EDISON

Filtronic

Strategy update

High-performance RF design and manufacturing

Tech hardware & equipment

Filtronic completed its disposals of high-volume businesses in early 2020 and now only addresses those market niches where its specialist expertise in designing and manufacturing high-performance radio frequency (RF) components and subsystems operating at frequencies up to 180GHz can command a premium. Management's strategic priority is to broaden the customer base and product range to take advantage of the doubling in RF manufacturing capacity in FY20. Our estimates, which we recently upgraded following the recent post-close update, show this strategy supporting continued revenue growth in FY22 and FY23.

Year end	Revenue (£m)	EBITDA (£m)	PBT* (£m)	EPS* (p)	DPS (p)	P/E (x)
05/20	17.2	1.2	0.1	0.05	0.00	280.0
05/21	15.6	1.8	0.1	0.14	0.00	100.0
05/22e	17.1	2.7	1.5	0.67	0.00	21.0
05/23e	19.0	2.1	0.9	0.42	0.00	33.3

Note: *PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

Commanding a premium for specialist RF skills

Filtronic is one of the few independent companies globally that has MMIC design engineers, RF hardware designers, RF manufacturing engineers and RF system engineers. It is also one of the few companies in Europe that has the equipment required to manufacture high-frequency RF subsystems in volume. This combination is rare, so even large telecoms groups outsource design and manufacture of the critical RF front-end section of 5G and public safety communications networks to Filtronic. Similarly, large defence groups outsource the design and manufacture of the RF transmit/receive (transceiver) modules for radar.

Broadening the customer base

Demand for Filtronic's established products is benefiting from 5G network roll-out worldwide, investment in US public safety networks to safeguard citizens and an emphasis in UK defence spending on developing a more sophisticated threat response. As part of the sales push, since the strategic refocus in early 2020, Filtronic has begun to deploy its transceiver modules in new applications including 5G test equipment, private low-latency links and quantum computing. Growing sales in this way improves capacity utilisation, potentially increasing EBITDA margin longer term and reduces dependence on three key customers.

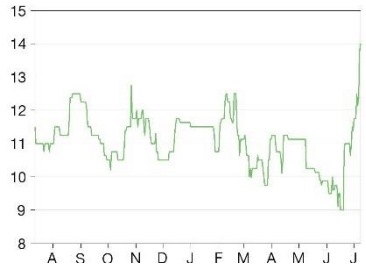
Valuation: Uplift for successful diversification

Our DCF analysis shows that if management's diversification strategy delivers double-digit year-on-year revenue growth through to FY26, while holding year-on-year growth in indirect costs at 5.0% or less from FY24 onwards, further uplift in Filtronic's share price can be justified. Announcements of further contract awards such as the recent orders from a 5G test equipment company and a quantum computing company will indicate how successful management is being in winning additional work outside its three core areas, which is key to achieving this growth.

11 July 2022

Price	**14p**
Market cap	**£30m**
Net cash (£m) at end May 2022 (excluding right of property leases)	3.1
Shares in issue	214.8m
Free float	66.1%
Code	FTC
Primary exchange	AIM
Secondary exchange	N/A

Share price performance



%	1m	3m	12m
Abs	45.8	30.2	21.7
Rel (local)	54.4	40.0	23.5
52-week high/low		14p	9p

Business description

Filtronic is a designer and manufacturer of advanced RF communications products supplying a number of market sectors including mobile telecommunications infrastructure, public safety, defence and aerospace.

Next event

FY22 results	2 August 2022

Analysts

Anne Margaret Crow	+44 (0)20 3077 5700
Dan Ridsdale	+44 (0)20 3077 5729

tech@edisongroup.com

Edison profile page

Investment summary

Company description: Enabling the future of RF, microwave and mmWave

Filtronic's primary products are tower top amplifiers used in public safety communications networks and high-frequency transceivers (transmitter/receivers) for use in mobile telecommunications backhaul links, active electronically scanned array radars and emerging applications such as 5G test equipment, quantum computing and low Earth orbit (LEO) satellite communications networks. The group is headquartered in Country Durham, UK, which is where sales, manufacturing and mmWave (30–300GHz) engineering are based. It also has an RF design facility in Leeds, UK, and an assembly and sales facility in Maryland, US. It employs around 120 people in total.

Financials: Rebound continues through H222

Our FY22 estimates, which we upgraded following the post-close trading update in June 2022 and have not changed since, show a 10% increase in revenues year-on-year in FY22 to £17.1m. The relatively high proportion of defence revenues resulted in a year-on-year jump in EBITDA to £2.7m. We model 11% revenue growth in FY23 to £19.0m, underpinned by a growing orderbook for 5G XHaul transceivers. Since gross margins are likely to be lower year-on-year in FY23 because of the lower proportion of defence orders, and overheads are likely to be higher reflecting the investment in RF engineering and direct sales during FY22, we model a year-on-year drop in EBITDA in FY23 (though an increase versus FY21) to £2.1m. Management intends that this investment will result in stronger revenue and profit growth during FY24 and FY25 as the group diversifies.

Valuation: Uplift for successful diversification

The unusually high EBITDA in FY22, linked to a high proportion of defence revenues, results in Filtronic trading on an FY22 EV/EBITDA of 9.9x. This rises to 12.9x for FY23e when margins are expected to be depressed by investments in sales and engineering intended to deliver strong, sustainable revenue growth. Given the volatility in EBITDA margin and lack of direct peers, we prefer a DCF approach. Our analysis shows that if the enlarged cost-base established in FY22 and FY23 is successful in delivering double-digit year-on-year revenue growth through to FY26, further uplift in the share price can be justified. For example, 11% revenue growth to FY26 coupled with only 4% cost growth would produce an indicative value per share of 16.5p (see Exhibit 8).

Sensitivities: Reducing customer concentration key

We believe the key sensitivities are: 1) customer concentration: Filtronic is extremely dependent on the relationship with three key customers, which collectively accounted for 87% of FY21 revenues; 2) the speed of 5G roll-out outside China; 3) component availability: this adversely affected 5G XHaul sales during Q122, although the issue was resolved in Q222, and critical communications sales in Q422; 4) the war in Ukraine: Filtronic has not been directly affected by the war and is likely to benefit longer term if the war results in NATO members increasing expenditure on major equipment; and 5) recruitment: Filtronic is very dependent on the availability of engineers with Master's degrees or doctorates in RF engineering. There are very few universities offering this training.

Company description: Communications for demanding environments

Focus on high-performance RF components and subsystems for demanding applications

Following a sequence of disposals of businesses making high-volume communications subsystems, which completed in January 2020, management has refocused Filtronic on market niches where its expertise in designing and manufacturing high-performance RF components and subsystems operating at frequencies up to 180GHz can command a premium. The three main areas of activity are mobile telecommunications infrastructure, defence and aerospace and public safety, where equipment has to withstand harsh operating environments and meet demanding specifications.

Filtronic is well-placed to service these sectors because it has monolithic microwave integrated circuit (MMIC) design engineers, RF hardware designers, RF manufacturing engineers and RF system engineers. This combination of skills is rare outside large telecoms groups such as Ericsson, Huawei or Nokia, and even these often outsource RF front-end design because of a shortage of suitably experienced staff. Following more than £1m investment in equipment during FY20, Filtronic is also one of only a handful of companies in Europe that has the chip and wire bonding equipment required to manufacture high-frequency RF subsystems in volume. This range of skills means defence and telecoms OEMs, which are increasingly operating as system integrators to give more flexibility over their cost bases, can outsource both the design and manufacture of subsystems to a single supplier.

Next phase of strategy ongoing: Growing sales

Management's focus is now on winning new business to increase the volume of product being manufactured at the site in County Durham, thus improving operating margin by delivering higher revenues from the same cost base. Potential revenue growth is being achieved by broadening the customer base and product range. The diversification strategy appears to be working, although external factors have held back revenue growth so far. Since selling the last high-volume activity, the refocused business has launched a new tower top amplifier for the public safety market, gained a new major UK defence customer, developed over-the-air 5G mmWave modules for a leading RF test equipment company in the US and won a contract to develop components for use in quantum computers. As part of the push to gain new clients, Filtronic has established an international network of sales representatives. These are based in the US, Israel, South Korea and Germany.

Critical communications depend on Filtronic

Filtronic's specialism is the manufacture and design of microwave communications components and subsystems which can withstand harsh operating environments and meet demanding specifications. Historically, its three main areas of activity have been mobile telecommunications infrastructure, defence and aerospace and public safety. While it continues to serve its customers in these markets, the company is deploying its transceiver modules in new applications including 5G test equipment, low latency banking networks, and high-altitude platform stations (HAPS) and LEO satellite communications.

Mobile telecommunications infrastructure market

Lowering the cost per Gbps

Exhibit 1: Morpheus transceiver module

Source: Filtronic

Mobile phone cell sites can be connected to the fibre backbone using either fibre links or mmWave backhaul links. As with 4G networks, more than 50% of the cells in 5G networks are being connected to the fibre backbone with wireless links rather than fibre (source: ABI Research, 2021). The proportion in each region depends on whether there is already fibre connectivity for backhaul, which is the case in urban parts of the US but not the case in much of India. The higher the frequency at which a microwave link operates, the more data can be sent per second, so as the data demands on networks has increased, the capacity of backhaul links has had to keep up. This has led to the use of the significant extra bandwidth available within the lightly licensed, higher-frequency E-band (71–76GHz and 81-86GHz). Looking into the future, Filtronic is already preparing for a move into even higher frequency bands, W-Band (92–114.5GHz) and D-Band (130–175GHz), to support links capable of transmitting up to 100Gbps as the communications industry responds to ever increasing demands for data.

Filtronic has been designing and manufacturing E-band transceivers, devices which both transmit and receive wireless signals, for over a decade. Its Morpheus modules, which were launched in February 2020, deploy a new generation of higher-power amplifier MMICs designed in-house by Filtronic. This gives Filtronic an immediate power advantage over amplifiers produced by competitors, which rely on standard MMICs from chip vendors. The Morpheus modules are 20% smaller and 50% lighter than the previous Orpheus modules. Both generations of modules are designed for easy integration into OEMs' outdoor units, giving OEMs the advantage of a rapid time to market while requiring minimal engineering resource. Additionally, both the Orpheus and Morpheus modules have been qualified for deployment in the latest radio platforms specifically developed for 5G applications and have been field proven in wide-bandwidth, high-capacity applications up to 10Gbp per channel. Filtronic's lead telecoms OEM customer, which had been deploying Orpheus modules in its 5G backhaul equipment, started to deploy Morpheus modules in volume during H121.

5G ramping up faster than 4G

According to the most recent edition of Ericsson's Mobility Report, the number of 5G subscriptions grew by 98 million during Q321 to around 570 million. The report estimates that there would be more than 660 million 5G subscriptions by the end of 2021, which was an increase from its previous estimate and is attributable to stronger than expected demand in China and North America, linked to decreasing prices of 5G devices. The report predicts that 5G subscription uptake will be faster than that of 4G, reaching one billion subscriptions over two years sooner than 4G did. By the end of 2027, the report predicts that there will be 4.4 billion 5G subscriptions globally, representing 49% of all mobile subscriptions. This growth is beneficial for infrastructure hardware providers such as Filtronic. A report from Grand View Research published in April 2022 estimated that the global 5G infrastructure market size was valued at US$4.75bn in 2021 and predicted that it would expand at a CAGR of 34.2% from 2022 to 2030. The report cites growing demand for enhanced bandwidth connectivity with low latency for applications such as semi-autonomous vehicles, drone connectivity, tele-healthcare, streaming ultra-high-definition (UHD) video, video calling and augmented reality/virtual reality (AR/VR) gaming.

Critical communications market

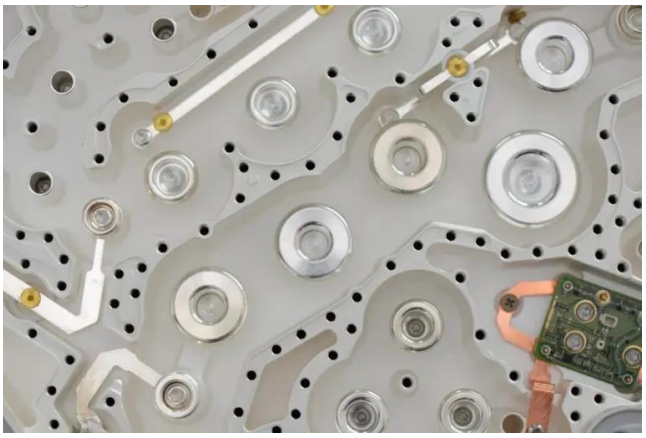
The critical communications market depends on highly reliable RF equipment for mission-critical operations, which often involve activities in harsh environments and in regions where conventional fibre networks are not accessible. Product life cycles in these sectors are typically more than 10 years, which is much longer than in the mobile telecommunications market.

Vital part of public safety communications networks

Exhibit 2: Tower top amplifier

Source: Filtronic

Exhibit 3: Detail of custom RF filter



Source: Filtronic

The emergency services use private, generally government-owned wireless networks for communications. Given the nature of the operations they support, these networks depend on having high-reliability equipment which meets demanding specifications. For example, Filtronic's tower top amplifier (TTA) system used in two-way radio networks, particularly the P25 network for first responders in the US, incorporates a smart redundancy function. The system continuously monitors the health of its amplifiers. If one of the amplifiers fails, the system can continue to operate using the spare amplifier. If both amplifiers are lost, the system will function in a bypass mode. The units are compact (229mm x 173mm x 51mm) and light (weighing less than 3.6kg), which reduces tower loading, and are designed to withstand lightning strikes. Filtronic's systems are among a limited number on the market which are fully compliant with stringent US public safety specifications.

For several years, Filtronic has been providing a range of high-performance ceramic filters and combiners and RF conditioning products to public safety networks in the US and other regions where Land Mobile Radio networks are used. In 2020 its lead customer, which we have previously inferred is Motorola Solutions, asked Filtronic to develop a new TTA 'as fast as you can' because the new specification had been released more than 12 months previously. The total development cycle took less than six months, from inception through to product qualification. The newly developed TTA met the updated specification and included performance improvements such as 'smart redundancy' discussed above. The client was also interested in inventory reduction and increasing the speed of deployment with a target of reducing lead time from four weeks. Filtronic responded to this request by developing a modular architecture and simplifying the order process. It delivered its first TTA products for Motorola to integrate into networks for its customers in May 2021.

Market growth driven by requirement to augment voice with data

Public safety networks typically receive good levels of investment as government and quasi-governmental agencies expand and upgrade existing networks to protect their citizens. However, there was a dip in investment during calendar 2020 while funds were diverted elsewhere. Investment recovered during calendar Q421 as COVID-19-related restrictions started to ease and public funds were redirected back into public infrastructure projects. Mission-critical communications networks increasingly need to support the transmission of data and machine-to-machine (Internet of Things) communication as well as just voice. Communications equipment is evolving to support the speed and data requirements of new technologies used by the emergency services such as body-worn cameras, drones and automated vehicles. Filtronic intends to grow its offering to this key market in the coming years as the trend from predominantly voice to full data networks grows.

In April 2022 Research and Markets issued a report which predicted that the global public safety and government agencies mission-critical communication market would grow from US$5,807.5m in 2021 to reach US$9,390.0m in 2028, an estimated CAGR of 7.4%. The mission-critical communication market not only includes ultra-reliability, low-latency and/or high-bandwidth public safety networks, where Filtronic has many years of experience, but also dedicated networks for specific industries such as rail transportation, banking, utilities, mining, manufacturing and the oil & gas industry. As discussed below, Filtronic is beginning to provide subsystems for some of these additional sectors.

Defence and aerospace

Exhibit 4: Transmit and receive module for active electronically scanned array radar

Source: Filtronic

The third sector where the reliability of communications products is of paramount importance is the defence and aerospace market. Filtronic provides customised solutions for this market. Its principal products are transceiver modules for active electronically scanned array radars. It also offers

switched filter banks for radar applications and microwave subsystems used in missile electronics. These subsystems are based on MMICs which Filtronic designed in house. The filters and subsystems are designed in Leeds and manufactured in Country Durham. The company's expertise in hybrid design and assembly enables it to provide uniquely small and thermally efficient modules and subsystems for harsh environments and those where weight reduction is critical. For example, a switch filter bank is a combination of switches and filters integrated into a single module. As well as saving space and weight, combining the components in a single module eliminates transitions between circuits, thus improving performance by reducing signal losses. Filtronic also provides contract manufacturing services for clients, making and testing precision components at scale to individual specifications.

Extending customer base

As defence equipment spending targets higher-frequency and more technically advanced radar and communications products, Filtronic's manufacturing know-how and technical capabilities have become of increasing interest to this market, enabling to expand its customer base. It has been supplying its lead defence and aerospace customer with high-performance radar transceiver modules for airborne applications since 2017. In September 2021, Filtronic announced that it had manufactured and shipped more than 60,000 transmit and receive modules to this customer over a three-year period. In January 2021, Filtronic announced that it had won a contract worth £1.3m from a new major UK defence customer for the supply of battlefield radio communications hardware over a 12-month period, which was a new application area. This contract has completed successfully and been followed by another contract from the same customer which is worth £0.5m and for completion during FY23, to design, manufacture and deliver a modular, programmable reference system for testing RF equipment. The new test system will be compatible with land, sea and airborne platforms, enabling it to be used for both outdoor field trials and static laboratory-based testing. Management notes significant potential for further opportunities for repeat orders and for other products from this new customer. Filtronic has also won several small development contracts for filters defence applications. While these are modest, they have the potential to lead to more substantial projects and give access to a wider customer base. In July 2022, Filtronic announced that one of these development contracts has resulted in a £0.4m order to manufacture prototype switched filter bank products for delivery in FY23.

UK investment in defence increasing

In November 2020, the UK government announced a £16.5bn increase in defence spending above its manifesto commitment over the next four years. Together with a pledge to increase defence spending by 0.5% above inflation for every year of the current parliament, this represented an overall cash increase of £24.1bn over four years compared to the prior year budget. In June 2022, 10 Downing Street announced that the UK had provided £1.3bn in extraordinary military support to Ukraine for its self-defence since the start of the war, deployed more troops to NATO's eastern flank and increased the UK's contributions to NATO's air policing and standing naval groups. Downing Street estimated that these investments, together with the unprecedented surge of support to Ukraine, would increase the percentage of GDP the UK spends on defence this year to around 2.3% compared with 2% every year since 2006. Statistics published in February 2022 by the Ministry of Defence (MoD) note that of the £42.4bn spent on defence in 2020/21, £13.5bn was attributable to service and civilian personnel costs, £18.8bn on equipment, £1.1bn on R&D and £0.5bn on the cost of operations and peacekeeping.

Expanding into new market segments

Morpheus modules are a good basis from which to develop systems for other applications because they have a footprint of 90mm x 80mm and weigh only 110g. Emerging application areas include:

- **5G test equipment:** in February 2020, the company received a $1.0m contract to develop over-the-air 5G mmWave modules for a leading RF test equipment company in the US. These modules extend the frequency range of the customer's existing product offering above 50GHz. The development contract was followed in October 2021 by a contract valued at $0.8m (c £0.6m) to make pilot phase production units, which have been delivered. In June 2022 Filtronic received a follow-on contract for full production units valued at $0.9m (c £0.7m) for delivery during FY23.
- **Low-latency private networks:** Filtronic secured a £0.4m development contract for a low-latency private network in December 2020, which has been delivered. This type of network is of interest to financial institutions because reducing the time it takes to transmit a signal from one site to another can create a competitive advantage when trading shares. Filtronic is in ongoing discussions regarding further work for this sector, where having its own MMICs gives it a significant advantage with regards to power consumption.
- **Quantum computing:** In July 2022, Filtronic announced the award of a contract from a quantum computing company for the design, development and supply of microwave filters and diplexers. These components will be used within the microwave circuits of both the external control rack and the cryogenic dilution refrigerator of a quantum computer. Management expects that the contract, valued at £0.35m, will be completed during FY23 and believes that it could lead to further work.
- **Internet in the sky/Spy in the sky:** as discussed in our report Internet in the sky, constellations of hundreds of small, interconnected satellites are increasingly being deployed to provide internet connectivity to remote and rural areas, environmental monitoring services and asset tracking. Satellites are also being deployed for earth observation. While mmWave links do not deliver as high a data rate as free-space laser communications links, the technology is completely proven and transmission in certain frequencies, including E-band, is not seriously affected by rain or water vapour. This makes mmWave transmission a good option for links between a satellite, unmanned aerial vehicle or aircraft and the ground (see Exhibit 4). For example, Telesat's proposed Lightspeed LEO constellation will have Ka-band (26.5–40GHz) microwave links to the earth as well as four optical inter-satellite links on each satellite. HAPS are also being investigated as a platform for providing connectivity to remote areas. For example, in 2021 Airbus and NTT DOCOMO used a Zephyr S HAPS carrying an on-board radio transmitter to carry out radio wave propagation tests, analysis of which demonstrated the viability of stratospheric communications to devices such as smartphones.

Filtronic has already proved its transceivers through work with a HAPS developer which subsequently withdrew from the market. It is currently in discussions with other potential partners in the UK, mainland Europe and the US regarding LEO programmes.

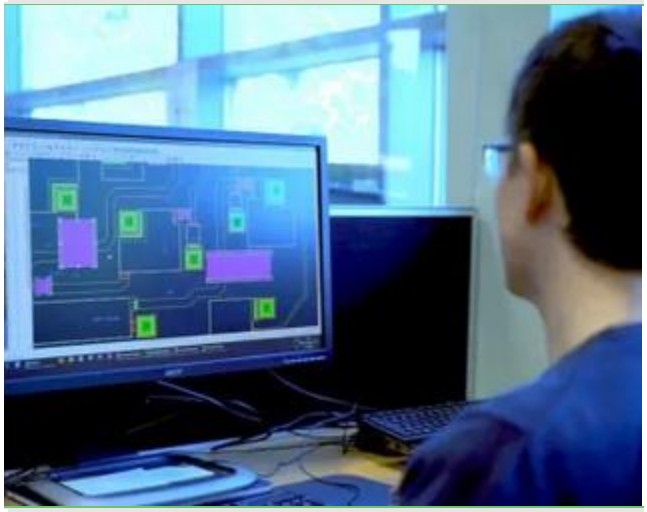
Given the additional capacity following the investment in the County Durham site, Filtronic is also actively marketing its manufacturing and test capability as a service to defence and telecoms customers, as well as companies making down-hole drilling equipment now that the oil and gas market has stabilised.

Competitive advantages

RF engineering team: Filtronic is highly unusual in being an independent company that has MMIC design engineers, RF hardware designers, RF manufacturing engineers and RF system engineers as well as manufacturing and test capability. This combination of skills is rare outside large telecoms groups such as Ericsson, Huawei or Nokia and even these often outsource RF front-end design because of a shortage of suitably experienced staff. However, Filtronic has a team of around 25 designers and developers. Other independent companies such as PRFI typically only specialise in one of the aspects of designing RF systems such as MMIC design and do not have any volume

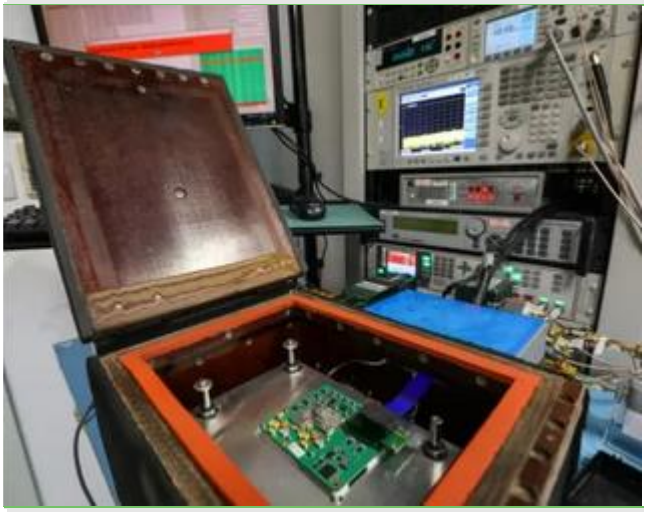
manufacturing capability. Filtronic's range of skills means that defence and telecoms OEMs, which are increasingly operating as system integrators to give more flexibility over their cost bases, can outsource both design and manufacture of subsystems to a single supplier. Filtronic's real competition therefore is in-house operations rather than other independent RF specialists.

Exhibit 5: MMIC design capability



Source: Filtronic

Exhibit 6: mmWave test capability



Source: Filtronic

Manufacturing facilities tailored to market: as noted earlier, the ability to make electronic products containing unpackaged integrated circuits is critical for achieving the performance required for high-frequency applications and also results in lighter, more compact subsystems. However, using unpackaged die means that specialist equipment is required for placing the tiny unpackaged die in the correct place on the circuit boards and for connecting the die to the circuit boards. Filtronic is one of a handful of companies in Europe that has the equipment required to carry out these processes in volume. It also has the secure premises, proven, documented processes and full traceability and work-in-progress tracking required for defence contracts, and a range of fulfilment options preferred by defence OEMs including turnkey design and manufacturing, inventory management and supply of kits of components ready for assembly.

High-volume manufacturing capability: Filtronic invested more than £1m in automated high-precision die placement and wire bonding machinery at its site in County Durham during FY20, as well as high-frequency electrical and environmental testing capacity. This doubled capacity to a potential throughput of 3,000 transceivers per month, enabling Filtronic to scale up volumes to meet customer demand, for example for the 5G backhaul market or US public safety market. In addition, automating processes has helped Filtronic increase product yields to an average of 95%, reducing the need to rework the product before it leaves the facility.

UK/US manufacturing: Filtronic moved the assembly of its public safety products, which are primarily sold to a customer in the United States, from its Chinese subcontractor to an in-house facility at its operation in Maryland, US during FY20. This move has had the dual benefit of reducing lead times, which was a critical customer requirement, and achieving compliance with the McCain Bill, which bars a large number of named Chinese companies from the US market. It is possible that the current interest in reshoring to shorten supply chains may benefit Filtronic's UK-based activities.

Management

Following the retirement of Reg Gott in October 2021, Jonathan Neale became non-executive chairman in November 2021. Jonathan Neale has been chief operating officer of McLaren Group

for the past six years, prior to which he held a number of executive roles including CEO of McLaren Racing F1 between 2001 and 2016. Before that Jonathan was managing director of Hawk Military Aircraft at BAE Systems, UK. He has hands-on experience of high-frequency design, having begun his career as a research physicist in high-frequency semiconductor design and application, then leading the advanced development group in the electronic warfare division of Philips Defence Systems.

Richard Gibbs became CEO in September 2020. Richard is an experienced director who has led a number of business operations supplying semiconductor, RF and electronics subsystems to the telecoms, aerospace, defence, medical and oil & gas markets. He joined Filtronic from Micross Components, a private equity-owned company, where he had been managing director since 2016. Prior to that, he spent nine years at E2V Technologies, where he was group sales and marketing director and president of the RF Product and Hi-Reliability Semiconductors divisions, and 20 years with Honeywell, of which 10 years were spent managing overseas operations.

Michael Tyerman joined Filtronic in 2007 and became chief financial officer in April 2016. Prior to joining Filtronic, Michael held various positions at Procter and Gamble, Huntsman Polyurethanes and Komatsu.

Sensitivities

Customer concentration: the telecommunications equipment market is dominated by a few giant companies, so there are only a small number of potential customers. Filtronic is extremely dependent on its relationship with three key customers. During FY21, these three customers collectively accounted for 87% of revenue (FY20: 87%) of revenue, with the largest accounting for 35% of the total and the second largest 33%. We note that Filtronic has very long-term relations with each of these customers, effectively functioning as an extension to their RF design and manufacturing operation and providing RF modules for use in multiple end-products. For example, it is working on programmes to develop next-generation public safety network products for launch in one or two years' time. It would be time-consuming and risky for each of these customers to bring the work in house and difficult for them to find alternative suppliers with the same range of capabilities. Working with large customers with strong positions in their respective markets means that Filtronic is working with partners who are defining the direction of the market and require products at sufficiently high volumes to give Filtronic the benefit of economies of scale. For example, Motorola Solutions' land mobile radio sales totalled US$2.2bn in 2021 and, according to ResearchandMarkets.com, the global land mobile radio system market was valued at US$12.6bn in 2021.

Component availability: like other electronics companies, Filtronic has had to contend with shortages of certain electronic components. This adversely affected 5G XHaul sales during Q122, although the issue was resolved in Q222. During Q422 Filtronic's customer in the critical communications market was adversely affected by supply chain issues, which restricted its ability to build complete solutions, resulting in some orderbook rescheduling. Supply chain issues may ultimately be of benefit to Filtronic because they are encouraging electronics OEMs to work with companies that are located in the same country or continent. The issues are also encouraging customers to place contracts covering longer time scales, giving better visibility of revenues.

Speed of 5G roll-out: uptake of Filtronic's E-band transceivers for mobile communications applications is very dependent on the roll-out of 5G networks, particularly in regions outside China, reflecting the activity of its major telecommunications customer. This customer has stated that it expects 4% growth (in constant currency) in the total addressable mobile networks market excluding China to €50bn during 2022, supported by the likely award of 5G licences in India later this year. Transceiver uptake is also very dependent on whether these regions already have fibre

connectivity for backhaul, as is common in the United States, or are reliant on mmWave links for backhaul, as is typical in India.

War in Ukraine: Filtronic is not directly affected by the war as it did not have any customers in either Russia or Ukraine. While its major telecommunications customer has exited the Russian market, it has stated that it does not expect this decision to affect its ability to achieve its 2022 outlook because of strong demand in other areas. Filtronic is relatively unaffected by soaring energy prices. Longer term, the war may be beneficial for Filtronic as NATO members supplying weapons to Ukraine restock. In addition, Russia's illegal annexation of Crimea in 2014 resulted in the Allies endorsing the Defence Investment Pledge, whereby they either maintained defence expenditure at 2% or more of gross domestic product (GDP) or moved to 2% within a decade if not already at that guideline level. In 2014, only three Allies spent 2% of GDP or more on defence; this had increased to eight by 2021. Importantly for Filtronic, the Defence Investment Pledge required Allies to spend 20% of annual defence expenditure on major new equipment by 2024. Since Russia's invasion of Ukraine in February 2022, Allies have collectively announced €200bn in extra military spend and the President of the European Commission has stated that the EU will make available funds to help replenish 'the military material that has been sent to Ukraine' and allocated €500m 'to incentivise the joint procurement by at least three member states' of interoperable military equipment.

Recruitment: Filtronic is very dependent on the availability of engineers with second degrees in RF engineering. There are very few universities offering this training. However, Filtronic does not appear to have a major problem with recruiting and retaining suitably skilled personnel.

Financials: Back into the black

Recovery in US public safety market during H122 offsets issues caused by supply chain shortages

Filtronic remained fully operational throughout the coronavirus restrictions, enabling it to keep its engineering developments for customers on track against their respective milestone delivery plans and maintain product delivery schedules. The recovery noted in the US public safety market during Q421 as COVID-19-related restrictions started to ease was sustained as public funds were redirected back into public infrastructure projects. As a result, segmental sales doubled year-on-year. Sales of transceivers for 5G XHaul links to the lead customer were held back during Q122 by supply chain shortages, which prevented Filtronic from meeting the customer's original requirements in full. However, the issue was resolved during Q222, supporting a recovery in sales to pre-pandemic levels by the end of the period. Sales to the lead customer in the defence and aerospace market were steady. In addition, segmental sales benefited from the first deliveries of production units of battlefield radio communications hardware (see above) and several small development contracts from a large UK defence prime for the group's specialist filter technology. The latter follows the recent accreditation of the group's Leeds facility for certain defence work.

Group sales rose by 12% year-on-year during H122 to £8.0m, which was broadly in line with internal forecasts.

Strong growth in EBITDA during H122

Adjusted EBITDA jumped by 83% year-on-year to £1.1m. This improvement was attributable to a more favourable sales mix, with a higher proportion of sales to the critical communications and defence markets and the final phases of work on some long-term development programmes. The cost of goods sold (COGS) actually declined by 4%, even though revenues increased. The reduction in COGS helped offset a 12% rise in overheads primarily related to the cessation of the

UK furlough scheme and the US Paycheck Protection Program (PPP), as well as increased sales and marketing expenditure as trade shows started up again and recruitment costs as the company substantially enlarged the engineering team. The jump in EBITDA, together with lower depreciation charges and a £0.2m reduction in net finance costs, resulted in a shift from a pre-exceptional, pre-tax loss of £0.1m in H121 to a pre-exceptional, pre-tax profit of £0.6m in H122. Finance costs were artificially high in H121 because of the revaluation of an inter-company loan. The reported H122 pre-tax result of £0.7m benefited from the release of a £0.1m warranty provision related to the antennae business, which was sold in January 2020.

Strongest net cash position for four years

Net cash (net of all lease obligations except right-of-use property leases) increased from £1.9m at end FY21 to £2.2m at end H122. Cash generated from operations was £0.6m, reflecting a £0.5m increase in working capital related to the upswing in 5G XHaul links towards the end of the period. As in H121, investment in capital equipment was minimal (£0.1m) because the investment in the Sedgefield site completed in FY20. There were no capitalised development costs (£0.1m in H121) as the bulk of development undertaken was paid for by customers, with the rest expensed. The strong balance sheet gives Filtronic a good base from which to continue investing in additional engineering resource and business development activities during H222 and FY23.

FY22 to be third consecutive year of EBITDA growth

In its post-close trading update, management noted that FY22 revenues would be broadly in line with market expectations, rising by 10% year-on-year to £17.1m. 5G XHaul transceiver sales picked up in Q222 when the supply chain issue was resolved and remained at a higher level throughout H222. Demand from the aerospace and defence market was resilient, with Filtronic benefiting from follow-on orders for development programme wins secured during FY21. However, while end-user demand for critical communications equipment remained strong, Filtronic's customer was adversely affected by supply chain issues, which restricted its ability to build complete solutions, resulting in some orderbook rescheduling. Management also noted that adjusted EBITDA would be materially ahead of market expectations at over £2.7m, mainly reflecting a higher than expected proportion of defence revenues. We adjusted our FY22 estimates in line with this guidance in our June update, raising EBITDA by 35%, and have not changed them since.

Our FY23 estimates, which were not changed in the June update and remain unchanged, make the following assumptions:

- **Revenues:** we assume that sales to the US public safety market will remain at FY22 levels and that 5G XHaul deliveries will remain at the higher level reached at the end of H122. In addition, we assume that the c £0.7m revenues attributable to the contract announced in June 2022 for 5G test equipment will be received during the year. We assume that the group will be successful in its discussions to secure new contracts to replace revenues from the battlefield communications contract.
- **Cost of materials/sales:** we model an increase from 37.7% in FY22 to 44.3% in FY23 to reflect the higher proportion of 5G XHaul sales.
- **Other costs:** we model a further year-on-year increase in staffing costs during FY23 to reflect continued investment in engineering resource to accelerate the development of W-band links. This investment will hold back improvements in EBITDA margin short term (11.0% in FY23), as well as PBT and EPS growth, but management intends that it will result in stronger revenue and profit growth during FY24 and FY25.
- **Investment activity:** we model £0.5m in investment in dedicated pick-and-place equipment for development activities, so production is no longer disrupted by prototyping activities. We also model £0.5m of capitalised R&D costs to reflect this development work,

as resource should be redeployed to this now that the development phases of both the battlefield communications and 5G test equipment projects have been completed. For FY23, we model investment in capital equipment at FY22 levels as the group works on the of development of W-band and maintains investment in development activity at FY22 levels. These relatively modest levels of investment combined with solid operating cash flow means our estimates show that Filtronic should remain cash generative throughout the forecast period, with net cash rising from £3.1m (excluding property lease liabilities) at end FY22 to £3.4m at end FY23.

Valuation – uplift for successful diversification

Peer multiples indicate premium for strong revenue growth

When preparing a peer group, we found that there are very few other listed companies specialising in high-power mmWave communications products, not just in the UK but also across mainland Europe, Israel and North America. While this emphasises the uniqueness of Filtronic's skill set, it makes it more difficult to create a sample of peers to use as the basis of a peer multiples comparison. We have therefore created two sample sets. The first consists of companies that, like Filtronic, offer niche products used for transmitting data at mmWave frequencies. The second is a sample set of European companies that, like Filtronic, offer a highly differentiated technology based on hard-to-find skill sets.

Exhibit 7: Peer multiples

Name	Market cap (£m)	EV/Sales 1FY (x)	EV/Sales 2FY (x)	EV/EBITDA 1FY (x)	EV/EBITDA 2FY (x)	PE 1FY (x)	PE 2FY (x)	CAGR* (%)
Aviat Networks	245	0.9	0.8	6.9	6.5	9.6	9.0	6.6%
Baylin Technologies	22	0.6	0.5	(170.0)	7.9	(2.0)	(3.4)	12.3%
CommScope Holding Company	1,099	1.3	1.2	9.7	8.1	4.1	2.8	4.5%
Comtech Telecommunications	211	0.9	0.9	11.9	9.4	(6.4)	(46.3)	-7.8%
Mean of RF specialists		**0.9**	**0.9**	**9.5**	**8.0**	**9.6**	**9.0**	
CML Microsystems	62	1.9	1.7	7.4	6.3	27.9	23.0	27.1%
Kromek Group	44	3.4	2.5	(63.3)	120.9	(10.0)	(11.6)	31.9%
Mynaric	135	11.8	1.3	(3.0)	(12.5)	(3.5)	(7.6)	525.5%
Sivers Semiconductors	158	10.6	3.5	(23.7)	20.9	(15.0)	(77.6)	141.3%
Trackwise Designs	18	2.2	0.8	20.3	4.3	(28.5)	14.1	88.0%
Mean of companies with highly differentiated technology		**6.0**	**2.0**	**13.8**	**13.6**	**27.9**	**18.5**	
Filtronic	30	1.6	1.4	9.9	12.9	21.1	33.1	10.5%

Source: Refinitiv, Edison Investment Research. Note: Prices as at 11 July 2022. *FY0 to FY2. Grey shading indicates exclusion from mean.

Filtronic's share price has jumped by over 50% since the post-close trading update as investors have reacted positively to the news that FY22 adjusted EBITDA would be materially ahead of market expectations and subsequent news of contract awards. Filtronic is trading at a premium to its RF specialist peers, which we believe is justified by its higher growth rate and growth potential. It mainly trades at a discount to the group of high growth companies with differentiated technology, albeit that the sample is fairly small.

We believe that the recent share price rise in response to a jump in expected EBITDA highlights investors' positive reaction to profits growth. Assuming that management is correct in its view that the investment in overheads during FY22 and FY23 is sufficient to support continued revenue growth in FY24 and FY25, then 10% growth in revenues during FY24 would represent an additional £1.9m of revenues and £1.0m incremental operating profit, giving an EBITDA totalling £3.1m compared with the £2.7m management anticipates for FY22. Although we do not have estimates yet for FY24 or FY25, announcements of further contract awards in adjacent markets such as the recent US$0.9m follow-on order from the 5G test equipment company will indicate how successful

management is being in winning additional work outside its three core areas, which is key to sustaining double-digit revenue growth.

DCF shows uplift for successful diversification

Our peer multiples analysis shows potential for continued share price development if Filtronic is able to deliver strong, sustained revenue growth, but as we have noted, there are no really comparable companies. Moreover, the data from both sample sets are incomplete and Filtronic's FY22/FY23 EBITDA progression has been slightly distorted by the defence sales mix and costs being invested with the intention of delivering strong revenue growth past the end of our forecast period.

We therefore prefer a DCF approach that models the impact on EBITDA and indicative valuation if Filtronic is able to deliver sustained double-digit revenue growth (9.0% to 13.0% year-on-year between FY24 and FY26) without adding significantly to indirect costs after FY23 (3.0% to 5.0% year-on-year between FY24 and FY26). The calculation uses a WACC of 10.0% and terminal growth rate of 3.0%. Gross margin is modelled at FY21 levels, reflecting a lower percentage of defence revenues than FY22. Investment in tangible and intangible assets is held at FY24 levels. The analysis shows that if management's diversification strategy delivers double-digit year-on-year through to FY26, while holding year-on-year growth in indirect costs at 5.0% or less from FY24 onwards, further uplift in share price should be justified.

Exhibit 8: DCF analysis

FY26e EBITDA (£m)

		Year-on-year sales growth FY24–26e				
		9.0%	10.0%	11.0%	12.0%	13.0%
Indirect cost growth	3.0%	4,262	4,638	5,021	5,411	5,808
	3.5%	4,126	4,502	4,885	5,275	5,672
	4.0%	3,989	4,365	4,748	5,138	5,535
	4.5%	3,851	4,227	4,610	5,000	5,397
	5.0%	3,711	4,087	4,470	4,860	5,257

Indicative value (p/share)

		Year-on-year sales growth FY24–26e				
		9.0%	10.0%	11.0%	12.0%	13.0%
Indirect cost growth	3.0%	15.1	16.3	17.5	18.7	20.0
	3.5%	14.6	15.8	17.0	18.2	19.4
	4.0%	14.1	15.3	16.5	17.7	18.9
	4.5%	13.6	14.7	15.9	17.2	18.4
	5.0%	13.0	14.2	15.4	16.6	17.9

Source: Edison Investment Research

For example, Exhibit 8 shows that if Filtronic can deliver 11% revenue growth each year between FY24 and FY26, coupled with only 4% year-on-year cost growth over the same period, our DCF would produce an indicative value per share of 16.5p, 20% higher than the current level.

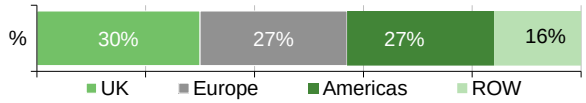
Exit multiples

With regards to the premium ascribable for specialist RF skills, we note that RF filter solution specialist Resonant was acquired by its customer Murata in March 2022 for c US$300m. Resonant was loss-making and generated only US$1.6m revenues during the first three quarters of 2021, with US$4.4m deferred revenues at end Q321.

Exhibit 9: Financial summary

31-May	£m	2020	2021	2022e	2023e
INCOME STATEMENT					
Revenue		17.2	15.6	17.1	19.0
EBITDA		1.2	1.8	2.7	2.1
Operating profit (before amort. and excepts.)		0.4	0.6	1.7	1.1
Amortisation of acquired intangibles		0.0	0.0	0.0	0.0
Exceptionals		(0.6)	0.1	0.0	0.0
Reported operating profit		(0.2)	0.6	1.7	1.1
Net Interest		(0.2)	(0.4)	(0.2)	(0.2)
Exceptionals		0.0	0.0	0.0	0.0
Profit Before Tax (norm)		0.1	0.1	1.5	0.9
Profit Before Tax (reported)		(0.4)	0.2	1.5	0.9
Reported tax		(0.1)	(0.2)	0.2	0.2
Profit After Tax (norm)		0.1	0.3	1.4	0.9
Profit After Tax (reported)		(0.5)	0.1	1.7	1.1
Discontinued operations		(1.4)	0.0	0.0	0.0
Net income (normalised)		0.1	0.3	1.4	0.9
Net income (reported)		(2.0)	0.1	1.7	1.1
Average Number of Shares Outstanding (m)		211	213	215	215
EPS - normalised (p)		0.05	0.14	0.67	0.42
EPS - diluted normalised (p)		0.05	0.14	0.66	0.42
EPS - basic reported (p)		(0.25)	0.03	0.80	0.51
Dividend (p)		0.00	0.00	0.00	0.00
Revenue growth (%)		7.8	-9.5	10.0	11.1
EBITDA Margin (%)		6.8	11.4	15.9	11.0
Normalised Operating Margin		2.2	3.7	9.9	5.6
BALANCE SHEET					
Fixed Assets		7.5	6.2	5.9	5.6
Intangible Assets		1.8	1.7	1.9	2.0
Tangible Assets		3.8	3.3	3.1	2.8
Investments & other		1.9	1.2	0.9	0.7
Current Assets		9.8	8.4	9.9	10.8
Stocks		2.9	2.2	2.5	2.9
Debtors		4.8	3.3	3.3	3.5
Cash & cash equivalents		2.0	2.9	4.1	4.4
Other		0.0	0.0	0.0	0.0
Current Liabilities		(6.0)	(3.6)	(3.3)	(3.0)
Creditors		(3.5)	(2.4)	(2.1)	(1.8)
Short term borrowings including lease liabilities		(0.7)	(0.6)	(0.6)	(0.6)
Other		(1.8)	(0.6)	(0.6)	(0.6)
Long Term Liabilities		(2.0)	(1.7)	(1.7)	(1.7)
Long term borrowings		(2.0)	(1.6)	(1.6)	(1.6)
Other long term liabilities		0.0	(0.1)	(0.1)	(0.1)
Net Assets		9.4	9.4	10.8	11.7
Minority interests		0.0	0.0	0.0	0.0
Shareholders' equity		9.4	9.4	10.8	11.7
CASH FLOW					
Op Cash Flow before WC and tax		1.2	1.8	2.7	2.1
Working capital		(2.4)	1.1	(0.6)	(0.8)
Exceptional & other		(2.7)	(1.0)	0.0	0.0
Tax		1.2	0.5	0.2	0.2
Operating Cash Flow		(2.6)	2.5	2.3	1.5
Capex (including capitalised R&D)		(1.2)	(0.4)	(1.0)	(1.0)
Acquisitions/disposals		3.7	0.0	0.0	0.0
Net interest		(0.3)	(0.2)	(0.2)	(0.2)
Equity financing		0.3	0.0	0.0	0.0
Dividends		0.0	0.0	0.0	0.0
Other		0.0	0.0	0.0	0.0
Net Cash Flow		(0.2)	1.9	1.2	0.3
Opening net debt/(cash)		(2.5)	0.7	(0.8)	(1.9)
FX		0.0	0.0	0.0	0.0
Other non-cash movements		(3.0)	(0.4)	(0.0)	(0.0)
Closing net debt/(cash) including lease liabilities		0.7	(0.8)	(1.9)	(2.2)
Property lease liabilities		1.1	1.2	1.2	1.2
Closing net debt/(cash)		(0.4)	(1.9)	(3.1)	(3.4)

Source: Edison Investment Research

Contact details	Revenue by geography
Plexus 1, NETPark, Thomas Wright Way, Sedgefield, County Durham TS21 3FD +44 1740 618 800 www.filtronic.com	

Management team

Non-Executive Chairman: Jonathan Neale

Jonathan Neale has been chief operating officer of McLaren Group for the past six years, prior to which he held a number of executive roles including chief executive officer of McLaren Racing F1, between 2001 and 2016. Before that Jonathan was managing director – Hawk Military Aircraft at BAE Systems, UK. He has hands-on experience of high-frequency design, having begun his career as a research physicist in high-frequency semiconductor design and application, then leading the advanced development group within the electronic warfare division of Philips Defence Systems. He became chairman in November 2021.

CEO: Richard Gibbs

Richard is an experienced director who has led a number of business operations supplying semiconductor, RF and electronics subsystems to the telecoms, aerospace, defence, medical and oil & gas markets. Richard joined Filtronic from Micross Components, a private equity-owned company, where he had been managing director since 2016. Prior to that Richard spent nine years at E2V Technologies, where he was group sales & marketing director and president of the RF Product and Hi-Reliability Semiconductors divisions, and 20 years with Honeywell, of which 10 years were spent managing overseas operations. He took up his appointment as CEO in September 2020.

CFO: Michael Tyerman

Michael joined Filtronic in 2007 as financial controller of the broadband business, and was promoted to group financial controller in 2009 and then to CFO in 2016. Prior to joining Filtronic, Michael held various positions at Procter and Gamble, Huntsman Polyurethanes and Komatsu, which included time working in the Benelux and Nordic regions.

Principal shareholders	(%)
Diana Marguerite Dixon	25.1%
Canaccord Genuity Wealth Management	10.5%
David John Newlands	8.3%
Monique Newlands	5.6%
River and Mercantile Asset Management LLP	5.3%
Michael Andrew Bennett	3.3%

General disclaimer and copyright

This report has been commissioned by Filtronic and prepared and issued by Edison, in consideration of a fee payable by Filtronic. Edison Investment Research standard fees are £60,000 pa for the production and broad dissemination of a detailed note (Outlook) following by regular (typically quarterly) update notes. Fees are paid upfront in cash without recourse. Edison may seek additional fees for the provision of roadshows and related IR services for the client but does not get remunerated for any investment banking services. We never take payment in stock, options or warrants for any of our services.

Accuracy of content: All information used in the publication of this report has been compiled from publicly available sources that are believed to be reliable, however we do not guarantee the accuracy or completeness of this report and have not sought for this information to be independently verified. Opinions contained in this report represent those of the research department of Edison at the time of publication. Forward-looking information or statements in this report contain information that is based on assumptions, forecasts of future results, estimates of amounts not yet determinable, and therefore involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of their subject matter to be materially different from current expectations.

Exclusion of Liability: To the fullest extent allowed by law, Edison shall not be liable for any direct, indirect or consequential losses, loss of profits, damages, costs or expenses incurred or suffered by you arising out or in connection with the access to, use of or reliance on any information contained on this note.

No personalised advice: The information that we provide should not be construed in any manner whatsoever as, personalised advice. Also, the information provided by us should not be construed by any subscriber or prospective subscriber as Edison's solicitation to effect, or attempt to effect, any transaction in a security. The securities described in the report may not be eligible for sale in all jurisdictions or to certain categories of investors.

Investment in securities mentioned: Edison has a restrictive policy relating to personal dealing and conflicts of interest. Edison Group does not conduct any investment business and, accordingly, does not itself hold any positions in the securities mentioned in this report. However, the respective directors, officers, employees and contractors of Edison may have a position in any or related securities mentioned in this report, subject to Edison's policies on personal dealing and conflicts of interest.

Australia

Edison Investment Research Pty Ltd (Edison AU) is the Australian subsidiary of Edison. Edison AU is a Corporate Authorised Representative (1252501) of Crown Wealth Group Pty Ltd who holds an Australian Financial Services Licence (Number: 494274). This research is issued in Australia by Edison AU and any access to it, is intended only for "wholesale clients" within the meaning of the Corporations Act 2001 of Australia. Any advice given by Edison AU is general advice only and does not take into account your personal circumstances, needs or objectives. You should, before acting on this advice, consider the appropriateness of the advice, having regard to your objectives, financial situation and needs. If our advice relates to the acquisition, or possible acquisition, of a particular financial product you should read any relevant Product Disclosure Statement or like instrument.

New Zealand

The research in this document is intended for New Zealand resident professional financial advisers or brokers (for use in their roles as financial advisers or brokers) and habitual investors who are "wholesale clients" for the purpose of the Financial Advisers Act 2008 (FAA) (as described in sections 5(c) (1)(a), (b) and (c) of the FAA). This is not a solicitation or inducement to buy, sell, subscribe, or underwrite any securities mentioned or in the topic of this document. For the purpose of the FAA, the content of this report is of a general nature, is intended as a source of general information only and is not intended to constitute a recommendation or opinion in relation to acquiring or disposing (including refraining from acquiring or disposing) of securities. The distribution of this document is not a "personalised service" and, to the extent that it contains any financial advice, is intended only as a "class service" provided by Edison within the meaning of the FAA (i.e. without taking into account the particular financial situation or goals of any person). As such, it should not be relied upon in making an investment decision.

United Kingdom

This document is prepared and provided by Edison for information purposes only and should not be construed as an offer or solicitation for investment in any securities mentioned or in the topic of this document. A marketing communication under FCA Rules, this document has not been prepared in accordance with the legal requirements designed to promote the independence of investment research and is not subject to any prohibition on dealing ahead of the dissemination of investment research.

This Communication is being distributed in the United Kingdom and is directed only at (i) persons having professional experience in matters relating to investments, i.e. investment professionals within the meaning of Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "FPO") (ii) high net-worth companies, unincorporated associations or other bodies within the meaning of Article 49 of the FPO and (iii) persons to whom it is otherwise lawful to distribute it. The investment or investment activity to which this document relates is available only to such persons. It is not intended that this document be distributed or passed on, directly or indirectly, to any other class of persons and in any event and under no circumstances should persons of any other description rely on or act upon the contents of this document.

This Communication is being supplied to you solely for your information and may not be reproduced by, further distributed to or published in whole or in part by, any other person.

United States

Edison relies upon the "publishers' exclusion" from the definition of investment adviser under Section 202(a)(11) of the Investment Advisers Act of 1940 and corresponding state securities laws. This report is a bona fide publication of general and regular circulation offering impersonal investment-related advice, not tailored to a specific investment portfolio or the needs of current and/or prospective subscribers. As such, Edison does not offer or provide personal advice and the research provided is for informational purposes only. No mention of a particular security in this report constitutes a recommendation to buy, sell or hold that or any security, or that any particular security, portfolio of securities, transaction or investment strategy is suitable for any specific person.

Frankfurt +49 (0)69 78 8076 960
Schumannstrasse 34b
60325 Frankfurt
Germany

London +44 (0)20 3077 5700
280 High Holborn
London, WC1V 7EE
United Kingdom

New York +1 646 653 7026
1185 Avenue of the Americas
3rd Floor, New York, NY 10036
United States of America

Sydney +61 (0)2 8249 8342
Level 4, Office 1205
95 Pitt Street, Sydney
NSW 2000, Australia