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Press Release

The Business of Science®

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Oxford Instruments plc
Announcement of Preliminary Results for the year ended 31 March 2019

Oxford Instruments plc, a leading provider of high technology products and systems for industry and research, today announces its Preliminary Results for the year ended 31 March 2019.

	Year ended 31 March 2019 £m	Year ended 31 March 2018 £m	**% change reported**	**% change constant currency**
Revenue[1]	**333.6**	296.9	**+12.4%**	**+10.8%**
Adjusted* operating profit[1]	**49.7**	46.5	**+6.9%**	**+9.7%**
Adjusted* profit before tax[1]	**47.5**	42.3	**+12.3%**	
Profit before tax[1]	**35.5**	34.2	**+3.8%**	
Adjusted* basic earnings per share[1]	**64.9p**	56.3p	**+15.3%**	
Basic earnings per share[1]	**50.1p**	34.3p	**+46.1%**	
Dividend per share (full year)	**14.4p**	13.3p	**+8.3%**	
Cash generated from operations[1]	**56.3**	33.4		
Net cash/(debt)	**6.7**	(19.7)		

[1]Continuing operations

Financial Highlights:

- Orders up 12.9% to £353.5m (2018: £313.0m), an increase of 12.0% at constant currency
- Order book of £171.6m (31 March 2018: £153.0m, restated for IFRS 15) up 12.2% (9.4% at constant currency)
- Reported revenue increased by 12.4% to £333.6m. The Group has adopted IFRS 15 ‘Revenue from Contracts with Customers’ and IFRS 16 ‘Leases’. The impact is to increase revenue by £7.0m
- Adjusted operating profit from continuing operations up 6.9% to £49.7m
- Adjusted operating margin of 14.9% (2018: 15.7%), 15.5% at constant currency, impacted by a currency headwind and in-year investment in operational excellence
- Reported profit before tax up 3.8% to £35.5m after mark-to-market movement on currency derivatives and adjusting items
- Net cash of £6.7m following strong cash conversion of 103%
- Full year dividend increased by 8.3% to 14.4p

Operational Highlights:

- Continued progress with the implementation of our Horizon strategy, embedding defined capabilities and disciplines across the businesses
- Incremental in-year investment in operational excellence with a focus on strategic procurement and operating processes
- Strong order, revenue and profit growth in Materials & Characterisation supported by growth in advanced material and semiconductor customer segments
- Healthy end markets across life science, quantum technology and academia supported strong order and revenue growth across our Research & Discovery sector. Operating profit was held back in the period by a lower performance from scientific X-ray tubes and Scienta Omicron
- Order, revenue and profit growth, with margin improvement, in Service & Healthcare, supported by growth in service and support of our own products and an improved performance from our healthcare businesses
- Investment in R&D supporting new and future product launches; received the Queen’s Award for Innovation for our latest material analyser

Summary and Outlook:

Ian Barkshire, Chief Executive of Oxford Instruments plc, said: "We have made good progress in the year with the continued implementation of our Horizon strategy, which is delivering good growth and improved profitability. We are serving attractive markets with long-term fundamental growth drivers and focusing on segments where we can maintain leadership positions.

"Our core purpose is to address some of the world's most pressing challenges. We have positioned the Group to be a leading provider of high technology products and services to image, analyse and manipulate materials down to the atomic and molecular level, facilitating a greener economy, increased connectivity, improved health and leaps in scientific understanding.

"While mindful of the backdrop of geopolitical and market uncertainty, we remain focused on improving the business and expect to make further progress in the year."

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Number of pages: 44

**NOTE: Throughout this announcement we make reference to adjusted numbers. A full definition of adjusted numbers can be found in note 1. Where we make reference to constant currency numbers these are prepared on a month by month basis using the translational and transactional exchange rates which prevailed in the previous year rather than the actual exchange rates which prevailed in the year. Transactional exchange rates include the effect of our hedging programme.*

Chairman's Statement

I was delighted to join Oxford Instruments as Chairman in December 2018 and this is my first report since taking on the role.

Oxford Instruments is a business that inspires the greatest admiration, with 2019 marking the Group's 60th anniversary. Today, Oxford Instruments' technologies are helping to find cures for cancer, advance space exploration and develop next generation electronics, advanced materials and quantum technologies. Our brand and capabilities are recognised by the world's leading industrial manufacturers and scientific research institutions, who specify our products to accelerate their R&D, increase productivity in high tech manufacturing and achieve ground-breaking innovations.

In my first six months with the Group, I have enjoyed travelling around our sites and meeting our talented teams. I have been impressed with the quality of our businesses and the calibre of management driving our growth strategy.

This is evident in our full year results, which show strong progress across our businesses and in each of our major geographies. I am especially heartened by the Group's success in increasing its commercial customer base and its market share in segments with long-term growth potential. I am also impressed by the Group's strong cash position, which represents a major turnaround over the last couple of years.

As Ian Barkshire sets out in the Chief Executive's Review, the Group is making good progress transitioning from a product focus to become a customer centric, market driven Group, increasing the value for our existing customers whilst expanding our addressable markets. By building on our innovative technology and targeting attractive markets, I am confident that the Group will deliver long-term sustainable growth and margin improvements.

Given our positive cash position and continued confidence, the Board has proposed to raise the final dividend to 10.6 pence (2018: 9.6 pence), giving a full-year dividend of 14.4 pence (2018: 13.3 pence), an increase of 8.3%.

I would like to thank Steve Blair for his commitment as Interim Chairman during the year. I also thank the Board and all our employees for their contribution that has resulted in a successful year.

Chief Executive's Review

We were delighted to welcome Neil Carson to the Board as our Non-Executive Chairman in December 2018. His wealth of Board and strategic leadership experience in high tech companies will be invaluable in helping us realise our growth aspirations. I, and the rest of the Board, would like to thank Steve Blair for his leadership as Interim Chairman.

Embedding the Horizon Strategy

It has been a positive year for Oxford Instruments, with the Horizon strategy now well embedded across the Group. This is driving our long-term plans and initiatives and has transformed our operating processes and day-to-day activities, resulting in a return to growth and improved financial performance. In particular, I have been delighted by the level of employee engagement and their ownership of the execution of our new strategy. Through Horizon we are building a stronger Oxford Instruments, positioning ourselves to deliver long-term sustainable growth and improved margins. Our performance in the year is testament to our progress, with strong order and revenue growth across each of our three sectors, year on year profit growth, a closing net cash position, strong orderbook growth, and a book-to-bill ratio of 1.06.

Horizon is our transformational programme for the Group and has now been in place for two years. Through our focus on Market Intimacy, Innovation and Product Development, Customer Support Services, and Operational Excellence we have been changing the way we operate and have been embedding clearly defined capabilities and disciplines across our businesses. Whilst there is still much to do, we have made significant progress over the past two years and are already seeing tangible returns.

We are now better positioned to address a broad and diverse range of attractive end markets and industrial sectors, and we have seen the share of commercial customers rise to over 50% of revenue. This was achieved by reshaping our portfolio and focusing on those areas where our key enabling technologies are driving long-term success for our customers, where we can achieve and maintain leadership positions. Within these markets, our products, solutions and services are facilitating a greener economy, increased connectivity, improved health and leaps in scientific understanding.

Through our Horizon focus, we help our customers accelerate their applied R&D, increase productivity in high tech manufacturing and make ground-breaking discoveries. Our solutions are being used by customers to find cures for cancer, advance space exploration and develop next generation electronics, advanced materials and quantum technologies.

Market Intimacy

We have made good progress in our transformation to a more customer-centric, market focused Group. Through a deeper understanding of our target market segments and the diverse challenges faced by our customers, we have changed the way we communicate and reach our prospective and existing customers, more clearly identifying the value our products can add.

As we get closer to our customers across our target markets we have been able to identify growth opportunities within our current markets and into new markets. We are seeing strong revenue growth from commercial customers as we expand our offerings and addressable markets. Examples include the analytical solutions we offer for batteries, additive manufacturing, automotive and aerospace, neuroscience and cell biology, lasers and optoelectronic devices, power electronics, and astronomy. Our heightened customer application-based market intelligence has strengthened our future product roadmaps by identifying more attractive development opportunities and driving our priorities and focus for innovation.

Operational Excellence

In the year, with our cohort of lean champions in place, we undertook a significant investment to deliver a step change in our operational excellence programme, targeting three key areas: strategic procurement, operational efficiency and logistics. This has re-shaped our operational teams and embedded new operating practices. Already this has increased our revenue capacity with improved productivity for the current year. Investment in our operational excellence programme within the year held back operating margins but helped to deliver increased revenues and established the foundations and methodologies to support future growth and margin improvement.

People Capabilities

Within the Group we continue to build our leadership team, while enhancing commercial focus and core capabilities across and within the Group at an operational level. This has been a dual approach of investing in our existing employees as well as looking outside the organisation for individuals with specific capabilities and experience to accelerate our progress.

Innovation & Product Development

Innovation is part of our heritage and remains central to our strategy. Through Horizon we are more keenly targeting our R&D investment to create differentiated products and solutions that will provide significant value for our customers in our chosen long-term, high growth market segments. In the year, the success of our recently launched products helped drive our growth across Advanced Materials, Semiconductor, Life Science and Quantum Technology applications. Examples of new product innovations are provided in the Operations Review.

Results

The Group delivered a strong full year performance, with positive second half trading building on the progress seen in the first half of the year. This resulted in strong order, revenue and profit growth, with the Horizon strategy producing tangible improvements in business performance. This was underpinned by our chosen end markets and their underlying growth drivers remaining attractive and robust. In addition, continued success from recently launched products further strengthened our market leading product portfolio, supported by an increased commercial focus and progress in establishing our customer-centric end application approach.

Reported revenue rose to £333.6m (2018: £296.9m), an increase of 12.4% (10.8% at constant currency). Materials & Characterisation and Research & Discovery sectors both delivered double digit revenue growth supported by the success of recently launched products and an increased presence and demand from commercial customers. The Service & Healthcare sector delivered good growth, driven predominantly by increased demand for services related to our own products. From an end market perspective, we had significant growth in Advanced Materials (31%), with strong growth across the Lifescience (5%), Quantum Technologies (14%) and Semiconductor (4%) segments. From a geographical perspective, we had strong constant currency revenue growth in Asia and North America of 17.7% and 9.8% respectively, with modest growth of 2.5% in Europe. Within Asia we had strong growth across the region including China, Japan and South East Asia. Global distribution of revenues remains broadly in line with the previous year, with Asia representing 43% of Group revenue, Europe 24% and North America 31%, which are broadly in line with global R&D spend profiles.

Increased volumes and our enhanced commercial focus drove reported adjusted operating profit up 6.9% to £49.7m (2018: £46.5m) despite a modest currency headwind, representing an increase of 9.7% at constant currency. Adjusted operating margin for the Group of 14.9% (2018: 15.7%) was impacted by an incremental in-year investment in our operational excellence programme and a small currency headwind. Operating margin at constant currency of 15.5% was broadly in line with last year. Adjusted profit before tax increased by 12.3% to £47.5m (2018: £42.3m), representing an increase of 15.4% at constant currency.

Continuing adjusted basic earnings per share increased by 15.3% to 64.9 pence (2018: 56.3 pence).

Reported orders for the Group were up 12.9% (12.0% at constant currency) to £353.5m (2018: £313.0m) with strong growth across all three sectors. We continue to see increased customer demand, supported by our enhanced customer application and market focus with good order growth from academic customers and stronger growth from commercial customers. Orders grew in Europe, North America and Asia and across each of our market segments.

The orderbook, representing orders for future delivery, increased by 12.2% to £171.6m (2018: £153.0m), growth of 9.4% at constant currency, with strong growth across Materials & Characterisation, Research & Discovery and services related to our own products.

Good cash collection resulted in the Group moving to a net cash position of £6.7m from net debt of £19.7m at the previous year end.

Sector Performance

Turning to the individual sector performance:

Materials & Characterisation products and solutions enable the fabrication and characterisation of materials and devices down to the atomic scale, predominately supporting customers across applied R&D as well as the production and manufacture of high technology products and devices. Building on a positive first half, the sector delivered a strong financial performance underpinned by increased demand from commercial customers within the Advanced Materials and Semiconductor & Communications segments.

The proportion of revenue from commercial customers rose in the year, representing 58% of sales from the sector. Reported orders grew in the period by 11.2% to £144.0m (2018: £129.5m). Reported revenue increased by 16.8% to £137.9m, with reported adjusted operating profit rising to £22.1m (2018: £20.1m), growth of 10.0%. The orderbook for future deliveries increased by 20.5% to £41.2m (2018: £34.2m). The reported operating margin of 16.0% (2018: 17.0%) was held back by a currency headwind and investment in our operational excellence programme, with constant currency margin of 16.8%.

Growth in Advanced Materials is driven by the increasing demand for lighter, stronger and higher performing materials to address customer needs across a broad range of end applications including autonomous vehicles, increased connectivity and a greener economy. Order and revenue growth of 8% and 4% respectively within the Semiconductor & Communications segment was supported by our breadth of analytical solutions utilised to accelerate the development of next generation devices, as well as the increasing demand for compound semiconductor processing solutions required for 5G, autonomous vehicles and higher efficiency energy devices. This has more than offset a reduction in demand from mainstream silicon-based chip semiconductor chip manufacture and consumer electronics.

Research & Discovery provides advanced solutions that create unique environments and enable imaging and analytical measurements down to the molecular and subatomic level, predominantly used in scientific research and applied R&D. Healthy end markets across Lifescience, Quantum Technologies and academic funded Research & Fundamental Science drove strong order and revenue growth in the year. Whilst the proportion of revenue from commercial customers increased in the year, 69% of sales in the sector are from academic and government funded research communities. Growth in Lifescience applications was predominantly driven by increased demand for our optical microscopy products and scientific cameras; Quantum Technologies by the continued global investment in fundamental technologies and applied development in quantum computing, communication and optics; and Research & Fundamental Science by the increased funding globally in larger scale national facilities driving demand across our portfolio of scientific instruments, cryogenics and high magnetic field platforms. Reported orders of £138.2m (2018: £118.2m) represented growth of 16.9%, with increases from both academic and commercial customers. Reported revenue increased by 11.8% to £125.2m (2018: £112.0m).

The Group has adopted IFRS 15 'Revenue from Contracts with Customers'. The primary impact is the recognition of revenue on our complex cryogenic and magnet systems on installation, rather than shipment. The financial impact in the year between the two accounting policies is an increase in revenue of £7.0m. The business has fundamentally changed its approach to its operational processes, from assembly through to testing and on-site installation. Accordingly, we have seen a significant reduction in the backlog of uninstalled complex systems.

In addition to the strategic investment in operational excellence, adjusted operating profit was held back in the period due to a temporary but sustained period of low manufacturing yield and increased costs within our scientific X-ray tube business as well as a lower contribution from our share of the Scienta Omicron joint venture. As a consequence, operating margin reduced 220 basis points in the period to 10.1% (2018: 12.3%).

Service & Healthcare provides customer services and support for our own products and the service, sale and rental of third-party healthcare imaging systems under the OI Healthcare brand. The sector had good growth in orders and revenue, resulting in increased profitability and higher margins through our increased focus on service products, customer support offerings and consumables related to our own products. In addition, this was combined with an improved performance from the US OI Healthcare business. Reported orders increased by 8.7% to £71.3m (2018: £65.6m), reported revenue grew 5.5% to £70.5m (2018: £66.8m) and adjusted operating profit increased 18.3% to £14.9m (2018: £12.6m). Reported operating margin improved 220 basis points to 21.1% (2018: 18.9%).

R&D

One of the core elements of our Horizon strategy is our investment in highly targeted innovation and product development in line with our short, medium and longer-term roadmaps to improve our market shares and expand our addressable markets. We incurred expenditure of £25.4m (2018: £24.8m) with an increased emphasis on products, solutions and technologies that provide new capabilities, ease of use and enhanced productivity. We monitor the proportion of revenue which originates from products launched in the last three years (our vitality index). In the period, our vitality index remained in line with previous year at 37% (2018: 37%) representing a continued healthy pipeline and performance of newly launched products.

People

Our staff are fundamental to our business success and I am delighted with their engagement, development and implementation of our Horizon strategy. We have continued to increase the capabilities of our teams through the development of existing employees and the targeted recruitment of new talent.

I would like to thank all our employees for their commitment to Oxford Instruments and their passion to deliver an exceptional experience for all our customers.

Summary and Outlook

We have made good progress in the year with the continued implementation of our Horizon strategy, which is delivering good growth and improved profitability. We are serving attractive markets with long-term fundamental growth drivers and focusing on segments where we can maintain leadership positions.

Our core purpose is to address some of the world's most pressing challenges. We have positioned the Group to be a leading provider of high technology products and services to image, analyse and manipulate materials down to the atomic and molecular level, facilitating a greener economy, increased connectivity, improved health and leaps in scientific understanding.

While mindful of the backdrop of geopolitical and market uncertainty, we remain focused on improving the business and expect to make further progress in the year.

Operations Review

Our Group reports in the following three sectors: Materials & Characterisation, Research & Discovery, and Service & Healthcare.

Materials & Characterisation

	2019 £m	2018 £m	Growth	Constant Currency Growth[1]
Revenue	**137.9**	118.1	16.8%	15.3%
Adjusted[2] operating profit	**22.1**	20.1		
Adjusted[2] operating margin	**16.0%**	17.0%		
Profit before tax after adjusting items	**19.7**	17.3		

[1]For definition refer to note on page 2 of highlights
[2]Details of adjusting items can be found in Note 1 of these Financial Statements

The Materials & Characterisation sector comprises Asylum Research, NanoAnalysis and Plasma Technology. This sector has a broad customer base across a wide range of applications for the imaging and analysis of materials down to the atomic level as well as the fabrication of semiconductor devices and structures through our range of advanced semiconductor etch and deposition process systems. Our portfolio of imaging systems include our range of market leading X-ray and electron analysis systems used in conjunction with electron and ion microscopes as well as our performance leading atomic force microscopes. The sector has a strong focus on supporting and accelerating our customers' applied R&D, enabling the development of new devices, next generation higher performance materials and enhancing productivity in advanced manufacturing, quality assurance (QA) and quality control (QC). We provide leading product performance, improved ease of use and enhanced productivity, with the analytics and information to aid the interpretation of acquired data.

Materials & Characterisation delivered strong growth in orders, revenue and profitability. This was supported by our continued focus on tailoring our product offering to targeted end customer segments and the success of recently launched products and solutions. Through our applications focus we have been able to increase value for our existing customers and expanded our reach into new addressable markets. This led to significant growth from industrial and commercial customers, with their proportion of sales in the period increasing to 58% (2018: 49%). Academic markets remained robust with orders broadly in line with the previous year.

The sector had growth across each of our target application segments, with particularly strong growth within Advanced Materials, which accounted for 39% of sales in the sector. Semiconductor & Communications represented 42% of sales, with Energy, Environment and Healthcare & Lifescience applications representing 7%, 6% and 5% of sales, respectively. From a geographic perspective, revenue grew in each of the major regions of Europe, North America and Asia.

The continued demand for lighter, stronger and higher functioning materials has driven our growth in Advanced Materials. Here, our solutions are being used to aid the development of next generation products and components, as well as in the QC and QA of current manufactured products. Some of the key market applications include automotive and aerospace, additive manufacturing, consumer electronics, displays, and polymers.

As an example, the disruptive transformation within the automotive industry towards electric, hybrid and autonomous vehicles is driving manufacturers to use new composite materials and super alloys, faster dynamic control electronics, and develop more efficient battery storage and power delivery solutions. This is driving an increasing demand for our advanced analytical imaging and etch and deposition systems, with the mechanical properties, performance and reliability of advanced materials being determined through the design and precise control of the composition, microstructure and thin film coatings. In particular, we have had strong sales growth from our imaging and analysis products used with electron microscopes, namely our Ultim™ range of large area X-ray detectors and Symmetry™, our super-fast material structural analysers. These analysers enable productivity improvement through higher speed, resolution and accuracy of analysis.

We have also had good growth within additive manufacturing applications where our imaging systems are being used to measure a range of critical material properties, assess the performance and quality of the manufactured components, and help optimise the manufacturing process. Building on our expertise in particle analysis, we have developed a tailored solution for the QC of the raw material feedstock, helping avoid contamination and maintaining end product performance.

The Semiconductor & Communications segment saw continued order and revenue growth in the year. Whilst sales to mainstream silicon chip manufacturing and electronics declined, we received particularly strong growth from commercial customers across our portfolio of semiconductor etch and deposition solutions, underpinned by our leading performance and expertise in compound semiconductors. Here, materials such as silicon carbide, indium phosphide and gallium nitride are critical to produce the higher speeds, larger capacity and improved energy efficiencies required to realise a greener economy, autonomous vehicles and ubiquitous unbound connectivity, when compared to current silicon based technologies. Success in the segment was supported by the breadth of end applications that we support, as well as our reach across fundamental research, applied R&D of next generation products, and the manufacturing support and production of current products.

Within compound semiconductors we have seen increasing demand being driven by the long-term transitioning of technology away from silicon based solutions for power electronics, connectivity and communication. Power electronics are the enabling technologies to use, distribute and generate electrical energy. The move to silicon carbide and gallium nitride based solutions enables a step change in energy efficiency, with increased sales across a range of end applications including electric vehicles and distribution networks. Our gallium arsenide and indium phosphide process solutions support the increased speed and infrastructure capacity required to deliver the desired transformation in connectivity, for example 5G networks and the rise in the data economy. Demand for increased communication is driving growth across sensors and optoelectronic devices such as vertical cavity surface emitting lasers (VCSELs), three-dimensional sensor arrays and microLEDs used across heads up displays, video walls and smart watches. We have been working with a number of leading commercial organisations to help develop the necessary semiconductor device performance, quality and reliability at commercially effective price points.

In the Energy segment, we saw good growth across energy generation, storage and battery applications as a result of the increasing interest in lithium (Li) batteries. Here our material analysers support two key drivers. First, our advanced high energy-resolution and ultra-sensitive Extreme™ X-ray analyser is the market leader in imaging of the internal chemistry and active interfaces at the nanoscale required for the development of new, higher capacity and faster charging systems. Second, we have developed a tailored particle analysis solution to aid the detection of microscale metal impurities, which degrade performance and can cause catastrophic failure. In recognition of the innovation encompassed within the Extreme™, it has recently received the Queen's Award for Innovation.

As our analytical systems become increasingly sensitive and easier to use by non-experts, we have found new opportunities within several markets for our X-ray analysers and atomic force microscopes. In Lifescience, researchers are using our video rate Cypher™ atomic force microscope to observe biomolecular interactions in real-time, furthering their understanding of how our bodies work. Our large area and high sensitivity X-ray solutions are being used to observe the role of calcium, sodium and potassium ions in cardiac, brain and nerve cell functionality; while in food markets we are helping to improve food integrity and production yield.

Research & Discovery

	2019 £m	2018 £m	Growth	Constant Currency Growth[1]
Revenue	**125.2**	112.0	11.8%	9.9%
Adjusted[2] operating profit	**12.7**	13.8		
Adjusted[2] operating margin	**10.1%**	12.3%		
Profit before tax after adjusting items	**6.6**	4.1		

[1]For definition refer to note on page 2 of highlights
[2]Details of adjusting items can be found in Note 1 of these Financial Statements

The Research & Discovery sector includes Andor Technology, Magnetic Resonance, NanoScience, X-Ray Technology and our minority share in Scienta Omicron. This sector provides advanced solutions that create unique environments and enable imaging and analytical measurements down to the molecular and subatomic level, used predominantly in fundamental and applied research. We build on our relationships with customers working on breakthrough applications in research to gain insights and support future commercial applications. We have strong brand recognition and leading product performance in our chosen market segments, with 69% of sales from the academic or government funded research community and 31% from industrial or commercial customers.

The sector had good growth in orders and revenue driven by a strong performance from our optical microscopy systems, scientific cameras, cryogenic systems and superconducting research magnets. Performance was supported by positive academic end markets leading to strong order growth across the product portfolio, augmented by further growth into commercial customers for our scientific cameras, cryogenic and optical microscopy systems. We saw continued improvement in our NanoScience business under a new leadership team. However, underlying profit improvement within the sector was more than offset by a temporary, but sustained, period of low manufacturing yield at X-Ray Technology, which produces our scientific X-ray tubes for third party customers, a lower contribution from the Scientia-Omicron joint venture and an investment in operational excellence.

We had growth across our three largest customer segments of Healthcare & Lifescience, Quantum Technology, and Research & Fundamental Science, which represent 41%, 22% and 19% of sales respectively. Sales to customers exploring new advanced materials, semiconductors or developing energy and environmental applications remained broadly in line with the previous year. From a geographical perspective we had good growth across Europe, Asia and North America.

Growth in Healthcare & Lifescience was driven by a strong performance from our optical microscopy products and solutions, including our Dragonfly™ confocal microscope, our image visualisation and analysis software and scientific cameras used on third party measurement solutions. The launch of our Sona™ camera further enhanced our portfolio of high sensitivity cameras specifically tailored for life science applications.

There is an increasing need from those working in neuroscience, cell and developmental biology to be able to acquire, visualise and analyse multiple large samples to better understand the core biological processes that lead to disease. Dragonfly™ has become a platform of choice for these researchers as it can handle such sample types while offering ease of use and an exceptional imaging capability that spans from the millimetre scale right down to the nanometre scale. The enhanced performance it provides researchers is enabling improved understanding and the development of new therapeutic approaches for cancer and neurological conditions, such as Alzheimer's and Parkinson's.

Building on our understanding of the needs of researchers in this segment, Imaris™, our imaging software, enables the visualisation and analysis of the huge data set modern optical microscopy systems create. Imaris™ offers enhanced interpretation of results and our customers are using it to better understand conditions, such as Autism and Alzheimer's, and processes, such as cellular activity during wound and organ repair and immune response to foreign organisms.

Our high sensitivity cameras, which offer enhanced performance at low light levels, are being used to measure and observe the interaction with individual biomolecules in real time, increasing the accuracy and relevance of results. This has proven especially valuable for our strategic OEM partners. It is providing them with a core capability for their gene sequencing and clinical screening solutions, which are used for drug feasibility studies and in the development of personalised medicines.

With the expanding role of technology in the world we have seen an increase in academic and government investment in more basic and fundamental science across a broad range of disciplines, as well as an ongoing renewal and regeneration of large-scale national user facilities. While end user applications vary, we are well positioned to support them with a range of optical, cryogenic, magnetic resonance imaging and high magnetic field solutions.

During the year we won a significant global tender to supply several high-performance cryogenic and extreme magnetic field systems to the renowned Institute of Physics Chinese Academy of Sciences (IOP-CAS). This builds on the performance and reliability of the many systems we have previously supplied to the IOP-CAS's existing laboratories. Our solutions will allow researchers to make ground breaking discoveries of new materials and novel phenomena, furthering our understanding of the structure, properties and performance of these materials on a quantum scale.

We continue to see sales growth in Astronomy, where our specialised cameras, such as the recently launched Marana™, are allowing the rapid imaging of large areas of the sky with increased sensitivity. This is enhancing the tracking of small particles of space junk that had been previously undetectable; space junk can be very damaging to operational satellites and future space missions. Exoplanet discovery continues to attract notable funding within astronomy and our range of large area cameras are well placed for this application. The drive to find other earth-like planets and the increased level of privately-funded space developments provide continued growth opportunities.

Fundamental shifts in technology and capability are driving increased research and applied development for both academic and commercial customers. Quantum Technology continues to deliver strong demand and we had increased order growth in the year for this segment. Global annual spend on quantum technologies is estimated to exceed $1.5 billion and is set to continue over the next decade. Quantum technologies offer the potential for vast increases in computational speed, new paradigms for secure information transfer and unprecedented sensor sensitivities applicable across a broad range of industrial and medical applications. With our Triton™ ultra-low temperature cryogenic platforms and iXon™ cameras, we are well placed to exploit these growing opportunities.

Within the Energy, Environment and Advanced Materials segments our broad range of analytical systems are supporting research into sustainable foods, water cleanliness and advanced fabrics, as well as ensuring compliance within food supply. For example, our high field benchtop magnetic resonance analysers are being used to measure the oil and fat content of foods, contamination within water, and are aiding the productivity and quality control of high-performance fabrics for clothing manufacture.

Service & Healthcare Sector

	2019 £m	2018 £m	Growth	Constant Currency Growth[1]
Revenue	**70.5**	66.8	5.5%	4.2%
Adjusted[2] operating profit	**14.9**	12.6		
Adjusted[2] operating margin	**21.1%**	18.9%		
Profit before tax after adjusting items	**14.1**	10.6		

[1]For definition refer to note on page 2 of highlights
[2]Details of adjusting items can be found in Note 1 of these Financial Statements

The Service & Healthcare sector comprises the Group's maintenance service contracts, billable repairs, training and support services, and spare part sales related to Oxford Instruments' own products under the OiService brand; and the sale, service and rental of refurbished third-party MRI and CT machines under the OI Healthcare brand.

In the year the sector had order and revenue growth, with increased profitability and operating margin, as a result of an improved performance from both OI Healthcare and OiService.

Our US OI Healthcare business continues to return a higher proportion of revenue from service contracts relative to the sale of refurbished systems, in line with our strategy. In the year there has been good improvement in the lease utilisation of our fleet of mobile imaging systems, and our increased focus on service capabilities has helped win multi-instrument contracts at larger imaging centres.

Within Japan, we continue our focus on supporting our key account customers through the provision of best in class service support for a range of MRI systems. Our technical expertise, response times and national coverage has enabled us to win further accounts within the year.

In OiService we have seen an increased demand for services and support related to our own products. As part of our Horizon strategy we continue to develop our customer service offerings, supporting our customers' needs by focusing on how we can add value in their day-to-day work and increase their overall productivity. We offer remote support packages and can undertake dynamic and remote monitoring of system performance to improve yield and maximise up-time. We have also created bespoke training packages to help our customers get the most from their equipment and help with expert data interpretation. We have built on the ongoing success of our Chinese Summer Microscopy School by hosting Taiwan's first School of Microscopy with the National Taiwan University. This two-day event attracted over 150 participants from academia and industry. Through our dedicated e-commerce website, our customers can conveniently find a range of relevant consumables and a selection of related services.

Finance Review

The Group has adopted IFRS 15 ‘Revenue from Contracts with Customers’ using the modified retrospective approach. Comparatives have not been restated. The main difference is within our NanoScience business where the revenue recognition on complex customised magnetic and cryogenic systems is deferred from being primarily on transfer of rights and rewards of ownership to completion of installation. The Group has also adopted IFRS 16 ‘Leases’ in the 2018/19 financial year. The net accounting impact of adopting IFRS 15 and IFRS 16 is to increase revenue by £7.0m and profit before tax by £2.6m.

Reported orders increased by 12.9% to £353.5m (2018: £313.0m), an increase of 12.0% at constant currency. At the end of the period the Group’s order book for future deliveries stood at £171.6m (31 March 2018: £134.0m). The order book as at 31 March 2018 restated on an IFRS 15 basis is £153.0m, against £134.0m as previously reported. Against this IFRS 15 adjusted comparative, the order book grew 12.2% on a reported basis and 9.4% at constant currency.

Reported revenue increased by 12.4% to £333.6m (2018: £296.9m). Revenue, excluding currency effects, increased by 10.8%, with the movement in average currency exchange rates over the year increasing reported revenue by £4.7m.

Adjusted operating profit from continuing operations increased by 6.9% to £49.7m (2018: £46.5m). Adjusted operating profit from continuing operations, excluding currency effects, increased by 9.7%. Adjusted operating margin from continuing operations decreased by 80 basis points to 14.9% (2018: 15.7%), impacted by a currency headwind and in-year investment in operational excellence. Excluding currency effects, adjusted operating margin fell by 20 basis points to 15.5%.

Adjusted profit before tax from continuing operations grew by 12.3% to £47.5m (2018: £42.3m), representing a margin of 14.2% (2018: 14.2%).

Adjusting items include amortisation of acquired intangibles of £9.6m and a net charge of £0.9m relating to loan note make-whole settlement payments, a net credit from our associate, Scienta Omicron, and a charge due to Guaranteed Minimum Pension equalisation. The movement in the mark-to-market valuation of un-crystallised currency hedges for future years gave rise to a charge of £1.5m.

After adjusting items, the Group recorded an operating profit of £38.6m (2018: £38.4m) and profit before tax of £35.5m (2018: £34.2m).

Continuing adjusted basic earnings per share grew by 15.3% to 64.9 pence (2018: 56.3 pence). Continuing basic earnings per share was 50.1 pence (2018: 34.3 pence).

Cash generated from operations of £56.3m (2018: £33.4m), represents 103% (2018: 69%) cash conversion. Net debt decreased from £19.7m on 31 March 2018 to net cash of £6.7m.

Adjusted operating profit is stated before impairment and amortisation of goodwill and acquired intangibles, restructuring costs, the mark-to-market valuation of unexpired currency hedges, and other adjusting items, as set out in Note 1 to the Financial Statements.

Income Statement

The Group's Income Statement is summarised below.

	Year ended 31 March 2019 £m	Year ended 31 March 2018 £m	Change
Revenue	**333.6**	296.9	12.4%
Gross profit	**177.0**	150.9	17.3%
Administrative expenses	**(126.3)**	(105.8)	
Share of profit of associate	**0.2**	0.5	
Foreign exchange	**(1.2)**	0.9	
Adjusted operating profit	**49.7**	46.5	6.9%
Net finance costs	**(2.2)**	(4.2)	
Adjusted profit before tax	**47.5**	42.3	12.3%
Amortisation of acquired intangibles	**(9.6)**	(10.9)	
Non-recurring items	**(0.9)**	(0.3)	
Mark-to-market of currency hedges	**(1.5)**	3.1	
Profit before tax	**35.5**	34.2	
Tax from continuing operations	**(6.8)**	(14.6)	
Profit for the period from continuing operations	**28.7**	19.6	
Adjusted effective tax rate[1]	**21.9%**	23.9%	
Continuing adjusted earnings per share – basic	**64.9p**	56.3p	15.3%
Continuing earnings per share – basic	**50.1p**	34.3p	46.1%
Continuing adjusted earnings per share – diluted	**64.3p**	56.1p	14.6%
Continuing earnings per share – diluted	**49.7p**	34.1p	45.7%
Dividend per share	**14.4p**	13.3p	8.3%

1. The adjusted effective tax rate is calculated excluding amortisation of acquired intangibles, the mark-to-market of financial derivatives, and other adjusting items.

Orders and Revenue

Total reported orders grew by 12.9% (12.0% at constant currency) to £353.5m. Orders, at constant currency, increased by 10.3% for Materials & Characterisation, 16.1% for Research & Discovery and 7.6% for Service & Healthcare.

Reported revenue of £333.6m (2018: £296.9m) increased by 12.4% (10.8% at constant currency). Reported revenue increased by 16.8% for Materials & Characterisation, 11.8% for Research & Discovery and 5.5% for Service & Healthcare.

The book-to-bill ratio (orders received to goods and services billed in the period) for the year was 1.06.

Revenue, at constant currency, increased by 15.3% for Materials & Characterisation, with a particularly strong performance from NanoAnalysis and Plasma Technology. Constant currency growth of 9.9% in Research & Discovery was primarily driven by good progress from Andor Technology, partially offset by a small decline in revenue for X-Ray Technology. Service & Healthcare constant currency revenue grew by 4.2%, with good growth from the service of our own products.

On a geographical basis, at constant currency, revenue grew by 2.5% in Europe, 9.8% in North America, 17.7% in Asia, with a small decline in Rest of World of 5.9%.

After adjusting the comparative period for IFRS 15, total reported order book grew by 12.2% (9.4% at constant currency). The order book, at constant currency, compared to 31 March 2018, increased by 16.7% for Materials & Characterisation and 15.3% for Research & Discovery. Good growth in orders from the service of our own products was offset by a decline in OI Healthcare's order book, resulting in a segment decline of 8.0%.

£m	Materials & Characterisation	Research & Discovery	Service & Healthcare	Total[1]
Revenue: 2017/18	118.1	112.0	66.8	296.9
Underlying movement	18.1	11.1	2.8	32.0
Foreign exchange	1.7	2.1	0.9	4.7
Revenue: 2018/19	**137.9**	**125.2**	**70.5**	**333.6**
Revenue growth: reported	16.8%	11.8%	5.5%	12.4%
Revenue growth: constant currency	15.3%	9.9%	4.2%	10.8%

1. Excluding inter-sector revenue.

Gross profit

Gross profit increased by 17.3% to £177.0m (2018: £150.9m), representing a gross profit margin of 53.1%, an increase of 230 basis points over last year.

Operating profit

Adjusted operating profit from continuing operations increased by 6.9% to £49.7m (2018: £46.5m), representing an adjusted operating profit margin of 14.9%, a decrease of 80 basis points against last year. At constant currency, the adjusted operating profit margin was 15.5%, a decrease of 20 basis points. The margins across all three segments have been impacted by the allocation of £2.0m of incremental costs associated with our operational improvement programme. Excluding these costs, adjusted operating margin would have been 15.5% on a reported basis and 16.1% at constant currency.

Materials & Characterisation margin declined by 100 basis points to 16.0% (2018: 17.0%). At constant currency, the margin was 16.8%, a decline of 20 basis points.

Research & Discovery's adjusted operating margin declined to 10.1% (2018: 12.3%), a decline of 220 basis points. At constant currency, the margin was 11.0%, a decline of 130 basis points. In addition to the segment's share of operational improvement costs, the reduction was impacted by a loss in the year incurred within our X-Ray Technology business.

Service & Healthcare margin increased by 220 basis points to 21.1% (2018: 18.9%). At constant currency, the margin was 21.0%, an increase of 210 basis points.

During the year the Group received a favourable legal opinion on a long-term patent dispute. Consequently, a provision of £1.5m was released to adjusted operating profit. As a key element of its operational excellence programme, the Group is committed to reducing working capital across its portfolio of businesses. Inventories and receivables are being closely scrutinised and measured against set targets. The Group has increased the provision for a write-down of working capital by £1.8m.

Our share of the Scienta Omicron joint venture showed an adjusted profit after tax of £0.2m for the year, against a profit of £0.5m for the comparative period. After adjusting items, our share of the Scienta Omicron joint venture was a profit of £0.5m.

Currency effects (including the impact of transactional currency hedging) have reduced reported adjusted operating profit by £1.3m when compared to blended hedged exchange rates for the comparative period.

£m	Materials & Characterisation	Research & Discovery	Service & Healthcare	Total
Adjusted operating profit: 2017/18	20.1	13.8	12.6	46.5
Underlying movement	2.8	(0.3)	2.0	4.5
Foreign exchange	(0.8)	(0.8)	0.3	(1.3)
Adjusted operating profit: 2018/19	**22.1**	**12.7**	**14.9**	**49.7**
Margin: 2017/18	17.0%	12.3%	18.9%	15.7%
Margin: 2018/19	**16.0%**	**10.1%**	**21.1%**	**14.9%**

Adjusting items

Amortisation of acquired intangibles of £9.6m relates to intangible assets recognised on acquisitions, being the value of technology, customer relationships and brands.

Non-recurring items were a net charge of £0.9m. During the period we repaid £11.5m of the principal outstanding on loan notes as a condition of the sale of Industrial Analysis. The make-whole settlement cost due at the time of the repayment was £0.9m. Following the High Court's confirmation on Guaranteed Minimum Pension equalisation between males and females, we have recognised a charge of £0.3m. Our associate recognised a net gain of £0.3m, comprised of a gain of £0.6m on a reversal of an impairment, partially offset by £0.3m of restructuring costs.

The Group uses derivative products to hedge its short-term exposure to fluctuations in foreign exchange rates. It is Group policy to have in place at the beginning of the financial year hedging instruments to cover 80% of its forecast transactional exposure for that year. The Group has decided that the additional costs of meeting the extensive documentation requirements of IFRS 9 to apply hedge accounting to these foreign exchange hedges cannot be justified. Accordingly, the Group does not use hedge accounting for these derivatives.

Net movements on marking-to-market derivatives in respect of future periods are disclosed in the Income Statement as foreign exchange and excluded from our calculation of adjusted profit before tax.

The mark-to-market loss in respect of derivative financial instruments was £1.5m (2018: £3.1m gain). This reflects the movement on currency derivatives that are hedging future transactional currency exposures for the Group - from an opening net fair value asset of £1.5m to a closing neutral position. The year-end neutral position reflects an un-crystallised loss arising from a fall in the value of Sterling at the balance sheet date against a blended rate achieved on US Dollar forward contracts that will mature over the next twelve months. This has been offset by an un-crystallised gain attributable to a rise in the value of Sterling at the balance sheet date against a blended rate achieved on Euro and Japanese Yen forward contracts that will mature over the next twelve months.

Net finance costs

The Group's adjusted net finance costs fell by £2.0m to £2.2m (2018: £4.2m) with net finance charges falling by £1.7m to £1.9m, and pension financing charges falling by £0.3m to £0.3m.

Profit before tax

Continuing adjusted profit before tax increased by 12.3% to £47.5m (2018: £42.3m). The adjusted profit before tax margin of 14.2% (2018: 14.2%) was in line with last year.

Profit before tax of £35.5m (2018: £34.2m) is after the mark-to-market movement on derivative financial instruments, amortisation of acquired intangibles and other adjusting items.

Tax

The adjusted tax charge from continuing operations of £10.4m (2018: £10.1m) represents an effective tax rate of 21.9% (2018: 23.9%). In April 2019, the Tax Tribunal adjudicated on a historical loan arrangement structure. The decision went against Oxford Instruments and as a result a payment of £4.0m was made to HMRC in April 2019. The liability was broadly covered by historical provisions and one-off credits.

Earnings per share

Continuing adjusted basic earnings per share increased by 15.3% to 64.9 pence (2018: 56.3 pence); continuing adjusted diluted earnings per share grew by 14.6% to 64.3 pence (2018: 56.1 pence). Continuing basic earnings per share increased by 46.1% to 50.1 pence (2018: 34.3 pence); continuing diluted earnings per share grew by 45.7% to 49.7 pence (2018: 34.1 pence).

The number of undiluted weighted average shares remained constant at 57.2m.

Foreign exchange

The Group faces transactional and translational currency exposure, most notably against the US Dollar, Euro and Japanese Yen. For the year, approximately 14% of Group revenue was denominated in Sterling, 55% in US Dollars, 18% in Euros, 11% in Japanese Yen and 2% in other currencies. Translational exposures arise on the consolidation of overseas company results into Sterling. Transactional exposures arise where the currency of sale or purchase transactions differs from the functional currency in which each company prepares its local accounts.

The Group maintains a hedging programme against its net transactional exposure using internal projections of expected currency trading transactions expected to arise over a period extending from 12 to 24 months. As at 31 March 2019 the Group had currency hedges in place extending up to twelve months forward.

Discontinued Operations

In May 2019, the Group received £1.6m in relation to the finalisation of tax affairs outstanding upon the disposal of the Industrial Analysis business. A gain of £1.3m after taxation has been recorded under discontinued operations. Recorded within the comparative period under discontinued operations is a post-tax profit of £45.9m from the sale of Industrial Analysis, which was completed on 3 July 2017.

Dividend

The Group's policy is to increase the dividend each year in line with the increase in underlying earnings, considering movements in currency. The Board has proposed to increase the final dividend to 10.6 pence (2018: 9.6 pence). This results in a total dividend of 14.4 pence (2018: 13.3 pence), an increase of 8.3%. The final dividend will be paid, subject to shareholder approval, on 18 October 2019 to Shareholders on the register as at 13 September 2019.

Cash flow

The Group cash flow is summarised below.

	Year ended 31 March 2019 £m	Year ended 31 March 2018 £m
Adjusted operating profit	**49.7**	46.5
Depreciation and amortisation	**11.0**	9.1
Adjusted EBITDA	**60.7**	55.6
Working capital movement	**3.7**	(13.2)
Purchase of rental assets held for subsequent sale	**(1.1)**	(0.7)
Loss on disposal of property, plant and equipment	**0.2**	0.3
Equity settled share schemes	**0.8**	1.1
Share of profit from associate	**(0.2)**	(0.5)
Restructuring costs	**(0.7)**	(1.3)
Pension scheme payments above charge to operating profit	**(7.1)**	(7.9)
Cash generated from operations	**56.3**	33.4
Interest	**(3.2)**	(2.1)
Tax	**(8.7)**	(3.8)
Capitalised development expenditure	**(3.5)**	(5.8)
Expenditure on tangible and intangible assets	**(6.3)**	(4.8)
Proceeds from sale of property, plant and equipment	**-**	9.3
Increase in investment in associate	**-**	(2.1)
Proceeds from sale of subsidiary undertaking	**-**	71.2
Decrease in long-term receivables	**1.1**	0.9
Dividends paid	**(7.6)**	(7.4)
Proceeds from issue of share capital and exercise of share options	**0.2**	0.2
Payments made in respect of lease liabilities	**(3.2)**	-
Decrease in borrowings	**(11.5)**	(96.8)
Net increase/(decrease) in cash and cash equivalents from continuing operations	**13.6**	(7.8)

Note: Adjusted EBITDA is earnings before interest, tax, depreciation, amortisation of acquired intangibles, mark-to-market of financial derivatives, restructuring costs and other non-cash adjusting items.

Cash generated from operations

Cash generated from operations of £56.3m (2018: £33.4m), represents 103% (2018: 69%) cash conversion. The impact of IFRS 16 is to recognise a lease liability and corresponding asset for leases previously classified as operating leases. As a result, the depreciation charge for the year includes an additional £3.3m reflecting the increase in asset base. Compared to the comparative period, cash generated from operations is also higher by £3.3m. Cash conversion is defined as cash generated from operations before non-recurring items and pension scheme payments, less, capitalised development expenditure, capital expenditure and payments made in respect of finance leases / adjusted operating profit. Payments made in respect of finance leases are now included within our definition of cash conversion to retain a like-for-like comparison following the introduction of IFRS 16.

Working capital fell by £3.7m, reflecting an increase in inventories of £4.0m and receivables of £3.5m, combined with payables and customer deposits increasing by £4.1m and £7.1m respectively.

Interest

Net interest paid was £3.2m (2018: £2.1m). This includes loan note make-whole payments of £0.9m as a consequence of repaying loan note principal following the sale of Industrial Analysis. Net interest paid in the comparative period was low due to payment timing differences.

Tax

Tax paid was £8.7m (2018: £3.8m), the comparative period benefiting from tax deductions on allowable adjusting items and utilisation of brought forward tax losses. Following the Tax Tribunal adjudication on historical loan structures, the Group made a cash settlement to HMRC of £4.0m in April 2019, after the end of the financial year.

Investment in Research and Development (R&D)

Total cash spend on R&D in the year was £25.4m, equivalent to 7.6% of sales (2018: £24.8m, 8.4% of sales). A reconciliation between the amounts charged to the Income Statement and the cash spent is given below:

	Year ended 31 March 2019 £m	Year ended 31 March 2018 £m
R&D expense charged to the Income Statement	**25.4**	23.4
Depreciation of R&D-related fixed assets	**(0.1)**	(0.1)
Amounts capitalised as fixed assets	**0.1**	0.1
Amortisation and impairment of R&D costs capitalised as intangibles	**(3.5)**	(4.4)
Amounts capitalised as intangible assets	**3.5**	5.8
Total cash spent on R&D during the year	**25.4**	24.8

Investment in associate

In the comparative period, the shareholders of Scienta Omicron agreed to a capital injection to strengthen the balance sheet of the joint venture and ensure future liquidity in support of the business strategy. Our share was £2.1m and was paid in September 2017.

Disposals

The sale of Industrial Analysis was completed on 3 July 2017. A post-tax profit of £45.9m is recorded within discontinued operations for the comparative period.

Net debt and funding

Net debt

Good cash generation in the year moved the Group from having opening net debt of £19.7m to net cash of £6.7m. Cash generated from operations was £56.3m. The Group invested in capitalised development costs of £3.5m and tangible and intangible assets of £6.3m.

Movement in net debt	£m
Net debt as at 31 March 2018	**19.7**
Cash generated from operations	(56.3)
Interest	3.2
Tax	8.7
Capitalised development expenditure	3.5
Capital expenditure on tangible and intangible assets	6.3
Payments made in respect of lease liabilities	3.2
Decrease in long-term receivables	(1.1)
Dividends paid	7.6
Foreign exchange and other items	(1.5)
Net cash as at 31 March 2019	**(6.7)**

Funding

On 2 July 2018 the Group entered into a new unsecured multi-currency revolving facility agreement, which is committed until June 2023 with one-year extension options at the end of the first and second years. The facility has been entered into with two banks and comprises a Euro denominated multi-currency facility of €50.0m and a US Dollar denominated multi-currency facility of $80.0m.

In the first half of the year the Group repaid, as a pre-condition relating to the sale of Industrial Analysis, £11.5m of its bilateral private placement note, leaving an outstanding note of £27.9m, which matures in March 2021. Associated make-whole settlement costs of £0.9m have been included within non-recurring items.

Debt covenants are net debt to EBITDA less than 3.0 times and EBITDA to interest greater than 4.0 times. As at 31 March 2019 the business had net cash.

Pensions

The Group has defined benefit pension schemes in the UK and USA. Both have been closed to new entrants since 2001 and closed to future accrual from 2010.

At 31 March 2019, the net liability arising from our defined benefit scheme obligations was £6.5m (31 March 2018: £15.3m), a fall of £8.8m. The reduction in the deficit was primarily due to the contributions paid in the period. Total scheme assets at 31 March 2019 were £311.4m (31 March 2018: £289.5m) while liabilities were £317.9m (31 March 2018: £304.8m).

As at 31 March 2019, the UK defined benefit pension liability includes an allowance of £0.3m for the expected cost of equalising Guaranteed Minimum Pension between males and females.

We have commenced a process to terminate the US defined benefit pension scheme. This will extinguish all liabilities of the scheme. The process is in its early stages and is not expected to complete until the end of March 2020. We estimate that the cash cost of termination will be approximately US$4.5m, with most of this due to be paid in the second half of the 2019/20 financial year.

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 Performance, Strategy and Operations sections. The financial position of the Group, its cash flows, liquidity position and borrowing facilities are described in the Financial Review.

The diverse nature of the Group, combined with its financial strength, provides a solid foundation for a sustainable business. The Directors have reviewed the Group's forecasts and flexed them to incorporate a number of potential scenarios relating to changes in trading performance. The Directors believe that the Group will be able to operate within its existing debt facilities. This review also considered hedging arrangements in place. The Directors believe that the Group is well placed to manage its business risks successfully.

The Financial Statements have been prepared on a going concern basis, based on the Directors' opinion, after making reasonable enquires, that the Group has adequate resources to continue in operational existence for the foreseeable future.

Forward-looking statements

This document contains certain forward-looking statements. The forward-looking statements reflect the knowledge and information available to the Company during the preparation and up to the publication of this document. By their very nature, these statements depend upon circumstances and relate to events that may occur in the future thereby involving a degree of uncertainty. Therefore, nothing in this document should be construed as a profit forecast by the Company.

Gavin Hill
Group Finance Director
11 June 2019

Consolidated Statement of Income

year ended 31 March 2019

	Notes	Adjusted* £m	Adjusting items* £m	Total £m
Revenue	3	**333.6**	**—**	**333.6**
Cost of sales		**(156.6)**	**—**	**(156.6)**
Gross profit		**177.0**	**—**	**177.0**
Research and development	4	**(25.4)**	**—**	**(25.4)**
Selling and marketing		**(61.3)**	**—**	**(61.3)**
Administration and shared services		**(39.6)**	**(9.9)**	**(49.5)**
Share of profit of associate, net of tax	5	**0.2**	**0.3**	**0.5**
Foreign exchange		**(1.2)**	**(1.5)**	**(2.7)**
Operating profit/(loss)		**49.7**	**(11.1)**	**38.6**
Other financial income		**0.3**	**—**	**0.3**
Financial income		**0.3**	**—**	**0.3**
Interest charge on pension scheme net liabilities		**(0.3)**	**—**	**(0.3)**
Other financial expenditure		**(2.2)**	**(0.9)**	**(3.1)**
Financial expenditure		**(2.5)**	**(0.9)**	**(3.4)**
Profit/(loss) before income tax from continuing operations		**47.5**	**(12.0)**	**35.5**
Income tax (expense)/credit	7	**(10.4)**	**3.6**	**(6.8)**
Profit/(loss) for the year from continuing operations		**37.1**	**(8.4)**	**28.7**
Profit from discontinued operations after tax	6	**—**	**1.3**	**1.3**
Profit/(loss) for the year attributable to equity Shareholders of the parent		**37.1**	**(7.1)**	**30.0**

		pence	pence
Earnings per share			
Basic earnings per share	2		
From continuing operations		**64.9**	**50.1**
From discontinued operations		**—**	**2.3**
From profit for the year		**64.9**	**52.4**
Diluted earnings per share	2		
From continuing operations		**64.3**	**49.7**
From discontinued operations		**—**	**2.3**
From profit for the year		**64.3**	**52.0**
Dividends per share			
Dividends paid	8		**13.3**
Dividends proposed	8		**14.4**

* Adjusted numbers are stated to give a better understanding of the underlying business performance. Details of adjusting items can be found in Note 1 of this Preliminary Statement.

The attached notes form part of the Financial Statements.

Consolidated Statement of Income

year ended 31 March 2018

	Notes	Adjusted* £m	Adjusting items* £m	Total £m
Revenue	3	296.9	—	296.9
Cost of sales		(146.0)	—	(146.0)
Gross profit		150.9	—	150.9
Research and development	4	(23.4)	—	(23.4)
Selling and marketing		(53.9)	—	(53.9)
Administration and shared services		(28.5)	(12.1)	(40.6)
Share of profit/(loss) of associate, net of tax	5	0.5	(2.4)	(1.9)
Other operating income		—	3.3	3.3
Foreign exchange		0.9	3.1	4.0
Operating profit/(loss)		46.5	(8.1)	38.4
Other financial income		0.3	—	0.3
Financial income		0.3	—	0.3
Interest charge on pension scheme net liabilities		(0.6)	—	(0.6)
Other financial expenditure		(3.9)	—	(3.9)
Financial expenditure		(4.5)	—	(4.5)
Profit/(loss) before income tax from continuing operations		42.3	(8.1)	34.2
Income tax expense	7	(10.1)	(4.5)	(14.6)
Profit/(loss) for the year from continuing operations		32.2	(12.6)	19.6
(Loss)/profit from discontinued operations after tax	6	(0.4)	46.3	45.9
Profit for the year attributable to equity shareholders of the parent		31.8	33.7	65.5

	Notes	pence		pence
Earnings per share				
Basic earnings per share	2			
From continuing operations		56.3		34.3
From discontinued operations		(0.7)		80.2
From profit for the year		55.6		114.5
Diluted earnings per share	2			
From continuing operations		56.1		34.1
From discontinued operations		(0.7)		80.0
From profit for the year		55.4		114.1
Dividends per share				
Dividends paid	8			13.0
Dividends proposed	8			13.3

* Adjusted numbers are stated to give a better understanding of the underlying business performance. Details of adjusting items can be found in Note 1 of this Preliminary Statement.

Consolidated Statement of Comprehensive Income

year ended 31 March 2019

	Notes	2019 £m	2018 £m
Profit for the year		**30.0**	65.5
Other comprehensive income/(expense):			
Items that may be reclassified subsequently to profit or loss			
Foreign exchange translation differences		**4.2**	(8.8)
Net cumulative foreign exchange gain on disposal of subsidiaries recycled to the Income Statement		**—**	(4.8)
Items that will not be reclassified subsequently to profit or loss			
Remeasurement gain in respect of post-retirement benefits		**2.5**	2.2
Tax on items that will not be reclassified to profit or loss	7	**(0.5)**	(0.9)
Total other comprehensive income/(expense)		**6.2**	(12.3)
Total comprehensive income for the year attributable to equity shareholders of the parent		**36.2**	53.2

Consolidated Statement of Financial Position

as at 31 March 2019

	2019 £m	2018 £m
Assets		
Non-current assets		
Property, plant and equipment	**24.2**	22.8
Right of use assets	**8.8**	—
Intangible assets	**152.5**	158.7
Investment in associate	**4.6**	4.1
Long-term receivables	**0.3**	1.4
Deferred tax assets	**15.3**	13.4
	205.7	200.4
Current assets		
Inventories	**60.8**	45.9
Trade and other receivables	**78.3**	73.3
Current income tax recoverable	**2.4**	2.5
Derivative financial instruments	**1.1**	2.4
Cash and cash equivalents	**35.2**	20.7
	177.8	144.8
Total assets	**383.5**	345.2
Equity		
Capital and reserves attributable to the Company's equity Shareholders		
Share capital	**2.9**	2.9
Share premium	**61.7**	61.7
Other reserves	**0.2**	0.2
Translation reserve	**13.4**	9.2
Retained earnings	**124.0**	105.6
	202.2	179.6
Liabilities		
Non-current liabilities		
Bank loans and overdrafts	**27.9**	39.4
Lease payables	**6.0**	—
Retirement benefit obligations	**6.5**	15.3
Provisions	**1.1**	1.7
Deferred tax liabilities	**6.3**	6.1
	47.8	62.5
Current liabilities		
Bank loans and overdrafts	**0.6**	1.0
Trade and other payables	**116.9**	85.5
Lease payables	**3.0**	—
Current income tax payables	**4.3**	6.2
Derivative financial instruments	**1.1**	0.4
Provisions	**7.6**	10.0
	133.5	103.1
Total liabilities	**181.3**	165.6
Total liabilities and equity	**383.5**	345.2

The Financial Statements were approved by the Board of Directors on 11 June 2019 and signed on its behalf by:

Ian Barkshire	**Gavin Hill**
Director	***Director***

Company Number: 775598

Consolidated Statement of Changes in Equity

year ended 31 March 2019

	Share capital £m	Share premium account £m	Other reserves £m	Foreign exchange translation reserve £m	Retained earnings £m	Total £m
Balance at 1 April 2018	2.9	61.7	0.2	9.2	105.6	179.6
Impact of adoption of IFRS 15	—	—	—	—	(7.2)	(7.2)
	2.9	**61.7**	**0.2**	**9.2**	**98.4**	**172.4**
Total comprehensive income/(expense):						
Profit for the year	—	—	—	—	**30.0**	**30.0**
Other comprehensive income:						
– Foreign exchange translation differences	—	—	—	**4.2**	—	**4.2**
– Remeasurement gain in respect of post-retirement benefits	—	—	—	—	**2.5**	**2.5**
– Tax on items recognised directly in other comprehensive income	—	—	—	—	**(0.5)**	**(0.5)**
Total comprehensive income/(expense) attributable to equity shareholders of the parent	—	—	—	**4.2**	**32.0**	**36.2**
Transactions with owners recorded directly in equity:						
– Proceeds from exercise of share options	—	—	—	—	**0.2**	**0.2**
– Charge in respect of employee service costs settled by award of share options	—	—	—	—	**0.8**	**0.8**
– Tax on items recognised directly in equity	—	—	—	—	**0.2**	**0.2**
– Dividends paid	—	—	—	—	**(7.6)**	**(7.6)**
Total transactions with owners recorded directly in equity	—	—	—	—	**(6.4)**	**(6.4)**
Balance at 31 March 2019	**2.9**	**61.7**	**0.2**	**13.4**	**124.0**	**202.2**

Consolidated Statement of Changes in Equity

year ended 31 March 2018

	Share capital £m	Share premium account £m	Other reserves £m	Foreign exchange translation reserve £m	Retained earnings £m	Total £m
Balance at 1 April 2017	**2.9**	**61.5**	**0.2**	**22.8**	**45.1**	**132.5**
Total comprehensive income/(expense):						
Profit for the year	—	—	—	—	**65.5**	**65.5**
Other comprehensive income:						
– Foreign exchange translation differences	—	—	—	**(8.8)**	—	**(8.8)**
– Net foreign exchange gain on disposal of subsidiaries recycled to the Income Statement	—	—	—	**(4.8)**	—	**(4.8)**
– Remeasurement gain in respect of post-retirement benefits	—	—	—	—	**2.2**	**2.2**
– Tax on items recognised directly in other comprehensive income	—	—	—	—	**(0.9)**	**(0.9)**
Total comprehensive (expense)/income attributable to equity shareholders of the parent	—	—	—	**(13.6)**	**66.8**	**53.2**
Transactions with owners recorded directly in equity:						
– Proceeds from issue of shares	—	**0.2**	—	—	—	**0.2**
– Charge in respect of employee service costs settled by award of share options	—	—	—	—	**1.1**	**1.1**
– Dividends paid	—	—	—	—	**(7.4)**	**(7.4)**
Total transactions with owners recorded directly in equity	—	**0.2**	—	—	**(6.3)**	**(6.1)**
Balance at 31 March 2018	**2.9**	**61.7**	**0.2**	**9.2**	**105.6**	**179.6**

Other reserves comprise the capital redemption reserve, which represents the nominal value of shares repurchased and then cancelled during the year ended 31 March 1999, and the hedging reserve in respect of the effective portion of changes in value of commodity contracts.

The foreign exchange translation reserve comprises all foreign exchange differences arising since 1 April 2004 from the translation of the Group's net investments in foreign subsidiaries into Sterling.

The Group holds 152,710 (2018: 183,145) of its own shares in an employee benefit trust. The cost of these shares is included within retained earnings.

Consolidated Statement of Cash Flows year ended 31 March 2019

	Notes	2019 £m	2018 £m
Profit for the year		**30.0**	65.5
Profit for the year from discontinued operations	6	**(1.3)**	(45.9)
Profit for the year from continuing operations		**28.7**	19.6
Adjustments for:			
Income tax expense	7	**6.8**	14.6
Net financial expense		**3.1**	4.2
Fair value movement on financial derivatives		**1.5**	(3.1)
Restructuring costs		**—**	1.2
Restructuring costs – relating to associate		**0.3**	0.4
Past service cost on defined benefit pension scheme		**0.3**	—
Net profit on disposal of buildings		—	(3.3)
Share of impairment recognised by associate		**(0.6)**	2.0
Amortisation and impairment of acquired intangibles		**9.6**	10.9
Depreciation of property, plant and equipment		**3.9**	4.7
Depreciation of right of use assets		**3.3**	—
Amortisation and impairment of capitalised development costs		**3.5**	4.4
Amortisation and impairment of capitalised software costs		**0.3**	—
Adjusted earnings before interest, tax, depreciation and amortisation		**60.7**	55.6
Loss on disposal of property, plant and equipment		**0.2**	0.3
Cost of equity settled employee share schemes		**0.8**	1.1
Share of profit from associate		**(0.2)**	(0.5)
Restructuring costs paid		**(0.7)**	(1.3)
Cash payments to the pension scheme more than the charge to operating profit		**(7.1)**	(7.9)
Operating cash flows before movements in working capital		**53.7**	47.3
Increase in inventories		**(4.0)**	(4.5)
Increase in receivables		**(3.5)**	(14.4)
Increase in payables and provisions		**4.1**	2.8
Increase in customer deposits		**7.1**	2.9
Purchase of rental assets held for subsequent sale		**(1.1)**	(0.7)
Cash generated from continuing operations		**56.3**	33.4
Interest paid		**(3.5)**	(2.1)
Income taxes paid		**(8.7)**	(3.8)
Net cash from operating activities – continuing operations		**44.1**	27.5
Net cash from operating activities – discontinued operations		—	3.0
Net cash flow from operating activities		**44.1**	30.5
Cash flows from investing activities			
Proceeds from sale of property, plant and equipment		**—**	9.3
Acquisition of property, plant and equipment		**(4.1)**	(4.3)
Acquisition of intangible assets		**(2.2)**	(0.5)
Net cash flow on disposal of businesses	6	**—**	71.2
Capitalised development expenditure		**(3.5)**	(5.8)
Increase in investment in associate		**—**	(2.1)
Decrease in long-term receivables		**1.1**	0.9
Interest received		**0.3**	**—**
Net cash (used in)/generated from investing activities – continuing operations		**(8.4)**	68.7
Net cash used in investing activities – discontinued operations		—	—
Net cash (used in)/generated from investing activities		**(8.4)**	68.7
Cash flows from financing activities			
Proceeds from issue of share capital		**—**	0.2
Proceeds from exercise of share options		**0.2**	**—**
Payments made in respect of lease liabilities		**(3.2)**	**—**
Repayment of borrowings		**(11.5)**	(96.8)
Dividends paid		**(7.6)**	(7.4)
Net cash used in financing activities		**(22.1)**	(104.0)
Net increase/(decrease) in cash and cash equivalents		**13.6**	(4.8)
Cash and cash equivalents at beginning of the year		**20.7**	26.5
Effect of exchange rate fluctuations on cash held		**0.9**	(1.0)
Cash and cash equivalents at end of the year		**35.2**	20.7

Notes to the Financial Statements

year ended 31 March 2019

1 Non-GAAP measures

In the preparation of adjusted numbers the Directors exclude certain items in order to assist with comparability between peers and to give what they consider to be a better indication of the underlying performance of the business. These adjusting items are excluded in the calculation of adjusted operating profit, adjusted profit before income tax, adjusted profit for the year from continuing operations, adjusted EBITDA, adjusted EPS, adjusted cash conversion, and adjusted effective tax rate. Details of adjusting items are given below.

Adjusted EBITDA is calculated by adding back depreciation of property, plant and equipment and amortisation of intangible assets to adjusted operating profit and can be found in the Consolidated Statement of Cash Flows. Calculation of Adjusted EPS can be found in note 2. Adjusted effective tax rate is calculated by dividing the share of tax attributable to adjusted profit before tax by adjusted profit before tax.

Reconciliation between profit before income tax and adjusted profit from continuing operations

	2019		2018	
	Operating profit £m	**Profit before income tax £m**	Operating (loss)/profit £m	(Loss)/profit before income tax £m
Statutory measure from continuing operations	**38.6**	**35.5**	38.4	34.2
Restructuring costs	**—**	**—**	1.2	1.2
Restructuring costs – relating to associate	**0.3**	**0.3**	0.4	0.4
Net profit on disposal of buildings	**—**	**—**	(3.3)	(3.3)
Business reorganisation items	**0.3**	**0.3**	(1.7)	(1.7)
Past service cost on defined benefit pension scheme	**0.3**	**0.3**	—	—
Share of impairment recognised by associate	**(0.6)**	**(0.6)**	2.0	2.0
Amortisation and impairment of acquired intangibles	**9.6**	**9.6**	10.9	10.9
Mark-to-market loss/(gain) in respect of derivative financial instruments	**1.5**	**1.5**	(3.1)	(3.1)
Loan note make-whole payable	**—**	**0.9**	—	—
Total non-GAAP adjustments	**11.1**	**12.0**	8.1	8.1
Adjusted measure from continuing operations	**49.7**	**47.5**	46.5	42.3
Share of taxation		**(10.4)**		(10.1)
Adjusted profit for the year from continuing operations		**37.1**		32.2
Adjusted effective tax rate		**21.9%**		23.9%

Restructuring costs

Restructuring costs of £1.2m incurred in the prior year primarily relate to our US Healthcare business and include £0.5m to successfully defend a legal claim relating to a prior acquisition.

Restructuring costs – relating to associate

These represent the Group's shares of mergers and acquisition costs and other one-off items incurred by the associate.

Net profit on disposal of buildings

The Group recorded a net profit on disposal of £3.3m during the prior year, following the disposal of two buildings previously held under property, plant and equipment.

Notes to the Financial Statements (continued)
year ended 31 March 2019

1 Non-GAAP measures (continued)

Past service cost on defined benefit pension scheme

As at 31 March 2019, the IAS 19 defined benefit pension balance sheet liability includes an allowance of £0.3m for the expected cost of equalising Guaranteed Minimum Pension (“GMP”) between males and females.

GMP is a portion of pension that was accrued by individuals who were contracted out of the UK State Second Pension prior to 6 April 1997. Historically, there was an inequality of benefits between male and female members who have GMP. A High Court case concluded on 26 October 2018 and confirmed that GMPs need to be equalised.

Share of impairment recognised by associate

During the prior year the Group’s equity accounted associate recognised an impairment relating to the disposal of its Vacgen subsidiary. The Group’s share of this impairment was £2.0m. Following the completion and finalisation of the transaction, £0.6m of the impairment has been reversed.

Amortisation of acquired intangibles

Adjusted profit excludes the non-cash amortisation and impairment of acquired intangible assets and goodwill.

Mark-to-market movements in respect of derivative financial instruments

Under IFRS 9, all derivative financial instruments are recognised initially at fair value. Subsequent to initial recognition, they are also measured at fair value. In respect of instruments used to hedge foreign exchange risk and interest rate risk the Group does not take advantage of the hedge accounting rules provided for in IFRS 9 since that standard requires certain stringent criteria to be met in order to hedge account, which, in the particular circumstances of the Group, are considered by the Board not to bring any significant economic benefit. Accordingly, the Group accounts for these derivative financial instruments at fair value through profit or loss. To the extent that instruments are hedges of future transactions, adjusted profit for the year is stated before changes in the valuation of these instruments so that the underlying performance of the Group can be more clearly seen.

Loan note make-whole payable

During the year to 31 March 2019 the Group repaid £11.6m of the principal outstanding on its loan notes. This payment was necessary due to material changes to the Group’s structure following the disposal of its Industrial Analysis business during July 2017. The costs of £0.9m relate to the make-whole balance payable upon settlement of the £11.6m principal.

Share of taxation

Adjusting items include the income tax on each of the items described above. In addition, during the prior year the tax rate in the United States reduced from 35% to 21%. As a result, this reduced the Group’s deferred tax asset by £5.4m This was excluded from the calculation of share of taxation attributable to adjusted profit before tax.

Notes to the Financial Statements (continued)
year ended 31 March 2019

1 Non-GAAP measures (continued)

Reconciliation of changes in cash and cash equivalents to movement in net debt

	2019 £m	2018 £m
Net increase/(decrease) in cash and cash equivalents	**13.6**	(4.8)
Effect of foreign exchange rate changes on cash and cash equivalents	**0.9**	(1.0)
	14.5	(5.8)
Repayment of borrowings	**11.5**	96.8
Movement in accrued interest	**0.4**	(1.0)
Amortisation of prepaid issuance fees	**—**	(0.4)
Movement in net debt in the year	**26.4**	89.6
Net debt at start of the year	**(19.7)**	(109.3)
Net cash/(debt) at the end of the year	**6.7**	(19.7)

Reconciliation of net cash/(debt) to Statement of Financial Position

	2019 £m	2018 £m
Bank loans and overdrafts	**(28.5)**	(40.4)
Cash and cash equivalents	**35.2**	20.7
Net cash/(debt) at the end of the year	**6.7**	(19.7)

2 Earnings per share
Basic and diluted EPS from continuing operations are based on the result for the year from continuing operations, as reported in the Group Income Statement. Basic and diluted EPS from total operations are based on the result for the year attributable to equity shareholders of the parent. Adjusted and diluted adjusted EPS are based on adjusted profit for the year from continuing operations. The profit measures noted above are divided by the weighted average number of ordinary shares outstanding during the year, excluding shares held by the Employee Share Ownership Trust. The table below reconciles these different profit measures.

	Continuing operations £m	Discontinued operations £m	2019 total £m	Continuing operations £m	Discontinued operations £m	2018 total £m
Profit for the year attributable to equity Shareholders of the parent	**28.7**	**1.3**	**30.0**	19.6	45.9	65.5
Adjusting items:						
Business reorganisation items	**0.3**			(1.7)		
Past service cost on defined benefit pension scheme	**0.3**			—		
Share of impairment recognised by associate	**(0.6)**			2.0		
Amortisation and impairment of acquired intangibles	**9.6**			10.9		
Mark-to-market gain in respect of derivative financial instruments	**1.5**			(3.1)		
Loan note make-whole payable	**0.9**			—		
Income tax (credit)/charge	**(3.6)**			4.5		
Adjusted profit for the year from continuing operations	**37.1**			32.2		

Notes to the Financial Statements (continued)

year ended 31 March 2019

2 Earnings per share (continued)

The weighted average number of shares used in the calculation excludes shares held by the Employee Share Ownership Trust, as follows:

	2019 Shares million	2018 Shares million
Weighted average number of shares outstanding	**57.4**	57.4
Less shares held by Employee Share Ownership Trust	**(0.2)**	(0.2)
Weighted average number of shares used in calculation of basic earnings per share	**57.2**	57.2

The following table shows the effect of share options on the calculation of diluted earnings per share:

	2019 Shares million	2018 Shares million
Weighted average number of ordinary shares per basic earnings per share calculations	**57.2**	57.1
Effect of shares under option	**0.5**	0.2
Weighted average number of ordinary shares per diluted earnings per share calculations	**57.7**	57.4

For the purposes of calculating diluted and diluted adjusted EPS, the weighted average number of ordinary shares is adjusted to include the weighted average number of ordinary shares that would be issued on the conversion of all potentially dilutive ordinary shares expected to vest, relating to the Company's share-based payment plans. Potential ordinary shares are only treated as dilutive when their conversion to ordinary shares would decrease EPS, or increase loss per share.

3 Segment information

The Group has ten operating segments. These operating segments have been combined into three aggregated operating segments to the extent that they have similar economic characteristics, with relevance to products and services, type and class of customer, methods of sale and distribution and the regulatory environment in which they operate. Each of these three aggregated operating segments is a reportable segment.

Following the disposal of the Industrial Analysis business and the introduction of the Horizon Strategy in 2017, the Group now reports under a revised segment structure. The aggregated operating segments are as follows:

- the Materials and Characterisation segment comprises a group of businesses focusing on applied R&D and commercial customers, enabling the fabrication and characterisation of materials and devices down to the atomic scale;
- the Research and Discovery segment comprises a group of businesses providing advanced solutions that create unique environments and enable measurements down to the molecular and atomic level which are used in fundamental research; and
- the Service and Healthcare segment provides customer service and support for the Group's products and the service, sale and rental of third party healthcare imaging systems.

The Group's internal management structure and financial reporting systems have been amended to differentiate the three aggregated operating segments on the basis of the economic characteristics discussed above.

Reportable segment results include items directly attributable to a segment as well as those which can be allocated on a reasonable basis. Inter-segment pricing is determined on an arm's length basis. The operating results of each are regularly reviewed by the Chief Operating Decision Maker, which is deemed to be the Board of Directors. Discrete financial information is available for each segment and used by the Board of Directors for decisions on resource allocation and to assess performance. No asset information is presented below as this information is not presented in reporting to the Group's Board of Directors.

Notes to the Financial Statements (continued)

year ended 31 March 2019

3 Segment information (continued)

a) Analysis by business

Results from continuing operations Year to 31 March 2019	**Materials & Characterisation £m**	**Research & Discovery £m**	**Service & Healthcare £m**	**Total £m**
External revenue	**137.9**	**125.2**	**70.5**	**333.6**
Inter-segment revenue	—	—	—	
Total segment revenue	**137.9**	**125.2**	**70.5**	
Segment adjusted operating profit from continuing operations	**22.1**	**12.7**	**14.9**	**49.7**

Results from continuing operations Year to 31 March 2018	Materials & Characterisation £m	Research & Discovery £m	Service & Healthcare £m	Total £m
External revenue	118.1	112.0	66.8	296.9
Inter-segment revenue	—	0.1	—	
Total segment revenue	118.1	112.1	66.8	
Segment adjusted operating profit from continuing operations	20.1	13.8	12.6	46.5

The adjusted profit after tax of £0.2m (2018: £0.5m) from the Group's associate is reported within the Research & Discovery segment.

Revenue in the Materials & Characterisation and Research & Discovery segments represents the sale of products. Revenue in the Service & Healthcare segment relates to service income, with the exception of leasing of mobile MRIs of £6.4m (2018: £6.1m) and equipment sales of £3.6m (2018: £3.3m).

As at 31 March 2019 the Group had unfulfilled performance obligations under IFRS 15 of £172.5m.

Reconciliation of reportable segment profit

Year to 31 March 2019	**Materials & Characterisation £m**	**Research & Discovery £m**	**Service & Healthcare £m**	**Unallocated Group items £m**	**Total £m**
Adjusted profit for reportable segments from continuing operations	**22.1**	**12.7**	**14.9**	**—**	**49.7**
Restructuring costs – relating to associate	**—**	**(0.3)**	**—**	**—**	**(0.3)**
Past service cost on defined benefit pension scheme	**—**	**—**	**—**	**(0.3)**	**(0.3)**
Share of impairment recognised by associate	**—**	**0.6**	**—**	**—**	**0.6**
Amortisation of acquired intangibles	**(2.4)**	**(6.4)**	**(0.8)**	**—**	**(9.6)**
Fair value movement on financial derivatives	**—**	**—**	**—**	**(1.5)**	**(1.5)**
Financial income	**—**	**—**	**—**	**0.3**	**0.3**
Financial expenditure	**—**	**—**	**—**	**(3.4)**	**(3.4)**
Profit/(loss) before income tax on continuing operations	**19.7**	**6.6**	**14.1**	**(4.9)**	**35.5**

Year to 31 March 2018	Materials & Characterisation £m	Research & Discovery £m	Service & Healthcare £m	Unallocated Group items £m	Total £m
Adjusted profit for reportable segments from continuing operations	20.1	13.8	12.6	—	46.5
Restructuring costs	(0.3)	—	(0.9)	—	(1.2)
Restructuring costs – relating to associate	—	(0.4)	—	—	(0.4)
Net profit on disposal of buildings	—	—	—	3.3	3.3
Share of impairment recognised by associate	—	(2.0)	—	—	(2.0)
Amortisation of acquired intangibles	(2.5)	(7.3)	(1.1)	—	(10.9)
Fair value movement on financial derivatives	—	—	—	3.1	3.1
Financial income	—	—	—	0.3	0.3
Financial expenditure	—	—	—	(4.5)	(4.5)
Profit before income tax on continuing operations	17.3	4.1	10.6	2.2	34.2

Notes to the Financial Statements (continued)

year ended 31 March 2019

3 Segment information (continued)

Depreciation, capital expenditure, amortisation and impairment of intangibles and capitalised development costs arise in the following segments:

	2019		2018	
	Depreciation £m	**Capital expenditure £m**	Depreciation £m	Capital expenditure £m
Materials & Characterisation	**2.5**	**4.5**	1.5	2.8
Research & Discovery	**1.3**	**1.1**	0.8	0.8
Service & Healthcare	**2.0**	**0.5**	1.8	1.0
Unallocated Group items	**1.4**	**1.3**	0.6	0.9
Total	**7.2**	**7.4**	4.7	5.5

	2019		2018	
	Amortisation and impairment £m	**Capitalised development costs £m**	Amortisation and impairment £m	Capitalised development costs £m
Materials & Characterisation	**4.6**	**2.7**	5.8	4.8
Research & Discovery	**7.7**	**0.8**	8.4	1.0
Service & Healthcare	**0.8**	—	1.1	—
Unallocated Group items	**0.3**	—	—	—
Total	**13.4**	**3.5**	15.3	5.8

b) Geographical analysis

The Group's reportable segments are located across a number of geographical locations and make sales to customers in countries across the world. The analysis below shows revenue and non-current assets (excluding deferred tax) for individual countries or regions that represent more than 5% of revenue.

Revenue from continuing operations from external customers by destination

	2019 £m	2018 £m
USA	**99.8**	89.5
Rest of Europe	**38.7**	35.9
Rest of Asia	**34.4**	31.9
UK	**14.2**	18.1
Japan	**38.7**	34.9
China	**70.0**	53.5
Germany	**28.3**	24.8
Rest of World	**9.5**	8.3
Total	**333.6**	296.9

Non-current assets (excluding deferred tax)

	2019 £m	2018 £m
UK	**157.4**	160.4
Germany	**3.9**	3.3
USA	**15.4**	11.3
Japan	**1.7**	0.5
China	**0.5**	0.2
Rest of Europe	**9.4**	9.6
Rest of Asia	**0.4**	—
Rest of World	**1.7**	1.7
Total	**190.4**	187.0

Notes to the Financial Statements (continued)
year ended 31 March 2019

4 Research and Development ("R&D")
The total R&D spend by the Group as part of continuing operations is as follows:

	2019			2018		
	Materials & Characterisation £m	**Research & Discovery £m**	**Total £m**	Materials & Characterisation £m	Research & Discovery £m	Total £m
R&D expense charged to the Consolidated Statement of Income	**14.6**	**10.8**	**25.4**	12.3	11.1	23.4
Less: depreciation of R&D related fixed assets	**(0.1)**	**—**	**(0.1)**	(0.1)	—	(0.1)
Add: amounts capitalised as fixed assets	**—**	**0.1**	**0.1**	—	0.1	0.1
Less: amortisation and impairment of R&D costs previously capitalised as intangibles	**(2.2)**	**(1.3)**	**(3.5)**	(3.2)	(1.2)	(4.4)
Add: amounts capitalised as intangible assets	**2.7**	**0.8**	**3.5**	4.8	1.0	5.8
Total cash spent on R&D during the year	**15.0**	**10.4**	**25.4**	13.8	11.0	24.8

5 Investment in associate
The Group holds a 47% interest in the ordinary share capital of Scienta Scientific AB. Scienta Scientific AB is registered and has its principal place of business in Sweden. The investment has been accounted for as an associate taking into account the following factors:

- the Group holds substantial, but minority, voting rights (47%). All other rights are controlled by a single shareholder;
- the Group has a minority number of Non-Executive Board seats (two of five), with the remaining seats held by representatives of GDI; and
- whilst the Group has certain veto rights in respect of certain decisions, it cannot unilaterally direct the activities of the Scienta AB Group.

During the prior year the Group invested a further £2.1m in its equity accounted associate.

The Group's share of profit in its equity accounted associate for the year was £0.5m (2018: loss of £1.9m). The Group did not receive any dividends from the associate in either period.

	2019 £m	2018 £m
Carrying value at 1 April 2018	**4.1**	3.9
Addition	—	2.1
Share of profit/(loss) of associate (net of tax)	**0.5**	(1.9)
Dividends received	—	—
Carrying value at 31 March 2019	**4.6**	4.1

Notes to the Financial Statements (continued)

year ended 31 March 2019

5 Investment in associate (continued)

Summary financial information for the equity accounted associate is as follows:

	2019	2018
	£m	£m
Non-current assets	**0.9**	2.3
Current assets	**25.2**	23.7
Total assets	**26.1**	26.0
Current liabilities	**(20.5)**	(12.1)
Non-current liabilities	**(1.8)**	(9.2)
Total liabilities	**(22.3)**	(21.3)
Net assets	**3.8**	4.7
Income	**36.5**	51.0
Expenses	**(35.4)**	(55.0)
Profit/(loss) for the year	**1.1**	(4.0)
Group's share of net assets	**1.8**	2.2
Group's share of profit/(loss)	**0.5**	(1.9)

According to the terms of the transaction, no dividend could be paid by the associate until 27 May 2017. Following that date, any dividend paid must be agreed by both Oxford Instruments plc and GD Intressenter AB, up to a maximum of 50% of the previous year's profit after tax. At the date of signing these Financial Statements no dividend has been declared or paid.

6 Disposal of subsidiary and discontinued operations

In the prior year, on 3 July 2017, the Group disposed of its Industrial Analysis business for a final consideration of £82.8m.

Effect of disposal on the financial position of the Group

	Industrial Analysis
	2018
	£m
Goodwill	(4.3)
Acquired intangible assets	(0.1)
Other intangible assets	(4.7)
Property, plant and equipment	(2.4)
Inventory	(11.5)
Trade and other receivables	(9.8)
Cash and cash equivalents	(6.0)
Trade and other payables	8.6
Provisions	0.8
Tax balances	(0.4)
Net assets divested	(29.8)
Consideration receivable	82.8
Deferred consideration	—
Consideration received, satisfied in cash	82.8
Cash disposed of	(6.0)
Transaction expenses	(5.6)
Net cash inflow	71.2
Carrying value of net assets disposed of (excluding cash and cash equivalents)	(23.8)
Deferred consideration	—
Recognition of provision on disposal	(2.1)
Currency translation differences transferred from translation reserve	4.8
Gain on disposal	50.1
Tax (charge)/credit on gain on disposal	(2.3)
Gain on disposal net of tax	47.8

Notes to the Financial Statements (continued)

year ended 31 March 2019

6 Disposal of subsidiary and discontinued operations (continued)

The recognition of provisions on disposal primarily relate to onerous lease contracts. These have been recognised in the Income Statement under discontinued operations.

Discontinued operations

In the year to 31 March 2018 the Group's Industrial Analysis business was classified as a discontinued operation. The Industrial Analysis business was considered a major class of business on the basis that it was previously an operating segment and referred to in the Group Strategic Report.

On 24 May 2019 a further £1.6m was received by the Group in relation to the finalisation of tax affairs outstanding upon disposal.

Results of discontinued operations

	2019 £m	2018 £m
Revenue	**—**	16.8
Expenses	**—**	(16.3)
Adjusted profit before tax	**—**	0.5
Income tax charge	**—**	(0.9)
Adjusted loss after tax	**—**	(0.4)
Adjusting items:		
Amortisation of acquired intangibles	**—**	(0.1)
One-off costs arising as a result of disposal	**—**	(2.2)
Income tax on adjusting items	**—**	0.8
Loss after tax	**—**	(1.9)
Gain on disposal	**1.6**	50.1
Tax on gain on disposal	**(0.3)**	(2.3)
Profit from discontinued operations after tax	**1.3**	45.9

Earnings per share from discontinued operations

	2019 pence	2018 pence
Adjusted basic result/(loss) per share	**—**	(0.7)
Adjusted diluted result/(loss) per share	**—**	(0.7)
Total basic earnings per share	**2.3**	80.2
Total diluted earnings per share	**2.3**	80.0

Cash flows from discontinued operations

	2019 £m	2018 £m
Net cash generated from operating activities	**—**	3.0
Net cash generated from/(used in) investing activities	**—**	71.2
Net cash used in financing activities	**—**	—

Notes to the Financial Statements (continued)

year ended 31 March 2019

7 Income tax expense

Recognised in the Consolidated Statement of Income

	2019 **£m**	2018 £m
Current tax expense		
Current year	**8.1**	7.3
Adjustment in respect of prior years	**(0.7)**	(1.7)
	7.4	5.6
Deferred tax expense		
Origination and reversal of temporary differences	**(0.9)**	7.3
Adjustment in respect of prior years	**0.3**	1.7
	(0.6)	9.0
Total tax expense	**6.8**	14.6
Reconciliation of effective tax rate		
Profit before income tax	**35.5**	34.2
Income tax using the weighted average statutory tax rate of 22% (2018: 22%)	**7.8**	7.5
Effect of:		
Tax rates other than the weighted average statutory rate	**(0.1)**	0.3
Change in rate at which deferred tax recognised	**(1.2)**	5.3
Transaction costs, deferred consideration and impairments not deductible for tax	**0.6**	1.2
Non-taxable income and expenses	**—**	—
Tax incentives not recognised in the Consolidated Statement of Income	**—**	(0.7)
Current period losses not available for carry forward	**—**	0.4
Movement in unrecognised deferred tax	**0.1**	0.6
Adjustment in respect of prior years	**(0.4)**	—
Total tax expense	**6.8**	14.6
Taxation charge recognised in other comprehensive income		
Deferred tax – relating to employee benefits	**0.5**	0.9
	0.5	0.9
Taxation (credit) recognised directly in equity		
Current tax on adoption of IFRS 15	**(0.9)**	—
Deferred tax on adoption of IFRS 15	**(0.9)**	—
Deferred tax – relating to share options	**(0.2)**	—

Reductions in the UK corporation tax rate from 20% to 19% (effective from 1 April 2017) and to 18% (effective from 1 April 2020) were substantively enacted on 26 October 2015, and an additional reduction to 17% (effective from 1 April 2020) was substantively enacted on 6 September 2016. This will reduce the Company's future current tax charge accordingly. The UK deferred tax liability at 31 March 2019 has been calculated based on those rates. The Group carries tax provisions in relation to uncertain tax positions arising from the possible outcome of negotiations with tax authorities. Such provisions are a reflection of the geographical spread of the Group's operations and the variety of jurisdictions in which it carries out its activities.

Effective 1 January 2018 the rate of federal tax in the US was reduced from 35% to 21% and, as a result, in the prior year deferred tax assets were reduced by £5.4m.

On 2 April 2019 the EU Commission announced that it believes that in certain circumstances the UK's Controlled Foreign Company (CFC) regime (introduced in 2013) for certain finance income constituted State Aid. The Commission instructed the UK Government to recover any such aid from affected parties. The Group has claimed the benefit of this exemption, and therefore may be required to repay State Aid. The maximum amount of State Aid repayable as at 31 March 2019 was £1.2m in respect of tax and £0.1m in respect of interest unless the decision is successfully challenged in the EU Courts. However, no provision has been made in respect of this investigation since we believe that it is more likely than not that no additional tax will ultimately be due.

Notes to the Financial Statements (continued)
year ended 31 March 2019

8 Dividends per share
The following dividends per share were paid by the Group:

	2019 pence	2018 pence
Previous year interim dividend	**3.7**	3.7
Previous year final dividend	**9.6**	9.3
	13.3	13.0

The following dividends per share were proposed by the Group in respect of each accounting year presented:

	2019 pence	2018 pence
Interim dividend	**3.8**	3.7
Final dividend	**10.6**	9.6
	14.4	13.3

The interim dividend was not provided for at the year end and was paid on 8 April 2019. The final proposed dividend of 10.6 pence per share (2018: 9.6 pence) was not provided at the year end and will be paid on 18 October 2019 subject to authorisation by the Shareholders at the forthcoming Annual General Meeting.

9 Basis of preparation
This preliminary announcement does not constitute the Company's statutory accounts for the years ended 31 March 2019 or 2018. Statutory accounts for 2018 have been delivered to the registrar of companies and those for 2019 will be delivered in due course. The auditor has reported on those accounts: their reports were (i) unqualified, (ii) did not include a reference to any matters to which the auditor drew attention by way of emphasis without qualifying their report and (iii) did not contain a statement under section 498 (2) or (3) of the Companies Act 2006.

The financial information presented in this preliminary announcement for the year ended 31 March 2019 is based on, and is consistent with, that in the Group's audited Financial Statements for the year ended 31 March 2019.

The following standards and interpretations have been adopted by the Group for the year ended 31 March 2019:

- IFRS 9 *Financial Instruments*
  The Group adopted IFRS 9 on 1 April 2018. IFRS 9 addresses the classification, measurement and derecognition of financial instruments, introduces a new impairment model for financial assets and new rules for hedge accounting. It replaces IAS 39 *Financial Instruments* guidance and comprehensive updates have been made to IFRS 7 *Financial Instruments: Disclosure* and IAS 32 *Financial Instruments: Presentation*. The adoption of IFRS 9 has had no material impact on the Group's results.

- IFRS 15 *Revenue from Contracts with Customers*
  The Group adopted IFRS 15 using the modified retrospective approach on 1 April 2018, which means that the cumulative impact on adoption has been recognised in retained earnings as of 1 April 2018. Comparative information has not been restated. IFRS 15 provides a single, principles-based, five step model to be applied to all sales contracts, based on the transfer of goods and services to customers, and it replaces the separate model for goods and services of IAS 18 *Revenue*. The impact on adoption of IFRS 15 was a decrease in retained earnings of £7.2m, net of tax; an increase in inventory of £11.0m; an increase in customer deposits of £19.0m; an increase in deferred income of £1.0m; a reduction in current tax payable of £0.9m and an increase in deferred tax assets of £0.9m.

- IFRS 16 *Leases*
  The Group adopted IFRS 16 using the modified retrospective approach on 1 April 2018. IFRS 16 provides a single model for lessees which recognises a right of use asset and lease liability for all leases that are longer than one year or that are not classified as low value. The impact on adoption of IFRS 16 was the recognition of right of use assets totalling £10.7m on the balance sheet and corresponding lease liabilities of £10.7m.

Notes to the Financial Statements (continued)

year ended 31 March 2019

9 Basis of preparation (continued)

The table below summarises the effect of the adoption of IFRS 15 and IFRS 16 on the Group Income Statement during the year to 31 March 2019.

Continuing operations - adjusted	Pre IFRS 15 & IFRS 16 £m	IFRS 15 adjustment £m	IFRS 16 adjustment £m	**As reported £m**
Revenue	326.6	7.0	—	**333.6**
Cost of sales	(152.5)	(4.1)	—	**(156.6)**
Gross profit	174.1	2.9	—	**177.0**
Operating profit	46.9	2.9	(0.1)	**49.7**
Net finance expense	(2.0)	—	(0.2)	**(2.2)**
Profit before tax	44.9	2.9	(0.3)	**47.5**
Tax charge	(9.8)	(0.6)	—	**(10.4)**
Profit after tax	35.1	2.3	(0.3)	**37.1**

No other revisions to adopted IFRS that became applicable in 2019 had a significant impact on the Group's Financial Statements for the year ended 31 March 2019.

The Company is registered in England, Registration Number 775598.

The principal exchange rates to Sterling used were:

Year-end rates	**2019**	2018
US Dollar	**1.30**	1.40
Euro	**1.16**	1.14
Yen	**144**	149

Average translation rates 2019	US Dollar	Euro	Yen
April	**1.39**	**1.14**	**150**
May	**1.36**	**1.14**	**148**
June	**1.33**	**1.14**	**146**
July	**1.32**	**1.13**	**146**
August	**1.30**	**1.12**	**144**
September	**1.29**	**1.11**	**146**
October	**1.29**	**1.13**	**145**
November	**1.28**	**1.13**	**144**
December	**1.28**	**1.12**	**142**
January	**1.30**	**1.13**	**142**
February	**1.31**	**1.15**	**145**
March	**1.30**	**1.16**	**144**

Average translation rates 2018	US Dollar	Euro	Yen
April	1.27	1.18	142
May	1.29	1.17	143
June	1.29	1.14	144
July	1.31	1.13	146
August	1.30	1.10	143
September	1.31	1.11	146
October	1.33	1.13	150
November	1.32	1.13	149
December	1.34	1.12	151
January	1.39	1.13	153
February	1.41	1.14	151
March	1.40	1.14	149

Notes to the Financial Statements (continued)

year ended 31 March 2019

10 The Annual General Meeting

The Annual General Meeting will be held on 10 September 2019 at Group Head Office, Tubney Woods, Abingdon, Oxfordshire, OX13 5QX.

Notes to the Financial Statements (continued)

year ended 31 March 2019

11 Principal Risks and Uncertainties

Specific risk 1: Routes to market

Context: In some instances the Group's products are components of higher-level systems sold by OEMs, and thus the Group does not control its route to market.

Risk	Possible impact	Control mechanisms	Mitigation
• Vertical integration by OEMs.	• Loss of key customers / route to market. • Reduction in sales volumes or pricing and lower profitability.	• Customer intimacy to match product performance to customer needs. • Positioning of Oxford Instruments brand and marketing directly to end users.	• Strategic relationships with OEMs to sell performance of the combined system. • Product differentiation to promote advantages of Oxford Instruments equipment and solutions. • Direct marketing to end users.

Specific risk 2: Technical risk

Context: The Group provides high technology equipment, systems and services to its customers.

Risk	Possible impact	Control mechanisms	Mitigation
• Failure of the advanced technologies applied by the Group to produce commercially viable products.	• Loss of market share or negative pricing pressure resulting in lower turnover and reduced profitability. • Additional NPI expenditure. • Adverse impact on the Group's brand and reputation.	• "Voice of the Customer" approach and market intimacy to direct product development activities. • Formal NPI processes to prioritise investment and to manage R&D expenditure. • Product lifecycle management.	• Understanding customer needs/expectations and targeted new product development programme to maintain and strengthen product positioning. • Stage gate process in product development to challenge commercial business case and mitigate technical risks. • Operational practices around sales-production matching and inventory management to mitigate stock obsolescence risks.

Specific risk 3: Economic environment

Context: Government expenditure may become constrained in key markets.

Risk	Possible impact	Control mechanisms	Mitigation
• Reduction in research funding in key markets such as the US, China and the EU (including the UK).	• Lower sales and profitability.	• Market intimacy and diversification strategy.	• Increased focus on customers that are not reliant on government funding.

Notes to the Financial Statements (continued)

year ended 31 March 2019

11 Principal Risks and Uncertainties (continued)

Specific risk 4: Political risk

Context: The Group operates in global markets and can be required to secure export licences from governments.

Risk	Possible impact	Control mechanisms	Mitigation
• Changes in the geopolitical landscape or a global trade war resulting in a complete embargo on trade with specific nations, barriers to trade with individual customers, or significant increases in tariffs.	• Lower exports adversely affecting turnover. • Increases to input costs and lower gross margins. • Limitations on ability to provide after sales service to existing customers	• Contract review and protection against breach in the event that export licence is withheld.	• Broad global customer base; contractual protection.

Specific risk 5: Legal/compliance risk

Context: The Group operates in a complex technological environment and competitors may seek to protect their position through intellectual property rights.

Risk	Possible impact	Control mechanisms	Mitigation
• Infringement of a third party's intellectual property.	• Potential loss of future revenue. • Future royalty payments. • Payment of damages.	• Formal 'Freedom to Operate' assessment to identify potential IP issues during product development.	• Confirmation of 'Freedom to Operate' during new product development stage gate process.
• Regulatory breach	• Fines and non-financial sanctions such as restrictions on trade, disbarment from public procurement contracts. • Reputational damage.	• Internal control framework including policies, procedures and training in risk areas such as bribery and corruption, sanctions and export controls.	• Compliance monitoring programmes.

Specific risk 6: Brexit related risks

Context: The UK will leave the EU.

Risk	Possible impact	Control mechanisms	Mitigation
• Supply chain disruption • Lower participation in EU-funded research projects post Brexit. • Potential short-term hiatus in UK research funding. • Barriers to existing free movement of goods and services in the EU. • Tariffs on exports to EU countries from the UK and vice versa • UK becomes less attractive to EU nationals as a place to work	• Delays to shipments. • Lower sales and profitability. • Salary inflation. • Loss of key skills, and/or increased recruitment, and/or salary costs. • Supply chain disruption • Lower net pricing on UK exports to EU and increased input costs on products sourced from the EU.	• Sales-production matching and resource planning. • Customer intimacy and monitoring of funded projects. • Strategic supply chain review. • Product pricing reviews. • Skills and capabilities reviews. • Brexit Committee.	• Existing stock of raw materials and work in progress. • Market diversification • Long-term pricing agreements for key suppliers and strategic sourcing review. • Pricing strategy. • Renewal of UK work permit scheme to facilitate employment of non-UK/EU nationals. • Application for Authorised Economic Operator status to facilitate movement of goods with EU 27.

Notes to the Financial Statements (continued)

year ended 31 March 2019

11 Principal Risks and Uncertainties (continued)

Specific risk 7: Adverse movements in long-term foreign currency rates

Context: A high proportion of the Group's revenue is in foreign currencies, notably US dollars while the majority of the cost base is denominated in sterling.

Risk	Possible impact	Control mechanisms	Mitigation
• Long-term strengthening of Sterling against key currencies such as the US dollar, Japanese Yen and the Euro. (Short-term exposure to volatility is managed by hedging programme).	• Reduced profitability.	• Procurement "make or buy" strategy. • Review of revenue and costs by currency.	• Strategic procurement in USD, Euros and Yen.

Specific risk 8: Supply chain risk

Context: The Group operates a strategic make or buy policy which places reliance on key partners, notably single source suppliers in terms of pricing and on time delivery.

Risk	Possible impact	Control mechanisms	Mitigation
• Supply chain disruption in particular for single source components leading to production delays and potentially lost revenue.	• Disruption to customers. • Lower sales and profitability. • Higher input costs. • Negative impact on the Group's reputation.	• Procurement strategy to manage stock availability.	• Buffer stocks of key components. • Where possible, dual source supply is sought.

Specific risk 9: People

Context: A number of the Group's employees have business critical skills.

Risk	Possible impact	Control mechanisms	Mitigation
• Key employees leave and effective replacements are not recruited on a timely basis.	• Adverse impact on NPI. • Operational disruption. • Lower sales and profitability.	• HR people strategy for retention and recruitment of staff with key skills.	• Succession management plans. • Technical career paths. • UK work permit scheme to facilitate employment of non-UK/EU nationals in place.

Specific risk 10: IT risk

Context: Elements of production, financial and other systems rely on IT availability.

Risk	Possible impact	Control mechanisms	Mitigation
• Cyber attack on the Group's IT infrastructure. • Spread of viruses or malware through "Zero-day" incidents or phishing attacks. • Insider threat.	• Disruption to business as usual operations. • Loss of business critical data. • Financial and reputational damage.	• IT security policy and associated standards and protection systems. • Internal IT governance to maintain those protection systems and our incident response. • Employee awareness training.	• Regular review, monitoring and testing of key security measures to assess adequacy of protection against known threats. • Citadel approach to protect key data. • User education.

Notes to the Financial Statements (continued)

year ended 31 March 2019

11 Principal Risks and Uncertainties (continued)

Specific risk 11: Operational risk

Context: Business units' production facilities are typically located at a single site.

Risk	Possible impact	Control mechanisms	Mitigation
• Sustained disruption to production arising from a major incident at a site.	• Inability to fulfil orders in the short term, resulting in a reduction in sales and profitability. • Additional, non-recurring overhead costs.	• Business Continuity Plans ("BCPs") exist for all manufacturing sites. • Contractual clauses to limit financial consequences of delayed delivery.	• Detailed response plans in BCPs can reduce downtime arising from incidents and facilitate the restoration or relocation of production. • Standard sales contracts include clauses for limitation of liability, liquidated damages and the exclusion of consequential losses.

Specific risk 12: Pensions

Context: The Group's calculated pension deficit is sensitive to changes in the actuarial assumptions.

Risk	Possible impact	Control mechanisms	Mitigation
• The reported pension deficit is sensitive to movements in actuarial assumptions and returns on investments.	• Increase in net debt as additional Group contributions become payable to fund the deficit. • Increase in the annual levy paid to the Pension Protection Fund • Reduction in net assets.	• Regular review of pension strategy • Liability hedging programme to mitigate exposure to movements in interest rates and inflation	• The Group has closed its defined benefit pension schemes in the UK and US to future accrual. • The Group has a funding plan in place to reduce the pension deficit over the short to medium term.