THE PROMISE OF THE DIGITAL AGE. ASSURED.

spirent™
Promise. Assured.

Spirent Communications plc
Annual Report 2019

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Eric Updyke
Chief Executive Officer

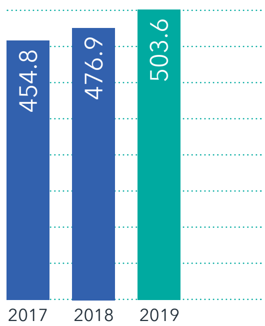
COMMITTED TO BEING A TRUSTED PARTNER

"Spirent is leading the way in providing technology testing and assurance solutions.

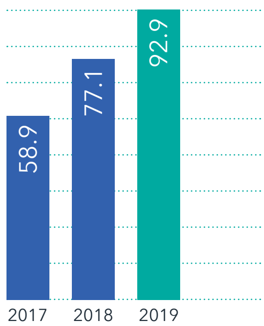
We help our customers find clarity in the face of complexity, overcome the challenges of a fast-approaching future, and ultimately deliver on their promise to their own customers.

Spirent is on a trend of delivering sustainable, profitable revenue growth and increasing shareholder return. Our strategy is working."

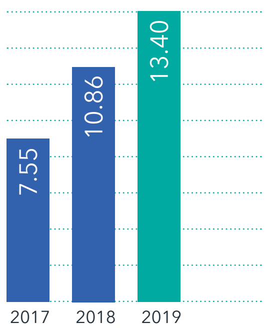
Revenue ($m)



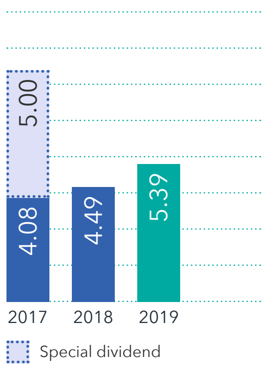
Adjusted operating profit[1] ($m)



Adjusted basic EPS[4] (cents)



Dividend per share (cents)



2019 highlights

Revenue

$503.6M 2019 — ↑ 5.6% — $476.9M 2018

Adjusted operating profit[1]

$92.9M 2019 — ↑ 20.5% — $77.1M 2018

Adjusted operating margin[2]

18.4% 2019 — ↑ 2.2% — 16.2% 2018

Profit before tax

$89.6M 2019 — ↑ 46.4% — $61.2M 2018

Free cash flow[3]

$100.1M 2019 — ↑ $49.2M — $50.9M 2018

Adjusted basic EPS[4]

13.40C 2019 — ↑ 23.4% — 10.86C 2018

Dividend per share

5.39C 2019 — ↑ 20.0% — 4.49C 2018

Notes
1. Before exceptional items, acquisition related costs, acquired intangible asset amortisation and share-based payment amounting to $4.3 million in total (2018 $19.6 million).
2. Adjusted operating profit as a percentage of revenue in the period.
3. Operating cash flow after tax, net interest, net capital expenditure and lease payments/sublease income.
4. Adjusted basic earnings per share is based on adjusted earnings as set out in note 11 of Notes to the full year consolidated financial statements.

Items with notes 1 to 4 above are non-GAAP alternative performance measures; see pages 190 and 191 for more detail.

Strong profitable growth

- Order intake was up 13.2 per cent and benefited from an increased level of multi-year support contract wins, with 24 per cent of the closing orderbook for delivery in more than 12 months, compared to 17 per cent at the end of last year, which improves visibility of future revenue.
- Revenue up 5.6 per cent, driven by demand for 400G high-speed Ethernet and a higher win rate with US defence contractors for GNSS positioning products.
- Adjusted operating profit increased by 20 per cent, with an improved operating margin of 18.4 per cent.
- Adjusted basic EPS up 23 per cent to 13.40 cents.
- Cash closed at $183.2 million, following another year of highly effective working capital management.
- 20 per cent increase in full year dividend, up 25 per cent in sterling, broadly in line with the increase in earnings. Final dividend of 3.45 cents to be paid in May 2020.

Operational highlights – continuing progress across segments

- Secured over 250 5G related wins and are well positioned for ongoing growth across the Spirent portfolio.
- Focus on driving services revenue has already resulted in a large strategic win for "testing-as-a-service" (TaaS) with a leading North American service provider for 2020 delivery.
- Continued innovation and investment in leading technologies to enable sustainable revenue growth.
- Strategy review instigated by the CEO involving a number of initiatives designed to maximise market opportunities and become more agile and customer-centric, including the reorganisation of the marketing function to drive further effectiveness ($1.8 million exceptional cost in 2019, $2.7 million estimated for 2020).
  - Key customer account management programme extended to strengthen our relationships with more of our largest customers.
  - Several new experienced leaders added to the senior management team to drive and evolve our growth strategy.

A TRUSTED PARTNER
TO OUR CUSTOMERS

Spirent helps our customers manage the complexity of their devices, networks and services, enabling them to keep the promises they make to their customers while reducing cost. We provide innovative test and assurance solutions and trusted expertise that allow our customers to bring better quality products and services to market faster, to automate the turn-up of new services and to proactively identify and resolve problems in their production networks.

Across every one of our businesses we are accelerating the transition of testing and evaluation of devices, network equipment and applications from development labs to the operational network, and evolving from a product-centric to a customer-centric organisation. We will continue to innovate towards fully automated testing and autonomous service assurance and analytics solutions.

Spirent has around 1,500 employees, serving in excess of 1,100 customers in over 50 countries, and is organised into three operating segments.

What we do

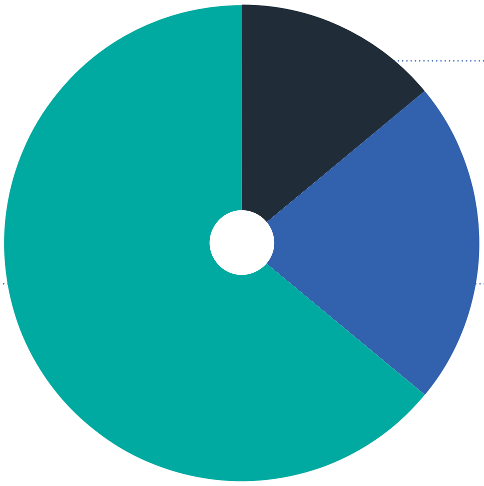
Networks & Security
Performance and security testing to accelerate the development and validation of new equipment, networks and applications for high-speed Ethernet/IP, cloud, mobile and GNSS.

Lifecycle Service Assurance
Solutions for pre-deployment testing of mobile core networks. Cloud-native active test and assurance solutions that automate service turn-up, monitoring and troubleshooting of 5G, LTE, Ethernet, SD-WAN, cloud networks and more.

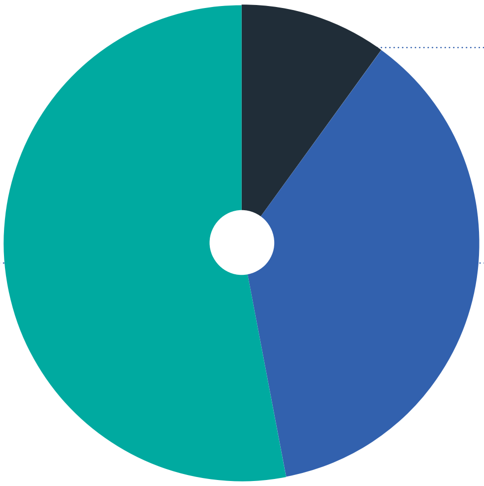
Connected Devices
Automated test systems and service offerings to test mobile devices and supported voice, video and location services in the lab or on operational networks. Solutions for new 5G air interface technology testing.

Strong diversification 2019 revenue:

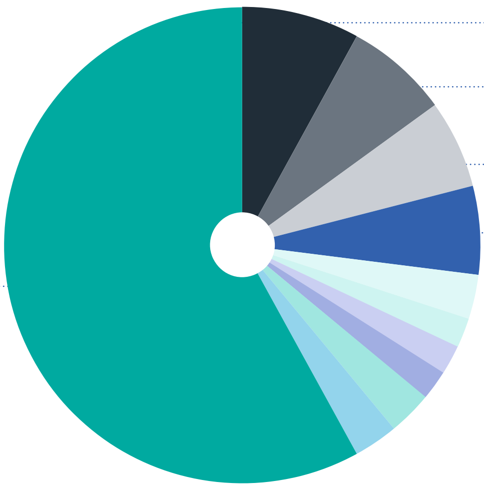
By segment



By geography



By customer



OUR UNIQUE VALUE CREATION

Spirent provides expert guidance and award-winning testing and assurance methodologies that help our customers overcome the challenges of the fast-approaching future, and ultimately deliver on their promises to their own customers of performance and security.

DEVELOP

Spirent reduces time and cost to develop, secure and launch new products, services and networks.

Spirent's technologies and methodologies begin with testing the most realistic scenarios in the lab. By reducing time and cost to develop, secure and launch new products, services and networks, Spirent helps our customers accelerate time to market and maximise their return on investment.

DEPLOY

We assure things work as expected by testing the most realistic scenarios at scale.

Spirent's solutions bridge the gap from the lab to the live environment and the divide between the development and operational teams. Our solutions help our customers deploy new technologies and services more rapidly and with greater confidence, optimise the validation of networks and business offerings, and improve the customer experience while radically reducing operating costs. By spanning the product/service lifecycle from Develop to Operate with Spirent solutions, our customers can achieve order of magnitude improvements in their businesses.

OPERATE

Spirent improves network performance and customer experience while radically reducing operating costs.

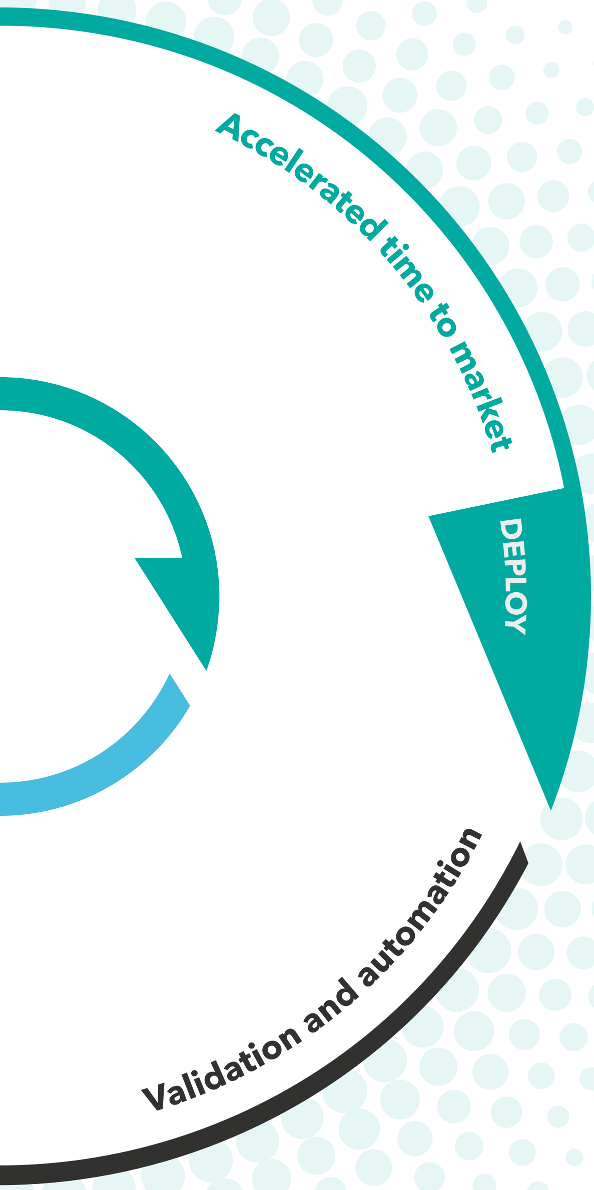
Through highly advanced solutions, such as virtual test agents, we are able to transfer our award-winning lab expertise into the operational environment, providing continuous assurance that reduces operating costs while improving the customer experience.

Our approach

Bridges the gap between development and operational teams to support DevOps across the stack and throughout the service lifecycle.

Facilitates automation of the testing process, of utmost importance when things are moving faster than a human can handle.

Emphasises continuous testing, driven by test and lab automation, to optimise the validation of an organisation's networks and business offerings.



Consider that:

- 5G wireless technology is introducing capabilities 10–100 times more advanced than previous generations.
- Smart cities, homes and industries are introducing millions of new connected devices.
- Network operators are virtualising communications networks.
- Enterprises are moving applications to the cloud and experiencing more security breaches every year.
- Organisations are embracing extreme operations automation and looking at every opportunity to reduce human intervention, accelerate the rollout of new services, reduce operational costs and differentiate service quality.
- Autonomous vehicles and drones require months (even years) of testing before they are considered safe for people to use.

Everything is changing rapidly in this digital age. Our customers must keep pace with changing technology while simultaneously reducing operating costs.

Reliable testing and assurance services are more crucial than ever for success today. That is why Spirent has pioneered a unique new approach to testing and validation that enables our customers to better meet the demands of increasing complexity and the evolving environment.

LEVERAGING OUR EXPERTISE TO DELIVER MARKET-LEADING SOLUTIONS

Sir Bill Thomas
Chairman

Adjusted basic earnings per share[1]

13.40C

↑23.4%

2018 10.86C

Dividend per share

5.39C

↑20.0%

2018 4.49C

Note
1. Adjusted basic earnings per share is based on adjusted earnings as set out in note 11 of Notes to the full year consolidated financial statements.

I am pleased to present our Annual Report for the year to 31 December 2019.

Performance

Every employee at Spirent should be proud to have contributed to delivering another good year of performance. Spirent has now delivered three years of year-on-year growth, in revenue, profitability and order intake.

Revenue increased by 5.6 per cent to $503.6 million and we achieved a 20 per cent increase in adjusted operating profit, and a 23 per cent increase in earnings per share.

In line with our progressive dividend policy I am delighted we are proposing a 20 per cent increase to the full year dividend.

Our successful growth has been achieved by being at the forefront of key industry growth areas and by delivering market-leading solutions to our customers. We are reaping the rewards of focusing on our core strategic priorities, in particular on delivery of more value through solutions for our key customers.

Spirent has a number of market-leading businesses and, by being first to market with leading solutions, the Board hopes that we will continue to make progress in fully realising the potential of the portfolio of technologies that we have developed. We remain restless to continue to improve all aspects of our business, to deliver good returns for our investors and to make greater career opportunities open to our employees.

Leadership

During 2019, Eric Hutchinson stepped down from the Board and retired after a 37-year career with Spirent. He served five years as the CEO and 14 years as the CFO. These days it is a rare thing for an individual to commit an entire career to one organisation, and the Board and I would like to put on record our thanks for his enormous contribution and for the execution of a very smooth handover to our new CEO. Eric left Spirent on an upwards trajectory and in his time as CEO made a number of changes which placed Spirent in a far more competitive place than when he took the CEO role. All of us at Spirent wish Eric and his wife Rosemarie a long and happy retirement.

In April, Eric Updyke joined the Company as our new CEO. Eric is a seasoned leader in the telecoms industry and brings with him a set of key operational competencies which will help drive the ongoing effectiveness of Spirent. He has made a bright start and has the Board's full support to deliver continued value to Spirent's customers, shareholders and other stakeholders.

The Board is fully supporting Eric in a range of initiatives which we expect will continue to drive the growth of Spirent. We have taken steps following the CEO's strategic review to improve our marketing and sales effectiveness and have added more management muscle to drive future growth. We continue to build ever closer relationships with our largest customers, which has borne fruit in 2019 and we expect will continue to aid our growth trajectory in 2020 and beyond.

Market

The growth in investment in 5G has now begun in earnest. The investment in 400G Ethernet testing is accelerating and through 2019 we continued to see strong government spending benefiting our GNSS solutions. These are all positive trends which we hope will continue to drive our business forward.

The ongoing US trade dispute with China is certainly an area we continue to monitor carefully ensuring we maintain our strong customer relationships. However, we believe that the breadth of our technologies and the market opportunities they will offer provide us with sufficient growth drivers to continue to grow Spirent. Changes in our industry have historically driven our growth and given us opportunities to disrupt our competitors. The Board continues to ensure that the appropriate level of investment is being made in research and development to ensure that Spirent is capable of maintaining its market-leading positions and growing in new and adjacent markets.

Culture

The Board understands the need to promote a healthy culture within the Group, and we have made significant strides through the year to ensure that the Board is more fully informed of feedback from our employees. We have discussed engagement survey results and sought more direct feedback through employee groups speaking directly to our Non-executive Directors. There is always more that we can do to help engage our employees in the purpose of the organisation and help them to understand how they can contribute to the success of the whole of Spirent whilst growing their own careers at Spirent. The Board looks forward to continuing that dialogue with our workforce. Our employees can be assured that developing our own internal talent pipeline is a priority for the Board.

Sustainability

For a number of years Spirent has quietly gone about trying to reduce its environmental impact and improve its sustainability metrics. Our FuturePositive programme, now in place for more than five years, is explained in more detail on pages 46 to 49. Each year we publish a Sustainability Report giving fuller details of our efforts in this area which I would encourage all our stakeholders to read. I am pleased that we have been able to significantly reduce our carbon emissions over the past five years. I am also grateful to those of our employees who take the time to make an impact in their local communities through our Global STEM Ambassador programmes and other voluntary initiatives. In our own way we are seeking to make a difference beyond just making money for our shareholders.

Coronavirus (COVID-19)

We are carefully managing the coronavirus situation and already have in place processes to protect our staff, including working from home and restricted travel arrangements. We are continuing to engage with our customers in the most optimal way during this period. Supplies for our products and solutions are in the vast majority dual sourced to mitigate against potential risk in the supply chain process. We continue to be extremely vigilant and at this time we have not assumed a financial impact to our outlook. We will continue to analyse potential implications and implement Government guidelines as the situation evolves.

Outlook

At present, the Board is confident that the Group will continue to see steady profitable growth in 2020.

Sir Bill Thomas
Chairman
5 March 2020

"By being first to market with leading solutions the Board hopes that we will continue to make progress in fully realising the potential of the portfolio of technologies that we have developed."

CAPTURING MARKET OPPORTUNITIES IN THE DIGITAL AGE

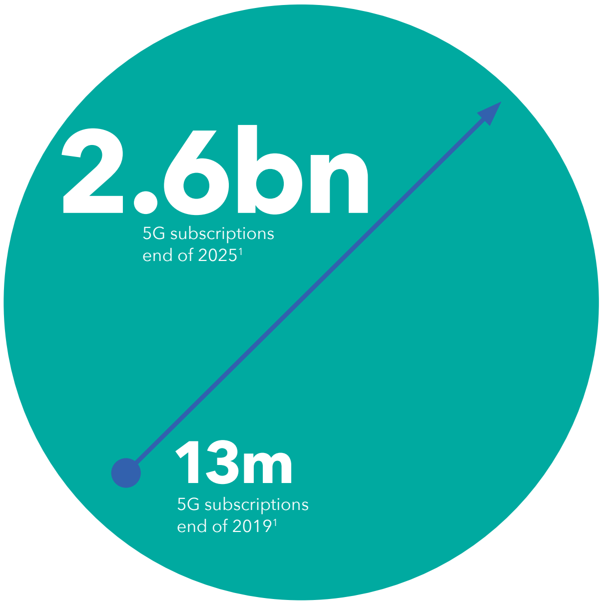
Spirent continues to invest to maintain and develop its leadership in key areas such as 5G, cybersecurity and cloud, as well as to apply its industry-leading expertise to emerging areas such as connected and autonomous vehicles. New markets provide us with new opportunities to grow and to build more recurring revenue streams.

5G momentum

Market driver: 5G technology, driven by the increasing digital, cloud and security requirements of industries such as automotive, logistics, communications, entertainment and manufacturing, represents a crucial change in complexity over 4G.

Opportunities for Spirent: Complex 5G networks that support new services and employ software-defined networking (SDN) and virtualised network functions pose a wide range of new testing and assurance challenges.

Our response: Spirent has developed one of the industry's broadest solution portfolios for 5G testing and assurance, from chipsets, devices and the complex 5G air interface, cloud radio access network (C-RAN) performance and virtualised network function validation. We have solutions to help meet the challenges of complex 5G production network active test and assurance.



2019 business risk perception[2]

	The #1 risk	A top five risk (but not #1)	Total
Cyber attacks/cyber threats	22%	57%	79%
Economic uncertainty	15%	44%	59%
Brand/reputation damage	11%	46%	57%
Regulation legislation	9%	46%	55%
Loss of key personnel	5%	39%	44%
Supply chain disruption	9%	32%	41%
Criminal activity (theft, fraud, etc.)	4%	33%	37%
Natural disasters or climate change	9%	25%	34%
Credit/liquidity risk	7%	26%	33%
Industrial accident	5%	18%	23%

The #1 risk
A top five risk (but not #1)

Cumulative % ranking each item a top five risk (including #1)

Cybersecurity threat

Market driver: Annual global cyber losses are expected to hit $6 trillion by 2021, with cumulative cybersecurity spending projected to exceed $1 trillion over five years to 2021[3].

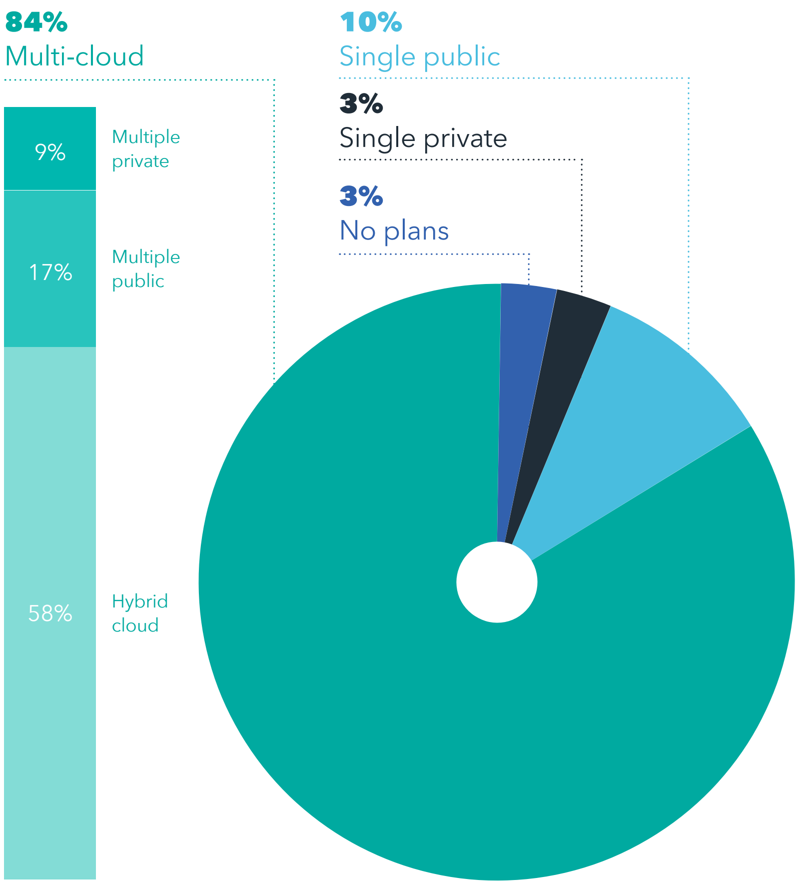
Opportunities for Spirent: Taming the massive complexity of cybersecurity requires new security testing approaches with realistic application load and threat traffic, along with industry-leading security specialists.

Our response: Spirent solutions include a test platform that generates realistic application traffic and attacks to test the security, performance, and efficacy of application-aware network infrastructures, and service offerings that apply our expertise to comprehensive scanning, penetration testing and monitoring for networks, applications and devices. Our latest solution emulates attacks and other assessment traffic, enabling security operations teams to identify and address weaknesses in their production networks.

Sources
1. Ericsson | Mobility Report | November 2019.
2. Marsh/Microsoft | 2019 Global Cyber Risk Perception Survey | September 2019.
3. Cybersecurity Ventures | Top 5 Cybersecurity Facts, Figures, Predictions and Statistics for 2019 to 2021 | September 2019.

Enterprise Cloud strategy[4]

1,000+ employees



Migration to the cloud

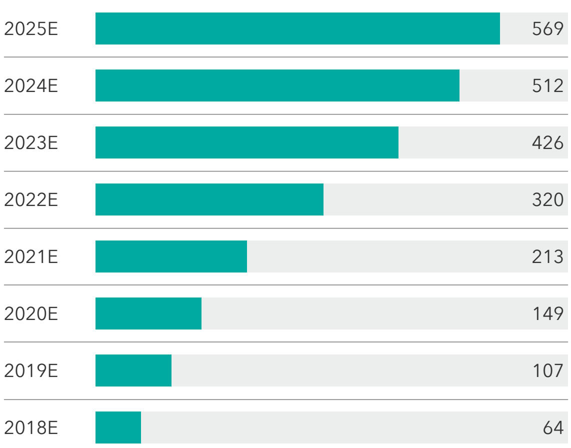
Market driver: Cloud adoption by enterprises continues apace, with the worldwide public cloud services market projected to grow from $227.8 billion in 2019 to $404.8 billion in 2023[5].

Opportunities for Spirent: Mitigate key risks involved in moving to multi-cloud platforms by helping to assure cloud infrastructure performance, resiliency and security and successful workload migration.

Our response: Spirent has extended its leadership in the testing and validation of virtualised and cloud ecosystems with a web application that enables predictability and resiliency in cloud infrastructures, the industry's first standards-based test platform for validating network functions virtualisation (NFV) ecosystems, and a comprehensive benchmarking solution to assess and compare the performance of virtualised or cloud infrastructures. It also offers a proactive and realistic cloud and virtual network security testing platform.

Forecast: Fully autonomous car shipments[6]

US, 2018–2025, thousands



Connected and autonomous vehicles

Market driver: Connected and autonomous vehicles are disrupting the entire industry, requiring huge technology investments and the development of new business models.

Opportunities for Spirent: Wireless connectivity and networking technologies for vehicles need to be tested and secured. Autonomous vehicles' capability to sense their environment and navigate must be tested and assured.

Our response: Spirent has extended its networking test leadership to encompass conformance, functional, performance and security testing of in-vehicle Ethernet networks, including time-sensitive networking (TSN), as well as vehicle-to-everything (V2X) conformance. Spirent is also a global leader in solutions that enable the development and evaluation of robust positioning and navigation technologies for connected autonomous vehicles, and provides solutions and services to help ensure connected vehicle security, including global navigation satellite system (GNSS) threats.

4. Flexera | RightScale 2019 State of the Cloud Report | February 2019.
5. Gartner | Forecast Analysis: Public Cloud Services, Worldwide | November 2019.
6. BI Intelligence Estimates 2017.

Assuring the promise of 5G

Few technologies have arrived with more fanfare and greater promise than 5G. A technology with the potential to empower a digital revolution and a promise from the Information Communications Technology (ICT) industry that it will change our world forever. 5G promises blazing speeds, massive scale and ultra-low latency capable of delivering new services, revenues and experiences.

In a recent study[1] commissioned by Qualcomm, IHS Markit found that by 2035, 5G technology will enable $13.2 trillion of global economic output, with the 5G value chain continually investing an average of $235 billion annually. However, 5G is a radical leap from 4G, heralding a move from personal communication to a ubiquitous enabling technology that offers the potential to seamlessly service both consumers and industries alike.

To make 5G possible, everything will need to change – from the devices and radio technologies we use to the networking technologies that provide us with services. The unprecedented complexity of 5G goes hand in hand with an industry-wide scramble to be first to market.

When all this complexity combines with urgency, it pushes testing, service assurance and security validation to become even more critical. Spirent is at the forefront in providing the industry's most innovative and collaborative set of 5G test, assurance and security solutions. With over 250 deals won across the 5G ecosystem in 2019, Spirent is helping the communications industry fulfil its promise of quickly and safely delivering 5G.

5G-enabled revenue potential for ICT industry in 2030[2]

$1.5 trillion

58

Communications service providers

have initial commercial 5G launches across 32 countries (November 2019)[3]

Sources
1. IHS Markit Commissioned by Qualcomm | The 5G Economy | November 2019.
2. Ericsson with Arthur D. Little | 5G for Business: a 2030 Market Compass | October 2019.
3. Hadden Telecoms | Countries Where Commercial 5G Services Are Launched | November 2019.

Fostering 5G innovation

Major industrial and government sectors such as manufacturing, transport, energy, healthcare and the military are actively exploring 5G's potential as a key enabler of their long-term digitalisation plans.

Spirent's innovation has allowed it to lead the way in development of unique solutions, such as its 5G Digital Twin, used within educational and industrial research institutions to help them accelerate the research and development of 5G commercial applications.

Fostering an ecosystem of cutting-edge industrial research institutes, such as the University of Warwick in the UK, and investing in strategic partnerships with 5G technology leaders, such as National Instruments, is allowing Spirent to broaden its customer base and deepen its relationships with existing customers.

Networks & Security

Accelerating time to market

Initial plans to target 2020 for the first 5G launches have subsequently been turned on their heads, with 58[3] commercial 5G launches by November 2019. This acceleration comes with increased risk, as operators must safely and efficiently ready their networks for initial deployments and prepare their underpinning transport and software-defined networks to support future high-speed data capacity needs and edge cloud distributions.

Spirent's multi-speed transport network test solutions have been helping the industry safely accelerate time to market by automating complex validation processes while future-proofing network scalability (to 400G) and the evolution to edge clouds. With security being paramount, Spirent's advanced security solutions are helping customers continuously audit the 5G environment to pre-emptively identify vulnerabilities and prioritise risk mitigation.

Lifecycle Service Assurance

Assuring 5G performance and reliability

As operators move at breakneck speeds towards complex 5G rollouts, delivering on early performance expectations is paramount to the development of sustainable revenue streams. With new 5G networks utilising cloud technologies, artificial intelligence (AI) and automation, and interoperating with legacy networks, deployment of a new breed of proactive service assurance alongside the earliest stages of these next-generation network rollouts is critical.

Spirent 5G Active Assurance solutions proactively test the network in the background to rapidly identify and isolate issues before customers are impacted. This pioneering solution has been deployed by a leading North American operator to help ensure new 5G markets are ready for service and proactively assuring network-wide performance, enabling them to keep the promises they made to their customers.

Connected Devices

Simplifying 5G complexity

5G's mission to support a very diverse range of application requirements has led to a new level of complexity in the 5G air interface, a wide variety of new device types and the need to support many new services. This requires fresh approaches to testing which are simple, automated and predictable, reducing the complexity and economics of validating 5G and delivering even more value to customers.

Spirent's 5G network emulation, radio frequency (RF) channel emulation and user experience solutions are at the heart of this new wave of testing, simplifying and accelerating testing of infrastructure and devices under real-world conditions. This translates into greater flexibility and savings, faster time to market and greater customer satisfaction and is another reason why 5G industry leaders choose to work with Spirent as their trusted test and assurance partner.

FOCUSED ON OUR STRATEGIC EVOLUTION

In order to realise our vision, we are focused on three strategic priorities: Customer Centricity, Innovation for Growth and Operational Excellence.

Eric Updyke
Chief Executive Officer

Revenue

$503.6M

↑5.6%

2018 $476.9m

Adjusted operating margin[1]

18.4%

↑2.2%

2018 16.2%

Note
1. Adjusted operating profit as a percentage of revenue in the period.

I am delighted to have joined Spirent in April 2019 and to be leading a business that is so well respected by its customers, has such engaged and innovative employees, and has a solid financial platform. We have a strong foundation to drive sustainable, profitable growth but as I highlighted at the half year, we need to move faster to capture new opportunities.

As such, we will accelerate our growth by pushing beyond selling products into labs to solving customer issues across their lifecycle and expanding our customer reach. We remain focused on the opportunities arising from emerging market drivers, including 5G, 400G Ethernet and cloud.

Market overview

In this digital age, our customers face ever-increasing demands from massive network traffic and escalating customer expectations, to pervasive security threats and cost pressures. We are in a continuum of testing, measuring, monitoring and optimising where service assurance is no longer an afterthought. As networks become more complex and virtualised, the challenge of delivering flawless performance to satisfy customers is a constantly evolving journey. Spirent is well positioned to help customers navigate this challenge.

In 2019, Spirent successfully demonstrated the ability to reach beyond the lab and pursue next-generation opportunities. We are leading the industry at the front lines of 5G and closed over 250 5G deals this year. We look forward to maintaining our leadership in enabling 5G networks, devices and services in 2020.

In order to realise our vision, we are focused on three strategic priorities: Customer Centricity, Innovation for Growth and Operational Excellence.

Customer Centricity

We are evolving our strategic direction, working to increase share of wallet with our existing customers and broadening our customer base in new segments, adjacencies and geographies.

Across our business, we partner as our customers' trusted advisers across the DevOps journey, helping them overcome the challenges of a transforming world. In order to seize the opportunities open to us, we are positioning ourselves to take on a broader role on behalf of our customers by solving bigger problems and adding more value. We plan to deliver this value by enhancing our portfolio to offer innovative solutions and services addressing key business challenges.

Our Client Partner Executive initiative was a great success this year in our key accounts, moving us from transactional buying centres into ones with broader business impact. We plan to expand this programme, along with our account-based marketing approach, to strengthen our relationships with our largest customers. Spirent has a diversified customer base; with no single customer accounting for more than 8 per cent of total revenue in 2019.

Customers are more connected than ever in this digital age and expect their business partners to be proactive in addressing potential issues. However, often only *after* a network outage or service-impacting event, do organisations perform manual tests to evaluate data and find root causes. With Spirent solutions, they can identify and address degradation *before* the customer experience is affected.

We say to our customers: Every day, you make a promise to your customers. We are here to assure that you fulfil it.

Building a strong operational platform

During 2019, Spirent built an even stronger operational platform. While we continued to grow revenue and develop innovative solutions, we also focused on maintaining a solid balance sheet, solidifying customer relationships and investing in our people. We partnered strategically to expand our global reach and managed our cost effectiveness.

1. Key account management implementation
2. Global partner programme to extend reach
3. "Promise. Assured." brand established
4. Talent management review complete
5. Leadership programme initiated
6. Sustained cost-effectiveness

Innovation for Growth

As a global leader in testing and assurance, it's vital that we invest to stay ahead on key emerging technologies. To maintain our leadership in key areas such as 5G, cloud and cybersecurity, we invested 19.2 per cent of revenue on research and development in 2019.

As our customers' businesses and networks become increasingly complex, our tools help them gain clarity. We are investing in enhancing our solution portfolio, augmenting feature functionality and making our products even easier to use, which in turn will expand our customer reach. To best leverage increasing market opportunities, we are making our solutions more flexible and scalable.

In addition to investing in product innovation to drive sustainable, profitable growth, we remain invested in our people. In 2019, in order to evolve Spirent into a more customer-focused organisation, we have made new senior leadership appointments, adding valuable experience and new energy to strengthen our teams.

To support our growth and to gain more future visibility, we will be focused on building recurring revenue streams over time. With our talented leadership team and refreshed, solutions-selling mindset, we will expand our software and service offerings.

As we focus on innovating and expanding our customer base, we are investing in strategic partnerships to provide new growth opportunities. In 2019, our 5G solution partnership with National Instruments (NI) yielded excellent strategic value and enabled us to reach adjacent markets.

NI is part of Spirent's recent 5G End-to-End Digital Twin solution and is bringing Spirent into universities and research organisations focused on leading-edge 5G applications.

Operational Excellence

We are focused on cash generation and maintaining a strong balance sheet. Our results, including our improved operating margin, demonstrate strong operational discipline and dedication to our competitive cost structure. In 2019, we maintained a strong balance sheet with $183.2 million of cash and no bank debt.

Sustainability and corporate responsibility are integral to the success of our business. Spirent is committed to embedding the highest standards of environmental management, social practices and governance into our operations, products and across our supply chain. We do this via our FuturePositive programme aimed at addressing sustainability issues facing our business and how we can contribute to the communities in which we operate. Building on a foundation of compliance, we will continue to seek out innovation and drive commercial performance by continuing to embed sustainable thinking across our entire business. For more on our FuturePositive programme, turn to page 46.

The geopolitical landscape was particularly turbulent in 2019 with US/China trade challenges. We navigated regulatory changes throughout the year and continue to work closely with our customers in impacted regions.

In order to pivot to a more customer-centric organisation, we are evolving our sales and marketing structure and we remain focused on improving the overall efficiency and effectiveness of these teams. This will result in a more agile, collaborative organisation, capable of solving bigger business problems for our customers.

We will continue evaluating and rationalising our portfolio to meet the needs of our customers. We will look to grow our portfolio both organically and inorganically to keep pace with those objectives and the markets that we serve.

Eric Updyke
Chief Executive Officer
5 March 2020

Our three strategic pillars

1. Customer Centricity
2. Innovation for Growth
3. Operational Excellence

Our strategic priorities

CUSTOMER CENTRICITY

"We are evolving our strategic direction, working to increase share of wallet with our existing customers and broadening our customer base in new segments, adjacencies and geographies."

Eric Updyke
Chief Executive Officer

What we achieved

In 2019, we expanded the key account management programme initiated in 2018 into more of our important global accounts and continued to ramp the programme's account-based marketing element. We expanded channel coverage in the eastern Asia, Middle East and Central/South America regions, grew our government business and established new direct channels to enhance our coverage of the enterprise market.

Priorities for 2020

- Grow share of wallet with our existing customers through further expansion of our key account management and account-based marketing programme.
- Broaden our reach and relevance in new segments such as cloud service providers, enterprises and government, and into new geographies.
- Deliver even more value to customers through the evolution of our sales and marketing organisation and by offering more solutions/services.

Our strategic priorities continued

INNOVATION FOR GROWTH

"As a global leader in testing and assurance, it's vital that we invest to stay ahead on key emerging technologies. To maintain our leadership in key areas such as 5G, cloud and cybersecurity, we invested 19.2 per cent of revenue on research and development in 2019."

Eric Updyke
Chief Executive Officer

What we achieved

Our research and development investment included enhancing features, functionality and automation to expand our addressable customer base. We invested in strategic partnerships, including 5G with National Instruments and in growing recurring revenue streams with more software. We also invested in our people, adding senior leadership with additional capabilities and experience and initiating a "Leader. Assured." development programme.

Priorities for 2020

- Invest in infrastructure and talent to further expand our key account and account-based marketing programme.
- Invest in growing recurring revenue through our services delivery capability and increased software content in our solutions.
- Invest to make our products even easier for customers to use, improving their efficiency and reducing their time to revenue.

OPERATIONAL EXCELLENCE

"We are focused on cash generation and maintaining a strong balance sheet. Our results, including our improved operating margin, demonstrate strong operational discipline and dedication to our competitive cost structure."

Eric Updyke
Chief Executive Officer

What we achieved

2019 saw continued focus on cash generation and a strong balance sheet, with $183.2 million of cash. We improved our adjusted operating margin by 2.2 percentage points to 18.4 per cent. We began a new initiative to improve the overall efficiency and effectiveness of our sales and marketing organisations. We also began our evolution to a more agile, collaborative organisation, adding new talent and more change agents.

Priorities for 2020

- Fully implement our efficiency and effectiveness initiatives for our sales and marketing organisations.
- Continue to review our portfolio, with a view to growing it both organically and inorganically to align with our strategic objectives and our markets.
- Drive towards our objective of being an agile, collaborative organisation, capable of moving quickly to capture the full range of opportunities.

ENSURING WE DELIVER CONTINUED GROWTH

Spirent's strategy focuses on medium to long-term growth and therefore its achievement cannot be measured by just looking at performance in 2019 compared to the prior year; trends over a number of years must also be considered. Executive Director remuneration is linked to certain financial, strategic and operational key performance indicators (KPIs) with further information available in the Remuneration Report on pages 79 to 84.

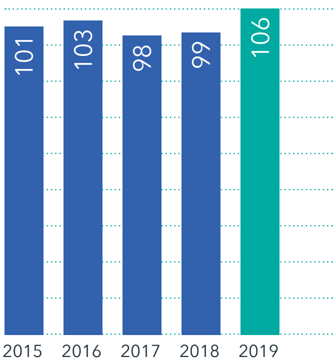
Book to bill[1]

Reason for measurement
The ratio of orders booked to revenue billed is a measure of the visibility of future revenues at current levels of activity and provides an indication of the underlying trend in Spirent's future revenue stream.

Performance
The increase in book to bill ratio to 106, from 99 in 2018, reflects increased activity levels, particularly in relation to Ethernet test product and US Government business, together with an increased level of multi-year support contract wins.

Relevance to strategy
The book to bill ratio is an indicator of the underpin to future revenue and whether activity levels are rising or slowing, and therefore how effective we have been in the execution of our strategy.

Ratio



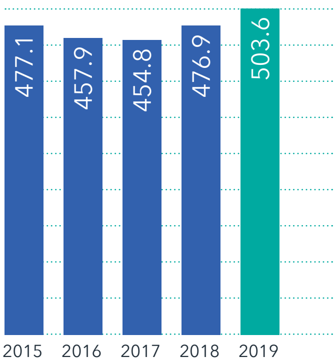
Revenue

Reason for measurement
Spirent monitors growth in revenue as this shows how successful Spirent has been in expanding its markets and growing its customer base.

Performance
5.6 per cent revenue increase in 2019, following a 4.9 per cent increase in 2018, driven by 400G high-speed Ethernet ramp-up and continued strong demand from US defence contractors for positioning products.

Relevance to strategy
Revenue demonstrates the effectiveness of our strategy: our success in expanding our markets both organically and through acquisition; maintaining technology leadership; and our strong relationships with our customers, all of which ensure that we continue to win and maintain business.

$ million



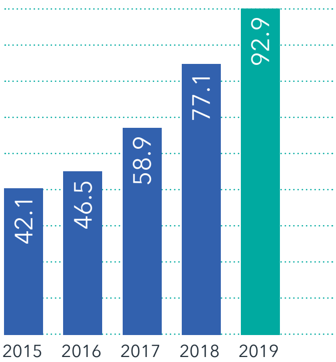
Adjusted operating profit[2]

Reason for measurement
Adjusted operating profit is the measure used to evaluate the overall performance of the Group as well as each of the operating segments.

Performance
Adjusted operating profit increased by 20.5 per cent to $92.9 million, from $77.1 million in 2018, as a result of strong revenue growth, improved gross margin and effective cost management.

Relevance to strategy
Adjusted operating profit indicates our financial strength and our ability to invest in the business for future growth.

$ million



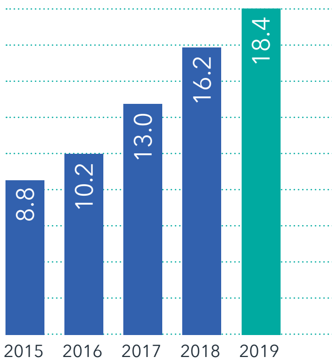
Adjusted operating margin[3]

Reason for measurement
Adjusted operating margin is a measure of the Group's overall profitability. Spirent operates in markets which have high operating returns and strives to achieve best-in-class operating margin compared with its peers.

Performance
Increase in adjusted operating margin to 18.4 per cent, from 16.2 per cent in 2018, reflects a combination of revenue growth, gross margin improvement and continued cost management.

Relevance to strategy
Adjusted operating margin is a measure of how successful we are in our overall strategy and demonstrates our ability to improve margin through efficient operations whilst being mindful of the need to invest for the future.

%



Notes
1. Ratio of orders booked to revenue in the period.
2. Before exceptional items, acquisition related costs, acquired intangible asset amortisation and share-based payment amounting to $4.3 million in total (2018 $19.6 million).
3. Adjusted operating profit as a percentage of revenue in the period.
4. Adjusted basic earnings per share is based on adjusted earnings as set out in note 11 of Notes to the full year consolidated financial statements.
5. Operating cash flow after tax, net interest, net capital expenditure and lease payments/sublease income.

Items with notes 1 to 5 above are non-GAAP alternative performance measures; see pages 190 and 191 for more detail.

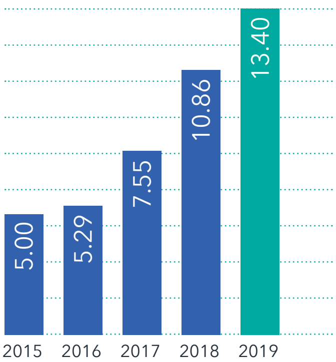
Adjusted basic earnings per share[4] (EPS)

Reason for measurement
Long-term growth in adjusted basic EPS is a fundamental driver to increasing shareholder value.

Performance
Spirent aims to achieve growth in adjusted basic EPS. Part of the Executive Directors' remuneration is dependent on achieving EPS targets. In 2019, adjusted basic EPS grew 23.4 per cent as a result of the increase in adjusted earnings.

Relevance to strategy
Adjusted basic earnings per share is a measure of how successful we are in our strategy and ultimately how Spirent increases value for its shareholders.

Cents



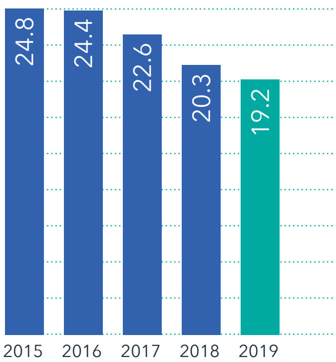
Product development spend as a percentage of revenue

Reason for measurement
To maintain its competitive position, Spirent must invest at suitable levels to support further organic growth initiatives in line with the strategic objectives, whilst driving improved productivity and effectiveness.

Performance
In 2019, product development spend reduced to 19.2 per cent of revenue from 20.3 per cent in 2018, as a result of the growth in revenue in the year. The spend was level in absolute terms at $96.5 million (2018 $96.9 million).

Relevance to strategy
It is critical that Spirent's product development investment keeps pace with the speed of change in technology, and that it is directed at the right key technology areas; this enables us to expand our markets and to maintain our technology leadership position.

%



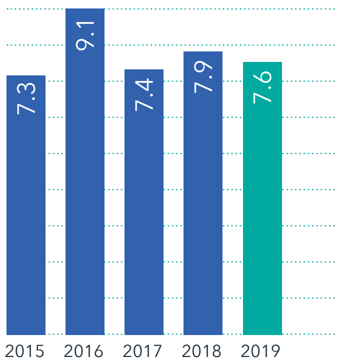
Voluntary employee turnover

Reason for measurement
Spirent's success is dependent on its talented employees and retaining them is extremely important. Voluntary employee turnover compared to the industry average is the measure used to assess how well the Group has performed.

Performance
Our 2019 voluntary turnover rate of 7.6 per cent remains well below the global industry average of 12.3 per cent.

Relevance to strategy
We cannot avoid the fact that some of our employees will move on but we can avoid a skills shortage by appropriately managing, recognising and rewarding our people. Voluntary employee turnover is a measure of how successful Spirent is in its strategy of retaining and investing in its people.

%



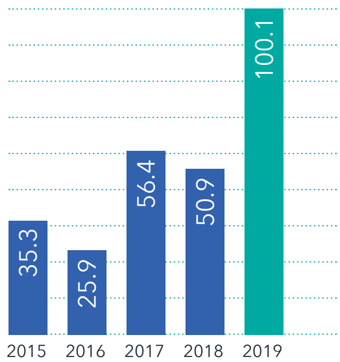
Free cash flow[5]

Reason for measurement
Free cash flow is a measure of the quality of Spirent's earnings. The aim is to achieve a high conversion of earnings into cash.

Performance
Free cash flow in 2019 was very strong at $100.1 million driven by growth in earnings and highly effective working capital management. Free cash flow conversion for 2019 was 123 per cent of adjusted earnings (2018 77 per cent).

Relevance to strategy
Having strong free cash flow reflects Spirent's ability to generate funds for future investment. It provides financial strength and flexibility and the ability to pay sustainable dividends to our shareholders.

$ million



Networks & Security

Networks & Security is a world leader in high-speed Ethernet/IP performance testing, in Wi-Fi and automotive Ethernet, and develops test methodologies, tools and services for virtualised networks and cloud. We provide consulting services, test tools, methodologies and proactive security validation solutions. We continue to be the world leader for global navigation satellite system (GNSS) simulation products and tailored solutions as we expand into the positioning, navigation and timing (PNT) market.

2019 performance highlights

- Leading market positions and technologies are driving good growth with revenue up 12 per cent.
- Surge in order placements for 400G high-speed Ethernet in the latter part of the year validates our market leadership.
- Positioning business delivered a record year for revenue, benefiting from continued momentum across its customer base and maintaining a high win rate for GNSS defence projects in the United States.
- Released new data breach assessment security product and won first landmark deal in China with continued focus on building pipeline for 2020 revenue.

Strategy

- We will further extend our leadership in high-speed Ethernet/IP performance testing for next-generation network and cloud infrastructure. We seek to drive and apply industry standards that enable rapid adoption of new technologies such as 5G, network functions virtualisation (NFV), software-defined-wireless area network (SD-WAN), 400G, Wi-Fi, and automotive Ethernet and to expand our test domain expertise and deliver managed test services.
- We will expand our footprint of performance and security testing solutions essential for development and deployment in manufacturers, service providers and large enterprises. We will extend our reach into existing and new customers with solutions and services that provide proactive security defence validation and risk assessment of production networks and devices.
- Building on our global GNSS test leadership, we will extend our reach and influence as the trusted partner of researchers, developers and integrators in the field of PNT technology. Our portfolio of solutions, services, customers and markets will increasingly be multi-sensor oriented, addressing segments such as connected and autonomous vehicles.

What we test

High-speed Ethernet/IP, cloud and virtualisation

Our high-speed Ethernet/IP test solutions enable high-speed Ethernet and Wi-Fi network vendors, carriers, cloud service providers and enterprises to meet their promise of delivering the next-generation networks – assuring successful network transformation by reducing testing complexity and accelerating design, development and deployment. Our customers benefit from our wide network of industry partnerships and active contributor role in standards development, enabling them to leverage the latest technology and best practices.

Spirent's cloud solutions help validate cloud infrastructure performance, ensuring that hosted applications are allocated enough resources to deliver the high-quality experience end users expect. Our solutions help with workload migration to the cloud and provide actionable insights into poor cloud performance.

Applications performance and cybersecurity

We offer tools and services that reduce the complexity and costs of validating production network security through use application and threat emulation. We safely and swiftly ascertain enterprise cyber risk profiles, enabling rapid tuning and remediation with integrations to market-leading technologies.

We assure the return on investment of security investments through accurate, automated and continuous cybersecurity assessment of multi-vendor network infrastructure environments, applications and devices. We empower development teams to build comprehensive security platforms, benchmark performance and capacities, and validate network device security.

Positioning, navigation and timing

Spirent has an industry-leading portfolio of test systems and services to support the development of PNT systems for military, space, research and other high-precision applications. We offer solutions for research and development and verification and integration testing of location-enabled civilian and consumer products, such as smart devices and drones. Spirent's PNT solutions work behind the scenes to improve accuracy, reliability and robustness for our clients.

We offer a practical and robust PNT framework to audit receiver, system or application resilience in the face of increasing threats to GNSS-based PNT. We are also a leader in the testing of hybrid positioning and sensor fusion under real-world conditions for connected autonomous vehicle development.

CASE STUDY

Spirent Cloud testing solution to help enterprises accelerate their cloud migration journey

Migrating from a traditional, physical data center to the cloud can be daunting, and many enterprises find themselves "stuck" when attempting it on their own. Spirent was able to help this large enterprise customer get "unstuck" through a combination of expertise, products and services.

Challenge

A leading European financial services company, with over 15,000 employees, had a traditional data center consisting mainly of bare-metal servers and storage devices, as well as some virtual machines, but wanted to migrate everything to virtual. However, during the process performance issues prevented the customer from completing its cloud migration. While the technical issues were being resolved, the company had to continue to pay for both the old and new data centers. The delays were costing the company hundreds of thousands of Euros a month and attracting significant attention within the company's upper management.

The company attempted to debug these performance issues on its own, unsuccessfully. Finally, it reached out to Spirent. Spirent began by analysing the issues that kept the customer "stuck", pinpointing two problem areas. First, the open-source traffic generator the client was using was not measuring performance properly. Second, the new data center was experiencing degraded performance, for reasons that had yet to be uncovered.

Solution

Spirent Cloud solutions, along with consulting services, were brought in to help diagnose the problems and assist in resolving this customer challenge. It became clear that a comprehensive test solution was required that included L2-7 physical and virtual traffic generation, automation and security testing tools.

To fulfil these unique testing requirements, the Spirent experts assembled a solution. Key to the solution was Spirent's CloudStress, a web application for virtualised infrastructure validation. CloudStress is a synthetic workload generator that simulates the physical footprint of any virtual machine to help validate NFVi or cloud deployments.

The customer gained visibility into the performance of its cloud infrastructure, allowing it to address its performance issues by identifying the direct causes of poor performance and adjusting the infrastructure accordingly.

Impact

Once the root cause of poor performance in its new cloud environment was identified, the financial services company was able to resolve the issues and validate its new infrastructure with further testing. The expertise, support and creative solutions Spirent provided helped win the customer's trust and forge the strong partnership needed for this major transformation. Ultimately, the customer was able to complete the cloud migration successfully.

Networks & Security continued

Revenue	Operating profit[1]	Operating margin[2]
$319.9M	**$73.9M**	**23.1%**
2018 $285.1M	2018 $56.4M	2018 19.8%

Notes
1. Before exceptional items of $1.1 million charged in 2019.
2. Operating profit before exceptional items as a percentage of revenue.

Performance

Networks & Security revenue increased by 12.2 per cent to $319.9 million (2018 $285.1 million), driven by growth in high-speed Ethernet, cloud and Wi-Fi solutions and continued momentum in our Positioning business, winning more US government contracts.

Networks & Security operating profit before exceptional items increased by $17.5 million to $73.9 million (2018 $56.4 million) driven by the higher revenue and a favourable product mix.

Operating margin before exceptional items increased to 23.1 per cent, from 19.8 per cent in 2018, having benefited from effective cost management and a favourable mix of positioning solution sales and software revenue growth.

Accomplishments

High-speed Ethernet/IP, cloud and virtualisation

- We saw robust high-speed Ethernet test growth in 2019, with multiple key 100G and 400G wins, particularly in the second half of the year, that affirmed our product and market leadership. We demonstrated the world's highest density 400/200/100/50G test system at the Optical Networking and Communication conference & exhibition (OFC), which subsequently won a 2019 Lightwave Innovation Honouree award and 2019 Best of Interop Tokyo award.
- Our Wi-Fi business grew significantly in 2019, driven by our Wi-Fi 6 test leadership. We launched the industry-leading Spirent TestCenter Wi-Fi6 test solution to accelerate development and deployment of the technology, access points, gateways and for end-to-end testing, which also won a 2019 Best of Interop Tokyo award.
- The automotive Ethernet business grew, with wins at automotive original equipment manufacturers in APAC and EMEA, to meet the need for compliance to industry standards, including such world-class customers as Jaguar Land Rover.
- Spirent introduced CloudSure, a cloud test platform designed to enable customers to validate and certify their virtualised infrastructure and network functions.
- The Metro Ethernet Forum (MEF) announced Spirent as the world's first authorised test partner for SD-WAN certification, playing a key role in helping service and technology providers to validate that their services and products conform to the MEF's recently-published SD-WAN standard.

Applications performance and cybersecurity

- In the second half of the year we introduced our Cyberflood Data Breach Assessment solution, providing holistic and hyper-realistic security testing of networks and devices for awareness of data breach and intruder activity. The solution was selected by a leading Chinese consulting company for deployment throughout Chinese financial markets.
- We released our C200 the industry's most powerful 1U appliance for security and application assessment. It offers support for five data speeds from 10G to 100G, while doubling the cryptographic acceleration capacity of the previous generation of solutions.
- Our SecurityLabs services offering continued to successfully provide security certification and penetration testing for critical Internet of Things (IoT) and Industrial Internet of Things (IIoT) devices globally, including those authorised for CTIA IoT Cybersecurity and the First Responder Network Authority (FirstNet) in the US.
- Prairie View A&M University, a member of the prestigious Texas A&M University system, procured the Spirent CyberFlood solution for research and teaching of cybersecurity network testing, enabled by a grant from the US Department of Defense.

Positioning, navigation and timing

- We saw strong momentum for our Positioning business in the US defence market. We further enhanced our solutions to maintain our leadership in this space, with Spirent Federal Systems becoming the unique provider of simulation for the US government's next phase of signal modernisation for its global positioning system (GPS). A major upgrade to our flagship GNSS simulator, providing significantly improved capability, flexibility and performance, was released mid-year and very well received in this demanding market.
- In addition to commercial off-the-shelf products and solutions, Positioning has also expanded its capability to design and build solutions to meet an individual customer's specific testing need. This tailored solution capability is a clear differentiator.
- Growth in the China market was underpinned by two large tailored solution sales to the National Space and Science Institute of the Metrology.
- Traction in our strategy of moving beyond GNSS simulation towards the use of co-simulation of multiple PNT sensors and assurance solutions in adjacent markets, such as autonomous vehicles.

- We announced our unique Sim3D modelling solution that enables the effects of real-world conditions on GNSS signals to be tested in a true-to-life synthetic environment. Covering applications from chipset, handset and automotive to defence and space, Sim3D brings greatly enhanced realism into the lab, reducing the need for costly and time-consuming field trials.

Impact of market dynamics on Spirent's business

- As telecommunications cloud and service providers undertake massive network transformation, they and their vendors leverage our portfolio of 400G, 100G, network functions virtualisation infrastructure (NFVi) assurance and Wi-Fi 6 solutions/services to accelerate and assure their customer offerings. Customers increasingly leverage Spirent to gain access to industry expertise that can transform their business objectives into revenue, using a broad set of solutions and services.
- Our customers have an ever-stronger imperative to build, deploy and evolve security solutions that address ever-changing threats and performance demands. Our strategic relationship with NetSecOPEN and its open testing standards allows enterprises to meaningfully compare options using real-world scenarios. Cybersecurity investment is shifting to proactive security validation, creating opportunities for solutions such as our CyberFlood Data Breach Assessment.
- The market that makes use of PNT is placing increasing reliance on other technologies in conjunction with GNSS. Our business benefits from the needs of developers and integrators of PNT devices and of applications such as connected and autonomous vehicles, for the most realistic environment models for lab-based testing, and for the integration of additional positioning sensors such as LiDAR.

> **"Revenue growth driven by high-speed Ethernet, cloud and Wi-Fi solutions and continued momentum in our Positioning business, winning more US government contracts."**

CASE STUDY

Preparing tomorrow's cybersecurity engineers for real-world challenges

Challenge

Prairie View A&M (PV A&M) University is part of the Texas A&M University and the second oldest public institution of higher learning in Texas. PV A&M is home to the SECURE Center of Excellence, which trains undergraduate and graduate students in the latest in cybersecurity concerns and technologies. The university wanted to provide its students with an experience as close to real-world as possible; using a system that could emulate realistic scenarios was critical to the programme's success.

Solution

The University chose the Spirent CyberFlood CF20 as the best solution for teaching cybersecurity in multi-user classroom settings. Agile and adaptive, CyberFlood CF20 can emulate realistic business application and attack traffic. Its attack/malware scenario database is continually updated via Spirent's TestCloud threat and application intelligence feed, ensuring that the students are testing the most current threat vectors.

Impact

With Spirent CyberFlood CF20 and TestCloud, PV A&M can now offer a comprehensive cybersecurity education and research programme that it could not previously provide. The curriculum is designed to give students an experience that closely emulates "real-world" situations. The proposed system will remove previous research limitations in testing new solutions and enhance the research capability and knowledge gap in education.

Lifecycle Service Assurance

Our Lifecycle Service Assurance solutions radically reduce the time and cost to turn-up new services and to rapidly diagnose, troubleshoot and resolve issues with production networks and services. We do this through automation, visibility and analytics, all of which improve customer satisfaction and retention while reducing the cost and complexity of operating and managing a network.

2019 performance highlights

- Strong orders growth, secured later in the year, resulted in a robust close to the orderbook with revenue broadly level in 2019.
- Strong demand for lab-based 5G network testing (Landslide products) mitigated some slower traction of VisionWorks solutions.
- New leader appointed in October 2019, who is evolving our strategies for growth and global expansion.

Strategy

Our Lifecycle Service Assurance strategy is twofold: 1) delivering the leading active assurance platform for 5G, new-era enterprise services and service provider automation needs; and 2) developing a suite of outcome-based services leveraging our deep testing and assurance expertise, our assurance platform and our new as-a-service commercial models.

Our active assurance platform already supports the two variants of 5G being rolled out by providers, non-standalone (NSA) and standalone (SA), a leadership position derived from our deep experience and lab test excellence and one we will build on as new 5G standards are released. Our platform employs a novel active test approach, able to test individual network functions and end-to-end services by creating virtual users, devices and network functions and deploying these anywhere in the network to verify performance and quality.

We target enterprise services with a powerful assurance capability which helps service providers isolate whether service issues are related to basic connectivity or to an aspect of virtualised overlay services. A cloud-native active assurance controller sits at the heart of our active assurance platform and is a key building block for automation. The controller speeds the integration of Spirent's automated turn-up, monitoring and troubleshooting modules with providers' cloud networks and automation platforms, as well as their legacy network systems. The same controller also forms the foundation of our new anything-as-a service (XaaS) offerings.

While we expect platform sales to continue to represent the majority of our business in the near term, we see rapidly increasing demand for new outcome-based as-a-service offerings, such as TaaS managed service for 5G core. We expect to expand our as-a-service suite over time with a goal to unlock new market opportunities beyond service providers. The as-a-service model lowers or eliminates many traditional barriers to deploying service assurance, including upfront capex investment and ongoing system administration overhead. Lowering these barriers will enable us to target enterprises with compelling value propositions, particularly around deployment of private 5G networks and clouds.

What we test

We validate and assure the transformation of networks and services across the lifecycle, from development to deployment and operation.

Network validation

Our network validation solutions for service provider and network equipment manufacturer (NEM) development teams include mobility network validation platforms, automation platforms and TaaS. Mobility network validation platforms emulate subscribers and adjacent nodes to evaluate the performance of the network under varying levels of realistic traffic. They enable validation of mobile core, wireless local area network (WLAN), internet protocol multimedia subsystems (IMS) and diameter networks, including the evolution to 5G.

Automation platforms empower service providers and NEMs to automate testing workflows, including management of complex lab/pre-production test environments. Our new TaaS offering builds on our validation and automation platforms and deep testing expertise to deliver a managed service for designing and executing next-generation test suites. TaaS helps service providers rapidly deploy next-generation network validation tests for 5G, SD-WAN and virtual networks across internal development teams and supplier ecosystems.

Active assurance

Spirent's active assurance solutions for service provider operations teams are built on a cloud-native platform that supports proactive, automated testing of networks and services. Our active assurance platform helps service providers turn-up new network functions and services, monitor service level agreements, and diagnose and troubleshoot issues for mobile, Ethernet and internet protocol networks, and 5G, SD-WAN and business services.

DevOps automation

Our DevOps automation solutions for network operators (NetDevOps automation) automate testing across lab and live network environments so Dev and Ops teams can work together seamlessly to continuously test networks and services across their lifecycle. NetDevOps automation solutions help operators adopt DevOps continuous integration and delivery practices, resulting in dramatic reductions in the time and cost of deploying new devices, functions and services.

CASE STUDY

Virtual test agents deliver real assurance for a tier-one service provider

A tier-one North American service provider offering virtual private networks (VPNs) for mobile and IoT services to enterprise customers was looking to expand through evolving technological complexity, urgent new business goals and rapid growth in its customer base.

The service provider wanted to fulfil the promise of high-quality service to its customers, but old hardware-based equipment was inhibiting the amount of testing it could perform. Realising that the hardware-based testing in place was inadequate for meeting these objectives, the service provider turned to testing and assurance leader Spirent for help.

Challenge

The service provider needed the ability to test each customer hourly and to continuously monitor the service level agreement (SLA) for all its customers, rather than just a small segment. Network virtualisation was also becoming increasingly complicated, making the isolation of problems more difficult due to load balancing.

Rapid customer growth was another area of concern. In just a few years, the service provider grew from 2,500 to 5,000 enterprise customers, adding enormous numbers of new devices.

The service provider wanted to continuously monitor its SLA customers, but its old equipment was preventing it from doing so.

Solution

Spirent's solution was VisionWorks, a technology that uses virtual test agents and network emulation to continuously test the quality of essential mobile services. Deploying virtual test platforms (VTPs) instead of physical hardware allowed the service provider to test all customers from different locations. Its automated and scalable qualities also enabled the service provider to test once per hour and process billions of metrics per day, as well as test higher-layer traffic situations.

Impact

With the use of VisionWorks, the tests now take only ten seconds and VisionWorks automatically monitors services every five minutes. The service provider can test 5,000 customers in under five minutes, enabling it to quickly and cost effectively test all of its customers and assure the promise of a high-quality experience.

Lifecycle Service Assurance continued

Revenue	Operating profit[1]	Operating margin[2]
$111.2M	$18.1M	16.3%
2018 $112.8M	2018 $17.4M	2018 15.4%

Notes
1. Before exceptional items of $0.4 million charged in 2019.
2. Operating profit before exceptional items as a percentage of revenue.

Performance

Lifecycle Service Assurance revenue decreased slightly to $111.2 million (2018 $112.8 million), as revenue growth for next-generation automated validation and assurance solutions was offset by reductions in legacy solution revenues. In addition, revenue for a substantial TaaS managed services order won late in 2019 will not be recognised until 2020.

We saw strong orders growth driven by demand for our automated validation and assurance solutions for 5G, SD-WAN and virtual networks. Our 5G core network validation (Landslide) and automation platform segments were key contributors to the order result. New offerings for automated NetDevOps testing and TaaS managed services also achieved strong initial orders late in the year, with much of the revenue recognition falling into 2020.

Lifecycle Service Assurance operating profit before exceptional items increased to $18.1 million (2018 $17.4 million) as a result of favourable product mix and rigorous cost management.

Operating margin before exceptional items improved to 16.3 per cent, from 15.4 per cent in 2018.

Accomplishments

Network validation

- Spirent is the 5G mobile core validation leader, with Landslide for 5G adopted by over 50 service providers, NEMs and research centre labs worldwide, including Nokia, a leading 5G NEM, making this a key contributor to Spirent's overall 5G success.
- We secured a large multi-million dollar contract for a TaaS managed service offering, a collaboration between Spirent's Lifecycle Service Assurance and Cloud and IP businesses. A tier-one US mobile provider selected Spirent to design 5G core network validation tests and provide web-accessible test infrastructure to it and its vendors. This will result in reductions in the upfront capital spend on testing infrastructure and expertise for new 5G technologies, shifting instead to a more nimble operating expenditure cost model.

Active assurance

- In our first VisionWorks 5G active assurance win, Spirent was selected by a tier-one US mobile service provider to support its nationwide 5G assurance efforts. The service provider will deploy Spirent VisionWorks for active assurance, initially testing end-to-end performance across its 5G (NSA) network.
- A tier-one mobile service provider is deploying VisionWorks to automate change management. Every night, this service provider makes changes to its mobile network. With the move to 5G, these changes will only increase in frequency, necessitating a move to automated change management in preparation for 5G. VisionWorks is enabling the service provider's operations teams to run pre-defined tests prior, during and after updates, to automatically validate changes to their long-term evolution (LTE) core network and proactively identify issues.

DevOps automation

- We launched our VisionWorks NetDevOps solution in 2019 and closed the first sale with a tier-one US fixed network operator. This deployment automates advanced troubleshooting of complex network issues and manages their distribution and operational use.

Recognition

- Spirent was recognised as the 2019 Leading Light's "Outstanding Test & Measurement Vendor" due to our industry leadership in 5G and adoption of our solutions by 5G pioneers, especially our Landslide solution which service providers and NEMs use to validate the performance of 5G core networks.
- This is Spirent's second successive year as winner of a Leading Lights award. The Light Reading award statement reads: "Spirent wins for its focused and successful 5G product development strategy, its ongoing support for 5G-related industry initiatives around the world and its financial success."
- Spirent also won the "Best MEF 3.0 SD-WAN Implementation PoC" award at MEF19, in collaboration with NTT Communications, ADVA, Netcracker, Silver Peak and Versa Networks. The award was given in recognition of a successful proof of concept of a MEF-compliant SD-WAN service, which will accelerate the adoption of multi-vendor SD-WAN and value-added services through automated operations and a new digital user experience.

Impact of market dynamics on Spirent's business

- We compete in the service assurance market, in which we see three primary trends that impact our business: 5G deployments, new enterprise services and service provider automation. The rollout of 5G is enabled by new innovations such as containers, edge clouds and network slicing, which greatly increase operational complexity. The legacy model employs centralised assurance of slowly changing network elements that consist of groups of related functions.

- The 5G network brings a new transport network architecture, and new technologies such as network slicing and mobile access edge computing, requiring a new model that requires assurance of individual network functions, which are widely distributed and constantly updated. This change necessitates a new type of service assurance, designed for 5G clouds. In addition, new era enterprise services such as SD-WAN create demand for more advanced assurance capabilities including correlation of the performance of the underlay network that delivers connectivity and the overlay network which provides a virtualised layer of on-demand, configurable business services.
- Lastly, service provider objectives to improve agility and operational efficiency are driving broad adoption of automation. Legacy testing and service assurance activities have mostly been manual, reactive and time consuming. Automated assurance and active test are essential building blocks for service provider automation, enabling workflows such as turn-up, monitoring and troubleshooting to be seamlessly integrated with network management systems with a goal of establishing fully autonomous operations.

"We saw order growth for our automated validation and assurance solutions for 5G, SD-WAN and virtual networks, as well as our 5G core network validation and test automation segments."

CASE STUDY

Creating a solid foundation for SD-WAN with active testing

Challenge
Following a merger, a major service provider looked to scale up its enterprise services business and lay a foundation for an upcoming SD-WAN rollout. The service provider needed to be able to activate services for new enterprise customers faster and at significantly lower cost while ensuring a high level of quality and accommodating legacy systems from multiple pre-merger companies.

Solution
Spirent experts worked closely with the client to determine the best path forward. The Spirent Active Assurance solution that emerged centred on deploying VisionWorks VTPs to more than a thousand of the client's points of presence across the country. The solution:

- immediately delivered visibility into the performance of layer three services;
- removed a former network blindspot for the client;
- automated manual service activation, SLA monitoring and troubleshooting workflows, saving millions of dollars each year;
- replaced expensive physical probes with low-cost VisionWorks VTPs and VTAs; and
- has saved the client over $10 million as it upgrades thousands of 1G links to 10G.

Impact
As new network capabilities are deployed, the active assurance solution can easily be scaled to support future virtualisation and SD-WAN initiatives. With Spirent's help, the client created and implemented a solid, flexible foundation for SD-WAN expansion that consolidated the underlying network assurance approach, increased its efficiency and effectiveness, and generated enormous cost savings.

Connected Devices

Ubiquitous wireless connectivity drives our modern lifestyle. Our mission is to help those who build wireless devices and networks to meet their promise of delivering the very best end-user experience. Our live network testing and digital twins for network and radio systems let manufacturers and service providers get to market faster with peak performance.

2019 performance highlights

- Maintained a solid operating margin, despite some revenue decline driven by expected decline of 4G testing.
- Robust 5G market demand, including the release of a new 5G device testing product for which we won the first orders.
- Secured a key win for our Service Experience field test methodology for proving 5G networks and devices from a tier-one service provider.

Strategy

Our strategy is to pursue sustainable, profitable growth by aligning with market drivers in our core telecoms market as well as those in emerging verticals that will take advantage of 5G's game-changing capabilities.

We will focus on reaching new market segments including defence, private enterprise networks, university and government-funded research, and the V2X transportation market. We will address the evolved testing needs of a new generation of location-based services that utilise both GNSS and terrestrial signals and sensors to yield more accurate positioning in more places, maintaining our leadership in this segment. We will innovate in new radiated ("over-the-air") test solutions that enable design and evaluation of the complex antennas on 5G network equipment and devices.

Our Fit4Launch test service offerings will evolve to evaluate the performance of next-generation 5G devices and the new services that they will enable. We will pursue new opportunities for our differentiated user experience measurement services and tools for voice, data and video in growing adjacent markets, such as smart home devices and public safety services.

What we test

Radio systems

The medium between a radio system's transmitting antenna and a receiving antenna introduces multiple effects: reflections, interference, motion-induced frequency shifts, power drop due to distance and many others.

It has always been challenging to test radio systems in the field in a way that is repeatable and accounts for the many corner cases that can stress a design.

Spirent's Vertex Radio Frequency (RF) Channel Emulation solutions provide a "digital twin" in the lab for the real-world's complex effects. It enables developers of endpoints, chipsets, base stations and access points to test their radio systems in a controlled lab environment.

5G's many new complexities millimetre-wave frequencies, base stations with hundreds of antenna elements, and three-dimensional beamforming, all new to cellular communications. Spirent advances and accelerates successful 5G deployments with its innovation around new RF test methodologies and with the world's most flexible channel emulation solution.

Cellular device location and protocol test

The world's leading operators and standards bodies mandate thousands of test cases before a new cellular device is allowed into operation. Spirent's 8100 Mobile Device Test system specialises in rigorous testing for the mobile services we depend on for emergency calls, location accuracy, voice connectivity and data. Enhanced in 2019 to support new 5G capabilities, the 8100 is now able to emulate 5G base stations and the network behind them, allowing a device to behave as it would on almost any carrier's network. 8100 provides fully automated test suites and ad-hoc testing. It creates network stress and error scenarios to prove in the functionality and robustness of devices.

Spirent 8100 has recognised over multiple cellular technology generations as the industry's de-facto standard for worldwide location conformance and acceptance test of mobile devices and chipsets employing cellular and indoor positioning technologies that make use of signals from satellites, cellular base stations, Wi-Fi and other sources. Devices and chipsets are evaluated for location characteristics such as accuracy, time-to-fix, RF interference and antenna performance.

User experience evaluation

To understand the experience that users achieve from wireless devices and mobile networks, Spirent's Umetrix User Experience solution listens to audio, watches video, and uses data-hungry applications like real users do. Umetrix's state of the art 5G chipset logging and automated cloud data collection and reporting facilitate testing in the field and in the lab, making it easy to reproduce and resolve issues.

Prior to deploying a new device or new service, top-tier operators around the globe use Spirent's Fit4Launch Test Service to ensure their readiness. Fit4Launch leverages Umetrix to weed out data, voice and calling, streaming video, emergency location and calling issues. Spirent has drive-tested thousands of devices to catch "in-the-wild" live infrastructure interaction troubles before users do. Fit4Launch protects the operators' brands, lowers support and returned device costs, reduces churn, and helps the operator keep its promise of an excellent user experience.

CASE STUDY

A breakthrough 5G network helps put autonomous vehicles on the road

One of the UK's leading research institutes for intelligent and connected autonomous vehicles wanted the ability to conduct tests in a 5G network environment. Spirent provided foundational emulation and testing technologies from its Landslide core network validation solution to help create a combined digital and real-world ecosystem for testing autonomous vehicles safely and cost efficiently.

Warwick University (Warwick Manufacturing Group (WMG)) is one of the UK's leading research institutes for intelligent and connected autonomous vehicles and the lead academia partner in the UK National Automotive Innovation Centre. It is working in conjunction with Midlands Future Mobility (MFM), a UK government and industry-funded ecosystem designed to accelerate technological progress, establishing the UK's presence in the autonomous vehicle market and contributing to the UK's industrial strategy.

Challenge

Autonomous vehicles require seamless communications between vehicle to vehicle, vehicle to infrastructure, vehicle to pedestrian and vehicle to network. 5G connectivity is seen as a requisite for cellular connectivity in autonomous vehicles in order to meet a long-term goal of delivering zero fatalities on our roads and transport networks. However, 5G is still in its infancy, with limited national coverage. Getting access to the technology is costly and time constrained, and the new 5G architecture is both complex and not well understood.

In this environment, MFM and WMG needed a solution that would give them access to their own 5G network, with complete control. Critical requirements included the ability for the network to be highly flexible and repeatable to allow them to test all types of complex what-ifs and corner cases, which would be critical to prevent fatalities.

In addition, the 5G network needed to be both realistic and future-proof to attract leading industry players to use the facility and empower the ecosystem.

Solution

Combining physical communications network capabilities with a future-proof 5G emulation environment was identified as delivering the best of both worlds, a 5G environment today while also being cost efficient and future-proof.

MFM worked with Spirent to deploy 5G digital twin technology, which emulates 5G network connectivity for testing in a controlled environment, within a 3D drive-in simulator with 30 miles of 360-degree, photo-realistic driving routes surrounded by an emulated communications network. This represents the first emulated 5G standalone core network dedicated to researching next-generation mobile use cases, including connected automated mobility, in almost unlimited testing scenarios.

The solution includes:

- Spirent 5G new core network emulator (Landslide).
- Spirent 5G base station (gNodeB) emulator built on National Instrument's world leading Software Defined Radio platform.
- Spirent GNSS Simulator.

Impact

MFM will be both a digital and a real-world (480km of public roads) ecosystem serving as a springboard for scalable, future mobility technologies and services. It will facilitate access to diverse, public physical test environments with smart monitoring, the latest wireless connectivity and a complete support network. Researchers and commercial entities will be able to work with MFM to safely and confidently amass volumes of data from emerging use case experimentation that correlates precisely with a live 5G network's behaviour. This includes everything from determining the maximum responsiveness of autonomous vehicle applications to testing how a robot connected to the network can accelerate a manufacturing task with minimal latency in a safe, reliable and secure manner.

"A full understanding of future 5G-enabled industries and how to operationalise them for business and consumer usage is now possible in a safe, controlled environment, thanks to Spirent," said Doctor Matthew Higgins, Associate Professor at WMG. "We'll be able to test with near-limitless potential. For instance, determining how an intelligent vehicle, drone or manufacturing robot, would perform on a 5G network that millions of people are using at the same time, a near impossibility on the live 5G networks today."

In its latest work with MFM, Spirent is providing foundational emulation and testing technologies from its Landslide core network validation solution, with the expectation to eventually include additional components.

Connected Devices continued

Revenue	Operating profit[1]	Operating margin[2]
$72.5M	**$9.5M**	**13.1%**
2018 $79.0M	2018 $10.5M	2018 13.3%

Notes
1. Before exceptional items of $0.3 million charged in 2019.
2. Operating profit before exceptional items as a percentage of revenue.

Performance

In 2019, Connected Devices revenue decreased by 8.2 per cent to $72.5 million (2018 $79.0 million) as the decline in legacy 4G device test outstripped the growing demand for next-generation 5G solutions.

Operating profit before exceptional items was $9.5 million, compared to $10.5 million in 2018, with operating margin before exceptional items held broadly level at 13.1 per cent (2018 13.3 per cent).

The year saw an improvement in gross margin and further realignment of the cost base, with operating costs $2.6 million lower year-on-year.

Accomplishments

During 2019, the Connected Devices business unit advanced each of its strategic priorities with significant accomplishments.

5G radio channel emulation and services testing

- We delivered our first 5G 8100 Mobile Device Test System solution through our National Instruments partnership. Using this platform, several rounds of interoperability testing were completed with leading tier-one chipset vendors and 5G location test cases were validated.
- A tier-one US service provider turned to Spirent's Fit4Launch advanced field test methodology for proving in its 5G network and devices. Vendors use the service before launching a device with the carrier.
- Umetrix for 5G data performance was adopted by several of the leading top five chipset, smartphone device and tier-one operators.
- With a unique ability to lower the cost of testing through instrument integration and modularity, we won several multi-million dollar deals with a tier-one 5G chipset vendor to evaluate its modem performance, in multiple 5G frequency bands.
- China Mobile collaborated with Spirent to build the first comprehensive 5G over-the-air device evaluation system, using the solution to benchmark and publish the performance of new flagship 5G chipsets and handsets.
- Spirent continues to lead the industry in developing new test methodologies and test systems to evaluate the location performance of connected devices:
  - first to supply the industry with the ability to evaluate a smartphone's location capability for both commercial and E-911 applications utilising Assisted-Galileo (A-Galileo) technology;
  - through a series of technical contributions on test methodologies, Spirent drove the advancement of both conducted and radiated 5G location test case development in 3GPP, GCF and CTIA industry standards bodies; and
  - collaborated with tier-one service providers on defining 5G location test plans for emergency services (E-911).

Video delivery performance over streaming networks

- A top-tier smartphone provider selected Umetrix to benchmark the streaming video performance of its device against leading competitors.
- China Mobile Research Institute began using the new Umetrix 4K Video Quality solution to evaluate the performance of its streaming content delivery for mobile and home services.
- China Academy of Information and Communications Technology, which is China's largest national lab for telecommunications testing, selected Umetrix Video as its solution for non-reference video testing.

Expanding the use cases of our products into applications beyond smartphones

- Two global-leading chipset manufacturers began using Spirent's Vertex RF Channel Emulation solution to prove in the unique device-to-device radio challenges of their V2X chipsets. Spirent was chosen over competitors as its superior solution integration simplified test setups and its expertise in device-to-device channel models provided the most realistic test scenarios.
- Provided thought leadership in the area of public safety mobile services for first responders. We published a first-of-its-kind comprehensive analysis of speech intelligibility results that raised the industry's awareness of differences between the performance of smartphones delivering mission-critical voice services.
- Warwick University in the UK adopted Spirent's 5G "digital twin" as part of its end-to-end solution to develop 5G-based Industry 4.0 applications.
- A new channel partner for Connected Devices in the US defence and aerospace market (Dualos) is online and closed >$1 million business in the period, including deals with the US Army and US Navy, with a strong funnel heading into 2020.

Impact of market dynamics on Spirent's business

- The transition from 4G to 5G is bringing new challenges within the traditional cellular ecosystem, and new opportunities beyond it. 4G testing is declining as anticipated as operators, equipment vendors and device manufacturers shift investment to 5G technologies.
- While Spirent's 4G revenue shifts from product to support, we are building 5G product and services revenues. 5G testing is moving beyond the RF performance of base stations, network equipment and new device designs, as operators look for help in overcoming new field test challenges created by new frequency bands and antenna systems.
- Defence departments around the globe are modernising their communications technologies, creating growth opportunities for Spirent in tactical and airborne RF performance test. The latest generation of Wi-Fi technology, Wi-Fi 6, is bringing new performance, range and robustness to airports, arenas and large-scale urban networks, requiring new testing approaches. Our business is benefiting from 5G's emergence as an underlying technology for V2X communications, and from the significant investment in 5G research by universities and governments in areas such as connected industry, smart city and defence.

"The transition from 4G to 5G is bringing new challenges within the traditional cellular ecosystem, and new opportunities beyond it."

CASE STUDY

Assuring a quality user experience with 5G handsets

Challenge

A tier-one North American carrier is rolling out handsets on its new nationwide 5G network. Parts of that network operate on millimetre-wave frequencies, which presents new challenges when validating the user experience in the field. For example, the connection is far more sensitive to device orientation than was the case with previous cellular generations.

Solution

Spirent worked with the operator to develop field test plans that ensure that the device and the network are working in harmony. A specialised test rig allowed the device's orientation to be controlled and repeated (including rotation and position in x, y and z axes). New test plans were created to ensure the stability of connections and data rates while changing device orientation, moving among 5G locations and between 4G and 5G signal areas.

Issues with new 5G handsets were uncovered that had not previously been seen with the device manufacturers' standard tests. Some 5G devices using millimetre-wave became overheated and dropped back to 4G, while others experienced difficulties maintaining 5G coverage when in 5G areas.

Impact

This new 5G network is highly visible, with a national advertising and media blitz behind it. By discovering these "in-the-wild" issues early, the operator was able to work with the manufacturers to address these issues, protect its reputation and meet its primary goal of assuring an excellent end-user experience.

CONTINUING TO DELIVER
STRONG EARNINGS GROWTH

A further year of material earnings growth demonstrates our strategy is working. Our focus is in key growth markets where we can leverage our leading technologies whilst ensuring we invest in our technology and routes to market to sustain revenue growth. We also benefit from strong financial management with a focus on productivity and high cash conversion.

Paula Bell
Chief Financial & Operations Officer

Adjusted operating profit[1]

$92.9M

↑20.5%

2018 $77.1M

Adjusted operating margin[2]

18.4%

↑2.2%

2018 16.2%

Notes
1. Before exceptional items, acquisition related costs, acquired intangible asset amortisation and share-based payment amounting to $4.3 million in total (2018 $19.6 million).
2. Adjusted operating profit as a percentage of revenue in the period.

Group overview

2019 trading performance demonstrably proves our strategy is working with continued revenue growth and another year of material profit growth. Our operational execution model is strong, balancing investment in our leading technology portfolio and our people, to drive sustainable revenue and earnings growth.

We secured double-digit growth in orders, and we saw progress in all operating segments. We benefited from some late support contracts from 2018 closing in early 2019, and we are also winning more multi-year contracts providing more underpin to revenue in the forthcoming years.

Revenue growth of 5.6 per cent was driven by demand for high-speed Ethernet test solutions and satellite simulators within our Networks & Security operating segment. Orders for our Lifecycle Service Assurance business, secured late in 2019, built a strong opening orderbook for 2020, but as a result revenue was level for 2019. Connected Devices revenue was impacted by a faster decline in the 4G legacy smartphone device lab test business, outpacing the ramp-up in 5G-related business. Another year of expansion in gross margin was driven by new product launches and higher software sales. We continued to be mindful of resource allocation and exercised careful management of the cost base, directing product development effort to high-growth, high-margin areas and targeting sales and marketing investment to expand our key account management programme and develop routes to market for our new technologies to a broadening customer base.

The year-on-year increase in revenue of $26.7 million has driven increased adjusted operating profit to $92.9 million, from $77.1 million in 2018. Adjusted operating margin has increased by 2.2 percentage points to 18.4 per cent, from 16.2 per cent last year.

Net exceptional income was $0.5 million in the year (2018 $13.1 million cost), being the net of the cost associated with a strategic review initiated by our new CEO of $1.8 million and $2.3 million of income following a successful reclaim for VAT on French Customs duty, treated as an exceptional cost in 2018. We anticipate incurring a further cost of circa $2.7 million in 2020 to complete the strategic review.

A further reduction in the Group's effective tax rate from 15.4 per cent in 2018 to 13.0 per cent for 2019, due to a combination of factors including a new tax treaty between Hong Kong and India, has also benefited earnings. Adjusted basic earnings per share has increased by 23 per cent, up from 10.86 cents last year to 13.40 cents for 2019.

Cash at bank closed at $183.2 million, up $61.6 million on the position at the end of last year, with free cash flow effectively doubling year-on-year, driven by highly effective working capital management. Free cash flow conversion increased significantly and now stands at 123 per cent of adjusted earnings (2018 77 per cent).

As a result of the strong financial performance, we propose a 20 per cent increase to the full year dividend per share, from 4.49 cents to 5.39 cents, and looking forward we will maintain our progressive dividend policy ensuring that we maintain dividend cover of 2 to 2.5 times.

The following table shows summary financial performance for the Group:

$ million	2019	2018	Change (%)
Order intake[1]	532.0	470.0	13.2
Revenue	503.6	476.9	5.6
Gross profit	368.6	344.5	7.0
Gross margin (%)	73.2	72.2	1.0
Adjusted operating costs[2]	275.7	267.4	3.1
Adjusted operating profit[2]	92.9	77.1	20.5
Adjusted operating margin[3] (%)	18.4	16.2	2.2
Reported operating profit	88.6	57.5	54.1
Effective tax rate[4] (%)	13.0	15.4	(2.4)
Reported profit before tax	89.6	61.2	46.4
Adjusted basic earnings per share[5] (cents)	13.40	10.86	23.4
Basic earnings per share (cents)	12.79	9.14	39.9
Free cash flow[6]	100.1	50.9	96.7
Closing cash	183.2	121.6	50.7
Final dividend per share[7] (cents)	3.45	2.73	26.4

Notes
1. Order intake represents commitments from customers to purchase goods and/or services that will ultimately result in recognised revenue.
2. Before exceptional items, acquisition related costs, acquired intangible asset amortisation and share-based payment amounting to $4.3 million in total (2018 $19.6 million).
3. Adjusted operating profit as a percentage of revenue in the period.
4. Effective tax rate is the adjusted tax charge, before tax on adjusting items, expressed as a percentage of adjusted profit before tax.
5. Adjusted basic earnings per share is based on adjusted earnings as set out in note 11 of Notes to the full year consolidated financial statements.
6. Cash flow generated from operations, less tax and net capital expenditure, interest paid and/or received, and payment of lease liabilities/sublease income.
7. Dividends are determined in US dollars and paid in sterling at the exchange rate prevailing when the dividend is proposed. The final dividend proposed for 2019 of 3.45 cents per Ordinary Share is equivalent to 2.70 pence per Ordinary Share.

Note on Alternative Performance Measures (APMs)
The performance of the Group is assessed using a variety of performance measures, including APMs which are presented to provide users with additional financial information that is regularly reviewed by management. These APMs are not defined under IFRS and therefore may not be directly comparable with similarly identified measures used by other companies.
The APMs adopted by the Group are defined on pages 190 and 191. The APMs which relate to adjusted income statement lines are presented and reconciled to GAAP measures using a columnar approach on the face of the income statement and can be identified by the prefix "adjusted" in the commentary. All APMs are clearly identified as such, with explanatory footnotes to the tables of financial information provided, and reconciled to reported GAAP measures in the Financial review or Notes to the consolidated financial statements.

Revenue

$ million	2019	% of total	2018	% of total
Revenue by segment				
Networks & Security	319.9	63.5	285.1	59.8
Lifecycle Service Assurance	111.2	22.1	112.8	23.6
Connected Devices	72.5	14.4	79.0	16.6
	503.6	100.0	476.9	100.0
Revenue by geography				
Americas	266.1	52.8	265.4	55.7
Asia Pacific	187.8	37.3	159.1	33.3
Europe, Middle East and Africa	49.7	9.9	52.4	11.0
	503.6	100.0	476.9	100.0

Revenue continued

Total Group revenue grew by $26.7 million in 2019, an increase of 5.6 per cent over the prior year.

The Networks & Security operating segment achieved year-on-year revenue growth of 12.2 per cent. Within that segment, all of our lines of business grew revenue compared to the prior year but the primary growth drivers were demand for high-speed Ethernet testing within our core business, particularly from China customers, and satellite simulators provided by our Positioning business, particularly US government related. The cybersecurity line of business also experienced revenue growth, although this remains a relatively small part of the overall Networks & Security portfolio.

Revenue at Lifecycle Service Assurance was essentially level year-on-year with revenue growth for next-generation automated validation and assurance solutions offset by a reduction in legacy solution revenues. However, we experienced robust growth in order intake year-on-year, growing the orderbook as a result of strong demand for our automated validation and assurance solutions for 5G, SD-WAN and virtual networks. New product offerings for automated NetDevOps testing and TaaS managed services also saw significant initial orders late in the year, with revenue to be recognised in 2020 and beyond.

Connected Devices experienced a reduction in revenue of 8.2 per cent, primarily a consequence of the continuing decline in the 4G legacy smartphone device lab test business outpacing the ramp-up in 5G-related business. Notwithstanding the fall in recognised revenue, order intake showed some growth over the prior year, as several large multi-year support contracts and orders closed in the final quarter that will not convert to revenue until 2020.

Geographically, we have continued to see growth in revenue from the Asia Pacific region (up 18 per cent year-on-year), particularly China customers purchasing high-speed Ethernet test solutions, with the Americas broadly level and EMEA marginally down. The growth in China revenue has been achieved despite the ongoing geopolitical landscape challenges. However, we saw order intake growth in the Americas and EMEA and closed the year with a solid orderbook for all regions.

Gross margin

$ million	2019	%	2018	%
Networks & Security	**232.3**	**72.6**	205.3	72.0
Lifecycle Service Assurance	**88.6**	**79.7**	87.9	77.9
Connected Devices	**47.7**	**65.8**	51.3	64.9
	368.6	**73.2**	344.5	72.2

The Group achieved further gross margin expansion in 2019 with an increase of 1.0 percentage points, to 73.2 per cent from 72.2 per cent in 2018. This followed an increase of 0.7 percentage points last year. Once again, all the operating segments achieved an improvement in gross margin, benefiting from new product launches and a higher proportion of software sales.

Operating costs

$ million	2019	2018
Product development	**96.5**	96.9
Selling and marketing	**129.2**	123.9
Administration[1]	**50.0**	46.6
Adjusted operating costs[1]	**275.7**	267.4
Networks & Security	**158.4**	148.9
Lifecycle Service Assurance	**70.5**	70.5
Connected Devices	**38.2**	40.8
Corporate	**8.6**	7.2
Adjusted operating costs[1]	**275.7**	267.4

Note
1. Before exceptional items, acquisition related costs, acquired intangible asset amortisation and share-based payment amounting to $4.3 million in total (2018 $19.6 million).

"2019 trading performance demonstrably proves our strategy is working with continued revenue growth and another year of material profit growth."

Total Group adjusted operating costs were up $8.3 million or 3.1 per cent in 2019 compared to last year, broadly in line with inflation. The emphasis remained on effective resource allocation and careful cost management. The overall investment in product development was maintained, with continuing focus on high-growth, high-margin areas. Investment in the sales and marketing organisation was targeted on expanding our key account management programme to drive incremental business with our most valuable customers and developing routes to market for our new technologies to a broadening customer base. Administration costs in 2019 reflected an inflationary increase and higher corporate costs, primarily due to CEO transition.

Segmentally, investment continued in Networks & Security, where we see the most near-term opportunities for growth, particularly in relation to 400G high-speed Ethernet and our Positioning business. A new General Manager joined Lifecycle Service Assurance in October and a review is in progress to evolve the business and optimise the organisational structure to expand the customer base and deliver on our growth agenda. Proactive cost management has once again been demonstrated within Connected Devices, where we have seen a decrease in legacy product revenue year-on-year. As stated above, corporate costs in 2019 included costs associated with CEO transition.

Operating profit

$ million	2019	Adjusted operating margin[1,2] %	2018	Adjusted operating margin[1,2] %
Networks & Security	**73.9**	**23.1**	56.4	19.8
Lifecycle Service Assurance	**18.1**	**16.3**	17.4	15.4
Connected Devices	**9.5**	**13.1**	10.5	13.3
Corporate	**(8.6)**		(7.2)	
Adjusted operating profit[1]	**92.9**	**18.4**	77.1	16.2
Exceptional items	**0.5**		(13.1)	
Acquisition related costs	**(0.1)**		–	
Acquired intangible asset amortisation	**(1.2)**		(3.7)	
Share-based payment	**(3.5)**		(2.8)	
Reported operating profit	**88.6**		57.5	

Notes
1. Before exceptional items, acquisition related costs, acquired intangible asset amortisation and share-based payment amounting to $4.3 million in total (2018 $19.6 million).
2. Adjusted operating profit as a percentage of revenue in the period.

Adjusted operating profit increased by $15.8 million or 20.5 per cent to $92.9 million in 2019, compared with $77.1 million in 2018. Adjusted operating margin increased by 2.2 per cent to 18.4 per cent, from 16.2 per cent in 2018.

Reported operating profit was up by $31.1 million or 54.1 per cent to $88.6 million (2018 $57.5 million). Total adjusting items were lower in 2019 at $4.3 million, compared to $19.6 million in 2018, mainly due to exceptional items totalling $13.1 million charged last year (see below).

Exceptional items

Net exceptional income of $0.5 million has been recognised in 2019; this was comprised of:

1. $2.3 million of income received in relation to the provision set up in 2018 for French import duty (see below), which arose following a successful claim for reimbursement of VAT on the imports; and
2. $1.8 million of costs associated with a strategic review instigated by Spirent's new CEO, appointed 1 May 2019, involving a number of initiatives designed to evolve the strategic direction of Spirent to maximise market opportunities by creating a more agile, customer-focused organisation. These include a strategic focus on recurring revenue streams over time, a strengthened leadership team and development of our sales and marketing structure to drive improved effectiveness to exploit our leading technologies. The total exceptional cost of these planned changes is circa $4.5 million with the remainder of this cost to be incurred in 2020.

In 2018, the Group incurred $13.1 million of exceptional costs in relation to:

1. a provision for $9.1 million in respect of import duty and VAT following receipt of a Notice of Recovery from French Customs; and
2. a pension scheme past service cost of $4.0 million (£3.1 million) arising from a benefit change for GMP equalisation under the UK defined benefit pension plans.

Acquired intangible asset amortisation and share-based payment

As a result of some acquired intangible assets reaching the end of their useful economic lives and no longer being amortised, acquired intangible asset amortisation has continued to reduce, decreasing to $1.2 million in 2019 from $3.7 million in 2018.

Share-based payment has increased to $3.9 million in 2019 (2018 $2.8 million), of which $3.5 million (2018 $2.8 million) has been treated as an adjusting item. This increase reflects the incremental cost associated with new awards. See note 34 of Notes to the consolidated financial statements for more information.

Acquisitions and divestments

On 31 May 2019, Spirent acquired a key business from a small navigation systems company based in the United Kingdom, for cash consideration of $1.9 million. This company develops and supplies the Group with a system for recording GNSS and Wi-Fi signals, and is reported within the Group's Networks & Security operating segment. Costs related to the acquisition of $0.1 million were expensed and treated as an adjusting item. The transaction gave rise to an intangible asset of $1.0 million, being current technology with a useful life of five years, and goodwill of $0.9 million.

During 2018, a $2.0 million loan, which had previously been impaired, was repaid to the Group from subsidiaries divested of in 2017. In addition, a provision for $0.4 million relating to a disposal in 2012, which was classified as a discontinued operation, was released.

Currency impact

The Group's revenue and costs are primarily denominated in US dollars or US dollar-linked currencies. Currency exposures arise from trading transactions undertaken by the Group in foreign currencies and on the retranslation of the operating results and net assets of overseas subsidiaries.

The Group's income statement includes a foreign exchange loss, included in administration costs, of $0.6 million (2018 $0.6 million) arising from transacting in foreign currencies, primarily US dollars in the United Kingdom, and the translation of foreign currency cash balances.

Forward foreign currency exchange contracts are entered into to manage the exposure arising from transacting in US dollars in the United Kingdom.

Although the most significant currency exposure arises in relation to movements in pounds sterling against the US dollar, there are other less significant currency exposures, notably the Euro and Chinese Yuan.

Finance income and costs

Interest income of $2.7 million was earned from cash on deposit (2018 $1.4 million) and $0.1 million (2018 $nil) of interest income was recognised in relation to the UK defined benefit pension plans. The increase in bank interest received year-on-year reflected higher cash balances and proactive treasury management across the Group. Surplus funds are held principally in the United Kingdom and United States on short-term or overnight deposit and earn market rates of interest.

Finance income and costs continued

Finance costs in 2019 were $1.8 million (2018 $0.1 million), $1.7 million of which related to interest on lease liabilities following the implementation of IFRS 16 on 1 January 2019.

Tax

The adjusted effective tax rate, being the adjusted tax charge expressed as a percentage of adjusted profit before tax, shown on the face of the consolidated income statement, was 13.0 per cent in 2019, down from 15.4 per cent in 2018.

Spirent's effective tax rate has benefited from a combination of factors in 2019, including the ratification of a new tax treaty between India and Hong Kong, and an increase in non-taxed income. Additionally, the Group received tax benefits from the United Kingdom Patent Box Scheme, the United States R&D Tax Credit, and a current year recognition of deferred tax assets in the United States.

Going forward it is anticipated that Spirent's effective tax rate will be maintained at around 13-14 per cent, subject to changes in tax legislation.

Earnings per share

Adjusted basic earnings per share was up 23.4 per cent to 13.40 cents (2018 10.86 cents). Basic earnings per share was 12.79 cents (2018 9.14 cents). There were 609.9 million (2018 610.4 million) weighted average Ordinary Shares in issue. See note 11 of Notes to the full year consolidated financial statements on page 142 for the calculation of earnings per share.

Treasury management

The key objective of the Group's treasury department is to manage the financial risks of the business and to ensure that sufficient liquidity is available for the Group. All treasury activity operates within a formal control framework. The Board has approved treasury policies and guidelines and periodically reviews treasury activities. Additionally, it is the Group's policy that speculative treasury transactions are expressly forbidden.

Spirent's financial risk management objectives and policies and its exposure to risks are discussed in note 30 of Notes to the consolidated financial statements.

Financing and cash flow

The Group delivered very strong cash generation in 2019, driven by higher operating profit and effective working capital management. Changes in working capital, reflected within cash flow from operations, benefited from:

- our continued focus on improving trade receivables collection;
- a reduction in inventory levels due to a high level of shipments at the end of 2019; and
- growth in payables, resulting from the increase in activity levels and emphasis on extending supplier payment terms.

Free cash flow for 2019 almost doubled year-on-year coming in at $100.1 million, compared to $50.9 million in 2018, resulting in a free cash flow conversion which represented 123 per cent of adjusted earnings (2018 77 per cent).

Free cash flow is set out below:

$ million	**2019**	2018
Cash flow from operations	**124.9**	65.9
Tax paid	**(5.6)**	(5.7)
Net cash inflow from operating activities	**119.3**	60.2
Interest received	**2.6**	1.3
Net capital expenditure	**(11.9)**	(10.6)
Payment of lease liabilities, principal and interest[1]	**(10.3)**	–
Lease payments received from finance leases	**0.4**	–
Free cash flow	**100.1**	50.9

Note
1. Spirent adopted IFRS 16 on 1 January 2019; in prior periods operating lease payments were included within cash flow from operations.

Free cash flow includes a net cash outflow in respect of exceptional items in 2018 and 2019 of $5.5 million (2018 $3.6 million in respect of exceptional items charged in 2017 and 2018).

Tax payments of $5.6 million made in 2019 were consistent with the prior year (2018 $5.7 million). Net capital expenditure of $11.9 million was also broadly consistent with the prior year (2018 $10.6 million), with the incremental spend of $1.3 million primarily related to investment in 5G. We continue to exercise careful management of capital investment to ensure efficient use of capital and maximise return on investment.

Following the adoption of IFRS 16 on 1 January 2019, the payment of lease liabilities, both the principal and interest elements, are shown separately from net cash flow from operating activities. In previous periods they would have been reflected in that number. There is no overall impact in comparing free cash flow year-on-year.

In 2019, the final dividend for 2018 and an interim dividend for 2019 totalling $28.6 million were paid. This compared to total dividends of $54.8 million paid in 2018, including a special dividend of $29.9 million. In addition, 4.0 million shares were purchased and placed into the Employee Share Ownership Trust at a cost of $8.6 million (2018 1.5 million shares at a net cost of $2.5 million) and $1.9 million of cash consideration was paid to acquire the business of a navigation systems company based in the United Kingdom.

Following these payments, cash and cash equivalents closed at $183.2 million at 31 December 2019, compared with $121.6 million at 31 December 2018. There continues to be no bank debt.

Defined benefit pension plans

The Group operates two funded defined benefit pension plans in the United Kingdom, both of which were closed to new entrants.

The accounting valuation of the funded defined benefit pension plans at 31 December 2019 gave rise to a net surplus of $11.6 million, compared with a net surplus of $2.5 million at 31 December 2018. The 31 December 2019 position has benefited from contributions paid to the plans in the year of $6.6 million (2018 $6.8 million) together with a return on pension plan assets in excess of the increase in plan liabilities, the latter arising primarily from a reduction in discount rate.

The latest triennial actuarial valuation dated 31 March 2018 indicated a deficit of £22.5 million, calculated on a technical provisions basis using more prudent assumptions

Free cash flow[1]

$100.1M

↑ $49.2M

2018 $50.9M

Note
1. Cash flow generated from operations, less tax and net capital expenditure, interest paid and/or received, and payment of lease liabilities/sublease income.

than the accounting valuation, particularly in relation to discount rate, inflation and demographic. A deficit reduction plan has been agreed with the Trustees which requires the Company to pay an annual contribution of £5.0 million, increasing in line with CPI, through to June 2023 (or earlier if self-sufficiency is reached). In addition, the Company will fund the plan by an amount equal to 10 per cent of any special dividend paid during that period.

Additionally, there is a liability for an unfunded plan of $0.7 million (31 December 2018 $0.6 million).

The Group also operates a deferred compensation plan for employees in the United States. As at 31 December 2019, the deferred compensation plan deficit amounted to $4.8 million (2018 $3.5 million). The key financial assumptions include a discount rate used to discount plan liabilities of 2.9 per cent (2018 4.2 per cent) and an expected investment yield of 6.4 per cent (2018 6.4 per cent).

Balance sheet

The consolidated balance sheet is set out on page 118.

Overall, net assets have increased by $47.0 million to $402.3 million at 31 December 2019, from $355.3 million at 31 December 2018. Much of the increase arises from the change in cash and cash equivalents, which have grown by $61.6 million to $183.2 million (31 December 2018 $121.6 million), offset by increased liabilities driven by higher activity levels at the end of 2019, relative to 2018.

In terms of non-current assets, these have increased by $33.4 million, with $26.0 million of right-of-use assets now on the balance sheet following the implementation of IFRS 16 on 1 January 2019. The UK defined benefit pension plan surplus has increased by $9.1 million to $11.6 million but this has been substantially offset by a $6.6 million fall in the value of property, plant and equipment.

Current assets have increased by $58.6 million, primarily reflecting the increase in cash. High levels of activity at year end 2019 resulted in an increase in receivables of $4.7 million, constrained to some extent by successful action taken by management to reduce the number of days sales outstanding reflected in trade receivables, offset by a decrease in inventory of $6.9 million, due to a high level of year end shipments.

Current liabilities have increased by $24.2 million, to $154.4 million (31 December 2018 $130.2 million), with growth in trade and other payables driven by higher activity levels. In addition, the 31 December 2019 balance sheet includes $8.5 million of current lease liabilities arising from the implementation of IFRS 16 on 1 January 2019. Provisions have decreased by $5.9 million following payment of $6.5 million during the year in respect of French Customs import duty.

The implementation of IFRS 16 on 1 January 2019 has added $24.5 million of lease liabilities to non-current liabilities at 31 December 2019.

Liquidity and dividend policy

The Board currently intends to maintain a cash positive balance sheet over the medium to long-term. This should allow the Company to maintain a strong capital position in the face of business risks, trading fluctuations and working capital demands. In addition, the Board wishes to maintain flexibility to invest in the business organically and inorganically. If and when it is deemed appropriate, the Company may take on modest gearing to fund inorganic investments.

The Board will regularly review the Company's balance sheet in light of current and expected trading performance and cash generation, working capital requirements and expected investments. To the extent the Company has excess cash, it will consider returning such cash to shareholders. The Board will consider from time to time the appropriate mechanism for returning surplus cash to shareholders.

The Board has implemented a progressive dividend policy maintaining cover in the range of 2 to 2.5 times adjusted earnings.

Dividend

The Board is recommending the payment of a final dividend for 2019 of 3.45 cents (2.70 pence) per share which, together with the interim dividend of 1.94 cents (1.59 pence) per share paid in September 2019, brings the full year dividend to 5.39 cents (4.29 pence) per share, a dividend cover of 2.5 times adjusted earnings. This is a 20 per cent increase compared to the full year dividend for 2018. In sterling terms this represents an increase of 25 per cent.

Subject to approval by shareholders at the Annual General Meeting on 29 April 2020, the final dividend will be paid on 1 May 2020 to shareholders on the register at 13 March 2020. Payment to ADR holders will be made on 8 May 2020. In total the payment of the final dividend for 2019 will consume approximately $21 million of cash.

New accounting standards – IFRS 16

The Group transitioned to IFRS 16, the new lease accounting standard, on 1 January 2019, using the modified retrospective transition method. This approach does not require comparatives to be restated. Instead, the cumulative effect of applying IFRS 16 is applied to the opening balance of retained earnings at 1 January 2019.

The cumulative effect of the adoption of IFRS 16 has resulted in a decrease in net assets of $3.4 million as at 1 January 2019. This reflects the difference between right-of-use assets and lease liabilities, as right-of-use assets depreciate quicker than lease liabilities are settled.

The following balances have been added to the Group's balance sheet at 1 January 2019:

- right-of-use assets of $30.9 million;
- lease liabilities of $36.7 million; and
- deferred tax assets of $1.0 million.

The above balances include net reclassification adjustments to liabilities of $1.4 million.

In terms of the income statement impact, adjusted operating profit marginally increased in 2019 through the operating lease expense being removed and replaced by a smaller depreciation charge. There was also an increase to finance costs under IFRS 16 as a result of interest on lease liabilities, which offset the increase to adjusted operating profit. The impact to the Group's earnings and income statement overall was immaterial.

An explanation of the impact of IFRS 16 on the Group's financial statements and related matters consequent upon the adoption of IFRS 16 are set out in note 39 of Notes to the consolidated financial statements.

MANAGING OUR RISKS AND UNCERTAINTIES

Like all businesses, Spirent is exposed to a number of risks and uncertainties. These risks may arise from internal factors, but some will be a result of external factors over which the Group has little or no direct control. It is the effective management of these risks that supports Spirent in delivering on its strategic objectives, safeguards the Group's assets and, over time, will enhance shareholder value.

The process to identify and manage the principal risks and uncertainties of the Group is an integral component of the internal control system.

The risk assessment process starts in the businesses, where up-to-date risk registers are maintained and updated as part of the normal operating and control procedures, and is facilitated by the Head of Risk & Internal Audit. Each business identifies its key risks and mitigating factors and nominates a risk owner. The impact and the likelihood of occurrence of each risk is ranked, which assists the Group Executive Committee in assessing the likely impact in aggregate of each risk to the Group as a whole. The individual businesses are required to update their risk registers regularly to reflect new or emerging risks as they are identified.

The approach has been enhanced during the year with a focus on process improvements to identify, clarify and communicate emerging risks for Board discussion and assessment, along with agreed mitigating action plans.

It is not possible to identify every risk that could affect the business and the actions described below to mitigate those risks cannot provide absolute assurance that the risk will not occur or adversely affect the operating or financial performance of the Group.

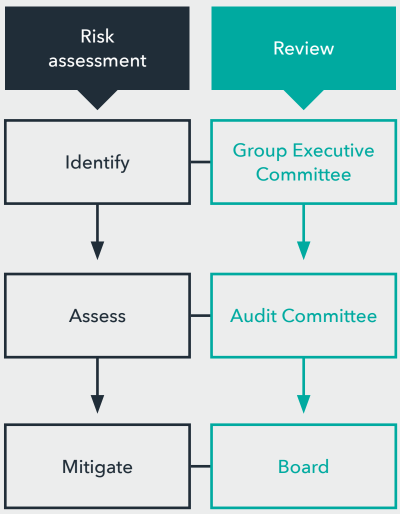
The Board has classified the principal risks by the impact the risk would be expected to have on the Group should it occur, and the anticipated likelihood that that risk may occur using the following classifications:

Risk	Impact
Impact	High
	Medium
	Low
Likelihood of occurrence	Likely
	Possible
	Unlikely

The Board takes the view that a high impact risk could lead to a 10 per cent or more reduction in revenue, a medium impact risk a 5 to 10 per cent reduction in revenue and a low impact risk a reduction of up to 5 per cent in revenue.

The Audit Committee reviews and monitors the Group's risk processes and reports to the Board on their effectiveness. Risk is considered by the Audit Committee at least twice each year, at which time risk registers for both the Group and the material business units within the Group are reviewed. The Audit Committee challenges and debates the risks with reference to risk tolerance and appetite, as set by the Board. Progress made and any further actions to be taken regarding mitigation plans, as well as any changes to the risk profile, are discussed in detail.

Identifying and assessing risk



The Board has identified the following principal risks, each of which is discussed on pages 42 to 45:

Risk	Impact	Likelihood	Change
Macro-economic change	High	Likely	No change
Technology change	High	Likely	No change
Customer dependence/ customer investment plans	High	Likely	No change
Business continuity	High	Likely	No change
Competition	Medium	Possible	No change
Acquisitions	Medium	Possible	No change
Employee skill base	Medium	Possible	No change

Current topical risks, uncertainties and emerging risks

Topical risks and uncertainties along with emerging risks are covered in detail in the table of principal risks and uncertainties, but some of the more pertinent ones are described below.

COVID-19 virus

The Group continues to monitor the impact of the COVID-19 virus outbreak. We have taken appropriate action regarding staff health and safety, and restricted international travel, whilst maintaining close contact with our customers in affected areas.

The majority of our subassembly supplies are from Thailand and to mitigate potential component shortages from China we seek to identify alternative sources of supply.

The Group's Business Continuity plans for each site have been updated and will be invoked if required.

US/China trade and sanctions

Trade tensions between the US and China have ebbed and flowed in 2019. Tariff charges introduced in 2019 would have a limited impact on the Group. We make sales across a broad range of customers in China, many of which are unaffected by the embargoes and we expect this to continue to be the case. Changes to existing US regulations to embargoed customers may impact our ability to supply affected customers in both the short and medium term. We maintain a watching brief as legislation requirements continue to evolve.

Brexit

The United Kingdom's exit from the European Union is still anticipated to have a low impact on the Group by virtue of the relatively small proportion of sales into Europe, the nature of our operations in Europe and the mitigating actions we have taken. In addition, the Group's main functional currency and presentational currency are both US dollars which largely mitigates our exposure to adverse foreign currency impacts arising on Brexit.

Risk appetite and developing the long-term Viability Statement

Provision C.2.2 of the 2016 UK Corporate Governance Code requires the Board to assess the viability of the Group over a period significantly longer than 12 months and confirm whether it has a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over that period. The Board has determined that a three-year period should be used when assessing viability, as explained on page 105 of this Annual Report.

The Board has sought to frame its risk appetite in terms of the markets and technologies in which it is prepared to make significant investments, and those in which it would expect its scale of investment to be more modest. Except where very attractive opportunities were to present themselves to achieve greater scale in well understood markets, which would be inherently cash generative, the Board would expect to maintain a net cash position.

Management, together with members of the Board, considered which of the principal risks, either alone or in combination, might threaten the Group's viability. The expected aggregate impact of macro-economic change, technology change, customer dependence and competition were modelled based on historical trends experienced across the Group. A severe but plausible combination of those risks was considered for the purposes of determining the revenue and free cash flow scenarios that should be stress tested via financial modelling.

The impacts were modelled over the three-year period, using the Group's strategic three-year plan as a basis, with two different assumptions in relation to timing:

1) with emphasis on a stressed scenario in years two and three, given management's view that such risks were unlikely to materialise in year one, as the Group had just completed a detailed full year budget for 2020; and
2) an even more severe, yet less plausible, scenario where those same impacts are immediate with significant revenue decline in 2020 and years two and three acutely impacted.

The analysis included assumptions in relation to the ability of the Group to take successful mitigating actions, including the ability to make significant reductions in its non-fixed operating costs. In doing so appropriate adjustment was made for the cost of taking those actions.

In performing the Viability Statement modelling the Board took into consideration the Company's healthy cash balance of $183.2 million at 31 December 2019 and the ability of the Company to continue to generate positive free cash flow even in stressed scenarios, as has historically been the case.

The Board reviewed and discussed with management:

- the process undertaken by management to decide which scenarios to stress test;
- the results of the stress testing performed, including an illustration of the reduction in revenue and cash generation and consequently the availability of cash to fund operations; and
- the ability of management to successfully take the mitigating actions identified.

The resulting Viability Statement is set out in the Directors' report on page 105.

Principal risks and uncertainties continued

Risk	Potential impact	Mitigating actions
Macro-economic change		
Spirent is a global business exposed to current world economic conditions and political and trade embargo uncertainties over which it has no control. The business is also exposed to government spending priorities, principally in the United States.	Deterioration in economic conditions and a change to the terms of conventional international trade and embargoing of specific customers may lead to a reduction in the level of demand for Spirent's products and services and cause customers to delay their purchasing decisions.	The Group closely monitors both market and geographic trends in order to respond to changes in demand and be in a position to take timely actions to protect profitability where possible. In addition, Spirent has a large number of geographically diverse customers, which may mitigate the impact of issues in any one area.
Technology change		
Spirent sells complex solutions in industries that can be subject to rapid technological changes. Testing new technologies drives our business, but the opportunity also brings high risk since keeping at the forefront of these key future technologies is critical to our success and to ensuring that we remain competitive in our markets. It is critical that our product development investment is directed at the right areas in order to deliver the solutions that our customers need, when they need them. Spirent's success is dependent in part on proprietary technology which may be infringed by others. Open-source tools become more prevalent providing some of the functionality of our products.	If product development investment does not keep pace with the speed of change in technologies, or if it is not directed at the right key areas, our competitive position and financial performance will suffer. If Spirent's solutions take longer to develop than anticipated or longer to develop than our competitors then our competitive position and financial performance will also suffer. Changes in technologies may lead to a short-term pause by our customers investing in our solutions. Intellectual property claims can result in significant defence costs and may affect Spirent's ability to market its products. Competition from open-source tools which customers may seek to use to meet part of their testing needs.	All Spirent's businesses work very closely with customers and remain focused on their requirements. Each business makes investment decisions specifically related to its solutions portfolio based on market needs. Spirent continues to focus its investment into areas that offer the most potential for sustainable earnings growth. In 2019 the product development investment was $96.5 million (2018 $96.9 million). Spirent has active intellectual property protection programmes in place to obtain appropriate protection in a cost-effective manner.

Risk	Potential impact	Mitigating actions
Customer dependence/customer investment plans		
The Group sells its products and services to a wide range of companies and continually seeks to expand its customer base. In 2019, no one customer accounted for more than 10 per cent of Group revenue, although the top ten customers represented 42 per cent of Group revenue (2018 40 per cent). In some of our markets certain customers have a dominant market share, which makes doing business with these customers and their suppliers critical to the success of our business. In addition, many of the companies with which we do business are some of the largest global telecommunications corporations. Therefore meeting our development obligations, producing high quality products and being on time are vital to Spirent's reputation and success. Changes in our major customers' priorities in technology investments can also have a significant impact on their spending on Spirent products and on those in the customers' supply chain. The industry continues to experience consolidation which does disrupt the spending patterns of affected customers.	Loss of one or more of Spirent's major customers could have a significant impact on Spirent's financial results. Spend on Spirent's products is often capital in nature and so customer spend can fluctuate significantly from year-to-year. Significant failings in either quality or being able to deliver in the appropriate timescale could cause long-lasting damage to Spirent's reputation and relationships. Over recent years there has been significant consolidation in our customer base amongst service providers and network equipment manufacturers. This trend continues and often results in delays in spending, thereby reducing demand for Spirent's solutions and services. It also reduces the potential number of customers to which those solutions and services could be sold. Changes in our customers' technology investments can result in reduced spending on our existing solutions before customers and those in the customers' supply chains increase spending on new technologies.	Strong customer relationships are critical to Spirent. We aim to provide innovative solutions which meet customers' needs and we place great emphasis on providing professional service and support. One of the Group's strategic objectives is to invest in deepening our customer relationships. We place engineers on site with our customers and undertake site surveys of intended plans for the use of test solutions in their business. We seek to establish thought leadership in our industry through participation in standards bodies and industry forums, which in turn creates additional links with customers. Our approach is to play a key part in the wider supply chain to our key service provider customers by aligning with early adopters of technology.

Principal risks and uncertainties continued

Risk	Potential impact	Mitigating actions
Business continuity		
Operational risks are present in the Group's businesses, including the risk of failed internal and external processes and systems, human error and external events, such as a natural disaster, a global pandemic or cybersecurity attacks. For example, a significant portion of our communications operations are located in California which has in the past experienced natural disasters, including earthquakes and wildfires. Contract manufacturers are used for the manufacture of a substantial amount of Spirent's products. Spirent's major contract manufacturer is located in Thailand. The incidence of cybercrime continues to rise. Spirent is dependent on its information technology systems for both internal and external communications as well as for its day-to-day operations.	A significant natural disaster or global pandemic could disrupt the Group's ability to conduct business and adversely impact revenue and operating results. Failed internal and external processes, systems or human error could lead to compliance issues. Trade compliance issues continue to remain a focus, particularly with China. Disruption, financial problems of contract manufacturers or limitations in their manufacturing capacity could limit supply and/or increase cost. If a cyber attack were to be successful it could result in loss of data, and confidential information and damage to Spirent's intellectual property, causing major disruption to the business. There would also be a potential impact on Spirent's credibility in the security market.	An important component of Spirent's corporate governance is its risk management strategy. IT disaster recovery plans are in place for all core business systems and ensure that the wider operations are all fully covered. In 2018, we tested the new Group Business Continuity and Disaster Recovery Policy and Procedure. Regular meetings are held with contract manufacturers and a regular on-site presence is maintained. In addition, the Group's largest manufacturing subcontractor has multiple worldwide sites and comprehensive business continuity plans. During 2019, we continued with a programme of work to develop processes and procedures in the area of cybersecurity.
Competition		
Spirent operates in a range of highly competitive niche markets which experience rapid technological change. In order to compete effectively, it is necessary to establish and maintain technological differentiation in our solutions. The Group faces competition from new market start-ups as well as more established and well-resourced companies. Industry consolidation amongst our direct competitors may bring about a shift in competitive advantage.	Actions by competitors and increased competition can bring about pressure on Spirent's gross margin. These factors could also affect Spirent's competitive position, thereby reducing revenue and consequently affecting financial results. Consolidation continues within our sector. The consolidation of competitors may bring opportunities for Spirent but can also change the competitive landscape as competitors are able to leverage product capabilities or sales channels.	The Group's broad solution portfolio, market-leading capabilities and customer focus continue to address this risk. Spirent aims to maintain market-leading positions through significant investment in the development of differentiated products. Competitor activity is closely monitored with a view to maintaining clear differentiation based on Spirent's products, services and global reach.

Risk	Potential impact	Mitigating actions
Acquisitions		
A key emerging element of Spirent's strategy is to develop new capabilities and technologies, sometimes through acquisition. Integration of acquisitions can be a complex process and the results expected from acquisitions may not be achieved due to problems encountered in integration, changes in market conditions, the rate of adoption of new technologies, or sometimes deficiencies arising in the due diligence processes.	Underperformance by acquisitions will impact the Group's results and may lead to impairment of goodwill and/or intangible assets.	Rigorous strategic and financial evaluations of all acquisition opportunities are carried out. Detailed financial and commercial due diligence is performed. The Board will only authorise transactions after all due diligence has been successfully completed and where the financial hurdles are within the agreed guidelines. Integration plans and processes are carefully considered prior to acquisition. The Board reviews post-acquisition performance.
Employee skill base		
Employees are crucial to the success of our business. Attracting and retaining highly qualified and skilled employees is essential to enable the Group to deliver on its strategy and to the success of the business.	Intense competition for personnel is faced from other companies and organisations and the loss of key employees, the failure to attract and retain other highly skilled employees, or the failure to adequately plan for succession may impair Spirent's ability to run and expand the business effectively.	Investing in people is at the core of the Group's strategy. The aim is to find, keep and engage the highest calibre of employees and encourage their contribution and development. An environment that fosters innovation and collaboration is critical to Spirent's success, as is ensuring incentive plans are competitive. Succession planning for senior posts in the Company is reviewed periodically by the Board. Appropriate career paths and internal recognition programmes are developed for both technical and non-technical staff. Regular reviews are performed to ensure that all elements of compensation across the Group are competitive with the market.

FOCUSED ON FUTURE POSITIVE

We manage our material sustainability impacts and opportunities through our FuturePositive programme. Our comprehensive programme not only ensures we comply with legislation and stakeholder expectations, but also has positive social and environmental impacts for customers and for our own business.

The Board has designated the CEO as the Board member responsible for corporate social responsibility matters within the Group.

The key areas of management and performance are set out below, but we also publish a comprehensive report on our corporate responsibility activities which is available on our website at https://corporate.spirent.com.

Sustainability at Spirent

We are committed to embedding the highest standards of environmental management, social practices and governance into our operations, products and across our supply chain. We look to create long-term value for our shareholders by:

- protecting our reputation and ability to grow;
- focusing on winning business from customers who value strong environmental, social and governance (ESG) performance;
- enhancing our efficiency;
- enabling our people to work productively in a safe and inclusive environment;
- helping us to attract and retain talent, and encouraging employees to take pride in working for us; and
- reducing the risk of incidents and their associated costs.

Our material sustainability issues

Our material sustainability issues were reviewed in 2018 using the AA 1000 standard. The review reaffirmed the importance of anti-corruption and business ethics for the business and identified the importance of our product functionality in unlocking sustainability performance for our customers.

Policies

Spirent maintains a suite of responsible business policies which commit the Group to compliance with high standards of ethics and business integrity, environmental management, and employee and community welfare.

All policies are available on our website at https://corporate.spirent.com.

Progress in 2019

Key achievements

- We have rolled out our STEM programme globally, with programmes now in place across EMEA, North America and APAC;
- we developed new software to help improve lab efficiency alongside the rollout of Spirent's Velocity product;
- we exceeded our supply chain sustainability targets: 22 audits (target 18) and 88.7 per cent of components from verified sources (target 85 per cent); and
- we sourced 90 per cent of our electricity from renewable sources in 2019.

Our focus areas

Our FuturePositive programme covers four main areas: Product, People, Property and Procurement. Full details of our programmes are set out in our 2019 Sustainability Report, available on our website at https://corporate.spirent.com.

Product

Electronic waste and use of hazardous materials

Spirent's business units comply with the EU's Waste Electrical and Electronic Equipment Regulations 2013, EU's Restriction of Hazardous Substances Directive (RoHS), Batteries Directive and the California Electronic Waste Recycling Programme.

Conflict minerals

The Group is not directly required to comply with or report under Section 1502 of the Dodd-Frank Act or the US Conflict Minerals Law. However, it has robust procedures in place to ensure that it would be in compliance if it were brought within the scope of this legislation. The Group will be subject to the EU Directive on Conflict Minerals and we are monitoring the development of the legislation and are confident our existing practices will meet the specifications required.

People

Business ethics and human rights

Spirent's values and principles are set out in the Group's Business Ethics Policy. These principles apply to all dealings with our customers, suppliers and other stakeholders, and are considered in pre-contract due diligence and monitored through ongoing supplier audits.

The Group has a zero-tolerance approach to all forms of bribery and corruption. As a UK registered company, Spirent Communications plc is bound by the laws of the UK, including the Bribery Act 2010, in respect of its conduct both at home and abroad. In addition, we will uphold all laws relevant to countering bribery and corruption, including the US Foreign Corrupt Practices Act, as well as human rights, in all jurisdictions in which we operate.

Anti-bribery training is required to be taken by certain employees periodically and will be rolled out to employees again in 2020.

Equality and diversity

At 31 December 2019, our gender diversity was:

Level of organisation	Female		Male		Other or no gender reported		Total
Board	2	28.6%	5	71.4%	–	–	7
Executive management[1]	2	18.2%	9	81.8%	–	–	11
Senior management[2]	2	4.9%	39	95.1%	–	–	41
Total employees	297	21.5%	1,074	77.7%	11	0.8%	1,382

Notes

1. The data for Executive management includes direct reports to the CEO only.
2. The data for Senior management includes all other Vice Presidents (including Regional Sales VPs and Client Partner Executives) and Senior Directors.

The Group employs a diverse workforce and prides itself in providing equal opportunities for all. High value is placed on rewarding our people for their commitment, their integrity and their service. Our commitment to a fair and inclusive workplace is governed by our Business Ethics and HR Policies which ensure that no employee is discriminated against, directly or indirectly, on the grounds of colour, race, ethnic and national origins, sexual orientation or gender, marital status, disability, religion or belief, being a part-time employee or on the grounds of age.

Using the data provided in the Hampton-Alexander Review, "Improving gender balance in FTSE leadership", published in November 2019, Spirent compares well with its peers for women on boards, with 28.6 per cent of the Board being female, compared to the FTSE 250 total of 29.6 per cent. We are mindful of the recommendations of the Hampton-Alexander Review and will take them into consideration as Board and senior management changes are made.

Gender pay gap

Having fewer than 250 employees in the UK, Spirent is not currently required to comply with the Gender Pay Gap Reporting Regulations introduced in 2017. However, data for the 5 April 2019 snapshot date has been collected on a voluntary basis and is set out below.

UK gender pay gap

	Mean	Median
Hourly pay	14.8%	31.2%
Bonus pay	28.1%	34.3%

UK bonus gap

	Male	Female
Bonus	94.6%	93.5%

UK quartile split

	Top quartile	Upper-middle quartile	Lower-middle quartile	Lower quartile
Male	90.0%	85.0%	85.0%	65.0%
Female	10.0%	15.0%	15.0%	35.0%

The Board will continue to review outcomes of the Gender Pay Gap Reporting process and will encourage the Executive team to look at ways to reduce the gap across the Group.

Sustainability continued

People continued

Health and safety

The Board has designated the CFO as being the Board member responsible for health and safety within the Group and procedures are in place for incidents to be reported through the Audit Committee to the Board as necessary.

The health and safety risk profile for the Group remained low during 2019, with nine reported accidents, of which none were reportable under the RIDDOR Regulations and none of which required hospitalisation.

Training and skills

Spirent provides all its employees with a wide range of technical and business training opportunities. We manage training through personal development plans which are assessed by all managers and updated periodically. In 2019 we replaced annual appraisals with ongoing performance and development reviews. Employees and managers are able to provide feedback routinely after one-to-one discussions or as pieces of work are completed, which has delivered positive results across the business.

Information security

Spirent takes data security and privacy seriously and we continually review the security of our data systems and procedures in order that we comply with all legislation and can react to areas of heightened risk promptly and effectively.

The Group undertook a General Data Protection Regulation readiness exercise across 2017 and 2018 and updated its policies and procedures to ensure compliance with the new EU regulation. We also achieved certification to ISO 27001 for our Applications & Security business based in Plano and San Jose.

Our procedures restrict the type and quantity of confidential information collected and stored and there are robust procedures in place to protect customer data from unauthorised access and disclosure.

Periodic information security risk assessments are performed, and training is provided to staff which aims to prevent information security breaches. We have a whistleblowing procedure in place for staff to report information security or any other concerns.

Spirent has implemented a response procedure to manage breaches of confidential information if they were to occur.

Confidential waste is shredded if in hard copy and certificates of destruction are provided for electronic storage devices disposed of at end-of-life.

MAKING A POSITIVE CONTRIBUTION TO COMMUNITIES IN WHICH WE WORK

A team from Spirent's Paignton office kept up its record of participation in one of the south west of England's most arduous sporting events – the City-to-Sea Marathon - while helping a worthy local cause.

The team was again raising funds for the Torbay Holiday Helpers Network (THHN) charity, which provides much-needed vacations to families who have seriously ill children, families who are recently bereaved having lost a child or parent, and families who have a terminally ill parent.

The picturesque 26.6 mile (42.8 km) course started in the City of Exeter in south west England, before winding its way along the Devonshire county coastline to the cliff top promenade finish at Babbacombe Downs.

Aided by the beautiful surroundings, the runners were lulled into a false sense of security by the opening 20 miles of relatively flat terrain, but the final 6.58 miles concluded the race with a gruelling ascent of 2,556 feet to reach the finish line.

"The City-to-Sea marathon is an event particularly close to our hearts," said Senior IT Operations Specialist, Paul Duffield. "We've had participants and volunteers take part in the event every year, and this year was a particularly good turn out.

"The team did Spirent proud, and special thanks should also go to manufacturing team leader Mark Stockman, who, as well as providing support and manning a vital food station checkpoint on the day, also ran the extended 34-mile course the following weekend to collect course marking signage and any other race paraphernalia that had been left behind. It was a Herculean effort."

With Spirent matching donations up the value of £200 per participant, the marathon team was able to raise a fantastic £4,600 for THHN to help the charity carry on its terrific work.

STEM initiatives and community impact projects

Spirent actively encourages its employees to become STEM Ambassadors around the globe. We expanded our STEM programme in 2019 and our STEM Ambassadors work with students in local schools and institutions to help them develop STEM skills and start out in their professional journey. We now have STEM Ambassadors in APAC, EMEA and the Americas.

We also provide our employees in the US and EMEA with volunteering time off to make a positive contribution to the communities in which they work.

Through financial donations and volunteering, Spirent has continued to support community projects worldwide. In 2019 our staff completed more than 710 hours of volunteering and donated in excess of $31,000 to good causes.

Property

Energy use

Spirent's energy use decreased by 2.3 per cent in 2019 to 14,187MWh. This has been primarily driven by our efficiency initiatives delivering strong energy reductions in North America and APAC. There was an increase in energy use in EMEA, driven by the opening of new sites in the UK and Finland, and an increase in energy use at our site in Paris. Gas use also increased in the year by 7 per cent, with all sites seeing similar increases over 2018.

Greenhouse gas emissions

Spirent is committed to acting to combat climate change and reporting its progress. Our total Scope 1 and 2 emissions dropped by 6.14 per cent from 2018, and our emissions per $ million of revenue were down by 10.9 per cent. We have reduced our total emissions by 29 per cent since our 2014 baseline.

The Group responded to the Carbon Disclosure Project in 2019, completing the Climate Change and Supply Chain questionnaires. In 2019 we achieved a Climate Change rating of B (management) (2018 C) and a Supplier Engagement rating of B (management) (2018 B). The average for our sector is C in both categories.

	2019 Tonnes of CO_2e	2018 Tonnes of CO_2e
Emissions from:		
Combustion of fuel and operation of facilities (Scope 1)	**144.7**	137.2
Electricity, heat, steam and cooling purchased for own use (Scope 2)	**4,641.0**	4,950.4
Total emissions	**4,785.7**	5,087.6
Emissions intensity metrics:		
Normalised per FTE employee	**3.46**	3.57
Normalised per square metre of gross internal area of our facilities	**0.114**	0.125
Normalised per $ million of revenues	**9.50**	10.67

Methodology

Reporting on emission sources is required under the Companies Act 2006 (Strategic Report and Directors Report) Regulations 2013 and these sources fall within our consolidated financial statements. We have reported on all the emission sources that fall within our consolidated financial statements. We do not have any responsibility for any emission sources that are not included in our consolidated financial statements.

We have used the GHG Protocol Corporate Accounting and Reporting Standard (Revised Edition), along with data gathered to fulfil our requirements under these Regulations, and the most recent emission factors available: UK Government's GHG Conversion Factors for Company Reporting 2019 for the UK, US EPA 2018 eGrid emissions factors for the applicable individual states in the US, and 2018 emissions factors for all other countries were sourced from the International Energy Agency's 2019 data set.

Performance against target

The Group set a target to reduce carbon emissions by five per cent relative to revenue from 2018 figures. We have achieved this target, having reduced carbon emissions per $million of revenue by 10.9 per cent.

Compliance

The Group is not required to comply with stages 1 or 2 of the UK Energy Savings Opportunity Scheme (ESOS) Regulations 2014.

Procurement

Vendor assessment and auditing

Vendors are required to abide by our Code of Conduct which sets out our expectations for environmental management, labour and human rights, health and safety, and business ethics. They are assessed using a detailed questionnaire.

In addition, priority suppliers are audited by Spirent's procurement team: 22 supplier audits were conducted in 2019, representing 88.7 per cent of our hardware supply chain spend. This exceeded our target of completing 18 audits in the year. No material issues were identified.

Compliance

We comply with the requirements of the UK Modern Slavery Act 2015 and the California Transparency in Supply Chains Act 2010. We require slavery and human trafficking to be eradicated from our direct supply chain for the products we sell and monitor suppliers by performing regular evaluation surveys to assure ourselves of each supplier's commitment in this area.

Spirent's full statement on Modern Slavery and Human Trafficking can be found on the Company's website at https://corporate.spirent.com.

Section 172(1) statement

Who? Stakeholder group	Why? Why it is important to engage	How? Ways management and/or Directors engaged
Investors The major interests in our shares are set out on page 103. Key metrics: • Earnings per share • Total dividends paid • Total Shareholder Return (TSR)	Continued access to capital is of vital importance to the long-term success of our business. Through our engagement activities, we seek to obtain investor support for our strategic objectives and our approach to executing them. We create value for our shareholders by generating strong and sustainable results that translate into dividends. We are seeking to promote an investor base that is interested in a long-term holding in the Company.	The key mechanisms of engagement include: • Annual General Meetings; • investor presentations; and • one-on-one meetings with relevant information being distributed to all investors through: • regulatory news releases; • corporate website; and • annual reports.
Workforce We define workforce as full-time and part-time permanent employees. Key metrics: • Total benefits and payments to employees • Employee turnover rate	The Company's long-term success is fundamentally linked to the commitment of our workforce to our purpose and its demonstration of our values on a daily basis. We engage with our workforce to ensure that we are fostering an environment that they are happy to work in and that best supports their wellbeing. We invest significantly in our workforce as we believe that maintaining low turnover rates across the entire workforce is the source of our industry-leading efficiency and productivity rates.	To meet the new requirements of the 2018 Code, the Board decided that the global reach of the Group's employees is best served by Non-executive Directors meeting with members of the workforce in their home geographical area: • Gary Bullard met with employees at locations in EMEA; • Wendy Koh met with employees at a location in APAC; and • Edgar Masri met with employees at locations in North America. The Board also discussed feedback arising from employee surveys conducted through the year.
Customers Key metrics: • Order intake • Performance feedback	Understanding our customers' needs and behaviours allows us to deliver relevant products and services, retain customers and also attract new ones. It also identifies opportunities for growth.	Directors and management meet regularly with customers in one-to-one meetings or at industry conferences. Our largest customers have Client Partner Executives, who strengthen our relationships and ensure we stay agile to react to their needs.
Suppliers Key metrics: • % of Supplier Code of Conduct certifications • % of payments made within payment terms	Engaging with our supply chain means that we can ensure security of supply and speed to market. We depend on the high standards of our carefully selected suppliers in order for us to deliver market-leading products and services.	Spirent has a Supplier Code of Conduct, based on the Electronic Industry Citizenship Coalition (RBA) Code v5.1. The Code sets out our expectations for environmental management, health and safety, labour rights and management systems as well as the provision of sustainability data. Suppliers are subject to audits to ensure they continue to meet high standards on ESG issues and to foster greater collaboration.

What? Key topics of engagement and feedback and input received	Outcomes and actions Impact of engagement and any actions taken
Other than our routine engagement with investors on topics of strategy, governance and performance, below are specific matters on which we engaged and that influenced outcomes and actions during 2019.	
Remuneration Policy	
A formal consultation was undertaken with the 20 largest shareholders prior to the revised Remuneration Policy being put to shareholders at the 2019 AGM.	Shareholders indicated positive support for the proposed policy changes and the revised policy was approved by shareholders at the 2019 AGM with 95.89 per cent of votes cast in favour.
CEO succession	
Several investors expressed an interest in the CEO recruitment process.	Investors' views were taken into account during the planning of the CEO recruitment process. Following his appointment, the new CEO met with major shareholders as part of the Half-Year Results roadshow.
Employee communications	
Shortly after the new CEO's appointment in April, an employee survey was launched to provide him with a baseline picture of the views of the workforce. This was followed by town hall meetings to discuss the feedback and outcomes and a second survey in October measured progress on feedback received.	In the April survey, employees requested additional communication and sharing of ideas between the Executive management and the workforce, and also between business units. A regular series of town hall meetings was launched in June 2019 to improve the sharing of corporate news, business information and industry updates.
Employee share ownership	
Employees noted that the existing offerings under the Employee Share Purchase Plans were not competitive with other employers as they did not reflect a discount to the share purchase price.	We are currently exploring the introduction of a more attractive offering to encourage employees to own shares in the Company and share in its success.
Spirent engages with its customers not only to seek feedback on existing products but also to focus investment into new products to meet customers' future needs.	We continue to evaluate and rationalise our product, solutions and services portfolio to meet the needs of our customers and their operational objectives.
Supplier audits not only demonstrate our strong commitment to embedding sustainability across our whole value chain to our suppliers, but also provide a valuable framework to share innovation and good practice. The approval status of key suppliers is reviewed each quarter.	Our close collaboration with suppliers has meant improvements in quality, cost management, environmental management and health and safety, and identified new market information and technologies for the Group.

Section 172(1) statement continued

Who? Stakeholder group	Why? Why it is important to engage	How? Ways management and/or Directors engaged
Government/regulatory bodies		
Key metrics: • Compliance • Best practice	Policies and regulatory changes, including changes to the global political landscape and laws and regulations affecting terms of trade, may provide opportunities and pose risk to our operations.	Ongoing engagement with trade compliance authorities ensures compliance with export regulations. Participation in consultation exercises enables Spirent to play a part in the development of regulation and ESG best practice.
Community		
Key metrics: • Charitable donations and participation • Support for STEM education efforts	Spirent has the capacity to create a significant positive impact in its communities.	Spirent's Charitable Giving programme provides each member of staff with two days' paid volunteer time off (VTO) per year, a new scheme to match employee charitable donations, and a further fund to provide financial support to local charities directly by the Company.
Environment		
Key metrics: • Greenhouse gas emissions • Energy use	All companies have a responsibility to work to reduce their impact on the environment and engage with stakeholders to discuss how everyone can move towards a more sustainable business model.	Environmental issues are included in supplier audits. Responses are provided to enquiries received from investors and other monitoring bodies. A separate Sustainability Report is published each year, setting out details of the engagement undertaken in this area.

What? Key topics of engagement and feedback and input received	Outcomes and actions Impact of engagement and any actions taken
Global trade compliance Reviews of evolving changes to export regulations requiring meetings and discussions with relevant governmental departments.	Engagement has reassured customers, investors and relevant authorities that Spirent conducts its business in a compliant manner.
Diversity strategy Spirent continues to take part in UK and global surveys relating to the drive for increased diversity in the workplace, in particular at senior management levels.	Spirent published its first Diversity Policy during 2019, with a commitment to take diversity into account in future recruitment.
Charitable giving Employees asked for clarity and consistency in the Company's approach to charitable giving so that they could make recommendations for deserving causes that could be helped either financially or with volunteering efforts.	In February 2019, a new Charitable Giving programme was launched, comprising information on 'Company match' donations, how to seek assistance with local charity support, and an expansion of the VTO programme into APAC.
STEM education STEM jobs are predicted to grow globally, but there remains a lack of young people with the right mix of skills to fill them. By engaging with local schools and colleges, Spirent can raise the profile of the opportunities available in our industry.	A Global STEM Ambassador programme has been launched to provide opportunities for employees to be role models for young people by demonstrating the options for careers in STEM around the world.
Stewardship As investors monitor investee companies' performance on ESG metrics, Spirent engages with information analysts to ensure investors get the data they need to comply with the UK Stewardship Code regime.	MSCI ESG ratings for 2019 show Spirent performing well against peer companies and indices.
Carbon Disclosure Project Spirent responds to the Carbon Disclosure Project each year to monitor performance against a range of metrics and against peer companies.	Spirent's rating for the Climate Change and Supply Chain questionnaire for 2019 was B, an improvement from the C rating achieved in 2018.

Section 172(1) statement continued

Principal decisions

We define principal decisions as both those that are material to the Group, but also those that are significant to any of our key stakeholder groups.

In making the following principal decisions the Board considered the outcome from its stakeholder engagement as well as the need to maintain a reputation for high standards of business conduct and the need to act fairly between the members of the Company.

CEO succession

After Eric Hutchinson informed the Board of his wish to retire from the position of CEO in November 2018, the Board initiated a search for his replacement. The search culminated in the decision to appoint Eric Updyke as CEO in April 2019.

An external executive search firm was retained to assist the Board's Nomination Committee with the development of search criteria, including consideration of desirable skills, experience and person attributes. Input was received from certain shareholders with their views on the skillset required by a new CEO and, in some cases, potential candidates. Those views were taken into account by the Nomination Committee, with shareholders encouraged to pass names to the executive search firm for consideration. A longlist of potential candidates in various geographical locations was reviewed and a number of individuals interviewed by the Chairman and Senior Independent Non-executive Director to reach a shortlist of individuals for further consideration. Shortlisted candidates were also interviewed by the Chairman of the Remuneration Committee; preferred candidates were then interviewed by each of the remaining Board members. After a period of reflection and series of discussions between the Directors, the Nomination Committee concluded that a recommendation should be made to the Board that a formal offer should be made to Eric Updyke for the role of CEO. The Board approved the making of a formal offer, which was accepted by Mr Updyke.

When considering the role profile for the appointment of a CEO and the suitability of the candidates for the position, the Directors were mindful of what the impact of their decision could be for the Company's stakeholders.

Stakeholders would need to feel reassured that the appointee had the industry experience and key competencies to drive ongoing effectiveness and deliver continued value; customers and suppliers would be looking for an understanding of the importance of quality management and cost efficiency, while investors' focus would also extend to risk management and strategic investment in the Company's future. Employees would have interests in candidates' approach to the Company's culture and workforce engagement.

The Directors took all of these matters into consideration and looked to address them by appointing an individual with a balance of existing skills and experience.

As an individual with extensive experience in international business management with a strong technical understanding of the markets in which Spirent operates, the Board considered Eric Updyke to be a strong fit for the role of Spirent CEO. In the Company's announcement on 1 April 2019, the Chairman commented: "The Board wanted to appoint an executive with global experience and deep expertise in our chosen markets. We are delighted to appoint Eric and are confident he meets all those criteria."

Diversity Policy

Although Spirent has always recognised the importance of diversity for introducing different perspectives into debate and decision making at all levels within the Company, prior to 2019 it had not had a formal Diversity Policy outside of its Business Ethics Policy. However, in March 2019, the Board agreed the time was right to give the issue of diversity in all its forms a specific policy document through which the Company's actions could be guided.

A review of best practice in the area of diversity policy setting was used to inform, design and draft a policy for discussion by the Board.

Acknowledging that diversity goes beyond gender, the policy is designed to demonstrate the Company's commitment to encouraging equality and diversity amongst its workforce and eliminating unlawful discrimination in the workplace. Following review and discussion, the Board approved the policy and it was rolled out to the business.

Beyond the employee stakeholders that are supported by this policy, its introduction also strengthens Spirent's position when conducting supply chain audits, encouraging suppliers to achieve similar equal opportunities for their workforce.

Investors are increasingly conscious of diversity metrics when assessing companies for potential or ongoing investment, and government-funded or sponsored initiatives such as the Hampton-Alexander Review of FTSE Women Leaders and the Parker Review on Ethnic Diversity of Boards highlight an expectation in society at large that businesses ensure that their workforce culture is one where each employee can feel respected and able to give their best.

As stated in the Diversity Policy, which can be viewed at https://corporate.spirent.com, the Company commits to:

- encourage equality and diversity in the workplace as they are good practice and make business sense;
- create a working environment free of bullying, harassment, victimisation and unlawful discrimination, promoting dignity and respect for all, where individual differences and the contributions of all staff are recognised and valued;
- make opportunities for training, development and progress available to all staff, who will be helped and encouraged to develop their full potential, so their talents and resources can be fully utilised to maximise the efficiency of the organisation; and
- decisions concerning staff being based on merit (apart from in any necessary and limited exemptions and exceptions allowed under applicable legislation).

Non-Financial Reporting Compliance statement

We aim to comply with the Non-Financial Reporting requirements contained in Sections 414CA and 414CB of the Companies Act 2006. The table below, and the information it refers to, is intended to help stakeholders understand our position on key non-financial matters. This builds on existing reporting that we already do under the following frameworks: CDP, Global Reporting Initiative, and Guidance on the Strategic Report (UK Financial Reporting Council).

Non-financial reporting matter	Policy/Code	
Environmental matters	Environmental Policy	Policies page 46, Property page 49
	Sustainability Policy	Sustainability at Spirent page 46
	Supplier Code of Conduct	Sustainability at Spirent page 46
Employees	Business Ethics Policy	People pages 46 to 48, Committee oversight page 75
	Whistleblowing Policy	Raising concerns at work pages 75 and 76
	Occupational Safety Policy	Health and safety page 48
	Volunteering Time-Off Policy	STEM initiatives and community impact projects page 49
	GDPR Privacy Notice	Information security pages 48 and 49
Human rights	Business Ethics Policy	People pages 46 and 47, Committee oversight page 75
	Modern Slavery Policy	People pages 46 and 47
	Supplier Code of Conduct	Sustainability at Spirent page 46
Social matters	Supporting charities	STEM initiatives and community impact projects page 49
Anti-corruption and anti-bribery	Anti-bribery Policy	People pages 46 to 48, Committee oversight page 75
	Whistleblowing Policy	Raising concerns at work pages 75 and 76
Policy embedding, due diligence and outcomes		Policies page 46, Business ethics and human rights page 46
Description of principal risks and impact of business activity		Risk management pages 40–41, Principal risks and uncertainties pages 42–45
Description of the business model		Our business model and strategy pages 4 and 5
Non-financial key performance indicators		Key performance indicators pages 20 and 21

Pages 1 to 55 form part of the Strategic Report, which has been reviewed and approved by the Board.

Angus Iveson
Company Secretary
5 March 2020

Chairman's introduction to governance

Sir Bill Thomas
Chairman

"Maintaining the highest standards of corporate governance across the Group is integral to the delivery of our strategy and creating long-term value for our stakeholders."

Dear shareholder

I am pleased to introduce our Governance report for 2019, on behalf of your Board and in accordance with the 2018 UK Corporate Governance Code (the 2018 Code). This report outlines how we have ensured that best practice and effective corporate governance procedures are in place to help support the creation of long-term value for the mutual benefit of all of our stakeholders.

2019 saw continued evolution of our corporate governance arrangements, with time being spent refining our processes and procedures to comply with the 2018 Code. I am happy to say that we are in full compliance with the 2018 Code.

The Board understands that building and maintaining successful relationships with a wide range of stakeholders is essential. These relationships will only be successful and enduring if they are based on respect, trust and mutual benefit. Accordingly, we aim to promote a culture of integrity and openness, and further details on how we have engaged with all of our stakeholders over the year can be found on pages 50 to 54.

The Board recognises the importance of its role in setting the tone for Spirent's culture and making sure that it is embedded throughout the Group. The Board recognises its responsibility to ensure diversity of thought to assist us in achieving that. As discussed on page 54 and pages 70 to 71, Spirent is committed to diversity and inclusion in all its forms, and during the year the Board was pleased to publish its first standalone Diversity Policy, which is available to read at https://corporate.spirent.com.

An engaged workforce is key to the success of Spirent, and in 2019 the Board has initiated a new programme of workforce engagement, with Non-executive Directors going out to our sites and meeting with employees to make sure that views from across the organisation are understood and considered in Board discussions and decision making. Additional details on our workforce engagement activities can be found on pages 50 and 51.

2019 was also the first full year of the implementation of our 'Leader. Assured.' programme in which we seek to build the internal talent pipeline and instil core management competencies in both a theoretical and practical way for our next generation of leaders.

This year the Board undertook an internally led effectiveness evaluation, and I am pleased to report that your Board, its Committees and its individual Directors continue to operate effectively. As always, the Directors aim to identify how we can better use our skills and experience to more effectively contribute to the success of Spirent and we discuss that in more detail on page 66 and 67.

Maintaining the highest standards of corporate governance across the Group is integral to the delivery of our strategy and we remain focused on creating sustainable long-term value for the mutual benefit of our customers, communities and shareholders.

I hope you find this report useful and I would like to encourage you to attend our AGM. We welcome the opportunity to meet with you and I hope you will give us the pleasure of doing so this year.

Sir Bill Thomas
Chairman
5 March 2020

Board statements

Requirement	Compliance statement	Where to find further information
Strategic report	The Strategic report was approved by the Board of Directors on 5 March 2020.	Pages 1 to 55
NFR statement	The Company has complied with the Non-Financial Reporting Directive contained in Sections 414CA and 414CB of the Companies Act 2006.	Page 55
S172 of the Companies Act 2006	The Board of Directors, through the Strategic report, provides information for shareholders to help them assess how the Directors have performed their duty, under Section 172, to promote the success of the Company and, in doing so, had regard to the matters set out in that section. This includes considering the interests of other stakeholders which will have an impact on the long-term success of the Company.	Pages 1 to 55
Compliance with the UK Corporate Governance Code	In accordance with the Listing Rules of the UK Listing Authority, the Company confirms that throughout the period ended 31 December 2019 and at the date of this Annual Report, it was in compliance with all the relevant provisions as set out in the 2018 UK Corporate Governance Code.	Pages 56 to 106
Going concern	After making appropriate enquiries and taking into account the matters set out in this Annual Report, the Directors have a reasonable expectation that the Group has adequate resources to continue in operational existence for the foreseeable future and therefore continue to adopt the going concern basis when preparing the financial statements.	Page 105
Viability statement	The Directors confirm that they have a reasonable expectation that the Group will continue in operation and meet its liabilities as they fall due over the three-year period under review.	Page 105
Robust assessment of the principal risks facing the Group	The Directors confirm that they have carried out a robust assessment of the principal and emerging risks facing the Group, including those that would threaten its strategy, business model and future performance. The Directors also assessed the Group's risk appetite with regard to each risk and considered how to manage and mitigate such risks.	Pages 40 to 45
Annual review of the systems of risk management and internal control	During the period ended 31 December 2019, the Audit Committee provided transparency on the Group's systems of risk management and internal control which were confirmed as effective.	Pages 72 to 76
Directors' report on remuneration	The Directors confirm that their report on remuneration for the period ended 31 December 2019 complies with the requirements of the Listing Rules of the UK Listing Authority, Schedule 8 of the Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (as amended) and the provisions of the 2018 UK Corporate Governance Code.	Pages 77 to 101
Competition and Markets Authority	The Audit Committee considers that the Company complied with the mandatory audit processes and Audit Committee responsibility provisions of the Competition and Markets Authority Audit Order for the period ended 31 December 2019.	Pages 72 to 76
Modern Slavery Act 2015	The Directors confirm, for the financial year ended 31 December 2019, that steps have been taken in relation to our responsibilities under Section 54 of the Modern Slavery Act 2015 and that the Board approved a statement setting out the steps that have been taken to combat modern slavery in the Group's supply chain.	Page 49

THE RIGHT MIX OF KNOWLEDGE & SKILLS

An effective and entrepreneurial Board, whose role is to promote the long-term sustainable success of the Company, generating value for shareholders and contributing to wider society. (UK Corporate Governance Code 2018)

Sir Bill Thomas
Chairman

Appointed: Chairman in May 2017; Non-executive Director in December 2016

Committees: Nomination Committee Chairman

Skills and experience
Sir Bill brings strong commercial and management experience to the Board. His extensive international technology experience, together with his track record in leading major change in large organisations, provides valuable insight. Sir Bill is a former Senior Vice President at Hewlett Packard and was on the executive committee of EDS plc as Executive Vice President.

Other roles
Chairman of Clarkson PLC; Chairman of Node4, a private equity-owned IT services firm; Chairman of the Royal Navy and Royal Marines Charity; Non-executive Director of The Co-operative Bank; member of Advisory Board of FireEye, Inc.

Sir Bill was awarded a knighthood in the New Year Honours 2020.

Eric Updyke
Chief Executive Officer

Appointed: Chief Executive Officer in May 2019

Skills and experience
Most recently, Eric was on the Executive Management team of Amdocs reporting directly to the CEO. In his capacity as Group President, Services at Amdocs Ltd he had global responsibility for the entire Managed Services, Testing and SI businesses. This business encompassed 10,000 employees and roughly $2 billion in revenue. Prior to that role, Eric was Division President for North America at Amdocs where he managed a $1 billion P&L and was responsible for the relationship with North American communications service providers. Prior to his time at Amdocs, he held executive roles at Nokia Siemens Networks and AT&T. Eric has a great track record of success, has functional expertise in every facet of the business and has excelled in multi-cultural global companies. Eric has an MBA in Finance and a Bachelor's degree in Electrical Engineering from Cornell University.

Paula Bell
Chief Financial & Operations Officer

Appointed: Chief Financial Officer in September 2016

Skills and experience
Paula has extensive FTSE 250 board experience and, in particular, working with global technology and engineering businesses. Paula has demonstrable experience of effective commercial, financial and operational management leading to increased earnings whilst driving a strategic agenda. Paula was previously CFO at John Menzies Plc from 2013 and CFO at Ricardo Plc from 2006 to 2013. Paula has held senior management roles at BAA plc, AWG plc and Rolls-Royce Plc, leading business development for international growth underpinned by extensive M&A activity.

Paula is a Fellow of the Chartered Institute of Management Accountants and a Chartered Global Management Accountant.

Other roles
Since September 2018, Non-executive Director and, since January 2019, Chair of Audit Committee at Keller Group Plc; Non-executive Director and Chairman of Audit Committee of Laird plc between 2012 and June 2018.

Jonathan Silver

Senior Independent Non-executive Director

Appointed: Senior Independent Non-executive Director in November 2016; Chairman of Audit Committee in August 2015; Non-executive Director in June 2015

Committees: Nomination Committee, Remuneration Committee, Audit Committee Chairman

Skills and experience

Jonathan brings experience in finance, risk, control, governance and international business expertise. He was Chief Financial Officer at Laird plc until 2015, having held a variety of roles in his 30 years with the company.

Jonathan is a Member of the Chartered Accountants of Scotland.

Other roles

Non-executive Director and Chairman of Audit Committee at Invesco Income Growth Trust; Non-executive Director and Chairman of Audit Committee at East and North Hertfordshire NHS Trust; Non-executive Director at Henderson High Income Trust PLC.

Gary Bullard

Independent Non-executive Director

Appointed: Chairman of Remuneration Committee in May 2017; Non-executive Director in December 2016

Committees: Nomination Committee, Remuneration Committee Chairman, Audit Committee

Skills and experience

Gary brings extensive experience in senior management positions, including sales and marketing roles, at IBM and BT Group plc and was a Non-executive Director of Chloride Group plc. Until 2012 he was President at Logica UK and a member of the Executive Committee of Logica plc.

Other roles

Non-executive Chairman of Gooch & Housego PLC; Non-executive Director and Chairman of Remuneration Committee of Recycling Technologies plc.

Wendy Koh

Independent Non-executive Director

Appointed: Non-executive Director in January 2018

Committees: Nomination Committee, Remuneration Committee, Audit Committee

Skills and experience

Wendy brings strong technology sector experience from various strategic and sales roles she has undertaken in the APAC region with Juniper Networks, most recently as Senior Vice President Global GTM Strategy and Business Development, a global role focused on leading transformational strategy and establishing partnerships to increase value proposition for customers. Wendy also previously worked for Cisco Systems from 1998 to 2003.

Wendy holds a Bachelor of Engineering in Electrical and Electronics from Nanyang Technological University and a Graduate Diploma in Marketing Management from the Singapore Institute of Management.

Other roles

Vice President, Pathways, Alliance & Strategy APAC at NetApp Singapore.

Edgar Masri

Independent Non-executive Director

Appointed: Non-executive Director in January 2018

Committees: Nomination Committee, Remuneration Committee, Audit Committee

Skills and experience

Edgar brings to the Board wide-ranging experience of managing companies across the technology sector with a focus on driving investment and profitability. Edgar was President and Chief Executive Officer of Qualtre, Inc., a US-based start-up acquired by Panasonic Corporation in December 2016 at the same time as acting as a member of the board of Calient Technologies until its acquisition by Chunxing Precision Mechanical Co., Ltd. Prior to this, Edgar was President and CEO of 3Com Corporation, a leading global data networking company, bringing the company to record revenue and gross margins before it was taken into private ownership.

Edgar holds a Diplôme d'Ingénieur from Ecole Centrale de Paris, a Master of Science degree in Electrical Engineering from the University of California at Berkeley, and a Master of Business Administration with distinction (Arjay Miller Scholar) from Stanford University.

Other roles

CEO of Accton Technology Corporation; Director of Kollective Technology, Inc.

Directors' statement on corporate governance

Principles of UK Corporate Governance Code 2018				Page
Board leadership and company performance	**A**	A successful company is led by an effective and entrepreneurial board, whose role is to promote the long-term sustainable success of the company, generating value for shareholders and contributing to wider society.	Board of Directors The Board	58–59 61
	B	The board should establish the company's purpose, values and strategy, and satisfy itself that these and its culture are aligned. All directors must act with integrity, lead by example and promote the desired culture.	Chairman's statement	6–7
	C	The board should ensure that the necessary resources are in place for the company to meet its objectives and measure performance against them. The board should also establish a framework of prudent and effective controls, which enable risk to be assessed and managed.	Internal control and risk management Internal control environment	68 74-75
	D	In order for the company to meet its responsibilities to shareholders and stakeholders, the board should ensure effective engagement with, and encourage participation from, these parties.	Section 172 statement	50–54
	E	The board should ensure that workforce policies and practices are consistent with the company's values and support its long-term sustainable success. The workforce should be able to raise any matters of concern.	Workforce engagement Raising concerns at work	69 75-76
Division of responsibilities	**F**	The chair leads the board and is responsible for its overall effectiveness in directing the company. They should demonstrate objective judgement throughout their tenure and promote a culture of openness and debate. In addition, the chair facilitates constructive board relations and the effective contribution of all non-executive directors, and ensures that directors receive accurate, timely and clear information.	Chairman and CEO Independence Commitment Information flow	61 65 65 68
	G	The board should include an appropriate combination of executive and non-executive (and, in particular, independent non-executive) directors, such that no one individual or small group of individuals dominates the board's decision making. There should be a clear division of responsibilities between the leadership of the board and the executive leadership of the company's business.	Board composition Chairman and CEO	61 61
	H	Non-executive directors should have sufficient time to meet their board responsibilities. They should provide constructive challenge and strategic guidance, offer specialist advice and hold management to account.	Non-executive Directors Independence Commitment	62 65 65
	I	The board, supported by the company secretary, should ensure that it has the policies, processes, information, time and resources it needs in order to function effectively and efficiently.	Information flow Board development	65 65
Composition, succession and evaluation	**J**	Appointments to the board should be subject to a formal, rigorous and transparent procedure, and an effective succession plan should be maintained for board and senior management. Both appointments and succession plans should be based on merit and objective criteria and, within this context, should promote diversity of gender, social and ethnic backgrounds and cognitive and personal strengths.	Nomination Committee report	70–71
	K	The board and its committees should have a combination of skills, experience and knowledge. Consideration should be given to the length of service of the board as a whole and membership regularly refreshed.	Nomination Committee report	70–71
	L	Annual evaluation of the board should consider its composition, diversity and how effectively members work together to achieve objectives. Individual evaluations should demonstrate whether each director continues to contribute effectively.	Board performance evaluation	66-67
Audit, risk and internal control	**M**	The board should establish formal and transparent policies and procedures to ensure the independence and effectiveness of internal and external audit functions and satisfy itself on the integrity of financial and narrative statements.	Internal control and risk management External audit	68 76
	N	The board should present a fair, balanced and understandable assessment of the company's position and prospects.	Fair, balanced, understandable	106
	O	The board should establish procedures to manage risk, oversee the internal control framework, and determine the nature and extent of the principal risks the company is willing to take in order to achieve its long-term strategic objectives.	Internal control and risk management	68

Principles of UK Corporate Governance Code 2018 continued

				Page
Remuneration	**P**	Remuneration policies and practices should be designed to support strategy and promote long-term sustainable success. Executive remuneration should be aligned to company purpose and values, and be clearly linked to the successful delivery of the company's long-term strategy.	Directors' Remuneration Policy	93-101
			Chairman's introduction to remuneration	77-78
	Q	A formal and transparent procedure for developing policy on executive remuneration and determining director and senior management remuneration should be established. No director should be involved in deciding their own remuneration outcome.	Directors' Remuneration Report	77-93
			Composition of Remuneration Committee	92
	R	Directors should exercise independent judgement and discretion when authorising remuneration outcomes, taking account of company and individual performance, and wider circumstances.	Chairman's introduction to remuneration	77-78

Compliance with the UK Corporate Governance Code

As a premium listed company on the London Stock Exchange, the Company is reporting in accordance with the UK Corporate Governance Code (the 2018 Code) published in July 2018 which sets out standards of good practice in relation to board leadership and effectiveness, remuneration, accountability and relations with shareholders. The Code is published by the UK Financial Reporting Council (FRC) and a copy of the Code is available from the FRC website at www.frc.org.uk.

The Board confirms that the Company has complied in full with the 2018 Code throughout the period under review.

The Board

The Board of Directors is collectively responsible to the Company's shareholders for the direction and oversight of the Company to ensure its long-term success.

The Board met regularly throughout the year to approve the Group's strategic objectives, to lead the Group within a framework of effective controls which enable risk to be assessed and managed and to ensure that sufficient resources are available to meet the objectives set.

There are a number of matters which are specifically reserved for the Board's approval. These are set out in a clearly defined schedule which includes: matters relating to the Group's strategic plan; approving the annual business strategy and objectives; the nature and extent of principal risks to be taken to achieve the strategic objectives; changes relating to structure and capital; approval of trading statements, half year results, final results and Annual Report and Accounts; declaring interim dividends and recommending final dividends; the Group's policies and systems of internal control and risk management, approving capital projects, acquisitions and disposals valued at over $2 million; and provision of adequate succession planning.

The schedule of matters reserved for the Board was reviewed during the year and approved and adopted at the December 2019 Board meeting.

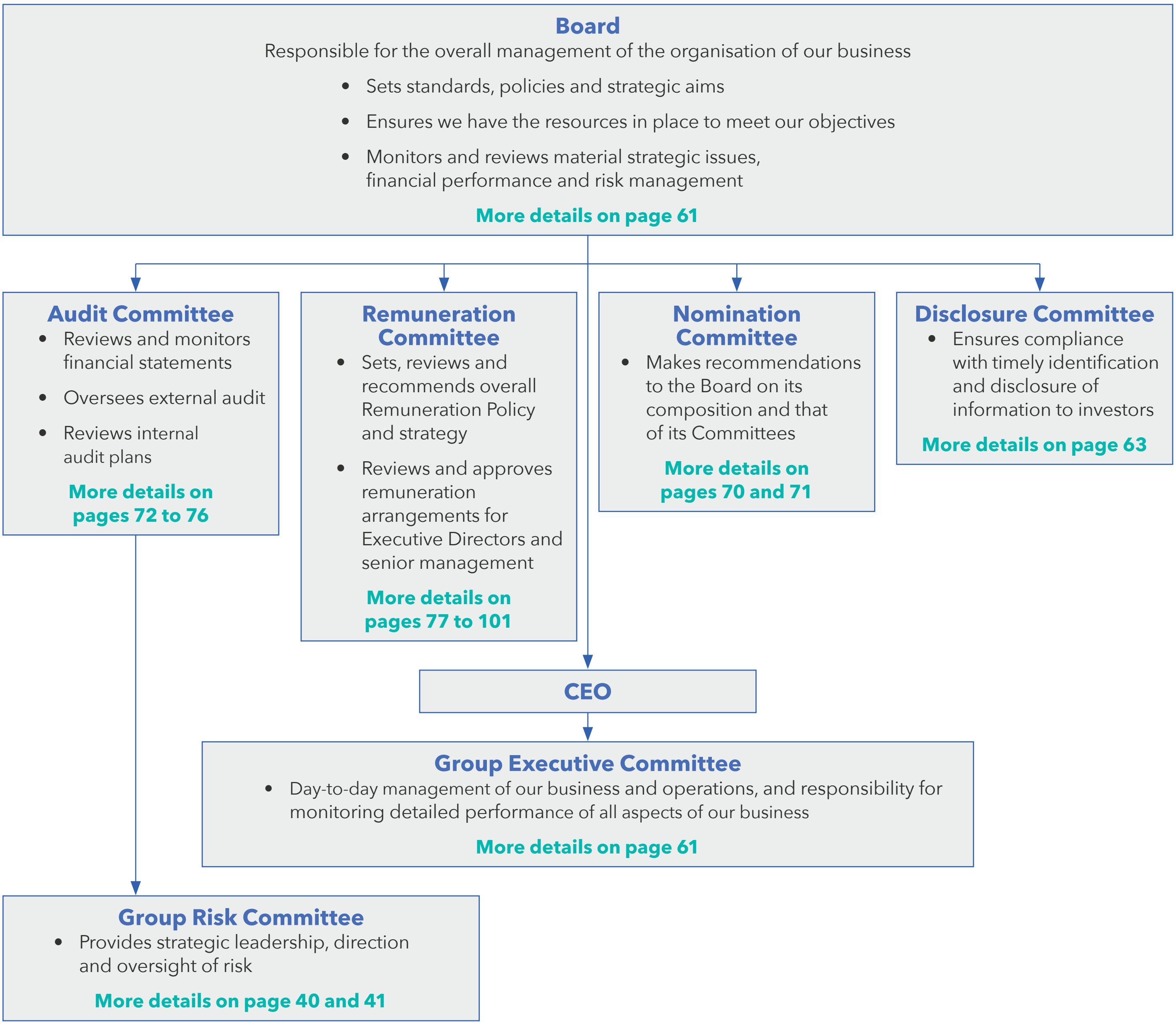
Certain specific responsibilities are delegated to the Committees of the Board, notably the Audit, Nomination and Remuneration Committees, which operate within clearly defined terms of reference and report regularly to the Board. For further details, please see the reports of each Committee that follow this statement.

Chairman and CEO

The roles of the Chairman and the CEO are separately held and the division of their responsibilities is clearly established, set out in writing, and agreed by the Board to ensure that no one person has unfettered powers of decision. The Chairman is responsible for the operation and leadership of the Board, ensuring its effectiveness and setting its agenda. The CEO is responsible for leading and managing the Group's business within a set of authorities delegated by the Board and the implementation of Board strategy and policy.

Authority for the operational management of the Group's business has been delegated to the CEO for execution or further delegation by him for the effective day-to-day running and management of the Group. The Group Executive Committee, led by the CEO, consists of the CFO, EVP Global Sales, EVP Marketing, Strategy & Corporate Development, Company Secretary & General Counsel, and Global Head of Human Resources.

Directors' statement on corporate governance continued



Senior Independent Director

The role of Senior Independent Director is to act as a sounding board for the Chairman and to serve as an intermediary for other Directors as necessary. He is also available to shareholders to convey concerns to the Board which they have been unable to convey through the Chairman or through the Executive Directors. During the year, led by the Senior Independent Director, the Non-executive Directors have met without the presence of the Chairman (including to appraise the Chairman's performance).

Non-executive Directors

In addition to their responsibilities for strategy and business results, the Non-executive Directors play a key role in providing a solid foundation for good corporate governance and ensure that no individual or group dominates the Board's decision making. They each occupy, or have occupied, senior positions in industry, bringing valuable external perspective to the Board's deliberations through their experience and insight from other sectors enabling them to contribute significantly to Board decision making. The formal letters of appointment of the Non-executive Directors are available for inspection at the Company's registered office.

Board Committees

The Board has established three principal Board Committees, to which it has delegated certain of its responsibilities. These are the Audit Committee, the Nomination Committee and the Remuneration Committee. The membership, responsibilities and activities of these Committees are described later in this Directors' statement on corporate governance and, in the case of the Remuneration Committee, in the Report on Directors' remuneration beginning on page 77. Membership of these Committees is reviewed annually and minutes of Committee meetings are made available to all Directors on a timely basis.

In addition, in 2019 the Board established a formal Disclosure Committee, tasked with ensuring that adequate procedures, systems and controls are maintained to enable the Company to fully comply with its obligations for the handling of information which falls, or has the potential for falling, within the definition of inside information.

The Chairmen of the Audit, Nomination and Remuneration Committees intend to be present at the Annual General Meeting to answer questions on the work of their respective Committees.

The written terms of reference for the Audit, Nomination and Remuneration Committees and the Disclosure Committee, all of which were reviewed, updated where necessary and approved during the year, are available on the Company's website at https://corporate.spirent.com.

Election and re-election of Directors

Having been appointed a Director in the period since the 2019 Annual General Meeting, Eric Updyke will, in accordance with the Company's Articles of Association, submit himself for election by shareholders at the 2020 Annual General Meeting in April. In accordance with the 2018 Code's recommendations, all remaining Directors who wish to continue in their roles will be proposed for re-election at the 2020 Annual General Meeting.

The Board confirms that each of the Directors standing for election and re-election has been subject to a formal performance evaluation in relation to their duty to act in the long-term interests of the Company, while also having regard to other stakeholders.

Company Secretary

In his role of Company Secretary & General Counsel, Angus Iveson is responsible for advising and supporting the Chairman and the Board on corporate governance matters as well as ensuring that there is a smooth flow of information to enable effective decision making. All Directors have access to the advice and services of the Company Secretary and can take independent professional advice in respect of their duties, at the Company's expense.

Board meetings

The Board held ten meetings during the year, including a two-day strategy meeting held at the Company's site in Beijing, China.

	Board	Audit Committee	Nomination Committee	Remuneration Committee
Sir Bill Thomas	10/10	–	3/3	–
Paula Bell	10/10	–	–	–
Eric Hutchinson[1]	5/5	–	–	–
Eric Updyke[2]	6/6	–	–	–
Gary Bullard	10/10	5/5	3/3	8/8
Wendy Koh[3]	9/10	5/5	3/3	8/8
Edgar Masri	10/10	5/5	3/3	8/8
Jonathan Silver	10/10	5/5	3/3	8/8

Notes
1. Eric Hutchinson stepped down from the Board following the Annual General Meeting on 1 May 2019 and retired from the Company on 30 June 2019.
2. Eric Updyke joined the Company on 1 April 2019 and was appointed to the Board on 1 May 2019.
3. Ms Koh was unable to attend the ad hoc Board meeting held on 14 January 2019 but received all papers relating to the meeting and had the opportunity to discuss issues arising directly with the Chairman before the meeting.

Senior executives below Board level are invited, when appropriate, to attend Board meetings and to make presentations relating to the results and strategies of their business units and Group-wide responsibilities. Papers for Board and Committee meetings are provided to Directors in advance of the meeting. The attendance of the Directors at Board and Committee meetings during the year under review is shown in the table above. If a Director is unable to participate in a meeting either in person or remotely, the Chairman will solicit their views on key terms of business in advance of the relevant meeting, so that these can be shared with the meeting.

Directors' statement on corporate governance continued

Directors' indemnity provisions

In accordance with its Articles of Association, the Company has granted a qualifying third party indemnity, to the extent permitted by law, to each Director. The Company also maintains Directors' and officers' liability insurance.

These provisions are qualifying third party indemnity provisions as defined in Section 234 of the Companies Act 2006. Neither the Company's indemnity nor the insurance provides cover in the event that a Director is proven to have acted dishonestly or fraudulently.

Board activities during 2019

At each Board meeting, the CEO presents an update on the performance, strategy and business issues across the Group and the CFO presents a detailed analysis of the financial performance of the business units. Senior executives below Board level attend relevant parts of Board meetings in order to make presentations on their areas of responsibility; this gives the Board access to a broader group of executives and helps the Directors make ongoing assessments of the Group's succession plans. The Board has a rolling programme of visits to business unit locations to deepen its appreciation of the different opportunities and challenges that each unit faces.

Key issues considered by the Board during 2019

	Governance/compliance	Finance	Business/strategy
January		• CFO update • 2018 Full Year trading update review	
March	• Stakeholder engagement • 2018 Full Year compliance and Annual Report review • Legal update • Modern Slavery Statement review • Diversity Policy review • CEO succession update	• CFO update • 2018 Full Year results review • Viability Statement review • Dividend Policy review • Capital Policy review • Receive Audit Committee report on internal controls and risk management	• CEO update • M&A landscape review • Leadership review • Cyber strategy review
April	• CEO succession update		
Apri/May	• AGM voting review • Stakeholder engagement update	• CFO update • 2019 Q1 results review	• CEO update • EMEA Sales update
June		• CFO update	• CEO update • Strategy presentations
July	• 2019 Half year corporate governance and compliance review • Board effectiveness review kick-off • Regulatory and legal review • Legal and Trade compliance update	• 2019 Half year results review • CFO update • Risk review • Tax update • Insurance update	• CEO update
October	• Intellectual property update	• CFO update	• CEO update • CEO Change programme review
November	• Governance compliance review • Legal review • Workforce engagement update	• CFO update • 2019 Q3 results review • Treasury Policy update	• CEO update • Sales progress update
December	• Board effectiveness review results • Governance compliance review	• CFO update • Budget 2020	• CEO update • Business unit review • Marketing effectiveness review

Board composition

At the date of this report, the Board comprises the Non-executive Chairman, four Independent Non-executive Directors and two Executive Directors.

The Chairman and the Non-executive Directors contribute entrepreneurial leadership and external expertise and experience in areas of importance to the Company, such as strategic investments, corporate finance, general finance and corporate governance. They also contribute independent challenge and rigour to the Board's deliberations and assist in the development of the Company's strategy, scrutiny of the performance of management in meeting agreed goals and targets, and satisfying themselves of the integrity of the Company's internal controls and risk management systems. The Board believes that all of the Directors devote sufficient time and attention as is necessary in order to perform their duties.

The Chairman holds regular discussions with the Non-executive Directors without the Executive Directors present to ensure a free and frank exchange of views on the effectiveness of the Executive Directors and senior management.

Independence

The independence of each Non-executive Director is reviewed on appointment and at least annually. The Board determined that the current Non-executive Directors are each independent in character and judgement, save for the Chairman who was deemed independent by the Board at the date of his appointment. None have been employed by the Company previously in any capacity or have any current material business relationship with any Group company.

Non-executive Directors at Spirent receive no remuneration from the Company other than their fees (detailed in the Report on Directors' remuneration on page 81) and each Non-executive Director has confirmed that they do not represent any significant shareholder in the Company. No individual or group of individuals dominates the Board's decision making and the 2018 Code requirement stating that at least half of the Board (excluding the Chairman) should comprise independent Non-executive Directors is satisfied.

Appointments to the Board

There is a formal, rigorous and transparent procedure for the appointment of new Directors to the Board. Details are available in the Nomination Committee report on pages 70 and 71 which also provides details of the Committee's role and activities.

Commitment

The letters of appointment for the Chairman and Non-executive Directors set out the expected time commitment required of them and are available for inspection at the Company's registered office and at the Annual General Meeting.

The full list of external appointments held by Directors can be found on page 58 and 59. All of our Non-executive Directors are considered to be independent.

Board development

On appointment, Directors are offered an induction programme on the operations and activities of the Group, the role of the Board and the matters reserved to its decision, the Group's corporate governance practices and procedures and their duties, responsibilities and obligations as directors of a listed public limited company. This may be supplemented by visits to key locations and meetings with, and presentations by, senior executives.

Further training for Directors is available as required and can be provided by means of external courses, internal computer-based training, briefings from specific consultants or in-house presentations. In addition, the Board's knowledge and understanding of the legal and regulatory environment is updated through the provision of information by the Group's advisers and by means of regular updates from the Company Secretary.

New Directors are encouraged to take advantage of opportunities to meet with major shareholders and attend presentations to analysts where possible.

THE INDUCTION OF OUR NEW CEO

Eric Updyke joined Spirent as CEO in April 2019 and participated in a programme of internal and external meetings to help him to have a more detailed understanding of the frameworks that underpin Spirent's business and to get to know stakeholders to develop trust and improve cohesion.

With the assistance of the outgoing CEO, Eric Hutchinson, Eric built on his existing industry knowledge to understand the Company's key operations by meeting with senior managers and business unit managers to develop an operational overview of all business areas.

Eric also worked with the Company Secretary & General Counsel, with the support of relevant corporate advisers, to broaden his knowledge of the UK corporate governance environment to ensure knowledge of and compliance with Spirent's regulatory obligations.

In his first 100 days in the role, Eric engaged with various stakeholders of the Company, meeting major customers and investors and conducting an employee survey to "take the temperature" of the organisation and identify areas for future action.

Directors' statement on corporate governance continued

Board performance evaluation

The effectiveness of the Board is reviewed at least annually and conducted according to the guidance set out in the 2018 Code and FRC Guidance on Board Effectiveness. An externally facilitated evaluation was conducted by Independent Audit Limited in 2018, with the next externally facilitated evaluation scheduled for 2021.

Evaluation process

Step 1 – Planning

The Company Secretary undertook a detailed review of the Board effectiveness evaluation process and made revisions to incorporate recommendations and areas of focus highlighted in the 2018 Code and FRC Guidance on Board Effectiveness.

A questionnaire was developed for the Board and each of its Committees, with questions structured on the basis of feedback from the 2018 evaluation, including areas for improvement and any additional observations.

Step 2 – Evaluation questionnaire

Board and Committee members completed a confidential online evaluation questionnaire, supplemented by discussions between each individual Director and the Chairman on their own performance and between the Directors and the Senior Independent Director on the Chairman's performance.

Step 3 – Evaluation and reporting

The Company Secretary compiled the individual responses, including analysis of themes and proposed actions. A detailed report, setting out the findings of the evaluation, was provided to the Chairman for consideration. The Company Secretary and Chairman discussed the findings, with the resulting report being presented to the Board at its meeting in December 2019.

Step 4 – Agree actions and monitor progress

The findings of the evaluation exercise were fully considered when making recommendations in respect of the election and re-election of individual Directors and included an assessment of their independence, time commitment and individual performance.

Evaluation findings

The evaluation concluded that excellent progress had been made in respect of areas for further focus identified in the 2018 review, as detailed below:

Evaluation action from 2018 review	Progress in 2019
Further develop the Board's understanding of the impact of emerging technology trends on Spirent's existing business model and on its longer-term strategic vision	The Board held a strategy meeting in Beijing which included presentations from the senior management on emerging trends relevant to our business, new growth vectors and evolution of the product portfolio. Senior executives have also presented to the Board on their key areas of responsibility and key industry trends.
Monitor the effectiveness of the Group's new approach to internal talent development	The new 'Leader. Assured.' talent programme was implemented for our next generation of business leaders during 2019. This is a rigorous programme to build core management and problem-solving capabilities. Further work remains to be done to strengthen the internal talent pipeline which is being taken forward as a key priority of the new CEO and the Board is scheduled to receive further updates in 2020.
Review key leading indicators of performance within Group	A review was undertaken at the start of the year to ensure the key leading indicators of performance were relevant to the growing needs of the Group. During the year, the Board reviewed and discussed the value propositions and go-to-market strategies of our main investments in our expected growth areas and the milestones to be met which are likely to indicate successful execution in those areas.
Undertake a deep review of the Group's IT strategy to ensure it meets the evolving needs of the business	The Board has received presentations on the key priorities for the IT department and its recommendations for further improvements in 2020. Detailed business continuity plans have been reviewed for all key Group sites and the results of the implementation of mock disaster planning scenarios have been presented. A partner has been identified to provide a further detailed cybersecurity threat analysis in 2019 to specifically address cyber threats to our business in 2020.
Evolve Spirent's culture and values to ensure that they meet the current and future needs of the business	Workforce engagement has been significantly enhanced during the year, with the new CEO building his visibility of engagement drivers across the Group through an all-employee engagement survey. Non-executive Directors have also met with employee focus groups at the Group's locations worldwide to discuss global and local issues, with feedback being discussed at Board level.

The evaluation also concluded that the Board, its Committee Chairs and Committees were effective and that all Directors were considered to have demonstrated considerable commitment and time to their roles, notwithstanding any other positions held by them outside Spirent. The Board is also satisfied that the contribution of each Director is, and continues to be, important to the Company's long-term sustainable success.

Areas for focus for 2020 are detailed below:

Growth strategy
Consider the long-term strategy of the Group

Culture and engagement
Consider employee engagement data and other workforce feedback to ensure promotion of a healthy corporate culture

People
Continue to review talent pipeline and build leadership and management capability, in particular in the Sales and Marketing group

Cyber threats
Continue to review the Group's ongoing programme to identify and mitigate cyber threats

Audit tender
Undertake tender programme for external audit provision and begin integration of selected provider

Directors' statement on corporate governance continued

Information flow

The Company Secretary manages the provision of information to the Board at appropriate times in consultation with the Chairman and CEO. In addition to formal meetings, the Chairman and CEO maintain regular contact with all Directors. The Chairman also holds informal meetings with Non-executive Directors, without any of the executives being present, to discuss any issues affecting the Group, if this is thought necessary. Regular management updates are sent to Directors to keep the Non-executive Directors informed of events throughout the Group between Board meetings and to ensure that they are kept fully advised of the latest issues affecting the Group.

Conflicts of interest procedures

The Company has procedures in place, which were reviewed and updated during the year, to deal with the situation where a Director has a conflict of interest.

As part of this process, the Board:

- considers each potential conflict situation separately on its particular facts;
- considers the potential conflict situation in conjunction with the rest of the Directors' duties under the Companies Act 2006;
- keeps records and Board minutes as to authorisations granted by Directors and the scope of any approvals given; and
- regularly reviews conflict authorisation.

Financial and business reporting

The Board recognises its responsibility to present a fair, balanced and understandable assessment of Spirent in all of its reporting obligations. This responsibility covers the Annual Report and extends to the half year report and other regulatory announcements. The Directors consider this Annual Report, taken as a whole, to be fair, balanced and understandable, providing the information necessary for shareholders to assess the Company's performance, business model and strategy. In arriving at this position, the Board asked the Audit Committee to review and confirm a process is in place to support this assessment. The Audit Committee confirmed that a robust approach is in place to support the fair, balanced and understandable assessment, details of which can be found in the Audit Committee's report on pages 72 to 76.

Business model

A description of the Company's business model for sustainable growth is set out in "Our business model" on pages 4 and 5.

This section provides an explanation of the basis on which the Group generates value and preserves it over the long term and its strategy for delivering its objectives.

Going concern

After making enquiries, the Directors have a reasonable expectation that the Company and the Group have adequate resources to continue in operational existence for the foreseeable future. Accordingly, and consistent with the guidance contained in the document titled "Guidance on Risk Management, Internal Control and Related Financial and Business Reporting" published by the FRC, they continue to adopt the going concern basis in preparing the annual financial statements.

Internal control and risk management

The Board acknowledges its responsibilities for the Group's system of internal control to facilitate the identification, assessment and management of risk, the protection of shareholders' investments and the Group's assets. The Directors recognise that they are responsible for providing a return to shareholders which is consistent with the responsible assessment and mitigation of risks.

Effective controls ensure that the Group's exposure to avoidable risk is minimised, that adequate accounting records are maintained, that the financial information used within the business is reliable and that the consolidated accounts preparation and financial reporting processes comply with all relevant regulatory reporting requirements. The dynamics of the Group and the environment within which it operates are continually evolving, together with its exposure to risk. Internal controls can only provide reasonable and not absolute assurance against material misstatement or loss.

The Directors confirm that there is an ongoing, robust process for identifying, evaluating and managing the principal risks faced by the Group and the operational effectiveness of the related controls, which has been in place for the year under review and up to the date of approval of the Annual Report and Accounts. They also confirm that they have regularly reviewed the system of risk management and internal controls utilising the review process set out below.

The Directors confirm that a robust assessment of the principal risks facing the Company has been carried out, including those risks that would threaten its business model, future performance, solvency or liquidity. More details are set out in the Principal risks and uncertainties section on pages 40 to 45 of this Annual Report.

Management and control of US subsidiary

Spirent Federal Systems Inc ("Spirent Federal"), which contributed approximately $52.5 million to the Group's revenue in 2019 (2018 $46.9 million), operates under a Proxy agreement, as detailed below, with the remainder of the US business operating outside the Proxy regime and therefore allowing the same reporting lines and processes as the Group's other, non-regulated businesses.

Spirent Federal and the Proxy arrangement

Spirent Federal Systems Inc is a wholly-owned subsidiary of Spirent in the United States. It has been placed under a Proxy arrangement as it is required by the US National Industrial Security Program to maintain facility security clearances and to be insulated from foreign ownership, control or influence for the business it undertakes. Under the Proxy agreement, Spirent Federal and the US Department of Defense (DoD) are parties to a Proxy agreement that relates to the management and operation of Spirent Federal.

In addition to their powers as Directors, the Proxy holders have power under the Proxy arrangements to exercise all prerogatives of share ownership of Spirent Federal. The Proxy holders have a fiduciary duty, and agree, to perform their interests in the best interests of Spirent as a shareholder (including the legitimate economic interest), and in a manner consistent with the national security interests of the United States. Spirent may not remove the Proxy holders other than for acts of gross negligence or wilful misconduct or for breach of the Proxy agreement (and always only with the consent of the US Defense Security Service).

In terms of the power to govern, the Proxy agreement vests certain powers solely with the Proxy holders and certain powers solely with Spirent. For example, the Proxy holders cannot carry out any of the below without Spirent's express approval:

- sell or dispose of, in any manner, capital assets or the business of Spirent Federal;
- pledge, mortgage or encumber assets of Spirent Federal for purposes other than obtaining working capital or funds for capital improvements;
- merge, consolidate, reorganise or dissolve Spirent Federal; and
- file or make any petition under the federal bankruptcy laws or similar law or statute of any state or any foreign country.

Spirent can require the above to be carried out and these are, therefore, considered to be significant participative features.

Spirent maintains its involvement in Spirent Federal's activities through normal business interaction and liaison with the Chair of the Proxy Board. Members of Spirent's senior management team attend meetings of the Proxy Board periodically.

Standards

Guidelines on the minimum Group-wide requirements for health and safety and environmental standards are set out in policy documents and procedures. There are also guidelines on the minimum level of internal control that each of the business units should exercise over specified processes. Each business has developed and documented policies and procedures to comply with the minimum control standards established, including procedures for monitoring compliance and taking corrective action.

High level controls

All businesses prepare annual operating plans and budgets which are supplemented by regular forecasts throughout the year. Performance against budget is monitored at operational level and centrally, with variances being reported promptly. The cash position at Group and operational level is monitored constantly and variances from expected levels are investigated thoroughly. Clearly defined guidelines have been established for capital expenditure and investment decisions. These include the preparation of budgets, appraisal and review procedures, and delegated authority levels.

Financial reporting

Detailed management accounts are prepared every month, consolidated in a single system and reviewed by senior management and the Board. They include a comprehensive set of financial reports and key performance indicators covering commercial and operational issues. Performance against budgets and forecasts is discussed regularly at Board meetings and at meetings between operational and Group management. The adequacy and suitability of key performance indicators is reviewed regularly.

Internal audit

All of the internal audit activities are co-ordinated by the Head of Risk & Internal Audit, who has direct access to the Board Chairman and to the Audit Committee Chairman and is accountable to the Audit Committee.

All Group businesses are required to comply with the Group's financial control framework that sets out minimum control standards. A key function of the Group's internal audit resource is to undertake audits to ensure compliance with the financial control framework and make recommendations for improvement in controls where appropriate.

Senior members of the Group finance team meet with the Chairman of the Audit Committee as appropriate but at least annually, without the presence of Executive management, and have direct access to the Chairman.

Remuneration

The Directors' report on remuneration is set out on pages 77 to 101 and provides details of our Remuneration Policy and how it has been implemented, together with the activities of the Remuneration Committee.

Articles of Association and share capital

Information in relation to share capital, the appointment and powers of Directors and the issue and buyback of shares and significant interests in share capital is set out in the Directors' report on pages 102 to 105.

Relations with shareholders

The Board is committed to maintaining good communications with shareholders. The Chairman, CEO and CFO have regular face-to-face contact with individual institutional shareholders in order to develop an understanding of their views which are then discussed with the Board. Key themes for discussion in 2019 have included the appointment of the new CEO and the Company's plans for further developing its growth strategy.

All Directors are offered the opportunity to develop a dialogue with major shareholders to listen to their views and Executive Directors receive regular reports prepared by an independent capital markets advisory firm which provides comprehensive information relating to the Company's major shareholders.

Presentations are made to analysts, investors and prospective investors covering the full year and half year results and the Company seeks to maintain a dialogue with the various bodies which monitor the Company's governance policies and procedures.

The Company is always keen to hear the views of its private shareholders and we encourage them to access our website at https://corporate.spirent.com for our Company reports and business information and to use our shareholder mailbox at investor.relations@spirent.com for detailed enquiries.

Any concerns raised by shareholders or their representatives, whether expressed directly or through voting patterns at the Company's AGM, are discussed by the Directors and an appropriate response is given either specifically to the concerned party or, if it is felt to be of wider benefit, made available to all shareholders via the Company's website.

Workforce engagement

In 2019, feedback from employees was gathered in a number of ways including a resumption of regular employee engagement surveys throughout the year and management roadshows at Company locations.

In light of the 2018 Code, the Board has also introduced a programme of Board-level engagement with the workforce. The Board decided that rather than designate any single Non-executive Director to lead the engagement, it was more practical for a Non-executive Director to be designated as the liaison point for employees in the three geographical areas in which the Company operates:

- Americas – Edgar Masri
- APAC – Wendy Koh
- EMEA – Gary Bullard

Meetings in each of the three areas began during H2 2019, with feedback being reported to the Board at their regular meetings.

Annual General Meeting

The Company's 2020 Annual General Meeting (2020 AGM) will be held at 10.30am on Wednesday 29 April 2020 at the registered office of Spirent Communications plc at Origin One, 108 High Street, Crawley, West Sussex RH10 1BD.

The Board views the AGM as a valuable opportunity to communicate with private shareholders in particular, for whom it provides the opportunity to hear about the general development of the business and to ask questions of the Chairman and, through him, the Chairmen of the key Committees and other Directors.

The Board looks forward to welcoming all our shareholders to our 2020 AGM and to updating them on our business developments.

Nomination Committee report

Sir Bill Thomas
Chairman

"A key part of the Committee's role is to maintain an ongoing assessment of the senior leadership depth, and improving the effectiveness of the internal talent pipeline continues to be one of the Board's priorities."

Members

During the year and at the date of this Annual Report:

Sir Bill Thomas (Chairman)
Jonathan Silver
Gary Bullard
Wendy Koh
Edgar Masri

Key duties

In accordance with its terms of reference, the Nomination Committee's key duties include:

- leading the search process and making recommendations to the Board for the appointment of new Directors;
- regularly reviewing the Board structure, size and composition (including the skills, knowledge, independence, experience and diversity), recommending any necessary changes and considering plans for orderly succession; and
- making recommendations to the Board about suitable candidates for the role of Senior Independent Director, and membership of the Audit and Remuneration Committees in consultation with the Chairmen of the relevant Committees.

How the Committee operates

Members of the Nomination Committee are appointed by the Board from the Directors of the Company. The Committee comprises a minimum of three independent Non-executive Directors. A quorum consists of two members, being either two independent Non-executive Directors or one independent Non-executive Director and the Chairman.

Only members of the Committee have the right to attend Committee meetings. Other individuals, such as the CEO and external advisers, may be invited to attend meetings when appropriate.

When dealing with the appointment of the Chairman, the Committee is chaired by the Senior Independent Director.

The terms of reference of the Nomination Committee, which were updated as necessary and approved during the year, are available on the Company's website at https://corporate.spirent.com.

Meetings

The Nomination Committee met three times during the year under review.

Committee activities during 2019

Recruitment of new CEO

Following Eric Hutchinson's decision to inform the Board of his wish to retire from the Company, the Chairman initiated a search process for a new Chief Executive Officer. Mr Hutchinson agreed to continue in the role until a replacement was appointed and for a transitional period thereafter.

The services of an external executive consulting firm Korn Ferry were retained to identify candidates. Korn Ferry is independent, with no other connection to the Company, and is a signatory to the "Voluntary Code of Conduct for Executive Search Firms" on diversity and best practice.

The search firm was given a role profile outlining the skills, attributes and experience sought and asked to produce a longlist of potential candidates from various backgrounds for consideration. The longlist of potential candidates was reviewed and a number were then interviewed by the Chairman and other Directors. A shortlist of potential candidates was then agreed. Preferred candidates were selected and all the remaining Board members interviewed each candidate. Following the interviews, the potential candidates were discussed by the Committee resulting in a recommendation of the preferred candidate to the Board. On 1 April 2019 the appointment of Eric Updyke as CEO was announced and he was appointed as a Director following the Company's AGM on 1 May 2019.

Succession planning

A key part of the Committee's role is to maintain an ongoing assessment of the senior leadership depth, and improving the effectiveness of the internal talent pipeline continues to be one of the Board's priorities.

2019 was the first full year of operation of our 'Leader. Assured.' programme, designed to build additional management competencies in our internal talent pipeline, and the Committee looks forward to developing this programme further to ensure greater career opportunities for our staff.

Policy on diversity and inclusion at Board level

The Committee noted the recommendations of the Hampton-Alexander Review on Improving Gender Balance in FTSE Leadership published in November 2019 and the Parker Review on Ethnic Diversity published in 2017.

Although the Board does not currently set specific aspirations in respect of diversity at Board level, it has a policy of supporting fully the 2018 Code's principles and the recommendations in the Hampton-Alexander Review and the Parker Review in respect of this key issue. Spirent as a whole recognises the benefits of diversity beyond that of gender, taking account of diversity of social and ethnic backgrounds and cognitive and personal strengths when considering appointments at all levels whilst ensuring appointments are made on merit and ability to enhance the performance of the business.

An analysis of data on the gender balance at different levels within the Company can be found in the Sustainability section of this Annual Report on page 47.

Board composition

Although no recruitment is currently underway, Board composition is routinely reviewed to ensure that the balance of skills, knowledge and experience of the Spirent Board remains appropriate to the business.

Performance review

The performance of the Committee was reviewed as part of the annual Board effectiveness evaluation and the Committee was found to be operating effectively.

Re-election of Directors

The Committee reviews the results of the annual Board effectiveness evaluation that specifically relate to the composition of the Board and whether the time commitment of those who fulfil the roles of Chairman, Senior Independent Director and Non-executive Director was appropriate.

The Committee was satisfied that all non-executive members of the Board devote sufficient time to their duties and remain independent in nature and recommends all continuing Directors for re-election by shareholders at the forthcoming AGM.

Sir Bill Thomas
Chairman
5 March 2020

Audit Committee report

Jonathan Silver
Chairman, Audit Committee

Fair, balanced, understandable

In making its recommendation to the Board that the Annual Report, taken as a whole, is fair, balanced and understandable, the Committee applied robust governance arrangements, including:

- clear guidance and instruction of the disclosure requirement provided to contributors;
- comprehensive Group and subsidiary accounts processes, with written confirmations provided by business unit management teams on the health of the financial control environment;
- a verification process applied to factual content with the aim of providing the information necessary to assess the Company's performance, business model and strategy;
- reviews of the Annual Report undertaken at different levels of the Group and by the senior management team that aim to ensure consistency and overall balance;
- additional scrutiny by senior management including focused review of risk registers;
- additional Committee reviews of the draft Annual Report in advance of final sign-off; and
- external audit review.

Final approval of the Annual Report is provided by the Board, on the recommendation of the Committee.

Dear shareholder

On behalf of the Audit Committee, I am pleased to present its report for the period ended 31 December 2019.

The Committee continues to play a key role within the Company's governance framework to support the Board in matters relating to financial reporting, internal control and risk management.

The Committee members have been selected to provide the wide range of financial and commercial expertise necessary to fulfil the Committee's duties and responsibilities and the Board considers the members' financial experience to be recent and relevant for the purposes of the 2018 Code. Further, in accordance with the 2018 Code, the Board has determined that the current composition of the Committee as a whole has competence relevant to the sector in which the Group operates.

PwC has continued to perform a co-source arrangement to assist with the Group's internal audit plan, reporting to the Audit Committee and the Company's Head of Risk & Internal Audit, in accordance with an agreed internal audit plan. This plan continues to provide the Committee with a means of assessing the level and effectiveness of controls across the Group. In addition, the Committee regularly reviews the results of an assessment of internal controls carried out by management across all businesses. During 2020, the Committee will continue to look in detail at the Group's business operations, with a number of internal audits planned to take place over the year. These will cover internal control and compliance areas and be undertaken across functions in the businesses around the globe.

As part of its process for monitoring the standards of audit work, the Audit Quality Review team of the Financial Reporting Council (FRC) reviewed EY's audit of the Group's accounts for the year ended 31 December 2018, with the FRC report received in December 2019.

As stated in previous reports, the Committee has considered guidance on audit tendering and has decided to initiate a tender in 2020. The Committee considers it prudent to undertake the tender exercise during mid-2020 and early 2021, with a view to making a recommendation in time for the end of the current external audit partner's tenure. There are no contractual provisions that restrict the Committee's choice of auditor.

On behalf of the Committee, I would like to thank everyone for their hard work over the past year, especially the finance teams across the businesses.

I look forward to meeting with shareholders at the Annual General Meeting to answer any questions on the work of the Committee.

Jonathan Silver
Chairman, Audit Committee
5 March 2020

Members

During the year and at the date of this report, Committee members were:

- Jonathan Silver (Committee Chairman)
- Gary Bullard
- Wendy Koh
- Edgar Masri

It is intended that the Audit Committee is comprised of at least three members, all of whom are independent Non-executive Directors of the Company who have the necessary range of financial and commercial expertise to challenge management. Two members constitute a quorum.

The 2018 Code requires the inclusion of one financially qualified member (as recognised by the Consultative Committee of Accountancy Bodies) with recent and relevant financial experience. Currently, the Committee Chairman fulfils this requirement.

Key duties

In accordance with its terms of reference, the Audit Committee's key duties include:

- monitoring the integrity of the Group's financial statements and any formal announcements relating to the Company's performance, reviewing significant financial reporting judgements contained in them before their submission to the Board for approval;
- on matters of financial reporting, reviewing and challenging where necessary the consistency of and any changes to accounting and treasury policies, for example whether the Group has followed appropriate accounting policies and made appropriate estimates and judgements, the clarity and completeness of disclosure, significant adjustments resulting from the audit, and the going concern assumption and compliance with auditing standards;
- at the request of the Board, reviewing the content of the Annual Report and Accounts and advising the Board on whether, taken as a whole, it is fair, balanced and understandable and provides the information necessary for shareholders to assess the Company's position and performance, business model and strategy;
- as requested by the Board, assisting in relation to the Board's assessment of the principal and emerging risks facing the Company and the prospects of the Company for the purposes of disclosures required in the Annual Report and Accounts;
- reviewing the effectiveness of the Group's internal financial controls, including the policies and overall process for assessing established systems of internal financial control and timeliness and the effectiveness of corrective action taken by management;
- reviewing the most appropriate fulfilment of the internal audit function, agreeing and assessing the annual internal audit plan and its effectiveness in the context of the Company's overall risk management system;
- overseeing the Group's policies, procedures and controls for preventing bribery and identifying money laundering, and the Group's arrangements for whistleblowing; and
- overseeing the relationship with the Group's external auditor, reporting to the Board each year whether it considers the audit contract should be put out to tender taking into account any legal requirements for tendering or rotation of the audit contract, reviewing and monitoring its objectivity and independence including seeking information from the external auditor on an annual basis about its policies and procedures for maintaining independence, agreeing the scope of its work and fees paid to it for audit, assessing the effectiveness of the audit process, and agreeing the policy in relation to the provision of non-audit services.

How the Committee operates

All Committee members are expected to be financially literate and to have an understanding of the following areas:

- the principles of, and developments in, financial reporting including applicable accounting standards and statements of recommended practice;
- key aspects of the Company's operations including corporate policies and the Group's internal control environment;
- matters which may influence the presentation of accounts and key figures;
- the principles of, and developments in, company law, sector-specific laws and other relevant corporate legislation;
- the role of internal and external auditing and risk management; and
- the regulatory framework for the Group's businesses.

The Committee invites the CEO, CFO and senior representatives of the external auditor to attend its meetings in full, although it reserves the right to request any of these individuals to withdraw.

During the year, the Committee held two meetings with the external auditor without Executive Directors.

The Committee has unrestricted access to Company documents and information, as well as to employees of the Company and the external auditor.

The Committee's effectiveness is reviewed on an annual basis as part of the Board's performance evaluation process and the Committee was found to be operating effectively.

The terms of reference of the Audit Committee were reviewed and updated during the year and can be viewed on the Company's website at https://corporate.spirent.com.

Meetings

The Audit Committee met five times during the year, with the Committee agenda linked to events in the Group's financial calendar.

Activities during 2019

The Audit Committee's activities principally related to financial reporting, internal control and risk management, the preparation for publishing a Viability Statement and the external audit. The Committee considered all material controls, including financial, operational and compliance controls and their effectiveness. In addition, the Audit Committee considered other specific matters such as the Group's approach to IT controls and cybersecurity.

Financial reporting and significant issues

During the year, the Audit Committee:

- reviewed the full year and half year financial statements, trading updates, key accounting policies and significant financial reporting judgements contained therein (with particular reference to the critical accounting assumptions and judgements as set out in note 2 of the consolidated financial statements) and recommended the financial statements to the Board for approval;
- reviewed whether the Annual Report, taken as a whole, is fair, balanced and understandable and formed an opinion thereon prior to recommending it to the Board;
- reviewed and monitored risk management processes and the potential for risks to impact on the viability of the Group;
- reviewed and considered assumptions in relation to the going concern basis for preparation of financial statements;
- reviewed the external auditor's report on the interim review and year end audit and management's responses to the issues raised; and
- reviewed and monitored the Group's continuing implementation of IFRS 15 on revenue recognition and introduction of IFRS 16 on leases.

The Committee Chairman reports any significant findings or identified weaknesses to the Board.

Significant financial issues considered

The Audit Committee has reviewed each of the following key significant financial risks by:

- reviewing papers and management updates;
- holding discussions with management and key finance staff to challenge assumptions made;
- debating alternative treatments;
- receiving periodic reports on key areas of judgement;
- discussing with the external auditor; and
- considering presentations to analysts to assess for inconsistencies or areas of bias.

Revenue recognition

The Committee is aware that pressure on management to meet certain targets and to respond to specific customer requests may drive additional deal complexity which in turn could lead to complex accounting. This may result in inappropriate recognition of revenue and associated balances.

The Committee has continued to monitor the finance organisation's implementation of the new revenue recognition standard (IFRS 15), which applied to the Company's financial statements for the period beginning 1 January 2018.

As part of its audit procedures agreed with the Committee, Ernst & Young LLP (EY) has examined the allocation of revenue, reviewing specific large and complex transactions and contracts containing non-standard acceptance clauses to ensure that revenue has been recognised appropriately. EY has also tested the allocation of revenue to the service element of multi-element contracts to ensure that deferred revenue and other associated balances have been recognised in accordance with Group accounting policies and IFRS.

Deferred tax assets

The Committee recognises there is a risk that inappropriate use of brought forward tax losses and volatility in forecast taxable income may result in incorrect recognition of deferred tax assets.

The Committee noted that the VP, Taxation has performed a detailed review of the recognition of deferred tax assets in the Group accounts and EY, as part of its audit review, had performed a detailed review which confirmed a good level of challenge of management's underlying assumptions.

Goodwill impairment

Management undertook its annual review of impairment at the end of 2019 and the Committee challenged the assumptions made and concluded that management's assessment of goodwill is appropriate.

As part of its audit process, EY undertook a review of the procedures followed and judgements made by management and agreed with management's conclusions.

Exceptional items

The Committee has reviewed and agreed the quantum and disclosure of the provisions for the ongoing French Customs dispute and the restructuring arising from the new CEO's strategic review.

Misstatements

Management reported to the Committee that it was not aware of any material or immaterial misstatements made intentionally to achieve a particular outcome. The auditor reported to the Committee misstatements it had found in the course of its work. After due consideration, the Committee concurred with management that no adjustments were required.

Internal control and risk management

During the year, the Audit Committee:

- monitored and reviewed internal control and risk management systems;
- reviewed and approved the internal audit programme for 2019; and
- reviewed regular reports on taxation, treasury operations, health and safety and cybersecurity.

The Board is responsible for the effectiveness of the Group's system of internal control, which has been designed and implemented to meet the particular requirements of the Group and the risks to which it is exposed. Details can be found below on the Group's internal control environment, how risk is managed and the Committee's review of the effectiveness of the risk management and internal control systems.

Internal control environment

The primary aim of the Group's internal controls is to operate a system which is appropriate to the business and which can support the Group in delivering its strategic objectives, safeguard the Group's assets and, over time, enhance shareholder value. The system is designed to identify, evaluate and manage the significant risks faced by the Group rather than to eliminate the risk of failure to achieve business objectives and can only provide reasonable and not absolute assurance against material misstatement or loss. This is in accordance with the Guidance on Risk Management, Internal Control and Related Financial and Business Reporting issued by the FRC in September 2014.

The CFO is responsible for internal financial control and for ensuring that the finance department employs a level of management and specialists appropriate for maintaining financial records and processes that provide financial information that is relevant and reliable, complies with applicable laws and regulations, and is distributed both internally and externally in a timely manner. A review of the consolidation and financial statements is undertaken by senior management to ensure that the financial position and results of the Group are appropriately reflected. All financial information published by the Group is subject to the approval of the Audit Committee prior to it being approved by the Board.

The following key elements comprise the internal control environment:

- an appropriate organisational structure with clear lines of responsibility;
- an experienced and qualified finance function which regularly assesses the possible financial impact of the risks facing the Group;
- a comprehensive annual business planning process and strategy review;
- systems of control procedures and delegated authorities which operate within defined guidelines, and approval limits for capital and operating expenditure and other key business transactions and decisions;
- a robust financial control, budgeting and forecast system, which includes regular monitoring, variance analysis, key performance indicator reviews and risk and opportunity assessments at Board level;
- procedures by which the consolidated financial statements are prepared, which are monitored and maintained through the use of internal control frameworks addressing key financial reporting risks arising from changes in the business and accounting standards;
- established policies and procedures setting out expected standards of integrity and ethical standards which reinforce the need for all employees to adhere to all legal and regulatory requirements;
- an annual internal controls compliance checklist; and
- the Head of Risk & Internal Audit is supported by a co-sourced internal audit resource.

During the year ended 31 December 2017, the Group adopted a co-source arrangements and appointed PwC, which continues to support the Head of Risk & Internal Audit to formulate and execute the Group's internal audit plan. The plan was approved to ensure that there was appropriate coverage of the internal control environment, strategic priorities and key risks identified by the Board. At each Committee meeting, the Head of Internal Audit & Risk, assisted by PwC, gives an update on the progress of the internal audit plan, which is reviewed to ensure that it is in line with the Committee's expectations.

During the year, the internal audit plan was amended so that additional areas were added to the plan based on the changes that gave rise to increased levels of risk. These changes to the agreed audit plan were approved by the Committee.

The Head of Risk & Internal Audit has direct access to the Board Chairman and to the Committee Chairman, is accountable to the Committee and meets regularly with both the Committee and its Chairman, without the presence of management, to consider the work of internal audit.

The effectiveness of the execution of the Internal Audit plan is monitored at each Audit Committee meeting and also forms part of the Board's annual evaluation process. The 2019 evaluation confirmed that the Directors are satisfied with the arrangements and approach currently in place.

Risk management

Members of the Group Executive Committee meet to challenge and debate the assessment of risk including emerging risks, for the Group as a whole and within each business unit, which have submitted local risk registers for analysis and ranking together with Company-wide risks to form a robust corporate risk register. This corporate risk register is presented to the Audit Committee at least twice each year. Actions arising from the Audit Committee's review of the corporate risk register are fed back to the business units for their management.

Following the temporary closure of the Calabasas site in 2018 due to its proximity to a forest fire, business continuity plans continue to be updated at all Group sites, with test exercises being conducted and enhancements added to the plans as a result.

Committee oversight

Day-to-day responsibility for effective internal control and risk management and monitoring rests with senior management at business unit level. During the year, the CFO and Head of Risk & Internal Audit attended all Audit Committee meetings to report on internal control and risk management and notified the Committee of any control weaknesses, control failings and risks, their impact and the actions taken to deal with the issues. Detailed updates on specific areas, such as cybersecurity or business continuity, are provided at the Committee's request.

Business Ethics Policy

A policy that sets standards of professionalism and integrity for all employees and operations was relaunched during 2018 and is regularly refreshed. The Business Ethics Policy includes sections relating to bribery and corruption to ensure that all of Spirent's systems, controls and training comply with the anti-bribery and corruption legislation in the countries in which we operate and that a culture of prevention and detection of all forms of bribery and corruption is in place. Anti-bribery training is required to be taken by certain employees periodically; such training was undertaken by certain employees during 2019 and will be rolled out again during 2020.

Acquisitions and divestments

A disciplined due diligence process and post-acquisition integration programme.

Fraud

The Group's Business Ethics Policy has been communicated to all employees and states that all employees have a responsibility for fraud prevention and detection. Any suspicion of fraud will be reported immediately and investigated vigorously.

Raising concerns at work

The Committee aims to ensure that employees are able to raise any concern in confidence about any possible improprieties in business practices, or other matters. In 2018, a revised Group-wide Whistleblowing Policy was launched, and an external third party was appointed and continues to be available to employees for the reporting of any concerns. Disclosures under this arrangement are investigated promptly by the Company Secretary, with the support of the Head of Risk & Internal Audit, and escalated to the Executive Directors and the Committee as appropriate, with follow-up action being taken as soon as practicable thereafter. The Committee is satisfied that the means for employees to raise concerns at work are appropriate to the size and scale of the Group.

External audit

The Committee is responsible for overseeing the Company's relations with the external auditor.

The Committee places great importance on ensuring that high standards of quality and effectiveness are maintained within the external audit process. It considers a number of areas in relation to the external auditor: its performance in discharging the audit and interim review of financial statements, its independence and objectivity, and its re-appointment and remuneration.

Auditor appointment

Each year the Committee assesses and reports to the Board on the qualification, expertise and resources, and independence of the external auditor and the effectiveness of the audit process, with a recommendation on whether to propose to the shareholders that the external auditor be re-appointed.

The Committee notes and confirms compliance with the Competition and Markets Authority Order 2014 (CMA Order) in respect of statutory audit services for large companies.

Following the recommendation of the Board, EY was appointed (as predecessor firm Lindsay, Jamieson & Haldane) by the Company at its Annual General Meeting on 9 May 1950 to audit the financial statements of the Company for the period ending 31 December 1949 and subsequent financial periods. EY's total uninterrupted period of engagement, covering the period from appointment to the period currently under review, is 70 years. The current audit partner, Joe Yglesia, was appointed in 2016.

The Committee is aware that the transitional provisions of the CMA Order and the EU Audit Regulations (which became effective on 17 June 2016) will require the Company to change its external auditor no later than 2021. The Committee confirms that it has begun a tender process for a new external auditor, in keeping with its intention to change the external auditor no later than the expiry of the five-year term of the external audit partner (i.e. by 2021) with the new auditor's term to begin in 2021.

There are no contractual obligations in existence that restrict the Company's choice of auditor.

Auditor effectiveness

The Committee assesses the effectiveness of the audit process on an ongoing basis, with particular attention to the mindset and culture, skills, character and knowledge, quality control and judgement of the external auditor in its handling of key judgements, responsiveness to the Committee and in its commentary where appropriate on the systems of internal control.

The Committee holds regular private meetings with the external auditor to assist with its assessment, including discussion of:

- how the auditor has identified and addressed potential risks to audit quality;
- the controls in place within the audit firm to identify risks to audit quality, including the results of internal and external inspections of the audit team and firm;
- whether the auditor has met the agreed audit plan, in particular how it has responded to any changes that have been required during the process;
- feedback from the key people involved in the audit; and
- the content of the auditor's management letter.

The Committee reviewed and appropriately challenged the basis for these before agreeing the proposed approach and the scope of the external audit was identified.

The Committee also monitored the audit partner's involvement in his team's work to ensure sufficient oversight and direction of work was evident, in particular with regard to the audit of significant components involving judgements.

The effectiveness of the external auditor also formed part of the Board's annual evaluation process, with positive feedback supporting the Committee's satisfaction with EY's performance.

FRC Audit Quality Review

During 2019 an Audit Quality Review Team from the FRC undertook an inspection of EY's audit of the Group's 2018 Financial Statements. As part of that process, the Committee Chairman shared his and the Board's view of the quality of the EY audit. The Committee considered the final inspection report, which did not raise any significant findings, and discussed the results and agreed actions with the lead audit partner.

The Committee agreed with the overall assessment, which was consistent with its own view of the quality and effectiveness of the external audit.

Auditor independence

The Committee assesses the independence and objectivity of the external auditor annually, taking into consideration relevant UK law, regulation, the FRC Revised Ethical Standard and other professional requirements. EY has provided a letter confirming its belief that it remained independent throughout 2019 and has discussed with the Committee the threats to its independence and the safeguards applied to mitigate those threats.

As part of this review, the Committee examined in particular:

- a report from the external auditor describing its arrangements to identify, report and manage any conflicts of interest; and
- the extent of non-audit services provided by the external auditor.

Policy on non-audit services

The Committee is responsible for pre-approving the engagement of the external auditor for any and all non-audit services, with the objective of ensuring that the provision of such services by the external auditor does not impair its independence or objectivity. Taking into account relevant ethical guidance, the Committee's policy precludes a number of non-audit services, including those relating to the accounting records and financial statements, internal audit, IT consulting, legal and investment services and other services deemed by regulators to be precluded.

The Committee accepts that certain work of a non-audit nature may be best undertaken by the external auditor. The policy is reviewed annually and financial limits for the provision of non-audit services, including audit-related fees and other fees, are set on the same annual basis (2019 $0.3 million (2018 $0.3 million)) and were less than one-third of the Group's audit fee of $1.1 million (2018 $0.9 million). The Committee can confirm that no such non-audit services were provided by EY during the period under review (2018 nil).

Report on Directors' remuneration

Gary Bullard
Chairman, Remuneration Committee

Compliance statement

This Report on Directors' remuneration for the year ended 31 December 2019 has been prepared on behalf of the Board by the Remuneration Committee in accordance with Schedule 8 to the Large and Medium-sized Companies and Groups (Accounts and Reports) (Amendment) Regulations 2013 and the relevant sections of the Companies Act 2006 and meets the requirements of the Listing Rules of the Financial Conduct Authority. The Report also describes how the Board has complied with the provisions of the 2018 UK Corporate Governance Code.

The Report is presented in two parts: the Directors' Annual Remuneration Report and the Directors' Remuneration Policy.

The Directors' Annual Remuneration Report sets out details of how our Remuneration Policy was implemented for the year ended 31 December 2019 and how it will be applied for the year ended 31 December 2020. At the 2020 AGM to be held on 29 April 2020 the Directors' Annual Remuneration Report on pages 79 to 93 will be put to an advisory shareholder vote.

The revised Remuneration Policy, set out on pages 93 to 101 of this Report was put to shareholders at the 2019 AGM on 1 May 2019 and, after receiving 95.89 per cent of the total votes cast in favour, the Policy became effective on 2 May 2019 and will apply for three years from that date.

Dear shareholder

I am pleased to present our Report on Directors' remuneration for the year ended 31 December 2019. This report has been prepared on behalf of the Board by the Committee and has been approved by the Board.

Committee's activities in 2019

In 2019 the Committee focused on:

- preparing a suitable remuneration package for the newly appointed CEO;
- consulting with shareholders on Remuneration Policy proposals for 2020 and beyond;
- reviewing metrics and setting targets for annual incentives;
- reviewing metrics and targets for long-term incentives; and
- monitoring the changing landscape of investor expectations with regard to remuneration.

Remuneration Policy review

During 2019, the Committee concluded its in-depth review of the overall Remuneration Policy and structure for Executive Directors with a view to ensuring that it remains fit for purpose in light of our strategy over the coming years and the nature of our business while at the same time reflecting the views of our major stakeholders. The Committee consulted with 20 of the Company's shareholders (representing 80 per cent of the Company's issued share capital) and investor advisory bodies with respect to the proposed changes to the Policy, set out on page 93 of this Report, and received positive support at the 2019 AGM, receiving 95.89 per cent of the total votes cast in favour of the revised Policy. It is the Committee's expectation that it will operate the Policy as approved for the next three years.

Change of CEO

At the beginning of May 2019, Eric Hutchinson stepped down from the Board, retiring from the Company on 30 June 2019 after 37 years with the Group.

Given Mr Hutchinson's retirement, the Committee agreed that he should be considered to be a "good leaver" in terms of both his Annual Incentive for 2019 and his outstanding Long-Term Incentive Plan awards. The Remuneration Committee has used its discretion to conclude that Mr Hutchinson was sufficiently aligned with the interests of shareholders given his significant beneficial shareholding, valued at more than five times his base salary and therefore deferral into shares was not necessary. Subject to the meeting of the applicable performance conditions, he will receive a pro-rata award in cash. With respect to in-flight LTIP awards held by Mr Hutchinson, performance conditions will be tested at the conclusion of each applicable performance period and any resulting vesting will be adjusted to reflect the portion of the performance period for which he was an employee. Details of the Remuneration Policy in place at Mr Hutchinson's leaving date and the payments arising from their application are set out in the Annual Remuneration Report on pages 79 to 93.

Change of CEO continued

The appointment of Eric Updyke as CEO took place on 1 April 2019. The Committee gave careful consideration to the remuneration package for Mr Updyke. Upon appointment he received a salary of $720,000, which our search process suggested was a mid-market level for this role among the pool of appropriately qualified candidates. In addition, the Annual Incentive will have a maximum incentive opportunity of 150 per cent and an annual award of 150 per cent under the Spirent Long-Term Incentive Plan, the same levels as the outgoing CEO.

Eric Updyke also received an additional share incentive award in the form of Restricted Stock under Listing Rule 9.4.2 to partially compensate him for remuneration forfeited at his previous employer. When determining this award, the Committee took into account the form and time horizon of the forfeited compensation together with an independent valuation of likely outcomes. Further details of the award are provided on page 88 of the Annual Remuneration Report.

Other Committee activities in 2019

This is our first Annual Report under the 2018 Code and, in order to comply fully, the Committee's activities have expanded during the year to take into account its wider remit:

- The Committee has had oversight of senior management remuneration for many years. It considers and approves the reward structure and levels of remuneration for each of the CEO's direct reports and approves the budget of the Long-Term Incentive Plan awards for employees below Executive Committee level. In addition, the Committee reviews pay in the wider workforce before setting any pay increases for the Executive Directors.
- The Committee considers clarity, simplicity, risk, predictability, proportionality and the Group's culture when setting remuneration principles and structure.
- The Committee believes that a diverse workforce and inclusive culture are essential to business success and supports and values diversity in all forms. The Committee believes remuneration is an important element of employee engagement.
- The Committee already considers the relationship between executive reward and the reward structures in place for other Group employees, but during 2019 the Board took further steps to improve its engagement with employees by introducing meetings at certain Spirent site with designated Non-executive Directors.
- Given the global nature of Spirent's workforce, the Board decided that rather than designate any single Non-executive Director to lead the engagement, it was more practical for a Non-executive Director to be designated as the liaison point for employees in the three geographical areas in which the Company operates. Meetings in all three areas began during H2, with feedback being reported to the Board and, where it specifically relates to remuneration, to the Remuneration Committee.

Executive remuneration in 2019

The Annual Incentive for 2019 was based on achievement of targets for profitability, revenue and strategic and operational priorities. Full details of the specific targets, and the Executive Directors' achievements against them, can be found on pages 82 to 84. As demonstrated elsewhere in this Annual Report, Spirent performed well, delivering revenue growth and significant growth in profitability in 2019 and this is reflected in the level of payouts.

Eric Hutchinson's 2016 award under the Spirent Long-Term Incentive Plan achieved a partial vesting in 2019, with the performance conditions vesting at 78.625 per cent for the earnings per share (EPS) target and 100 per cent for the Absolute Total Shareholder Return (Absolute TSR) target.

The Long-Term Incentive Plan award given to Paula Bell in 2016 on her appointment as CFO also achieved a partial vesting in 2019, with the performance conditions vesting at 78.625 per cent for the EPS target and 100 per cent for the Absolute TSR target.

Executive remuneration in 2020

Base salaries for the Executive Directors have been increased over the prior year, reflecting the general range of increase in the workforce.

For the Annual Incentive, the metrics of profitability, revenue and strategic and operational priorities remain the same, with the targets for the financial metrics updated to require growth from the achievements of 2019. The Committee believes the targets they have set to be challenging and appropriate; details of the actual targets will be disclosed in the 2020 Annual Report.

Long-Term Incentive Plan awards in 2020 will retain the EPS and Absolute TSR metrics, each with a weighting at 50 per cent. The Committee remains of the view that Absolute TSR as a measure is appropriate due to the limited number of true comparator companies for Spirent but will be undertaking a comprehensive review of the appropriateness of performance metrics during 2020.

I hope you find this Report clear and informative. I will be available at the 2020 AGM to respond to any questions that shareholders may have with respect to the work of the Committee.

Gary Bullard
Chairman, Remuneration Committee
5 March 2020

Annual Remuneration Report 2019

Statement of implementation of Remuneration Policy in 2020 (unaudited)

Information on how the Company intends to implement the Directors' Remuneration Policy in 2020 is set out below.

Base salary

	2020	2019	Per cent change
Paula Bell	**£362,350**	£350,097	3.5 per cent
Eric Updyke[1]	**£580,327**	£563,424	3.0 per cent

Note
1. The figure shown represents the annual base salary for Eric Updyke at an exchange rate of $1.2779:£1; Mr Updyke was appointed as CEO on 1 April 2019 and details of the salary he actually received during 2019 are shown on page 80 of this Annual Remuneration Report.

Benefits

- Life insurance cover of four times annual base salary
- Permanent health insurance
- Private healthcare cover for executive and family
- Car allowance

Retirement benefits

Eric Updyke is eligible to participate in the Spirent Communications, Inc 401k programme with a 4 per cent Company match of his own contributions, subject to any applicable IRS cap. He did not participate in the programme during 2019, but will be enrolling during 2020.

Paula Bell will receive a taxable cash sum in lieu of pension at a rate of 20 per cent of base salary.

Annual Incentive

The Committee has set targets for the year focused on adjusted operating profit, revenue and strategic and operational priorities.

Although the target detail is considered commercially sensitive, the weightings for the year ended 31 December 2020 are as follows:

Adjusted operating profit	50 per cent
Revenue	30 per cent
Strategic and operational priorities	20 per cent

On-target and maximum annual incentive payments are as follows:

	On-target performance per cent of base salary	Maximum performance per cent of base salary
Paula Bell	75	125
Eric Updyke	90	150

One-third of any incentive achieved through the Annual Incentive will be deferred into shares for an additional period of three years.

Details of these targets and their achievement will be disclosed in the Directors' Annual Remuneration Report 2020.

Award under Spirent Long-Term Incentive Plan

It is anticipated that the following award will be made under the LTIP in 2020:

	Per cent of base salary	Anticipated value of award
Paula Bell	125	£452,938
Eric Updyke	150	£870,491

The awards are made in the form of Performance Shares, which are valued at the share price on the date of grant.

Having reviewed the performance targets for awards under the LTIP, the Committee has determined that for the Performance Share awards to be made in 2020, the following parameters are appropriate, calculated over a three-year performance period:

Annual Remuneration Report 2019 continued

Award under Spirent Long-Term Incentive Plan continued

50 per cent of award:

The EPS performance period starts at the beginning of the financial year in which the award is made, in this case on 1 January 2020, and ends after three years, in this case on 31 December 2022. The adjusted EPS figure reported for the financial period to 31 December 2019, which forms the baseline for this performance target, is 13.40 cents.

Target EPS (adjusted) at the conclusion of the performance period	Proportion of Performance Shares vesting (per cent)
Below 15.50 cents	0
15.50 cents	25
Above 15.50 cents and below 18.82 cents	On a straight-line basis between 25 and 100
18.82 cents and higher	100

50 per cent of award:

In determining Absolute TSR growth for the Company, share prices will be averaged over 90-day periods immediately prior to, and at the end of, the performance period, which will commence 14 days prior to the date of award and will end three years later.

Absolute TSR[1]	Proportion of Performance Shares vesting (per cent)
Below 17.00 per cent growth	0
17.00 per cent growth	25
Above 17.00 per cent growth but below 42.00 per cent growth	On a straight-line basis between 25 and 100
42.00 per cent growth or higher	100

Note
1. Share price including reinvested dividends.

Awards made to Executive Directors under the Spirent Long-term Incentive Plan in 2020 will be subject to a post-vesting holding period of an additional two years.

Audited information

Single figure of total Directors' remuneration 2019

The tables below set out the single figure of remuneration received by the Executive Directors and the Non-executive Directors during 2019[1]. Details of performance under the Annual Incentive and Long-Term Incentive Plans are set out on page 82 and 83 and 81 respectively.

Executive Directors

	Paula Bell £000		Eric Hutchinson[2] £000		Eric Updyke[3] £000	
	2019	2018	**2019**	2018	**2019**	2018
Salary/fees[4, 5]	**350.1**	339.9	**264.3**	412.0	**411.7**	–
Benefits[6]	**16.7**	16.4	**8.4**	17.1	**17.4**	–
Retirement benefits[7]	**70.0**	68.0	**42.2**	82.4	**–**	–
Fixed remuneration[8]	**436.8**	424.3	**314.9**	511.5	**429.1**	–
Annual Incentive[9]	**379.9**	278.8	**269.6**	494.6	**539.7**	–
Long-Term Incentive[10, 11]	**587.4**	358.2	**964.1**	620.8	**–**	–
Variable remuneration[12]	**967.3**	637.0	**1,233.7**	1,115.4	**539.7**	–
Total[13]	**1,404.1**	1,061.3	**1,548.6**	1,626.9	**968.8**	–

Non-executive Directors[14]

	Gary Bullard £000		Wendy Koh £000		Edgar Masri £000		Jonathan Silver £000		Sir Bill Thomas £000	
	2019	2018	**2019**	2018	**2019**	2018	**2019**	2018	**2019**	2018
Salary/fees[4]	**60.5**	59.0	**51.5**	48.7	**51.5**	48.7	**62.5**	61.0	**175.0**	160.0
Benefits	**–**	–	**–**	–	**–**	–	**–**	–	**–**	–
Retirement benefits	**–**	–	**–**	–	**–**	–	**–**	–	**–**	–
Fixed remuneration[8]	**60.5**	59.0	**51.5**	48.7	**51.5**	48.7	**62.5**	61.0	**175.0**	160.0
Annual Incentive	**–**	–	**–**	–	**–**	–	**–**	–	**–**	–
Long-Term Incentive	**–**	–	**–**	–	**–**	–	**–**	–	**–**	–
Variable remuneration[12]	**–**	–	**–**	–	**–**	–	**–**	–	**–**	–
Total	**60.5**	59.0	**51.5**	48.7	**51.5**	48.7	**62.5**	61.0	**175.0**	160.0

Notes
1. All Executive Directors who served during 2018 and two of those who served in 2019 are UK based and paid in Sterling; therefore the data is presented in this currency. Data for Eric Updyke, who is US based and paid in US Dollars has been converted using an exchange rate of $1.2779:£1.
2. Eric Hutchinson stepped down from the Board on 1 May 2019 and retired from the Company on 30 June 2019; the figures shown represent the amounts earned until the date of his retirement in June 2019. The exception to this is the figure for Annual Incentive; see Note 9 below.
3. Eric Updyke joined the Company on 1 April 2019.
4. Salary / fees: cash paid in respect of the year.
5. Eric Hutchinson's 2019 salary / fees figure includes a payment of £52,787 relating to annual leave that remained outstanding and untaken at his leaving date of 30 June 2019.
6. Benefits: taxable value of all benefits in respect of the year which comprise relocation expenses, private healthcare, permanent health insurance, life insurance and car allowance.
7. Retirement benefits: cash value in lieu of pension for Paula Bell and Eric Hutchinson; Company contribution to 401k plan for Eric Updyke.
8. Fixed remuneration subtotal: Salary/fees, Benefits and Retirement benefits.
9. Annual Incentive: cash incentive payable in respect of performance during the year. The Annual Incentive earned by Eric Hutchinson has been pro-rated to reflect the time served.
10. Long-Term Incentive based on 2019 performance:
    The figures quoted comprise values for the elements of LTIP awards which vest based on performance during 2019:
    (i) TSR element of June 2016 LTIP Award to Eric Hutchinson and September 2016 LTIP Award to Paula Bell – actual value calculated based on the market price of a Spirent Ordinary Share at the date of vesting (197.740 pence on 30 September 2019 for Paula Bell and 151.326 pence on 16 June 2019 for Eric Hutchinson).
    (ii) EPS element of 2017 LTIP Award – level of vesting calculated based on audited EPS figure published in this Annual Report 2019; estimated value calculated based on the 3-month average price of a Spirent Ordinary Share to 31 December 2019 of 211.04 pence and pro-rated for the portion of the performance period completed while Mr Hutchinson was employed by the Company. This estimated value will be restated in the 2020 Annual Report on Remuneration to reflect the actual share prices on the dates of vesting for each award.
    (iii) Value attributable to share price growth:
    In June 2016, Eric Hutchinson received an LTIP award with a face value of £600,000. This award vested in 2019, achieving an actual value of £1,056,568.72. The growth in value attributable to share price growth was therefore £456,568.72.
    In September 2016, Paula Bell received an LTIP award with a face value of £240,000. This award vested in 2019, achieving an actual value of £516,896.31. The growth in value attributable to share price growth was therefore £276,896.31.
11. Long-Term Incentive based on 2018 performance:
    The figures quoted comprise values for the elements of LTIP awards which vest based on performance during 2018:
    (i) TSR element of 2015 EIP Award to Eric Hutchinson and 2016 LTIP Award to Paula Bell – actual value calculated based on the market price of a Spirent Ordinary Share at the date of vesting (118.0 pence on 23 March 2018 for Paula Bell and 117.4 pence on 18 May 2018 for Eric Hutchinson).
    (ii) EPS element of 2016 LTIP Award – restated actual value calculated based on the market price of a Spirent Ordinary Share at the date of vesting (197.740 pence on 30 September 2019 for Paula Bell and 151.326 pence on 16 June 2019 for Eric Hutchinson). The figures disclosed in Spirent's Annual Report 2018 were based on estimated vesting levels and estimated share prices.
12. Variable remuneration subtotal: Annual Incentive and Long-Term Incentive.
13. The total single figure of remuneration for 2018 for each Executive director is restated to reflect the restated Long-Term Incentive figure (see note 11(ii) above).
14. Non-executive Directors do not receive benefits or pension payments and are not eligible for variable remuneration.

Annual Incentive

During 2019, incentives were available to Executive Directors on an annual basis, with the following maximum total Annual Incentive available:

	On-target total incentive available per cent of base salary	Maximum total incentive available per cent of base salary
Paula Bell	75	125
Eric Hutchinson[1]	90	150
Eric Updyke[2]	90	150

Notes
1. Eric Hutchinson stepped down as CEO following the AGM on 1 May 2019 and retired from the Company on 30 June 2019; the Annual Incentive paid for the 2019 financial period is pro-rated to reflect time served to his retirement date of 30 June 2019.
2. Eric Updyke was appointed as CEO following the AGM on 1 May 2019; the Annual Incentive paid for the 2019 financial period is pro-rated to reflect time served.

The maximum Annual Incentive which could be earned was determined by reference to growth targets in the Company's adjusted operating profit and revenue, representing 50 per cent and 30 per cent of the incentive respectively, with performance against an agreed set of strategic and operational priorities linked to improving Spirent's operational effectiveness in the areas of sales, engineering and finance representing the remaining 20 per cent of the incentive.

On appointment, the incoming CEO, Eric Updyke, was set the same targets as the outgoing CEO, Eric Hutchinson, with outcomes for each individual to be pro-rated to reflect time served.

Adjusted operating profit element (50 per cent of Annual Incentive)

	Target $ million	Achievement $ million
Entry point (20 per cent)	80.2	
On-target (60 per cent)	84.8	
Maximum (100 per cent)	92.5	92.9
Achievement		100 per cent

Revenue (30 per cent of Annual Incentive)

	Target $ million	Achievement $ million
Entry point (20 per cent)	486.4	
On-target (60 per cent)	505.5	
Maximum (100 per cent)	524.6	503.6
Achievement		56 per cent

Strategic and operational priorities (20 per cent of Annual Incentive)

Eric Hutchinson and Paula Bell were each set priorities at the start of 2019, with performance of each target to be equally weighted. As with the financial targets, the incoming CEO, Eric Updyke, was set identical priorities to the outgoing CEO, Eric Hutchinson.

Cash conversion (Outgoing CEO: Eric Hutchinson; Incoming CEO: Eric Updyke; CFO: Paula Bell)

Objective: To manage cash to optimise availability for acquisition or shareholder returns.

Metric: Cash conversion is defined as adjusted Free Cash Flow divided by Adjusted Earnings and is expressed as a percentage.

	Achievement
Entry point (20 per cent)	85.0
On-target (60 per cent)	92.5
Maximum (100 per cent)	100.0
Achievement	100 per cent

Key account management (Outgoing CEO: Eric Hutchinson; Incoming CEO: Eric Updyke)
Objective: To continue to focus increasing growth from our key customers.

	Achievement
Recruitment (50 per cent)	
Expansion of key account management programme (50 per cent)	
Achievement	75 per cent

Improvement in cash collection measures (CFO: Paula Bell)
Objective: To continue to drive improvements in receivable days' sales outstanding (2018 72 days).

	Achievement
Entry point (20 per cent)	=<71 days
On-target (60 per cent)	=<70 days
Maximum (100 per cent)	=<69 days
Achievement	100 per cent

CEO transition (Outgoing CEO: Eric Hutchinson; Incoming CEO: Eric Updyke)
Objective: To ensure an orderly induction and handover programme between incoming and outgoing CEOs.

	Achievement
Achievement	100 per cent

Summary of Annual Incentive target outcomes

		CEO Eric Hutchinson[1]		CEO Eric Updyke[2]		CFO Paula Bell	
Target	% of total incentive	Achievement as % of on-target	Achievement as % of maximum	Achievement as % of on-target	Achievement as % of maximum	Achievement as % of on-target	Achievement as % of maximum
Adjusted operating profit	50	166.7	100.0	166.7	100.0	166.7	100.0
Revenue	30	93.3	56.0	93.3	56.0	93.3	56.0
Strategic and operational priorities	20	152.8	91.7	152.8	91.7	166.7	100.0
• Cash conversion		166.7	100.0	166.7	100.0	166.7	100.0
• Key account management		125.0	75.0	125.0	75.0	n/a	n/a
• Improvement in cash collection		n/a	n/a	n/a	n/a	166.7	100.0
• CEO transition		166.7	100.0	166.7	100.0	n/a	n/a
Total	100	141.9	85.1	141.9	85.1	144.7	86.8

Notes
1. Eric Hutchinson stepped down as CEO following the AGM on 1 May 2019 and retired from the Company on 30 June 2019; the Annual Incentive paid for the 2019 financial period is pro-rated to reflect time served to his retirement date of 30 June 2019.
2. Eric Updyke was appointed as CEO following the AGM on 1 May 2019; the Annual Incentive paid for the 2019 financial period is pro-rated to reflect time served.

Total Annual Incentive performance

	2019			2018		
	Per cent on-target Annual Incentive	**Per cent of annual base salary**	**£**	Per cent on-target Annual Incentive	Per cent of base salary	£
Paula Bell	**144.7**	**108.5**	**379,883**	136.7	82.0	278,821
Eric Hutchinson[1]	**141.9**	**63.9**	**269,648**	133.4	120.0	494,821
Eric Updyke[2]	**141.9**	**95.8**	**539,638**	–	–	–

Notes
1. Eric Hutchinson stepped down as CEO following the AGM on 1 May 2019 and retired from the Company on 30 June 2019; the Annual Incentive paid for the 2019 financial period is pro-rated to reflect time served to his retirement date of 30 June 2019.
2. Eric Updyke was appointed as CEO following the AGM on 1 May 2019; the Annual Incentive paid for the 2019 financial period is pro-rated to reflect time served.

Annual Incentive continued

Deferred Bonus Plan

The Remuneration Policy approved by shareholders at the 2019 AGM has introduced the deferral of one-third of the incentive achieved under the Annual Incentive into shares, to be retained for a period of three years. This applies to Executive Directors employed by the Group at the date of the payment of the Annual Incentive. The Remuneration Committee has used its discretion to conclude that Mr Hutchinson was sufficiently aligned with the interests of shareholders given his significant beneficial shareholding, valued at more than five times his base salary and therefore deferral into shares was not necessary. Subject to the meeting of the applicable performance conditions, he will receive a pro-rata award in cash.

The deferral element of the Annual Incentive will be applied as follows:

	Total value of Annual Incentive achieved £	Value of Annual Incentive payable as cash £	Value of Annual Incentive deferred into shares £	Vesting date for deferred shares
Paula Bell	379,883	253,255	126,628	March 2023
Eric Updyke	539,638	359,759	179,879	March 2023

Relocation expenses

No relocation expenses were paid to an Executive Director during 2019.

Following her appointment as CFO in 2016, Paula Bell received a relocation payment of £100,000, on which the Company paid an associated tax liability of £76,940, giving a total gross relocation package to the value of £176,940. The amount reimbursed is subject to a three-year clawback from her start date (5 September 2016), with the balance of the clawback reducing by one-third on each anniversary of that start date. This clawback period ended on 5 September 2019.

Total pension entitlements

Eric Hutchinson received a taxable cash allowance in lieu of pension of 20 per cent of base salary. For the portion of 2019 during which Mr Hutchinson was employed by the Company, the allowance paid was £42,230 (2018 £82,400).

Paula Bell receives a taxable cash allowance in lieu of pension of 20 per cent of base salary. For 2019, the allowance paid was £70,019 (2018 £68,000).

Eric Updyke is eligible to participate in the Spirent Communications, Inc 401k programme with a 4 per cent Company match of his own contributions, subject to any applicable IRS cap. Mr Updyke elected not to participate in the programme during 2019.

External appointments

Eric Hutchinson held no external positions during the year under review to the date at which he retired from the Company.

On appointment in 2016, the Board agreed that it was acceptable for Paula Bell to continue with her non-executive role with Laird plc, however, this appointment ended in July 2018 on the acquisition of Laird plc by Advent International.

From 1 September 2018, and with the approval of the Company's Board, Paula Bell was appointed to a non-executive director role with Keller Group plc; she became Chairman of the Audit Committee of Keller Group plc on 1 January 2019.

Fees in respect of this directorship are paid directly to and retained by Ms Bell.

Eric Updyke has held no external positions since his appointment on 1 April 2019.

Payments to past Directors

There were no payments made to past Directors during the year under review.

Payments for loss of office

There were no payments for loss of office during the year under review.

Payments of advances, credits or guarantees

There were no payments of advances, credits or guarantees to Directors during the year under review.

Non-executive Director fees

Details of individual appointments are as follows:

Director	First appointed as a Director	Current appointment due to expire
Gary Bullard	1 December 2016	2020 AGM
Wendy Koh	11 January 2018	2021 AGM
Edgar Masri	11 January 2018	2021 AGM
Jonathan Silver	25 June 2015	2022 AGM
Sir Bill Thomas	1 December 2016	2020 AGM

Details of the fees paid to the Non-executive Directors during the year are set out on page 81.

During 2019, fees for the Non-executive Directors were reviewed with effect from 1 January 2020.

Under the matters reserved to the Board, the Board considered and agreed that in keeping with the range of salary increases applied across the Group's employees, the basic annual fee for Non-executive Directors should be increased by 3.0 per cent, from £51,500 to £53,045, with effect from 1 January 2020.

It was decided that the additional fees payable to the Chairman of the Audit and Remuneration Committees would remain at £11,000 and £9,000 respectively. The role of Senior Independent Director was entitled to receive an additional fee of £7,500 per annum in recognition of the increased time commitment associated with the role but the individual who currently fills this role has chosen to continue to waive this additional fee during the period under review and for 2020.

Similarly, under the terms of reference of the Committee, it considered and agreed that the annual fee for the Chairman should also be increased by 3.0 per cent, from £175,000 to £180,250, with effect from 1 January 2020.

Non-executive Directors are not eligible for variable remuneration.

Statement of Directors' shareholdings and share interests

The beneficial interests of the Directors and their connected persons in the shares of the Company are set out below:

	At 31 December 2018 Ordinary Shares[1]	At 31 December 2019 Ordinary Shares[1]	At 5 March 2020 Ordinary Shares[1]
Executive Directors			
Paula Bell[2]	227,096	365,488	365,591
Eric Hutchinson[3]	2,010,420	1,682,293	–
Eric Updyke	–	–	–
Non-executive Directors			
Gary Bullard	50,830	51,170	51,170
Wendy Koh	–	–	–
Edgar Masri	20,000	20,000	20,000
Jonathan Silver	70,000	70,000	70,000
Sir Bill Thomas	67,442	67,442	67,442

Notes
1. Directors' beneficial interests do not form part of the remuneration provided by the Company.
2. Events since 31 December 2019:
   On 24 January 2020, Paula Bell acquired 52 Ordinary Shares under the UK Employee Share Purchase Plan at a price of 240.0000 pence per share.
   On 24 February 2020, Paula Bell acquired 51 Ordinary Shares under the UK Employee Share Purchase Plan at a price of 245.0000 pence per share.
3. Eric Hutchinson stepped down as a Director following the AGM on 1 May 2019 and retired from the Company on 30 June 2019; the figures shown represent his beneficial interests on that date.

Shareholding guidelines for Executive Directors

The Committee believes that to further align their interests with those of shareholders, Executive Directors should have a significant shareholding in the Company. Under the 2019 Remuneration Policy, the Committee requires Executive Directors to build a holding of shares equivalent in value to 200 per cent of base salary.

Under the 2019 Remuneration Policy, Executive Directors are not required to hold on to beneficially owned shares after the end of their employment with the Group.

The table below sets out the holdings of the Executive Directors who served during the year at 31 December 2019, with the exception of Eric Hutchinson, whose holding is that reported at the date on which he left the Company:

	Guideline holding	Beneficially owned shares	Unfettered share incentives	Value of holding as percentage of salary[1]	Guideline met?
Paula Bell	200 per cent of base salary	365,488	–	253.7 per cent	Yes
Eric Hutchinson[2]	200 per cent of base salary	1,682,293	–	608.7 per cent	Yes
Eric Updyke[3]	200 per cent of base salary	–	–	–	No

Notes
1. The value of shareholdings is based on the closing price of a Spirent Ordinary Share on 31 December 2019 and the number of Ordinary Shares held by the individual on that date, with the exception of Mr Hutchinson. The percentage is calculated based on 2020 base salary.
2. Eric Hutchinson stepped down as a Director following the AGM on 1 May 2019 and retired from the Company on 30 June 2019; the figures shown represent his shareholding on that date.
3. Eric Updyke was appointed to the Company on 1 April 2019 and joined the Board on 1 May 2019 and is in the process of building up a shareholding to meet the guideline.

Outstanding share incentive awards[1]

The share incentive interests of Executive Directors who served during the period 1 January 2019 to the date of this report are set out below:

Paula Bell

Plan type	LTIP	LTIP	LTIP	LTIP
Award type	PS	PS	PS	PS
Award date	30 September 2016	4 May 2017	22 May 2018	16 May 2019
At 1 January 2019 (or date of appointment)	292,683	279,661	302,402	–
Granted during the period	–	–	–	276,276
Vested during the period	261,402	–	–	–
Lapsed during the period	31,281	–	–	–
Any other adjustments during the period	–	–	–	–
At 31 December 2019 (or at date of cessation)	–	279,661	302,402	276,276
Market price at date of award (£)[2]	0.820000	1.180000	1.124000	1.584000
Face value of award granted in period (£)	–	–	–	437,621.25
Exercise price (£)[3]	Nil	Nil	Nil	Nil
Subject to performance conditions?	Yes	Yes	Yes	Yes
Performance condition	50% EPS, 50% TSR	50% EPS, 50% TSR	50% EPS, 50% TSR	50% EPS, 50% TSR
Performance condition testing date[4]	30 September 2019	4 May 2020	22 May 2021	16 May 2022
Result of performance condition testing	EPS 78.625% vest TSR 100% vest	–	–	–
Market price at vesting date (£)	1.977400	–	–	–
Exercise date	30 September 2019	–	–	–
Market price at exercise date (£)	1.977400	–	–	–
Gain on exercise (£)	516,896.31	–	–	–
Expiry date	30 September 2019	4 May 2020	22 May 2021	16 May 2022
Expiry of post-vesting holding period	–	–	–	16 May 2024

Eric Hutchinson

Plan type	LTIP	LTIP	LTIP
Award type	PS	PS	PS
Award date	16 June 2016	4 May 2017	22 May 2018
At 1 January 2019 (or date of appointment)	781,758	508,474	549,822
Granted during the period	–	–	–
Vested during the period	698,207	–	–
Lapsed during the period	83,551	–	–
Any other adjustments during the period	–	–	–
At 31 December 2019 (or at date of cessation)	–	508,474	549,822
Market price at date of award (£)[2]	0.767500	1.180000	1.124000
Face value of award granted in period (£)	–	–	–
Exercise price (£)[3]	Nil	Nil	Nil
Subject to performance conditions?	Yes	Yes	Yes
Performance condition	50% EPS, 50% TSR	50% EPS, 50% TSR	50% EPS, 50% TSR
Performance condition testing date[4]	16 June 2019	4 May 2020	22 May 2021
Result of performance condition testing	EPS 78.625% vest TSR 100% vest	–	–
Market price at vesting date (£)	1.513260	–	–
Exercise date	16 June 2019	–	–
Market price at exercise date (£)	1.513260	–	–
Gain on exercise (£)	1,056,568.72	–	–
Expiry date	16 June 2019	4 May 2020	22 May 2021
Expiry of post-vesting holding period	–	–	–

Outstanding share incentive awards[1] continued

Eric Updyke

Plan type	LTIP	LTIP
Award type	RSU	PS
Award date	1 April 2019	16 May 2019
At 1 January 2019 (or date of appointment)	–	–
Granted during the period	663,769	532,672
Vested during the period	–	–
Lapsed during the period	–	–
Any other adjustments during the period	–	–
At 31 December 2019 (or at date of cessation)	663,769	532,672
Market price at date of award (£)[2]	1.446000	1.584000
Face value of award granted in period (£)	959,809.97	843,752.80
Exercise price (£)[3]	Nil	Nil
Subject to performance conditions?	Yes	Yes
Performance condition	Continuing employment and satisfactory performance	50% EPS, 50% TSR
Performance condition testing date[4, 5]	5 May 2020, 5 May 2021, 5 May 2022	16 May 2022
Result of performance condition testing	–	–
Market price at vesting date (£)	–	–
Exercise date	–	–
Market price at exercise date (£)	–	–
Gain on exercise (£)	–	–
Expiry date	5 May 2022	16 May 2022
Expiry of post-vesting holding period	–	16 May 2024

Notes

An explanation of each share plan and its operation is given in note 33 to the audited consolidated financial statements of the Group.

1. Key to share plan and type of award:
   LTIP PS – 2016 Long-Term Incentive Plan Performance Shares awarded as conditional share awards.
   LTIP RSU – 2016 Long-Term Incentive Plan Restricted Stock Units awarded as conditional share awards.
2. The market price on date of grant is the price of an Ordinary Share at the close of business on the day before the date of grant.
3. There is no exercise price payable for a Performance Share upon vesting.
4. Awards which have passed the date first exercisable have vested and are unfettered, having passed the relevant performance conditions.
5. The 1 April 2019 award to Mr Updyke formed an additional share incentive award to partially compensate Mr Updyke for remuneration forfeited at his previous employer. When determining these awards, the Committee took into account the form and time horizon of the forfeited compensation. The award will vest in three tranches: 34 per cent on 5 May 2020, 33 per cent on 5 May 2021 and 33 per cent on 5 May 2022, with each tranche being subject to Mr Updyke's continuing employment with the Company and satisfactory performance in his role as CEO.

Share incentive interests awarded during the year

Eric Updyke

The Remuneration Committee approved an award under Listing Rule 9.4.2 to Mr Updyke to "buy-out" remuneration arrangements forfeited by Mr Updyke on leaving his previous employer. The value of the award was calculated by way of an independent valuation at the time of Mr Updyke's contractual negotiations, based on the value of the existing awards.

An award to the value of $1.2 million was made in the form of Restricted Stock with a vesting schedule designed to mirror the timing of the awards forfeited as follows:

- 34% of the award with a face value of $408,000 with a vesting date of 5 May 2020, subject to Mr Updyke continuing to be employed with the Spirent Communications plc Group and acceptable personal performance up to the date of vesting as determined by the Committee;
- 33% of the award with a face value of $396,000 with a vesting date of 5 May 2021, subject to Mr Updyke continuing to be employed with the Spirent Communications plc Group and acceptable personal performance up to the date of vesting as determined by the Committee; and
- 33% of the award with a face value of $396,000 with a vesting date of 5 May 2022, subject to Mr Updyke continuing to be employed with the Spirent Communications plc Group and acceptable personal performance up to the date of vesting as determined by the Committee.

Vesting for each tranche of the award will be subject to Mr Updyke continuing to be employed by the Company and the Committee being satisfied as to his personal performance in the role. For this award only, there is no malus or clawback applied and, in the event of a change of control of the Company, the award will vest in full.

Eric Updyke and Paula Bell

In 2019, the Committee approved an award of Performance Shares to Ms Bell and Mr Updyke equivalent to 125 per cent and 150 per cent of base salary respectively. Awards made to the Executive Directors since the approval by shareholders of the Company's revised Remuneration Policy on 1 May 2019 have a two-year post-vesting holding period.

50 per cent of award:

The EPS performance period for this award started at the beginning of the financial year in which the award is made, in this case on 1 January 2019, and ends after three years, in this case on 31 December 2021. The adjusted EPS figure reported for the financial period to 31 December 2018, which forms the baseline for this performance target, is 10.86 cents.

Target EPS (adjusted) at the conclusion of the performance period	Proportion of Performance Shares vesting (per cent)
Below 12.90 cents	0
12.90 cents	25
Above 12.90 cents and below 14.45 cents	On a straight-line basis between 25 and 50
14.45 cents	50
Above 14.45 cents and below 18.75 cents	On a straight-line basis between 50 and 100
18.75 cents and higher	100

50 per cent of award:

In determining Absolute TSR growth for the Company, share prices will be averaged over 90-day periods immediately prior to, and at the end of, the performance period, which will commence 14 days prior to the date of award and will end three years later.

Absolute TSR[1]	Proportion of Performance Shares vesting (per cent)
Below 17 per cent growth	0
17 per cent growth	25
Above 17 per cent growth but below 25 per cent growth	On a straight-line basis between 25 and 50
25 per cent growth	50
Above 25 per cent growth but below 42 per cent growth	On a straight-line basis between 50 and 100
42 per cent growth or higher	100

Note
1. Share price including reinvested dividends.

Share incentive interests vesting during 2020

Both Mr Hutchinson and Ms Bell's awards which are due to vest on 4 May 2020 are subject to an EPS performance condition and an Absolute TSR performance condition.

- The EPS condition has passed the growth threshold required for full vesting.
- The Absolute TSR condition will be tested after the conclusion of the performance period. Current estimates, based on the growth in market price of a Spirent Ordinary Share between the beginning of the performance period and the date of this report, suggest it is likely that this will achieve a significant level of vesting.

Mr Hutchinson's award will be pro-rated to reflect the proportion of the performance period for which he was employed by the Company.

The first tranche of Mr Updyke's buyout award of Restricted Stock (awarded under Listing Rule 9.4.2) is due to vest on 5 May 2020, subject to his continuing employment and his satisfactory performance of the role of CEO. The Remuneration Committee will consider the approval of the vesting prior to 5 May 2020.

No new shares were issued during the year, with all exercises of share incentives being satisfied by the transfer of shares held by the Company's Employee Share Ownership Trust (ESOT). At the date of this report, the ESOT holds 1.5 million Ordinary Shares for the purpose of satisfying the exercises of current and future awards by employees and former employees of the Group.

Dilution

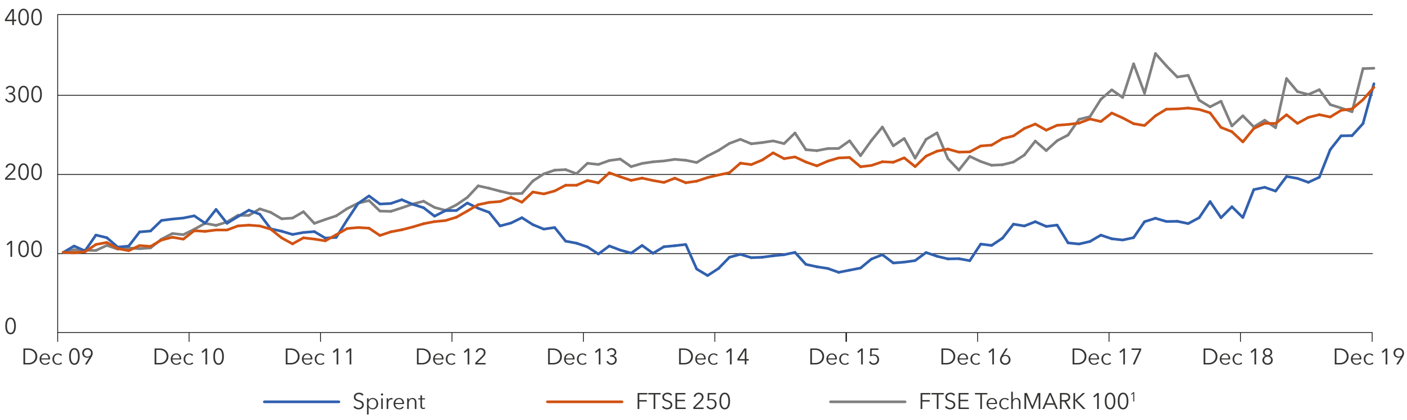
Overall shareholder dilution resulting from the Company's share incentive plans (on a rolling ten-year basis) has fallen by 1.3 per cent when comparing the positions at 31 December 2019 (2.7 per cent) and 31 December 2018 (4.0 per cent). The overall number of share incentives outstanding has increased slightly to 9.2 million at 31 December 2019 (2018 9.1 million).

Unaudited information

Total Shareholder Return performance

The graph below shows the TSR performance for the last ten financial years of Spirent Communications plc against the FTSE 250 Index and the FTSE TechMARK 100 Index, excluding those companies who were also constituents of the FTSE 100 Index at the commencement of the period. These indices have been selected as the most relevant comparators for Spirent across the time period reflected in the graph below due to Spirent's business operations in the technology space and the Company's market capitalisation and size.

Ten-year TSR performance – Spirent vs FTSE TechMARK[1] and FTSE 250



Note
1. As of 1 January 2010, excluding FTSE 100 companies.

The middle market price of an Ordinary Share at the close of business on 2 January 2019 and 31 December 2019 (being the first and last days the London Stock Exchange was open for trading in 2019) was 116.0 pence and 251.5 pence respectively, and during that period ranged between a high of 251.5 pence and a low of 115.4 pence.

Table of CEO remuneration[1]

Year	CEO	CEO single figure of total remuneration £000	Annual bonus payout against maximum opportunity Per cent	Long-term incentive vesting rates against maximum opportunity Per cent
2019	Eric Updyke[2]	968.8	85.1	–
2019	Eric Hutchinson[3]	1,548.6	85.1	89
2018	Eric Hutchinson	1,533.4	80.0	63
2017	Eric Hutchinson	1,292.6	86.8	–
2016	Eric Hutchinson	632.6	22.6	–
2015	Eric Hutchinson	497.1	–	–
2014	Eric Hutchinson	521.6	–	–
2013	Eric Hutchinson[4]	186.9	12.0	–
2013	Bill Burns[5]	401.3	–	–
2012	Bill Burns	931.8	40.5	34
2011	Bill Burns	1,309.6	93.3	84
2010	Bill Burns	1,279.9	100.0	100
2009	Bill Burns	997.8	93.9	100

Notes
1. Data for Mr Updyke's earnings are presented in Sterling based on an average exchange rate for 2019 of 1.2779. Prior year data in this table has been recalculated from US Dollars to be presented in Sterling at the following average exchange rates: 2014 $1.65:£1; 2013 $1.56:£1; 2012 $1.58:£1; 2011 $1.60:£1; 2010 $1.54:£1; 2009 $1.57:£1.
2. Eric Updyke took up the position of CEO on 1 April 2019.
3. Earnings disclosed are to 30 June 2019, when Eric Hutchinson retired from the Spirent Group.
4. Eric Hutchinson took up the position of CEO on 3 September 2013.
5. Earnings disclosed are to 3 September 2013, when Bill Burns stepped down as CEO.

Percentage change in remuneration of the CEO

The table below shows the movement in salary, benefits and Annual Incentive for the CEO between the current and prior years compared to the average remuneration for all Group employees:

	CEO[1] 2019 $000	2018 $000	Per cent change	Average employee 2019 $000	2018 $000	Per cent change
Base salary	720.0	549.4	31.1	100.2	96.1	4.3
Benefits[2]	29.6	132.0	(77.6)	12.7	13.7	(7.3)
Total Annual Incentive[3]	919.5	659.5	39.4	21.3	19.1	11.8

Notes
1. CEO data based on Eric Updyke's starting salary, annualised for 2019.
2. Benefits include employer pension contributions, car allowance, health insurance and life assurance.
3. Total Annual Incentive includes all bonus payments and commission.

Relative importance of the spend on pay

The following table shows the total expenditure on pay for all of the Company's employees compared to distributions to shareholders by way of dividend. In order to provide context for these figures, adjusted operating profit is also shown.

	2019 $ million	2018 $ million	Per cent change
Employee remuneration costs[1]	**220.5**	208.9	5.6
Distributions to shareholders[2]	**28.6**	54.8	(47.8)
Adjusted operating profit[3]	**92.9**	77.1	20.5

Notes
1. Remuneration, social security costs, pension and other related costs and expense of share-based payment (see Note 8 to the Consolidated Financial Statements).
2. Dividends declared and paid in the year include a special dividend paid in 2018 (see Note 12 of the Consolidated Financial Statements). Removing the Special Dividend would give a figure for 2018 of $24.9 million with an increase of 14.86 per cent to the 2019 figure of $28.6 million.
3. Before exceptional items, acquisition related costs, acquired tangible asset amortisation and share-based payment amounting to $4.3 million in total (2018 $19.6 million) (see Note 3 of the Consolidated Financial Statements).

CEO pay ratio

For the purposes of this year's disclosure, the gender pay gap data from our 5 April 2019 snapshot has been used to identify the three appropriate employees for comparison with the CEO (Option B). Further detail on the methodology is set out below.

The table below compares the aggregate 2019 single figure of remuneration for the two individuals who fulfilled the role of CEO during the period (which includes a three month period where both individuals were receiving remuneration) with that of the Group employees who are paid at the 25th percentile (lower quartile), 50th percentile (median) and 75th percentile (upper quartile of its UK employee population).

Year	Method	25th percentile pay ratio	Median pay ratio	75th percentile pay ratio
2019	Option B	72:1	53:1	24:1

The remuneration figures for all employees were determined at 31 December 2019.

Under Option B, the latest available gender pay gap data is used to identify the best equivalent for three Group employees in the UK whose hourly rates of pay are at the 25th, 50th and 75th percentiles for the Group and their total pay and benefits figure for 2019 is then calculated. The identified employees are considered to be reasonably representative since the structure of their remuneration arrangements is in line with that of the majority of the UK workforce. The table below sets out the salary and total pay and benefits for the three identified quartile point employees:

Year	25th percentile (P25)	Median (P50)	75th percentile (P75)
Salary (£)	30,680	44,203	77,579
Total pay and benefits (£)	34,979	47,063	106,327

Each employee's pay and benefits were calculated using each employees remuneration, consistent with the aggregated CEO remuneration, on a full-time equivalent basis. No adjustments were made and no components of pay have been omitted.

Base salaries of all employees, including our Executive Directors, are set with reference to a range of factors including market practice, experience and performance in role. In reviewing the ratios the Committee also noted that the CEO's remuneration package is weighted more heavily towards variable remuneration (including the Annual Incentive and Long-Term Incentive Plan) than the wider workforce due to the nature of the role, and this means the ratio is likely to fluctuate depending on the performance of the business and associated outcomes of incentive plans in each year.

CEO pay ratio continued

The Committee believes the median pay ratio is consistent with the pay, reward and progression policies for our UK employees. The salary and total pay and benefits levels for the CEO and median representative employee are competitively positioned within the relevant markets and reflect the operation of our remuneration structures which are effective in appropriately incentivising staff, while having regard to the Company's risk framework, risk appetite and to rewarding the approach as well as the outcome of performance.

There was a period of overlap during 2019 between the outgoing and incoming CEO in order to effect a smooth handover of responsibilities. Accordingly the required disclosure table above shows the aggregate of the remuneration for both individuals. For illustrative purposes, the table below compares an annualised 2019 single figure of remuneration for the outgoing CEO with the same UK-based Group employees. By using an annualised figure in this way, it is anticipated that the above ratios are more representative of the typical pay ratios.

Year	Method	25th percentile pay ratio	Median pay ratio	75th percentile pay ratio
2019	Option B (annualised)	58:1	43:1	19:1

In future years we will provide context to the ratios and set out a table showing changes over time and narrative explaining them, together with a chart tracking CEO to employee pay ratios.

Statement of shareholder voting

At the 2019 AGM on 1 May 2019 the results of shareholder voting on remuneration matters were as follows:

Advisory vote regarding the Report on Directors' remuneration for the year to 31 December 2018:

Votes for[1]	Per cent	Votes against	Per cent	Votes cast	Votes withheld[2]
488,530,561	98.00	9,964,252	2.00	498,494,813	13,520

Binding vote for the Company's Remuneration Policy, approved by shareholders at the 2019 AGM and effective from 2 May 2019:

Votes for[1]	Per cent	Votes against	Per cent	Votes cast	Votes withheld[2]
478,026,071	95.89	20,467,919	4.11	498,493,990	14,343

Notes
1. The "For" vote includes those giving the Company Chairman discretion.
2. A vote withheld is not a vote in law and is not counted in the calculation of the votes "For" and "Against" the resolution.

Votes "For" and "Against" are expressed as a percentage of total votes cast.

Remuneration Committee

Responsibilities

The Remuneration Committee is responsible to the Board for determining:

- Remuneration Policy for the Executive Directors and Chairman taking into account remuneration trends across the Company;
- specific terms and conditions of employment of each individual Executive Director;
- overall policy for remuneration for the Executive Directors' direct reports;
- design and monitoring of the operation of any Company share incentive plans;
- setting stretching incentive targets to encourage enhanced performance;
- an approach that rewards fairly and responsibly contribution to the Company's long-term success; and
- other provisions of the Executive Directors' service agreements and ensuring that contractual terms on termination, and payments made, are fair to the individual and the Company and that failure is not rewarded and loss is mitigated.

The Committee's remit is set out in detail in its terms of reference, which are reviewed regularly and were approved in December 2019. The Committee's terms of reference are available on the Company's website at https://corporate.spirent.com.

Composition of the Committee

At the date of this Report, the Remuneration Committee comprises four Independent Non-executive Directors, one of whom acts as Committee Chairman. The Company Secretary serves as Secretary to the Committee. All members are considered independent within the meaning of the 2018 UK Corporate Governance Code.

Advisers to the Committee

During the period under review the Committee consulted with the Company's Chairman, CEO, CFO and Company Secretary & General Counsel but not on matters relating to their own remuneration.

Following a formal tender, Aon was appointed by the Committee in August 2018 to undertake a market review of executive remuneration practices and assist with the design and introduction of an updated Remuneration Policy which was put to shareholders at the 2019 Annual General Meeting. The Committee remains satisfied that Aon is independent, thoughtful and challenging. Aon is also a member of the Remuneration Consultants Group and complies with its voluntary Code of Conduct in respect of the provision of remuneration consulting services, details of which can be found at www.remunerationconsultantsgroup.com. The Committee considers Aon to be independent in its approach.

The fees paid to Aon to carry out work for the Remuneration Committee during the period under review totalled £87,871 (2018 £33,900). Fees are based on a fixed retainer for certain services and time and materials otherwise.

Kepler Associates Limited, which was acquired in June 2015 by Mercer Limited, was appointed by the Committee some years ago to provide the results of TSR testing to determine the vesting of share incentives. The Committee has retained Mercer Limited in this role because it values the robust data provided and continuity of advice from the consultants involved. The Committee remains satisfied that Mercer Limited is independent, thoughtful and challenging. Mercer Limited is a member of the Remuneration Consultants Group and complies with its voluntary Code of Conduct in respect of the provision of remuneration consulting services, details of which can be found at www.remunerationconsultantsgroup.com and has no other connection to the Company. The Committee considers Mercer Limited to be independent in its approach.

The fees paid to Mercer Limited to carry out work for the Remuneration Committee during the period under review totalled £7,242 (2018 £8,040) and were based on time and materials.

Deloitte LLP was appointed by the Committee in 2015 to undertake a market review of executive remuneration practices and continued to assist the Committee through early 2018. The Committee was satisfied that Deloitte LLP is independent, thoughtful and challenging. Deloitte LLP is also a member of the Remuneration Consultants Group and complies with its voluntary Code of Conduct in respect of the provision of remuneration consulting services, details of which can be found at www.remunerationconsultantsgroup.com. The Committee considered Deloitte LLP to have been independent in its approach during its time as adviser to the Committee.

No fees were paid to Deloitte LLP to carry out work for the Remuneration Committee during the period under review (2018 £16,200).

Directors' Remuneration Policy (Unaudited)

The Committee's Policy is to set remuneration levels which ensure that the Executive Directors are fairly and responsibly rewarded in return for high levels of performance. The Remuneration Policy aims to promote value creation through transparent alignment with the agreed corporate strategy, supporting performance and encouraging the underlying sustainable financial health of the business while promoting sound risk management for the benefit of all stakeholders. The Committee believes that the aims of the Policy are achieved by ensuring that a significant proportion of executive remuneration is tied to the achievement of the agreed corporate strategy and long-term value creation.

The Company's previous Remuneration Policy was subject to a binding vote at the 2016 AGM on 4 May 2016 and received 96.7 per cent of all votes cast in favour. A revised Remuneration Policy was put to shareholders for approval at the AGM on 1 May 2019 and, having received 95.89 per cent of all votes cast in favour, is intended to apply for the next three years. The revised Policy is broadly consistent with the previously approved Policy. However, certain changes were made to ensure that the new Policy remains fit for purpose for the next three years for the Company and its shareholders. The principal changes from the previously approved Policy are:

- introduction of a cap on the maximum pension contribution (or cash allowance in lieu) that may be offered to a newly appointed Executive Director;
- introduction of mandatory three-year deferral into shares for one-third of the Annual Incentive for Executive Directors for bonuses paid with respect to 2019 and beyond;
- addition of a two-year post-vesting holding requirement for the Long-Term Incentive Plan awards;
- clarification of the malus and clawback provisions operable in each of the Company's incentive plans; and
- an increase to the share ownership guideline for Executive Directors to 200 per cent of salary (whilst in employment) and the introduction of a formal policy on post-cessation holdings.

Report on Directors' remuneration continued

Policy table

This section of the Report describes the key components of each element of the remuneration arrangements for the Executive Directors.

Component and link to strategy	Operation
Fixed remuneration	
Base salary	
To provide fixed remuneration for each role which reflects the size and scope of the Executive Director's responsibilities and their individual skills and experience.	Base salaries are normally reviewed annually. Set at levels to recruit and retain the high calibre talent needed to deliver the Group's strategy without paying more than is considered necessary. Salaries are typically set after considering various factors including the salary levels in companies of a similar size and complexity, the responsibilities of each individual role, internal relativities, progression within the role, individual performance and an individual's experience and with regard to market salary levels in the country in which the executive resides. Our overall policy, having had due regard to the factors noted, is normally to target salaries at the median market level.
Benefits	
To provide market levels of benefits on a cost-effective basis.	May include private health cover for the Executive Director and their family, life insurance cover, permanent health insurance and a car allowance. Executive Directors may participate in any all-employee share plans which may be operated by the Company on the same terms as other employees. Relocation support and any associated costs or benefits may also be provided if considered by the Committee to be appropriate and reasonable to meet the requirements of the business. Other benefits may be offered from time to time broadly in line with local market practice in the country of residence of the Executive Director. Reasonable business-related expenses may be reimbursed (including tax thereon, if deemed to be a taxable benefit).
Retirement benefits	
To provide cost-effective and competitive post-retirement benefits.	Defined contribution scheme or cash allowance in lieu of Company pension contributions or a combination of both. Other post-retirement benefits may be offered from time to time broadly in line with local market practice in the country of residence of the Executive Director.
Variable remuneration	
Annual Incentive	
To reward and incentivise the achievement of annual financial and strategic goals which are selected to align the strategy of the business and support enhancement of shareholder value.	Two-thirds of any bonus earned is payable in cash with the remaining one-third deferred into shares. The deferred bonus shares ordinarily vest after three years. Dividend equivalents may be paid on vested shares in respect of dividends arising over the period between the grant date and the vesting date. Both the cash and deferred share elements of the annual bonus are subject to clawback and malus provisions.
Long-term incentive	
To incentivise executives to achieve the Company's long-term strategy and enhance sustainable shareholder value.	Discretionary awards of conditional shares or nil-cost options may be granted to Executive Directors annually, calculated as a percentage of base salary. Awards will ordinarily vest, subject to performance, on the third anniversary of grant and will be subject to an additional two-year holding period post-vesting, during which time awarded shares may not ordinarily be sold (other than to settle tax liabilities incurred by the vesting of the award). Dividend equivalents may be paid on vested shares in respect of dividends arising over the period between the grant date and the vesting date (or, where an award is structured as a nil-cost option and subject to a holding period, to the expiry of the holding period or the date of exercise (if earlier)). Malus and clawback provisions will apply to all awards made under the Spirent Long-Term Incentive Plan.

Maximum opportunity	Framework to assess performance
While there is no defined maximum salary, any increase in salary will ordinarily be (in percentage terms) in line with those of the wider workforce, having regard to the increases in the country in which the individual resides. Increases beyond those granted to the wider workforce (in percentage terms) may be awarded in certain circumstances, for example where there is a change in responsibility, progression in the role, experience or a significant increase in the scale of the role and/or size, value and/or complexity of the Group. Details of current salary levels are set out in the Annual Remuneration Report.	Not applicable.
The overall value of benefits will depend on the individual's circumstances and therefore there is no formal maximum. Participation in all employee share plans will be in line with relevant statutory limits. It is intended that the maximum value of benefits offered will remain broadly in line with market practice in the location in which the Executive Director operates.	Not applicable.
It is intended that the maximum value of retirement benefits offered will remain broadly in line with market practice in the location in which the Executive Director operates. The maximum Company contribution is set at 20 per cent of base salary (combined cash supplement and/or defined contribution plan). Retirement benefit levels for newly appointed Executive Directors will be set in line with the general rates applicable to new employees in the country of residence of the new Executive Director. Pension arrangements for current Executive Directors are set out in the Annual Remuneration Report.	Not applicable.
Maximum opportunity is capped at 150 per cent of base salary. The Annual Incentive starts accruing from threshold levels of performance. Current maximum potential for each Executive Director is set out in the Annual Remuneration Report.	Annual incentives may be based on a mix of financial, individual and business objectives with the majority of the weighting being given to financial metrics. Measures, weightings and targets are determined by the Remuneration Committee each year taking into account the Group's key strategic priorities and the approved budget for the year and are set out in the Annual Remuneration Report. The payment of any bonus is at the absolute discretion of the Committee.
Maximum plan limit for awards is 200 per cent of base salary in respect of any financial year. No more than 25 per cent of the relevant part of the award will vest for achieving threshold performance, increasing to full vesting for the achievement of maximum performance. Details of proposed award levels for 2020 are set out in the Annual Remuneration Report.	Award levels and performance conditions are reviewed before each award cycle to ensure they remain appropriate. Awards are currently subject to challenging Earnings Per Share and Total Shareholder Return targets. However, different measures may be applied for future award cycles as appropriate to reflect the business strategy. A full description of the performance conditions applicable to long-term incentive awards is set out in the Annual Remuneration Report. In respect of awards granted in 2019 and beyond, the Committee has the discretion to override the formulaic out-turn of the award if appropriate to do so to take into account the underlying financial and operational performance of the Company and, in exceptional circumstances, individual performance.

Notes to the policy table

Performance conditions applicable to the Annual Incentive

The Annual Incentive is designed to drive and reward excellent short-term financial and operational performance. The Committee reviews the Annual Incentive plan measures each year in order to ensure that they are aligned with the Group's strategy. The Committee may alter the choice and weighting of the metrics for future Annual Incentive cycles to reflect the changing needs of the business. The Committee also retains the discretion to retrospectively amend the measures, weightings, targets and/or method of assessment for the in-year Annual Incentive to take into account changes in the business strategy, significant acquisitions or disposals, changes in accounting treatment or other exceptional events to ensure that the scheme is able to fulfil its original purpose. The payment of any Annual Incentive is at the sole discretion of the Committee.

Annual Incentives are currently based on:

- adjusted operating profit – a key driver of shareholder return and a key measure of business success;
- revenue – reflecting Spirent's strategic priority of delivering top-line growth; and
- other strategic and operational priorities – these account for a minority of the Annual Incentive and ensure a rounded assessment of performance.

Performance conditions applicable to awards under the Spirent Long-Term Incentive Plan (LTIP)

Long-term incentive awards will be granted in accordance with the rules of the LTIP and the discretions contained therein. The Committee reviews the appropriateness of performance parameters for each award under the LTIP and sets stretching performance conditions in light of the Company's current and expected performance over the performance cycle.

The performance conditions for awards to Executive Directors are (ordinarily) measured over a period of three years and are set using a sliding scale of targets and no more than 25 per cent of the award (under each measure) will vest for achieving the threshold performance hurdle. The choice of measures may change for future award cycles, but is currently based on:

- Absolute Total Shareholder Return – generates a strong alignment of interest between executives and shareholders; and
- Adjusted Earnings per Share – this provides an assessment of the profitability of the revenues delivered and aligns with the interests of shareholders. Challenging targets for earnings per share are set based on internal and external forecasts.

The Committee would consult with shareholders in advance of a significant change in the choice or weighting of the performance measures to be applied to future award cycles. Under the rules of the LTIP, the Committee has the discretion to amend or substitute the performance conditions for in-flight awards in exceptional circumstances, providing the new targets are no less challenging than originally envisaged.

Malus and clawback

The rules of the LTIP and the Company's Annual Incentive (including any element deferred into shares) include provisions for malus and clawback to apply if the Committee concludes that:

- the relevant individual has committed misconduct;
- there has been a restatement of any member of the Group's financial results, due to inaccurate or misleading data;
- the extent to which an award was granted or has vested was based on inaccuracy or error;
- the Group (or a business unit within the Group) suffered a material financial loss as a result of circumstances that could reasonably have been risk managed;
- where the Company has suffered an instance of corporate failure resulting in the appointment of a liquidator or administrator;
- a material failure of risk management and/or regulatory non-compliance resulting in damage to the Company's business or reputation; or
- any other circumstances that the Board considers to have a similar nature or effect.

Clawback may be applied for up to two years following cash payment of an Annual Incentive and vesting under the LTIP, and up to three years following the granting of awards under the Company's deferred bonus arrangements.

Shareholding guideline

The Executive Directors are required to build and maintain a shareholding in the Company equivalent to 200 per cent of salary and are expected to retain shares vesting under the deferred annual bonus and LTIP (net of tax) until such time as the guideline shareholding has been achieved.

The Company's policy in respect of vested and unvested share awards post-cessation of employment is set out below in the section on Exit Payment Policy.

Discretions retained by the Committee in operating the LTIP and other variable pay schemes

The Committee operates the Group's various incentive plans according to their respective rules and (where applicable) in accordance with relevant legislation and HMRC guidance. In order to ensure efficient administration of these plans, certain operational discretions are reserved to the Committee. These include:

- determining who may participate in the plans;
- determining the timing of grants of awards and/or payments under the plans;
- determining the quantum of any awards and/or payments (within the limits set out in the Policy table above);
- in exceptional circumstances, determining that a share-based award (or any dividend equivalent) shall be settled (in full or in part) in cash;
- determining the performance measures and targets applicable to an award (in accordance with the statements made in the Policy table above);
- where a participant ceases to be employed by the Company, determining whether "good leaver" status shall apply;
- determining the extent of vesting of an award based on assessment of the performance conditions, including discretion as to the basis on which performance is to be measured if an award vests in advance of normal timetable (on cessation of employment as a "good leaver" or on the occurrence of corporate events);
- whether, and to what extent, pro ration shall apply in the event of cessation of employment as a "good leaver" or on the occurrence of corporate events;
- whether malus and/or clawback shall be applied to any award and, if so, the extent to which they shall apply; and
- making appropriate adjustments to awards on account of certain events, such as major changes in the Company's capital structure.

Approach to recruitment remuneration

In the event that the Company recruits a new Executive Director (either from within the organisation or externally), when determining the appropriate remuneration arrangements, the Committee will take into consideration all relevant factors, (including but not limited to quantum, the type of remuneration being offered and the jurisdiction which the candidate was recruited from) to ensure that arrangements are in the best interests of both shareholders and the Company without paying more than is necessary to recruit an executive of the required calibre.

Element	Recruitment Policy
Base salary	The Committee will take into consideration a number of factors, including internal relativities, external market forces, skills and current level of pay. Salary may (but need not necessarily) be set below the normal market rate, with a series of planned increases implemented over the following few years to bring it to the desired positioning, subject to individual performance.
Benefits	Benefits provision would be in line with normal policy. The Committee may agree that the Company will meet appropriate relocation costs.
Retirement benefits	In line with normal Policy.
Annual Incentive	Eligible to take part in the Annual Incentive, with a maximum bonus of up to 150 per cent of salary in line with Policy. Depending on the timing of the appointment, the Committee may deem it appropriate to set Annual Incentive performance metrics that are different from those that apply to the current Executive Directors for the first performance year in which the appointment falls.
Long-term incentive	A normal award of up to 200 per cent of salary, in line with Policy.
Buy-out awards	In exceptional circumstances, the Committee may offer additional cash or share incentive awards (using Listing Rule 9.4.2, if necessary) to compensate an individual for remuneration forfeited on leaving a previous employer. The awards would not exceed what is felt to be a fair estimate of the remuneration forfeited and would reflect (as far as possible) the nature and time horizons attached to that remuneration and the impact of any performance conditions. The Company would aim to replace any forfeited cash awards with shares wherever possible. Shareholders will be informed of any such payments at the time of appointment.

Notes to the policy table continued

Approach to recruitment remuneration continued

For an internal appointment, any remuneration terms awarded in respect of the previous role may either continue on its original terms or be adjusted to reflect the new appointment.

When recruiting Non-executive Directors, the remuneration arrangements offered would normally be in line with those paid to existing Non-executive Directors, details of which are set out in the Annual Remuneration Report.

Service contracts

Executive Directors

In normal circumstances, it is the Company's Policy that service contracts for Executive Directors have no fixed term and are capable of termination on no more than 12 months' notice from either the Company or the Executive Director. It is intended that this Policy would also apply to new appointments of Executive Directors.

Eric Updyke currently has a service agreement with Spirent Communications, Inc, and, being a US resident, his contract is in line with US employment practice and is governed by the laws of the state of New Jersey. Mr Updyke's service agreement, dated 1 April 2019, may be terminated on 12 months' notice from the Company and six months' notice from Mr Updyke.

Paula Bell currently has a service agreement with Spirent Communications plc, and, being a UK resident, her contract is in line with UK employment practice and is governed by the laws of England and Wales. Ms Bell's service agreement, dated 12 April 2016, may be terminated on 12 months' notice from the Company and six months' notice from Ms Bell.

The Company recognises that its Executive Directors may, from time to time, be invited to become non-executive directors of other companies and that such appointments can broaden their knowledge and experience, to the benefit of the Company. Details of any such appointments are set out in the Annual Remuneration Report.

The service agreements of Executive Directors are available for inspection at the Company's registered office on request and will be available for inspection at the 2020 AGM.

Exit Payment Policy

The Committee is committed to ensuring that it does not pay more than is necessary when Executive Directors leave Spirent and its Policy on exit payments is and will continue to be in line with market practice in the country in which the Executive Director resides. The current Exit Payment Policy is:

- service contracts contain provisions for the removal of the Executive Director without compensation for not performing their duties to the standard required by the Board or material misconduct;
- payment in lieu of notice may be paid under service contracts if the relevant notice period is not given to the Executive Director or if, having received notice from the Executive Director, the employer does not wish him/her to serve it. Any payment in lieu of notice shall ordinarily be paid in monthly instalments, in respect of annual base salary and pension contributions only;
- unless provided for in the service contract, the Company would seek to apply practical mitigation measures to any payment of compensation on termination, for example by reducing payments to reflect payments received in respect of alternative employment, taking into account all relevant circumstances;
- service contracts do not contain provision for additional compensation on termination following a change of control (as detailed in the Change of Control provisions set out in the Directors' Report);
- service contracts do not contain provision for liquidated damages of any kind; and
- service contracts contain appropriate provisions to protect the legitimate interests of the Company with respect to preventing any terminated Executive Director from working in a business which competes against the Company.

The table below sets out key provisions for Executive Directors under their service contracts and the incentive plan rules:

Element	Termination policy
Salary, benefits and pension	Payment will be made up to the termination date in line with relevant contractual notice periods and will not exceed contractual entitlements.
Annual Incentive	Unless otherwise provided in the service contract to be consistent with market practice in the country in which the Executive Director resides, Executive Directors are not entitled to accrued cash incentives payable following termination unless the individual is determined by the Committee to be a good leaver (defined as an individual leaving employment due to redundancy, ill health, injury or disability, retirement, death, the individual's employing company ceasing to be under the control of the Group, or a transfer of the undertaking in which the individual works (Good Leaver)).
Deferred Share Bonus Plan	Awards will ordinarily continue to vest on the normal vesting date, unless the Committee determines that early vesting should apply. The Committee reserves the discretion to scale the awards down (including to nil) in the event of misconduct by the individual or to reflect individual performance.
Spirent Long-Term Incentive Plan 2016	Unvested awards will generally lapse at the time of exit. For individuals determined by the Committee to be a "Good Leaver" (see below), the Committee will ordinarily assess the performance conditions at the end of the applicable vesting period and unvested awards will ordinarily vest on the normal timetable. Exceptionally, and always in the case of death, the Committee may assess performance conditions at the point of cessation by testing the performance conditions up to (or as close as reasonably practicable to) the date of cessation. Awards will then vest following such early assessment of performance. Except in the case of death, any shares which vest following the assessment of the performance conditions would normally be pro-rated to reflect the proportion of the vesting period actually served by the individual. For the purposes of the LTIP, a Good Leaver is any individual who leaves due to death, ill health, injury, disability, agreed retirement, redundancy, a transfer of the business for which the individual works out of the Group or for any other reason at the Committee's discretion (except where the individual is summarily dismissed). Any post-vesting holding period would normally continue to apply to a leaver's vested and unvested awards.
Legacy arrangements: Employee Incentive Plan (EIP)	Unvested awards generally lapse at the time of exit. For individuals determined by the Committee to be a Good Leaver, performance conditions are assessed by the Committee at the point of exit by testing the performance conditions up to the date of exit for TSR performance and to the end of the most recent financial period for EPS performance. Vesting is then pro-rated for the proportion of the performance period actually served and the individual has 12 months following the date of termination of employment in which to exercise them.

For all leavers, the Committee may also determine to make a payment in reimbursement of a reasonable level of outplacement and legal fees in connection with a settlement agreement. The Company may pay any statutory entitlements, to which an Executive Director is entitled, or settle or compromise any claims made in connection with the termination of employment or appointment of an Executive Director where the Committee considers such claims to have a reasonable prospect of success and that it is in the best interests of the Company to do so. Where appropriate, private health cover may continue for a suitable period post-cessation of employment.

The Committee has now introduced a formal Policy in respect of post-cessation shareholdings. Following the approval of this Policy and in respect of the incentive awards granted thereafter, the following will ordinarily apply:

- unvested shares under the deferred share bonus plan – will continue to vest on the normal vesting date (i.e. up to four years post-cessation);
- unvested shares under the LTIP – will, subject to the participant being a Good Leaver, continue to vest on the normal vesting date and be subject to a post-vesting holding period;
- vested shares under the LTIP – the holding period will continue to apply; and
- other beneficially owned shares – no sale restriction applies.

The above will ensure that the Executive Directors continue to have an interest in the Company after having left employment, promoting a culture of sustainable long-term performance. Furthermore, additional safeguards are in place through the malus and clawback provisions which can continue to be invoked irrespective of employment status.

In the event of change in control of the Company, in accordance with rules of the respective plans, any outstanding share awards will ordinarily vest on the date of such an event. For awards under the LTIP, vesting will be subject to an assessment of achievement against the applicable performance conditions and, unless the Board determines otherwise, a reduction to reflect the curtailed vesting period.

Notes to the policy table continued

Non-executive Directors

All Non-executive Directors have a letter of appointment with the Company for a period of not more than three years, subject to the Company's Articles of Association. However, since 2011 and in accordance with the 2018 Code, all Directors who are not stepping down from the Board will stand for re-election at each AGM.

The letters of appointment of Non-executive Directors are available for inspection on request and will be available for inspection at the 2020 AGM. An example of a letter of appointment for a Non-executive Director is available on the Company's website at https://corporate.spirent.com.

Consideration of employee remuneration arrangements elsewhere in the Group

When setting the Policy for Directors' remuneration, the Committee has regard to the pay and employment conditions elsewhere within the Group, particularly in the jurisdictions in which the Executive Directors are based. The Committee is kept informed on a regular basis of salary increases for the general employee population and takes these into account when determining salary increases for Executive Directors and the Executive Management Team.

Where relevant, the Committee seeks to align the Remuneration Policy for Executive Directors with that for other senior managers. Selected employees are able to share in the success of the Group through participation in the Management Incentive Plan. Executive Directors, other members of the Executive Management Team and key employees are also eligible for participation in the Long-Term Incentive Plan.

The Committee is aware of the 2018 UK Corporate Governance Code and its requirements for increasing engagement with stakeholders including employees and details of the workforce engagement programme can be found on pages 50 and 51 of this Annual Report.

Consideration of the views of shareholders in setting Remuneration Policy

The Committee is mindful of the views of shareholders in determining appropriate levels of remuneration and in ensuring that shareholder and Director interests are aligned. The Committee is committed to an ongoing dialogue with shareholders and seeks shareholder views when any significant changes are proposed to remuneration arrangements. Over the past few years, the Committee consulted with major shareholders and shareholder representatives as follows:

- January 2016: consultation related to the introduction of the new LTIP;
- December 2017: consultation related to the Committee's approach to base salary, cash incentives and LTIP awards in 2018; and
- December 2018: consultation regarding the revised Remuneration Policy for which the Committee sought shareholder approval at the 2019 Annual General Meeting.

Legacy matters

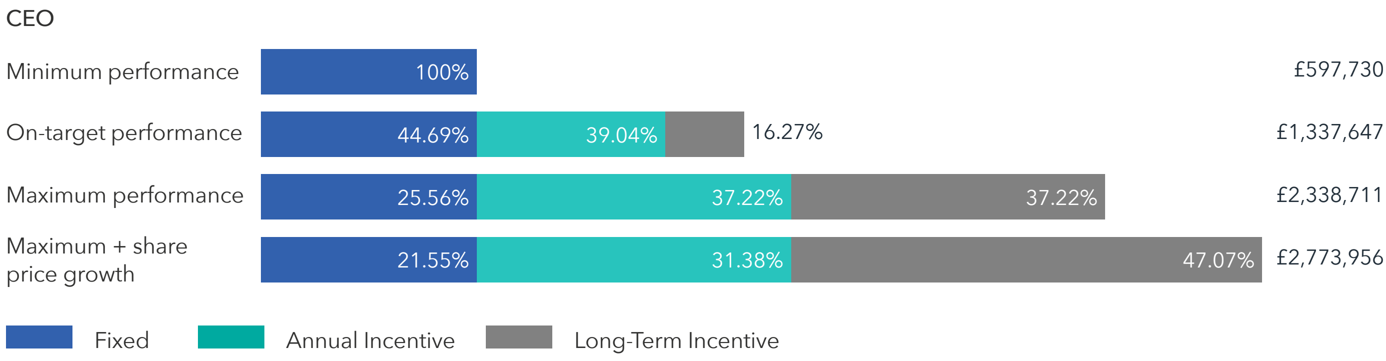
For the avoidance of doubt, in approving this Remuneration Policy, authority is given to the Company to make payments and honour any commitments entered into with current or former Directors (such as the payment of pension or the unwinding of legacy share schemes) where the terms were agreed either prior to 24 April 2014 (the effective date of the first Directors' Remuneration Policy) or at a time when a previous Remuneration Policy was in force. Details of any payments will be set out in the Annual Remuneration Report as they arise.

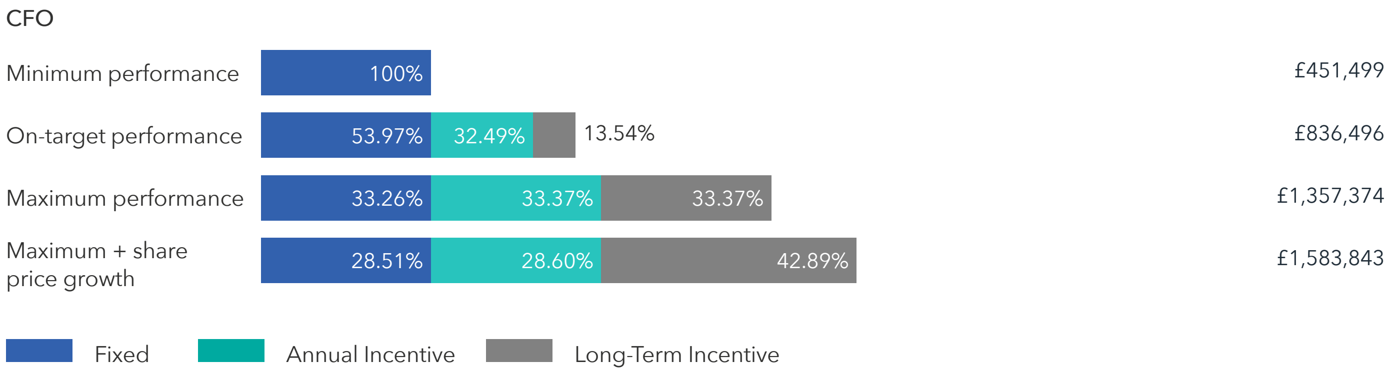
Illustrations of the application of Remuneration Policy in 2020

A significant proportion of remuneration is linked to performance, particularly at maximum performance levels. The charts below show how much the Executive Directors could earn under Spirent's Remuneration Policy under different performance scenarios in the 2020 financial year. The following assumptions have been made:

	Fixed remuneration	Variable remuneration	
		Annual Incentive	Long-Term Incentive
Minimum	Base salary[1] Benefits[2] Pension[3]	–	–
Target	Base salary[1] Benefits[2] Pension[3]	On target[4]	Threshold vest (25 per cent)
Maximum	Base salary[1] Benefits[2] Pension[3]	Maximum[5]	Full vest (100 per cent)
Maximum + 50 per cent share price growth	Base salary[1] Benefits[2] Pension[3]	Maximum[5]	Full vest (100 per cent) + 50 per cent growth in share price from date of grant

Notes
1. Base salary effective 1 January 2020.
2. Benefits as received during 2019 financial year.
3. Cash sum in lieu of pension as received during 2019 financial year for CEO and equal to 20 per cent of base salary for CFO.
4. Annual Incentive on-target payout of 90 per cent of base salary for CEO and 75 per cent of base salary for CFO.
5. Annual Incentive maximum payout of 150 per cent of base salary for CEO and 125 per cent of base salary for CFO.





Dilution

The Committee is strongly committed to continuing to manage shareholder dilution in a responsible manner. Details of the Company's dilution are set out in the Annual Remuneration Report.

Directors' report

This section contains additional information which the Directors are required by law and regulation to include within the Annual Report.

This section, along with the information from the Board of Directors and the Directors' statement on corporate governance on pages 58 to 69 (which are incorporated herein by reference), constitutes the Directors' Report for the purposes of the Companies Act 2006.

Future developments

The Company has chosen, in accordance with the Companies Act 2006 Section 414C(II), to include the disclosure of likely future developments in the Strategic Report on pages 1 to 55.

Research and development

The Company has chosen, in accordance with the Companies Act 2006 Section 414C(II), to include the disclosure of research and development in the Strategic Report on pages 1 to 55.

Greenhouse gas emissions and gender diversity

Information on environmental matters and disclosures relating to diversity, gender and human rights are contained in the Sustainability section on pages 46 to 49.

Results and dividends

The consolidated income statement is on page 116. Profit for the financial year attributable to equity shareholders amounted to $78.0 million.

The Directors recommend a final dividend of 3.45 cents per Ordinary Share to be paid. Subject to approval by shareholders at the 2020 AGM, the final dividend will be paid on 1 May 2020 to shareholders on the Register of Members at close of business on 13 March 2020.

This final dividend, together with the interim dividend paid in September 2019, will represent a total dividend of 5.39 cents per Ordinary Share for the year ended 31 December 2019 (2018 4.49 cents).

Directors

The names of the persons who were Directors of the Company during the period under review and as at 5 March 2020 appear on pages 58 and 59. All current Directors are standing for election or re-election at the 2020 AGM.

Appointment of Directors

The Company's Articles of Association (the "Articles") give the Directors power to appoint and replace Directors. Under the terms of reference of the Nomination Committee, an appointment must be recommended by the Nomination Committee for approval by the Board. The Articles require Directors to submit themselves for election at the first AGM following their appointment and all Directors who held office at the time of the two preceding AGMs to submit themselves for re-election. The Articles notwithstanding, all Directors will stand for election or re-election at the AGM this year in compliance with the 2018 UK Corporate Governance Code. Details of unexpired terms of Directors' service contracts are set out in the Directors' report on remuneration on page 85.

Powers of Directors

The Directors are responsible for managing the business of the Company and may exercise all the powers of the Company subject to the provisions of relevant statutes, to any directions given by special resolution and to the Company's Articles. Powers relating to the issuing of shares are included in the Articles and such authorities are renewed by shareholders at the AGM each year.

Directors' share interests

Details regarding the share interests of Directors and their connected persons in the share capital of the Company, including any interests under long-term incentive plans, are set out in the Directors' report on remuneration on page 85.

Employees

The average number of Group employees during 2019 was 1,465 worldwide (2018 1,457). The Group strives to maintain the following principles:

Equal opportunities

The Group is committed to offering equal opportunities in recruitment, training, career development and promotion to all people, including those with disabilities, having regard for their particular aptitudes and abilities. As a matter of policy, full and fair consideration is given to applicants with disabilities and every effort is made to give employees who become disabled whilst employed by the Group an opportunity for retraining and continuation in employment. It is Group policy that the training, career development and promotion of disabled persons should, as far as possible, be the same as that of other employees.

Health and safety

Health and safety are considered as equal in importance to that of any other function of the Group and its business objectives and the Group is committed to providing a safe and healthy workplace to protect all employees, visitors and the public from foreseeable work hazards.

Harassment

Sexual, mental or physical harassment in the workplace will not be tolerated. It is expected that incidents of harassment are reported to the appropriate Human Resources director.

Human rights

The Group provides opportunities that promote human rights and dignity every day through the employment created, both directly and indirectly, in its global supply chain and through the positive contribution its products make to people's lives. Further details on the Group's approach to human rights can be found in the Sustainability section of the Strategic Report on pages 46 to 49.

Communication

Employees are briefed on all relevant matters on a regular basis to achieve a common awareness of all the financial and economic factors affecting the performance of the Group. Information relevant to employees will be provided to them.

Employees are provided with information on the performance of their business unit and their involvement is encouraged in a variety of ways, such as through engagement surveys, town hall meetings and management presentations.

The Group encourages an open culture in all its dealings between employees and people with whom it comes into contact. The Group's whistleblowing procedure sets out guidelines for individuals who feel they need to raise issues in confidence with the Company or their own business unit or through an independent third party. Every effort is made to protect the confidentiality of those who raise concerns and employees may come forward without fear for their position.

Further details of the workforce engagement in place across the Group are set out in the Section 172 statement on pages 50 to 54 of this Annual Report.

Change of control provisions

The Company does not have agreements with any Director or employee that would provide compensation for loss of office or employment resulting from a takeover except that provisions of the Company's share incentive plans may cause outstanding unvested options and awards granted to employees under such plans to vest on a takeover as follows:

Share incentive plan	Change of control	Effect on vesting provisions in the rules	Performance condition
2005 Employee Incentive Plan	Yes	Pro-rated	Still applies
Spirent Long-Term Incentive Plan	Yes	Pro-rated	Still applies
Spirent Deferred Bonus Plan	Yes	Full vesting	N/a

The Company is not aware of any significant agreements to which it is party that take effect, alter or terminate upon a change of control of the Company following a takeover.

Substantial shareholdings

In accordance with Listing Rule 9.8.6(2), the Company has been notified of the following significant interests in its Ordinary Shares pursuant to Disclosure Guidance and Transparency Rule 5.

The following notifications have been received during the period 1 January 2019 to 31 December 2019 or earlier as applicable:

	Date of notification	Total holding	Per cent of Company's total voting rights
Ameriprise Financial, Inc	21 October 2019	103,961,048	16.99
Aviva plc	28 August 2019	45,489,047	7.44
Standard Life Investments Limited	27 January 2011	32,370,026	5.29
Franklin Templeton Fund Management Limited	4 April 2019	31,700,000	5.18
Brandes Investment Partners LP	3 March 2016	30,537,440	4.99
AXA Investment Managers SA	6 June 2019	30,515,747	4.99
Prudential plc	5 July 2019	30,472,411	4.98
Aberforth Partners	29 April 2019	30,368,910	4.96
Neptune Investment Management Limited	24 July 2018	29,775,214	4.87
Artemis Investment Management Limited	6 November 2017	29,195,146	4.77
Schroders plc	9 October 2014	26,986,598	4.41
PrimeStone Capital LLP	28 November 2019	26,231,082	4.29
Teleios Capital Partners LLC	7 May 2019	24,639,997	4.03
Sun Life Assurance Company of Canada (UK) Limited	5 December 2018	23,382,347	3.82
Kames Capital	6 February 2012	18,507,514	3.03

Substantial shareholdings continued

The following notifications have been received during the period 1 January 2020 to 5 March 2020:

	Date of notification	Total holding	Per cent of Company’s total voting rights
Ameriprise Financial, Inc	20 January 2020	97,838,322	15.99
JP Morgan Asset Management Holdings Inc	13 February 2020	30,621,901	5.01
JP Morgan Asset Management Holdings Inc	14 February 2020	31,386,701	5.13
JP Morgan Asset Management Holdings Inc	3 March 2020	30,595,270	5.00

Share capital

The Company has a single class of share which is divided into Ordinary Shares of 3 & 1/3 pence each. Each Ordinary Share carries one vote and all of the Ordinary Shares rank pari passu. There are no special control rights relating to any of the Ordinary Shares. At the date of this Report, 611.7 million Ordinary Shares of 3 & 1/3 pence each had been issued which are fully paid up and are listed on the London Stock Exchange. The Company also operates a Level 1 American Depositary Receipt (ADR) programme with each ADR representing four Ordinary Shares. The ADRs trade on the US over-the-counter market and BNY Mellon is the authorised depositary bank for the programme. Further details on share capital are set out in note 32 to the consolidated financial statements and note 18 to the parent Company financial statements. The rights, including those relating to voting, obligations and any restrictions on transfer relating to the Company’s Ordinary Shares, as well as the powers of the Company’s Directors, are set out in the Company’s Articles of Association, a copy of which can be found on our website at https://corporate.spirent.com/ or can be obtained from Companies House or by writing to the Company Secretary. The Company’s Articles of Association may only be amended by a special resolution at a general meeting of shareholders. The most recent changes to the Articles of Association were approved at the 2010 AGM and became effective at the close of that meeting on 5 May 2010.

The Company has established two employee benefit trusts in connection with the operation of the Company’s share incentive plans: the Spirent Employee Share Ownership Trust (ESOT) and the Spirent Sharesave Trust (SST). The trustees of both trusts have waived their right to receive dividends on any Ordinary Shares held by them except for a nominal amount of 1 pence other than for those Ordinary Shares held in the ESOT which are the beneficial property of an employee/shareholder. For further details on the employee benefit trusts see “Investment in own Ordinary Shares” in note 32 to the consolidated financial statements and note 18 to the parent Company financial statements. Trustees of both trusts do not vote their Ordinary Shares, except for those Ordinary Shares held in the ESOT that are the beneficial property of an employee/shareholder, which the trustees will vote in accordance with the instructions received from the beneficial owner.

Restrictions on share transfers

There are no restrictions on the transfer of Ordinary Shares in the capital of the Company other than certain restrictions which may from time to time be imposed by law, for example insider trading law or as required under the Company’s Remuneration Policy for Executive Directors. In accordance with the Market Abuse Regulation, certain employees are required to seek the approval of the Company prior to dealing in its securities.

The Company is not aware of any agreements between shareholders that may result in restrictions on the transfer of securities or on voting rights. The Company is also not aware of any contract of significance between itself or any subsidiary undertaking and a controlling shareholder.

Powers for issue of new shares

During the year to 31 December 2019 and to the date of this Report, no new Ordinary Shares have been allotted as a result of the exercise of options and rights pursuant to the Company’s share incentive plans.

At each AGM, the Directors seek authority to allot shares for cash and to disapply pre-emption rights within prescribed limits. At the 2020 AGM, authority will be sought to allot new Ordinary Shares up to a nominal value of £6,797,132, which is equal to approximately 33.3 per cent of the Company’s issued share capital as at 6 March 2020.

Return of capital

The Company was first authorised to repurchase up to 14.99 per cent of its own issued Ordinary Shares, within certain limits and as permitted by the Company’s Articles of Association, at the 2006 AGM.

This authority has been renewed at each subsequent AGM, reducing to 9.99 per cent at the 2010 AGM and subsequent AGMs. The authority from the 2019 AGM remains valid until the earlier of the 2020 AGM or 30 June 2020. Since the Company began returning capital to shareholders in May 2006, a total of £270.2 million has been returned, through the repurchase of 397.6 million Ordinary Shares.

No shares were repurchased during 2019 or to the date of this Report.

The Company will seek authority to repurchase up to 9.99 per cent of its own Ordinary Shares at the 2020 AGM to facilitate any further return of capital if the Board concludes that it is in the best interests of shareholders to do so.

Political donations

In accordance with the Group’s Business Ethics Policy, no political donations were made during the year (2018 nil).

Financial risk management

Details of the Group's use of financial instruments, together with information on our risk objectives and policies and our exposure to price, credit, liquidity, cash flow and interest rate risks, can be found in note 30 to the consolidated financial statements.

Going concern

After making appropriate enquiries and taking into account the matters set out in the Principal risks and uncertainties section on pages 40 to 45 of this Annual Report, the Directors have a reasonable expectation that the Group has adequate resources to continue in operational existence for the foreseeable future. For this reason, they continue to adopt the going concern basis when preparing the financial statements.

Viability Statement

In accordance with provision 31 of the 2018 UK Corporate Governance Code, the Directors have assessed the viability of the Group over a period significantly longer than 12 months from the date of approval of the financial statements and concluded whether they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over that period.

The Board has concluded that the most appropriate period for this assessment should be three years.

This period was selected for the following reasons:

- the Group's strategic planning cycle covers a three-year period;
- the Board reviews a three-year financial corporate plan;
- it reflects the period over which the principal risks would be realised; and
- when considering a major investment in product development, three years is considered by the Board to be a reasonable time horizon in which the product should achieve meaningful sales.

The Board's assessment has been made with reference to the Company's current financial position and prospects, the budget for 2020, the Group's long-term strategy, the Board's risk appetite and the Group's principal risks and uncertainties as set out on pages 40 to 45 of this Annual Report.

The plans and cash flow projections used as the basis for the assessment were the 2020 budget and the three-year strategic plan.

They were drawn up on the basis that the Group ends 2019 with a cash balance of circa $180 million and maintains a cash balance sufficient to fund normal operations, and that there will be no material changes to the business structure, throughout the review period.

The Board has reviewed plausible and severe stress tests based on the occurrence of a combination of the principal risks to which the Company is exposed, considering the potential impact of these risks on the business model, future performance, solvency and liquidity over the period.

Based on this assessment and the expected successful impact of mitigating actions, the Directors have a reasonable expectation that the Company will be able to continue in operation and meet its liabilities as they fall due over the three-year period.

Post-balance sheet events

No post-balance sheet events are required to be disclosed in the consolidated financial statements.

Disclosure of information to auditor

Each of the Directors of the Company at the date of this Report confirms that:

- so far as the Director is aware, there is no information needed by the Company's auditor in connection with preparing its report of which the Company's auditor is unaware; and
- he (she) has taken all the steps that he (she) ought to have taken as a Director in order to make himself (herself) aware of any information needed by the Company's auditor in connection with preparing its report and to establish that the Company's auditor is aware of that information.

Independent auditor

As described in more detail on page 76 of the Audit Committee report, the Board will be proposing a resolution to re-appoint EY as auditor at the 2020 AGM.

Annual General Meeting

The 2020 AGM will be held at 10.30am on Wednesday 29 April 2020 at the registered office of Spirent Communications plc at Origin One, 108 High Street, Crawley, West Sussex RH10 1BD.

By Order of the Board

Angus Iveson
Company Secretary
5 March 2020

Spirent Communications plc
Company number 470893

Directors' responsibilities statement

The Directors are responsible for preparing the Annual Report, the Report on Directors' remuneration, the consolidated financial statements of the Group and the financial statements of the parent Company.

Company law requires the Directors to prepare financial statements for each financial year. Under that law they are required to prepare the consolidated financial statements of the Group in accordance with International Financial Reporting Standards (IFRS) as adopted by the European Union (EU) and have elected to prepare the parent Company financial statements in accordance with UK Generally Accepted Accounting Principles (including FRS 101) and applicable law.

The consolidated financial statements of the Group are required by law and IFRS to present fairly for each financial period the financial position and performance of the Group; the Companies Act 2006 provides, in relation to such financial statements, that references in the relevant part of that Act to financial statements giving a true and fair view are references to their achieving a fair presentation.

The parent Company financial statements are required by law to give a true and fair view of the state of affairs of the parent Company.

In preparing each of the consolidated financial statements of the Group and parent Company financial statements, the Directors are required to:

- select suitable accounting policies and apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- state for the audited consolidated financial statements of the Group whether they have been prepared in accordance with IFRS as adopted by the EU;
- state for the parent Company financial statements whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the parent Company financial statements; and
- prepare the financial statements on a going concern basis unless it is inappropriate to presume the Group and the parent Company will continue in operational business for the foreseeable future.

The Directors confirm that they have complied with the above requirements in preparing the financial statements.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Company's transactions and that disclose with reasonable accuracy at any time the financial position of the Group and the parent Company and enable them to ensure that its financial statements comply with the Companies Act 2006 and, for the Group, Article 4 of the International Accounting Standards (IAS) Regulation. They have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Group and to prevent and detect fraud and other irregularities.

Under applicable law and regulations, the Directors are also responsible for preparing a strategic report, a directors' report, a directors' remuneration report and a statement on corporate governance that comply with the law and those regulations. They are also responsible for the maintenance and integrity of the corporate and financial information included on the Company's website.

Legislation in the UK governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

The Directors consider that the Annual Report, taken as a whole, is fair, balanced and understandable and provides the information necessary to assess the Company's performance, business model and strategy.

This Annual Report complies with the Disclosure Guidance and Transparency Rules (DTR) of the Financial Conduct Authority in respect of the requirement to produce an annual financial report.

The Annual Report and consolidated financial statements are the responsibility of, and have been approved by, the Directors.

Each of the Directors confirms that, to the best of their knowledge:

- the consolidated financial statements of the Group and parent Company financial statements, prepared in accordance with the applicable set of accounting standards, give a true and fair view of the assets, liabilities, financial position and the profit or loss of the Company and the undertakings included in the consolidation taken as a whole; and
- the Annual Report includes a fair review of the development and performance of the business and the position of the Company and the undertakings included in the consolidation taken as a whole, together with a description of the principal risks and uncertainties that they face.

By Order of the Board

Paula Bell
Chief Financial Officer
5 March 2020

Independent auditor's report to the members of Spirent Communications plc

Opinion

In our opinion:

- Spirent Communications plc's Group financial statements and parent Company financial statements (the "financial statements") give a true and fair view of the state of the Group's and of the parent Company's affairs as at 31 December 2019 and of the Group's profit for the year then ended;
- the Group financial statements have been properly prepared in accordance with IFRSs as adopted by the European Union;
- the parent Company financial statements have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- the financial statements have been prepared in accordance with the requirements of the Companies Act 2006, and, as regards the Group financial statements, Article 4 of the IAS Regulation.

We have audited the financial statements of Spirent Communications plc which comprise:

Group	Parent Company
Consolidated balance sheet as at 31 December 2019	Balance sheet as at 31 December 2019
Consolidated income statement for the year then ended	Statement of changes in equity for the year then ended
Consolidated statement of comprehensive income for the year then ended	Related notes 1 to 21 to the parent Company financial statements including a summary of significant accounting policies
Consolidated statement of changes in equity for the year then ended	
Consolidated cash flow statement for the year then ended	
Related notes 1 to 39 to the financial statements, including a summary of significant accounting policies	

The financial reporting framework that has been applied in the preparation of the Group financial statements is applicable law and International Financial Reporting Standards (IFRSs) as adopted by the European Union. The financial reporting framework that has been applied in the preparation of the parent Company financial statements is applicable law and United Kingdom Accounting Standards, including FRS 101 "Reduced Disclosure Framework" (United Kingdom Generally Accepted Accounting Practice).

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the auditor's responsibilities for the audit of the financial statements section of our report below. We are independent of the Group and parent Company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard as applied to listed public interest entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Conclusions relating to principal risks, going concern and viability statement

We have nothing to report in respect of the following information in the Annual Report, in relation to which the ISAs (UK) require us to report to you whether we have anything material to add or draw attention to:

- the disclosures in the Annual Report set out on pages 40 to 45 that describe the principal risks and explain how they are being managed or mitigated;
- the Directors' confirmation set out on page 105 in the Annual Report that they have carried out a robust assessment of the principal risks facing the entity, including those that would threaten its business model, future performance, solvency or liquidity;
- the Directors' statement set out on page 105 in the financial statements about whether they considered it appropriate to adopt the going concern basis of accounting in preparing them, and their identification of any material uncertainties to the entity's ability to continue to do so over a period of at least 12 months from the date of approval of the financial statements;
- whether the Directors' statement in relation to going concern required under the Listing Rules in accordance with Listing Rule 9.8.6R(3) is materially inconsistent with our knowledge obtained in the audit; or
- the Directors' explanation set out on page 105 in the Annual Report as to how they have assessed the prospects of the entity, over what period they have done so and why they consider that period to be appropriate, and their statement as to whether they have a reasonable expectation that the entity will be able to continue in operation and meet its liabilities as they fall due over the period of their assessment, including any related disclosures drawing attention to any necessary qualifications or assumptions.

Independent auditor's report to the members of Spirent Communications plc continued

Overview of our audit approach

Key audit matters	• Inappropriate revenue recognition. • Recoverability of deferred tax assets. • Carrying value of goodwill (Group) and investments in subsidiary undertakings (parent Company only).
Audit scope	• We performed an audit of the complete financial information of four components and audit procedures on specific balances for a further four components. • The components where we performed full or specific audit procedures accounted for 94 per cent of profit before tax adjusted for non-recurring items, 94 per cent of revenue and 96 per cent of total assets.
Materiality	• Overall Group materiality of $4.4 million which represents 5 per cent of profit before tax adjusted for non-recurring items.

Key audit matters

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the financial statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) that we identified. These matters included those which had the greatest effect on: the overall audit strategy; the allocation of resources in the audit; and directing the efforts of the engagement team. These matters were addressed in the context of our audit of the financial statements as a whole, and in our opinion thereon, and we do not provide a separate opinion on these matters.

In 2018, our auditor's report included the same key audit matters as in 2019.

Key audit matters continued

Risk	Our response to the risk	Key observations communicated to the Audit Committee
Inappropriate revenue recognition Refer to the Audit Committee report (page 74); accounting policies (page 171); and note 3 of the consolidated financial statements (page 131). The Group has reported revenues of \$503.6 million (2018 \$476.9 million). The Group enters into multi-element contracts comprising software, hardware and post-contract support service elements. Such arrangements can be complex or judgemental and can require separate recognition of the different elements of revenue in order to comply with Group accounting policies and IFRS. Furthermore, pressure on management to meet certain targets may result in inappropriate recognition of revenue and associated balances as a result of judgement over revenue recognition on transactions completed closer to the year end. This risk is consistent with the prior year.	We performed full and specific scope audit procedures over this risk area in four locations, which covered 94 per cent of Group reported revenue. For the audit of revenue recognition in each full and specific scope audit location: • we performed walkthroughs of significant classes of revenue transactions and assessed the design effectiveness of key controls; • for a sample of transactions in each location, we agreed revenue recognised to sales contracts focusing on the allocation of revenue in contracts with separate performance obligations consisting of hardware, software and support services; • we performed detailed testing of the completeness and valuation of deferred revenue and other associated balance sheet accounts by selecting a sample of transactions included within these balances to ensure they have been recognised in accordance with Group accounting policies and IFRS; • we performed cut-off testing by tracing a sample of revenue transactions close to the year end to third party delivery notes and customer acceptance documentation; • we validated management's approach to determining their best estimate of relative standalone selling prices in accordance with IFRS; • for a sample of transactions, we performed procedures to ensure that the transactions price was allocated to separate performance obligations on a reasonable and consistent basis. This included recalculating revenue allocations, agreeing revenue to cash receipts and, where appropriate, testing whether revenue had been deferred correctly at year end; • we tested a sample of journal entries made to revenue specifically focusing on significant manual or unusual journal entries to revenue to test whether each entry is supported by an appropriate, underlying business rationale, is properly authorised, accounted for correctly and properly recorded in the correct period; and • we also considered the adequacy of the Group's disclosures in respect of the accounting policies for revenue recognition under IFRS 15 as disclosed in notes 2 and 3.	We concluded that revenue recognised in the year, and deferred as at 31 December 2019, is materially correct on the basis of our procedures performed. We concluded the Group's disclosures in respect of the accounting policies for revenue recognition under IFRS 15 are appropriate.

Independent auditor's report to the members of Spirent Communications plc continued

Key audit matters continued

Risk	Our response to the risk	Key observations communicated to the Audit Committee
Recoverability of deferred tax assets Refer to the Audit Committee report (page 74); accounting policies (page 129); and note 27 of the consolidated financial statements (pages 151 to 152). The Group has deferred tax assets of $22.4 million (2018 $22.0 million). There is a risk that inappropriate recognition of brought forward tax losses and other temporary differences due to the volatility in forecast taxable income may result in incorrect recognition and disclosure of deferred tax assets. Furthermore, there is risk of incorrect application of legislative changes to deferred tax recognition. The risk is consistent with the prior year.	The following procedures on the deferred tax assets were performed centrally by the Group team supported by overseas component teams, including specialists: • we performed walkthroughs of the tax process and assessed the design effectiveness of key controls; • with the assistance of our EY tax specialists, we have evaluated management's rationale for the forecast periods selected in determining the likelihood of the Group generating suitable future profit to support the recognition of deferred tax assets; • we evaluated the historical accuracy of management's forecasting of taxable profits, the integrity of the forecast models and the consistency of the projections with other forecasts made by management and approved by the Board; • with the assistance of our US tax specialists, we assessed the completeness and correctness of management's assessment of the impact of the US tax legislation and its correct application of the methods to calculate deferred tax assets; • we considered the impact of the restrictions on recognising carry forward losses and assessed the correctness of management's assessment that they would be used during the forecast period; and • we considered the accuracy and appropriateness of related disclosures and offsetting of deferred tax balances in the Group financial statements.	We concluded that management's judgements in relation to the extent of recognition of deferred tax assets and related disclosures are appropriate.

Key audit matters continued

Risk	Our response to the risk	Key observations communicated to the Audit Committee
Carrying value of goodwill (Group), and investments in subsidiary undertakings (parent Company) Refer to the Audit Committee report (page 72); accounting policies (page 123); and note 13 of the consolidated financial statements (page 143). The Group has goodwill of $157.1 million (2018 $155.7 million) and investments in subsidiary undertakings of £388.0 million (2018 £366.6 million). Given the continuing uncertain political and economic environment, there is a risk that goodwill in the Group financial statements and investments in the parent Company financial statements may be overstated. In 2016, management impaired goodwill relating to the Connected Devices segment by $41.3 million down to its recoverable amount. Headroom for this segment has increased following improving profitability; however, we continue to monitor this segment in particular. This risk is consistent with the prior year.	The following procedures on the carrying value of goodwill and investments in subsidiary undertakings were performed centrally by the Group team: • with the support of our valuation specialists, we assessed the discount rate used in the impairment models by obtaining the underlying data used in the calculation and benchmarking it against comparable organisations and market data; • we validated the growth rates assumed in the models by comparing them to economic and industry forecasts; • we challenged management on the achievability of the cash flow forecasts, the downside risk relating to US–China trade tension, coronavirus (COVID-19) and Brexit, and we assessed the projected financial information against original forecasts and other market data to assess the robustness of management's forecasting process; • we analysed the historical accuracy of budgets to actual results to determine whether forecast cash flows are reliable based on past experience; • we performed sensitivity analyses by testing key assumptions in the model to recalculate a range of potential outcomes in relation to the size of the headroom between carrying value and fair value; • we have compared the carrying value of the CGUs to the market capitalisation of the Group; and • we considered the appropriateness of the related disclosures provided in note 13 to the Group financial statements.	We concluded that there is no goodwill impairment as at 31 December 2019. We noted that there remains judgement with regard to the timing of expected future cash flows of Connected Devices as a result of market sentiment around 5G technology. We also concluded that there is no impairment required to be recorded with respect to parent Company investments. We concluded the disclosure in note 13 to the Group financial statements is appropriate.

An overview of the scope of our audit

Tailoring the scope

Our assessment of audit risk, our evaluation of materiality and our allocation of performance materiality determine our audit scope for each entity within the Group. Taken together, this enables us to form an opinion on the consolidated financial statements. We take into account size, risk profile, the organisation of the Group and effectiveness of Group-wide controls, changes in the business environment and other factors such as recent internal audit results when assessing the level of work to be performed at each entity.

In assessing the risk of material misstatement to the Group financial statements, and to ensure we had adequate quantitative coverage of significant accounts in the financial statements of the reporting components of the Group, we selected components covering entities within the United Kingdom, North America and Asia, which represent the principal business units within the Group.

Of the eight components selected, we performed an audit of the complete financial information of four components (full scope components) which were selected based on their size or risk characteristics. For the remaining four components (specific scope components), we performed audit procedures on specific accounts within that component that we considered had the potential for the greatest impact on the significant accounts in the financial statements either because of the size of these accounts or their risk profile.

An overview of the scope of our audit continued

Tailoring the scope continued

Reporting components	2019					2018			
	Number	% of Group adjusted profit before tax*	% of Group revenue	% of Group assets	See note	Number	% of Group adjusted profit before tax*	% of Group revenue	% of Group assets
Full scope	4	102	93	68	1,2	3	104	83	73
Specific scope	4	(8)	1	28	3,4	5	(11)	10	23
Full and specific scope coverage	8	94	94	96		8	93	93	96
Remaining components	16	6	6	4	5	16	7	7	4
Total reporting components	24	100	100	100		24	100	100	100

Notes
* Profit before tax adjusted for non-recurring items as defined in the 'Our application of materiality' section of this report.
1. The Group audit risk in relation to the carrying value of goodwill was subject to full scope audit procedures by the Group audit team on the entire balance.
2. The Group audit risk in relation to the recoverability of deferred tax assets was subject to full scope audit procedures by the Group audit team on the entire balance.
3. One of the four specific scope components relates to the corporate division of the parent Company which includes consolidation and elimination adjustments.
4. The specific scope loss before tax adjusted for non-recurring items coverage of 8 per cent represents four specific scope components having a positive contribution of 4 per cent offset by the corporate component having a negative contribution of 12 per cent.
5. Of the remaining components that together represent 6 per cent of the Group's profit before tax adjusted for non-recurring items, none are individually greater than 2 per cent of the Group's profit before tax adjusted for non-recurring items. For these components, we performed other procedures, including analytical review procedures and specified procedures to respond to any potential risks of material misstatement to the Group financial statements.

Changes from the prior year

Our scoping is comparable with the prior year with the exception of Spirent Federal Systems Inc which has been designated as full scope (2018 specific scope) based on its contribution to profit before tax adjusted for non-recurring items and our professional judgement.

Involvement with component teams

In establishing our overall approach to the Group audit, we determined the type of work that needed to be undertaken at each of the components by us, as the Group audit engagement team, or by component auditors from other EY global network firms operating under our instruction. Of the four full scope components, audit procedures were performed on one of these directly by the primary audit team with the other three performed by component audit teams. Of the four specific scope components audit procedures were performed on three of these directly by the Group audit team and one by component audit teams. Where the work was performed by component auditors, we determined the appropriate level of involvement to enable us to determine that sufficient audit evidence had been obtained as a basis for our opinion on the Group as a whole.

At the start of the audit, a Global Team Planning event was held in the UK with representatives from all full and specific scope component audit teams in attendance. Detailed instructions were sent to all auditors in these locations. These instructions covered the significant areas that should be addressed by the component team auditors (which included the relative risks of material misstatement detailed above) and set out the information to be reported back to the Group audit team. In addition, the Group audit team continued to follow a programme of planned visits that has been designed to ensure that the Senior Statutory Auditor visits certain material or high risk locations on a rotational basis. During the current year's audit cycle, visits were undertaken by the Group audit team to the component teams in North America. These visits involved meeting with our component team to discuss and direct their planned audit approach, holding meetings with local management and reviewing procedures performed to date on the Group risk areas. Our planned visit to the component team in Asia was cancelled due to travel restrictions as a result of coronavirus (COVID-19); however, no change was made to the extent of our oversight of the component, nor to the extent of the work performed by the component. We held numerous meetings with our component team, including via video conference, and performed a remote review of the key workpapers associated with the component team's audit.

The Group team interacted regularly with the component teams where appropriate during various stages of the audit, including attendance at all closing meetings by phone, review of key working papers and were responsible for the scope and direction of the audit process. This, together with the additional procedures performed at Group level, gave us appropriate evidence for our opinion on the Group financial statements.

Our application of materiality

We apply the concept of materiality in planning and performing the audit, in evaluating the effect of identified misstatements on the audit and in forming our audit opinion.

Materiality

The magnitude of an omission or misstatement that, individually or in the aggregate, could reasonably be expected to influence the economic decisions of the users of the financial statements. Materiality provides a basis for determining the nature and extent of our audit procedures.

Materiality continued

We determined materiality for the Group to be $4.4 million (2018 $3.5 million), which is 5 per cent (2018 5 per cent) of profit before tax adjusted for non-recurring items of $89.2 million (2018 $71.9 million). We consider that profit before tax adjusted for non-recurring items provides us with a consistent year-on-year basis for determining materiality and is the most relevant performance measure to the stakeholders of the entity. Detailed audit procedures are performed on material non-recurring items.

We determined materiality for the parent Company to be £3.3 million (2018 £3.0 million), which is 1 per cent (2018 1 per cent) of net assets. Parent Company materiality is higher than Group materiality as it is calculated on a different basis as primarily a head office company rather than the trading group.

Starting basis

- Profit before tax $89.6 million (2018 profit before tax $61.2 million)

Adjustments

- Adjusted for non-recurring items:
  – Exceptional income of $0.5 million (2018 exceptional costs of $13.1 million)
  – Acquisition related costs of $0.1 million (2018 nil)
  – Gain on divestments of $nil million (2018 $2.4 million)

Materiality

- Profit before tax adjusted for non-recurring items $89.2 million (basis for materiality) (2018 $71.9 million)
- Materiality of $4.4 million (2018 $3.5 million) (5 per cent of materiality basis)

Management makes further adjustments to profit before tax adjusted for non-recurring items (basis for materiality) to arrive at adjusted operating profit, the measure used by the Directors to evaluate the overall performance of the Group. These adjustments include intangible asset amortisation of $1.2 million (2018 $3.7 million), share-based payment expense of $3.5 million (2018 $2.8 million), and net interest income of $1.0 million (2018 $1.3 million). Adjusting for these items gives adjusted operating profit of $92.9 million (2018 $77.1 million).

The $0.9 million increase in materiality is in proportion to the $17.3 million increase of profit before tax adjusted for non-recurring items (2019 $89.2 million, 2018 $71.9 million). That increase is a result of the $15.8 million increase in adjusted operating profit (2019 $92.9 million, 2018 $77.1 million), the $2.5 million reduction in intangible asset amortisation (2019 $1.2 million, 2018 $3.7 million), and the $0.3 million decrease in net finance income (2019 $1.0 million, 2018 $1.3 million) partially offset by a $0.7 million increase in share-based payment expense (2019 $3.5 million, 2018 $2.8 million).

During the course of our audit, we reassessed initial materiality and the only change in final materiality was to reflect the actual reported performance of the Group in the year.

Performance materiality

The application of materiality at the individual account or balance level. It is set at an amount to reduce to an appropriately low level the probability that the aggregate of uncorrected and undetected misstatements exceeds materiality.

On the basis of our risk assessments, together with our assessment of the Group's overall control environment, our judgement was that performance materiality was 75 per cent (2018 75 per cent) of our planning materiality, namely $3.3 million (2018 $2.6 million). We have set performance materiality at this percentage to ensure that total detected and undetected audit differences do not exceed our planning materiality of $4.4 million (2018 $3.5 million) for the financial statements as a whole.

Audit work at component locations for the purpose of obtaining audit coverage over significant financial statement accounts is undertaken based on a percentage of total performance materiality. The performance materiality set for each component is based on the relative scale and risk of the component to the Group as a whole and our assessment of the risk of misstatement at that component. In the current year, the range of performance materiality allocated to components was $0.6 million to $2.1 million (2018 $0.4 million to $1.3 million).

Reporting threshold

An amount below which identified misstatements are considered as being clearly trivial.

We agreed with the Audit Committee that we would report to them all uncorrected audit differences in excess of $0.22 million (2018 $0.17 million), which is set at 5 per cent of planning materiality, as well as differences below that threshold that, in our view, warranted reporting on qualitative grounds.

We evaluate any uncorrected misstatements against both the quantitative measures of materiality discussed above and in light of other relevant qualitative considerations in forming our opinion.

Independent auditor's report to the members of Spirent Communications plc continued

Other information

The other information comprises the information included in the Annual Report, including the strategic report (set out on pages 1 to 55), corporate governance and Directors' report (set out on pages 102 to 105), and other information (set out on pages 188 to 196) other than the financial statements and our Auditor's report thereon. The Directors are responsible for the other information.

Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in this report, we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether there is a material misstatement in the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of the other information, we are required to report that fact.

We have nothing to report in this regard.

In this context, we also have nothing to report in regard to our responsibility to specifically address the following items in the other information and to report as uncorrected material misstatements of the other information where we conclude that those items meet the following conditions:

- **Fair, balanced and understandable set out on page 72** – the statement given by the Directors that they consider the Annual Report and financial statements taken as a whole is fair, balanced and understandable and provides the information necessary for shareholders to assess the Group's performance, business model and strategy, is materially inconsistent with our knowledge obtained in the audit; or
- **Audit Committee reporting set out on page 72** – the section describing the work of the Audit Committee does not appropriately address matters communicated by us to the Audit Committee or is materially inconsistent with our knowledge obtained in the audit; or
- **Directors' statement of compliance with the UK Corporate Governance Code set out on page 61**– the parts of the Directors' statement required under the Listing Rules relating to the Company's compliance with the UK Corporate Governance Code containing provisions specified for review by the auditor in accordance with Listing Rule 9.8.10R(2) do not properly disclose a departure from a relevant provision of the UK Corporate Governance Code.

Opinions on other matters prescribed by the Companies Act 2006

In our opinion, the part of the Directors' remuneration report to be audited has been properly prepared in accordance with the Companies Act 2006.

In our opinion, based on the work undertaken in the course of the audit:

- the information given in the Strategic report and the Directors' report for the financial year for which the financial statements are prepared is consistent with the financial statements; and
- the Strategic report and the Directors' report have been prepared in accordance with applicable legal requirements.

Matters on which we are required to report by exception

In the light of the knowledge and understanding of the Group and the parent Company and its environment obtained in the course of the audit, we have not identified material misstatements in the Strategic report or the Directors' report.

We have nothing to report in respect of the following matters in relation to which the Companies Act 2006 requires us to report to you if, in our opinion:

- adequate accounting records have not been kept by the parent Company, or returns adequate for our audit have not been received from branches not visited by us; or
- the parent Company financial statements and the part of the Directors' remuneration report to be audited are not in agreement with the accounting records and returns; or
- certain disclosures of Directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

Responsibilities of Directors

As explained more fully in the Directors' responsibilities statement set out on page 106, the Directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the Directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Directors are responsible for assessing the Group and parent Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Directors either intend to liquidate the Group or the parent Company or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Explanation as to what extent the audit was considered capable of detecting irregularities, including fraud

The objectives of our audit, in respect to fraud, are; to identify and assess the risks of material misstatement of the financial statements due to fraud; to obtain sufficient appropriate audit evidence regarding the assessed risks of material misstatement due to fraud, through designing and implementing appropriate responses; and to respond appropriately to fraud or suspected fraud identified during the audit. However, the primary responsibility for the prevention and detection of fraud rests with both those charged with governance of the entity and management.

Our approach was as follows:

- We obtained an understanding of the legal and regulatory frameworks that are applicable to the Group and determined that the most significant frameworks that are directly relevant to specific assertions in the financial statements are those that relate to the reporting framework (IFRS, FRS 101, the Companies Act 2006 and the UK Corporate Governance Code) and the relevant tax compliance regulations in the jurisdictions in which the Group operates.
- We understood how Spirent Communications plc is complying with those legal and regulatory frameworks by making enquires of management, Internal Audit, those responsible for legal and compliance procedures and the Company Secretary. We corroborated our enquires through our review of Board minutes and papers provided to the Audit Committee.
- We assessed the susceptibility of the Group's financial statements to material misstatement, including how fraud might occur, by meeting with management from various parts of the business to understand where it considered there was susceptibility to fraud. We also considered performance targets and their propensity to influence efforts made by management to manage earnings. We considered the programmes and controls that the Group has established to address risks identified, or that otherwise prevent, deter and detect fraud; and how senior management monitors those programmes and controls.
- Based on this understanding we designed our audit procedures to identify non-compliance with such laws and regulations identified in the paragraphs above. Our procedures involved: journal entry testing, with a focus on manual consolidation journals and journals indicating large or unusual transactions based on our understanding of the business; enquiries of Legal Counsel, Group management, Internal Audit, and component management. Where the risk was considered to be higher, we performed audit procedures to address the identified fraud risk as referred to in the key audit matters section above. In addition, we completed procedures to conclude on the compliance of the disclosures in the Annual Report and Accounts with the requirements of the relevant accounting standards, UK legislation and the UK Corporate Governance Code 2018.

A further description of our responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at https://www.frc.org.uk/auditorsresponsibilities. This description forms part of our Auditor's report.

Other matters we are required to address

- We were appointed by the Company on 1 May 2019 to audit the financial statements for the year ending 31 December 2019.
- Following the recommendation of the Board we were appointed (as predecessor firm Lindsay, Jamieson & Haldane) by the Group at its Annual General Meeting on 9 May 1950 to audit the financial statements of the Group for the period ending 31 December 1949. Our total uninterrupted period of engagement is 70 years, covering periods from our appointment through to the period ending 31 December 2019.
- The non-audit services prohibited by the FRC's Ethical Standard were not provided to the Group or the parent Company and we remain independent of the Group and the parent Company in conducting the audit.
- The audit opinion is consistent with the additional report to the Audit Committee explaining the results of our audit.

Use of our report

This report is made solely to the Company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the Company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the Company's members as a body, for our audit work, for this report, or for the opinions we have formed.

Joe Yglesia
(Senior Statutory Auditor)
For and on behalf of Ernst & Young LLP, Statutory Auditor
Reading
5 March 2020

Notes
1. The maintenance and integrity of the Spirent Communications plc website is the responsibility of the Directors; the work carried out by the auditor's does not involve consideration of these matters and, accordingly, the auditor accepts no responsibility for any changes that may have occurred to the financial statements since they were initially presented on the website.
2. Legislation in the United Kingdom governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Consolidated income statement
Year to 31 December 2019

	Notes	Year ended 31 December 2019 Adjusted $ million	Year ended 31 December 2019 Adjusting items[1] $ million	Year ended 31 December 2019 Reported $ million	Year ended 31 December 2018 Adjusted $ million	Year ended 31 December 2018 Adjusting items[1] $ million	Year ended 31 December 2018 Reported $ million
Revenue	3	**503.6**	**–**	**503.6**	476.9	–	476.9
Cost of sales		**(135.0)**	**–**	**(135.0)**	(132.4)	–	(132.4)
Gross profit		**368.6**	**–**	**368.6**	344.5	–	344.5
Product development	3	**(96.5)**	**–**	**(96.5)**	(96.9)	–	(96.9)
Selling and marketing		**(129.2)**	**–**	**(129.2)**	(123.9)	–	(123.9)
Administration		**(50.0)**	**–**	**(50.0)**	(46.6)	–	(46.6)
Other items		**–**	**(4.3)**	**(4.3)**	–	(19.6)	(19.6)
Operating profit		**92.9**	**(4.3)**	**88.6**	77.1	(19.6)	57.5
Other items credited/(charged) in arriving at operating profit:							
Exceptional items	5	**–**	**0.5**	**0.5**	–	(13.1)	(13.1)
Acquisition related costs	37	**–**	**(0.1)**	**(0.1)**	–	–	–
Acquired intangible asset amortisation		**–**	**(1.2)**	**(1.2)**	–	(3.7)	(3.7)
Share-based payment	34	**–**	**(3.5)**	**(3.5)**	–	(2.8)	(2.8)
Other items		**–**	**(4.3)**	**(4.3)**	–	(19.6)	(19.6)
Finance income	6	**2.8**	**–**	**2.8**	1.4	–	1.4
Finance costs	7	**(1.8)**	**–**	**(1.8)**	(0.1)	–	(0.1)
Gain on divestment	36	**–**	**–**	**–**	–	2.4	2.4
Profit before tax	4	**93.9**	**(4.3)**	**89.6**	78.4	(17.2)	61.2
Tax	10	**(12.2)**	**0.6**	**(11.6)**	(12.1)	6.7	(5.4)
Profit for the year attributable to owners of the parent Company		**81.7**	**(3.7)**	**78.0**	66.3	(10.5)	55.8
Earnings per share (cents)	11						
Basic		**13.40**		**12.79**	10.86		9.14
Diluted		**13.23**		**12.63**	10.75		9.05

Note
1. Adjusting items comprise exceptional items, acquisition related costs, amortisation of acquired intangible assets, share-based payment, gain on divestment, tax on adjusting items and prior year tax.

The performance of the Group is assessed using a variety of non-GAAP alternative performance measures which are presented to provide additional financial information that is regularly reviewed by management. Adjusting items are identified and excluded by virtue of their size, nature or incidence as they do not reflect management's evaluation of the underlying trading performance of the Group. The alternative performance measures are presented on pages 190 and 191.

The notes on pages 121 to 163 and pages 186 and 187 form part of these financial statements.

Consolidated statement of comprehensive income

Year to 31 December 2019

	Notes	2019 $ million	2018 $ million
Profit for the year attributable to owners of the parent Company		**78.0**	55.8
Other comprehensive income/(loss)			
Items that may subsequently be reclassified to profit or loss:			
– Exchange differences on retranslation of foreign operations		**1.9**	(3.1)
Items that will not subsequently be reclassified to profit or loss:			
– Re-measurement of the net defined benefit pension asset	9	**2.7**	2.8
– Income tax effect of re-measurement of the net defined benefit pension asset	10	**(0.5)**	(0.6)
– Re-measurement of the deferred compensation liability	9	**(0.4)**	0.5
– Income tax effect of re-measurement of the deferred compensation liability	10	**0.1**	(0.1)
		1.9	2.6
Other comprehensive income/(loss)		**3.8**	(0.5)
Total comprehensive income for the year attributable to owners of the parent Company		**81.8**	55.3

The notes on pages 121 to 163 and pages 186 and 187 form part of these financial statements.

Consolidated balance sheet

At 31 December 2019

	Notes	2019 $ million	2018 $ million
Assets			
Non-current assets			
Intangible assets	13	**160.3**	158.0
Property, plant and equipment	14	**29.5**	36.1
Right-of-use assets	15	**26.0**	–
Trade and other receivables	20	**6.9**	4.5
Assets recognised from costs to obtain a contract	21	**0.3**	0.5
Investment in associate	16	**–**	–
Defined benefit pension plan surplus	9	**11.6**	2.5
Deferred tax asset	27	**22.4**	22.0
		257.0	223.6
Current assets			
Inventories	19	**20.6**	27.5
Trade and other receivables	20	**142.8**	138.1
Assets recognised from costs to obtain a contract	21	**0.5**	0.5
Other financial assets	20	**0.1**	–
Current tax asset		**0.5**	1.4
Cash and cash equivalents	22	**183.2**	121.6
		347.7	289.1
Total assets		**604.7**	512.7
Liabilities			
Current liabilities			
Trade and other payables	23	**(84.1)**	(63.1)
Deferred income	25	**(53.2)**	(55.2)
Lease liabilities	26	**(8.5)**	–
Current tax liability		**(3.8)**	(1.2)
Provisions	28	**(4.8)**	(10.7)
		(154.4)	(130.2)
Non-current liabilities			
Trade and other payables	23	**(1.0)**	(5.4)
Deferred income	25	**(13.6)**	(14.4)
Lease liabilities	26	**(24.5)**	–
Defined benefit pension plan deficit	9	**(5.5)**	(4.1)
Provisions	28	**(3.4)**	(3.3)
		(48.0)	(27.2)
Total liabilities		**(202.4)**	(157.4)
Net assets		**402.3**	355.3
Capital and reserves	32		
Share capital		**26.8**	26.0
Share premium account		**26.6**	25.7
Capital redemption reserve		**17.4**	16.8
Other reserves		**15.2**	17.5
Translation reserve		**10.1**	8.2
Retained earnings		**306.2**	261.1
Total equity attributable to owners of the parent Company		**402.3**	355.3

The notes on pages 121 to 163 and pages 186 and 187 form part of these financial statements.

Signed on behalf of the Board

Paula Bell
Director
5 March 2020

Consolidated statement of changes in equity

		Attributable to the equity holders of the parent Company						$ million
	Notes	Share capital	Share premium account	Capital redemption reserve	Other reserves	Translation reserve	Retained earnings	Total equity
At 1 January 2018		27.5	27.3	17.8	13.4	11.3	256.8	354.1
Profit for the year		–	–	–	–	–	55.8	55.8
Other comprehensive (loss)/income[1]		–	–	–	–	(3.1)	2.6	(0.5)
Total comprehensive (loss)/income		–	–	–	–	(3.1)	58.4	55.3
Share-based payment	34	–	–	–	–	–	2.8	2.8
Tax credit on share incentives	10	–	–	–	–	–	0.4	0.4
Equity dividends	12	–	–	–	–	–	(54.8)	(54.8)
Employee Share Ownership Trust	32	–	–	–	–	–	(2.5)	(2.5)
Exchange adjustment		(1.5)	(1.6)	(1.0)	4.1	–	–	–
At 31 December 2018, as reported		26.0	25.7	16.8	17.5	8.2	261.1	355.3
Impact of change in accounting standard – IFRS 16	39	**–**	**–**	**–**	**–**	**–**	**(3.4)**	**(3.4)**
At 1 January 2019		**26.0**	**25.7**	**16.8**	**17.5**	**8.2**	**257.7**	**351.9**
Profit for the year		**–**	**–**	**–**	**–**	**–**	**78.0**	**78.0**
Other comprehensive income[2]		**–**	**–**	**–**	**–**	**1.9**	**1.9**	**3.8**
Total comprehensive income		**–**	**–**	**–**	**–**	**1.9**	**79.9**	**81.8**
Share-based payment	34	**–**	**–**	**–**	**–**	**–**	**3.9**	**3.9**
Tax credit on share incentives	10	**–**	**–**	**–**	**–**	**–**	**1.9**	**1.9**
Equity dividends	12	**–**	**–**	**–**	**–**	**–**	**(28.6)**	**(28.6)**
Employee Share Ownership Trust	32	**–**	**–**	**–**	**–**	**–**	**(8.6)**	**(8.6)**
Exchange adjustment		**0.8**	**0.9**	**0.6**	**(2.3)**	**–**	**–**	**–**
At 31 December 2019		**26.8**	**26.6**	**17.4**	**15.2**	**10.1**	**306.2**	**402.3**

Notes
1. The amount included in other comprehensive (loss)/income for 2018 of $2.6 million represents re-measurement gains on the net defined benefit pension asset of $2.8 million, net of a tax charge of $0.6 million, and re-measurement gains on the deferred compensation liability of $0.5 million, net of a tax charge of $0.1 million. The amount included in the translation reserve of $3.1 million represents other comprehensive loss related to the translation of foreign operations.
2. The amount included in other comprehensive income for 2019 of $1.9 million represents re-measurement gains on the net defined benefit pension asset of $2.7 million, net of a tax charge of $0.5 million, and re-measurement losses on the deferred compensation liability of $0.4 million, net of a tax credit of $0.1 million. The amount included in the translation reserve of $1.9 million represents other comprehensive income related to the translation of foreign operations.

The notes on pages 121 to 163 and pages 186 and 187 form part of these financial statements.

Consolidated cash flow statement

Year to 31 December 2019

	Notes	2019 $ million	2018 $ million
Cash flows from operating activities			
Cash flow from operations	35	**124.9**	65.9
Tax paid		**(5.6)**	(5.7)
Net cash inflow from operating activities		**119.3**	60.2
Cash flows from investing activities			
Interest received		**2.6**	1.3
Purchase of intangible assets	13	**(2.0)**	–
Purchase of property, plant and equipment	14	**(10.9)**	(12.0)
Proceeds from the sale of property, plant and equipment		**1.0**	1.4
Lease payments received from finance leases	15	**0.4**	–
Net expenses of divestments	36	**–**	(0.2)
Repayment of loans to divested subsidiaries	36	**–**	2.0
Acquisition of business	37	**(1.9)**	–
Net cash used in investing activities		**(10.8)**	(7.5)
Cash flows from financing activities			
Lease liability principal repayments	26	**(8.6)**	–
Lease liability interest paid	26	**(1.7)**	–
Dividend paid	12	**(28.6)**	(54.8)
Share purchase into Employee Share Ownership Trust	32	**(8.6)**	(2.5)
Net cash used in financing activities		**(47.5)**	(57.3)
Net increase/(decrease) in cash and cash equivalents		**61.0**	(4.6)
Cash and cash equivalents at the beginning of the year		**121.6**	128.4
Effect of foreign exchange rate changes		**0.6**	(2.2)
Cash and cash equivalents at the end of the year	22	**183.2**	121.6

The notes on pages 121 to 163 and pages 186 and 187 form part of these financial statements.

Notes to the consolidated financial statements

1. Corporate information

The Group's consolidated financial statements for the year ended 31 December 2019 were authorised for issue by the Board of Directors on 5 March 2020. Spirent Communications plc is a public limited company incorporated and domiciled in England and Wales (registration number 00470893). The registered address of the Company is Origin One, 108 High Street, Crawley, West Sussex RH10 1BD, United Kingdom.

The Company's Ordinary Shares are traded on the London Stock Exchange.

As required by the European Union's (EU) IAS Regulation and the Companies Act 2006, the Group has prepared its consolidated financial statements in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU and issued by the International Accounting Standards Board (IASB).

The Company has elected to prepare the Company financial statements in accordance with UK Accounting Standards. These are presented on pages 164 and 165 and the accounting policies in respect of the Company are set out on pages 166 to 172.

2. Significant accounting policies

Accounting convention

The consolidated financial statements are prepared on a historical cost basis apart from certain financial instruments that have been measured at fair value.

Going concern basis of accounting

At 31 December 2019, the Group had cash balances of $183.2 million and external debt in relation to its lease liabilities.

The Directors have reviewed the detailed financial projections for a period of 12 months from the date of this report and the business plans for the 2021 and 2022 financial years. They have also considered the principal risks and uncertainties that the Group faces and its current financial position and are satisfied that the Group has adequate financial resources to continue in operational existence for the foreseeable future, a period of not less than 12 months from the date of this report. Accordingly, the going concern basis of accounting continues to be used in the preparation of the financial statements.

New accounting standards

The Group has adopted IFRS 16 'Leases' on 1 January 2019. Other than this, there have been no applicable new standards, amendments to standards and interpretations effective from 1 January 2019 that have been applied by the Group which have resulted in a significant impact on its consolidated results or financial position.

IFRS 16 'Leases'

IFRS 16 'Leases' is effective from 1 January 2019 and replaces the existing standard IAS 17 'Leases'. The consolidated financial statements for the year ending 31 December 2019 are the first financial statements presented under IFRS 16. In the lessee's financial statements, the standard eliminates the classification of leases as either operating leases or finance leases as per IAS 17 and introduces a single lessee accounting model. Lease agreements give rise to the recognition of an asset representing the right to use the leased item and a corresponding loan obligation for future lease payables. The Group has applied IFRS 16 using the modified retrospective approach, meaning comparatives are not restated and the cumulative effect of initially applying the standard is recognised as an adjustment to the opening balance of retained earnings at the date of initial application. Under this option, the Group has elected to calculate the asset value as if the standard had always been applied since the lease commencement date but discounted using the Group's incremental borrowing rate at the date of initial application. Lease liabilities were recognised based on the present value of the remaining lease payments, discounted using the incremental borrowing rate at the date of initial application. The Group has also elected to use the following practical expedients:

- the application of a single discount rate to a portfolio of leases with reasonably similar characteristics;
- use of its onerous lease assessment calculated in accordance with IAS 37 'Provisions, Contingent Liabilities and Contingent Assets' as an alternative to performing an impairment review of right-of-use assets on initial application;
- leases with less than 12 months remaining at the date of initial application can be accounted for as short-term leases and continue to be expensed as incurred;
- initial direct costs can be excluded from the measurement of right-of-use assets at the date of initial application; and
- hindsight can be used in determining the lease term if the contract contains options to extend or terminate the lease.

The Group also made use of the exemptions in respect of short-term leases and leases for which the underlying asset is of low value in accordance with paragraph 6 of IFRS 16.

An explanation of the impact of IFRS 16 on the Group's financial statements and related matters consequent upon the adoption of IFRS 16 are set out in note 39. The Group's accounting policy in respect of leases, from 1 January 2019, is set further on in note 2.

2. Significant accounting policies continued

Presentation

The Group's deferred costs balance has been reclassified from 'trade and other receivables – current' to 'inventories' as this classification more appropriately represents the nature of the balance. The presentation of the comparative amounts in the Group's balance sheet has also been amended to reflect this change. This resulted in a reclassification of $1.8 million in 2018. The related cash flow movement in 2018 was also reclassified using the appropriate corresponding line item within the 'cash flow from operating activities' category in the Group's cash flow statement. This reclassification had no impact on the Group's net assets, income statement or net cash flow from operating activities reported in 2018.

Basis of consolidation

The consolidated financial statements incorporate the financial statements of the Company and its subsidiaries made up to 31 December each year. The financial statements of subsidiaries are prepared for the same reporting year as the parent Company, using consistent accounting policies. A full list of subsidiary undertakings is provided on pages 186 and 187.

Subsidiary undertakings are entities that are directly or indirectly controlled by the Group. The Group controls an entity when it is exposed, or has rights, to variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity.

Results of subsidiaries are consolidated from the date on which control is transferred to the Group and cease to be consolidated from the date on which control is transferred out of the Group.

The separable net assets, including intangible assets of newly acquired subsidiaries, are incorporated into the consolidated financial statements based on their fair values at the effective date of control.

The Group includes a subsidiary that is operated under the management of a Proxy Board. Details of the Proxy Board arrangements and the powers of the proxy holders and Spirent's management are set out in the Corporate Governance section of this Annual Report on pages 68 and 69. The Directors consider that the Group meets the requirements of IFRS 10 'Consolidated Financial Statements' in respect of control over the entity in question as Spirent maintains the following:

- rights to appoint, reassign or remove members of key management and the ability to appoint proxy holders and change Directors every five years;
- rights to direct the investee to enter into, or veto any changes to, transactions; and
- decision-making rights and rights to direct activities including the ability to change products, territories and customers and the ability to terminate product selling (with notice).

Associates are those entities in which the Group has significant influence, but not control, over the financial and operating policies. Significant influence is presumed to exist when the Group holds between 20 and 50 per cent of the voting power of another entity.

Associates are accounted for using the equity method and are initially recognised at cost. The Group's investment includes goodwill identified on acquisition, net of any accumulated impairment losses. The consolidated financial statements include the Group's share of the total comprehensive income from the date that significant influence commences until the date that significant influence ceases. When the Group's share of losses exceeds its interest in an equity accounted investee, the Group's carrying amount is reduced to nil and recognition of further losses is discontinued except to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of an associate.

Dividends received from associates reduce the carrying value of the associate. Investments in associates are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount.

All intra-group transactions, balances, income and expenses are eliminated on consolidation.

2. Significant accounting policies continued

Business combinations and goodwill

A business combination is a transaction or other event in which an acquirer obtains control of one or more businesses. Business combinations are accounted for using the acquisition method.

At acquisition date, the identifiable assets acquired and liabilities assumed, including intangible assets, are measured at their fair values. The cost of an acquisition is measured as the aggregate of the consideration transferred and the amount of any non-controlling interest in the acquiree. Non-controlling interests are measured at the proportionate share of the acquiree's identifiable net assets.

Contingent consideration resulting from business combinations is valued at fair value at the acquisition date as part of the business combination. When the contingent consideration meets the definition of a financial liability, it is subsequently re-measured to fair value at each reporting date, with changes in fair value recognised in profit or loss. The determination of fair value is based on discounted cash flows. The key assumptions take into consideration the probability of meeting each performance target and the discount rate.

Acquisition related costs are expensed and included in other items.

Goodwill arising on the acquisition of subsidiaries, representing the excess of cost over the net fair value of the net assets acquired, is capitalised as an intangible asset. Goodwill is carried at cost less any accumulated impairment losses.

Goodwill is subject to an annual review for impairment. For the purpose of impairment testing, goodwill is allocated to the related cash-generating units monitored by management. Where the recoverable amount of the cash-generating unit is less than its carrying amount, including goodwill, an impairment loss is recognised in the income statement.

Intangible assets

Intangible assets are carried at cost less accumulated amortisation and accumulated impairment losses. Separately identifiable intangible assets such as patent fees, licence fees, trademarks and customer lists and relationships are capitalised on the balance sheet only when the value can be measured reliably, or the intangible asset is purchased as part of the acquisition of a business. Such intangible assets are amortised over their useful economic lives on a straight-line basis. The carrying value of intangible assets is reviewed for impairment if events or changes in circumstances indicate the carrying value may not be recoverable.

Acquired intangible assets, being customer lists, current technology, brand names, database and a non-compete covenant, are amortised on a straight-line basis over their estimated useful lives and the charge is included within other items in the income statement. Licences are amortised over their useful lives or term, and are expensed within cost of sales or selling costs.

The estimated useful lives of intangible assets and the amortisation expiry dates are as follows:

	Useful life	Expiry date
Customer lists	2 to 7 years	2019
Current technology	5 to 7 years	2024
Brand names	5 years	2018
Licences	3 to 5 years	2022

Product development

Research expenditure is charged to product development in the income statement in the year in which it is incurred. Intangible assets arising on the Group's various product development projects are recognised only if the recognition criteria of IAS 38 'Intangible Assets' are met.

Product development costs are expensed as incurred until the technological feasibility of the product under development has been established. Technological feasibility in Spirent's circumstances occurs when a working model is completed. For software development, technological feasibility is not established until the process of developing the software is complete. After technological feasibility is established, additional costs are capitalised and amortised on a straight-line basis over the estimated useful life.

At 31 December 2019 and 31 December 2018, no amounts have met the recognition criteria.

2. Significant accounting policies continued

Property, plant and equipment

Property, plant and equipment are stated at cost less accumulated depreciation and accumulated impairment. Depreciation is not provided on freehold land. Depreciation is provided to write off the cost, less estimated residual value, of all other assets over their estimated useful lives on a straight-line basis at rates which take into account commercial conditions at their location. Usual asset lives are as follows:

Freehold buildings	50 years
Plant and machinery	3 to 8 years
Fixtures, fittings and equipment:	
– Building installations	20 years or lease period if lower
– Fittings and equipment	3 to 8 years
– Motor vehicles	3 to 5 years
– Business systems software	4 years

The carrying values of property, plant and equipment are reviewed for impairment if events or changes in circumstances indicate the carrying value may not be recoverable.

Impairment of assets

Intangible assets with finite useful lives, property, plant and equipment and right-of-use assets are tested for impairment at each reporting date where there is an indication that an asset may be impaired. Goodwill and intangible assets with an indefinite useful life are assessed at least annually. When an impairment test is performed, the recoverable amount is assessed by reference to the higher of the net present value of the expected cash flows (value in use) of the relevant cash-generating unit or asset and the fair value less cost of disposal. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. Where the carrying amount of an asset exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. Impairment losses are recognised in the income statement in those expense categories consistent with the function of the impaired asset.

Where an impairment loss has been recognised against an asset, it may be reversed in future periods where there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognised, but only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, had no impairment loss been recognised in prior years. Such a reversal is recognised in the income statement. This does not apply for goodwill, for which an impairment loss must not be reversed in any circumstances.

Leases

Lease accounting policy applicable from 1 January 2019.

The Group as a lessee

The Group assesses whether a contract is or contains a lease, at inception of a contract. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

The vast majority of the Group's leases are buildings and therefore the new definition of a lease under IFRS 16 did not change the population of contracts that meet the definition of a lease for the Group.

The Group recognises a right-of-use asset and a corresponding lease liability with respect to all lease agreements in which it is the lessee at the commencement date of the lease (i.e. the date the underlying asset is available for use), except for short-term leases (defined as leases with a lease term of 12 months or less) and leases of low-value assets. For these leases, the Group recognises the lease payments as an operating expense within the income statement on a straight-line basis over the period of the lease.

At the commencement date of the lease, the lease liability is initially measured at the present value of lease payments to be made over the lease term, discounted using the rate implicit in the lease. If this rate cannot be readily determined, the Group uses its incremental borrowing rate. Under the modified retrospective transition method, lease liabilities are required to be discounted using the incremental borrowing rate at date of transition. The Group has set the discount rate based upon the local base rate with an additional premium to reflect various factors such as credit risk. This approach enables an appropriate rate to be set for each lease depending on geographic location and lease classification.

The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by the Group and payments of penalties for terminating a lease, if the lease term reflects the Group exercising the option to terminate. The variable lease payments that do not depend on an index or a rate are recognised as an expense in the period on which the event or condition that triggers the payment occurs.

The lease liability is presented as a separate line in the consolidated balance sheet.

2. Significant accounting policies continued

Leases continued

The Group as a lessee continued

The lease liability is subsequently measured by increasing the carrying amount to reflect interest on the lease liability (using the effective interest method), and by reducing the carrying amount to reflect the lease payments made. It is re-measured when there is a change in future lease payments arising from a change in an index or rate, or if the Group changes its assessment of whether it will exercise a purchase, extension or termination option. Interest on the lease liability is presented within finance costs in the income statement.

When the lease liability is re-measured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

The right-of-use asset is initially measured at cost, which comprises the initial amount of the corresponding lease liability, adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term. In addition, the right-of-use asset is periodically reduced by impairment losses, if any, and adjusted for certain re-measurements of the lease liability.

The right-of-use assets are presented as a separate line in the consolidated balance sheet.

Lease payments for short-term leases, lease payments for low-value assets and variable lease payments not included in the measurement of the lease liability are classified as cash flows from operating activities within the consolidated cash flow statement. The Group has classified the principal and interest portions of lease payments within financing activities.

The Group as a lessor

When the Group acts as a lessor, it determines at lease inception whether each lease is a finance lease or operating lease.

To classify each lease, the Group makes an overall assessment of whether the lease transfers substantially all of the risks and rewards incidental to ownership of the underlying asset. If this is the case, then the lease is a finance lease; if not, then it is an operating lease.

The Group subleases certain of its buildings where the subleases are classified as finance leases. In these instances, the Group derecognises the right-of-use asset on the head lease at the sublease commencement date and continues to account for the original lease liability in accordance with the lessee accounting model. The Group, as a sublessor, recognises a net investment in the sublease within trade and other receivables in the balance sheet and evaluates it for impairment. The net investment in the sublease is subsequently measured by increasing the carrying amount to reflect interest (using the effective interest method), and by reducing the carrying amount to reflect sublease income received. Interest on the net investment in the sublease is presented within finance income in the income statement.

Cash flows from the principal and interest of the finance lease receivables received are classified as investing activities within the consolidated cash flow statement.

Under IAS 17

In the comparative period, as a lessee all of the Group's leases were operating leases and were not recognised in the consolidated balance sheet. Payments made under operating leases were charged to the income statement on a straight-line basis over the period of the lease.

The Group did not have any leases in which it was a lessor before 1 January 2019.

Inventories

Inventories are stated at the lower of cost and estimated net realisable value, after provisions for obsolescence. Cost includes all costs incurred in bringing each product to its present location and condition, being the full manufacturing cost on a first-in, first-out basis, including all attributable overheads based on a normal level of activity.

Provisions

Provisions are recorded when the Group has a present, legal or constructive obligation as a result of a past event, for which it is probable that the Group will be required to settle by an outflow of resources and for which a reliable estimate of the amount of the obligation can be made. Provisions are reviewed at each balance sheet date and adjusted to reflect the current best estimate.

Where the effect of the time value of money is material, the amount of the provision shall be the present value of the expenditures expected to be required to settle the obligation.

Contingent liabilities

Contingent liabilities are possible obligations whose existence will be confirmed only on the occurrence or non-occurrence of uncertain future events outside the Group's control, or present obligations that are not recognised because it is not probable that a settlement will be required or the value of such a payment cannot be reliably measured. The Group does not recognise contingent liabilities but discloses them.

2. Significant accounting policies continued

Foreign currencies

The consolidated financial statements are presented in US Dollars, which is the Group's presentation currency.

Transactions in foreign currencies are initially recorded at the rates ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are retranslated at the rates ruling at the balance sheet date. All exchange differences are taken to the consolidated income statement. Non-monetary assets and liabilities denominated in foreign currencies are measured in terms of historical costs using the exchange rate at the date of the initial transaction.

The functional currencies of the Group's operations are principally US Dollar, Sterling or Euro. On consolidation, the assets and liabilities of the Group's foreign operations are translated into the Group's presentation currency at exchange rates ruling at the balance sheet date. The results of foreign operations are translated into US Dollars using average rates for the period. The exchange differences arising on retranslation are classified as a separate component of equity, the translation reserve. Such translation differences are recognised as part of the profit or loss on disposal should an operation be disposed of. The Group has elected to apply the exemption in IFRS 1 'First Time Adoption of International Financial Reporting Standards' which allows the cumulative translation differences for all foreign operations to be deemed to be zero at the date of transition to IFRS, being 1 January 2003.

Financial instruments

Financial assets and liabilities are recognised on the Group's balance sheet when it becomes a party to the contractual provisions of the instrument.

Trade receivables

Trade receivables are non-interest bearing and are stated at original invoiced amount less an appropriate allowance for expected credit losses. At each reporting date, the Group measures the loss allowance at an amount equal to the lifetime expected credit losses.

The Group applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables. Therefore, the Group does not track changes in credit risk, but instead recognises a loss allowance based on lifetime expected credit loss at each reporting date. To measure the expected credit losses, the Group has established a provision matrix that is based on shared credit risk characteristics and the days past due based on the expected loss rates.

The provision matrix is initially based on payment profiles of trade receivables over a period of 12 months before 31 December 2018 and the corresponding historical credit losses experienced within this period. At every reporting date the historical observed default rates are updated.

Trade receivables are written off when there is no reasonable expectation of recovery.

A default on a trade receivable occurs when the debtor fails to make contractual payments when they fall due.

Cash and cash equivalents

Cash and cash equivalents in the balance sheet comprise cash at bank and in hand and short-term deposits which have an original maturity of three months or less. For the purposes of the consolidated cash flow statement, cash and cash equivalents consist of cash and cash equivalents as defined above. There are no bank overdrafts.

Also recognised within cash and cash equivalents are shares in money market funds which, due to their first-class credit rating and investment in extremely short-term money market securities, undergo only minor fluctuations and can be readily converted within one day into known amounts of cash.

Trade payables

Trade payables are non-interest bearing and are stated at the original invoiced amount.

Equity instruments

Equity instruments are recorded at the proceeds received, net of direct issue costs. Spirent Communications plc Ordinary Shares held by the Group are classified in equity as treasury shares and are recognised at cost and included as a deduction from retained earnings. Consideration received for the sale of such treasury shares is also recognised in equity.

Derivative financial instruments and hedge accounting

The Group uses forward foreign currency exchange contracts to manage exposures arising on receipts and payments in foreign currencies relating to firm commitments.

Forward foreign currency exchange contracts are initially recognised at fair value on the date on which the contract is entered into, and are subsequently re-measured to fair value at each reported balance sheet date. The fair value of forward foreign currency exchange contracts is calculated by reference to current forward exchange rates for contracts with similar maturity profiles. The Group has not adopted the hedge accounting rules. Consequently all gains and losses arising from changes in fair value are taken to the income statement.

Derivatives embedded in other financial instruments or other host contracts are treated as separate derivatives when their risks and characteristics are not closely related to those of the host contracts.

2. Significant accounting policies continued

Retirement benefits

The Group operates two funded defined benefit pension plans which are in the United Kingdom; all other pension plans are defined contribution in nature. For the defined contribution plans, the amount charged to the income statement is the employers' contributions paid or payable during the year.

For defined benefit pension plans, full actuarial valuations are carried out every three years using the projected unit credit method, and updates are performed at each balance sheet date. Re-measurement, comprising actuarial gains and losses, the effect of changes to the asset ceiling (if relevant) and the return on plan assets (excluding interest), is reflected immediately in the balance sheet surplus/deficit with a charge or credit recognised in other comprehensive income in the period in which they occur. Re-measurement recognised in other comprehensive income will not be reclassified to profit or loss. Past service cost is recognised in profit or loss in the period of plan amendment. Net interest is calculated by applying the discount rate at the beginning of the period to the net defined benefit pension asset, taking account of any changes in the net defined benefit pension asset during the period as a result of contribution and benefit payments. Defined benefit pension costs are categorised as:

- service cost (including current service cost, past service cost and gains and losses on curtailments or settlements);
- net interest expense or income; and
- re-measurement.

The Group presents the first two components of defined benefit pension costs in profit or loss.

The Group also operates a deferred compensation plan in the United States. The plan has elements of a defined benefit pension retirement obligation and therefore is required to be valued in accordance with IAS 19 'Employee Benefits'. For the deferred compensation plan, the gains or losses on the deemed investments that are attributed to the deferral account over time are charged or credited to the income statement whereas the re-measurement, comprising actuarial gains or losses, is reflected immediately in the balance sheet liability with a charge or credit in other comprehensive income in the period in which it occurs. Re-measurement recognised in other comprehensive income will not be reclassified to profit or loss.

Revenue

Revenue represents the transfer of promised products or services to customers in an amount that reflects the consideration to which the Group expects to be entitled in exchange for those products or services.

Revenue from product sales of hardware and perpetual software licences is recognised at the point in time when the customer has obtained control of the products sold. This is usually when the products have been delivered in accordance with the contractual terms. In some instances it is not until acceptance has occurred that control of the asset is transferred to the customer. Terms of acceptance are dependent upon the specific contractual arrangement agreed with the customer. If it can be objectively determined that control has been transferred to the customer in accordance with the agreed contract specifications, customer acceptance is a formality that would not affect the determination of when the customer has obtained control of the products. However, if it cannot be objectively determined that the products delivered are in accordance with the agreed-upon contract specifications, revenue would not be recognised until customer acceptance has been granted.

For sales of software licenses, the Group determines whether the license is capable of being distinct and is separately identifiable from other promises in the context of the contract. Revenue from software subscription licences that provide the customer with a right to access the Group's intellectual property throughout the subscription period is recognised over time, throughout the subscription period. Revenue from perpetual software licences that provide the customer with a right to use the Group's intellectual property for an indefinite period of time is recognised at the point in time when the customer can first use and benefit from the software.

For the sale of services, revenue is generally recognised over time with reference to when or as the performance obligations are satisfied by transferring the service to the customer. Revenue from support and maintenance service contracts and software subscription sales is recognised over the period of performance on a straight-line basis. Revenue from professional services is generally recognised as work progresses in accordance with agreed-upon contractual terms, based on a measure of progress towards complete satisfaction of the performance obligation. Progress is measured with reference to the actual cost of services provided as a proportion of the total cost of services expected to be provided under the contract. Where the professional service has a predetermined or fixed output deliverable, revenue is recognised at a point in time once the performance obligation has been satisfied and the customer has received the agreed deliverable.

Revenue from multi-component and bundled orders that includes both products and services is accounted for as two or more separate performance obligations only where the commercial substance is that the individual components operate independently of each other, because they are capable of being distinct and are separately identifiable from other promises in the context of the contract with the customer.

Cost of sales

The Group's cost of sales related to the sale of its products includes materials, payments to third party contract manufacturers, royalties and salaries and other expenses related to its manufacturing and supply operations personnel. Cost of sales related to the provision of services includes salaries and other expenses associated with technical support services and the cost of extended maintenance services.

Costs to obtain a contract

The incremental costs of obtaining a contract with a customer are capitalised as an asset if the Group expects to recover them. The Group incurs costs such as sales commissions when it enters into a new contract. Such costs are presented in the consolidated balance sheet as assets recognised from costs to obtain a contract where the related revenue is recognised over time, usually in relation to support and subscription agreements. These assets are amortised on a systematic basis consistent with how the related revenue is recognised. The amortisation is recognised in selling costs within the income statement.

Notes to the consolidated financial statements continued

2. Significant accounting policies continued

Costs to obtain a contract continued

The Group applies the practical expedient in paragraph 94 of IFRS 15 and recognises incremental costs of obtaining a contract as an expense when incurred if the amortisation period of the asset that the Group would otherwise have recognised is one year or less.

Management is required to determine the recoverability of assets recognised from costs to obtain a contract. At each reporting date, the Group determines whether or not the assets are impaired by comparing the carrying amount of the asset to the remaining amount of consideration that the Group expects to receive less the costs that relate to providing services under the relevant contract. No assets were impaired as at 31 December 2019 or 31 December 2018.

Deferred income

Deferred income is only recognised on non-cancellable contracts that provide unconditional rights to payment from the customer for products and services that the Group has not yet completed providing or that it will provide in the near future.

Revenue from product sales of hardware and perpetual software licences is recognised at the point in time when the customer has obtained control of the products sold. In the instances where the customer has been invoiced and revenue from hardware or perpetual software licences is unable to be recognised, revenue would not be recognised until control has passed, resulting in deferred income.

Support services and software subscription agreements are generally billed at commencement of the support or subscription contract, while revenue is recognised over the period of the support or subscription agreement, resulting in deferred income.

The Group occasionally receives advance payments from customers on account, before products or services are delivered and revenue is recognised, resulting in liabilities. These liabilities are reported on the consolidated balance sheet within trade and other payables on a contract-by-contract basis at the end of each reporting period.

Government grants

A government grant is recognised in the balance sheet initially within trade and other payables when there is reasonable assurance that it will be received and that the Group will comply with the conditions attached to it. Grants that compensate the Group for expenses incurred are recognised as other operating income on a systematic basis in the same periods in which expenses are incurred. Grants that compensate the Group for the acquisition of an asset are presented by deducting them from the acquisition cost of the related asset in accordance with IAS 20 'Accounting for Government Grants and Disclosure of Government Assistance'.

Employee benefits

When an employee has rendered services to the Group during an accounting period, short-term benefits expected to be paid in exchange for those services are recognised in the same accounting period.

Share-based payment

The Group operates various equity-settled share-based compensation plans and accounts for these awards in accordance with IFRS 2 'Share-based Payment'.

The fair value of these awards is recognised in the income statement on a straight-line basis over the vesting period together with a corresponding change in equity. The fair value is measured using the Black-Scholes binomial model by reference to the share price, and taking into account the terms and conditions of the award, excluding non-market vesting conditions, at the date the awards were granted. The charge is reassessed at each balance sheet date to reflect the expected and actual levels of vesting, due to achievement or otherwise of non-market conditions. Awards where vesting is conditional upon satisfying a market condition or non-vesting condition are treated as vesting irrespective of whether the market or non-vesting condition has been satisfied.

With effect from 1 January 2019, one-third of the Annual Incentives of the Executive Directors is deferred into shares for a period of three years. This amount is an equity settled share-based payment transaction within the scope of IFRS 2 and the related expense is charged to the income statement in the same year as the measurement period. This amount has been charged to administration expenses in the income statement and forms part of adjusted operating profit as it reflects part of the underlying trading performance of the Group.

The Group has an employee share trust for the granting of certain share incentives to employees. Shares in the Group held by the employee share trust are treated as treasury shares and presented in the balance sheet as a deduction from equity.

Tax

Income tax on the profit or loss for the year comprises current and deferred tax. Income tax is recognised in the income statement except to the extent that it relates to items in other comprehensive income or equity.

Current tax is the expected tax payable on the taxable income for the year, using tax rates enacted or substantively enacted at the balance sheet date, and any adjustments to tax payable for previous years.

Deferred tax is recognised on all temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the financial statements, with the following exceptions:

- where the temporary difference arises from the initial recognition of goodwill (taxable temporary differences only) or of an asset or liability in a transaction that is not a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss; and
- in respect of taxable temporary differences associated with investments in subsidiaries, associates and joint ventures, where the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future.

2. Significant accounting policies continued

Tax continued

A deferred tax asset is recognised only to the extent that it is probable that taxable profits will be available against which the deductible temporary differences, carried forward tax credits or tax losses can be utilised.

Deferred tax assets and liabilities are measured on an undiscounted basis at the tax rates that are expected to apply when the related asset is realised or the liability is settled, based on tax rates and laws enacted or substantively enacted at the balance sheet date.

Dividends paid

The interim dividend is included in the financial statements in the period in which it is paid, and the final dividend and the special dividend are included in the period in which they are approved by the shareholders at an Annual General Meeting.

Adjusting items

Adjusting items are disclosed separately in the income statement where it is necessary to do so due to their nature or amount and to provide further understanding of the Group's financial performance. Adjusting items comprise exceptional items, acquisition related costs, amortisation of acquired intangible assets, share-based payment, gain on divestment, the tax effect of these items and any over/under provisions of tax in the prior year.

Certain items are classified as exceptional items due to their nature, amount or infrequency. Such presentation is relevant to an understanding of the Group's financial statements. These items are not part of the Group's normal ongoing operations.

Critical accounting assumptions and judgements

The preparation of financial statements requires the Group to make estimates and assumptions that affect items reported. Such estimates and assumptions are based on management's best knowledge of current facts, circumstances and future events. Actual results may differ, possibly significantly, from those estimates. The areas requiring a high degree of judgement or where assumptions and estimates are significant to the consolidated financial statements are discussed below.

Estimates

Business combinations and goodwill

For the purpose of impairment tests, the goodwill arising from each business combination is allocated to cash-generating units (CGUs) that are expected to benefit from the combination and which represent the lowest level within the Group at which management monitors goodwill. There have been no changes to the CGUs in the year.

The Group tests annually by CGU whether goodwill has suffered impairment and more frequently when events or circumstances indicate that the current carrying value may not be recoverable. The recoverable amounts of CGUs have been determined based on value in use calculations which require estimates and assumptions to be made in relation to management's expectations of growth in adjusted operating profit before depreciation and amortisation; long-term growth rates; and appropriate discount rates to reflect the risks involved.

Given the level of headroom at 31 December 2019, the Directors believe that no reasonable possible change in any of the key assumptions used, in isolation, would result in an impairment in any of the CGUs. Therefore, no sensitivities have been disclosed in note 13. Notwithstanding this, the goodwill impairment test is inherently based on management's expectations of growth and requires estimates and assumptions to be made. Changing the assumptions selected by management could affect the Group's impairment evaluation and hence reported assets and profits and losses.

Defined benefit pension plans

The pension cost and the defined benefit pension obligation of the Group's defined benefit pension plans are based on a number of selected assumptions; these include the discount rate, inflation rate, salary growth and longevity. Differences arising from actual experience or future changes in assumptions will be reflected in future periods. The effect of changing these assumptions is described in note 9.

At 31 December 2018, the Group estimated an allowance of $4.0 million (£3.1 million) in respect of GMP equalisation, a past service cost charged to exceptional items in the income statement in 2018. The data used in the calculation was high level and appropriate for an approximate calculation. The cost of GMP equalisation remains highly uncertain due to legal uncertainty, political uncertainty, historical data which is unavailable at this stage, and future trustee decisions. The ultimate cost of equalising GMPs will only be known once the trustees have completed an exercise to equalise benefits, and it could be significantly different to this estimate. The process followed and assumptions used are disclosed in note 9 of the Group's 2018 Annual Report.

Recognition of deferred tax assets

The recognition of deferred tax assets is based upon whether it is more likely than not that there will be sufficient and suitable taxable profits in the relevant legal entity or tax group against which to utilise the assets in the future. The extent to which deferred tax assets can be recognised is based on current forecasts and estimates prepared by management. A change to these forecasts and estimates could result in a different recognition outcome. Judgement is required when determining probable future taxable profits, which are estimated using the latest available profit forecasts. Unrecognised deferred tax assets are disclosed in note 27.

2. Significant accounting policies continued

Critical accounting assumptions and judgements continued

Provisions and contingent liabilities

Provisions are estimates and the actual cost and timing of future cash flows are dependent on future events. The Group exercises judgement in recognising provisions and the exposures to contingent liabilities. Judgement is necessary to assess the likelihood that a liability will arise and to quantify the possible amount of any financial settlement. The inherent uncertainty of such matters means that actual amounts of transactions may differ materially from estimates provided. Any difference between the amounts previously recognised and the actual amount is recognised immediately in the consolidated income statement. Provisions and contingent liabilities are disclosed in notes 28 and 17, respectively.

Judgements

Revenue recognition

To determine the appropriate revenue recognition for contracts containing multiple elements or complex solutions that include both products and services, we evaluate whether the contract should be accounted for as a single or multiple performance obligation. This evaluation requires significant judgement. For revenue recognition purposes contractual arrangements are accounted for as two or more separate performance obligations only where the commercial substance is that the individual components operate independently of each other, because they are capable of being distinct and are separately identifiable from other promises in the context of the contract with the customer. Management exercises a degree of judgement in setting the criteria used for determining when revenue which involves several elements should be recognised and the standalone selling prices of each element. The Group generally determines the standalone selling prices of individual elements based on prices which are not observable and are therefore based on standalone internal list prices which are then subject to discount.

For professional services revenue recognised over time, the selection of the method to measure progress towards completion requires judgement and is based on the nature of the services to be provided.

Contracts are sometimes modified to account for changes in customer requirements. Contract modifications are considered to exist when the modification either creates new, or changes the existing, enforceable rights and obligations. Most of the Group's contract modifications are for products and services that are distinct from existing performance obligations and are made prior to the transfer of the products or services to the customer. Accordingly, these are included in the products and services to be transferred and are included in the accounting of the contract on a prospective basis or as a separate performance obligation as appropriate.

In instances where the receipt of the consideration does not match the timing of the transfer of products or services because the customer has paid in advance, the Group evaluates whether the difference between the amount of promised consideration and the cash selling price of the promised products or services is significant. The Group generally determines any difference arising is not significant and therefore a financing component does not exist. This evaluation requires judgement.

Leases

The Group has set the discount rate based upon the local base rate with an additional premium to reflect various factors such as credit risk. This approach requires judgement and impacts the amount recognised as a lease liability and corresponding right-of-use asset, and therefore the amount of depreciation on the right-of-use asset and interest on the lease liability that are charged to the income statement.

The Group exercises judgement in determining whether it is reasonably certain that a building lease extension or termination option will be exercised. The Group assesses at lease commencement whether it is reasonably certain to exercise the extension options. The Group reassesses whether it is reasonably certain to exercise the options if there is a significant event or significant change in circumstances within its control. This judgement impacts the carrying amounts of right-of-use assets and lease liabilities.

Applicable new standards and interpretations not applied

The IASB and IFRIC have issued the following standards and interpretations with an effective date for the Group after the date of these financial statements:

International Accounting Standards (IAS/IFRS)		Effective for annual periods beginning on or after
IAS 1	Definition of Material (Amendments to IAS 1)	1 January 2020
Amendments to References to the Conceptual Framework in IFRS Standards		1 January 2020

The Directors do not anticipate that the adoption of these standards and interpretations will have a material impact on the Group's financial statements in the period of initial application.

3. Operating segments

The Group's organisational structure is based on differences in the products and services offered by each segment and information regularly reviewed by the Group's Chief Executive Officer, its chief operating decision maker, is presented on this basis. The Group's operating segments follow this structure.

The Group's reportable operating segments are Networks & Security, Lifecycle Service Assurance and Connected Devices. The Group evaluates adjusted operating profit before exceptional items, acquisition related costs, acquired intangible asset amortisation and share-based payment. Finance income, finance costs and gain on divestment are not allocated to the reportable segments. Corporate is not an operating segment and costs are separately reported and not allocated to the reportable segments. Information on segment assets and segment liabilities is not regularly provided to the Group's Chief Executive Officer and is therefore not disclosed below. There is no aggregation of operating segments.

The Group disaggregates revenue from contracts with customers by nature of products and services and primary geographical markets as this best depicts how the nature, amount, timing and uncertainty of the Group's revenue and cash flows are affected by economic factors.

						2019 $ million
	Notes	Networks & Security	Lifecycle Service Assurance	Connected Devices	Corporate	Total
Revenue						
Nature of products and services						
Sale of hardware and software		272.0	67.8	32.6	-	372.4
Maintenance and support services		47.9	43.4	39.9	-	131.2
		319.9	111.2	72.5	-	503.6
Primary geographical markets						
Americas		141.0	85.5	39.6	-	266.1
Asia Pacific		143.3	15.2	29.3	-	187.8
Europe, Middle East and Africa		35.6	10.5	3.6	-	49.7
		319.9	111.2	72.5	-	503.6
Inter-segment revenue is eliminated.						
Profit before tax						
Total reportable segment profit before exceptional items		73.9	18.1	9.5	(8.6)	92.9
Exceptional items	5	(1.1)	(0.4)	(0.3)	2.3	0.5
Total reportable segment profit		72.8	17.7	9.2	(6.3)	93.4
Unallocated amounts:						
– Acquisition related costs	37					(0.1)
– Acquired intangible asset amortisation						(1.2)
– Share-based payment	34					(3.5)
Operating profit						88.6
Finance income	6					2.8
Finance costs	7					(1.8)
Profit before tax						89.6
Other information						
Product development		56.0	27.6	12.9	-	96.5
Intangible asset amortisation – other		-	-	0.9	-	0.9
Depreciation of property, plant and equipment	14	9.2	2.7	2.7	0.1	14.7
Depreciation of right-of-use assets	15	4.4	1.7	1.1	0.3	7.5

3. Operating segments continued

	Notes	Networks & Security	Lifecycle Service Assurance	Connected Devices	Corporate	2018 $ million Total
Revenue						
Nature of products and services						
Sale of hardware and software		239.8	66.9	40.0	–	346.7
Maintenance and support services		45.3	45.9	39.0	–	130.2
		285.1	112.8	79.0	–	476.9
Primary geographical markets						
Americas		133.7	93.4	38.3	–	265.4
Asia Pacific		112.6	9.8	36.7	–	159.1
Europe, Middle East and Africa		38.8	9.6	4.0	–	52.4
		285.1	112.8	79.0	–	476.9

Inter-segment revenue is eliminated.

	Notes	Networks & Security	Lifecycle Service Assurance	Connected Devices	Corporate	Total
Profit before tax						
Total reportable segment profit before exceptional items		56.4	17.4	10.5	(7.2)	77.1
Exceptional items	5	–	–	–	(13.1)	(13.1)
Total reportable segment profit		56.4	17.4	10.5	(20.3)	64.0
Unallocated amounts:						
– Acquired intangible asset amortisation						(3.7)
– Share-based payment	34					(2.8)
Operating profit						57.5
Finance income	6					1.4
Finance costs	7					(0.1)
Gain on divestment	36					2.4
Profit before tax						61.2

	Notes	Networks & Security	Lifecycle Service Assurance	Connected Devices	Corporate	Total
Other information						
Product development		53.0	29.6	14.3	–	96.9
Intangible asset amortisation – other		–	–	0.6	–	0.6
Depreciation of property, plant and equipment	14	9.7	3.1	3.6	0.1	16.5

All of the Group's revenue arose from contracts with customers.

Generally, revenue from the sale of hardware and software is recognised at a point in time and revenue from maintenance and support services is recognised over time.

Europe, Middle East and Africa includes United Kingdom revenue of $8.2 million (2018 $6.8 million).

Americas includes United States revenue of $252.4 million (2018 $254.1 million).

Asia Pacific includes China revenue of $114.1 million (2018 $92.2 million).

Revenues are attributed to regions and countries based on customer location.

No one customer accounted for 10 per cent or more of total Group revenue in either 2019 or 2018.

3. Operating segments continued

	2019 $ million	2018 $ million
Non-current assets[1]		
Americas	**196.9**	184.6
Asia Pacific	**7.4**	4.4
Europe, Middle East and Africa	**11.5**	5.1
	215.8	194.1

Note
1. Non-current assets excludes trade and other receivables, assets recognised from costs to obtain a contract, defined benefit pension plan surplus and deferred tax asset.

Europe, Middle East and Africa includes United Kingdom non-current assets of $6.9 million (2018 $2.0 million).

Americas includes United States non-current assets of $182.4 million (2018 $171.1 million).

4. Profit before tax

The following items have been charged in arriving at profit before tax:

	Notes	2019 $ million	2018 $ million
Employee benefit costs	8	**220.5**	208.9
Costs of inventories recognised as an expense		**81.6**	79.8
Write-down of inventories to net realisable value	19	**1.6**	0.1
Amortisation of intangible assets	13	**2.1**	4.3
Depreciation of property, plant and equipment	14	**14.7**	16.5
Depreciation of right-of-use assets	15	**7.5**	–
Amortisation of assets recognised from costs to obtain a contract	21	**0.5**	0.6
Operating leases – minimum lease payments		**–**	8.5
Expenses relating to short-term leases and leases of low-value assets	26	**0.3**	–
Product development costs		**96.5**	96.9
Net foreign exchange loss		**0.6**	0.6

Services provided to all of the operations of the Group by the auditor, Ernst & Young LLP, and its associates:

	2019 $ million	2018 $ million
Audit services		
Group audit fee	**1.1**	0.9

A description of the work of the Audit Committee is set out in the Audit Committee report on pages 72 to 76 and includes an explanation of how auditor objectivity and independence is safeguarded when non-audit services are provided by the auditor.

5. Exceptional items

	Note	2019 $ million	2018 $ million
CEO strategic review		**1.8**	–
French Customs (refund)/duty		**(2.3)**	9.1
UK pension fund GMP equalisation past service cost	9	**–**	4.0
		(0.5)	13.1

Notes to the consolidated financial statements continued

5. Exceptional items continued

In 2019, the Group incurred $1.8 million of costs associated with a strategic review, instigated by Spirent's new CEO, involving a number of initiatives designed to evolve the strategic direction of Spirent to maximise market opportunities by creating a more agile, customer-focused organisation. These include a strategic focus on recurring revenue streams over time; a strengthened leadership team and development of our sales and marketing structure to drive improved effectiveness to exploit our leading technologies. This charge comprised employee severance costs of $1.1 million, recruitment costs of $0.3 million and consulting costs of $0.4 million. The review will continue into 2020.

In 2018, the Group recognised a $9.1 million charge in relation to an ongoing compliance dispute with Direction Générale des Douanes et Droits Indirects (French Customs) concerning the valuation and classification of imports into France which commenced in 2011. The amount was comprised of a provision for $8.9 million (note 28) and $0.2 million of other costs. In 2019, the Group received a refund amounting to $2.3 million following a successful claim for reimbursement of VAT paid on the imports.

Additionally in 2018, following the Lloyds Bank GMP inequalities court judgement published in October of that year, the Group equalised GMP benefits amounting to $4.0 million (£3.1 million) of defined benefit pension past service costs.

The tax effect of exceptional items is a charge of $0.2 million (2018 $3.8 million credit). There will be a total net cash inflow of $0.5 million in respect of exceptional items credited in 2019, $1.0 million of which was received in 2019 (2018 $9.1 million with $0.2 million paid in 2018). The cash outflow in 2019 in respect of exceptional items charged in 2018 was $6.5 million (2018 $3.4 million).

The total cash outflow in respect of exceptional items is reported within cash flows from operating activities in the consolidated cash flow statement.

6. Finance income

	Note	**2019 $ million**	2018 $ million
Bank interest receivable		**2.7**	1.4
Net defined benefit pension plan interest	9	**0.1**	–
		2.8	1.4

7. Finance costs

	Notes	**2019 $ million**	2018 $ million
Interest on lease liabilities	26	**1.7**	–
Unwind of discount on provisions	28	**0.1**	0.1
		1.8	0.1

8. Employees

The average number of people employed by the Group during the year was:

	2019 Number	2018 Number
Manufacturing	**330**	329
Product development	**460**	478
Selling and marketing	**475**	456
Administration	**200**	194
	1,465	1,457

Employee benefit costs were:

	Note	**2019 $ million**	2018 $ million
Remuneration		**192.4**	183.3
Social security costs		**16.3**	15.6
Pension and other related costs		**7.3**	7.2
Expense of share-based payment	34	**3.9**	2.8
		219.9	208.9

Please refer to the Report on Directors' remuneration on pages 77 to 101 and note 38 for disclosures relating to the emoluments, share incentives and pensions of the Directors.

9. Pensions

Defined benefit plans

i) Characteristics and risks associated with the Plans

The Group sponsors two funded defined benefit pension plans in the United Kingdom: the Spirent Communications plc Staff Pension & Life Assurance Plan (Staff Plan) and the Spirent Communications plc Retirement Cash & Life Assurance Plan (Cash Plan). These plans are funded and have full UK HM Revenue & Customs (HMRC) tax-exempt approval. Both schemes are administered by a trustee board which is comprised of representatives from the employer, member nominated trustees and an independent trustee. The trustee board operates in accordance with the Trust Deed and rules of each Plan and acts in the interests of all of its members.

- The Staff Plan is the Group's most significant plan, and it provides its members with retirement benefits based on their final salary and length of service. The Staff Plan is closed to new entrants.
- The Cash Plan is primarily a defined contribution arrangement, although there are some legacy defined benefits (Old Section) that have been valued for the purpose of these accounts in accordance with IAS 19 'Employee Benefits'. Members who left service before 1992 are entitled to a cash lump sum on retirement that is based on their salary and length of service. Members of the Old Section are entitled to defined contribution benefits, but with an underpin based on salary and length of service. The Cash Plan is closed to new entrants.

There is also a UK unfunded plan, which consists of a contractual obligation for the Group to top up certain former employees' benefits whose salaries exceeded the statutory earnings cap.

As with the vast majority of similar arrangements in the United Kingdom, the Group ultimately underwrites the risks relating to the defined benefit plans. These risks include investment risks and demographic risks, such as the chance of members living longer than expected.

The Plans hold a significant proportion of their assets in equity. Strong future equity returns would be expected to reduce the Group's future cash contributions (and vice versa).

Expected contributions to the defined benefit plans in 2020 are $6.7 million. This includes the contributions agreed with the funded plans' trustees in accordance with UK legislation. The latest triennial actuarial valuation dated 31 March 2018 indicated a deficit of £22.5 million, calculated on a technical provisions basis using more prudent assumptions than the accounting valuation, particularly in relation to discount rate, inflation and demographic. Therefore, the Group has agreed to pay $6.6 million (£5.0 million) per annum into the Staff Plan, increasing in line with CPI, through to June 2023 (or earlier if self-sufficiency is reached) in order to clear the funding deficit. Additionally, the Group will fund the plan by an amount equal to 10 per cent of any special dividend paid during the period.

If the contributions currently agreed are insufficient to pay the benefits due, the Group will need to make further contributions.

The Group also operates an unfunded deferred compensation plan for employees in the United States. The plan enables participating employees to defer a portion of their salary and invest it in deemed investments, which are used to measure the gains or losses that are attributed to the deferral account over time. The plan has elements of a defined benefit pension retirement obligation and therefore is required to be valued in accordance with IAS 19.

GMP equalisation

On 26 October 2018, the High Court ruled on the Lloyds Bank GMP inequalities case. In response to this, an allowance of $4.0 million (£3.1 million) was included on the balance sheet at 31 December 2018 to make provision for the estimated costs arising from the judgement. This past service cost was charged to exceptional items in the income statement in 2018 and related to the Staff Plan. There was no impact on the Cash Plan.

Over the year to 31 December 2019, the Trustees and the Group have not taken any formal decisions over the process. The calculation of the allowance as a proportion of the liabilities included within the IAS 19 figures are therefore unchanged. As a result of changes in market conditions, the allowance is now $4.1 million (£3.2 million). The difference has been charged to other comprehensive income during the year as an experience gain/loss.

Further information on the GMP equalisation, including the considerations in the calculation, are disclosed in the Group's 2018 Annual Report.

ii) Amounts in the financial statements

The assets and liabilities on the balance sheet are as follows:

	2019 $ million	2018 $ million
Schemes in net asset position		
UK defined benefit pension plan – Staff Plan	**10.3**	1.4
UK defined benefit pension plan – Cash Plan	**1.3**	1.1
	11.6	2.5
Schemes in net liability position		
UK unfunded plan	**(0.7)**	(0.6)
US deferred compensation plan	**(4.8)**	(3.5)
	(5.5)	(4.1)
Net pension plan surplus/(deficit) on the balance sheet	**6.1**	(1.6)

9. Pensions continued

Defined benefit plans continued

ii) Amounts in the financial statements continued

a) The assets and liabilities in each plan

	2019 $ million	2018 $ million
Staff Plan		
Quoted		
– Equities	67.4	53.4
– Government bonds	5.9	5.2
– Corporate bonds	4.9	4.1
Unquoted		
– LDI funds	45.4	40.4
– Cash benchmarked bonds	100.9	95.5
– Hedge funds	26.3	23.8
– Insured annuities	2.6	2.7
– Property	1.5	1.4
– Cash and other	25.3	17.9
Fair value of plan assets	280.2	244.4
Present value of defined benefit pension plan obligations	(269.9)	(243.0)
Surplus in the plan	10.3	1.4
Cash Plan		
Quoted		
– Equities	5.0	4.2
– Government bonds	3.7	3.4
Unquoted		
– Insured annuities	0.1	0.1
– Cash and other	2.1	2.1
Fair value of plan assets	10.9	9.8
Present value of defined benefit pension plan obligations	(9.6)	(8.7)
Surplus in the plan	1.3	1.1
Total net surplus recognised	11.6	2.5
Unfunded plan		
Present value of unfunded obligations	(0.7)	(0.6)
Deferred compensation plan		
Present value of deferred compensation obligations	(4.8)	(3.5)
Net pension plan surplus/(deficit) on the balance sheet	6.1	(1.6)

Approximately two-thirds of the Staff Plan's assets are held in a combination of LDI funds, cash benchmarked bonds and hedge funds. The objective of this allocation is to hedge against the plan's liabilities, provide protection against inflation risk and provide a level of investment returns in all market scenarios.

These funds have a wide investment remit and as such the investments in the funds may or may not be listed on recognised exchanges and markets and will be without restriction as to geographical, industrial or sector exposure. These funds may take both long and short positions and may utilise a broad range of derivatives. The funds' investments may include sub-investment grade securities, corporate debt securities, gilts, sale and repurchase agreements, loans, and emerging markets debt and currencies.

The plans are prohibited from investing in Spirent's own financial instruments.

9. Pensions continued

Defined benefit plans continued

ii) Amounts in the financial statements continued

a) The assets and liabilities in each plan continued

The fair values of the quoted equity and debt instruments are determined based on quoted market prices in active markets whereas the fair values of the other assets are not. Unquoted investments are included at values provided by the fund managers and are generally valued using recent market data and external sources, with a hierarchy that follows the principles of IFRS 13 'Fair Value Measurement'.

The Group has determined that it has an unconditional right to refund of surplus assets if the schemes are run off until the last member dies, on which basis IFRIC 14 does not cause any change in the balance sheet disclosures before tax.

For the purposes of the following disclosures the Staff Plan and Cash Plan have been combined as the Cash Plan is immaterial to these financial statements.

b) Analysis of the amounts charged to the income statement

	2019 $ million	2018 $ million
Plan administration expenses	0.6	0.5
Current service cost	0.1	0.1
Amount charged to operating costs	0.7	0.6
Past service cost charged to exceptional items (GMP equalisation)	–	4.0
Net interest on the net defined benefit pension surplus	(0.1)	–
Net charge to the income statement	0.6	4.6

c) Analysis of amount recognised directly in the statement of comprehensive income

	2019 $ million	2018 $ million
Re-measurement gain/(loss) on plans' assets	25.8	(14.2)
Actuarial gain arising from experience	0.3	3.1
Actuarial gain arising from the demographic assumptions	2.9	1.9
Actuarial (loss)/gain arising from changes in financial assumptions	(26.3)	12.0
Re-measurement of the net defined benefit pension surplus	2.7	2.8

d) Movements in the present value of funded defined benefit obligations

	2019 $ million	2018 $ million
At 1 January	251.7	284.8
Current service cost	0.1	0.1
Past service cost	–	4.0
Interest cost	6.9	7.0
Benefit payments	(11.4)	(12.1)
Actuarial gain arising from experience	(0.3)	(3.1)
Actuarial gain arising from the demographic assumptions	(2.9)	(1.9)
Actuarial loss/(gain) arising from changes in financial assumptions	26.3	(12.0)
Exchange adjustment	9.1	(15.1)
Present value of funded defined benefit pension plans' obligations	279.5	251.7

Notes to the consolidated financial statements continued

9. Pensions continued
Defined benefit plans continued
ii) Amounts in the financial statements continued
e) Movements in the fair value of plans' assets

	2019 $ million	2018 $ million
At 1 January	254.2	282.6
Interest income on plans' assets	7.0	7.0
Employer contributions	6.6	6.8
Benefit payments	(11.4)	(12.1)
Plan administration expenses	(0.6)	(0.5)
Re-measurement gain/(loss) on plans' assets	25.8	(14.2)
Exchange adjustment	9.5	(15.4)
Fair value of plans' assets	291.1	254.2

f) The key financial assumptions
The assumptions used for both plans using a weighted average were as follows:

	2019 %	2018 %
Inflation – RPI	3.0	3.2
Inflation – CPI	2.2	2.1
Rate of increase in pensionable salaries	2.2	2.1
Rate of increase for pensions in payment pre-2001 service	3.6	3.7
Rate of increase for pensions in payment 2001 to 5 April 2005 service	2.9	3.1
Rate of increase for pensions post-5 April 2005 service	2.0	2.1
Rate of increase in deferred pensions	2.2	2.1
Rate used to discount plan liabilities	2.1	2.8

The mortality assumptions are based on standard mortality tables which allow for future mortality improvements. The assumptions are such that a member currently aged 65 (2018 aged 65) will live on average for a further 22.1 years (2018 22.5 years) if they are male and for a further 24.1 years (2018 24.5 years) if they are female. For a member who retires in 2039 (2018 in 2038) at age 65 (2018 age 65), the assumptions are that they will live on average for a further 23.4 years (2018 23.9 years) after retirement if they are male and for a further 25.6 years (2018 26.0 years) after retirement if they are female.

iii) Amount, timing and uncertainty of future cash flows
The approximate impact to the past service liabilities of changing these main assumptions is as follows:

- Reducing the discount rate by 0.1 per cent per annum would increase past service liabilities by $3.8 million (2018 $3.4 million).
- Increasing RPI inflation by 0.1 per cent would increase the plans' liabilities by $1.4 million (2018 $1.3 million).
- Increasing the life expectancy of a member by one year (by modifying the standard mortality tables using an appropriate scaling factor) would increase past service liabilities by $13.5 million (2018 $11.5 million).

There will also be an impact on the future service cost but given the small active population in these plans this is likely to be insignificant. The sensitivity analysis may not be representative of the actual change as the changes in assumptions may not occur in isolation.

9. Pensions continued

Defined benefit plans continued

iii) Amount, timing and uncertainty of future cash flows continued

The liability has the following duration and maturity:

	2019	2018
Weighted average duration of the defined benefit obligation (years)	14	15
Maturity analysis of benefit payments (non-discounted amounts) $ million		
Maturity ≤ 1 year	10.8	10.4
Maturity > 1 ≤ 5 years	45.6	43.2
Maturity > 5 ≤ 10 years	61.7	119.0
Maturity > 10 ≤ 20 years	114.3	103.0
Maturity > 20 ≤ 30 years	81.7	68.0
Maturity > 30 years	63.0	42.9

Deferred compensation plan

At 31 December 2019, the deferred compensation plan deficit amounted to $4.8 million (2018 $3.5 million).

During the year, $0.2 million was charged to the income statement (2018 $0.2 million) and a re-measurement loss of $0.4 million (2018 $0.5 million gain) was recognised directly in the statement of other comprehensive income. The key financial assumptions include a discount rate used to discount plan liabilities of 2.9 per cent (2018 4.2 per cent) and an expected investment yield of 6.4 per cent (2018 6.4 per cent). There is no material impact in 2019 or 2018 of changing each of the key assumptions by 0.1 per cent, in isolation.

Defined contribution plans

United Kingdom

The Group contributes towards defined contribution pension plans for employees in the United Kingdom. Employer contributions into these plans for 2019 were $1.0 million (2018 $0.9 million).

United States

The Group maintains a defined contribution pension plan for employees of its United States subsidiaries. This plan, also known as a 401(k) Plan, allows employees to defer a percentage of their salary for retirement. In aggregate, the Group's contributions to the US plan totalled $4.0 million for 2019 (2018 $3.9 million). There were no defined benefit plans in the United States in 2019 or 2018.

Other jurisdictions

Outside the United Kingdom and the United States, employees are provided with pension arrangements determined in accordance with approved local practice and regulations. These arrangements are defined contribution plans. Total employer contributions for 2019 in respect of these plans amounted to $1.3 million (2018 $1.2 million).

Total employer contributions to defined contribution plans were $6.3 million (2018 $6.0 million).

Directors' pension arrangements

The pension arrangements of the Executive Directors are described in detail in the Report on Directors' remuneration on pages 77 to 101.

10. Tax

	2019 $ million	2018 $ million
Tax charge in the income statement		
Current income tax		
UK tax	**0.3**	0.1
Foreign tax	**9.2**	6.2
Amounts underprovided/(overprovided) in previous years	**0.3**	(1.2)
Total current income tax charge	**9.8**	5.1
Deferred tax		
Recognition of deferred tax assets	**(1.5)**	(0.8)
Reversal of temporary differences	**3.5**	1.4
Adjustments in respect of prior years	**(0.2)**	(0.3)
Total deferred tax charge	**1.8**	0.3
Tax charge in the income statement	**11.6**	5.4

The tax charge for the year ended 31 December 2019 was $11.6 million (2018 $5.4 million). This was after a prior year tax charge of $0.1 million and a tax credit on the adjusting items of $0.7 million (2018 prior year credit of $1.5 million and tax credit on adjusting items of $5.2 million). Excluding the prior year and tax credit on adjusting items, the effective tax rate was 13.0 per cent (2018 15.4 per cent).

Tax relating to items (credited)/charged to other comprehensive income or equity:

	2019 $ million	2018 $ million
Deferred tax on share incentives	**(1.3)**	(0.3)
Current tax on share incentives	**(0.6)**	(0.1)
Tax credit on share incentives	**(1.9)**	(0.4)
Deferred tax charge on defined benefit pension plan	**0.5**	0.6
Deferred tax (credit)/charge on deferred compensation plan	**(0.1)**	0.1

10. Tax continued

Reconciliation of the total tax charge

The tax charge in the income statement for the year is lower than the standard rate of corporation tax in the UK of 19.0 per cent (2018 19.0 per cent). The differences are reconciled below:

	Year ended 31 December 2019		
	Adjusted $ million	**Adjusting $ million**	**Reported $ million**
Accounting profit before tax	**93.9**	**(4.3)**	**89.6**
Accounting profit multiplied by the UK standard rate of corporation tax of 19.0 per cent	**17.8**	**(0.8)**	**17.0**
Differences in overseas rates	**3.4**	**–**	**3.4**
Non-taxable income	**(0.8)**	**–**	**(0.8)**
Recognition of temporary differences previously not recognised for deferred tax	**(1.5)**	**–**	**(1.5)**
Utilisation of temporary differences not previously recognised	**(2.0)**	**–**	**(2.0)**
UK and US Research and Experimental tax credit	**(2.1)**	**–**	**(2.1)**
Withholding tax	**0.9**	**–**	**0.9**
Hong Kong income tax credit	**(0.7)**	**–**	**(0.7)**
Permanent differences	**(2.8)**	**0.1**	**(2.7)**
Tax underprovided in prior years	**–**	**0.1**	**0.1**
Total tax charge reported in the income statement	**12.2**	**(0.6)**	**11.6**

	Year ended 31 December 2018		
	Adjusted $ million	Adjusting $ million	Reported $ million
Accounting profit before tax	78.4	(17.2)	61.2
Accounting profit multiplied by the UK standard rate of corporation tax of 19.0 per cent	14.9	(3.3)	11.6
Differences in overseas rates	3.3	(1.5)	1.8
Non-taxable income	(0.8)	(0.4)	(1.2)
Recognition of temporary differences previously not recognised for deferred tax	(0.8)	–	(0.8)
Current year losses upon which no deferred tax recognised	0.4	–	0.4
Utilisation of temporary differences not previously recognised	(1.3)	–	(1.3)
UK and US Research and Experimental tax credit	(2.0)	–	(2.0)
Withholding tax	0.8	–	0.8
Permanent differences	(2.4)	–	(2.4)
Tax overprovided in prior years	–	(1.5)	(1.5)
Total tax charge reported in the income statement	12.1	(6.7)	5.4

Included in the above reconciliation are the following items: Research and Experimental tax credits of $2.1 million (2018 $2.0 million); non-taxable income of $0.8 million (2018 $1.2 million), most of which relates to offshore income in the rest of the world; and permanent differences of $2.7 million (2018 $2.4 million) largely relating to the UK Patent Box deduction and the US foreign-derived intangible income deduction; and recognition of deferred tax assets in the US of $1.7 million and deferred tax liabilities in the UK of $0.2 million.

The Group's tax rate is sensitive to the geographic mix of profits and reflects a combination of higher statutory tax rates in certain jurisdictions, and other regions with significantly lower statutory tax rates. Regional statutory tax rates range from a high of 32 per cent to a low of 15 per cent. The UK Patent Box deduction benefit of $1.8 million (2018 $1.6 million), US foreign-derived intangible income deduction of $1.3 million (2018 $1.1 million), Research and Experimental credits of $2.1 million (2018 $2.0 million) and other tax credits of $0.9 million (2018 $0.1 million) realised in Hong Kong bring down the rate but items such as state taxes and withholding tax increase the tax rate.

11. Earnings per share

Basic

Earnings per share is calculated by dividing the profit for the year attributable to owners of the parent Company by the weighted average number of Ordinary Shares outstanding during the year.

Diluted

Diluted earnings per share is calculated by dividing the profit for the year attributable to owners of the parent Company by the weighted average number of Ordinary Shares outstanding during the year plus the weighted average number of Ordinary Shares that would be issued on the conversion of all dilutive potential Ordinary Shares into Ordinary Shares.

	2019 $ million	2018 $ million
Profit for the year attributable to owners of the parent Company	**78.0**	55.8

	Number million	Number million
Weighted average number of Ordinary Shares in issue – basic	**609.9**	610.4
Dilutive potential of employee share incentives	**7.5**	6.5
Weighted average number of Ordinary Shares in issue – diluted	**617.4**	616.9

	Cents	Cents
Earnings per share		
Basic	**12.79**	9.14
Diluted	**12.63**	9.05

Adjusted

The Group is disclosing adjusted earnings per share attributable to owners of the parent Company in order to provide a measure to enable period-on-period comparisons to be made of its performance. The following items are excluded from adjusted earnings:

- exceptional items;
- acquisition related costs;
- acquired intangible asset amortisation;
- share-based payment;
- gain on divestment;
- tax effect on the above items; and
- prior year tax (adjustments made to provisions in respect of prior years).

A reconciliation is provided below:

		2019		2018	
	Notes	$ million	EPS (cents)	$ million	EPS (cents)
Profit for the year attributable to owners of the parent Company		**78.0**	**12.79**	55.8	9.14
Exceptional items (credit)/charge	5	**(0.5)**		13.1	
Acquisition related costs	37	**0.1**		–	
Acquired intangible asset amortisation		**1.2**		3.7	
Share-based payment	34	**3.5**		2.8	
Gain on divestment	36	**-**		(2.4)	
Tax effect on the above items	10	**(0.7)**		(5.2)	
Prior year tax charge/(credit)	10	**0.1**		(1.5)	
Adjusted basic		**81.7**	**13.40**	66.3	10.86
Adjusted diluted			**13.23**		10.75

There were no Ordinary Share transactions that occurred after 31 December that would have significantly changed the number of Ordinary Shares or potential Ordinary Shares outstanding at the period end if those transactions had occurred before the end of the reporting period in either year.

12. Dividends paid and proposed

	2019 $ million	2018 $ million
Declared and paid in the year		
Equity dividend on Ordinary Shares		
Final dividend 2018 of 2.73 cents (2.08 pence) per Ordinary Share (2017 2.40 cents (1.73 pence))	**16.7**	14.3
Special dividend 2017 of 5.00 cents (3.60 pence) per Ordinary Share	**–**	29.9
Interim dividend 2019 of 1.94 cents (1.59 pence) per Ordinary Share (2018 1.76 cents (1.34 pence))	**11.9**	10.6
	28.6	54.8
Proposed for approval at AGM (not recognised as a liability at 31 December)		
Equity dividend on Ordinary Shares		
Final dividend 2019 of 3.45 cents (2.70 pence) per Ordinary Share (2018 2.73 cents (2.08 pence))	**21.0**	16.7

The Directors are proposing a final dividend in respect of the financial year ended 31 December 2019 of 3.45 cents per Ordinary Share (2.70 pence) (2018 2.73 cents (2.08 pence)), which will absorb an estimated $21.0 million of shareholders' funds (2018 $16.7 million). The final dividend will be paid on 1 May 2020 to Ordinary Shareholders who are on the Register of Members at close of business on 13 March 2020. Payment will be made to ADR holders on 8 May 2020. No liability is recorded in the financial statements in respect of this dividend.

Dividends are determined in US Dollars and paid in Pounds Sterling. The exchange rate for determining the amount of the final dividend to be paid for 2019 was $1.28: £1 (2018 $1.31: £1).

13. Intangible assets

$ million

	Note	Goodwill	Customer list	Current technology	Brand names	Other	Licences	Total
Cost, net of accumulated amortisation and impairment losses								
At 1 January 2018		156.8	2.1	2.9	0.2	–	1.6	163.6
Disposals		–	–	–	–	–	(0.2)	(0.2)
Amortisation for the year		–	(1.5)	(2.0)	(0.2)	–	(0.6)	(4.3)
Exchange adjustment		(1.1)	–	–	–	–	–	(1.1)
At 1 January 2019		**155.7**	**0.6**	**0.9**	**–**	**–**	**0.8**	**158.0**
Acquisitions	37	**0.9**	**–**	**1.0**	**–**	**–**	**–**	**1.9**
Additions		**–**	**–**	**–**	**–**	**–**	**2.0**	**2.0**
Amortisation for the year		**–**	**(0.6)**	**(0.6)**	**–**	**–**	**(0.9)**	**(2.1)**
Exchange adjustment		**0.5**	**–**	**–**	**–**	**–**	**–**	**0.5**
At 31 December 2019		**157.1**	**–**	**1.3**	**–**	**–**	**1.9**	**160.3**
At 31 December 2018								
Cost (gross carrying amount)		593.4	16.9	36.2	2.3	3.6	11.9	664.3
Amortisation and accumulated impairment losses		(437.7)	(16.3)	(35.3)	(2.3)	(3.6)	(11.1)	(506.3)
Net carrying amount		155.7	0.6	0.9	–	–	0.8	158.0
At 31 December 2019								
Cost (gross carrying amount)		**595.3**	**16.9**	**37.2**	**2.3**	**3.6**	**13.9**	**669.2**
Amortisation and accumulated impairment losses		**(438.2)**	**(16.9)**	**(35.9)**	**(2.3)**	**(3.6)**	**(12.0)**	**(508.9)**
Net carrying amount		**157.1**	**–**	**1.3**	**–**	**–**	**1.9**	**160.3**

Goodwill is allocated at acquisition to the cash-generating units (CGUs) that are expected to benefit from that business combination.

The Group identifies CGUs at the lowest level at which cash flows are largely independent of other cash flows.

13. Intangible assets continued

Goodwill has been allocated to three CGUs, which align with the reportable operating segments, as follows:

	2019 $ million	2018 $ million
Networks & Security	73.4	72.0
Lifecycle Service Assurance	37.6	37.6
Connected Devices	46.1	46.1
	157.1	155.7

Annual impairment test

The Group has an annual impairment testing date of 30 November. The key assumptions used in the value in use calculations were:

- revenue growth rates;
- gross margin;
- operating expenses;
- discount rate; and
- growth rate used to extrapolate cash flows beyond the five-year period covered by management's projections.

The cash flows are derived from the most recent financial budgets for the next financial year, as approved by management, and the Group's three-year strategic plan. Cash flows in years four and five are extrapolated based on long range plans. Cash flows in subsequent years have been extrapolated using a steady 2.5 per cent for all CGUs (2018 2.5 per cent for all CGUs), which management estimates to be the approximate average long-term growth rate for the industries in which these units operate. Fundamentally, this long-term growth is based on a proxy for global long-term inflation taking into consideration more developed and developing markets. The growth rates used in the value in use calculations are set at the same level for each CGU as all the CGUs operate within similar markets which share the same growth drivers and characteristics. The discount rates incorporate the specific risks relating to each CGU.

The discount rate applied to the cash flows is based on the weighted average cost of capital of comparable companies by taking the risk free rate for 30-year government bonds and making an adjustment to reflect the increased risk of investing in equities. In making this adjustment, the inputs required are the equity market risk premium, beta, and the risk adjustment applied to reflect the systematic risk of Spirent and the specific CGUs, taking into account factors such as size and the territories in which each CGU operates.

The cash flows have been discounted using the following pre-tax discount rates:

	2019 %	2018 %
Networks & Security	13.8	15.1
Lifecycle Service Assurance	13.5	14.3
Connected Devices	13.1	14.8

For Spirent the key factor in relation to the cash flow forecasts is the ability to forecast revenue. All CGUs operate in the data technology market and generate a high gross profit (gross margin); consequently changes in revenue can have a significant impact on the operating profit and cash flows. Revenue growth rates used in the projections are based on management's estimate of growth in the markets served and take into account historical levels of growth, expected future developments in products and technology, industry forecasts and macro-economic conditions in the territories in which the CGUs operate. Gross margin and operating expenses are based on historical values adjusted for the effect of revenue growth and cost reduction actions committed prior to the impairment testing date.

At Networks & Security, Cloud and IP is expected to maintain its leadership position in high-speed Ethernet and this, together with optimised 400G volumes and growth in network virtualisation, is expected to drive earnings. Further growth in Networks & Security is expected in the Positioning business, with focus on core markets in APAC and on the emerging autonomous vehicle market. Management expects that the security business will benefit in the longer term from the launch of data breach emulation, and also the move to a subscription model and further expansion of SecurityLabs into EMEA and APAC. Cyber Security is expected to benefit from synergies with Positioning and continued expansion in complementary solutions with Cloud and IP.

The continuing drive in lab sales and enhancements to the feature set at the Mobility Infrastructure business unit is expected to grow revenue in Lifecycle Service Assurance on a relatively flat cost base in the near term. Management expects revenue increases at the Customer Experience Management business unit driven by the VisionWorks sales strategy and a relatively flat gross margin over the three-year forecast period. The Lumos legacy business in Lifecycle Service Assurance is continuing to drop in the near term and is being replaced by growth in new Ethernet products supported by investment in product development, particularly in virtualisation, mobility testing and 5G. The individual business units in Lifecycle Service Assurance are expected to work together to deliver the three-year plan to meet changes in customer needs and the competitive landscape. A new General Manager has recently been appointed at Lifecycle Service Assurance and there is increased emphasis on Testing-as-a-Service and development of the services and solutions businesses.

13. Intangible assets continued

Annual impairment test continued

Revenue is expected to grow at Connected Devices as the smartphone market recovers, driven by network emulator partnerships with growth in 5G. Management expects gross margin improvement as a result of product mix shifting to more software solutions and cost reduction initiatives, including a new channel emulator platform and a new network emulator platform. Operating expenses are expected to remain relatively flat as business unit integration synergies are leveraged following recent organisational change and research and development flexibility is gained from outsourcing programmes and shifting investment to new growth areas.

The recoverable amount of each CGU was calculated on a value in use basis and was in excess of its carrying value. Consequently, no impairment has been recognised.

Sensitivity to changes in key assumptions

The Directors believe that no reasonable possible change in any of the key assumptions used, in isolation, would cause the value in use of the Networks & Security, Lifecycle Service Assurance or Connected Devices CGUs to fall below the carrying value.

Other intangible assets

There was no impairment charge in respect of the other intangible assets in either 2019 or 2018.

14. Property, plant and equipment

$ million

	Note	Land and buildings	Plant and machinery	Fixtures, fittings and equipment	Total
Cost, net of accumulated depreciation and accumulated impairment					
At 1 January 2018		14.3	17.1	10.9	42.3
Additions – owned assets		0.8	9.7	1.5	12.0
Disposals		–	(1.4)	–	(1.4)
Depreciation charge for the year		(2.9)	(9.2)	(4.4)	(16.5)
Exchange adjustment		(0.1)	(0.2)	–	(0.3)
At 31 December 2018, as reported		12.1	16.0	8.0	36.1
Impact of change in accounting standard – IFRS 16	39	**(1.5)**	**–**	**–**	**(1.5)**
At 1 January 2019		**10.6**	**16.0**	**8.0**	**34.6**
Additions – owned assets		**1.3**	**7.6**	**2.0**	**10.9**
Disposals		**–**	**(1.2)**	**–**	**(1.2)**
Inter-class transfers		**0.1**	**–**	**(0.1)**	**–**
Depreciation charge for the year		**(2.5)**	**(8.5)**	**(3.7)**	**(14.7)**
Exchange adjustment		**–**	**–**	**(0.1)**	**(0.1)**
At 31 December 2019		**9.5**	**13.9**	**6.1**	**29.5**
At 31 December 2018					
Cost		26.1	80.7	57.3	164.1
Accumulated depreciation and accumulated impairment		(14.0)	(64.7)	(49.3)	(128.0)
Net carrying amount		12.1	16.0	8.0	36.1
At 31 December 2019					
Cost		**23.7**	**79.8**	**42.9**	**146.4**
Accumulated depreciation and accumulated impairment		**(14.2)**	**(65.9)**	**(36.8)**	**(116.9)**
Net carrying amount		**9.5**	**13.9**	**6.1**	**29.5**

15. Leases

Right-of-use assets (Group as a lessee)

The Group globally leases office buildings and motor vehicles for staff.

	Note	Land and buildings ($ million)	Motor vehicles ($ million)	Total ($ million)
Cost, net of accumulated depreciation and accumulated impairment				
At 1 January 2019	39	30.9	–	30.9
Additions		4.5	0.3	4.8
Derecognition		(2.6)	–	(2.6)
Re-measurement		0.4	–	0.4
Depreciation charge for the year		(7.5)	–	(7.5)
At 31 December 2019		25.7	0.3	26.0
At 31 December 2019				
Cost		68.6	0.3	68.9
Accumulated depreciation and accumulated impairment		(42.9)	–	(42.9)
Net carrying amount		25.7	0.3	26.0

In 2019, the Group entered into a sublease on an office building that it leases. This resulted in a derecognition of right-of-use assets amounting to a net book value of $2.6 million (cost of $4.3 million and accumulated depreciation of $1.7 million).

In December 2019, the Group re-measured the lease liability relating to an office building that it leases due to a change in future lease payments following a market rent review. This resulted in an increase to right-of-use assets and lease liabilities at 31 December 2019.

Finance lease receivables (Group as a lessor)

The Group subleases an office building that it leased in 2015. The Group has classified the sublease as a finance lease, because the sublease transfers substantially all of the risks and rewards incidental to ownership of the underlying asset to the sublessee.

The following table sets out a maturity analysis of lease receivables, showing the undiscounted lease payments to be received after the reporting date.

	2019 $ million
Maturity analysis – contractual undiscounted cash flows	
Less than one year	0.6
One to two years	0.6
Two to three years	0.6
Three to four years	0.6
Four to five years	0.1
Total undiscounted lease payments receivable	2.5
Unearned finance income	(0.1)
Net investment in the lease	2.4

During the year, $0.4 million was received in respect of finance leases.

The related lease liability is disclosed in note 26.

The net investment in the lease has been included within trade and other receivables (note 20), as follows:

	2019 $ million
Current	0.5
Non-current	1.9
	2.4

16. Investment in associate

In 2018, the Group held an investment in Jolata, Inc. (Jolata). The Group divested of its investment in Jolata in February 2019.

Jolata was a company incorporated in the United States and its principal activity was the provision of network testing.

In 2018, Jolata was considered an associate as the Group controlled 26 per cent of the voting power and therefore had significant influence over the entity. The investment in Jolata had been impaired in full and the recoverable amount in 2018 was therefore nil. The Group's share of Jolata's total comprehensive income was immaterial in 2018.

17. Capital commitments and contingent liabilities

The Group had capital commitments in relation to purchases of property, plant and equipment of $0.9 million at 31 December 2019 (31 December 2018 $0.7 million).

18. Subsidiaries

A list of subsidiaries, including the name, country of incorporation and proportion of ownership interest is given on pages 186 and 187 of these financial statements.

19. Inventories

	2019 $ million	2018 $ million
Raw materials	4.8	6.6
Work in progress	1.2	1.2
Finished goods[1]	14.6	19.7
	20.6	27.5

Note
1. Finished goods in 2018 includes $1.8 million relating to deferred costs which has been reclassified from trade and other receivables; see note 2 for further details.

An expense of $1.6 million (2018 $0.1 million) has been charged to the income statement in the year for inventory write-downs. There were no reversals of prior period inventory write-downs (2018 nil).

No inventories are carried at fair value less costs to sell (2018 nil).

20. Trade and other receivables

	2019 $ million	2018 $ million
Non-current		
Other receivables	5.7	3.5
Prepayments	1.2	1.0
	6.9	4.5
Current		
Trade receivables	128.7	123.4
Other receivables	4.5	3.5
Prepayments	9.6	11.2
	142.8	138.1
	149.7	142.6

The trade receivables are stated net of an allowance for expected credit losses. The movement in the allowance was as follows:

	2019 $ million	2018 $ million
At 1 January	0.9	1.2
Charge for the year	0.9	0.5
Released in the year	(0.4)	(0.8)
At 31 December	1.4	0.9

20. Trade and other receivables continued

The Directors consider that the carrying amount of trade and other receivables approximates their fair value.

$1.9 million of the non-current other receivables balance relates to the net investment in the lease (note 15). The majority of the remaining balance relates to corporate-owned life insurance.

The Group has no significant concentration of credit risk attributable to its trade receivables as the exposure is spread over a large number of customers.

Other financial assets – current

	2019 $ million	2018 $ million
Other financial assets	**0.1**	–

Other financial assets comprises forward foreign currency exchange contracts.

21. Assets recognised from costs to obtain a contract

	2019 $ million	2018 $ million
Non-current	**0.3**	0.5
Current	**0.5**	0.5
	0.8	1.0

These assets relate to capitalised incremental costs to obtain a contract, being sales commissions, arising on contracts with customers of over one year in length.

During the year, amortisation of $0.5 million was charged to the income statement (2018 $0.6 million).

No assets were impaired or derecognised during the current year or prior year.

22. Cash and cash equivalents

	2019 $ million	2018 $ million
Cash at bank	**103.9**	57.7
Short-term bank deposits	**79.3**	63.9
	183.2	121.6

Cash at bank earns interest at floating interest rates. Of the total cash and cash equivalents balance, $79.3 million (2018 $63.9 million) is callable at notice of three months or less at the date of investment.

Short-term bank deposits are made for varying periods of between one day and three months depending on the cash requirements of the Group and earn interest at the short-term deposit rates appropriate for the term of the deposit and currency.

At the end of 2019, the currency split of cash and cash equivalents was US Dollar 78 per cent (2018 83 per cent), Sterling 11 per cent (2018 8 per cent) and other currencies 11 per cent (2018 9 per cent).

For the purposes of the cash flow statement, cash and cash equivalents comprise the above amounts.

23. Trade and other payables

	Note	2019 $ million	2018 $ million
Current			
Trade payables		**24.6**	12.9
Payments received on account[1]		**2.3**	1.0
Other taxes and social security costs		**4.6**	3.7
Other payables		**1.5**	1.0
Accruals[1]		**49.3**	43.2
Government grants[1]	24	**1.8**	1.3
		84.1	63.1
Non-current			
Other payables[2]		**0.8**	4.4
Government grants[2]	24	**0.2**	1.0
		1.0	5.4
		85.1	68.5

Notes
1. In 2018, government grants of $0.4 million and $0.9 million were included within payments received on account and accruals, respectively. These have been reclassified to government grants.
2. In 2018, government grants of $1.0 million were included within other payables. These have been reclassified to government grants.

Trade payables are non-interest bearing and are normally settled on 30 to 60-day terms. Other payables are non-interest bearing.

The Directors consider that the carrying amount of trade payables approximates their fair value.

24. Government grants

The following government grants are included within trade and other payables:

	2019 $ million	2018 $ million
At 1 January	**2.3**	2.6
Received during the year	**0.3**	0.1
Released to the income statement	**(0.6)**	(0.4)
At 31 December	**2.0**	2.3

	2019 $ million	2018 $ million
Current	**1.8**	1.3
Non-current	**0.2**	1.0
	2.0	2.3

Government grants have been received to accelerate and support research and development in the vulnerability of global navigation satellite systems and other high technology projects.

25. Deferred income

	2019 $ million	2018 $ million
Current	**53.2**	55.2
Non-current	**13.6**	14.4
	66.8	69.6

The Group's deferred income balances relate solely to revenue from contracts with customers.

26. Lease liabilities

	2019 $ million
Maturity analysis – contractual undiscounted cash flows	
Less than one year	**9.9**
One to five years	**24.5**
More than five years	**1.9**
Total undiscounted lease liabilities at 31 December	**36.3**
Lease liabilities included in the balance sheet at 31 December	
Current	**8.5**
Non-current	**24.5**
	33.0

$2.2 million of the lease liability included in the balance sheet relates to a building the Group subleases; see note 15 for further details.

	Note	2019 $ million
Amounts recognised in the income statement		
Interest on lease liabilities	7	**1.7**
Expenses relating to short-term leases		**0.1**
Expenses relating to leases of low-value assets, excluding leases of short-term low-value assets		**0.2**
Amounts recognised in the cash flow statement		
Total cash outflow for leases		**10.3**

The Group also had non-cash additions to right-of-use assets and lease liabilities of $4.4 million in 2019.

Expenses relating to short-term leases and leases of low-value assets are classified within cash flows from operating activities in the consolidated cash flow statement.

Extension options

Some leases of buildings contain extension options exercisable by the Group before the end of the non-cancellable contract period. Where practicable, the Group seeks to include extension options in new leases to provide operational flexibility. The extension options held are exercisable only by the Group and not the lessors. In addition, the Group assesses at lease commencement whether it is reasonably certain to exercise the extension options. The Group reassesses whether it is reasonably certain to exercise the options if there is a significant event or significant change in circumstances within its control.

	Lease liabilities recognised (discounted) $ million	Potential future lease payments not included in lease liabilities (discounted) $ million
Buildings	**5.7**	**19.2**

27. Deferred tax

The movements in the deferred tax assets/(liabilities) are as follows:

$ million

	Notes	Temporary differences	Tax losses	Tax credits	UK pension plans	Total
At 1 January 2018		13.4	7.4	1.6	0.5	22.9
Charged/(credited) in the year	10	2.3	(1.5)	(0.7)	(0.4)	(0.3)
Deferred tax on defined benefit pension plan	10	–	–	–	(0.6)	(0.6)
Deferred tax on deferred compensation plan	10	(0.1)	–	–	–	(0.1)
Deferred tax on share incentives recognised in equity	10	0.3	–	–	–	0.3
Transfers		–	(1.0)	1.0	–	–
Exchange adjustment		(0.2)	(0.1)	–	0.1	(0.2)
At 31 December 2018, as reported		15.7	4.8	1.9	(0.4)	22.0
Impact of change in accounting standard – IFRS 16	39	**1.0**	**–**	**–**	**–**	**1.0**
At 1 January 2019		**16.7**	**4.8**	**1.9**	**(0.4)**	**23.0**
(Credited)/charged in the year	10	**(2.4)**	**–**	**1.8**	**(1.2)**	**(1.8)**
Deferred tax on defined benefit pension plan	10	**–**	**–**	**–**	**(0.5)**	**(0.5)**
Deferred tax on deferred compensation plan	10	**0.1**	**–**	**–**	**–**	**0.1**
Deferred tax on share incentives recognised in equity	10	**1.3**	**–**	**–**	**–**	**1.3**
Exchange adjustment		**0.2**	**0.1**	**–**	**–**	**0.3**
At 31 December 2019		**15.9**	**4.9**	**3.7**	**(2.1)**	**22.4**
Amounts on the balance sheet:						
At 31 December 2018						
Deferred tax asset		15.9	4.8	1.9	–	22.6
Deferred tax liability		(0.2)	–	–	(0.4)	(0.6)
		15.7	4.8	1.9	(0.4)	22.0
At 31 December 2019						
Deferred tax asset		**16.3**	**4.9**	**3.7**	**–**	**24.9**
Deferred tax liability		**(0.4)**	**–**	**–**	**(2.1)**	**(2.5)**
		15.9	**4.9**	**3.7**	**(2.1)**	**22.4**

In 2019 and 2018, the deferred tax asset and liability have been offset on the balance sheet as they relate to income taxes raised by the same authority on the same taxable entity.

A net deferred tax asset of $22.4 million has been recognised at 31 December 2019 (2018 $22.0 million). $18.5 million is in the United States (2018 $14.7 million), $1.8 million is in France (2018 $3.6 million), $2.2 million is in the rest of the world (2018 $1.7 million), offset by a liability of $0.1 million in the United Kingdom (2018 $2.0 million asset).

27. Deferred tax continued

The deferred tax asset includes $3.2 million (2018 $1.6 million) in respect of the tax deduction which may be available on the future exercise of share incentives, $4.5 million (2018 $6.5 million) in respect of the future tax deduction on provisions and $4.8 million (2018 $3.6 million) in respect of the future tax deduction on the deferral of compensation. These amounts are presented within temporary differences.

The Group has tax losses arising in the United Kingdom of $36.9 million (2018 $38.3 million) and at the State level in the United States of $2.6 million (2018 $5.5 million), which are available for offset against suitable future taxable profits. The United States tax losses can be carried forward until 2036. Additionally, there are short-term timing differences in the rest of the world of $4.8 million (2018 $4.9 million), Scientific Research and Experimental qualifying expenditures in Canada of $6.7 million (2018 $6.7 million) and tax credits at the State level in the United States and the rest of the world of $4.8 million and $1.3 million, respectively (2018 $7.2 million and $1.2 million). A deferred tax asset has not been recognised in respect of these items as their future recovery is uncertain.

The Group has capital losses carried forward of $1,086.8 million (2018 $1,045.6 million) for which no deferred tax asset has been recognised on the balance sheet. This change is due to foreign exchange movements. These capital losses have no expiry date.

The temporary difference associated with investments in the Group's subsidiaries for which a deferred tax liability has not been recognised in the periods presented are $244.9 million in aggregate (2018 $255.8 million). The Group does not expect a significant amount of the undistributed profits to be distributed in the foreseeable future but has recognised a deferred tax liability of $0.2 million on the expected distribution of $3.3 million of earnings from its China subsidiary.

Changes in tax rates

Following the enactment of the United Kingdom Finance Act 2016, which reduced the United Kingdom rate of corporation tax to 19 per cent from 1 April 2017 and by a further 2 per cent to 17 per cent from April 2020, no further United Kingdom corporation tax reductions have been announced. As such, the United Kingdom temporary differences have been recognised at the rate at which the temporary differences are expected to unwind. In line with these rate changes, deferred tax assets and liabilities being realised or settled before 2020 have been based on a rate of 19 per cent. Those being realised or settled after 2020 have been based on a rate of 17 per cent.

28. Provisions

	Note	Lease provisions	Restructuring provisions	Other provisions	Total
					$ million
At 1 January 2018		3.5	1.4	1.9	6.8
Charged in the year		–	0.5	9.4	9.9
Asset retirement obligation		0.5	–	–	0.5
Released in the year		–	(0.1)	(0.9)	(1.0)
Utilised in the year		(0.5)	(1.8)	(0.1)	(2.4)
Unwind of discount		0.1	–	–	0.1
Exchange difference		–	–	0.1	0.1
At 31 December 2018, as reported		3.6	–	10.4	14.0
Impact of change in accounting standard – IFRS 16	39	**(0.6)**	**–**	**–**	**(0.6)**
At 1 January 2019		**3.0**	**–**	**10.4**	**13.4**
Charged in the year		**0.1**	**1.3**	**0.9**	**2.3**
Asset retirement obligation		**0.4**	**–**	**–**	**0.4**
Released in the year		**–**	**–**	**(0.3)**	**(0.3)**
Utilised in the year		**–**	**(0.9)**	**(6.5)**	**(7.4)**
Unwind of discount		**0.1**	**–**	**–**	**0.1**
Exchange difference		**–**	**–**	**(0.3)**	**(0.3)**
At 31 December 2019		**3.6**	**0.4**	**4.2**	**8.2**

	2019 $ million	2018 $ million
Current	**4.8**	10.7
Non-current	**3.4**	3.3
	8.2	14.0

28. Provisions continued

The lease provisions are for the continuing obligations under leases in respect of property dilapidation and reinstatement provisions. Where material, lease obligations are discounted. The Group expects these provisions to be utilised over one to ten years.

Other provisions comprise environmental provisions related to property disposed of, provisions relating to legal claims and a provision relating to a Notice of Recovery received from French Customs, discussed below. The Group expects these provisions to be utilised in less than one year.

In 2018, the Group made a provision for $8.9 million following the receipt of a Notice of Recovery from the Direction Générale des Douanes et Droits Indirects (French Customs) in relation to the valuation and classification of duty on certain imports into France. This dispute commenced with enquiries in 2011. During the period in question, Spirent adopted a duty tariff based on World Customs Organization guidelines which conflicted with European Union regulation. In 2019, the Group paid $6.5 million in relation to this claim.

The import regulations changed on 1 January 2017 and no liability exists after that date. Spirent has provided for the liability up until the date of the change, which encompasses the period covered by the Notice of Recovery. The amount of the remaining provision includes uncertainties with regard not only to the legitimacy of the basis of the claim made by the French authorities, but also in relation to the period in question, the appropriate tariff classification, the recoverability of import VAT, and the population and valuation of goods potentially subject to duty.

The Group strongly refutes the basis of the claim paid under the Notice of Recovery and has reserved the right to challenge that basis in the courts at a future date.

29. Contract balances

The following table provides information about receivables and contract liabilities from contracts with customers. The Group does not have any contract assets.

	Notes	**2019 $ million**	2018 $ million	2017 $ million
Trade receivables	20	**128.7**	123.4	113.8
Contract liabilities				
Payments received on account	23	**2.3**	1.0	3.8
Deferred income	25	**66.8**	69.6	72.7
		69.1	70.6	76.5
Revenue recognised in the period from amounts included in contract liabilities at the beginning of the period		**56.2**	65.5	62.1

There was no revenue recognised in 2019, 2018 or 2017 from performance obligations satisfied in previous periods.

The timing of revenue recognition, invoicing and cash collections results in trade receivables, deferred income and advance customer payments received on account on the balance sheet.

The Group receives payments from customers based on a billing schedule, as established in the contract. Trade receivables are recognised when the right to consideration becomes unconditional. Contract liabilities are recognised as revenue as (or when) the Group performs under the contract.

The Group also recognises incremental costs incurred to obtain a contract as an asset if it expects to recover those costs. Such costs are presented in the balance sheet as assets recognised from costs to obtain a contract and disclosed in note 21.

Expected realisation of remaining performance obligations at year end

The Group applies the practical expedient in paragraph 121 of IFRS 15 and does not disclose information about remaining performance obligations that have original expected durations of one year or less.

For contracts that exceed one year, deferred income that relates to unsatisfied or partially satisfied performance obligations at year end is expected to be recognised as revenue in the future as follows:

	2019 $ million	2018 $ million
Within one year	**18.3**	15.5
Greater than one year	**10.3**	12.7
	28.6	28.2

The above information represents the revenue the Group will recognise when it satisfies the remaining performance obligations in the contracts. The amounts presented do not include orders for which the Group has not performed.

29. Contract balances continued

Expected realisation of remaining performance obligations at year end continued

Revenue from the sale of hardware and software generally arises from contracts less than one year in length. Consequently, the above amounts predominantly relate to the sale of maintenance and support services.

Virtually all of the revenue will be recognised within three years.

The Group provides standard warranties on its products and services. The nature of these warranties is considered to provide customers with assurance that the related product or service will function as intended in accordance with the agreed specification, and does not contain or imply any additional service obligation to the customer. Warranty obligations are estimated and recognised as liabilities based on the probable outflow of resources.

30. Financial instruments and financial risk management

The main purpose of the Group's financial instruments, other than trade and other receivables, trade and other payables, contractual provisions and lease liabilities, is to fund the Group's liquidity requirements.

All of the Group's financial assets and liabilities are categorised as financial assets/liabilities stated at amortised cost, except for forward foreign currency exchange contracts, included within current other financial assets, that are designated as financial assets at fair value through profit or loss and corporate owned life insurance, amounting to $3.0 million (2018 $2.4 million), included within non-current trade and other receivables, that is designated as financial assets at fair value through profit or loss. These are shown in the below table:

	Notes	2019 $ million	2018 $ million
Non-current trade and other receivables	20	5.7	3.5
Cash and cash equivalents	22	183.2	121.6
Current trade and other receivables	20	133.2	126.9
Current other financial assets	20	0.1	–
Financial assets		**322.2**	252.0
Non-current other payables, excluding government grants	23	0.8	4.4
Current trade payables, other payables and accruals	23	75.4	57.1
Lease liabilities, current and non-current	26	33.0	–
Contractual provisions	28	3.6	3.6
Financial liabilities		**112.8**	65.1

The Group enters into derivative transactions, forward foreign currency exchange contracts, for the management of the Group's foreign currency exposures when deemed appropriate.

The key objective of the Group's treasury department is to manage the financial risks of the business and to ensure that sufficient liquidity is available to the Group. All treasury activity operates within a formal control framework. The Board has approved treasury policies and guidelines and periodically reviews treasury activities. Additionally, it is the Group's policy that speculative treasury transactions are expressly forbidden.

a) Market risk

The main types of market risk that affect the Group are interest rate risk and exchange rate risk.

Interest rate risk

The Group has external debt in relation to its lease liabilities (note 26) but has limited exposure to interest rate risk as the incremental borrowing rate used to discount these lease liabilities is fixed at the lease commencement date. The Group's excess funds are principally held in the United Kingdom and the United States and invested in on-demand or short-term bank deposits. It therefore has some exposure to interest rate risk arising on changes in Sterling and US Dollar interest rates.

Cash and cash equivalents and forward foreign currency exchange contracts are the Group's financial instruments which are exposed to interest rate risk.

30. Financial instruments and financial risk management continued

a) Market risk continued

Interest rate risk continued

Short-term bank deposits and forward foreign currency exchange contracts mature within three months. The financial instruments bear the following interest rates:

	Note	2019 Effective interest rate %	2019 $ million	2018 Effective interest rate %	2018 $ million
Floating rate					
Cash at bank	22		**103.9**		57.7
Fixed rate					
Fixed deposits	22	**2.03**	**79.3**	2.52	63.9

Interest rates on financial instruments classified as fixed rate are fixed until the maturity of the instrument. All fixed rate deposits mature within three months after which date they will be exposed to floating rates of interest.

Interest receivable for the year (note 6) was $2.7 million (2018 $1.4 million) and is under the effective interest method.

The other financial instruments of the Group that are not included in the above table are non-interest bearing and are therefore not subject to interest rate risk.

A movement of 25 basis points in interest rates based on levels of investment at 31 December 2019 would increase or reduce interest income and equity by $0.3 million (2018 $0.2 million).

Exchange rate risk

Currency exposures arise from trading transactions undertaken by the Group in foreign currencies and on the translation of the operating results and net assets of overseas subsidiaries.

The Group has the majority of its operations in the United States and presents its consolidated financial statements in US Dollars. The parent Company's functional currency is Sterling and its share capital is denominated in Pounds Sterling; the Group also has operations in Europe and Asia and therefore its results and assets and liabilities are affected on translation by movements in exchange rates in relation to the US Dollar. The Group does not enter into instruments to hedge the translation exposure of the operating results or net assets of its overseas subsidiaries since these are considered accounting and not cash exposures.

The Group undertakes transactions denominated in foreign currencies; consequently exposures to exchange rate fluctuations arise. Exchange rate exposures are managed within approved policy parameters using forward foreign currency exchange contracts.

The main exposures arise in relation to the retranslation of foreign operations to US Dollar, on non-local currency denominated transactions and on non-local currency denominated cash balances. These exposures predominantly arise on Sterling, Euro and Chinese Yuan transactions and balances. A 10 per cent appreciation or depreciation of these currencies against the US Dollar would decrease or increase profit before tax based on the activity in the period and balances at the reporting date as follows: sterling $1.9 million, Euro $0.1 million and Chinese Yuan $0.5 million (2018 Sterling $3.1 million, Euro $0.3 million and Chinese Yuan $1.4 million).

b) Credit risk

Investment counterparties are subject to pre-approval by the Board with pre-approved limits set for each bank to avoid any concentrations of credit risk.

The maximum credit exposure at the balance sheet date under financial instruments in relation to cash and bank deposits is equal to the carrying value of $183.2 million (2018 $121.6 million).

Trade receivables, which generally have 30 to 90-day terms, are carried at original invoice amount less an allowance for expected credit losses. Trade receivable exposures are managed in the business units where they arise.

The Group applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables. Therefore, the Group does not track changes in credit risk, but instead recognises a loss allowance based on lifetime expected credit loss at each reporting date. To measure the expected credit losses, the Group has established a provision matrix that is based on shared credit risk characteristics and the days past due based on the expected loss rates.

The provision matrix is initially based on payment profiles of trade receivables over a period of 12 months before 31 December 2018 and the corresponding historical credit losses experienced within this period. At every reporting date the historical observed default rates are updated.

The Group has no significant concentration of credit risk attributable to its trade receivables as the exposure is spread over a large number of customers with no one customer accounting for more than 10 per cent of total Group revenue. The maximum credit exposure at the balance sheet date in relation to trade receivables is equal to the carrying value of $128.7 million (2018 $123.4 million). The credit risk relating to trade receivables has not increased significantly from the prior year.

30. Financial instruments and financial risk management continued

b) Credit risk continued

The composition of trade receivables at 31 December is as follows:

	2019 $ million	2018 $ million
Neither impaired nor past due	115.3	99.8
Past due but not impaired:		
– Less than 30 days overdue	8.6	16.8
– 30 to 60 days	3.6	3.2
– Over 60 days	1.2	3.6
Trade receivables	128.7	123.4

The Group closely monitors amounts due from customers and performs activities such as credit checks and reviews of payment history and has put in place appropriate credit approval limits. Based on these procedures, management assessed the quality of those receivables that are past due but not impaired as low risk.

The receivables' provision is based on expected credit losses. The movement on the provision during the year is given in note 20. The value of impaired trade receivables is $1.4 million (2018 $0.9 million). For all other financial assets, the maximum exposure to credit risk is represented by the carrying amount.

c) Liquidity risk

The Group's objective is to ensure that there are sufficient sources of funding to meet projected requirements. Its operations are financed through cash and cash equivalents held centrally and cash generated from operations.

At 31 December 2019, the Group had cash and cash equivalents of $183.2 million (2018 $121.6 million), of which $103.9 million (2018 $57.7 million) is available on demand and $79.3 million matures within three months (2018 $63.9 million matures within three months).

During 2019, the Group generated $119.3 million (2018 $60.2 million) of cash from operating activities and considers that, with current cash resources, debt only in relation to its lease liabilities and positive cash flow from its operating activities, it has adequate resources available to it to remain in operational existence for the foreseeable future.

The Group has entered into forward foreign currency exchange contracts at 31 December, all of which mature within three months. The gross settlement amounts of these contracts are as follows:

	2019 $ million	2018 $ million
Sale of US Dollars against Sterling	6.8	13.1

The Group has external debt in relation to its lease liabilities (note 26) but is otherwise debt free and does not have loans payable. Financial liabilities are trade and other payables, the majority of which are due to be settled within one year, and contractual provisions (note 28).

The Group does not have any other material financial contractual commitments.

d) Fair value of financial instruments

The carrying value of all financial assets and liabilities is a reasonable approximation of fair value.

Derivative financial instruments are stated at fair value although the amounts at 31 December 2019 and 2018 were immaterial.

Corporate owned life insurance is stated at fair value and is at Level 1 in the fair value hierarchy as the valuation of the linked investments is based on quoted prices in active markets.

e) Capital management

The primary objective of the Group's capital management is to support its business and maximise shareholder value. The Group's capital is its total shareholders' funds.

The Group manages its capital structure and makes adjustments to it in light of changes in economic conditions.

Spirent's policy on the payment of dividends to shareholders is to maintain a sustainable dividend.

31. Operating lease commitments

The Group adopted IFRS 16 'Leases' on 1 January 2019; see note 39. In the lessee's financial statements, the standard eliminates the classification of leases as either operating leases or finance leases as per IAS 17 and introduces a single lessee accounting model. As a result, the vast majority of the Group's operating leases came onto the balance sheet.

At 31 December, the Group had outstanding commitments for future minimum lease payments under non-cancellable operating leases, which fall due as follows:

	2019 $ million	2018 $ million
Within one year	–	9.6
In the second to fifth years	–	28.7
Over five years	–	2.2
	–	40.5

The Group leases certain land and buildings under non-cancellable operating lease agreements with a variety of terms. The Group also leases certain plant and equipment under non-cancellable operating lease agreements.

32. Equity

a) Issued share capital

Issued and fully paid Ordinary Shares of 3⅓ pence each:

	Number of Ordinary Shares million	$ million
At 1 January 2018	611.7	27.5
Exchange adjustment		(1.5)
At 1 January 2019	**611.7**	**26.0**
Exchange adjustment		**0.8**
At 31 December 2019	**611.7**	**26.8**

b) Equity and reserves

The nature and purpose of each reserve within equity is as follows:

- Share premium account: this reserve records the consideration premium for shares issued at a value that exceeds their nominal value.
- Capital redemption reserve: this reserve arises in relation to share capital cancellation.
- Other reserves: share capital, share premium account and capital redemption reserve are translated into US Dollars at the rates of exchange at the balance sheet date and the resultant exchange differences are included in other reserves.
- Translation reserve: this reserve is used to record exchange differences arising from the translation of the financial statements of foreign subsidiaries.

Investment in own Ordinary Shares

During the year, 4.0 million shares were purchased and placed into the Employee Share Ownership Trust at a cost of $8.6 million, and 3.0 million shares were transferred from the Employee Share Ownership Trust to satisfy options exercised under the Spirent employee share plans (2018 1.5 million shares purchased and placed at cost of $2.5 million, and 1.5 million shares transferred).

At 31 December 2019, the Employee Share Ownership Trust held 1.6 million Ordinary Shares (2018 0.6 million Ordinary Shares) to satisfy awards under various share incentive plans. At 31 December 2019, the Spirent Sharesave Trust held 0.5 million Ordinary Shares (2018 0.5 million Ordinary Shares) to satisfy awards made to United Kingdom-based employees under an all-employee share scheme. The market value of own Ordinary Shares held in trust, being in total 2.1 million Ordinary Shares (2018 1.1 million Ordinary Shares), at 31 December 2019 was $6.9 million (2018 $1.7 million).

Both the Employee Share Ownership Trust and the Spirent Sharesave Trust are an extension of the parent Company.

33. Employee share plans

Movements in share incentives over a two-year period ending on 31 December 2019 are shown below:

	2005 Employee Incentive Plan[1]		Spirent Long-Term Incentive Plan[2]	
	Number of share incentives million	Weighted average exercise price pence	Number of share incentives million	Weighted average exercise price pence
Incentives outstanding at 31 December 2017	3.5	55	6.5	–
Exercised	(1.7)	45	(0.4)	–
Granted	–	–	2.7	–
Forfeited	(1.0)	47	(0.5)	–
Incentives outstanding at 31 December 2018	**0.8**	**89**	**8.3**	**–**
Exercised	**(0.4)**	**89**	**(2.9)**	**–**
Granted	**–**	**–**	**3.8**	**–**
Forfeited	**–**	**–**	**(0.4)**	**–**
Incentives outstanding at 31 December 2019	**0.4**	**89**	**8.8**	**–**
Incentives exercisable				
At 31 December 2018	0.8	89	–	–
At 31 December 2019	**0.4**	**89**	**–**	**–**

Notes
1. Figures for the 2005 Employee Incentive Plan include share options, stock appreciation rights and Performance Shares in aggregate. No exercise price is payable on the vesting of a Performance Share.
2. Figures for the Spirent Long-Term Incentive Plan include Restricted Stock and Performance Shares in aggregate. No exercise price is payable on the vesting of a Performance Share.

The weighted average share price at exercise date was 158 pence (2018 118 pence).

The following information relates to outstanding share incentives at 31 December 2019:

			2019			2018		
Share plan	Exercise period (as at 31 December)	Exercise price pence	**Weighted average exercise price pence**	**Number of share incentives outstanding million**	**Weighted average remaining contractual life years**	Weighted average exercise price pence	Number of share incentives outstanding million	Weighted average remaining contractual life years
2005 Employee Incentive Plan	23.03.18–23.03.25	89	**89**	**0.4**	**5.2**	89	0.8	6.2
Spirent Long-Term Incentive Plan	04.05.20-16.12.22	–	**–**	**8.8**	**1.4**	–	8.3	1.4
				9.2			9.1	

Discretionary plans

Spirent Long-Term Incentive Plan (LTIP)

The LTIP, which was approved by shareholders at the 2016 AGM, is available for selected employees, including Executive Directors, on a discretionary basis.

Under the LTIP, the Company is able to grant share options, including HMRC-approved options, share-settled stock appreciation rights (SARs), Performance Shares and Restricted Stock. No price is payable on the grant of an award.

In normal circumstances, LTIP awards vest three years following the date of grant provided the relevant performance conditions have been met. For Performance Share awards, performance conditions related to Total Shareholder Return (TSR) and the Company's earnings per share (EPS). For Restricted Stock, the performance conditions relate to the recipient's continued employment with the Company.

Further information on the performance conditions for LTIP share incentives is set out in the Report on Directors' remuneration.

33. Employee share plans continued

Discretionary plans continued

2005 Employee Incentive Plan (EIP)

The EIP closed for new awards following the 2016 AGM and was replaced by the Spirent Long-Term Incentive Plan.

The EIP, which was approved by shareholders and introduced in 2005, was available for selected employees, including Executive Directors, on a discretionary basis.

Under the EIP, the Company was able to grant share options, including HMRC-approved options, share-settled stock appreciation rights (SARs) and Performance Shares. No price was payable on the grant of an award.

In normal circumstances, EIP awards vest three years following the date of grant provided the relevant performance conditions have been met. For share options and SARs, the performance conditions relate to the Company's earnings per share (EPS). For Performance Share awards made prior to 2011, performance conditions related to Total Shareholder Return (TSR). For awards made since 2011, performance conditions related to the Company's EPS and TSR.

Further information on the performance conditions for EIP share incentives is set out in the Report on Directors' remuneration.

Options and SARs granted under the EIP expire on the tenth anniversary of their grant unless they have previously lapsed or been exercised.

All-employee plans

UK Employee Share Purchase Plan (UK ESPP)

The UK ESPP, which is an HMRC-approved share incentive plan, was approved by shareholders in 2005 and 2015 and is available to all UK employees. The UK ESPP offers four ways to provide Ordinary Shares to employees: free shares, partnership shares, matching shares and dividend shares. The UK ESPP operates in conjunction with a trust, which holds the shares on behalf of participants.

In November 2010, the Company commenced making invitations to all UK employees to acquire partnership shares on market using deductions from payroll.

US Employee Stock Purchase Plan (US ESPP)

The US ESPP was initially approved by shareholders in 2000, with amendments being approved by shareholders in 2005 and 2011.

The US ESPP enables the Company to invite all US employees to acquire Ordinary Shares in the Company on market using deductions from payroll. In November 2010, the Company commenced making six-monthly invitations to employees.

The US ESPP also enables the Company to grant eligible US employees the right to acquire Ordinary Shares in the Company using the proceeds of a savings contract. If such a grant were made, when joining the US ESPP, participants would enter into a 12-month contract to save up to 15 per cent of base salary subject to an individual limit of $1,000 per month. No grants of this nature have been made since 2003.

Global All Employee Share Purchase Plan (GAESPP)

The GAESPP was initially approved by shareholders in 2001 with amendments being approved by shareholders in 2005 and 2011. The GAESPP enables the Company to invite employees in countries other than the United States or United Kingdom to acquire Ordinary Shares in the Company on market using deductions from payroll. In September 2011, the first such invitation was made to all employees in Canada, Hong Kong, France and Germany and subsequent invitations have been made on a six-monthly basis since 2012.

The GAESPP can also be operated on similar terms to the US ESPP above, with participants entering into a 12-month contract to save up to 15 per cent of base salary subject to an individual limit. No grants of this nature have been made since 2003.

34. Share-based payment

	2019 $ million	2018 $ million
Charged to adjusting items		
2005 Employee Incentive Plan	**–**	0.1
Spirent Long-Term Incentive Plan	**3.5**	2.7
Charged to administration expenses		
Executive deferred bonus plan	**0.4**	–
	3.9	2.8

All schemes are equity settled.

In 2019, $0.4 million, being one-third of the Executive Directors' Annual Incentive has been deferred into shares for an additional period of three years. This amount has been charged to administration expenses in the income statement and is included within adjusted operating profit as it reflects part of the underlying trading performance of the Group.

34. Share-based payment continued

3.8 million share incentives were granted during 2019 (2018 2.7 million). The fair value of share incentives has been estimated as at the date of grant using the Black-Scholes binomial model. The following table gives the assumptions made in arriving at the share-based payment charge and the fair value:

	2019	2018
Weighted average share price (pence)	163.1	112.9
Weighted average exercise price (pence)	0.0	0.0
Weighted average fair value (pence)	141.1	95.1
Expected volatility (%)	31.6–32.8	30.6
Option life (years):		
– Performance Shares	3.0	3.0
– Options and SARs	10.0	10.0
Risk free rate (%)	0.48-0.72	0.88
Dividend yield (%)	2.5–3.0	3.0

The expected volatility was determined by calculating the historical volatility of the Company's share price over the previous two years which management considers to be the period which is likely to be most representative of future volatility. The risk free rate is calculated by reference to UK government bonds.

35. Reconciliation of profit before tax to cash generated from operations

	2019 $ million	2018 $ million
Profit before tax	89.6	61.2
Adjustments for:		
Finance income	(2.8)	(1.4)
Finance costs	1.8	0.1
Intangible asset amortisation	2.1	4.3
Depreciation of property, plant and equipment	14.7	16.5
Depreciation of right-of-use assets	7.5	–
Loss on the disposal of property, plant and equipment	0.2	–
Gain on divestment	–	(2.4)
Share-based payment	3.9	2.8
Changes in working capital		
Deferred income released	(3.0)	(2.5)
Increase in receivables	(4.4)	(11.5)
Decrease/(increase) in inventories	7.0	(1.7)
Increase/(decrease) in payables	18.7	(4.7)
(Decrease)/increase in provisions	(5.4)	7.6
Defined benefit pension plan employer contributions net of administration expenses paid by the plan	(5.9)	(6.7)
Defined benefit pension plan re-measurement (GMP equalisation)	–	4.0
Deferred compensation plan	0.9	0.3
Cash flow from operations	124.9	65.9

36. Divestments

There were no divestments in 2019 or 2018.

The gain on divestments in 2018 of $2.4 million represents the repayment of a $2.0 million loan from the subsidiaries the Group divested of on 30 June 2017, together with the release of a $0.5 million provision related to unsettled legal claims from a disposal the Group made in 2012. The $2.0 million loan had previously been impaired. The Group also incurred legal fees of $0.1 million related to the divestments made in 2017. The net cash inflow from divestments in 2018 was $1.8 million.

37. Business combinations

On 31 May 2019, Spirent acquired a key business from Integrated Navigation Systems Limited (INS), a company based in the United Kingdom, for cash consideration of $1.9 million. The acquired business is reported within the Group's Networks & Security operating segment.

INS develops and supplies the Group with a system for recording GNSS and Wi-Fi signals. The business acquisition will enable Spirent to streamline its supply chain process and improve gross margin on this product line.

From the date of acquisition to 31 December 2019, the acquired business did not contribute any revenue but contributed $0.4 million of profit before tax, as a result of lower cost of sales, to the result of the Group before charging $0.1 million of acquisition related costs and $0.1 million of acquired intangible asset amortisation. If the combination had occurred at the beginning of the financial year, there would not have been any revenue, and $1.0 million of profit before tax, as a result of lower cost of sales, would have been included in the Group result, before charging $0.1 million of acquisition related costs and $0.2 million of acquired intangible asset amortisation.

The fair value of the identifiable net assets acquired is set out below:

			2019 $ million
	Book value	Fair value adjustment	Fair value
Intangible assets	1.0	–	1.0
Inventory	0.1	(0.1)	–
Total identifiable net assets	1.1	(0.1)	1.0
Goodwill			0.9
Consideration			1.9

The intangible assets acquired represent current technology and have been assigned a useful life of five years.

The inventory acquired on acquisition amounting to $0.1 million was written down to a fair value of nil.

The goodwill arising of $0.9 million consists largely of the synergies and economies of scale expected from the combination together with intangible assets not qualifying for separate recognition, such as workforce in place. The goodwill recognised is expected to be partly deductible for income tax purposes.

Acquisition related costs were $0.1 million and have been expensed to other items within the income statement.

38. Related party transactions

Transactions between the Company and its subsidiaries, which are related parties, have been eliminated on consolidation and are not disclosed in this note.

Remuneration of key management personnel

The remuneration of the Directors, who are the key management personnel of the Group, is set out below in aggregate for each of the categories specified in IAS 24 'Related Party Disclosures':

	2019 $000	2018 $000
Short-term employee benefits	3,540.9	3,842.1
Share-based payment	1,982.7	664.6
	5,523.6	4,506.7

No Director received compensation for loss of office (2018 nil).

There were gains of $2,010,731 (2018 $852,742) on the exercise of options by key management personnel in 2019.

For further details refer to the Report on Directors' remuneration on pages 77 to 101.

39. Transition to IFRS 16

The Group adopted IFRS 16 'Leases' on 1 January 2019 using the modified retrospective transition method. This approach does not require restated comparative figures and therefore the comparative information is reported under IAS 17. Instead, the cumulative effect of applying IFRS 16 is applied to the opening balance of retained earnings at 1 January 2019.

The cumulative effect of the adoption of IFRS 16 has resulted in a decrease in net assets of $3.4 million as at 1 January 2019. This reflects the difference between right-of-use assets and lease liabilities, as right-of-use assets depreciate quicker than lease liabilities are settled.

The following balances have been added to the Group's balance sheet at 1 January 2019:

- right-of-use assets of $30.9 million;
- lease liabilities of $36.7 million; and
- deferred tax assets of $1.0 million.

Of the above balances:

- $1.5 million of the right-of-use assets have been reclassified from property, plant and equipment at 1 January 2019, offset by $0.6 million reclassified from provisions at 1 January 2019; and
- $2.3 million of the lease liabilities relate to lease incentives that have been derecognised from trade and other payables at 1 January 2019.

Therefore, the net decrease in net assets and adjustment to retained earnings is $3.4 million. The net decrease in retained earnings reflects the additional expense that would have be charged to the income statement under IFRS 16 before 1 January 2019.

In terms of the income statement impact in 2019, the operating lease expense per IAS 17, amounting to $9.3 million, was removed and replaced by a smaller depreciation charge of $7.5 million. Finance costs, being interest on the lease liabilities, of $1.7 million were also incurred resulting in an immaterial impact overall to the Group's profit before tax and earnings.

On transition to IFRS 16, the following adjustments were made to the Group's balance sheet:

	Notes	At 1 January 2019 $ million
Right-of-use assets' cost	A	65.2
Right-of-use assets' accumulated depreciation	B	(35.2)
Right-of-use assets' impairment	C	(0.6)
Lease reinstatement reclassification from property, plant and equipment:		
– Right-of-use assets' cost	D	2.7
– Right-of-use assets' accumulated depreciation	D	(1.2)
Total right-of-use assets recognised, at net book value		30.9
Lease liabilities	E	(36.7)
Lease reinstatement provisions reclassified to right-of-use assets	C	0.6
Property, plant and equipment reclassified to right-of-use assets	D	(1.5)
Lease incentives derecognised from trade and other payables	F	2.3
Deferred tax assets recognised	G	1.0
Total decrease to retained earnings, at 1 January 2019		(3.4)

Notes

A. Right-of-use assets' cost recognised at 1 January 2019 (excluding lease reinstatement costs in note D). The Group has taken advantage of the practical expedient that permits initial direct costs to be excluded from the measurement of the right-of-use assets at the date of initial application (para. C10 (d)).

B. Right-of-use assets' accumulated depreciation at 1 January 2019 (excluding lease reinstatement costs in note D).

C. Reclassification of onerous lease provision to right-of-use assets. On initial application of IFRS 16, the onerous lease assessment calculated in accordance with IAS 37 is permitted as an alternative to an impairment assessment (para. C10 (b)).

D. Reclassification of lease reinstatement costs from property, plant and equipment to right-of-use assets on 1 January 2019. Under IFRS 16, the right-of-use assets' cost includes an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located. Under IAS 17, the lease reinstatement costs were included within property, plant and equipment.

E. Lease liabilities recognised at 1 January 2019. The Group has applied a single discount rate to a portfolio of leases with similar characteristics (para. C10 (a)) and hindsight has been used in determining the lease term if the contract contains options to extend or terminate the lease (para. C10 (e)).

F. On transition to IFRS 16, lease incentives previously included within trade and other payables have been derecognised as they form part of the measurement of the lease liability.

G. Deferred tax impact on transition to IFRS 16.

39. Transition to IFRS 16 continued

A reconciliation between the Group's operating lease commitment at 31 December 2018 and the lease liabilities at 1 January 2019 is presented below:

	At 1 January 2019 $ million
Operating lease commitment at 31 December 2018 as disclosed in the Group's consolidated financial statements	**40.5**
Discounted using the incremental borrowing rate at 1 January 2019	**(4.6)**
Other	**0.8**
Lease liabilities recognised at 1 January 2019	**36.7**

The lease liabilities were discounted at the incremental borrowing rate at 1 January 2019. The weighted average discount rate was 4.9 per cent. The average discount rate differs between regions due to differing base rates.

Parent Company balance sheet
At 31 December 2019

	Notes	2019 £ million	2018 £ million
Fixed assets			
Intangible assets	4	**3.8**	2.4
Tangible assets	5	**1.4**	1.6
Right-of-use assets	6	**2.4**	–
Investments	7	**388.0**	366.6
		395.6	370.6
Current assets			
Stocks	8	**3.9**	4.5
Debtors: amounts falling due within one year	9	**20.6**	19.9
Debtors: amounts due after more than one year	9	**8.8**	2.0
Cash at bank and in hand		**16.4**	10.6
		49.7	37.0
Creditors: amounts falling due within one year	10	**(102.2)**	(95.9)
Net current liabilities		**(52.5)**	(58.9)
Total assets less current liabilities		**343.1**	311.7
Creditors: amounts falling due after more than one year	11	**(2.9)**	(1.7)
Defined benefit pension plan deficit	3	**(0.5)**	(0.5)
Deferred tax liabilities	13	**(0.3)**	–
Net assets		**339.4**	309.5
Capital and reserves	18		
Called up share capital		**20.4**	20.4
Share premium account		**20.2**	20.2
Capital redemption reserve		**13.1**	13.1
Profit and loss account		**285.7**	255.8
Shareholders' funds – equity		**339.4**	309.5

The Company has taken advantage of the exemption under Section 408 of the Companies Act 2006 from presenting its own profit and loss account. In 2019, the profit for the year amounted to £54.3 million (2018 £55.7 million).

The notes on pages 166 to 185 form part of these financial statements.

Signed on behalf of the Board

Paula Bell
Director
5 March 2020

Parent Company statement of changes in equity

	Notes	Called up share capital	Share premium account	Capital redemption reserve	Profit and loss account	Total equity
		Attributable to the equity holders of the parent Company				£ million
At 1 January 2018		20.4	20.2	13.1	238.7	292.4
Profit for the year		–	–	–	55.7	55.7
Other comprehensive income[1]		–	–	–	1.7	1.7
Total comprehensive income		–	–	–	57.4	57.4
Share-based payment		–	–	–	2.1	2.1
Tax credit on share incentives		–	–	–	0.1	0.1
Employee Share Ownership Trust	18	–	–	–	(1.8)	(1.8)
Equity dividends	17	–	–	–	(40.7)	(40.7)
At 1 January 2019[2]		**20.4**	**20.2**	**13.1**	**255.8**	**309.5**
Profit for the year		**–**	**–**	**–**	**54.3**	**54.3**
Other comprehensive income[3]		**–**	**–**	**–**	**1.7**	**1.7**
Total comprehensive income		**–**	**–**	**–**	**56.0**	**56.0**
Share-based payment		**–**	**–**	**–**	**2.7**	**2.7**
Tax credit on share incentives		**–**	**–**	**–**	**0.3**	**0.3**
Employee Share Ownership Trust	18	**–**	**–**	**–**	**(6.7)**	**(6.7)**
Equity dividends	17	**–**	**–**	**–**	**(22.4)**	**(22.4)**
At 31 December 2019		**20.4**	**20.2**	**13.1**	**285.7**	**339.4**

Notes
1. The amount included in other comprehensive income for 2018 of £1.7 million represents re-measurement gains on the net defined benefit pension asset of £2.1 million, net of a tax charge of £0.4 million.
2. The Company adopted IFRS 16 'Leases' on 1 January 2019. This did not have an impact on the profit and loss account reserve at 1 January 2019. See note 21.
3. The amount included in other comprehensive income for 2019 of £1.7 million represents re-measurement gains on the net defined benefit pension asset of £2.1 million, net of a tax charge of £0.4 million.

The notes on pages 166 to 185 form part of these financial statements.

Notes to the parent Company financial statements

1. Significant accounting policies

Corporate information
Spirent Communications plc (the Company) is a public limited company incorporated and domiciled in England and Wales (registration number 00470893). The registered address of the Company is Origin One, 108 High Street, Crawley, West Sussex RH10 1BD, United Kingdom.

Basis of accounting
The financial statements have been prepared in accordance with Financial Reporting Standard 101 Reduced Disclosure Framework (FRS 101).

In preparing these financial statements, the Company applies the recognition, measurement and disclosure requirements of International Financial Reporting Standards as adopted by the EU (EU Adopted IFRS), but makes amendments where necessary in order to comply with the Companies Act 2006 and has set out below the FRS 101 disclosure exemptions that have been taken in respect of the following disclosures:

- a cash flow statement and related notes;
- comparative period reconciliations for share capital, tangible fixed assets and intangible assets;
- disclosures in respect of transactions with wholly owned subsidiaries;
- disclosures in respect of capital management;
- the effects of new but not yet effective IFRS; and
- disclosures in respect of the compensation of key management personnel.

As the consolidated financial statements include the equivalent disclosures, the Company has also taken the exemptions under FRS 101 available in respect of the following disclosures:

- IFRS 2 'Share-based Payment' in respect of Group-settled share-based payments;
- certain disclosures required by IAS 36 'Impairment of Assets' in respect of the impairment of goodwill and indefinite life intangible assets; and
- the disclosures required by IFRS 7 'Financial Instruments: Disclosures' and IFRS 13 'Fair Value Measurement' regarding financial instrument disclosures have not been provided apart from those which are relevant for the financial instruments which are held at fair value.

The following exemptions have been taken in these financial statements, as granted by IFRS 1 'First-time adoption of IFRS':

- business combinations – business combinations that took place prior to 1 January 2014 have not been restated; and
- use of previous GAAP carrying amounts as at date of transition as a deemed cost for investment in subsidiaries.

As the Company is included in the consolidated financial statements, made up to 31 December each year, it is not required to present a separate profit and loss account as provided by Section 408 of the Companies Act 2006. Information on fees for non-audit services in respect of the parent Company accounts has not been disclosed as the Company prepares Group accounts which disclose information on fees for non-audit services on a consolidated basis.

Accounting convention
The financial statements are prepared on a historical cost basis apart from certain financial instruments that have been measured at fair value.

Going concern basis of accounting
The Directors have reviewed the detailed financial projections for a period of 12 months from the date of this report and the business plans for the 2021 and 2022 financial years. They have also considered the principal risks and uncertainties that the Company faces and its current financial position and are satisfied that the Company has adequate financial resources to continue in operational existence for the foreseeable future, a period of not less than 12 months from the date of this report. Accordingly, the going concern basis of accounting continues to be used in the preparation of the financial statements.

New accounting standards
The Company has adopted IFRS 16 'Leases' on 1 January 2019. Other than this, there have been no applicable new standards, amendments to standards and interpretations effective from 1 January 2019 that have been applied by the Company which have resulted in a significant impact on its results or financial position.

1. Significant accounting policies continued

IFRS 16 'Leases'

IFRS 16 'Leases' is effective from 1 January 2019 and replaces the existing standard IAS 17 'Leases'. The financial statements for the year ending 31 December 2019 are the first financial statements presented under IFRS 16. In the lessee's financial statements, the standard eliminates the classification of leases as either operating leases or finance leases as per IAS 17 and introduces a single lessee accounting model. Lease agreements give rise to the recognition of an asset representing the right to use the leased item and a corresponding loan obligation for future lease payables. The Company has applied IFRS 16 using the modified retrospective approach, meaning comparatives are not restated and the cumulative effect of initially applying the standard is recognised as an adjustment to the opening balance of profit and loss account reserves at the date of initial application. Under this option, the Company has elected to calculate the asset value as if the standard had always been applied since the lease commencement date but discounted using the Company's incremental borrowing rate at the date of initial application. Lease liabilities were recognised based on the present value of the remaining lease payments, discounted using the incremental borrowing rate at the date of initial application. The Company has also elected to use the following practical expedients:

- the application of a single discount rate to a portfolio of leases with reasonably similar characteristics;
- use of its onerous lease assessment calculated in accordance with IAS 37 'Provisions, Contingent Liabilities and Contingent Assets' as an alternative to performing an impairment review of right-of-use assets on initial application;
- leases with less than 12 months remaining at the date of initial application can be accounted for as short-term leases and continue to be expensed as incurred;
- initial direct costs can be excluded from the measurement of right-of-use assets at the date of initial application; and
- hindsight can be used in determining the lease term if the contract contains options to extend or terminate the lease.

An explanation of the impact of IFRS 16 on the Company's financial statements and related matters consequent upon the adoption of IFRS 16 are set out in note 21. The Company's accounting policy in respect of leases, from 1 January 2019, is set out further on in note 1.

Presentation

The Company's deferred costs balance has been reclassified from 'prepayments' within 'debtors' to 'stocks' as this classification more appropriately represents the nature of the balance. The presentation of the comparative amounts in the Company's balance sheet has also been amended to reflect this change. This resulted in a reclassification of £2.2 million in 2018. This reclassification had no impact on the Company's net assets reported in 2018.

Business combinations and goodwill

A business combination is a transaction or other event in which an acquirer obtains control of one or more businesses. Business combinations are accounted for using the acquisition method.

At acquisition date, the identifiable assets acquired and liabilities assumed, including intangible assets, are measured at their fair values. The cost of an acquisition is measured as the aggregate of the consideration transferred and the amount of any non controlling interest in the acquiree.

Goodwill arising on the acquisition of a business, representing the excess of cost over the net fair value of the net assets acquired, is capitalised as an intangible asset. Goodwill is carried at cost less any accumulated impairment losses.

For the purpose of impairment testing, goodwill is allocated to the related cash-generating units monitored by management. Where the recoverable amount of the cash-generating unit is less than its carrying amount, including goodwill, an impairment loss is recognised in the profit and loss account.

The UK Companies Act requires goodwill to be reduced by provisions for depreciation on a systematic basis over a period chosen by the Directors, its useful economic life. However, under IFRS 3 'Business Combinations' goodwill is not amortised. Consequently the Company does not amortise goodwill, but reviews it for impairment on an annual basis or whenever there are indicators of impairment. The Company is therefore invoking a 'true and fair view override' to overcome the prohibition on the non-amortisation of goodwill in the Companies Act.

Had the Company amortised goodwill a period of 20 years would have been chosen as the useful life for goodwill. There would have been an immaterial impact to profit in the year had goodwill been amortised.

Notes to the parent Company financial statements continued

1. Significant accounting policies continued

Intangible assets

Intangible assets are carried at cost less accumulated amortisation and accumulated impairment losses. Separately identifiable intangible assets such as current technology are capitalised on the balance sheet only when the value can be measured reliably, or the intangible asset is purchased as part of the acquisition of a business. Such intangible assets are amortised over their useful economic lives on a straight-line basis. The carrying value of intangible assets is reviewed for impairment if events or changes in circumstances indicate the carrying value may not be recoverable. Acquired intangible assets, being current technology, are amortised on a straight-line basis over their estimated useful lives and the charge is included within the profit and loss account.

The estimated useful life of the current technology intangible asset is five years and the expiry date is 2024.

Product development

Research expenditure is recorded as a product development cost in the year in which it is incurred. Intangible assets arising on the Company's various product development projects are recognised only if the recognition criteria of IAS 38 'Intangible Assets' are met.

Product development costs are expensed as incurred until the technological feasibility of the product under development has been established. Technological feasibility in Spirent's circumstances occurs when a working model is completed. For software development, technological feasibility is not established until the process of developing the software is complete. After technological feasibility is established, additional costs are capitalised and amortised on a straight-line basis over the estimated useful life.

At 31 December 2019 and 31 December 2018, no amounts have met the recognition criteria.

Tangible assets

Tangible assets and right-of-use assets are stated at cost less accumulated depreciation and accumulated impairment. Depreciation is not provided on freehold land. Depreciation is provided to write off the cost of all other assets, less residual value, on a straight-line basis over their estimated useful lives at rates which take into account commercial conditions at their location. Usual asset lives are as follows:

Freehold buildings	50 years
Plant and machinery	3 to 8 years
Fixtures, fittings and equipment:	
– Building installations	20 years or lease period if lower
– Fittings and equipment	3 to 8 years
– Motor vehicles	3 to 5 years
– Business systems software	4 years

The carrying values of tangible fixed assets are reviewed for impairment if events or changes in circumstances indicate that the carrying value may not be recoverable.

Impairment of assets

Tangible assets and right-of-use asset with finite useful lives are tested for impairment at each reporting date where there is an indication that an asset may be impaired. Goodwill with an indefinite useful life is assessed at least annually. When an impairment test is performed, the recoverable amount is assessed by reference to the higher of the net present value of the expected cash flows (value in use) of the relevant cash-generating unit or asset and the fair value less cost of disposal. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. Where the carrying amount of an asset exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. Impairment losses are recognised in the profit and loss account in those expense categories consistent with the function of the impaired asset.

Where an impairment loss has been recognised against an asset, it may be reversed in future periods where there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognised, but only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, had no impairment loss been recognised in prior years. Such a reversal is recognised in the profit and loss account. This does not apply for goodwill, for which an impairment loss must not be reversed in any circumstances.

Investments

Investments in subsidiaries are stated at cost and reviewed for impairment if there are indications that the carrying value may not be recoverable.

1. Significant accounting policies continued

Leases

Lease accounting policy applicable from 1 January 2019.

The Company as a lessee

The Company assesses whether a contract is or contains a lease, at inception of a contract. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

The Company leases are buildings and therefore the new definition of a lease under IFRS 16 did not change the population of contracts that meet the definition of a lease for the Company.

The Company recognises a right-of-use asset and a corresponding lease liability with respect to all lease agreements in which it is the lessee at the commencement date of the lease (i.e. the date the underlying asset is available for use), except for short-term leases (defined as leases with a lease term of 12 months or less) and leases of low-value assets. For these leases, the Company recognises the lease payments as an operating expense within the income statement on a straight-line basis over the period of the lease.

At the commencement date of the lease, the lease liability is initially measured at the present value of lease payments to be made over the lease term, discounted using the rate implicit in the lease. If this rate cannot be readily determined, the Company uses its incremental borrowing rate. Under the modified retrospective transition method, lease liabilities are required to be discounted using the incremental borrowing rate at date of transition. The Company has set the discount rate based upon the local base rate with an additional premium to reflect various factors such as credit risk.

The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by the Company and payments of penalties for terminating a lease, if the lease term reflects the Company exercising the option to terminate. The variable lease payments that do not depend on an index or a rate are recognised as an expense in the period on which the event or condition that triggers the payment occurs.

The lease liability is presented in creditors in the balance sheet.

The lease liability is subsequently measured by increasing the carrying amount to reflect interest on the lease liability (using the effective interest method), and by reducing the carrying amount to reflect the lease payments made. It is re-measured when there is a change in future lease payments arising from a change in an index or rate, or if the Company changes its assessment of whether it will exercise a purchase, extension or termination option.

When the lease liability is re-measured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero. The Company did not make any such measurements during the periods presented.

The right-of-use asset is initially measured at cost, which comprises the initial amount of the corresponding lease liability, adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term. In addition, the right-of-use asset is periodically reduced by impairment losses, if any, and adjusted for certain re-measurements of the lease liability.

The right-of-use assets are presented as a separate line in the balance sheet.

Under IAS 17

In the comparative period, as a lessee all of the Company's leases were operating leases and were not recognised in the balance sheet. Payments made under operating leases were charged to the profit and loss account on a straight-line basis over the period of the lease.

Stocks

Stocks are valued at the lower of cost and estimated net realisable value, after provisions for obsolescence. Cost includes all costs in bringing each product to its present location and condition, being the full manufacturing cost on a first-in, first-out basis, including all attributable overheads based on a normal level of activity.

Provisions

Provisions are recorded when the Company has a present, legal or constructive obligation as a result of a past event, for which it is probable that it will be required to settle by an outflow of resources and for which a reliable estimate of the amount of the obligation can be made. Provisions are reviewed at each balance sheet date and adjusted to reflect the current best estimate.

Where the effect of the time value of money is material, the amount of the provision shall be the present value of the expenditures expected to be required to settle the obligation.

Foreign currencies

The financial statements are presented in Sterling, which is the Company's functional and presentation currency.

Transactions in foreign currencies are initially recorded at the rates ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are retranslated at the rates ruling at the balance sheet date. All exchange gains and losses are taken to the profit and loss account.

Notes to the parent Company financial statements continued

1. Significant accounting policies continued

Financial instruments

Financial assets and liabilities are recognised on the Company's balance sheet when it becomes a party to the contractual provisions of the instrument.

Trade debtors

Trade debtors are non-interest bearing and are stated at original invoiced amount less an appropriate allowance for expected credit losses. At each reporting date, the Company measures the loss allowance at an amount equal to the lifetime expected credit losses.

The Company applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade debtors. Therefore, the Company does not track changes in credit risk, but instead recognises a loss allowance based on lifetime expected credit loss at each reporting date. To measure the expected credit losses, the Company has established a provision matrix that is based on shared credit risk characteristics and the days past due based on the expected loss rates.

The provision matrix is initially based on payment profiles of trade debtors over a period of 12 months before 31 December 2018 and the corresponding historical credit losses experienced within this period. At every reporting date the historical observed default rates are updated.

Trade debtors are written off when there is no reasonable expectation of recovery.

A default on a trade debtor occurs when the debtor fails to make contractual payments when they fall due.

Cash at bank and in hand

Cash at bank and in hand in the balance sheet comprise cash at bank and in hand and short-term deposits which have an original maturity of three months or less.

Trade creditors

Trade creditors are non-interest bearing and are stated at the original invoiced amount.

Loans and borrowings

Loans and borrowings are recognised initially at fair value less attributable transaction costs. Subsequent to initial recognition, loans and borrowings are stated at amortised cost using the effective interest method, and in respect of financial assets, less any impairment losses.

Impairment losses are based on lifetime expected credit losses.

Equity instruments

Equity instruments are recorded at the proceeds received, net of direct issue costs. Spirent Communications plc Ordinary Shares held by the Company are classified in equity as treasury shares and are recognised at cost and included as a deduction from retained earnings. Consideration received for the sale of such treasury shares is also recognised in equity.

Derivative financial instruments and hedge accounting

The Company uses forward foreign currency exchange contracts to manage exposures arising on receipts and payments in foreign currencies relating to firm commitments.

Forward foreign currency exchange contracts are initially recognised at fair value on the date on which the contract is entered into, and are subsequently re-measured to fair value at each reported balance sheet date. The fair value of forward foreign currency exchange contracts is calculated by reference to current forward exchange rates for contracts with similar maturity profiles. The Company has not adopted the hedge accounting rules. Consequently all gains and losses arising from changes in fair value are taken to the profit and loss account.

Derivatives embedded in other financial instruments or other host contracts are treated as separate derivatives when their risks and characteristics are not closely related to those of the host contracts.

Pensions

The Company operates two funded defined benefit pension plans. All other pension plans are defined contribution in nature where the amount charged to the profit and loss account is the employer's contributions paid or payable during the year.

For defined benefit pension plans, full actuarial valuations are carried out every three years using the projected unit credit method, and updates are performed at each balance sheet date. Re-measurement, comprising actuarial gains and losses, the effect of changes to the asset ceiling (if relevant) and the return on plan assets (excluding interest), is reflected immediately in the balance sheet liability or asset with a charge or credit recognised in other comprehensive income in the period in which they occur. Re-measurement recognised in other comprehensive income will not be reclassified to profit or loss. Past service cost is recognised in profit or loss in the period of plan amendment. Net interest is calculated by applying the discount rate at the beginning of the period to the net defined benefit pension asset, taking account of any changes in the net defined benefit pension asset during the period as a result of contribution and benefit payments. Defined benefit pension costs are categorised as:

- service cost (including current service cost, past service cost and gains and losses on curtailments or settlements);
- net interest expense or income; and
- re-measurement.

The Company presents the first two components of defined benefit pension costs in profit or loss.

1. Significant accounting policies continued

Revenue

Revenue represents the transfer of promised products or services to customers in an amount that reflects the consideration to which the Company expects to be entitled in exchange for those products or services.

Revenue from product sales of hardware and perpetual software licences is recognised at the point in time when the customer has obtained control of the products sold. This is usually when the products have been delivered in accordance with the contractual terms. In most instances it is not until acceptance has occurred that control of the asset is transferred to the customer. Terms of acceptance are dependent upon the specific contractual arrangement agreed with the customer. If it can be objectively determined that control has been transferred to the customer in accordance with the agreed contract specifications, customer acceptance is a formality that would not affect the determination of when the customer has obtained control of the products. However, if it cannot be objectively determined that the products delivered are in accordance with the agreed-upon contract specifications, revenue would not be recognised until customer acceptance has been granted.

For sales of software licenses, the Company determines whether the license is capable of being distinct and is separately identifiable from other promises in the context of the contract. Revenue from software subscription licences that provide the customer with a right to access the Company's intellectual property throughout the subscription period is recognised over time, throughout the subscription period. Revenue from perpetual software licences that provide the customer with a right to use the Company's intellectual property for an indefinite period of time is recognised at the point in time when the customer can first use and benefit from the software.

For the sale of services, revenue is recognised over time with reference to when or as the performance obligations are satisfied by transferring the service to the customer. Revenue from support and maintenance service contracts and software subscription sales is recognised over the period of performance on a straight-line basis. Revenue from professional services is generally recognised as work progresses in accordance with agreed-upon contractual terms, based on a measure of progress towards complete satisfaction of the performance obligation. Progress is measured with reference to the actual cost of services provided as a proportion of the total cost of services expected to be provided under the contract. Where the professional service has a predetermined or fixed output deliverable, revenue is recognised at a point in time once the performance obligation has been satisfied and the customer has received the agreed deliverable.

Revenue from multi-component and bundled orders that includes both products and services is accounted for as two or more separate performance obligations only where the commercial substance is that the individual components operate independently of each other, because they are capable of being distinct and are separately identifiable from other promises in the context of the contract with the customer.

Cost of sales

The Company's cost of sales related to the sale of its products includes materials, payments to third party contract manufacturers, royalties and salaries and other expenses related to its manufacturing and supply operations personnel. Cost of sales related to the provision of services includes salaries and other expenses associated with technical support services and the cost of extended maintenance services.

Costs to obtain a contract

The incremental costs of obtaining a contract with a customer are capitalised as an asset if the Company expects to recover them. The Company incurs costs such as sales commissions when it enters into a new contract. Such costs are presented within debtors in the balance sheet as assets recognised from costs to obtain a contract where the related revenue is recognised over time, usually in relation to support and subscription agreements. These assets are amortised on a systematic basis consistent with how the related revenue is recognised.

The Company applies the practical expedient in paragraph 94 of IFRS 15 and recognises incremental costs of obtaining a contract as an expense when incurred if the amortisation period of the asset that the Company would otherwise have recognised is one year or less.

Management is required to determine the recoverability of assets recognised from costs to obtain a contract. At each reporting date, the Company determines whether or not the assets are impaired by comparing the carrying amount of the asset to the remaining amount of consideration that the Company expects to receive less the costs that relate to providing services under the relevant contract. No assets were impaired as at 31 December 2019 or 31 December 2018.

Deferred income

Deferred income is only recognised on non-cancellable contracts that provide unconditional rights to payment from the customer for products and services that the Company has not yet completed providing or that it will provide in the near future.

Revenue from product sales of hardware and perpetual software licences is recognised at the point in time when the customer has obtained control of the products sold. In the instances where the customer has been invoiced and revenue from hardware or perpetual software licences is unable to be recognised, revenue would not be recognised until control has passed, resulting in deferred income.

Support services and software subscription agreements are generally billed at commencement of the support or subscription contract, while revenue is recognised over the period of the support or subscription agreement, resulting in deferred income.

The Company occasionally receives advance payments from customers on account, before products or services are delivered and revenue is recognised, resulting in liabilities. These liabilities are reported on the balance sheet within creditors on a contract-by-contract basis at the end of each reporting period.

Government grants

A government grant is recognised in the balance sheet initially within creditors when there is reasonable assurance that it will be received and that the Company will comply with the conditions attached to it. Grants that compensate the Company for expenses incurred are recognised as other operating income on a systematic basis in the same periods in which expenses are incurred. Grants that compensate the Company for the acquisition of an asset are presented by deducting them from the acquisition cost of the related asset in accordance with IAS 20 'Accounting for Government Grants and Disclosure of Government Assistance'.

Notes to the parent Company financial statements continued

1. Significant accounting policies continued

Employee benefits

When an employee has rendered service to the Company during an accounting period, short-term benefits expected to be paid in exchange for that service are recognised in the same accounting period.

Share-based payment

The cost of equity-settled transactions with employees is measured by reference to the fair value at the date at which they are granted. The fair value is determined using the Black-Scholes binomial model.

The cost of equity-settled transactions is recognised as a cost to the Company or as an addition to the cost of investment in the subsidiary in which the relevant employees work, over the vesting period of the equity-settled transactions with a corresponding adjustment to reserves. Any payments received from the Company's subsidiaries in respect of these share-based payments result in a reduction in the cost of investment.

No expense is recognised for awards that do not ultimately vest, except for awards where vesting is conditional upon a market condition, which are treated as vesting irrespective of whether or not the market condition is satisfied, provided that all other vesting conditions are satisfied.

Where an equity-settled award is cancelled, it is treated as if it had vested on the date of cancellation and any expense not yet recognised for the award is recognised immediately.

The Company has an employee share trust for the granting of certain share incentives to employees. Shares are held by the employee share trust, treated as treasury shares and presented in the balance sheet as a deduction from equity.

Tax

Income tax on the profit or loss for the year comprises current and deferred tax. Income tax is recognised in the profit and loss account except to the extent that it relates to items in other comprehensive income or equity.

Current tax is the expected tax payable on the taxable income for the year, using tax rates enacted or substantively enacted at the balance sheet date, and any adjustments to tax payable for previous years.

Deferred tax is recognised on all temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the financial statements, with the following exceptions:

- where the temporary difference arises from the initial recognition of goodwill (taxable temporary differences only) or of an asset or liability in a transaction that is not a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss; and
- in respect of taxable temporary differences associated with investments in subsidiaries, associates and joint ventures, where the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future.

A deferred tax asset is recognised only to the extent that it is probable that taxable profits will be available against which the deductible temporary differences, carried forward tax credits or tax losses can be utilised.

Deferred tax assets and liabilities are measured on an undiscounted basis at the tax rates that are expected to apply when the related asset is realised or the liability is settled, based on tax rates and laws enacted or substantively enacted at the balance sheet date.

Dividends paid

The interim dividend is included in the financial statements in the period in which it is paid, and the final dividend in the period in which it is approved by the shareholders at an Annual General Meeting.

Critical accounting assumptions and judgements

The preparation of financial statements requires the Company to make estimates and assumptions that affect items reported. Such estimates and assumptions are based on management's best knowledge of current facts, circumstances and future events. Actual results may differ, possibly significantly, from those estimates. The areas requiring high degree of judgement or where assumptions and estimates are significant to the parent Company financial statements are revenue recognition, defined benefit pension plans (note 3) and recognition of deferred tax assets (note 13). Please refer to note 2 of Notes to the consolidated financial statements on page 121 for detailed disclosures.

2. Employees

Please refer to the Report on Directors' remuneration on pages 77 to 101 and note 38 of Notes to the consolidated financial statements on page 161 for disclosures relating to the emoluments, share incentives and long-term incentive interests and pensions of the Directors.

The average number of people employed by the Company during the year was:

	2019 Number	2018 Number
Manufacturing	40	37
Product development	54	50
Selling and marketing	52	45
Administration	32	30
	178	162

Employee benefit costs were:

	2019 £ million	2018 £ million
Remuneration	14.5	12.3
Social security costs	1.9	1.6
Pension and other related costs	1.8	1.6
Expense of share-based payment	0.7	0.7
	18.9	16.2

3. Pensions

Defined benefit plans

i) Characteristics and risks associated with the Plans

The Company sponsors two funded defined benefit pension plans in the United Kingdom: the Spirent Communications plc Staff Pension & Life Assurance Plan (Staff Plan) and the Spirent Communications plc Retirement Cash & Life Assurance Plan (Cash Plan). These plans are funded and have full UK HM Revenue & Customs (HMRC) tax-exempt approval. Both schemes are administered by a trustee board which is comprised of representatives from the employer, member nominated trustees and an independent trustee. The trustee board operates in accordance with the Trust Deed and rules of each Plan and acts in the interests of all of its members.

- The Staff Plan is the Company's most significant plan. It provides its members with retirement benefits based on their final salary and length of service. The Staff Plan is closed to new entrants.
- The Cash Plan is primarily a defined contribution arrangement, although there are some legacy defined benefits (Old Section) that have been valued for the purpose of these accounts in accordance with IAS 19 'Employee Benefits'. Members who left service before 1992 are entitled to a cash lump sum on retirement that is based on their salary and length of service. Members of the Old Section are entitled to defined contribution benefits, but with an underpin based on salary and length of service. The Cash Plan is closed to new entrants.

There is also a UK unfunded plan, which consists of a contractual obligation for the Company to top up certain former employees' benefits whose salaries exceeded the statutory earnings cap.

As with the vast majority of similar arrangements in the United Kingdom, the Company ultimately underwrites the risks relating to the defined benefit plans. These risks include investment risks and demographic risks, such as the chance of members living longer than expected.

The plans hold a significant proportion of their assets in equity. Strong future equity returns would be expected to reduce the Company's future cash contributions (and vice versa).

Expected contributions to the defined benefit plans in 2020 are £5.2 million. This includes the contributions agreed with the funded plans' trustees in accordance with UK legislation. The triennial valuation as at 1 April 2018 was in deficit, whereas the IAS 19 accounting valuation is in surplus; therefore, the Company has agreed to pay £5.0 million per annum into the Staff Plan, increasing in line with CPI, through to June 2023 (or earlier if self-sufficiency is reached) in order to clear the funding deficit. Additionally, the Company will fund the plan by an amount equal to 10 per cent of any special dividend paid during the period.

If the contributions currently agreed are insufficient to pay the benefits due, the Company will need to make further contributions.

Notes to the parent Company financial statements continued

3. Pensions continued

Defined benefit plans continued

i) Characteristics and risks associated with the Plans continued

GMP equalisation

On 26 October 2018, the High Court ruled on the Lloyds Bank GMP inequalities case. In response to this, an allowance of £3.1 million was included on the balance sheet at 31 December 2018 to make provision for the estimated costs arising from the judgement. This past service cost was charged to the profit and loss account in 2018 and related to the Staff Plan. There was no impact on the Cash Plan.

Over the year to 31 December 2019, the Trustees and the Company have not taken any formal decisions over the process. The calculation of the allowance as a proportion of the liabilities included within the IAS 19 figures is therefore unchanged. As a result of changes in market conditions, the allowance is now £3.2 million. The difference has been charged to profit and loss account reserves during the year as an experience gain/loss.

Further information on the GMP equalisation, including the considerations in the calculation, are disclosed in the Company's 2018 Annual Report.

ii) Amounts in the financial statements

The assets and liabilities on the balance sheet are as follows:

	2019 £ million	2018 £ million
Schemes in net asset position		
UK defined benefit pension plan – Staff Plan	**7.8**	1.1
UK defined benefit pension plan – Cash Plan	**1.0**	0.9
	8.8	2.0
Schemes in net liability position		
UK unfunded plan	**(0.5)**	(0.5)
Net pension plan surplus on the balance sheet	**8.3**	1.5

3. Pensions continued

Defined benefit plans continued

ii) Amounts in the financial statements continued

a) The assets and liabilities in each plan

	2019 £ million	2018 £ million
Staff Plan		
Quoted		
– Equities	**51.2**	41.9
– Government bonds	**4.5**	4.1
– Corporate bonds	**3.7**	3.2
Unquoted		
– LDI funds	**34.5**	31.7
– Cash benchmarked bonds	**76.6**	75.0
– Hedge funds	**20.0**	18.7
– Insured annuities	**2.0**	2.1
– Property	**1.1**	1.1
– Cash and other	**19.2**	14.1
Fair value of plan assets	**212.8**	191.9
Present value of defined benefit pension plan obligations	**(205.0)**	(190.8)
Surplus in the plan	**7.8**	1.1
Cash Plan		
Quoted		
– Equities	**3.8**	3.3
– Government bonds	**2.8**	2.7
Unquoted		
– Insured annuities	**0.1**	0.1
– Cash and other	**1.6**	1.6
Fair value of plan assets	**8.3**	7.7
Present value of defined benefit pension plan obligations	**(7.3)**	(6.8)
Surplus in the plan	**1.0**	0.9
Total net surplus recognised	**8.8**	2.0
Unfunded plan		
Present value of unfunded obligations	**(0.5)**	(0.5)
Net pension plan surplus on the balance sheet	**8.3**	1.5

Approximately two-thirds of the Staff Plan's assets are held in a combination of LDI funds, cash benchmarked bonds and hedge funds. The objective of this allocation is to hedge against the plan's liabilities, provide protection against inflation risk and provide a level of investment returns in all market scenarios.

These funds have a wide investment remit and as such the investments of the funds may or may not be listed on recognised exchanges and markets and will be without restriction as to geographical, industrial or sectoral exposure. These funds may take both long and short positions and may utilise a broad range of derivatives. The funds' investments may include sub-investment grade securities, corporate debt securities, gilts, sale and repurchase agreements, loans, and emerging markets debt and currencies.

The plans are prohibited from investing in Spirent's own financial instruments.

The fair values of the quoted equity and debt instruments are determined based on quoted market prices in active markets whereas the fair values of the other assets are not. Unquoted investments are included at values provided by the fund managers and are generally valued using recent market data and external sources, with a hierarchy that follows the principles of IFRS 13 'Fair Value Measurement'.

The Company has determined that it has an unconditional right to refund of surplus assets if the schemes are run off until the last member dies, on which basis IFRIC 14 does not cause any change in the balance sheet disclosures before tax.

For the purposes of the following disclosures, the Staff Plan and Cash Plan have been combined as the Cash Plan is immaterial to these financial statements.

Notes to the parent Company financial statements continued

3. Pensions continued

Defined benefit plans continued

ii) Amounts in the financial statements continued

b) Analysis of the amounts charged to the profit and loss account

	2019 £ million	2018 £ million
Plan administration expenses	0.5	0.4
Current service cost	0.1	0.1
Amount charged to operating costs	0.6	0.5
Past service cost (GMP equalisation)	–	3.1
Net interest on the net defined benefit pension surplus	(0.1)	–
Net charge to the profit and loss account	0.5	3.6

c) Analysis of the amount recognised directly in the statement of comprehensive income

	2019 £ million	2018 £ million
Re-measurement gain/(loss) on plans' assets	20.2	(10.6)
Actuarial gain arising from experience	0.2	2.3
Actuarial gain arising from the demographic assumptions	2.3	1.4
Actuarial (loss)/gain arising from changes in financial assumptions	(20.6)	9.0
Re-measurement of the net defined benefit pension surplus	2.1	2.1

d) Movements in the present value of funded defined benefit obligations

	2019 £ million	2018 £ million
At 1 January	197.6	211.0
Current service cost	0.1	0.1
Past service cost	–	3.1
Interest cost	5.4	5.2
Benefit payments	(8.9)	(9.1)
Actuarial gain arising from experience	(0.2)	(2.3)
Actuarial gain arising from the demographic assumptions	(2.3)	(1.4)
Actuarial loss/(gain) arising from changes in financial assumptions	20.6	(9.0)
Present value of funded defined benefit pension plans' obligations	212.3	197.6

e) Movements in the fair value of plans' assets

	2019 £ million	2018 £ million
At 1 January	199.6	209.4
Interest income on plans' assets	5.5	5.2
Employer contributions	5.2	5.1
Benefit payments	(8.9)	(9.1)
Plan administration expenses	(0.5)	(0.4)
Re-measurement gain/(loss) on plans' assets	20.2	(10.6)
Fair value of plans' assets	221.1	199.6

3. Pensions continued

Defined benefit plans continued

ii) Amounts in the financial statements continued

f) The key financial assumptions

The assumptions used for both plans using a weighted average were as follows:

	2019 %	2018 %
Inflation – RPI	**3.0**	3.2
Inflation – CPI	**2.2**	2.1
Rate of increase in pensionable salaries	**2.2**	2.1
Rate of increase for pensions in payment pre-2001 service	**3.6**	3.7
Rate of increase for pensions in payment 2001 to 5 April 2005 service	**2.9**	3.1
Rate of increase for pensions post-5 April 2005 service	**2.0**	2.1
Rate of increase in deferred pensions	**2.2**	2.1
Rate used to discount plan liabilities	**2.1**	2.8

The mortality assumptions are based on standard mortality tables which allow for future mortality improvements. The assumptions are such that a member currently aged 65 (2018 aged 65) will live on average for a further 22.1 years (2018 22.5 years) if they are a male and for a further 24.1 years (2018 24.5 years) if they are female. For a member who retires in 2039 (2018 in 2038) at age 65 (2018 aged 65) the assumptions are that they will live on average for a further 23.4 years (2018 23.9 years) after retirement if they are male and for a further 25.6 years (2018 26.0 years) after retirement if they are female.

iii) Amount, timing and uncertainty of future cash flows

The approximate impact to the past service liabilities of changing these main assumptions is as follows:

- Reducing the discount rate by 0.1 per cent per annum would increase past service liabilities by £3.0 million (2018 £2.7 million).
- Increasing RPI inflation by 0.1 per cent would increase the plans' liabilities by £1.1 million (2018 £1.0 million).
- Increasing the life expectancy of a member by one year (by modifying the standard mortality tables using an appropriate scaling factor) would increase past service liabilities by £10.6 million (2018 £9.0 million).

There will also be an impact on the future service cost but given the small active population in these plans this is likely to be insignificant. The sensitivity analysis may not be representative of the actual change as the changes in assumptions may not occur in isolation.

The liability has the following duration and maturity:

	2019	2018
Weighted average duration of the defined benefit obligation (years)	**14**	15
Maturity analysis of benefit payments (non-discounted amounts) £ million		
Maturity ≤ 1 year	**8.2**	8.2
Maturity > 1 ≤ 5 years	**34.6**	33.9
Maturity > 5 ≤ 10 years	**46.9**	93.4
Maturity > 10 ≤ 20 years	**86.8**	80.9
Maturity > 20 ≤ 30 years	**62.0**	53.4
Maturity > 30 years	**47.8**	33.7

Defined contribution plans

The Company contributes to defined contribution pension plans for employees. Employer contributions for 2019 were £0.7 million (2018 £0.6 million).

Notes to the parent Company financial statements continued

4. Intangible assets

	Note	Goodwill	Current technology	Total
				£ million
Cost				
At 1 January 2019		**6.8**	**–**	**6.8**
Acquisitions	20	**0.7**	**0.8**	**1.5**
At 31 December 2019		**7.5**	**0.8**	**8.3**
Accumulated amortisation and impairment losses				
At 1 January 2019		**4.4**	**–**	**4.4**
Amortisation for the year		**–**	**0.1**	**0.1**
At 31 December 2019		**4.4**	**0.1**	**4.5**
Net book value at 31 December 2018		2.4	–	2.4
Net book value at 31 December 2019		**3.1**	**0.7**	**3.8**

The carrying value of goodwill has been tested by reference to the value in use of the Networks & Security CGU. No impairment of goodwill was required.

The goodwill arose on the acquisition of the Positioning business and on the acquisition of Integrated Navigation Systems Limited in 2019 (note 20), both within the Networks & Security CGU.

5. Tangible fixed assets

	Freehold land and buildings	Plant and machinery	Fixtures, fittings and equipment	Total
				£ million
Cost				
At 1 January 2019	**0.7**	**4.2**	**1.9**	**6.8**
Additions	**–**	**0.3**	**–**	**0.3**
Disposals	**–**	**(0.1)**	**(0.3)**	**(0.4)**
At 31 December 2019	**0.7**	**4.4**	**1.6**	**6.7**
Accumulated depreciation and impairment				
At 1 January 2019	**0.3**	**3.4**	**1.5**	**5.2**
Depreciation charge for the year	**–**	**0.4**	**0.1**	**0.5**
Disposals	**–**	**(0.1)**	**(0.3)**	**(0.4)**
At 31 December 2019	**0.3**	**3.7**	**1.3**	**5.3**
Net book value at 31 December 2018	0.4	0.8	0.4	1.6
Net book value at 31 December 2019	**0.4**	**0.7**	**0.3**	**1.4**

6. Right-of-use assets

The Company leases office buildings.

	Note	**Land and buildings £ million**
Cost, net of accumulated depreciation and accumulated impairment		
At 1 January 2019	21	**0.2**
Additions		**2.5**
Depreciation charge for the year		**(0.3)**
At 31 December 2019		**2.4**
At 31 December 2019		
Cost		**2.8**
Accumulated depreciation and accumulated impairment		**(0.4)**
Net carrying amount		**2.4**

The related lease liabilities are disclosed in note 14.

7. Investments

	Shares in subsidiaries	Loans to subsidiaries	Total
			£ million
Cost			
At 1 January 2019	**1,110.3**	**3.7**	**1,114.0**
Additions	**19.4**	**–**	**19.4**
Share-based payment	**2.0**	**–**	**2.0**
At 31 December 2019	**1,131.7**	**3.7**	**1,135.4**
Amounts provided			
At 1 January 2019 and 31 December 2019	**743.7**	**3.7**	**747.4**
Net book value at 31 December 2018	366.6	–	366.6
Net book value at 31 December 2019	**388.0**	**–**	**388.0**

The recoverability of the carrying value of investments in subsidiaries has been assessed by reference to value in use.

During the year, capital contributions of £19.4 million were paid to subsidiaries (2018 £10.9 million) and there were no loans capitalised (2018 £2.7 million of loans due from Spirent Communications SAS were capitalised).

8. Stocks

	2019 £ million	2018 £ million
Work in progress	**0.7**	0.6
Finished goods[1]	**3.2**	3.9
	3.9	4.5

Note
1. Finished goods in 2018 includes £2.2 million relating to deferred costs which has been reclassified from prepayments; see note 1 for further details.

There were no stock write-downs recognised in the period (2018 nil) and there were no reversals of prior period stock write-downs (2018 nil).

No stock is carried at fair value less costs to sell (2018 nil).

9. Debtors

	Notes	**2019 £ million**	2018 £ million
Due within one year			
Trade debtors		**5.2**	7.0
Owed by subsidiaries		**13.7**	9.6
Other debtors		**0.2**	0.7
Prepayments		**0.4**	0.6
Current tax asset		**1.0**	0.6
Deferred tax	13	**–**	1.3
Assets recognised from costs to obtain a contract		**0.1**	0.1
		20.6	19.9
Due after one year			
Defined benefit pension plan surplus	3	**8.8**	2.0

The Directors consider that the carrying amount of trade and other debtors approximates their fair value.

The Company has no significant concentration of credit risk attributable to its trade debtors as the exposure is spread over a large number of customers.

Assets recognised from costs to obtain a contract relate to capitalised incremental costs to obtain a contract, being sales commissions arising on contracts with customers of more than one year in length. No assets were impaired or derecognised during the current year or prior year.

10. Creditors: amounts falling due within one year

	Notes	2019 £ million	2018 £ million
Trade creditors		**2.3**	1.4
Owed to subsidiaries		**90.4**	84.8
Accruals		**5.1**	4.5
Deferred income		**3.2**	4.4
Lease liabilities	14	**0.1**	–
Other taxes and social security costs		**0.4**	0.5
Government grants	12	**0.7**	0.3
		102.2	95.9

Trade creditors are non-interest bearing and are normally settled on 30 to 60-day terms. Other creditors are non-interest bearing.

The Directors consider that the carrying amount of trade creditors approximates their fair value.

11. Creditors: amounts falling due after more than one year

	Notes	2019 £ million	2018 £ million
Deferred income		**0.8**	0.9
Lease liabilities	14	**2.0**	–
Government grants	12	**0.1**	0.8
		2.9	1.7

12. Government grants

The following government grants are included within creditors:

	2019 £ million	2018 £ million
At 1 January	**1.1**	1.3
Received during the year	**0.1**	–
Released to the profit and loss account	**(0.4)**	(0.2)
At 31 December	**0.8**	1.1

	2019 £ million	2018 £ million
Current	**0.7**	0.3
Non-current	**0.1**	0.8
	0.8	1.1

A government grant has been received to accelerate and support research and development in the vulnerability of global navigation satellite systems.

13. Deferred tax

The movements in the deferred tax (liability)/asset are as follows:

£ million	Temporary differences	Tax losses	UK pension plans	Credits	Total
At 1 January 2018	0.2	1.7	0.4	0.1	2.4
Charged in the year	–	(0.4)	–	–	(0.4)
Deferred tax on defined benefit pension plan	–	–	(0.7)	–	(0.7)
At 1 January 2019	**0.2**	**1.3**	**(0.3)**	**0.1**	**1.3**
Charged in the year	**0.2**	**(0.6)**	**–**	**0.1**	**(0.3)**
Deferred tax on defined benefit pension plan	**–**	**–**	**(1.3)**	**–**	**(1.3)**
At 31 December 2019	**0.4**	**0.7**	**(1.6)**	**0.2**	**(0.3)**

In 2019 and 2018, the deferred tax liability and asset have been offset on the balance sheet as they related to income taxes raised by the same authority on the same taxable entity.

The Company has tax losses of £23.9 million (2018 £23.9 million) that are available for offset against suitable future taxable profits.

A deferred tax asset has not been recognised in respect of these losses as their future recovery is uncertain. These losses can be carried forward indefinitely.

The Company also has capital losses carried forward of £823.3 million (2018 £823.3 million) for which no deferred tax asset has been recognised on the balance sheet. These capital losses have no expiry date.

14. Lease liabilities

	2019 £ million
Maturity analysis – contractual undiscounted cash flows	
Less than one year	**0.1**
One to five years	**1.1**
More than five years	**1.2**
Total undiscounted lease liabilities at 31 December	**2.4**
Lease liabilities included in the balance sheet 31 December	
Current	**0.1**
Non-current	**2.0**
	2.1

In 2019, the total cash outflow for leases was £0.2 million.

Extension options

Some leases of buildings contain extension options exercisable by the Company before the end of the non-cancellable contract period. Where practicable, the Company seeks to include extension options in new leases to provide operational flexibility. The extension options held are exercisable only by the Company and not the lessors. The Company assesses at lease commencement whether it is reasonably certain to exercise the extension options. The Company reassesses whether it is reasonably certain to exercise the options if there is a significant event or significant change in circumstances within its control.

	Lease liabilities recognised (discounted) £ million
Buildings	**1.4**

15. Contract balances

The following table provides information about debtors and contract liabilities from contracts with customers. The Company does not have any contract assets.

	Notes	2019 £ million	2018 £ million	2017 £ million
Trade debtors	9	**5.2**	7.0	7.7
Contract liabilities – deferred income	10, 11	**4.0**	5.3	5.8
Revenue recognised in the period from amounts included in contract liabilities at the beginning of the period		**4.4**	5.8	5.0

There was no revenue recognised in 2019, 2018 or 2017 from performance obligations satisfied in previous periods.

The timing of revenue recognition, invoicing and cash collections results in trade debtors and deferred income on the balance sheet.

The Company receives payments from customers based on a billing schedule, as established in the contract. Trade debtors are recognised when the right to consideration becomes unconditional. Contract liabilities are recognised as revenue as (or when) the Company performs under the contract.

The Company also recognises incremental costs incurred to obtain a contract as an asset if it expects to recover those costs. Such costs are presented within debtors in the balance sheet as assets recognised from costs to obtain a contract and disclosed in note 9.

Expected realisation of remaining performance obligations at year end

The Company applies the practical expedient in paragraph 121 of IFRS 15 and does not disclose information about remaining performance obligations that have original expected durations of one year or less.

For contracts that exceed one year, deferred income that relates to unsatisfied or partially satisfied performance obligations at year end is expected to be recognised as revenue in the future as follows:

	2019 £ million	2018 £ million
Within one year	**1.0**	1.2
Greater than one year	**0.8**	0.9
	1.8	2.1

The above information represents the revenue the Company will recognise when it satisfies the remaining performance obligations in the contracts. The amounts presented do not include orders for which neither party has performed.

Revenue from the sale of hardware and software generally arises from contracts less than one year in length. Consequently, the above amounts predominantly relate to the sale of maintenance and support services.

Virtually all of the revenue will be recognised within three years.

The Company provides standard warranties on its products and services. The nature of these warranties is considered to provide customers with assurance that the related product or service will function as intended in accordance with the agreed specification, and does not contain or imply any additional service obligation to the customer. Warranty obligations are estimated and recognised as liabilities based on the probable outflow of resources.

16. Operating lease commitments

The Company adopted IFRS 16 'Leases' on 1 January 2019; see note 21. In the lessee's financial statements, the standard eliminates the classification of leases as either operating leases or finance leases as per IAS 17 and introduces a single lessee accounting model. As a result, the vast majority of the Company's operating leases came onto the balance sheet.

At 31 December, the Company had outstanding commitments for future minimum lease payments under non-cancellable operating leases, which fall due as follows:

	2019 £ million	2018 £ million
Within one year	**–**	0.2
In the second to fifth years	**–**	0.5
	–	0.7

17. Dividends

	2019 £ million	2018 £ million
Declared and paid in the year		
Equity dividend on Ordinary Shares		
Final dividend 2018 of 2.08 pence per Ordinary Share (2017 1.73 pence)	**12.7**	10.5
Special dividend 2017 of 3.60 pence per Ordinary Share	**–**	22.0
Interim dividend 2019 of 1.59 pence per Ordinary Share (2018 1.34 pence)	**9.7**	8.2
	22.4	40.7
Proposed for approval at AGM (not recognised as a liability at 31 December)		
Equity dividend on Ordinary Shares		
Final dividend 2019 of 2.70 pence per Ordinary Share (2018 2.08 pence)	**16.5**	12.7

The directors are proposing a final dividend in respect of the financial year ended 31 December 2019 of 2.70 pence per Ordinary Share (2018 2.08 pence), which will absorb an estimated £16.5 million of shareholders' funds (2018 £12.7 million). The final dividend will be paid on 1 May 2020 to Ordinary Shareholders who are on the Register of Members at close of business on 13 March 2020. Payment will be made to ADR holders on 8 May 2020. No liability is recorded in the financial statements in respect of this dividend.

Dividends are determined in US Dollars and paid in Pounds Sterling. The exchange rate for determining the amount of the final dividend to be paid for 2019 was $1.28: £1 (2018 $1.31:£1).

18. Capital and reserves

Changes during the year in the issued Ordinary Share capital were as follows:

	Number of Ordinary Shares million	£ million
Issued and fully paid Ordinary Shares of 3⅓ pence each at 1 January 2019 and 31 December 2019	**611.7**	**20.4**

There has been no material increase in the issued Ordinary Share capital, whether by exercise of share incentives or otherwise, between 31 December 2019 and 5 March 2020, the date on which these financial statements have been signed.

Please refer to note 32 of the Notes to the consolidated financial statements on page 157 for disclosures relating to the nature and purpose of each reserve within equity.

Investment in own Ordinary Shares

During the year, 4.0 million shares were purchased and placed into the Employee Share Ownership Trust at a cost of £6.7 million and 3.0 million shares were transferred from the Employee Share Ownership Trust to satisfy options exercised under the Spirent employee share plans (2018 1.5 million shares purchased and placed at cost of £1.8 million, and 1.5 million shares transferred).

At 31 December 2019, the ESOT held 1.6 million Ordinary Shares (2018 0.6 million Ordinary Shares) to satisfy awards under various share incentive plans. At 31 December 2019, the Spirent Sharesave Trust held 0.5 million Ordinary Shares (2018 0.5 million Ordinary Shares) to satisfy awards made to United Kingdom-based employees under an all-employee share scheme. The market value of own Ordinary Shares held in trust, being in total 2.1 million Ordinary Shares (2018 1.1 million Ordinary Shares), at 31 December 2019 was £5.2 million (2018 £1.3 million).

Both the Employee Share Ownership Trust and the Spirent Sharesave Trust are an extension of the parent Company.

18. Capital and reserves continued

Capital redemption reserve

During 2019, the Company did not cancel any Ordinary Shares (2018 nil) and did not make any transfers to the capital redemption reserve (2018 nil).

Employee share plans

The Company operates a number of employee share incentive plans which are described in note 33 of Notes to the consolidated financial statements. The following share incentives over Ordinary Shares under these plans have been granted and remain outstanding, held by employees of the parent Company.

The following information relates to outstanding share incentives at 31 December 2019:

			2019			2018		
Share plan	Exercise period (as at 31 December)	Exercise price pence	Weighted average exercise price pence	Number of share incentives outstanding million	Weighted average remaining contractual life years	Weighted average exercise price pence	Number of share incentives outstanding million	Weighted average remaining contractual life years
2005 Employee Incentive Plan[1]	23.03.18–23.05.25	89	89	–	5.2	89	–	6.3
Spirent Long-Term Incentive Plan[2]	14.05.20-16.05.22	–	–	2.8	1.4	–	3.4	1.4
				2.8			3.4	

Notes
1. Figures for the 2005 Employee Incentive Plan include share options, stock appreciation rights and Performance Shares in aggregate. No exercise price is payable on the vesting of a Performance Share.
2. Figures for the Spirent Long-Term Incentive Plan include Restricted Stock and Performance Shares in aggregate. No exercise price is payable on the vesting of a Performance Share.

The weighted average share price at exercise date was 159 pence (2018 114 pence).

19. Subsidiaries

A list of subsidiaries, including the name, country of incorporation, registered office address and proportion of ownership interest, is given on pages 186 and 187 of this Annual Report.

20. Business combinations

On 31 May 2019, the Company acquired a key business from Integrated Navigation Systems Limited (INS), a company based in the United Kingdom, for cash consideration of £1.5 million. INS develops and supplies the Company with a system for recording GNSS and Wi-Fi signals. The business acquisition will enable Spirent to streamline its supply chain process and improve gross margin on this product line.

From the date of acquisition to 31 December 2019, the acquired business did not contribute any revenue but contributed £0.3 million of profit before tax, as a result of lower cost of sales, to the result of the Company before charging £0.1 million of acquisition related costs and £0.1 million of acquired intangible asset amortisation. If the combination had occurred at the beginning of the financial year, there would not have been any revenue, and £0.8 million of profit before tax, as a result of lower cost of sales, would have been included in the Company result, before charging £0.1 million of acquisition related costs and £0.1 million of acquired intangible asset amortisation.

The fair value of the identifiable net assets acquired is set out below:

	2019 £ million		
	Book value	Fair value adjustment	Fair value
Intangible assets	0.8	–	0.8
Stocks	0.1	(0.1)	-
Total identifiable net assets	0.9	(0.1)	0.8
Goodwill			0.7
Consideration			1.5

The intangible assets acquired represent current technology and have been assigned a useful life of five years. The stock acquired on acquisition amounting to £0.1 million was written down to a fair value of nil. The goodwill arising of £0.7 million consists largely of the synergies and economies of scale expected from the combination together with intangible assets not qualifying for separate recognition such as workforce in place. The goodwill recognised is expected to be partly deductible for income tax purposes.

Acquisition related costs were £0.1 million and have been expensed to the profit and loss account.

21. Transition to IFRS 16

The Company adopted IFRS 16 'Leases' on 1 January 2019 using the modified retrospective transition method. This approach does not require restated comparative figures and therefore the comparative information is reported under IAS 17. Instead, the cumulative effect of applying IFRS 16 is applied to the opening balance of the profit and loss account reserve at 1 January 2019.

The cumulative effect of the adoption of IFRS 16 has not impacted net assets as at 1 January 2019.

The following balances have been added to the Company's balance sheet at 1 January 2019:

- right-of-use assets of £0.2 million; and
- lease liabilities of £0.2 million.

There was an immaterial impact to the Company's profit and loss account in 2019.

On transition to IFRS 16, the following adjustments were made to the Company's balance sheet:

	Notes	At 1 January 2019 £ million
Right-of-use assets' cost	A	0.3
Right-of-use assets' accumulated depreciation	B	(0.1)
Total right-of-use assets recognised, at net book value		0.2
Lease liabilities	C	(0.2)
Total impact to the profit and loss account reserve, at 1 January 2019		-

Notes

A. Right-of-use assets' cost recognised at 1 January 2019. The Company has taken advantage of the practical expedient that permits initial direct costs to be excluded from the measurement of the right-of-use assets at the date of initial application (para. C10 (d)).

B. Right-of-use assets' accumulated depreciation at 1 January 2019.

C. Lease liabilities recognised at 1 January 2019. The Company has applied a single discount rate to a portfolio of leases with similar characteristics (para. C10 (a)) and hindsight has been used in determining the lease term if the contract contains options to extend or terminate the lease (para. C10 (e)).

Full list of subsidiary undertakings

A full list of subsidiaries and companies in which Spirent Communications plc has an interest of more than 20 per cent at 31 December 2019. The country of incorporation and the effective percentage of equity owned (if less than 100 per cent) is also detailed below. Unless otherwise noted, the share capital comprises Ordinary Shares which are indirectly held by Spirent Communications plc.

Company name	Registered in	Registered office address	Notes
Spirent Communications of Ottawa Limited	Canada	100 King Street West, 41st Floor, 1 First Canadian Place, Toronto, Ontario M5X 1B2	
Spirent Communications Technology (Beijing) Limited	China	Suite 1302, Shining Tower, No 35 Xue Yuan Road, Haidian District, Beijing 100191	Held directly
Bowthorpe Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[1]	Held directly
Cambridge Analytical Group Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[1]	Held directly
Earlynow Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[1]	Held directly
Inclex No 1 Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[1]	Held directly
Inclex No 2 Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Inclex No 3 Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Inclex No 4 Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Inclex No 5 Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Inclex No 6 Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	
Inclex No 7 Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	
Inclex No 8 Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	
PG International Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Shipbrick Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	54.55 per cent held directly, 45.45 per cent held indirectly
Spirent Capital Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Spirent Financial Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Spirent Holdings Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Spirent Investment Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Spirent Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Spirent Sharesave Trust Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	Held directly
Spirent Systems Limited	England	Northwood Park, Gatwick Road, Crawley, West Sussex RH10 9XN[2]	100 per cent 'A' shares held indirectly 100 per cent 'B' shares held directly

Company name	Registered in	Registered office address	Notes
Spirent Communications SAS	France	Gaia, 9 Parc Ariane, Boulevard des Chenes, 78280 Guyancourt	Held directly
Spirent Communications GmbH	Germany	Leopoldstrasse 252a, 80807 Munich	
Spirent Technologies GmbH	Germany	Michaelkirchstr 17/18, 10179 Berlin	
Spirent (Overseas) Limited	Guernsey	Suite 6, Provident House, Havilland Street, St Peter Port GY1 2QE	
Spirent Communications (Asia) Limited	Hong Kong	Suites 1603–05, 16th Floor, 625 King's Road, North Point	
Spirent Communications (India) Pvt Limited	India	9th Flr Umiya Business Bay Tower, 1 Cessna Business Park, Marathahalli-Sarjapur Ring Road, Kadubeesanahalli, Bangalore 560037 Karnataka	
Spirent Communications Japan KK	Japan	4th Floor Kyodotsushin Kaikan, 2-2-5, Toranomon, Minato-ku, Tokyo 105-0001	
Spirent Communications Singapore Pte Limited	Singapore	101 Thomson Road, #30-01 United Square, Singapore 307591	
Spirent Communications Korea Inc	South Korea	2F, 16 Gangnam-daero 95-gil, Seocho-gu, Seoul 06526	
Spirent Communications Taiwan Limited	Taiwan	10F, No 66, Sec 1, Neihu Road, NeiHu District, Taipei City 11493	
Netcom Systems Holding Corporation	US (Delaware)	1209 Orange Street, Wilmington, Delaware 19801	
Spirent Communications Inc	US (Delaware)	1209 Orange Street, Wilmington, Delaware 19801	
Spirent Federal Systems Inc	US (Delaware)	1209 Orange Street, Wilmington, Delaware 19801	
Spirent Holdings Corporation	US (Delaware)	1209 Orange Street, Wilmington, Delaware 19801	
Spirent Communications Hawaii LLC	US (Hawaii)	1209 Orange Street, Wilmington, Delaware 19801	

Notes
1. The registered office address for this Company changed on 13 February 2020 to Origin One, 108 High Street, Crawley, West Sussex RH10 1BD UK.
2. The registered office address for this Company changed on 14 February 2020 to Origin One, 108 High Street, Crawley, West Sussex RH10 1BD UK.

Financial history

	$ million				
	2019	2018	2017	2016	2015
Summary income statement					
Revenue	**503.6**	476.9	454.8	457.9	477.1
Cost of sales	**(135.0)**	(132.4)	(129.8)	(133.6)	(145.3)
Gross profit	**368.6**	344.5	325.0	324.3	331.8
Product development	**(96.5)**	(96.9)	(103.0)	(111.7)	(118.3)
Selling and marketing	**(129.2)**	(123.9)	(116.8)	(125.4)	(127.2)
Administration	**(50.0)**	(46.6)	(46.3)	(40.7)	(44.2)
Other items	**(4.3)**	(19.6)	(15.2)	(87.6)	(32.0)
Operating profit/(loss)	**88.6**	57.5	43.7	(41.1)	10.1
Share of loss of associate	**-**	–	–	(4.5)	(0.4)
Net finance income/(costs)	**1.0**	1.3	0.3	(0.4)	(0.1)
Gain on divestment	**-**	2.4	2.6	–	–
Profit/(loss) before tax	**89.6**	61.2	46.6	(46.0)	9.6
Tax	**(11.6)**	(5.4)	(17.6)	3.7	3.9
Profit/(loss) for the year	**78.0**	55.8	29.0	(42.3)	13.5
Summary balance sheet					
Intangible assets	**160.3**	158.0	163.6	169.8	251.6
Property, plant and equipment	**29.5**	36.1	42.3	47.3	51.1
Right-of-use assets	**26.0**	–	–	–	–
Working capital (excluding cash and deferred tax)	**16.0**	33.2	10.2	18.9	8.8
Operating assets	**231.8**	227.3	216.1	236.0	311.5
Investment in associate	**-**	–	–	–	4.6
Net funds including long-term cash	**183.2**	121.6	128.4	96.2	102.1
Lease liabilities	**(33.0)**	–	–	–	–
Provisions and other liabilities	**(8.2)**	(14.0)	(6.8)	(6.8)	(11.3)
Deferred tax	**22.4**	22.0	22.9	32.8	25.0
Defined benefit pension plan surplus/(deficit)	**6.1**	(1.6)	(6.5)	(15.8)	(19.8)
Net assets	**402.3**	355.3	354.1	342.4	412.1
Total equity	**402.3**	355.3	354.1	342.4	412.1
Summary cash flows					
Cash flow from operating activities	**119.3**	60.2	69.3	42.7	60.4
Net interest received	**2.6**	1.3	0.6	0.3	0.4
Net capital expenditure	**(11.9)**	(10.6)	(13.5)	(17.1)	(25.5)
Net lease payments	**(9.9)**	–	–	–	–
Free cash flow	**100.1**	50.9	56.4	25.9	35.3
Acquisitions and disposals and investment in associate	**(1.9)**	1.8	(2.7)	(2.7)	(6.7)
Share capital, share repurchase and ESOT	**(8.6)**	(2.5)	–	–	0.1
Dividends paid	**(28.6)**	(54.8)	(24.6)	(24.2)	(23.5)
Transfer from long-term deposit and loan repayment	**-**	–	–	–	(0.1)
Net increase/(decrease) in cash and cash equivalents	**61.0**	(4.6)	29.1	(1.0)	5.1

	$ million				
	2019	2018	2017	2016	2015
Other information					
Expenditure on property, plant and equipment	**10.9**	12.0	14.9	17.3	26.5
Depreciation of property, plant and equipment	**14.7**	16.5	18.0	19.1	25.0
Depreciation of right-of-use assets	**7.5**	–	–	–	–
Product development	**96.5**	96.9	103.0	111.7	118.3
Share information					
Earnings/(loss) per share (cents)					
Basic	**12.79**	9.14	4.75	(6.93)	2.18
Diluted	**12.63**	9.05	4.71	(6.93)	2.17
Adjusted basic[1,2]	**13.40**	10.86	7.55	5.29	5.00
Dividend per Ordinary Share (cents)	**5.39**	4.49	4.08	3.89	3.89
Special dividend per Ordinary Share (cents)	**-**	–	5.00	–	–
Fully paid Ordinary Shares in issue at year end (number, million)	**611.7**	611.7	611.7	611.7	611.7
Segmental analysis					
Revenue					
Networks & Security	**319.9**	285.1	261.0	262.2	239.2
Lifecycle Service Assurance	**111.2**	112.8	109.2	99.2	112.2
Connected Devices	**72.5**	79.0	84.6	96.5	125.7
	503.6	476.9	454.8	457.9	477.1
Adjusted operating profit[1]					
Networks & Security	**73.9**	56.4	43.9	47.2	34.6
Lifecycle Service Assurance	**18.1**	17.4	17.9	11.2	17.7
Connected Devices	**9.5**	10.5	5.2	(4.4)	(4.4)
Corporate – non-segmental	**(8.6)**	(7.2)	(8.1)	(7.5)	(5.8)
Adjusted operating profit[1]	**92.9**	77.1	58.9	46.5	42.1
Exceptional items	**0.5**	(13.1)	(6.7)	(4.8)	(12.5)
Acquisition related costs	**(0.1)**	–	–	–	(0.1)
Acquired intangible asset amortisation	**(1.2)**	(3.7)	(6.3)	(12.9)	(14.8)
Goodwill and acquired intangible asset impairment	**-**	–	–	(69.1)	(3.8)
Share-based payment	**(3.5)**	(2.8)	(2.2)	(0.8)	(0.8)
Operating profit/(loss)	**88.6**	57.5	43.7	(41.1)	10.1
Geographical information					
Revenue by market					
Americas	**266.1**	265.4	248.6	254.1	268.1
Asia Pacific	**187.8**	159.1	160.2	149.3	148.2
Europe, Middle East and Africa	**49.7**	52.4	46.0	54.5	60.8
	503.6	476.9	454.8	457.9	477.1

Notes
1. Before exceptional items, acquisition related costs, acquired intangible asset amortisation, goodwill and acquired intangible asset impairment and share-based payment.
2. Before gain on divestment, impairment of investment in associate, items in note 1, tax effect of items in note 1, revaluation of deferred tax assets due to US tax reform (in 2017) and prior year tax.

Alternative performance measures

The performance of the Group is assessed using a variety of alternative performance measures (APMs) which are presented to provide users with additional financial information that is regularly reviewed by management. The APMs presented are not defined under IFRS and therefore may not be directly comparable with similarly identified measures used by other companies.

In management's view, the APMs reflect the underlying performance of the Group and provide an alternative basis for evaluating how the Group is managed and measured on a day-to-day basis. Such APMs should not be viewed in isolation or as an alternative to the equivalent GAAP measure.

The APMs and key performance indicators are aligned to the Group's strategy and collectively are used to measure the performance of the Group and form the basis of the metrics for Director and management remuneration. The Group's key performance indicators are presented on pages 20 and 21.

Order intake

Order intake represents commitments from customers to purchase goods and/or services from Spirent that will ultimately result in recognised revenue.

Order intake is a measure of operating performance used by management to assess whether future activity levels are increasing or slowing and therefore how effective we have been in the execution of our strategy. Order intake is a key performance indicator used to measure Group, operating segment and regional performance for internal reporting purposes.

Order intake is a non-GAAP measure and as such should not be considered in isolation or as a substitute for GAAP measures of operating performance.

Book to bill

Book to bill is the ratio of orders booked to revenue billed in the period and is a measure of the visibility of future revenues at current levels of activity. Book to bill is a key performance indicator used to measure Group and operating segment performance for internal reporting purposes.

Book to bill is a non-GAAP measure and as such should not be considered in isolation or as a substitute for GAAP measures of operating performance.

Adjusted operating profit

Adjusted operating profit is reported operating profit excluding exceptional items, acquisition related costs, amortisation of acquired intangible assets and share-based payment. Management uses adjusted operating profit, in conjunction with other GAAP and non-GAAP financial measures, to evaluate the overall operating performance of the Group as well as each of the operating segments and believes that this measure is relevant to understanding the Group's financial performance, as specific items (adjusting items) are identified and excluded by virtue of their size, nature or incidence, as they do not reflect the underlying trading performance of the Group. The exclusion of adjusting items from adjusted operating profit is consistent from period to period.

Adjusted operating profit is also used in setting Director and management remuneration targets and in discussions with the investment analyst community.

Adjusted operating margin

Adjusted operating margin is adjusted operating profit as a percentage of revenue. It is a measure of the Group's overall profitability and how successful we are in executing on our overall strategy, and demonstrates our ability to improve margin through efficient operations and cost management whilst being mindful of the need to invest for the future.

Adjusted basic earnings per share

Adjusted basic earnings per share (EPS) is adjusted earnings attributable to owners of the parent Company divided by the weighted average number of Ordinary Shares outstanding during the period. Adjusted earnings is reported profit before tax excluding acquisition related costs, exceptional items, amortisation of acquired intangible assets, share-based payment, gain on divestment and tax on adjusting items.

Adjusted basic EPS is a measure of how successful we are in executing on our strategy and ultimately delivering increased value for shareholders. Adjusted basic EPS is also used in setting Director and management remuneration targets and in discussions with the investment analyst community. The Group sets out the calculation of adjusted basic EPS in note 11 of Notes to the full year consolidated financial statements.

Product development spend as a percentage of revenue

Product development as a percentage of revenue in the period. It is a measure of how much the Group is investing to support further organic growth initiatives in line with the strategic objectives, whilst driving improved productivity and effectiveness.

Free cash flow

Free cash flow is cash flow generated from operations, less tax and net capital expenditure, lease liability principal repayments and lease liability interest paid, add interest received and lease payments received from finance leases.

Free cash flow is a measure of the quality of the Group's earnings and reflects the ability to convert profits into cash and ultimately to generate funds for future investment. It gives us financial strength and flexibility and the ability to pay sustainable dividends to our shareholders. Free cash flow is an important indicator of overall operating performance as it reflects the cash generated from operations after capital expenditure, financing and tax which are significant ongoing cash flows associated with investing in the business and financing the operations.

Free cash flow excludes corporate level cash flows that are independent of ongoing trading operations such as dividends, acquisitions and disposals and share repurchases and therefore is not a measure of the funds that are available for distribution to shareholders.

A reconciliation of cash generated from operations, the closest equivalent GAAP measure, to free cash flow is provided within the Financial review on page 38.

Free cash flow conversion

Free cash flow conversion is the ratio of free cash flow to adjusted earnings, presented as a percentage.

Free cash flow conversion is a measure used in conjunction with free cash flow to assess the Group's ability to convert profit into cash and ultimately to generate funds for future investment.

Shareholder information

Financial calendar 2020

5 March 2020	Full year results and final dividend announcement
12 March	Final dividend – ex-dividend date
13 March	Final dividend – record date
29 April	Annual General Meeting
1 May	Final dividend – payment date (Ordinary Shareholders)
8 May	Final dividend – payment date (ADR holders)
30 June	Half year end
August	Half year results and interim dividend announcement
August	Interim dividend – ex-dividend date
August	Interim dividend – record date
September	Interim dividend – payment date (Ordinary Shareholders)
September	Interim dividend – payment date (ADR holders)
31 December 2020	Financial year end
February/March 2021	2020 full year results and final dividend announcement

Ordinary Shares and American Depositary Receipts

The Company's Ordinary Shares are traded on the London Stock Exchange (ticker: SPT). The Company operates a Level 1 American Depositary Receipt (ADR) programme with each ADR representing four Ordinary Shares. The ADRs trade on the US over-the-counter market (symbol: SPMYY; CUSIP: 84856M209). BNY Mellon is the authorised depositary bank for the Company's ADR programme.

The ADRs are quoted on the OTC Pink electronic quotation service which can be found at www.otcmarkets.com/otc-pink/home.

Annual General Meeting

The Company's 2020 Annual General Meeting (2020 AGM) will be held at 10.30 am on Wednesday 29 April 2020 at the registered office of Spirent Communications plc at Origin One, 108 High Street, Crawley, West Sussex RH10 1BD.

Company's registrar

Enquiries concerning shareholdings, change of address or other particulars should be directed in the first instance to the Company's registrar, Equiniti, on 0371 384 2126. Equiniti also provides a range of online shareholder information services at www.shareview.co.uk, where shareholders can check their holdings and find practical help on transferring shares or updating their details.

Dividends

Shareholders are able to choose to receive their dividends direct to their bank account, reinvested in Ordinary Shares through the Company's Dividend Reinvestment Plan (see below), paid by cheque or paid in foreign currencies. To change how you receive your dividends please contact the Company's registrar, Equiniti, on 0371 384 2268 or log on to www.shareview.co.uk.

Dividend Reinvestment Plan

The Company has a Dividend Reinvestment Plan (DRIP) delivered by Equiniti Financial Services Limited. The DRIP allows eligible shareholders to use their cash dividend to buy additional shares in the Company, so increasing their shareholding. If you would like additional information, please contact the Company's registrar, Equiniti, on 0371 384 2268 or log on to www.shareview.co.uk.

Shareholder security

Shareholders are advised to be wary of any unsolicited advice, offers to buy shares at a discount or offers of free reports about the Company.

Details of any share dealing facilities that the Company endorses will be included in the Company's mailings or on our website. More detailed information can be found at www.fsa.gov.uk/consumerinformation.

Glossary

4G (Fourth Generation)	Fourth generation of mobile communications that delivers data rates of tens to hundreds of megabits per second.
5G Digital Twin	An approach to testing and assurance that provides an emulated, software replica of a 5G physical network that allows for continuous prototyping, testing, assuring and self-optimisation of the living network.
5G (Fifth Generation)	Fifth generation of cellular technology, engineered to greatly increase the speed and responsiveness of wireless networks, capable of multiple gigabit per second data rates and very low latency.
5G New Radio (5G NR)	5G NR is a new air interface being developed for 5G. An air interface is the radio frequency portion of the circuit between the mobile device and the active base station. The active base station can change as the user is on the move, with each changeover known as a handoff.
Anything-as-a-Service (XaaS)	XaaS refers to the growing diversity of services available over the internet via cloud computing as opposed to being provided locally, or on premises. XaaS reflects the vast potential for on-demand cloud services.
Assisted-Galileo (A-Galileo)	The use of assistance data provided over a cellular network to significantly improve the start-up performance (time-to-first-fix) of a satellite-based positioning system such as in a cellular device.
Backhaul	The portion of a network that comprises the intermediate links between the core network, or backbone, and the sub-networks at the "edge" of the entire hierarchical network.
Cloud	A variety of computing concepts that involve a large number of computers connected through a real-time communication network such as the internet. Often used in reference to network-based services served up by virtual hardware, simulated by software running on one or more physical machines.
Cloud Radio Access Network (C-RAN)	A centralised, cloud computing-based architecture for radio access networks that supports a range of wireless communication standards. Consists of three primary components: a centralised baseband unit pool, remote radio unit networks, and transport network or fronthaul.
Data Center	A centralised location where computing resources critical to an organisation are maintained in a highly controlled environment.
DevOps	A set of practices that automates the processes between software development and IT teams, in order that they can build, test, and release software faster and more reliably. The concept of DevOps is founded on building a culture of collaboration between teams that historically functioned in relative siloes.
Ethernet	A family of networking technologies originally developed for local area networks, which migrated to metro area networks and eventually became the dominant standard in wireline networks worldwide.
Evolved Packet Core (EPC)	A framework for providing converged voice and data on a 4G LTE network to support user mobility, wireless data connections, routing and authentication.
Fronthaul	Fronthaul, also known as mobile fronthaul, is a term that refers to the connection of the C-RAN at the access layer of the network to remote standalone radio heads at cell sites.
Global Navigation Satellite System (GNSS)	The standard generic term for satellite navigation systems that provide autonomous geo-spatial positioning with global coverage. GNSS allows users' receivers to determine their location to within a few metres by employing a triangulation technique that uses information from multiple satellites.

Glossary continued

Global Positioning System (GPS)	A global navigation satellite system operated by the United States government for determining a user's location and height at any point on the earth's surface. A receiver uses minute differences in measured time signals from clocks on satellites to calculate these positions and altitudes.
Industrial Internet of Things (IIoT)	A reference to interconnected sensors, instruments and other devices networked together with computers' industrial applications, including manufacturing and energy management. This connectivity allows for data collection, exchange, and analysis, potentially facilitating improvements in productivity and efficiency as well as other economic benefits.
Internet of Things (IoT)	A network of physical objects or "things" embedded with electronics, software, sensors and connectivity to enable data exchange with the manufacturer, operator and/or other connected devices. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within existing internet infrastructure.
Internet Protocol (IP)	The primary network protocol used on the internet and on other network devices to facilitate and control the flow of data.
Internet Protocol Multimedia Subsystem (IMS)	A standardised next-generation architecture for telecoms operators which want to provide mobile and fixed multimedia services.
LiDAR	A surveying method that measures the distance to a target by illuminating it with laser light and measuring the reflected light with a sensor, which then be used to make digital 3D representations of the target. It has terrestrial, airborne and mobile applications.
Long-Term Evolution (LTE)	An advanced wireless data communications technology standard (sometimes called "4G") which is an evolution of 3G UMTS standards. In addition to its wireless interface specification, LTE uses a simplified flat IP-based network architecture.
millimetre-Wave (mmWave)	The portion of the radio frequency spectrum between 30GHz and 300GHz, with very short wavelengths (from one to ten millimetres). In some 5G deployments, mmWave is expected to help increase the data bandwidth available over smaller, densely-populated areas.
Network Functions Virtualisation (NFV)	An initiative to provide a network production environment which lowers cost, raises efficiency and increases agility by hosting network functions previously carried out by proprietary, dedicated hardware on virtual machines running on industry-standard commodity hardware.
Network Functions Virtualisation Infrastructure (NFVi)	A key component of NFV architecture that describes the hardware and software components on which virtual networks are built.
Non-Stand-Alone (NSA) 5G	A 5G deployment that depends on an 4G evolved packet core for control functions, with 5G New Radio (NR) exclusively focused on the user plane.
Radio Frequency (RF)	A technology used for wireless broadcasting and/or communications that uses radio waves within the range over which they may be transmitted, from about 3 KHz to about 300,000 MHz.
Software-Defined Network (SDN)	An approach to networking in which control is decoupled from hardware and given to a software application called a controller.
Software-Defined Wide Area Networking (SD-WAN)	Simplifies the management and operation of a wide area network (WAN) by decoupling the networking hardware from its control mechanism. This concept is similar to how software-defined networking implements virtualisation technology to improve data center management and operation.

Stand-Alone (SA) 5G	Use of 5G cells for both signalling and information transfer. It includes new 5G packet core architecture instead of relying on the 4G evolved packet core. SA deployment is expected to have lower cost, better efficiency, and to assist development of new use cases.
Testing-as-a-Service (TaaS)	The outsourcing of testing activities to a third party that focuses on simulating real-world testing environments as specified in the client requirements.
Time-Sensitive Networking (TSN)	A set of standards under development by the Time-Sensitive Networking task group of the IEEE 802.1 working group, which define mechanisms for the time-sensitive transmission of data over deterministic Ethernet networks. Applications include real-time control streams which are used in automotive or industrial control facilities
Universal Mobile Telecommunications System (UMTS)	The most common 3G wireless technology globally, which uses wideband code division multiple access on its underlying air interface and offers support for data transfer rates from hundreds of kilobits per second to tens of megabits per second.
Vehicle-to-Everything (V2X)	A vehicular technology system that enables vehicles to communicate with the traffic and the environment around them using short-range wireless signals. V2X has several subsets, including vehicle-to-vehicle communication (V2V) and vehicle-to-infrastructure (V2I).
Virtualisation	Technologies designed to provide a layer of abstraction from the physical characteristics of computing resources to simplify the way in which other systems, applications or end users interact with those resources.
Virtual Test Probe (VTP)	A virtual test entity that enables addressing various aspects of performance management across the lifecycle of services delivered using NFV, cloud and SDN-based infrastructure.
Wide Area Network (WAN)	A wide area network is a telecommunications network that extends over a large geographical area for the primary purpose of computer networking. Wide area networks are often established with leased telecommunication circuits.
Wi-Fi 6	Also known as 802.11ax, Wi-Fi 6 is the latest generation and standard for wireless internet that replaces the 802.11ac, or Wi-Fi 5, standard. Wi-Fi 6 uses advanced technology such as orthogonal frequency-division multiple access (OFDMA) to provide lower latency and more efficient data transfer.
Wireless Local Area Network (WLAN)	A wireless distribution method for two or more devices that use high-frequency radio waves and often includes an access point to the internet. A WLAN allows users to move around the coverage area, often a home or small office, while maintaining a network connection.

Contact details

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Cautionary statement regarding forward-looking statements
This Annual Report may contain forward-looking statements which are made in good faith and are based on current expectations or beliefs, as well as assumptions about future events. You can sometimes, but not always, identify these statements by the use of a date in the future or such words as "will", "anticipate", "estimate", "expect", "project", "intend", "plan", "should", "may", "assume" and other similar words. By their nature, forward-looking statements are inherently predictive and speculative and involve risk and uncertainty because they relate to events and depend on circumstances that will occur in the future. You should not place undue reliance on these forward-looking statements, which are not a guarantee of future performance and are subject to factors that could cause our actual results to differ materially from those expressed or implied by these statements. The Company undertakes no obligation to update any forward-looking statements contained in this Annual Report, whether as a result of new information, future events or otherwise.

Spirent Communications plc's commitment to environmental issues is reflected in this Annual Report, which has been printed on GalerieArt Satin, an FSC® certified material.

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