Ravensdown is here
to enable smarter farming
for a better New Zealand

REAL
PEOPLE & PROGRESS

Ka pūkekotia
a Rongomātāne, ka poho
kererū a Aotearoa

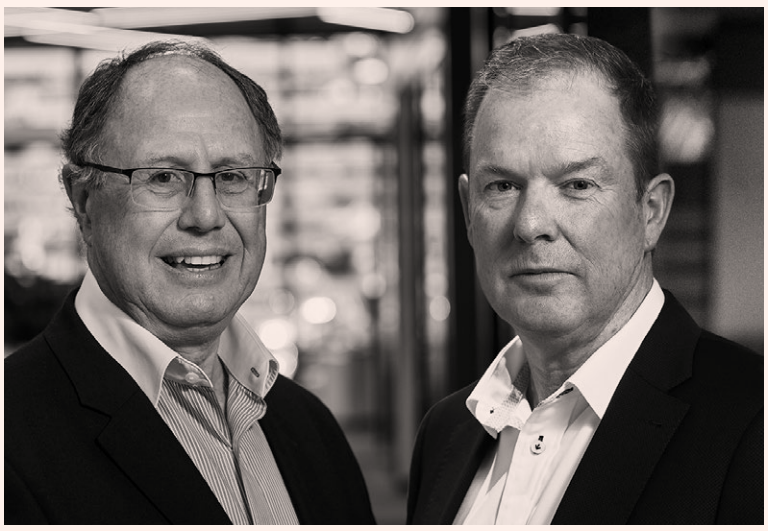
Stewardship is about more than the financials

Measuring wellbeing is becoming critical

Complex problems require smarter farming

RAVENSDOWN'S INTEGRATED REPORT 2018—19

How has the co-operative done this year? Let's look at people, progress, perspectives.



Let's face it
—
Ravensdown's Chair John Henderson and CEO Greg Campbell introduce the Integrated (Annual) Report for 2018-19.

Welcome to our Integrated Report for the year ending 31 May 2019. Inside you will find the topics that are material to our stakeholders, our approach to challenges and to managing risks. Throughout, there is a focus on how our solutions are delivering value.

We have had a strong year and there is pride in that performance, and a fierce determination to push ourselves further.

Solutions demand optimism and compromise. Stone throwing from the sidelines does not. It's about tough choices – making the best decisions we can – acknowledging they do have serious impacts. The challenges we face are complex.

We asked three leaders in their fields to outline how they see the big-picture issues facing a co-operative like ours, before going on to explain our approach to these topics.

As a co-operative that exists to enable smarter farming for a better New Zealand, we are determined to report transparently on progress towards that purpose. The stakes are high and there are many viewpoints on the right way forward. The debate is to be welcomed. Scrutiny is an opportunity to improve. The solutions are worth investing in.

When it comes to helping farmers reduce their environmental impact and optimise value from the land, the challenge is worth confronting. How do we create food that enough people are prepared to pay for in ways that do not destroy our natural environment or cause ecological harm?

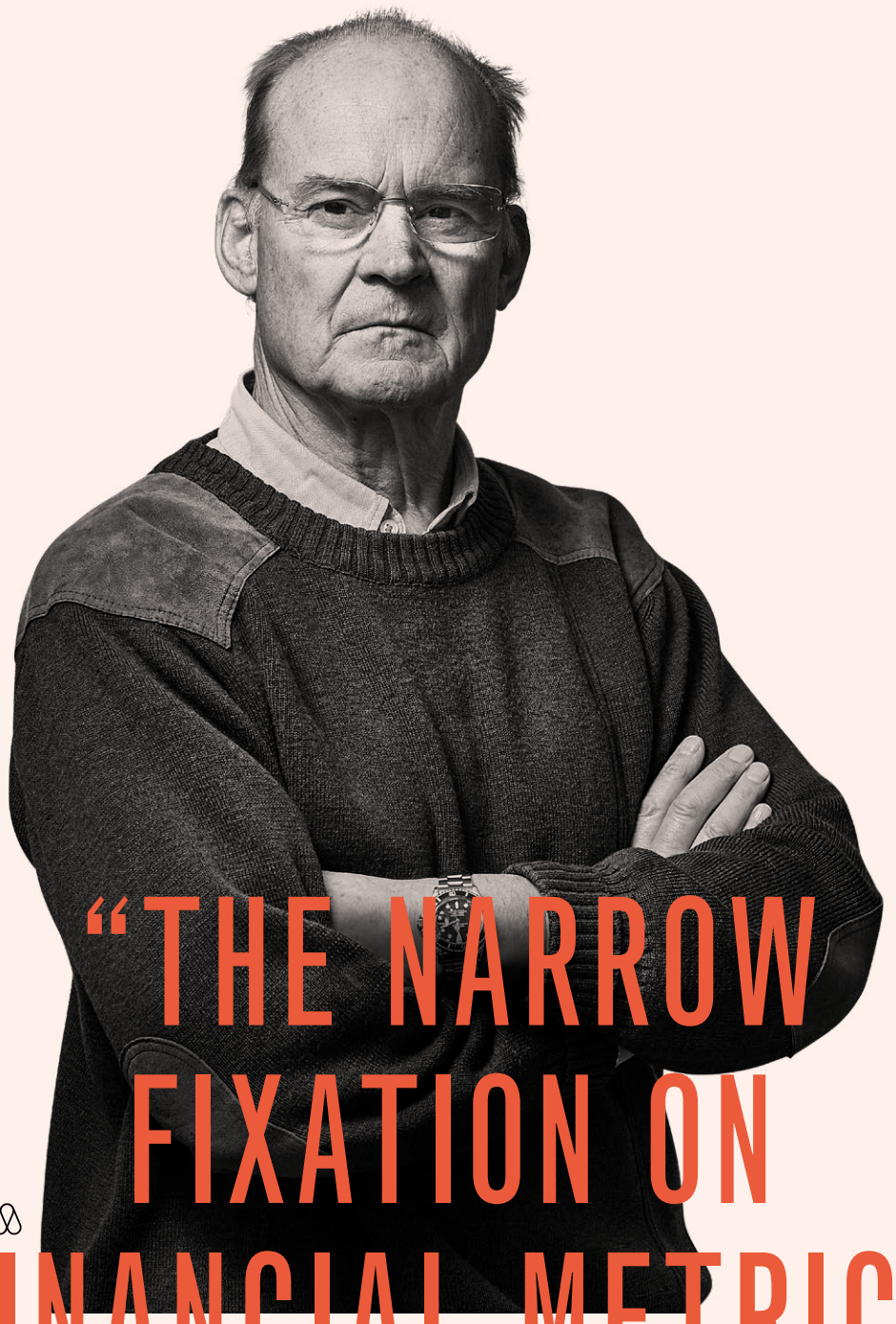
This is the challenge occupying the minds of all our stakeholders – not just our farmer shareholders. There are plenty of differing perspectives on how to achieve better nutrient and environmental management, and Ravensdown is uniquely positioned to help. ■

Contents

ravensdown

Check out videos, downloads and how we engage with stakeholders at:

integratedreporting.
ravensdown.co.nz



“THE NARROW FIXATION ON FINANCIAL METRICS IS YESTERDAY’S THINKING. IT’S A DANGEROUS MODEL.”

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Soils around the world are being degraded as never before.

01

/ 03

Sir Rob Fenwick is the inaugural Chair of Aotearoa Circle, Fonterra's Sustainability Advisory Panel and Sustainable Seas National Science Challenge.

He's also on advisory panels for Air New Zealand, Westpac and Waste Management NZ, and Director of Te Papa Tongarewa and Ngāti Whātua Orakei's corporation Whai Rawa Ltd. He was knighted for services to business and the environment in 2016.

Accounting for our natural capital

The State of the Environment Report 2019 – Environment Aotearoa – was, as expected, a grim read showing steady decline of many indicators including soils, climate, fresh water, biodiversity and the marine environment. And as usual, hand-wringing by commentators, politicians and non-government agencies followed about what the Government should do about it.

But who are the best guardians? Of course it's all of us in society, not just the Government, and business has a huge role to play in providing leadership in the preservation of the country's natural capital.

Ravensdown is a special case. Not only is it a powerful participant in the country's private sector whose business is to drive sustainable productivity from our precious soils, it is a co-operative owned and controlled by a collection of private land owners who together have stewardship over a huge footprint of New Zealand.

Going beyond financial measures

For many in the commercial sector, financial capital has for so long been the only measure of successful business. This narrow fixation on financial metrics is yesterday's thinking. It's a dangerous model because it excludes some of the most potent risks facing the economy.

It's now clear to enlightened analysts that environmental risks must be properly measured and managed, and where possible, mitigated. Evidence is everywhere:

- International funders, investors and insurers are demanding transparent environmental risk disclosure.
- The World Economic Forum's Global Risk Report 2019 lists the top five global economic risks as being environmental, such as freak weather events, water calamities, and climate-related disasters.
- The New Zealand Stock Exchange and Financial Management Authority increasingly require companies to report non-financial risks such as climate change and water use.
- Our Super Fund is divesting investments with track records of environmental degradation, while some banks are limiting funds to environmental degrading practices.

It's a safe prediction that future New Zealand businesses will build environmental risk and opportunity into everyday thinking and will account for natural capital in decision-making, as we have used only financial capital in the past.

As the Productivity Commission said, the inevitable shift to a new, low-emissions, higher-value economy will be profound and widespread. It will transform land use, energy systems, production methods and technology. It will shift regulatory frameworks and institutions and the culture of business and politics.

Gross Domestic Product (GDP) has been a very clumsy metric. Many GDP indicators perversely improved at the expense of natural capital.

For an economy and a society so dependent on its natural environment, New Zealand of all countries needs a measure of success that balances the stocks of human, financial and natural capital.

Collective action as the way forward

Some business sector leaders with resources and agile innovation at their disposal are voluntarily partnering with leaders of government agencies that control the levers of policy and regulation. As well as meeting their corporate goals, they are awake to another personal responsibility – to the next generation of New Zealanders. To ensure the land, water and climate they inherit will be at least as abundant and healthy as this generation has enjoyed.

This has led to the Aotearoa Circle, a kaupapa that unites this group of leaders from the principal government departments and the CEOs of the country's leading corporate businesses (including Ravensdown). The circle's mission is to preserve the country's pillars of natural capital.

I have been hugely impressed by the enthusiastic response of business and government leaders understanding the need and wanting to join and support the Circle.

It's the first time public and private sector leaders, as individuals, have come together, to better understand the state of natural productivity of, for example, our soils – a massively important issue for the New Zealand economy. A recent United Nations study found that soils around the world are being degraded as never before, reducing productivity by 23% of the land surface of the Earth. It's an issue where Ravensdown's knowledge and experience can add tremendous value in New Zealand.

Stepping up to the challenge

Solutions are only possible collectively. Business, government, science institutions, NGOs and civil society are in this together and must step up to this challenge with urgency. For a business like Ravensdown, here are a few simple changes to everyday business culture:

- Make environmental risk and opportunity integral in daily decision-making. How best can Ravensdown influence its supply chain, suppliers and owners to ensure better outcomes for nature?
- Account for natural capital in business decisions by putting a real transactional cost on resources like carbon and water.
- Devote space at the board table to discuss how to accelerate the sustainability trajectory, both environmental risks and value-add opportunities.

In New Zealand, we're privileged to share and learn from the profound knowledge and practice of kaitiakitanga which does not focus on ownership, but on authority and responsibility and is concerned with both sustainability of the environment and the utilisation of its benefits.

Optimism does not go hand in hand with complacency. With determination and collaboration, solutions can and must be found, urgently. ■

To watch the interview with Sir Rob Fenwick, visit:

integratedreporting.ravensdown.co.nz

Or simply download the Magenta app from App Store or Google Play and point it at his image on page 02.

02

/ 03

Dr Lucy Hone is a director at the New Zealand Institute of Wellbeing & Resilience and a research associate at AUT. She's dedicated the last decade to helping organisations apply the scientific findings from resilience research.

Thriving in an uncertain world

The World Health Organisation predicts mental illness will become the world's number one disease by 2030. If the agri sector wants to survive and continue to thrive in the decades ahead, it had better put aside any ideas that resilience is a fluffy concept and wellbeing is for wusses. It's time to pay attention to the science.

When I was studying the team charged with designing and implementing Military Resilience Training for all 1.1 million soldiers of the US Army, I learned that resilience is a critical skill which, like so many others, can be learned and taught.

Resilience may be an over-used word but just because we're weary of hearing it doesn't make it safe to ignore. Like it or not, navigating the journey ahead is going to require resilience and wellbeing, both at an individual level – research shows people with higher wellbeing live longer, happier, more fulfilled, successful lives with better relationships and physical health – and at a systems-wide organisational level too.

Researchers have identified four essential uses for resilience.

- Overcoming difficulties in early childhood (poverty, emotional neglect, physical abuse, etc).
- Overcoming the stresses of everyday life (cashflow worries, managing staff, a tractor tipping, rain at harvest time or temperamental equipment).
- Allowing us to steer through life's big events (drought, floods, divorce, mental illness, death and physical impairment).
- Being able to reach out and take on new challenges – being proactive.

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If the Navy Seals undergo emotional regulation training, perhaps farming can take it seriously too.

Defining wellbeing

While we define resilience as the ability to steer through difficulty and learn from it, wellbeing is better summed up as our capacity for feeling good and functioning well. Wellbeing is more than experiencing positive emotions: it's also about our ability to function effectively and appropriately in our work and home lives – to foster and maintain strong supportive relationships, to focus our attention, to develop a sense of purpose and be self-directed and possess the self-belief that we are capable of doing what is required of us.

Until recently these were all too often dismissed as 'soft skills' but are now valued as core capacities driving today's human economy. Yes these things can be measured. However, to be brutally honest, wellbeing is subjective and current assessments remain overly-reliant on self-report surveys.

'Harden up' is no match for the pressures and realities of farming.

Busting some myths

Some may think individual resilience requires us to be staunch and strong; but 'she'll be right' and 'harden up' thinking are no match for the pressures and realities of farming in 2019. Research shows the precise opposite to be true: resilient people are good at acknowledging they cannot control everything and reaching out for help when times are tough. They recognise they are fallible, with a capacity for, and ability to experience, vulnerability.

No one likes feeling vulnerable. But in order to progress in uncertain times, bring up children, love and care for others, collaborate in teams, dream up creative solutions in uncharted markets and embrace new technology with uncertain results, tremendous bravery is required. And no one is ever brave without brushing up against vulnerability. Not knowing or being sure of the outcome, yet advancing and acting anyway, is the very definition of bravery.

While encouraging personal responsibility and accountability for wellbeing is important, there are also organisational and systemic factors to take into account. By deliberately designing wellbeing and resilience into your farms and across your organisation you will be better equipped to adapt to the future. The literature is clear: resilient organisations are agile, they have strong supportive leadership, a focus on relationships and collaboration, an environment where learning is encouraged and a healthy engaged workforce motivated more by purpose, autonomy and personal mastery than money.

The key competencies associated with peak performance must be continually developed: curiosity, creativity, collaboration, co-operation, courage and trust.

Leading in resilience and wellbeing

For both on-farm or office workers, being regularly active is good, but not enough to keep you and your workforce feeling good and functioning well. Humans have a unique capacity to ruminate (replay events over and over in our heads) which is strongly linked to depression.

The Farmstrong initiative shows that farmers are endeavouring to take

"FARMING HAD BETTER PUT ASIDE THE IDEA THAT WELLBEING IS FOR WUSSES."

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Mental illness is predicted to become the world's number one disease by 2030.

wellbeing seriously. There are many ways to demonstrate leadership in this space – by taking time off away from the farm, tackling sleep problems head on and learning how to think flexibly (swapping automatic negative thoughts for more realistic and optimistic interpretations).

Not leading in this space will directly impact colleagues and families in the long term – either in the form of employee absenteeism, churn, accidents or turning future generations away from pursuing careers in farming.

For anyone who wants to thrive in the years ahead, it's vital to start learning about your psychological health – the ways of thinking and acting that inhibit peak performance and how to regulate emotions and prevent burnout. If the US Army and Navy Seals now undergo emotional regulation training, perhaps all those involved with farming can take it seriously too. ■

To watch the interview with Dr Lucy Hone, visit:

integratedreporting.ravensdown.co.nz

Or simply download the Magenta app from App Store or Google Play and point it at her image above.

“THERE ARE NO BLACK AND WHITE ANSWERS.”

An antidote to disruption

The two images below of 5th Avenue New York show the dramatic changes in landscape over a period of only a dozen years. Oil-fuelled transport had taken over from hay-fuelled transport. Millions of acres of land – over 25% of America’s harvested area – once used for horse feed was no longer needed for that purpose. A new technology brought massive changes to both the countryside and the city. Could we be facing a similarly disruptive event today? And what should we do about it?

Source: US National Archives

Source: George Grantham Bain Collection

03

/ 03

Nuffield scholar and Ravensdown shareholder, Mat Hocken farms 1,000 dairy cows with his family in Colyton.

He is Chair of the Rural Innovation Lab and is a member of Massey University's Business School Advisory Board. He has worked on policy in Brussels and Sydney.

Imagine your favourite burger chain just put synthetic meat on the menu. Let's close the factory farms. Then we can have an actual factory grow food for the 90% of the population living in cities. Why would we kill another animal, or dirty another stream if we could have our burger guilt-free?

Here in New Zealand we're not factory farmers you say. We care for our animals and they live a good life. They are skipping around the paddocks free-range, GMO-free, comparatively low GHG natural, clean and green. Good story, (the last part needs some work) but, just because we are all folksy and natural down-under, will consumers pay a premium to keep us in business when minced "meat" could cost the same as bottled water?

If it's not synthetic food, disruption may come from any one of a number of digital, biological or physical (or combination of) technologies being developed, or something we haven't thought of yet.

Over the next 20 years there could be any number of potential technologies to disrupt farming.

An antidote to disruption

In a popular, and for some a controversial, book 'The 12 rules for life: an antidote to chaos', Jordan Petersen challenges us: how do we move from our existing systems to succeed in an uncertain and challenging future? What is the antidote to disruption (chaos)?

New challenges require new thinking. Companies, industry bodies and individual farmers are working hard to come up with answers. Ravensdown is a good example of a company bringing a broader perspective to its role in the world and directing significant resources towards the environmental challenges. But this is not enough. Innovation data shows New Zealand is not getting the traction or results needed. One of the missing elements is how we put 'the farmer' in the proper context to generate new ideas and successful innovation.

The Rural Innovation Lab (RIL) is an example of an initiative that aims to add this missing element. It was launched in the Manawatū-Whanganui region in January this year and is supported by the Provincial Growth Fund and local funding.

Farmer and grower led innovation

The RIL is designed so that the farmer or grower is placed at the heart of the innovation process. It is a grass roots, bottom-up approach that focuses on the challenges and opportunities seen from farmers and growers and matches them with a collaborative network of partners to help solve them. Research shows problems are best solved by those closest to them. It makes sense, as farmers and growers know most about their challenges and are motivated to solve them.

The Smartfarm network is a key platform for the RIL and aims to reduce the amount of wheel reinvention going on by connecting like-minded farmers and growers. It builds capability to absorb new ideas and practices and to think innovatively. Companies, developers, researchers and start-ups are keen to test, trial and develop ideas with the Smartfarm network.

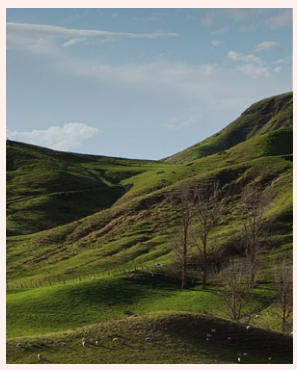
Collaborating on "wicked" problems

The Director of Google Food talks about wicked problems. A "wicked" problem is difficult or impossible to solve because of incomplete, contradictory and changing requirements. There are no black and white answers, but rather, there are trade-offs. When a solution is found to one problem, another problem emerges. Producing nutritious food for a growing world population rising to 10 billion by 2050, with less agricultural land, a smaller environmental footprint, the effects of climate change, a multiplicity of consumer demands and improving rural communities is a set of significant, wicked problems. The point we should take is that we cannot and should not try and tackle these wicked problems alone. They require broad and effective collaboration. By doing this we break down silos and unhelpful conventions and increase the likelihood of innovation happening at the fertile intersection between sectors.

Back to the horse and cart

I am the fourth generation to have the privilege to farm on the banks of the Oroua River in the Manawatū. My great-grandparents bred draught horses in the 1890s. We still find horseshoes around the farm. Tractors were the disruptive technology facing them but the family persisted and established the platform that succeeding generations have built on.

Today our challenges are quite different and require a fresh approach. The problems of agriculture and food may be wicked, but we have more capability and tools than ever before to solve them. As farmers, we must lead this work and work hard to collaborate across sectors. In doing so we will discover that the best antidote to disruption is to innovate and build our capacity to continue to innovate. ■



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The problems of agriculture and food may be "wicked", but our approach must surely be to tackle those parts we have a chance at solving.

To watch the interview with Mat Hocken, visit:

integratedreporting.ravensdown.co.nz

Or simply download the Magenta app from App Store or Google Play and point it at his image on page 06.

Sarah and George Tatham
Matariki Farm, Wairarapa

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"The placement of fertiliser for us is vitally important."

OUR APPROACH

Winning together

Tackling practical new ways to help reduce the environmental impact of nutrients.

Collaboration is the catchcall when it comes to science. When it comes to the risk of ecological harm from excessive nutrient use or bad practice, it's also a case of more brains being better than one.

Ravensdown fund research and collaborate with government ministries, Crown Research Institutes and academics from Lincoln, Massey and Victoria. The far-sighted aim being to help farmers see that, from an environmental not just financial perspective, they can "do well by doing good."

One breakthrough is the use of special aerial cameras and algorithms tested against "ground truth" data which can test soils at 1,000 hectares per hour.

Avoiding waterways when applying nutrients

Matariki Farm runs 70% sheep, 30% cattle, with a high performance sheep breeding unit, some Angus cows, finishing for all its own stock and Angus steers.

"Matariki is a really diverse landscape," says Sarah Tatham. "We have sandy coastal flats, then medium hill country, leading through to bush at the back ... You can go out on our farm and go into patches of beautiful native bush and hear native birds, kereru and tui, and that's fantastic for our family." There are three main waterways on the farm, two of them ending in quite significant estuaries on the coast.

"The placement of fertiliser for us is vitally important," says George Tatham. "First and foremost, it's the biggest investment we make on the farm every year so we want it to go where it's going to do the best benefit for us as a business. Secondly, we know that putting fertiliser straight into a waterway is just not good environmental practice. With the technology that we're moving to now, it's becoming easier and easier to avoid doing that effectively and repeatedly... we now have a system where we can provide evidence to anyone who wants to see it that we are actually putting the fertiliser where we said we are."

Soil diagnostics from the sky

Analysing nutrient levels from the air is a fairly complex process, says Dr Alister Metherell, Ravensdown Decision Support Manager. It involves using a hyperspectral camera to fly over the farm and measure a reflectance from the vegetation. By comparing what the camera sees with what Ravensdown already knows from the huge number of plant and soil samples it collects, the aerial scan "reads" the soil fertility in the pasture.

The goal is not necessarily to use less fertiliser but rather to ensure it is allocated to the right places. Through greater use of technology, Ravensdown is finding that around 18% of farm areas can and should be avoided.

The speed of aerial scanning is a huge advantage. "We currently do a lot of soil tests out on farms," says Alister, "but particularly on hill country farms it's difficult to achieve good coverage. The Airscan® process means that we're basically covering the whole farm in a couple of hours."

"The map that we receive from the aerial scan is accurate to about one square metre," says Dan Keith, Ravensdown GIS Analyst. "So a combination of the imagery captured from the aircraft to determine the soil fertility and the maps that we have ourselves, drawn by the customer or us, mean we have an accurate understanding of what's required.

"When we get it, we go over the map and exclude the waterways. We also send a copy of the map through to the agri manager to take back to the customer, so they can check over the map again and make sure that we haven't missed anything. Especially for larger waterways like streams and rivers, there's also a nationwide dataset for waterways that we can use as a guide. Then we look to apply appropriate exclusions either side of that waterway. This ensures that, as the plane's flying along, no fertiliser will enter the waterway."

IntelliSpread® is the software that reads the prescription map loaded into the topdressing plane and tells the hopper doors when to open and by how much in order to ensure the fertiliser goes where it needs to. This is done without any interventions by the pilot.

Consulting over progress

Greig McLeod, Ravensdown Senior Agri Manager, says the Tathams had already done a lot of work across several generations to fence off their waterways and plant. So IntelliSpread was the next step for them. IntelliSpread gives the Tathams access to the speed of aerial spreading, especially in the hilly areas of their farm, whilst ensuring that their precious waterways are also protected.

Dan Keith
GIS Analyst

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"The map that we receive from the aerial scan is accurate to about one metre."

Mike Manning
GM Innovation & Strategy
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"The advisors have the credibility – shareholders listen to them."

James Goosen
Aerowork Operations Manager
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"Today the maps have become a lot more sophisticated and a lot more focused on environmentally sensitive areas."

Greig McLeod
Senior Agri Manager
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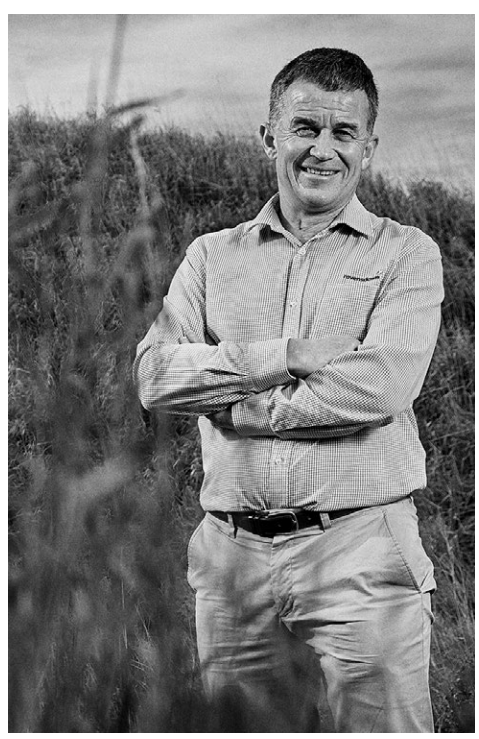
"Ravensdown and its customers are working together in smarter ways to make environmental differences."



Dr Alister Metherell
Decision Support Manager
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"The AirScan® process means that we're basically capturing data across the whole farm in a couple hours."

Previous generations of farmers, Greig says, had to wrestle with high interest rates and low stock returns, but as profitability has returned to the farming sector, farmers like the Tathams have stepped up to meet their environmental responsibilities, and that commitment, plus the changes in the technology, have seen Ravensdown and its customers are working together in smarter ways to make that environmental difference, for now and into the future.

Technologies like IntelliSpread have also completely changed how the pilots work says James Goosen, Aerowork Operations Manager. "When we first adopted this prescription application technology or the variable rate, the work we did was basic single rate blanket application over the property. Today the maps have become a lot more sophisticated and a lot more focused on environmentally sensitive areas, and that means a lot more precision application into specific areas on a property. We're now doing multiple rates over a property in much smaller areas with many more intricate exclusion zones ... I grew up swimming in rivers as a child, and I would like my child to grow up like that and her children. It's important that we protect that for the future."

The development programme is part of a Primary Growth Partnership backed by the Ministry for Primary Industries and is six years into a project timespan of seven years. Mike Manning General Manager Innovation and Strategy says that being a co-operative gives Ravensdown three advantages. "There's the long term view and co-operation across teams. But there's also the credibility that the advisers have as the shareholders listen to them."

"With this example, farmers, pilots, the IT team, agri managers and so many others have recognised that they needed to co-operate to make this work." The concept itself is very much a world first, says Mike. It's made possible because Ravensdown has the size and balance sheet to invest, the Board is committed to a strategy of doing better environmentally, customers are looking to use technology to do a better job ecologically and Ravensdown has its own aerial spreading fleet which gives them access to extraordinary experience and insights.

"I think new technology is often difficult for farmers, but we need to all take responsibility, step up and provide evidence for our consumers and the public that we're doing things right," says George Tatham. "In general, farmers are already doing this, but this provides a great opportunity for us to really get on the front foot and say we've embraced this new technology and we're using it to really prove that what we've said we've been doing for a long time is actually happening on the ground." ■

To watch our approach to the guardianship challenge, visit:

integratedreporting.ravensdown.co.nz

Or simply download the Magenta app from App Store or Google Play and point it at the main image on page 08.

Euan Talbot
Regional Agri Support

"Farmers are stressed about several things."

OUR APPROACH

Getting our heads around wellbeing

How resilience and wellbeing are proving so important in helping to get the best from people.

Initiatives like Farmstrong and "I Am Hope" are changing the mental health landscape for the better. With farmers arguably under more pressure than ever and on so many fronts, the sector as a whole is coming to see that old-fashioned stoicism can do a lot more harm than good.

Ravensdown too has recognised it needs to do its part: educating its own people on how to respond if they see or hear anything concerning and offering support to staff in the form of resilience training, wellbeing initiatives and so much more to help them maintain a healthy approach to work.

Listening for signs of stress

The Customer Centre takes about 370,000 calls a year. Euan Talbot who is based in the Napier Customer Centre says "Farmers are stressed about several things – environmental or feed situations. The climate is not the same every year so the feed supply is an important thing. And of course financial issues. We get all those questions."

Through these interactions, he says, the Customer Centre Team is trained to look for situations where farmers may be under strain. "I think one of the telltale signs if someone is stressed is indecision, and you can get that on the phone. I had one instance where the farmer rang in and he was very indecisive. I thought, 'There's something wrong here.'

"Some of the calls are quite short... some can be longer. We take the opportunity to chat and ask them questions. The obvious one is the weather, but you can also ask farming questions, you know, what the stock prices are doing, what the feed situation is. People always like to talk about that. And, that might lead on to something else that you might be able to help them with."

Georgia Bartosh
Agri Manager

"Just take a moment of silence if that's what you need."

Taking the time

Georgia Bartosh, Ravensdown Agri Manager says she learned two key lessons from the Ravensdown resilience training she undertook in the past year: "One, how to pick up if someone's stressed and what to do about it if they are. And the second most important thing was how to listen without absorbing the issues and being able to make a rational decision about what the next step needs to be."

Part of the training involved 'Resilience Genie' cards which, she believes, are a very simple and effective way to be able to step back from a situation and evaluate where things are at. "It's basically a whole stack of cards. They've got some cool little cues on them. For example, there are the 'cool down' cards with a few nice little tips. One of my favourite cards just says 'bring back the little spaces in your life'. In other words, stop rushing and just take a moment of silence if that's what you need."

"My philosophy out in the field is to always take the time to talk to the farmer and spend that little bit of extra time with them," says Brent Chamberlain, Ravensdown Area Manager, Animal Health. "You never know what's going on in people's lives, whether they are looking for some companionship or friendship or just want to show off the farm."

Shirree Chenery
Lab Assistant

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"It's about de-stigmatising mental health problems and those wellbeing aspects that have got more to do with the mind and emotions than the physical."

Katrina Benedetti Forastieri
GM Culture and People

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"There are lots of initiatives underway on both sides of the farming fence."

Shelly Bloor
Sample Preparation Assistant

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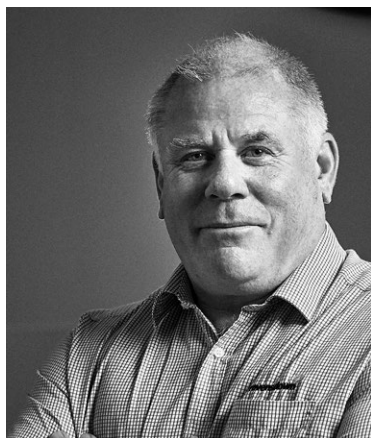
"Your mind and your body are definitely connected. So if your mind's not good, your body will suffer."



Brent Chamberlain
Area Manager, Animal Health

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"My philosophy out in the field is to always take the time to talk to the farmer and spend that little bit of extra time with them."

Brent particularly noticed the stress farmers were under when Ravensdown seconded him to work with MPI on the *m.bovis* response. "It was a baptism of fire regarding handling stress and difficult situations with farmers and their livestock and the future of the farming industry." These were tough times, he acknowledges. "The farmers all responded differently and all needed support to get through what they were facing at that stage."

He wishes he had already done the resilience training when he went out to meet them. "The resilience training course that Ravensdown laid on in the past year probably would have helped me clarify and make easier decisions or clearer decisions in supporting these farmers," he says. "The course was valuable to me in helping me analyse my work life balance and putting things into perspective and dealing with those stress issues that come along from time to time."

Taking care and having fun

At ARL, where thousands of soil samples are analysed in a relatively small time window, many of the pressures revolve around getting work done quickly and maintaining quality in a very pressurised environment.

Shirree Chenery, Ravensdown Laboratory Assistant says that the culture that ARL and Ravensdown in general is looking to foster is one of looking after each other. "It's about de-stigmatising mental health problems and those wellbeing aspects that have got more to do with the mind and emotions than the physical," she says. "If you're able to talk with more people about those things, then it helps."

"It's the smart thing to do and it's also the right thing to do," adds Shelly Bloor, Ravensdown Sample Preparation Assistant. "Your mind and body are definitely connected. So if your mind's not good, your body will suffer, your work will suffer, the people around you will suffer. So it just makes sense, doesn't it?"

Both Shirree and Shelly say that changing the way the research teams dealt with stress started with changing the mindset. "Our first thing was nobody's going to die if some of the soils don't get processed by the end of the day, and we took that on board. And it made it more manageable," says Shirree.

"Also, we just brought a bit of fun into the workplace," says Shelly. "So we took the serious nature of it away, and just added some little fun components, and ways to tap each other on the back and say, you know, you did a good job, and stuff like that. Because we're all human we need to be told we're doing a good job and to feel valued."

The right thing to do

At Dipton Quarry, Richard Millar, Ravensdown Quarry Manager, says that he focuses on making sure people are also looking after themselves after-hours. When people don't know how to manage issues, he says, they inevitably bring the fallout of that to work. That can put others at risk, especially in the unforgiving environment in which his teams work.

"The secret to getting people to open up is to open up to them first. Tell them what's going on in your life and ask them to tell you what's going on in theirs. Be vulnerable, and then, be a good listener. Let them talk." The goal, he says, is to make sharing what's going on a normal part of the day to day conversations that people – particularly men – have.

People may find it hard to open up, says Richard, but his experience is that once they feel accepted and that they can talk about what's going on without being judged, they emerge as better people because they have allowed themselves to be helped.

Katrina Benedetti Forastieri, General Manager Culture and People agrees with Richard when he says that people perform better when they are able to acknowledge, and others help them accept, what's holding them back. "At Ravensdown, there are lots of initiatives underway on both sides of the farming fence to make people more comfortable with showing their vulnerability and improving their wellbeing. There's a risk for the company to manage when it comes to health, safety and wellbeing, but we shouldn't forget that in the context of modern working, it's simply the right thing to do." ■

To watch our approach to the resilience challenge, visit:

integratedreporting.ravensdown.co.nz

Or simply download the Magenta app from App Store or Google Play and point it at the main image on page 10.

Sonya Perkin
Senior Agri Manager
—
"Precise testing, mapping and spreading helps Rakaia Island Dairy grow more pasture and there's more productivity."

OUR APPROACH

Good for the land. Good for the farm.

Food created for animals or people needs nutrients and the quest is on for ever-more efficient ways to use such nutrients. Any nutrient being lost to the atmosphere or waterways is wasted and can have an environmental impact. Today's technology and services allow farmers to take an integrated approach to nutrient testing, spreading and mapping their progress.

With overseas consumers of NZ premium produce demanding – and paying more for – a provable back story, traceability is the new watchword. The process has become the product. Buyers want to know how farmers are managing their nutrients and Ravensdown provides the tools that enable them to show how they are doing that.

Services combine to help reduce environmental impact and achieve production goals.

Taking nutrient efficiency to the next level

Rakaia Island Dairy, a large family-owned operation running 9,000 cows in Canterbury, is one of many farms that have benefited from doing this. Shareholder Dave Turner, whose family owns Rakaia Island Dairy says, "The biggest challenge we're facing at the moment I think is our social licence to farm. The biggest thing with Ravensdown is that they help us utilise the products or the fertiliser in efficient ways, so we know exactly where it's gone. We can actually verify and justify what we've used, and it all drives efficiency within our whole business."

His brother Doug agrees. "Nutrient budgeting is just like a bank account. "You've got to know exactly where you are at any one time, so we don't want to overload the system. Forward planning is a key element of our relationship with Ravensdown. It's about making sure we're putting on the right thing at the right time." He says products like N-Protect coated urea mean applying 10% less nitrogen for the same result and they're also not needing to factor in the weather, meaning they can manage their spreading much more easily.

Smart products and technologies like the HawkEye® mapping tool, he says, are taking nutrient management to the next level.

Brothers **Dave** (left) and **Doug Turner**, shareholders
—
"The biggest challenge we're facing at the moment I think is our social licence to farm."

Right amount in right place

Ravensdown Senior Agri Manager Sonya Perkin says, "Precise testing, mapping and spreading helps Rakaia Island Dairy grow more pasture and there's more productivity. It takes out the variation of soil nutrient status and reduces the nutrient hotspots, making run-off less likely. It also puts nitrogen in the right places at the right rate."

Sonya says the process starts with getting the farm mapped. This is followed by grid sampling. "On Rakaia Island we did one sample every two hectares … that's 750 soil samples. We then send those samples to the laboratory (ARL) to analyse the soil. I then formulate a recommendation using modelling software OverseerFM based on those results and the agri-optics team formulate a spreading plan which goes to the truck.

"When the driver arrives, the spreader is already pre-programmed to apply the fertiliser at a variable rate around the farm depending on what's on the map. This is then mapped through HawkEye®, which shows proof of placement as to where that fertiliser has been applied."

Quality reduces environmental impact

Integrating the testing, spreading and mapping services reduces the risk of human error or duplicated jobs. But it all counts for nothing if the product is overly dusty, won't go where it's intended or doesn't contain the right blend of nutrients in ways that are available to the plant. Importing, manufacturing and storing fertilisers is critical to product quality. And fertiliser quality has a real impact on environmental challenges.

Good ballistics and prescription recipes have changed what can be achieved with fertilisers today. Ravensdown works manager Peter Hay believes that the quality of Ravensdown's products is market-leading, and getting better by the day. "Product quality is important from a spreading operation point of view because it means our customers can have more confidence in ensuring they put the product in the right places with more accuracy, they are able to get into variable-rate spreading and they can better avoid sensitive areas, boundary trespass with dust and such like."

He says in the last ten years customised blends based on specific soil samples have changed the game. Ravensdown can now provide a prescription blend that is specific to each paddock's requirements. These new blended products are not only more effective, because there's less loss to the

Peter Hay
Christchurch
Works Manager
–
"Customers can have more confidence in ensuring they put the product in the right places with more accuracy."

Jono Menting
Rakaia Store Manager
–
"...we aim to get the logistics right so that whether the product being picked up has come from South Korea, Germany or China it's ready and fit for purpose when needed."

Gavin Palmer
Spreading
Canterbury Manager
–
"The maps coming into the cab now mean that the truck won't spread if it's too close to a waterway."

Rangi Holland
HawkEye Specialist
–
"With HawkEye®, if you're in the paddock and you realise something needs to happen, you can do it right there and then."

atmosphere or the soil, they're also smarter. "You're making more of the nitrogen within those products available for plant growth. Simple as that. So you're getting a bigger bang for your buck."

Spreading Canterbury is a Ravensdown joint venture and Gavin Palmer, its manager, says that the integration with technology has helped. "Without quality GPS and the Spreadmark certification system, the spread was less than optimal and there was too much spillage. The maps coming into the cab now mean that the truck won't spread if it's too close to a waterway, for example, or an area that's been designated a no-go zone. But also the vehicles won't spread on areas that are too steep because they've been removed from the map."

Products are picked up in bulk from the local store which needs to hold enough of the essential nutrient for farmers to use when they need it. Jono Menting, store manager at Rakaia, takes up the story. "The right amount of the right product at the right time is important and that all boils down to availability. Throughout the whole store network, we aim to get the logistics right so that whether the product being picked up has come from South Korea, Germany or China it's ready and fit for purpose when needed."

Better information for better decisions

Farm-mapping tools like Ravensdown's HawkEye help farmers make nutrient decisions based on their soil tests and conversations with their agri manager. The release of a mobile app means that farmers can make decisions on the spot. "We know farmers would rather spend more time in the paddock," says Rangi Holland, a Ravensdown HawkEye specialist.

"With HawkEye, if you're in the paddock and you realise something needs to happen, you can do it right there and then. You don't need to wait until you're back in the office. Ordering is really simple – select a few paddocks, put your product in, send that off. You don't even have to talk to your spreader. HawkEye has been created for all our Ravensdown shareholders. If you've got 20 hectares, you can still map that farm, and you can still order through HawkEye and have all that useful information available for you to make the right decisions."

"We've got to move with the times," says Dave Turner. "The pressure that's on us to perform in a socially responsible way is huge. We need to farm as smartly as we can."

Mark McAtamney, Chief Information Officer at Ravensdown concludes: "The smarts are important as farming evolves from being all about the volume of milk, wool or meat heading out the farm gate to value and values based business models. The nutritious food created in New Zealand has a great story behind it and informed consumers want to hear it. Having the technology that shows how the soils were nurtured and nourished by the stewards of the land is just one way to help support that story.

"It doesn't have to be a stark trade-off between environment outcomes or economic efficiency. Technology and other enablers can turn this into an 'and story' not an 'or story'." ■

Mark McAtamney
Chief Information Officer
–
"It doesn't have to be a stark trade-off between environment outcomes or economic efficiency."

To watch our approach to the disruption challenge, visit:

integratedreporting.ravensdown.co.nz

Or simply download the Magenta app from App Store or Google Play and point it at the main image on page 12.

We have been working towards producing an Integrated Report for the past three years. This Integrated Report is our first and is important because Ravensdown is a complex business that is impacted by, and has an impact on, a variety of resources and stakeholders.

Chair's report

John Henderson

We report progress on several fronts – not purely financial. In the spirit of disclosure, this performance will be comparable over time.

However, financial performance is critical and your Board is happy to report another good financial result in a year which responsible governance and balance sheet strength have been a priority.

While $35m was paid back to shareholders who bought fertiliser, $12m is being retained by the co-operative to reinvest in improved infrastructure, research and development, product innovation and new technology.

A total cash rebate of $30 per tonne was issued to fully paid-up shareholders while the co-operative's profit before tax and rebate for continuing operations was $52 million.

Profit was impacted by several factors. These included foreign exchange movements and higher world commodity prices leading to higher interest and inventory costs. As part of its all-year value commitment, prices charged in New Zealand were held at a level that impacted on margins. Investment continued in precision mapping and spreading technology, more environmental specialists were recruited and a Holiday Act remediation of $1.3m was set aside.

We have delivered market-leading rebates since 2016. Yet shareholders tell us the rebate in any one year is not the top priority. What matters is a sustainable, viable co-operative that offers great service, quality products, surety of supply, competitive pricing throughout the 12 months and ways to help them perform in the long term.

My fellow directors are determined not to pursue short-term gains at the expense of our debt or equity position. Farmers are facing a new decade that will be dominated by disruption and we intend to do all we can to help them adapt and thrive in the years ahead.

Collaboration with regulators, policymakers, researchers, industry good bodies and suppliers is one important way to help farmers manage uncertainty and it is pleasing to see the relationships become stronger in the year ending 31 May 2019.

The Board is moving to a new structure with six area-elected directors and three appointed directors and I'm looking forward to updating shareholders about the contribution of the new team.

I would like to thank retiring directors Tony Howey and Glen Inger for their contributions to our board over the time they were members. They both brought clear, critical and valued thinking to our discussions.

All the team at Ravensdown deserve great credit and it was wonderful to see Chief Executive Greg Campbell win the inaugural award for Primary Industries CEO of the Year.

Morale is high among the team. This translates into real results on many fronts for our shareholders and bodes well as the co-operative enters the 2020s. ■

$52m
profit before tax and rebate from continuing operations
2017-18 **$63m**

$30
rebate per tonne
2017-18 **$47**

70%
equity ratio
2017-18 **71%**

15,799 tCO_2e
Ravensdown carbon footprint
2017-18 **17,214 tCO_2e**

$5.2m
expenditure supporting R&D
2017-18 **$4.7m**

$1.1m
spent on targeted training and development
2017-18 **$800k**

26
Net Promoter score®
2017-18 **19**

98%
of bulk imports are low risk
2017-18 **97%**

CEO's report
Greg Campbell

As a co-operative here to enable smarter farming for a better New Zealand, we need to invest and innovate in order to help shareholders reduce their environmental impacts and achieve their production goals.

There's a lot of pride in this year's awards for cutting-edge effluent technology like ClearTech® that can transform a dairy farm's fresh water use. More precise aerial scanning and application resulted in 18% of farming areas of IntelliSpread customers being avoided because they are environmentally sensitive or unproductive.

Integrated service
The HawkEye nutrient mapping tool has progressed well with a mobile app and online ordering successfully introduced. Strategic developments with both our Ravensdown spreading joint ventures and Tracmap NZ have greatly enhanced the accuracy and integrity of fertiliser planning, ordering, spreading and reporting.

Integration of services brings efficiency and more control; helping farmers with their need for more traceability and transparency. We expect to see more progress in this space.

Environmental focus
We have the highest number of certified nutrient advisors in New Zealand in our field-based teams and a growing environmental consultancy. We have been building capability in this vital area and the future focus will be on how we integrate this service.

Effective procurement and supplier partnerships delivered quality product and surety of supply throughout the year. Phosphate rock was sourced from the non-self governing territory of Western Sahara (WS) via our longstanding supplier OCP, which assures us that all funds from the phosphate mine are invested in local programmes that benefit the Saharawi people in the territory.

When it comes to superphosphate's manufacture and application, there is currently no alternative to WS rock that comes without significant environmental and agronomic impacts, processing costs or supply risks.

Quality products
Fertiliser tonnages were virtually static but sales of the coated urea N-Protect product, which helps reduce the amount of nitrogen lost to the atmosphere, increased by 75%. In terms of fertiliser product quality, 83% of surveyed customers rate it as excellent or very good. Quality rating and sales of animal health, agrochemicals and seeds were positive with seeds having a record year. Quality is maintained by the investment in our physical assets and, when it comes to our stores network, there is still much to do.

Positive team
Health, safety and wellbeing remained a steadfast focus of the organisation and I am personally committed to keeping it that way.

This year we welcomed two new members to the leadership team. We continue to attract top talent across the company who want to work in a positive culture and this is reinforced in various staff surveys. Another example of a key appointment was the new role of Sustainability Manager and you will see our carbon reporting has already improved as a result.

Working in a sector that helps create nutritious, premium-earning food in a sustainable way fills me with pride. Working with such highly motivated people gives me confidence your co-operative can make a positive difference for our farmers and their families and I'd like to take this opportunity to thank all the Ravensdown team. ■

To watch the interview with John Henderson and Greg Campbell, visit:

integratedreporting.ravensdown.co.nz

Or simply download the Magenta app from App Store or Google Play and point it at either John's image on page 14 or Greg's image on page 15.

Financial commentary — After three years of market-leading returns in terms of rebate and a strong profit in 2019, it is prudent the co-operative retain funds to maintain its long-term ability to support shareholders.

The profit before rebate and taxes from our continuing businesses was $52 million. A full rebate of $30 per tonne will be made to shareholders, which includes a $15 per tonne interim rebate announced in March 2019. Discontinued activities contributed a loss (after taxes) of $1.6 million. After assessing requirements to fund current and future projects that will assist shareholders to farm smarter, $12 million after rebate and taxes will be retained.

Revenue increased by over $70 million, with much of the increase due to higher commodity prices and a weaker New Zealand dollar. We opted to minimise the increase on fertiliser prices by reducing margin and accordingly, profit. A strong financial position enabled Ravensdown to make this decision without impacting on key ratios.

Sales and marketing expenses increased over the prior year and include a number of additional staff for our expanding environmental consultancy team to meet customer demand. Administration costs have also increased, they do include a $1.3 million set aside for Holidays Act remediation costs. Increased requirements for Information Technology systems and services have also contributed to the increase in administration costs.

Our ongoing commitment to our research and development saw this year's record expenditure increasing to over $5 million.

In October 2018, a fire damaged the intake and storage facilities at the Christchurch manufacturing site. The company holds insurance policies and the claim has been accepted, with the repair work progressing. The group holds a deductible which has been expensed this year.

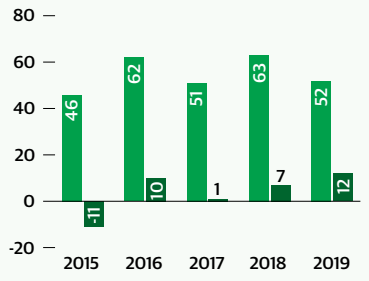
Our fifth year of the asbestos replacement plan impacted our profit by $1.4 million, however was lower than forecast with contractors redeployed to repair damage caused by the Christchurch fire.

Equity continued to grow, now sitting at $451 million after allowing for this year's rebates. The equity ratio of 70% after deducting rebates continues to remain in our target range, however staying at this level is important to ensure we can continue to fund ongoing capital expenditure and R&D projects.

Operating cashflow of $32 million was impacted by the decision to reduce margins for the benefit of customer pricing during the year, an increase in the cost of the stock we held at year-end and an increase in May sales which is collected in June (the following financial year).

Investments in infrastructure, technology and other projects continue with over $33 million invested. After deducting $10 million received for sale of assets, our net capital expenditure for the year was $23.5 million. Net bank debt increased by $41 million to $69 million, reflecting higher value of stock on hand and an increase in Receivables for the month of May 2019.

NET PROFIT

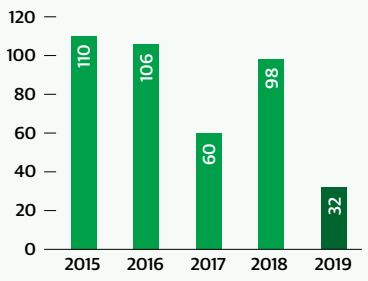


Net profit before rebate and tax from continuing operations

Net profit after rebate, tax and discontinued operations ($m)

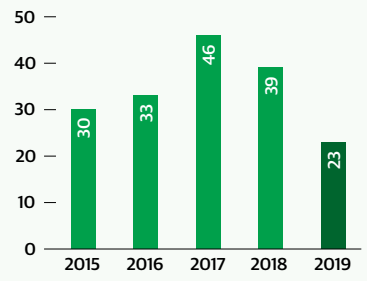
Decrease in profit as a result of reduced prices in market and increased costs. Retaining income to fund future investment.

OPERATING CASHFLOW ($M)



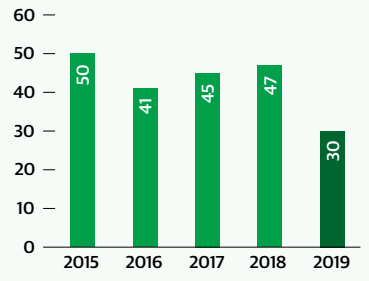
Decrease in operating cashflows reflects lower prices in market and increased inventory and accounts receivable.

NET CAPITAL EXPENDITURE CASHFLOW ($M)



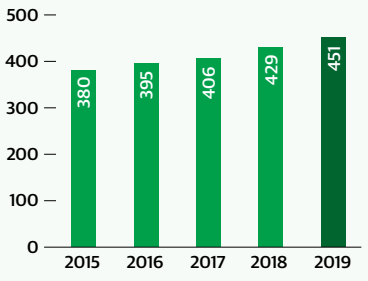
Net capital investment is after the proceeds from the sale of New Plymouth. Includes investments in intangibles.

SHAREHOLDER RETURN ($/T)



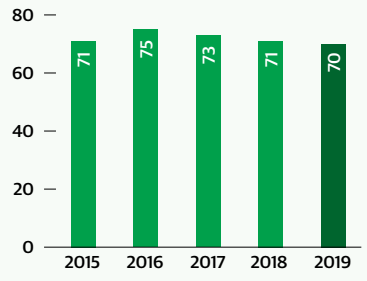
For the fourth year in a row, we have returned cash back earlier with an interim rebate while retaining income to fund future investment.

TOTAL EQUITY ($M)



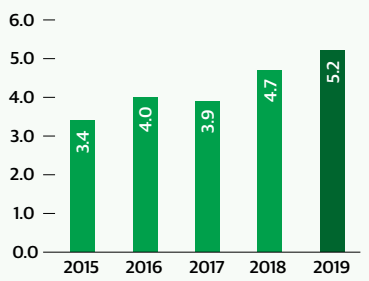
We have continued to add shareholder value with increasing total equity.

EQUITY RATIO (%)



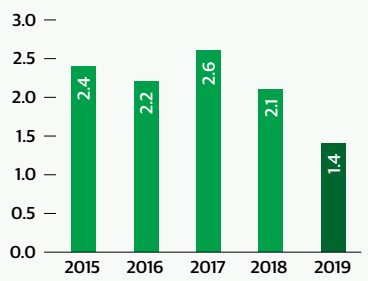
The equity ratio after rebate remains in our targeted band.

RESEARCH AND DEVELOPMENT ($M)



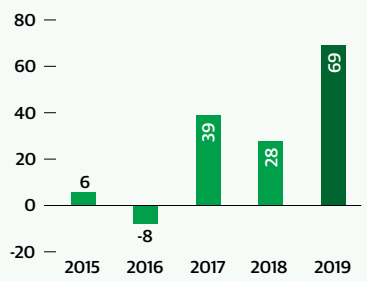
Expenditure in funding research and supporting development of new initiatives continues to grow.

ASBESTOS REPLACEMENT ($M)



We are committed to our programme of replacing asbestos throughout our network.

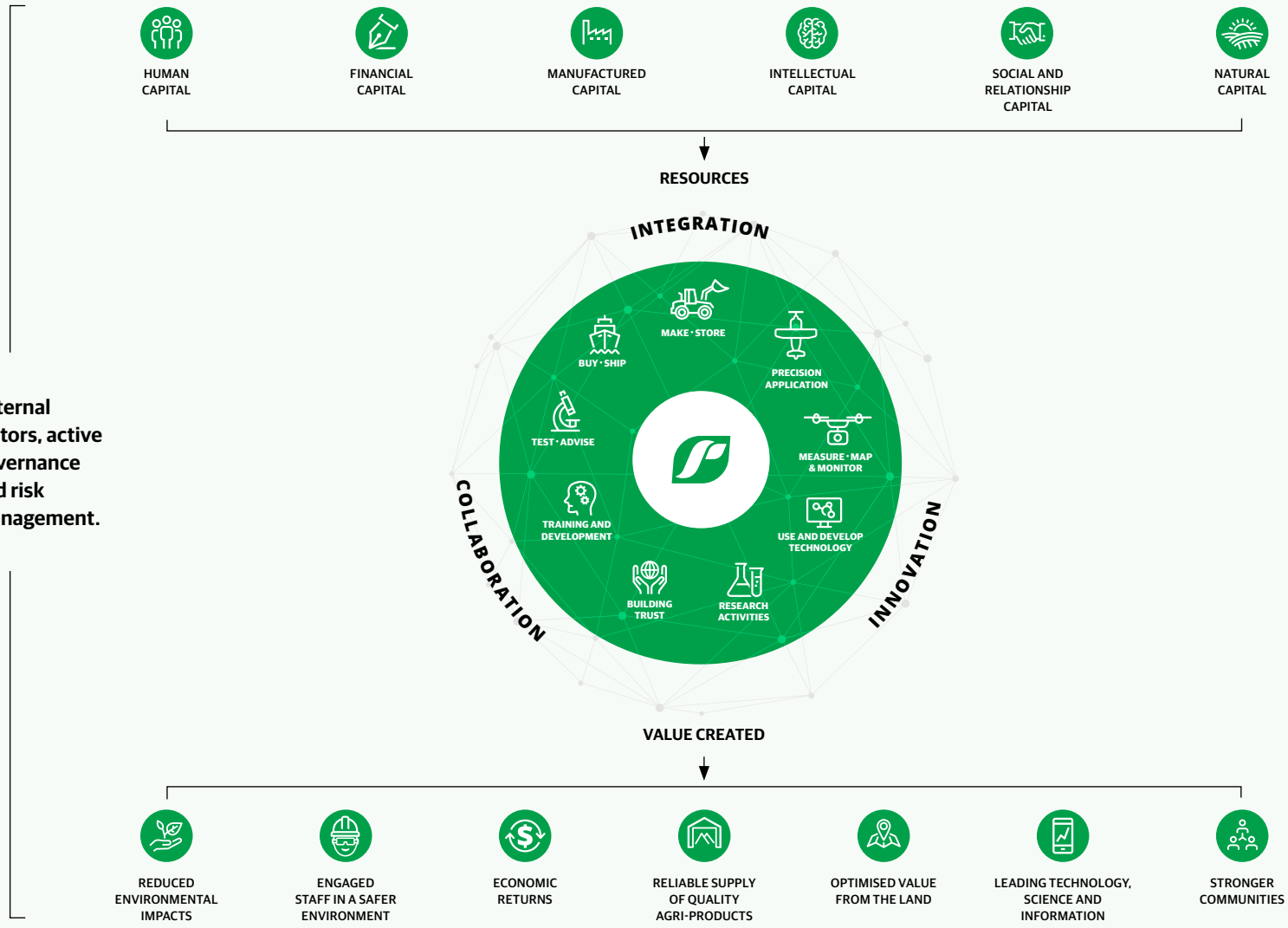
NET BANK DEBT ($M)



Year-end debt increased as a result of increased inventories on hand and lower prices in market. Remains in a sustainable band.

Business model — How we define and create value.

Our business is impacted by, and has an impact on, all the six capitals as described in the Integrated Reporting framework as specified by the International Integrated Reporting Council (IIRC). More details are available on our Integrated Reporting website.



To enable smarter farming for a better New Zealand — Ka pūkekotia a rongomātāne, ka poho kererū a Aotearoa.

Strategic framework
Ravensdown is clear on why it exists and how it helps turn this goal into reality. The following pages of the Integrated Report are focused on how we are progressing on our five priorities listed below.

Why
To enable smarter farming for a better New Zealand

How
By providing products, expertise and technology to help farmers reduce environmental impact and optimise value from the land

Trusted and Leading – pages 18-21
We have an ambition to lead and will never stop trying to do what we say we will do.

Quality Agri Products – pages 22-23
Quality is about delivering promised performance – how it is experienced is the bedrock of our offering.

Enabled People – pages 24-25
Working smarter and farming smarter go hand in hand – we focus on helping our people thrive and achieve.

Science – pages 26-27
We work with others to discover new approaches to the thorny challenges – the science never stops moving and neither will we.

Technologies and Services – pages 28-29
Armed with supporting technology, our employees work with each other and customers to deliver excellent service.

UN Sustainable Development Goals
At Ravensdown we recognise the critical role of business in helping to achieve the Sustainable Development Goals (SDGs). The SDG framework provides a blueprint for strengthening any community and this applies to our rural environments and communities in New Zealand.

Below are the specific SDGs that are important to us and that we set out to have an impact on. They are referenced throughout the Integrated Report. We have evaluated and aligned our business against the UN's SDG indicators and will continue to be transparent about how we are performing against these indicators.

Trusted and leading – Trust is built by accounting for multiple perspectives and being transparent across a range of measures. We aim to lead by prioritising environmental sustainability and social responsibility. In 2019 we have added a dedicated Sustainability Manager to our team, giving focus to the development and pursuit of our sustainability goals.

–

Customers continue to show trust in Ravensdown.

Net promoter score

An encouraging lift in Net Promoter Score® shows customers continue to show trust in Ravensdown through their likelihood to recommend us to a friend or colleague. This reflects an increase in the percentage of promoters and a decrease in the number of detractors, which we can attribute to a continual focus on improving products and services.

The Net Promoter Score increased from 19 to 26 which implies we are doing well compared to other companies but must continue to look at ways we can meet the changing needs of farmers. When customers in the survey were asked "How is Ravensdown performing overall?" the score was the same as the previous year.

26

Net Promoter score®

2017-18 **19**

91%

spent on direct international purchases from long-term partners with supply contracts

Target **>90%**
2017-18 **88%**

TARGET ACHIEVED

Long-term partners with supply contracts

Ravensdown develops long-term relationships based on integrity and trust to ensure we get the best value for our spend. This measure of "spend under management" shows how much of our total direct procurement spend is with preferred suppliers under contract. Ultimately it is an indicator that the best suppliers are used; ensuring risks are managed while achieving a positive commercial outcome.

2018/19 has seen an increase in purchases from preferred suppliers. Suppliers are audited on their performance annually, with results shared openly with them. Where performance has been outstanding, we ensure this is celebrated; on the other hand, where performance is lacking, this is managed with the supplier to ensure they return service to the expected level.

In any year, we will have a certain amount of spend not under long-term contract. This allows us the flexibility to develop new suppliers. Some of these new suppliers can provide valuable new technologies and solutions, along with alternative supply channels to reduce supply chain risk.

Ethical supply chain

It is important to Ravensdown that we engage with suppliers who share our vision and values and undertake their businesses in accordance with our own Code of Conduct. To this end, our Suppliers Code of Conduct document outlines the expectations Ravensdown has for suppliers to act in an ethical and just manner. For more information please visit https://www.ravensdown.co.nz/supplier-code-of-conduct.

Our RFP (tender) documents include supplier ethics as an assessment criterion within the balanced scorecard, and we extend this to requesting more specific actions being undertaken by our suppliers that support positive ethical behaviour.

–

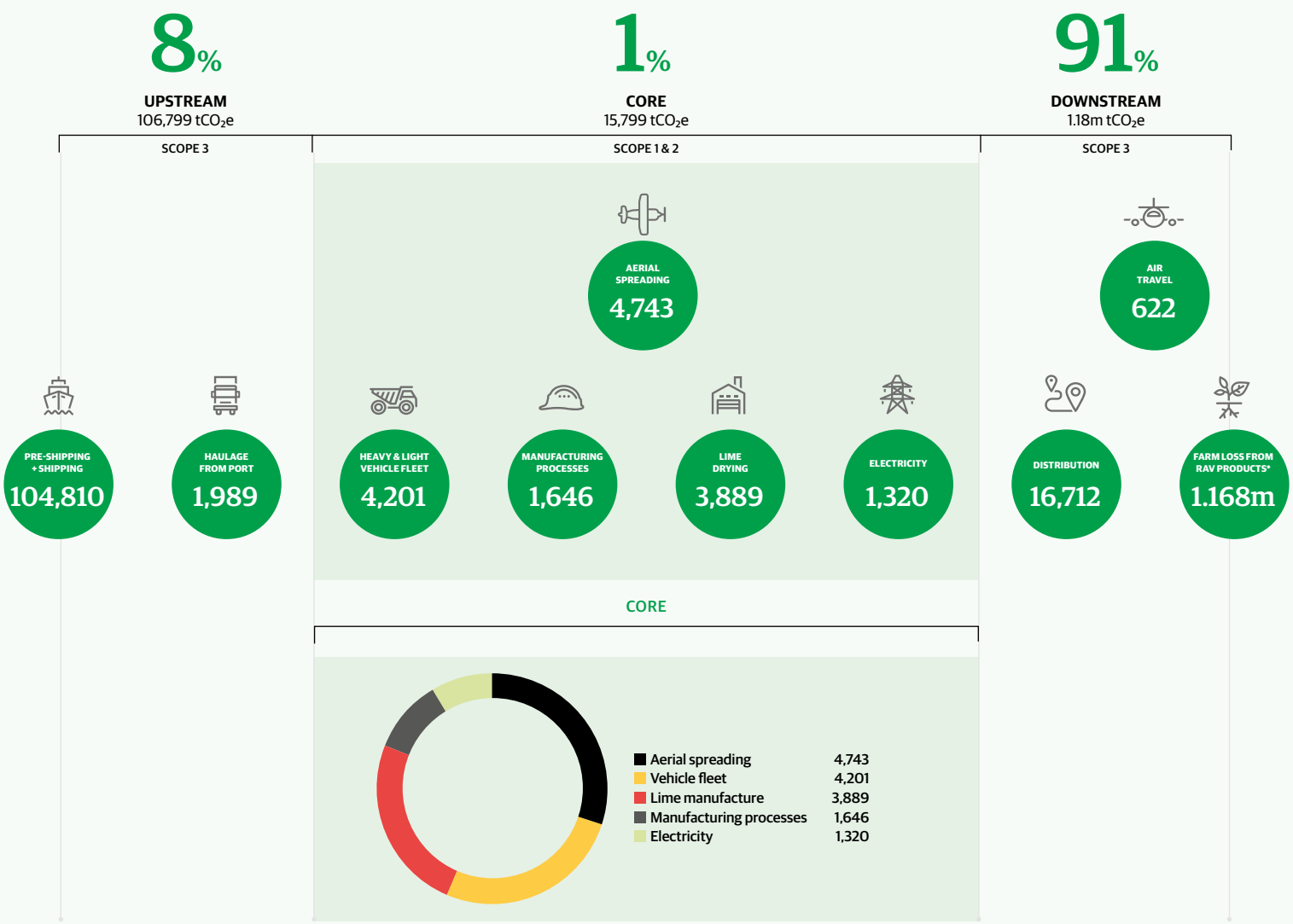
Suppliers are audited on quality and follow a code of conduct.

17 PARTNERSHIPS FOR THE GOALS

Engagement survey

Engaged employees have a genuine commitment and passion for the business goals and ultimately want their efforts to make a positive difference to our stakeholders and New Zealand as a whole. Data from a full engagement survey in 2020 will be available in the next Integrated Report, allowing time for improvement action plans from 2018 to be implemented. The survey provides a wealth of information that supports us to develop initiatives to further improve engagement and build a team that is committed to Ravensdown and strive to do their best for themselves, Ravensdown and our shareholders.

Our focus in 2019 was to allow the teams to work on the key actions from the 2018 survey around communication, collaboration and change management. One example was a new internal framework called Interactive BRIEFing which was launched to ensure a more consistent approach to communicating changes across the business.



Note: ——— **Scope 1:** sources owned by company. **Scope 2:** purchased electricity. **Scope 3:** sources not owned or directly controlled (https://ghgprotocol.org/corporate-standard)

*N fertiliser (N_2O) loss and Lime ($CaCo_3$) loss

15,799
tCO_2e
Ravensdown carbon footprint
Scope 1 & 2

2017-18 **17,214 tCO2e**
2030 target **15%** reduction across scope 1 and 2

Carbon footprint

For 2018, Ravensdown reports core organisational (scope 1 and 2) greenhouse gas (GHG) emissions of **15,799** tonnes of carbon dioxide equivalent (tCO_2e). Ravensdown exhibits relatively low industrial scope 1 and 2 emissions and very high scope 3 (indirect) emissions (99% of our assessed GHG sources).

Therefore scope 3 emissions are included in Ravensdown's total footprint, giving a total of 1,308,005 tCO_2e. Most of this is attributable to upstream international shipping of raw materials and downstream haulage of products to market and use on farm. An operational control approach has been taken in line with the GHG Protocol Corporate Standard and joint ventures are excluded this year.

As a founding signatory of the Climate Leaders Coalition, Ravensdown is taking climate change mitigation seriously. Ravensdown first reported its CY 2017 carbon footprint in 2018. This year, for CY 2018 we have broadened the scope, removed sources of uncertainty and improved calculation methods. In 2019 we are setting a science-based reduction target consistent with a limit of two degrees of temperature change. The 2018 footprint (in the graphic above) represents our baseline for our 2030 greenhouse gas (GHG) emissions reduction targets. In the coming year we are also working with our suppliers to help reduce their emissions.

Areas where we have made reductions and identified opportunities in 2018 are described in detail below.

- In conjunction with our joint venture, Ravensdown Shipping Service (RSS), we will look to implement operational efficiencies, such as engaging more fuel efficient ships and slow steaming, to reduce our carbon footprint. Our SO_2 emissions will decrease as a result of international legislation imposing lower sulphur content in marine fuels.
- Currently the many forklifts and loaders that move products around our site are powered by fossil fuels. In 2018, we successfully trialled an electric forklift at Christchurch Works and are seeking offers from the marketplace for a standard electric forklift that meets our needs. As older forklifts are retired, we will replace them with the electric model.
- Some lime quarries use coal-fired driers to dry lime prior to sale to ensure the moisture content meets specifications. In 2018, we have identified areas with inherently low moisture content that can be mined during dry summer days without the need to use the dryer.
- For domestic logistics, our opportunities to address a reduction in emissions are
  - Development of vehicle standard guidelines for domestic transport providers
  - A review of our logistics network, taking into account new backloading opportunities and coastal shipping.

Limited assurance for our GHG emissions inventory has been provided by EY. Their statement is available at https://integratedreporting.ravensdown.co.nz/

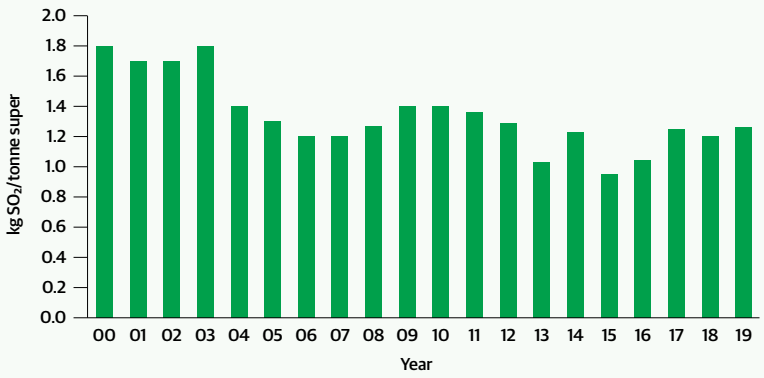
We source from natural gas (not coal) urea suppliers who are examples of international best practice when it comes to carbon efficiency.

—

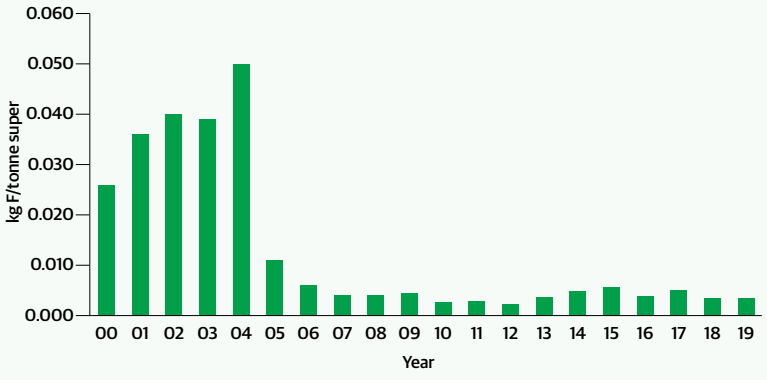
Shipping is a large contributor and modern ships are more fuel efficient.

13 CLIMATE ACTION
17 PARTNERSHIPS FOR THE GOALS

SULPHUR DIOXIDE DISCHARGE TO AIR
(kg SO2 per tonne of fertiliser manufactured)



FLUORIDE DISCHARGE TO AIR
(kg F per tonne of fertiliser manufactured)



Environmental Performance and Compliance

Ravensdown is committed to reporting on our environmental performance and have been doing so annually since 2001 in our Operations Environmental Report. For full details, the 2019 edition can be found on the Ravensdown integrated reporting website.

Our major air discharge consents are at the three superphosphate manufacturing sites. The principal discharges they cover are sulphur dioxide from our sulphuric acid plants and fluoride from superphosphate production. The combined discharges expressed are per tonne of fertiliser manufactured.

Fluoride discharges are strongly influenced by the types of phosphate rock used in the rock blends, as well as the efficiency of the environmental control systems. Changes to rock types used and enhancements to the scrubber systems led to the large reductions in 2005.

There were four regional council interventions in the 2018-19 year where our operations fell short of standards.

1. Christchurch Works – Environment Canterbury has issued an abatement notice regarding stormwater discharges to the City Council system and ultimately to the Hayton Stream catchment, requiring improvements by April 2020. Several projects are underway to improve the quality of the stormwater discharge from this large site. This work is being done in close communication with Environment Canterbury
2. New Plymouth Store – Taranaki Regional Council issued an abatement notice in May 2019 as stormwater discharges to the Mangaone Stream (that runs beside the site) did not meet consented standards on two occasions. Since the notice was issued, several operational improvements were made and an independent engineer is in the process of reviewing the design and effectiveness of the stormwater management system. Overall the Taranaki Regional Council has commended Ravensdown on its environmental performance at both the old and new sites at New Plymouth, in a letter from the CEO in March 2019, so it is disappointing that our high standards were not met.
3. Seadown Store – since 2017 the site has been under a non-compliance notice from Environment Canterbury regarding elevated nitrate levels in downgradient bores. Consultants are undertaking comprehensive assessments of groundwater in the vicinity, checking nitrate and flow directions. As the many influences on these bores are still being determined, the work is being undertaken in close liaison with the Council who are satisfied with progress.
4. Gisborne Store – a non-compliance notice was received from the Gisborne District Council in February 2019 relating to spillages from a conveyor belt, with potential to enter stormwater. Site cleanliness has been addressed and a stormwater management plan is to be prepared by May 2020.

–

Emissions, dust and stormwater require careful managing and investment.

Stormwater Management

As can be seen from three of the four council interventions, stormwater management is an essential environmental activity at Ravensdown sites, and poor stormwater management has the potential to negatively impact on waterways. There are many positive initiatives occurring:

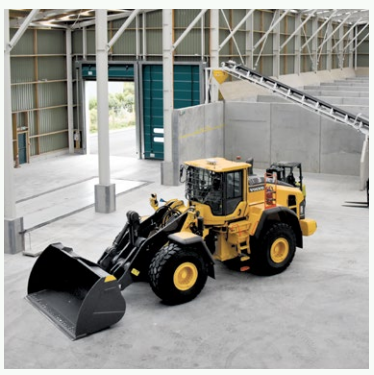
- Several sites have external consultants working on stormwater management and treatments so as to improve discharge quality.
- More than ten sites are conducting stormwater monitoring in partnership with ARL.
- Passive wetland development at Supreme Lime to capture sediment before discharge.
- Automated pH correction for discharge water at Napier Works, and a project around the acid plant, to ensure all stormwater sources were found and channelled to the dosing point for pH correction prior to entering the settling pond. Napier has also installed a recirculation pump at the settling pond to ensure representative pH samples are obtained before discharge.
- Automatically activated valve to prevent discharge of low pH water at Dunedin Works.
- Stormwater improvement project at Christchurch Works to capture and contain on site all stormwater from around the urea dispatch area.
- New ride-on sweeping equipment purchased at Dunedin Works to minimise risks from fertiliser products on the yard.

On Tuesday morning, 9 October 2018, a major fire occurred at the Christchurch Works affecting the intake system and four of the site's 13 stores. As well as the emergency response at the time, attention was devoted to the stormwater system and the potential for fire-fighting water to carry nutrient and building contaminants. Operational actions prevented environmental problems on the day – other than the black smoke while the rubber conveyor belts were burning. Subsequent removal of post-fire residues and sediments from the site and drains ensured no long term adverse effects.

Dust Control Systems

Dust is an important aspect for Ravensdown to manage across its network. Our actions to address dust include:

- Researching and implementing the use of dust suppressants.
- Building and retrofitting improved intake and dispatch systems that minimise dust generation or airborne dust levels.
- Development and implementation of a company-wide Storage and Handling protocol.
- Screening installed at Christchurch Works on boundary fence near intake system to reduce dust drift risk.
- Installing a large plastic curtain to shield the superphosphate bay at the New Plymouth store.
- And as mentioned in the Stormwater Management discussion, new ride-on sweeping equipment purchased at Dunedin Works to remove dust deposits.



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Customers, staff and communities benefit from investment in manufacturing, stores and quarries.

$27.5m

investment in property, plant and equipment

2017-18 **$33.6m**

50%

of asbestos replacement completed

$10.7m

invested since 2014-15

Investment in infrastructure

By investing in our infrastructure, we are delivering better outcomes for our shareholders, and internal and external stakeholders.

- Following on from its successful implementation at the Christchurch Works, the Despatch Optimisation Project (improving despatch throughput by reducing waiting times) was rolled out at our New Plymouth store. This resulted in improved customer service through reduced waiting times, assisting both sites to manage despatch during record output months in excess of 29,500 tonnes each.
- Ongoing improvements to our office and amenities areas have improved both our staff and customers' experience.
- The asbestos replacement programme has now reached its halfway mark of year five out of 10. To date, we have reinvested $10.7 million in this initiative. All buildings and workplaces where asbestos is likely to be found have an asbestos management plan in place in line with the Health and Safety at Works (Asbestos) Regulations 2016.
- The company continues to work through its asset replacement programme. Significant investment has already been made to upgrade the three acid plants and improve a range of buildings and other infrastructure. A notable upcoming project is the replacement of the Napier fluoride scrubbers with the latest technology. As an essential environmental control process, replacement of this equipment will ensure the site can continue to meet its fluoride discharge consents.
- Throughout our stores network we have invested in a next generation IT network and application delivery infrastructure. For design and deployment of this infrastructure, Ravensdown was selected as a finalist in the international Citrix Innovation awards in Orlando, Florida. IT investments such as these are all about improving availability, efficiency and customer service.
- In the year 2018-19, we invested to significantly enhance our systems and software to protect against cyber security threats. The investment provides further mitigations to the ever-increasing risk of cyber-attacks preventing loss of sensitive data and business disruption.

With the sale of the old eight hectare New Plymouth store site and the building of a new store nearby, Ravensdown was able to honour a 2004 agreement with the local Ngāti Tawhirikura hapu of Te Ātiawa iwi relating to the waahi tapu site of the Aotere Pā.

Ngati Tawhirikura's Glenn Skipper (pictured) thanked Ravensdown for structuring the commercial land deal in a way that allowed for the site to be handed back to the hapu at a ceremony on 12 April 2019.

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Glenn Skipper of Ngāti Tawhirikura acknowledges Ravensdown as the pā is handed back to the hapu in New Plymouth.

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It's the Seadown store's turn to benefit from improvements and investment.

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Trained staff build relationships with regional councils so shareholders benefit from an in-depth knowledge of the regulations.

Regional Policy Engagements

Ravensdown staff engage extensively with regional councils throughout New Zealand. Engagement is often at multiple levels – including chief executive level, sector director, policy, consents and compliance.

Ravensdown participates in a number of council-led stakeholder groups, sharing knowledge and seeking to influence policy direction as it relates to farming and our own operations.

The benefit to our shareholders is that we have trusted relationships with Councils so we can prepare and respond early to the changing regulatory environment and advise our farmers accordingly.

Our shareholders benefit from our staff having a sound understanding of the regulations and being able to translate them into plain language for on-farm actions.

Councils also benefit from our environmental and agri manager team's ability to help them implement their regulations.

Quality agri products — Whether it's fertiliser, lime, seed, agchem or animal health products, farmers and growers need products that are fit for purpose, suitable for New Zealand conditions and available when needed.

Compressive strength

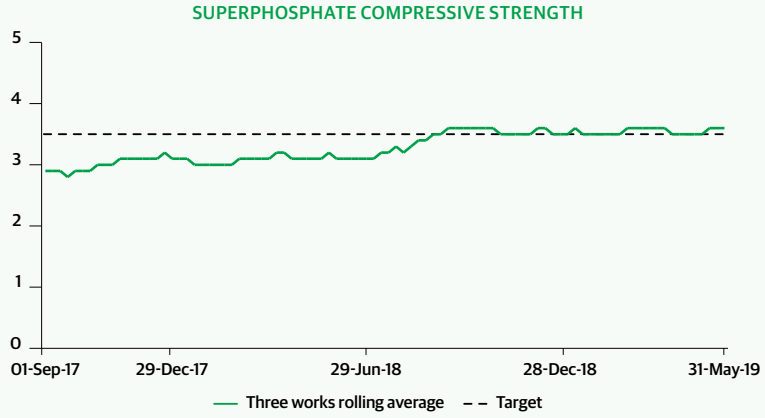
Granule compressive strength offers agronomic and environmental benefits helping ensure the right nutrients are applied in the right place. Ravensdown's goal is to increase the compressive strength of our manufactured superphosphate and maintain granular integrity.

Increased compressive strength means the fertiliser granules break down less during handling and blending. This means less dust and better, more precise spread during application.

Our stated superphosphate target is 3.5kg force and we have been achieving results greater than this on average across the three works sites for the last nine months.

This has been achieved through operational focus and sourcing quality rocks.

SUPERPHOSPHATE COMPRESSIVE STRENGTH



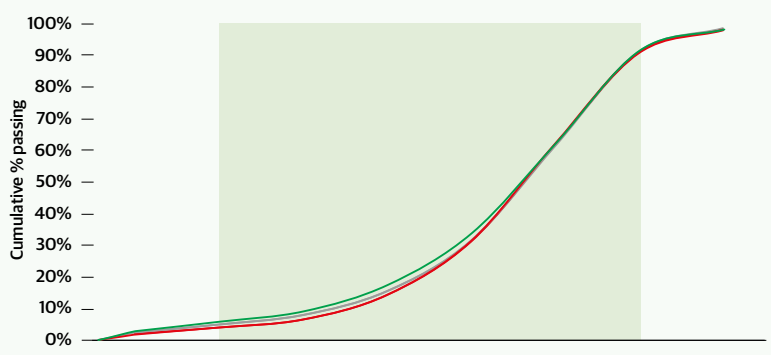
Particle sizing distribution

Particle size is a crucial quality metric. The ideal sized granule will improve coverage and spreading efficiency and reduce dust. Some variation is needed, but either extreme will have implications for the environment and for precision spreading.

We have set a target particle-sizing band for each product (superphosphate: 1.0 mm to 5.6 mm and urea: 2.0 mm to 4.8 mm). The target is to ensure that we provide high quality products to improve environmental outcomes and optimise performance. Ravensdown continues to improve our focus on achieving ideal particle sizing.

We have a strong focus on granulation quality from the manufacturing teams, and care and attention from our despatch and stores teams. Our goal is to continue to improve our quality by evaluating different rock blends, making process and operational improvements. We intend to more widely share our quality information so our staff, spreaders and customers can have the confidence in our manufactured products.

SUPERPHOSPHATE PRODUCT SIZING
2016 - 2019



UREA PRODUCT SIZING
2016 - 2019

93.9%

of Ravensdown fertiliser tonnage sold were Fertmark registered components

2017-18 **93.8%**

Fertmark standards

The Fertmark programme was set up in 1992 to give New Zealand farmers confidence in the chemical quality of fertiliser, lime and associated claims. The scheme is managed by the farmer-controlled Fertiliser Quality Council.

Ravensdown maintained all its registrations in 2018-19 and has the highest number of Fertmark product registrations of any company. These products are independently audited every six months, with audit samples compared with Ravensdown's own internal quality control results. All Ravensdown lime quarries and major fertiliser products are Fertmark registered.

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All major fertiliser and lime products are Fertmark registered so users know what they are applying.

74

overall product quality rating for fertiliser, lime, agrochemicals, seed and animal health products from Customer Satisfaction survey

2017-18 **74**

Product quality rating

Ravensdown's average product rating was 74 out of 100, equivalent to a very good rating on a scale of 0 = poor to 100 = excellent. Fertiliser quality has been improving from a high base as the store refurbishment programme continues and the suppliers chosen are required to meet high quality specifications. For manufactured product, the consistency of rock blends has reduced variability in physical and chemical properties. The use of the Continuous Improvement processes by an engaged manufacturing team has led to improvements in processes and reduced downtime resulting in better quality and productivity.

Investment is paying off in terms of higher quality and manufacturing productivity.

0.045%

quality complaints as a percentage of total orders.

2017- 18 **0.065%**

Quality control through supply chain

Product quality is one of the key drivers for the Supply Chain team. It is important that we maintain the quality of our products from supplier and manufacturing sites so that our shareholders receive maximum benefit from their essential farm inputs. This year we received only 127 quality complaints which is 32% fewer than last year. This is an area that the entire team is constantly working on.

Over the past 12 months, we have started to see benefits flow through from initiatives which were implemented as a result of the "Joint Quality Working Group" (which looked at improving quality in the supply chain from end to end). These include:

- 24-hour, 7-days-a-week temperature and humidity monitoring at the originating load port. This ensures loading is only carried out in ideal conditions which minimises product taking in excess moisture.
- A Storage and Handling Protocol has been developed and implemented throughout our stores and operations network. This has seen a significant improvement in housekeeping standards.
- One of our industrial urea customers, Hexion, audited our Napier Wharf store as a back-up supply point for their Mt Maunganui operation. They were impressed with the tidiness of the site, highlighting the level of housekeeping that can be achieved by a dedicated team.
- An improved sampling protocol has also been rolled out to ensure the tests we do on products are standardised across our network and extends sampling to our stores network.
- Ongoing work with suppliers on their product offering. Ravensdown benefits through improved product quality, and the supplier benefits by opening access to other world markets.
- Our quality performance is supported by in-house laboratory fertiliser testing. This year we completed 2,825 in-house laboratory tests, up from 2,038 in 2017/2018. The increase was due to testing on new products under development, which is necessary to ensure the products we develop meet the required standards to add value to our shareholders.

98%

of bulk imports are low risk

Target **>95%**
2017-18 **97%**

TARGET ACHIEVED

Low risk imports and bulk vessel quality

The "Low Risk" measure is bulk shipments imported under the Ravensdown Fertiliser Imports System. This system is approved by MPI and is a robust system consisting of independent audits, rigorous supplier facility, vessel and product inspections and sampling and testing of products. This ensures high quality product and that biosecurity risk is mitigated.

This year we had one small purchase from a non-preferred supplier which did not qualify under our low risk import system, compared to two last year. Being a non-preferred supplier does not mean we have increased the biosecurity risk to New Zealand. This shipment was from a "supplier under trial", in which case we have yet to audit their offshore facilities. Normal MPI border inspections are carried out on these shipments to ensure there is no risk to New Zealand's flora and fauna.

97%

of bulk vessel fertiliser imported met our specification for physical and chemical quality

Target **>95%**
2017-18 **97%**

TARGET ACHIEVED

86%

of international suppliers' performance is evaluated

Target **>90%**
2017-18 **85%**

TARGET NOT ACHIEVED

International suppliers' performance evaluation

Our suppliers are a key component in delivering value to our shareholders. It is therefore important that we know they are doing a good job. We review all long-term fertiliser suppliers twice per year and provide specific feedback on their performance. This provides clarity about what is important to Ravensdown, how suppliers are performing, what is going well and what needs to improve. This year we added non-fertiliser suppliers to the review process, which has impacted our overall score. Key performance and actions in place:

- 100% of fertiliser suppliers evaluated under our supplier performance review programme.
- We also turned the tables and asked our partners and preferred suppliers to complete a 360-degree survey on our performance – to see how well we work with them and understand more about what we can do to improve our collaboration with them.
- We are in the process of adding non-fertiliser suppliers (i.e., animal health and agrochemical) to the review programme. This will help to achieve our target of evaluating >90% of our direct suppliers.

280mg Cd/kg P

maximum cadmium in all phosphate products

TARGET ACHIEVED

Cadmium management

Cadmium naturally occurs as a trace impurity in phosphate rock. Evidence to date indicates that cadmium in New Zealand soils poses little concern, but it needs to be managed over the long term. Up until the 1990s, the phosphate rock source (Nauru and Christmas Islands) were much higher than in the current rocks used to manufacture superphosphate.
As a result, specific areas with a long history of phosphate application including the Waikato, Taranaki and Bay of Plenty do need monitoring and management which can include the supply of a lower cadmium products.

Through the Fertiliser Association of New Zealand, a maximum limit was identified and has been monitored since 1997. For the past decade, Ravensdown has been consistently lower than this limit of 280 mg Cd/kg P by a significant margin.

This year the limit was not exceeded and averages have been consistently well below that level.

Through integration between our sourcing, manufacturing and advisory services, we will continue to be vigilant in the area of managing cadmium accumulation. New testing regimes will also be supported and we will continue to collaborate with stakeholders via the Cadmium Working Group.

Where there are localised effects, a Tiered Management System means alternative products are recommended and provided.

Enabled People — Enabling people takes constant focus and a positive, safety-oriented culture. Training and development have always been prioritised, and staff and contractor wellbeing is becoming increasingly important.

Hazard and Incident Management Process Performance

We have seen a positive improvement in safety reporting rates with a 15% increase in events reported over the past year.

We have set two key performance measures to build trust in our reporting system and ensure that if someone reports an issue it will be addressed in a timely manner. Our performance has greatly improved over the last year, though further work needs to be done to meet our targets.

839

events reported

2017-18 **714**

68%

of reported hazards and incidents assessed / investigated within 48 hours

Target **>90%**
2017-18 **43%**

TARGET NOT ACHIEVED

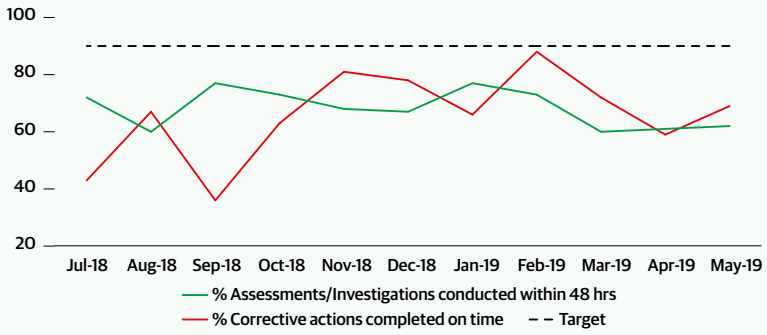
69%

of corrective actions are completed on time (on or before their due date)

Target **>90%**
2017-18 **53%**

TARGET NOT ACHIEVED

PERFORMANCE AGAINST PROCESS KPIs



Focus on Critical Risks

Key projects are underway to improve how we manage the following critical risk areas:

Traffic Risk Management: A standard has been developed to specify the minimum requirements sites must meet to prevent people-vehicle and vehicle-vehicle interactions that could result in a serious injury or fatality.

Hazardous Energy Isolation: A suite of hazardous energy isolation procedures, roles and verification methods have been developed and are being implemented.

Airborne contaminants: Better understand airborne contaminants generated as a result of our operational activities and how we can manage them to protect people from harm.

Contractor management: Review and improve how we prequalify, manage and performance evaluate and manage our contractors and their work.

Permit To Work (PTW): Review the existing PTW system and put forward a new risk-based approach that will streamline the PTW paperwork and focus the process on managing risks associated with non-routine work.

Critical Focus Area	Project Phase: Review	Design & Development	Consultation	Implementation	Review and Improve
Traffic Risk Management	■	■	■	■	
Hazardous Energy Isolation	■	■	■		
Airborne Contaminants	■	■	■	■	
Contractor Management	■	■	■	■	■
Permit To Work system	■	■	■		

ICAM – Potentially Critical Incidents

We have introduced a new process to conduct detailed investigations of potentially critical incidents. These are incidents that under different circumstances could have resulted in a fatality or serious injury. A report is prepared and presented to the leadership team for review and corrective actions across the organisation are agreed and communicated.

Recordable Injuries

Unfortunately, 27 of our staff were injured in the 2018-19 financial year to the extent that they needed medical treatment, restricted duties or time off work. While this is four less than last year, reducing this number remains a key focus for us.

Focus on Injuries Contributing to our TRIFR

Although there has been a decrease in the number of musculoskeletal injuries, they still contribute to 63% of our recordable injuries and 50% of our lost time injuries. An area of focus for us over the next year will be to determine how we can reduce the number of these types of injuries.

4.4

rolling 12-month Total Recordable Injury Frequency Rate average

2017-18 **4.69**
Target **3.68** (Annual Zero Harm benchmarking report)

TARGET NOT ACHIEVED

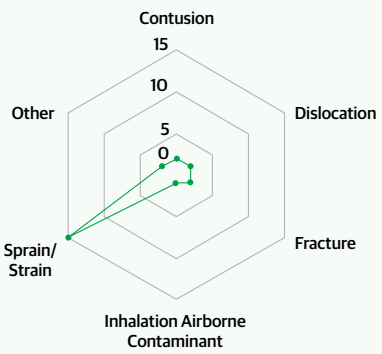
1.96

rolling 12-month Lost-Time Injury Frequency Rate average

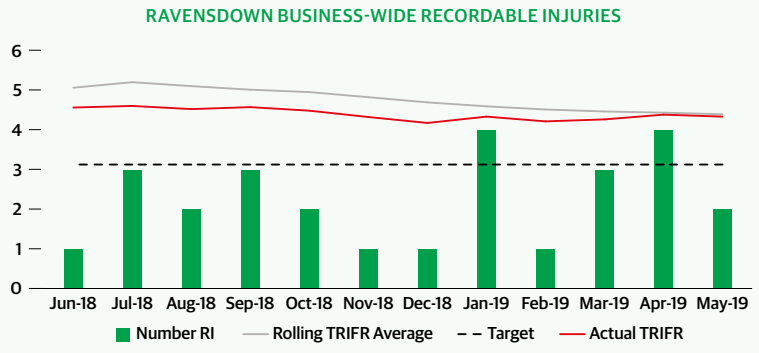
2017-18 **1.44**
Target **1.48** (Annual Zero Harm benchmarking report)

TARGET NOT ACHIEVED

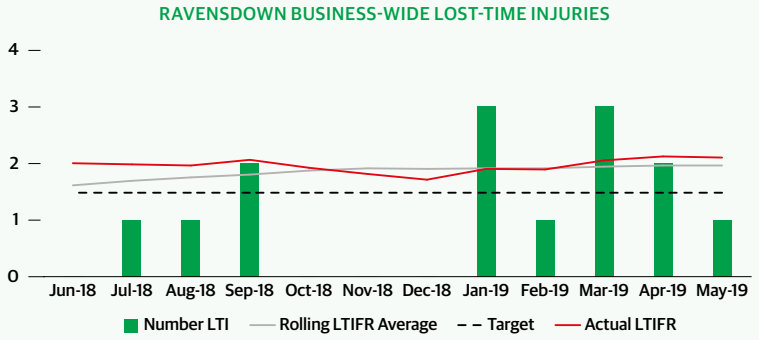
2018-2019 RECORDABLE INJURIES – INJURY TYPES



RAVENSDOWN BUSINESS-WIDE RECORDABLE INJURIES



RAVENSDOWN BUSINESS-WIDE LOST-TIME INJURIES



Wellbeing

Wellbeing means something different to everyone, and Ravensdown looks to offer support and initiatives for staff that meet an individual's needs. These range from medical insurances, flu vaccinations, personal insurances, to access to financial advice, counselling services and the provision of education and information around mental and physical health.

We look to partner with our providers around initiatives that are relevant to our industry and our people. For example, we have invested in psychological first-aid training for some of our people in customer-facing roles.

We will continue to add key initiatives to our wellbeing package each year.

Staff take the opportunity to connect and learn together.

8 DECENT WORK AND ECONOMIC GROWTH

11.3%

staff turnover

2017-18 **11%**
Target **<10%**

TARGET NOT ACHIEVED

Staff turnover rates

Our turnover rate has remained relatively steady over the past year with just a slight increase. Turnover rates can reveal how the company is delivering the overall employee experience. High turnover is disruptive to the business and our stakeholders. By identifying, then remedying any issues, a stable experienced workforce will give confidence to the stakeholders. We have a target of ≤10% turnover providing us with a healthy movement of talent into and out of the organisation.

New recruits are given intensive structured training to hit the ground running.

$1.1m

spent on targeted training and development

2017-18 **$800k**

36%

internal appointments

Training & Development

Our investment in Training and Development demonstrates the commitment Ravensdown has made to expanding the knowledge base of its staff, providing them with the training required to be safe and fully competent in their current role and develop skills required for growth and future opportunities. Internal appointments to positions made up 36% of all appointments this FY. By monitoring this metric, we can determine how effectively our training and development is setting our employees up for internal career advancement. Developing a pipeline of talent for future opportunities within the organisation lead to a greater sense of job security and loyalty to the organisation and our customers.

Training spend increased in 2018/19. Investment in Health, Safety & Wellbeing (HS&W) related courses doubled on the previous year ($370K vs $180K) and Leadership-related courses were up over $100K on the previous year ($134K vs $32K). A contributing factor to the increase in HS&W courses was the introduction of a resilience and wellbeing training programme for customer-facing staff. This looks at not only building skills for managing their own wellbeing, but also looking out for our farmers and ensuring our team have the skills and knowledge on how to respond to customers who may need more support.

2019/20 will see a continued focus on the HS&W space with a comprehensive Driver Training programme being introduced to ensure our teams are safe on- and off-road.

658

full time equivalent employees

2017-18 **641**

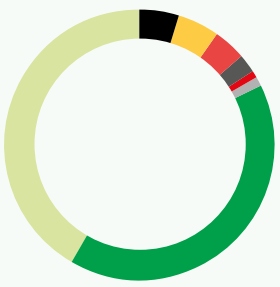
8 DECENT WORK AND ECONOMIC GROWTH

Diversity and inclusion

Diversity and inclusion at Ravensdown is about moving our demographic towards a workforce that reflects the wider communities of which we are a part. In addition to demographic diversity we also focus on ensuring diversity of thought across our organisation. This means building a workforce of people who come from different backgrounds and bring a range of life experiences and learnings to the team.

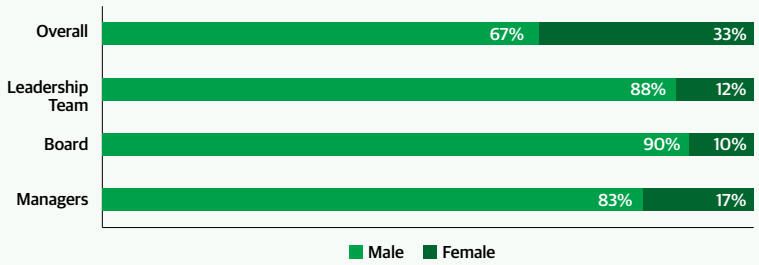
As we see steady change in the agricultural sector, this diversity will ensure we continue to innovate and deliver. Inclusion in Ravensdown is about our people feeling that they belong; that they are heard, valued and empowered to contribute to smarter farming – all part of our core values. We also have a strong focus on ensuring our recruitment and remuneration decisions follow fair and robust processes and that we educate decision-makers on the potential impact of unconscious bias. This gives us confidence that we simply hire the best people and reward those whose performance assists us in delivering excellence to our stakeholders.

ETHNICITY

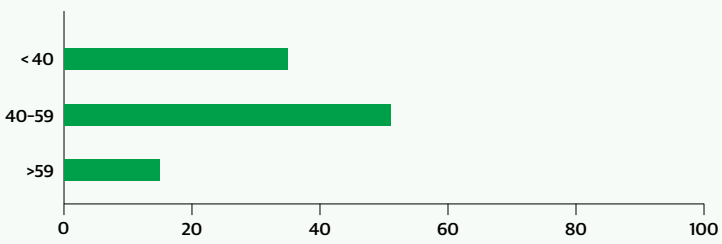


Māori	5%
New Zealander	5%
European	4%
Asian	2%
African	1%
Australian & Pacific Islands	1%
NZ European	41%
Not Stated	42%

GENDER DIVERSITY



AGE



Science — Our research has to progress because the science is always moving forward. Evidence and collaboration can deliver solutions that are having a real impact on farming practice.

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All Aerowork aircraft are expected to be fitted with IntelliSpread® technology by 2021.

IntelliSpread

Ravensdown's IntelliSpread® precision aerial application system enables a prescription map to be loaded into a topdressing aircraft's GPS. The GPS then communicates with a computer which controls the opening and closing of hopper doors. The doors are automatically operated with the added benefit of not distracting the pilot to enable fertiliser to be applied where it is needed and at the rate required.

The value

Farmers can trust their fertiliser investment is applied as intended with proof of release records available. Technology-enabled aircraft allow fertiliser plans to be accurately delivered by electronic instruction.

- Improved precision to avoid non-productive/sensitive areas (which has amounted to 18% of land in the 100 farms already mapped) and associated positive environmental outcomes.
- Improved precision in carrying out fertiliser applications which target maintenance areas, low fertility areas which require capital fertiliser applications and opportunities to redeploy fertiliser application rates where soil fertility is high.
- Positive economic benefit, immediately by avoiding exclusion zones, so fertiliser can be redeployed on to target areas.
- Improved pilot safety due to not having to use the hand-operated lever for hopper opening.
- Farmer has confidence that the fertiliser is being applied as intended.
- Productivity and profitability gains for hill and high-country meat and wool farmers using precision fertiliser application technology through increased nutrient use efficiency.
- Reduced environmental impacts from fertiliser use on hill country farms.

Status

Five planes are in operation. As of May 2019, 115 commercial applications were completed using the differential rate application technology (prescription map). This is outside trial applications. The applications with full data represent 108,835 hectares with 19,237 of this deemed to be ineffective or sensitive where fertiliser was not applied. Effective area applied was 89,147 hectares.

Future expectation

Plan for all Aerowork aircraft to be fitted with IntelliSpread technology by 2021.

–

Validating aerial fertility scans with 'ground truth' results at the soil level.

AirScan

Airscan® is the service resulting from the Primary Growth Partnership programme "Pioneering to Precision". The PGP programme takes aerial fertiliser application from pioneering to precision by enabling the detailed nutrient requirements of hill country farms to be identified through remote sensing technology which then helps ensure that the right amount of fertiliser is applied precisely as needed for optimal pasture and stock growth.

The PGP programme is a collaboration between Ministry for Primary Industries and Ravensdown as investment partners. The two main research contractors are Massey University and AgResearch.

The value

- Allows effective areas to be accurately determined.
- Better targeting of low fertility areas which may require capital fertiliser applications, and reduced application rates where fertility is high.
- Positive economic benefit, either immediately from redeploying fertiliser, or over a longer timeframe from capital application.

Status

Five farm fertiliser applications have been achieved using variable rate equipped aircraft based on plans developed directly from hyperspectral data and programme software. One fertiliser application was completed using the nitrogen pasture growth forecaster tool and via an IntelliSpread-equipped aircraft.

Future expectation

The business case targets 15% of hill country farmers within three years of programme finishing (2023) using precision application and 40% within 10 years still appear to be reasonable and achievable. Trends in fertiliser use on hill country and the relationship of this with precision application can also be evaluated from the programme finishing.

–

Advisors, consultants and agri managers like Paul Salle guide farmers in order to maximise nutrient efficiency and minimise losses.

Nitrogen and phosphorus use efficiency

Ravensdown focuses on research and development to provide innovative products and/or services which aim to reduce or mitigate N and P losses from our shareholders' farms.

As well as financial impacts for the farmers, losses of N as nitrous oxide to the atmosphere impacts on greenhouse gas emissions.

Agricultural systems are 'leaky' with respect to nutrient losses. Nitrogen (N) and phosphorus (P) are essential plant and animal nutrients which are added mainly as fertiliser. Direct losses from fertilisers are small if good management practices are used by farmers. However N is lost by leaching from animal urine patches, atmospheric loss and fertiliser. Most P is attached to fine clays. The particles to which the P is attached can be transported across the landscape in surface runoff.

The value

As N and P loss affects receiving water quality, new technologies to reduce N and P loss can enable our shareholders to continue their ability to farm in the face of increasing regulatory requirements around nutrient externalities.

Status

When fertiliser nutrients are applied using good management practice (GMP), direct losses of N and P from fertiliser products are generally less than 10%. GMP for fertiliser use is the right product at the right rate, applied at the right time and in the right place.

Future expectation

The quest for optimising nutrient efficiency will be perpetual. It will not always be possible to indicate how successful a single technology or management change (or bundle of solutions) arising from this work will be in reducing nutrient loss in real farm situations because of the highly complex system of interactions which occur on farm. At best, success will be demonstrated by showing the impact of new component technologies on the farm system.

Climate change is a central concern to New Zealand stakeholders, so the co-operative will be investing in the training and certification of its advisors, the technology they use and the products they can recommend.

–

Professors Keith Cameron and Hong Di picked up two innovation awards for their work on the ClearTech® effluent treatment system.

ClearTech

ClearTech® is a new dairy effluent treatment system developed to help farmers reduce the environmental risks from land application of effluent and to safely recycle water to wash the dairy yard.

The value

ClearTech® reduces the risk of a dairy farmer breaching a consent – particularly when wet weather is both filling the pond and preventing effluent application. Collaborations with Lincoln University, DairyNZ, Waterforce and Yardmaster have all progressed well. The latest research focuses on the ClearTech lysimeter trials and the benefits of applying clarified water and/or treated effluent versus untreated effluent. The focus is on reduced *E.coli* in clarified water (for washing the yard and/or irrigation), reduced potential for *E.coli* leaching into drinking water and/or underground aquifers, plus reduced nitrates and phosphates into waterways which in turn can support reduced algal growth and improve water quality.

By reusing and recycling water, the effluent storage capacity is greatly extended.

Status

Actively commercialising with six units being installed and fully commercial farms across the country by spring 2019.

Future expectation

We continue to develop this technology to best capture efficiencies and apply them to environmental requirements. Success will be shown as reduced fresh water use in dairy yards (litres), reduced raw effluent being irrigated and increased treated effluent being irrigated (ha). Reduced phosphate loss to waterways (total-P) and reduced *E. coli* ending up on pastures.

–

Senior Technical Specialist Martha Trodahl is using LUCI-Ag to help farmers identify nutrient hotspots and provide mitigations.

LUCI-Ag

LUCI-Ag (Land Utilisation and Capacity Indicator) is a decision support tool developed exclusively for Ravensdown by researchers at Victoria University of Wellington (VUW). The tool investigates current on-farm P & N losses and identifies nutrient hotspots on spatially detailed maps. This enables mitigations specific to a farm's management and biophysical environment to be explored and ranked according to effectiveness, prior to taking action and financial outlay.

The value

LUCI-Ag enables farmers to identify and target nutrient hotspots on their farm in more spatial detail than other commonly used nutrient models. In addition, it links on-farm management and mitigations to in-stream water quality via an innovative hydrological model. This means the effects of current and future mitigation options can be explored in terms of estimated in-stream nutrient reductions.

Status

Ravensdown completed a Phosphorus Pilot Project in collaboration with Beef + Lamb NZ in October 2018. The project used a catchment engagement approach and LUCI-Ag to improve environmental management on farms. In total 11 farms were modelled in two catchment areas (Waiiti in Hawke's Bay and Pourakino in Southland). Feedback from farmers involved in the Pilot Project was positive. One farmer was quoted *'added value as it takes the guesswork out, also reinforces what we think, and it is a better programme than any others I have seen or heard of'*. Farmers had a positive experience from the process as they felt it helped to validate the existing environmental mitigations they had already undertaken on their individual farms – *'Good to know it's working, shows you doing good, inspires you to do more'*.

As part of a wider rollout of LUCI-Ag, a further three farms have been modelled and anecdotal evidence suggests the model outputs and associated report has been of use and interest to the farmers involved. LUCI-Ag works particularly well on properties with rolling to steep topography, where there is a need to manage P losses and these areas will be an initial focus for LUCI-Ag initial uses.

Future expectation

Interest in LUCI-Ag will grow as farmers come to understand how it can extend their current knowledge of on-farm losses, help them better target nutrient hotspots and allow them to explore mitigations prior to any action or financial outlay.

In preparation for this increase in work and to help with the rollout, the Ravensdown Environmental team has employed Dr Martha Trodahl to lead the rollout of LUCI-Ag. She completed her PhD at Victoria University of Wellington in Physical Geography based on LUCI.

Technologies and services — Technology is a key driving force behind agsector improvement. It opens up new opportunities; new ways to track progress, make decisions, demonstrate performance and make connections with end consumers.

75

average rating of agri manager advice and service from customer satisfaction survey.

2017-18 **74**

Advice and support

The field-based staff made up of agri managers, agronomists, environmental consultants and animal health technical managers are focused on delivering insights and support that help farmers achieve their production goals and reduce their environmental impact. Being seen as members of the farmer's team means their trusted advice has the potential to change farming practice. The average rating of 75 reflects a score of very good on a rating scale of 0 = poor to 100 = excellent.

Certification is part of an industrywide programme targeted at those who provide nutrient management advice to ensure farmers receive advice of the highest standard. Relevant qualifications and experience are essential. Once certified, advisers need to undertake continuing professional development each year.

Through our valued relationships with Massey and Lincoln universities, we are able to offer our people access to the experienced academic staff who provide structured training combined with access to current research thus enabling continued professional development. This gives our people and customers confidence that the advice provided is of the expected very high calibre to enable smarter farming for a better NZ.

70

Certified Nutrient Management Advisors.

2,789

training hours completed in Agronomy, Animal health, Environment and Nutrient Management by our customer-facing teams in 2018-19.

13,578

hours Ravensdown farm environmental consultancy helping farmers.

2017-18 **10,115 hours**

~210,000 ha

combined area of farms receiving specialist Ravensdown Environmental work.

2017-18 **~128,000 ha**

Farm Environmental Consultancy

The environmental consultancy assists Ravensdown farmers with their more complex environmental needs. Now a team of 26 highly qualified and experienced staff, recognised by professional bodies, has completed over 13,500 hours of project work for farmers. This has resulted in over 200,000 hectares of farmland assessed for environmental improvement, across nearly 800 farms.

We are building more capacity for the future through more than 5,500 hours of training and more than 950 hours engaging with external agencies, regulators as well as other teams in Ravensdown. The team has also kicked off the market delivery of LUCI-Ag to 14 farms in Southland, Waikato and Hawke's Bay. Collaborations are far-reaching depending on the farmer and their advisors. They can include irrigation schemes, farm system consultants, agri managers, lenders, industry-good bodies and regulators.

The goal is to continue to meet farmer demand. At the moment this is well met across the country but we expect it to increase as plans become operative. Over the long term (10 years) we expect to see continued growth of Ravensdown shareholders engaging with the Ravensdown Environmental team.

793

farms serviced by Ravensdown's farm environmental consultancy.

2017-18 **645**

954 hrs

of external engagement working with regulatory and non-regulatory bodies to achieve environmental outcomes.

2017-18 **592 hours**

15 LIFE ON LAND

6,585

customers who have performed soil tests.

2017-18 **6,448**

Testing to improve farm performance

Ravensdown uses soil tests to understand soil fertility and advise farmers about the best combination of nutrients and what amounts should be applied to different parts of their farm.

The correct amount and application of nutrients ensures farmers are able to optimise soil health, balance the demands for feed and ensure they are operating to reduce possible environmental impacts. As expected, the number of customers performing soil and water tests is increasing as farmers seek more data about their nutrient needs in order to improve their farming practice and comply with emerging regulations.

Testing through ARL remains important to give science-based advice to customers. Soil tests account for the bulk of testing and have been consistent numbers over the past three years.

In addition, there has been an increase in the number of fertiliser tests as the company ensures its product is meeting required specifications.

79,194

soil tests completed by ARL.

2017/18 **80,502**

11,704

other diagnostic tests completed by ARL.

2017-18 **10,636**

3,209

customers actively use HawkEye/ SmartMaps during the year.

2017-18 **2,682**

–

Craig Minson is one of thousands of shareholders using the HawkEye tool.

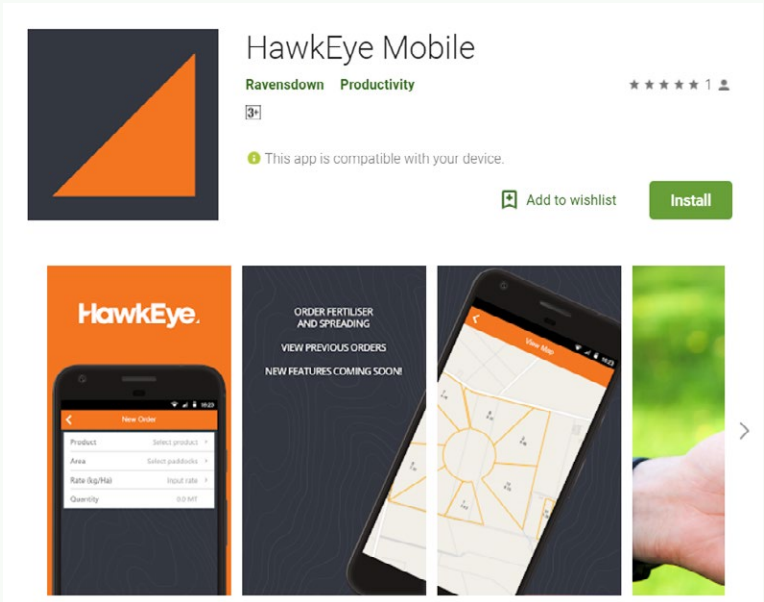
Mapping Technology

Use of mapping technology enables efficient nutrient management with accurate, easy-to-understand records of paddock activity and easy time-saving ordering. With software developments reducing the time taken, farmers are freed up to spend more time on the farm.

Ravensdown's mapping technology has shifted from Smart Maps to HawkEye. HawkEye improvements during the year have included fertiliser ordering from the map, feature and hazard identification and an app so that it is now mobile friendly. Most importantly, the data is owned by the farmer and the farmer is in control of their information.

Organising ordering and spreading through one automated tool ensures complete accuracy as no manual intervention is needed. This safeguards against any double ups or errors that have the potential to result in over-application.

The design and continual improvement of the market-leading software is based on feedback from users. All of these changes are focused on improving the customer experience as we continue to develop technology to enable users to make informed decisions with accurate, timely information.



The number of customers actively using HawkEye or Smart Maps during the year has increased. This is not surprising considering the growing need to have accurate records of nutrient application and the desire to reduce potential environmental harm. As confidence in the use of digital technology grows and we continue to improve the range of services the software provides, we expect more active customers to be using HawkEye.

–

The HawkEye app is ready for download, helping farmers take control of nutrient decisions.

21%

of Ravensdown fertiliser tonnes captured by Ravensdown proof of placement GPS technology.

Proof of Placement

Tonnages captured by GPS-enabled proof of placement technology is a relatively low proportion of all fertiliser applied. However, in the past year, significant focus has been invested on spreading technology and integration with other companies such as TracMap, the market leader in in-cab control devices for ground spreading trucks. This will mean that 2020's report will see a rise in the tonnages spread with proof of placement technology as indicated in HawkEye.

We expect next year's figure to exceed 30% with continued focus on HawkEye-compatible spreaders and data quality.

The use of GPS-enabled technology enables us to place nutrients exactly where they are needed. This relies on the correct calibration of the spreader which is assured when using a Spreadmark certified spreader. For aerial application this means use of aircraft equipped with variable rate application technology such as IntelliSpread (see page 26).

Accurate maps enable farmers to track nutrient application and to increase the total traceability of nutrient applied. HawkEye developments during the year have focused on giving farmers simpler control over their ordering. Farmers can order directly from what has been planned for them in their Agronomy Plan in HawkEye. This will show the correct location on the farm thereby giving assurance of the right placement. The planned vs actual feature shows how your orders have been progressing during the year against the plan. The "Recent Order" warning feature highlights recent activity and prevents accidental re-ordering.

This ensures farmers benefit from the integrity of their information and possible environmental reporting and planning.

8,900

published agronomy plans.

2017-18 **8,362**

Use of agronomy plans for efficient use of nutrients, agrichemicals and seed

Agronomy Plans ensure the customer is getting the best advice about which nutrients to apply and how much, what kind of seed to sow and any agrochemicals needed. This advice provides an improved outcome for the health of the plant, soil, livestock and environment on an ongoing basis.

The number of published agronomy plans is used to give us an understanding of how many customers have chosen a plan recommended by a Ravensdown team member. These plans can act as evidence supporting a stronger story about the farm and the produce grown on it.

Ordering nutrients directly from the plan gives farmers more control as they can be assured they are organising the right rate of the right product for the right place.

The percentage of unique customers who have been provided agronomy plans is the same, yet the number of published agronomy plans has increased suggesting that those customers using agronomy plans are increasing their use of them.

In the future, we expect orders that exceed advised limits can be systematically flagged to alert the customer about the risk of possible over-application.

–

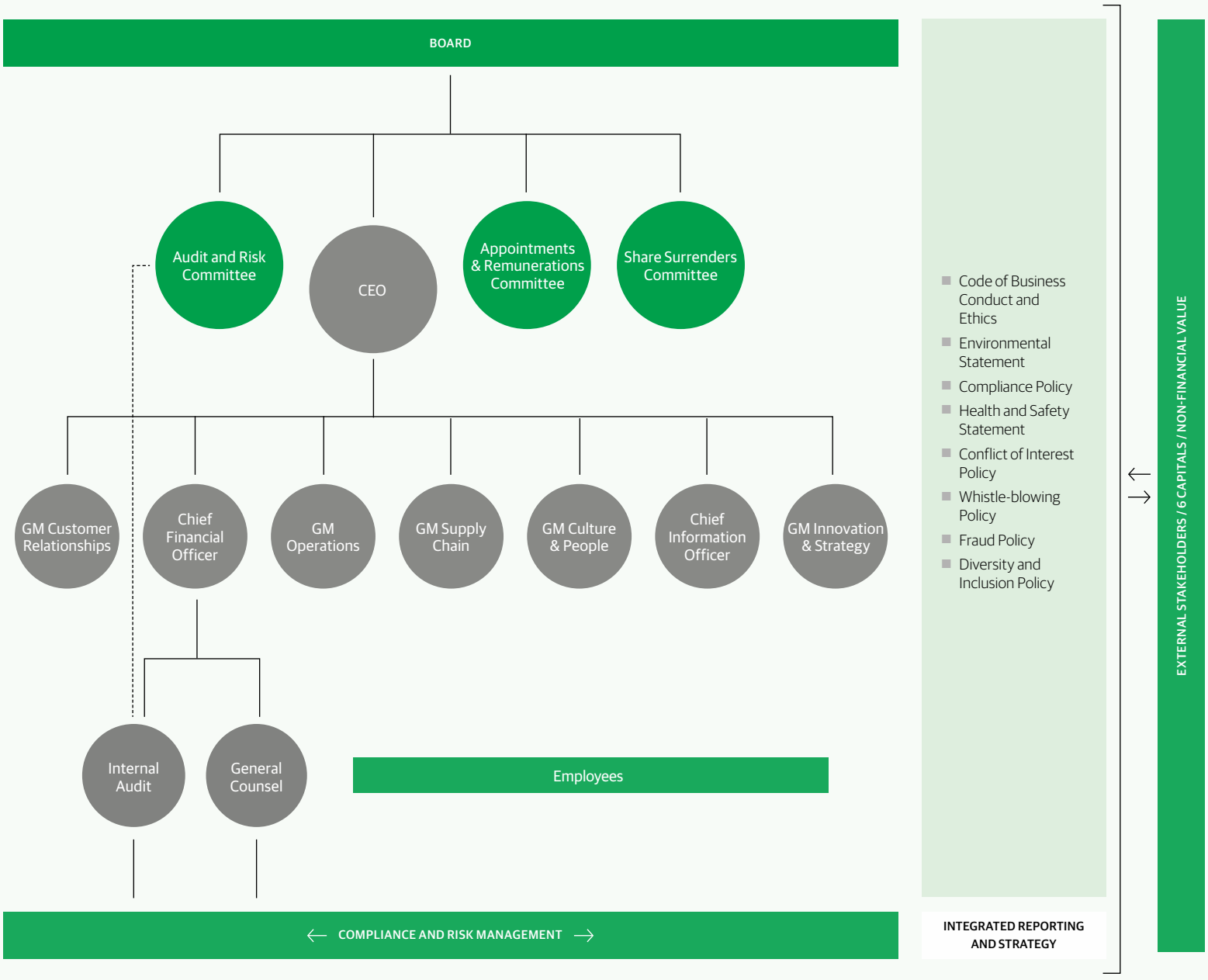
Agronomy plans are being increasingly relied upon.

Governance – Ravensdown's governance structure is set up to promote accountability and to support its ability to create value in the short, medium and long term. It provides insight on strategy implementation and direction, while supporting ethical, lawful and responsible behaviour throughout the business.

Enabling smarter farming for a better New Zealand

Board members are elected by the shareholders, with up to three additional directors appointed by the Board to enable a balance of skills and diversity.

For further information on Ravensdown's Board and Leadership's composition, skills, competence and experience see page 32 -33.



Code of Business Conduct and Ethics

The Board of Directors has developed a Code of Business Conduct and Ethics to give effect to Ravensdown's core values and to guide all employees and directors in our relationships with our stakeholders.

Company Values

The code requires that our decisions and personal behaviour will at all times be consistent with Ravensdown's core values of:

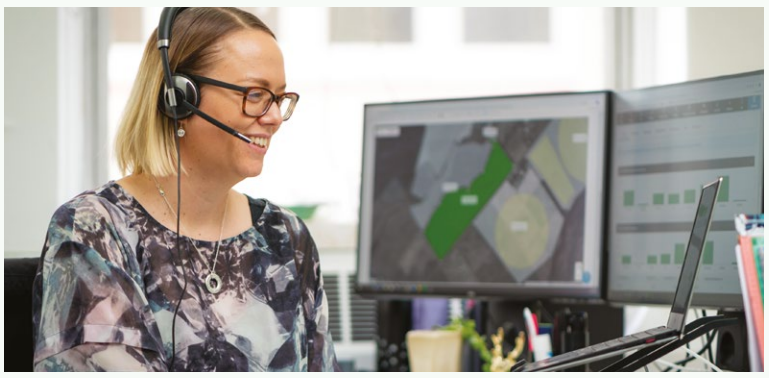
- Successful co-operative – we put the customer at the centre of everything we do.
- Empowered people – we choose the best people, keep them safe, and enable them to do their best.
- Enduring relationships – we develop long-term relationships based on integrity and trust.
- Environmental leadership – we strive to lead in the field of sustainability.
- Driving Innovation – we drive the business forward by finding better solutions.

These values mean that we will:

- Act honestly and fairly with due skill, care and diligence in the interests of all of our stakeholders.
- Demonstrate respect for key moral principles including diversity, individual rights, equality and dignity.
- Value personal and professional integrity, trustworthiness and competence.

Fraud Policy

Ravensdown has a philosophy of "zero tolerance" towards fraud, both inside and outside of the company. We value the integrity of our staff and recognise that they have a key role to play in the prevention, detection and reporting of fraud. We therefore ask them to be vigilant at all times and to report any concerns they may have at the earliest opportunity. We are committed to creating and maintaining an honest, open and well-intentioned working environment where people are confident to raise their concerns without fear of reprisal on a confidential basis. All reported cases of fraud will be investigated.



Ravensdown invests in Overseer Limited which received additional government support in 2019.

Conflict of interest/Related party transactions

Like most co-operative companies, Ravensdown Limited has frequent transactions with its farming directors in the ordinary course of business. All transactions are conducted on commercial terms.

A Conflict of Interest Policy ensures that any real or perceived conflicts related to staff members are managed at arm's length.

Whistle-Blowing Policy

Ravensdown is committed to providing a transparent accountable organisation and staff are encouraged to have the responsibility to report any known or suspected wrongdoing within the company. Employees are encouraged to report this to their managers, or directly to the Chief Executive Officer. A 24/7 independent anonymous Ethics Hotline is also available where confidential information can be reported. Ravensdown is committed to the protection of genuine whistle-blowers against action taken in reprisal for the making of protected disclosures.

Diversity and Inclusion Policy

Ravensdown values and understands the importance of an inclusive workplace with diversity of thought, opinion and background. Our diversity commitment is about welcoming and respecting these differences and treating individuals equally, embedding this as part of our organisational culture. We aim to promote and sustain a sense of belonging; valuing and practising respect for the talents, beliefs, backgrounds and ways of living of all employees, candidates, customers and suppliers. We are committed to ensuring all employees have access to equal opportunities through all phases of the employee experience.

Risk Identification and Management

The company has a comprehensive risk management framework to identify, assess and monitor new and existing risks. Annual risk updates are performed and risk improvement plans created and acted on. The Chief Executive Officer and the leadership team are required to report to the Board and Audit & Risk Committee on high risks affecting the business and to develop strategies to mitigate these risks. Additionally, management is responsible for ensuring an appropriate insurance programme is in place and reviewed annually.

Top Risks	Response
Interruption to the supply of key fertiliser inputs, arising from either global or domestic events or constraints	We have enduring relationships with long-term suppliers of our key fertiliser inputs which we continue to assess and manage, at the same time as we explore back-up options, to ensure we can meet supply commitments to our customers.
Inability to deter or recover from cyber security risks	We have robust systems and software in place to detect, protect and recover from cyber security threats, and continue to challenge our systems in this area.
Changing Government and shareholder priorities affecting our industry in relation to climate, emissions and the use or protection of natural resources	We have regular and meaningful engagement with our shareholders and various levels of Government to ensure we can have proactive involvement in legislative and regulatory changes relevant to our business and our shareholders and to enable our business to support the changing needs and priorities of our shareholders.
Failure to embed a culture, systems and processes that prevent or can appropriately respond to material safety, health or security dangers or incidents	We remain committed to continuously improving the systems and processes we have in place to track, protect and take proactive actions to manage the health, safety and wellbeing of our people and to embed a culture which puts safety and wellbeing first.
Changing public opinion on the role of agriculture in New Zealand	Our purpose is to enable smarter farming for a better New Zealand, so it is essential that we participate in the debate about the role of agriculture in New Zealand and remain agile and willing to respond.
Ravensdown losing its social licence to operate	We work to ensure positive and genuine engagement with our local communities and regulators and transparently report our operational compliance and progress against our commitment to continuously improve our environmental footprint and sustainable business practices.

Board

Deep understanding and knowledge

As mentioned in the Chair's report on page 14, the Board is in the process of moving to a structure of six shareholder-elected directors and up to three appointed directors.

John Henderson *LLB* **Chair**

John runs a 22,000 stock unit sheep and beef breeding and finishing operation, has been on the Board since 2004 and has been Chair since February 2014. As well as running a legal practice in Marton, John spent many years as a director of RACE Incorporated and of a number of farming and agricultural companies in NZ and overseas.

Stuart Wright *B. Ag. Com*
Deputy Chair

Stuart farms 330ha west of Christchurch growing arable crops, seed potatoes and finishing lambs and has been on the Board since 2006 and Deputy Chair since 2014. Stuart is a Nuffield Scholar and has had a number of governance roles in the industry-good sector as well as not-for-profit organisations.

Kate Alexander
Dip. Ag. Bus. Mgmt

Kate owns a 245ha dairy farm in Dargaville and has been on the Board since 2014. Kate is also Chair of Delta Produce Co-operative Ltd and is a ministerial-appointed council member of the Open Polytechnic of New Zealand. Kate is a Member of the IoD and has completed the Company Directors Certificate, as well as the Fonterra Governance Development Programme.

Scott Gower

Scott owns and runs a large hill country sheep and beef station at Ohura in the Central North Island and has been on the Board since 2006. Scott is also on the Board of Beef and Lamb New Zealand, is a member of the NZ IoD and holds a certificate in company direction. He has completed a number of governance courses and continues to prioritise professional development.

Tony Howey
B. Ag. Com

Through the companies Alpine Fresh Ltd and ViBERi NZ Ltd, Tony grows for the arable, vegetable and berryfruit sectors. He has been on the Board since 2006.

Currently Tony is on the board of Horticulture NZ, a director of several local companies and is the Chair of NZGAP.

Peter Moynihan
B. Ag. Sc

Peter owns a 190ha dairy farm located at Northope and has farming interests in Lochiel and Lorneville, and has been on the Board since 2013. Peter is an Agribusiness Regional Manager for a prominent bank and has been through the Fonterra Governance Development Programme.

Bruce Wills
B. Ag. Com

Bruce farms in Hawke's Bay and has been on the Board since 2015. Bruce holds a wide range of governance positions, particularly in the science and environmental areas. He previously spent six years on the Federated Farmers Board and was National President from 2011 to 2014.

Jason Dale (Appointed)
B. Com FCA

Jason is CFO of NZ Steel and a Fellow of Chartered Accountants Australia and New Zealand and has been on the Board since 2014. He is currently Chairman of Crest Commercial Cleaning Limited and former Chair of the Audit Committees for Taranaki Investments Management Limited and LIC. He is the former CFO of large listed and unlisted companies such as EROAD, Auckland Airport, PGG Wrightson and Fonterra Ingredients.

Glen Inger (Appointed)

Glen is an Auckland-based entrepreneur who has been on the Board since 2007. Glen was a founding director of the Warehouse Group and was a board member there for 11 years. He currently has directorships of 20 private companies across the agriculture, property, retail and tourism sectors. Glen's agricultural investments include dairy, beef, avocado, kiwifruit, mushroom, forestry and aquaculture.

Leadership Team
Optimistic about the future

As a leadership team, we see our role as maintaining a positive culture at Ravensdown while ensuring the organisation remains agile as it faces multiple opportunities and challenges.

Knowing that continual consensus rarely leads to good decision-making, we hold each other to account and exchange ideas freely and honestly.

Because we're often challenging the traditional way of doing things, we will debate and offer alternative points of view.

We seek alternative perspectives from outside the team and listen to all employees within the company throughout the year.

We are here to deliver on strategic goals agreed with the Board. This involves looking ahead and keeping an eye on the detail of the day-to-day.

The safety and wellbeing of our team is paramount and we continue to ensure each and every employee shares this belief so they can act on it.

Greg Campbell
MBA(Dist), FNZIM, MIoD
Chief Executive

Greg started with Ravensdown in 2013 and was formerly Chief Executive of Ngāi Tahu Holdings. Greg has been Managing Director of Waste Management NZ and CEO of Cleanaway Ltd Australia. He is a director of various companies and a past director of PGG Wrightson.

"Seeing so many stakeholders telling us about the importance of smarter farming means that our purpose resonates far beyond the Ravensdown team. The Ravensdown "why" is a vital part of our culture and this year has shown how important it is for the actions to match the words."

Sean Connolly
B. Com, C.A
Chief Financial Officer

Sean started with Ravensdown in 2004 and has been CFO since 2005.

"We continue to fund the progress towards smarter farming while the company maintains its growth. The move towards Integrated Reporting – going beyond only financial reporting – has been important for the entire business. What's more significant is the level of integrated thinking that's going on behind the actual report and this has been improving through the year."

Stephen Esposito
M. A. Sc. (Civ Eng), P. Eng.
General Manager Operations

Stephen is a professional engineer and joined Ravensdown in 2018 after 20 years of international experience in operations, risk management and strategy development.

"I've been really pleased to see the positive attitude our employees have towards continuing to improve our safety, environment and product quality performance as well as our customer service. We get lots of ideas on how we can be smarter about what we do and we have many people who are willing to go the extra mile to get these ideas implemented."

Katrina Benedetti Forastieri
M.Sc (Hons), Dip. Ind. Org. Psyc, Regd. Psyc
General Manager Culture and People

Katrina joined Ravensdown in 2018 with over 20 years' experience in Human Resources and Organisation Development.

"New talent joined and existing talent excelled. With staff engagement scores reaching the top quartile for best employers in Australia and New Zealand, we can be confident our people are striving to do their best work for our customers and shareholders."

Bryan Inch
B. Ag. Sc
General Manager Customer Relationships

Bryan started with Ravensdown in early 2014 and was previously CEO of Canterbury Building Society and held senior roles with Rabobank.

"The focus within the Customer Relationships team has been to support our engaging experts in the farmer-facing roles with both relevant science and service-enhancing technologies. Strategic developments with HawkEye have greatly enhanced the accuracy and integrity of fertiliser planning, ordering, spreading and reporting."

Mark McAtamney
B. Com
Chief Information Officer

Mark started with Ravensdown in 2001 and has been CIO since 2005.

"From the adoption of Artificial Intelligence to automate the processing of thousands of transactions to the delivery of mobile ordering to our smartphone-savvy customers, technology is being leveraged to reclaim time for the activities that add real value to our businesses."

Mike Manning
B. Ag. Sc, CP Ag
General Manager Innovation and Strategy

Mike started with Ravensdown in 1981 and has held a variety of roles in regional management, marketing, sales, supply and R&D.

"Collaboration is the key to turning curiosity into practical value-adding discoveries. Papers were published, awards were won and insights were captured. Perhaps most importantly, farming practice is evolving as a result of all that work."

Mike Whitty
B. Com. Ag, C.A
General Manager Supply Chain

Mike started with Ravensdown in 1997 and has held a variety of roles in finance, sales, marketing, manufacturing and now the supply chain.

"We received great support from our supply partners through the year and this filters through into quality which, in turn, helps with agronomic and environmental performance. The stores and aerowork investment are having a real impact on morale, customer service and safety of our team."

A year in pictures –

Winter

–
June – C-Dax's Abeer Syed works on improvements to the Ravensdown subsidiary's product range of spreaders, sprayers and pasture meters.

–
June – Trade Envoy Mike Petersen is named Ravensdown Agri Communicator of the Year 2018 for his work in promoting the sector.

–
July – Greg joins CEOs to sign up to the Climate Leaders Coalition. Ravensdown also joined the invite-only Aotearoa Circle that is focused on sustainability.

–
July – Rebecca Johnstone and Mark Crawford from Ravensdown devote a volunteer day to support the Otago Peninsula Biodiversity Group.

–
August – Despatch efficiency improved after the delivery of a new loader at the Te Awamutu store.

Spring

–
September – Hundreds of staff got moving throughout "Steptember" – this crew based in Dunedin completed the Forsyth Barr Stadium Climb.

–
September – There's a lot of pride in the garden and landscape improvements – here is the Napier team next to the garden screen they made and installed.

–
October – The Christchurch team pulled out all the stops to minimise disruption after the fire closed one of the stores.

–
November – Julie Roberts, Area Manager, Animal Health (third from left in front row) graduates from the AWDT's Escalator Programme.

–
November – The co-operative provides several scholarships each year – Taiawhio Waipoua-Bryers received the PKW-Ravensdown scholarship.

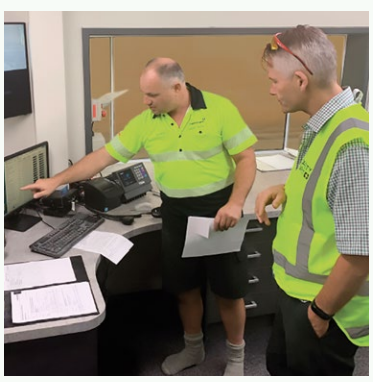
Summer

–
December – Continuous Improvement champions get ideas flowing.

–
December – Senior Environmental Consultant and Nuffield Scholar Turi McFarlane shares insights at climate conference in Poland. *Thanks to IISD reporting services for the photo.*

–
January – The team at Ravensdown's laboratory ARL work with a new robot that tests water for pH, *e.coli*, nitrates and phosphates.

–
January – Throughout the year, staff are given the opportunity to "Lend a Hand" with a day to help community causes. Tania Nichol decided to help Husky Rescue.



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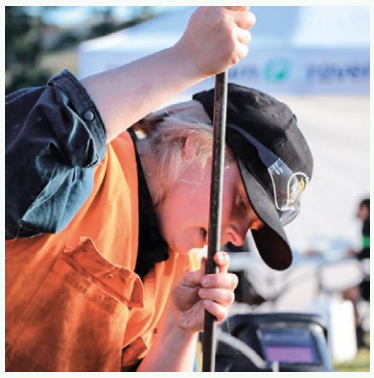
February – IT infrastructure was improved across the stores network to improve collaboration – Steve Maguire at the Nelson store shows the IT team around.

Autumn



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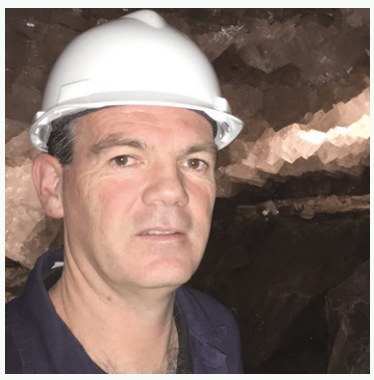
March – Agri Manager Alex Knowles at the Tasman regional final taking the Ravensdown sponsored Environmental prize.

–
March – The Ravensdown team was proud to celebrate the best of the dairy sector through its partnership with New Zealand Dairy Industry Awards.

–
April – Allanah Kidd is appointed as the new Sustainability Manager as the co-operative seeks to bring its initiatives together.



–
April – Procurement Manager Chad Gillespie visits the Werra mine in Germany – a vital source of nutrients such as potassium, sulphur and magnesium.

–
April – Ravensdown supported the FMG Young Farmer Contest changes as they attracted more diverse entrants. ©Stuff-agrikids2

Ravensdown — Enabling smarter farming throughout New Zealand.

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All reasonable internal verification efforts have been made in bringing this Integrated Report together in the spirit of disclosure. With the exception of the greenhouse gas emissions inventory, for which Ernst & Young provided limited assurance, no other information contained in this Integrated Report was externally assured. The views of Sir Rob Fenwick, Dr Lucy Hone and Mat Hocken are not necessarily those of Ravensdown.

Ravensdown – the farm nutrient and environmental experts.

Ravensdown exists to enable smarter farming for a better New Zealand. Our products, expertise and technology help farmers reduce environmental impacts and optimise value from the land.

We are a co-operative set up by farmers in 1977 to secure essential farm nutrients which are used to create food for livestock or humans. Today, our nutrient management services enable the right amount of the right fertiliser to be applied to the right place.

Our technology gives farmers evidence to back up the value-adding story that helps them command a premium on the world stage.

We are the only co-operative on the planet that tests for, advises about, buys, ships, makes, stores, spreads, measures and maps food-creating nutrients and fertiliser in a truly integrated way. We also provide solutions in the areas of environmental mitigation, agronomy and animal health sectors.

Buying and importing minerals and manufactured fertilisers overseas is done under strict controls. Ravensdown has invested in independent annual audits of bulk fertiliser suppliers for over five years. Our system meets the highest standards, approved by MPI, and ensures consistent quality and low risk biosecurity.

Often attending on farm, our highly trained advisors guide farmers on a wide variety of topics including animal health, nutrient management and environmental mitigation.

Our network of 85 fertiliser stores is nationwide and our joint venture partners in the spreading sector visit farms to apply a range of fertiliser products by ground and by air.

Food needs nutrients. The environment needs better nutrient management. Ravensdown helps with both.

Check out videos, downloads and how we engage with stakeholders at: integratedreporting.ravensdown.co.nz

RECOMMENDED VIEWING:

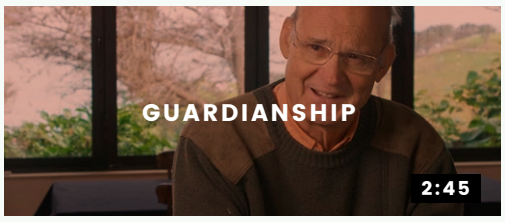
To watch any of the videos below on your mobile device, either visit integratedreporting.ravensdown.co.nz, or follow these simple steps.

01. Search for and download an app called Magenta from the App Store or Google Play.

02. Point your phone at the video thumbnails below to watch the videos.

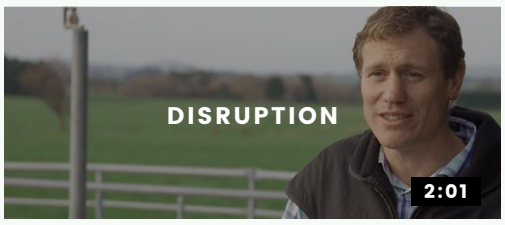
03. Enjoy the clips.

THE CHALLENGES —



Sir Rob Fenwick: Accounting for our natural capital...

Dr Lucy Hone: Thriving in an uncertain world...



Mat Hocken: An antidote to disruption...

OUR RESPONSE —

Science: Working together to achieve better soil, better farms...

Wellbeing: Thinking well into the future...

Innovation: Using technology to achieve the right nutrient budget...

RAVENSDOWN CHAIR & CEO DEBRIEF —

John Henderson, Chair &
Greg Campbell, CEO

To enable smarter farming for a better New Zealand
Ka pūkekotia a rongomātāne, ka poho kererū a Aotearoa.

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