

Whaioranga Taiao Whaioranga Tangata

Our steps towards a fairer,
kinder, more sustainable world
in 2022.



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

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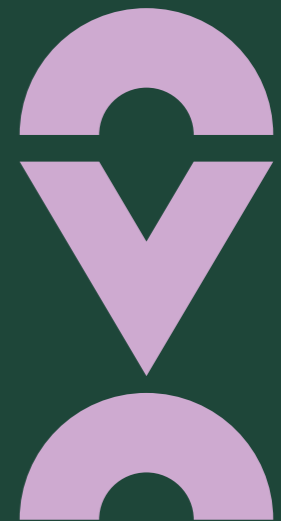
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A message from the Vice-Chancellor

Welcome to our 2022 sustainability report, Whaioranga Taiao Whaioranga Tangata, which captures some of our proudest achievements in pursuit of the United Nations' Sustainable Development Goals (SDGs).

2022 marked the long-awaited return to business as usual for many parts of our institution, with well-attended graduation ceremonies in both Hamilton and Tauranga and the re-opening of borders in July allowing us to connect with several of our international partners in-person. These visits have spurred some exciting new collaborations across both teaching and research.

One of my personal highlights was celebrating 50 years of being trailblazers in business education and reflecting on the evolution of the Waikato Management School over this time. It was also a pleasure to be involved in bringing together experts from around the country for the 2022 New Zealand Economics Forum, shining a spotlight on the complex economic issues we are currently facing as a nation, providing hope and clarity on what lies ahead.

In the area of climate change, we welcomed our first cohort of Bachelor of Climate Change students in 2022 while also securing significant government investment in specialist climate change research through various funding bodies.

We made excellent headway in expanding our health offerings, lifting the cap on our Bachelor of Nursing programme to meet the demand and starting new postgraduate nursing programmes. With the New Zealand health system creaking under pressure, we look forward to providing the specialist workforce our communities are crying out for, particularly in rural areas and in fields like midwifery and mental health.

I am also very proud of the progress we made this year to overcome structural racism within our institution following accusations lobbied against us in 2020. I am confident our Te Aurei programme of work will ensure our foot stays on the pedal long-term. It is encouraging to see many of our staff already developing in cultural confidence and competence and I look forward to continued momentum in this space.

Professor Neil Quigley
Vice-Chancellor

The SDGs remain a guiding light for us as an institution and I am proud of the momentum we have sustained throughout another turbulent year, especially as leaders and hosts of the Sustainable Development Goals Summit event series for New Zealand.

Professor Neil Quigley
Vice-Chancellor



Our journey so far

In early 2022 we celebrated the launch of our Sustainability Plan 2022–2026, developed with input from across our University community.

The plan is underpinned by a commitment to incorporating the knowledge and perspectives of Māori and Pacific peoples as inseparable from the environmental, social and economic dimensions of sustainable development. It includes six key objectives to drive and guide action towards sustainable development and fairer futures.

1 Embed Māori and Pacific principles and values of sustainability in the University's values.

2 Prioritise research that promotes the UN SDGs, climate action, and the creation of sustainable environments and fair futures.

3 Join with others outside the University in dialogue and action on the SDGs with the aim of helping us meet our goals.

4 Enhance the University's environmental performance with the aim to be carbon neutral by 2030.

5 Increase the number of students who have opportunities to develop sustainability and climate change related knowledge and understanding of effective and innovative solutions.

6 Foster leadership of sustainability across all areas of the University.

As a University, we have a special role to play in advancing the SDGs and working alongside our community to take action, honouring our bicultural history and the rich perspectives of Māori every step of the way.

Professor Lynda Johnston
Assistant Vice-Chancellor
Sustainability



Building a more sustainable Waikato

The University of Waikato proudly hosted the fourth Aotearoa New Zealand Sustainable Development Goals Summit Series over 2022, culminating in a two-day summit on-campus in February 2023.

The events brought together a diverse array of passionate business and community leaders, researchers and sustainability champions from across the region and beyond, spurring further action to tackle climate change, promote community cohesion and prepare individuals and businesses for the economic challenges on the horizon.

The 17 UN Sustainable Development Goals (SDGs) provided the backbone of this event series, serving as a reminder of the many threads that create strong, fair, and sustainable communities, like how we can build more liveable cities, overcome entrenched racism, provide fairer access to healthcare and create an ecosystem that truly supports sustainable business in a local context.



Summit participants on a field trip to Xtreme Zero Waste in Whaiangaroa, Raglan

Our University at a glance

We offer a uniquely New Zealand model of university education that is built on a strong and enduring partnership with Māori. We are enriched immeasurably by our cultural history and fearless in our collective pursuit of a fairer, safer, cleaner world.

Work-integrated Learning forms a core part of all degrees

World-leading researchers in artificial intelligence, robotics, cybersecurity and marine science

State-of-the art campus in downtown Tauranga with 1500 students

Ongoing investment in support for vulnerable students

Blazing a trail in health education

Flexible delivery options increasing year on year

Home of the world-first Bachelor of Climate Change

High-calibre performing arts venue

Vast 65-hectare Hamilton campus with over 2,500 trees enjoyed by dozens of community groups

On a journey to eradicate entrenched and invisible forms of racism

Comprehensive mental health provisions on campus

Working side-by-side with iwi

Firm commitment to Te Ao Māori

Unique living labs spanning marine, freshwater volcanic and Antarctic environments

21%

of students identify as Māori

51%

of leadership roles occupied by women

Equivalent full-time domestic students

8481

Equivalent full-time international students

(923 on-shore and 171 offshore)

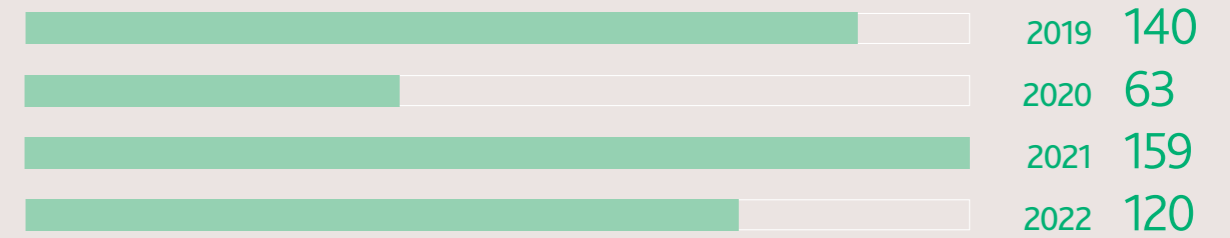
1637

Value of active research contracts

\$306m

Sustainability on campus

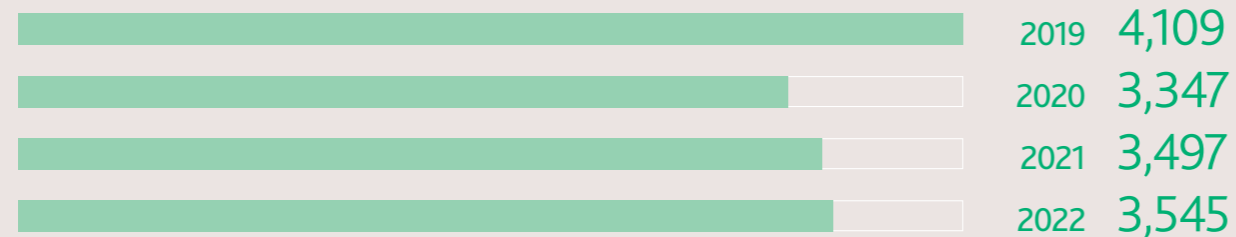
Waste Tonnes



120 tonnes of waste diverted from landfill (representing 31% of total waste)

Total emissions

CO₂-e



Reduction in emissions (against a 2019 baseline)

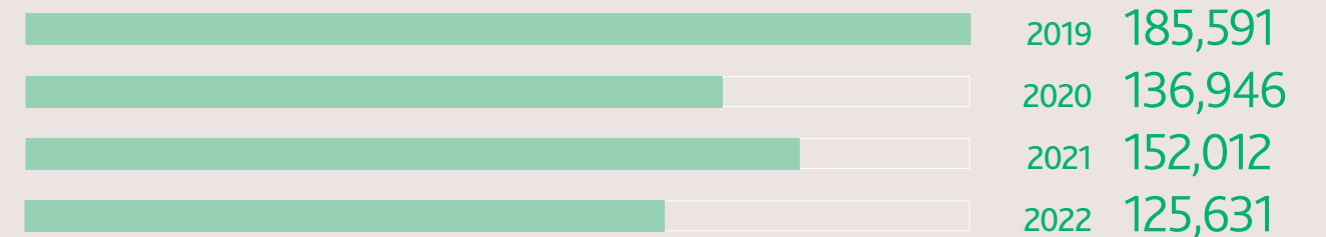


13%

*please note, this data includes scope 1 and 2 emissions only as scope 3 emissions (which include staff travel to and from work and remote working) were yet to be verified at the time of publication).

Water

Cubic metres



Reduction in water usage (against a 2019 baseline)



32%

Energy use

LED lights

We finished a campus-wide project to install LED lights in place of all alternatives.

Heating

We continued to replace boilers and radiant heaters at our Hamilton campus, including in student accommodation, with the help of funding from the Energy Efficiency and Conservation Authority.

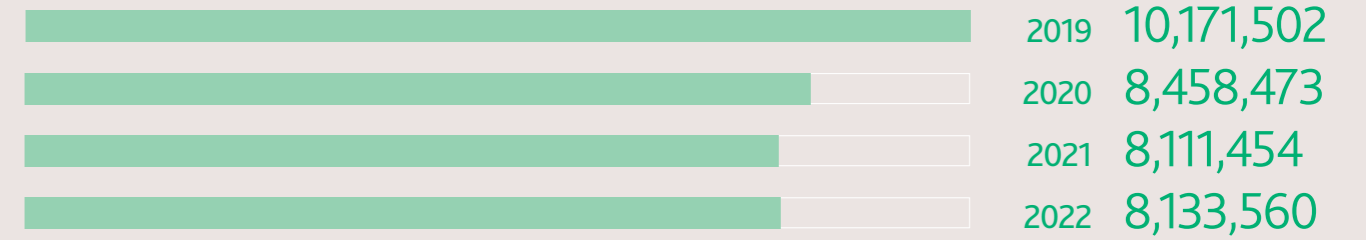
Solar panels

We installed solar panels on several buildings at our Hamilton Campus including Property Services, Silverdale Road Apartments and Orchard Park and have bold plans for further installations in 2023.

Energy assessment

We undertook an energy assessment with help from energy engineers to help us make technically and commercially viable investment decisions in our transition to a low-carbon energy future.

kWh



Reduction in gas (against a 2019 baseline)



20%

kWh



Reduction in electricity (against a 2019 baseline)



8%

Travel

Hybrids/EVs

Hybrids and electric vehicles (EVs) now make up 55% of our total fleet

E-bikes

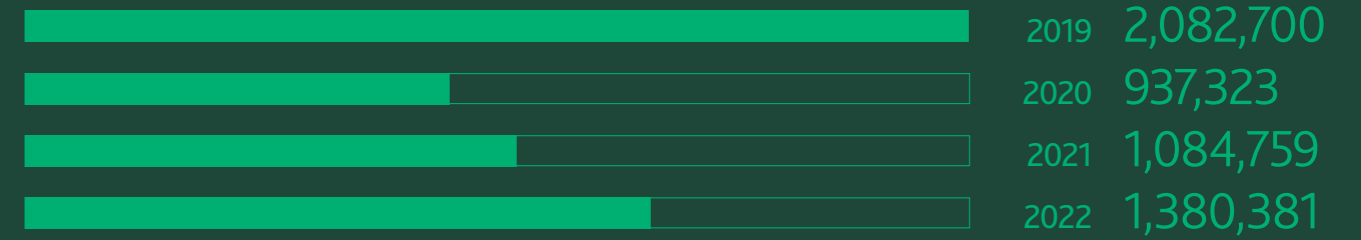
New (free) e-bike charging facilities installed

EV charging

Plans underway to roll-out EV charging infrastructure

Domestic flights (staff)

km



Reduction in domestic air travel (against a 2019 baseline)



International flights (staff)

km



Reduction in international air travel (against a 2019 baseline)





The People

Te Tangata

Our mahi to support the people of Aotearoa New Zealand to flourish, nurturing wellbeing, fostering togetherness and creating safe spaces for all to work, live and play.

Connecting our campus

Throughout 2022, construction continued on a versatile new space in the heart of the Hamilton Campus called The Pā — the largest single capital project ever undertaken by the University.

The 5500 sqm building opens in mid-2023 and is set to transform the on-campus experience, providing a welcoming space that promotes collaborative research and learning and provides a destination for connection and celebration with the broader community. It also incorporates a new marae, seamlessly integrating the University's cultural home within the centre of the campus.

The Pā has been designed to blend sympathetically into the University surroundings and tread as lightly as possible on the environment.

It sits on land that was once a large kahikatea stand in the forest Karipukau, and features heavy use of structural timber, mostly sustainably harvested pine. Structural timber is still a relatively new material in New Zealand building design, but it offers low embodied carbon, carbon emitted as part of its production, and it has also sequestered carbon from the environment before being harvested.

Engineered glulam beams are also used within the new building in place of traditional, carbon intensive structural steel, lowering the building's overall carbon footprint, providing the

strength needed to support the building while also creating a fine internal aesthetic. The Pā's distinct roof includes the largest wooden beam engineered in New Zealand at 43 metres and weighing 4.2 tonnes.

Insulation has been carefully installed throughout the new space to manage temperature efficiently. Thermodynamic glazing is also an integral part of the design to control heat within the building while also delivering exceptional clarity. The whareniui has the largest double-glazed windows to ever be installed in New Zealand, with six of the 12 ultra-clear glass windows weighing more than one tonne each.

Glazing along the sides of the building has also been designed to accommodate the building's multifunctional nature, controlling light and heat into the Student Hub, an important consideration for events.

The Pā's distinctive roof design has also been engineered to collect rainwater into a 100 cubic metre detention tank on the southern side of the building that is then used in a 5000 litre tank used to run the building's non-potable water system.



A space to play

Our 65-hectare Hamilton campus is a thriving hub of activity enjoyed by thousands of members of the community for competitive sports, events and other recreation activities.



Highlights from 2022

Supported over 150 members of the community aged 60+ to stay active through our LifeFit programme

Provided beautiful natural spaces for reflection and exploration by young and old

Hosted the Waikato Weetbix TRYathlon

Hosted hundreds of runners every weekend via Parkrun

Provided free community workout equipment at our outdoor 'fitness island'

Provided wraparound support to student high performance athletes through a dedicated hub

Taught children from local schools to swim in our outdoor pool

Coordinated inter-hall and inter-faculty competitions

Hosted tournaments for schools and grassroots sports groups year-round

Supported injury rehabilitation through onsite physiotherapy

Hosted an array of dance groups in our unique mirror room and various performing arts spaces

Engaged and connected young people through esports in our state of the art arena

Helped older people get back into movement through our Sports for Seniors programme

A nuanced approach to human flourishing

We are focused on nurturing a rich sense of wellbeing in all aspects of our teaching, research and operations, embracing Māori knowledge to better understand the connections between our internal worlds, relationships and physical environment.

Our expertise in this space is particularly timely, as mental health continues to be an issue causing significant concern across New Zealand, intensified by a series of extreme weather events, Covid-19, natural disasters and acts of terrorism.

We know too well that minority groups suffer disproportionately from these events, as existing inequities accelerate the inequality in our communities. We are enormously proud of the Waikato academics helping to shape the national kōrero about this topic in 2022, providing nuanced understanding of the cultural and socio-economic context which affect an individual's resilience and ability to thrive in the face of adversity.

Dr Waikaremoana Waitoki is playing a critical role in Indigenising the psychology profession in New Zealand



Highlights from 2022

Mental health services across the University were strengthened over the course of 2022 with a new online booking system embedded for student counselling and same-day appointments made available for urgent matters. We increased social work services available to students, and comprehensive healthcare services available on-campus, with medical staff working side-by-side with our growing team of mental health specialists.

We became the first tertiary institution in New Zealand to become a licensed provider of Mental Health First Aid training. Over 100 staff across both campuses have now completed the two-day programme which will ensure they are well placed to support a student, colleague, friend or family member experiencing distress.

Dr Waikaremoana Waitoki (Ngāti Hako me Ngāti Māhanga) from the School of Psychology was recognised for her work to Indigenise the psychology profession — ultimately to achieve better outcomes for Māori — receiving Te Puāwaitanga Research Excellence Award from the Royal Society. She also passionately championed cultural competency in the psychological workforce as President of the New Zealand Psychological Society from 2020-2022.

We launched a new minor in Kaupapa Māori Psychology, combining traditional psychological theories and methods with Te Ao Māori. This innovative new programme will develop graduates who are more culturally aware, understand the myriad ways Indigeneity affects mental health, and generally embrace more holistic views about wellbeing.

We lifted the cap on our Bachelor of Nursing programme from 40 to 130 students and launched a Master of Nursing Practice enrolling 50 students with the first intake. Both programmes have a unique focus on mental health, and more clinical hours than any other provider in New Zealand, mostly in community health settings.

Dr Bridgette Masters-Awatere (Te Rarawa, Ngāi te Rangi, Tūwharetoa ki Kawerau) — head of our Community Psychology programme — was recognised at the 15th Kudos Awards Showcase in 2022, receiving Te Whatu Ora Waikato Medical Science Award for her tireless work to embed Kaupapa Māori principles into medical and health-related research. Her research paves the way for the delivery of healthcare in ways that work for Māori, ultimately to create better health outcomes. She has dedicated her career to research in this area, informing policy and service provisions at the highest levels of government.

A celebration of the human voice

The Gallagher Academy of Performing Arts at the University's Hamilton Campus is used by a range of performance groups, treating those in its vicinity to a rich and varied soundscape year-round.



The voices of opera students will now feature prominently within this soundscape following the launch of Te Pae Kōkako — The Aotearoa New Zealand Opera Studio.

The studio was formally opened in September 2022 and is the long-held vision of Dame Malvina Major, a Senior Fellow in Music at the University. It is the first of its kind in New Zealand and combines academic rigour with immersive industry training.

Madeleine Pierard, an internationally-recognised opera singer, has returned from London to head the Studio which welcomed its first cohort of students in early 2023. Students will work towards a Master of Music and receive tutoring from an array of experts from across the world with opportunities to take up residencies with Opera Australia, New Zealand Opera and the Auckland Philharmonia Orchestra.

David Kelly accompanies Filipe Manu and Taylor Wallbank at a rehearsal within one of several performance spaces at the Gallagher Academy of Performing Arts

Changing our cultural landscape

The University of Waikato is committed to tackling racism and discrimination in all forms, acknowledging the inherent tension that arises from being an institution founded in settlement history in Aotearoa New Zealand while originating from European university culture and traditions.

Te Aurei is an ambitious programme of work which ensured this important issue remained in the spotlight throughout 2022.

Dr Sarah-Jane Tiakiwai (Te Rarawa, Waikato, Ngaati Awa, Ngaati Pikiao (whaangai)) is the Deputy Vice-Chancellor Māori and key member of the Executive Leadership Team at the University of Waikato.



Highlights from 2022

We launched Te Rautaki Māori (the Māori Advancement Plan 2022-2026), embedding the work of Te Aurei, prioritising objectives for the advancement of te reo Māori, our Māori staff and students and strengthening partnerships with iwi and Māori communities.

Created scholarships for staff to complete our unique one-year Māori language immersion programme, Te Tohu Paetahi, starting in 2023.

Delivered tailored workshops to staff to help grow their understanding of how mātauranga Māori can enrich both our teaching and research.

Embedded recognition of mātauranga Māori into our promotions processes.

We held our annual day of commitment to the Kīngitanga which included a keynote focus on Te Mana o te Wai, the intrinsic connection of water with iwi Māori and the awarding of Te Ātairangikaahu scholarships in partnership with Waikato-Tainui and the Waikato Regional Council.

Enhanced our scholarships aimed at supporting Māori school leavers and created new PhD scholarships for Māori and Pacific peoples including the Academic Pathways Doctoral Scholarship (\$35,000 value) to support career development for future Māori and Pacific academics.

We want our University to be a place where casual and systemic racism have no place, where Te Tiriti o Waitangi is at the heart of the work we do and where mātauranga Māori is treasured.

Women helping Women

The Waikato Women in Leadership programme went from strength to strength in 2022, providing unique opportunities to emerging female leaders within the University to build capability, confidence and networks.

The programme runs from April until November and was launched in 2021. It includes one-on-one mentoring, peer mentoring by colleagues and monthly workshops delivered by in-house experts exploring topics ranging from cultural leadership, work/life balance, career planning and finances.

Professor Robyn Longhurst was one of the key players in bringing this programme to life.

"Given that we have a number of women in senior roles including three women in Deputy Vice-Chancellor roles at the University, we saw an opportunity to create a community and forge a pathway for other women to move into these roles".

"We have had great support, particularly from our mentors. Without them the programme wouldn't exist. Last year we had more women apply than we could accept so we know there is real demand."

Dr Melanie Ooi participated in the inaugural programme in 2021, and came back as a mentor in 2022. She says the mentorship aspect of the programme has been incredibly rewarding.

"Being part of this Leadership Programme as a mentor, watching my mentee progress throughout the year and then getting her feedback that I have made a positive contribution to her career growth makes me feel like I did my own mentor proud. It's more rewarding than a successful grant application!"



Participants and mentors of the 2022 Women in Leadership Programme

Places and spaces for all

Enhancing the campus experience for disabled students

The University of Waikato proudly launched a Disability Action Plan in 2022 following extensive consultation with staff and students. This work was led by Dr Patsie Frawlie who is well known for her research in disability and inclusion studies.

The Plan seeks to improve the education experience of disabled students, who are a key part of our diverse student body.

It sets out clear goals for creating a safer and more inclusive learning environment and improving accessibility, ultimately to lift achievement and make it easier for disabled students to engage in all aspects of University life.

Tackling ableism in sport

Dr Rob Townsend is a key member of the Disability, Sport and Active Recreation Research group at the University of Waikato which provides support and guidance to the disability sport sector.

He is currently a part of two ground-breaking research teams — funded by The Royal Society Te Apārangi and Health Research Council — investigating ableism across sport and physical activity.

He is passionate about addressing the many complex issues which deter disabled people from keeping active and participating in sport, from policy at the highest levels to one-on-one coaching dynamics.





The Environment

Te Taiao

Our work to address climate change, protect our natural environment and green our communities.

Clues from yesterday guide plans for tomorrow

Dr Terry Isson was awarded a prestigious Rutherford Discovery Fellowship in 2022 for his research into climate regulation on earth over its multi-billion-year history.

The Fellowship will help him to progress his work in investigating intricate processes within the global carbon cycle, with a focus on silicate minerals and how they can help absorb carbon directly from the atmosphere.

If proven, the process will not only provide a pathway to carbon reduction, but will also provide farmers with a concrete way to offset their carbon footprint.

Recent modelling suggests the process has the potential to reduce New Zealand's carbon emissions on the million-tonne scale, but the idea needs to be rigorously tested in the field.

The research has received seed funding and feedstock from Ballance Agri-Nutrients, and there are ongoing discussions with the Ministry for Primary Industries on the topic.

In addition to the Rutherford Fellowship, Dr Isson leads two other externally funded research projects and is a Senior Lecturer at our Tauranga Campus. He also leads the Earth-Life Interactions research group, where he fosters budding geochemists, including graduate and undergraduate students and postdoctoral researchers. In all of his work, Dr Isson is driven by a desire to better understand the processes that regulate the global carbon cycle and the mechanisms that give rise to global climate stability.

This project will test the idea that we might be able to harness the power of silicate minerals to curb the escalating planetary fever and potentially take us one step closer to achieving carbon neutrality.

Dr Terry Isson



Shaping the national debate on the future of peat

With drained wetlands hitting headlines in early 2022 as peat fires smouldered around the country, Dr David Campbell played a key role in shaping the public debate that ensued, providing expert scientific commentary and advocating for transforming these areas into powerful carbon sinks once again.

Over 90% of wetlands in New Zealand have been drained for farmland over the last 100 years, resulting in the release of locked-in carbon on a massive scale.

Dr Campbell and several other researchers within the School of Science have spent decades investigating this very topic, making

a compelling case for reflooding and restoring many of these areas and embracing paludiculture or 'wet farming', similar to that seen in The Netherlands. Their combined work is providing a guiding light to environmental decision makers across the country.

A circular economy for Aotearoa — a roadmap for change

Āmiomio Aotearoa is a transdisciplinary research programme led by the University of Waikato and funded by the Ministry for Business, Innovation and Employment (MBIE).

The overarching objective is to develop a circular economy for the wellbeing of Aotearoa New Zealand that represents a socio-economic concept firmly rooted in both mātauranga Māori and western science. The first of the three research aims is creating a blueprint for the Āmiomio Aotearoa concept, informed by our unique bicultural history.

This aim is led by researchers from the Te Pua Wānanga ki te Ao Faculty of Māori and Indigenous Studies and the Waikato Management School. Professor Tom Roa (Ngāti Maniapoto, Waikato-Tainui) and Dr Jason Mika (Tūhoe, Ngāti Awa, Whakatōhea, Ngāti Kahungunu) alongside Professor Les Oxley are leading this mahi supported by Professor Sandy Morrison (Ngāti Maniapoto, Ngāti Rarua, Te Arawa).



Highlights from 2022

Institute leads the way in blending Māori knowledge with western science

Te Tumu Whakaora Taiao (Environmental Research Institute) is focused on developing transformative solutions to the many environmental challenges we face, blending western science with mātauranga Māori every step of the way. The team is led by two co-directors, microbial ecologist, Dr Charles Lee and freshwater expert, Dr Tim Manukau. They embrace technology and work closely with the community to achieve environmental change that is both holistic and enduring.

Leading with Matauranga Māori in marine science

We are proud of the strong and growing contingent of wāhine Māori marine scientists based at our Tauranga campus, led by Kura Paul-Burke (Ngāti Awa, Ngāti Whakahemo) who was promoted to Professor in 2022 and is now among only three Māori marine scientists in New Zealand. The group of marine scientists are mainly focused on restoring degraded kaimoana in the region, incorporating customary practices and materials and working with the community every step of the way.

Bachelor of Climate Change attracts corporate support

Insurance company Tower pledged \$45,000 over three years to support students in a world-first Bachelor of Climate Change degree at the University of Waikato, becoming the first corporate supporter of scholarships for the degree. Tower's contribution recognises the value of nurturing a workforce with a comprehensive understanding of climate change to lead New Zealand's transformation towards a zero-emissions society.

Scientist recognised for revealing Antarctic secrets

Associate Professor Charles Lee is Co-Director of Te Tumu Whakaora Taiao — Environmental Research Institute and, in 2022, received an award from the Kudos Science Trust for his work examining microbes in Antarctica, which revealed the instability of the icy continent's ecosystems. The Award also recognised his efforts leading large research programmes designed to inform environmental management policy in Antarctica, which is a unique archive of our past, a critical player in our present and vital key to our future.

Keeping tabs on our resident Great Whites

A research project focused on learning more about Great White Sharks in the Bay of Plenty region kicked off in late 2022, spearheaded by a team of researchers from our Coastal Marine Field Station including Dr Phil Ross, Professor Chris Battershill and Masters student, Melissa Kellett. The trio worked alongside local iwi, fisheries scientists and other shark experts, and included many opportunities for citizen scientists to get involved. The project came about after a growing number of Great White sightings in the Region. It is hoped the findings will help allay growing fears in the community and provide guidance to local authorities about the resident shark population and their behaviours and movements.

Lifting the lid on the sex life of spiders to shed light on evolution

Behavioural ecologist Dr Chrissie Painting received a Marsden Fast-Start grant in 2022, to further her research into the extreme variation seen in the mating habits of spiders. Her research is ultimately geared at uncovering why monogyny exists within a species, thereby painting a broader, more nuanced picture of evolution.



Teaching
and Learning

Te Ako

Our work to enrich the minds of the next generation and equip them with the skills needed to tackle the problems of tomorrow.

Literacy done right

Dr Melissa Derby (Ngāti Ranginui) is a researcher with a passion for developing literacy skills in young children in a culturally responsive way, setting them up with essential skills for life.

In 2022, Dr Derby was awarded the prestigious Royal Society Te Apārangi Te Kōpūnui Māori Research Award for her work to strengthen bilingual preschool children's early literacy skills in both te reo Māori and English. Her research draws from Māori oral traditions and teaching approaches to create a literacy programme that is culturally responsive and connects with whānau to foster complementary in-home learning.

In her award-winning doctoral study, Melissa drew from Māori oral traditions and pedagogical approaches to co-create a literacy programme aimed at strengthening bilingual preschool children's early literacy skills in te reo Māori and English.

She then used her findings to co-write Talking Together: He Kōrerorero, a resource that strengthens kaiako and whānau practice in fostering early literacy skills. Melissa also runs workshops in developing children's early literacy skills.



Dr Melissa Derby doing what she does best, supporting literacy in a bilingual preschool setting.

New programme paves way for careers in science and technology

The University is proud to have partnered with the Pūhoro Pūrau/STEMM Academy, which officially launched in the Waikato in 2022 and aims to support Māori students into careers in science and technology. Pūrau is a Māori concept encompassing Science, Technology, Engineering, Mathematics and Mātauranga.

A key goal of the partnership is to remove barriers to tertiary study in these subject areas, nurturing relationships between high school students and University staff over many years and showcasing the varied career pathways.

Throughout 2022, University of Waikato kaihautū visited students on the programme at their schools for one hour, once a week on subjects such as computing, coding and mathematics as well as cultural identity.

The students also came together for one-day wānanga, once a term.

In September, this wānanga saw 76 students spend the day at our Hamilton campus, hosted by staff from the School of Computing and Mathematical Sciences. They participated in a range of activities and workshops based around Waikato-Tainui pūrakau linked to STEMM subjects.



Waikato University staff are able to provide exposure to a range of programmes and offerings which, when coupled with industry and career exposure, enable students to develop a line of sight from secondary school, through tertiary and into high value STEM employment.

Naomi Manu
CEO of Pūhoro
Charitable Trust



Orienting students to issues that matter

Launched in 2022, the Impact Lab is a unique programme delivered through the University's Work-Integrated Learning papers.

It provides an opportunity for students from all disciplines to collaborate on specific challenges being faced in the community and within industry, helping them to stand out in the job market when they graduate and hit the ground running.

Students on the programme work in multidisciplinary teams alongside community and industry partners, combining the

knowledge and skills they have acquired through their studies to solve a specific challenge.

In 2022 these projects included working with the business community in Tauranga on sustainable transport options in and around the growing city and with a community group in Hamilton with the goal of rejuvenating the iconic 'Trees at the Meteor' event.

Highlights from 2022

We launched a nine-week course aimed at equipping teacher aides with the skills needed to support students with complex learning needs and provide them with a much-needed professional development pathway.

We remained committed to flexible delivery of courses, incorporating a mix of traditional lectures and activity-based learning on campus, with online alternatives and supplementary learning made available wherever possible.

We welcomed our first cohort of students into the world-first Bachelor of Climate Change programme. The three-year course combines science with an understanding of economic, social and political systems, plus Māori and Pacific responses to climate change.

We developed a series of new teaching resources through the Science Learning Hub to coincide with the new Matariki public holiday, with a focus on how Māori used tools like the stars to track changes in the environment and how we can learn from this to help mitigate climate change.

We addressed the teacher shortage through the Auckland Schools' Teacher Training Programme, delivering an abridged teaching diploma to students on sponsored placements within 20 participating schools.

We increased the cap on our popular Bachelor of Nursing programme (launched in 2021) from 40 to 130 and launched a new Masters of Nursing Practice programme with 50 students in the initial intake.



Safety

Te Haumaru

Our work to create a fairer, safer, more peaceful world, protecting those who are vulnerable and addressing long-standing inequities.

Unleashing the potential of data for Māori

Tikanga in Technology is a five-year research programme funded by MBIE and led by researchers at the University of Waikato.

It is focused on ensuring Māori interests are fairly represented when it comes to all things data — how it is collected, how it is stored and how it is used. Two years in, the team has well and truly hit its stride, nurturing a growing community of data innovators around the country who are unleashing the true potential of astute and proactive data management in

ways that will improve the health and wellbeing of Māori communities and the environment. Throughout 2022, the team delivered monthly webinars, exploring a raft of topics associated with Indigeneity and data, shining a spotlight on issues within a Covid-19 context, and the risks and opportunities for Māori in artificial intelligence.

Keeping our people safe

We care deeply about providing a safe and respectful environment for all of our staff and students and helping those struggling with their work or learning because of issues at home to get the support they need.

In 2021 we established specialist family violence social work roles to provide discreet support to those dealing with violence at home. In 2022 we introduced a comprehensive new policy and set of procedures to make our zero-tolerance stance on sexual violence clear. These new tools provide a safe way for victims to report incidents and also give guidance to our people leaders to ensure these sensitive matters are handled robustly and respectfully.



Law degree now offered in Tauranga

We launched a full suite of Law papers at our Tauranga campus in 2022, building on the Diploma in Law which has been offered for several years. The new offerings now make it possible to study a full Bachelor of Laws (LLB) and even a PhD at the Tauranga Campus, providing an important pathway for local legal executives eager to transition to being a lawyer.



Crime the focus of global partnership

An international collaboration between University of Waikato's Te Puna Haumarū—New Zealand Institute for Security and Crime Science (NZISCS) and the Security, Crime and Intelligence Innovation Institute (SCII) at Cardiff University has shed light on some of the most important issues facing society today—and consolidated a valuable relationship in the process.

Staff from across the two universities combined for a three-day event in November 2022, components of which were offered both online and in-person at hubs in Hamilton, New Zealand and Cardiff, Wales. The wānanga brought

together over 90 people across the two institutions, sharing knowledge around contemporary crime and security, including violence risk assessment, cybercrime, and counter terrorism and extremism.

Strong global partnerships mean our staff and students have access to global experience and expertise. Together, we increase the global impact of our research and contribute to global challenges.

Cath Battersby
Associate Director for Global
Engagement and Partnerships

Nurturing the next generation of cyber sleuths

The national Cyber Security Challenge, led and hosted by the University of Waikato, continued to grow in popularity in 2022, shining a spotlight on the ever-evolving issue of cybercrime.

Now in its ninth year, the event began with an online competition, with 150 finalists then selected to attend an on-campus event over two days in July. The event attracts young cyber enthusiasts from high schools and tertiary institutions as well as industry professionals, providing a valuable opportunity for them to network and learn from each other, while competing in a series of challenges.

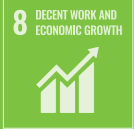


Protecting the core networks of big industry

Building on our strengths in cybersecurity over many years, we were proud to see our spin-out company, First Watch, continue to evolve throughout 2022.

WaikatoLink, our commercialisation team, oversees First Watch and develops and licenses cybersecurity software for industrial control systems. These systems have become increasingly vulnerable to cyber attacks as smart technology is now commonly used, alongside software and hardware, to maintain critical infrastructure in manufacturing,

wastewater treatment plants and electricity networks. In 2021, the company received a \$3.2 million investment from CTEK Ltd to take its product from proof-of-concept to first sale. In 2023, the team started installing its technology in Australian sites and now has Southeast Asia in its sights.



Prosperity

Te Tōnuitanga

Our work to build a resilient economy, develop leadership potential and support businesses to thrive in sustainable ways.

50 years as a trailblazer in business education

In 2022 the Waikato Management School celebrated its 50th anniversary, pausing to reflect on the bold spirit of innovation that remains hardwired into its DNA.

The Waikato Management School was born out of a desire to do management and commerce training differently, with the goal of being broader and more holistic than traditional business schools. From the outset, this required academics across different disciplines to work collaboratively, ensuring graduates entered the workforce with a range of skills, giving them more flexibility in their careers and setting them up for progression into leadership roles.

The School's offerings have evolved considerably over 50 years, anticipating

and responding to the needs of the business community, advances in technology and global issues. Its ongoing success is underpinned by deep connections with alumni and industry, commitment to experiential learning, world-leading research and strong global networks.

Pro Vice-Chancellor Matt Bolger is now driving the future direction of the Waikato Management School, with sustainability at the centre and an ongoing commitment to providing a holistic student experience, with work-integrated learning a core component of every degree.

Today's business graduates need to be able to work across disciplines to solve current and future problems. We need people who have great technical and business skills, but also people who are good at working with others and building relationships, with good communication and conceptual thinking skills.

Pro-Vice Chancellor
Matt Bolger



Highlights from 2022

NZ Economics Forum returns — bigger and better

The Waikato Management School proudly hosted the New Zealand Economics Forum for the second consecutive year, focusing on the challenges and opportunities brought about by the Covid-19 global pandemic. The event brought together top economists, business and social leaders, and public sector officials and provided valuable insights at a time of intense scrutiny on the state of the New Zealand economy. The Waikato Management School has the highest concentration of world-class economists for any New Zealand university, with a number one ranking for economics research (average quality score) in the Performance-Based Research Fund 2018.

Nurturing leaders for tomorrow's world

The Waikato Management School launched a new Leadership Academy in 2022 with the aim of growing the capabilities, confidence and character of ambitious and self-motivated high school students in their final year. Students accepted into the Academy worked collaboratively alongside an exceptionally diverse group of peers from across the Waikato region for seven months. They received training led by University staff on a range of topics pertaining to leadership development in addition to many networking activities, guest speakers and workshops with influential leaders.

Feedback from schools was resoundingly positive and the programme was subsequently expanded to provide this great opportunity to even more young leaders in 2023.

Supporting Māori businesses to thrive

Dr Jason Mika from the Waikato Management School has taken giant strides in his research to understand how Māori businesses tick, ultimately to help them thrive. In 2022, he secured prestigious Marsden (Fast Start) funding from The Royal Society Te Apārangi. He will use the funding to answer questions around what it means to be a Māori firm, a Māori manager, and to manage a business in a Māori way, by constructing a kaupapa Māori theory grounded in Indigenous management philosophy. This will include analysis of Māori business data and working directly with Māori who engage in entrepreneurial activity to share knowledge and collaboratively work on solutions.

Buoying a pandemic- fatigued workforce

Having dedicated her career to exploring issues around leadership and workplace wellbeing, Associate Professor Maree Roche from the Waikato Management School knows only too well the pandemic has had a significant and enduring impact on businesses across the country. In the lead-up to the 2022 Budget, she helped to shine a timely spotlight on plummeting workplace productivity and employee engagement following Covid-19, recommending more targeted support to help businesses grapple with these issues in meaningful ways.

She also called on the New Zealand Government to pay careful consideration to the changing nature of work with more targeted support and guidance on matters like diversity in the workplace and development pathways for skilled workers.



Technology
and Innovation

Te Pūnaha Hiringa Whakaea

Our work to harness the potential of emerging technologies and develop creative solutions by working side-by-side with industry and the business community.

New research lab in the bay

The Blue/Green Lab is our new research and development space in Tauranga focussed on engineering and technology for the primary industries sector with a special emphasis on horticulture.

After formally launching in mid-2022, the Lab swiftly became a hive of activity, bringing together multi-disciplinary teams to accelerate progress towards robotic solutions for local kiwifruit growers and marine-derived bioactives for widespread use in horticulture, to name but a few.

It is a place for University staff and students to grow capability in the Bay of Plenty Region while embracing cutting-edge technology and collaborative ways of working with community experts. It also serves as an excellent space to showcase a range of exciting tertiary career pathways to STEM-minded high school students.

Blue initiatives bloom

Thanks to a new fish farming licence secured in 2022, our Tauranga-based aquaculture researchers are now one step closer to large-scale cultivation of seaweed and freshwater algae with the local environment set to benefit in myriad ways.

The new licence paves the way for partnership, investment and growth in this burgeoning niche within the blue industry while providing a rich training ground for our students and researchers.

Dr Marie Magnusson leads the team of researchers and has been instrumental in the research and community connections developed to date, in addition to the state-of-the-art macroalgal facility built in 2020.



High-tech solution makes light work of harvesting

Researchers from the School of Engineering took out the Prototype Award at Fieldays Innovations Awards in 2022 for their electronic fruit bin called e-BIN that assists in harvesting of kiwifruit using automation technology.

Like many others in the horticultural industry, kiwifruit growers have experienced huge challenges finding seasonal workers who are willing to take on this very physically demanding task each year. Traditionally, it has required each person to carry a large bag that they fill as they pick. Once filled it can weigh about 25kg and needs to be emptied into a larger bin.

With the e-BIN—which is on wheels—a group of four people walk alongside it as they pick, dropping each kiwifruit into a fruit catcher. A net cushions and secures the fruit, before it rolls down and comes to rest in the main bin.

The project was sponsored by Zespri, led by Nick Pickering from the School of Engineering, and involved a range of industry experts, other Waikato academics and students.

Together, their challenge was to find a solution that was technically feasible, financially viable and most importantly, kept people employed. Ultimately this required making the task itself more attractive, recognising there are many people who love to work outdoors but simply cannot handle the weight and the regular bending involved in the harvest.

Mr Pickering says the e-BIN has already been put to the test, first with 3D printed fruit and then out in the field, with researchers looking at a number of factors including productivity and fruit damage. The results are promising in terms of the e-BIN's ability to reduce fatigue and safely operate in an orchard environment.

The winnings from Fieldays will be used for further trials before moving into a commercialisation phase.



It's a basic concept and it links the desirability, financial feasibility and practicality in a very simple solution.

Nick Pickering
School of Engineering

Highlights from 2022

High-tech imaging for high-yield horticulture

Dr Melanie Ooi took giant strides in her research which uses hyperspectral imaging technology to support the horticultural industry with a particular focus on medicinal cannabis. With the help of a Rutherford Discovery Scholarship, she has played a key role in advancing a sensor system to improve crop quality and consistency and support agile, real-time plant management and decision-making.

Collaboration for innovation and preservation

A unique collaboration between researchers from our School of Computing and Mathematical Sciences and a Bay of Plenty iwi has given rise to an app that preserves and celebrates waiata unique to the tribe. The Whakatōhea Waiata App was in the spotlight at TechWeek 2022, and other regional events showcasing 'tech for good'. The app makes use of a location-based framework called Tipple developed by Professor Annika Hinze. Professor Hinze played a leading role in this inspiring example of collaborative research which has provided a springboard for many other collaborations with the iwi, all aimed at preserving and sharing Whakatōhea history.

New pathway for aspiring Māori and Pacific academics

PhD student Ahuroa Leach (Ngāti Porou, Te Whānau a Kai, Te Aitanga-a-Māhaki and Rongowhakaata) was the first recipient of our new Academic Pathway Doctoral Scholarship, designed to help set more Māori and Pacific students on a pathway into academia. His PhD will focus on unleashing the power of waves and wind to provide affordable electricity to New Zealand's most impoverished coastal communities. The unique scholarship enables recipients to study at universities outside of Waikato, with the intent that they return into an academic role. Ahuroa is planning to join Trinity College in Dublin, which has a large offshore energy research centre funded by the European Commission.

Nurturing research that matters side-by-side with industry

We launched a new partnership doctoral scholarship in 2022 which provides support to students in their study towards a research degree, funded in collaboration with an external organisation. These unique scholarships strengthen our links with industry partners, nurturing emerging innovative research in areas of high priority. While there are no set number of these scholarships available each year, they start at \$27,500 in value — the amount of a standard University of Waikato Doctoral Scholarship.

Science key to growth and integrity of mānuka honey industry

Dr Megan Grainger from the School of Science was recognised for her contribution to the multi-million dollar mānuka honey industry when she took out the Hamilton City Council Emerging Scientist category at the Kudos Science Awards in 2022. Dr Grainger's early research focused on identifying the compound behind UMF, culminating in a signature 'fingerprint' for NZ mānuka honey. In recent years her focus has turned to examining the impact of toxins on bee health, the enzyme reactions which result from poorly stored honey and a test to detect adulteration of honey.

Clues from Antarctica a game-changer for biochemistry

Dr Adele Williamson secured prestigious MBIE Smart Ideas funding in 2022 to build on her extensive research into microbes in Antarctica, helping to unravel the mystery of how they survive in such harsh conditions. The new funding will help her develop a platform for synthesising artificial versions of natural DNA and RNA, or XNAs, with the potential for making significant advances in the fields of biosensing, diagnostics and therapeutics.

Aquaculture researchers in the spotlight

Sea lettuce key to cleaning up waterways in Thames

Waikato algal scientists are playing a critical role in a project focused on restoring waterways in the Firth of Thames. They are working alongside AgriSea which pioneered the seaweed industry in New Zealand. The collaborative project will see sea lettuce grown at Kōpū Marine Precinct in the Coromandel, with the aim of using it to soak up the nutrients that freshwater plants are currently unable to absorb. Seaweed, unlike many plants, does not have root systems and grows by pulling nutrients from the surrounding water.

Growing the aquaculture industry in Coromandel

Dr Marie Magnusson and Dr Rebecca Lawton are overseeing the research component of a \$5 million pilot project led by EnviroStrat which will see seaweed plants, grown in our unique algal facility in Tauranga, later planted in consented aquaculture space south of Coromandel Town, and off Ponui Island. This highly innovative project aims to establish economically viable ocean farming with an environmental purpose by propagating the key native kelp species known as Ecklonia radiata. The brown kelp is an important species in the ecosystem and has never been harvested from the wild.

Treating wastewater the algal way in Te Puke

Associate Professor Marie Magnusson and her team developed a system to allow bioremediation of wastewater by freshwater macroalgae at Te Puke wastewater treatment plant as part of a local collaboration with Aqua Curo. The pilot bioremediation plant, which was formally launched in February 2022, uses algae to remove excess nutrients—like nitrogen and phosphorus—from the wastewater as a last clean-up step before it is released back into our waterways. It is the first scientific trial of its kind in New Zealand and uses unique engineering solutions, with huge potential for commercialisation beyond the trial.

Glossary

Hāngī

Food cooked in an earth oven with steam and heat from heated stones.

Hauora

An all-encompassing concept of health and wellbeing that includes physical, mental, social and spiritual health.

Kaihautū

Leader or mentor.

Kaimoana

Seafood or shellfish.

Kapa haka

Māori cultural group, Māori performing group.

Kaupapa

Topic, policy, matter for discussion, plan, purpose, scheme, proposal, agenda, subject, programme, theme, issue, initiative.

Kōrero

Discussion or conversation.

Kī-o-rahi

A traditional ball game played with a small, flax ball.

Kura

A school based on Māori culture and values where lessons are conducted in te reo Māori.

Mahi

Work or accomplishments.

Marae

A complex of buildings and grounds that belong to a particular iwi (tribe), hapū (sub-tribe) or whānau (family). Māori see their marae as their tūrangawaewae—their place to stand and belong.

Pūrākau

Myth, ancient legend, story.

Te Ao Māori

The Māori worldview which acknowledges the interconnectedness and interrelationship of all living and non-living things.

Te Ātairangikaahu

A reference to Te Arikinui Dame Te Ātairangikaahu, the first Māori Queen and a passionate champion of Māori culture and language.

Te Tiriti o Waitangi

New Zealand's founding document. It is an agreement entered into by representatives of the Crown and of Māori iwi (tribes) and hapū (sub-tribes). It is named after the place in the Bay of Islands where the Treaty was first signed, on 6 February 1840.

Tikanga

Customs, protocols and procedures.

Mātauranga Māori

A holistic, dynamic and continually evolving knowledge system involving generational observations and experiences. The term takes many forms, such as language (te reo), education (mātauranga), traditional environmental knowledge (taonga tuku iho, mātauranga o te taiao), traditional knowledge of cultural practice, such as healing and medicines (rongoā), fishing (hī ika) and cultivation (mahinga kai).

Wāhine

Females, women.

Wānanga

Conference, forum or educational seminars. Can also mean tribal knowledge, lore, learning. Important traditional cultural, religious, historical, genealogical, philosophical knowledge.

Whānau

Family or family group.

Whareniui

Meeting house or main building of a marae where guests are accommodated.



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