Enabling the Connected Future

Revenue ▲ 4.4% $119.0m
Underlying EBITDA ▲ 11.4% $14.8m
Net Profit After Tax ▲ 18.3% $4.0m
Operating Cashflow FY20 $9.4m
FY2019 -$1.8m

All amounts in this document are in NZ$ unless otherwise specified.

At a Glance

53 years of operation
Global platform over 4 continents
950+ people, more than 40 nationalities represented
Core markets – telecommunications, space & defence, global positioning
Strategic supplier to some of the largest telecommunications equipment companies
3 manufacturing, 6 Research and Development (R&D) centres, 16 customer support locations
Selling into 60+ countries in FY2020
In worldwide government and commercial programmes where high performance is critical
Since Rakon’s inception, approximately 1 billion products manufactured for applications everywhere

1 Refer to the footnote on page 19 for the definition of Underlying EBITDA as a measure of non-GAAP financial information, referred to in this document.

% Share of Revenue
Telecommunications 54.8%
Space & Defence 23.7%
Global Positioning 15.9%
Emerging & Other 5.6%
Rakon designs and manufactures world leading frequency control and timing solutions. Its products help set the frequencies that all communications transmit and receive on. They also hold time and provide a stable timing reference for electronic equipment around the world. This enables synchronised time globally, and the efficient and reliable transfer of data at ever-increasing precision and speed. Precise timing is required for demanding applications within Rakon’s three core markets of telecommunications, global positioning and space & defence.

5G is making a myriad of applications possible

“With dominant share allocations from key Tier One customers secured, our products are being designed into all the main network providers’ 5G equipment.”

Brent Robinson, CEO / Managing Director
Tribute to Our Founder

From a young age, Warren had a curious mind. His fascination with electronics led him to build a radio at the age of 15 and he became one of the youngest in New Zealand to receive an amateur radio license. This hobby led him to spend time as a technical trainee at the New Zealand Broadcasting Service.

Warren then went to work for Electronic Navigation as a technician in marine electronics. He built his first radio telephone as the firm made Skipper marine radio telephones for small ships and ‘pleasure craft.’

While at Electronic Navigation, Warren met Henri Klok who had experience in the marine electronics business. Warren went on to form a company in partnership with Henri. They designed a new radio telephone, giving it the trade name ‘Marlin’, and registered it under their company, Marlin Electronics Limited. Warren and Henri ran Marlin Electronics from 1955 until 1965 before deciding to sell out to Autocrat Radio. While at Marlin Electronics, Warren had experienced the frustration of crystals taking up to three or four months to be delivered. The large gap in the market for locally made crystals was too big to ignore, so he decided to make his own at his garage in Howick, Auckland.

Rakon was founded in 1967. As the business grew, premises were set up initially in Newmarket, Auckland and in 1971 the company moved to Mt Eden and had a team of 30–40 staff. Warren then temporarily moved to Singapore with his family and established a manufacturing plant there in 1972. Over the years the business evolved, to become the global company that it is today. Warren continued as Chair and a director of the company until 2006 when it went public and listed on the New Zealand stock exchange (NZX). Warren then became a director of the public company and continued in that role until stepping down from the Board in 2017. He continued to maintain a keen interest in the success of the company.

In his later years, Warren continued to push the envelope developing an olive grove and vineyard on his estate on Waiheke Island, where he produced his own olive oil and wine. His fascination with technology never wavered. He continued with his lifelong interest in amateur radio. His choice of vehicle in retirement . . . an electric car.

Those of us at Rakon privileged to know Warren recall fondly a great man, who always made it a priority to engage with our people.

Warren, your accomplishments will forever be embedded within our history and your curiosity and passion for electronics will continue to live on in the curious minds you have enabled.

Sadly our founder Warren Robinson passed away during the year, at the age of 84. We pay tribute to an electronics innovator, a business leader and a great New Zealander.

Warren John Robinson
7 January 1935 – 10 September 2019

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From a young age, Warren had a curious mind. His fascination with electronics led him to build a radio at the age of 15 and he became one of the youngest in New Zealand to receive an amateur radio license. This hobby led him to spend time as a technical trainee at the New Zealand Broadcasting Service.

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Chair’s and CEO’s Report

Welcome to the 2020 Annual Review of your company Rakon Limited (‘Rakon’ or the ‘Group’).

Continued growth in the telecommunications segment and positive operating cash flow of $9.4m were highlights for the Financial Year ended 31 March 2020 (FY2020). Rakon reported a net profit after tax of $4.0m compared with $3.4m in FY2019.

Underlying EBITDA\(^2\) was $14.8m compared with $13.3m in FY2019. FY2020 included a positive impact of $3.1m from the adoption of IFRS 16 Leases. Excluding this, Underlying EBITDA is $11.7m. This reflects a much stronger than expected finish to the year, predominantly from the growing telecommunications segment.

Revenue of $119.0m was $5.0m higher, or up 4%, for the period, with telecommunications increasing by $11.6m. This was offset by declines of $3.4m in space & defence (phasing of long-term customer contracts) and $1.6m in global positioning (a decline of low-margin, high-volume business). It was pleasing to see the growth in revenue starting to come through in the last quarter from higher share of business awarded to Rakon from its Tier One telecommunications customers.

Gross profit was $52.0m, in line with the prior year. Although improved product mix provided better underlying gross profit, additional inventory obsolescence meant the overall gross profit was flat. Operating expenses for the year were $48.1m, up $0.7m compared to the prior year.

Net debt\(^3\) was $7.9m, up $0.2m on the prior year. This included a final payment of $2.1m for the acquisition of the remaining 51% interest in Rakon India. Rakon’s shareholders’ equity stands at $91.9m, funding 61% of total assets.

Operational Overview

COVID-19

While COVID-19 had a negative short-term impact on the Group, with our manufacturing operations in New Zealand and India severely restricted for periods of time, the medium-term to long-term effects are not expected to be significantly negative. COVID-19 has increased the reliance on remote communications, reliable telecommunications infrastructure and higher network capacities, reinforcing the importance of Rakon in the global telecommunications supply chain.

Rakon had a strong finish to the year with revenue and order bookings despite our global team being affected by the pandemic, with many required to work from home.

New products & XMEMS™

It was pleasing to see a number of new products and variants of existing products introduced to the market during the year, and an increase in orders for Rakon’s 5G offering.

Customers are demonstrating a strong preference for Rakon’s quartz-based products over silicon-based competition, with higher shares awarded to Rakon from major Tier One telecommunications customers.

Rakon released XMEMS™ during the year, its key quartz-based technology for future products. XMEMS™ is our advanced resonator technology made with our NanoQuartz™ photolithography microfabrication process on quartz wafers, which is delivering unprecedented resonator and oscillator performance.

XMEMS™ coupled with Rakon’s innovative proprietary semiconductor Application Specific Integrated Circuits (ASICs) enables the creation of new products not possible using conventional mechanical processing methods which are smaller, higher performing and more cost-effective.

Market update

Telecommunications

As mentioned, telecommunications grew strongly, with revenue up 15% in USD terms this year compared with FY2019. The 5G segment contributed 43% of this growth and new 5G products showed 150% year-on-year growth, mostly out of the New Zealand plant. These products are going into early deployments of 5G in South Korea, China and the US. Of particular note were the higher revenues from the data centres market as data centre operators invested to meet the growing worldwide data demand.

Outlook

The outlook for the telecommunications segment continues to be positive with all three mobile operators in China deploying 5G networks, and the continuing demand for stable, reliable and greater capacity communications networks accentuated by COVID-19. Balancing this is the intensifying geopolitical uncertainty, which is creating volatility in customer forecasts.

Space and Defence

Rakon’s space revenue dropped 13% in USD terms, due predominantly to the phasing of long-term multi-year projects. The prior year also included a significant initial order for products going into the first Low Earth Orbit (LEO) satellite network in China.

Although overall revenue was lower, it was pleasing to see our European space business...
increasing, with some of Rakon’s traditional geostationary satellite business returning during the year.
The defence segment lost some of the gains from the last two years, with USD revenue down 15%. While the US market held firm, the negative impact came out of Europe.

**Outlook**
Current bookings indicate some revenue growth in both space and defence, including Rakon India having won new contracts for supplying the local Indian market and good forward orders for Space OCXOs* used in a US satellite application. In the meantime progress continues to be made in the New Space® LEO market, but it will take time for this revenue to grow.

**Global Positioning**
Global positioning revenue declined 25% in USD terms, predominantly due to one customer where high-volume, low-margin business declined. The industrial high precision Global Navigation Satellite System (GNSS) segment (including agricultural and mining equipment) was flat, with gains made in the first half offset by a lower second half, the latter being affected by the US/China trade issues. It was pleasing to see the emergency locator beacon market segment growing 7%.

**Outlook**
Rakon’s market share is increasing in the high precision sub-segment for low g-sensitivity products and this trend is expected to continue.

In the high-volume sub-segment, competitive pressures from global positioning module makers in Asia are expected to increase price pressure; however with our partnership with low-cost manufacturer Taiwan-based Siward Crystal Technology Co. Limited (‘Siward’) Rakon is expected to remain competitive.

**Corporate Governance**
The Board was deeply saddened by the passing of Rakon’s founder and former Chair and director Warren Robinson in September. We would like to acknowledge Warren’s outstanding contribution to New Zealand’s technology sector and his 50+ year dedication and commitment to our company. Warren was a remarkable New Zealander and formed strong connections with our people. He will be sorely missed.

FY2020 was a year of consolidation of the new team of directors completed in late 2018 and strengthening of governance practices, and there was a particular focus on key organisational and operational matters that would drive company performance. Looking forward, following a review of company strategy, the Board is seeking improved results through gross profit growth and continued focus on the development of best-in-class technology for existing and new customers.

The Board has appreciated the efforts of the whole Rakon team in responding to the COVID-19 pandemic, both as it emerged in the latter months of FY2020 and as the lockdowns and restrictions were imposed across the world affecting our operations, our supply chains, our customers and the day-to-day lives of our people. Amidst the immense uncertainty caused by the pandemic, Rakon employees rallied to support the business and to meet the requirements of our customers. They did so while working at Rakon’s manufacturing sites, where permitted, under strict health and safety protocols or, where practical, working from home; and having agreed to take a pay reduction. As part of the supply chain for essential communications and civil defence services, it was important to stay connected with our suppliers and understand delivery logistics to meet our customers’ requirements to the extent possible.

We also appreciated the efforts of our fellow directors who took a 50% reduction in their fees and met more frequently to support management through the crisis.

**Closing Comments and Outlook**
At this point in time we seem to be through the worst of COVID-19’s impact and we were fortunate that there were no permanent effects for our staff personally. With our global manufacturing operations largely back to normal, Rakon is well positioned for the rest of FY2021.

We expect the coming period to show continuing growth in telecommunications, tempered by potential uncertainties from geopolitical tensions within the telecommunications market.

Rakon’s XMEMS™ technology will continue to be developed and commercialised, and will be more important to Rakon’s longer-term future as it becomes a key point of difference with regard to competitors.
Financial Year 2020
Performance Summary

- Revenue of $119.0m vs. $114.0m in FY2019.
- Underlying EBITDA of $14.8m vs. $13.3m in FY2019.
- Net profit after tax of $4.0m vs. $3.4m in FY2019.
- Net debt was $7.9m vs. $7.7m in FY2019.

The Surface Mount Technology area at Rakon's Auckland facility prior to the COVID-19 health emergency. While manufacturing operations in New Zealand and India were severely restricted for a period of time, the medium-term to long-term effects are not expected to be significantly negative.
Board of Directors

Bruce Irvine
Chair and Independent Director
Bruce is a professional director with extensive experience across a wide range of industries. He is a Chartered Fellow of the Institute of Directors, as well as an Accredited Fellow of Chartered Accountants Australia and New Zealand (CAANZ).
He is currently Chair of Heartland Bank Limited, Market Gardeners Limited and Skope Industries Limited. He is also a director of Scenic Hotel Group Limited and House of Travel Holdings Limited and a number of other private companies.

Brent Robinson
Executive Director
Brent has 41 years at Rakon, which includes establishing global operations and markets and 34 years as CEO / Managing Director.
Under Brent’s leadership Rakon has grown into a global business and a recognised leader in the frequency control product industry. Brent is an Honorary Fellow of the Institution of Professional Engineers New Zealand. He was awarded the New Zealand Hi-Tech Trust – Flying Kiwi Award in 2011.

Bruce Irvine
Chair and Independent Director
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He is currently Chair of Heartland Bank Limited, Market Gardeners Limited and Skope Industries Limited. He is also a director of Scenic Hotel Group Limited and House of Travel Holdings Limited and a number of other private companies.

Lorraine Witten
Independent Director
Lorraine is a professional director with extensive experience in technology and Information Communications Technology (ICT) sectors. She is a Chartered Fellow of the New Zealand Institute of Directors and a member of Chartered Accountants Australia and New Zealand (CAANZ).
Lorraine is Chair of the Corrections Department Audit & Risk Committee and a director of TIL Logistics Group Limited and Horizon Energy Group. She is also Chair of Simply Security Limited, a company she founded in 2007, and Chair of vWork Limited.

Yin Tang Tseng
Non-Executive Director
Yin Tang (Tony) is the current Chair of Siward Crystal Technology Co. Limited, a substantial shareholder (16.6%) in Rakon.
Tony has more than 30 years of experience in the frequency control product industry, having founded Siward in 1988 and grown the company to become one of the leaders in the industry globally, with revenue of US$100+ million. Tony is a director of Securitag Assembly Group Limited.

Keith Oliver
Independent Director
Keith is a professional director and a business advisor with Alto Capital, where he is also a director. He is a past director of a range of NZ technology companies operating in international markets in Asia, Europe and the Americas, several of which he has been a founder and investor in.
Keith is currently the Executive Chair of Blackhawk Tracking Systems Limited and a director of Wellington Drive Technologies Limited.

Lorraine Witten
Independent Director
Lorraine is a professional director with extensive experience in technology and Information Communications Technology (ICT) sectors. She is a Chartered Fellow of the New Zealand Institute of Directors and a member of Chartered Accountants Australia and New Zealand (CAANZ).
Lorraine is Chair of the Corrections Department Audit & Risk Committee and a director of TIL Logistics Group Limited and Horizon Energy Group. She is also Chair of Simply Security Limited, a company she founded in 2007, and Chair of vWork Limited.

Keith Watson
Independent Director
Keith is a professional director with substantial experience in the technology and engineering sectors. He is a Chartered Member of the Institute of Directors in New Zealand. Keith has governance, management and leadership experience in companies across the Asia Pacific region, the Americas, Central Europe, the UK, Australia and New Zealand.
Keith is currently the Chair of the New Zealand Institute of Economic Research (NZIER) and a director of Acumen Republic Limited, Taska Prosthetics Limited and Complete 3D.
Business and Strategic Focus

INPUTS
- 950+ global team
- Global platform
- Strong ecosystem partnerships & customer relationships
- Investment in R&D
- Our 53-year trusted brand
- Deep application expertise

DIFFERENTIATION STRATEGY
- HOW WE SUCCEED IN ENABLING THE CONNECTED FUTURE

OUTPUTS
- Enabling applications that change the way we live our lives
- Enabling our customers to advance technology
- Improved service and efficiencies for our customers
- Increased shareholder value
- Growth of our people

KEY FOCUS
- TECHNOLOGY LEADERSHIP
- HIGHLY FLEXIBLE PRODUCT PLATFORMS
- WORLD CLASS QUALITY
- OPERATIONAL EXCELLENCE
- PROFESSIONAL EXCELLENCE & LEADERSHIP
- PARTNERSHIPS
- FAST RESPONSE TIMES
- LOW COST STRATEGY

Karl Ward
Principal Design Engineer, Harlow, UK
Rakon is uniquely positioned in the frequency control product industry with its own in-house ASIC design team. Our experienced team produces advanced designs for Rakon products, strengthening and extending performance ranges, allowing us to meet future market demands.
Global Executive Team

Brent Robinson
CEO / Managing Director & Chief Technology Officer

Brent was appointed Managing Director and Chief Executive Officer in 1986. Under Brent’s leadership, Rakon has grown into a global company and recognised leader in the frequency control product industry with revenue of $119.0m in FY2020.

In his capacity as Chief Technology Officer, Brent oversees the business’s technology and innovation. He has 41 years’ experience at Rakon in the design and manufacture of crystals and oscillators, which has included leading the development of Rakon’s core business.

Darren Robinson
Chief Operating Officer

Darren has led sales and marketing since 1990, having earlier held various roles with the company in New Zealand and overseas. He has been instrumental in the company’s expansion into new markets, its commercialisation of new applications and its development of business relationships with many Fortune 500 companies.

Through Darren’s in-depth understanding of the markets Rakon competes in, he also plays an integral part in steering its R&D efforts. He guides product development teams to meet new requirements in emerging applications and solve problems for customers.

Anand Rambhai
Chief Financial Officer

Anand joined Rakon in January 2012 and was appointed CFO in November 2018. Anand brings strong leadership, commercial skills and in-depth Rakon business knowledge to the company. In his current role he is responsible for Rakon’s finance, information systems and investor relations functions.

Anand has gained broad financial and commercial experience in previous roles, including as GM of Finance and General Manager. His previous experience includes tenures at Sony, British Telecom and Deloitte. Anand is a member of Chartered Accountants Australia and New Zealand (CAANZ).

Dr. Sinan Altug
Chief Executive Officer

Sinan joined Rakon in 2002 and commenced as COO in January 2020. In this newly created position he leads, aligns and drives the company’s global operations to best meet customer demand and create profitable growth.

Other senior positions held by Sinan include Managing Director of Rakon’s European businesses and Global Business Development Director. Sinan held various management positions in the frequency control product industry before joining Rakon, including Director of European Operations for Champion Technologies. He has a PhD in Electrical Engineering and an MBA.

Arun Parasnis
Managing Director, Rakon India

Arun joined Rakon in October 2018 and is responsible for overseeing all business functions at Rakon India.

Arun has had 30 years of experience in the electronics industry, overseeing functions including engineering, operations, business development and profit and loss management.

His experience across the electronics industry includes electronic components, consumer electronics and Electronics Manufacturing Services (EMS). Prior to joining Rakon, Arun was the Vice President of Cyient Limited. He has also held senior positions at Radiall India Private Limited, Jabil Circuit India Private Limited and Vishay Components India Private Limited (formerly the Philips Electronics Passive Components division).

Margo Thomas
General Manager, Global People and Capability

Margo joined Rakon in January 2016. In her current role she is responsible for all global Human Resources (HR) strategy, policies and processes including organisational alignment, talent acquisition, leadership development, change management, employment relations and health and safety.

Prior to this, she held the position of General Manager of People and Capability New Zealand. Margo has 20 years’ experience working in HR including senior HR positions in a range of industries with Crowe Horwath, Spark, Westpac and New Zealand Post.

Biographies are available at: www.rakon.com/corporate/investor/ir-gov/ir-mgmt
Key Achievements FY2020

Strong finish to the year with revenue and order bookings

Preference for Rakon’s quartz-based products over silicon-based competition

18 new products introduced including launch of Mercury+, the world’s smallest OCXO.

Ramping up for 5G – Mercury+, Neptune™ and Mercury™ products

6 core R&D advanced technology developments under way including release of XMEMS™, Rakon’s key quartz-based technology for future requirements

New products being developed for emerging 5G millimetre wave (mmWave) requirements

Increased share of major Tier One telecommunications customers’ business

Rakon is designed into the transportation and radioheads for 5G

34 million products shipped

Launched global Sales & Operations Planning (S&OP) review process, significantly improving worldwide customer satisfaction and employee engagement

All business units recertified to global quality standards

Carole Gagnard
Product Assurance Manager, Space & Defence Business Unit, Pont-Sainte-Marie, France

At Rakon product quality is paramount. Our quality team is involved from the initial purchase order right through to the final shipment of products to our space & defence customers. We are involved in project review, components selection, operator qualification, product inspection (including before sealing with customer participation) and final quality control.

9 & 10 Visit www.rakon.com/products for more information on Neptune™ (Ultra Stable TCXO), Mercury™ and Mercury+™ (IC OCXO) products, or scan the QR code on page 17. For the Mercury+™ release visit www.rakon.com/corporate/about/news

9 New products introduced by Rakon to the market are defined as products which have begun sampling.
Financial Summary

Summary of Revenue and Profit
For the year ended 31 March 2020

<table>
<thead>
<tr>
<th></th>
<th>2020 $000s</th>
<th>2019 $000s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>118,980</td>
<td>113,985</td>
</tr>
<tr>
<td>Underlying EBITDA</td>
<td>14,787</td>
<td>13,270</td>
</tr>
<tr>
<td>Depreciation and amortisation</td>
<td>(8,823)</td>
<td>(5,802)</td>
</tr>
<tr>
<td>Interest</td>
<td>(1,055)</td>
<td>(534)</td>
</tr>
<tr>
<td>Adjustment for associates and joint venture share of interest, tax and depreciation</td>
<td>(1,447)</td>
<td>(1,120)</td>
</tr>
<tr>
<td>Other non-cash items</td>
<td>(178)</td>
<td>(340)</td>
</tr>
<tr>
<td>Income tax expense</td>
<td>696</td>
<td>(2,110)</td>
</tr>
<tr>
<td>Net profit after tax</td>
<td>3,980</td>
<td>3,364</td>
</tr>
</tbody>
</table>

Summary of Statement of Cash Flows
For the year ended 31 March 2020

<table>
<thead>
<tr>
<th></th>
<th>2020 $000s</th>
<th>2019 $000s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net cash flow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Operating activities</td>
<td>9,401</td>
<td>(1,768)</td>
</tr>
<tr>
<td>– Investing activities</td>
<td>(6,631)</td>
<td>(12,674)</td>
</tr>
<tr>
<td>– Financing activities</td>
<td>(3,078)</td>
<td>(24)</td>
</tr>
<tr>
<td>Net (decrease) / increase in cash and cash equivalents</td>
<td>(308)</td>
<td>(14,466)</td>
</tr>
<tr>
<td>Foreign currency translation adjustment</td>
<td>(672)</td>
<td>144</td>
</tr>
<tr>
<td>Cash and cash equivalents at the beginning of the period</td>
<td>(6,782)</td>
<td>7,540</td>
</tr>
<tr>
<td>Cash and cash equivalents at the end of the period</td>
<td>(7,762)</td>
<td>(6,782)</td>
</tr>
</tbody>
</table>

This financial summary provides partially summarised financial information only, regarding the financial performance of Rakon Limited for the year ended 31 March 2020. Please refer to the Rakon Limited Annual Report 2020 for the full financial statements and accompanying notes.

Keerti Prakash
Procurement Manager, Supply Chain, Auckland, NZ

Strong supplier partnerships are foundational to a business’s overall success. They provide partners with a more complete understanding of our business needs, leading to improved services and reduced costs. The team has been involved in open and ongoing dialogue with our strategic partners, which has helped build strong business-to-business engagement. As we have seen, solid partnerships take dedicated effort, but they deliver more mutual value.

Refer to the footnote on page 19 for explanation of Underlying EBITDA.
## Balance Sheet
### As at 31 March 2020

<table>
<thead>
<tr>
<th>Assets</th>
<th>2020 $000s</th>
<th>2019 $000s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>5,086</td>
<td>4,719</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>42,379</td>
<td>38,220</td>
</tr>
<tr>
<td>Financial asset at fair value through profit and loss</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>Derivative financial instruments</td>
<td>27</td>
<td>307</td>
</tr>
<tr>
<td>Inventories</td>
<td>37,624</td>
<td>39,310</td>
</tr>
<tr>
<td>Current income tax asset</td>
<td>889</td>
<td>561</td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td>86,007</td>
<td>83,136</td>
</tr>
<tr>
<td><strong>Non-current assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>2,702</td>
<td>2,267</td>
</tr>
<tr>
<td>Derivative financial instruments</td>
<td>–</td>
<td>258</td>
</tr>
<tr>
<td>Financial asset at fair value through other comprehensive income</td>
<td>2,918</td>
<td>4,549</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>18,924</td>
<td>19,394</td>
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<tr>
<td>Intangible assets</td>
<td>9,003</td>
<td>9,149</td>
</tr>
<tr>
<td>Investment in associates</td>
<td>11,714</td>
<td>10,399</td>
</tr>
<tr>
<td>Deferred tax asset</td>
<td>9,246</td>
<td>7,352</td>
</tr>
<tr>
<td>Right-of-use assets</td>
<td>9,730</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total non-current assets</strong></td>
<td>64,237</td>
<td>53,368</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>150,244</td>
<td>136,504</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liabilities</th>
<th>2020 $000s</th>
<th>2019 $000s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank overdraft</td>
<td>12,848</td>
<td>11,501</td>
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<tr>
<td>Borrowings</td>
<td>145</td>
<td>474</td>
</tr>
<tr>
<td>Trade and other payables</td>
<td>22,252</td>
<td>26,398</td>
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<tr>
<td>Derivative financial instruments</td>
<td>5,040</td>
<td>945</td>
</tr>
<tr>
<td>Lease liabilities</td>
<td>2,741</td>
<td>–</td>
</tr>
<tr>
<td>Provisions</td>
<td>714</td>
<td>471</td>
</tr>
<tr>
<td>Deferred consideration on acquisition</td>
<td>–</td>
<td>1,885</td>
</tr>
<tr>
<td>Deferred income – government wage subsidy</td>
<td>2,000</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total current liabilities</strong></td>
<td>45,740</td>
<td>41,674</td>
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<tr>
<td><strong>Non-current liabilities</strong></td>
<td></td>
<td></td>
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<tr>
<td>Derivative financial instruments</td>
<td>2,840</td>
<td>343</td>
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<tr>
<td>Borrowings</td>
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<td>412</td>
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<tr>
<td>Provisions</td>
<td>2,918</td>
<td>2,990</td>
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<tr>
<td>Deferred tax liabilities</td>
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<td>1,069</td>
</tr>
<tr>
<td>Lease liabilities</td>
<td>6,704</td>
<td>–</td>
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<tr>
<td><strong>Total non-current liabilities</strong></td>
<td>12,648</td>
<td>4,814</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>58,388</td>
<td>46,488</td>
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<tr>
<td><strong>Net assets</strong></td>
<td>91,856</td>
<td>90,016</td>
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<tr>
<td><strong>Equity</strong></td>
<td></td>
<td></td>
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<tr>
<td>Share capital</td>
<td>181,024</td>
<td>181,024</td>
</tr>
<tr>
<td>Other reserves</td>
<td>(23,293)</td>
<td>(21,153)</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>(65,875)</td>
<td>(69,855)</td>
</tr>
<tr>
<td><strong>Total equity</strong></td>
<td>91,856</td>
<td>90,016</td>
</tr>
<tr>
<td><strong>Total equity and liabilities</strong></td>
<td>150,244</td>
<td>136,504</td>
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</table>
A key focus and strategy for Rakon is technology leadership. Three senior members involved in executing this strategy explain how Rakon maintains its leadership, and discuss current technology developments and what the future of technology holds.

**Rakon develops product solutions** to enable its customers, some of whom are world-leading companies within their respective markets, to advance their systems to the next level of performance.

Rakon’s R&D capability has kept it at the forefront of the frequency control products industry.

“One of the key aspects is that Rakon has developed strong in-house R&D capability in our core foundational technologies. We have our own ASIC design and development team, along with the quartz resonator development team’s in-house microfabrication facility where we can develop technologies such as XMEMS™,” says Advanced Technology Manager of Global Engineering Michael McIlroy.

The General Manager of Rakon’s UK R&D business unit Philip Davies says such a combination is formidable.

“Having the XMEMS™ technology plus an ASIC design team in the same company is extremely rare, if not unique. Putting those two things together gives us incredible benefits in terms of developing new technologies, enhancing product performance and maintaining technology leadership.”

**Investment in innovation** and close collaboration are also important.

“Rakon continues to invest heavily in R&D and innovation. Without this we could not maintain our leadership. It’s all about investment in automation, investment in highly skilled engineers – and not only those that look after design, but also the process engineers who play a huge part in implementing the new technologies they are presented with by the R&D teams.

“Our close collaboration with customers, our in-house engineering systems level understanding and our experienced and highly knowledgeable engineering community are also key.

“To tie it all together, we have strategic relationships with customers who are Tier One companies in their respective industries, so we know what’s coming; then we invest in technologies and realise their requirements using our crystal and ASIC technology to its best and fullest extent. It’s knowing what customers need at the start of that process, and also that systems level knowledge, which sets Rakon apart.”

A highly technical understanding of the ecosystems in which Rakon operates is also essential.

“We link in a strong understanding of customer and market needs. We also have a highly technical understanding of our customers’ requirements. In combination with that is a drive to invest, be innovative, develop technology and the world-class R&D teams we have, to support those technology drives and developments,” says McIlroy.

**Management at the senior level** is very entrepreneurial, agile and pushing the boundaries are also key differentiators at Rakon.

“To vest in the right things which are technically very difficult, where we are not guaranteed to succeed. We take on the difficult specifications.”

**Future proofing and foresight** have also been crucial says Davies.

“Management at the senior level is very technically savvy, which is critically important – and we have a technology focused culture where everybody is pulling in the same direction. That and the foresight of management and the Board in making the right strategic decisions have ensured we maintain our technology leadership.”

In the past financial year alone the company invested $13.9m in R&D, with technology developments under way at its R&D facilities in NZ, the UK, France and India.

In India product developments have included a space-grade TCXO, crystal filter and distribution amplifier for space applications and a narrow bandwidth miniature VCO for a defence application.

In France the team diversified its product portfolio with the release of its high performance VCSO range of products. Developments have also included a complete Frequency Generation Unit for a space application and customer sampling of an OCXO for the New Space market.

In the UK exciting progress was made with a proprietary post-compensation TCXO and a next generation high stability OCXO. Davies says the post compensation technology has already been released to some select customers.

“It is a very clever technology, allied to some highly sophisticated algorithms. Basically, it doubles the product’s performance, enabling even tighter frequency tolerances.”
In New Zealand, the release of XMEMS™ has been a key technology development in FY2020, says McIlroy. “XMEMS™ is a key foundational technology and we will be using it to develop the core resonator portion of our oscillator products further.”

“XMEMS™ is leveraging the high performance possible with a quartz-based resonator. It is leveraging the fantastic history and legacy of quartz-based products but linking in new geometries, structures and microfabrication techniques. This further enables the best characteristics of the quartz to be used and drawn out into that final resonator performance. It is taking our oscillator products to a new level in terms of size, stability, phase noise, and $g$ sensitivity. All of the key parameters are leveraged off the resonator and our XMEMS™ technology.”

McIlroy says additionally that part of his role as Advanced Technology Manager (a new role established 12 months ago) has been to further enable Rakon to leverage and benefit from the synergies of the global team’s technical competencies. “A key role of mine is to work to pull teams together, find those synergy points and cross-fertilise as needed. “Sometimes technology at one level which has been developed for a particular market then becomes important in another market, and we are able to leverage our initial developments in one market over to another. So for example . . . if you take the New Space requirements, where lower power, smaller form factor OCXOs are required, we can leverage some of the technology that we’ve developed in the telecommunications miniature OCXO market and feed that into the requirements for New Space.”

Davies said the UK team are working on developing a next generation ‘Super TCXO’ in the near future. “Using all the knowledge we have gained over the past two to three years in our core ASIC technology developments, we are now about to start developing the next TCXO chip. We believe it will be a world-beater, offering extremely tight frequency stability performance.”

So what lies further ahead for Rakon and what does the future of technology look like? “We will continue to focus on achieving and exceeding the upper limits of performance specifications and being first to market while keeping design costs down. I see us having a very good connection into all of the markets that we operate in. It’s really just continuing to push the boundaries,” says Cann. Markets will continue to evolve and Cann and McIlroy believe Rakon is positioned well at the high performance end of those markets. “Rakon will continue to excel in areas that require high accuracy; for example, applications like automotive, car-to-car communications, or where more stringent applications of quality and design processes are required. These areas often have safety and life criticality associated with them – like what we’re already doing in the global positioning and rescue beacons space,” says Cann.

“Demand for high performance frequency control products is growing, with demand throughout the telecommunications, space & defence and global positioning markets, while also now expanding into areas such as automotive with smart vehicles and those types of applications. “So our demand and growth will continue to be for higher and specific requirements. This will come about with demand for tighter stabilities, increased robustness, performance at higher temperatures and smaller form factors across all of those markets. We will continue to meet these requirements while maintaining cost effective solutions enabling our customers to advance their own technology,” says McIlroy.
In a very fast moving and fiercely competitive, changing market environment, fast response times are essential to business sustainability and success. When we understand each customer requirement and respond accurately and efficiently, we maximise the potential to gain from every opportunity.

Telecommunications

The equipment that enables telecommunications networks to operate. Includes small cells, 4G / 5G mobile base stations, microwaves, broadband networks as well as data transport, routers and optical transmission equipment.

Space & Defence

Applications where reliability, precision and performance are at premium. Includes Space, defence, radians and other high reliability applications.

Global Positioning

Includes all Global Navigation Satellite System (GNSS) equipment and other positioning systems. Applications include Personal Navigation Devices (PNDs), high-precision positioning (surveying, mining, and agriculture), emergency services (rescue, service, distress, automotive, asset tracking, and sport and recreation products).

Emerging and Other

Many applications including wireless control, test and measurement, industrial, energy monitoring, Machine-to-Machine (M2M), the Internet of Things (IoT), as well as other emerging markets.

Rakon Everywhere

Rakon products enable connectivity and are embedded in electronic systems everywhere.

Acronyms

Augmented Reality & Virtual Reality  (AR / VR)

Digital Subscriber Line  (DSL)

Ultra-Reliable Low-Latency Communication  (URLLC)

Very Small Aperture Terminal  (VSAT)

Wide Area Network  (WAN)

IoT

VSAT

INTERNET

OF THINGS

(IoT)

5G

DISTRIBUTION

UNITS

AVIONICS

TELECOM

EARTH

OBSERVATION &

GNSS SATELLITES

4G REMOTE

RADIO HEADS

DATA

CENTRES

SMART

GRIDS

URLLC

NETWORKS

INDUSTRIAL

AUTOMATION

SURVEILLANCE

RADARS

AIR TRAFFIC

CONTROL

DEEP SPACE

PROBES

DEEP SPACE

EXPLORATION

LOW

EARTH ORBIT

SATELLITES

CABLE

DSL / FIBRE TO

THE HOME

FINANCIAL

NETWORKS

ENTERPRISE

NETWORKS

AUTONOMOUS

VEHICLES

4G MACRO

BASE STATIONS

LAUNCH

VEHICLES

DEEP SEA

CABLE

EMERGENCY

LOCATOR

BEACONS

GROUND &

SHIPBOARD

STATIONS

ASSET

MANAGEMENT

LOW POWER

WAN

5G

SMALL CELLS

4G

SMALL CELLS

SPORT &

RECREATION

WEARABLES

5G

REMOTE

RADIO HEADS

DRONES &

UNMANNED

AERIAL VEHICLES

5G

CENTRAL

UNITS

TIME

GRANDMASTER

SOLUTIONS

PRECISION

AGRICULTURE

TRANSPORT & BACKHAUL

ROUTERS AND

SWITCHES

PRODUCT OFFERING

Rakon products enable connectivity and are embedded in electronic systems everywhere.

In a very fast moving and fiercely competitive, changing market environment, fast response times are essential to business sustainability and success. When we understand each customer requirement and respond accurately and efficiently, we maximise the potential to gain from every opportunity.
In today’s highly competitive global business environment, only organisations that are agile, flexible and excellent in their operations can survive and grow. Rakon’s success comes out of its strengths in leadership, employee engagement and technological expertise. Rakon India’s ‘creating the future’ programme brings out the best from every employee and helps toward achieving operational excellence.

In today’s highly competitive global business environment, only organisations that are agile, flexible and excellent in their operations can survive and grow. Rakon’s success comes out of its strengths in leadership, employee engagement and technological expertise. Rakon India’s ‘creating the future’ programme brings out the best from every employee and helps toward achieving operational excellence.

Imagine a world where specialist doctors could perform surgeries remotely, with the use of robots and real time data transmitted and received from the other side of the world. Imagine a world of complete autonomy, where connected cars could drive us to our next destination.

These applications may seem a way off for now, but they are becoming possible with 5G, says Rakon CEO Brent Robinson.

“Every ‘G’ or Generation of new wireless network brings faster speed and functionality to our wireless devices. 5G will not only bring significant improvements to capability and the end-user experience for existing applications like video streaming, data transfer of distributed databases, real time data transfer and downloading; the functionality will also bring to life many applications that are simply not yet possible,” he says.

So what does 5G enable that 4G technology cannot?

“5G will be ten times faster and will allow 1000 times more traffic capacity than 4G networks. It will open up room for more users and more traffic. A key factor is the very low latency that 5G is enabling. Latency is the delay you experience from the time data is transmitted and received. It is the buffering or the frozen static image you see on screen of that person you are video calling, or the lag in time while you wait for that movie to download.”

For Rakon the opportunities lie in the precise timing that is required for 5G.

“We’re providing the precise timing that enables 5G to operate. Low latency is based around synchronised timing, which our OCXOs and TCXOs can provide. Our products are embedded in the equipment that is supplied into the telecommunications networks. It is the low latency of 5G that will enable real time data applications like remote surgeries and autonomous cars to become a reality. With applications like these, the time taken to transmit and receive data is critical.”

Technologies are also emerging as the foundation of 5G – one of them being millimetre waves. Users are demanding more data and bandwidth. Currently, this demand is largely fulfilled by frequencies on the radio frequency spectrum at between 1 GHz to 6 GHz, says Brent.

“5G is opening up the spectrum for mobile devices to operate on shorter millimetre waves with frequencies that fall between 30 to 300 GHz, which is opening up the bandwidth. We are supplying high frequency, low noise VCXOs and timing devices that allow for higher frequencies to be used – up into the 30 to 60 GHz range. To use these very high frequency spectrums they need high frequency quartz crystal products to allow them to access these

Unnikrishnan PM
General Manager of Operations, Bengaluru, India

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bands. So in addition to our products being able to provide the reference for the timing, we are also able to provide the high frequency, low noise source required for millimetre wave frequency bands.”

Rakon’s gain in revenue in the telecommunications segment is an indication that the 5G roll-out has begun and Brent says the company is well-positioned with its product offering, for anticipated widespread deployment.

“5G roll-out is happening in China and South Korea right now. There are a few countries where it is widely deployed already and it’s rolling out further. With dominant share allocations from key Tier One customers secured, our products are being designed into all the main network providers’ 5G equipment.”

Brent says that networks around the world are running out of capacity. With the COVID-19 pandemic there has been a radical change in the way the world conducts its business, putting further unprecedented demand on network traffic and accelerating 5G roll-out.

“Really, next year in 2021, I think, is when we will see large 5G roll-out, but with the coronavirus it may change. It seems there have been a lot of commitments to accelerate it given COVID-19. With more demand for data, with people self-isolating and working from home, we believe that trend will continue after the COVID-19 health emergency ends. People will be adopting remote working as a mode, because they will be able to see that they can,” he says.

Rakon sees further opportunities ahead – not only for telecommunications, but also in its other core markets of space & defence and global positioning.

“In global positioning we are well positioned for the higher end industrial products like seismic surveying, where there are difficult environmental requirements like low g-sensitivity, wide temperature range and very high precision. This is where Rakon basically comes into its own in that end of the market, rather than the consumer end. So we’re positioned well, we’ve got a great product offering and that end of the market is growing for us.”

Brent says the company will continue to see a convergence of its technologies across all of its core markets in the future.

“In the New Space market, for example, we are leveraging our heritage in supplying the geostationary market and a blend of telecommunications and GNSS products where there is a lot more volume. Low Earth Orbit (LEO) satellites are being mainly used today for global broadband coverage. We’ve been developing a hybrid between telecommunications, GNSS and space products to deliver a lower cost, radiation-hard product offering for this application. We are continuing to leverage the combined expertise of our R&D teams to enable new applications as they emerge.”

Definition of Underlying EBITDA
Rakon has used “Underlying EBITDA” as a measure of non-GAAP financial information in this 2020 Review document. Underlying EBITDA is defined as “Earnings before interest, tax, depreciation, amortisation, impairment, employee share schemes, non-controlling interests, adjustments for associate’s and joint venture’s share of interest, tax and depreciation, loss on disposal of assets and other cash and non-cash items (Underlying EBITDA).”

Underlying EBITDA is a non-GAAP measure that has not been presented in accordance with GAAP. The Directors present Underlying EBITDA as a useful non-GAAP measure to investors, in order to understand the underlying operating performance of the Group and each operating segment, before the adjustment of specific cash and non-cash items and before cash impacts relating to the capital structure and tax position. Underlying EBITDA is considered by the Directors to be the closest measure of how each operating segment within the Group is performing. Management uses the non-GAAP measure of Underlying EBITDA internally, to assess the underlying operating performance of the Group and each operating segment.

Underlying EBITDA as non-GAAP financial information has been extracted from the financial statements for the year. Except for Underlying EBITDA, other information provided to the chief operating decision maker is measured in a manner consistent with GAAP. The Directors provide a reconciliation of Underlying EBITDA to net profit for the year, refer note 4 of the Rakon Limited Annual Report 2020.
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