Risk management
Managing our risks

Key risk areas

The risks around our business are set out in more detail on pages 43 to 49, but the key risk areas can be identified as being associated with the following:

Market

Risk owner: **CEO** John Mills

1. **Competition**
   Maximising returns over the long-term in the target application through early adoption to achieve a market leading position and then retention of that position.
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.
4. **Merger and acquisition opportunities**
   Seek opportunities to expand, create synergies and generate greater shareholder value.
5. **Coronavirus ('COVID-19') – External**
   Tracking the potential global impact and external risks arising from pandemic response and impact on customers / supply chain.

Operational

Risk owner: **CEO** John Mills

6. **Organisational capability**
   Having the right people in the right roles.
7. **Coronavirus ('COVID-19') – Internal / Company**
   Tracking the potential local impact and response to pandemic and operational internal risks on employees or organisation.
8. **Brexit**
   Tracking the impact of the Trade & Co-operation agreement between UK & EU.
9. **Manufacturing facility**
   Diversifying products, locations and manufacturing partners to alleviate operational issues.
10. **Partnerships**
    Working with the right companies, at the right time on the right terms to deliver long-term value.

IT

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

11. **IT systems and information failures**
    Failure of our IT infrastructure or key IT systems. Further, failure to build resilience at the time of investing in and implementing new IT infrastructure or IT systems.
12. **IT transformation**
    Failure to achieve 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.
13. **Cyber security risk – see incident response**
    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

14. **Ability to access sufficient capital**
    Ability to access sufficient capital to fund growth opportunities.
15. **Customer credit exposure**
    Offering credit terms ensuring recoverability is reasonably assured.
16. **Inventory obsolescence**
    Holding excess inventory levels when compared to demand, that leads to increased risk of obsolescence and write-off before consumption.
17. **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.

The printing industry in which we operate is declining in overall terms of total output, tends to be 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.

However in areas such as Packaging and Textiles, analogue processes are still dominant and the conversion to digital still modest.

The first approach to managing these risks is to have high quality individuals within the necessary functions that these risks tend to fall into. 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.

During 2020, the senior management and Board re-evaluated the existing principal risks, to consider emerging/alternative risks, with significant developments within the IT risk being expanded to cover increase in principal risks arising from cyber-security.

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 2021, allowing the Board to periodically review existing risks and consider key emerging risks, whether they be operation-specific or broader in scope, such as climate change and environmental matters, with particular reference to TCFD reporting requirements in 2022 (see page 36).

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.

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. Significant deficiencies in internal control were identified in EPS during the external audit process in respect to financial statement close process and management controls (see Audit Committee report on page 74), and an action plan has been developed to be implemented in 2021.

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.

Approach to risks

The first approach to managing these risks is to have high quality individuals within the necessary functions that these risks tend to fall into.

Risk management (cont.)

Cyber security – Xaar Group IT security incident

As communicated in Company announcements in 2020, Xaar experienced a critical security incident on 4 October 2020 when the Group's IT infrastructure was hit by a Ransomware attack.

Our quick response to the issue by shutting down IT systems across multiple sites contained the attack and limited the impact from it, however data was encrypted by the Ransomware on several systems. We did not experience any significant impacts to business operations and we successfully fulfilled all customer orders in the period following the attack.

As one of the affected systems was our HR system, we immediately notified the Information Commissioner's Office (ICO) of the Personal Data Breach. We co-operated with the Information Commissioner throughout the investigation and were informed on 27 October that no further regulatory action would be taken.

We engaged external cyber security experts to investigate the attack and other key IT partners to assist with the safe recovery of the affected systems. Recovery activities continued for several weeks following the attack and were completed by the end of November. The forensic investigation into the attack confirmed that no data was extracted.

While working to recover our IT systems, we have focused on using the insights gained in the process to further strengthen our IT security and data protection platforms. We will continue this important work going forward as documented in our Risk management activities.

The external fees incurred responding to and recovering from this security incident were £35k.

Approach to risks

The first approach to managing these risks is to have high quality individuals within the necessary functions that these risks tend to fall into.

Probability rating

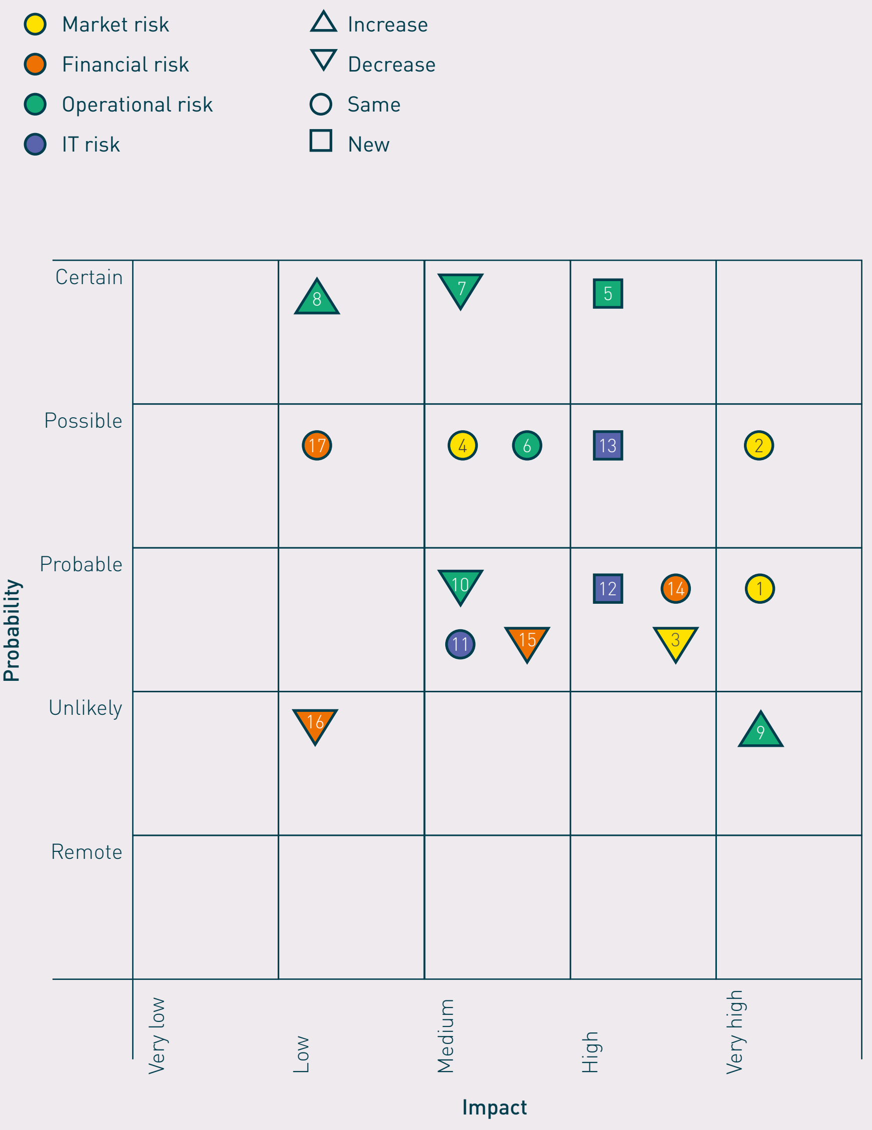
The probability rating is likelihood of an event occurring based on previous experiences, historical information and professional judgement with respect to the incident in the territory or industry. Probability can be subjective and is not an exact science. The probability of an incident occurring can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

Type of risk



Key of change
⌃ Increase
❯ No change
⌄ Decrease

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.	**Possible** **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 of 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 (cont.)

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Market (cont.)			
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 as is reasonably achievable in the context of each M&A opportunity. 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. Use of external advisors.	**Possible** **Medium** **›**
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 printhead. Temporary disruption to the supply chain and further workplace restrictions may threaten to slow down production or delay testing and the commercialisation of the 3D printers.	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 printhead 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. Assessment has taken place by the Board of the impact upon the 3D operation, and work has commenced to identify an appropriate solution to de-risk and transfer ownership of the 3D business.	**Certain** **High** **NEW**

Key of change
⌃ Increase
❯ No change
⌄ Decrease

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Operational			
6. 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. 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. Investment to build a learning organisation with focus on culture, reward and recognition. The Group reviews remuneration to ensure that the appropriate reward packages accompany a fulfilling work environment. 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 is to be launched in 2021. Annual performance management reviews for the majority of employees to identify talent and develop key employees. Campaigns to increase performance and development of communication between managers and employees to ensure alignment to Company objectives.	**Possible** **Medium** ❯
7. 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 11. IT risk	We have stopped all international travel and remote access and business continuity testing has been performed. Employees where possible are working from home, we have communicated sick and self-quarantine policies to all our staff. 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 2020 no claims for furlough or job support were requested from the UK Government. A claim was submitted in the USD for a government loan that was subject to conditions to obtain relief and has been recorded as a Government grant. Further assessment will be made against available Government support schemes, should the need arise.	**Certain** **Medium** ⌄

Risk management (cont.)

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
Operational (cont.)			
8. Brexit	The United Kingdom's decision to leave the European Union presents both risk 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 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 2021. Identify and support EU, EEA or Swiss employees requiring advice in completion of application to the EU Settlement Scheme by June 2021. 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.	**Certain** **Low** ⌃
9. 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. COVID-19: Sites left vacant / limited access, risk of theft / vandalism increased. 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 and fire. 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.	**Unlikely** **Very High** ⌃
10. Partnerships	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 (e.g. 3D/Stratasys) there will be contractual arrangements to ensure appropriate governance and Board structure to support the business and product development.	**Probable** **Medium** ⌄

Key of change
⌃ Increase
› No change
⌄ Decrease

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
IT			
11. IT systems and information failures	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. Reputational impact, business disruption and potential deterioration in customer relationships.	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 is 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** ›
12. IT Transformation	Partial or complete failure 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. New risk: As a result of planning and initiating a major IT Transformation Programme in Q4 2020.	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. Active engagement with business stakeholders across the organisation and direct involvement in the Programme. Undertaking real-time project delivery management and assurance activities throughout the Transformation Programme.	**Probable** **High** **NEW**

Risk management (cont.)

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
IT (cont.)			
13. 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. New risk: As a result of the cyber attack suffered by Xaar in October 2020, a general increase in the threat level, and increases in the financial and reputation impact from such attacks, we have separated this from inclusion in other IT risks to enable a much clearer focus on this area of IT risk.	Implemented a Multi-Factor Authentication solution for VPN to reduce the likelihood of remote attacks. MFA to be rolled out across all key systems in 2021. 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 to be completed in Q1 2021. 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 information security. 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.	**Possible** **High** **NEW**
Financial			
14. 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 implemented cost reduction actions to focus resources on key initiatives and to achieve breakeven under current volume requirements. The Group has sufficient cash available for execution and delivery of the turnaround strategy within agreed timescales. 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 (e.g. 3D/Stratasys).	**Probable** **High** ›

Key of change
⌃ Increase
❯ No change
⌄ Decrease

Risk and link to business unit	Impact	Mitigation	Likelihood Magnitude Change
15. 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 its 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 is being reviewed with a move away from a distribution model, to being a direct supplier to OEM manufacturers, which will reduce the future risk being contained in a limited number of large transactions to a wider breadth of supply across a consistent sales order pipeline. Significant level of existing debts written off — recoverability of remaining outstanding debts as distributors run down balances. Previous OEM customers being on boarded with favourable payment terms depending upon credit history — exposure to Chinese manufacturers – payments in advance.	**Probable** **Medium** ⌄
16. 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 increases 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. 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. The risk has reduced compared to prior year, following cessation of Thin Film activities and operational improvements.	**Unlikely** **Medium** ⌄
17. 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, EUR and SEK. 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.	Our treasury policy allows us to hedge. There is a partial natural hedge for foreign currency movements. Cash flows are constantly reviewed and action is taken when appropriate. **See 'Brexit' risk above for further disclosure.**	**Possible** **Low** ❯