Our vision
A world where you can print anything you can imagine.

Xaar plc
Annual Report and
Financial Statements 2021

2021 at a glance

Building for the future

Our customers seek to work with partners who can *help them* get their products to market efficiently and effectively and who can support them *throughout* the product lifetime.

Our strategy is to provide an integrated solution for our customers and to work collaboratively *with them so* that they get to market more quickly whilst delivering innovative and *robust products. This strategy will* ultimately ensure we sell more printheads

Read more on page 11

ImagineX

Our ImagineX printhead *platform* is already delivering unique product capabilities such as printing at up to *100 metres per minute.*

2021 product launch: Xaar Nitrox

Print fast
Operating up to 48kHz, combined with drop-in plug and print capability, for getting up and *running at speed in minutes*

Print perfect
Unbeatable uniformity *with TF Technology* and AcuChip for printing perfectly the first time and every time

Print almost anything
The widest application window and ability to handle broadest range of fluids

Read more about the ImagineX *platform on page 2*

Printheads
Designed, developed and manufactured by Xaar

Sub Systems
Electronics, software, ink system

Ink

Print Bar

Print Engine

OEMs

UDIs

Integrated solutions

Read more about our strategy for delivering more integrated inkjet solutions *on page 11*

Business responsibility

Our three *main areas of focus during* 2021 have been: sustainability, employee engagement and charity support.

Sustainability
Our Sustainability Roadmap centres on four areas, each of which has a goal

- **Environment**
- **People**
- **Innovation**
- **Community**

Read more on page 28

Employee engagement
Our success depends on the capability and engagement of our people, which has included a focus *during 2021 on embedding* our values deeper into the Xaar culture

Read more about employee engagement on page 3

Charity support
We continued our support of local charities via a collaboration with Break charity's Cows About *Cambridge Event*

Read more about our charity support on page 3

New opportunities

During the course of 2021 we have seen a broadening of the range of applications using Xaar technology and a number of our OEMs launched new machines based on Xaar *technology.*

OEM products launched included an industrial grade print engine in China and an entry level 3D printer in Europe. We also collaborated with materials science company, Meta Additive, *recently acquired by Desktop* Metal, who have used our technology to push the *boundaries of binder jetting* technology

Read more about our new opportunities on page 3

Driven by our mission

We help companies and industries be more colourful creative and productive through our world-class technology and printheads.

Overview

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.

We also develop print systems for product decoration and 3D printing which use our inkjet technology, and our digital imaging business, FFEI, provides high performance digital imaging technology 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.

Our culture

We champion a values-led culture so each member of our team is empowered to do their very best, creating a working environment that people love to be in and where we can all achieve our ambitions.

Watch our new video demonstrating how these values are part of our day-to-day lives.

Strategic Report

Governance

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Our progress in 2021

Building for the future

We place customers at the heart of our strategy. It is only when our customers are successful that Xaar is successful and our aim is to be the partner of choice, enabling our customers to respond quickly and efficiently to changing market needs with robust and reliable products that are powered by Xaar technology.

Our strategy is to provide integrated solutions, allowing our customers to access not only Xaar's leading printhead technology but also the ink supply and electronic control systems required to ensure sustained and reliable performance from a wide range of fluids that deliver market leading print quality every time.

Our ImagineX printhead platform delivers unique capabilities. 720 dpi print resolution, Ultra High Viscosity and High Laydown Technology printing at speeds of up to 100 metres per minute.

We launched two new printheads from this platform during 2021 and have an ongoing roadmap of product developments to enable our customers to address a broader range of applications.

The acquisition of print systems and printbar specialist FFEI in 2021 widens our product range for our OEM and UDI (User Developer Integrators) customers with a broader product range including Xaar Versatex print engines for adding effects and embellishments digitally.

At the heart of our new ink strategy is a close collaboration with leading fluid companies to fully optimise the fluid for the best print performance, not just in the printhead testing lab, but also throughout the machine development programme, through to user integration and beyond. UDI customers can also buy their fluids direct from Xaar, giving them a single point of contact for both the printhead and the fluids, saving them time and simplifying the development process.

Our new Ink Supply System roadmap will ensure we can deliver products that help customers evaluate and adopt our technology whilst also reducing their time-to-market. We offer a number of inkjet supply systems under the Xaar brand, and have further added to our capability with the acquisition of Megnajet in March 2022. One of the market leaders, Megnajet designs and manufactures industrial ink management and supply systems for digital inkjet.

These easily integrated products are among the most compact ink management and supply systems on the market today, with options of fast and reliable routes to market when developing industrial inkjet printers.

The acquisition of Megnajet is part of Xaar's growth strategy which focuses on offering our customers, particularly UDIs, a more integrated inkjet solution, which will attract a broader range of opportunities for us.

In turn, UDI customers will be able to reduce their development timescales and shorten their time to market. This acquisition also enables Megnajet to focus on growth through new developments and shared expertise.

Whilst enabling a broader range of products under the Xaar brand, Megnajet will also continue to offer products to a wide customer base (sectors), under the Megnajet label.

In addition, our datapath roadmap has been developed to provide a rich portfolio of datapath products to enable our customers to build their own systems more easily which take advantage of the full potential of our ImagineX platform.

EPS progress

In 2021 we achieved +9% growth in sales. In addition, we changed the leadership of EPS and strengthened our teams in Finance, Human Resources, and EH&S Management, as well as re-organising the sales team into two distinct groups.

Find out more on page 22

FFEI progress

Since acquisition in July, the alignment with Xaar has progressed well. In addition, FFEI has developed its roadmap of integrated inkjet systems for Xaar to sell to its UDI customers, with the first product launch in March 2022. On the life sciences side of the business FFEI has continued to develop its product portfolio and now has a pipeline of next generation scanning technologies. Some technologies are very close to market readiness, others require further development. FFEI is now looking for new partners to reap the rewards of these next generation scanning systems.

Find out more on page 23

New opportunities

During the course of 2021 we have seen *a broadening of the* range of applications using Xaar technology.

- *Chinese OEM, King Tau,* a pioneer in the ceramics and graphics sectors, launched a new industrial-grade print engine, The 'Magic Cube', incorporating Xaar's advanced printhead technologies
- Beijing National Innovation Institute of Lightweight Ltd *(BNIL) and Xaar announced a* Joint Laboratory to develop new applications in digital inkjet such as printing glass, electronics, 3D and automotive spray painting
- The wide operating window and unique technologies within the Xaar 1003 printhead have enabled Meta Additive to use a variety of fluids that had previously been seen as too difficult to jet. With Xaar technology, Meta Additive was able to move beyond the conventional limits of inkjet printing with its binder jetting innovation
- *The Xaar 2002 printhead* is successfully addressing the current ceramics trend for printing big slab *applications such as dining* tables, kitchenware and sanitary ware, where tile viewing distances are much closer. Customers are looking for higher quality tiles with higher resolution and definition, produced by our 720 dpi capability – no *other printhead can deliver* resolution this high and with this capability we have now set the image quality standard in ceramics.
- In the 3D printing market, dp polar launched its latest machine, the AMpolar® i1 *which jets 3D parts at volume* on a truly industrial scale. The combination of scalability, productivity and agility of this new machine achieves an output that traditionally would have required multiple conventional 3D machines, and significantly more capital *investment*
- Xaar continues to see a growing number of new opportunities within the 3D printing markets. Our technology offers significant advantages and therefore value for managing high viscosity fluids and delivering *industrial levels of reliability* across a range of additive manufacturing applications and emerging technologies

EPS ended its year by landing the largest single order in the Company's history which will be manufactured and delivered during 2022. The Company closed 2021 with a strong order book for bespoke systems and a plan for continued strong growth for 2022.

Xaar's recent acquisitions of FFEI and Megnajet enable us to offer our customers, particularly UDIs, a more integrated inkjet solution, which *will attract a* broader range of opportunities for us from here on in.

Read more on page 12

Business responsibility

We operate as a socially, culturally and environmentally responsible business.

Our three main areas of focus during 2021 have been: sustainability, employee engagement *and charity support.*

Sustainability

During 2021 we set up a Sustainability team with members from across the Company to work on a roadmap of projects with defined objectives. The Roadmap *centres on four areas,* each of which has a goal:

1. **Environment**
   Leading the way in environmental sustainability for the industrial inkjet technology sector.
2. **People**
   To be employer of choice by putting our people, their potential and well-being at the heart of all we do.
3. **Innovation**
   Encouraging more sustainable approaches to design, manufacture, technology and collaboration across the whole product lifecycle.
4. **Community**
   Actively engaging with our *communities to provide* practical, lasting support that benefits society.

The full sustainability strategy and roadmap can be found on pages 29 to 37

Employee engagement

We hosted a number of COVID-19 safe lunches for *our employees* to encourage collaboration and team building, as well as to help new employees meet the wider team. In July we held an employee event to officially open our new Corporate HQ and bespoke R&D lab at the Cambridge Research Park.

We have also been working on embedding our values more into our culture. A cross functional project team developed an easy to remember logo for our values, launched a new values award which runs across the whole Group and developed a new video which we are using *for employee engagement,* recruitment and induction.

https://youtu.be/4rXmXMlEpgg

Read more about our values on page 5

In addition, we have introduced packs for key employee occasions: new starter packs, new baby packs and an anniversary card to mark certain milestones (first year, five, ten, 20, 30 years).

Supporting local charities

Our employees nominated two charities and each received a donation of £2,000, with the beneficiaries being the Special Care Baby Unit at Hinchingbrooke Hospital in *Q1 2021 and Wood Green,* The Animals Charity in Q4 2020.

Later in the year we fund-raised for Break Charity (www.break-*charity.org/charity/). As well as* sponsoring their Cows about Cambridge Farewell weekend, Xaar employees hosted a stand at the event and raised £150 by selling for a £1 donation colourful miniature cows that we had 3D printed.

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.

Leading the way with our strong partnerships

In my first report as Chairman two years ago, I spoke of *my confidence* in the new leadership team and in our ability to turn the business around after the challenges encountered in 2019. At the end of 2021 and following a period of unprecedented uncertainty surrounding the COVID-19 pandemic, I am pleased to report good progress continues *to be made.*

Our fundamental focus has been on Xaar's core competence in design and manufacture of world leading printheads, whilst rebuilding and strengthening all areas of the business to better serve our customers and deliver consistent and reliable business performance.

There has been a realignment of our go-to-market approach with a clear focus on the value chain and our customers, a strengthening of our senior leadership and functional teams, a revitalisation of our brand and corporate identity and, *importantly, a focus on the technical and* competitive advantages of the Xaar bulk piezo product range.

The introduction of our new ImagineX bulk piezo platform has created a pipeline of new product developments with the first two products, Nitrox and Irix, launched during 2021.

The Board is pleased with the progress that the management team has made in re-energising the business and would also like to thank our teams worldwide for their commitment and adaptability, particularly across our supply chain, during this period of uncertainty.

Strategic progress

We have continued to embed our strategy across the Group and through our people, a key enabler of the strong performance in 2021. 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 this means that 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 and that is our focus.

During the year, our ability to serve customers was further advanced through the acquisition of FFEI, adding both capability and capacity whilst enabling a more vertically integrated approach to assisting customers with the adoption of digital print technology. In November 2021 we completed the sale of our stake in Xaar 3D to our partner Stratasys *further strengthening our balance sheet* whilst retaining a strong commercial partner in the 3D market.

We recently (March 2022) strengthened the business further with the acquisition of Megnajet, a leader in design and manufacture of ink delivery systems. Megnajet adds complementary skills to Xaar's core competence as we build the capability to provide customers with a more complete package of integration tools and accelerate the adoption of Xaar printhead technology. We welcome the Megnajet team to the Group.

Financial results

In what has proven to be another challenging year for the global economy, the Group has delivered sales growth of 23% and moved back into profit in the second half of the year. Actions have been taken to build management and organisational strength, while cost control and careful cash management demonstrate our clear focus on performance and a return to profit.

The Printhead business has made good progress both commercially and operationally. Sales volumes have grown and a programme to improve efficiency and consistency of operational performance is progressing well. A specific area of focus has been our supply chain and our response to the challenges caused by the pandemic. An early recognition of the potential constraints on supply and logistics enabled us to secure materials to meet expected production requirements, and to proactively adapt product designs to accommodate alternative components.

Strategic and operational highlights

- Re-alignment of our go-to-market approach has strengthened customer engagement
- Strong performance for the Printhead business with consistent wins of new customers and projects and renewed focus on markets where products have a competitive advantage
- Ongoing delivery of product roadmap with two successful product launches from our ImagineX platform
- Investment in working capital has allowed Xaar to successfully mitigate supply chain constraints and secure ability to deliver on customer demand
- Further operational progress made in Engineered Printing Solutions (EPS), delivering strong revenue growth
- Relocation of Cambridge office during 2021 will result in £0.7 million annualised cost saving
- Acquisition of Megnajet to provide customers with a more complete package of integration tools
- Successful integration of FFEI acquisition expanding business capability and vertically integrated product offering
- Completion of divestment of Xaar 3D investment
- Launch of Sustainability roadmap with clear strategy to reach 'net zero' by 2030.

These actions have increased business resilience and will help us maintain uninterrupted supply to customers during 2022.

After encountering weaker demand and challenges in EPS, during the first half of the year, the appointment of new leadership and a realignment of strategy led to a much stronger second half of the year with sales 25% higher than in the first half. While performance for the year as a whole was impacted by previously announced non-cash adjustments relating to slow moving and obsolete inventory, there is good momentum in the order book and operational performance is improving in EPS.

We are pleased with the progress made at FFEI. Having only joined the Group in July 2021, integration of the technical teams is largely complete, and performance is in line with our expectations.

Good underlying cash flow and receipts from the sale of our stake in Xaar 3D in November 2021 enabled the Group to close the year with a robust balance sheet. Net cash of £25.1 million provides a platform for further investment and further complementary acquisitions.

The Board has not declared a dividend in 2021 as we believe that prioritising cash for continued investment in the business at this stage of our rebuilding programme will deliver more compelling returns for shareholders in the medium term.

Environment

As a Board we consider our responsibility to the environment and society in general as an integral part of running a successful business. We are mindful of, and are committed to, the need to be good custodians of our natural resources for future generations. The business has established an ESG Committee with oversight and input from the Board and has committed to a Sustainability Roadmap including ways in which we will strive to provide solutions and products for our customers that are cleaner and healthier. We are in the process of defining and setting meaningful ESG targets alongside plans of how we will achieve those targets in a specific time frame. Our goal is for the business to be 'Net Zero by 2030'.

People

For Xaar to be successful we need the energy, commitment and engagement of all our employees. Periods of 'lockdown', remote working and constraints on how people interact have all presented challenges, but I have great admiration for the way in which our people have overcome these challenges and worked tirelessly developing a strong 'can-do' culture.

We entered the year with optimism and a renewed sense of purpose but of course still uncertain as to the wider economic environment and extent of the challenges that would present. Despite this backdrop we have pushed on with the necessary changes to the business and it is to the great credit of the whole team at Xaar, in all businesses and in the many countries around the world where colleagues live and work, that they have adapted, committed to and succeeded in delivering both solid financial results and a platform for continued growth. On behalf of the Board, I thank them and congratulate them on the progress made.

Summary

The Board is optimistic following our progress this year and is confident in the future prospects of the Group.

Andrew Herbert
Chairman
29 March 2022

Our **EPIICC** values

E P I I C C

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.

Our values are the driving force of our culture and are at the heart of everything that we do.

We have a cross functional team that has been working on ways to further embed our values throughout the Company, and we have also rolled the values out across all the Group. The team put together a video which demonstrates the part that our values play in our lives, both at work and in our home lives.

Read more about our Company culture on page 9

Watch our video at https://youtu.be/4rXmXMlEpgg

WE ARE READY FOR THE FUTURE

Six reasons to 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. For example, with Direct-to-Shape printing, Xaar technology offers unique value thanks to the capability of our printheads to print dynamically in multiple orientations. This is particularly relevant in a number of areas from aerospace to bicycle manufacture.

In addition, Xaar continues to see a growing number of new opportunities within the 3D printing markets. Our technology is unique in its capability for managing high viscosity fluids and at the same time delivering *industrial* levels of reliability across a range of additive manufacturing applications and emerging technologies.

There are significant opportunities in textile printing, particularly in applications using pigmented inks. Xaar's technology is well suited for the challenges of printing highly pigmented inks, providing several USPs, and when combined with upcoming products from ImagineX, will bring a significant value proposition to that market.

See Marketplace on page 10

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.

See more on pages 20 and 21

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 *growth strategy of offering* a more vertically integrated solution.

See Board biographies on pages 60 and 61

4 A clear strategic vision

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

See Our business model on page 8

5 Roadmap to deliver the opportunities

Our ImagineX printhead 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 already launched two new printheads on this platform (Xaar Nitrox and Xaar Irix). Future product *launches include* aqueous compatibility, increased robustness to improve the life of the printhead and even higher resolutions. These features are helping to 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, Labels, Packaging and Textiles.

See New opportunities on page 3

6 Strong balance sheet position

We have the resources necessary to implement our strategy, a strong balance sheet with no debt and net cash of £25.1 million. This provides the platform for security and a great foundation for future growth.

See the Strategy update on page 12

Our business model

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 two business units concentrate on 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.

Our product printing business, EPS, *designs and develops complete industrial* printing machines which are sold to end users.

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.

In March 2022 we completed the acquisition of Megnajet, market leader in the design and manufacture of industrial ink management and supply systems for digital inkjet.

We have recently sold our remaining interest in Xaar 3D (which is developing 3D printing machines) to Stratasys.

Our business model

Xaar designs

We have R&D facilities in Cambridge, Hemel Hempstead, Stockholm, and Vermont.

We invest a substantial proportion of our revenue in R&D to remain a *world leader in inkjet technology* (2021: approximately 10%).

We continually add to our Intellectual Property ('IP') portfolio, and currently we have around 340 patents and patent applications.

Our R&D staff totals 86 which is 21% of the total workforce.

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 ink management and 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

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 Europe, Asia and North America regions.

Xaar company EPS also 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 capability and engagement of our people. We want bright and driven people who 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. We like to build long-term relationships with all our employees by helping them grow and develop – in 2021 we promoted over 70 people – and by making Xaar an interesting place to work as well as a great company to be involved with.

Whilst this year we continued to manage the impact of COVID, we were able to host a number of COVID safe lunches for our employees to encourage collaboration and team building, as well as to help new employees meet the wider team. We also focused on embedding our values more deeply into our culture which has included launching a new values award across the whole Group.

We have also 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

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 CO_2 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. Notable outcomes during 2021 include a move to 100% certified renewable energy tariffs at three of our UK facilities – a switch that will make a valuable contribution to our net zero goals. We completed this move for two remaining facilities in January 2022. One key decarbonisation project that has commenced in 2021 is the installation of EV charging infrastructure. Work on moving to solar energy continues, with other factory level energy efficiency improvements ongoing.

In the second half of 2021 we formed an ESG Committee with governance and accountability to the Board. Reporting to the ESG Committee, the Sustainability team, formed with representatives from across the business, has developed a co-ordinated Sustainability Roadmap that will push Xaar towards its 'Net Zero by 2030' goal. 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. Once approved at Board level, the Roadmap will provide an essential backbone for much of Xaar's future investment and activity.

Digital printing compared to analogue reduces consumption of up to:

95%
CO_2 emissions

55%
Energy consumption

60%
Water consumption

Source: Xaar

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 promotes 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.

Primary 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.

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.

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.

Printheads
Designed, developed and manufactured by Xaar

Sub Systems
Electronics, software, ink system

Ink

Print Bar

Print Engine

OEMs

UDIs

Strategy at a glance

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 strategy will ultimately ensure we sell more printheads.

Enhancing our integrated product offering

Introduction

We are now two years into the turnaround of Xaar and we are extremely pleased with what we have achieved. We have implemented a new strategy across the business, with a new commercial model whilst investing in the business. This has seen significant progress as old customers have returned and new customers are continuing to engage with us. The speed with which this has been achieved is impressive and we have proved our strategy is working.

We have also made great progress updating our infrastructure and further strengthening the team, our products and the capabilities to deliver growth in the business. Operationally we have strengthened the business, improved our efficiency and margins whilst continuing to build a sustainable solid platform from which to grow the business further. During the year we successfully integrated FFEI, which will enhance our commercial offering and widens our product technology offering.

We have also established an ESG Committee and committed to our Sustainability Roadmap which will become further embedded in the business and be visible in everything we do as a business.

Xaar has achieved much in the last two years and this success will help drive us further in the coming years.

Delivered good results and finished the year well

The results for the year demonstrate significant progress for the business and we are extremely pleased with the continued strong performance which, despite challenging market conditions, demonstrates the positive momentum our strategy is driving throughout Xaar. Investment in capability and capacity provides us with further opportunities to accelerate our strategy and future growth. This leaves the business well placed to capitalise on this performance and deliver further growth and a return to profitability. Delivering profit on an adjusted basis over the second half of 2021 is a key landmark achievement for the Group. It is a milestone which has been achieved quicker than planned as part of the turnaround.

Revenue growth

Revenue for the year was £59.3 million, representing an increase of 23% relative to 2020. Organic growth before the effects of the acquisition of FFEI was 12%.

In the Printhead business we have a clear customer-focused commercial model strategy which is reaping rewards, delivering revenue growth of 14%. This approach includes removal of distribution channels, a clear pricing strategy, and a sales process that is focused on selling the printhead based on its technical merits.

The focus has been on markets where our technology has a competitive advantage and working with the customer, both Original Equipment Manufacturers (OEMs) and User Developer Integrators (UDIs), over the entire product lifecycle to reduce their development times and, therefore time to market, and to also provide improved aftersales support. We continue to see increased customer engagement both from existing as well as new customers.

The product roadmap delivered two new products during 2021 – Xaar Nitrox and Xaar Irix – that has broadened the Bulk printhead product range to offer advantages over the competition in existing and new markets.

Revenue growth in Asia, especially China, has been significant, up 33% year-on-year, with ceramics and glass customers particularly re-engaging, increasing our market share. Revenue growth in this sector in the year was 38%.

Product Print Systems business 'EPS' delivered improved performance demonstrating strong revenue growth of 9%. This follows the effective implementation of operational changes and progress in developing a modular approach to products. As previously announced the 2021 results were impacted by non-cash adjustments relating to slow moving and obsolete inventory following the implementation of planned process improvement and strategy. This impacted the gross profit negatively by £0.7 million of provisions and write downs.

Digital Imaging delivered revenue of £5.3 million in the period from acquisition on 11 July 2021.

Improved margins and returns

This strong revenue growth, coupled with our increased operational efficiency, saw the gross margin increasing to 34% in 2021 (2020: 27%). We have invested in our capability and efficiency most notably in Operations and support functions but have continued to exercise discipline in our cost management actions.

Accordingly, we can report a much reduced adjusted loss for the year of £0.6 million, compared to £5.9 million last year, and crucially we can report an adjusted profit for the second half of the year.

Pleasingly we can report positive adjusted EBITDA in each of our businesses, which is a notable step towards full year profitability for the Group.

Strong balance sheet

The Group retains a strong balance sheet and cash position. Net cash at 31 December 2021 was £25.1 million. This represents an improvement of £7.0 million in the year. This has been primarily driven by the £9.3 million initial consideration received for the Xaar 3D divestment and continued strong cash generation in our Printhead business. We have taken the opportunity to invest in inventory of £7.1 million in the year to successfully secure materials to meet expected 2022 production requirements and to increase our holding of finished goods.

This gives us greater assurance that we can deliver on customer demands throughout 2022. We have taken further proactive actions to adapt product designs to accommodate alternative components, increasing our resilience to supply chain constraints.

On track with our journey, plan and strategy and more confidence in our capability

During the last two years we have successfully re-set the Group with a new business model and established a robust platform to deliver profitable growth. The turnaround 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 sustainable profitable growth.

The first phase 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 strategy is to provide an integrated solution for customers whereby they can access more of the printing ecosystem, to include supporting elements such as ink supply systems and the electronics required for printing. 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, making our customers' investment more profitable.

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

Refreshed customer engagement

Accordingly, we have regained customers, particularly in core sectors such as Ceramics and Glass, and we now have significant market opportunities in 3D, Coding & Marking and Direct-to-Shape. Our 2021 revenue in the ceramics and glass sector has increased by over 40% since 2020 and the number of OEM projects commissioning Xaar products has doubled year on year for each of the last two years.

Our commercial approach has also been updated with new branding and a fresh, clear communication plan which has helped to regain the trust of OEMs, making sure the advantages of Xaar technology are well understood. The level of engagement from lapsed and established customers and our desire to listen to their needs and to work with them to find a solution, through consistent communication, indicates this has been working and we are regaining their trust.

Financial highlights

£59.3m

Revenue – Continuing operations

in line with management expectations (2020: £48.0 million)

34%

Gross margin – Continuing operations

increased from 27% in 2020, benefiting from operational leverage in the business

£5.7m

Gross R&D spend

by continuing operations of £5.7 million, up £1.2 million on 2020 with investment focused on the ImagineX platform and product roadmap

(£2.3m)

Net cash outflow

Net cash outflow from continuing operations before Xaar 3D disposal proceeds (2020: £7.1 million inflow)

£9.3m

Cash inflow on Xaar 3D disposal

Initial cash consideration received, with a further £10.9 million contingent consideration

£25.1m

Net cash

Strong closing balance sheet with net cash and treasury deposits (2020: £18.1 million excluding Xaar 3D)

Xaar's position in the 3D business is one of technology enabler and our end goal has been, and remains, to supply printheads for use in 3D applications and not become an OEM in the sector. That was the rationale behind our partnership with Stratasys, a recognised leader in 3D with a proven track record and strong routes to market. On 1 November 2021 we sold our remaining stake in Xaar 3D to Stratasys, and we will continue our relationship with them as a supplier of printheads.

Vertically integrated product offering

The acquisition of print systems and printbar specialist FFEI in July 2021 further widens our product offering for our OEM and UDI 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. 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 will give us further opportunities for additional vertical integration, and we continue to strengthen our offering with more products in the pipeline for 2022.

Our product roadmap, built on the ImagineX platform, has already delivered significant enhancements to the current portfolio with two products, Xaar Irix and Xaar Nitrox, launched on time during 2021.

Our EPS business performed well, increasing revenue and margins on an underlying, ongoing basis. The non-cash adjustments made in the year were necessary to rebase the business and ensure a strong financial platform from which to drive further growth. In addition, we changed the leadership of EPS and embedded the more efficient modular operational approach which will enable further margin growth. With increased control, focus and a more precise commercial approach EPS is well placed to deliver sustainable margin growth in the coming years.

Operational capability

We have made significant progress in building a world class leadership team, making some key appointments during the year 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, Finance, Human Resources and EH&S Management, as well as re-organising the sales team. This increase in operational support includes further investment in infrastructure such as IT, manufacturing and supply chain management.

During the year we established new corporate headquarters in Cambridge, UK and focused our Printhead operations into our main manufacturing facility in Huntingdon, UK. We also opened a new Customer Service Centre in Shenzhen, China. These changes give the benefit of increased efficiency in how our teams work together, providing us with a better way of working more closely and collaboratively with our customers across the world and will deliver £0.7 million of annualised cost savings.

We are proud of how our teams have continued to respond to the difficulties presented by COVID-19. We have proven the business can operate effectively with greater efficiency whilst building greater business resilience.

During the year we have worked on embedding new values into our culture. This is an important step in changing the mindset and culture of our business and has seen employees show engagement and empowerment. A cross functional project team developed an easy to remember logo for our values, launched a new values award, which is embedded across the Group, and developed a new video which we are using for employee engagement, recruitment and induction.

Sustainability

We established an ESG Committee during the year, constituted by a cross functional internal team and supplemented with external expertise. This group, formed from representatives from across the business, has developed a co-ordinated Sustainability Roadmap that will push Xaar towards its goal of 'Net Zero by 2030'. The Roadmap has four key pillars:

1. Environment
2. People
3. Innovation
4. Community

Its purpose is to drive our ESG goals beyond the Energy Reduction scope to a Group wide activity and provide an essential backbone for much of Xaar's future investment and activity. It has the full backing of the Board and is sponsored by Alison Littley, Senior Independent Director.

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 reducing the need for energy intensive drying processes. We are passionate in continuing further adoption and understanding of the environmental benefits our products can bring to customers.

Product development and increased capability

In aggregate the market size across these sectors is huge. We have a unique roadmap of product development to ensure we offer an increasing vertically integrated commercial strategy to capitalise on this market opportunity. The ImagineX platform will deliver a number of features over the next few years which will provide significant enhancements to the current portfolio; these include:

- Substantially improved speed and throughput (frequencies up to 150kHz, equivalent to a threefold increase in speed compared to current products)
- Aqueous compatibility
- 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)
- Higher resolutions (up to 1440 dpi).

We have made strategic 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.

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, Labels, 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.

Development of our aqueous product remains on track, and we intend to release more details on this later in the year. The exciting opportunity this product provides is significant as we would have an unrivalled *portfolio that could* satisfy market demands which we are currently not able to due to our printhead architecture.

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 actions taken in the last two years leave us with a strong balance sheet. 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.

Significant opportunity

Xaar's digital inkjet technologies are transforming print processes in a wide range of markets, and the medium- and long-term opportunity for the business remains significant.

We have already grown market share in core, mature markets such as Ceramics & Glass and Coding & Marking. There remains further growth opportunity in these areas as our technology is best in class and we have a clear competitive advantage over our competitors due to *our core technologies* (TF Technology ink recirculation, High Laydown Technology, Ultra High Viscosity Technology).

Increased market opportunity exists in sectors that are looking for further digitisation of printing on which we can capitalise. We see opportunities 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*.

Outlook

The positive momentum in the business has continued in the first quarter of 2022 and we remain optimistic about the short-term outlook for the business. Customer engagement and sales orders have been maintained in quarter 1 and are in line *with our expectations. We anticipate* continued performance improvements during 2022 with further good organic revenue growth.

Due to the action taken to secure supply by investing in working capital during 2021 we believe we are well placed to satisfy *customer demand for the year ahead* and we have the supply chain resilience to withstand most disruption. We are continuing to invest in the business, adding skills, capability and capacity.

We expect an improved gross margin which will come from the continued efficiency gains we have in the business. Whilst that enhancement won't be at the same incremental increase as for 2021, we are confident of returning to 40% gross margins in the medium term.

Whilst we are conscious of the continuing risks arising from the economic consequences of wider global issues, and COVID-19 continues to be a risk to economic disruption, particularly in Asia, we remain on track to return the business to profitable growth and look forward to the future with confidence.

We have the right strategy and remain confident in our ability to achieve our target of a full year profit this year.

John Mills
Chief Executive Officer

29 March 2022

Ian Tichias
Chief Financial Officer

29 March 2022

Our business units

***Xaar plc has a number of business units* within the Group, with the principal focus being on inkjet technology.**

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, Labels and Packaging as well as 3D Printing and Additive Manufacturing.

Revenue segment

£40.1m

Markets	
Industrial	53%
Packaging	30%
Graphic Arts	15%
Royalty	2%

Product Print Systems

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.

Revenue segment

£13.9m

Markets	
Digital	58%
Analogue	39%
Other	3%

Digital Imaging

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

In March 2022 we acquired Megnajet, market leader in the design and manufacture of industrial ink management and supply systems for digital inkjet. The acquisition is part of our strategy to offer our customers a more integrated inkjet solution.

Revenue segment

£5.3m

Markets	
Inkjet	60%
Life Sciences	40%

3D Printing

We have recently sold our remaining interest in Xaar 3D to Stratasys (see Financial Statements – note 11, page 137). Xaar 3D is developing, manufacturing and commercialising 3D printing machines with a unique 3D printing technology. The sale to Stratasys will enable Xaar 3D to succeed with their go-to-market plans.

In addition, we have developed a close relationship with Stratasys for future collaboration and ongoing supply of printheads.

We continue to work on other 3D printing projects which use Xaar printheads to deliver alternative 3D printing technology.

£9.3m
Cash proceeds received

£17.9m
Gain on sale of investment

£10.9m
Fair value of contingent consideration on disposal

(£246k)
Transaction costs on disposal

DELIVERING ON OUR STRATEGY

2021 summary

Product launches

The Printhead business continues to perform well with a growing pipeline of *new product developments* coming from the ImagineX printhead platform.

In April we launched the Xaar Nitrox to deliver greater print *speeds (up to 100* metres per minute) and uniformity for unparalleled performance across a wide *variety of print applications*. By the end of 2021 we already had 23 projects using the Xaar Nitrox in progress, covering more *than seven* different application sectors.

We also launched the Xaar Irix in September. This printhead is targeted *at our Coding & Marking customers in* particular but also offers a good solution for printing direct to products, printing *functional fluids* and for 3D *printing* applications where a highly accurate delivery of ink drops and/or longer throw distances are important. Interest from our Coding & Marking customers has been positive with six customers already evaluating the printhead.

New opportunities

The number of customers launching new machines has increased year on year with ten customers launching with Xaar technology during 2021. The sectors into which the machines have been launched are varied and cover *labels, ceramics,* direct-to-shape, 3D printing and PCB printing. Four other planned launches *have been pushed* to 2022 due to delays caused by COVID-19.

In June we signed a co-operation agreement to establish a '*Joint Digital* Printing Laboratory' with the Beijing National Innovation Institute of *Lightweight Ltd (BNI) in China*. We are now collaborating on R&D projects built on the innovative technologies from both *parties* as well as their expertise in inkjet printing. The Joint Laboratory will develop new applications in digital inkjet such as printing glass, electronics, 3D and automotive spray painting.

Operational efficiencies

Scalability of the *Huntingdon factory has* been a focus in 2021. We introduced some standard efficiency initiatives within the *production area, restructuring* the team into smaller work units. This makes it easier to train operators, easier to *manage* the teams on a day to day basis and easier to react to changing market demands through scaling up production quickly when necessary. In addition, a second initiative, the Xaar Excellence System, is now underway and covers Company-wide standards and processes.

Our IT Transformation Programme to establish a modern, secure and supportable *IT infrastructure is also* underway. This will enable us to deliver an optimised and consistent set of *end-to-end operational processes.*

The relocation of our corporate HQ from the Cambridge Science Park to the nearby Cambridge Research Park *took place in July* and will generate savings of £0.7 million per annum from the start of the second half of *2021. The new global headquarters houses* Xaar's finance, HR, legal and marketing functions, as well as a new purpose-built R&D laboratory. Specifically configured to enhance the working environment for the team, the new offices embrace Xaar's commitment to flexible working for employees. Also, importantly the offices provide a significantly reduced carbon footprint for Xaar.

A move towards an integrated service

We appointed an Ink Business Director *in March 2021* to develop and roll out a new ink strategy aimed at building collaborative partnerships with leading fluid manufacturers. We are working with these companies to fully optimise the fluid, not just in the printhead in a lab setting, but also throughout the machine development programme, end user integration and beyond. This ensures optimum print performance in the actual application environment, and ultimately delivers a better end result for our customers and their customers, as well as shortening time to market for all parties. For our UDI customers we are selling fluids, manufactured by our fluid partners under the Xaar brand. This helps to tie us into a long-term relationship with these customers and will provide an ongoing revenue stream.

We made significant progress this year towards our goal of providing an integrated inkjet solution whereby our customers can access the printing ecosystem as well as the print technology from Xaar. In July we acquired FFEI, which is enabling us *to widen our product* offering (of print engines using Xaar technology) to our UDI customers.

The roadmap for our Ink Supply Systems, developed this year, will ensure that we can help customers evaluate and adopt our technology – and ultimately reduce their time-to-market. One focus in 2021 has been to upgrade the Hydra Ink Supply System for use with *aqueous* inks.

In March 2022 we acquired Megnajet, market leader in the design and manufacture of industrial ink management and supply systems for digital inkjet.

The acquisition is part of our strategy to offer our Printhead business unit customers *a more integrated* inkjet solution.

We have also developed our datapath roadmap, and are now working on delivering a *rich portfolio of datapath* products to help our customers develop their systems and solutions and also to *ensure they can* take advantage of the technology advantages available from our ImagineX platform.

Building stakeholder engagement

We are now building momentum with our customer-centric business model, re-engaging with past customers *and* attracting new ones. Products launched this year are gaining good traction *(23 projects with the Xaar Nitrox and six* customers already evaluating the Xaar Irix), and we already have ten new customer launches with Xaar printheads during 2021.

Our 720 dpi print resolution is also attracting interest in our ceramics market. *Xaar has the unique ability to print at* this high resolution. This capability, which we showcased at Uniceramics, China, in June, has proven to be of interest to tile manufacturers looking to print exceptionally large tiles which are used for homeware products (for example, table tops).

In August we announced the opening of a new Customer Service Centre to better support our Chinese customers, delivering technical support and training and providing a fast response to customer needs.

The new marketing platform that we implemented at the end of 2020 is also driving audience engagement. Our campaigns in 2021 generated a unique reach of over 678,000 people, over 350,000 video views, over 15,000 meaningful engagements (likes, shares, comments) and gained us *over 1,000 new followers* on LinkedIn.

Building a viable printhead business with a stable future

We are making good progress with delivering our product roadmap. The launch of the Xaar Nitrox in April delivered our first high frequency printhead which can reach speeds of 100 metres per minute. We delivered increased throw distance via the Xaar Irix in September, and the aqueous programme is on track with the printhead now in its *beta* testing phase. A significant focus for our marketing campaigns in H2 has been *to promote the advantages of our Ultra* High Viscosity capability, with the goal of opening up new applications which involve *printing highly* viscous fluids to achieve new functionality, such as increased product toughness or material flexibility.

Our inkjet printhead range

Xaar Nitrox

With unparalleled *productivity and performance*, the Xaar Nitrox lets you create without limits

Xaar 2002
High productivity and out-of-the-box exceptional print quality

Xaar 1003 AMp
Small drop deposition on an industrial scale

Xaar 502 S
Exceptional print quality for Wide-Format Graphics

Xaar 1003 C
***Ultimate versatility in ceramic* tile decoration**

Xaar 501
High production up-time and industrial reliability

Xaar 128
***Adaptable printhead with* trouble-free integration**

Xaar Irix

Exceptional print quality, simple to use, robust, and highly reliable

Xaar 1003 U
***All round reliable high quality* printing for industrial applications**

Xaar 502 O
Industrial reliability and mineral-oil free inks

Our integrated solutions

Fluids

Ink supply systems

Print engines

Drive electronics and datapath solutions

Support

Printhead – technologies
Xaar's core inkjet technologies

We have a number of unique technologies which are incorporated into our printheads, and which provide distinct advantages to our customers.

TF Technology

Xaar's TF Technology is the original and still the best ink recirculation technology available. A printhead's architecture determines how well ink recirculation is implemented and therefore influences the degree to which the method delivers benefits across today's wide range of printing and jetting applications. Xaar's TF Technology, together with the unique Hybrid Side Shooter printhead architecture, enables ink or other fluids to flow directly past the back of the nozzle during drop ejection at very high flow rates.

This ensures the nozzles are continuously primed, keeping the printhead operational and the nozzles firing and – with the ink in constant motion – prevents sedimentation and nozzle blocking, particularly in heavily pigmented inks. Any air bubbles and unwanted particles in the ink are also carried away, improving reliability, even in the harshest industrial environment.

This makes jetting significantly more reliable compared to alternative printhead designs where convoluted ink flow paths means that recirculation is close to but not at the back of the nozzle.

The main benefits of TF Technology are unrivalled jetting reliability, outstanding print quality and an increased production uptime.

High Laydown Technology

Xaar's High Laydown Technology enables a range of new applications, thanks to its ability to deposit large quantities of fluid in each pass. It makes possible printing very high levels of UV inks or high build varnish in a single pass for tactile embellishments on labels, packaging and commercial print. Braille and label warning triangles are also possible. High Laydown Technology delivers unprecedented ink discharge rates for gloss and adhesive effects on ceramic tiles, so that effects can be printed at high line speeds.

For additive manufacturing applications, High Laydown Technology offers increased printing productivity which significantly accelerates build rate for parts and the ability to print a broader range of fluids including higher viscosity materials; this ultimately results in tougher 3D printed parts than those printed with standard inkjet technology.

Ultra High Viscosity technology

Xaar's Ultra High Viscosity technology opens up a wide range of new inkjet capabilities and applications for OEMs and manufacturers using Xaar technology. Most printheads can only jet materials with viscosities of up to 10-25 centipoise ('cP'). Thanks to Xaar's unique TF Technology and innovative High Laydown Technology, fluids with significantly higher viscosities – up to 100 cP – can now be jetted.

The ability to lay down fluids with higher particle loading and particle sizes offers advantages such as an increased colour gamut, opacity and special effects. In addition, jetting higher molecular weight photopolymers for Advanced Manufacturing and 3D printing applications is made possible.

Where we excel

We are the only truly independent inkjet technology company with over 30 years of experience. Our independence enables a flexible, collaborative approach to ensure we remain customer-centric and focus on their goals

State-of-the-art UK manufacturing facilities and an enviable R&D department staffed by scientists and engineers with a wealth of inkjet industry knowledge and expertise

A comprehensive portfolio of products to cover a wide range of applications

Engineers with extensive knowledge of inkjet and its application across many sectors as well as considerable field experience. This means they are able to assist our OEMs and UDIs in the successful design, build, commissioning and post-installation support of all Xaar-based inkjet systems

Ready-to-use development kits and an extensive portfolio of systems components ensures that OEMs and UDIs can get up and running quickly

Priorities for 2022

- Continuing to deliver on the vertical integration strategy to support our goal of driving printhead sales
- Launch Versatex for our UDI customers
- Launch of aqueous printhead and the ecosystem to support it (such as the datapath and ink delivery systems)
- Launch Sustainability Roadmap

Our business units continued
Product Print Systems

Introduction to the Product Print Systems business unit

Engineered Printing Solutions ('EPS') is a recognised leader in the industrial product marking machine industry, manufacturing highly automated machines and accessories. As well as providing an industry-leading service and support, EPS occupies a niche position as one of only a few bespoke product marking machine companies in North America.

What we achieved in 2021

2021 has been a rebuilding year within EPS.

In April, we changed the leadership of EPS. Additional changes were made in Finance, Human Resources, and EH&S Management. The sales group was re-organised into two distinct groups. One group focuses on selling pad print equipment and distributed inkjet printers and their related consumable items into the medical, industrial, promotional products, and other markets. A separate group focuses on selling the bespoke inkjet systems into industrial accounts.

We achieved +9% growth in sales in 2021 and ended the year with a strong order book for bespoke systems as well as a plan for continued strong growth for 2022.

At the very end of 2021 we took the largest single order in the Company's history (for multiple units) which will be realised during 2022, and the first half of 2023. There were continued challenges related to COVID-19 including no tradeshow presence and difficulty with travel, as well as regular interruptions of work schedules and supply issues.

We also made many changes in our internal procedures and business systems to allow a more focused approach to the business and better use of our resources to achieve results.

Project focus

In 2021, EPS designed, built, and delivered a bespoke single pass machine for a leading player in the promotional products industry. Based on the XD-70 platform, this machine featured a six-axis robotic arm controlled by a vision system to load parts, inline flame pre-treatment, a five-colour, six-head print engine, and servo-controlled offload accumulators for sorting of different SKUs.

Stored recipes enable the robotic arm to locate the part from the load cell, spot check the part for correct orientation and place it on a conveyor for pre-treatment. The part then continues under the printheads for decoration. Following inline UV curing, the part is conveyed to a series of "gates" that open and close according to the recipe. In this manner, parts are sorted automatically. On average, this machine can mark 1,000 parts per hour, including changeovers.

This successful implementation of single pass printing technology to the promotional products industry is an important step forward for EPS. The COVID-19 pandemic affected this market segment greatly, as the cancellation of sporting events, weddings and closure of restaurants negatively impacted sales for promotional products. As these events start to come back online, EPS is poised to bring this disruptive technology to an established industry that is seeking new efficiencies for their product decoration services.

Where we excel

Our core strengths are designing, building and integrating machines which allow our customers to product mark their parts in a highly automated manner, enabling significant cost savings and virtually unlimited print flexibility and personalisation.
We offer unparalleled service and support which in turn ensures we build long-term relationships with our customers

Priorities for 2022

In 2022, we will continue our efforts to standardise the base print engine platforms which become part of our customised inkjet solutions. The benefits of more standardisation will be lower costs and improved lead times.

At our core, EPS is an innovative group of very talented inkjet and automation experts who utilise their creativity and experience to design, build, and deliver specialised printing systems for our customers.

Digital Imaging

Introduction to FFEI

Established in 1947, FFEI has an impressive reputation for developing innovative and award winning digital inkjet and life science solutions – from concept to delivery. Most importantly, FFEI works closely with customers to ensure their market knowledge is transformed into the digital imaging system they need to meet their bespoke requirements. The two core FFEI application areas are digital imaging solutions for label presses and digital pathology scanners.

Where we excel

Over 65 years of know-how in industrial digital imaging technology

An extensive core technology patent portfolio

A reputation for developing sophisticated solutions from concept to delivery

A culture of innovation and a keen focus on customer needs, underpinned with highly capable and committed employees

FFEI Inkjet

The inkjet side of FFEI focuses on the design and manufacture of inkjet print engines which it sells to OEMs to incorporate in their own systems and brand as their own.

The FFEI print engine includes an ink system, a control unit to run it and mounted Xaar printheads. The OEM will take these elements and mount them into their own press to add a new print feature.

To date, FFEI has focused on the labels and packaging market where the print engine provides an efficient way to add digital embellishments to analogue presses, for example, varnish embellishment, high laydown embellishment, high opacity white, variable data coding/marking (which is very difficult without digital capability) and spot colours

FFEI will continue to service its own customers as before but is developing a roadmap of products for Xaar's UDI customers which is launching in 2022 under the Xaar brand Versatex. This is a stripped back standard print engine which, because of the changes, is more versatile and open to a range of different applications. It offers a more complete solution for the UDIs who have less inkjet experience and who are looking for a standalone engine, helping them to keep development costs down and get to market more quickly

FFEI Life Sciences

Digital pathology scanning technology

Over ten years ago FFEI applied its digital scanning expertise to the challenge of whole slide imaging (WSI) for pathology. Today its award-winning technology has been successfully taken to market by a number of blue chip clients. Central to the success of these scanners is FFEI's patented 'dynamic focus' technology, which delivers unparalleled scanning speed, z-stack functionality and high-resolution imaging.

Whether customers are seeking to add imaging capabilities to their existing core competencies, or are planning to extend their existing imaging portfolio, FFEI can help

Optical imaging and detection technologies developed by FFEI have been successfully applied to a number of different laboratory formats and applications in partnership with a number of blue chip companies.

Product portfolio development is ongoing and there is now a pipeline of next generation scanning technologies; some are very close to market readiness, while others require further development. FFEI is now looking for new partners to reap the rewards of these next generation scanning systems

Sierra slide colour calibration technology

FFEI's solutions include its patented Sierra slide and the unique capability to integrate with cloud-based ICC colour management profile generators. The Sierra slide calibration technology universally standardises WSI image quality to the highest ground-truth fidelity across all digital pathology scanning systems. This ensures the true and normalised colour of stained tissue biopsies are presented to pathologists, researchers and AI alike

Business performance

Continuing operations – revenue

Revenue for the Group of £59.3 million is an excellent performance for the year, representing a year-on-year increase of £11.3 million (2020: £48.0 million) of which FFEI represents £5.3 million in the period since acquisition.

It is a very pleasing result given the ongoing restrictions arising from COVID-19, with Printhead revenue increasing 14% and EPS 9%. Group revenues increased from £26.3 million in the first half of the year to £33.0 million in the second half driven principally by a £1.7 million increase in revenue from the EPS business. This is a strong recovery across the business demonstrating the positive customer engagement and trust that is being regained across our customer base and the continued momentum we have in the business.

Revenue from the Americas grew year-on-year across the Group, rising £3.3 million (2021: £23.6 million, 2020: £20.3 million), including £2.4 million from FFEI and despite a small drop in Printhead revenue of £0.3 million. The rise, driven by the recovery in EPS revenue, stems from increases in sales of digital machines and peripherals demonstrating the new commercial approach is being well received with customers

Performance in Asia, and China in particular, has been very successful in 2021. This has been the key driver for the continued overall revenue growth in Printhead. Group revenue grew £1.3 million in the first half of the year to £5.8 million (H1 2020: £4.5 million) and continued to grow in the second half to £6.2 million (H2 2020: £5.1 million). This growth has largely been driven by the re-engagement of Chinese Ceramic OEM customers where our new product range is proving successful. Revenues in Printhead have increased year-on-year from £9.6 million to £11.9 million, a 24% increase.

This is a real proof point for the change in strategy, the removal of distribution channels, the implementation of a clear pricing strategy, and more significantly a change in how we interact and support our customers have all helped with the speed of adoption of the Xaar 2002 together with Xaar Nitrox and Irix in China

Revenue in EMEA has continued to rise year-on-year. Excluding FFEI, revenue was £20.9 million compared to £18.1 million, and we have seen a promising continued upward trend in revenue since H2 2019. Revenue in the first half of the year increased £2.1 million compared to H1 2020 of £8.4 million and by £0.7 million in the second half compared to £9.7 million in H2 2020.

Printhead revenue for the year increased £4.8 million to £40.1 million (2020: £35.3 million). Growth in the first half was 20% and in the second half was 8% as we saw continued momentum in revenue throughout the year

Printhead revenue growth stems from the continued recovery in the key sectors of Ceramics & Glass (C&G) with growth of £5.2 million (38%). Increasing market share with our extended product portfolio and being able to demonstrate our clear technology advantages has proven successful in the Chinese Ceramics market, where we have regained trust with our customers. We have also established a market leading position in Glass with the Xaar 2002 and won several accounts in the Glass sector in 2021, with revenue in 2021 increasing 38% compared to 2020

Coding & Marking (C&M) revenue has remained largely flat year-on-year, while Direct-to -Shape (DTS) revenue has declined with the majority of the decline taking place in the Americas which we believe will be a short-term flattening of demand

Whilst still a relatively small part of our business, DTS will prove to be an increasingly important sector for the business and an area for potential growth in the long term and it is encouraging that we are showing how our unique technology advantages can prove successful in this area by winning new accounts and commissioning new machins by switching their production lines over to a digital solution

Wide Format Graphics (WFG) and Labels revenue fell slightly in the year from £6.3 million to £6.2 million. This is an area where we have seen some delays in orders, mainly COVID-19 related. As our customers are more able to access their own customer bases with a relaxation of travel restrictions, we expect this reduction to be one of timing only and to recover in 2022

3D Printing and Advanced Manufacturing (AVM) have stayed relatively flat year-on-year (2021: £2.4 million, 2020: £2.5 million) with gains in 3D Printing offset by a reduction in revenues from AVM. As with the DTS market, the AVM market for printheads is still relatively small but growing, and we are very excited about our prospects in this area and expecting to see significant growth in the coming years. Both 3D Printing and AVM are markets where we are well positioned to take advantage of growth opportunities, but development cycles can be long, therefore, it can take several years for a customer to reach full product on and ultimately significant demand for printheads

Revenues from Packing & Textiles remain modest. Our ability to target this sector effectively is somewhat limited by our current product range. 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 £0.8 million was down year-on-year (2020: £0.9 million)

Our royalty revenue stream was sold during 2019 and so we have a declining legacy royalty rate which will continue to decline in 2021 and 2022 before ceasing altogether shortly thereafter

Revenue from the EPS business increased by £1.2 million to £13.9 million (2020: £12.7 million) as the new commercial approach has seen some significant customer order wins

Table A – Revenue by region – Continuing operations

£m	2021 H1			2021 H2				FY 2021				FY 2020		
	PH	EPS	Total	PH	EPS	FFEI	Total	**PH**	**EPS**	**FFEI**	**Total**	PH	EPS	Total
Americas	3.9	6.1	10.0	3.4	7.8	2.4	13.6	**7.3**	**13.9**	**2.4**	**23.6**	7.6	12.7	20.3
Asia	5.8	–	5.8	6.1	-	0.1	6.2	**11.9**	**–**	**0.1**	**12.0**	9.6	–	9.6
EMEA*	10.5	–	10.5	10.4	-	2.8	13.2	**20.9**	**–**	**2.8**	**23.7**	18.1	–	18.1
Total	20.2	6.1	26.3	19.9	7.8	5.3	33.0	**40.1**	**13.9**	**5.3**	**59.3**	35.3	12.7	48.0

* Includes plc £0.2 million 3D service fee allocated to PH and EMEA. Figures subject to rounding

This has been driven particularly by digital inkjet machine sales with growth of 11%, which is particularly pleasing as this will be the core focus for the business in the future. Pad print machine revenue has also increased (8%) albeit with a decline year-on-year in the second half. The focus on consumables and accessory sales has contributed to the growth as a result of the change in commercial approach, with increased revenue from ink, plates and parts. We see a strengthening pipeline and order book and we are well placed to deliver further growth in 2022 as companies start to invest in capital equipment again and those markets affected by the pandemic, such as Ad Speciality and Promotional Products, start to recover.

Continuing operations – gross profit

Gross profit for the year increased by £7.2 million to £20.2 million (2020: £13.0 million) with an increase in the gross margin to 34% (2020: 27%). This was primarily the result of an improvement in the Printhead business unit's gross profit which grew from 27%. We increased utilisation of the factory as throughput was increased during the year resulting in better overhead cost recovery, supporting margin gains. We have worked hard on cost saving initiatives during the year and as we increase volumes there should be further scope for improved overhead recoveries and accordingly margin gains. During 2021 we proactively worked to secure raw materials which should reduce further supply chain risks. Issues in supply chains globally are well known and documented, particularly so for semi-conductors and other technology materials, with increasing cost pressures. Our actions in Q4 should insulate us from further costs and mean we are able to meet customer demand throughout 2022. We have increased our working capital with inventory rising £9.1 million (2020: £4.8 million reduction in inventory). 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 whilst utilising the high level of operational gearing to deliver further improvements in the gross margin.

Gross profit for the EPS business declined £0.2 million in the year to £3.2 million (2020: £3.4 million) with gross margin down year-on-year (2021: 23%, 2020: 27%). Actions taken to refocus the business on future growth opportunities mean 2021 results have been impacted by non-cash write down adjustments totalling £0.7 million. These are largely related to inventory we now consider to be slow moving or obsolete.

Table B – printhead revenue

£m	2021 H1	2021 H2	FY 2021	FY 2020	Var	Var %
Ceramics & Glass	9.5	9.5	19.0	13.8	5.2	+38%
C&M and DTS	5.9	5.2	11.1	11.5	-0.4	-3%
WFG & Labels	3.4	2.8	6.2	6.3	-0.1	-2%
3D Printing & AVM	1.0	1.4	2.4	2.5	-0.1	-4%
Packaging & Textiles	0.2	0.6	0.8	0.9	-0.1	-11%
Royalties Commissions & Fees[1]	0.2	0.4	0.6	0.4	0.2	+50%
Total	20.2	19.9	40.1	35.3	4.8	14%

1 Royalties in H2 includes £0.2 million relating to Xaar / Stratasys service fee administered by Group.

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

Table C – EPS revenue

£m	2021 H1	2021 H2	FY 2021	FY 2020	Var	Var %
Digital inkjet	3.6	4.4	8.0	7.2	0.8	+11%
Pad printing	2.4	3.1	5.5	5.1	0.4	+8%
Other	0.1	0.3	0.4	0.4	-	-
Total	6.1	7.8	13.9	12.7	1.2	+9%

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

Excluding the non-cash adjustments mainly relating to slow moving and obsolete inventory, the underlying gross margin was 28%, largely due to the resetting of the modular strategy by new management. Excluding the £0.7 million of adjustments recorded by EPS in 2021, the gross profit for the Group would have improved to £20.9 million, with a gross margin of 35%.

Continuing operations – R&D

R&D spend of £5.7 million was up £1.2 million on 2020 (2020: £4.5 million). This reflects the investment in the ImagineX platform which will be central to our long-term growth, with the added investment in FFEI of £0.4 million. The total increase is in proportion to our revenue growth and maintains a spend/revenue ratio of approximately 10%. Sales and marketing spend for the year was £6.3 million (2020: £6.0 million). The increase in spend of £0.3 million year-on-year reflects the focus on sales and business development in the Printhead business unit following the restructuring of the business in the second half of 2020. Savings were seen in both the Printhead and EPS businesses due to COVID-19 which limited our ability to visit customers and led to the cancellation of the majority of tradeshows which one, or both, businesses would have attended.

Continuing operations – expenses

General and administrative expenses increased £2.1 million from £8.0 million in 2020 to £10.1 million in 2021. This increase largely relates to planned investment in key areas of the business and infrastructure, including operations, IT and finance, offset by £0.3 million related to trading foreign exchange gains in 2021, as a result of the exchange rate volatility response to COVID-19.

Impairment reversals on financial assets were £0.4 million (2020: £0.9 million). This reversal predominantly relates to a distribution channel used by the Printhead business and the collection of a customer debt previously provided for.

Other operating income in 2020 of £0.8 million related to the PPP loan taken out by the EPS business in the US which met all qualifying criteria to be forgiven.

Restructuring and transaction costs of £1.4 million (2020: £0.8 million) predominantly relate to re-organisation costs, acquisition related professional fees and additional costs relating to the dilapidation and exit of the office on the Cambridge Science Park.

Table D – Movement in net cash* (including 3D)

£'000	2021	2020
Cash & treasury deposits – Continuing operations	25,051	18,117
Cash & treasury deposits – 3D operations	-	2,120
Cash & treasury deposits at the end of the year	25,051	20,237
Cash & treasury deposits at the beginning of the year	20,237	25,322
Total net cash inflow/(outflow)	4,814	(5,085)
Effect of foreign exchange rate changes on cash balances	110	57
Increase/(Decrease) in net cash for the Group	4,924	(5,028)
Consisting of:		
Total cash (outflow) / inflow from continuing operations	(2,342)	7,073
Cash outflow from Xaar 3D business	(2,109)	(7,018)
Xaar 3D – Proceeds from share capital and share sale	9,272	-
Net cash inflow (outflow) from Thin Film operation	103	(5,083)
Increase/(Decrease) in net cash for the Group	4,924	(5,028)

Continuing operations – profit

The profit before tax from continuing operations under IFRS was £1.0 million in 2021 (2020: £4.3 million loss). Basic earnings per share from continuing operations was 0.9p (2020: loss 5.7p).

The performance of the Printhead business improved £6.5 million from a £4.3 million loss in 2020 to a £2.2 million profit before tax in 2021, driven by increased sales, a much improved gross margin, and a reduction in operating expenditure. The EPS business went from a £0.3 million profit in 2020 to a £0.9 million loss in 2021 due to the impact arising from the write off and provisioning of legacy inventory. Excluding this one-off impact, the EPS business made a small loss which given the underlying performance of the business should see turn this into profit during 2022.

FFEI contributed a profit before tax of £0.4 million since acquisition on 11 July 2021.

In calculating the adjusted loss before tax we have adjusted for gains on derivative financial liabilities of £2.9 million (2020: £0.1 million) and fair value gains on financial assets of £1.0 million (2020: nil) alongside restructuring costs of £1.4 million, foreign exchange losses on intra-group loans of £0.1 million, and share-based payments of £0.7 million with an R&D expenditure credit of £0.3 million and amortisation of acquired intangible assets of £0.4 million (see Financial Statements – note 4 on page 130).

The adjusted loss before tax from continuing operations was £0.6 million, compared to £3.9 million loss in 2020. This is a significant step forward for the business, emphasised by the delivery of adjusted profit in the second half of 2021. The adjusted EBITDA for continuing operations in the year was £3.2 million (2020: £0.1 million).

Discontinued operations

Due to the divestment of the remaining investment in Xaar 3D, completed on 1 November 2021, the results are classified as discontinued operation. The business was classified as an asset held for sale as at 31 December 2020.

A £13.5 million profit was recorded in relation to discontinued operations (2020: £10.3 million loss) with cash outflows for the period of £1.9 million (2020: £12.1 million). The Thin Film business, which was classified as discontinued in 2019, recorded a loss of £0.2 million (2020: £3.7 million) which related to inventory commitments and supplier liabilities. All liabilities regarding the Thin Film business have now been settled. The 3D business recorded an operating loss of £4.2 million in 2021 (2020: £6.4 million loss).

The Group has recognised a gain on the sale of the investment in subsidiary of £17.9 million, comprising net cash received of £9.3 million, with contingent consideration at the transaction date of £10.9 million, less transaction costs of £0.2 million.

Basic earnings per share from discontinued operations was 20.0p (2020: loss 9.5p).

Profit for the year

The Group profit for the year was £14.2 million (2020: £14.7 million loss) of which £16.2 million is attributable to the owners of the Company (2020: £11.7 million loss), with a £2.0 million loss to non-controlling interests (2020: £3.0 million loss). The total basic earnings per share attributable to shareholders is 20.9p (2020: loss 15.2p).

Cash generation

The Group retained a healthy cash balance of £25.1 million at the year end, representing an increase of £4.9 million during the year, comprising a cash outflow from continuing operations of £2.3 million, with discontinued Xaar 3D operations utilising £2.1 million, being offset against cash proceeds received for the sale of Xaar 3D of £9.3 million.

Operating cash inflow for continuing operations before working capital was £2.7 million due to improved aEBITDA of £3.2 million delivered principally in our Printhead division.

As a result of the managed investment in inventory, working capital saw an outflow of £3.4 million, with improvements in receivables and payables helping to offset some of the £9.1 million increase in inventory.

The Group maintains a strong disciplined focus on cash, and this will continue throughout 2022. During 2021, investing activities saw a cash spend of £2.3 million, mainly on infrastructure and IT projects.

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.

Strong balance sheet

Non-current assets increased £22.7 million in the year from £24.7 million to £47.4 million. This was driven by the increase in goodwill following the acquisition of FFEI Limited of £0.7 million, along with an increase in intangible assets of £3.8 million. The identification of financial assets at fair value arising from the sale of 3D assets was £10.9 million plus revaluation through profit and loss at year end of £1.0 million (2020: £nil). Additionally, there were increases in right-of-use assets of £7.3 million, and a £0.9 million reduction in property, plant and equipment as new purchases were controlled in line with the Group's cash focus.

Current assets, excluding the disposal group assets held for sale, increased £18 4 million from £38 1 million in 2020 to £56 5 million A significant proportion of this increase is attributable to the increase in inventories of £9.1 million to £18 8 million (2020 £9 7 million), associated with the managed *investment in our supply chain capability* Trade and other receivables increased by £2 5 million to £12.1 million (2020 £9.6 million) and *cash and cash equivalents* (including treasury deposits) increased by £7 0 million to £25 1 million (2020 £18 1 million), with current tax assets increasing by £0 1 million to £0 5 million (2020 £0 4 million). Each of these were primarily driven by the consolidation of FFEI

The 3D business was classified as held for sale with £10 0 million of assets in 2020 and disposed of in 2021

Current liabilities, excluding *liabilities* associated with Xaar 3D (held for sale) in 2020 of £1 6 million, increased by £8 7 million to £23 0 million (2020 £14.3 million) primarily due to the increase in trade and other payables of £11 6 million to £21 5 million (2020 £9 9 million), as a result of the consolidation of FFEI A reduction in *the provision* balance of £0 2 million arose from the utilisation of the £0 3 million restructuring provision in the year, offset by an increase in warranty provision of £0 1 million Current lease liabilities increased by £0 1 million to £1 2 million (2020 £1 1 million), with the disposal of Xaar 3D also removing the liability arising from derivative financial instrument, of £2 9 million

Non current liabilities increased by £10 7 million to £12 2 million (2020 £1 5 million), which mainly relate to lease liabilities recorded under IFRS 16 for property, which increased by £7 0 million to £8 5 million (2020 £1 5 million) in the year, alongside recognising a dilapidation provision on leases of *£0 3* million (2020 £nil) and long-term liability of £3 4 million for the deferred consideration on the acquisition of FFEI Limited

Dividend

No dividend has been declared for 2021, *as* the Board believes that prioritising cash for continued investment in the business at this stage of our rebuilding programme will *deliver more compelling returns* for shareholders in the medium term

Table E – Cash flow table – Continuing operations (excluding 3D)

	2021	2020
aEBITDA	**3,183**	67
Restructuring and transaction expenses	**(1,404)**	(754)
Depreciation of right-of-use assets	**871**	1,107
Government grant (PPP loan)	**-**	819
Other	**90**	144
Operating cash flows before movement in working capital	**2,740**	1,378
Movement in working capital	**(3,383)**	6,735
Cash (utilised) /generated by operations	**(643)**	8,113
Income taxes received	**288**	351
Net cash used in investing and other financing activities	**(1,987)**	(1,391)
Net (decrease) / increase in cash and cash equivalents from continuing operations	**(2,342)**	7,073

A strong belief in responsibility

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 CO_2 emissions (by up to 95%), in addition to reducing pollution and waste materials

Sustainability governance structure

In the second *half of 2021* we *established* a more formal ESG governance structure *and formed a Sustainability team* with accountability to the Board The team, formed from representatives across the business, has *developed a co-ordinated* ESG Roadmap that will push Xaar towards its "Net Zero by 2030" goal 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 The 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

Board and Executive Management

Alison Littley, Senior Independent Director

Define corporate strategic vision for ESG and sustainability, approving Group goals

ESG Committee

Global Ops Director, Group HR Director, Corporate Finance Director and Company Secretary, Head of Marketing, External Sustainability Comms Advisor and Group Sustainability Lead

Review, assess and track, roadmap and established goals

Sustainability team

Selected cross function team, meetings as required to identify, develop and update roadmap, with external support

Carbon Net Zero team

Cross functional team tasked with looking at opportunities and executing these

Energy Efficiency team

Facilities and EHS site team which drives completion of projects

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.

See Risk management on page 44

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 page 34

In 2022, we will assess the risks and opportunities of climate change to deliver activities that improve our resilience by either mitigating or adapting against physical and transitional risks. This will include a commitment to both setting Science Based Targets and evaluating the UN Sustainable Development Goals to determine those of primary importance to the Group.

Our ESG Roadmap – founded on four pillars

The ESG Roadmap aligns with the Xaar EPIICC values

Read more about EPIICC on page 32

Environment

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

Read more on page 29

People

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

Read more on page 31

Innovation

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

Read more on page 34

Community

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

Read more on page 35

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 energy usage and greenhouse gas emissions of the Company recorded in Scope 1 and 2 since 2015.

See Greenhouse gas emissions statement on page 41

As part of the development to ensure affordable and clean energy, Xaar has entered into a supply contract during 2021 for the supply of green electricity from a renewable source in the UK. The target is 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 are now supplied with certified carbon free electricity. Offices and laboratories will convert where green energy is available in 2022.

Carbon offset

During 2021, Xaar offset all 2020 Scope 1 and 2 carbon emissions (1,815 tCO_2e) for the Printhead business. We purchased trees to be planted in the UK, and Amazon tree protection (1,000 trees = 1,000 tonnes CO_2e). In addition we offset 815 tCO_2e purchasing solar cookers as part of the Heqing Solar Cooker Project for poor rural farmers in remote areas of China to replace coal for cooking and hot water needs.

In 2022 we will continue to offset our residual Scope 1 and Scope 2 carbon emissions, whilst we investigate and identify the full extent of the boundary in relation to our Scope 3 emissions which will be added to the offset in the future.

Waste

Xaar strives to reduce the amount of waste we produce, ensuring that all waste is disposed of ethically and legally through responsible waste handlers.

In 2021, the Group set a recycling target of zero waste to landfill, with any waste not recycled being sent to a waste to energy recovery process.

- **Electronic waste:** The Group is compliant with WEEE (Waste Electrical and Electronic Equipment) directives as required under UK and EU legislation.

Our waste handler Veolia has provided confirmation that zero waste went to landfill in 2021

0kg

Landfill

13.48Kkg

Waste diverted

9,692kg

Waste recycled

Plastics and packaging

Xaar initiated a project to remove packaging complexity and improve sustainability, introducing new packaging for its printhead products in 2020. This project to remove plastic as a packaging material has reduced our plastic consumption by 1.2 tonnes per year.

Significant improvements in the use of fully recyclable and biodegradable cardboard packs during 2021 led to all printheads being shipped in boxes made from a mix of recycled and new material – whereby at least 70% of the printhead box and 85% of the cardboard inserts are from a recycled source.

In 2022 the Xaar Logistics team continues to focus on the remaining peripheral packaging boxes, with aspirations to convert all packing materials to be fully recyclable by mid-2022.

Biodiversity

Biodiversity is the key to healthy ecosystems, to provide us with the soils, nutrients, pollinators (75% of the world's crops are pollinated by insects), food and water that we need to survive.

As outlined in Carbon offset, to achieve carbon neutrality we are supporting action to protect trees in the Amazon, and have planted 1,000 trees in the UK. In 2022, we are looking to support and promote local employee campaigns, starting with the introduction of a beehive on site in Huntingdon, UK, and the distribution of wild flower seeds to employees.

In the medium term we will link biodiversity improvements with the employee wellbeing programme in developing 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

We have determined that 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.

- **Usage:** Water usage in Huntingdon operations is limited to domestic use. 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 2 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 NOx / SOx.

Printhead water usage	2021	2020
Freshwater usage (m³)	5,000	5,087
Intensity ratio (m³/£m turnover – excl. royalties)	127	146
Effluent and waste water (m³)	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.

Xaar is committed to only supplying product that contains 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.*

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.

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
- *Whistle blowing 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 56

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, 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	2021	2020
RIDDORs*	0	0
Accidents	9	6
Incidents	11	9
Near misses	5	7

* 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.

A value-led culture

E P I I C C

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

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 retain 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 and Share Incentive Plan.

Based on the closing headcount at 31 December the split of staff by gender was as follows:

	2021 Male/ Female	2020 (restated) Male/ Female
All employees	350/105	311/77
Directors	4/1	4/1
Senior managers	39/7	27/5
Employees	307/97	280/71

The split between senior managers and employees (inc. agency staff) has been redefined and 2020 restated.

CEO pay gap ratio

The following table sets out the ratio of the CEO's total remuneration in respect of FY21 (taken from the single figure table on page 92) 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 2020 are also included.

	2021	2020
Method	Option A	Option A
25th percentile	16:1	15:1
Median pay ratio	11:1	11:1
75th percentile	7:1	8.1

Further information is provided in the Remuneration Committee report on page 98

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 2021. At that point Xaar had 265 relevant employees: 213 male and 52 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 nd we regularly monitor our pay awards to ensure that we pay the same rate for similar roles.

Xaar's mean gender pay gap stands at 14.38% (2020: 22.96%). 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 re-imbursement 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

Developing our talent is key to our on-going success, and in 2022 we will recruit a Learning & Development Manager to support the organisational plans and to identify enablers that can drive the attainment of employees aligned with the business requirements.

- An updated suite of Learning and Development tools is being developed to ensure key skills are developed and enhanced.
- Internal courses are developed in conjunction with the Institute of Learning and Management (ILM) to support key manager development.
- A new graduate and apprenticeship programme was launched in 2021.

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.

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 44. Voluntary labour turnover was 5.5% across the Group in 2021 (2020: 3.6%).

Our people response during the pandemic

During the COVID pandemic the safety and wellbeing of our employees has been and continues to be our overriding priority. Our executive and senior management teams have monitored events closely to ensure that we have been able to react quickly to an ever-changing situation. At the start of the pandemic we enabled working from home at short notice for those who were able to do so, and in the workplace we took actions to introduce enhanced hygiene and social distancing measures, screens, temperature checks, use of face coverings and more recently workplace lateral flow testing.

The Board recognises the commitment of the Group's employees demonstrated through the coronavirus pandemic as they responded with great agility and dedication to the new ways of working required.

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.

Sustainable product development

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

In 2021 we relaunched the Product Lifecycle Management process used to develop new and innovative printhead 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.

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

The Company 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 products lifecycles.

As the COVID impact on the electronics supply chain became clear in 2021, Xaar implemented a 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 allowed us to continue production despite global shortages.

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 2021, advising customers on product updates, system improvements and product end of life announcements. No product recall was initiated in 2021, however we did complete a recall initiated in 2020. 18 XPMs were recalled from the field to enable replacement of a defective chip installed in error by a supplier that had the potential to unexpectedly halt the XPM operation. Advanced replacements were made available to all customers affected to minimise the impact on their production or research.

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.

Xaar sponsors an Imagineering Clubs within a local primary schools. Imagineering Clubs are designed to introduce children to engineering through fun activities.

The sponsorship is part of Xaar's role in helping to create the 'engineers of the future' and drive interest in STEM subjects (Science, Technology, Engineering and Mathematics') amongst school students. During 2020/21 the impact of COVID meant the clubs were held less frequently than previous years. Xaar is delighted that the clubs, and our support have restarted with the onset of the 2021/22 academic year.

For our own employees, the social club, which is aimed at encouraging staff to have fun and get to know each other socially, was paused during 2020 as a consequence of COVID restrictions. Activities have restarted as COVID restrictions allowed from H2 2021.

Volunteering

The Company 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.

- Of the 1,000 trees purchased as part of the carbon offset (see environment section page 30), Xaar employees volunteered to assist with the planting of 100 trees at two local schools, assisting Year 2 children to plant 90 hedging plants at one of these schools.
- 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.

Charities

Xaar contributes annually to charitable causes through three funds:

- A chosen charities fund: these should be charities that provide benefits locally, or charities with specific connection to Xaar staff:
  - Xaar employees usually raise money during the year for a number of charities, previously taking part in various activities for Comic Relief on Red Nose Day, coffee mornings for Macmillan Cancer Support and Christmas Jumper Day for Save the Children. Unfortunately due to the coronavirus pandemic in 2021 we were unable to participate in charity fundraisers this year. Charity nominations took place with Hinchingbrooke Special Care Baby Unit receiving a donation of £2,000 in January 2021.
- 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 £5,060 (2020: £3,150).

Charitable sponsorship

- In 2021, Xaar became an official supporter and sponsor to the 'Cows about Cambridge' event (www.cowsaboutcambridge.co.uk), becoming a headline sponsor of the Farewell Weekend (2021: £6,000, 2020: Nil). A team of Xaar employees also volunteered to assist in preparations for and also at the event. The event was organised to raise funds for 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/).

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.

See Financial Statements – note 12 on page 137

The initial core recommendations

Progress against initial actions in 2021.

Achieved Work ongoing

Initial action from 2020	Progress in 2021
Offset all of the UK regulatory Scope 1 and 2 carbon impact that we made and reported in 2020	See Carbon offset. Based on our carbon footprint reported in 2020 this makes Xaar a carbon neutral inkjet manufacturer. Carbon offset to continue in 2022 with an investigation to identify the inclusion of Scope 3 emissions for future offset
Identify targets and metrics applicable to Xaar, to measure across the organisation	Work ongoing – as part of TCFD requirements to identify Science Based Targets
Preparation and identification of Scope 3 emissions within the supply chain – Identify tier 1 suppliers and their disclosures around climate change and GHG emissions	Work ongoing – to address with tier 1 suppliers. Initial Scope 3 emissions for travel in 2021 identified for offset in 2022.
Review product return policy, to identify possibilities for improvements in responsible consumption in production and remanufacturing of products, reduction in plastic use, reclaiming raw materials, recovery of any heavy metals, copper, lead etc	Identified as part of Sustainable Roadmap activities by committee actions to take place as part of sustainable product development and circular economy – actions to be defined
Set, measure and disclose a zero waste to landfill target, any waste not recycled being sent to a waste to energy recovery process	See **Waste**. UK operations certified zero waste to landfill by Veolia, with non-recycled waste being sent to waste to energy recovery
Green energy projects to identify additional energy and GHG savings:	
Identify actions to remove natural gas as an energy and heat source, or replace with a renewable gas supplier e.g. biogas	Work ongoing – Limited exposure with gas as a heat source but working with landlord to identify and replace with electric alternative
Electric vehicle chargers installation on UK sites and vehicle offer to employees.	Project scope finalised for installation in 2022 at HQ & Huntingdon offices. Electric vehicle options being offered to employees
LED light installations to further reduce the utilisation of electricity	Individual projects by location to replace lighting with LED alternatives. New HQ comprises LED lights only
Investigate solar panel installation at Huntingdon location to generate a proportion of electricity ourselves	Activities on solar continue with landlord discussion around installation with a contractual supply of energy to Xaar. These discussions are not complete so we do not expect any solar installation in 2022

The ongoing objectives will be incorporated into the ESG roadmap for delivery in 2022/23.

Sustainability Roadmap
We all need to play our part to reach our goals

2030

2030 net zero (Group Scope 1,2 &3)

Carbon
Instigate long-term insetting options for Xaar (if viable)

2028

Launch printhead with biodegradable structural parts

Carbon
Launch Xaar Take Back Scheme where feasible

2026

Reduce waste in ALL manufacturing operations by 10% (separate goal for each BU)*

50% reduction in Lost Time Accident Frequency Rate*

Taskforce to establish path to manufacture 100% recyclable printhead

Establish supply hubs in Europe for Far Eastern suppliers with a call off from there, to minimise air freight for small shipments

2024

Water

Derive Sustainability Review for ALL current products. Generate Sustainability Scorecard for each product, across all Xaar Group

Drive reduction in mains water use, minimising waste, driving reuse / recycle and repair leakage*

Deliver awareness-raising campaign to educate all employees about our support policies

Achieve zero to landfill for all Xaar Group sites

Generate industry defacto standard for sustainable products

Focus a Continuous Improvement team on costs and sustainable improvements on new and established products

Create policy for donating of all electronic equipment that cannot be re-deployed within the business

Complete review of product and sub-component transport

Establish Xaar Apprentice / Graduate / Work Experience programmes

Support STEM activities with our local communities

Establish local Wellbeing Committee at all Xaar Group sites

Generate charity policy for all business divisions

Carbon offset all staff travel

Covert ALL electricity contracts to green energy where available

Implement Supplier Sustainability Policy

Appoint departmental Charity Champions with targets, Xaar to match funds raised

2022

Team 100%
Establish ESG Governance structure and form a Sustainability team

Carbon 100%
Convert all Group Manufacturing site Electricity contracts to Green Energy

Maintain low turnover rate versus standard rates

Carbon 100%
Ongoing carbon offset to achieve net zero

Carbon 100%
Convert Huntingdon plant electricity contracts to green energy

2020

* Group targets vs 2019 baseline will be confirmed by end of 2022

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.

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 recommended disclosures – Governance, Risk Management**
- **We partially comply with recommended disclosures – Strategy (B5), Metrics (D10)**
- **We do not comply with recommended disclosures – n/a**

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.	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 Alison Littley, Senior Independent Director, has specific responsibility for ESG matters, including climate change and sustainability.
	2. Describe management's role in assessing and managing climate-related risks and opportunities	Executive management receives reports from an ESG Committee whose members consist of senior managers across the Group The ESG Committee meets on a quarterly basis to assess the opportunities and proposals developed by the Sustainability Working Group The Sustainability Working Group meets regularly and is developing a roadmap whilst also receiving information from both the Carbon Net Zero team and Energy Efficiency team **See governance structure on page 29**
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	**Short term (2021-2025):** We do not anticipate any significant physical risk changes over the short term. Implementation of transitionary regulatory controls (e.g. carbon pricing) could potentially commence, and could affect raw material pricing, that would need to be passed onto customers. **Medium term (2025-2035):** Mitigating the physical impact of climate change is critical because we depend on raw materials sourced from countries that are particularly vulnerable to rising seas and temperatures from changing weather patterns. We have performed high-level assessments on our business in respect of 2°C and 4°C global warming scenarios which show that without action, both scenarios represent increased financial risks by 2030, with increased risk of property damage and business disruption from e.g. flooding. Under the 2°C scenario, transition risks and mitigation actions lead to carbon pricing being introduced in key countries and hence there are increases in both manufacturing costs and the costs of raw materials e.g. plastics and the metals used in products. Change in customer expectations as more companies committed to becoming net zero and set Science Based Targets, assessing the supply chain and Scope 3 emissions. **Longer term (2035-2050):** Under the 4°C scenario, there are likely to be significant risks arising from failure to transition, leading to significant increase in physical and adaptation risks. With significantly hotter summers (+4°C to +7.6°C), leading to increased flooding and storm losses and an expectation of significant uninsurable losses affecting financial markets and global economic growth.

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	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* 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, re-use and recycle materials all to be undertaken as part of Xaar's overall Sustainability Roadmap **See Risk Management on page 45**
	5 Describe the resilience of the organisation's *strategy, taking into* consideration different climate-related scenarios, including a 2°C or lower scenario	We have undertaken a high level review of the likely impact of 2°C and 4°C global warming scenarios (see above) as outlined by the IPCC report issued in 2021. As part of the sustainability strategy to deliver Science *Based Targets to achieve* 1.5°C, an independent external climate related scenario review will be researched in 2022 to identify physical and transition risks and opportunities in delivering carbon neutral manufacturing leading to 'Net Zero by 2030'.
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	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 The Board has considered the potential *impact of* regulatory change that could occur in the short to medium term. **See Risk Management on pages 45 and 49**
	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

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

Disclosures	Recommended disclosures	Response
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	Initial metrics as outlined in 2020 • Investigate metrics and targets to be defined as part of Science Based Target initiative • Continuing improvement / reduction in Scope 1 & 2 emissions along with intensity measurement • Scope *1 & 2 emissions to be offset to become* carbon neutral' • Scope 3 emissions recognition Initial targets as outlined in 2020 • Set, measure and disclose a zero waste to landfill target, any waste not recycled being sent to a waste to energy *recovery process* • Generation of a Sustainability Roadmap **See page 37 for Sustainability Roadmap**
	10 Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	GHG emissions are disclosed as per the SECR requirements for Scope 1 and Scope 2 An initial assessment has commenced for Scope 3 emissions, and a boundary developed We have recognised Scope 3 emissions arising from employee travel and commuting, the difficulty remains in determining the supply and quality of *data via upstream* and downstream value chain (ongoing) **See GHG/SECR disclosure on page 41**
	11. Describe the targets used by the organisation to manage climate-*related risks and opportunities and* performance against targets	Xaar has committed *short-term targets* • To achieve a net zero target by 2030 • 100% renewable (green) electricity at UK facilities • Zero waste to landfill • Offset of all Scope 1 & 2 Group emissions as we continue to drive reductions in energy use **See page 36 for progress summary**

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 and fuel used in leased Company vehicles. 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 CO_2 emissions currently represent estimated CO_2 emissions from travel and estimates from employee commuting. As the Group's sustainability programmes develop we will capture more of our Scope 3 emissions and aim to collaborate with the supply chain to reduce them and will disclose progress in our Annual Report. Please refer to page 30 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 (2021: £58.9 million)

* 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	2021 Total	Renewable	Non-renewable	2020 Total
Global energy use	KWh	**10,610,069**	**752,331**	**11,362,400**	2,351,508	7,764,206	10,115,714
	%	**93.4%**	**6.6%**		23.2%	76.7%	
UK	KWh	**10,205,766**	**472,854**	**10,678,620**	2,351,508	7,315,782	9,667,290
Non-UK	KWh	**404,303**	**279,477**	**683,780**	–	448,424	448,424
Absolute values							
Scope 1	tCO_2e	–	**98**	**98**	–	75	75
Scope 2	tCO_2e	–	**116**	**116**	–	1,741	1,741
Scope 3	tCO_2e	–	**150**	**150**	–	361	361
Total	tCO_2e	–	**364**	**364**	–	2,177	2,177
– Scope 1 & 2 emissions of which UK	tCO_2e	–	**198**	**198**	–	1,706	1,706
Normalised values							
Scope 1	tCO_2e/£'000	–	**165**	**165**	–	157	157
Scope 2	tCO_2e/£'000	–	**198**	**198**	–	3,655	3,655
Scope 3	tCO_2e/£'000	–	**254**	**254**	–	618	618
Total	tCO_2e/£'000	–	**617**	**617**	–	4,430	4,430

* UK energy certified by EON, in the form of Guarantees of Origin from renewable wind sources. US energy (Green Mountain) 100% carbon free: 68% renewable (balance being nuclear)

Historic greenhouse gas emissions

	2019	2018	2017	2016	2015	2014
Global energy use KWh	10,573,689	11,270,047	11,506,598	12,474,406	14,187,311	14,058,636
Scope 1 – tCO_2e	108.3	124.8	147.7	167.0	162.2	162.0
Scope 2 – tCO_2e	2,622.8	3,128.1	4,088.0	4,432.0	4,475.2	6,263.0
Total – tCO_2e	2,731.1	3,252.9	4,235.7	4,599.0	4,637.4	6,425.0

Key performance indicators

Our progress in numbers

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 on page 130

2021 figures and 2020 comparative figures are based on continuing operations (where relevant), and are subject to rounding.

Revenue

Statutory

£59.3m

Continuing operations

Total revenue for the Group was £59.3 million, an increase of £11.2 million year-on-year (2020: £48.0 million). Revenue increased 23% year-on-year

Revenue by sector £m

Industrial

2021	£40.8m
2020	£28.9m

Packaging

2021	£11.9m
2020	£12.4m

Industrial sector growth incorporates the acquisition of FFEI (£5.3 million), combined with Ceramics and Glass segment increasing throughout the year with full year revenue up 38%.

Graphic Arts

2021	£6.2m
2020	£6.3m

Royalties

2021	£0.4m
2020	£0.4m

Royalties from the single remaining licensee declined and will continue to decline in both 2021/22 before ceasing. Royalties in 2021 include a one off service fee payable by Stratasys.

Revenue by region £m

EMEA

2021	£23.7m
2020	£18.1m

Asia

2021	£12.0m
2020	£9.6m

Americas

2021	£23.6m
2020	£20.3m

The increase of revenue in Americas is primarily due to the sales turnaround in the EPS business. Performance in Asia, and China in particular, was successful with growth of £2.6 million in Printheads driven by re-engagement of Chinese Ceramic customers who began to adopt the Xaar 2001 and have now transitioned to the newly launched Xaar 2002 for their new printer builds. EMEA was slightly higher, and we have seen a promising upward trend.

Profit

Statutory

34%

Gross margin – Continuing operations

2021	34%
2020	27%

The increase in the gross profit for the *Group can be* attributed to the performance of the Printhead business. This was driven by the operational leverage in the business with *increased* product throughput absorbing greater costs in 2021 (2020: 27%)

£1.0m

Profit (Loss) before tax £m – *Continuing operations*

2021	£1.0m
2020	(£4.3m)

Profit before tax represents operating profit after investment income and finance costs (2020 £4.3 million loss), and before the gain arising on sale of Xaar 3D

20.9p

Basic earnings per share (Total)

2021	20.9p
2020	(15.2p)

The calculation of basic EPS is based on the weighted average number of ordinary shares outstanding during the period. (2020: 15.2p loss) see Financial Statements - note 14 for further information.

Alternative Performance Measures (APMs)

£3.2m

Adjusted EBITDA – Continuing operations

2021	£3.2m
2020	£0.1m

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.

(£0.6m)

Adjusted loss before tax £m – Continuing operations

2021	(£0.6m)
2020	(£3.9m)

Adjusted loss 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 (page 130) (2020: loss *£3.9 million)*

(1.0p)

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

2021	(1.0p)
2020	(5.2p)

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

Net cash

Statutory

£25.1m

Cash & treasury deposits £m

2021	£25.1m
2020	*£18.1m*

Cash and cash equivalents comprise cash at bank of £25.1 million (2020: 17.9 million) and short-term highly liquid investments with an original *maturity* of three months or less. Net cash incl. treasury deposits of £Nil (2020: £0.2 million)

£5.2m

Net increase in cash and cash equivalents £m

2021	£5.2m
2020	(£4.7m)

Net increase in cash and cash equivalents was £5.2 million following a reduction in cash consumed by operating activities and after adjusting for cash movements in both investing and financing activities during the year (2020: (£4.7) million)

Alternative Performance Measures (APMs)

£5.7m

Gross R&D investment £m

2021	*£5.7m*
2020	£4.5m

Gross R&D investment (continuing operations) reflects the investment in *the ImagineX platform* (£5.7 million). 2020 investment excludes amortisation of Xaar 3D development costs *and* impairment of Thin Film (2020 *restated: £4.5 million)*

(£2.3m)

Cash outflow from continuing operations £m

2021	(£2.3m)
2020	£7.1m

Net cash outflow (incl. treasury deposits) from continuing operations was £2.3 million *as a consequence* of increases in working capital and net cash used for investing activities before proceeds from the disposal of Xaar 3D *(2020: £7.1 million)*

Risk management
Managing our risks

Key risk areas

The risks around our business are set out in more detail on pages 47 to 55, but the key risk areas can be *identified* as being associated with the following:

Market

Risk owner: **CEO** John Mills

1. **Competition**
   Monitoring and adjusting to competitive dynamics such as pricing/promotion, innovation, resource investments and market share changes
2. **Identification of market requirements**
   Successfully developing products with the characteristics that meet market requirements within the necessary timescale
3. **Commercialising and maintaining products *with* cutting edge technology**
   Creating value by generating innovative products that deliver significant customer benefit.
4. **Merger and acquisition opportunities**
   Seek opportunities to expand, create synergies and generate greater shareholder value
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

Operational

Risk owner: **CEO** John Mills

6. **Climate change**
   Identifying risks and scenario planning of physical and transition impact upon operations and developing mitigating actions
7. **Organisational capability**
   Having the right people in the right roles
8. **Coronavirus ('COVID-19' and variants) – Internal / Company**
   Tracking the potential local impact and response to pandemic and operational internal risks on employees or organisation
9. ***Brexit***
   Tracking & adjusting to the impact of the Trade & Co-operation *agreement* between UK & EU
10. **Manufacturing facility**
    Optimising mix of products, locations and manufacturing partners to drive performance and minimise operational issues
11. **Partnerships and alliances**
    Working with the right companies, at the right time *on the right terms* to deliver long-term value
12. **Supply chain**
    Optimising sourcing and supply chain relationships to drive performance *and* minimise operational issues

IT

Risk owner: **CFO** Ian Tichias & **Group IT Director** Graeme Smith

13. **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
14. **IT transformation**
    Delays in our IT transformation objectives due to poor prioritisation, ineffective change management and a failure to understand and deliver the IT infrastructure, IT systems, and business process changes required
15. **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

Financial

Risk owner: **CFO** Ian Tichias

16. **Ability to access *sufficient* capital**
    Ability to access sufficient capital to fund growth opportunities.
17. **Customer credit exposure**
    Offering credit terms ensuring recoverability is reasonably assured.
18. **Inventory obsolescence**
    Holding excess inventory levels when compared to demand, that leads to increased risk of obsolescence and write-off before consumption
19. **Exchange rates**
    Monitoring global economic *events and mitigating any* resulting significant exchange rate impacts

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.

Background

Overall the printing industry is declining in terms of total output, is generally capital intensive, is slow to react to change and is resistant to the adoption of new technology. Analogue printing processes are declining rapidly particularly in areas such as Commercial print (transactional documents and publications) where electronic media and digital printing processes are becoming more widespread. In areas such as Packaging and Textiles, where analogue processes are still dominant, the conversion to digital opportunity is significant.

The digital printing market in which we operate continues to grow, with the market expected to grow from USD $24.8 billion in 2021 to USD $34.3 billion in 2026, at a CAGR of 6.7%. Growing demand for sustainable printing and developments in packaging and textile industries are key factors driving the growth of the digital printing markets. (Source: www.marketsandmarkets.com)

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. Other examples of the effective day-to-day management of these risks include operating multi-functional teams to share knowledge across the business, having regular stage gates in the management of development programmes, and the regular assessment of manufacturing capacity against future potential needs.

In addition to day-to-day processes the Group's risk register is formally reviewed at senior management and Board level, including the assessment of the performance of risk management during the preceding period. The Board will continue to develop the management framework across these specific risks so that it operates effectively alongside the changing organisational structure, and will inform an assessment of the Group's principal risks throughout 2022.

Climate change

During 2021, the senior management and Board re-evaluated the existing principal risks, and approved the escalation of climate change from an emerging to a principal risk. The Board considers that climate change has the potential to affect our business in various ways and while these may not be severe in the short term, we believe climate change-related risks are likely to have a medium and long-term impact on our business.

Notwithstanding the opportunities and threats climate change presents, the Directors have assessed that currently climate risks present no potential material adverse impact to the financial performance or position of the Group.

In 2022, we will conduct 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.

Supply chain

In the past year, Xaar has navigated the COVID-related supply chain disruptions fairly well. However, there continue to be significant global supply chain risks that could worsen due to COVID and variants, tight labour markets, key component capacity and potential inflationary dynamics. A new separate principal risk has been identified.

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. A report in Q4 2021 from Gartner highlighted the Top 5 emerging risks, and these were mapped against existing principal risks.

The Directors' views on each of the above and on emerging risks in general, were integrated into the management discussions and actions being taken on existing principal risks.

Cyber security

Cyber risks continue to be a significant area of focus for the Group following the cyber security incident in October 2020. During 2021 we conducted further work under the IT transformation program to strengthen our IT security, focused on mitigating risks in operational technology in response to the changing dynamics and external cyber threats of new ransomware models. Work on maintaining and, where appropriate, improving the integrity of our system security remains an area of focus.

Internal controls

In compliance with provision 28 of the 2018 UK Corporate Governance Code, the Board regularly reviews the effectiveness of the Group's system of internal control.

The Board's monitoring covers all controls, including financial, operational and compliance controls, risk management systems and internal control systems. It is based principally on reviewing reports from management to consider whether significant risks are identified, evaluated, managed and controlled and whether any significant weaknesses are promptly remedied and indicate a need for more extensive monitoring.

Following the identification of internal control weakness in EPS during 2020, an action plan was initiated in 2021 to identify and strengthen the internal and management controls. Headcount restructuring and non-cash adjustments relating to slow moving and obsolete inventory were recognised in 2021. External advisors were engaged to support the newly appointed senior management team of EPS in remediation of the gaps identified and establish a proper control environment. In addition, the external advisors also assisted management in development and execution of audit readiness to support the year end preparation of accurate financial statements and supporting documentation.

The Board has also performed a specific assessment for the purpose of this Annual Report. This assessment considers all significant aspects of internal control arising during the period covered by the report. The Audit Committee assists the Board in discharging its review responsibilities.

Emerging risks

1. **New ransomware models**
2. **Post-pandemic talent**
3. **Endemic COVID-19 and variants**
4. **Supply chain disruptions**
5. **Hybrid workforce disparities**

Principal risk response

14. IT cyber risks – remote working security risks

7. Organisation capability – retention & recruitment

8. Internal COVID-19 risks & 5. External COVID-19 risks – further variants

5. External COVID-19 risks & 12. Supply chain

7. Organisation capability – engagement, development & conduct

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).

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.

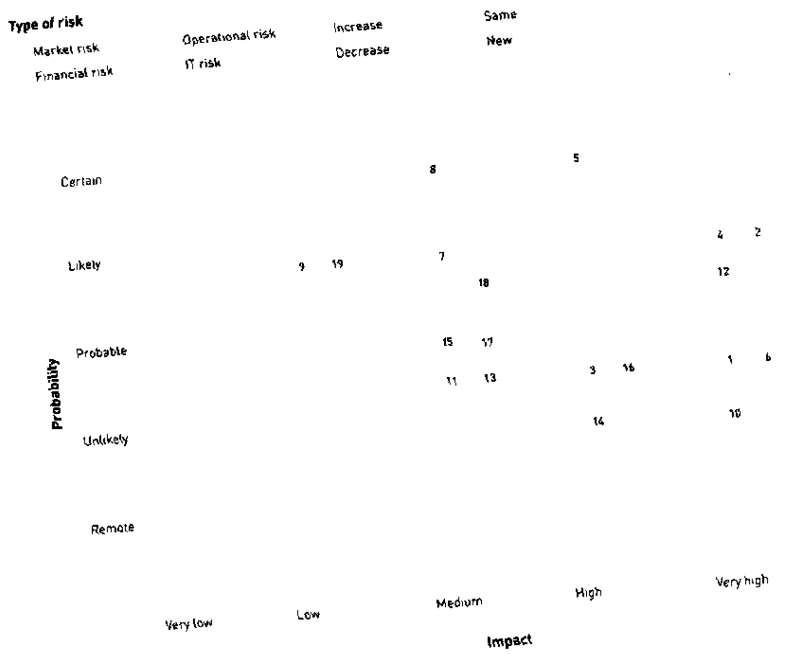
Probability rating

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.



Key of change
Increase
No change
Decrease
NEW

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Market			
1. Competition	We compete on the basis of our technology, innovation, price, quality, *reliability* brand reputation and customer relationships Failure to continually improve in these areas may mean that we lose market share or have to reduce prices Since *there are fixed factory* costs, reductions in sales volumes may substantially lower profit margins We are the only true independent printhead company in the world and we are competing with *vertically* integrated large scale multinational companies.	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 *Production efficiency improvement* programmes are established to ensure that cost bases remain competitive within the marketplace 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 Continued investment in innovative *technical solutions for* development of new applications from existing technologies and launch new technologies	**Probable** **Very high**
2. Failure to identify market requirements	Products need to meet the changing demands of the market, including regulatory changes Failure to meet *future market* requirements/specifications could impact on long-term revenue and profit	Regular, specific and detailed reviews are held to assess *current and anticipated market* requirements, including expected regulatory changes 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 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.	**Likely** **Very high**
3. Commercialising and maintaining products with *cutting edge* technology	We aim to produce quality end products Failure to meet the *required* quality standards could have an impact on products that have been sold or that are held in inventory This could lead to • Unexpected costs associated with resolving the issues • Possible warranty costs customer compensation or write-down in *inventory values* • Potentially longer term revenue loss if customers *move to* competitors and damage to reputation We operate in an increasingly dynamic and changing environment To counter the risks associated with this and, most importantly, to exploit the opportunities it presents, we must embrace innovation, protect our Intellectual Property and capitalise on technology *advancements to ensure* we grow our market position	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* Xaar s manufacturing facilities are ISO 9001 accredited Customer returns *are reviewed quickly using* a consistent and thorough investigation process *Warranty costs*, RMA and customer return costs are reviewed and compared against forecast to highlight unexpected costs, and identify root cause for corrective action. We will continue to focus on product innovation This is evidenced by our continued focus on R&D spend and the number of new products *brought to market*	**Probable** **High**

Risk management continued

Risk and link to business unit	Impact	Mitigation	Likelihood *Magnitude* Change
Market			
4. Merger and acquisition opportunities	Our strategy is predicated primarily on *organic growth* 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 *Divestments also carry risk We may* sell an asset at the wrong time, or may not realise appropriate value for the asset. Separation may be complex and, if poorly executed, may impact the wider business	Full financial and other due diligence is conducted to the extent reasonably achievable in the context of each opportunity arising from acquisition or divestment. Integration risk and planning would be reviewed and undertaken as part of every acquisition A detailed business case including forecasts is reviewed *by the Board for each opportunity for acquisition or* divestment Use of external advisors	**Likely** **Very high**
5. Coronavirus (COVID-19) – External	In the uncertain environment of a global pandemic, *the impact of COVID-19 can* be felt within the entire customer base and supply chain We operate in a global environment with significant exposure as part of the new *business model* to OEM customers in China, Europe and USA Any slowdown in the global economy could lead to delays in capital investment for new equipment that utilises Xaar *printheads*. Temporary disruption to the supply chain and further workplace restrictions may threaten to slow down production	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 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. 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. *Order books and manufacturing processes* are closely aligned with goods manufactured to customer order Newly developed printheads will enable Xaar to diversify into a broader customer base and new vertical markets Scenario planning alongside stress testing and reverse stress testing to identify and develop alternative solutions, as guidance and requirements change during an evolving event	**Certain** **High**

Key of change
Increase
No change
Decrease
NEW

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Operational			
6. Climate change	Climate change is not only a future challenge. The IPCC report in 2021 was declared a "code red for humanity". 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. The impact of Climate change can be specified as. **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 **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	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). 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. **Physical risks:** • 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. Undertake scenario planning across two climate scenarios (e.g. RCP2.6, RCP 8.5) to identify recommendations for key mitigation measures and resilience consideration, including: • Flood modelling • Full assessment of key climate perils. **Transition risks:** • 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 • Continue reducing carbon use to minimise impact, and to become a low carbon manufacturer • 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.	**Probable** **Very High** **NEW**

Risk management continued

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Operational			
7. Organisational capability	Our people remain key to our business. Ensuring the right people are in the right roles is critical to our future success and growth. Operations in remote locations or highly competitive markets make attracting and retaining skilled employees challenging. We need to attract and retain the right talent to enable achievement of our strategic aims. Failure to do this risks delivery and growth as follows: • Lack of staff to meet a specific business need or contract requirement • Loss of project specialisms • Single point of failure • Loss of key skills.	Our focus is to minimise the voluntary turnover of employees, through better hiring for fit, improved induction procedures and employee engagement initiatives Launched in 2021, new corporate values (EPIICC): • Everything with Passion • Innovative • Integrity • Creative • Collaborative The Group reviews remuneration to ensure that the appropriate reward packages accompany a fulfilling work environment. Annual performance management reviews for the majority of employees to identify talent and develop key employees Investment to build a learning organisation with focus on culture, reward and recognition. An updated suite of Learning and Development tools is being progressed to ensure key skills are developed and enhanced. Internal courses are developed in conjunction with the Institute of Learning and Management (ILM) to support key manager development. A new graduate and apprenticeship programme was launched in 2021. Campaigns to increase performance and development of communication between managers and employees to ensure alignment to Company objectives.	**Likely** **Medium**
8. Coronavirus ('COVID-19') – Internal / Operations	Impact across all business operations and locations: Reduction in staff availability and development of commercial opportunities. With the continued uncertainty associated with the virus it is too early to assess the impact on the Group's financial performance. IT infrastructure – see 13. IT systems.	We had stopped all international travel and remote access and business continuity testing has been performed. As we enter a 'post-COVID' world, international travel will be evaluated in conjunction with a risk assessment by location. Employees where possible are working from home, and we have communicated sick and self-quarantine policies to all our staff. Employees who work from home have effective digital collaboration tools to enable continued effective communication with their colleagues, customers and suppliers; we raise employee awareness to cyber security risks and implement additional security measures related to remote working. There has been minimal impact upon the manufacturing operations in Huntingdon, with work being performed to new shift patterns to reduce the number of staff on site at any one time. COVID secure working practices have been introduced across all sites with handwashing, face coverings and safe working spaces being mandatory for all employees. The Group is debt free with sufficient cash reserves and liquidity to be able to continue operations "as-is" in the short term. The business has a proven track record for disciplined cost control, which will continue to be vital in the current trading environment. In 2021 no claims for furlough or job support were requested from the UK Government.	**Certain** **Medium**

Key of change
Increase
No change
Decrease
NEW

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Operational			
9. Brexit	The United Kingdom's decision to leave the European Union presents both risks and opportunities to the Company The formal trade negotiations concluded at the end of 2020 and are now governed by the Trade and Co-operation agreement reached between the UK and the European Union A challenge continues to be free trade into the EU. Around one third of our revenues are generated from EU countries and so any actual or perceived barriers to free trade are an obvious area of concern The free movement of employees and recruitment of potential employees are key focus areas under the new arrangements We remain exposed to currency fluctuations that could result from the United Kingdom's decision to leave the EU	Key managers across the business are continuously monitoring the latest political developments and putting mitigating actions in place where there may be a potential impact on Xaar or its stakeholders A review of import and export tariffs identified minimum effect on the raw materials and finished goods Non-tariff barriers (i.e. import/export documents) are being reviewed with our freight forwarders and couriers to ensure pro-active compliance with documentation requirements from 1 January 2022 Identify and support EU, EEA or Swiss employees requiring advice in completion of application to the EU Settlement Scheme Xaar will become a licensed sponsor for recruitment of EU nationals. This does not apply to Irish citizens or those whose eligible status is covered by the EU settlement scheme Identify talent that will meet visa requirements under existing Tier 2 conditions and/or minimum threshold criteria for skilled worker general visa The Group transacts in four main currencies – Sterling, US Dollars and Euro for sales and purchases, with some additional exposure to purchases in Japanese Yen – and adopts natural hedging where possible to mitigate against exchange rate movements The Group has sufficient cash resources to protect against any short-term volatility The Board will assess the removal of "Brexit" as a principal risk in 2022, as the transition periods end, and are replaced by normal legislative activities that would be categorised under other principal risks	**Likely** **Low**
10. Loss of manufacturing facility	We have manufacturing facilities in the UK and the US, and we rely on our strategic partners for key products and components If our manufacturing sites or our partners' manufacturing sites were to experience an incident this could have operational and supply chain issues for the business	Formal disaster recovery plans are maintained and reviewed. Appropriate precautions are taken in all factories and warehouses to safeguard against theft, fire and flood. Business continuity plan implemented, site access restricted, security enhanced, daily building and IT checks for security and performance Given the specialised nature of the manufacturing equipment and processes there would be short-term disruption We are also able to use manufacturing partners to alleviate some operational issues. **2021 update**: Reduction versus interim report, as supply chain risk transferred to separate principal risk category.	**Unlikely** **Very high**
11. Partnerships and alliances	Companies with whom we have alliances in certain areas (i.e. manufacturing/research) may already be or may become our competitors in other areas. In addition, companies with whom we have partnerships may also acquire or form alliances with our competitors, which could reduce their business with us. If we are unable to effectively manage these complicated relationships with alliance partners, our business and results of operations could be adversely affected	The IP and Legal team focuses on the extensive review of legal agreements and in particular IP with such partners 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. 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	**Probable** **Medium**

Risk management continued

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Operational			
12. Supply chain	The Group is dependent on retaining its key suppliers and ensuring that deliveries are on time and the materials supplied are of appropriate quality. There has been a shift from a finished goods risk to a component materials risk particularly where components have a single source of supply There are challenges with the supply of some key components that are used in production and global logistics routes have experienced some disruption	Focused on monitoring and securing continuity of supply of components necessary to maintain production and the supply of printheads into 2022 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 We also dual source our components where possible to minimise dependency on any single supplier Working capital investment was undertaken in 2021 to secure the raw component materials required to meet expected 2022 production plans We will design new products with multiple sources of components where possible, and identify alternative materials to build resilience into manufacturing 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	**Likely** **Very high** **NEW**
IT			
13. IT systems and control environment	COVID-19: IT network resilience and access to information via hardware and software capabilities Inability to operate effectively or loss of operating capability Loss of information, incurring financial or regulatory penalties	Appropriate testing of the network environment, new software access (MS Teams) and allocation of laptops, monitors etc., to enable work from home and instant communication Developed and communicated a new IT Vision statement and IT Strategy which are clearly aligned to our overall business objectives. Developed a three-year IT Transformation Programme to deliver the necessary enhancements to our IT infrastructure and IT systems. This includes investment in moving to a hybrid cloud model, strengthening the resilience and security of our IT infrastructure, rationalising and modernising our business systems, and re-aligning systems with improved operational business processes Consolidating more of our critical manufacturing and finance processes into our Epicor ERP system and delivering improved engagement with our existing and potential new customers through our Salesforce based CRM platform. Placing increased focus on ensuring that continuity plans for critical IT systems are tested and current as the IT infrastructure and systems are changed Developing the IT Service Delivery maturity and increasing capacity in the Group IT function	**Probable** **Medium**
14. IT transformation	Delays in transformation project to deliver the key elements of the IT Strategy and achieve the Vision for IT Inability to progress sufficiently quickly to avoid disproportionate increases in the operational cost base as the business grows Lack of alignment between business processes and IT systems.	Designed the IT Transformation Programme to deliver the three year plan for IT which has been generated from the IT Vision and Strategy and has been aligned with three-year plans from all the key operational functions within the business Established executive-level governance and oversight for the IT Transformation activities to ensure that the programme is adequately resourced, milestones achieved and to approve key rollout decisions Undertaking real-time project delivery management and assurance activities throughout the Transformation Programme	**Unlikely** **High**

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
IT			
14. IT transformation continued		**2021 update:** Overall risk level reduced as a result of probability being lowered. Good project delivery performance in 2021 with all planned projects in the IT infrastructure and IT security work streams delivered to plan. Major achievement in the ERP work stream successfully delivered the highest priority project to upgrade Xaar's ERP system to the latest supported release of the software.	**Unlikely** **High**
15. Cyber threat and information security	Inability to operate effectively or significant loss of operating capability and business disruption. Unauthorised access to data, breach of information security and data protection regulations incurring financial penalties from regulators Reputational impact, business disruption and potential deterioration in customer relationships. Potential loss of Intellectual Property or exposure of commercially sensitive information. Extensive resources expended in responding to security incidents and recovering from them. IT security breaches or disruption (loss of network), unauthorised access or mistaken disclosure of information.	Implemented a Multi-Factor Authentication solution for VPN to reduce the likelihood of remote attacks. MFA rolled out across all key systems in 2021, including CRM and HR systems. Established incident response and business contingency plans were in place and have been strengthened following the cyber breach in October 2020. Strengthened our Enterprise Backup Solution by incorporating a third immutable copy of all system data in a secure public cloud environment. Prioritisation of infrastructure and systems rationalisation to reduce the available attack surface for malicious cyber attackers. Implemented a risk-based security testing approach across IT infrastructure and systems to identify ongoing vulnerabilities and prioritise remediation. Inclusion of a security work stream in the IT Transformation Programme, with an in-depth externally conducted IT Security Assessment. IT Service maturity and increased capacity in the Group IT function will enable us to enhance our security operations capability. Employees are trained on the risks of phishing and best practices for IT, a new training and education programme for information security will be introduced in 2022. Access to information is only provided on a "need-to-know" and "least privilege" basis consistent with the user's role and requires the appropriate authorisation. **2021 update:** Overall risk level reduced as a result of probability being lowered. Whilst the general prevalence of cyber-attacks has increased during the last 12 months, we have made good progress in strengthening Xaar's IT security and reducing the number of vulnerabilities that malicious attackers could exploit External IT security consultants (Claranet) were engaged in 2021 to perform penetration tests to assist in the identification and resolution of any remaining vulnerabilities in the network A review will be undertaken in 2022 as to the benefits of ISO 27001 certification as part of the IT security stream The Board receives regular updates on the IT Transformation Programme and cyber security risks. The Board will continue to assess progress in the IT security stream in 2022 The Board has assessed the IT security risk based on the above and deferred introducing specific cyber security insurance in 2021; this is subject to annual review by the Board	**Probable** **Medium**

Key of change
Increase
No change
Decrease
NEW

Risk management continued

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Financial			
16. Ability to access sufficient capital	Our ability to access sufficient capital/liquidity may restrict growth opportunities for our organisation, as well as the strategic plan and vision. Significant investment is required to bring new products to market and ramp up to meaningful volumes.	The Group has sufficient cash available for execution and delivery of the strategy within agreed timescales. The Group has implemented cost reduction actions to focus resources on key initiatives and to achieve break even under current volume requirements. In order to continue to fund our research and development activities and to realise the full potential value of our product portfolio we are seeking strategic investment partners.	**Probable** **High**
17. Customer credit exposure	The Group may offer credit terms to its customers which at times could be extended beyond what is 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.	This risk is mitigated by strong ongoing customer relationships, close monitoring of product launches by the customer in the marketplace and by credit insurance in certain jurisdictions. Monitor overdue receivables and manage credit limits prudently. Close management of overdue debtors and use of credit holds to encourage payment. The business model has moved away from a distribution model, to being a direct supplier to OEM manufacturers, which reduces the future risk being contained in a limited number of large transactions to a wider breadth of supply across a consistent sales order pipeline. New OEM customers are being onboarded with favourable payment terms depending upon credit assessment and review of credit history. Where there is exposure to Chinese manufacturers payments in advance may be requested.	**Probable** **Medium**
18. Inventory obsolescence	Holding too much inventory increases the risk of obsolescence, theft and other costs of holding stock. Furthermore, working capital restrictions created by excess inventories could affect Xaar's liquidity or prevent investment in new products or identified future acquisitions. Conversely, too little inventory risks stock outs, missed sales opportunities and ultimately damage to Xaar's reputation. Insufficient buffers in raw materials increase Xaar's exposure to supply chain issues – particularly during times of economic uncertainty (see Brexit) or health emergencies (see COVID).	Put in place appropriate stock holding policies, ensuring these are reviewed frequently and change dynamically in line with market/business conditions. Identify and write off obsolete or slow moving stock items, review work in progress to determine profitability of contracts and revenue recognition for EPS. In 2021 a review of inventory recorded in EPS was undertaken as part of the improvements to internal and management controls, leading to the non-cash adjustments for writing off historic inventory values. Improvements have been made to management controls relating to the costing of projects and physical stock counts. Enforcing lead times for customer orders to ensure we have the most accurate forecast in place as far out as possible. Continually develop forecasting techniques so that stock requirements can be predicted with great accuracy. Ongoing supplier negotiation to reduce minimum order quantities to prevent obsolescence and inflated inventory To minimise the potential impact of supply chain disruption arising from economic uncertainty, inventory levels for components have been increased to provide sufficient availability for production plans in 2022.	**Likely** **Medium**

Risk and link to business unit	Impact	Mitigation	Likelihood / Magnitude / Change
Financial			
19. *Volatility in* exchange rates	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. The Group is exposed to currency transactional risk relating to day-to-day sales and purchases across GBP, USD, and EUR. Reported results of overseas subsidiaries are subject to translational risk which may cause *volatility* in earnings and the balance sheet. *The risk is that there could be* significant adverse movements in currencies which cause a foreign exchange *loss, reducing profit*	We take a balanced view of this risk as the risk arises as a direct *result of our global presence, but our* geographic spread means we are not wholly dependent on any one currency. There is a partial natural hedge for foreign currency movements with sales companies and manufacturing *spread across the globe*. Consideration of exchange rate movements in *the* manufacturing operations. Cash flows are constantly reviewed and action is taken when appropriate. We may enter forward cover contracts in line with the Group Treasury Policy on hedging foreign currency exchange *movements*. See Brexit risk above for further disclosure	Likely / Low

Key of change
Increase
No change
Decrease
NEW

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 2021.*

Reporting requirement	Group policies that guide our approach		Information and risk management, with page references
Environmental matters	• *Environmental Policy Statement* • Environmental Sustainability statement • *Health & Safety Policy statement* • Quality Policy statement.		***Risk management & principal risks*, pages 44 to 55** **Sustainable and responsible business, pages 28 to 37** **Section 172 statement, page 69** **Company Purpose, page 71** **Our business model, pages 8 to 9**
Employees	• 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	**Risk management & principal risks, pages 44 to 55** **Sustainable and Responsible business, pages 28 to 37** ***Section* 172 statement, page 69** **Company Purpose, page 71** **Our business model, pages 8 to 9**
IT, cyber security & data protection	• *Confidential Information Policy* • Data Protection Policy • Email and Internet Policy • Mobile Phone Policy		***Risk management* & principal risks, pages 44 to 55**
Social matters	• *Human Rights Policy* • Charitable Donations Policy • Employee Volunteering *Policy*		**Sustainable and responsible business, pages 28 to 37**
Respect for human rights	• Human Rights Policy • Sanctions Policy • Modern Slavery Policy • Modern Slavery Act Compliance Statement.		**Risk management & principal risks, pages 44 to 55** **Sustainable and responsible business, pages 28 to 37** **Section 172 statement, page 69** **Company Purpose, page 71**
Anti-corruption and anti-*bribery* matters	• Anti-Bribery & Corruption Policy • Anti-money Laundering Policy • *Conflict Materials Policy* • Corporate Criminal Offence Policy • *Employee Share Dealing code*	• *Gifts & Entertainment Policy* • Whistleblowing Policy	**Risk management & principal *risks, pages 44 to 55*** **Sustainable and responsible business, pages 28 to 37** ***Our business model, pages 8 to 9*** **Section 172 statement, page 69** **Company Purpose, page 71**
Description of the business model			**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			**Risk management & principal risks, pages 44 to 55** **Sustainable and responsible business, pages 28 to 37** **Climate change, pages 29**
Non-financial key performance indicators			**Sustainable and responsible business, pages 28 to 37** **Greenhouse gas report, page 41** **Key Performance Indicators, pages 42 to 43**

* 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
Board approval

The section 172 statement forms part of this Strategic Report – please see page 69.

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 29 March 2022 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

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 pages 60 and 61

Corporate Governance

Read more about Corporate Governance on pages 71 to 76

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 61

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 composition of the Board and its Committees.

Andrew Herbert Chair
Appointed 1 April 2020

Read more on page 60

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 61

Board composition in 2021

Composition

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

Diversity

Male **4**
Female **1**

Tenure

0-3 years **3**
3-6 years **1**
6-9 years **1**

Division of responsibilities

Directors	Responsibilities
Andrew Herbert Chairman	• 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	• 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	• 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	• 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	• 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 2021, with three additional unscheduled meetings held to cover specific items.

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 2021, the Board undertook the following key governance activities:

Further developed Board meeting structure, format, agenda and material

Ensured compliance with the 2018 UK Corporate Governance Code, agreeing actions to address any non-compliance

Read more on pages 71 to 76

Reviewed and updated the Committee Terms of Reference

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

Reviewed progress of the action plan addressing the remediation of significant deficiencies in internal control at EPS during the year

Board focus areas

During 2021, the Board focused on the following key operational and strategic activities:

Printhead ImagineX product roadmap progress and customer engagement

Mitigation of supply chain constraints

Strategy progress and operational improvements at EPS

IT infrastructure improvements, including the ERP upgrade

Capital and equity strategy

Development of the Sustainability Roadmap

Read more about the Sustainability Roadmap on page 37

FFEI acquisition and integration implementation

Completion of the divestment of the Xaar 3D investment

Board of Directors

Andrew Herbert

Chairman

N R

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

John Mills

Chief Executive Officer

N

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

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 15 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**
N **Nomination**
R **Remuneration**
Chair
Member

Chris Morgan

Non-Executive Director

A N R

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
- Chief Marketing Officer for Stratasys in 2014-2015 and recently served as Senior Vice President of Americas and Asia for 3D Systems, Inc. until January 2018.

External appointments

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

Alison Littley

Senior Independent Director

A N R

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 ten 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 Norcros plc
- Senior Independent Director and Remuneration Committee Chair at musicMagpie plc.

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 2021.

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 44 to 55
Business model	Strategic Report on page 8
Employee engagement	Strategic Report on page 3 Stakeholder engagement on pages 69 to 70 Directors' Remuneration report on page 85
Equality, diversity, inclusion and human rights	Sustainable and responsible business on pages 31 to 32
Disabled employees	Sustainable and responsible business on pages 32 to 33
Supplier engagement	Stakeholder engagement on page 70
Engagement with customers and other business relationships (including community engagement)	Stakeholder engagement on page 70 Sustainable and responsible business on page 35
Greenhouse gas emissions and environmental policies	Sustainable and responsible business (TCFD) on pages 38 to 40 GHG statement on page 41
Political donations	Sustainable and responsible business on page 35
Ethics and governance, including Code of Conduct, anti-bribery and corruption policies	Sustainable and responsible business on page 31 Corporate Governance section on page 79

Branches

In addition to the subsidiaries disclosed in note 11 of the Company's separate financial statements on pages 135 to 137, 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 2021.

Details on dividends are set out in note 13 on page 138

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 59

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 keep 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 2021 AGM held on 16 June 2021, 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 2021 or 2020

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 pages 60 and 61

Directors' report continued

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 2021 are as follows.

	Number of ordinary shares of 10p each 31 December 2021	Number of ordinary shares of 10p each 31 December 2020
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 2021 and 29 March 2022. 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 2021 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 10 shareholders (by holding) – at 31 December 2021	Number of ordinary shares held	Percentage of issued share capital
Schroder Investment Mgt	22,791,868	29.05%
Aberforth Partners	7,075,267	9.02%
Odyssean Capital	6,380,000	8.13%
Columbia Threadneedle Investments	4,619,139	5.89%
Invesco (OppenheimerFunds)	4,068,105	5.19%
Hargreaves Lansdown Asset Mgt	3,632,282	4.63%
Interactive Investor	3,160,615	4.03%
Chelverton Asset Mgt	2,300,000	2.93%
Barclays Wealth	1,789,426	2.28%
JO Hambro Capital Mgt	1,743,309	2.22%
Total	57,560,011	73.38%

During the period 31 December 2021 to 29 March 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

Changes in material shareholdings since 31 December 2021	Number of ordinary shares held	Percentage of issued share capital
Schroder Investment Mgt	22,569,368	28.79%

Annual General Meeting

The notice convening the Annual General Meeting is set out on pages 173 to 176

Resolutions 1 to 9 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 10 to 13

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.

Directors' Remuneration report

Resolution 9

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

The Directors' Remuneration report can be found on pages 83 to 101 (inclusive) of the Annual Report and Financial Statements

In accordance with regulations which came into force on 1 October 2013, Resolution 9 offers shareholders an advisory vote on the implementation of the Company's existing Remuneration Policy.

Power to issue securities

Resolutions 10, 11 and 12

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 10, 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 29 March 2022) and up to an additional aggregate nominal value of £5,229,749 (corresponding to approximately two thirds of the issued share capital at 29 March 2022) 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 11 and 12

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.

In accordance with institutional guidelines, under Resolution 11, 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 12, 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 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 11 and 12 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 13

It is proposed by Resolution 13, 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 14.9% 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 29 March 2022 (including options awarded under LTIP which may be satisfied by subscription for new shares) was 4,711,777. This represents 6.0% 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 2021 would represent 7.1% of the reduced issued ordinary share capital.

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 173 to 176.

The notice of the Annual General Meeting is on pages 173 to 176

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 173 to 176 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

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

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 95

Major interests (i.e. those greater than 3%) of which the Company has been notified are shown on page 64

Company share schemes

The Xaar plc ESOP Trust holds 0 9% (2020 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 12 to 23 and Business performance on pages 24 to 27

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 12 to 23 The Group reported a profit after tax for the year ended 31 December 2021 of £14.2 million, which includes a profit after tax of £13 5 million related to discontinued operations, being the costs relating to Thin Film and Xaar 3D (£4.4 million loss), as well as the gain on disposal (£17.9 million) Notes 21 and 22 include a description of the Group'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 2021 of £25 1 million. The Group was debt free as at 31 December 2021

To date the impact of COVID-19 on the Group's trading has been minimal, however we did experience some COVID-19 related supply constraints in 2021, for which actions have been taken to mitigate their impact and therefore the Board continues to be optimistic on the future trading environment

The going concern review has been completed by considering the performance of the different businesses across the Group and each of their funding requirements before performing a number of stress tests The base going concern case is consistent with the current Board approved forecasts and, to reflect judgement over timing of contingent consideration payments, has been adjusted to exclude these in the going concern period A second case which includes the consideration payable on the acquisition of Megnajet Ltd (as set out in note 38), however excludes the revenue compared to forecast across the entire Group required to prevent the business continuing as a going concern is more than 30% which is considered remote 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

Notwithstanding this, the Group has further options to mitigate a cash shortfall which have not been factored into the above forecasts, such as staffing reductions, further delaying/stopping capital and research and development expenditure and aligning performance related pay to actual results

The Directors have a reasonable expectation that the Group has adequate resources to continue in operational existence for the period to 30 June 2023, taking account of reasonably possible changes in trading performance 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 three 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 CEO report and in the strategic review on pages 12 to 23

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 47 to 55

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 of the 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 impact that these could have over a three-year period The principal risks that were combined and modelled to create a 'severe but plausible scenario are: 2 Identification of market requirements, 4 Merger and acquisition opportunities and 12 Supply chain The results of this scenario led to an 8% reduction in base case 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 2024

Auditor

Ernst & Young LLP were re-appointed in 2021 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 60 and 61

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
- If any independent Director does not agree to support this statement this must be disclosed.

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 29 March 2022 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 most be most 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 s172 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 Report on pages 73 to 74 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 in pages 46 to 55

Stakeholder engagement

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

- our Investors
- our People
- our Communities and,
- 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 72 and Directors' Remuneration Report on pages 83 to 102

Section 172 statement continued

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 32 and Directors' Remuneration report on page 85

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 35

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 £5.7 million in R&D during 2021, 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 the Strategic Report on page 31, Our business model on page 9 and individual business unit updates on pages 16 to 23

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 2021, the Company has followed the principles and provisions of the 2018 UK Corporate Governance Code, 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 terms of reference for the Audit, Nomination and Remuneration Committees were reviewed during 2021 to address the requirements of the Code, and updated as of 1 January 2022

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 2021 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

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 do not comply fully with the Code, as it doesn't include a minimum two-year post-employment holding. This is partially mitigated through applying the leaver provisions under the Company's share plans. We intend to introduce a post-employment shareholding for future LTIP grants from 2023 onwards and will update the guideline when a new remuneration policy is introduced

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 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

Corporate Governance statement continued

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. 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 5 for the Strategy review and page 32 for Company values

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 three manufacturing facilities with offices, one in Huntingdon, UK, one in Hemel Hempstead, 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 page 8 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 69 for the s.172 disclosure

The key focus this year was to maintain the progress made by the business in recent years while navigating the unpredictable impacts of a global pandemic. The Board has focused on ensuring 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. In particular, the main Board decisions during the year were

- Continuing to invest in R&D and the product roadmap, leading to two further product launches from the ImagineX platform
  - April 2021 – launch of the Xaar Nitrox printhead attracting new customers and increased opportunities
  - September 2021 – launch of the Xaar Irix printhead, strengthening our product offering in the Coding & Marking sector
- Concluded the divestment of the remaining shareholding of Xaar 3D to Stratasys generating a positive cash inflow of £9.3 million (before transaction costs of £0.3 million) to enable Xaar to focus on its core business
- Completed the acquisition of FFEI, a leading integrator and manufacturer of industrial digital inkjet systems and digital life science technology, as part of the vertical integration strategy to grow Xaar's capability and help accelerate customer adoption of our printhead technology.
- Initiated operational changes within the EPS business unit to strengthen management and internal controls, to take advantage of the compelling growth opportunity in the market
- Relocated the corporate headquarters in Cambridge, UK which is expected to deliver £0.7 million of annual cost savings
- Opened a new Customer Service Centre in Shenzhen, China
- Established an ESG Committee to develop a Sustainability Roadmap to 2030.
- Presented a pandemic response during 2021 to ensure the safety and wellbeing of our people, security of supply chain and provision of finished goods to our customers

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 83 and Sustainable and responsible business on page 32

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 85

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 2021, the majority of resolutions had less than 1% of votes cast against the Board's recommendation. The exceptions being resolutions 4, 5 & 10 with c. 8% 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

Workforce engagement has been increasingly important during 2021 due to the second year of the COVID-19 pandemic and changes to working patterns. Despite the restrictions on international travel, we have endeavoured to stay close to our employees and support them during this difficult time. We have ensured that our managers have taken additional time to check on the wellbeing of their teams, for those individuals working on site and those who are working from home.

The Board continued to hold employee engagement sessions which are held recurrently throughout the year. With the impact of COVID-19, the three Non-Executive Directors hosted two sessions each during 2021, which were held either virtually via video call or in person, i.e. a total of six sessions in total. 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.

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 2021.

The only change to Directors' outside commitments during 2021 related to Senior Independent Director Alison Littley, who resigned as a Non-Executive Director from Headlam plc, Osborne Group Holdings Ltd and Rosewood Holdings Ltd, and was appointed as Senior Independent Director and Chair of the Remuneration Committee of musicMagpie plc in April 2021. Each Director devoted significant time to their Xaar Board responsibilities during 2021, with all Directors attending all Board meetings (see page 76).

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 pages 60 and 61 of the Annual Report and 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 was re-appointed as Company Secretary on 1 February 2021.

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 Littley, 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. The year was a less active one for the Nomination Committee, with no Board appointments, resignations or changes during 2021 for Executive and Non-Executive Directors.

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 two years. The Nomination Committee has recommended that during 2022 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.

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 but without reference to a specific diversity policy and without any established measurable objectives in respect of diversity quotas (e.g. age, gender, ethnicity, disability, religion or educational and professional background). More information on the Group's gender profile is reported in Sustainable and responsible business on page 33.

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 the UK boards to better reflect their employee base and communities they serve.

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 2021. From the review and conclusions drawn, areas of improvement were identified as follows:

1 Board membership diversity, skills and experience to be reviewed and an additional NED appointment to be considered.
2 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.
3 Further develop the approach to succession planning and talent management in the business to create greater opportunity for progression and increased diversity among senior management and the Board.

Areas of improvement identified in 2020 were addressed and actions taken and implemented during 2021.

Further details of the activities of the Nomination Committee can be found on pages 81 and 82.

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 2021 AGM.

The biographies of the Directors, set out on pages 60 to 61, 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 77 to 80

- The Audit Committee review of the effectiveness of the external audit is set out on page 80
- The auditors 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 80.

The Directors' assessment of the Group's internal control environment as required under the UK Corporate Governance Code is set out on page 79 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 section on page 78 and in note 2 to the accounts on pages 119 and 120

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 publ*ished by the Group are fair, balanced and* understandable. The Strategic Report, set out on pages 2 to 57, 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

The Board has confirmed on page 44 of the Annual Report 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:

- Climate change, was escalated from an emerging to a principal risk
- IT and Cyber risks, following the progress of the transformation programme has seen the risk probability reduced.

Descriptions of principal and emerging risks and how they are mitigated and any changes are set out on pages 44 to 55

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 44 to 46*

The Board explains on pages 67 and 68 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 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 will be reviewed ahead of being put to a shareholder vote in 2023, and as part of this review we will consider how our *ESG priorities should be reflected in the reward framework. The Remuneration Committee* has not exercised any discretion in relation to remuneration outcomes in 2021.

Details of the activities of the Remuneration Committee can be found in the Remuneration Committee section on page 83 and in the Directors' Remuneration report on pages 86 to 101

- The alignment of executive remuneration with Company purposes and values is set out on page 86
- The award of long-term incentives and their performance conditions are set out on page 88
- 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 91
- *The discretionary powers of the Remuneration Committee* are on page 88
- The alignment of executive pensions with those of the workforce are on page 87
- Recovery and withdrawal provisions (malus/clawback), and the circumstances under which the provisions may apply, are on page 89

Summary of Board meeting attendance in 2021

Eleven Board meetings were held in *2021, with three additional unscheduled meetings for specific items*:

Name	Scheduled Board meetings	Additional meetings
Andrew Herbert	11 (11)	3 (3)
Alison Littley	11 (11)	3 (3)
Chris Morgan	11 (11)	3 (3)
John Mills	11 (11)	3 (3)
Ian Tichias	11 (11)	3 (3)

Board Committees

Summary of Committee membership

Name	Audit Committee	Remuneration Committee	Nomination Committee
Andrew Herbert	No	Yes	Chair
Alison Littley	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 2021:

Name	Audit Committee[1]	Remuneration Committee[1]	Nomination Committee[1]
Andrew Herbert	n/a	5 (5)	1 (1)
Alison Littley	7 (7)	5 (5)	1 (1)
Chris Morgan	7 (7)	5 (5)	1 (1)
John Mills	n/a	n/a	1 (1)

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

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

Approval

The Board confirms the 2021 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 was approved by the Board on 29 March 2022 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 pages 60 and 61.

The Audit Committee met formally on seven occasions during the year and details of the attendance at meetings by members of the Audit Committee are set out on page 76. Please see the tables on page 76 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 Adrian Bennett 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:

- Revenue recognition
- Valuation of Xaar 3D disposal contingent consideration
- FFEI acquisition
- Impairment of goodwill, intangible assets and PPE
- Inventory valuation and obsolescence, including EPS' H1 2021 non-cash adjustments relating to slow moving and obsolete inventory
- Consideration and treatment as a prior year adjustment of the remediation of the significant deficiencies in internal control identified within EPS as part of the 2020 year end audit process, as described on page 79

Audit Committee continued

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 Audit Committee considers management's assessments when the criteria for capitalisation are met. The development of the High Speed Sintering in 3D was completed in December 2020, the cost and accumulated depreciation was reclassified as part of an asset group held for sale as at 31 December 2020, and subsequently disposed of in 2021.

Discontinued operations – note 11
The 3D business met the criteria of a discontinued operation in December 2020 and the disposal was formally completed on 1 November 2021. The accounting treatment of the disposal of the Xaar 3D business reclassified as discontinued operations has been presented to, considered and agreed by the Audit Committee and the external auditors.

Estimation uncertainty

Climate-related risks – Risk management
Climate change is a global challenge and an emerging risk to businesses, people and the environment across the world. In management's view and the Audit Committee's review, climate change does not currently create any further key sources of estimation uncertainty for the Group.

Contingent consideration – note 22
The contingent consideration is a financial asset measured at fair value, which is calculated using the Monte Carlo Simulation model, the model uses a number of inputs that require estimation, forecast revenues, time until expiration, expected volatility and discount rates. Third party experts are used to provide these inputs, but the estimates remain uncertain. The valuations are considered by the Audit Committee on review of the accounting treatment of the disposal of the Xaar 3D business.

Inventory provision – note 20
A policy is used by management to calculate the inventory provisions based upon use and ageing of inventory, a significant proportion of the inventory provision relates to discontinued operations.

Credit provision for the allowance of doubtful debts – note 21
A review has been undertaken to consider the requirements of IFRS 9 and the expected credit loss provision requirements based on historical default and loss experience by management.

Impairment of capitalised development costs – note 16
The Group determines whether capitalised development costs, and all other non-current assets, are impaired at least on an annual basis. The carrying amount of capitalised development costs at 31 December 2021 was £nil.

Impairment of goodwill in relation to EPS – note 15
The Group tests goodwill annually for impairment. A budget has been prepared for EPS and a cash flow forecast derived to determine a value in use calculation. The recoverable amount is estimated and discounted with regards to a discount rate applicable to EPS, this reflects external third party advice and input estimates of the risk free rate, equity beta and market premium calculated at the year end. Sensitivity analysis is undertaken, but the estimates remain uncertain and rely upon forward guidance. Management's assessment has been reviewed by the Audit Committee, which is satisfied that there is no impairment identified.

Revenue recognition – note 5
The Audit Committee reviews the assessment of the application of IFRS 15, as presented to it, with regards to the stage of completion for relevant customer contracts.

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 119 and 120

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 66 and 45), 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
- Reviewed and approved actions for improvements to Treasury management
- The Committee considered and reviewed the internal audit plan that in 2020 was unable to progress as planned due to the impact of COVID-19 restricting the ability to travel to overseas sites alongside requirements to work from home, which continued to disrupt plans in 2021. A review was undertaken for the approach of internal audit, internal resource was recruited (joined in January 2022) and an external provider was engaged to commence internal audit activities in 2022. In addition, an audit readiness engagement was performed at EPS in the place of an internal audit in 2021 (see more detail below).

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 recognises the challenges faced over the last two years, and has ensured steps have been taken to commence internal audits of financial processes and controls in 2022 across the Group. The Committee sanctioned an approach for greater emphasis to be placed on the methodology and effectiveness of management controls. This was implemented during 2021 with the objective to identify effective and ineffective processes and controls, and will drive increased engagement with internal audit in the future through the design and implementation of new internal systems to ensure a robust and effective solution.

As disclosed in the Xaar plc Annual Report and Financial Statements 2020, significant deficiencies in internal control were identified in the EPS subsidiary during the external audit process for the year ended 31 December 2020 in respect to the financial statement close process and management controls. An action plan was established, presented to the Board and Audit Committee, and implemented in 2021, covering the actions required to remediate the internal management and reporting controls and remediate the identified deficiencies. The significant deficiencies in internal control identified in the EPS subsidiary were in respect of the adequacy of controls in the financial reporting close process, controls over revenue recognition, and controls over inventory management and valuation.

The action plan was substantially underway by the end of 2021, enabling the delivery of improved operational processes across the business and addressing the concerns raised during the external audit of the 2020 financial year. The Board and the Audit Committee are kept up to date with the progress made against the action plan. A third party, RSM LLP US (RSM), were engaged to support the audit readiness of EPS ahead of the 2021 year-end audit. In addition to reviewing actions taken during 2021, RSM helped to identify and implement further actions as required to enable a successful year-end external audit. This engagement was undertaken ahead of traditional internal audit activities in order to provide assurance that appropriate processes have been performed resulting in accurate accounting, free from significant deficiencies in internal controls.

Further to this, RSM will work with EPS in relation to risk and controls to ensure we have clear integrated controls and reporting across the EPS business. This work will be enhanced further by internal audit procedures to follow later in 2022 once clear processes and controls have been established at EPS. Work continues across the business to enable delivery of improved operational processes, however the actions taken to date have resulted in significant progress being made, with clear and demonstrable improvement in operations, process and culture.

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 page 48.

FRC's Corporate Reporting Review

Xaar plc's Annual Report and Accounts to 31 December 2020 was selected as part of the FRC thematic review of companies' disclosure of alternative performance measures (APMs); as such, only the disclosures in relation to APMs were reviewed. Xaar's disclosure relating to the cash flow impact and tax effect of restructuring costs was highlighted as an example of better practice in the FRC Thematic Review Alternative Performance Measures (APMs), published in October 2021. A request for information was also made. Xaar provided a response covering the specific questions raised and on 10 November the FRC confirmed that the matter was brought to a satisfactory conclusion. The FRC asked Xaar to explain the difference between the amount of depreciation of property, plant and equipment disclosed within the reconciliation of adjusted EBITDA, and the depreciation charge disclosed elsewhere in the notes to the accounts. We provided a satisfactory analysis and clarified that the main difference related to an impairment charge. We also stated that the depreciation of right-of-use assets was not added back when arriving at the adjusted EBITDA. We confirmed that the nature of the reconciling items, and the reasons for their selection, would be clarified in the next Annual Report and Financial Statements.

Note that there are inherent limitations in the FRC's review as the FRC provides no assurance that Xaar's 2020 Annual Report and Financial Statements are correct in all material aspects; their role is not to verify the information provided but to consider compliance with reporting requirements. The FRC accepts no liability for reliance on them by Xaar or any third party, including but not limited to investors and shareholders.

External audit

- Following the conclusion and sharing of the 2020 audit results, there was an extensive collaborative effort by the Xaar and the EY teams to review the process in detail, and identify and implement improvements for future audit efforts including improved planning and timing of audit procedures, as well as working team adjustments to better handle engagement given the dynamic COVID-19 situation. This process work and the related recommendations were reviewed by the Audit Committee and were instrumental in aiding the planning of the 2021 audit
- The Audit Committee provided a forum for reporting and discussion with the Group's external auditors 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
- 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. For the second year the senior statutory auditor is Adrian Bennett. 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. EY were engaged to provide tax services for FFEI for their year ending 31 March 2021, however on the completion of Xaar's acquisition of FFEI, there was no open work and EY discontinued their engagement as tax advisor.

Note 8 to the consolidated financial statements includes disclosure of the auditor's remuneration for 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 2021, 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 2021 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 terms of reference of the Committee state that it shall meet typically twice per year. 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 76 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.

The Board has not established a specific diversity policy in respect of its membership but 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 32 and 33.

Key issues and activities

In 2020 and following significant losses in the business and as part of a move to control costs, a decision was made to reduce the Board size to five comprising three independent Non-Executive Directors and two Executive Directors. This position was retained in 2021 during which there were no changes to the Board. The matter has, however, been kept under constant review.

Following implementation of a new strategy and the good progress made on building an executive management team during the past two years, the Nomination Committee has recommended that during 2022 the Board be strengthened and that the number of independent Non-Executive Directors be increased to four including the Chair. This move will allow the balance of skills of Board members to be enhanced, will facilitate some reassignment of responsibilities among the Non-Executive team and will ensure continuation of strong governance. In making any future appointment the Nomination Committee will consider both diversity and succession 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, an induction programme for Non-Executive Directors, and, in association with the Remuneration Committee, has worked alongside executive management in reviewing senior management development. A number of senior appointments have been made during 2021 to strengthen the executive team across the business units as the Company rebuilds competencies appropriate to its strategy and structure following the acquisition of FFEI Limited and divestment of the 3D business in the year.

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 FTSE 350 company, 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 60 and 61. 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

29 March 2022

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 2021

Our report explains the work of the Committee and how we have implemented our Remuneration Policy which was approved by shareholders at the 2020 AGM. For ease of reference, a summary of the key elements of the Directors' Remuneration Policy is included on pages 86 to 89 The Annual Report on Remuneration (on pages 92 to 101) explains how the Remuneration Policy was implemented in 2021 and how it will be applied in 2022 This is the subject of an advisory shareholder vote at the 2022 AGM

2021 remuneration in the context of our business performance

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

As outlined in our Remuneration report last year, under the leadership of the CEO and CFO, we have refocused the business on our core competencies and developed a new strategy for growth exploiting the fundamental strength of our bulk piezo inkjet technology. We have continued to deliver strong performance, which despite challenging market conditions, demonstrates the success of our strategy and underlying strength of the business By way of context

- Our Printhead business continues to perform with a growing pipeline of new product developments
- Underlying performance of our Engineered Printing Solutions (EPS) remains good with progress made in our modular strategy
- A new bulk piezo product platform, ImagineX, has been established and a regular rollout of new products with enhanced performance aligned to market needs is continuing
- Continued investment in capability and capacity, together with the acquisition of FFEI Limited ('FFEI') on 11 July 2021 will drive future growth and continue to accelerate strong performance
- An ESG Committee has been established with a view to announcing the Sustainability Roadmap to 2030 with the full-year results
- In November 2021 we announced the completion of the divestment of the Company's remaining interest in Xaar 3D which enables us to focus on our core technology and what we do best
- As detailed in the Strategic Report our balance sheet remains strong and we have continued to deliver robust financial performance
- Reflecting the excellent progress made and positive momentum generated across the business, we report an adjusted profit for the business in the second half of 2021 and anticipate a return to sustained profitable growth from 2022
- Our market capitalisation (six month average) has also increased almost three fold from c. £53 million to 31 December 2019 to c £146 million to 31 December 2021

This performance is a testament to the proactive management and leadership of our CEO, CFO and Board and the commitment of all our people

Annual bonus outturn for the year ended 31 December 2021

For the financial year ended 31 December 2021, 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 26 26% of maximum (32.83% of salary and 26 26% of salary respectively) Full details of the targets and performance achieved can be found on page 93. 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

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.

Deferred element of 2020 bonus

Reflecting the fact that the divestment of the Company's remaining interest in Xaar 3D did not complete and gain shareholder approval by 30 June 2021, the deferred element of bonus earned for 2020 that was based on the 3D strategic goals was forfeited during the year

Long-Term Incentive Plan (LTIP) awards

No LTIP awards were due to vest for Executive Directors in respect of 2021

Reflecting the strong recovery in our share price, the 2021 LTIP awards were granted at 150% of base salary for the CEO and 100% of salary for the CFO 2021 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 2023 As noted above, there is a further two-year holding period following the end of the performance period

Directors' Remuneration report continued

Key principles of the compensation philosophy

Whilst market data provides a valuable insight into pay levels and structures, the Committee recognises that benchmarking should not be the sole determinant when considering Executive Director remuneration In line with Xaar's general approach to setting pay, the Committee considers a range of factors alongside benchmarking when reviewing proposed changes to remuneration packages Our approach to remuneration is based on 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.

Implementation of the Policy in 2022

The wider workforce was awarded a 2.5% base salary increase for both 2020 and 2021 and the proposed general base salary increase for 2022 is 3% for UK employees In addition to these increases, since 2019 the base salaries of various members of the senior management team have been significantly revised in recent years to reflect increased responsibilities and the development of the business, which has reduced internal relativities (five key executives have received double digit increases over the last three years to reflect increased responsibilities) 69 individuals below the executive team have received higher base salary increases on promotion over the last year

Since appointment the Executive Directors have received one base salary increase The CEO and CFO's current base salary is below the lower decile compared to companies of a similar market capitalisation to Xaar

The Committee believes it is appropriate to recognise our continued strong performance and ambitions in the future including our return to sustained profitable growth with base salary increases for the CEO and CFO that are higher than the general rises for employees The proposed increases set out below also take into account the outstanding contribution of our CEO and CFO to the development and successful implementation of our new strategy Our intention is to increase the CEO and CFO's base salary on a phased basis towards the mid-point of the market competitive range

	Current salary (effective 1 January 2021)	New salary (effective 1 January 2022)	Lower quartile*	Proposed salary (effective 1 January 2023)	Median*
CEO – John Mills	£315,000	£360,000 14% increase c. 94% of lower quartile	£381,400	£390,000	£412,000 8% increase c 95% of median
CFO – Ian Tichias	£220,500	£ 240,000 9% increase c 96% of lower quartile	£251,000	£260,000	£282,000 8% increase c 92% of median

* Based on companies with 12 month average market cap £50 million – £175 million.

The Committee is mindful of the impact of base salary increases on the value of the overall total remuneration package The changes outlined above move the positioning of base salaries and total remuneration package for our current Executive Directors towards the lower end of the market for 2022

No other changes are proposed to the Executive Directors' package for 2022.

- Pension/cash in lieu – in line with wider workforce (currently 6% of salary)
- Maximum annual bonus for 2022 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
- 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

The proposed increase for 2023 is subject to the continued performance of the Executive Directors and the Company including a return to sustained profitable growth

Looking ahead – key focus areas for the Committee for 2022

The Committee is mindful of the need to attract and retain high calibre individuals in an increasingly competitive market and to remunerate executives fairly and responsibly. During the course of 2022 we will be reviewing our Remuneration Policy to ensure that it continues to support delivery of the strategy for the next stage of Xaar's development, ahead of being put to a shareholder vote in 2023.

As part of this review we will consider how our ESG priorities should be reflected in the reward framework. We also intend to introduce a post-employment shareholding for future LTIP grants from 2023 onwards. Any changes to the Remuneration Policy will be considered alongside the impact of the proposed changes to base salary for 2023.

Board Chair and Non-Executive Directors

We have also taken the opportunity to review our Chairman fee level and a committee, appointed by the Executive Directors and the Chairman, has reviewed fees for the other Non-Executive Directors.

We are mindful that the strong performance delivered has required a significant time commitment and contribution from the whole Board. The successful turnaround of the business has also been achieved with a very effective, albeit smaller, Board.

From 1 January 2020 the Chairman fee was reduced to £90,000. This reflected the smaller scale and profitability of the business at that time. Consistent with the approach being adopted for the Executive Directors, and reflecting both the time commitment and contribution of the Chairman, the Committee has agreed to increase the Board Chair fee (currently £92,250) on a phased basis as detailed below. The 2023 increase will be subject to the continued performance of the Company including a return to sustained profitable growth. This still positions us slightly below the market compared to FTSE SmallCap companies of a similar size.

	Current fee (effective 1 January 2021)	New fee (effective 1 January 2022)	Lower quartile*	Proposed fee (effective 1 January 2023)	Median*
Chairman – Andrew Herbert	£92,250	£120,000 30% increase c. 95% of lower quartile	£126,750	£130,000	£137,500 8% increase c. 95% of median

* Based on companies with 12 month average market cap £50 million – £175 million

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 £46,125 for the Non-Executive Directors' fees is broadly market competitive (positioned around the mid-point). The base fee will be increased by circa 3%, in line with the increase for the wider workforce for 2022, to £47,500. The additional fee in respect of acting as a Committee Chair will be increased from £3,000 to £7,500 and the fee for the Senior Independent Director will be increased from £1,000 to £3,000. These increases bring the additional fees closer to the mid-point of the market competitive range for the Committee Chairs and closer to the lower end of the market for the Senior Independent Director.

Employee engagement

The Board has formally introduced workforce engagement sessions to be 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. During the course of the year, we have provided an update on how our reward framework aligns with business and talent strategy and the wider Company pay policy.

Shareholder engagement

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. The Committee consulted with major shareholders on the changes in our two most senior executives' basic salaries and the change to the Chairman's fee as set out above. We greatly appreciate the feedback and the level of support we have received from our shareholders regarding our approach to remuneration and the changes outlined. We are firmly of the view they are in the best interests of the business and its shareholders.

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 2021 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 25 May 2022.

Alison Littley
Chairman of the Remuneration Committee

29 March 2022

Directors' Remuneration Policy

Our Directors' Remuneration Policy was approved by shareholders at the 2020 AGM held on 2 June 2020, and is set out in full on pages 75 to 85 of the 2019 Annual Report and Accounts, which are available on the Company's website at https://www.xaar.com/media/2182/xaar-annual-report-2019-online-v2.pdf. We have set out below a summary of those parts of the Policy that we think shareholders will find the most useful.

The Directors' Remuneration Policy is not audited.

Policy table for Executive Directors

The table below summarises 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	Normally reviewed annually and any increases generally apply from 1 January (but may be reviewed more frequently if required). When determining base salary levels, consideration is given to the following: • 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	No maximum salary opportunity has been set out in this policy report to avoid setting expectations for Executive Directors and employees. The base salaries effective as at 1 January 2022 are shown on page 99.
Performance measures	Not applicable.
Benefits	
Objective	Provide a market-competitive benefits package to recruit and retain Directors of the calibre required for the business. Participation in the Company's Share Incentive Plan (SIP) and Share Save Scheme (SAYE) encourages share ownership and alignment with the wider workforce.
Operation	Executive Directors receive base benefits including car allowance, private medical insurance, and basic levels of other insurances (such as income protection cover). 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 Remuneration Committee approval, the allowance may be paid in cash rather than utilised to purchase benefits. The SIP and SAYE are HMRC approved share plans for all employees facilitating the acquisition of shares in the Company at a discount. 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.
Opportunity	Whilst the Remuneration 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 Remuneration Committee considers to be appropriately positioned taking into account relevant market levels based on the nature and location of the role and individual circumstances. The flexible benefits allowance is currently up to 5% of base salary. The Remuneration Committee has the authority to review and amend this rate as appropriate. 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. SAYE and SIP limits as permitted in accordance with the relevant tax legislation.
Performance measures	Not applicable

Retirement benefits

Objective	Provide an appropriate level of retirement benefit (or cash allowance equivalent) as part of a market-competitive total remuneration package
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 contributions into a pension plan
Opportunity	Company pension contribution (or cash allowance equivalent) not exceeding the contribution available to the majority of the workforce (currently 6% of base salary)
Performance measures	Not applicable

Annual bonus

Objective	Rewards performance against annual targets which support the strategic direction of the Company The majority of staff participate in the same scheme
Operation	Targets are set annually and any pay-out is determined by the Remuneration Committee after the period-end, based on performance against those targets. The Remuneration 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 Remuneration Committee's assessment of overall business performance 30% of any bonus will be deferred in shares and subject to a two-year deferral period. The balance is delivered in cash Additionally, Directors may opt to invest in the Company SIP (refer to note 32 for details)
Opportunity	Overall maximum annual bonus is 125% of salary for Chief Executive Officer and 100% for Chief Financial Officer and Chief Operations Officer. 50% of the maximum bonus can be earned for on-target performance
Performance measures	The annual bonus is assessed against financial and/or strategic targets which are determined by the Remuneration Committee. Stretching performance targets are set each year reflecting the business priorities that underpin Group strategy The proposed performance measures for the 2022 annual bonus are adjusted profit before tax (70%) and cash flow (30%). The Committee may vary the weighting of these measures and could add alternative measures in future years

Long-Term Incentive Plan

Objective	Drive and reward the achievement of longer-term objectives aligned closely to shareholders' interests Support the turnaround of the business towards longer-term, sustainable profitability Provide alignment with shareholders' interests Support retention and promote share ownership
Operation	An award of performance shares (zero priced share options) may be granted on an annual basis and will vest after three years subject to the achievement of the applicable performance conditions. There will be a further two-year holding period Vested LTIP options must be exercised within ten years of the date of grant. Under the rules of the LTIP, the Remuneration Committee has discretion to satisfy vested LTIP awards in cash On the vesting/exercise of an LTIP award, the Remuneration Committee has the discretion to decide that Executives can receive an amount (in cash or shares) equal to the dividends paid or payable between the date of grant and the vesting of an award on the number of shares which have vested. However, the Committee would only settle dividend equivalents for an Executive Director in cash where the particular circumstances made that appropriate – for example in the event of a regulatory restriction on the delivery of shares, or in respect of the tax arising on the vesting or release of the award Awards may vest early on a change of control (or other relevant event) subject to the satisfaction of the performance conditions (as determined by the Remuneration Committee) and pro-rating for the LTIP was previously approved by shareholders in April 2007 The Remuneration 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 HMRC approved option 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 an approved option for the part of the award up to the HMRC limit (currently £30,000) with an unapproved option for the balance and a 'linked award' to fund the exercise price of the approved option, or as an approved 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 approved 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
Maximum opportunity	The maximum award in respect of any year will be: • as regards the Chief Executive Officer, an award over 365,000 shares, and • as regards any other Executive Director, an award over 170,000 shares, subject to an overriding limit in respect of any year of 150% of salary for the Chief Executive Officer and 100% of salary for any other Executive Director For threshold performance, 25% of award will vest Straight-line vesting applies between threshold and maximum vesting. These limits do not include the value of shares subject to any approved option granted as part of an LTIP award.
Performance measures	Stretching performance targets are set each year reflecting the business priorities that underpin longer-term Group strategy The 2022 LTIP award will be measured based on: • *Cumulative Adjusted EPS – 60%* • The Company's relative TSR performance against the companies in the FTSE SmallCap All-Share Index – 40% • Cumulative Adjusted EPS and relative TSR performance will be measured over a three-year performance period to 31 December 2024 The Remuneration Committee retains the discretion to alter the weighting of measures and to apply alternative or additional measures in future years.

Shareholding guideline

To align the interests of Executive Directors with those of shareholders, the Remuneration 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 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 Remuneration Committee's policy on post-employment shareholdings is to apply the "leaver" provisions under the Company's share plans as regards both unvested awards and awards which are vested but subject to a holding period.

Malus, clawback and underpin provisions

The Remuneration Committee has the right to:

- Reduce any LTIP awards which have not yet vested (i.e. a malus provision) if an act or omission contributes to a material misstatement of the Group's financial statements or results in material loss or reputational damage for the Company
- Recover cash or shares which have been paid or transferred (i.e. a clawback provision) in the event of a corporate failure, serious misconduct or an act or omission contributes to a material misstatement of the Group's financial statements or results in material loss or reputational damage for the Company, for a period up to two years following determination of the vesting outcome
- Apply an underpin to LTIP vesting and bonus achievement and to flex the weighting of performance measure in the event of early vesting as a result of change of control

Operation of share plans

The Remuneration 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 Remuneration Committee would only settle an Executive Directors' award in cash in exceptional circumstances, such as where there is a regulatory restriction on the delivery of shares.

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 Remuneration Committee taking into account the relevant performance conditions (and the Remuneration Committee may vary the weightings of the applicable performance measures) and, unless the Remuneration 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, and
- 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
Chairman and Non-Executive Directors' fees Provide an appropriate reward to attract and retain Directors of the calibre required for the business.	The remuneration of the Chairman of the Board is set by the Remuneration Committee and the Chief Executive Officer. Fees are set at a level which reflects the skills, knowledge, and experience of the individual, whilst taking into account appropriate market data. The fee is set as a fixed annual fee and may be paid wholly or partly in cash or Company shares. 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. The fees are set as a fixed annual fee and may be paid wholly or partly in cash or Company shares. Overall fees paid to Directors will remain within the limit stated of £300,000 in our Articles of Association. Non-Executive Directors do not participate in any incentive scheme. Directors may be eligible to benefits such as the use of secretarial support, travel costs or other benefits that may be appropriate.

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 an HMRC approved SAYE and invites all employees to participate, therefore encouraging wider workforce share ownership.

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 the 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	Date of appointment	Remaining term of maximum on 31 December 2021
Andrew Herbert	15 April 2016	1 June 2016	41 months
Alison Littley	22 April 2020	1 May 2020	88 months
Chris Morgan	2 December 2015	4 January 2016	36 months

All Directors offer themselves for annual re-election at each AGM in accordance with the UK Corporate Governance Code. Letters of appointment are available for inspection at the registered office address of the Company.

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
Clarity Remuneration arrangements should be transparent and promote effective engagement with shareholders and the workforce	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 Employees have a forum where they can raise questions and give feedback about the Remuneration Policy directly to the Non-Executives.
Simplicity Remuneration structure should avoid complexity and its rationale and operation should be easy to understand	A core reward principle of our Policy is to operate a simple and transparent framework which can be readily cascaded 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* The structure is simple to understand for both participants and shareholders, and is aligned to the strategic priorities for the business.
Risk 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	Annual bonus and LTIP targets are set at levels which reward high performance, but which do not encourage inappropriate business risk Both the annual bonus and LTIP are subject to malus and clawback provisions This allows the Committee to have appropriate regard to risk considerations Annual bonus deferral and the application of the two-year holding period to awards under the LTIP provide longer-term alignment with shareholders' interests The Committee also has discretion to override formulaic outcomes, which may not accurately reflect the underlying performance of the Group
Predictability 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	The range of possible pay awards available to Executive Directors under the current Policy were clearly set out in the 2020 Directors' Remuneration report prior to the Policy being voted on
Proportionality 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	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 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
Alignment with culture Incentive schemes should drive behaviours consistent with the Company's purpose, values and strategy	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. Our incentive schemes are aligned with our strategy to return to sustainable long-term growth and profitability.

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 2021

The Remuneration Committee's policy is to attract and retain individuals of the highest calibre by offering remuneration competitive with comparable publicly listed companies, and to drive Company performance by providing arrangements which fairly and responsibly reward individuals for their contribution to the success of the Group Performance related bonuses and equity-based remuneration represent a substantial proportion of Executive Directors' potential remuneration

The information provided in this part of the Directors Remuneration report is subject to audit

Single figure table

The aggregate remuneration provided to Directors who have served as Directors in the year ended 31 December 2021 is set out below, along with the aggregate remuneration provided to such Directors for the financial year ended 31 December 2020

Year ended 31 December 2021

	Salary/fees[a] £'000	Benefits[b] £'000	Performance bonus[c,d] £'000	Bonus[e] £'000	Reduction[f] £'000	Others[g] £'000	Pension[h] £'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 Littley	50	-	-	-	-	-	-	50	50	-
Chris Morgan	50	-	-	-	-	-	-	50	50	-

Year ended 31 December 2020

	Salary/fees[a] £'000	Benefits[b] £'000	Performance bonus[c] £'000	Bonus[e] £'000	Reduction[f] £'000	Others[g] £'000	Pension[h] £'000	Total remuneration £'000	Total fixed remuneration £'000	Total variable remuneration £'000
Executive										
John Mills	300	27	162	-	-	4	18	511	345	166
Ian Tichias[1]	175	36	76	66	-	4	11	368	288	80
Non-Executive										
Andrew Herbert (Chairman)[2]	80	-	-	-	-	-	-	80	80	-
Alison Littley[3]	32	-	-	-	-	-	-	32	32	-
Chris Morgan	48	-	-	-	-	-	-	48	48	-
Robin Williams[4]	23	-	-	-	-	-	-	23	23	-
Margaret Rice-Jones[5]	25	-	-	-	-	.		25	25	-

1 Ian Tichias joined the Board on 1 March 2020
2 Andrew Herbert became Chairman on 1 April 2020
3 Alison Littley joined the Board on 1 May 2020
4 Robin Williams stepped down as Chairman on 31 March 2020
5 Margaret Rice-Jones stepped down from the Board on 30 June 2020

The figures in the single figure table on page 92 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) Performance 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) Bonus	The value of any other bonus, for Ian Tichias, this is a bonus payment in 2020 of £65,420 to compensate him for remuneration forfeited when he joined Xaar as CFO
(e) Reduction	In the single figure table in the 2020 Directors' Remuneration report, the performance bonus value for 2020 reflected the full bonus earned by each Executive Director by reference to the applicable performance conditions. As noted in that report, the deferred element of bonus earned based on the 3D strategic goals was to be forfeited in the event that the transaction did not complete by 30 June 2021. The relevant transaction did not complete and the shares over which the deferred element was granted on 14 October 2021 (as referred to on page 83) were reduced accordingly by a value of £11,250 in the case of John Mills and £5,250 in the case of Ian Tichias. In line with the reporting regulations, the reduction is included in the 2021 single figure table
(f) Others	The value of SAYE options granted based on the fair value of the options/shares at grant.
(g) 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 £315,000 from 1 January 2021 and the CFO's salary was increased to £220,500 from 1 January 2021.

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.

Annual bonus

For the financial year ended 31 December 2021, 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 (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*	70%	(£3,911k)	(£414k)	£2,023k	(£1,291k)	37.51%
Cash flow from operations*	30%	(£382k)	£1,334k	£3,117k	(£999k)	0.00%
Overall out-turn						26.26%

* The Adjusted Group PBT target is the adjusted loss before tax from continuing operations as defined in note 4. Targets and actual exclude the impact of FFEI results.

The bonus out-turns for 2021 are detailed in the table below.

	% of maximum opportunity vesting	% of salary	Total	Cash	Deferred shares*
John Mills	26.26%	32.83%	£103,399	£72,379	£31,020
Ian Tichias	26.26%	26.26%	£57,903	£40,532	£17,371

* In line with the new Remuneration Policy approved in 2020, 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 and deferred bonuses awarded during the financial year

The table below outlines awards made under the LTIP to Executive Directors in 2021.

		Award basis	Performance condition	Number of shares	Face value of the award[1] £'000	Vesting at threshold	Performance period	Vesting date
14 October 2021	John Mills	Performance Share Plan awards	EPS & TSR	293,478	473	25% of award	1 January 2021 to 31 December 2023	March 2024 (2023 Results)
		Deferred Bonus Plan	-	23,249	37		N/A	March 2023 (2022 Results)
14 October 2021	Ian Tichias	Performance Share Plan awards	EPS & TSR	136,957	221	25% of award	1 January 2021 to 31 December 2023	March 2024 (2023 Results)
		Deferred Bonus Plan	-	10,849	17		N/A	March 2023 (2022 Results)

1 The share price used to calculate the face value of the Performance Share award and the Deferred Bonus share award granted on 14 October 2021 was £1.61 being the average mid-market price during the five days prior to award date.

The 2021 LTIP grants were based on Cumulative Adjusted EPS performance for the three-year performance period commencing with the 2021 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 2021 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 2020 bonus earned, the element of bonus earned based on the 3D strategic goals was forfeited as the transaction did not complete by 30 June 2021.

Given the turnaround position of the Company, the Board considers the EPS performance targets for the LTIP awards granted in 2021 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%

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: Subject to performance conditions	Unvested: Not subject to performance conditions	Total as at 31 December 2021
Executive Directors								
John Mills	200% of salary	72%	Shares	125,000				**992,349**
			LTIP options			838,806		
			DBP and SAYE options				28,543	
Ian Tichias	200% of salary	41%	Shares	50,000				**428,681**
			LTIP options			356,957		
			DBP and SAYE options				21,724	
Non-Executive Directors								
Andrew Herbert			Shares	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 2021 (£1 82) with the percentage of salary determined by reference to salaries at 31 December 2021 (CEO £315,000 and CFO £220,500)

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 2021 and 29 March 2022 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 2021	Granted during the year	Exercised during the year	Lapsed during the year	As at 31 December 2021	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
	545,328	293,478	-	-	**838,806**				
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
	220,000	136,957	-	-	**356,957**				

* 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

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 2021	Granted during the year	Exercised during the year	Lapsed during the year	As at 31 December 2021	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
Ian Tichias	-	10,849	-	-	**10,849**	14 October 2021	£1 61	March 2023	14 October 2031

* 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)

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 2021	Granted during the year	Lapsed during the year	Exercised during the year	As at 31 December 2021	Grant date	Exercise price	Earliest date of exercise	Expiry date
John Mills	5,294	-	-	-	**5,294**	2 November 2020	£1 02	2 November 2023	2 May 2024
	5,294	-	-	-	**5,294**				
Ian Tichias	5,294	-	-	-	**5,294**	2 November 2020	£1 02	2 November 2023	2 May 2024
		5,581	-	-	**5,581**	4 November 2021	£1 29	4 November 2024	4 May 2025
	5,294	5,581	-	-	**10,875**				

Payments for loss of office and payments to past Directors made during the year

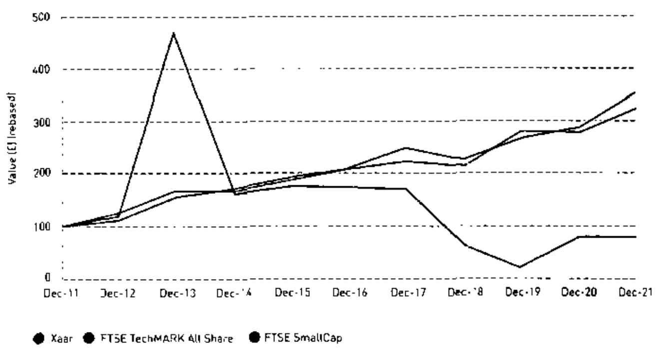
No payments for loss of office or payments to past Directors were made in 2021

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 2021, of £100 invested in Xaar on 31 December 2011, 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

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 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%
Year ended 31 December 2012	649	53%	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 2020 and the year ended 31 December 2021, and the average percentage change in the same remuneration over the same period in respect of the employees of the Company on a full-time equivalent basis.

For the purposes of the table below, the average employee has been defined as being within the UK employees of the Group. This comparator group was chosen because it is the most relevant sub-set of employees and can be used consistently.

	Salary/Fees				Benefits[5]				Bonus			
Year	2021	2020	2020-2021 % increase	2019-2020 % increase	2021	2020	2020-2021 % increase	2019-2020 % increase	2021	2020	2020 2021 % increase	2019 2020 % increase
John Mills	**315,000**	300,000	5%	-	**34,650**	33,000	5%	-	**103,399**	162,271	(36%)	(21%)
Ian Tichias[1]	**220,500**	210,000	5%	-	**24,255**	23,100	5%	-	**57,903**	75,726	(24%)	-
Andrew Herbert[2]	**92,250**	80,000	15%	70%		-	-	-		-	-	-
Alison Littley[3]	**50,125**	48,250	3.9%	-		-	-	-		-	-	-
Chris Morgan	**50,125**	48,250	3.9%	10%		-	-	-		-	-	-
Comparator employee group[4]	**60,000**	53,975	11.2%	2 5%	**5,400**	4,857	11 2%	2.5%	**4,163**	3,933	5 8%	n/a

1 Ian Tichias joined in March 2020 His 2020 salary has been annualised to provide comparison
2 Andrew Herbert became Chairman on 1 April 2020 and received an annual fee of £90,000 from this date
3 Alison Littley joined the Board on 1 May 2020 Her 2020 fees have been annualised to provide comparison
4 Average employee – Full-time equivalent median employee of Xaar plc
5 Benefits calculated as 11% for Executive Directors (5% flex 6% pension) and 9% for employee group (3% flex, 6% pension)

CEO pay ratio

The following table sets out the ratio of the CEO s total remuneration in respect of FY21 (taken from the single figure table on page 92) 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 2020 are also included.

Year	Method	25th percentile	Median pay ratio	75th percentile
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

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 2020 and 2021 and the salary component of that remuneration

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)
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 2021

	2021 £'000	2020 £'000	Change %
Dividends paid to shareholders	-	-	0%
Group-wide expenditure on pay for all employees (note 9)	**24,660**	21,629	14%

Implementation of Directors' Remuneration Policy for the financial year commencing 1 January 2022

Information on how the Company intends to implement the Policy for the financial year commencing 1 January 2022 is set out in the statement from the Chairman of the Remuneration Committee and is summarised below

Basic salary and fees

The base salary increases for the Executive Directors are shown below

	2021	2022 (effective 1 January 2022)	% increase
John Mills	**£315,000**	£360,000	14%
Ian Tichias	**£220,500**	£240,000	9%

As explained in the statement from the Chairman of the Remuneration Committee, while market data provides a valuable insight into pay levels and structures, the Committee recognises that benchmarking should not be the sole determinant when considering Executive Director remuneration In line with Xaar's general approach to setting pay, the Committee therefore considered a range of factors alongside benchmarking when reviewing proposed changes to remuneration packages

The increases reflect

- The CEO s and CFO's current base salaries are below the lower decile compared to companies of a similar market capitalisation to Xaar The Committee reviewed a peer group of companies with 12 month average market capitalisations of between £50 million - £175 million for these purposes Xaar s market capitalisation is circa £146 million to 31 December 2021
- The Committee s belief that it is appropriate to recognise our continued strong performance and ambitions in the future, including our return to sustained profitable growth with base salary increases for the CEO and CFO that are higher than the general rises for employees
- The proposed increases also take into account the outstanding contribution of our CEO and CFO to the development and successful implementation of our new strategy

Fees for Non-Executive Directors will be increased with effect from 1 January 2022 as shown below

	2021	2022 (effective 1 January 2022)
Chairman	**£92,250**	£120,000
Non-Executive Director - base fee	**£44,125**	£47,500
Fee for holding the position of Chair of a Board Committee	**£3,000**	£7,500
Fee for holding the position of Senior Independent Director	**£1,000**	£3,000

As explained in the statement from the Chairman of the Remuneration Committee, the fee for the Chairman was increased by the Remuneration Committee to reflect the time commitment and contribution of the Chairman The changes to the fees for the Non-Executive Directors (including fees for additional duties) were approved by the Executive Directors and the Chairman with the base fee increase being in line with the increase for the wider workforce for 2022 and the fees for additional duties bringing them closer to the mid-point of the market competitive range in the case of the Committee Chair fee and the lower end of the market in the case of the Senior Independent Director fee

Annual bonus

The maximum opportunity for the CEO and CFO will be unchanged at 125% and 100% of base salary respectively for 2022 The performance metrics for the bonus for 2022 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

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 It provides 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 2022 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 (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 2021, given the turnaround position of the Company, the Board considers the EPS performance targets for the LTIP awards to be granted in 2021 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 2021, as set out on page 94

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 76 for details of the Committee members in the year and the number of Committee meetings attended.

The Remuneration Committee is currently chaired by Alison Littley The other members during the year ended 31 December 2021 were Andrew Herbert and Chris Morgan. All members of the Remuneration Committee are considered independent within the meaning of the UK Corporate Governance Code

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 2021 are shown below

Remuneration Committee's key activities in 2021	
Executive Directors and senior management remuneration	Assess 2020 bonus and LTIP outcomes Set the remuneration for the Executive Directors, senior management and the Company Secretary Finalise and approve 2021 bonus and 2021 LTIP targets Review update on market practice and corporate governance Review of Executive Director shareholdings against shareholding guidelines Review the impact of the launch of the new strategy and consider how the performance goals set at the start of 2021 should be assessed
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 Consider the background of COVID-19 and its impact 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 £22,470. 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 2020 at the 2021 AGM and in respect of the resolution to approve the Directors' Remuneration Policy approved at the 2020 AGM.

Number of votes	For (including discretion)	Against	Withheld
Resolution 9 – Directors' Remuneration report for the year ended 31 December 2020	53,687,531 (99.95%)	27,365 (0.05%)	1,551
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 29 March 2022 and signed on its behalf by:

Alison Littley
Remuneration Committee Chairperson

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 pages 60 and 61

This responsibility statement was approved by the Board of Directors and is signed on its behalf by:

John Mills
Chief Executive Officer

29 March 2022

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 2021 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;
- 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 2021 which comprise:

Group	Parent company
Consolidated balance sheet as at 31 December 2021	Balance sheet as at 31 December 2021
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 39 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

Independent auditor's report continued

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 understood the process undertaken by management to perform the going concern assessment, including the evaluation of the ongoing impact of COVID-19 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 2023. The Group has modelled a base case uses the same board approved forecasts as used in the Group's impairment assessments (adjusted to exclude the contingent consideration expected to be received on the 3D disposal), a second scenario which factors in the consideration payable to acquire Megnajet Ltd and Technomation Ltd but not the forecast trading cash inflows, and a reverse stress test based on liquidity in order to determine how much additional downside in trading could be absorbed before the cash and cash equivalents run out. No debt facilities are in place, nor required in any of these scenarios
- We evaluated the key assumptions underpinning the Group's forecasts. In particular, we compared the trading projections in management's two scenarios to the Group's performance including in respect of EPS ,the contracted order book, pipeline and margin performance since the onset of the COVID-19 pandemic.
- 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 considered mitigating actions such as reducing non-essential capital expenditure, assessing whether they were within management's control and whether they were supported by the actual mitigation achieved in response to COVID-19, to date. 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.
- We tested the clerical accuracy of the models used to prepare the Group's going concern assessment; 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 after tax for the year ended 31 December 2021 of £14.2m (2020: £14.7m loss). This included a profit from continuing operations after tax of £1.7m (2020: £4.4m loss), reflecting the progress made in the printhead and product print segments, acquisition of FFEI Limited and no longer incurring development costs for the disposed 3D business unit. The discontinued result was due to the gain on disposal of the 3D business. At the Balance Sheet date, the Group was debt free and had cash and cash equivalents of £25.1m (2020: £20.1m). The reverse stress testing performed by management demonstrates revenue would need to reduce by more than 30% compared to the base case for the cash and cash equivalents to be fully consumed over the going concern period. This is considered remote 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 the period to 30 June 2023

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	• We performed an audit of the complete financial information of 3 components and audit procedures on specific balances for a further 5 components • The components where we performed full or specific audit procedures accounted for 100% of Revenue, 89% of Adjusted Profit Before Tax and 100% of Total assets.
Key audit matters	• Revenue recognition • Impairment of non-current assets (EPS) • Contingent consideration (3D) • Inventory provisioning (EPS) • Acquisition accounting (FFEI)
Materiality	• Overall Group materiality of £300k 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 and other factors 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 13 reporting components of the Group, we selected 8 entities within the UK and US, which represent the principal business units within the Group.

Of the 8 components selected, we performed an audit of the complete financial information of 3 components ("full scope components") which were selected based on their size or risk characteristics. For the remaining 5 components ("specific scope components"), 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 100% (2020: 100%) of the Group's Revenue, 89% (2020: 100%) of the Group's Adjusted Profit Before Tax and 100% (2020: 100%) of the Group's Total assets. For the current year, the full scope components contributed 82% (2020: 93%) of the Group's Revenue, 73% (2020: 95% loss) of the Group's Adjusted Profit Before Tax and 78% (2020: 97%) of the Group's Total assets. The specific scope component contributed 18% (2020: 7%) of the Group's Revenue, 16% (2020: 5% loss) of the Group's Adjusted Profit Before Tax and 22% (2020: 3%) 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 five components were not revenue generating. 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

As a result of the disposal of the 3D business in the year, we performed specific scope procedures over the result from discontinued operations from 1 January 2021 through to the date of disposal. Given the disposal, there were no Balance Sheet audit requirements as at 31 December 2021. In the prior year, this was a full scope component.

Following the acquisition of FFEI Limited during the year, this was included as a specific scope component.

Involvement with component teams

All audit work performed for the purposes of the audit was undertaken by the Group audit team.

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

Revenue recognition (£59.3 million – continuing operations, 2020: £48.0 million – continuing operations)

Refer to the Audit Committee Report (page 78); Accounting policies (page 122); and Note 5 of the Consolidated Financial Statements (page 131)

Given the difficult trading environment and investor focus on the Group's revenue, 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. Management reward and incentive schemes are based on achieving profit targets which may also place pressure on management to manipulate revenue recognition.

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.

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. A significant deficiency in the control environment was identified with respect to revenue recognition at EPS in the prior year, which represents an increased risk if not appropriately remediated.

Our response to the risk

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.

In respect of the main UK trading entity, which comprised 68% 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.

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.

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:

- 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.

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.

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.

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.

Key observations communicated to the Audit Committee

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.

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.

Risk	Our response to the risk	Key observations communicated to the Audit Committee
Revenue recognition (£59.3 million – continuing operations - of risk, 2020: £48.0 million – continuing operations) continued	We performed full and specific scope audit procedures over this risk area in 3 components which covered 100% of the revenue from continuing operations **Revenue recognised over time** For a sample of items, we reviewed the respective sales contract to determine whether the contract met the criteria for being revenue recognised over time. Where any of these criteria are fulfilled, revenue should be recognised over time in accordance with IFRS 15. For these items, we evaluated judgements 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. To further assess the stage of completion at year end we also physically inspected a sample of work in progress projects and reviewed the impact of post year-end changes on labour hour and cost estimates 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 We performed full scope audit procedures over this risk area in 2 locations which covered 100% of the risk amount	

Risk	Our response to the risk	Key observations communicated to the Audit Committee
Impairment of non-current assets – EPS (£7.6 million, 2020: £7.8 million) Refer to the Audit Committee Report (page 78); Accounting policies (page 125); and Note 15 of the Consolidated Financial Statements (page 141) 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. In particular the Group has goodwill of £5.2 million in relation to EPS, which we have designated as a significant risk given the limited headroom in management's impairment testing model in prior year	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, and 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 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 We tested the key inputs to management's impairment models by: • 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. 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 EPS forecasts and determined whether adequate headroom remained We assessed whether there were any other indicators of impairment, which would give rise to the impairment of an individual asset We audited the related disclosures with reference to the requirements of IAS 36 and confirmed their consistency with the audited impairment models.	We agree with management's conclusion that no impairment of goodwill is required in the current year We have concluded that the methodology applied is reasonable, that the forecast period is appropriate and that management's models are mathematically accurate 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

Risk	Our response to the risk	Key observations communicated to the Audit Committee
Contingent consideration (3D) (£11.9 million, 2020: £nil) Refer to the Audit Committee Report (page 78); Accounting policies (page 127); and Note 11 of the Consolidated Financial Statements (page 135) 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 $15.5m which is contingent on the achievement of certain milestones and a 3% earn-out consideration in respect of the future revenues of Xaar 3D. The Group recorded a financial asset of £10.9m on the date of the transaction (remeasured to £11.9m at 31 December 2021) in respect of the contingent earn-out consideration. 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. For this valuation, management's external specialist used a Monte Carlo Simulation model given the complex conditions associated with the contingent consideration	We have used EY internal valuation specialists to review the methodology and reasonableness of key assumptions used within management's Monte Carlo Simulation. 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. We have assessed the consistency of the forecasts with the strategic plans for Xaar 3D and impact of COVID-19 through validating the forecast with Stratasys management. 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. We have audited the related disclosures with reference to the requirements of IFRS and confirmed they are consistent with the specialist's valuation report.	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.

Risk	Our response to the risk	Key observations communicated to the Audit Committee
Inventory provisioning (EPS) (£2.0 million including provision of £0.9 million, 2020: £2.6 million including provision of £1.4 million) Refer to the Audit Committee Report (page 78), Accounting policies (page 126); and Note 20 of the Consolidated Financial Statements (page 145) In the prior year Annual Report and Accounts, management reported a significant deficiency in the control environment in relation to inventory management at the EPS business During the period management took steps to remediate the significant deficiencies identified in the prior year. The steps taken are described on page 79 and included a full review of existing inventory provisions and provisioning methodology. As a result of these steps, a significant write-off of EPS inventory was recorded. As a result of our subsequent challenge this write off of £0.6m has been recorded as a prior year adjustment. Given the significance of these two matters, we have upgraded this to a significant risk in the current year (specific to the EPS segment), reflecting the overall risk that the provision recorded by management does not accurately reflect the level of exposure and that inventory is incorrectly valued.	We have obtained an understanding of the Group's policies on inventory provisions and how they are applied, including the relevant controls, and performed a walkthrough to validate our understanding. We have assessed the remediation of controls previously reported as deficient at EPS and found them to be appropriately remediated. We performed procedures on the standard costs calculations to assess whether only normal production variances have been capitalised in the year-end inventory balance and material abnormal inefficiencies have been appropriately expensed. We have checked that inventory was appropriately revalued to an estimate of actual cost. We have performed tests of clerical accuracy on management's inventory provision calculations. We have performed procedures to validate the appropriateness of any management judgements applied in calculating the inventory provision. For a sample of inventory lines, we have reviewed post year-end selling prices in comparison to the values assumed in the book values recorded. Where the book value exceeds realisable value, we have confirmed that management has recorded an appropriate provision. We have discussed the latest sales and marketing strategies including implications for the level of provision recorded. This included comparing forecast product usage to customer orders, considering historical usage, historical accuracy of provisioning and understanding management's future plans to utilise the inventory. We attended management's year-end wall to wall inventory count at EPS and also for each of the other key locations (Printhead and FFEI). This comprised 100% of all stocks of the Group We have audited the related disclosures with reference to the requirements of IFRS.	Following the posting of the prior year restatement (see note 37), the provisions reflect the adjustment required to ensure that inventory balances reflect the lower of cost or NRV.

Risk	Our response to the risk	Key observations communicated to the Audit Committee
Acquisition accounting (FFEI) Refer to the Audit Committee Report (page 77); Accounting policies (page 122), and Note 36 of the Consolidated Financial Statements (page 161) FFEI Limited was acquired in July 2021 for £9.1m (£3.9 million cash consideration with the remaining £5.2m to be paid out as a deferred consideration over three years) 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 • Classification and measurement of deferred consideration and conditions attached • Fair value estimation for acquired intangibles • Opening balance sheet testing • Transition from FRS 102 to IFRS • Resulting updates to tax balances	We have reviewed the sale and purchase agreement and due diligence report to determine the completeness of the identified acquired assets and liabilities. We have reviewed the journals posted to transition the opening balances from FRS 102 to IFRS We have also performed a walkthrough of the significant processes to determine any further areas that require consideration in terms of IFRS transition adjustments that were not previously considered by management 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 and engaged our EY internal valuation specialists to review the methodology and key assumptions. 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, and We have audited the disclosures within the annual report and accounts in relation to the business combination and resulting changes	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.

In the prior year, our auditor's report included a key audit matter in relation to recoverability of receivables, consolidation of Xaar 3D and the EPS business In the current year:

- Recoverability of receivables no longer represents a key audit matter following improvements in the ageing profile of receivables, resolution of legacy matters and reduced exposure of the customer base to the economic impact of COVID-19.
- Consolidation of Xaar 3D no longer represents a key audit matter given the business was disposed of during the year; and
- The EPS business no longer represents a key audit matter given the steps management have taken to remediate the previously reported significant deficiencies and the ongoing risk factors are incorporated within other Key Audit Matters, namely revenue recognition, impairment of non-current assets and inventory provisioning

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 £300k (2020: £240k), which is 0.5% (2020: 0.5%) of revenue We believe that revenue provides us with the most appropriate basis given it is the main KPI for the Group, whilst the Group reports an adjusted loss before tax

We determined materiality for the Parent Company to be £300k (2020: £240k), which we capped at the Group materiality

During the course of our audit, we reassessed initial materiality and updated for the 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% (2020: 50%) of our planning materiality, namely £150k (2020: £120k) 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 £30k to £112k (2020: £24k to £91k)

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 £15k (2020: £12k), 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 thereon 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; or
- 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 67;
- 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 68;
- 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 68;
- Directors' statement on fair, balanced and understandable set out on page 76;
- Board's confirmation that it has carried out a robust assessment of the emerging and principal risks set out on page 45;
- The section of the annual report that describes the review of effectiveness of risk management and internal control systems set out on page 45; and
- The section describing the work of the audit committee set out on page 77.

Responsibilities of directors

As explained more fully in the directors' responsibilities statement set out on page 102, 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 parent 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 parent 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 16 June 2021 to audit the financial statements for the year ending 31 December 2021 and subsequent financial periods.
- The period of total uninterrupted engagement including previous renewals and reappointments is 3 years, covering the years ending 2019 to 2021.
- 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.

Adrian Bennett
Senior statutory auditor
for and on behalf of Ernst & Young LLP, Statutory Auditor
Cambridge

Ernst & Young LLP

29 March 2022

Consolidated income statement
for the year ended 31 December 2021

	Notes	2021 £'000	2020 £'000
Revenue	5	**59,254**	47,984
Cost of sales		**(39,064)**	(34,974)
Gross profit		**20,190**	13,010
Research and development expenses		**(5,706)**	(4,535)
Research and development expenditure credit		**270**	142
Sales and marketing expenses		**(6,342)**	(5,970)
General and administrative expenses		**(10,070)**	(8,022)
Impairment reversals on financial assets		**388**	946
Restructuring and transaction expenses		**(1,404)**	(754)
Other operating income	7	**-**	819
Fair value gain on financial assets at FVPL	22	**987**	-
Gain on derivative financial liabilities	22	**2,919**	77
Operating profit/(loss)		**1,232**	(4,287)
Investment income	10	**4**	47
Finance costs		**(242)**	(82)
Profit/(loss) before tax		**994**	(4,322)
Income tax credit/(expense)	12	**(299)**	(52)
Profit/(loss) for the year from continuing operations		**695**	(4,374)
Profit/(loss) from discontinued operations after tax	11	**13,533**	(10 295)
Profit/(loss) for the year		**14,228**	(14,669)
Attributable to:			
Owners of the Company		**16,219**	(11,685)
Non-controlling interest	35	**(1,991)**	(2,984)
Profit/(loss) for the year		**14,228**	(14,669)
Earnings/(loss) per share – Total			
Basic	14	**20.9p**	(15 2p)
Diluted	14	**20.6p**	(15.2p)
Earnings/(loss) per share – Continuing operations			
Basic	14	**0.9p**	(5 7p)
Diluted	14	**0.9p**	(5 7p)

There were no dividends paid during the current and preceding year

Consolidated statement of comprehensive income
for the year ended 31 December 2021

	Notes	2021 £'000	Restated 2020 £ 000
Profit/(loss) for the year		**14,228**	(14,669)
Items that may be reclassified subsequently to profit or loss:			
Exchange differences on retranslation of net investment		**143**	262
Tax		**-**	(5)
Other comprehensive income for the year		**143**	257
Total comprehensive income/(loss) for the year		**14,371**	(14,412)
Total comprehensive loss attributable to:			
Owners of the Company		**16,366**	(11,444)
Non-controlling interests	35	**(1,995)**	(2 968)
		14,371	(14,412)

Consolidated statement of financial position
as at 31 December 2021

	Notes	2021 £'000	Restated 2020 £ 000
Non-current assets			
Goodwill	15	**5,894**	5,152
Intangible assets	16	**4,043**	207
Property, plant and equipment	17	**16,226**	17,147
Right-of-use asset	18	**9,368**	2,078
Financial asset at fair value through profit or loss	22	**11,850**	-
Deferred tax asset	23	**-**	139
		47,381	24,723
Current assets			
Inventories	20	**18,839**	9,750
Trade and other receivables	21	**12,138**	9,640
Current tax asset	21	**531**	425
Treasury deposits	21	**-**	161
Cash and cash equivalents	21	**25,051**	17,956
Derivative financial instruments	22	**-**	160
Assets held for sale	17	**-**	43
		56,559	38,135
Disposal group assets held for sale	11	**-**	9,968
		56,559	48 103
Total assets		**103,940**	72,826
Current liabilities			
Trade and other payables	24	**(21,489)**	(9 940)
Provisions	25	**(264)**	(357)
Derivative financial instruments	22	**-**	(2 919)
Lease liabilities	18	**(1,231)**	(1 064)
		(22,984)	(14,280)
Liabilities associated with the disposal group	11	**-**	(1 589)
		(22,984)	(15,869)
Net current assets		**33,575**	32 234
Non-current liabilities			
Deferred tax liabilities	23	**(1)**	-
Lease liabilities	18	**(8,499)**	(1,515)
Provisions	25	**(300)**	-
Other financial liabilities	26	**(3,354)**	-
Total non-current liabilities		**(12,154)**	(1,515)
Total liabilities		**(35,138)**	(17,384)
Net assets		**68,802**	55 442
Equity			
Share capital	26	**7,844**	7,833
Share premium	27	**29,427**	29,328
Own shares	28	**(1,923)**	(1,957)
Translation reserve	29	**1,011**	864
Other reserves	30	**21,820**	21,167
Retained earnings	30	**10,623**	(5,564)
Equity attributable to owners of the Company		**68,802**	51,671
Non-controlling interest	35	**-**	3,771
Total equity		**68,802**	55 442

The financial statements of Xaar plc, registered number 3320972, were approved by the Board of Directors and authorised for issue on 29 March 2022. 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 2021

	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 2020 (as reported)		7,833	29,328	(2,676)	594	20,921	7,598	63,598	6,739	70,337
Correction of error	37	-	-	-	24	-	(766)	(742)	-	(742)
Balance at 1 January 2020 (as restated)		7,833	29,328	(2,676)	618	20,921	6,832	62,856	6,739	69,595
Loss for the year		-	-	-	-	-	(11,685)	(11,685)	(2,984)	(14,669)
Tax on items taken directly to equity		-	-	-	-	-	(5)	(5)	-	(5)
Exchange differences on retranslation of net investment		-	-	-	224	-	-	224	16	240
Correction of error	37	-	-	-	22	-	4	26	-	26
Total comprehensive loss for the year as reported		-	-	-	246	-	(11,686)	(11,440)	(2,968)	(14,408)
Own shares sold in the period	28	-	-	719	-	-	-	719	-	719
Share option exercises		-	-	-	-	-	(710)	(710)	-	(710)
Credit to equity for equity-settled share-based payments	9	-	-	-	-	246	-	246	-	246
Balance at 31 December 2020 (as restated)		7,833	29,328	(1,957)	864	21,167	(5,564)	51,671	3,771	55,442
Profit 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 income for the year		-	-	-	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	9	-	-	-	-	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**

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 2021

	Notes	2021 £'000	2020 £'000
Net cash used in operating activities	31	**(2,054)**	(2,807)
Investing activities			
Investment income	10	**13**	64
Treasury deposits withdrawn	21	**161**	361
Purchase of derivative financial instrument		**-**	(130)
Purchases of property, plant and equipment		**(1,876)**	(1,098)
Proceeds on disposal of property, plant and equipment		**209**	167
Expenditure on software		**(38)**	-
Proceeds from disposal of investment in subsidiary	11	**9,272**	-
Cash attributable to subsidiary sold		**(96)**	-
Acquisition of subsidiary, net cash acquired	36	**168**	-
Net cash provided by/(used in) investing activities		**7,813**	(636)
Financing activities			
Proceeds from sale of ordinary share capital		**150**	-
Payment of lease liabilities and related interest		**(824)**	(1,224)
Net cash used in financing activities		**(674)**	(1,224)
Net increase / (decrease) in cash and cash equivalents		**5,085**	(4,667)
Effect of foreign exchange rate changes on cash balances		**(110)**	(57)
Cash and cash equivalents at beginning of year		**20,076**	24,800
Cash and cash equivalents at end of year		**25,051**	20,076
Cash and cash equivalents attributable to subsidiary sold	11	**-**	2,120
Cash and cash equivalents	21	**25,051**	17,956

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 short-term highly liquid investments with a maturity 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 2021

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 57.

The Strategic Report can be found on pages 4 to 57

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 3, 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. There were no capitalised development costs for the current and prior year as there are no projects that have met the capitalisation criteria as the technical feasibility criteria is only typically achieved at the end of a project and given the capitalisation ceased on Xaar 3D in 2019 and its subsequent sale this year.

Discontinued operations (accounting judgement) – note 11

Following the Board decision in December 2020 to amend the terms of the call option in relation to Xaar 3D the Group considered the application of IFRS 5 'Non-current Assets Held for Sale and Discontinued Operations'. The 3D business meets the criteria of a discontinued operation per IFRS 5 given it has been previously been reported as a major line of business and the disposal was formally completed on 1 November 2021. The accounting judgement relating to the consolidation of Xaar 3D in the 2020 financial statements is no longer applicable in the 2021 financial statements following the disposal of Xaar 3D on 1 November 2021 in accordance with UK-adopted International Accounting Standards. The business was reported as held for sale at 31 December 2020.

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.

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:

Climate-related risks (estimation uncertainty)

Climate change is a global challenge and an emerging risk to businesses, people and the environment across the world. We have a role to play in limiting global warming by improving our energy management, reducing our carbon emissions and by helping our customers do the same. Growing awareness of climate change and customer sustainability targets will provide impetus for business growth as we provide products, services and solutions that increase efficiency and reduce customers' energy use and carbon emissions. As a result, 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.

Contingent consideration (estimation uncertainty) – note 11, 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. The Group considers this model to be appropriate, given the complex conditions associated with the milestone consideration and 3% earn-out consideration. The Monte Carlo Simulation model uses a number of inputs that require estimation and the key ones are the risk-adjusted discount rate and revenue volatility. Whilst the Group uses third party experts to provide these inputs and is dependent on receipt of data or financial information from the purchaser, the estimates remain uncertain.

Inventory provision (estimation uncertainty) – note 20

The Group's inventory provision at 31 December 2021 of £9,571,000 (2020: £24,621,000) includes £6,289,000 relating to discontinued operations (2020: £21,256,000) and £3,282,000 from continuing operations (2020: £3,365,000). The reduction in Group's inventory provision is mainly due to clear down of previously provided inventory amounting to £16,239,000. All assets, including inventory, that relate to the discontinued operations have been valued at the lower of the carrying amount and fair value less cost to sell. Provisions in relation to continuing operations have been made based on management's assessment of customer sell through, market conditions, current and potential competitors, and the ageing profile and quantity of the inventory on hand. Furthermore, management has assessed the likely time period to sell the inventory and the ability to decrease prices to drive sales.

2. Key sources of estimation uncertainty and critical accounting judgements continued

Credit provision for the allowance of doubtful debts (estimation uncertainty) – note 21

The Group's provision for doubtful debts of £144,000 (2020: £622,000) relates to management's assessment of the ageing profile of receivables and the risk of collecting unpaid overdue balances. In making the estimate, management has taken steps to assess the ongoing viability of the customers, the probability and timing of repayment, external factors which may affect the customers' ability to pay and historical data relating to settlement of aged debts.

Impairment of capitalised development costs (estimation uncertainty) – note 16

The Group determines whether capitalised development costs, and all other non-current assets, are impaired at least on an annual basis. This requires an estimation of the 'value-in-use' of the cash generating units to which the capitalised development costs are allocated. Estimating a value-in-use amount requires management to make an estimate of the expected future cash flows from the cash-generating unit and also to choose a suitable discount rate in order to calculate the present value of those cash flows. The carrying amount of capitalised development costs at 31 December 2021 was £1,000 (2020: £76,000).

Impairment of goodwill (estimation uncertainty) – note 15

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 in 2021 (2020: £nil). Management has performed sensitivity analysis on its reasonably worst case scenario for EPS and FFEI and it has been completed on each key assumption in isolation. With regard to EPS, reasonably possible change sensitivities are included in note 15.

Revenue recognition (estimation uncertainty) – 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 2021 is set out in note 5.

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 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.

Non-controlling interests in subsidiaries are identified separately from the Group's equity therein. Those interests of non-controlling shareholders that are present ownership interests entitling their holders to a proportionate share of net assets upon liquidation may initially be measured at fair value or at the non-controlling interests' proportionate share of the fair value of the acquiree's identifiable net assets. The choice of measurement is made on an acquisition-by-acquisition basis.

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.

3. Significant accounting policies continued

Basis of consolidation continued

Changes in the Group's interests in subsidiaries that do not result in a loss of control are accounted for as equity transactions. The carrying amount of the Group's interests and the non-controlling interests are adjusted to reflect the changes in their relative interests in the subsidiaries. Any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognised directly in equity and attributed to the owners of the Company.

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 12 to 23. The Group reported a profit after tax for the year ended 31 December 2021 of £14.2 million, which includes a profit after tax of £13.5 million related to discontinued operations, being the costs relating to Thin Film and Xaar 3D (£4.4 million loss), as well as the gain on disposal (£17.9 million). Notes 21 and 22 include a description of the Group'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 2021 of £25.1 million. The Group was debt free as at 31 December 2021.

To date the impact of COVID-19 on the Group's trading has been minimal, however we did experience some COVID-19 related supply constraints in 2021, for which actions have been taken to mitigate their impact and therefore the Board continues to be optimistic on the future trading environment.

The going concern review has been completed by considering the performance of the different businesses across the Group and each of their funding requirements before performing a number of stress tests. The base going concern case is consistent with the current Board approved forecasts and, to reflect judgement over timing of contingent consideration receipts, has been adjusted to exclude these in the going concern period. A second case which includes the consideration payable on the acquisition of Megnajet Ltd (as set out in note 38), however excludes the revenue compared to forecast across the entire Group required to prevent the business continuing as a going concern is more than 30% which is considered remote 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.

Notwithstanding this, the Group has further options to mitigate a cash shortfall which have not been factored into the above forecasts, such as staffing reductions, further delaying/stopping capital and research and development expenditure and aligning performance related pay to actual results.

The Directors have a reasonable expectation that the Group has adequate resources to continue in operational existence for the period to 30 June 2023, taking account of reasonably possible changes in trading performance. 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, other operating income, 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. No amounts have been capitalised in the current year, as the criteria have not been achieved.

3. Significant accounting policies continued

Business combinations

The acquisition of subsidiaries is accounted for using the acquisition method.

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

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.

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 the manufacture and sale of printheads, engineered printing solutions and digital imaging devices ("product sales"). The Group also provides consulting and research and developments 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.

3. Significant accounting policies continued

Revenue recognition continued

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 doesn't 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 as the Group perform. Where this isn't 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 our related intellectual property installed in equipment developed by original equipment manufacturers ('OEMs').

Practical expedients

Use has been made of the practical expedient not to recognise a significant financing component where the period between transfer of the good or service and payment is one year or less.

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.

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.

Customer acquisition costs

Where sales commission is linked directly to an individual sale and is therefore an incremental cost of acquiring that contract, the commission is recognised as an asset on the balance sheet. Deferred customer acquisition costs are amortised over the period that the related goods or services transfer to the customer. Given the majority of revenue is recognised at a point in time, this doesn't give rise to material assets on the balance sheet.

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.

In order to hedge its exposure to certain foreign exchange risks, the Group may enter into forward contracts (see page 147 for details of the Group's accounting policies in respect of such derivative financial instruments).

Further information can be found on page 147

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 average exchange rates for the period.

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, or in the case of the Payment Protection Program (PPP) for COVID-19 support provided by the US Government, that it meets the criteria for the loan to be waived and recognised as grant income.

Operating profit/(loss)

Operating profit/(loss) is stated after charging restructuring costs but before investment income and finance 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 and is accounted for using the statement of financial position liability method. 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.

3. Significant accounting policies continued

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.

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	Three to 20 years
Furniture, fittings and equipment	Three 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.

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.

In accordance with IAS 38, an internally generated intangible asset arising from the Group's development is recognised only if all of the following conditions are met:

- an asset is created that can be identified (such as software and new processes);
- it is probable that the asset created will generate future economic benefits;
- the development cost of the asset can be measured reliably;
- the project is technically and commercially feasible;
- the Group intends to and has sufficient resources to complete the project; and
- the Group has the ability to use or sell the services and product developed.

Internally generated intangible assets are amortised on a straight-line basis over three 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 combination 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.

Licence	Shorter of the licence term and 20 years
Software	Three to 15 years
Patents	Six years
Customer relationships	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 whether 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.

3. Significant accounting policies continued

Impairment of tangible and intangible assets excluding goodwill continued

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.

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 presented as a separate line in the consolidated statement of financial position.

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 Group did not make any such adjustments during the periods presented.

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.

For short-term leases (lease term of 12 months or less) and leases of low-value assets (such as personal computers and office furniture), the Group has opted to recognise a lease expense on a straight-line basis as permitted by IFRS 16. This expense is presented within the consolidated income statement.

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.

3. Significant accounting policies continued

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

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

Effective interest method

The effective interest method is a method of calculating the amortised cost of a debt instrument and of allocating interest income over the relevant period The effective interest rate is the rate that exactly discounts estimated future cash receipts through the life of the debt instrument, or, where appropriate, a shorter period, to the net carrying amount on initial recognition

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 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

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).

However, financial liabilities that arise when a transfer of a financial asset does not qualify for derecognition or when the continuing involvement approach applies, and financial guarantee contracts issued by the Group, are measured in accordance with the specific accounting policies set out below

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

3. Significant accounting policies continued

Financial liabilities continued

Financial liabilities at FVTPL are measured at fair value, with any gains or losses arising on changes in fair value recognised in profit or loss to the extent that they are not part of a designated hedging relationship. The net gain or loss recognised in profit or loss incorporates any interest paid on the financial liability and is included within 'other gains and losses' in profit or loss

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

Derivative financial instruments

The Group's activities expose it primarily to the financial risks of changes in foreign currency exchange rates and interest rates and liquidity risk

The Group uses derivative financial instruments (primarily foreign currency forward contracts) to hedge its risks associated with foreign currency fluctuations relating to certain firm commitments and forecast transactions

Derivatives are recognised initially at fair value at the date a derivative contract is entered into and are subsequently remeasured to their fair value at each reporting date. The resulting gain or loss is recognised in profit or loss immediately unless the derivative is designated and effective as a hedging instrument, in which event the timing of the recognition in profit or loss depends on the nature of the hedge relationship

The written call option that Xaar 3D Holdings granted Stratasys to acquire its remaining 55% shareholding in Xaar 3D in 2019 was a financial liability measured subsequently at fair value at Level 3 fair value measurement The valuation technique used was the Black-Scholes model Further detail is included in note 22 – Financial instruments This was derecognised following the disposal of Xaar 3D

A derivative with a positive fair value is recognised as a financial asset whereas a derivative with a negative fair value is recognised as a financial liability Derivatives are not offset in the financial statements unless the Group has both legal right and intention to offset

A derivative is presented as a non-current asset or a non-current liability if the remaining maturity of the instrument is more than 12 months and it is not expected to be realised or settled within 12 months Other derivatives are presented as current assets or current liabilities

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

Equity instruments

Equity instruments issued by the Company are recorded as the proceeds received, net of direct issue costs

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

3. Significant accounting policies continued

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 since 2007. 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.

An impairment loss is recognised for any initial or subsequent write-down of the asset (or disposal group) to fair value less costs to sell. A gain is recognised for any subsequent increases in fair value less costs to sell of an asset (or disposal group), but not in excess of any cumulative impairment loss previously recognised. A gain or loss not previously recognised by the date of the sale of the non-current asset (or disposal group) is recognised at the date of derecognition.

Non-current assets (including those that are part of a disposal group) are not depreciated or amortised while they are classified as held for sale. Interest and other expenses attributable to the liabilities of a disposal group classified as held for sale continue to be recognised.

Non-current assets classified as held for sale and the assets of a disposal group classified as held for sale are presented separately from the other assets in the balance sheet. The liabilities of a disposal group classified as held for sale are presented separately from other liabilities in the balance sheet.

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 will be split between continuing and discontinued operations on the face of the cash flow statement. Comparatives are restated to distinguish between continuing and discontinued operations.

New and amended standards and interpretations

The Group applies for the first-time certain standards and amendments, which are effective for annual periods beginning on or after 1 January 2021 (unless otherwise stated). The Group has not early adopted any other standard, interpretation or amendment that has been issued but is not yet effective.

Interest Rate Benchmark Reform – Phase 2: Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16

The amendments provide certain practical expedients including a practical expedient to require contractual changes, or changes to cash flows that are directly required by the reform, to be treated as changes to a floating interest rate, equivalent to a movement in a market rate of interest and certain reliefs relating to hedge accounting.

Xaar does not have floating rate borrowings or leases that reference IBOR and does not apply hedge accounting. Therefore, these amendments have no impact on the consolidated financial statements of the Group.

COVID-19-Related Rent Concessions beyond 30 June 2021 Amendments to IFRS 16

On 28 May 2020 the IASB issued COVID-19-Related Rent Concessions – amendment to IFRS 16 Leases (which was amended on 31 March 2021) to provide a practical expedient in accounting for any change in lease payments resulting from the COVID-19 related rent concessions received before 30 June 2021. Since the Group has not received COVID-19 related rent concessions, there is no impact from this.

4. Reconciliation of adjusted financial measures

	Note	2021 £'000	2020 £'000
Profit / (loss) before tax from continuing operations		**994**	(4,322)
Share-based payment charges	9	**758**	348
Exchange differences on intra-group transactions		**95**	347
Gain on derivative financial liabilities	22	**(2,919)**	(77)
Restructuring and transaction expenses		**1,404**	754
Research and development expenditure credit		**(270)**	(142)
Other operating income	7	**-**	(819)
Fair value gain on financial assets at fair value through profit or loss	11, 22	**(987)**	-
Amortisation of acquired intangible assets	16	**354**	-
Adjusted loss before tax from continuing operations		**(571)**	(3,911)
Interest income	10	**(4)**	(47)
Finance costs		**242**	82
Depreciation of property, plant and equipment	17	**3,318**	3,400
Amortisation of intangible assets (other than acquired intangibles)	16	**121**	82
Loss on asset disposal		**77**	99
Impairment of assets		**-**	391
Other immaterial movements in property, plant and equipment		**-**	(34)
Adjusted EBITDA from continuing operations		**3,183**	62

EBITDA is calculated as statutory operating profit before depreciation, 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 are not reflective of the underlying performance of the Group. Recurring items are adjusted each year irrespective of materiality to ensure consistent treatment. Non-recurring items are identified and adjusted for by virtue of their size or nature. See note 3 for further detail.

Share-based payment charges include the IFRS 2 charge for the period of £653,000 (2020: £242,000) and the debit relating to National Insurance on the outstanding potential share option gains of £105,000 (2020: charge £106,000). These costs were included in the general and administrative expenses in the consolidated income statement and exclude the Xaar 3D charge of £440 (2020: £5,000).

Exchange differences relating to the operations in the United States represent exchange gains or losses recorded in the consolidated income statement as a result of intragroup transactions in the United States. 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. The option was exercised in 2021. These amounts are included on the consolidated income statement under Gain on derivative financial liabilities.

Restructuring and transaction expenses of £1,404,000 (2020: £754,000) relate to costs incurred and provisions made in relation to acquisition transaction costs incurred of £961,000 and re-organisation costs. In the prior year, it is related predominantly to re-organisation costs and some transaction expenses. The calculated impact of the restructuring and transaction expenses at the corporation tax rate of 19% would be £52,000 based on the expenses included that would be treated as deductible (2020: £143,000). The cash paid related to restructuring and transaction expenses is £992,000 (2020: £518,000).

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 £219,000 were received during the year in relation to the FFEI RDEC and R&D claim which related to their financial year 1 April 2020 to 31 March 2021. The £1,460,000 received in 2020 was in relation to the 2018 and 2019 submitted RDEC claims.

Other operating income of £nil (2020: £819,000) relates to a forgivable $1 million loan between Engineered Print Solutions (EPS) and TD bank and is backed by the US Federal Government (Small Business Administration); further details are provided under note 7. The loan was taken out as part of the government backed scheme. The Company met the requirements of the waiver, and therefore the loan was waived, and has therefore been treated as a government grant under IAS 20. A cash receipt of the same amount was received.

The fair value 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 gain 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. These include software, patents and customer relationships and are being amortised over six years. These costs were included in general and administrative expenses in the consolidated income statement.

4. Reconciliation of adjusted financial measures *continued*

	Note	2021 Pence per share	2020 Pence per share
Basic earnings/(loss) per share from continuing operations	14	**0.9p**	(5.7p)
Share-based payment charges		**1.0p**	0.5p
Exchange differences on intra-group transactions		**0.1p**	0.5p
Gain on derivative financial liabilities		**(3.8p)**	(0.1p)
Restructuring and transaction expenses		**1.8p**	1.0p
Other operating income		**-**	(1.1p)
Fair value gain on financial assets at FVPL		**(1.3p)**	-
Amortisation of acquired intangible assets		**0.5p**	-
Tax effect of adjusting items		**(0.2p)**	(0.3p)
Adjusted basic and diluted loss per share from continuing operations	14	**(1.0)p**	(5.2p)

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 doesn't 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 cost(s)) is used *as this depicts the performance conditions when* recognising revenue over time.

2021 Continuing operations	Product sales £'000	Commissions & services £'000	Licensee royalties £'000	Total £'000
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**

2020 Continuing operations	Product sales £'000	Commissions & services £'000	Licensee royalties £'000	Total £'000
Printhead	34,268	645	370	35,283
Product Print Systems	12,347	354	-	12,701
Digital Imaging	-	-	-	-
	46,615	999	370	47,984

Product Print Systems and Digital Imaging have contracts with customers where the performance obligations are partially unsatisfied at 31 December 2021. The transaction price allocated to partially satisfied and unsatisfied performance obligations at 31 December 2021 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.

Continuing operations	2021 £'000	2020 £'000
Transaction price allocated *to partially satisfied performance obligations*	**4,569**	950
Transaction price allocated to partially unsatisfied performance obligations	**6,060**	956
Total transaction price for partially completed contracts	**10,629**	1,906

Management expects that 100% of the transaction price allocated to the unsatisfied *contracts as at 31 December 2021 totalling £6,060,000* will be recognised from 2022 to future periods (2020: £956,000 recognised in 2020).

Notes to the consolidated financial statements continued
for the year ended 31 December 2021

6. Business and geographical segments

For management reporting purposes, the Group's operations are analysed according to the three operating segments of 'Printhead', 'Product Print Systems', and 'Digital Imaging'. These three 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.

The Xaar 3D business which was classified as assets held for sale in the prior year has now divested on 1 November 2021. The result for the ten-month period is classified as discontinued operations and is presented separately in note 11.

Segment information for continuing operations is presented below.

Year ended 31 December 2021	Printhead £'000	Product Print Systems £'000	Digital Imaging £'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 FVPL	**987**	**-**	**-**	**-**	**987**
Amortisation of acquired intangible assets	**-**	**-**	**(354)**	**-**	**(354)**
Profit / (loss) before tax from continuing operations	**2,224**	**(882)**	**410**	**(758)**	**994**

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, excluding the charge attributable to Xaar 3D as discontinued operations £440 (2020: £5,000).

Year ended 31 December 2020	Printhead £'000	Product Print Systems £'000	Unallocated £'000	Consolidated £'000
Revenue				
Total segment revenue	35,283	12,701		47,984
Result				
Adjusted loss from continuing operations before tax	(3,431)	(480)	-	(3,911)
Share-based payment charges	-	-	(348)	(348)
Exchange differences relating to intra-group transactions	(347)	-	-	(347)
Restructuring and transaction expenses	(754)	-	-	(754)
Gain on derivative financial liabilities	77	-	-	77
Research and development expenditure credit	142	-	-	142
Other operating income	-	819	-	819
Profit / (loss) before tax from continuing operations	(4,313)	339	(348)	(4,322)

Segment assets – Continuing operations

	2021 £'000	Restated 2020 £'000
Printhead	**73,247**	48,781
Product Print Systems	**16,793**	13,806
Digital Imaging	**13,900**	-
Total assets	**103,940**	62,587

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.

6. Business and geographical segments continued

Other segment information – Continuing operations

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	17	**2,153**	**160**	**127**	**-**	**2,440**

Year ended 31 December 2020	Notes	Printhead £'000	Product Print Systems £'000	Digital Imaging £'000	Unallocated £'000	Consolidated £'000
Depreciation and amortisation	8	4,302	367	-	-	4,669
Impairment of PPE		158	115	-	-	273
Share-based payment charges	9	-	-	-	348	348
Capital expenditure	17	957	574	-	-	1,531

Revenues from major products and services – Continuing operations

	2021 £'000	2020 £'000
Printhead	**40,104**	35,283
Product Print Systems	**13,900**	12,701
Digital Imaging	**5,250**	-
Consolidated revenue (excluding investment income)	**59,254**	47,984

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	
	2021 £'000	2020 £'000
EMEA	**23,730**	18,113
Asia		
- China	**10,562**	7,936
- Japan	**575**	1,235
- Other	**828**	420
The Americas (including USA)	**23,559**	20,280
	59,254	47,984

Revenues are attributed to geographical areas on the basis of the customer's operating location

	Non-current assets	
	2021 £'000	2020 £'000
EMEA	**27,784**	16,755
Asia	**90**	38
The Americas (including USA)	**7,657**	7,791
	35,531	24,584

Non-current assets, being Goodwill, Other intangible assets, Property, plant and equipment and Right-of-use assets 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 No other single customer contributed 10% or more to the Group's revenue in either 2021 or 2020

Revenue from the top five customers represents 28% of revenues (2020 26%)

7. 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

Xaar plc and its UK based subsidiaries have decided not to take part in any of the government support schemes arising from the COVID-19 crisis.

- No employees have been placed on furlough and no claims made via the Coronavirus Job Retention Scheme (CJRS)
- No submissions have been made for financial support via either the Coronavirus Business Interruption Loan Scheme (CBILS) or Bounce Back Loan Scheme (BBLS)
- The UK entities operate primarily under a VAT repayment position due to the significant level of export sales, so do not utilise the government scheme in deferring VAT payments
- No submission has been made for salary compensation, which could arise due to employees being retained that could otherwise have been released. No employees have left the business
- During the period it was part of the Xaar Group (up to 1 November 2021) Xaar 3D ApS, based in Denmark, operated in a repayment position for Danish VAT, and like the UK did not utilise the extension available for payments, and also did not take part in any government support measures in response to COVID-19

A Xaar Group company based in the USA, Engineered Printing Solutions (EPS), took part in the US Government Loan scheme which provided a $1 million loan (£819k), which under certain provisions linked to maintaining employment and avoiding redundancy could be waived The company met the requirements of the waiver, and therefore the loan was waived, and has therefore been treated as a government grant. The Group has presented this amount as exceptional income in 2020 in the consolidated income statement Government support grants are recognised in the consolidated income statement on a systematic basis over the periods in which the related revenue or expense for which the grants are intended to compensate Further details are provided under note 4

8. Profit/(loss) for the year

Profit for continuing operations in the year has been arrived at after charging/(crediting).

	2021 £'000	2020 £'000
Research and development expenses (net of capitalised development costs)*	**5,786**	4,535
Grants towards research and development including the research and development expenditure credit	**(227)**	(142)
Depreciation of property, plant and equipment	**3,318**	3,400
Depreciation of right-of-use asset	**871**	1,107
Amortisation of capitalised development costs (included in research and development expenses)	**77**	82
Amortisation of other intangible assets (included in general and administrative expenses)	**398**	81
Loss on disposal of property, plant and equipment	**77**	99
Cost of inventories recognised as expense	**36,227**	31,467
Impairment reversals on financial assets	**388**	946
Total fees payable to the Company's auditor and its associates	**651**	402

* Total spend on research and development in 2021, before capitalised and amortised development costs included in note 16, was £5,786,000 (2020 £4,535,000)

Auditor's remuneration

	2021 £'000	2020 £'000
Fees payable to the Company's auditor for the audit of the Company's annual accounts	**20**	20
Fees payable to the Company's auditor and its associates for other services to the Group		
– The audit of the Company's subsidiaries	**473**	272
– Prior year overrun	**120**	70
Total audit fees	**613**	362
- Interim review	**38**	40
Total non-audit fees	**38**	40
Total fees payable for the continuing operations	**651**	402
Total audit fees payable for the discontinued operations	**38**	38
Total fees payable to the Company's auditors and its associates	**689**	440

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 77 to 80 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

	2021 Number	Restated 2020 Number
Research and development	86	75
Sales and marketing	46	47
Manufacturing and engineering	222	189
Administration	53	46
	407	357

2020 headcount has been restated to remove agency staff Their aggregate remuneration comprised

	Notes	2021 £'000	2020 £'000
Wages and salaries		20,958	18,784
Social security costs		2,014	1,752
Pension costs	33	930	740
Share-based payments		758	353
		24,660	21,629

Share-based payment charges comprise the IFRS 2 charge for the year of £653,000 (2020: £246,000) and a credit relating to National Insurance on the outstanding potential share option gains of £105,000 (2020: £107,000 charge), of which a charge of £440 (2020 £5,000) *relates to discontinued operations in Xaar 3D*

10. Investment income

	Group £'000	3D £'000	2021 Total £'000	Group £'000	3D £'000	2020 Total £'000
Interest receivable on cash and bank balances and treasury deposits	6	-	6	47	24	71

Group interest accrued receivable of £1,000 at year end (2020: £8,000) Cash interest received at year end was £13,000 (2020: £64,000).

11. Discontinued operations

The Thin Film business which was discontinued in 2019 incurred costs in 2020 and 2021 which mainly related to supplier 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 Of the total Group net assets, £nil (2020 £271,000) is related to Thin Film which is not included in net assets held for sale

As detailed in the strategic and financial update, the Xaar 3D business completed its divestment on 1 November 2021 Xaar received net *cash of £9,272,800 and as specified in an 'earn out' clause in the sale agreement*, additional cash consideration of up to $15,456,000 will be receivable At the time of sale, the fair value of the consideration was determined to be £10,863,000 It has been recognised as a financial asset at fair value through profit or loss. Further detail is disclosed further in note 22

At year end, the fair value was re-estimated to be £11,850,000 The gain of £987,000 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 The results of Thin Film and 3D related activities for the year are shown below

	Thin Film 2021 £'000	3D 2021 £'000	Total 2021 £'000	Thin Film 2020 £'000	3D 2020 £'000	Total 2020 £'000
Revenue	384	2,918	3,302	258	734	992
Expenses	(623)	(7,075)	(7,698)	(3,922)	(7,175)	(11,097)
Loss before income tax	(239)	(4,157)	(4,396)	(3,664)	(6,441)	(10,105)
Income tax credit	-	30	30	-	(190)	(190)
Net loss before gain on sale	(239)	(4,127)	(4,366)	(3,664)	(6,631)	(10,295)
Gain on sale of investment in subsidiary	-	17,899	17,899	-	-	-
Profit/(loss) after income tax from discontinued operations	(239)	13,772	13,533	(3,664)	(6,631)	(10,295)

The gain on sale of investment in subsidiary is not subject to income tax because it falls under the Substantial Shareholding Exemptions (SSE) Rule

The £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

11. Discontinued operations continued

	Thin Film 2021 £'000	3D 2021 £'000	Total 2021 £'000	Thin Film 2020 £'000	3D 2020 £'000	Total 2020 £'000
Attributable to.						
Owners of the Company	(239)	15,763	15,524	(3,664)	(3,647)	(7,311)
Non-controlling interest	-	(1,991)	(1,991)	-	(2,984)	(2,984)
	(239)	13,772	13,533	(3,664)	(6,631)	(10,295)

The major classes of assets and liabilities of 3D classified as held for sale as at 31 December 2020 and its carrying amounts as at the date of sale (1 November 2021) are as follows

	1 November 2021 £'000	2020 £'000
Assets		
Property, plant and equipment	1,207	1,041
Intangible assets	4,649	4,649
Deferred tax asset	164	68
Right-of-use asset	592	440
Inventory	870	919
Debtors	2,085	737
Corporate income tax	371	(6)
Cash and cash equivalents	96	2,120
Assets held for sale	10,034	9,968
Liabilities		
Creditors	(5,542)	(1,115)
Corporate income tax	-	-
Provisions (Warranty & Restructuring)	(31)	(11)
IFRS 16 lease liability	(525)	(463)
Liabilities associated with the assets held for sale	(6,098)	(1,589)
Net assets associated with disposal group	3,936	8,379

The net cash flows incurred by Thin Film and 3D are as follows

	Thin Film 2021 £'000	3D 2021 £'000	Total 2021 £'000	Thin Film 2020 £'000	3D 2020 £'000	Total 2020 £'000
Net cash inflow/(outflow) from operating activities	103	(1,792)	(1,689)	(5,058)	(6,213)	(11,271)
Net cash outflow from investing activities	-	(122)	(122)	(25)	(645)	(670)
Net cash outflow from financing activities	-	(98)	(98)	-	(160)	(160)
Net cash generated/(used) from discontinued operations	103	(2,012)	(1,909)	(5,083)	(7,018)	(12,101)

	2021 Pence per share	2020 Pence per share
Earnings (loss) per share		
Basic earnings / (loss) for the year from discontinued operations	20.0p	(9.5p)
Diluted earnings / (loss) for the year from discontinued operations	19.7p	(9.5p)

The sale of 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 Xaar shareholding to 3D adjusted by an intracompany markup that relates to inventory

11. Discontinued operations continued

	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

The carrying amount of net assets sold includes an inventory mark up from the Group undertaking amounting to £172,000 which has to be eliminated in the Group consolidated balance sheet. Following the divestment of 3D, this elimination was reversed and adjusted to the gain on sale. A recycled foreign exchange difference of £3,000 was also included in the carrying amount as a result of translation.

12. Tax

Total tax calculation:

	Notes	2021 £'000	2020 £'000
Current tax – UK		100	158
Current tax – overseas		14	125
		115	283
Amounts under provided in previous years		71	41
Total current income tax charge		186	324
Deferred tax – origination and reversal		45	(18)
Adjustment in respect of prior years		38	(64)
Total deferred tax credit		83	(82)
Total tax (credit) / charge for the year		269	242

The rate of tax for the year, based on the UK standard rate of corporation tax, is 19% (2020: 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 the financial year 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 2021 have been calculated at the rate at which the relevant balance is expected to be recovered or settled.

The note to the cash flow statement (note 31) shows repayments of tax for £150,000 during the year (2020: £1,466,000).

The closing deferred tax liability at 31 December 2021 has been calculated at 19% and 25%, reflecting the tax rate at which the deferred tax liability is expected to be reversed in future periods. Details on deferred tax assets are disclosed in note 23.

12. Tax continued

The charge for the year can be reconciled to the profit per the income statement as follows:

	Notes	2021 £'000	2020 £'000
Profit / (Loss) before tax from continuing activities		994	(4,322)
Profit / (Loss) before tax from discontinued activities		13,503	(10,105)
Profit / (Loss) before income tax		14,497	(14,427)
Tax on ordinary activities at standard UK rate of 19% (2020: 19.00%)		2,754	(2,741)
Effect of:			
Expenses not deductible for tax purposes		398	883
(Non-taxable) income		(4,192)	(171)
Effect of different tax rates of subsidiaries operating overseas		(135)	(15)
Effect of change in UK corporation tax rate on deferred tax		-	7
Current year losses not recognised		1,195	2,303
Derecognition of previously recognised deferred tax balances		141	-
Prior year adjustments		108	(24)
Total tax expense / (credit) for the year		269	242
Income tax expense / (credit) reported in the statement of profit and loss		299	52
Income tax expense / (credit) attributable to discontinued operations	11	(30)	190
		269	242

The expenses not deductible for tax purposes mainly relate to depreciation on non qualifying assets, restructuring costs and share-based payments.

The effective tax rate for the year is 1.9% (2020: -1.7%).

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

	2021 £'000	2020 £'000
Earnings		
Earnings for the purposes of basic earnings per share being net profit/(loss) attributable to equity holders of the parent	**16,219**	(11,685)
from continuing operations	**695**	(4,374)
from discontinued operations	**15,524**	(7,311)
Number of shares		
Weighted average number of ordinary shares for the purposes of basic earnings per share	**77,528,064**	77,103,593
Effect of dilutive potential ordinary shares:		
Share options	**1,261,215**	-
Weighted average number of ordinary shares for the purposes of diluted earnings per share	**78,789,279**	77,103,593

	2021 Pence per share	2020 Pence per share
Basic	**20.9p**	(15.2p)
Diluted	**20.6p**	(15.2p)
Continuing operations		
Basic	**0.9p**	(5.7p)
Diluted	**0.9p**	(5.7p)
Discontinued operations		
Basic	**20.0p**	(9.5p)
Diluted	**19.7p**	(9.5p)

Potential ordinary shares are treated as dilutive if their conversion to ordinary shares would decrease earnings per share or increase loss per share. Therefore in 2020, the diluted earnings per share is not impacted by the effect of dilutive potential ordinary shares, given the 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 2021, there were share options granted over 107,490 shares that had not been included in the diluted earnings per share calculation because they were anti-dilutive at the period end (2020: 310,100 shares that would not have been included).

The performance conditions for LTIP awards over 1,510,685 shares (2020: 510,482 shares) have not been met in the current financial period, and therefore the dilutive effect of those shares has not been included in the diluted earnings per share calculation.

14. Earnings per share – basic and diluted continued

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:

	2021 £'000	2020 £'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	**695**	(4,374)
Share-based payment charges	**758**	348
Exchange difference relating to intra-group transactions	**95**	347
Gain on derivative financial instruments	**(2,919)**	(77)
Restructuring and transaction expenses	**1,404**	754
Other operating income	**-**	(819)
Fair value gain on financial assets at FVPL	**(987)**	-
Amortisation of acquired intangible assets	**354**	-
Tax effect of adjusting items	**(179)**	(217)
Adjusted loss after tax - continuing operations	**(779)**	(4,038)

Tax effect of adjusting items is calculated at current corporation tax rate (19%) less any disallowed tax items.

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.

	2021 Pence per share	2020 Pence per share
Adjusted basic	**(1.0p)**	(5.2p)
Adjusted diluted	**(1.0p)**	(5.2p)

15. Goodwill

The carrying amount of goodwill at 31 December 2021 was £6,882,000 (2020: £5,152,000).

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 and FFEI Limited in July 2021.

	2021 £'000	2020 £'000
Balance at the beginning of the year	**5,152**	5,333
Addition – acquisition of FFEI Limited	**689**	-
Foreign currency translation	**53**	(181)
Balance at the end of the year	**5,894**	5,152

As part of the reportable segments, goodwill amounting to £5,205,000 (2020: £5,152,000) is attributed to Product Print Systems (a single CGU) and £689,000 is attributed to FFEI (a single CGU).

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 recoverable amount of the CGU is determined from a value-in-use calculation. The key assumptions to which the value-in-use calculation is most sensitive are those regarding the expected change in sales, the gross margin percentage from those sales, and the discount rate used.

Engineered Print Solutions goodwill impairment review

A cash flow forecast was prepared for a period of five years based upon the strategic plan for the business and a terminal value determined using a 1.40% (2020: 2%) growth rate in Engineered Print Solutions, based on OECD growth rates.

To evaluate the risk of impairment, the Group adjusted its cash flows over the five-year period to reflect the current constraint on revenue due to the size of the manufacturing facility and removed all investment costs associated with expansion. These adjusted cash flows have then been used in the value-in-use calculation. For impairment testing purposes, gross margin has been maintained in line with actual current results. The discount rate applied to the cash flow projections is 13.74% (2020: 11.65%) and reflects external third party advice on the discount rate associated with Engineered Print Solutions. The discount rate reflects the risk free rate, equity beta and local market premium as calculated at the year-end.

The recoverable amount calculated on the basis set out above exceeds the carrying value of the EPS CGU by £10.0 million (2020: £1.5 million). Sensitivity analysis has been completed on each key assumption (Revenue, Gross Margin % and Discount Rate) for the EPS business. The carrying amount of goodwill would exceed its recoverable amount when compared to the adjusted cash flows, if:

- revenue growth were to decline 19% from the forecasted figures over the five-year period.
- gross margin or sales were to decline 4% over the five-year period.

FFEI Limited goodwill impairment review

FFEI Limited was acquired on 11 July 2021. Due to the fact that the time between acquisition and the year end date is less than six months and post acquisition performance to date at both the profit and cash flow level has exceeded the forecasts used for the PPA calculations, no impairment adjustment is required at 31 December 2021.

16. Other intangible assets

	Capitalised development costs £'000	Licences acquired £'000	Software £'000	Technology-based intangible asset £'000	Customer relationships £'000	Total £'000
Cost						
At 1 January 2020	43,737	709	3,453	-	-	47,899
Exchange movements	-	-	(6)	-	-	(6)
Assets held for sale	(5,050)	(177)	(10)	-	-	(5,237)
At 1 January 2021	**38,687**	**532**	**3,437**	**-**	**-**	**42,656**
Additions	-	-	124	-	-	124
Acquisitions	-	-	-	3,044	1,204	4,248
Transfer	-	-	(80)	-	-	(80)
Exchange movements	-	-	2	-	-	2
At 31 December 2021	**38,687**	**532**	**3,483**	**3,044**	**1,204**	**46,950**
Amortisation						
At 1 January 2020	38,571	554	3,231	-	-	42,356
Charge for the year	587	13	85	-	-	685
Exchange movements	-	-	(4)	-	-	(4)
Assets held for sale	(547)	(35)	(6)	-	-	(588)
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 31 December 2021	**38,687**	**532**	**3,334**	**254**	**100**	**42,907**
Carrying amount:						
At 31 December 2021	**-**	**-**	**149**	**2,790**	**1,104**	**4,043**
At 31 December 2020	76	-	131	-	-	207

Internally generated product development costs relate to the Platform 2, Platform 3 and Platform 4 ranges of printheads and technology. All three platforms are now fully amortised.

In July 2021, Xaar acquired additional intangible assets in relation to the acquisition of FFEI Limited. These are technology-based patents and customer relationships totalling £4,248,000. Further details on the acquisition are in note 36.

Licences acquired are amortised over their estimated useful lives which is the shorter of the licence term and 20 years.

The amortisation period for software is three to 15 years and for other product development costs incurred on the Group's product development is three to 20 years.

The amortisation for technology-based patents and software and customer relationships is six years.

Amortisation is recorded in administrative expenses of the consolidated accounts.

As at 31 December 2021 the Group had not entered into any contractual commitments for the acquisition of intangible assets.

17. Property, plant and equipment

	Land and buildings £'000	Leasehold property £'000	Plant and machinery £'000	Furniture, fittings and equipment £'000	Assets in the course of construction £'000	Total £'000
Cost						
At 1 January 2020	1,684	14,045	68,161	3,634	108	87,632
Additions	–	199	1,654	382	16	2,251
Transfers	184	(171)	(737)	–	(69)	(793)
Exchange movements	(57)	(2)	12	(18)	(4)	(69)
Disposals	–	–	(492)	–	–	(492)
Assets held for sale	–	(551)	(1,766)	(6)	(2)	(2,325)
At 1 January 2021	1,811	13,520	66,832	3,992	49	86,204
Additions	31	693	976	457	283	2,440
Acquisitions	–	7	14	71	–	92
Transfer	65	(35)	1,144	(64)	(49)	1,061
Exchange movements	19	–	15	6	–	40
Disposals	–	(505)	(1,012)	(15)	–	(1,532)
At 31 December 2021	**1,926**	**13,680**	**67,969**	**4,447**	**283**	**88,305**
Depreciation						
At 1 January 2020	320	8,304	54,692	3,408	–	66,724
Charge for the year	48	569	3,506	101	–	4,224
Transfer	34	(21)	(702)	–	–	(689)
Exchange movements	(14)	(2)	(1)	(17)	–	(34)
Disposals	–	–	(275)	–	–	(275)
Impairment	–	–	391	–	–	391
Assets held for sale	–	(65)	(1,216)	(3)	–	(1,284)
At 1 January 2021	388	8,785	56,395	3,489	–	69,057
Charge for the year	24	584	2,516	188	6	3,318
Transfer	39	(54)	1,087	(90)	(6)	976
Exchange movements	4	–	2	5	–	11
Disposals	–	(353)	(915)	(15)	–	(1,283)
At 31 December 2021	**455**	**8,962**	**59,085**	**3,577**	**–**	**72,079**
Carrying amount						
At 31 December 2021	**1,471**	**4,718**	**8,884**	**870**	**283**	**16,226**
At 31 December 2020	1,423	4,735	10,437	503	49	17,147

The impairment during the year is £nil (2020 £391,000) The prior year impairment is related to the Printhead and EPS businesses with associated assets written down to nil

In 2021 assets held in the Printhead business for sale were transferred back to property, plant and equipment due to additional productions requirements These assets had a cost of £257,010 net book value (NBV) of £39,406

Assets held for sale in 2020 relate to the 3D business unit that has been sold in the year

As at 31 *December* 2021 the Group had entered into contractual commitments for the acquisition of property, plant and equipment amounting to £1,330,000 (2020 £218,000)

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 and some contracts require the Group to maintain certain financial ratios

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 2020	11,978	119	16	12,113
Additions	183	–	–	183
Disposals	(172)	(36)	(16)	(224)
Assets held for sale	(885)	–	–	(885)
Exchange movements	18	1	–	19
At 31 December 2020	11,122	84	–	11,206
Additions	5,073	11	–	5,084
Acquisition	3,057	16	–	3,073
Disposals	(6,341)	(14)	–	(6,355)
Exchange movements	4	–	–	4
At 31 December 2021	**12,915**	**97**	**–**	**13,012**
Depreciation				
At 1 January 2020	8,483	56	13	8,552
Charge for the year	1,204	29	3	1,236
Disposals	(167)	(35)	(16)	(218)
Assets held for sale	(445)	–	–	(445)
Exchange movements	3	–	–	3
At 31 December 2020	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**
Carrying amount				
At 31 December 2021	**9,325**	**43**	**–**	**9,368**
At 31 December 2020	2,044	34	–	2,078

Out of £5,084,000 additions during the year, £3,272,000 represent 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:

	2021 £'000	2020 £'000
At 1 January	**2,579**	3,971
Additions	**7,734**	183
Accretion of interest	**144**	98
Payments	**(726)**	(1,224)
Exchange movement	**(1)**	14
Lease liabilities associated with assets held for sale	**–**	(463)
At 31 December	**9,730**	2,579
Current	**1,231**	1,064
Non-current	**8,499**	1,515
	9,730	2,579

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 2021

	2021 £'000	2020 £'000
On demand	-	-
Less than three months	196	222
Four to 12 months	759	645
One to five years	5,047	1,945
More than five years	4,538	-
	10,540	2,812

The following are the amounts recognised in profit or loss:

	2021 £'000	2020 £'000
Depreciation expense of right-of-use assets	871	1,235
Interest expense on lease liabilities	144	98
Expense relating to short-term leases (included in administrative expenses)	375	152
Total amount recognised in profit or loss	1,390	1,485

Interest expense on lease liabilities consists of £144,000 (2020: £82,000) reported under continuing operations and £9,000 (2020: £16,000) relating to Xaar 3D business reported under discontinued operations.

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

	2021 £'000	Restated 2020 £'000
Raw materials and consumables	5,619	6,356
Work in progress	8,605	1,687
Finished goods	4,615	1,707
	18,839	9,750

The cost of inventories recognised as an expense includes £1,189,000 (2020: £3,395,000) in respect of inventory write-downs.

Gross stock was £28,410,000 (2020: £34,371,000) with inventory provisions of £9,571,000 (2020: £24,621,000). The provision of £9,571,000 included £6,289,000 in relation to discontinued operations. Inventory for discontinued operations has been recognised at fair value. A significant proportion of this increase in inventory is attributable to the managed investment in our supply chain capability.

The finished goods in 2020 were restated due to the adjustment in EPS in the prior year. Refer to note 37 for further details.

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 current assets

The fair value of all financial assets and financial liabilities approximates their carrying value. No amounts are expected to be settled in more than 12 months. Refer to note 37 for restatement of 2020.

Trade and other receivables	2021 £'000	Restated 2020 £'000
Amount receivable for the sale of goods	5,336	6,679
Allowance for doubtful debts	(144)	(622)
	5,192	6,057
Contract assets	3,296	1,542
Other debtors	2,211	1,218
Prepayments	1,439	822
	12,138	9,639
Current tax asset	531	425

21. Other financial assets continued

Trade receivables

The average credit period taken on sales of goods is 32 days (2020: 47 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 of the greater of either 3% 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 on page 150. 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 £2,100,000 (2020: £1,100,000). The total due from these customers represents 4% (2020: 2%) of the Group's revenue.

Included in the Group's trade receivables balance are debtors with a carrying amount of £1,444,000 (2020: £1,843,000) 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:

	2021 £'000	2020 £'000
1–30 days overdue	885	1,168
30–60 days overdue	150	233
60–90 days overdue	264	85
90–120 days overdue	81	266
Over 120 days overdue	64	91
Total receivables	1,444	1,843

Movement in the allowance for doubtful debts:

	2021 £'000	2020 £'000
Balance at the beginning of the year	622	7,959
Impairment (reversal) / losses increased	(388)	(929)
Amounts written off as uncollectible	(90)	(6,408)
Balance at the end of the year	144	622

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 debtors, general economic conditions of the industry in which the debtors operate 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 1.0% for receivables aged 60 days or less, 5% for receivables aged between 61 and 90 days, 5% 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. Amounts written off in the prior year relate to distributor balances. There is no current enforcement activity on the remaining balance.

Ageing of impaired trade receivables:

	2021 £'000	2020 £'000
Current	2	19
1–30 days overdue	2	3
30–60 days overdue	-	-
60–90 days overdue	-	-
90–120 days overdue	-	-
Over 120 days overdue	140	600
Total	144	622

The Directors have considered the sensitivity of doubtful debts and a 1% increase on the ECL percentage would equate to an additional £51,000 allowance. The Directors consider that the carrying amount of trade and other receivables approximates their fair value.

21. Other financial assets continued

Treasury deposits

Treasury deposits comprise bank deposits with an original maturity of between three months and 12 months. The carrying amount of these assets approximates their fair value

	2021 £'000	2020 £'000
Treasury deposits	-	161

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

	2021 £'000	2020 £'000
Cash	25,051	17,956

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

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		
2021	FVTPL - designated £'000	FVTPL - mandatorily measured £'000	Amortised cost £'000	FVTPL - mandatorily measured £'000	Amortised cost £'000	Total £'000
Financial asset at fair value through profit or loss (note 11)	-	11,850	-	-	-	11,850
Trade and other receivables (note 21)	-	-	10,699	-	-	10,699
Treasury deposits (note 21)	-	-	-	-	-	-
Cash and bank balances (note 21)	-	-	25,051	-	-	25,051
Trade and other payables (note 24)	-	-	-	-	(21,489)	(21,489)
Other financial liabilities due after more than one year (note 24)	-	-	-	-	(3,354)	(3,354)
Derivative financial instrument	-	-	-	-	-	-

Additional disclosure for lease liabilities is reported in note 18

	Financial assets			Financial liabilities		
2020 Restated	FVTPL - designated £'000	FVTPL - mandatorily measured £'000	Amortised cost £'000	FVTPL - mandatorily measured £'000	Amortised cost £'000	Total £'000
Trade and other receivables (note 21)	-	-	8,817	-	-	8,817
Treasury deposits (note 21)	-	-	161	-	-	161
Cash and bank balances (note 21)	-	-	17,956	-	-	17,956
Trade and other payables (note 24)	-	-	-	-	(9,940)	(9,940)
Derivative financial instrument	160	-	-	(2,919)	-	(2,759)

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
Derivative financial instrument (Level 3)	Black-Scholes model. The following variables were taken into consideration current underlying price of the underlying share, options strike price, time until expiration (expressed as a percent of a year), implied volatility of the underlying share and LIBOR.	Underlying price of the share Volatility of the underlying share.	Not applicable as the options have been exercised this year
Financial asset at fair value through profit or loss (level 3)	Monte Carlo Simulation model. The following variables were taken into consideration. revenue projections, management forecast and discount rate.	Revenue volatility	10% increase/(decrease) in revenue volatility would result in £41,000 decrease and £3,000 increase in fair value respectively
	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	Risk-adjusted discount rate	1% increase/(decrease) in discount rate would result in £6,000 decrease and *£10,000 increase in fair value* respectively

There were no transfers between Level 1 and 2 during the current or prior year

The financial liabilities measured using Level 3 fair value measurement represent written call options relating to a business combination During the year, with a revised term of the call option, Stratasys exercised the call option and acquired the remaining 55% shareholding of Xaar The value of the derivative financial liability has therefore been recognised in the income statement

On 1 November 2021, the sale of Xaar 3D Limited to Stratasys was completed through a change to the terms of the call option without cost which was then exercised immediately The fair value of the previous option immediately prior to exercise was nil 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 year-end The contingent consideration is recognised as a financial asset at fair value through profit or loss The only movement in the year represents the revaluation between 1 November to 31 December 2021. Additional disclosure information is provided in note 11 -Discontinued operations and note 35 - *Non-controlling interest*

	Derivative financial instrument £'000	Financial asset at fair value through profit or loss £'000
Balance at 1 January 2021	(2,919)	-
Recognition of contingent consideration	-	10,863
Exercised of call option	2,919	-
Total gains or losses - in profit or loss	-	987
Balance at 31 December 2021	**-**	**11,850**

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 continued

The use of financial derivatives is governed by the Group's policies approved by the Board of Directors, which provide written principles on the use of financial derivatives consistent with the Group's risk management strategy. The Group does not use derivative financial instruments for speculative purposes.

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.

Interest rate risk

As the Group currently has no borrowings, its exposure to interest rate risk relates to the interest rate on its cash, cash equivalent and treasury deposit balances. The Group's interest rate risk arises mainly from its funds invested in short-term bank deposits. To mitigate these risks, limits have been set by the Board in relation to maturity period and maximum deposits with any one institution.

If interest rates had been 10% higher/reduced by 10% and all other variables were held constant, the Group's profit for the year ended 31 December 2021 would increase by £136,000 or decrease by £167,000 (2020: increase by £100,000 or decrease by £100,000). There would be no effect on equity reserves.

Foreign currency risk

The Group receives approximately 40% of its revenues in US Dollars and 7% 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 inter-company 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	
	2021 £'000	2020 £'000	2021 £'000	2020 £'000	2021 £'000	2020 £'000
Effect of a 10% increase in relevant exchange rate on						
Profit or loss	**(96)**	(139)	**(50)**	(420)	**10**	(107)
Equity	**(96)**	(139)	**(528)**	(1,002)	**10**	(107)
Effect of a 10% decrease in relevant exchange rate on						
Profit or loss	**117**	170	**61**	514	**(12)**	131
Equity	**117**	170	**645**	1,225	**(12)**	131

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 2021.

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%.

22. Financial instruments continued

Capital risk management continued

The gearing ratio (excluding IFRS 16 leases) at the year-end is as follows:

	2021 £'000	2020 £'000
Net debt	**-**	-
Total equity	**69,790**	56,158
Gearing ratio	**0%**	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 incurring 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 £21,489,000 (2020: £9,940,000) 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 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.

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 2020	705	(40)	-	(582)	(213)	(130)
(Credit)/charge to income	55	39	-	(139)	31	(14)
(Credit)/charge for discontinued operations	(68)	-	-	-	-	(68)
Foreign exchange movement	-	-	-	-	4	4
At 31 December 2020	**692**	**(1)**	**-**	**(721)**	**(178)**	**(208)**
(Credit)/charge to income	336	-	(64)	(309)	175	138
(Credit)/charge for discontinued operations	(58)	-	-	(38)	-	(96)
Acquisitions	-	-	989	(989)	-	-
Disposals	126	-	-	38	-	164
Foreign exchange movement	-	-	-	-	3	3
At 31 December 2021	**1,096**	**(1)**	**925**	**(2,019)**	**-**	**1**

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:

23. Deferred tax continued

	2021 £'000	2020 £'000
Deferred tax liabilities	1	-
Deferred tax assets	-	208
Being Deferred tax assets from continuing operations	1	130
Being Deferred tax assets from discontinued operations	-	68

As at 31 December 2021, the Group had unused tax losses of £117,300,000 (2020: £75,900,000) available to offset against future profits. As at 31 December 2021 the Group has an unrecognised deferred tax asset in respect of these losses totalling £28,200,000 (2020: £14,500,000). These losses may be carried forward indefinitely. As at 31 December 2021, the Group has unused capital losses of £1,100,000 (2020: £1,100,000) available for offset against future gains.

The impact of climate change has been considered in the forecast and valuation of future taxable profits and no impacts were noted. No deferred tax asset is recognised by the Group.

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.

24. Trade and other payables

	2021 £'000	2020 £'000
Current liabilities		
Trade payables and accruals	19,900	9,940
Other financial liabilities	1,589	-
	21,489	9,940
Non-current liabilities		
Other financial liabilities	3,354	-

Trade payable and accruals principally comprise amounts outstanding for trade purchases and ongoing costs. The average credit taken for trade purchases is 28 days (2020: 18 days).

The increase in trade creditors balance is mainly due to improved credit terms with suppliers and increasing stock held across the Group of £1,734,000, increase in customer deposits in EPS (£2,389,000) and the addition of FFEI in the year (£3,654,000).

The other financial liabilities represent the deferred consideration in relation to the acquisition of FFEI Limited split between the current portion due in 2022 (£1,589,000) 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 2020	247	2,700	-	2,947
Additional / (release) provision in the year	71	685	-	756
Utilisation of provision	(121)	(3,105)	-	(3,226)
Release of provision	(120)	-	-	(120)
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 31 December 2021	**253**	**11**	**300**	**564**

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 £11,000 have been added primarily in relation to redundancy to be utilised in 2022; the utilisation of the £280,000 in 2021 was for 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 is in note 18.

26. Share capital

	2021 £'000	2020 £'000
Issued and fully paid: 78,446,230 (2020: 78,334,296) ordinary shares of 10.0p each	**7,844**	7,833

The movement during the year on the Company's issued and fully paid shares was as follows:

	2021 Number	2020 Number	2021 £'000	2020 £'000
Balance at 1 January	**78,334,296**	78,334,296	**7,833**	7,833
Exercise of share options	**111,934**	-	**11**	-
Balance at 31 December	**78,446,230**	78,334,296	**7,844**	7,833

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 2021	Number of shares under option as at 31 December 2020	Subscription price per share
Xaar plc 2004 Share Option Plan	01 June 11	-	40,000	250.0p
	01 May 12	**90,000**	90,000	226.5p
		90,000	130,000	
Xaar plc 2017 Share Save Scheme	01 November 17	-	7,010	344.0p
	01 November 18	**34,975**	116,596	142.0p
	01 December 19	**893,038**	937,505	34.0p
	02 November 20	**681,104**	702,032	102.0p
	04 November 21	**632,995**	-	129.0p
		2,242,112	1,763,143	
Xaar plc 2013 Share Incentive Plan	17 April 13	**4,332**	6,309	0.0p
	16 April 14	**4,749**	8,866	0.0p
	14 April 16	**6,766**	11,717	0.0p
	13 April 17	**3,952**	5,280	0.0p
		19,799	32,172	
Total share options outstanding at 31 December		**2,351,911**	1,925,315	

26. Share capital continued

Options granted under the Xaar plc 2004 Share Option Plan are ordinarily exercisable within three to ten years after the date of grant. The maximum value of approved options, under the Xaar plc 2004 Share Option Plan, which may be granted to individual employees is £30,000.

Options under the Xaar plc Share Save Scheme are ordinarily exercisable between 36 and 42 months after the date of grant.

Awards under the Xaar plc Share Incentive Plan are ordinarily exercisable between three and five years 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 2021	Number of shares under option as at 31 December 2020
3 May 11	-	4,533
1 May 12	**5,229**	7,297
2 April 15	**30,179**	35,933
28 September 15	**2,536**	3,069
7 December 15	-	9,354
1 April 16	**17,733**	34,645
11 May 16	**4,977**	4,977
27 June 16	**3,733**	3,733
6 September 16	**700**	700
1 December 16	**15,093**	15,093
	80,180	119,334

All awards under this scheme are exercisable within three to ten years after the date of grant.

Performance Share Awards have been made under the Xaar plc 2017 Long-Term Incentive Plan as follows:

Date of grant	2021 Number of shares	2020 Number of shares
16 May 17	**18,806**	30,472
03 April 18	-	126,735
2 April 2019	**104,292**	110,792
30 April 2019	**59,789**	59,789
4 October 2019	**180,328**	180,328
29 April 2020	**394,000**	404,000
4 June 2020	**535,000**	535,000
1 October 2020	**21,000**	21,000
14 October 2021	**986,272**	-
	2,299,485	1,468,116

All awards under this scheme are exercisable within three to ten years after the date of grant.

27. Share premium account

	2021 £'000	2020 £'000
Balance at 1 January	**29,328**	29,328
Premium arising on issue of equity shares	**99**	-
Balance at 31 December	**29,427**	29,328

28. Own shares

	2021 £'000	2020 £'000
Balance as at 1 January	**(1,957)**	(2,676)
Sold in the year	**34**	719
Balance at 31 December	**(1,923)**	(1,957)

Of this balance, £20,000 (2020: £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 £1,903,000 (2020: £1,937,000) represents the cost of 692,575 (2020: 705,083) 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.

The market value of own shares at 31 December 2021 was £1,427,000 (2020: £1,421,000).

29. Translation reserves

	2021 £'000	Restated 2020 £'000
Balance at 1 January	**864**	618
Exchange differences on retranslation of net investment	**147**	246
Balance at 31 December	**1,011**	864

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 2020 (as reported)		1,105	14,665	5,151	20,921	7,598	28,519
Prior year restatement	37	-	-	-	-	(766)	(766)
Balance at 1 January 2020 (as restated)		1,105	14,665	5,151	20,921	6,832	27,753
Net loss for the year		-	-	-	-	(11,685)	(11,685)
Tax on items directly to equity		-	-	-	-	(5)	(5)
Own shares sold in the period		-	-	-	-	(710)	(710)
Charge to equity for equity-settled share-based payments	32	-	246	-	246	-	246
Prior year restatement	37	-	-	-	-	4	4
Balance at 31 December 2020 (as restated)		1,105	14,911	5,151	21,167	(5,564)	15,603
Net profit for the year		-	-	-	-	16,219	16,219
Own shares sold in the period		-	-	-	-	-	-
Share options 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**

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. Notes to the cash flow statement

	2021 £'000	2020 £'000
Profit/(loss) before tax from continuing operations	994	(4,322)
Profit/(loss) before tax from discontinued operations	13,503	(10,105)
Total Profit / (loss) before tax	14,497	(14,427)
Adjustments for:		
Share-based payments	758	353
Depreciation of property, plant and equipment	3,318	4,223
Depreciation of right-of-use assets	871	1,236
Amortisation of intangible assets	475	685
Impairment of assets	-	391
Research and development expenditure credit	(582)	(454)
Investment income	(4)	(72)
Interest expense	252	94
Foreign exchange gains/(loss)	(23)	523
Gain on remeasurement of derivative liability	(2,919)	(77)
Fair value gain on financial assets at fair value through profit or loss	(987)	-
Loss on disposal of property, plant and equipment	77	99
Profit on disposal of investment in subsidiary	(17,899)	-
Other gains and losses	-	202
Decrease in provisions	(74)	(2,572)
Operating cash flows before movements in working capital	(2,240)	(9,796)
(Increase)/decrease in inventories	(7,964)	4,849
Increase in receivables	(1,525)	(1,337)
Increase in payables	9,525	2,011
Cash used in operations	(2,204)	(4,273)
Income taxes received	150	1,466
Net cash used in operating activities	(2,054)	(2,807)

During the year non-cash investing activity pertains to purchase of property, plant and equipment by the Company on credit amounting to £472,000 (2020: £1,152,000)

Further information on cash flows from discontinued operations can be found in note 11.

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.

An option granted under the Xaar plc 2004 Share Option Plan from 2011 onwards will be exercisable over shares with a market value at the date of grant not exceeding a person's annual salary, if at the third anniversary of grant, Xaar plc has achieved positive adjusted profit before tax as shown in the consolidated income statement in the Company's Annual Report and Accounts for any of the three years ending during the vesting period. One third of the shares subject to the option granted *rounded to the nearest whole share will vest based on the* performance condition being met per year for each of the three years ending in the vesting period. If the adjusted profit before tax as shown in the consolidated income statement in Xaar plc's Annual Report and Accounts for any relevant year is restated before the option becomes exercisable, the restated figure shall, unless the Remuneration Committee determines otherwise, be applied in determining whether the above targets are met. 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.

The Xaar 2007 and 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 provides an opportunity for all UK employees to buy shares from their pre-tax remuneration up to the limit permitted by the relevant tax legislation (£1,500 per year for the awards made in 2013 and 2014, £1,800 per year for awards made from 2015) and additional shares are awarded for free on a matching basis; the Company currently operates the plan on *the basis of a 1:1 match but* may award matching shares up to the maximum ratio permitted by the relevant tax legislation (currently a 2:1 ratio).

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.

	2021		2020	
	Number of share options	Weighted average exercise price (£)	Number of share options	Weighted average exercise price (£)
Outstanding at beginning of year	1,925,315	0.79	1,603,864	0.72
Granted during the year	632,995	1.29	702,032	1.02
Lapsed during the year	(104,614)	1.59	(349,323)	0.94
Exercised during the year	(101,785)	1.08	(31,258)	0.22
Outstanding at the end of the year	2,351,911	0.88	1,925,315	0.79
Exercisable at the end of the year	144,774	1.75	162,172	1.87

The weighted average share price at the date of exercise for share options exercised during the period was £1.64 (2020: £1.10). The options outstanding at 31 December 2021 had a weighted average remaining contractual life of two years (2020: three and a half years). 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. *In 2020,* options were granted on 2 November. The aggregate of the estimated fair values of the options granted on those dates is £525,000.

32. Share-based payments continued

Equity-settled share option scheme continued

The inputs into the Black-Scholes model are as follows

	2021	2020
Weighted average share price	**£1.61**	£1.28
Weighted average exercise price	**£1.29**	£1.02
Weighted average expected volatility	**73%**	74%
Expected life	**3.25 years**	3.5 years
Risk-free rate	**0.69%**	(0.05)%
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.

Long-Term Incentive Plan

The Company's Long-Term Incentive Plan is open to all employees of the Group.

All LTIP share awards granted before 2015 are subject to the achievement of EPS performance conditions and the number of shares that vest will depend on the EPS growth of the Company for the three financial years of the Company commencing on 1 January of the year of grant, as follows:

(1) None of the awards will vest if the Company's EPS growth does not exceed growth in the Retail Prices Index ("RPI") by at least 4% compound p.a.

(2) 35% of the awards will vest if the Company's EPS growth exceeds growth in the RPI by at least 4% compound p.a.

(3) All of the awards will vest if the Company's EPS growth exceeds growth in the RPI by at least 10% compound p.a.

(4) Awards will vest on a straight-line basis for EPS growth in excess of growth in the RPI of between 4% and 10% compound p.a.

LTIP share awards granted in 2015 onwards are subject to the achievement of different performance conditions depending on the level of the employee. The number of shares that vest will depend on the three financial years of the Company commencing on 1 January of the year of grant, and are subject to one, two, three, four or five of the conditions as set out below:

(1) Absolute cumulative EPS performance over the 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 EPS target or higher is achieved.

(2) For 2015 and 2016 grants, TSR relative to FTSE TechMARK All Share Index, whereby 25% of the awards will vest if the median rank in the comparator group is achieved, below median 0% will vest and up to a maximum of 100% if the upper quartile or higher is achieved. For 2017 and 2018 grants, TSR outperformance multiplier determined by comparison to the FTSE SmallCap Index, whereby a performance multiplier of between 116.7% (for upper quartile performance) and 150% or 200% (for upper decile performance) is applied to the base award relating to awards granted with EPS and revenue performance conditions.

(3) For 2015 and 2016 grants, achievement of positive adjusted profit before tax as shown in the consolidated income statement in the Company's Annual Report and Accounts for any of the three years ending during the vesting period. One third of the shares subject to the option granted, rounded to the nearest whole share, will vest based on the performance condition being met per year for each of the three years ending in the vesting period. If the adjusted profit before tax as shown in the consolidated income statement in Xaar plc's Annual Report and Accounts for any relevant year is restated before the option becomes exercisable, the restated figure shall, unless the Remuneration Committee determines otherwise, be applied in determining whether the above targets are met. 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.

(4) From 2017, revenue growth over the 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 growth target or higher is achieved.

(5) 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.

32. Share-based payments continued

Long-Term Incentive Plan continued

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:

	2021	2020
Awards outstanding at start of year	**1,587,450**	1,135,011
Granted during the year	**986,272**	963,000
Lapsed during the year	**(161,535)**	(275,618)
Exercised during the year	**(32,522)**	(234,943)
Awards outstanding at end of year	**2,379,665**	1,587,450
Exercisable at end of year	**98,984**	149,806

The weighted average share price at the date of exercise for awards exercised during the period was £1.67 (2020: £0.58). The options outstanding at 31 December 2021 had a weighted average remaining contractual life of 8.67 years (2020: 9.5 years). 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. In 2020, Performance Share Awards were made in April, June and October. The aggregate of the estimated fair values of grants made on those dates is £440,000.

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:

	2021	2020
Weighted average share price	**£1.77**	£0.48
Weighted average exercise price	**£nil**	£nil
Weighted average expected volatility	**81%**	74%
Weighted average expected life	**2.44 years**	3 years
Weighted average risk free rate	**0.67%**	(0.05)%
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:

	2021	2020
Weighted average share price	**£1.37**	£0.44
Weighted average exercise price	**£nil**	£nil
Weighted average expected volatility	**90%**	72%
Weighted average expected life	**2.44 years**	3 years
Weighted average risk free rate	**0.55%**	0.04%
Weighted average expected dividends	**0.00%**	0.00%

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. The awards were granted on 14 October 2021. All of these awards have been granted in respect of the participant's 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 normal vesting date").

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.

32. Share-based payments continued

The following table shows the deferred shares granted and outstanding at the beginning and end of the reporting period

	2021	2020
Awards outstanding at start of year	-	-
Granted during the year	34,098	-
Lapsed during the year	-	-
Exercised during the year	-	-
Awards outstanding at end of year	34,098	-

The weighted average share price at the date of exercise for awards exercised during the period was £nil (2020: £nil). The options outstanding at 31 December 2021 had a weighted average remaining contractual life of one year and three months (2020: nil). In 2021, Deferred Bonus Plan awards were made in October. The aggregate of the estimated fair values of grants made on that date is £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

	2021	2020
Weighted average share price	£1.77	£0.48
Weighted average exercise price	£nil	£nil
Weighted average expected volatility	81%	-
Weighted average expected life	1.25 years	-
Weighted average risk free rate	0.67%	-
Weighted average expected dividends	-	-

The Group recognised total expenses of £653,000 and £246,000 related to all equity-settled share-based payment transactions in 2021 and 2020, respectively

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 these schemes during 2021 was £930,000 (2020: £740,000). As at 31 December 2021 contributions of £102,000 (2020: £89,000) due in respect of the current reporting period had not been paid over to the schemes

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

During the year, with a revised term of the call option, Stratasys exercised the call option and acquired the remaining 55% shareholding of Xaar. The revised term of the call option allows Xaar to receive $13,500,000 as initial consideration and with the 3% revised ean-out and the earn-out payments allow Xaar to receive up to $34,750,000 of the total consideration

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 with a fair value of £10,863,000 as at year-end. The sale is disclosed further in note 11.

Additional disclosure on the transaction is included in note 22 - Financial instruments and note 35 - Non-controlling interest

During 2021 there were both product sales between Xaar and SSYS, and related party transactions associated with the "go-to-market" functions where SSYS employees have been seconded to Xaar 3D Limited and the costs recharged

- Sales between Xaar and SSYS in 2021 £3,049,000 (2020: £636,078)
- Purchases between SSYS and Xaar £1,331 (2020: £2,620)
- Employees seconded to Xaar from SSYS £274,965 (2020: £219,201)

There were no other transactions during the year with related parties who are not members of the Group.

Remuneration of key management personnel

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 92 to 96.

34. Related party transactions continued

Remuneration of key management personnel continued

	2021 £'000	2020 £'000
Short-term employee benefits	924	1,040
Post-employment benefits	32	29
Share-based payments	168	183
	1,124	1,252

35. Non-controlling interest

Summarised financial information in respect of the Group's subsidiary, Xaar 3D Limited, in which it has a material non-controlling interest is set out below. The summarised financial information below represents amounts before intra-group eliminations. During the year, with a revised term of the call option, Stratasys exercised the call option and acquired the remaining 55% shareholding of Xaar. The revised term of the call option allows Xaar to receive $13,500,000 as initial consideration with a 3% revised earn-out. The earn-out payments for a 15-year period allow Xaar to receive up to $34,750,000 of total consideration

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 with a fair value of £10,863,000. The sale is disclosed further in note 11

The carrying amount of Xaar 3D assets and liabilities, the 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

Statement of financial position	1 November 2021 £'000	2020 £'000
Current assets	3,622	3,770
Non-current assets	6,612	6,198
Current liabilities	(5,817)	(1,233)
Non-current liabilities	(281)	(356)
Equity attributable to owners of the Company	3,936	8,379
Non-controlling interests (2021: 45% / 2020: 45%)	1,771	3,771

Income statement and other comprehensive income	2021 £'000	2020 £'000
Revenue	2,918	734
Expenses	(7,342)	(7,366)
Loss for the year	(4,424)	(6,632)
Loss attributable to owners of the Company	(2,433)	(3,648)
Loss attributable to the non-controlling interests	(1,991)	(2,984)
Loss for the year	(4,424)	(6,632)
Total comprehensive loss attributable to owners of the Company	(2,433)	(3,648)
Total comprehensive loss attributable to the non-controlling interest	(1,995)	(2,968)
Total comprehensive loss for the year	(4,428)	(6,616)

Cash flow statement	2021 £'000	2020 £'000
Net cash outflow from operating activities	(1,792)	(6,213)
Net cash outflow from investing activities	(122)	(645)
Net cash outflow from financing activities	(98)	(160)
Net cash outflow	(2,012)	(7,018)

Non-controlling interest equity	2021 £'000	2020 £'000
Balance at 1 January	3,771	6,739
Share of other comprehensive expense for year	(1,995)	(2,968)
Derecognition of non-controlling interest	(1,776)	-
Balance at 31 December	-	3,771

36. Business combination

On 11 July 2021, Xaar acquired 100% of the issued share capital of FFEI Limited, a leading integrator and manufacturer of industrial digital inkjet systems and digital life science technology with many years of experience in managing technical integration and engineering projects.

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	4,075
Trade & other receivables	2,301
Corporate income tax	291
Inventories	1,169
Property, plant and equipment	91
Right-of-use assets	3,074
Intangible assets	4,248
Trade & other payables	(4,130)
Lease liabilities	(2,996)
Provision (non-current)	(50)
Total net identifiable assets	**8,073**
Goodwill	689
Total consideration	**8,762**

Satisfied by:	£'000
Cash	3,907
Deferred consideration	4,855
Total consideration transferred	8,762

Net cash outflow arising on acquisition	£'000
Cash consideration	3,907
Less: cash and cash equivalents acquired	4,075
Total net cash inflow arising on acquisition	168

The fair value of acquired trade receivables is £1,310,000. The gross contractual amount for trade receivables due is £1,388,000, with a loss allowance of £78,000 recognised on acquisition.

The goodwill of £639,000 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 experienced operations team which will allow Xaar to accelerate the Company's existing growth strategy and will enable Xaar to capture additional opportunities in vertically integrated solutions. 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 patents and software (£3,044,000) and customer relationships (£1,204,000). These have an estimated useful life of six years. The amortisation from the date of acquisition to 31 December 2021 is £354,000 which is included in the income statement under general and administrative expenses.

In addition to the cash consideration, deferred consideration shall be paid in three annual instalments. The undiscounted amount of all future payments that the Company is required to make under the deferred consideration arrangement is £5,200,000.

Acquisition related costs which are included in administrative expenses in the consolidated income statement for the period ended 31 December 2021 amounted to £618,000.

The acquired business contributed revenues of £5,250,000 and net profit of £410,000 to the Group for the period from 11 July 2021 to 31 December 2021. FFEI Limited had an accounting reference date of 31 March prior to acquisition, reporting on a 4 week/4 week/5 week basis in their ERP system, which has subsequently been aligned with the Xaar Group date of 31 December and month end reporting. FFEI Limited reported under FRS 102 up to 31 March 2021, transitioning to IFRS and reporting under FRS 101 from 1 April 2021. Due to the difficulties presented in performing an accurate calculation of the results as if the acquisition had occurred on 1 January, the Board has decided that it is impracticable to present the pro forma revenue and profit.

37. Restatement of prior period

The financial statements include a prior period restatement in relation to non-cash inventory related adjustments identified at EPS in 2021, that relate prior to 2020. Inventory items with a total value of $827,000 (£627,000) were identified as being held on the balance sheet that had been previously disposed, scrapped or consumed prior to 1 January 2020. The errors occurred as a result of the internal control deficiencies identified in the EPS subsidiary, in respect of the adequacy of controls over inventory management, as disclosed in the 2020 Annual Report and Financial Statements. Additionally an amount owed to an EPS supplier of $153,000 (£116,000) was incorrectly classified as a vendor deposit on the balance sheet when the payment was made to them in 2020, which should have been recognised as an expense in 2016. The increase in the brought forward tax losses as a result of these adjustments has not been recognised as a deferred tax asset but has increased the level of unused tax losses (as also disclosed in note 23). There was no impact of the restatement on earnings per share. Actions have been taken in 2021 to remediate the deficiencies identified. Process changes have been made to prevent the reoccurrence of such errors.

The following tables summarise the impact of the prior period restatement on the financial statements of the Group for the periods ended 1 January and 31 December 2020:

Consolidated statement of financial position	1 Jan 2020 as reported £'000	EPS adjustment £'000	1 Jan 2020 restated £'000
Current assets			
Inventories	16,530	(627)	15,903
Total assets	**88,224**	**(627)**	**87,597**
Current liabilities			
Trade and other payables	(17,973)	(116)	(18,089)
Total liabilities	**(17,887)**	**(116)**	**(18,003)**
Net assets	**70,337**	**(742)**	**69,595**
Equity			
Translation reserve	594	24	618
Retained earnings	7,598	(766)	6,832
Total equity	**70,337**	**(742)**	**69,595**

Consolidated statement of comprehensive income	31 Dec 2020 as reported £'000	EPS adjustment £'000	31 Dec 2020 restated £'000
Loss for the year	**(14,669)**	**-**	**(14,669)**
Exchange differences on retranslation of net investment	240	22	262
Tax	(5)	-	(5)
Other comprehensive income for the year	235	22	257
Total comprehensive loss for the year	**(14,434)**	**22**	**(14,412)**
Attributable to:			
Owners of the Company	(11,466)	22	(11,444)
Non-controlling interests	(2,968)	-	(2,968)
	(14,434)	**22**	**(14,412)**

37. Restatement of prior period continued

Consolidated statement of financial position	31 Dec 2020 as reported £'000	EPS adjustment £'000	31 Dec 2020 restated £'000
Non-current assets			
Goodwill	5,152	-	5,152
Other intangible assets	207	-	207
Property, plant and equipment	17,147	-	17,147
Righ-of-use asset	2,078	-	2,078
Deferred tax asset	139	-	139
	24,723	**-**	**24,723**
Current assets			
Inventories	10,355	(605)	9,750
Trade and other receivables	9,751	(111)	9,640
Current tax asset	425	-	425
Treasury deposits	161	-	161
Cash and cash equivalents	17,956	-	17,956
Derivative financial instruments	160	-	160
Assets held for sale	43	-	43
	38,851	**(716)**	**38,135**
Disposal group assets held for sale	9,968	-	9,968
	48,819	**(716)**	**48,103**
Total assets	**73,542**	**(716)**	**72,826**
Current liabilities			
Trade and other payables	(9,940)	-	(9,940)
Provisions	(357)	-	(357)
Derivative financial instruments	(2,919)	-	(2,919)
Lease liabilities	(1,064)	-	(1,064)
	(14,280)	-	**(14,280)**
Liabilities associated with disposal group	(1,589)	-	(1,589)
	(15,869)	**-**	**(15,869)**
Net current assets	**32,950**	**(716)**	**32,234**
Non-current liabilities			
Lease liabilities	(1,515)	-	(1,515)
Total non-current liabilities	**(1,515)**	-	**(1,515)**
Total liabilities	**(17,384)**	**-**	**(17,384)**
Net assets	**56,158**	**(716)**	**55,442**
Equity			
Share capital	7,883	-	7,883
Share premium	29,328	-	29,328
Own shares	(1,957)	-	(1,957)
Translation reserve	818	46	864
Other reserve	21,167	-	21,167
Retained earnings	(4,802)	(762)	(5,564)
Equity attributable to owners of the Company	**52,387**	**(716)**	**51,671**
Non-controlling interests	3,771	-	3,771
Total equity	**56,158**	**(716)**	**55,442**

38. Non-adjusting post balance sheet event – Megnajet acquisition

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

The initial combined cash consideration of £3,600,000 (£1,800,000 for each of Megnajet Ltd and Technomation Ltd) was paid on completion, with an additional combined £400,000 deferred consideration (£200,000 for each of Megnajet Ltd and Technomation Ltd) to be paid out in two years. The Board expects the acquired expertise and resource will contribute to the long-term profitable growth in Xaar s core printhead business. The acquisition accounting is not yet complete due to the timing of the transaction Due to the short time since the acquisition of Megnajet Ltd and Technomation Ltd and date of the financial statements, and the work yet to be completed with regard to transitioning the entities to IFRS, this presents difficulties in performing an accurate calculation of the results as if the acquisition of Megnajet Ltd and Technomation Ltd had occurred on 1 January 2021 Therefore the Board has decided that it is impracticable to present the pro-forma revenue and profit.

39. Subsidiary audit exemption

The following companies are exempt from the requirements relating to the audit of individual accounts for the year ended 31 December 2021 by virtue of section 479A of the Companies Act 2006: Xaar Jet Limited (03375961), XaarJet (Overseas) Limited (04312431), Xaar Technology Limited (02469592), Xaar Digital Limited (03588121), *Xaar Trustee Limited (03025096), Xaar 3D Holdings Limited (11425540), and FFEI* Limited (03244452)

Company balance sheet
as at 31 December 2021

	Notes	2021 £'000	2020 £'000
Fixed assets			
Tangible fixed assets	3	**1,059**	39
Investments	4	**92,893**	82,055
		93,952	82,094
Current assets			
Debtors	5	**8,803**	5,572
Cash at bank and in hand		**9,979**	7,051
		18,782	12,623
Total assets		**112,734**	94,717
Creditors: amounts falling due within one year			
Trade and other payables	6	**(23,977)**	(9,280)
Lease liabilities	3	**(85)**	(16)
		(24,062)	(9,296)
Net current assets		**(5,280)**	3,327
Total assets less current liabilities		**88,672**	85,421
Creditors: amounts falling due after more than one year			
Lease liabilities	3	**(776)**	(19)
Other financial liabilities		**(3,354)**	-
		(4,130)	(19)
Provisions for liabilities	7	**(250)**	-
Net assets		**84,292**	85,402
Capital and reserves			
Called up share capital	9	**7,844**	7,833
Share premium account	9	**29,427**	29,328
Other reserves	9	**37,108**	36,723
Own shares	9	**(1,903)**	(1,937)
Share-based payment reserve	9	**3,780**	3,520
Profit and loss account		**8,036**	9,935
Equity shareholders' funds		**84,292**	85,402

Xaar plc reported a loss for the financial year ended 31 December 2021 of £1,867,000 (2020: profit of £6,663,000)

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 29 March 2022. 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 2021

	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 2020		7,833	29,328	36,561	(2,656)	3,440	3,982	78,488
Profit for the financial year		-	-	-	-	-	6,663	6,663
Total comprehensive income for the period		-	-	-	-	-	6,663	6,663
Own shares sold in the period		-	-	-	719	-	-	719
Share option exercises		-	-	-	-	-	(710)	(710)
Capital contribution for share-based payments	4	-	-	162	-	-	-	162
Credit to equity for equity-settled share-based payments	10	-	-	-	-	80	-	80
At 31 December 2020		**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 expense 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**

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 2021

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 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 recharged from Xaar plc to the related entity

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 12 to 15. Notes 21 and 22 to the consolidated financial statements 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 2023, which have undergone reverse stress tests by 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 Directors' report on page 67 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 include 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 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 leased assets are consumed. Please refer to page 125, 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 2021 was 31 (2020: 32). Staff costs amounted to £2,652,000 (Restated 2020: £2,328,000) including share-based payments. Information about the remuneration of Directors is provided in the audited part of the Directors' Remuneration report on page 83. 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 83

The audit fee for the audit of the Company's financial statements in 2021 was £20,000 (2020: £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 2021

3. Tangible fixed assets

	Right-of-use asset – building £'000
Cost	
At 1 January 2021	44
Additions	1,166
Transfer to subsidiary	(44)
At 31 December 2021	1,166
Depreciation	
At 1 January 2021	(5)
Charge for the year	(107)
Transfer to subsidiary	5
At 31 December 2021	(107)
Carrying amount	
At 31 December 2021	1,059
At 31 December 2020	39

Set out below are the carrying amounts of lease liabilities (included under interest-bearing loans and borrowings) and the movements during the period

	2021 £'000	2020 £'000
At 1 January	**35**	-
Additions	**896**	45
Accretion of interest	**17**	-
Payments	**(51)**	(9)
Exchange movement	**-**	(1)
Transfer to subsidiary	**(35)**	-
At 31 December	**862**	(35)
Current	**85**	16
Non-current	**776**	19
	861	35

The table below summarises the maturity profile of the Group's financial liabilities based upon the contractual undiscounted payments for the year

	2021 £'000	2020 £'000
On demand	-	-
Less than three months	**26**	-
Four to 12 months	**77**	17
One to five years	**384**	19
More than five years	**460**	-
	947	36

The following are the amounts recognised in profit or loss

	2021 £'000	2020 £'000
Depreciation expense of right-of-use assets	**107**	6
Interest expense on lease liabilities	**17**	-
Total amount recognised in profit or loss	**124**	6

Notes to the Company financial statements continued
for the year ended 31 December 2021

4. Investments

	2021 £'000	2020 £'000
Subsidiary undertakings held at cost		
At beginning of the year	82,055	32,893
Additions in the year	10,453	49,000
Capital contributions arising from share-based payments	385	162
At end of the year	92,893	82,055

The Directors believe that the carrying value of the investments is supported by their underlying net assets

5. Debtors

	2021 £'000	2020 £'000
Amounts receivable within one year		
Amounts owed by Group undertakings	8,638	5,572
Trade debtors	90	-
Other debtors	75	-
	8,803	5,572

Amounts owed by Group undertakings are trading balances and interest is not charged and is payable on demand.

6. Creditors

	2021 £'000	2020 £'000
Amounts falling due within one year		
Amounts owed to Group undertakings	21,811	9,124
Other payables and accruals	577	156
Other financial liabilities	1,589	-
	23,977	9,280

Amounts falling due after one year	2021 £'000	2020 £'000
Other financial liabilities	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 split between the current due in 2022 (£1,589,000) and non-current portion. Further details are in note 36 to the consolidated financial statements

7. Provisions

	2021 £'000	2020 £'000
Current		
At 1 January	-	119
Additional provision in the year	44	-
Utilisation of provision	(44)	(119)
At 31 December	-	-
Non-current		
Provision for dilapidation	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

9. Share capital and share premium account

Full details of movements in share capital, share premium account, other reserves, own shares and the share option payment reserve are given in notes 26, 27, 28 and 30 to the consolidated financial statements.

10. Share-based payments

Equity-settled share option scheme

The Company's share option schemes are open to all employees of the Company. Options are exercisable at a price equal to the average quoted market price of the Company's shares on the date of grant. The vesting period is three years. The vesting criteria of these options are disclosed in note 32 to the consolidated financial statements. If the options remain unexercised after a period of ten years from the date of grant, 42 months in the case of the Share Save Scheme, or five years in the case of the Share Incentive Plan, the options expire. Save as permitted in the share option scheme rules, options lapse on an employee leaving the Company.

The weighted average share price at the date of exercise for share options exercised during the period was £1.67 (2020: £0.53). The options outstanding at 31 December 2021 had a weighted average remaining contractual life of two and a half years (2020: two and a half years), and a range of exercise prices between 0 pence and 227 pence (2020: 0 pence and 344 pence).

The performance conditions relating to the above share options and the exercise prices of options outstanding at the year-end are given in note 32 to the consolidated financial statements

Long-Term Incentive Plan

The Company's Long-Term Incentive Plan is open to all employees of the Company. Vesting of Performance Share Awards made under this scheme is conditional upon the achievement of performance conditions. Full details of the performance conditions are shown in note 32 of the consolidated financial statements. 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 Company.

The weighted average share price at the date of exercise for awards exercised during the period was £1.67 (2020: £0.45). The awards outstanding at 31 December 2021 had a weighted average remaining contractual life of nine years (2020: nine years). All awards have a £nil exercise price

Groups 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. The awards are granted on 14 October 2021. All of these awards have been granted in respect of the participant's 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 normal vesting date").

The weighted average share price at the date of exercise for awards exercised during the period was £nil (2020: £nil). The options outstanding at 31 December 2021 had a weighted average remaining contractual life of one year and three months (2020: nil). In 2021, Deferred Bonus Plan awards were made in October. The aggregate of the estimated fair values of grants made on that date is £60,000.

11. Subsidiary undertakings

The following entities are the subsidiary undertakings of the Company

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 7 March 2022. See note 38 to the consolidated financial statements for more detail

Five year record

	2021 Continuing operations £'000	2020 Continuing operations £'000	2019[1] £'000	2018 £'000	2017 £'000
Summarised consolidated results					
Results					
Revenue	**59,254**	47,984	49,379	60,468	100,142
Gross profit	**20,190**	13,010	12,290	29,496	47,045
Adjusted (loss)/profit before tax (note 4)	**(571)**	(3,911)	(7,952)	4,523	18,012
Adjusted profit/(loss) after tax (note 14)	**209**	(4,038)	(11,632)	6,930	16,413
Adjusted diluted earnings per share (note 14)	**(1.0p)**	(5.2p)	(15.1p)	10.0p	20.7p
Statutory profit before tax	**994**	(4,322)	(10,937)	280	12,290
Statutory earnings per share	**0.9p**	(5.7p)	(18.7p)	3.6p	14.3p
Dividends pence per share	**–**	-	-	1.0p	10.2p
Assets employed					
Net cash[2]	**25,051**	18,117	25,322	27,946	44,697

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, treasury deposits less borrowings and assets held for sale

Notice of the Annual General Meeting

Notice is hereby given that the twenty-fifth 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 25 May 2022 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 2021, 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 Dr Robert 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.
9. THAT the Directors' Remuneration report (excluding the Directors' Remuneration Policy which is set out on pages 86 to 89 of the Annual Report) for the year ended 31 December 2021 be approved.

Special business

To consider and, if thought fit, pass the following Resolutions which will be proposed in the case of Resolution 10 as an Ordinary Resolution and in the case of Resolutions 11 to 13 as Special Resolutions:

10. 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 conferred by this resolution will expire on the earlier of the next Annual General Meeting of the Company held after the date on which this resolution becomes unconditional and 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.

11. THAT, subject to the passing of Resolution 10, 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 10, 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

Notice of the Annual General Meeting continued

Special business continued

(b) the allotment of equity securities or sale of treasury shares (otherwise than pursuant to paragraph (i) 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.

12. THAT, subject to the passing of Resolution 10, the Directors of the Company be authorised in addition to any authority granted under Resolution 11 to allot equity securities (as defined in section 560 of the Act) for cash under the authority conferred by Resolution 10 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.

13. 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 11,688,488 (representing 14.9% 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.

By order of the Board

Camila Cottage
Company Secretary

29 March 2022

Notes

1. A member entitled at 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 enquiries@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. We 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 23 May 2022 (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 23 May 2022 (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 pages 60 and 61 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.

Notice of the Annual General Meeting continued

Notes continued

9. In order to facilitate voting by corporate representatives at the meeting, arrangements will be put in place at the meeting so that: (i) if a corporate shareholder has appointed the Chairman of the meeting as its corporate representative to vote on a poll in accordance with the directions of all of the other corporate representatives for that shareholder at the meeting, then on a poll those corporate representatives will give voting directions to the Chairman and the Chairman will vote (or withhold a vote) as corporate representative in accordance with those directions; and (ii) if more than one corporate representative for the same corporate shareholder has not appointed the Chairman of the meeting as its corporate representative, a designated corporate representative will be nominated, from those corporate representatives, who will vote on a poll and the other corporate representatives will give voting directions to that designated corporate representative. Corporate shareholders are referred to in the guidance issued by the Institute of Chartered Secretaries and Administrators on proxies and corporate representatives (www.icsa.org.uk) for further details of this procedure. The guidance includes a sample form of appointment letter if the Chairman is being appointed as described in (i) above.
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 CRESTCo's 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 23 May 2022. 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 CRESTCo 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 Uncertificated Securities Regulations 2001 (as amended).
14. As at 7am on 29 March 2022, 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, except for the shares held in trust for the Xaar Share Incentive Plan totalling 54,067 ordinary shares and, therefore, the total number of voting rights in the Company as at 7am on 29 March 2022 is 78,392,163.
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

Link Group, the Company's registrar, has launched a shareholder app: LinkVote+

It's 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.

Company information and advisors

Registered office
3950 Cambridge Research Park
Waterbeach
Cambridge CB25 9PE

Registered number
3320972

Company Secretary
Camila Cottagea

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, £1.2bn 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

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