of all assets, liabilities and any retained non-controlling interest.

Going concern

The Group's business activities, together with the factors likely to affect its future development, performance and position, are set out in the Strategic Report on pages 16 to 25. Notes 21 and 22 include a description of the Company's objectives, policies and processes for managing its capital; its financial risk management objectives; details of its financial instruments and hedging activities; and its exposure to credit risk and liquidity risk. The Group's day-to-day working capital requirements are expected to be met through the current cash and cash equivalent resources (including treasury deposits) at the balance sheet date of 31 December 2022 of £8.5 million. As set out in note 22, the Group has a £5 million invoice discounting facility, of which £0.4 million was drawn as at 31 December 2022.

The Group has prepared and reviewed monthly profit and cash flow forecasts which cover a period up to 30 June 2024, the going concern period. This base case forecast position has been compiled by considering the performance of the different businesses across the Group and each of their funding requirements which represents the current Board approved forecasts. These forecasts reflect existing technologies and products, existing OEM adoption, the committed order pipeline, an increasing customer install base and demand for consumables such as fluids across the customer base and no specific risks around creditworthiness. This creates a high degree of predictability within the short-term cash flows, which have been factored in to the level of sensitivity testing and reverse stress testing performed below. As set out in note 6, there is no concentration of revenues from an individual customer. The operational steps described in the Strategic Report also provide increased predictability over future margins, which have been incorporated in this base case forecast. Using this base case, liquidity compliance has been assessed across the going concern period and is sufficient to enable the Group to settle its obligations as they fall due.

To support the going concern conclusion, a sensitivity analysis has been performed which models a 10% reduction in revenue and 2% reduction in gross margin in comparison to the base case and is below the reported FY22 actual result. The outcome of this sensitivity analysis is that the Group maintains liquidity across the going concern period and is able to meet all forecasted obligations as they fall due. A reverse stress scenario has also been performed to model the circumstances required to eliminate available liquidity during the going concern period. This includes reducing revenues and reducing gross margin. This reverse stress scenario requires a reduction in revenue in excess of 25% in comparison to the base case and is below the reported FY22 actual result, as is the assumed margin. The Directors believe the possibility of this combination of severe downsides arising to be remote given the recurring revenue base and predictability of forecasts, and that there are numerous controllable mitigating actions such as deferring non-committed capital expenditure and reducing performance related pay which could be taken to avoid a liquidity breach.

3. Significant accounting policies continued

Going concern continued

Should extreme downside scenarios occur, the Group has further options within its control to mitigate a cash shortfall which have not been factored into the above forecasts and stress testing, such as staffing reductions, further delaying/stopping capital and research and development expenditure and aligning performance related pay to actual results. The Group has also received credit pre-approval for a £5 million revolving credit facility. No drawdowns have been assumed during the going concern period, nor are they required in the sensitivity or reverse stress scenarios described above and as such the facility would provide additional liquidity headroom to the Group across the going concern period.

Based on the above, the Directors have a reasonable expectation that the Group has adequate resources to continue in operational existence for the period to 30 June 2024. For this reason, we continue to adopt the going concern basis in preparing the financial statements.

Adjusted financial measures

Adjusted financial measures relate to continuing operations and comprise adjusted profit/(loss) before tax, adjusted EBITDA, and adjusted basic and diluted earnings per share. These measures are alternative performance measures (APMs) which are not defined or specified under the requirements of IFRS. These APMs adjust for recurring and non-recurring items which management consider are not reflective of the underlying performance of the Group. These APMs are used in evaluating management's performance and in determining management and executive remuneration. Items adjusted for include share-based payment charges, exchange differences on intra-group transactions, gain on derivative financial instruments, restructuring and transaction expenses, the research and development expenditure credit, fair value gains on financial assets and amortisation of acquired intangible assets. See note 4 for further detail.

Recurring items are adjusted each year irrespective of materiality to ensure consistent treatment, and allow for variation transactions that can occur e.g. due to volatility in share prices in respect of share-based payment charges, or the significant impact of restructuring and transaction expenses. Non-recurring items are identified and adjusted for by virtue of their size or nature.

Share-based payment charges are excluded from the calculation of adjusted profit/(loss) before tax as these represent a non-cash accounting charge which represent long-term incentives designed for long-term employee retention. Share-based payment charges are not included in the analysis of segment performance used by the Chief Operating Decision Maker and their add-back is consistent with metrics used by a number of other companies in the technology sector, therefore this treatment remains appropriate.

Fair value gains and losses on financial assets at fair value through profit and loss are excluded from the calculation of adjusted profit/(loss) before tax as these represent a non-cash movement in accounting estimates related to divestment contingent consideration.

The movements are driven by external factors and not influenced by the Group. Fair value gains and losses on financial assets at fair value through profit and loss bear no relation to the Group's underlying ongoing operational performance, and are not included in the analysis of segment performance used by the Chief Operating Decision Maker.

Amortisation of acquired intangibles is excluded from the calculation of adjusted profit/(loss) before tax as these charges are the result of acquisition accounting, and whilst revenue recognised in the income statement benefits from the underlying intangibles that have been acquired, the amortisation costs bear no relation to the Group's underlying ongoing operational performance. In addition, amortisation of acquired intangibles is not included in the analysis of segment performance used by the Chief Operating Decision Maker.

Net cash includes cash, cash equivalents and treasury deposits. Gross R&D investment represents the cost of research and development on continuing operations in the year.

Business combinations

The acquisition of subsidiaries is accounted for using the acquisition method in accordance with IFRS 3.

Goodwill

Goodwill arising on acquisition is recognised as an asset and initially measured at cost, being the excess of the sum of consideration transferred, the amount of any non-controlling interests in the acquiree over the net of the acquisition-date fair values of the identifiable assets, liabilities and contingent liabilities recognised. If after reassessment, the Group's interest in the net fair value of the acquiree's identifiable assets, liabilities and contingent liabilities exceeds the cost of the business combination, the excess is recognised immediately in the income statement.

Goodwill arising on consolidation is initially recognised as an asset at cost and is subsequently measured at cost less any accumulated impairment losses. Goodwill which is recognised as an asset is reviewed for impairment at least annually. Any impairment is recognised immediately in the income statement and is not subsequently reversed.

For the purposes of impairment testing, goodwill is allocated to each of the Group's cash-generating units expected to benefit from the synergies of the combination. Cash-generating units to which goodwill has been allocated are tested for impairment annually, or more frequently when there is an indication that the unit may be impaired. If the recoverable amount of the cash-generating unit is less than the carrying amount of the unit, the impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit and then to the other assets of the unit pro rata on the basis of the carrying amount of each asset in the unit.

On disposal of the cash-generating unit, the attributable amount of goodwill is included in the determination of the profit or loss on disposal.

Goodwill arising on acquisitions before the date of transition to IFRS has been retained at the previous UK GAAP amounts subject to being tested for impairment at that date. Goodwill written off to reserves under UK GAAP prior to 1998 has not been reinstated and is not included in determining any subsequent profit or loss on disposal.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

3. Significant accounting policies continued

Revenue recognition

Overall policy

Revenue is measured based on the consideration to which the Group expects to be entitled in a contract with a customer and excludes amounts collected on behalf of third parties. The Group determines whether to recognise revenue, following a five-step process:

1. Identifying the contract with a customer;
2. Identifying the performance obligations;
3. Determining the transaction price;
4. Allocating the transaction price to the performance obligations; and
5. Recognising revenue when/as performance obligation(s) are satisfied.

Revenue streams

Revenue arises from a number of sources but mainly "product sales":

- the manufacture and sale of printheads
- engineered printing solutions and
- digital imaging devices

The Group also provides consulting and research and development services ("commissions and services"), and licenses intellectual property to third parties as part of royalty-based revenue ("licensee royalties").

Revenue is shown net of value-added tax, returns, rebates and discounts and after eliminating sales within the Group.

Identification of performance obligations

When the Group enters into an agreement with a customer, goods and services deliverable under the contract are identified as separate performance obligations ("obligations") to the extent that the customer can benefit from the goods or services on their own and that the separate goods and services are considered distinct from other goods and services in the agreement. Where individual goods and services do not meet the criteria to be identified as separate obligations they are aggregated with other goods and/or services in the agreement until a separate obligation is identified.

Typically each of the revenue streams listed above qualify as separate performance obligations, with consideration allocated accordingly. However, for certain of the Digital Imaging and Product Print Systems contracts, the performance obligations are not distinct, for example where the services are essential for the customer to be able to benefit from the product sale.

Timing of revenue recognition

Revenue is recognised in accordance with IFRS 15 when control has been transferred to the customer. For product sales, revenue is recognised at a point in time, unless specific conditions have been satisfied allowing revenue to be recognised over a period of time as identified in the five-step process (above); this can arise in the Product Print Systems and Digital Imaging segments for example where the asset produced does not have an alternative use and the Group has an enforceable right to payment for performance completed to date. An input methodology (based on estimated labour hours or costs) is used as this depicts the performance conditions when recognising revenue over time. Where this is the case, the performance obligations are typically not distinct as set out above. Payments for revenue recognised over time are typically in instalments whereas point in time revenue is typically invoiced in arrears.

Commissions and services revenue is recognised over time where the customer simultaneously receives and consumes the benefits of the Group's performance obligations. Where this is not the case, revenue is recognised at a point in time. Payments for this revenue stream are typically in arrears.

Royalties are recognised on an accruals basis, based on quarterly statements received from each licensee. The royalties arise from the licensee's use of their printheads and the Group's related intellectual property installed in equipment developed by original equipment manufacturers (OEMs).

Further details of payment terms are provided in note 21.

Receivables

A receivable is recognised when the performance obligations are satisfied (e.g. upon shipment for product sales, upon delivery as services are rendered or upon completion of service) as this is the point in time that the consideration is unconditional because only the passage of time is required before the payment is due, there will be a reservation of title until payment has been received, but control has been transferred.

Investment income

Investment income is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable, which is the rate that discounts estimated future cash receipts through the expected life of the financial asset to that asset's net carrying amount.

Interest expense

Interest expense on lease liabilities is a component of finance costs which is required to be presented separately in the income statement.

Foreign currencies

The individual financial statements of each Group company are presented in the currency of the primary economic environment in which it operates (its functional currency). For the purpose of the consolidated financial statements, the results and financial position of each Group company are expressed in Sterling, which is the functional currency of the Company and the presentation currency for the consolidated financial statements.

Exchange differences arising on the settlement of monetary assets and liabilities, and on the retranslation of monetary assets and liabilities, are included in the income statement for the period.

3. Significant accounting policies continued

Foreign currencies continued

For the purposes of presenting consolidated financial statements, the assets and liabilities of the Group's foreign operations are translated at the exchange rates prevailing on the date of the statement of financial position. Income and expense items are translated at the monthly average exchange rates for the period which are an approximation of actual rates.

Exchange differences arising on the translation of the net investment in foreign operations are recognised in other comprehensive income and taken to the translation reserve.

When the Group's foreign operations are liquidated or disposed, exchange differences previously recognised through other comprehensive income and the translation reserve will be recycled and recognised through the income statement.

Goodwill and fair value adjustments arising on the acquisition of a foreign entity are treated as assets and liabilities of the foreign entity and translated at the closing rate.

Government and EU grants

Government and EU grants are not recognised until there is reasonable assurance that the Group will comply with the conditions attached to them and that the grant will be received. Government and EU grants relating to research and development are treated as income over the periods necessary to match them with the related costs.

Restructuring costs

Restructuring cost refers to the one-time expenses or infrequent expenses which are incurred by the Group in the process of reorganising its business operations with the motive of the overall improvement of the long-term profitability and working efficiency of the Group.

Retirement benefit costs

Payments to defined contribution retirement benefit schemes are charged as an expense as they fall due. Payments made to state managed retirement benefit schemes are dealt with as payments to defined contribution schemes where the Group's obligations under the schemes are equivalent to those arising in a defined contribution retirement benefit scheme.

Taxation

The tax expense represents the sum of the tax currently payable and deferred tax, including UK corporation tax and foreign tax.

The tax currently payable is based on taxable profit for the year. Taxable profit differs from net profit as reported in the income statement because it excludes items of income or expense that are taxable or deductible in other years and it further excludes items that are never taxable or deductible. The Group's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the date of the statement of financial position.

Deferred tax is the tax expected to be payable or recoverable on differences between the carrying amounts of assets and liabilities in the financial statements and the corresponding tax bases used in the computation of taxable profit. Deferred tax liabilities are generally recognised for all taxable temporary differences and deferred tax assets are recognised to the extent that it is probable that taxable profits will be available against which deductible temporary differences can be utilised. Such assets and liabilities are not recognised if the temporary difference arises from the initial recognition of goodwill (taxable temporary differences only) or from the initial recognition (other than in a business combination) of other assets and liabilities in a transaction that affects neither the tax profit nor the accounting profit.

Deferred tax liabilities are recognised for taxable temporary differences arising on investments in subsidiaries, except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the date of each statement of financial position and reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow all or part of the asset to be recovered.

Deferred tax is charged or credited in the income statement, except when it relates to items charged or credited in other comprehensive income or directly in equity, in which case the deferred tax is also dealt with in other comprehensive income or directly in equity respectively.

To the extent that the Group receives a tax deduction relating to share-based payment transactions, a deferred tax asset is recognised at the appropriate tax rate on the difference in value between the market price of the underlying equity as at the date of the financial statements and the exercise price of the outstanding share options multiplied by the expired portion of the vesting period. As a result, the deferred tax impact of share options will not be derived directly from the expense reported in the consolidated income statement. Where the deductible difference exceeds the cumulative charge to the consolidated income statement the excess of the associated tax benefit is recorded directly to equity rather than in profit or loss.

Deferred tax assets and liabilities are measured on an undiscounted basis and are offset when there is a legally enforceable right to set off current tax assets against current tax liabilities and when they relate to income taxes levied by the same taxation authority and the Group intends to settle its current tax assets and liabilities on a net basis.

Property, plant and equipment

All property, plant and equipment is shown at original historical cost less accumulated depreciation and any recognised impairment loss.

Assets in the course of construction for production or administrative purposes are carried at cost, less any recognised impairment loss.

Depreciation of these assets, on the same basis as other assets in the same class, commences when the assets are ready for their intended use.

Freehold land is not depreciated.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

3. Significant accounting policies continued

Property, plant and equipment continued

Depreciation is charged so as to write off the cost or valuation of assets, less their residual values, other than assets in the course of construction, over their estimated useful lives, using the straight-line method, on the following bases:

- Leasehold property improvements: Shorter of the lease term and 20 years
- Plant and machinery: 3 to 20 years
- Furniture, fittings and equipment: 3 to 20 years
- Buildings: Up to 40 years

The gain or loss arising on the disposal of an asset is determined as the difference between the sales proceeds and the carrying amount of the asset and is recognised in income.

Spare parts are capitalised within property, plant and equipment where it is expected that future economic benefits will flow to the entity and the cost can be measured reliably. This typically relates to critical spares, which must be maintained for business continuity. Depreciation of these assets commences both when the assets are bought and when they are put in use. The former has longer useful life of six years to account for the 'idle' time whilst the latter is shorter useful life of three years which is an approximation for the average useful life of a part in use.

Internally generated intangible assets – research and development expenditure

Expenditure on research activities is recognised as an expense in the period in which it is incurred.

An internally generated intangible asset arising from the Group's development is recognised only if the conditions of IAS 38 paragraph 57 are met.

Internally generated intangible assets are amortised on a straight-line basis over 3 to 20 years. Where no internally generated intangible asset can be recognised, development expenditure is recognised as an expense in the period in which it is incurred.

Other intangible assets

Costs incurred in maintaining the patent and trademark portfolio are written off to the income statement as incurred.

Acquired intangible assets as a result of business combinations are capitalised and amortised on a straight-line basis over their estimated useful lives.

Payments in respect of software, and licence rights acquired are capitalised at cost and amortised on a straight-line basis over their estimated useful lives.

- Capitalised development costs – Patents over the life of the patent; Development costs based on the project life
- Licences acquired shorter of the licence term and 20 years
- Software – three to fifteen years with IT equipment being three years and infrastructure up to fifteen years
- Customer relationships - six to eight years
- Brands - ten years
- Technology-based patents - six years

Impairment of tangible and intangible assets excluding goodwill

At the date of each statement of financial position, the Group reviews the carrying amounts of its tangible and intangible assets to determine there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). Where the asset does not generate cash flows that are independent from other assets, the Group estimates the recoverable amount of the cash-generating unit to which the asset belongs.

Recoverable amount is the higher of fair value less costs of disposal and value-in-use. In assessing value-in-use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset (or cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (cash-generating unit) is reduced to its recoverable amount. An impairment loss is recognised as an expense immediately.

Where an impairment loss is subsequently reversed, the carrying amount of the asset (or cash-generating unit) is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset (or cash-generating unit) in prior years. A reversal of an impairment loss is recognised as income immediately.

Leases

The Group assesses whether a contract is or contains a lease, at inception of the contract. The Group recognises a right-of-use asset and a corresponding lease liability with respect to all lease arrangements in which it is the lessee, except for short-term leases (defined as leases with a lease term of 12 months or less) and leases of low-value assets. For these leases, the Group recognises the lease payments as an operating expense on a straight-line basis over the term of the lease unless another systematic basis is more representative of the time pattern in which economic benefits from the leased assets are consumed.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted by using the rate implicit in the lease. If this rate cannot be readily determined, the Group uses its incremental borrowing rate. Generally, an incremental borrowing rate approach is applied.

3. Significant accounting policies continued

Leases continued

Lease payments included in the measurement of the lease liability comprise:

- fixed lease payments (including in substance fixed payments), less any lease incentives;
- variable lease payments that depend on an index or rate, initially measured using the index or rate at the commencement date;
- the amount expected to be payable by the lessee under residual value guarantees;
- the exercise price of purchase options, if the lessee is reasonably certain to exercise the options;
- payments of penalties for terminating the lease, if the lease term reflects the exercise of an option to terminate the lease.

The lease liability is subsequently measured by increasing the carrying amount to reflect interest on the lease liability (using the effective interest method) and by reducing the carrying amount to reflect the lease payments made.

The Group re-measures the lease liability (and makes a corresponding adjustment to the related right-of-use asset) whenever:

- the lease term has changed or there is a change in the assessment of exercise of a purchase option, in which case the lease liability is re-measured by discounting the revised lease payments using a revised discount rate;
- the lease payments change due to changes in an index or rate or a change in expected payment under a guaranteed residual value, in which cases the lease liability is re-measured by discounting the revised lease payments using the initial discount rate (unless the lease payments change is due to a change in a floating interest rate, in which case a revised discount rate is used);
- a lease contract is modified and the lease modification is not accounted for as a separate lease, in which case the lease liability is re-measured by discounting the revised lease payments using an incremental borrowing rate at the effective date of the modification.

The right-of-use assets comprise the initial measurement of the corresponding lease liability, lease payments made at or before the commencement day and any initial direct costs. They are subsequently measured at cost less accumulated depreciation and impairment losses.

Whenever the Group incurs an obligation for costs to dismantle and remove a leased asset, restore the site on which it is located or restore the underlying asset to the condition required by the terms and conditions of the lease, a provision is recognised and measured under IAS 37.

The costs are included in the related right-of-use asset, unless those costs are incurred to produce inventories.

Right-of-use assets are depreciated over the shorter period of lease term and useful life of the underlying asset. If a lease transfers ownership of the underlying asset or the cost of the right-of-use asset reflects that the Group expects to exercise a purchase option, the related right-of-use asset is depreciated over the useful life of the underlying asset. The depreciation starts at the commencement date of the lease. The Group does not have any leases that transfer ownership of the underlying asset. The Group does not have any leases with a purchase option where there is a reasonable expectation that the option will be exercised.

Inventories

Inventories are stated at the lower of cost and net realisable value. Cost is calculated using the first in, first out (FIFO) cost formula, by applying the standard cost methodology, with costs including direct materials, direct labour costs and an attributable proportion of manufacturing overheads based on normal levels of activity that have been incurred in bringing the inventories to their present location and condition. Net realisable value represents the estimated selling price less all estimated costs of completion and costs to be incurred in marketing, selling and distribution. Provision is made for obsolete, slow-moving or defective items where applicable.

Contract asset/contract liability

A contract asset is recognised when revenue recognised in respect of a customer contract exceeds amounts received or receivable from the customer. This situation arises when the recognition of revenue over time to date is greater than amounts invoiced to the customer and invoicing is conditional on further performance. The carrying amount is reduced by allowances for expected credit losses under IFRS 9.

When there is an unconditional entitlement, generally when invoices are raised, the contract asset values are reclassified to trade receivables.

Contract liabilities comprise the Group's obligation to transfer goods or services to a customer for which the Group has received payment from the customer in advance of revenue recognition. This situation arises when the customer is invoiced in advance and the revenue recognised over time is lower than the amounts invoiced to the customer.

Financial instruments

Financial assets and financial liabilities are recognised in the Group's statement of financial position when the Group becomes a party to the contractual provisions of the instrument.

Financial assets and financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities are added to or deducted from the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at fair value through profit or loss are recognised immediately in profit or loss.

Recognition of financial assets

All regular way purchases or sales of financial assets are recognised and derecognised on a trade date basis. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

All recognised financial assets are measured subsequently in their entirety at either amortised cost or fair value, depending on the classification of the financial assets.

In order for a financial asset to be classified and measured at amortised cost or fair value through OCI, it needs to give rise to cash flows that are 'solely payments of principal and interest (SPPI)' on the principal amount outstanding. This assessment is referred to as the SPPI test and is performed at an instrument level. Financial assets with cash flows that are not SPPI are classified and measured at fair value through profit or loss, irrespective of the business model.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

3. Significant accounting policies continued

Impairment of financial assets

The Group recognises an allowance for expected credit losses (ECLs) for all debt instruments not held at fair value through profit or loss.

ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

ECLs are recognised in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12 months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL). Trade receivables and contract assets are recognised using a lifetime ECL approach.

For financial assets carried at amortised cost, the amount of the impairment is the difference between the asset's carrying amount and the present value of the estimated future cash flows, discounted at the financial asset's original effective interest rate.

Derecognition of financial assets

The Group derecognises a financial asset only when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity. If the Group neither transfers nor retains substantially all the risks and rewards of ownership and continues to control the transferred asset, the Group recognises its retained interest in the asset and an associated liability for amounts it may have to pay. If the Group retains substantially all the risks and rewards of ownership of a transferred financial asset, the Group continues to recognise the financial asset and also recognises a collateralised borrowing for the proceeds received.

The decision as to whether a transfer qualifies for derecognition is made by applying a combination of risks and rewards and control tests. The risks and rewards tests seek to establish whether, having transferred a financial asset, the entity continues to be exposed to the risks of ownership of that asset and/or continues to enjoy the benefits that it generates. The control tests are designed with a view to understanding which entity controls the asset (i.e. which entity can direct how the benefits of that asset are realised).

Inherent in the IFRS 9 derecognition model is the notion of 'stickiness', i.e. it is more difficult to remove an asset from an entity's statement of financial position than it is to recognise that asset in the first place. Derecognition cannot be achieved by merely transferring the legal title to a financial asset to another party. The substance of the arrangement must be assessed in order to determine whether an entity has transferred the economic exposure associated with the rights inherent in the asset (i.e. its risks and rewards) and, in some cases, control of those rights. On derecognition of a financial asset, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognised in other comprehensive income and accumulated in equity is recognised in profit or loss.

Financial liabilities and equity

Debt and equity instruments are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangement.

Financial liabilities

All financial liabilities are measured subsequently at amortised cost using the effective interest method or at fair value through profit or loss (FVTPL).

Financial liabilities are classified at FVTPL when the financial liability is (i) contingent consideration of an acquirer in a business combination, (ii) held for trading or (iii) it is designated as at FVTPL.

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the financial liability, or (where appropriate) a shorter period, to the amortised cost of a financial liability.

Derecognition of financial liabilities

The Group derecognises financial liabilities when, and only when, the Group's obligations are discharged, cancelled or have expired. The difference between the carrying amount of the financial liability derecognised and the consideration paid and payable is recognised in profit and loss.

Cash and cash equivalents

Cash and cash equivalents comprise cash on hand and demand deposits and other short-term highly liquid investments that are readily convertible to a known amount of cash with an original maturity of three months or less and are subject to an insignificant risk of changes in value.

Treasury deposits

Treasury deposits comprise demand deposits that are convertible to a known amount of cash with an original maturity of between three months and 12 months and are subject to an insignificant risk of changes in value.

Interest-bearing loans and borrowings

Interest-bearing loans and bank overdrafts are measured initially at fair value, net of direct issue costs. Finance charges, including premiums payable on settlement or redemption and direct issue costs, are accounted for on an accrual basis in the income statement using the effective interest rate method and are added to the carrying amount of the instrument to the extent that they are not settled in the period in which they arise.

The Group has entered into an invoice discounting arrangement. See note 22.

3. Significant accounting policies continued

Provisions

Provisions are recognised when the Group has a present obligation as a result of a past event and it is probable that the Group will be required to settle that obligation. Provisions are measured at the Directors' best estimate of the expenditure required to settle the obligation at the date of the statement of financial position and are discounted where the effect of the time value of money is material.

A restructuring provision is recognised when the Group has developed a detailed formal plan for the restructuring and has raised a valid expectation in those affected that it will carry out the restructuring by starting to implement the plan or announcing its main features to those affected by it, and the plan has reached a stage where the decision is unlikely to be reversed. The measurement of a restructuring provision includes only the direct expenditures arising from the restructuring, which are those amounts that are both necessarily entailed by the restructuring and not associated with the ongoing activities of the entity.

Provisions for the expected cost of warranty obligations under contracts with customers and local sale of goods legislation are recognised in the month of sale of the relevant products, at the Directors' best estimate of the expenditure required to settle the Group's obligation. Provisions for leased property dilapidation are recognised at the commencement of the lease using the Group's best estimate to settle the obligation at the end of the lease term.

Share-based payments

The Group issues equity-settled share-based payments to certain employees. These payments are measured at fair value (excluding the effect of non-market based vesting conditions) at the date of grant. The fair value determined at the grant date of the equity-settled share-based payments is expensed on a straight-line basis over the vesting period, based on the Group's estimate of the shares that will eventually vest based on the satisfaction of non-market based vesting and service conditions.

The fair value of options issued under the Group's Long-Term Incentive Plan is measured using a stochastic (Monte Carlo binomial) model for grants made with market based vesting conditions. The fair value of all other equity-settled share-based payments is measured using the Black-Scholes pricing model. The expected life used in these models has been adjusted, based on management's best estimate, for the effects of non-transferability, exercise restrictions and behavioural considerations.

SAYE share options granted to employees are treated as cancelled when employees cease to contribute to the scheme. This results in accelerated recognition of the expenses that would have arisen over the remainder of the original vesting period.

Own shares

Own shares are deducted from equity. No gain or loss is recognised in the income statement on the purchase, sale, issue or cancellation of the Group's own shares.

Non-current assets (or disposal groups) held for sale

Non-current assets (or disposal groups) are classified as held for sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use and a sale is considered highly probable. They are measured at the lower of their carrying amount and fair value less costs to sell, except for assets such as deferred tax assets, assets arising from employee benefits, financial assets and investment property that are carried at fair value and contractual rights under insurance contracts, which are specifically exempt from this requirement.

Non-current asset (or disposal group) is classified as held for sale only when two conditions are met:

- the asset (or disposal group) is available for immediate sale in its present condition subject only to terms that are usual and customary for sales of such assets (or disposal groups);
- and its sale is highly probable

Discontinued operations

A discontinued operation is a component of the Group that has been disposed of and that represents a separate major line of business and is part of a single co-ordinated plan to dispose of such a line of business. The results of discontinued operations are presented separately in the income statement and are shown net of tax.

Where an operation is classified as discontinued, the post-tax results of that operation will be presented as a single line item on the face of the income statement and the cash flows from the discontinued operations are shown in the discontinued operations note 11.

New and amended standards and interpretations

The Group adopted the following amendments to standards and interpretations, which are effective for the first time this year:

- Annual improvements to IFRS standards 2018–2020
- Amendment to IFRS 3 – Business Combinations
- Amendments to IAS 37 – Provisions, Contingent Liabilities and Contingent Assets
- Amendments to IAS 16 – Property, Plant and Equipment

The amendments have not had a material impact on the reported results.

International Accounting Standards in issue but not yet effective

The Group intends to adopt new and amended standards and interpretations, if applicable, when they become effective. The amended standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's financial statements are not expected to have an impact on the Group's reported financial position or performance.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

4. Reconciliation of adjusted financial measures

	Note	2022 £'000	2021 £'000
Profit before tax from continuing operations		824	994
Share-based payment charges	9	1,748	758
Exchange differences on intra-group transactions		(811)	95
Gain on derivative financial liabilities	22	-	(2,919)
Restructuring and transaction expenses		450	1,404
Research and development expenditure credit		(379)	(270)
Fair value gain on financial assets at fair value through profit or loss	22	8	(987)
Amortisation of acquired intangible assets	16	982	354
Adjusted profit/(loss) before tax from continuing operations		2,822	(571)
Interest income	10	(38)	(4)
Finance costs		453	242
Depreciation of property, plant and equipment	17	2,654	3,318
Amortisation of intangible assets (other than acquired intangibles)	16	85	121
Loss on asset disposal		80	77
Impairment of assets	17	147	-
Adjusted EBITDA from continuing operations		6,203	3,183

EBITDA is calculated as statutory operating profit before depreciation (other than that arising from IFRS 16 accounting), amortisation and impairment of property, plant and equipment, intangible assets and goodwill. Adjusted EBITDA is calculated as EBITDA excluding other adjusting items as defined.

Adjusted financial measures are alternative performance measures, which adjust for recurring and non-recurring items that management consider to have a distorting effect on the underlying results of the Group.

Share-based payment charges include the IFRS 2 charge for the period of £1,559,000 (2021: £653,000) and the debit relating to National Insurance on the outstanding potential share option gains of £189,000 (2021: £105,000).

Exchange differences relating to the United States and Swedish operations represent exchange gains or losses recorded in the consolidated income statement as a result of intra-group transactions in the United States and Sweden. These costs were included in general and administrative expenses in the consolidated income statement.

Gain on derivative financial instruments relates to gains made on call option contracts which were exercised in 2021. These amounts are included on the consolidated income statement under gain on derivative financial liabilities.

Restructuring and transaction expenses of £450,000 (2021: £1,404,000) relate to costs incurred and provisions made in relation to acquisition transactions of £194,000 (2021: £961,000) and reorganisation costs. The calculated impact of the restructuring and transaction expenses at the corporation tax rate of 19% would be £32,000 based on the expenses included that would be treated as tax deductible (2021: £52,000). The cash paid related to restructuring and investment expenses is £792,000 (2021: £992,000).

The research and development expenditure credit relates to the corporation tax relief receivable relating to qualifying research and development expenditure. This item is shown on the face of the consolidated income statement. Cash receipts of £198,000 received during the year were in relation to the Xaar RDEC claim which related to the claim for year ended 31 December 2020. In 2021 £219,000 was received in relation to the FFEI RDEC and R&D claim which related to their financial year 1 April 2020 to 31 March 2021.

The fair value loss of £8,000 (2021: £987,000 gain) on financial assets at fair value through profit and loss relates to the sale of Xaar 3D Limited. The net consideration includes contingent consideration that is valued and reported at fair value. The fair value movement is recognised in the income statement as fair value loss on financial assets at fair value through profit and loss. Further details are included in notes 11 and 22.

The amortisation of acquired intangible assets relates to the acquisition of FFEI Limited in 2021 and the acquisition of Megnajet Limited and Technomation Limited in 2022. These include software, patents and customer relationships for FFEI which are being amortised over six years and IP, brand and customer relationships for Megnajet and Technomation which are being amortised over eight to ten years. These costs were included in general and administrative expenses in the consolidated income statement.

4. Reconciliation of adjusted financial measures continued

	Note	2022 Pence per share	2021 Pence per share
Basic earnings per share from continuing operations	14	2.3p	0.9p
Share-based payment charges		2.3p	1.0p
Exchange differences on intra-group transactions		(1.1p)	0.1p
Gain on derivative financial liabilities		-	(3.8p)
Restructuring and transaction expenses		0.6p	1.8p
Research and development credit		(0.5p)	-
Fair value gain on financial assets at FVTPL		-	(1.3p)
Amortisation of acquired intangible assets		1.3p	0.5p
Tax effect of adjusting items		(0.1p)	(0.2p)
Adjusted basic earnings/(loss) per share from continuing operations	14	4.8p	(1.0p)

This reconciliation is provided to align with how the Board measures and monitors the business at an underlying level, and is a measure used in establishing remuneration.

5. Revenue

The Group derives its revenue from contracts with customers for the transfer of goods and services over time and at a point in time in the following major segments. This is consistent with the revenue information that is disclosed for each reportable segment under IFRS 8 Operating Segments in note 6.

Revenue from goods and services is recognised in accordance with IFRS 15 when control has been transferred to the customer. For sale of goods and services revenue is recognised at a point in time, unless specific conditions have been satisfied allowing revenue to be recognised over a period of time as identified in the five-step process (above), e.g. where the asset produced does not have an alternative use and the Group has an enforceable right to payment for performance completed to date. An input methodology (based on estimated labour hours or costs) is used as this depicts the performance conditions when recognising revenue over time.

2022	Product sales £'000	Commissions & services £'000	Licensee royalties £'000	Total £'000
Continuing operations				
Printhead	38,318	675	49	39,042
Product Print Systems	19,056	568	-	19,624
Digital Imaging	8,809	2,824	-	11,633
Ink Supply Systems	2,483	-	-	2,483
	68,666	4,067	49	72,782
2021				
Continuing operations				
Printhead	39,186	678	240	40,104
Product Print Systems	13,487	413	-	13,900
Digital Imaging	3,773	1,477	-	5,250
	56,446	2,568	240	59,254

Product Print Systems and Digital Imaging have contracts with customers where the performance obligations are partially unsatisfied at 31 December 2022. The transaction price allocated to partially satisfied and unsatisfied performance obligations at 31 December 2022 is as set out below. The transaction price allocated to partially satisfied performance obligations has been recognised in the year while the transaction price allocated to partially unsatisfied performance obligations has not been recognised.

	2022 £'000	2021 £'000
Continuing operations		
Transaction price allocated to partially satisfied performance obligations	5,464	4,569
Transaction price allocated to partially unsatisfied performance obligations	6,437	6,060
Total transaction price for partially completed contracts	11,901	10,629

Management expects that £6,310,000 of the partially unsatisfied performance obligations at 31 December 2022 will be recognised in 2023 with the remaining £127,000 in future periods (2021: £5,809,000 recognised in 2022, £251,000 in future periods).

During the year contract assets have increased by £181,000 from £1,319,000 in 2021 (restated) to £1,500,000 in 2022. Contract liabilities have increased by £258,000 from £3,541,000 in 2021 (restated) to £3,799,000 in 2022. Both of these movements are primarily due to the completion of Product Print Systems contracts. All contract liabilities are expected to be realised within the next year.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

5. Revenue continued

	2022 £'000	2021 £'000
At a point in time	67,318	54,685
Over time	5,464	4,569
Total revenue	72,782	59,254

	2022 £'000	2021 £'000
Within one year	6,310	5,809
In between one and five years	127	251
Total transaction price for partially completed contracts	6,437	6,060

Asset/liability table	2022 £'000	2021 £'000 Restated
Trade and other receivables	7,321	5,192
Contract assets	1,500	1,319
Contract liabilities	(3,799)	(3,541)

The contract assets represent revenue recognised in the consolidated income statement, but not yet invoiced.

6. Business and geographical segments

For management reporting purposes, the Group's operations are analysed according to the four operating segments of 'Printhead', 'Product Print Systems', 'Digital Imaging' and 'Ink Supply Systems'. These four operating segments are the basis on which the Group reports its primary segment information and on which decisions are made by the Group's Chief Executive Officer and Board of Directors, and resources allocated. Each business unit is run independently of the others and headed by a general manager. The Group's Chief Operating Decision Maker is the Chief Executive Officer. There is no aggregation of segments for disclosure purposes.

Digital Imaging was added in the second half of 2021 as a result of the acquisition of FFEI and Ink Supply Systems was added in the first half of 2022 as a result of the acquisition of Megnajet on 2 March 2022.

Segment information for continuing operations is presented below:

Year ended 31 December 2022	Printhead £'000	Product Print Systems £'000	Digital Imaging £'000	Ink Supply Systems £'000	Unallocated £'000	Consolidated £'000
Revenue						
Total segment revenue	39,042	19,624	11,633	2,483	-	72,782
Result						
Adjusted (loss)/gain from continuing operations before tax	(754)	2,756	198	622	-	2,822
Share-based payment charges	-	-	-	-	(1,748)	(1,748)
Exchange differences relating to intra-group transactions	811	-	-	-	-	811
Restructuring and transaction expenses	(429)	-	-	(21)	-	(450)
Gain on derivative financial liabilities	-	-	-	-	-	-
Research and development expenditure credit	83	-	296	-	-	379
Fair value gain on financial assets at FVTPL	(8)	-	-	-	-	(8)
Amortisation of acquired intangible assets	-	-	(775)	(207)	-	(982)
Profit/(loss) before tax from continuing operations	(297)	2,756	(281)	394	(1,748)	824

Unallocated corporate expense relates to administrative activities which cannot be directly attributed to any of the principal product groups, consisting of share-based payment charges include the IFRS 2 charge for the year and the charge relating to National Insurance on the outstanding potential share options.

6. Business and geographical segments continued

Year ended 31 December 2021	Printhead £'000	Product Print Systems £'000	Digital Imaging £'000	Ink Supply Systems £'000	Unallocated £'000	Consolidated £'000
Revenue						
Total segment revenue	40,104	13,900	5,250	-	-	59,254
Result						
Adjusted (loss)/gain from continuing operations before tax	(526)	(766)	721	-	-	(571)
Share-based payment charges	-	-	-	-	(758)	(758)
Exchange differences relating to intra-group transactions	(95)	-	-	-	-	(95)
Restructuring and transaction expenses	(1,288)	(116)	-	-	-	(1,404)
Gain on derivative financial liabilities	2,919	-	-	-	-	2,919
Research and development expenditure credit	227	-	43	-	-	270
Fair value gain on financial assets at FVTPL	987	-	-	-	-	987
Amortisation of acquired intangible assets	-	-	(354)	-	-	(354)
Profit/(loss) before tax from continuing operations	2,224	(882)	410	-	(758)	994

In addition to the external revenue reported by operating segments, the Printhead segment made £1,399,000 (2021: £1,092,000) of intercompany sales, the Product Print Systems segment made nil (2021: £312,000) of intercompany sales and the Ink Supply Systems segment made £538,000 (2021: nil) of intercompany sales.

Segment assets – Continuing operations

	2022 £'000	2021 £'000
Printhead	67,089	73,247
Product Print Systems	16,920	16,793
Digital Imaging	15,035	13,900
Ink Supply Systems	3,397	-
Total assets	102,441	103,940

Assets are allocated to the segment which has responsibility for their control.

No information is provided for segment liabilities as this measure is not provided to the Chief Operating Decision Maker.

Other segment information – Continuing operations

Year ended 31 December 2022	Notes	Printhead £'000	Product Print Systems £'000	Digital Imaging £'000	Ink Supply Systems £'000	Unallocated £'000	Consolidated £'000
Depreciation and amortisation	8	3,265	244	1,260	23	-	4,792
Impairment of PPE		147	-	-	-	-	147
Share-based payment charges	9	-	-	-	-	1,748	1,748
Capital expenditure (PPE)	17	1,639	231	673	119	-	2,662

Year ended 31 December 2021	Notes	Printhead £'000	Product Print Systems £'000	Digital Imaging £'000	Unallocated £'000	Consolidated £'000
Depreciation and amortisation	8	3,844	290	530	-	4,664
Impairment of PPE		-	-	-	-	-
Share-based payment charges	9	-	-	-	758	758
Capital expenditure (PPE)	17	2,153	160	127	-	2,440

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

6. Business and geographical segments continued

Revenues from major products and services – Continuing operations

	2022 €'000	2021 €'000
Printhead	39,042	40,104
Product Print Systems	19,624	13,900
Digital Imaging	11,633	5,250
Ink Supply Systems	2,483	–
Consolidated revenue (excluding investment income)	72,782	59,254

Geographical information

The Group operates in three principal geographical areas: EMEA, the Americas and Asia. The Group's revenue from external customers and information about its segments (non-current assets excluding deferred tax assets and other financial assets) by geographical location are detailed below:

	Revenue from external customers Continuing operations	
	2022 €'000	2021 €'000
EMEA	28,418	23,730
Asia		
– China	6,748	10,562
– Japan	396	575
– Other	1,045	828
The Americas (predominantly USA)	36,175	23,559
	72,782	59,254

Revenues are attributed to geographical areas on the basis of the customer's operating location.

Revenue attributed to the UK was £2,680,000 (2021: £3,733,000).

	Non-current assets	
	2022 €'000	2021 €'000
EMEA	31,353	27,784
Asia	213	90
The Americas (predominantly USA)	8,450	7,657
	40,016	35,531

Non-current assets being Goodwill, Other intangible assets, Property, plant and equipment and Right-of-use assets as these are attributed to the location where they are situated.

Information about major customers

There are no customers whose revenue exceeds 10% of total revenues from continuing operations during the current and preceding year.

Revenue from the top five customers represents 29% of revenues (2021: 28%).

7. Other income

The only other income is government grants. The accounting policy in relation to the adopted and applicable treatment of government grants is disclosed in note 3, in accordance with IAS 20 Accounting for Government Grants and Disclosure of Government Assistance.

During the year FFEI received a grant of £139,276 from the UKRI Future Leaders Fellowships scheme. The purpose of this grant is to increase throughput, quality and validity of imaging data for Biomedical AI. The full £139,276 was recognised and received in the year.

Xaar plc and its UK based subsidiaries decided not to take part in any of the government support schemes arising from the COVID-19 crisis in current, prior nor preceding years.

8. Profit/(loss) for the year

Profit for continuing operations in the year has been arrived at after charging/(crediting):

	2022 £'000	2021 £'000
Research and development expenses*	6,718	5,706
Grants towards research and development including the research and development expenditure credit	(379)	(227)
Depreciation of property, plant and equipment	2,654	3,318
Depreciation of right-of-use asset	1,071	871
Amortisation of capitalised development costs (included in research and development expenses)	-	77
Amortisation of other intangible assets (included in general and administrative expenses)	1,067	398
Loss on disposal of property, plant and equipment	80	77
Cost of inventories recognised as expense	42,184	36,227
Impairment (losses)/gains on financial assets	46	(388)
Net gain on foreign exchange	(1,152)	(158)
Total fees payable to the Company's auditor and its associates	779	651

* Total spend on research and development in 2022, including capitalised and amortised development costs included in note 16, was £8,375,000 (2021: £5,706,000).

Auditor's remuneration

	2022 £'000	2021 £'000
Fees payable to the Company's auditor		
- Group and Company audit	695	493
- Prior year overrun	-	120
Total audit fees	695	613
- Interim review	84	38
Total non-audit fees	84	38
Total fees payable for the continuing operations	779	651
Total audit fees payable for the discontinued operations	-	38
Total fees payable to the Company's auditor and its associates	779	689

The Audit Committee has considered the independence of the auditor in relation to non-audit services throughout the year. A description of the work of the Audit Committee is set out in the Corporate Governance statement on pages 73 to 78 and includes an explanation of how auditor's objectivity and independence is safeguarded when non-audit services are provided by the auditor.

9. Staff costs

The average monthly number of persons employed by the Group including Executive Directors was as follows:

	2022 Number	2021 Number
Research and development	85	86
Sales and marketing	49	46
Manufacturing and engineering	235	222
Administration	66	53
	435	407

Their aggregate remuneration comprised:

	Notes	2022 £'000	2021 £'000
Wages and salaries		22,560	20,958
Social security costs		2,400	2,014
Pension costs	32	1,303	930
Share-based payments		1,748	758
		28,011	24,660

Share-based payment charges comprise the IFRS 2 charge for the year £1,559,000 (2021: £653,000) and a charge relating to National Insurance on the outstanding potential share option gains £189,000 (2021: £105,000).

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

10. Interest receivable & payable

Investment income

	Group £'000	2022 Total £'000	Group £'000	2021 Total £'000
Interest receivable on cash and bank balances, and treasury deposits	38	38	4	4

There was no accrued interest receivable at year end (2021: £1,000). Cash interest received at year end was £39,000 (2021: £13,000).

Finance Costs

	Notes	2022 £'000	2021 £'000
Interest on invoice securitisation/discounting	22	33	-
Interest on leases	18	242	144
Other interest costs		178	98
		453	242

Interest on invoice securitisation/discounting is charged daily on amounts drawn at a rate equivalent to the appropriate base rate + 1.75% p.a.

Interest on leases is calculated at an effective interest rate depending upon the initial gross valuation of the lease and discounted repayment terms to calculate an Internal Rate of Return (IRR) required to achieve a nil value at the end of the lease term. Each lease is considered in isolation, a range of discount rates and interest rates are applicable between 2.0% and 4.0%.

11. Discontinued operations

The Thin Film business which was discontinued in 2019 incurred costs in 2021 and 2022 which mainly related to supplier and customer liabilities and inventory for last time buy sales. All liabilities have now been settled and we maintain an amount of inventory that is fully provided and not likely to be sold.

During the year ended 31 December 2021, the Xaar 3D business completed its divestment. Xaar received net cash of £9,272,000 and as specified in the sale agreement, additional cash consideration of up to \$21,250,000. At the time of sale, the fair value of the consideration was determined to be £10,863,000. It was recognised as a financial asset at fair value through profit or loss. Further detail is disclosed in note 36.

During the year, Xaar received earn-out income amounting to €289,000 (€236,000). At year end, the fair value was re-estimated to be £11,606,000 (2021: £11,850,000). The loss of £8,000 (2021: £987,000 gain) is presented in the income statement as fair value gain on financial assets at fair value through profit or loss. The results of Xaar 3D business for the period ended 1 November 2021 are included in the discontinued operations in the income statement for the year ended 31 December 2021.

The results of Thin Film and 3D related activities for the year are shown below:

	Thin Film 2022 £'000	3D 2022 £'000	Total 2022 £'000	Thin Film 2021 £'000	3D 2021 £'000	Total 2021 £'000
Revenue	-	-	-	384	2,918	3,302
Expenses	(159)	-	(159)	(623)	(7,075)	(7,698)
Loss before income tax	(159)	-	(159)	(239)	(4,157)	(4,396)
Income tax credit	-	-	-	-	30	30
Net loss before gain on sale	(159)	-	(159)	(239)	(4,127)	(4,366)
Gain on sale of investment in subsidiary	-	-	-	-	17,899	17,899
(Loss)/profit after income tax from discontinued operations	(159)	-	(159)	(239)	13,772	13,533

The 2021 gain on sale of investment in subsidiary was not subject to income tax because it falls under the Substantial Shareholding Exemptions (SSE) Rule.

11. Discontinued operations continued

The 2021 £7,075,000 expenses in 3D are net of £297,000 that relates to service charge received from the Group undertaking which has to be eliminated in the Group's consolidated income statement.

	Thin Film 2022 £'000	3D 2022 £'000	Total 2022 £'000	Thin Film 2021 £'000	3D 2021 £'000	Total 2021 £'000
Attributable to:						
Owners of the Company	(159)	-	(159)	(239)	15,763	15,524
Non-controlling interest	-	-	-	-	(1,991)	(1,991)
	(159)	-	(159)	(239)	13,772	13,533

The net cash flows incurred by Thin Film and 3D are as follows.

	Thin Film 2022 £'000	3D 2022 £'000	Total 2022 £'000	Thin Film 2021 £'000	3D 2021 £'000	Total 2021 £'000
Net cash (outflow)/inflow from operating activities	(150)	-	(150)	103	(1,792)	(1,689)
Net cash outflow from investing activities	-	-	-	-	(122)	(122)
Net cash outflow from financing activities	-	-	-	-	(98)	(98)
Net cash (used)/generated from discontinued operations	(150)	-	(150)	103	(2,012)	(1,909)

	2022 Pence per share	2021 Pence per share
(Loss)/earnings per share		
(Loss)/earnings for the year from discontinued operations	(0.2p)	20.0p
Diluted (loss)/earnings for the year from discontinued operations	(0.2p)	19.7p

The sale of the Xaar 3D business is summarised below. The total consideration received includes the initial cash consideration and contingent consideration less transaction costs that are directly attributable to the sale. The carrying amount of the net assets sold represents 55% of the Xaar shareholding to 3D adjusted by an intra-company markup that relates to inventory.

	2021 £'000
Consideration received or receivable:	
Cash	9,272
Fair value of contingent consideration	10,863
Less: Transaction costs	(246)
Total disposal consideration	19,889
Carrying amount of net assets sold	(1,990)
Gain on sale of investment in subsidiary	17,899

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

12. Tax

Total tax calculation:

Notes	2022 £'000	2021 £'000
Current tax – UK	(269)	100
Current tax – overseas	87	15
	(182)	115
Amounts under provided in previous years	96	71
Total current income tax (credit)/charge	(86)	186
Deferred tax – origination and reversal	(881)	45
Adjustment in respect of prior years	–	38
Total deferred tax credit	(881)	83
Total tax (credit)/charge for the year	(967)	269

The rate of tax for the year, based on the UK standard rate of corporation tax, is 19% (2021: 19%). Taxation for other jurisdictions is calculated at the rates prevailing in the respective jurisdictions.

The Finance Act 2021, which was substantively enacted on 10 June 2021, amended the main rate of corporation tax to 25% from 1 April 2023. As deferred tax assets and liabilities are measured at the rates that are expected to apply in the periods of the reversal, deferred tax balances at 31 December 2022 have been calculated at the rate at which the relevant balance is expected to be recovered or settled.

The cash flow statement shows repayments of tax for £113,000 during the year (2021: £150,000). The £113,000 is broken down as £199,000 for the RDEC claim received and £86,000 net income taxes paid (primarily in the US).

In the year ending 31 December 2022, the eligible UK companies in the Group are claiming R&D tax relief and RDEC for paid for development.

The closing deferred tax asset at 31 December 2022 is entirely related to the USA tax losses and has been calculated using the US tax rates at which the deferred tax asset is expected to be reversed in future periods. Details on deferred tax assets and liabilities are disclosed in note 23.

The charge for the year can be reconciled to the profit per the income statement as follows:

Notes	2022 £'000	2021 £'000
Profit before tax from continuing activities	824	994
(Loss)/profit before tax from discontinued activities	(159)	13,503
Profit before income tax	665	14,497
Tax on ordinary activities at standard UK rate of 19% (2021: 19%)	126	2,754
Effect of:		
Expenses not deductible for tax purposes	878	398
(Non-taxable) income	(1,521)	(4,021)
R&D SME credit	(285)	(171)
Effect of different tax rates of subsidiaries operating overseas	6	(135)
Effect of change in UK corporation tax rate on deferred tax	3	–
Current year losses not recognised	541	1,195
Previously unrecognised amounts now recognised	(1,060)	–
Derecognition of previously recognised deferred tax balances	–	141
Prior year adjustments	82	108
Losses surrendered for tax credit	374	–
Foreign exchange on translation of balances	(111)	–
Total tax (credit)/expense for the year	(967)	269
Income tax (credit)/expense reported in the statement of profit and loss	(967)	299
Income tax credit attributable to discontinued operations	–	(30)
	(967)	269

The expenses not deductible for tax purposes mainly relate to depreciation on non-qualifying assets, R&D SME expenditure and share-based payments.

The effective tax rate for the year is -145.4%. Without recognising the previously unrecognised US tax losses, this would have been 14.0% (2021: 1.9%).

13. Dividends

No interim or final dividend was proposed or paid during the current and preceding year.

14. Earnings per share – basic and diluted

The calculation of basic and diluted earnings per share is based on the following data:

	2022 £'000	2021 £'000
Earnings		
Earnings for the purposes of basic earnings per share being net profit/(loss) attributable to equity holders of the parent	1,632	16,219
from continuing operations	1,791	695
from discontinued operations	(159)	15,524
Number of shares		
Weighted average number of ordinary shares for the purposes of basic earnings per share	77,549,264	77,528,064
Effect of dilutive potential ordinary shares:		
Share options	4,085,096	1,261,215
Weighted average number of ordinary shares for the purposes of diluted earnings per share	81,634,360	78,789,279
	2022 Pence per share	2021 Pence per share
Basic	2.1p	20.9p
Diluted	2.0p	20.6p
Continuing operations:		
Basic	2.3p	0.9p
Diluted	2.2p	0.9p
Discontinued operations:		
Basic	(0.2p)	20.0p
Diluted	(0.2p)	19.7p

Potential ordinary shares are treated as dilutive if their conversion to ordinary shares would decrease earnings per share or increase loss per share.

The weighted average number of ordinary shares for the purposes of basic earnings per share is calculated after the exclusion of ordinary shares in Xaar plc held by Xaar Trustee Ltd, the Xaar plc ESOP Trust and the matching shares held in trust for the Share Incentive Plan.

For 2022, there were share options granted over 276,547 shares that had not been included in the diluted earnings per share calculation because they were anti-dilutive at the year end (2021: 107,490 shares that would not have been included).

The performance conditions for LTIP awards over 172,492 shares (2021: 1,510,685 shares) have not been met in the current financial period or are not expected to be met in future financial periods, and therefore the dilutive effect of those shares has not been included in the diluted earnings per share calculation.

Adjusted earnings per share

This adjusted earnings per share information is considered to provide a fairer representation of the Group's trading performance year-on-year, as it removes items which, in the Board's opinion, do not reflect the underlying performance of the Group and is a measure used in establishing remuneration.

The calculation of adjusted EPS, excluding the items listed below, is based on the loss on continuing operations of:

	2022 £'000	2021 £'000
Earnings/(loss) on continuing operations for the purposes of basic earnings per share being net profit/(loss) attributable to equity holders of the parent	1,791	695
Shared-based payment charges	1,748	758
Exchange difference relating to intra-group transactions	(811)	95
Gain on derivative financial instruments	-	(2,919)
Restructuring and transaction expenses	450	1,404
Research and development credit	(379)	-
Fair value gain on financial assets at FVTPL	8	(987)
Amortisation of acquired intangible assets	982	354
Tax effect of adjusting items	(100)	(179)
Adjusted profit/(loss) after tax – continuing operations	3,689	(779)

Tax effect of adjusting items is calculated at current corporation tax rate (19%) less any disallowed tax items.

Notes to the consolidated financial statements continued

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14. Earnings per share – basic and diluted continued

Adjusted earnings per share continued

The tax credit effect in the adjusted basic earnings per share reflects the fact that the FV gain/loss on financial assets at FVTPL and transaction costs were non-deductible. R&D tax credits are not taxable. In addition, deferred tax assets are largely unrecognised in respect of share-based payments.

The denominators used are the same as those detailed above for both basic and diluted earnings per share.

Adjusted earnings per share on continuing operations is earnings per share excluding the items adjusted for as detailed above:

	2022 Pence per share	2021 Pence per share
Adjusted basic	4.8p	(1.0p)
Adjusted diluted	4.5p	(1.0p)

15. Goodwill

The carrying amount of goodwill at 31 December 2022 was £7,163,000 (2021: £5,894,000).

Goodwill acquired in a business combination is allocated, at acquisition, to the cash-generating units (CGUs) that are expected to benefit from that business combination. Goodwill occurred from the acquisition of Engineered Print Solutions (EPS) in July 2016, FFEI Limited in July 2021 and Megnajet Limited in March 2022.

	2022 £'000	2021 £'000
Balance at the beginning of the year	5,894	5,152
Addition – acquisition of Megnajet Limited (2021: FFEI Limited)	661	689
Foreign currency translation	608	53
Balance at the end of the year	7,163	5,894

As part of the reportable segments, goodwill amounting to £5,813,000 is attributed to Product Print Systems (2021: £5,205,000), £689,000 to Digital Imaging (2021: £689,000) and £661,000 to Ink Delivery Systems (2021: nil). These are all single CGUs.

The Group tests goodwill annually for impairment or more frequently if there are indications that goodwill might be impaired. Having performed impairment testing, no impairment has been identified and therefore no impairment loss has been recognised during the current and preceding year.

The goodwill balance has been tested for annual impairment on the following basis:

- the carrying value of goodwill has been assessed by reference to value in use, which has been estimated using cash flow forecasts. The basis of these forecasts is the Board approved budget for the next year and management reviewed three-year plans, which have been extrapolated to a five-year view for each CGU, taking into consideration any expected inflationary pressures. Margins are broadly consistent with historic performance and revenues assumed take into account past experience and are reflective of a conservative view of Xaar's core strategy;
- discount rates range between 18.2% and 14.5%, reflecting third party specialist advice, and have been determined by taking into account geographies, size of business and industry risk factors;
- long-term growth rates of 1% (2021: 1%) for UK based CGUs and 1.4% (2021: 1.4%) for those in the US (being Product Print Systems only) were used based on OECD growth rate.

The outcomes of the impairment assessments conducted are dependent on estimates which have been subject to sensitivity analyses before a conclusion on impairment was made. It is management's view that the key assumptions are revenue growth, gross margin % and discount rate. Any reasonably possible change to these sensitivities that could result in an impairment charge have been disclosed below:

Engineered Print Solutions (Product Print Systems) goodwill impairment review

Using a discount rate of 14.5% (2021: 13.7%) the recoverable amount calculated exceeds the carrying value of the CGU by \$12.1 million (£10.1 million, 2021: £10.0 million). The carrying amount of goodwill would exceed its recoverable amount, when compared to the risk adjusted cash flows, if:

- forecast compound annual revenue growth over the five-year period were to decline from a forecast of 3.9% to 0.3%, representing a movement in revenue from \$24.2 million in 2022 to \$24.6 million in 2027, assuming no mitigating actions were taken.
- there was a reduction in assumed direct gross margin from 39% to 34%.

Digital Imaging goodwill impairment review

Using a discount rate of 18.2% (June 2022: 11.4%) the recoverable amount calculated exceeds the carrying value of the CGU by £5.1 million (£7.2 million, June 2022). No reasonably possible changes to assumptions that could result in an impairment charge have been identified.

Ink Delivery Systems goodwill impairment review

- Using a discount rate of 15.6% the recoverable amount calculated exceeds the carrying value of the CGU by £4.1 million. No reasonably possible changes to assumptions that could result in an impairment have been identified.

16. Other intangible assets

	Capitalised development costs £'000	Licences acquired £'000	Software £'000	Technology- based intangible asset £'000	Brands £'000	Customer relationships £'000	Total £'000
Cost							
At 1 January 2021	38,687	532	3,437	-	-	-	42,656
Additions	-	-	124	3,044	-	1,204	4,372
Transfers	-	-	(80)	-	-	-	(80)
Exchange movements	-	-	2	-	-	-	2
At 1 January 2022	38,687	532	3,483	3,044	-	1,204	46,950
Additions	1,657	1,100	33	-	-	-	2,790
Acquisitions	-	-	-	1,990	281	422	2,693
Transfers	222	-	-	-	-	-	222
Exchange movements	-	-	12	-	-	-	12
Disposals	-	-	(14)	-	-	-	(14)
At 31 December 2022	40,566	1,632	3,514	5,034	281	1,626	52,653
Amortisation							
At 1 January 2021	38,611	532	3,306	-	-	-	42,449
Charge for the year	77	-	44	254	-	100	475
Transfers	(1)	-	(16)	-	-	-	(17)
At 1 January 2022	38,687	532	3,334	254	-	100	42,907
Charge for the year	-	38	46	715	23	245	1,067
Exchange movements	-	-	12	-	-	-	12
Disposals	-	-	(14)	-	-	-	(14)
At 31 December 2022	38,687	570	3,378	969	23	345	43,972
Carrying amount:							
At 31 December 2022	1,879	1,062	136	4,065	258	1,281	8,681
At 31 December 2021	-	-	149	2,790	-	1,104	4,043

In 2022, Xaar acquired additional intangible assets in relation to the acquisition of Megnajet Limited.

Further details on the acquisition are in note 36.

Development costs of £1,657,000 were capitalised during the year. These were externally generated costs relating to the development of a new generation printhead platform. These assets were in the course of construction at the reporting date and consequently not amortised during the year. On completion, it is anticipated that these assets will have a useful economic life of up to 20 years.

The licences acquired during the year of £1,100,000 are being amortised over a period of between 13 and 15 years.

Amortisation periods are in line with the accounting policy in note 3.

Amortisation is recorded in administrative expenses of the consolidated accounts.

At 31 December 2022 the Group had entered into contractual commitments of £358,000 (2021: nil) for the acquisition of intangible assets.

All intangible assets are tested annually for impairment. The assessment of the intangibles in Megnajet, EPS and FFEI was determined using a discounted cash flow model and no impairment was identified.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

17. Property, plant and equipment

	Land and buildings £'000	Leasehold property £'000	Plant and machinery £'000	Furniture, fittings and equipment £'000	Total £'000
Cost					
At 1 January 2021	1,811	13,520	66,881	3,992	86,204
Additions	31	693	1,259	457	2,440
Acquisitions	–	7	14	71	92
Transfers	65	(35)	1,095	(64)	1,061
Exchange movements	19	–	15	6	40
Disposals	–	(505)	(1,012)	(15)	(1,532)
At 1 January 2022	1,926	13,680	68,252	4,447	88,305
Additions	14	217	1,506	925	2,662
Acquisitions	–	1	50	2	53
Transfers	–	–	(222)	–	(222)
Exchange movements	225	4	286	73	588
Disposals	–	–	(931)	(255)	(1,186)
At 31 December 2022	2,165	13,902	68,941	5,192	90,200
Depreciation					
At 1 January 2021	388	8,785	56,395	3,489	69,057
Charge for the year	24	584	2,522	188	3,318
Transfers	39	(54)	1,081	(90)	976
Exchange movements	4	–	2	5	11
Disposals	–	(353)	(915)	(15)	(1,283)
At 1 January 2022	455	8,962	59,085	3,577	72,079
Charge for the year	61	586	1,614	393	2,654
Transfers	–	–	–	–	–
Exchange movements	48	1	201	53	303
Disposals	–	–	(833)	(254)	(1,087)
Impairment	–	–	147	–	147
At 31 December 2022	564	9,549	60,214	3,769	74,096
Carrying amount					
At 31 December 2022	1,601	4,353	8,727	1,423	16,104
At 31 December 2021	1,471	4,718	9,167	870	16,226

The impairment during the year is £147,000 (2021: nil). The impairment relates to Printhead machinery no longer in use.

Included within the plant and machinery assets is £651,000 assets in the course of construction (2021: £283,000).

As at 31 December 2022 the Group had entered into contractual commitments for the acquisition of property, plant and equipment amounting to £923,000 (2021: £1,330,000).

18. Leases

The Group has lease contracts for various items of buildings, equipment and vehicles used in its operations. The Group's obligations under its leases are secured by the lessor's title to the leased assets. Generally, the Group is restricted from assigning and subleasing the leased assets.

The Group also has certain leases of machinery with lease terms of 12 months or less and leases of office equipment with low value. The Group applies the 'short-term lease' and 'lease of low-value assets' recognition exemptions for these leases.

Set out below are the carrying amounts of right-of-use assets recognised and the movements during the year:

	Buildings £'000	Equipment £'000	Vehicles £'000	Total £'000
Cost				
At 1 January 2021	11,122	84	–	11,206
Additions (restated)	4,534	11	–	4,545
Acquisitions	3,057	16	–	3,073
Disposals	(6,341)	(14)	–	(6,355)
Exchange movements	4	–	–	4
At 31 December 2021 (restated)	12,376	97	–	12,473
Additions	246	28	24	298
Exchange movements	17	–	–	17
At 31 December 2022	12,639	125	24	12,788
Depreciation				
At 1 January 2021	9,078	50	–	9,128
Charge for the year	853	18	–	871
Disposals	(6,341)	(14)	–	(6,355)
Exchange movements	–	–	–	–
At 31 December 2021	3,590	54	–	3,644
Charge for the year	1,046	21	4	1,071
Disposals	(14)	–	–	(14)
Exchange movements	19	–	–	19
At 31 December 2022	4,641	75	4	4,720
Carrying amount				
At 31 December 2022	7,998	50	20	8,068
At 31 December 2021 (restated)	8,786	43	–	8,829

Please refer to note 37 for prior year restatement.

Of the £4,545,000 additions in the prior year, £2,733,000 represented the lease renewal of the Huntingdon main site.

Set out below are the carrying amounts of lease liabilities (included under current and non-current liabilities on the statement of financial position) and the movements during the period:

	2022 £'000	Restated 2021 £'000
At 1 January	9,191	2,579
Additions (2021 restated)	323	7,195
Accretion of interest	242	144
Payments	(914)	(726)
Exchange movement	(10)	(1)
At 31 December (2021 restated)	8,832	9,191
Current	1,032	692
Non-current	7,800	8,499
	8,832	9,191

Please refer to note 37 for prior year restatement.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

18. Leases continued

The table below summarises the maturity profile of the Group's lease liabilities based upon the contractual undiscounted payments as at 31 December 2022.

	2022 £'000	2021 £'000
On demand	–	–
Less than three months	291	196
Four to 12 months	872	759
One to five years	5,057	5,047
More than five years	3,620	4,538
	9,840	10,540

The following are the amounts recognised in profit or loss:

	2022 £'000	2021 £'000
Depreciation expense of right-of-use assets	1,071	871
Interest expense on lease liabilities	242	144
Expense relating to short-term leases (included in administrative expenses)	59	375
Total amount recognised in profit or loss	1,372	1,390

Interest expense on lease liabilities consists of £242,000 (2021: £144,000) reported under continuing operations and nil in 2022 (2021: £9,000) relating to Xaar 3D business reported under discontinued operations.

Cash outflows in respect of right-of-use assets consisted of £914,000 (2021: £726,000) financing and £59,000 (2021: £375,000) operating cash flows.

19. Subsidiaries

A list of the investments in subsidiaries, including the name, country of incorporation and proportion of ownership interest, is given in note 11 to the Company's separate financial statements.

20. Inventories

	2022 £'000	2021 £'000
Raw materials and consumables	11,804	5,619
Work in progress	3,516	8,605
Finished goods	13,828	4,615
	29,148	18,839

The cost of inventories recognised as an expense includes a charge of £335,000 (2021: £1,189,000) in respect of inventory write-downs.

Gross stock was £37,973,000 (2021: £28,410,000) with inventory provisions of £8,826,000 (2021: £9,571,000). The provision included £6,143,000 (2021: £6,289,000) in relation to discontinued operations, all of which are fully written down. A significant proportion of this increase in inventory is attributable to the managed investment in our supply chain capability.

There is no specific impact on the valuation of the Company's inventories arising from climate related matters. Estimates are based upon the most reliable evidence available at the time the estimates are made.

21. Other financial assets

The fair value of all financial assets and financial liabilities approximates their carrying value.

Trade and other receivables	2022 £'000	2021 £'000
Amount receivable for the sale of goods	7,446	5,336
Allowance for doubtful debts	(125)	(144)
	7,321	5,192
Contract assets (2021 restated)	1,500	1,319
Other debtors	1,291	2,211
Prepayments	1,415	1,439
	11,527	10,161
Current tax asset	735	531

21. Other financial assets continued

Trade receivables

The average credit period taken on sales of goods is 37 days (2021: 32 days). No interest is charged on the receivables for the period agreed in the Requirements Contract or, if not specified or applicable, the first 30 days from the date of the invoice. Thereafter, the Group reserves the right to charge interest at a daily rate from 1.5% to the greater of 4.0% per annum above the base rate of the Bank of England from time to time, or the maximum rate of interest allowable under the Late Payment of Commercial Debts (Interest) Act 1998, on all sums outstanding until payment in full is received.

Trade receivables over 120 days are provided for based on estimated irrecoverable amounts from the sale of goods, determined by reference to past default experience.

The maximum exposure to credit risk is the carrying amount of the financial assets as disclosed in the liquidity section of note 22. Before accepting any new customer, the Group uses an external credit scoring system to assess the potential customer's credit quality and defines credit limits by customer. Credit limits are reviewed at least once per year. Of the trade receivables balance at the end of the year, seven customers each represented greater than 5% of the total receivables balance, totalling £2,857,000 (2021: £2,100,000). The total due from these customers represents 4% (2021: 4%) of the Group's revenue.

Included in the Group's trade receivables balance are debtors with a carrying amount of £1,700,000 (2021: £1,444,000) which are past due at the reporting date for which the Group has not provided as there has not been a significant change in credit quality and the amounts are still considered recoverable.

Ageing of past due but not impaired receivables:

	2022 £'000	2021 £'000
1–30 days overdue	831	885
30–60 days overdue	417	150
60–90 days overdue	398	264
90–120 days overdue	55	81
Over 120 days overdue	(1)	64
Total receivables	1,700	1,444

Movement in the allowance for doubtful debts:

	2022 £'000	2021 £'000
Balance at the beginning of the year	144	622
Impairment (reversal)/losses increased	46	(388)
Exchange difference	4	0
Amounts written off as uncollectible	(69)	(90)
Balance at the end of the year	125	144

The Group always measures the loss allowance for trade receivables at an amount equal to lifetime ECL. The expected credit losses on trade receivables are estimated using a provision matrix by reference to past default experience of the debtor and an analysis of the debtor's current financial position, adjusted for factors that are specific to the debtor, general economic conditions of the industry in which the debtor operates and an assessment of both the current as well as the forecast direction of conditions at the reporting date. The Group has recognised a loss allowance of 1% for receivables aged 60 days or less, 5% for receivables aged between 61 and 90 days and 15% for 91 and 120 days. A loss allowance of 25% is applied for receivables aged over 120 days. The loss allowance calculation excludes receivables with a specific provision. Most of the debt over 120 days has been provided in full and relates to a small number of customers where none of the debt is expected to be recovered through normal trading. A provision is made against trade receivables until such time as the Group believes the amount to be irrecoverable (such as the bankruptcy of a customer or emerging market risks, which would render the receivable irrecoverable), after which the trade receivable balance is written off.

Ageing of impaired trade receivables:

	2022 £'000	2021 £'000
Current	3	2
1–30 days overdue	1	2
30–60 days overdue	–	–
60–90 days overdue	8	–
90–120 days overdue	46	–
Over 120 days overdue	67	140
Total	125	144

The Directors have considered the sensitivity of doubtful debts and a 1% increase on the ECL percentage would equate to an additional £70,000 allowance (2021: £51,000). The Directors consider that the carrying amount of trade and other receivables approximates their fair value.

Contract assets

Contract assets consist of a small number of contracts relating to the design and production of bespoke machines or R&D services. Since there is regular contact with all those customers for project management purposes, with robust milestone payments, there is no generic risk in relation to any of those balances. The only time when expected credit loss provision would be in place is where we become aware of a risk of those customers becoming exposed to risk of bankruptcy. We were not aware of any such cases at year end so no such provision is in place.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

21. Other financial assets continued

Cash and cash equivalents

Cash and cash equivalents comprise cash held by the Group and short-term bank deposits with an original maturity of three months or less. The carrying amount of these assets approximates their fair value.

The analysis of cash and short-term bank deposits is as follows:

	2022 £'000	2021 £'000
Cash	8,546	25,051

The credit risk on liquid funds and derivative financial instruments is limited because the counterparties are banks with high credit ratings assigned by international credit-rating agencies.

Non-current assets

	2022 £'000	2021 £'000
Non-current assets	136	–

22. Financial instruments

Fair value measurements

The following table combines information about:

- classes of financial instruments based on their nature and characteristics;
- the carrying amounts of financial instruments;
- fair values of financial instruments (except financial instruments when carrying amount approximates their fair value); and
- fair value hierarchy levels of financial assets and financial liabilities for which fair value was disclosed.

Fair value hierarchy Levels 1 to 3 are based on the degree to which the fair value is observable:

- Level 1 fair value measurements are those derived from quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2 fair value measurements are those derived from inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices); and
- Level 3 fair value measurements are those derived from valuation techniques that include inputs for the asset or liability that are not based on observable market data (unobservable inputs).

	Financial assets			Financial liabilities		Total £'000
	FVTPL – designated £'000	FVTPL – mandatorily measured £'000	Amortised cost £'000	FVTPL – mandatorily measured £'000	Amortised cost £'000	
2022						
Financial asset at FVTPL (Level 3) (note 11)	–	11,606	–	–	–	11,606
Trade and other receivables (note 21)	–	–	10,114	–	–	10,114
Cash and bank balances (note 21)	–	–	8,546	–	–	8,546
Trade and other payables (note 24)	–	–	–	–	(14,862)	(14,862)
Borrowings and invoice discounting	–	–	–	–	(379)	(379)
Lease liabilities (note 18)	–	–	–	–	(8,832)	(8,832)
Other financial liabilities due after one year (note 24)	–	–	–	–	(2,094)	(2,094)

Additional disclosure for lease liabilities is reported in note 18.

	Financial assets			Financial liabilities		Total £'000
	FVTPL – designated £'000	FVTPL – mandatorily measured £'000	Amortised cost £'000	FVTPL – mandatorily measured £'000	Amortised cost £'000	
2021 (Restated)						
Financial asset at FVTPL (note 11)	–	11,850	–	–	–	11,850
Trade and other receivables (note 21)	–	–	8,722	–	–	8,722
Cash and bank balances (note 21)	–	–	25,051	–	–	25,051
Trade and other payables (note 24)	–	–	–	–	(15,971)	(15,971)
Borrowings and invoice discounting	–	–	–	–	–	–
Lease liabilities (note 18)	–	–	–	–	(9,191)	(9,191)
Other financial liabilities due after one year (note 24)	–	–	–	–	(3,354)	(3,354)

The fair value of cash, trade and other receivables/payables and other financial liabilities is deemed to equal book value.

22. Financial instruments continued

Fair value of the Group's financial assets and financial liabilities that are measured at fair value on a recurring basis

Some of the Group's financial assets and financial liabilities are measured at fair value at the end of each reporting period. The following table gives information about how the fair values of these financial assets and financial liabilities are determined (in particular, the valuation technique(s) and inputs used).

Financial asset/financial liabilities	Valuation technique(s) and key input(s)	Significant unobservable input(s)	Relationship and sensitivity of unobservable inputs to fair value
Financial asset at fair value through profit or loss (Level 3)	<p>Monte Carlo Simulation model.</p> <p>The following variables were taken into consideration: revenue projections and discount rate.</p> <p>The milestone consideration and 3% earn-out consideration are calculated based on the terms of the proposed transaction and by reference to simulated revenue. This is then discounted back to the valuation date using a discount rate over a period commensurate with the year in which payments are payable.</p>	<p>Revenue volatility (20% based on a median of comparable companies)</p> <p>Risk-adjusted discount rate. (10%)</p>	<p>10% increase/(decrease) in revenue volatility would result in £7,000 and £11,000 decreases respectively.</p> <p>1% increase/(decrease) in discount rate would result in £12,000 decrease and £14,000 increase in fair value respectively.</p>

Reconciliation of Level 3 fair value measurements of financial instruments

On 1 November 2021, the sale of Xaar 3D Limited to Stratasys was completed and Xaar received net cash of £9,272,000 and contingent consideration of £10,863,000 with a fair value of £11,850,000 as at 31 December 2021. The contingent consideration was recognised as financial asset at fair value through profit or loss. During the year, Xaar received earn-out income amounting to £236,000. The fair value of the contingent consideration as at 31 December 2022 is £11,606,000 with a fair value movement of £8,000.

	2022 £'000	2021 £'000
Balance at 1 January	11,850	–
Recognition of contingent consideration	–	10,863
Earn out received	(236)	–
Fair value (loss)/unrealised gain on financial assets at FVTPL	(8)	987
Balance at 31 December	11,606	11,850
Current asset	517	–
Non-current asset	11,089	11,850
	11,606	11,850

Financial risk management objectives

The Group's policy is to manage the Group's financial risk, secure cost effective funding for the Group's operations and to minimise the adverse effects of fluctuations in the financial markets on the value of the Group's financial assets and liabilities, on reported profitability and on the cash flows of the Group.

The Group finances its activities with a combination of cash and treasury deposits. Other financial assets and liabilities, such as trade debtors and trade creditors, arise directly from the Group's operating activities.

Financial instruments give rise to foreign currency, interest rate, credit and liquidity risk. The Group's management of its exposure to credit risk is discussed in note 21.

The Group's exposure has been calculated with reference to these balances as at the year-end.

Short-term borrowings

Short-term borrowings include an advance against customer invoices assigned to a third party as part of an invoice discounting arrangement. At the reporting date the carrying values of the customer invoices assigned and the associated liabilities were:

	2022 £'000	2021 £'000
Invoice discounting facility		
Gross invoice value assigned	2,851	–
Advance drawn	(379)	–
Net position	2,472	–

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22. Financial instruments continued

Short-term borrowings continued

Interest on the invoice discounting facility is charged daily when the facility is in an overdrawn position at a rate equivalent to the Bank of England base rate +1.75% p.a. There is an annual service fee of £25,000 charged monthly, and a one-off arrangement fee to open the facility of £10,000. No interest is payable on the unutilised element of the facility.

The facility limit is £5 million and operates for a minimum of 12 months from inception (September 2022). The facility can be cancelled with a three month notice period. There are no covenants attached to the invoice discounting facility.

Eligible debts in GBP and USD denomination are legally assigned to the facility provider as or soon after they are raised. The facility makes available 90% of the debts to Xaar Jet Limited, subject to certain monetary funding limits and concentration percentages by customer. XaarJet Limited remain responsible for collecting the debts as the collection agent for the finance provider and the remittances are made into an account held for the benefit of the finance provider, the balance of which is held as a liability in XaarJet Limited. Receipts from debtors in full generally have the effect of increasing the available facility.

No fair value adjustments are deemed necessary for these amounts; however, the receivables are subject to an allowance for doubtful debt (see note 21).

The invoice discounting facility is secured with fixed rate charges over purchased debts and a floating charge over the assets of Xaar Jet Ltd.

It remains the entity's responsibility to appropriately insure, manage and recover the debts assigned under the terms of the arrangement, and the transferred assets are subject to recourse at any time. This means the Group retained substantially all the risks and rewards and the control over the assets, thus derecognition criteria of accounts receivable were not met.

Interest rate risk

The Group's borrowing facilities, including its invoice discounting facilities, are linked to Bank of England base rate for GBP values, and Federal Bank Base rate for USD values. An increase in these benchmarks would impact the Group's cost of borrowing which, in turn, would affect the Group's financial performance.

If interest rates had been 1% higher/reduced by 1%, and all other variables were held constant, the Group's profit for the year ended 31 December 2022 would decrease by £4,000 or increase by £4,000 based on the invoice discounting facility balance at the year end. There would be no effect on equity reserves.

	2022				2021			
	Fixed rate financial liabilities	Floating rate financial liabilities	Interest free financial liabilities	Total	Fixed rate financial liabilities	Floating rate financial liabilities	interest free financial liabilities	Total
Leases (2021 restated)	(8,832)	-	-	(8,832)	(9,191)	-	-	(9,191)
Invoice discounting facility	-	(379)	-	(379)	-	-	-	-
Other liabilities	-	-	(16,956)	(16,956)	-	-	(19,325)	(19,325)
	(8,832)	(379)	(16,956)	(26,167)	(9,191)	-	(19,325)	(28,516)

Foreign currency risk

The Group receives approximately 41% of its revenues in US Dollars and 6% of its revenue in Euros, which are partially naturally hedged by supplies in these currencies, but the remainder requires conversion into Sterling in order to fund the remaining costs of the UK operations. The Group has R&D operations in Sweden, and therefore incurs costs and holds cash balances in Swedish Krona.

The Group is mainly exposed to foreign currency risk resulting from transactions in US Dollars, Euros and Swedish Krona. The following table demonstrates the Group's sensitivity to a 10% increase and decrease in the Sterling exchange rate against the relevant foreign currencies on the Group's profit before tax and equity (due to changes in the fair value of monetary assets, liabilities and forward currency contracts). 10% represents management's assessment of the reasonably possible movement in exchange rates. The sensitivity analysis includes only outstanding foreign currency denominated monetary items and adjusts their translation at the period end for a 10% change in foreign currency rates. The sensitivity analysis includes intercompany balances within the Group where the denomination of the balance is in a currency other than the functional currency of the debtor or the creditor. A positive number below indicates an increase in profit or equity.

	Euro currency impact		US Dollar currency impact		Swedish Krona currency impact	
	2022 £'000	2021 £'000	2022 £'000	2021 £'000	2022 £'000	2021 £'000
Effect of a 10% increase in relevant exchange rate on:						
Profit or loss	(63)	(96)	(1,489)	(1,126)	46	67
Equity	(63)	(96)	(1,489)	(1,126)	46	67
Effect of a 10% decrease in relevant exchange rate on:						
Profit or loss	77	117	1,819	1,376	(57)	(82)
Equity	77	117	1,819	1,376	(57)	(82)

22. Financial instruments continued

Capital risk management

The primary objective of the Group's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios in order to support its business, maximise shareholder value and provide flexibility for value enhancing investments. The Group manages its capital structure and makes adjustments to it in light of changes in economic conditions or as a result of corporate strategy.

To maintain or adjust the capital structure, the Group may adjust the dividend payment to shareholders, return capital to shareholders or issue new shares. In addition, any potential value enhancing investments may be funded through additional debt instruments. No changes were made in the objectives, policies or processes during the current or prior year. No dividend is proposed for 2022.

 Further information can be found on page 138 (note 13)

The Group monitors capital using a gearing ratio, which is determined as the proportion of debt to equity. Debt is defined as long- and short-term borrowings. Equity includes all capital and reserves of the Group attributable to the equity holders of the parent. The Group's policy for its existing business is to use debt where appropriate, whilst maintaining the gearing ratio at a level under 10%. The gearing ratio (excluding IFRS 16 leases) at the year-end is as follows:

	2022 £'000	2021 £'000
Borrowings excluding leases	379	–
Total equity	71,769	68,802
Gearing ratio	1%	0%

The Group is not subject to externally imposed capital requirements.

Credit risk management

Credit risk refers to the risk that a counterparty will default on its contractual obligations resulting in financial loss to the Group. The Group has adopted a policy of only dealing with creditworthy counterparties and insuring the suppliers, as a means of mitigating the risk of financial loss from defaults.

Trade receivables consist of a large number of customers, spread across different industries and geographical areas. Ongoing credit evaluation is performed on the financial condition of accounts receivable.

The credit risk on liquid funds is limited because the counterparties are banks with high credit ratings assigned by international credit rating agencies. Additional credit insurance coverage is maintained where appropriate against agreed credit terms with customers.

Liquidity risk

The Group aims to mitigate liquidity risk by managing cash generation by its operations and applying cash collection targets throughout the Group. Investment is carefully controlled, with authorisation limits operating up to Group Board level and cash payback periods applied as part of the investment appraisal process. In this way the Group aims to maintain a good credit rating to facilitate fund raising.

In order to mitigate the Group's liquidity risks, the Group can choose to fund significant fixed asset purchases by finance leases repayable over a period of three to five years dependent on the individual asset being financed and interest-bearing loans.

In its funding strategy, the Group's objective is to maintain a balance between continuity of funding and flexibility through the use of overdrafts, bank loans, finance leases and hire purchase contracts. The Group manages liquidity risk by maintaining adequate reserves and banking facilities by continuously monitoring cash flows and matching the maturity profiles of financial assets and liabilities. Given the current level of cash availability there are currently no overdraft or bank loan facilities arranged with banks either drawn or undrawn.

Non-derivative financial liabilities of £14,854,000 (2021: £15,971,000) comprise trade creditors. The trade creditors are within current liabilities. The inherent liquidity risk of these financial liabilities is managed within the overall liquidity risk of the Group as described above. The maturity profile of lease liabilities is set out in note 18. The only other non-current financial liabilities are in relation to deferred consideration for the two acquisitions (FFEI and Megnajt) which will be fully settled in 2024.

The Group's policy is to invest any excess cash used in managing liquidity in financial instruments exposed to insignificant risk of changes in market value, being placed on interest-bearing deposit with maturities no more than 12 months.

2022	Trade and other payables	Invoice discounting	Deferred consideration	Lease liabilities	Total
In three months or less, or on demand	10,459	379	–	291	11,129
Four to twelve months	2,757	–	1,733	872	5,362
One to five years	–	–	2,133	5,057	7,190
More than five years	–	–	–	3,620	3,620
	13,216	379	3,866	9,840	27,301
2021	Trade and other payables	Invoice discounting	Deferred consideration	Lease liabilities	Total
In three months or less, or on demand	12,099	–	–	196	12,295
Four to twelve months	2,283	–	1,733	759	4,775
One to five years	–	–	3,467	5,047	8,514
More than five years	–	–	–	4,538	4,538
	14,382	–	5,200	10,540	30,122

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

23. Deferred tax

The following are the major deferred tax liabilities and assets recognised by the Group and movements thereon during the current and prior reporting periods:

	Accelerated tax depreciation £'000	Share-based payment £'000	Intangible assets £'000	Tax losses £'000	Other temporary difference £'000	Total £'000
At 1 January 2021	692	(1)	–	(721)	(178)	(208)
(Credit)/charge to income	(13)	–	(64)	235	(20)	138
(Credit)/charge for discontinued operations	(58)	–	–	(38)	–	(96)
Acquisitions	–	–	989	(989)	–	–
Disposals	(450)	–	–	419	195	164
Foreign exchange movement	–	–	–	–	3	3
At 31 December 2021*	171	(1)	925	(1,094)	–	1
(Credit)/charge to income	206	–	(142)	(834)	(127)	(897)
Acquisitions	–	–	170	–	–	170
At 31 December 2022	377	(1)	953	(1,928)	(127)	(726)

* Prior year included a misclassification disclosure which resulted in both the accelerated tax depreciation and the tax losses being overstated by £925k at 31 December 2021. There is no impact on the total deferred tax. Prior year also included a misclassification of items shown in the (Credit)/charge to income line that should have been shown through the Disposals line.

Certain deferred tax assets and liabilities have been offset. The following is the analysis of the deferred tax balances (after offset) for financial reporting purposes.

	2022 £'000	2021 £'000
Deferred tax liabilities	–	1
Deferred tax (assets)	(726)	–
Being: Deferred tax (assets)/liabilities from continuing operations	(726)	1
Being: Deferred tax (assets)/liabilities from discontinued operations	–	–

As at 31 December 2022, the Group had unused tax losses of £119,925,000 (2021: £117,015,000) available to offset against future profits. As at 31 December 2022, in addition to the deferred tax asset recognised on losses in the table above, the Group has an unrecognised deferred tax asset in respect of these losses totalling £28,100,000 (2021: £28,200,000). These losses may be carried forward indefinitely.

Whilst the Board believes in the long-term potential and profitability of the Printhead business unit, the forecast taxable losses over the next couple of years mean that the UK tax losses will not be utilised in the short term. Therefore, no deferred tax asset has been recognised relating to UK losses for 2022. However, due to the forecasted taxable profits for the EPS business unit, a deferred tax asset in relation to brought forward US losses has been fully recognised resulting in a tax credit for the period, and is expected to be used over 2023 and 2024. USD 1,900,000 of US tax losses were utilised in 2022 with USD 4,200,000 carried forward.

As at 31 December 2022, the Group has unused capital losses of £1,100,000 (2021: £1,100,000) available for offset against future gains. No deferred tax asset has been recognised in respect of these capital losses as it is not considered probable that there will be future chargeable gains available. These losses may be carried forward indefinitely.

The impact of climate change has been considered in the forecast and valuation of future taxable profits and no impacts were noted.

24. Trade and other payables

	2022 £'000	2021 £'000 Restated
Current liabilities		
Trade payables and accruals	13,216	14,382
Other financial liabilities	1,646	1,589
	14,862	15,971
Non-current liabilities		
Other financial liabilities	2,094	3,354

Trade creditors and accruals principally comprise amounts outstanding for trade purchases and ongoing costs. The average credit taken for trade purchases is 36 days (2021: 28 days).

Contract liabilities are now shown separately on the balance sheet.

The other financial liabilities represent the deferred consideration in relation to the acquisitions of FFEI Ltd, Megnajet Limited and Technomation Limited, split between the current portion due in 2023 (£1,646,000) and non-current portion.

The Directors consider that the carrying amount of trade payables approximates to their fair value.

25. Provisions

	Warranty £'000	Restructuring £'000	Provision for dilapidation £'000	Total £'000
At 1 January 2021	77	280	–	357
Additional/(release) provision in the year	253	11	250	514
Acquisition	–	–	50	50
Utilisation of provision	(18)	(280)	–	(298)
Release of provision	(59)	–	–	(59)
At 1 January 2022	253	11	300	564
Additional/(release) provision in the year	225	93	–	318
Utilisation of provision	(166)	(11)	–	(177)
Release of provision	–	–	–	–
At 31 December 2022	312	93	300	705

The warranty and commercial agreements provision represents management's best estimate of the Group's liability related to claims against product warranties or commercial sales agreements. The timing of the utilisation of this provision is uncertain.

Additional restructuring provisions of £93,000 have been added primarily in relation to redundancy which will be utilised in 2023; the utilisation of the £280,000 in 2021 related to the relocation of HQ to Waterbeach.

Non-current provisions relate to provisions for dilapidation which form part of right-of-use assets and are depreciated over the lease term. Further details on leases are in note 18.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

26. Share capital

	2022 €'000	2021 €'000
Issued and fully paid:		
78,446,230 (2021: 78,446,230) ordinary shares of 10.0p each	7,844	7,844

The movement during the year on the Company's issued and fully paid shares was as follows:

	2022 Number	2021 Number	2022 €'000	2021 €'000
Balance at 1 January	78,446,230	78,334,296	7,844	7,833
Exercise of share options	–	111,934	–	11
Balance at 31 December	78,446,230	78,446,230	7,844	7,844

The Company has one class of ordinary shares which carry no right to fixed income.

Scheme	Date of grant	Number of shares under option as at 31 December 2022	Number of shares under option as at 31 December 2021	Subscription price per share
Xaar plc 2004 Share Option Plan	1 May 12	–	90,000	226.5p
		–	90,000	
Xaar plc 2017 Share Save Scheme	1 November 17	–	–	344.0p
	1 November 18	–	34,975	142.0p
	1 December 19	145,893	893,038	34.0p
	2 November 20	644,544	681,104	102.0p
	4 November 21	606,961	632,995	129.0p
	3 November 22	508,529	–	140.0p
		1,905,927	2,242,112	
Xaar plc 2013 Share Incentive Plan	17 April 13	–	4,332	0.0p
	16 April 14	–	4,749	0.0p
	14 April 16	–	6,766	0.0p
	13 April 17	–	3,952	0.0p
		–	19,799	
Total share options outstanding at 31 December		1,905,927	2,351,911	

Options under the Xaar plc Share Save Scheme are ordinarily exercisable between 36 and 42 months after the date of grant.

Long-Term Incentive Plan

Performance Share Awards outstanding under the Xaar plc 2007 Long-Term Incentive Plan are as follows:

Date of grant	Number of shares under option as at 31 December 2022	Number of shares under option as at 31 December 2021
1 May 2012	–	5,229
2 April 2015	25,096	30,179
28 September 2015	2,536	2,536
1 April 2016	15,733	17,733
11 May 2016	4,662	4,977
27 June 2016	–	3,733
6 September 2016	700	700
1 December 2016	–	15,093
	48,727	80,180

All awards under this scheme are exercisable within three to ten years after the date of grant.

26. Share capital continued

Long-Term Incentive Plan continued

Performance Share Awards have been made under the Xaar plc 2017 Long-Term Incentive Plan as follows:

Date of grant	2022 Number of shares	2021 Number of shares
16 May 2017	12,202	18,804
2 April 2019	–	104,292
30 April 2019	–	59,789
4 October 2019	180,328	180,328
29 April 2020	368,333	394,000
4 June 2020	535,000	535,000
1 October 2020	21,000	21,000
14 October 2021	937,528	986,272
6 April 2022	702,006	–
14 Dec 2022	204,317	–
	2,960,714	2,299,485

All awards under this scheme are exercisable within three to ten years after the date of grant.

27. Share premium account

	2022 £'000	2021 £'000
Balance at 1 January	29,427	29,328
Premium arising on issue of equity shares	–	99
Balance at 31 December	29,427	29,427

28. Own shares

	2022 £'000	2021 £'000
Balance as at 1 January	(1,923)	(1,957)
Purchased in the year	(1,000)	–
Sold in the year	2,148	34
Balance at 31 December	(775)	(1,923)

Of this balance, £20,000 (2021: £20,000) represents 91,250 ordinary shares in Xaar plc held in trust by Xaar Trustee Ltd. Xaar Trustee Ltd was formed in 1995 to act as trustee to the Employee Benefit Trust established in 1995 to hold shares for the benefit of the employees of the Company and the Group. There has been no movement in the number of shares held in trust by Xaar Trustee Ltd during the year.

The remaining balance of £755,000 (2021: £1,903,000) represents the cost of 307,410 (2021: 692,575) shares in Xaar plc purchased in the market at market value and held by the Xaar plc ESOP trust to satisfy options granted under the Company's share option schemes.

During the year the ESOP purchased 474,971 shares (2021: nil) and sold 860,136 shares to satisfy exercised options in the year (2021: 12,508).

The market value of own shares at 31 December 2022 was £773,000 (2021: £1,427,000).

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

29. Translation reserves

	2022 £'000	2021 £'000
Balance at 1 January	1,011	864
Exchange differences on retranslation of net investment	617	147
Balance at 31 December	1,628	1,011

Exchange differences relating to the translation of the net assets of the Group's foreign operations, which relate to subsidiaries only, from their functional currency into the parent's functional currency, being Sterling, are recognised directly in the translation reserve.

30. Retained earnings and other reserves

Notes	Merger reserve £'000	Share-based payments £'000	Other reserves £'000	Total other reserves £'000	Retained earnings £'000	Total £'000
Balance at 1 January 2021	1,105	14,911	5,151	21,167	(5,564)	15,603
Net profit for the year	–	–	–	–	16,219	16,219
Share option exercises	–	–	–	–	(32)	(32)
Charge to equity for equity-settled share-based payments	32	–	653	653	–	653
Balance at 31 December 2021	1,105	15,564	5,151	21,820	10,623	32,443
Net profit for the year	–	–	–	–	1,632	1,632
Cash-settled share-based payments	–	–	–	–	(249)	(249)
Share options exercises	–	–	–	–	(1,740)	(1,740)
Charge to equity for equity-settled share-based payments	32	–	1,559	1,559	–	1,559
Balance at 31 December 2022	1,105	17,123	5,151	23,379	10,266	33,645

The merger reserve and other reserves are not distributable. The merger reserve represents the share premium account in Xaar Technology Limited.

The share-based payment reserve represents the cumulative charge made under IFRS 2 in relation to share options and LTIP awards. Other reserves represent the non-distributable portion of the dividend received in Xaar plc from Xaar Digital Limited.

31. Reconciliation of liabilities arising from financing activities

	2021	Cash flows	Additions	Discontinued operations	Interest	Foreign exchange movement	2022
Lease liabilities (2021 restated)	9,191	(914)	323	–	242	(10)	8,832
Deferred consideration	4,943	(1,733)	374	–	156	–	3,740
Invoice discounting facility	–	346	–	–	33	–	379
Other interest incurred and paid	–	(22)	–	–	22	–	–
	14,134	(2,323)	697	–	453	(10)	12,951

	2020	Cash flows	Additions	Discontinued operations	Interest	Foreign exchange movement	2021
Lease liabilities (restated)	2,579	(824)	7,195	98	144	(1)	9,191
Deferred consideration	–	–	4,858	–	85	–	4,943
Other interest incurred and paid	–	(13)	–	–	13	–	–
	2,579	(837)	12,053	98	242	(1)	14,134

32. Share-based payments

Equity-settled share option scheme

The Company's share option schemes are open to all employees of the Group. Options are exercisable at a price equal to the average quoted market price of the Company's shares on the date of grant. The standard vesting period is three years.

Xaar plc 2004 Share Option Plan from 2011 onwards: The last remaining options either lapsed or were exercised during the year-ended 31 December 2022.

The Xaar 2017 Share Save Schemes provide an opportunity to all UK employees to save a set monthly amount (up to £500) over three years towards the exercise of a discounted share option, which is granted at the start of the three years.

The Xaar Share Incentive Plan provided an opportunity for all UK employees to buy shares from their pre-tax remuneration up to the limit permitted by the relevant tax legislation and were awarded additional shares for free on a matching basis. The last remaining options granted under the scheme were exercised during the year-ended 31 December 2022.

Options and awards under the Xaar 2007 and 2017 Share Save Schemes and Xaar Share Incentive Plan are not subject to performance conditions.

If the options remain unexercised after a period of ten years from the date of grant, or 42 months in the case of the Share Save Scheme, or five years in the case of the Share Incentive Plan (being the contractual lives), the options expire. Save as permitted in the share option scheme rules, options ordinarily lapse on an employee leaving the Group.

Details of the share options outstanding during the year are as follows:

	2022		2021	
	Number of share options	Weighted average exercise price (£)	Number of share options	Weighted average exercise price (£)
Outstanding at the beginning of the year	2,351,911	0.88	1,925,315	0.79
Granted during the year	508,529	1.40	632,995	1.29
Lapsed during the year	(105,267)	1.49	(104,614)	1.59
Exercised during the year	(849,246)	0.49	(101,785)	1.08
Outstanding at the end of the year	1,905,927	1.16	2,351,911	0.88
Exercisable at the end of the year	145,893	0.34	144,774	1.75

The weighted average share price at the date of exercise for share options exercised during the period was £2.05 (2021: £1.64). The options outstanding at 31 December 2022 had a weighted average remaining contractual life of two years (2021: two years). In 2022, options were granted on 3 November. The aggregate of the estimated fair values of the options granted on those dates is £559,000. In 2021, options were granted on 4 November. The aggregate of the estimated fair values of the options granted on those dates is £561,000.

The inputs into the Black-Scholes model are as follows:

	2022	2021
Weighted average share price	£1.81	£1.61
Weighted average exercise price	£1.40	£1.29
Weighted average expected volatility	78%	73%
Expected life	3.25 years	3.25 years
Risk-free rate	3.12%	0.69%
Weighted average expected dividends	0.00%	0.00%

Expected volatility was determined by calculating the historical volatility of the Group's share price over periods ranging from the previous one to three years. The expected life used in the model has been adjusted, based on management's best estimate, for the effects of non-transferability, exercise restrictions and behavioural considerations.

Notes to the consolidated financial statements continued

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32. Share-based payments continued

Long-Term Incentive Plan

The Company's Long-Term Incentive Plan is open to all employees of the Group.

From 2018, revenue from new products in the third year in the vesting period, whereby 25% of the awards will vest if the threshold target is achieved, below threshold 0% will vest and up to a maximum of 100% if the maximum revenue target or higher is achieved.

There are also a number of LTIP share awards granted that are subject to the achievement of different performance conditions for specific individuals, dependent on revenue or profit performance over a set performance period.

In addition, options shall only become exercisable in respect of any shares if the Committee in its absolute discretion determines that the overall financial performance of Xaar plc over the performance period is satisfactory. All awards that will vest will be calculated on a straight-line basis. All awards made under this scheme are exercisable within three to ten years after the date of grant. Save as permitted in the Long-Term Incentive Plan rules, awards lapse on an employee leaving the Group.

Key individuals have previously been invited to participate in a bonus matching scheme where matching LTIP share awards are granted when the employee invests their bonus in Xaar shares and retains ownership of these shares for the duration of the LTIP share award vesting period. The matching share award is a 1 for 1 match on the pre-tax value of the bonus used to acquire bonus investment shares. Matching LTIP share awards are subject to the same performance criteria as all other LTIP awards.

Details of Performance Share Awards outstanding during the year are as follows:

	2022	2021
Awards outstanding at the start of the year	2,379,665	1,587,450
Granted during the year	941,240	986,272
Lapsed during the year	(190,043)	(161,535)
Cash settled during the year	(84,700)	-
Exercised during the year	(36,721)	(32,522)
Awards outstanding at the end of the year	3,009,441	2,379,665
Exercisable at the end of the year	60,929	98,984

During the year ended 31 December 2022 the Remuneration Committee used its discretion to settle 84,700 awards that vested in the year in cash at their market value as at 31 March 2022 of £249,000 (2021: none).

The weighted average share price at the date of exercise for awards exercised during the period was £2.03 (2020: £1.67). The options outstanding at 31 December 2022 had a weighted average remaining contractual life of eight years (2021: nine years). In 2022, Performance Share Awards were made in April and December. The aggregate of the estimated fair values of the grants made during the year is £1,763,000. In 2021, Performance Share Awards were made in October. The aggregate of the estimated fair values of grants made on that date is £1,457,000.

The estimated fair values for grants with non-market based performance conditions were calculated using the Black-Scholes model. The inputs into the Black-Scholes model were as follows:

	2022	2021
Weighted average share price	£2.54	£1.77
Weighted average exercise price	£nil	£nil
Weighted average expected volatility	77%	81%
Weighted average expected life	3.41 years	2.44 years
Weighted average risk free rate	1.87%	0.67%
Weighted average expected dividends	0.00%	0.00%

The estimated fair values for grants with market based performance conditions were calculated using the Monte Carlo model. The inputs into the Monte Carlo model were as follows:

	2022	2021
Weighted average share price	£2.46	£1.77
Weighted average exercise price	£nil	£nil
Weighted average expected volatility	75%	90%
Weighted average expected life	3.61 years	2.44 years
Weighted average risk free rate	2.04%	0.55%
Weighted average expected dividends	0.00%	0.00%

32. Share-based payments continued

Deferred Bonus Plan

Under the Group's Deferred Bonus Plan, executives receive 70% of the participant's bonus achieved in cash and 30% in the form of rights to deferred shares of Xaar plc. These awards are subject only to service conditions, i.e. the requirement for recipients of awards to remain in employment with the Company over the vesting period. In 2022, the awards were granted in April and were in respect of participants' bonus for the Company's financial year which ended on 31 December 2021 and will vest on the dealing day following the announcement by the Company of its annual results for 2023 (assumed 24 March 2024) or, if later, the date on which the Committee determines. In 2021, the awards were granted in October in respect of the participants' bonus for the Company's financial year which ended on 31 December 2020 and will vest on the dealing day following the announcement by the Company of its annual results for 2022 (assumed 24 March 2023) or, if later, the date on which the Committee determines.

The executives do not receive any dividends and are not entitled to vote in relation to the deferred shares during the vesting period. If an executive ceases to be employed by the Group within this period, the rights will be forfeited, except in limited circumstances that are approved by the Board on a case-by-case basis.

The following table shows the deferred shares granted and outstanding at the beginning and end of the reporting period.

	2022	2021
Awards outstanding at the start of the year	34,098	–
Granted during the year	18,633	34,098
Lapsed during the year	–	–
Exercised during the year	–	–
Awards outstanding at the end of the year	52,731	34,098

The options outstanding at 31 December 2022 had a weighted average remaining contractual life of seven months (2021: one year and three months). The aggregate of the estimated fair value of grant made in 2022 was £50,000 and the estimated fair value of the grant made in 2021 was £60,000.

The estimated fair values for grants with non-market based performance conditions were calculated using the Black-Scholes model.

The inputs into the Black-Scholes model were as follows:

	2022	2021
Weighted average share price	£2.70	£1.77
Weighted average exercise price	£nil	£nil
Weighted average expected volatility	77%	81%
Weighted average expected life	1.25 years	1.25 years
Weighted average risk free rate	1.87%	0.67%
Weighted average expected dividends	0.00%	0.00%

The Group recognised total expenses of £1,559,000 and £653,000 related to all equity-settled share-based payment transactions in 2022 and 2021, respectively. A charge relating to National Insurance on the outstanding potential share option gains of £189,000 was recorded in 2022 (2021: £105,000).

33. Retirement benefit schemes

Defined contribution schemes

The UK based employees of the Group's UK companies have the option to be members of a defined contribution pension scheme managed by a third party pension provider. For each employee who is a member of the scheme the Company will contribute a fixed percentage of each employee's salary to the scheme. The only obligation of the Group with respect to this scheme is to make the specified contributions.

The total cost charged to the income statement in respect of all of the Group's retirement benefit schemes during 2022 was £1,303,000 (2021: £930,000). As at 31 December 2022 contributions of £165,000 (2022: £102,000) due in respect of the current reporting period had not been paid over to the schemes.

Notes to the consolidated financial statements continued

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34. Related party transactions

Transactions between the Company and its subsidiaries, which are related parties, have been eliminated on consolidation and are not disclosed in this note.

There were no other transactions during the year with related parties who are not members of the Group.

Remuneration of Directors

The actual remuneration of the Directors, who are the key management personnel of the Group, is disclosed in the Directors' Remuneration report. The contractual employee benefits are set out below in aggregate for each of the categories specified in IAS 24 'Related Party Disclosures'.

 Further information about the remuneration of individual Directors is provided in the audited part of the Directors' Remuneration report on pages 84 to 104

Remuneration of Directors

	2022 €'000	2021 €'000
Short-term employee benefits	1,080	924
Post-employment benefits	36	32
Share-based payments	494	168
	1,610	1,124

35. Non-controlling interest

Following the completion of the sale of Xaar 3D Limited to Strataysys during the year ended 31 December 2021, there are no non-controlling interests to report as at 31 December 2021 nor 31 December 2022.

On 1 November 2021, Strataysys exercised the call option and acquired the remaining 55% shareholding of Xaar 3D Limited. Xaar received \$13.5 million as initial consideration and with the 3% revised earn-out and the earn-out payments allow Xaar to receive up to \$34.75 million.

The 2021 income statement and the movement in cash flow as at and up to the date of sale (1 November 2021) are as follows:

Xaar 3D Limited

	2021 €'000
Income statement and other comprehensive income	
Revenue	2,918
Expenses	(7,342)
Loss for the year	(4,424)
Loss attributable to owners of the Company	(2,433)
Loss attributable to the non-controlling interests	(1,991)
Loss for the year	(4,424)
Total comprehensive loss attributable to owners of the Company	(2,433)
Total comprehensive loss attributable to the non-controlling interest	(1,995)
Total comprehensive loss for the year	(4,428)
Cash flow statement	
Net cash outflow from operating activities	(1,792)
Net cash outflow from investing activities	(122)
Net cash outflow from financing activities	(98)
Net cash outflow	(2,012)
Non-controlling interest equity	
Balance at 1 January	3,771
Share of total comprehensive expense for year	(1,995)
Derecognition of non-controlling interest	(1,776)
Balance at 31 December	-

36. Business combination

On 2 March 2022, Xaar completed the acquisition of 100% of the share capital of Megnajet Ltd and Technomation Ltd. The companies trade together under the name of Megnajet, and design and manufacture industrial ink management and supply systems for digital inkjet. The acquisitions will accelerate the Company's growth strategy by creating a more integrated inkjet solution whereby customers can access more of the printing ecosystem (such as ink supply systems and the electronics) from Xaar.

Technomation Ltd was acquired for its Intellectual Property and know-how. The acquisition has been accounted for as an asset acquisition using the optional concentration test within IFRS 3. The purchase price of £3,038,000, which includes £187,000 deferred consideration, was allocated to its Intellectual Property amounting £1,990,000 (being the purchase price net of £517,000 cash balance and £531,000 balance relating to working capital consisting of £816,000 receivables, £130,000 corporation tax creditor and £155,000 VAT creditor). Megnajet Ltd was accounted for as a business combination and the details of the net assets acquired, goodwill and purchase consideration are as follows:

Recognised amounts of identifiable assets acquired and liabilities assumed	Fair value £'000
Cash	1,067
Trade & other receivables	487
Corporate tax payable	(27)
Inventories	503
Property, plant and equipment	53
Intangible assets	703
Trade & other payables	(821)
Deferred Tax liability	(170)
Total net identifiable assets	1,795
Goodwill	661
Total consideration	2,456
Satisfied by:	£'000
Cash	2,269
Deferred consideration	187
Total consideration transferred	2,456
Net cash outflow arising on acquisition	£'000
Cash consideration	(2,269)
Less: cash and cash equivalents acquired	1,067
Total net cash outflow arising on acquisition	(1,202)

The fair value of acquired receivables is £250,000. The gross contractual amount for trade receivables due is £252,000, with a loss allowance of £2,000 recognised on acquisition. Other receivables relate to VAT amounting to £237,000.

The goodwill of £661,000 arising from the acquisition represents those characteristics and valuable attributes of the acquired business that cannot be quantified and attributed to separately identifiable assets in accounting terms. This goodwill is underpinned by a number of elements, the most significant of which is the well established, skilled and assembled workforce and potential new customer relationships and contracts which enable Megnajet to accelerate the development of ink management and supply systems through the shared expertise, technologies and resources across the Group. None of the goodwill recognised is expected to be deductible for income tax purposes.

The fair value of the intangible assets attributed to the acquisition of the business relates to customer relationships (£422,000) and brand (£281,000). These have an estimated useful life of eight and ten years respectively.

In addition to the cash consideration, deferred consideration shall be paid in the second year anniversary from the date of acquisition. The undiscounted amount of all future payments that the Company is required to make under the deferred consideration arrangement is £200,000.

Acquisition related costs which are included in administrative expenses in the consolidated income statement for the period ended 31 December 2022 amounted to £193,000.

The acquired business contributed revenues of £2,483,000 and net profit of £758,000 to the Group for the period from 2 March 2022 to 31 December 2022. If the acquisition had occurred on 1 January 2022, consolidated pro-forma revenue and profit for the period ended 31 December 2022 would have been £3,038,000 and £832,000 respectively. These amounts have been calculated using the subsidiary's results and adjusting them for differences in the accounting policies between the Group and the subsidiary; and the additional depreciation and amortisation that would have been charged assuming the fair value adjustments to property, plant and equipment and intangible assets had applied from 1 January 2022, together with the consequential tax effects.

During the prior year, on 11 July 2021, Xaar acquired 100% of the issued share capital of FFEI Limited for a total consideration of £8,762,000, comprising £3,907,000 in initial cash and deferred consideration of £4,855,000 (which is £5,200,000 discounted using 3.49% discount rate). Net assets acquired totalled £8,073,000, and goodwill of £689,000 arose on the acquisition. The fair value of the intangible assets attributed to the acquisition related to patents and software (£3,044,000) and customer relationships (£1,204,000) with an estimated useful life of six years. Net cash flow arising on the acquisition was an inflow of £168,000, being cash equivalents acquired of £4,075,000 minus the cash consideration paid. The deferred consideration is payable in three annual instalments, of which one instalment was paid during the year ended 31 December 2022 (£1,733,000). Acquisition costs included in the consolidated income statement for the prior year amounted to £618,000.

Notes to the consolidated financial statements continued

for the year ended 31 December 2022

37. Restatement of prior period

The financial statements include prior period restatements in relation to leases and contract assets and liabilities.

Right-of-use asset and lease liabilities were both overstated by £539,000 due to an error in recording the renewal on one lease with no impact on net assets, cash flows or profit for the period. Since 2022 additional finance reviews have been introduced for all legal contracts. With the current control introduced in 2022, we believe the likelihood of such errors is substantially reduced.

Additionally, the EPS division had not been netting contract assets and liabilities and both balances were shown gross in the prior period. This error was identified by management in the current year and was corrected resulting in changes in processes and systems to ensure correct accounting is in place going forward. The respective adjustment for the prior year amounted to \$2,672,000 (£1,977,000) with no impact on net assets, cash flows or profit for the period.

The following tables summarise the impact of the prior period restatement on the financial statements of the Group for the period ended 31 December 2021:

Consolidated statement of financial position	2021 as reported £'000	IFRS 16 lease correction £'000	Contract assets /liabilities correction £'000	2021 restated £'000
Non-current assets				
Right-of-use asset	9,368	(539)	-	8,829
Current assets				
Trade and other receivables	12,138	-	(1,977)	10,161
Total assets	103,940	(539)	(1,977)	101,424
Current liabilities				
Contract liabilities	(5,518)	-	1,977	(3,541)
Lease liabilities	(1,231)	539	-	(692)
Total liabilities	(35,138)	539	1,977	(32,622)
Net assets	68,802	-	-	68,802

38. Subsidiary audit exemption

The following companies are exempt from the requirements relating to the audit of individual accounts for the year ended 31 December 2022 by virtue of section 479A of the Companies Act 2006: XaarJet Limited (03375961), XaarJet (Overseas) Limited (04312431), Xaar Technology Limited (02469592), Xaar Digital Limited (03588121), Xaar Trustee Limited (03025096), Xaar 3D Holdings Limited (11425540), FFEI Limited (03244452) and Megnajet Limited (07160441).

Company balance sheet

as at 31 December 2022

	Notes	2022 £'000	2021 £'000 Restated
Fixed assets			
Tangible fixed assets	3	942	1,059
Investments	4	99,282	92,893
		100,224	93,952
Current assets			
Debtors	5	1,619	8,803
Cash at bank and in hand		517	9,979
		2,136	18,782
Total assets		102,360	112,734
Creditors: amounts falling due within one year			
Trade and other payables	6	(17,793)	(23,977)
Lease liabilities	3	(113)	(85)
		(17,906)	(24,062)
Net current assets		(15,770)	(5,280)
Total assets less current liabilities		84,454	88,672
Creditors: amounts falling due after more than one year			
Lease liabilities	3	(689)	(776)
Other financial liabilities		(2,094)	(3,354)
		(2,783)	(4,130)
Provisions for liabilities	7	(250)	(250)
Total liabilities		(3,033)	(4,380)
Net assets		81,421	84,292
Capital and reserves			
Called up share capital	9	7,844	7,844
Share premium account	9	29,427	29,427
Other reserves	9	38,003	37,108
Own shares	9	(755)	(1,903)
Share-based payment reserve	9	4,443	3,780
Profit and loss account		2,459	8,036
Equity shareholders' funds		81,421	84,292

Xaar plc reported a loss for the financial year ended 31 December 2022 of £3,588,000 (2021: loss of £1,867,000).

As permitted by section 408 of the Companies Act 2006, the Company has elected not to present its own profit and loss account for the year.

The financial statements of Xaar plc, registered number 3320972, were approved by the Board of Directors and authorised for issue on 27 March 2023. They were signed on its behalf by:



John Mills
Chief Executive Officer



Ian Tichias
Chief Financial Officer

Company statement of changes in equity for the year ended 31 December 2022

	Notes	Called up share capital £'000	Share premium account £'000	Other reserves £'000	Own shares £'000	Share-based payments £'000	Profit and loss account £'000	Total £'000
At 1 January 2021		7,833	29,328	36,723	(1,937)	3,520	9,935	85,402
Loss for the financial year		-	-	-	-	-	(1,867)	(1,867)
Total comprehensive income for the period		-	-	-	-	-	(1,867)	(1,867)
Own shares sold in the period		-	-	-	34	-	-	34
Share option exercises		11	99	-	-	-	(32)	78
Capital contribution for share-based payments	4	-	-	385	-	-	-	385
Credit to equity for equity-settled share-based payments	10	-	-	-	-	260	-	260
At 31 December 2021		7,844	29,427	37,108	(1,903)	3,780	8,036	84,292
Loss for the financial year		-	-	-	-	-	(3,588)	(3,588)
Total comprehensive expense for the period		-	-	-	-	-	(3,588)	(3,588)
Own shares purchased in the period		-	-	-	(1,000)	-	-	(1,000)
Own shares sold in the period		-	-	-	2,148	-	-	2,148
Share option exercises		-	-	-	-	-	(1,740)	(1,740)
Cash settlement of share options		-	-	-	-	-	(249)	(249)
Capital contribution for share-based payments	4	-	-	895	-	-	-	895
Credit to equity for equity-settled share-based payments	10	-	-	-	-	663	-	663
At 31 December 2022		7,844	29,427	38,003	(755)	4,443	2,459	81,421

The share premium account and other reserves are non-distributable.

Other reserves represent the profit from the sale of a subsidiary, the non-distributable portion of the dividend received in Xaar plc from Xaar Digital Limited and the capital contribution to investments relating to share-based payments.

The share-based payment reserve represents the cumulative charge made under IFRS 2 in relation to share options and LTIP awards.

Full details of share capital, share premium and own shares are given in notes 26, 27 and 28 to the consolidated financial statements.

Notes to the Company financial statements for the year ended 31 December 2022

1. Significant accounting policies

Basis of accounting

The separate financial statements of the Company are presented as required by the Companies Act 2006 and in accordance with FRS 101 (Financial Reporting Standard 101) 'Reduced Disclosure Framework' as issued by the Financial Reporting Council. The results of Xaar plc are included in the consolidated financial statements of Xaar plc.

As permitted by FRS 101, the Company has taken advantage of the disclosure exemptions available under that standard in relation to IFRSs issued but not effective, share-based payments, financial instruments, capital management, presentation of comparative information in respect of certain assets, presentation of a cash flow statement, fair value, key management and certain related party transactions.

Where required, equivalent disclosures are given in the consolidated financial statements of Xaar plc.

The financial statements have been prepared under the historical cost convention.

The principal accounting policies adopted are the same as those set out in note 3 of the consolidated financial statements except as noted below. They have all been applied consistently throughout the year and the preceding year.

Share-based payments

The share-based payment reserve represents the cumulative charge made under IFRS 2 in relation to share options and LTIP awards. The costs related to employees contracted with other Group entities are recorded as an increase to investments as a capital contribution.

Going concern

The Company's business activities, together with the factors likely to affect its future development, performance and position, are set out in the Strategic Report on pages 16 to 25. Notes 21 and 22 include a description of the Company's objectives, policies and processes for managing its capital; its financial risk management objectives; details of its financial instruments and hedging activities; and its exposure to credit risk and liquidity risk.

After making enquiries, and having regard to the principal risks the Directors have a reasonable expectation that the Company has adequate resources to continue in operational existence for the foreseeable future. The Directors have assessed the Company's forecasts and cash flow projections for the period to 30 June 2024, which have undergone reverse stress tests, significantly reducing revenue across the period, and identified cost mitigations. For this reason, we continue to adopt the going concern basis in preparing the financial statements.

Please refer to the Directors' report on page 69 for going concern and note 3 to the consolidated financial statements for more detail.

Investments

Fixed asset investments in subsidiaries are shown at cost less provision for impairment and includes capital contributions arising from share-based payments. Each year, the Company carries out impairment tests of its investments which require estimates to be made of the value in use of its CGUs and groups of CGUs. The value in use calculations are dependent on estimates of future cash flows, long-term growth rates and appropriate discount rates to be applied to future cash flows.

For investments in subsidiaries acquired for consideration, including the issue of shares qualifying for merger relief, cost is measured by reference to the nominal value only of the shares issued. Any premium is ignored. As the merger relief arose from transactions before the introduction of FRS 101, the transaction has utilised grandfathering relief rather than recalculating and presenting under appropriate FRS 101 treatment.

Leases

The Company assesses whether a contract is or contains a lease, at the inception of the contract. The Company recognises a right-of-use asset and a corresponding lease liability with respect to all lease arrangements in which it is the lessee, except for short-term leases (defined as leases with a lease term of 12 months or less) and leases of low-value assets. For these leases, the Company recognises the lease payments as an operating expense on a straight-line basis over the term of the lease unless another systematic basis is more representative of the time pattern in which economic benefits from the lease are consumed. Please refer to page 143, note 18 and page 126, note 3 to the consolidated financial statements for more detail.

Dividends

Dividend income is recognised when an irrevocable right to receive payment has been established provided that it is probable that the economic benefits will flow to the Company and the amount of income can be measured reliably.

2. Profit/(loss) for the year

As permitted by section 408 of the Companies Act 2006, the Company has elected not to present its own profit and loss account for the year.

The average number of employees throughout 2022 was 27 (2021: 31). Staff costs amounted to £4,688,060 (2021: £2,652,000) including share-based payments. Information about the remuneration of Directors is provided in the audited part of the Directors' Remuneration report on page 84. For the remuneration of key management personnel of the Company see note 34 – Related party transactions of the consolidated financial statements.

The Directors' Remuneration report can be found on page 84

The audit fee for the audit of the Company's financial statements in 2022 was £20,000 (2021: £20,000).

The figures for the auditor's remuneration for the Company required by regulation 5(1)(b) of the Companies (Disclosure of Auditor Remuneration and Liability Limitation Agreements) Regulations 2008 are not presented as the consolidated financial statements comply with this regulation on a consolidated basis.

Notes to the Company financial statements continued

for the year ended 31 December 2022

3. Tangible fixed assets

	Right-of-use asset – building £'000
Cost	
At 1 January 2022	1,166
Additions	–
Transfer to subsidiary	–
At 31 December 2022	1,166
Depreciation	
At 1 January 2022	(107)
Charge for the year	(117)
Transfer to subsidiary	–
At 31 December 2022	(224)
Carrying amount	
At 31 December 2022	942
At 31 December 2021	1,059

Set out below are the carrying amounts of lease liabilities (included under interest-bearing loans and borrowings) and the movements during the period:

	2022 £'000	2021 £'000
At 1 January	862	35
Additions	–	896
Accretion of interest	17	17
Payments	(77)	(51)
Transfer to subsidiary	–	(35)
At 31 December	802	862
Current	113	85
Non-current	689	776
	802	861

The table below summarises the maturity profile of the Company's lease liabilities based upon the contractual undiscounted payments for the year.

	2022 £'000	2021 £'000
On demand	–	–
Less than three months	26	26
Four to 12 months	77	77
One to five years	400	384
More than five years	342	460
	845	947

The following are the amounts recognised in profit or loss:

	2022 £'000	2021 £'000
Depreciation expense of right-of-use assets	117	107
Interest expense on lease liabilities	17	17
Total amount recognised in profit or loss	134	124

4. Investments

	2022 £'000	2021 £'000
Subsidiary undertakings held at cost		
At the beginning of the year	92,893	82,055
Additions in the year	5,494	12,453
Impairment	–	(2,000)
Capital contributions arising from share-based payments	895	385
At the end of the year	99,282	92,893

In March 2022 Xaar plc acquired Megnajet Ltd for a total consideration of £2,455,942 and Technomation Ltd for a consideration of £3,038,000.

The impairment charge in the prior year was a result of intercompany dividends.

The Directors believe that the carrying value of the investments is at least equal to the recoverable amount.

5. Debtors

	2022 £'000	2021 £'000
Amounts receivable within one year		
Amounts owed by Group undertakings	1,384	8,638
Trade debtors	–	90
Prepayments and accrued income	208	–
Other debtors	27	75
	1,619	8,803

Amounts owed by Group undertakings are trading balances and interest is not charged and is payable on demand.

6. Creditors

	2022 £'000	2021 £'000
Amounts falling due within one year		
Amounts owed to Group undertakings	13,869	21,811
Other payables and accruals	2,278	577
Other financial liabilities	1,646	1,589
	17,793	23,977
Amounts falling due after one year		
Other financial liabilities	2,094	3,354

Amounts owed to Group undertakings are trading balances under normal commercial terms and interest is not charged and is payable on demand.

The other financial liabilities represent the deferred consideration in relation to the acquisition of FFEI Limited, Megnajet Limited and Technomation Limited; split between the current due in 2023 (£1,646,000) and non-current portion. Further details are in note 24 to the consolidated financial statements.

Notes to the Company financial statements continued

for the year ended 31 December 2022

7. Provisions

	2022 €'000	2021 €'000
Current		
At 1 January	-	-
Additional provision in the year	-	44
Utilisation of provision	-	(44)
At 31 December	-	-
Non-current		
Provision for dilapidation	250	250
	250	250

Current provision movements relate to restructuring costs arising in Xaar plc. Non-current provisions relate to provision for dilapidation of Xaar Waterbeach office which form part of right-of-use assets and are depreciated over the lease term.

8. Dividends

There were no dividends declared or paid during the current and preceding year. There are no dividends expected to be declared on the 2022 financial results.

Dividends were received during the year as follows:

- Xaar Digital Ltd €1,700,000 (2021: nil)
- Xaar US Holdings Inc €1,885,003 (2021: nil)

9. Share capital and share premium account

Full details of movements in share capital, share premium account, own shares, other reserves and the share option payment reserve are given in notes 26, 27 and 30 to the consolidated financial statements.

10. Share-based payments

Equity-settled share option scheme

The Company operates a number of equity-settled share-based payment schemes for its employees and the employees of its subsidiaries. The share-based payment charge in relation to the Company's employees is recognised in profit or loss and the share-based payments reserve, whilst the share-based payment charge in relation to the employees of the Company's subsidiaries is recognised as capital contribution to the subsidiary with the corresponding increase in other reserves. Details of the share-based payment schemes are included in note 32 to the consolidated financial statements.

For the year ended 31 December 2022, the share-based payment charge in relation to the Company's employees was €663,000 (2021: €260,000) and €895,000 (2021: €385,000) was recognised as a capital contribution to subsidiaries.

11. Subsidiary undertakings

The subsidiary undertakings of the Company are listed below: all companies are directly owned by the Company except where indicated otherwise.

Name	Country of incorporation	Address of registered office	Principal activity	Issued and fully paid up share capital	Proportion of ordinary share capital held by the Company
Xaar Technology Limited	England & Wales	Cambridge Research Park, Waterbeach, Cambridge, CB25 9PE	Research and development	4,445,322 ordinary £1 shares	100%
XaarJet Limited	England & Wales	Cambridge Research Park, Waterbeach, Cambridge, CB25 9PE	Manufacturing, research and development and sales and marketing	2 ordinary £1 shares	100%
XaarJet (Overseas) Limited	England & Wales	Cambridge Research Park, Waterbeach, Cambridge, CB25 9PE	Sales and marketing	1 ordinary £1 share	100%
Xaar Trustee Limited ¹	England & Wales	Cambridge Research Park, Waterbeach, Cambridge, CB25 9PE	Trustee	2 ordinary £1 shares	100%
Xaar Digital Limited	England & Wales	Cambridge Research Park, Waterbeach, Cambridge, CB25 9PE	Treasury	100 ordinary £1 shares	100%
Xaar 3D Holdings Limited	England & Wales	Cambridge Research Park, Waterbeach, Cambridge, CB25 9PE	Holding company	1,100 ordinary shares of £0.01 each	100%
Xaar US Holdings Inc.	USA	1209 Orange Street, Wilmington, New Castle County, Delaware, USA	Holding company	10,000 shares of common stock \$1 each	100%
Engineered Printing Solutions ²	USA	201 Tennis Way, East Dorset, VT 05253, USA	Manufacturing, sales and marketing	200 shares of common stock \$1 each	100%
Xaar Americas Inc. ²	USA	1000 Post and Paddock, Suite 405, Grand Prairie, TX 75050, USA	Sales and marketing	10,000 shares of common stock US\$1 each	100%
Xaar Inkjet Technology (Shenzhen) Company Limited	China	Room 409, Floor 4, Building 13, Fuhai Industrial Zone, Fuzhou Avenue, Shenzhen, China	Sales and marketing	30 ordinary shares of £10,000 each	100%
FFEI Limited	England & Wales	Cambridge Research Park, Waterbeach, Cambridge, CB25 9PE	Manufacturing, sales and marketing	100,000 ordinary £1 shares	100%
Megnajet Ltd ³	England & Wales	Cambridge Research Park, Waterbeach, Cambridge, CB25 9PE	Manufacturing, sales and marketing	1 ordinary £1 share	100%
Technomation Ltd ³	England & Wales	Cambridge Research Park, Waterbeach, Cambridge, CB25 9PE	Research and development	100 ordinary £1 shares	100%

¹ Xaar Trustee Limited shares are held by Xaar Technology Limited.

² Xaar Americas Inc and Engineering Printing Solutions shares are held by Xaar US Holdings Inc.

³ Megnajet Ltd and Technomation Ltd were acquired by Xaar plc on 2 March 2022. See note 36 to the consolidated financial statements for more detail.

Five year record

	2022 Continuing operations £'000	2021 Continuing operations £'000	2020 Continuing operations £'000	2019 Continuing operations ¹ £'000	2018 Continuing operations £'000
Summarised consolidated results					
Results					
Revenue	72,782	59,254	47,984	49,379	60,468
Gross profit	28,644	20,190	13,010	12,290	29,496
Adjusted profit/(loss) before tax (note 4)	2,822	(571)	(3,911)	(7,952)	4,523
Adjusted profit/(loss) after tax (note 14)	3,689	(779)	(4,038)	(11,632)	6,930
Adjusted diluted earnings per share (note 14)	4.5p	(1.0p)	(5.2p)	(15.1p)	10.0p
Statutory profit before tax	824	994	(4,322)	(10,937)	280
Basic earnings per share	2.3p	0.9p	(5.7p)	(19.4p)	3.6p
Diluted earnings per share	2.2p	0.9p	(5.7p)	(19.4p)	3.6p
Dividends pence per share	–	–	–	–	1.0p
Assets employed					
Net cash ²	8,546	25,051	18,117	25,322	27,946

1 In the transition to IFRS 15 & 16, the Group used the modified approach and the impact on prior years was adjusted through retained earnings. Comparatives were not restated.

2 Net cash is made up of cash and cash equivalents and treasury deposits less assets held for sale.

Notice of the Annual General Meeting

Notice is hereby given that the twenty-sixth Annual General Meeting (AGM) of Xaar plc (the 'Company') will be held at Xaar plc, 1 Hurricane Close, Ermine Business Park, Huntingdon, Cambridgeshire, PE29 6XX on Wednesday 31 May 2023 at 9:30am for the following purposes:

Ordinary business

To consider and, if thought fit, pass the following Resolutions which will be proposed as Ordinary Resolutions:

1. THAT the Company's annual financial statements for the financial year ended 31 December 2022, together with the Directors' report and auditor's report on those financial statements, be received and adopted.
2. THAT Ernst & Young LLP be re-appointed as the Company's auditors to hold office from the conclusion of this meeting until the conclusion of the next general meeting of the Company at which financial statements are laid.
3. THAT the Directors be authorised to determine the remuneration of the auditors.
4. THAT John Mills be re-elected as a Director of the Company.
5. THAT Andrew Herbert be re-elected as a Director of the Company.
6. THAT Christopher Morgan be re-elected as a Director of the Company.
7. THAT Ian Tichias be re-elected as a Director of the Company.
8. THAT Alison Littley be re-elected as a Director of the Company.

Special business

To consider and, if thought fit, pass the following Resolutions which will be proposed in the case of Resolutions 9, 10 and 11 as Ordinary Resolutions and in the case of Resolutions 12 to 15 as Special Resolutions:

9. THAT the Directors' Remuneration Policy, the full text of which is contained in the Directors' Remuneration report for the year ended 31 December 2022 and which is set out in pages 87 to 95 of the Annual Report, which will take effect at the conclusion of this meeting, be approved.
10. THAT the Directors' Remuneration report (excluding the Directors' Remuneration Policy which is set out on pages 87 to 95 of the Annual Report) for the year ended 31 December 2022 be approved.
11. THAT, in substitution for all existing authorities including the authority conferred on the Directors of the Company by article 4(b) of the Company's articles of association, pursuant to and in accordance with section 551 of the Companies Act 2006 ('Act') the Directors of the Company be hereby generally and unconditionally authorised to exercise all powers of the Company to allot equity securities (within the meaning of section 560 of the Act), or grant rights to subscribe for, or convert any security into, shares in the Company ('Rights'):
 - (i) up to an aggregate nominal value of £2,614,874 (being the nominal value of approximately one third of the issued share capital of the Company); and
 - (ii) up to an aggregate nominal value of £5,229,749 (being the nominal value of approximately two thirds of the issued share capital of the Company) (such amount to be reduced by the nominal amount of any equity securities allotted or Rights granted under paragraph (i)) in connection with an offer by way of a rights issue (as defined in the Listing Rules issued by the Financial Conduct Authority pursuant to Part VI of the Financial Services and Markets Act 2000) or other pre-emptive offer to:
 - (a) the holders of ordinary shares of 10 pence each in the capital of the Company ('ordinary shares') in proportion (as nearly as may be practicable) to the respective numbers of ordinary shares held by them; and
 - (b) holders of other equity securities, as required by the rights of those securities or, subject to such rights, as the Directors otherwise consider necessary,

and so that, in each case, the Directors of the Company may impose any limits or restrictions and make any arrangements which they consider necessary or appropriate to deal with treasury shares, fractional entitlements, record dates, legal, regulatory or practical problems in, or under the laws of, any territory or the requirements of any regulatory body or stock exchange or any other matter.

The authority granted by this Resolution will expire at the conclusion of the Company's next Annual General Meeting after the passing of this Resolution or, if earlier, at the close of business on the date 15 months after the passing of this Resolution, save that the Company may at any time before such expiry make any offer(s) or enter into any agreement(s) which would or might require shares to be allotted or Rights to be granted after such expiry and the Directors may allot shares or grant Rights in pursuance of any such offer(s) or agreement(s) as if the authority conferred hereby had not expired. This Resolution revokes and replaces all unexercised authorities previously granted to the Directors to allot shares or grant Rights but without prejudice to any allotment of shares or grant of Rights already made, offered or agreed to be made pursuant to such authorities.

Notice of the Annual General Meeting continued

Special business continued

12. THAT, subject to the passing of Resolution 11, the Directors of the Company be authorised to allot equity securities (as defined in section 560 of the Act) for cash under the authority conferred by that Resolution and/or to sell ordinary shares held by the Company as treasury shares as if section 561 of the Act did not apply to any such allotment or sale, provided that such authority shall be limited to:

(a) the allotment of equity securities in connection with an offer of equity securities (but, in the case of the authority granted under paragraph (ii) of Resolution 11, by way of a rights issue only):

(i) to the holders of ordinary shares in proportion (as nearly as may be practicable) to their respective holdings; and

(ii) to holders of other equity securities as required by the rights of those securities or as the Directors otherwise consider necessary,

but subject to such exclusions or other arrangements as the Directors of the Company may deem necessary or expedient in relation to treasury shares, fractional entitlements, record dates, legal or practical problems in or under the laws of any territory or the requirements of any regulatory body or stock exchange; and

(b) the allotment of equity securities or sale of treasury shares (otherwise than pursuant to paragraph (a) of this Resolution) to any person up to an aggregate nominal amount of £392,231.

The authority granted by this Resolution will expire at the conclusion of the Company's next Annual General Meeting after the passing of this Resolution or, if earlier, at the close of business on the date 15 months after the passing of this Resolution, save that the Company may, before such expiry make offers or agreements which would or might require equity securities to be allotted (or treasury shares to be sold) after the authority expires and the Directors of the Company may allot equity securities (or sell treasury shares) in pursuance of any such offer or agreement as if the authority had not expired.

13. THAT, subject to the passing of Resolution 11, the Directors of the Company be authorised in addition to any authority granted under Resolution 12 to allot equity securities (as defined in section 560 of the Act) for cash under the authority conferred by Resolution 11 and/or to sell ordinary shares held by the Company as treasury shares as if section 561 of the CA 2006 did not apply to any such allotment or sale, provided that such authority shall be:

(a) limited to the allotment of equity securities or sale of treasury shares up to an aggregate nominal amount of £392,231; and

(b) used only for the purpose of financing (or refinancing, if the authority is to be used within six months after the original transaction) a transaction which the Directors of the Company determine to be an acquisition or other capital investment of a kind contemplated by the Statement of Principles on Disapplying Pre-Emption Rights most recently published by the Pre-Emption Group prior to the date of this notice.

The authority granted by this Resolution will expire at the conclusion of the Company's next Annual General Meeting after this Resolution is passed or, if earlier, at the close of business on the date 15 months after the passing of this Resolution, save that the Company may, before such expiry make offers or agreements which would or might require equity securities to be allotted (or treasury shares to be sold) after the authority expires and the Directors of the Company may allot equity securities (or sell treasury shares) in pursuance of any such offer or agreement as if the authority had not expired.

14. THAT the Company be generally and unconditionally authorised for the purposes of section 701 of the Act to make one or more market purchases (within the meaning of section 693(4) of the Act) of ordinary shares provided that:

(a) the maximum aggregate number of ordinary shares authorised to be purchased is 7,844,623 (representing 10% of the issued ordinary share capital);

(b) the minimum price (excluding expenses) which may be paid for an ordinary share is the par value of the shares;

(c) the maximum price (excluding expenses) which may be paid for an ordinary share is an amount equal to the higher of (i) 105% of the average of the middle market quotations for an ordinary share as derived from the London Stock Exchange Daily Official List for the five business days immediately preceding the day on which that ordinary share is purchased, and (ii) the higher of the price of the last independent trade and the highest current independent bid on the trading venue where the purchase is carried out;

(d) this authority shall expire at the conclusion of the next Annual General Meeting of the Company, or, if earlier, at the close of business on the date which is 15 months after the passing of this Resolution unless renewed, revoked or varied before that time; and

(e) the Company may make a contract to purchase ordinary shares under this authority before the expiry of the authority which will or may be executed wholly or partly after the expiry of the authority, and may make a purchase of ordinary shares in pursuance of any such contract.

15. THAT, with effect from the conclusion of the meeting, the articles of association produced to the meeting and, for the purposes of identification, initialled by the Chairman be adopted as the articles of association of the Company in substitution for, and to the exclusion of, the Company's existing articles of association including the relevant provisions of the memorandum of association that would otherwise be treated as provisions of the articles of association under section 28 of the Companies Act 2006.

By order of the Board

Julia Crane
Company Secretary

27 March 2023

Notes

1. A member entitled to attend the meeting may appoint one or more proxies to exercise all or any of the member's rights, to speak at the meeting. A proxy need not be a member of the Company. If a member appoints more than one proxy, each proxy must be appointed to exercise the rights attached to a different share or shares held by the member. If a member wishes to appoint one or more proxies they may do so at www.signalshares.com. If not already registered you will need your Investor Code to do so, this can be found on your share certificate. If you need help with voting online, or require a paper proxy form, please contact our registrar, Link Group by email at shareholderenquiries@linkgroup.co.uk, or you may call Link on 0371 664 0391. Calls are charged at the standard geographic rate and will vary by provider. Calls outside the United Kingdom will be charged at the applicable international rate. Link Group are open between 09:00 – 17:30, Monday to Friday excluding public holidays in England and Wales.
2. To be effective, the proxy vote must be submitted at www.signalshares.com so as to have been received by the Company's registrars not less than 48 hours (excluding weekends and public holidays) before the time appointed for the meeting or any adjournment of it. Any power of attorney or other authority under which the proxy is submitted must be returned to the Company's registrars, Link Group, PXS 1, Central Square, 29 Wellington Street, Leeds LS1 4DL. If a paper form of proxy is requested from the registrar, it should be completed and returned to Link Group, PXS 1, Central Square, 29 Wellington Street, Leeds LS1 4DL to be received not less than 48 hours before the time of the meeting.
3. Any person to whom this notice is sent who is a person nominated under section 146 of the Companies Act 2006 to enjoy information rights (a 'Nominated Person') may, under an agreement between him/her and the shareholder by whom he/she was nominated, have a right to be appointed (or to have someone else appointed) as a proxy for the Annual General Meeting. If a Nominated Person has no such proxy appointment right or does not wish to exercise it, he/she may, under any such agreement, have a right to give instructions to the shareholder as to the exercise of voting rights.
4. The statement of the rights of shareholders in relation to the appointment of proxies in paragraphs 1 and 2 above does not apply to Nominated Persons. The rights described in these paragraphs can only be exercised by shareholders of the Company.
5. In accordance with Regulation 41 of the Uncertified Securities Regulations 2001, the Company specifies that only those members entered on the register of members of the Company as at close of business on 26 May 2023 (or in the event the meeting is adjourned, on the register of members 48 hours before the time of any adjourned meeting) shall be entitled to vote at the meeting in respect of the number of shares registered in their name at that time. Changes to entries on the register of members after close of business on 26 May 2023 (or in the event the meeting is adjourned, on the register of members less than 48 hours before the time of any adjourned meeting) shall be disregarded in determining the rights of any person to vote at the meeting.
6. Copies of Directors' service agreements, the terms of appointment of Non-Executive Directors, and the register of Directors' interests kept by the Company under section 808 of the Companies Act 2006 will be available 15 minutes prior to the commencement of the meeting and will remain open and accessible during the continuance of the meeting to any person attending the meeting.
7. Biographical details of all Directors offering themselves for re-appointment are set out on page 63 of the Annual Report and Accounts.
8. Shareholders should note that it is possible that, pursuant to requests made by shareholders of the Company under section 527 of the Companies Act 2006, the Company may be required to publish on a website a statement setting out any matter relating to: (i) the audit of the Company's accounts (including the auditor's report and the conduct of the audit) that are to be laid before the Annual General Meeting; or (ii) any circumstance connected with an auditor of the Company ceasing to hold office since the previous meeting at which annual accounts and reports were laid in accordance with section 437 of the Companies Act 2006. The Company may not require the shareholders requesting any such website publication to pay its expenses in complying with sections 527 or 528 of the Companies Act 2006. Where the Company is required to place a statement on a website under section 527 of the Companies Act 2006, it must forward the statement to the Company's auditor not later than the time when it makes the statement available on the website. The business which may be dealt with at the Annual General Meeting includes any statement that the Company has been required under section 527 of the Companies Act 2006 to publish on a website.
9. A corporation that is a shareholder can appoint one or more corporate representatives who may exercise, on its behalf, all its powers as a shareholder provided that they do not do so in relation to the same shares.
10. CREST members who wish to appoint a proxy or proxies through the CREST electronic proxy appointment service may do so by using the procedures described in the CREST Manual. CREST Personal Members or other CREST sponsored members, and those CREST members who have appointed a service provider(s), should refer to their CREST sponsor or voting service provider(s), who will be able to take the appropriate action on their behalf.
11. In order for a proxy appointment or instruction made using the CREST service to be valid, the appropriate CREST message (a 'CREST Proxy Instruction') must be properly authenticated in accordance with Euroclear UK & International Ltd's ('Euroclear') specifications, and must contain the information required for such instruction, as described in the CREST Manual. The message, regardless of whether it constitutes the appointment of a proxy or is an amendment to the instruction given to a previously appointed proxy must, in order to be valid, be transmitted so as to be received by the issuer's agent (ID RA10) by 9:30am on 26 May 2023. For this purpose, the time of receipt will be taken to be the time (as determined by the timestamp applied to the message by the CREST Application Host) from which the issuer's agent is able to retrieve the message by enquiry to CREST in the manner prescribed by CREST. After this time any change of instructions to proxies appointed through CREST should be communicated to the appointee through other means.
12. CREST members and, where applicable, their CREST sponsors, or voting service providers should note that Euroclear does not make available special procedures in CREST for any particular message. Normal system timings and limitations will, therefore, apply in relation to the input of CREST Proxy Instructions. It is the responsibility of the CREST member concerned to take (or, if the CREST member is a CREST personal member, or sponsored member, or has appointed a voting service provider, to procure that his CREST sponsor or voting service provider(s) take(s)) such action as shall be necessary to ensure that a message is transmitted by means of the CREST system by any particular time. In this connection, CREST members and, where applicable, their CREST sponsors or voting system providers are referred, in particular, to those sections of the CREST Manual concerning practical limitations of the CREST system and timings.
13. The Company may treat as invalid a CREST Proxy Instruction in the circumstances set out in Regulation 35(5)(a) of the Uncertified Securities Regulations 2001 (as amended).
14. As at 7am on 29 March 2023, the Company's issued share capital comprised 78,446,230 ordinary shares of 10 pence each. Each ordinary share carries the right to one vote at a general meeting of the Company, and, therefore, the total number of voting rights in the Company as at 7am on 28 March 2023 is 78,446,230.

Notice of the Annual General Meeting continued

Notes continued

15. Any member has the right to ask questions. The Company must answer any such question relating to the business being dealt with at the meeting but no such answer need be given if: (a) to do so would interfere unduly with the preparation for the meeting or involve the disclosure of confidential information; (b) the answer has already been given on a website in the form of an answer to a question; or (c) it is undesirable in the interests of the Company or the good order of the meeting that the question be answered.
16. You may vote your shares electronically at www.signalshares.com. On the home page, search "Xaar plc" and then log in or register, using your Investor Code. To vote, click on the "Vote Online Now" button.
17. A copy of this Notice, and other information required by section 311A of the Companies Act 2006, can be found at www.xaar.com.
18. Under section 338 of the Companies Act 2006, shareholders meeting the threshold requirements set out in that section, may, subject to conditions, require the Company to give to shareholders notice of a resolution which may properly be moved and is intended to be moved at that meeting.
19. Under section 338A of the Companies Act 2006, shareholders meeting the threshold requirements set out in that section may, subject to conditions, require the Company to include in the business to be dealt with at the meeting a matter (other than a proposed resolution) which may properly be included in the business.

Appendix 1 – Explanatory note to the principal changes to the Company's Articles of Association

It is consistent with good corporate governance to review the Company's articles of association on a regular basis. Accordingly, the Company's articles of association (the 'Current Articles') have been reviewed with a view to updating provisions to reflect current practice and to include flexibility with regard to virtual or hybrid meetings. As a result of this review, it is considered appropriate to propose to the Company's shareholders that a new set of articles of association (the "New Articles") be adopted.

An explanation of the main changes between the proposed New Articles and the Current Articles is set out below.

Some other changes being proposed which are of a minor, technical or clarifying nature. They have been included to reflect current market practice and to update the articles as a result of the ongoing evolution of the Companies Act 2006 ("CA 2006") and/or the Uncertificated Securities Regulations 2001.

A copy of the Current Articles marked to show the changes, and of the proposed New Articles, are available on the Company's website at www.xaar.com/en and the National Storage Mechanism of the FCA at <https://data.fca.org.uk/#/nsm/nationalstoragemechanism>, and will be made available for inspection at the Company's registered office at 3950 Cambridge Research Park, Waterbeach, Cambridge, England, CB25 9PE during normal business hours until the conclusion of the Annual General Meeting, and at the place of the Annual General Meeting from at least 15 minutes prior to the Annual General Meeting until its conclusion.

Electronic conduct of meetings

In view of the changes to the arrangements for holding general meetings which were caused by the response to the COVID-19 pandemic and the expectation of many shareholders that such flexible arrangements will be continued, the New Articles explicitly permit hybrid general meetings. Such general meetings can be held and arranged by the Board of Directors of the Company both at a physical location and electronically. Hybrid general meetings will give shareholders the option to attend the meeting either in person or virtually. Appropriate amendments have also been made throughout the New Articles to allow related matters, such as the lodging of proxy instructions, to be done electronically as well.

Electronic notices

Similarly, the New Articles provide explicitly for the provision of notices by electronic means (for example by means of posting on the Company's website). This would allow the Company to send notices in a way which is both cheaper and more sustainable.

Allotment (Amended Article 4)

In order to allot shares, the Directors must be granted authority either by the articles of association or by shareholders in general meeting. The authority can only be granted for a specified period (not exceeding five years). Therefore, a disadvantage of including such an authority in the articles is that the authorising provision will become redundant after the specified period has expired, but it will remain within the articles regardless. For this reason, many companies prefer to confer authority by passing an ordinary resolution at their annual general meeting. Up to now, the Current Articles had included an authorising provision but it has long been redundant (as it is replaced at each AGM by a new authority). The New Articles do not include an authorising provision. Instead, the provisions relating to allotment in the New Articles have been simplified and a resolution to grant the Directors the authority to allot shares will continue to be proposed at each AGM, in line with market practice.

Power to postpone (New Article 50a)

The New Articles contain a new power for the Directors to postpone a general meeting after the notice is issued but before the meeting is convened if they consider it impracticable or unreasonable to hold a general meeting on the date and time specified in the notice. This avoids the need to adjourn a general meeting, giving the Board additional flexibility to respond to any unexpected events which might make it impracticable to hold a general meeting on a given date.

Retirement of Directors (Amended Article 75)

The Current Articles require Directors to retire by rotation based on a calculation so that circa one third of the Directors retire each year. In keeping with best corporate governance standards and the Company's current practice, the New Articles require all the Directors to retire from office at each AGM and to stand for re-election.

Directors' fees (Amended Article 86)

The limit on aggregate fees for Non-Executive Directors has been increased to £400,000. The current limit on the aggregate fees for Non-Executive Directors, approved at the AGM held on 18 May 2016, is £300,000. The Board believes that additional headroom and flexibility is required in view of succession planning and ensuring that the Company is able to remain competitive and attract talented individuals.

Borrowing powers (Amended Article 102)

The borrowing limit is currently set at three times adjusted capital and reserves (as defined in the Current Articles). If the Company were to exceed this limit, it would require, in advance, an ordinary resolution from the requisite majority of the shareholders in general meeting. To bring this limit in line with best practice and the recommendations from guidance issued by institutional investor groups, the New Articles include a lower limit of two times adjusted capital and reserves; any borrowing in excess of this limit would require the sanction of an ordinary resolution.

Indemnity & insurance (Amended Article 142)

The indemnity provision in the Current Articles has been updated in the New Articles with a provision which allows the Company to indemnify its officers and former officers to the full extent allowed by the CA 2006. The article has also been amended in order to clarify that it is not intended to authorise the Company to grant an indemnity which is broader than what is allowed by the CA 2006. The insurance provision has been simplified such that the Company can purchase insurance for its Directors to the fullest extent allowed by law. These changes will bring the articles in line with standard market practice for D&O indemnity and insurance provision.

Company information and advisors

Registered office

3950 Cambridge Research Park
Waterbeach
Cambridge CB25 9PE

Registered number

3320972

Company Secretary

Julia Crane

Brokers

Investec

30 Gresham Street
London, EC2V 7QP

Registered auditor

Ernst & Young LLP

Cambridge Business Park
Cowley Rd
Cambridge CB4 0WZ

Solicitors

Mills & Reeve LLP

Botanic House
100 Hills Road
Cambridge CB2 1PH

Principal Bankers

HSBC Bank plc

63-64 St Andrews Street
Cambridge CB2 3BZ

Registrars

Link Group

10th Floor
Central Square
29 Wellington Street
Leeds LS1 4DL

Unsolicited mail:

The Company is obliged by law to make its share register publicly available should a request be received. As a consequence, shareholders may receive unsolicited mail from organisations that use it as a mailing list. Shareholders wishing to limit the amount of such mail should either write to Mailing Preference Service, DMA House, 70 Margaret Street, London W1W 8SS, register online at www.mpsonline.org.uk or call the Mailing Preference Service (MPS) on +44 (0)845 703 4599. MPS is an independent organisation which offers a free service to the public.

Warning to shareholders – boiler room scams:

Each year in the UK, £1.2 billion is lost to investment fraud, with the average victim losing around £20,000. What is more, it is estimated that only 10% of the people that become victims of investment fraud actually report it.

Investment scams are becoming ever more sophisticated – designed to look like genuine investments, they are increasingly difficult to spot. They are targeted at those most at risk, typically people in retirement who are actively seeking an investment opportunity.

Protect yourself:

1. Reject cold calls

If you have been cold called with an offer to buy or sell shares, it is likely to be a high-risk investment or scam. You should treat the call with extreme caution. The safest thing to do is hang up. If you are offered unsolicited investment advice, discounted shares, a premium price for shares you own, or free company or research reports, you should get the name of the person and organisation contacting you and take these steps before handing over any money.

2. Check the firm on the Financial Services Register at www.fca.org.uk/register

The Financial Services Register is a public record of all the firms and individuals in the financial services industry that are regulated by the FCA. Use the details on the Financial Services Register to contact the firm.

3. Get impartial advice

Think about getting impartial financial advice before you hand over any money. Seek advice from someone unconnected to the firm that has approached you.

REMEMBER, if it sounds too good to be true, it probably is!

If you use an unauthorised firm to buy or sell shares or other investments, you will not have access to the Financial Ombudsman Service or Financial Services Compensation Scheme if things go wrong.

Report a scam

If you suspect you have been approached by fraudsters please tell the FCA using the share fraud reporting form at www.fca.org.uk/scams, where you can find out more about investment scams. You can also call the FCA Consumer Helpline on +44 (0)800 111 6768.

If you have lost money to investment fraud, you should report it to Action Fraud on +44 (0)300 123 2040 or online at www.actionfraud.police.uk.

 Find out more at www.fca.org.uk/scamsmart

Link Group, the Company's registrar, has launched a shareholder app: LinkVote+.

It is free to download and use and gives shareholders the ability to access their records at any time and attend virtual AGMs.

The app also allows users to submit a proxy appointment quickly and easily online rather than through the post.

The app is available to download on the Apple App Store and Google Play.





Xaar plc

3950 Cambridge Research Park
Waterbeach
Cambridge
CB25 9PE