

Impact & Sustainability Report





Welcome to Craigmore
Sustainables' third Impact and
Sustainability Report. We are
excited to share the progress we
have made in the last 12 months
on our journey to deliver positive
environmental, social and
economic impact.

WELCOME



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About this report

This Impact and Sustainability Report highlights to existing and prospective clients, employees, business partners and wider stakeholders the influence Craigmore Sustainable has on the environment, communities, and stakeholders. In our third report, we sharpen our commitment to the conversation around sustainability.

Craigmore's approach to sustainability

Craigmore approaches sustainability from the perspective that it is our responsibility to “meet the needs of today, without compromising the ability of future generations to meet their needs or adapt to changing circumstances”. Sustainability goes beyond environmental ambitions to include the development of resilient social systems and economic resources.¹

We are proud of our achievements to date and are determined to maintain our commitment to the ‘Sustainability Principles’ on which Craigmore was founded more than a decade ago, and to build positive outcomes for our businesses, for our families and communities, and for our supportive capital partners.

This report focuses on the financial year ending June 2023

The purpose of this report is to assist stakeholders, investors, and partners to understand our objectives and the impact we seek to have as a manager of capital.

We are committed to reporting on our impact annually in line with the annual financial reports for our partnerships. We continue to adapt and build on the baseline metrics set out in our first report and to apply learnings to expand this baseline. Transparency and collaboration with our stakeholders is essential and we welcome any feedback you have on this report.

¹ With acknowledgment to the Bruntland Report 'Our Common Future' published in 1987.

CEO Statement

Welcome to our 2023 Impact & Sustainability Report



Che Charteris
Chief Executive Officer

Tēna koutou kātoa. Tuatahi, ngā mihi ki nga mātau kaitautoko. Tuarua, he mihi ki ngā kaimahi o Craigmore Sustainables mo ō rātou tautoko me pukengatanga o tēnei mahi whakahirahira.

Craigmore Sustainables is 14 years into our mission to bring capital into Aotearoa New Zealand's rural economy to produce quality food and fibre, in a way that benefits rural communities, local ecosystems and the wider climate. We invest and operate land-based productive businesses across horticulture, forestry and pastoral farming sectors, improving both productivity and environmental footprint. We are a leader in sustainable food and fibre production through investing in land-use change and in better ways of operating, which take into account some of the major challenges facing society: climate change, loss of biodiversity, and social inequity. To do this, Craigmore Sustainables goes well beyond simply 'buying a few farms' – we invest in changing land-use and production systems.

This year we have planted 1.36 million forestry trees, 860,000 apple trees, 140,000 kiwifruit vines, and 491,000 grape vines, across land which was previously used for pastoral livestock farming. Craigmore continues to create employment opportunities, supporting the commitment to growth of our rural communities across the country.

In addition to benefits from land-use change, we seek out productivity and sustainability gains by improving everyday production systems. While Aotearoa New Zealand's pasture-based dairy sector can produce among the lowest GHG-intensity dairy

products in the world, we are focused on reducing emissions further. In addition to ongoing changes to reduce the GHG-intensity of food production, we have invested in a developing methane-busting treatment that has the potential to eliminate up 90% of the methane emissions from cows, and installed a first-of-its-kind treatment that virtually eliminates methane emissions from cattle effluent ponds. These technologies could be crucial to our goal of having an independently verified and commercially viable net-zero dairy farm by 2035.

As seen through the war in Ukraine, disruption to food production and supply networks can have devastating economic and social consequences across the globe. Aotearoa New Zealand's climate change resilience has been tested throughout 2023, with many areas surpassing mean annual rainfall within five to six months, and experienced multiple floods. Horticulture and forestry properties across the North Island have been impacted by extreme weather, including some Craigmores properties. However, our teams have been able to respond admirably to address damage from flooding and erosion. In particular, the rehabilitation of Glenpark orchard and vineyard, which was under a foot of silt for many weeks, has been remarkable, demonstrating that in order to be *climate resilient*, we need *resilient teams*.

Our ability to respond to property-specific crises is aided by our scale, diversification and networks of talented partners. The quality of our partners has been recognised this year through industry awards. Our Springhill vineyard manager followed

victory at the Young Viticulturist of the Year, with a runner-up placing in the Young Horticulturist of the Year. Also, one of our forest managers has been recognised for developing a more environmentally friendly portable bridge ('Blaze It Bridge') for low-level water crossings.

Using new technology, such as the 'Blaze It Bridge', adopting production systems and making appropriate land-use changes contributes to our goal of improving biodiversity across our properties. To date, Craigmores has placed 2,816 hectares of native forest under some form of additional legal or physical protection, enhanced these areas with 202 hectares of native planting, and protected a range of waterways throughout our properties. This year, we saw some specific results from our biodiversity programme – a large increase in Kiwi sightings at Wiroa kiwifruit orchard, observation of critically threatened endemic mudfish in a restored waterway on Somerset dairy farm, and discovery of a previously undescribed species of native Landhopper insect in a native area within Ngatieke forest.

While 2022/23 has been defined by climatic, economic and global-political uncertainty, it is great to be in a position to share with you some of the positive social and environmental impacts we have made – all of which is only possible through the commitment of Craigmores's teams and long-term support of our capital partners.

Our Vision

Our vision is to be *Kaitiaki* – Growing the best of Aotearoa New Zealand. *Kaitiaki* in te reo Māori (the indigenous language of Aotearoa New Zealand) means something similar to *guardian*.

This vision applies to everything we do through:

- Creating meaningful employment opportunities in under-invested communities
- Improving public access and connection to our environment
- Developing and protecting our people
- Actively addressing significant environmental challenges in our rural sectors
- Being an active fiduciary for our capital partners.

Our commitment to being *Kaitiaki* is also a promise to uphold the expectations set out in *Te Tiriti o Waitangi* (The Treaty of Waitangi), a historical agreement between Māori and the British Crown that governs the relationship between Māori and non-Māori.



Our Values

Understand tomorrow, act today



We 'look beyond the fence' and challenge today's norms.

We believe in turning knowledge into action, sharing what we learn with others, and having the courage to act now for a better tomorrow.

The value is symbolised by the Koru (fern frond), which represents growth and regeneration.

Connect and empower



Empowerment is at the heart of Craigmore.

We believe that our people are best positioned to make decisions about operations, so we give them the space and support to do just that.

The value is symbolised by the Pikorua (double twist), which represents an enduring bond between people in spite of barriers of time and distance.

Deliver with integrity



Get the job done, right.

We deliver on expectations and are honest and transparent when we fall short. We lead by example and celebrate our achievements.

The value is symbolised by the Waharoa (gateway), which demonstrates our commitment to 'go through the front gate' and be straight up with others.

Our Strategy

We strive to be locally, nationally and globally recognised as one of the best managers of natural assets. To achieve this, our businesses must deliver long-term financial returns and address industry challenges which are barriers to more sustainable futures for our communities.

These challenges include, among others:

- Creating pathways to net-zero production of healthy sustainable food and fibre
- Reversing biodiversity loss
- Addressing social inequity through generating employment in rural communities.

To achieve these challenges, we need access to capital (*Fund the Change*), to hold ourselves to the highest standard of operational excellence (*Be the Change*), and to use our success to influence others (*Enable others to be the Change*).

Strategic Highlights

New partnership puts people at the forefront

Craigmore has reinforced its commitment to creating meaningful employment and protecting their people by joining New Zealand Ethical Employers (NZEE) as a funding partner. Founded on the United Nations Guiding Principles on Business and Human Rights, NZEE's mission is to improve the quality of employment in all Aotearoa New Zealand workplaces. For Craigmore, the partnership with NZEE allows us to contribute to ensuring that all businesses can raise employment standards and level the playing field so that competitiveness is not at the expense of workers.

→ www.craigmore.com/raising-the-bar-with-ethical-employment-partnership/

Establishing a pathway to a net-zero dairy farm

Investment in technology and partnering for change are key drivers behind the strategy for Craigmore's farming business to get to a net-zero dairy farm by 2035. This year, Craigmore has invested in trials of four new technologies to enhance animal welfare and reduce our environmental impact, including investing in a tool under development by Ruminant Biotech, which will significantly reduce emissions of biogenic methane from livestock. The new sustainability linked loan facility, provided through a club deal arrangement with Rabobank and ASB, underscores Craigmore's commitment to deliver on this ambition.

→ www.craigmore.com/craigmore-sustainables-inks-new-sustainability-finance-agreement-to-lift-environmental-performance/

Excellence recognised with global forestry certification

Farman Turkington Forestry Limited (FTF), managers of Craigmore's Lagoon Hill property, achieved Forest Stewardship Council (FSC) certification in October 2022. Accreditation is a culmination of more than two years work by FTF which involved scrutiny of the business to ensure that all operations adhere to the principles of the FSC. FSC is a rigorous forest certification system trusted by NGOs, businesses and customers worldwide, which verifies sustainable sourcing of forest products and ecosystem services at every step of the value chain, from forest to customers.

→ www.craigmore.com/lagoon-hill-manager-obtains-forestry-certification/

Growing Greater Good

Craigmore Sustainables works with global capital partners to build and manage farms, orchards, and forestry businesses in Aotearoa New Zealand. We build these businesses to produce the food, fibre and ecosystem services sought around the globe, while leading the way in sustainable practices and benefiting our rural communities.

About Craigmore Sustainables

Founded in 2009, we are specialists at investing in, and managing rural assets in which Aotearoa New Zealand enjoys a competitive advantage – permanent crop horticulture, dairy and forestry. Our role is to raise capital, invest in opportunities, and to build skilled teams to manage our investments successfully and sustainably for the long-term.

Craigmore intends to exceed the social licence expectations of how land should be managed, to deliver operational excellence and profitability for our investors, to enhance environmental outcomes and to engage with and care for the communities in which we work every day. We believe that well-managed capital, introduced by Craigmore and invested with a focus on sustainability, can be instrumental in the reinvigoration of many rural communities.

About our investment partnerships

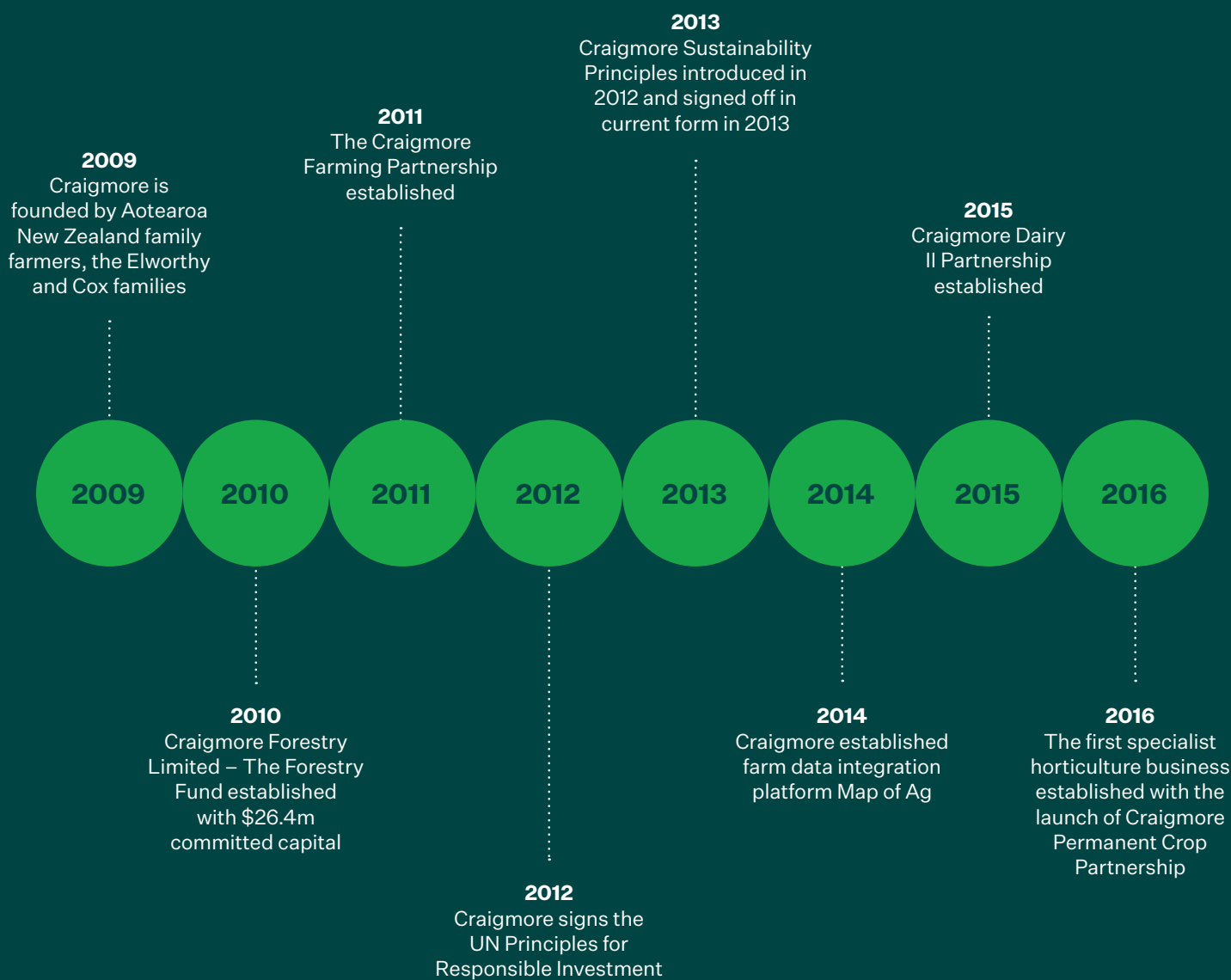
Aotearoa New Zealand is recognised as a high-quality investment destination, with secure property rights, a robust rule of law and straightforward business structures. For investors in forestry and farmland, Aotearoa New Zealand enjoys an excellent climate with plentiful rainfall, is the global low cost producer in several sectors and has an exceptional pool of management talent.

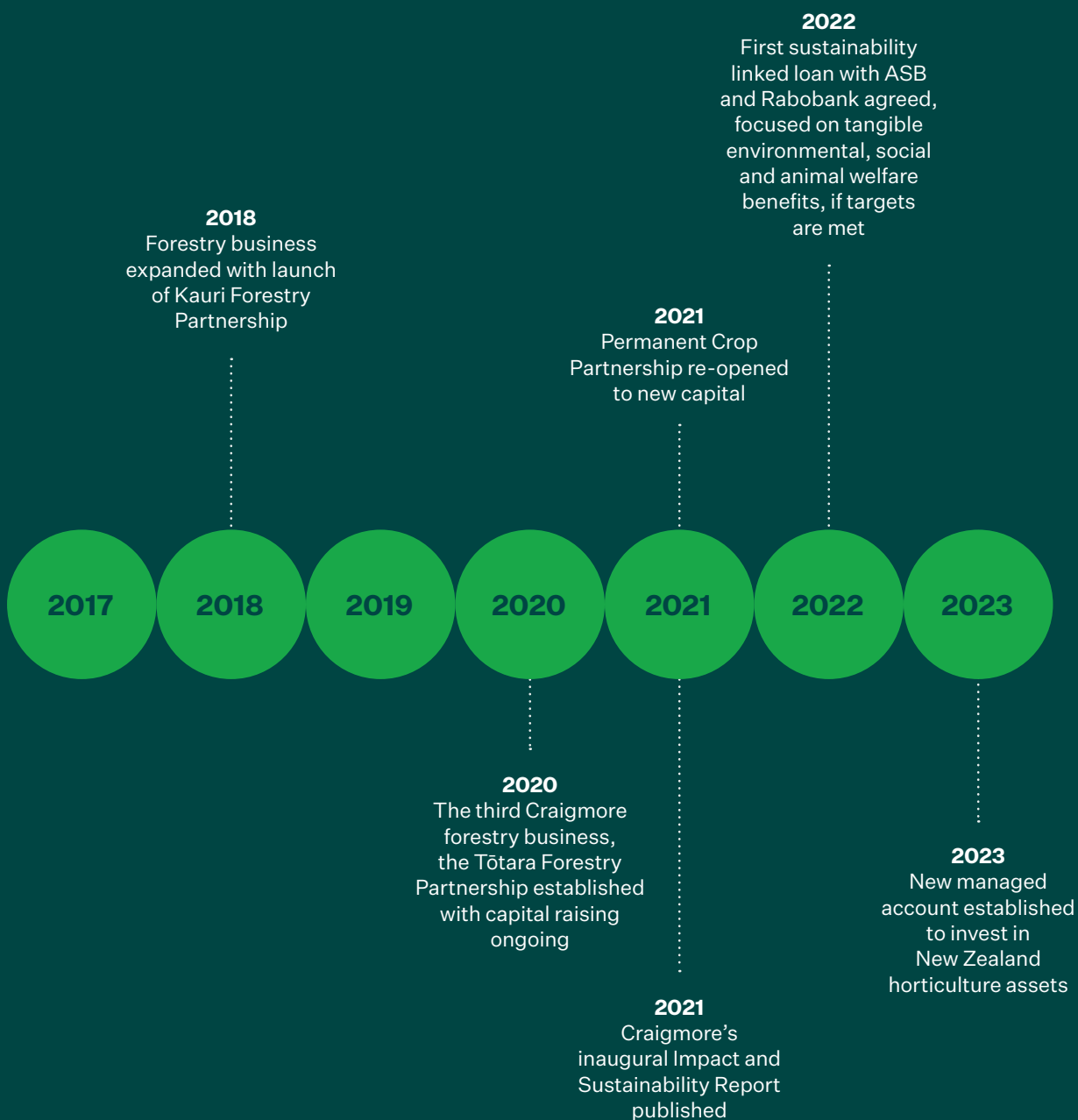
Craigmore manages a portfolio of high quality and productive land assets on behalf of our international capital partners. For these investors, long-term sustainable oversight of natural real assets is an important element of their investment criteria. Craigmore manages seven Aotearoa New Zealand Investment Vehicles, which gives our partners from around the world access to the permanent crop horticulture, dairy and forestry sectors.

Craigmore-managed entities

- Craigmore Farming Partnership
- Craigmore Dairy II Partnership
- Craigmore Permanent Crop Partnership
- Kauri Forestry Partnership (co-managed with GlenSilva GmbH)
- Tōtara Forestry Partnership
- Craigmore Land Income Partnership
- New managed account (2023)

Our Journey So Far





2009 → 23

Responsible Investment & UN Sustainable Development Goals

Responsible investment integrates environmental, social, and governance (ESG) factors into investment analysis and decision making. It recognises that these factors can have an impact on the financial value of an investment and the impact of that investment on the world.

Craigmore has relied on its foundational Sustainability Principles to guide our approach to responsible investment to date. We have now implemented a Responsible Investment Policy which sits alongside these principles. This can be found on our website.

UN PRI

Craigmore has been a signatory to the United Nations Principles of Responsible Investment (UN PRI) since 2012. Craigmore was awarded three stars out of a possible five in the release of reporting results in September 2022. We are committed to improving our rating and are in the process of evaluating what is required to reach five stars under the new ranking system, which will be completed towards the end of 2023. Our 2020 UN PRI Transparency Report can be found on our website.

→ www.craigmore.com/sustainability/reports

Decent work and economic growth

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Farming, horticulture and forestry contribute significantly to the Aotearoa New Zealand economy, with profitability in these sectors creating employment opportunities often in underinvested rural communities.

Craigmore brings capital to Aotearoa New Zealand to create economic growth, jobs and increased export earnings. We focus on building equity and safety in our workplaces while addressing barriers to employment through local training programmes and government partnerships.



Responsible consumption and production

Ensure sustainable consumption and production patterns.

Craigmore has a clear commitment to sustainability throughout our strategy and aims to increase productivity while using natural resources efficiently and reducing negative impacts. We advocate for sustainable practices in our industries and plan to lead the market in establishing a proof-of-concept net-zero dairy farm.

Where possible we are transitioning to organic production systems and are one of Aotearoa New Zealand's largest growers of organic gold kiwifruit. We encourage our people to innovate and align with third party certification of production systems including Biogro for organic certification, Lead with Pride for dairy supply to Synlait Milk and Global GAP for export of fruit.



UN Sustainable Development Goals

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. The blueprint includes 17 Sustainable Development Goals (SDGs). Craigmore is in a strong position to deliver significant progress on goals 8, 12, 13, and 15.

Climate action

Take urgent action to combat climate change and its impacts.

Farming, horticulture and forestry play an important role in contributing to and mitigating climate change. Craigmore is committed to measuring and reducing greenhouse gas emissions, planting new forests to sequester atmospheric CO₂, planting native species on our properties, undertaking responsible land-use change and demonstrating a viable pathway to net-zero dairy farming.



Life on the land

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss.

Craigmore is establishing new, sustainably managed, FSC certified forests and planting erodible land. Areas of less productive land in orchards and vineyards are planted with native forest species creating habitat for plants and wildlife, with native forests protected by law. We are following sustainable operating practices and partner with industry and community groups to improve biodiversity and promote healthy ecosystems. We also encourage innovation and practices that protect our waterways, with a commitment to upholding the principles of *Te Tiriti o Waitangi* (The Treaty of Waitangi).



By the Numbers

25,906

Total hectares under direct management (including leases and forestry right areas)

\$1,011 billion

Total assets (NZD)

61%

Our client capital is 61% institutional, 32% family offices, with the remainder private high net worth individuals/entities

7

Craigmore manages 7 investment vehicles

229

Number of direct employees

Total sector assets:

37%

Horticulture

36%

Farming

27%

Forestry

60

Craigmore manages 60 properties across Aotearoa New Zealand (excluding minority interests)



Data includes assets under direct management.
It does not include investments in businesses
that Craigmore does not control.

Map of Operations

Horticulture

1	Angus Kiwifruit, 4ha
2	Battery Hill* Hops, 300ha
3	Blue Rock* Hops, 237ha
4	Cat Creek Wine Grapes, 418ha
5	CFP Apples Apples, 112ha
6	Coxco Cropping Leases, 625ha
7	Sunpark Apples, 84ha
8	Huakiwi Kiwifruit, 43ha Mapua Kiwifruit, 18ha
9	Kirimini Kiwifruit, 40ha
10	Kiwinorth Kiwifruit, 52ha
11	Springhill Apples & Wine Grapes, 479ha
12	Glenpark Apples & Wine Grapes, 59ha
13	Tahi Avocados, 77ha
14	Wainui Kiwifruit, 12ha
15	Wiroa Kiwifruit, 137ha

Forestry

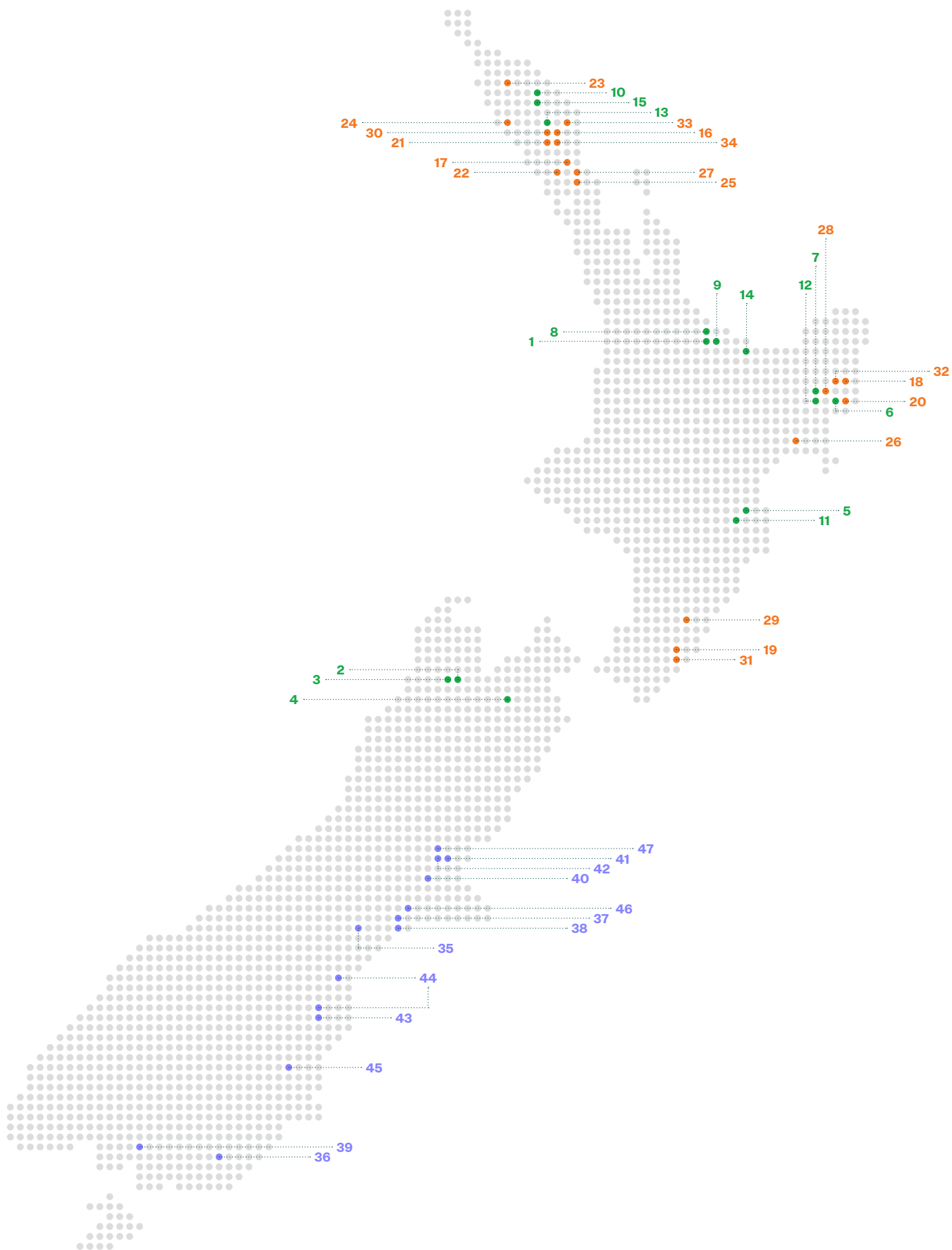
16	Aponga 241ha
17	Caves 626ha
18	Glen Tui 850ha
19	Lagoon Hill Station 3,609ha
20	Maunga-O-Rangi 1,275ha
21	Mangarata 372ha
22	Manganui 891ha
23	Ngatieke 708ha
24	Opape 1,591ha
25	Otioro 154ha
26	Pakowhai 376ha
27	Piroa 239ha
28	Punawai 389ha
29	Rata 374ha
30	Titirangi 702ha
31	Tora 943ha
32	Tuakau 550ha
33	Wairere North 482ha Wairere South 309ha
34	Wheki 693ha

Dairy

35	Aoraki Pod 531ha (2)
36	Argyll Group* 1,039ha (3)
37	Coastal Canterbury Pod 924ha (4)
38	Classact Dairy* 218ha (1)
39	Fortuna Group* 5,327ha (15)
40	Glen Eyre 426ha (1)
41	Haddon Farm* Dairy Support, 93ha (1)
42	North Canterbury Pod 953ha (4)
43	North Otago Taitonga Pod 835ha (4) North Otago Tuaraki Pod 275ha (1)
44	Southburn Pod 1,130ha (5)
45	Taieri Lake Dairy Support, 2,723ha
46	Te Awa 575ha (1)
47	Waibury Investments* 1,539ha (5)

(X) = Number of milking platforms

* = Minority interests





Our Sectors: Farming

Farming is our most mature business. Craigmore manages 22 milking platforms and one dairy support grazing farm in the South Island, producing 79 million litres of milk annually.

Our farms are run by teams and equity partners who share our values and have the proven ability to deliver, ensuring we can produce high quality milk for processing by Aotearoa New Zealand-based dairy companies for export around the world.²

As well as majority-owned properties, Craigmore also has five minority interest investments in dairy farming businesses that comprise an additional 8,216ha, producing 90 million litres of milk annually.

15,907

Total number of cows (dairy only)

\$363m

Total assets (NZD)

8,372ha

Total hectares including leased land*

Annual milk production:

7,158,815kgms

Milk solids (fat and protein)

79m

Litres of milk

² Aotearoa New Zealand exported dairy products worth NZ\$21,998m in the year to 30 June 2022. Source: MPI SOPI June 2023.

Data includes assets under direct management. It does not include investments in businesses that Craigmore does not control.

* Owned: 7,967ha; Leased: 64ha (McEwan) and 341ha (The Crossing).

Our Sectors: Horticulture

Craigmore's horticulture business continues in a strong growth phase, with high demand for Aotearoa New Zealand grown produce, and this is expected to continue for the foreseeable future.

We are building a diversified portfolio of assets in kiwifruit, apples and grapes to capitalise on Aotearoa New Zealand's competitive advantage in these sectors and strong export markets.³

Our strategy is to invest in areas where we can generate new jobs and deliver economic growth in under-developed rural communities. Capital investment in orchard and vineyard infrastructure transforms land previously used for pastoral farming and annual cropping to create significant growth in export receipts for Aotearoa New Zealand.

In 2023, Craigmore expanded its apple portfolio in Gisborne with the purchase of Sunpark, an 84-hectare cropping and grazing property, which will be developed into an apple orchard with high-value varieties and bring investment to the region in excess of \$45 million. Further development is also underway at Springhill with an additional 43-hectares of apples being planted. In addition, Craigmore acquired Cat Creek, a combined 418-hectare property in the globally renowned Marlborough region with an estimated 191-hectares to be planted in Sauvignon Blanc from 2024. The Springhill vineyard had the first harvest since development with a 17-tonne crop.

\$376m

Total assets (NZD)

2,160ha

Total hectares including leased land

2,471t

Annual apple production

17t

Annual grape production

2,265t

Annual squash production

3,406t

Annual kiwifruit production

20%

20% of Aotearoa New Zealand's organic gold kiwifruit is grown by Craigmore

48%

48% of Craigmore's kiwifruit production is under organic certification

³ Aotearoa New Zealand exported NZ\$2,898m of kiwifruit, NZ\$1,935m of wine and NZ\$865m of apples and pears in the year to 30 June 2022. Source: MPI SOPI June 2023.

Data includes assets under direct management. It does not include investments in businesses that Craigmore does not control.





Our Sectors: Forestry

Craigmore first invested in forestry more than a decade ago and it continues to be a significant and growing part of our business.

Focusing on the afforestation of marginal farmland, our strategy is to build a mixed portfolio of existing forests and land suitable for planting. We plant new forests where this is the most appropriate land-use – usually less productive grazing land including properties that are steep, have poor soil fertility or erosion issues. Newly planted forests provide a dual revenue stream – firstly from the sale of carbon credits and then from the sale of timber at harvest.

We have two dedicated forestry vehicles, the Kauri Forestry Partnership (which is managed in partnership with GlenSilva GmbH), and the Tōtara Forestry Partnership. Kauri Forestry Partnership has built a mixed portfolio of forestland over the last three years raising \$180.5m of capital to date. Tōtara Forestry Partnership has raised \$38.1m purchasing the first three farming properties on which new forests are being planted. Craigmore continues to raise capital for the Tōtara partnership.

During this year we purchased a further six properties covering an additional 2,321 hectares. We also commenced the first harvest at Lagoon Hill, Opare and harvest of remnant woodlots at Mangarata, Titirangi and Wheki. The subdivision and sale of 653-hectares of higher quality land at Lagoon Hill was also completed with the property being retained as an operational farm.

Data includes assets under direct management. It does not include investments in businesses that Craigmore does not control.



\$272m

Total assets (NZD)

1,340 ha

New planting in 2022/23

119,183t

Tonnes CO₂e sequestration in 2022/23

15,374 ha

Total hectares (including forestry right areas)

6,537 ha

Total forested area, net stocked productive area

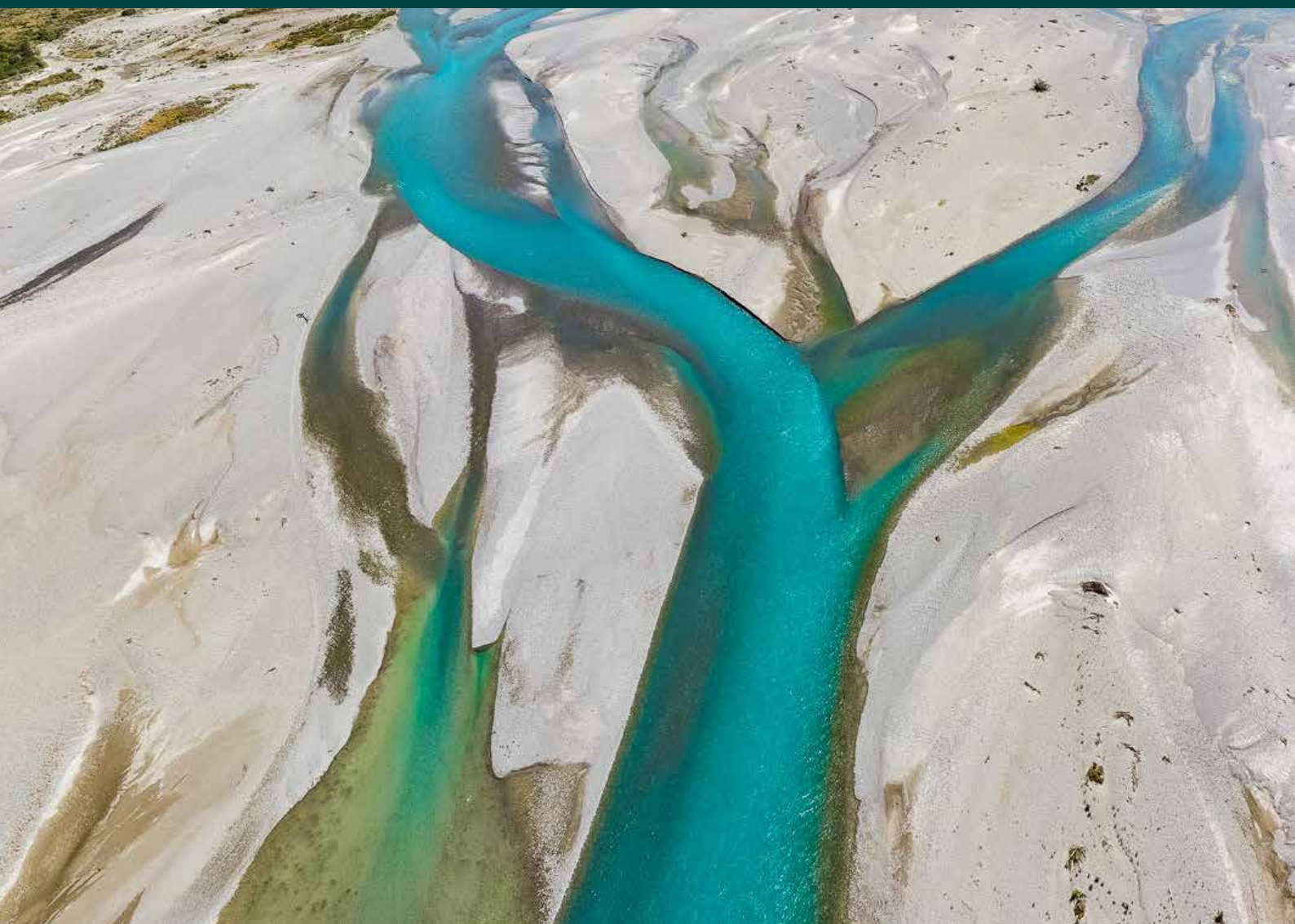
56,672t

Total tonnes harvested in 2022/23

1.36m

Total number of trees planted in 2022/23

Environmental



Greenhouse Gases & Climate Change

Craigmore's ambition is to be a leader in land-based reduction of Greenhouse Gases (GHG) through:

- *Changing land-use*; for example, converting less productive hill country farms into forests, thereby reducing emissions by reducing livestock numbers and sequestering atmospheric carbon through tree growth; and
- *Changing operational practices on farms, orchards and forests to reduce GHG emission intensity*; for example, improving the conversion of feed to milk through better herd genetics and operational decisions to reduce GHG emissions per litre of milk produced.

Our specific climate goals are to achieve:

- 50% reduction in net GHG emissions by 2030 compared to emissions immediately prior to Craigmore management control
- An independently verified net-zero emissions dairy farm by 2035, with minimal offsetting, established in partnership or collaboration with other like-minded entities
- 35% reduction in GHG emission intensity for milk production across our farms by 2035
- Net-zero GHG emissions from the Craigmore-managed portfolio of assets by 2030, including all sources and sinks of GHG⁴
- Net-zero GHG emissions from the Craigmore-managed portfolio of assets by 2050⁵.

Comparison to Aotearoa New Zealand GHG targets

Under domestic legislation, the *Zero Carbon Amendment Act 2019*, the government has set out a national commitment to the following GHG reduction targets:

- Net emissions of all GHG (excluding biogenic methane) reduced to zero by 2050
- Methane reduction of 10% by 2030, and a provisional target reduction of 24-47% by 2050.

Craigmore commitments go well beyond these national targets.

The significance of methane

Globally, governments are increasingly differentiating between long-lived GHG such as carbon dioxide, which can last hundreds of years in the atmosphere, and short-lived gases such as methane, which has an average atmospheric lifetime of 12 years. While all gases contributing to climate change must be reduced, the impact of reductions is different for long-lived gases (eg. CO₂, at 100 to 1,000 years) compared to short-lived gases (eg. methane, at c. 12 years). Reducing CO₂ emissions results in a slower, but continued, warming of our climate, whereas reducing methane emissions has a cooling effect on climate.⁶

This distinction is relevant to Aotearoa New Zealand because methane is the primary GHG emission from dairy cows, and Aotearoa New Zealand agricultural methane emissions have only increased 8% since 1990 (compared to a 35% increase for CO₂ emissions). The comparatively small increase in agricultural methane emissions is due to a fall in sheep numbers, down by 56% (31m) and an increase in cattle numbers by 26% (2m, often replacing sheep).⁷

4 This target includes all biological sources and sinks of GHG including those sold by the forestry sector and those indirectly offset by the supplier (eg fuel and electricity).

5 This target excludes any carbon credits (Aotearoa New Zealand Units or NZUs) which have been received by the forestry sector and sold to third-party emitters. It also excludes any indirect NZUs that have been purchased by Craigmore properties through fuel and electricity. Suppliers of these products are required to purchase credits to offset their emissions. This cost then flows through to the consumer (ie. Craigmore farms, orchards or forests).

6 Reference: www.stats.govt.nz/indicators/new-zealands-greenhouse-gas-emissions

7 Reference: www.stats.govt.nz/indicators/livestock-numbers



The pathway to achieving our climate goals

Measurement

The complexity of biological processes which drive GHG changes in our businesses and the absence of widely accepted tools and methodology make accurate measurement of our GHG emissions and reductions more difficult. For this reason, we will sometimes rely on averaging and general estimates from published research. Some areas such as soil carbon, embedded carbon in wooden products, and important sources of and potential sinks for atmospheric CO₂, have been excluded to date. For now, our focus is on estimating scope 1 and scope 2 cradle to property gate emissions on properties. Accuracy and scope of measurement will evolve over time.

Execution

The figures set out on page 25 capture the results of Craigmore's two-pronged strategy: land-use change and operational change. In addition to converting farmland to forests and orchards, we actively identify opportunities for innovation and experimentation to reduce methane emissions through feed supplements, and for increasing carbon sequestration in soils and trees on the farm. Peer reviewed articles also suggest that we can make our horticulture operations carbon neutral through increased sequestration of carbon in soil.

Overall emissions

The tables provide a summary of our estimate of the net impact on GHG emissions for the 2022-23 year by sector. The emissions figures set out Craigmore estimates of GHG emissions:

- Net GHG emissions across businesses for which Craigmore has management responsibility
- Adjustment for the distinction between short-lived and long-lived gases.

Land-use change

The diagram in *Figure 1* sets out the impact Craigmore has had on reducing GHG emissions through facilitating land-use change. Craigmore has converted the land-use on a range of properties to either more GHG-efficient production systems (horticulture) or to net positive production systems (forestry). Based on net cradle to gate estimates, Craigmore investment can be estimated to have reduced the annual emissions of the previous land-use by 173,000 tonnes of CO₂e, as farms have been transformed into orchards and forests.

Monitoring emissions intensity

Given the importance of animal protein as a source of human nutrition, a critical challenge in addressing climate change is to invest in production systems that have lower GHG emissions intensity. Milk is one of the most GHG-efficient forms of producing animal protein. Furthermore, the Aotearoa New Zealand grass-based milk production system is one of the lowest emission intensive commercial dairy systems in the world.

Craigmore net emission intensity measurement for 2022-23 is 0.81kgCO₂e per kg Fat and Protein Corrected Milk (FPCM), which is 13.5% above the Aotearoa New Zealand average and 12.5% below the US average (as estimated by Mazzetto, Falconer and Ledgard, 2022). This increase is due to a decrease in milk production and an increase in feed.

* Fat and protein corrected milk.

** Per hectare.

† The total GHG emissions include emissions from Taieri Lake, support blocks and stock grazing off farm (including replacements and wintered cows).

‡ Forestry averaging methodology.

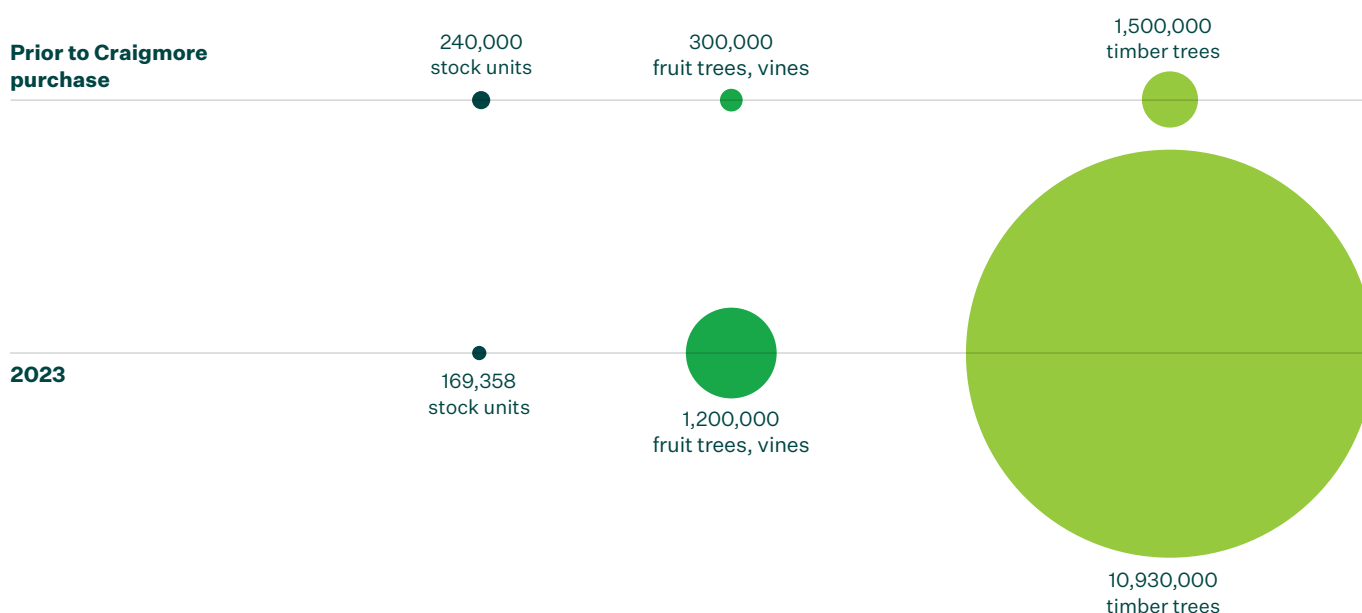
Net intensity of Craigmore managed dairy farms

	kgCO ₂ e/kgFPCM*	kgCO ₂ e/ha**
2018-19	0.71	15,610
2019-20	0.71	16,013
2020-21	0.69	15,939
2021-22	0.70	15,895
2022-23	0.81	15,311

Craigmore's overall GHG emissions and removals across the three sectors 2022-23

	UoM	Craigmore Total	Breakdown by Sector		
			Farming	Horticulture	Forestry*
GHG Emissions	tCO ₂ e	87,266	80,957 ⁺	6,309	0
GHG Removals	tCO ₂ e	-70,695	-681	-3,765	-66,249
Net GHG Emissions	tCO₂e	16,571	80,276	2,544	-66,249
Biogenic Methane	tCO ₂ e	51,416	51,416	0	0
Net GHG Emissions Excl. Methane	tCO₂e	-34,845	28,860	2,544	-66,249

Figure 1 Impact of land-use change decisions made by Craigmore



Case Study

Aotearoa New Zealand first trial to eliminate methane

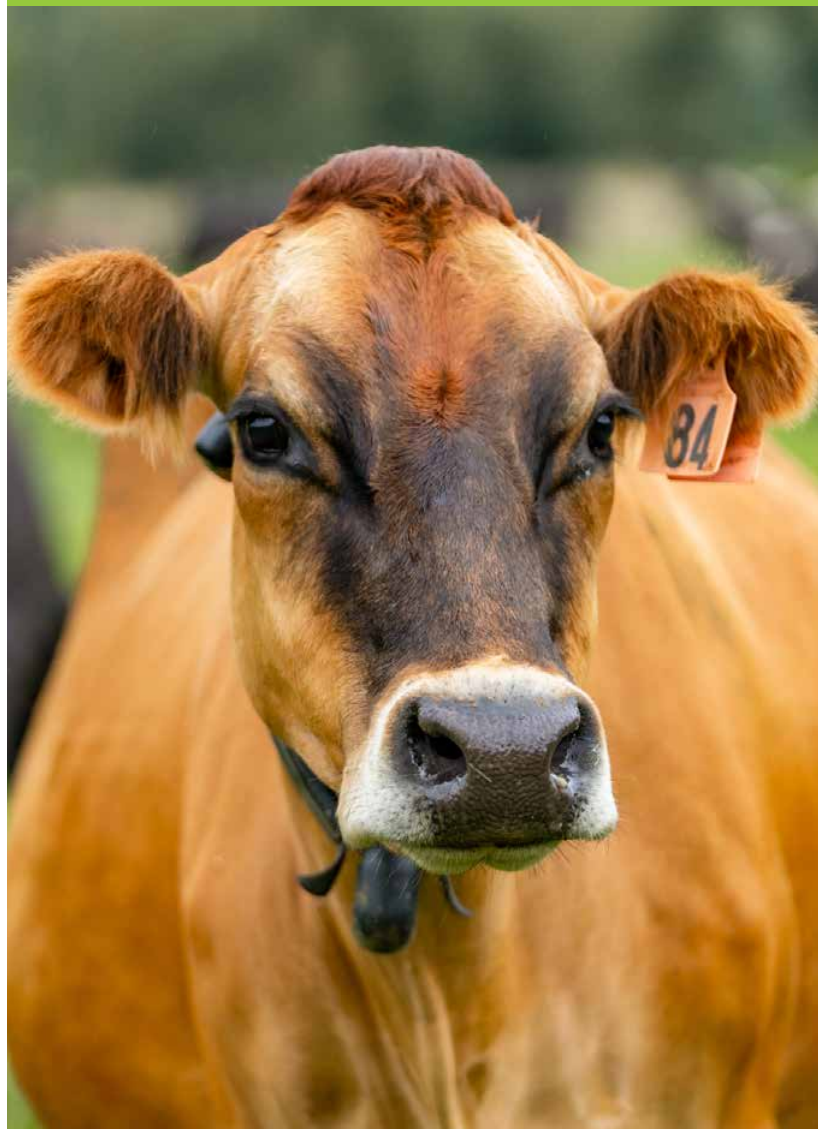
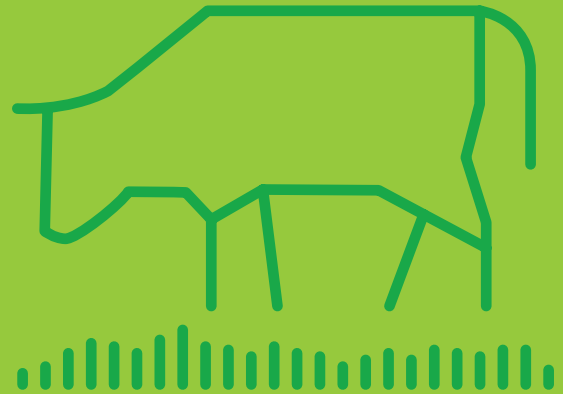
Craigmore is a leader in the trial and adoption of new technology that has the potential to reduce emissions of biogenic methane and help Aotearoa New Zealand meet its climate change targets.

Craigmore's 426-hectare dairy farm Glen Eyre in Oxford, North Canterbury is the first commercial dairy farm in Aotearoa New Zealand to adopt EcoPond, an effluent treatment system which removes virtually all methane emitted from effluent ponds through the use of an additive widely used in the treatment of drinking water. The cutting-edge technology at the farm which milks 1,100 cows, is the result of a collaboration between Ravensdown⁸ and Lincoln University.

The system uses an iron sulphate treatment, which is highly effective in reducing methane emissions due to increased microbial competition for organic matter substrate with the addition of sulphate and ferric ions. This restricts the growth of the methane producing microorganisms known as methanogens.

Initial tests of the effluent from the pond after it had been treated with iron sulphate showed a 95% reduction in CH₄ (methane) which is highly significant. The testing also revealed a reduction in total phosphate DPR (dissolved reactive phosphate) leaching from treated effluent of 99.9% and E.coli in leachate/drainage water of up to 73%. Odour, ammonia gas loss and hydrogen sulphide gas loss has also reduced to zero.

Research is improving the understanding of how dairy farmers can reduce their greenhouse gas emissions. A 2022 report by Mazzetto, Falconer and Ledgard confirmed Aotearoa New Zealand dairy farmers have the world's lowest carbon footprint for on-farm milk production.



⁸ Ravensdown is an Aotearoa New Zealand owned agricultural cooperative company. In early 2023, EcoPond became part of Ravensdown's newly established innovation and investment entity, Agnition.



Case Study

How one farm turned setback to success

Craigmore's Kirikiri dairy farm is achieving reduction in emissions in part due to an unforeseen weather event.

Dion and Kristie Gordon took over the 400-hectare South Canterbury property in an equity partnership in 2014. In 2019 the property experienced a significant flood with the Rangitata River breaking its banks taking away topsoil and rendering 25 hectares of the property unworkable.

The focus on emission reduction had already begun in 2018 when they experienced a higher than usual empty rate⁹. They chose to destock, and it worked, so when the floods hit they continued reducing stock rates and sharpened their focus on emission reduction. The programme included decreasing stock, nitrogen fertiliser and supplements.

From 2018 to 2022, they have achieved the following results:

Decreased stocking rate from 3.8 peak cows/ha to 3.6 peak cows/ha. This reduction was offset by an increase in milk production/cow from 411 kgMS/cow to 448 kgMS/cow, 1,502 kgMS/ha to 1,587 kgMS/ha, and total milk production from 596,634 kgMS to 630,599 kgMS, increasing methane and decreasing nitrous oxide emissions.

Decreased nitrogen fertiliser from 279 kgN/ha to 148 kgN/ha, decreasing nitrous oxide and carbon dioxide emissions.

Decreased supplements fed from 1,595 tDM to 1,189 tDM, increased pasture intake and utilisation, decreasing carbon dioxide emission.

Hear more from Dion: www.agmatters.nz/case-studies/dion-gordon/
Published with permission and thanks to AgFirst and the New Zealand Agricultural Greenhouse Gas Research Centre.

⁹ Empty rate is the percentage of cows recorded as empty (negative) after pregnancy testing.

Soil

Soil provides sustenance for plants, human nutrition, water filtration and helps to regulate the climate. Erosion and reduced biological health reduce the soil's ability to sustainably generate productive crops and, in some instances, farmland has been abandoned due to erosion and a loss of fertility.

For Craigmore, soil health is critical to our business, so we have a range of careful soil protection measures in place such as erosion protection plantings, no tillage re-grassing and balanced fertiliser plans, which include both synthetic and biological products. The most important action is to ensure that land-use is appropriate which includes mapping out areas with high erosion risk and planting them in erosion-reducing vegetation, such as trees and native shrubs.

Protected erodible land

One hundred percent of all land identified as highly erodible on any Craigmore property is protected with planting. This includes farming and horticulture land which is earmarked to be sold or planted with permanent crops.

'Highly erodible land' is land which is classified as having high or very high risk of erosion under the Erosion Susceptibility Classification (ESC) mapping layer developed by the Ministry for Primary Industries.

National Environmental Standard for Plantation Forestry

There are four classes of erosion risk under ESC: low; moderate; high; and very high. Land classified as high or very high is highly susceptible to erosion. Craigmore takes unstable land and stabilises it by planting native trees and shrubs. The chart in *Figure 2* shows the proportion of Craigmore's forestry area planted by ESC class.

The Land-Use Capability (LUC) classification shows land capability and versatility for various uses. All Aotearoa New Zealand's rural land is classified into eight classes, based on its physical attributes, such as climate, vegetation, soil, slope and erodibility.

- Classes 1-4 are generally suitable for a wide range of land-uses, such as arable or pastoral farming
- Classes 5-7 have serious limitations for arable production but can be suitable for pasture or forestry
- Class 8 is generally unsuitable for land-uses other than being left aside for conservation.

Figure 3 shows the forestry areas planted by Craigmore using LUC classification, showing forestry land-use is appropriate for the site. Any LUC 4 land in Craigmore's portfolio is land that is either being prepared for sale or is mixed with steeper class of land which cannot be subdivided and on-sold for a more productive use.



Figure 2
Proportion of forestry planted by ESC class

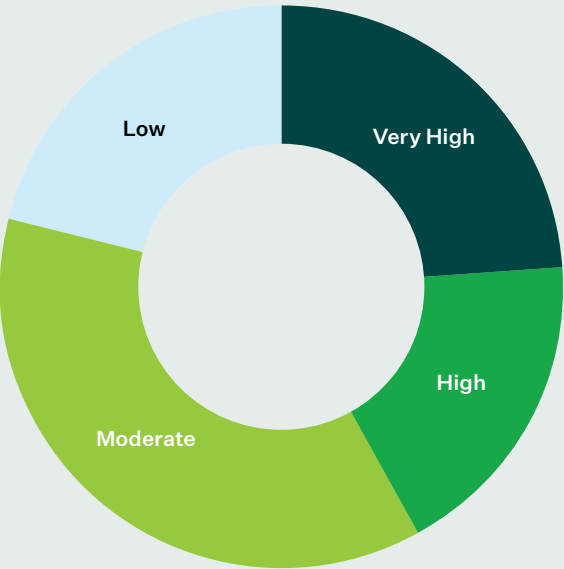


Figure 3
Forestry areas planted using LUC classification



Case Study

Conditioners improving soil health in South Canterbury

This season, South Canterbury dairy farms Wairepo Green and Wairepo Yellow received funding through The a2 Milk Company to use the Agraforum programme of soil conditioners.

In Canterbury, high stocking rates can lead to more soil compaction than in other regions in Aotearoa New Zealand. This is because of the high amounts of urine deposited per hectare over a season as compared to farms with lower stocking rates. The urea in the urine causes soil compaction and when the grass is growing well the amount of urea in urine is often very high as the protein levels in the grass are often excessive.

The use of soil conditioners remedies soil compaction, helping to manage and improve soil health. Agraforum recommends applying fine lime and blending humates¹⁰ with dry urea applications to buffer pH changes, reduce nitrogen loss to the atmosphere and provide a food source for the bacteria needed to make urea available.

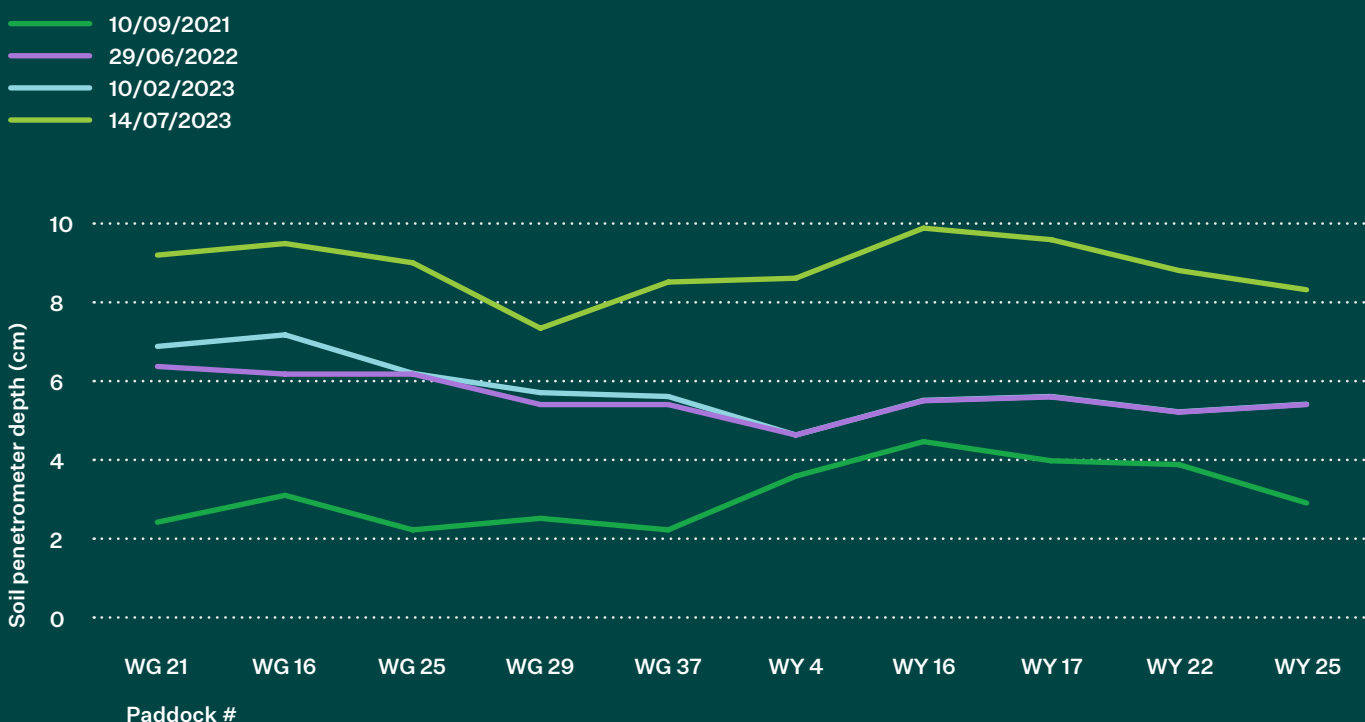
Penetrometer testing is undertaken annually to a target depth of 10 cm. Lab analysis and physical soil structure checks have shown an improvement over the application period and has reduced the use of nitrogen fertiliser by 20%.

Figure 4

Penetrometer Testing

Wairepo

The graph illustrates that the deeper the depth of the reading the less the compaction.



¹⁰ Humates are organic material sourced from leonardite or lignite coal fields. It is carbon dense and rich in humus, humic and fulvic acid. It is widely regarded by agronomists as one of the most important factors in building soil fertility. Source: www.humates.co.nz

Water

The availability, quality and biological health of freshwater is a global issue growing in importance as the climate changes and demand for high quality food and fibre increases.

The focus in Aotearoa New Zealand, with high and consistent rainfall and relatively small landmass, is on local water quality for human use (consumption and recreation) and the biological health of waterways, rather than on absolute water availability. Improvements can often be made to reduce both the sedimentation of waterways caused by erosion and nutrient loss to aquifers, streams and rivers.

Managing nitrogen loss

Craigmore is committed to developing innovative ways to improve water use efficiency and manage local impacts on water quality. We use a variety of metrics to analyse our performance with regards to water, the most quantitative of these is nitrogen loss to below the root zone. The table shows the nitrogen loss on Craigmore-managed properties.

	Nitrogen Loss kgN/ha	
	2022 Season	2023 Season
Forestry	-	-
Farming (Dairy)	30	26
Farming (Sheep & Beef)	2	2
Horticulture (Permanent Crop)	7	7

About the data

Farming numbers are property specific and estimated using Overseer – a model used by regulators across Aotearoa New Zealand for estimating nitrogen loss. Horticulture numbers are average numbers based on an independent report AgFirst: The value of nitrogen fertiliser to the Aotearoa New Zealand Economy report, 2019. Horticulture data excludes Coxco, which is a cropping business and very difficult to model at this stage. Nitrogen loss on our forestry properties has not been reported due to the negligible nitrogen loss expected.





Case Study

Award winning bridge installed at Lagoon Hill

Josh Blazeek of Farman Turkington Forestry, forest managers for Craigmore in the Wairarapa region, is the inventor of the 'Blaze It Bridge.' The Blaze It Bridge is a unique design for a portable bridge made from recycled railway iron that can be lowered into a watercourse ready for logging trucks to drive over, causing very little disturbance to the stream bed, reducing environmental damage.

Blaze It Bridges will be used for all crossings of the Ōterei River at Lagoon Hill. The use of the bridges not only saves money, but it is also the best environmental option when compared to permanent bridges and culverts. Bridges need significant work to the river banks to build the abutments which requires a machine in the waterways for a long time. Culverts in a river crossing can lead to impaired fish passage. Culverts are also problematic for large weather events, if they block, a dam can form behind, diverting the channel and leading to bank erosion.

Easily installed and removed, the Blaze It Bridge sits on top of concrete blocks during harvesting and is then lifted off post-harvest. It allows for unimpeded fish passage, and during a large weather event, debris and flood waters can easily flow over or the bridge can easily be removed in advance. They are anchored with steel cables so if not removed they will wrap to the sides of a bank with no damage or disruption to downstream properties or infrastructure. Several can be joined together to cross larger waterways.

In recognition of this innovation, Josh was named as the winner of the Outstanding Environmental Management category at the Southern North Island Wood Council awards.

→ [Find out more on Page 47](#)





Case Study

Health of waterways under scrutiny on dairy farms

Assessing the health of freshwater ecosystems involves examining aquatic life, habitat, water quality and flow patterns. Craigmores farming business has completed the second year of testing stream health on nine dairy farms, monitoring the environmental impact where streams enter and exit our properties.

This assessment provides farmers with an overall score reflecting stream health. Scores above 250 signify health, while under 120 indicate issues of possible concern. Our assessment in 2023 recorded an average score of 220 and identified areas for improvement on each farm.

Methods for evaluating ecosystem health include personal checks and specialist assistance. The Stream Health Check by Dr Russell Death, Professor of Freshwater Ecology from Massey University, aids farmers in visually assessing streams and surroundings annually.

For Craigmores, our responsibility as clean water stewards drives the visual stream assessment initiative. This process establishes a three-year baseline for implementing mitigation strategies as needed and will continue to be collected every February to track stream health.

Case Study

Native birds and river life return to Craigmore forests

Craigmore has begun a comprehensive water quality monitoring programme on all forestry properties, starting with a baseline measure pre-afforestation with repeat measurements at a frequency dependent on site objectives.

While it is too early to show evidence that land-use change from farming to forestry, which includes riparian planting, has had a positive effect on stream health, this is expected to improve over time as the canopy shades the water, stabilises the banks and there is more time with stock excluded from the river. It is estimated to take approximately five years before significant changes in nitrogen and phosphorous levels can be measured following planting.

It is positive to see that early water quality monitoring which has been completed at several Northland properties has shown the presence of native river life. The eDNA¹¹ results from our rivers show *tuna* (longfin eel) at Piroa, Titirangi and Wairere North, *īnanga* (whitebait) at Wairere North and Ngatieke, and *kōura* (freshwater crayfish) at Ngatieke and Piroa.

As part of the Ōterei River restoration project at Lagoon Hill 55,000 native trees, shrubs and flaxes have been planted. The eDNA results show the presence of *kōkopu tira whero* (redfin bully – near threatened), *tuna* (longfin eel – at risk-declining), *īnanga* (whitebait – at risk-declining), *kākahi* (freshwater mussel – at risk-declining) and *kōura* (freshwater crayfish – at risk-declining). These are all *taonga* (a treasured natural resource), with varying conservation status.

Native birds of significance have been identified including the *riroriro* (grey warbler), *kōtare* (kingfisher), *pōpokotea* (whitehead), *kererū* (pigeon), *kāhu* (swamp harrier), *korimako* (bellbird), *pīwakawaka* (fantail) and *pūtangitangi* (paradise shelduck). We hope to see greater abundance and diversity once the canopy grows and provides more habitat for native bird species.

¹¹ eDNA: As an alternative to fishing, eDNA monitoring can be utilised to gain an understanding of the existing fish community. eDNA sampling provides a presence/absence of fish (to the species level) of the section of stream/river upstream of the sampling point. In the case of this project, a useful comparison to draw is the potential difference in fish community between the newly planted (currently unforested) and forested stretches of river.

Biodiversity & Ecosystems

In addition to being of intrinsic value, native biodiversity contributes to ecosystem services such as erosion control and GHG reduction, as well as the recreational and cultural wealth of Aotearoa New Zealand and *te ao Māori* (the Māori world view including language, culture and customs).

Craigmore is committed to protecting and enhancing biodiversity through minimising practices which harm ecosystems; and enhancing and protecting native areas. Our biodiversity policies include:

- Protecting existing native vegetation and waterways from livestock grazing
- Protecting native plants and animals through control of mammalian pests¹²
- Avoiding deforestation of native species in our developments
- Planting native trees and shrubs on sensitive land
- Implementing low-spray management systems on orchards such as integrated pest and organics management.

Enhancing biodiversity is also an important way that Craigmore can support long-term Māori customary use of the land. This could include supporting populations of *tuna* (eels) and *kōura* (freshwater crayfish) and other *taonga* (treasured natural resources).

Native vegetation under protection on Craigmore properties

	Hectares	
	2023	2022
Forestry	2,645	1,109
Farming	101	100
Horticulture	70	62

Native plantings by Craigmore since inception

	Hectares	
	2023	2022
Forestry	67	64
Farming	104	103
Horticulture	31	25

About the data

‘Under protection’ refers to an area of land managed for environmental protection and conservation. It includes land subject to either management or legal land-use restrictions for the purposes of maintaining biological diversity and natural resources. Many of our farms have small areas of native plantings.

¹² Integrated pest management is an effective and environmentally sensitive approach to pest management using information on the life cycles of pests and their behaviour. This information, combined with pest control methods, manages pests while minimising negative impacts on the environment, other animals, crops, property and people.



Case Study

'Ecological warrior' discovered in Northland forest

Craigmore has completed an ecological assessment over ten Northland properties under afforestation development in preparation for Forest Stewardship Council (FSC) certification. This provides information on the indigenous ecosystems and benchmarks from which we can plan sustainable management interventions.

As part of the field surveys Dr Olivier Ball (Olly), senior ecologist at Wildland Consultants Limited, came across an exciting find at Ngatieke. In an area of broadleaf-dominated forest four native species of landhopper were identified, one of which appears to be an undescribed species (meaning it has been discovered but not formally described or named).

Landhoppers are described by Olly as ecological warriors. They live in the litter-soil interface and can be found in many terrestrial ecosystems in Aotearoa New Zealand including native forests, scrub, tussock grasslands and some do quite well in radiata pine plantation forests as well. They provide critical ecosystem services by processing dead organic matter and enhancing the mineralisation rate of elements back into the system.

What next? The four species identified have all been sent to the Museum of New Zealand Te Papa Tongarewa to be DNA sequenced. If indeed it is confirmed that one is a new find, it will be formally described in a publication and receive an official name.

Case Study

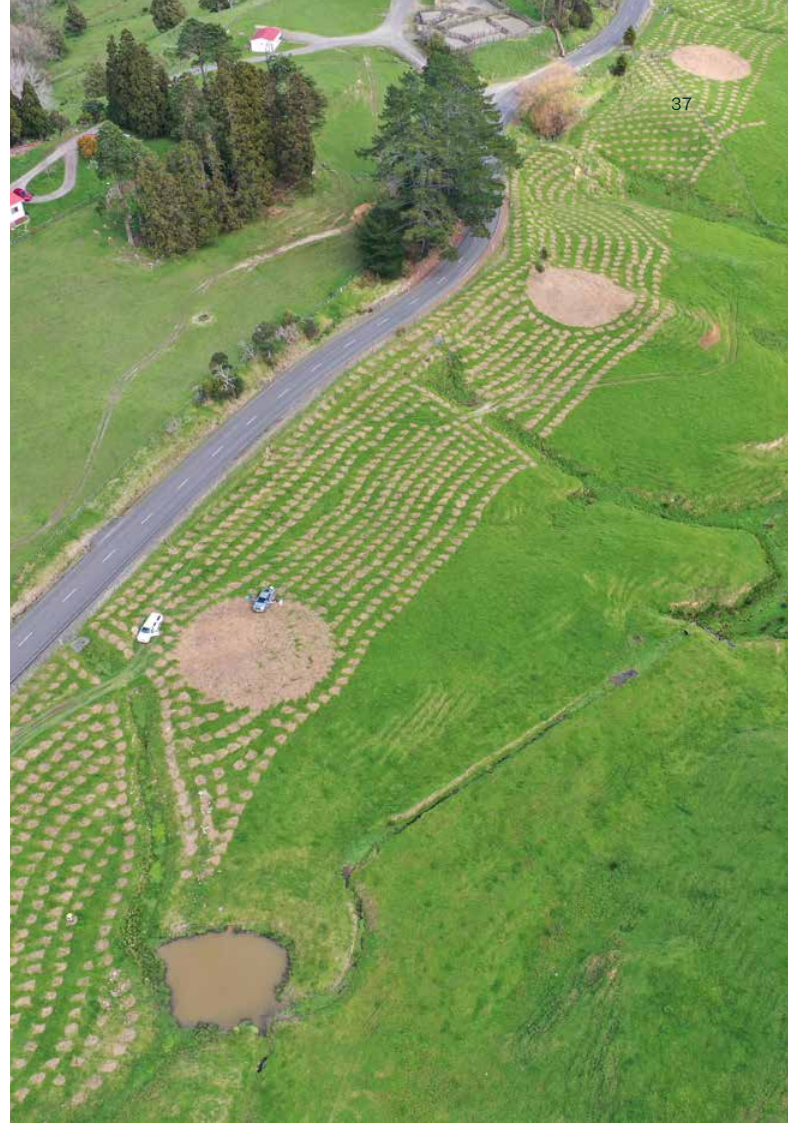
Birds aid in native plant regeneration

At Craigmore's Ngatieke forest, local manager Paul Ogle from PF Olsen Limited, has implemented biodiverse seed islands as part of the afforestation plan for the property. Seed islands are small plantings of native trees and shrubs, planted to provide a seed source for bird and wind dispersal.

The seed islands have been planted within a mānuka stand situated adjacent to the main productive species of radiata pine. The intention is to create a visually and socially appealing strip of road frontage and make good use of land subject to district planning rules around winter shading effects on the Twin Coast Highway.

Seed islands of 400m² size were created at an intensity of two per hectare. Species planted were a range of fast growing, robust natives, with varying final height to produce a stepped canopy as viewed from the road. Flax was planted predominantly in waterways. Many of the species selected are sub canopy species which, with bird and wind assistance, should help populate nearby patches of bush which have not been self-regenerating under the canopy due to cattle grazing.

Now that cattle have been removed and the farmland converted to radiata pine, these remnant areas are expected to recover and thrive.



Case Study

Waterway restoration sees return of endangered fish

Kōwaro (Canterbury mudfish) are a critically threatened endemic freshwater fish only found in Canterbury. We are fortunate to have a population living in the irrigation spring on Somerset dairy farm. Located alongside the Pareora River, the spring is the ideal habitat for mudfish because of the clean, clear water and the dense aquatic plant growth.

To protect the spring, Craigmore has carried out extensive restoration over the past two years to protect this significant natural area. To date, we have replaced the old diesel irrigation pump with a new electric pump to reduce any chemical leeching or contamination, fenced the site to stock-proof it, and most recently planted 2,760 native plants consisting of dry woodland shrubs and trees as well as flax and reed plants at the water edge.

This will ensure a regenerating native bush block around the site providing shade, shelter and food for many native and endangered species.





Case Study

Kiwi thriving at Wiroa

A research project undertaken at Wiroa kiwifruit orchard by Plant and Food New Zealand has recorded an increase in the number of kiwi sighted on the property. The Rejuvenating Cropping Ecosystems project looked at the effect of introducing indigenous plant communities to perennial crop systems.

The kiwi have been picked up by a fixed camera installed on the property by Massey University. The camera has also captured the return of native *pekapeka* (bats).

Plant and Food New Zealand's three-year study, which looked at insect populations across the block and the impact of conversion from dairy to kiwifruit,

has concluded with the final report due towards the end of 2023. It is pleasing to see that one of the outcomes of Craigmore's investment to improve biodiversity and the control of exotic pest species has been an uplift in kiwi sightings.

To help support the kiwi to thrive in the region, Craigmore has also sponsored the Kiwi Coast which is a collaboration of over 200 community-led conservation projects working to restore native forests and wildlife, as well as raising funds to build a kiwi rehabilitation centre in the Bay of Islands.

Animal Welfare

At the core of any good livestock farming is the welfare of animals from birth to beyond the farm gate. Aotearoa New Zealand was one of the first countries to enshrine animal sentience into law in 2015.

We enjoy a climate that allows livestock to graze outside for 12 months of the year. These effectively 'free-range', predominately grass-fed, dairy farming systems are much less intensive than most northern hemisphere systems, which involve partial or permanent housing of livestock.

Animal welfare is measured by death rate percentage and fertility with a six-week in-calf rate of the herd. The Aotearoa New Zealand average death rate is very low compared to global standards.

All Craigmore farms align animal welfare with the *Five Freedoms* which measures and promotes wellbeing across five realms: freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury or disease; freedom to express normal behaviour; and freedom from fear and distress. Each of these targets the overall condition and wellbeing of the herd.

Animal welfare metric

	Benchmark	Craigmore Farming (Dairy) Operations	
		2023	2022
Body condition	DairyNZ target at pre-mating: R3*: 4.5 – 5.0 MA**: 4.0 – 4.5	77% within range	66% within range
Death rate	Livestock Improvement Corporation (LIC): 2.2%	3.2%	3.7%
Six-week in-calf rate	DairyNZ average: 67.8%	72%	71%

* R3 is a rising three-year old cow

** MA is a mix aged cow

About the data

Body Condition Score

Body Condition Score (BCS) is a metric that describes the visual condition of dairy cows. BCS is determined by an independent vet who visits each farm and records the information based on visual inspection of the animals. BCS is measured on a scale of 1 to 10 – if the score falls below 3 urgent action must be taken to improve cow condition and a cow with a BCS over 6.0 is considered obese. High and low BCS predispose cows to disease, metabolic disorders, low productivity and low reproductive function, all of which indicates compromised welfare.

Death Rate Percentage (Death Rate %)

Death Rate % provides a clear indicator of herd health and is directly related to good farm management practices, which aim to minimise deaths from extreme weather events and less than ideal management practices. Death Rate % is calculated as the number of mixed age cows and mature replacements ('R2s') deaths divided by the number of wintered cows. There are no industry death rate reporting requirements. As a result, LIC death rate is based on non-audited reporting and Craigmore's definition of death is more conservative eg. includes animals that cannot be sold.

Six-Week In-Calf Rates

The six-week in-calf rate is a measure of the percentage of in-calf cows, six weeks after the start of the mating season. A high six-week fertility rate is a reliable indicator of good on-farm management, body condition, quality of feed and general animal and herd health.

Case Study

Technology giving farmers an eye on cows

Hayden and Mara Fletcher at Darnley dairy farm in North Canterbury are leaving no stone unturned, when it comes to the use of technology to monitor the health of their herd.

In 2020, they introduced SmaXtec, a tool intended to help farmers understand their cows from the inside out. The 10cm sensor is administered orally in the form of a bolus which continuously collects data with a high degree of accuracy. Every ten minutes, the bolus transmits data that can be viewed on a computer or smartphone, which gives the team precise alerts and recommendations, allowing them to make real-time decisions regarding the wellbeing of their animals.

Heat detection during mating is one example of how the technology has helped Hayden improve on-farm decision making. In 2020 Darnley had short returns¹³ of 25%. Since implementing SmaXtec this has reduced to 18% and 14% over the past two seasons, allowing for more accurate artificial insemination and less money spent on straws of bull semen.

A second tool helping further their knowledge is OmniEye, which gives farmers an 'intelligent eye' over their livestock. Installed in September 2022, OmniEye records information captured by a camera positioned on the exit race to the milking shed, analysing and charting the locomotion of each cow to monitor herd health. Lameness is a significant threat to the health of a cow and preventing it means that the animal remains well and a productive member of the milking system.

Since installation, OmniEye has provided over 160,000 locomotion scores for the herd, which equates to an average of more than 160 scores per cow across the season, or 160 opportunities to identify any potential issues. These scores are recorded and the locomotion analytics made available for the team to inform on-farm actions and decision making.

Using technology will help the team improve farm management and increase collaboration with advisors and vets.

¹³ A short return occurs when a cow is inseminated within 18 days of her previous insemination. In other words, there is a very short interval between the two inseminations.

Social



Health, Safety & Wellbeing

Our teams are at the core of our business, as is their health, safety, and wellbeing. We recognise that employees and contractors face day-to-day, sector-specific risks when working in our business. Craigmore promotes the use of best-practice health and safety protocols to protect the physical safety and mental wellbeing of our people and those who work with us.

We have a culture of safety across our business, ensuring every person receives the tools to work safely; the training they need to understand the risks they could face; and the instruction on the steps they need to take to keep themselves and others safe. Our core focus continues to be the management of critical health and safety risks, building company-wide capability and confidence, partnering with contractors, and focused reporting.

In farming, the focus this year has been on vehicle and machine safety, working at height, working in confined spaces, and on the management of hazardous substances. We have carried out external assurance reviews to provide an independent assessment of our risk programmes. A deep dive risk analysis of critical risks has also been completed for horticulture. The analysis looked at critical risk from four different scenarios: business as usual; introduction of a new or inexperienced operator; introduction of an unauthorised or external operator; and introduction of an unplanned or adverse event.

Injury recording and reporting

During 2022/23 there were no reported employee notifiable incidents, injuries, or illnesses. Our tool for measuring incidents is TRIFR (Total Recordable Injury Frequency Rate), which is a rolling 12-month metric charting the frequency of recordable work-related injuries or illness for every 200,000 hours worked.

TRIFR ¹⁴	16
Notifiable events ¹⁵	0

About the data

Under the Health and Safety at Work Act 2015 a PCBU (Person Conducting a Business or Undertaking) must notify the regulator when certain work-related events occur. This data includes all Craigmore entities but does not include contractor or contract manager performance.

Looking ahead

Building more structure around our wellbeing programme is a key focus across Craigmore's businesses for the future. Farming has embarked on a psychosocial programme, while Horticulture is implementing an action plan for critical risk management on the residual risks remaining following the implementation of control measures to identified risks.

¹⁴ TRIFR is calculated by combining recorded fatalities, lost-time injuries and other injuries requiring treatment by a medical professional, multiplying that number by 200,000 and then dividing by the total number of employee hours worked or 'exposure hours'.

¹⁵ A notifiable event is reported to WorkSafe New Zealand when any of the following occurs as a result of work: a death, notifiable illness or injury, or a notifiable incident.

Case Study

Real-time vehicle monitoring system trialled on farm

The health and safety of our people was at the forefront of the decision to install a vehicle monitoring system on farms where our staff are driving on hilly terrain every day.

Fleet Pin's Safetrak system is a satellite or GPS rollover and critical alerting system. Although we have designated no-go areas on farms, this system is designed with an in-cab alarm that will sound when the vehicle is driving on steep terrain, allowing the driver to reconsider their route choice.

In the event of the manual SOS button or the unit identifying a rollover, additional notifications will be sent either via satellite or GPS to the farm leadership team. This allows the farm team to respond promptly to check in on their staff. The data which comes from this system allows for positive conversations with the farm teams about their driving behaviour and route choices. There are additional behavioural (speed, efficiency) and security (stolen vehicles) benefits to the system.



Case Study

Standards introduced and training ramped up in horticulture

To ensure that the partners we work with support our vision and demonstrate good health and safety practices in the workplace, Craigmores horticulture business has introduced the Partner Health and Safety Standard. The Standard guides our partners to understand our expectations and how we will work together to achieve our risk reduction objectives.

Three partners have signed the Partner Health and Safety Standard and have undergone an annual audit in 2023 against the Standard to ensure that all risks are being managed appropriately and that they are complying with the standard.

Training has been a strong focus for the horticulture team this year, aligning to our critical risks, specifically around machinery and equipment operations. We have undertaken a gap analysis to identify areas for improvement and to ensure we have sufficient coverage across all sites for health, safety, and wellbeing training. Training programmes have been rolled out and competency assessments completed along with refreshers as well as external training undertaken on working at heights, permit issuer and receiver, first aid, OSH forklift, Growsafe and hazardous substance awareness.

Tractors are a critical risk in horticulture, and we continually aim to minimise the risk to our people and property by reviewing the effectiveness of controls around the use of vehicles.

During our 2023 apple harvest, we incurred a few *near miss* events involving tractor operations. An investigation was completed, and several contributing factors were identified which included lack of training and competency for new operators, lack of communication, congestion, and traffic management.

To avoid a reoccurrence or a more serious incident, we implemented controls, developed a traffic management plan specific to harvest and introduced further signage, designated parking areas and stop/give way areas. We now provide radios to tractor operators, a tractor re-training session was held, an orange hi-vis flag was trialled for better visibility of tractors when working in and exiting/entering a row, better planning for empty bin placements down rows to minimise tractor movements and we have discussed these events at an end of season review for further feedback from the team.

People & Communities

Growing the field

Craigmore aims to be a transformational employer in rural Aotearoa New Zealand.

We believe that there is a better way to employ people in our rural communities. Employment can be inaccessible to some people due to seasonality, split shifts, long hours and physical requirements. Through the adoption of new technology and new ways of thinking, we believe that we can make careers in the sectors in which we operate – farming, horticulture and forestry – more accessible, flexible and appealing.

Our aspiration for future employment includes job sharing, flexible working hours, inhouse and specialist training programmes, living wages, permanent contracts and values-based employment with all our people. But we are not limited to just these ways of work – our conversations will evolve as innovations are implemented and industry cultures change.

Growing our rural communities

The majority of Craigmore operations are in rural areas where primary industries are major contributors to local economies. By creating employment opportunities, we are helping to bring new families into underinvested rural communities, as well as bringing new people into primary industries.

We strive to ensure that people have the opportunity to grow and feel valued when they work with us. We are advocates for upskilling and training people for their futures – with or outside of Craigmore – and ensuring that each person is remunerated fairly for their work.

This commitment extends beyond our people and into the communities in which they live. We contribute to schools, sports clubs and community activities through both our time and sponsorships, so that we are playing a part in contributing to stability in the regions. *Figure 5* details the number of activities the Craigmore staff have contributed to this year.

Our workforce 2023

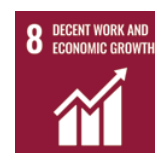
	Total	Total %	Farming	Horticulture	Forestry	Other
Number of people	229	–	83	102	2	42
Full-time	218	95%	80	100	1	37
Part-time	11	5%	3	2	1	5
Female staff members	80	35%	23	36	1	20
Male staff members	149	65%	60	66	1	22

Data includes people employed directly by a Craigmore-managed business in full-time or part-time roles.

Data excludes contractors, casual workers and seasonal workers.

Horticulture includes Coxco, a Craigmore Sustainables owned company.

Other includes Aotearoa New Zealand office-based staff and London-based investor relations team.





Case Study

Foresters recognised for innovation and excellence

A passion for the environment led Josh Blazek of Farman Turkington Forestry Limited, forest managers for Craigmore in the Wairarapa region, to come up with a solution to protect forest waterways.

Josh was named winner of the Outstanding Environmental Management category at the Southern North Island Wood Council awards. Josh is the inventor of the 'Blaze It Bridge', a portable bridge made of recycled railway irons that can be lowered into a watercourse ready for logging trucks to drive over. This unique design allows for very little disturbance to the stream bed, reducing environmental damage. Blaze It Bridges will be used on all waterway crossings at Lagoon Hill during harvesting operations.

People and communities are hugely important to Craigmore, and our contractors are key members of our extended whānau (family) for our Forestry business. We were thrilled to see the Zielinski family, owners and operators of Silviculture Contractors Limited, who expertly establish and tend to our trees in Northland, named joint winners of the 2022 Forestry Family of the Year at the Northland Forestry Awards.

Congratulations to Josh and the Zielinski family.

Figure 5
Community activities

2

Volunteering

6

Schools

7

Sport Clubs

12

Community Support

Case Study

Young viticulturist joins horticulture elite

Demonstrating specialist skills in viticulture and expertise right across the horticulture sector saw Craigmores Springhill Vineyard Contract Manager recognised at the 2022 Young Horticulturist of the Year competition.

Sam Bain was awarded second place overall representing New Zealand Winegrowers as the Young Viticulturist of the Year. In addition, Sam received the RNZIH Best Speech Award for his topic *“The consequences of increasing human population pressure on horticulture”*, in which he presented his thoughts on urban creep driving the horticulture sector to new regions and the impact on mental health for people working in the sector.

The Young Horticulturist of the Year is an annual event that brings together all sectors to promote excellence and opportunities for young people in horticulture. Sam competed against six other finalists in five disciplines including horticultural practice, leadership skills, speechcraft, business acumen and industry knowledge.

Employed by Villa Maria Estate/Indevin Group, Sam is leading the development of this new vineyard as well as the day-to-day operations. Springhill Vineyard is a 160ha property in Central Hawke’s Bay, which is a new growing region for viticulture. The property has both Sauvignon Blanc and Pinot Gris vines, which delivered the first harvest in March 2023.

Craigmores horticulture business is proud to sponsor the 2023 Young Horticulturist of the Year with finals to be held in Auckland in November.





Case Study

Scholarship to further research for primary industries

Craigmore's farming business has launched a new scholarship in 2023 with Lincoln University – The Craigmore Sustainables and Wilson Family Sustainability for Primary Industries Scholarship.

The scholarship will be awarded to a student undertaking post graduate studies in agriculture. We are looking for a student who offers research interests that align with Craigmore's sustainability principles with the potential to conduct their research on a Craigmore farm.

We see this as an opportunity to establish an ongoing relationship with individuals whose research adds value to the agricultural industry.

Craigmore's farming team was awarded the John Wilson Memorial Trophy at the Fonterra Responsible Dairying Awards in 2022. The award came with a cash prize of \$10,000 which Craigmore has chosen to put into this new scholarship fund.

Spotlight

2022 Craigmore Farming Scholarship winner

Established in 2014, the Craigmore Sustainables Scholarship has been awarded annually to one or more post graduate students undertaking study and research in agriculture.

The 2022 recipient was Lulu Jordan. Originally from Hawke's Bay, Lulu has spent the last seven years living in Lincoln and has fallen for the South Island charm. Working predominantly for AgResearch, she is also in her first year of a PhD in Plant Science. Lulu shares her interest in the sector, her research and plans for the future.

"My research focuses on diverse pastures, particularly investigating how root exploration and stratification can enhance pasture resilience in various farm climates and settings, including locations such as Lincoln, Middelmarsh and Takaka. I'm employing diverse grazing strategies and nitrogen application to assess their impact on root growth, distribution, water absorption and nutrient uptake.

One key aspect of my study is exploring soil interactions in diverse pastures to uncover potential novel synergies among the 12 sown species. An interesting finding from this field is the positive effect of growing cocksfoot alongside white clover, where cocksfoot increases the concentration of Phosphate, Sulphur, and Potassium in white clover tissue. Additionally, white clover fixes nitrogen for cocksfoot. This area of plant interactions and diverse pastures is especially intriguing due to a research gap in Aotearoa New Zealand regarding species interactions and optimisation for enhanced pasture resilience, tailored to specific soil and climate conditions.

This research is personally significant, as it contributes to a better understanding of diverse pasture benefits and limitations within an Aotearoa New Zealand context. Unlike much of the information available from the USA, this study is more relevant to our unique soils and climates."

After graduation Lulu has big plans. Firstly, she hopes to do a season as a hunting guide in Canada and raft the length of the Amazon River. From a work perspective, she would like to pursue a role in the industry that uses her passion for agronomy, digesting large amounts of information, problem solving and teaching to contribute positively to Aotearoa New Zealand's pastoral sector.

Governance



Governance Bodies

General Partner Boards

General Partner (GP) Board members are appointed by Craigmore Sustainables (the Investment Manager) to provide governance of the partnerships managed by Craigmore.

GP Board members support and challenge management decisions to ensure we are responsible in managing of our investors' capital. This includes reviewing and agreeing strategy, approving budgets, measuring performance and ensuring that we have the resources to deliver on our strategy and wider commitments to stakeholders. These Boards are also responsible for overseeing the strategic execution of sustainability and ESG activities.

Board members sit across each of our partnerships in farming, horticulture, and forestry. Among other roles, GP Boards also meet with senior management at least six times per year and attend specialist committees, as set out below.

Investment Committee

A decision-making committee of the Investment Manager, Craigmore Sustainables LLP. The investment committee makes investment and divestment decisions on behalf of each partnership, overseeing the allocation of capital. This includes the monitoring and management of key strategy and sector risks. The Head of Acquisitions and Corporate Finance reports to the Investment Committee

Assurance and Risk Committee

The Assurance and Risk Committee is charged with oversight of Craigmore policies and processes. Members provide the assurance required on accounting and audit matters, external reporting, compliance, governance and related party transactions. This committee is chaired by an independent GP board member.

Health, Safety and Empowerment Committee

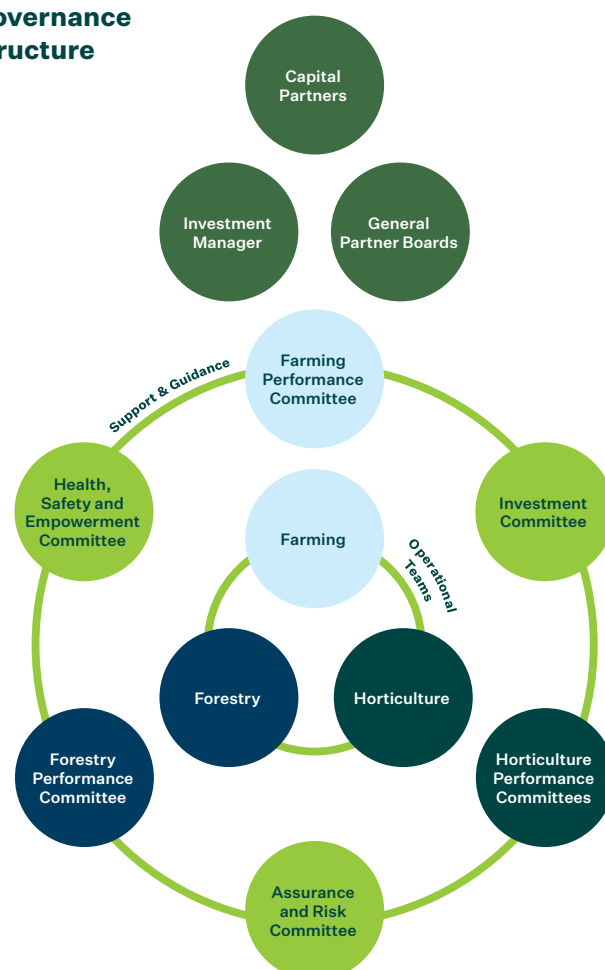
A combined committee of board members and senior managers (COO, CEO, General Managers) to ensure that we have the systems and resources to look after our people. This committee is responsible for health and safety planning, delivery, monitoring and review,

and ensuring that we have a strong culture that is aligned with our company values. This committee is chaired by the Chief Financial Officer.

Sector Performance Committees

Specialist sector Performance Committees provide advice and support for our General Managers and Business Managers. They facilitate and support operational excellence. These committees include two or three external experts with relevant technical and operational experience, sector-specific decision making and budgeting. The sector performance committees are farming, forestry, apples, kiwifruit and wine grapes. The relevant General Manager of each sector chairs these committees.

Figure 6
Governance structure



Governance Members

Key boards and committees

	John Holland	Andrew Gibbs	Che Charteris	Forbes Elworthy	John Donkers	Mark Cox*	Annika Streefland	Nick Tapp	Josef Nägel
GP Board	●	●	●	Observer	●	●	●		
Investment Committee			●	●		●		●	●
Assurance & Risk Committee	●	●	●				●		
Health, Safety & Empowerment Committee	●	●	●				●		
Gender	M	M	M	M	M	M	F	M	M
Ethnicity	NZ/ European	NZ/ European	Māori	NZ/ European	NZ/ European	NZ/ European	NZ/ European	British/ European	German/ European
Age	45–64	45–64	25–44	45–64	45–64	45–64	45–64	65+	45–64

* Mark Cox resigned from Investment Committee in July 2023.

Governance committees also include Craigmore employees and specialist advisors.

Senior leadership team

Che Charteris	Chief Executive Officer (joined 2010)
Reuben Casey	Chief Operating Officer (joined 2023)
Craig Palmer	Chief Financial Officer (joined 2022)
Paul Burns	Head of Acquisitions and Corporate Finance (joined 2016)
Stuart Taylor	General Manager, Farming (joined 2019)
John Barker	General Manager, Forestry (joined 2021)
Con Williams	General Manager, Horticulture (joined 2023)
Andrea Innes	Communications Manager (joined 2022)

Governance Members



John Holland

John joined the Craigmore GP Board in February 2021 and is also a director of Craigmore Sustainables Group. John has over 15 years governance experience including six years on the board of leading Aotearoa New Zealand law firm Chapman Tripp, seven years as director of ASX/NZX listed Kathmandu, nine years as chair of the board of Southbase Construction, where he remains a shareholder and director. He also spent four years on the board of the New Zealand Securities Commission, the regulator of the securities market at the time.



Andrew Gibbs

Andrew Gibbs has been a member of the Craigmore GP Board since 2014. He currently chairs the Craigmore Assurance and Risk Committee. Andrew is a recently retired Partner of Deloitte NZ, where he worked as Leader of Primary Industry for over ten years.



Che Charteris

Che joined Craigmore Sustainables in 2010. Prior to Craigmore, he worked in a range of roles within Aotearoa New Zealand's central government. He currently also chairs the investment committee for a large *Ahu Whenua* trust which affiliates to his iwi *Ngāti Tahu – Ngāti Whaoa*.



Forbes Elworthy

Raised on Craigmore Station in the foothills of the Southern Alps, Forbes trained in Agricultural Economics at Lincoln University, attended the University of Oxford as a Rhodes Scholar and gained an MBA from Harvard Business School. After working in the financial industry, Forbes returned to farming in 2005 and went on to establish Craigmore Sustainables with Mark Cox.



John Donkers

John joined the Craigmore Sustainables board in 2017. He has spent most of his career in the dairy industry, starting as a sharemilker on the West Coast. In 1994, John helped establish Camden Dairy Farms which owns and operates six properties in Central Canterbury, and in 1996 he established an advising consultancy, Dairy Farm Management Services.



Mark Cox

Mark was raised on a sheep, beef and cropping farm before gaining a degree in dairy farm management at Massey University. After graduation, Mark worked in a number of agricultural roles. In 1996 he purchased Cedenco's fresh division assets and formed Coxco, which is currently owned and operated under Craigmore.



Annika Streefland

Annika joined Craigmore in June 2023 bringing to the board extensive experience in human capital and business development, having spent much of her career building leadership talent at CEO, C-suite and board level. She is also on the board of the New Zealand Opera, a member of Global Women and the founder/owner of Kopuwai Delta Vineyard in Central Otago.



Nick Tapp

Nick joined Craigmore in 2013 to lead the London-based investor relations team. Nick spent 25 years managing a large cereal, vegetable and potato farming business, and was chair of a grain storage and marketing company, both in Kent. He sits on the Board of Magyar Farming Company, operating a largescale diversified farming business in Hungary. Nick is a Trustee of The Royal Agricultural Society of England and a Trustee of the Society Pension Fund.



Josef Nägel

Josef is a founding partner of GlenSilva GmbH which is part of the Westphalen Estate, Germany. The Estate has owned and managed forest and farmland in Central Europe for many centuries and during the last decade it has expanded into Aotearoa New Zealand and the US. Previously, he spent many years in the financial services industry, principally at Deutsche Bank AG in Germany, South America, India and Eastern Europe.

Risk Management

'Risk' is the potential for harm or loss from vulnerabilities in our business being exploited by a threat. In addition to normal process and market threats, which face any business, natural assets (such as farms, forests and orchards) face a range of climate and ecological threats which create specific short and long-term risks.

Key threats and risks addressed and managed

Ecological

Ecological risks include climatic variation, such as rainfall, temperature, and wind, along with pest and disease risk to plants, crops and animals. Craigmore addresses many of these ecological threats through careful site selection, geographical diversification of the portfolio of assets, insurance, effective daily operations and capital improvements for land and crop protection (such as hail nets, or irrigation).

Operational

Poor operational management can increase costs of production, lower output, reduce workplace safety and cause environmental harm. Strong operational teams can make assets perform to their potential. Craigmore's operational strategy focuses on the quality and support of local management teams both as individuals and teams.

Regulatory

While Aotearoa New Zealand has a lower level of political risk for those investing in land when compared to many countries, nothing is entirely risk-free. As an example, Aotearoa New Zealand manages the access of offshore investment capital to farmland through the Overseas Investment Office (OIO). Craigmore manages this situation by staying fully abreast of the regulations, acting with confidence within the rules and building a relationship of trust with the Office.

Transactional

Weak transactional processes may cause harm, such as the loss of private information, incorrect financial or other transactions, or non-compliance with contractual and constitutional commitments. Craigmore manages these threats through separation of duties and a focus on secure processes.

Market

Global and local markets materially affect the availability and prices for inputs and the farm gate price of products. Disruptions to export logistics during the COVID-19 pandemic influenced the availability of labour and created volatility in global commodity prices, which were also impacted by the Russia/Ukraine conflict. Price-related risks for products grown on Craigmore farms are managed by a relentless focus on cost of production, so that the inevitable downturns in global commodity prices can be contained with minimal downside damage.

While grouping risks is helpful for management, risks do not exist in isolation and often affect each other. For example, climatic changes may increase the risk of specific diseases or pests, which could result in reduced market access into countries that wish to protect themselves from those risks.

Allocation of risk management

Oversight and management of different risks is split between five separate internal entities – every risk must have a ‘home’. Outlined below are the entities responsible for each type of risk.

- *Investment Manager/GP board:*
Strategic, sustainability (including climate risk) and reputation management
- *Assurance and Risk Committee:*
Process, transactional and financial risks, cyber-crime, hedging, related party transactions, and regulatory compliance
- *Health, Safety and Empowerment Committee:*
Health and safety, people and culture
- *Investment Committee:*
Portfolio mix and acquisitions, which include considerations around climate (short-and long-term), soil quality, diversification, irrigation and other factors
- *Performance Committees:*
Operational, industry and market risks.

Assessing Craigmore’s climate-related risks

Climate-related risks are of growing concern globally, and the story in Aotearoa New Zealand is no different.

The Craigmore portfolios were built with an awareness of the threats posed by climate change. Even so, Craigmore is undertaking a review of the potential impact of climate change on our operations, over different timeframes and a range of warming scenarios, in line with the recommendations by the Task Force for Climate-Related Financial Disclosure (TCFD). We had expected to release this in 2023, however Craigmore is undertaking a large programme of systems upgrades and change management and this has been delayed. We will provide an update on this in future.



Report published October 2023

Disclaimer The views expressed herein are those of Craigmore Sustainable LLP as of October 2023 and subject to change at any time based on the market and other conditions. This is not an offer or solicitation for the purchase or sale of any security and should not be construed as such. Performance indicators are estimates only and actual results may differ materially from those described herein. Forecast and forward-looking statements are based on the reasonable beliefs of Craigmore Sustainable LLP and are not a guarantee of future performance.

Thank you to our Limited Partners, stakeholders, and the people of Craigmore for their ongoing commitment and support on our sustainability journey.

Feedback

We welcome any feedback you have on this report, please email: investorrelations@craigmore.com

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