

# Whaioranga Taiao Whaioranga Tangata

Sustainability Report 2023:  
Our work towards a better world



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*





# About this report

Whaioranga Taiao, Whaioranga Tangata is a record and a celebration of our interconnected work at the University of Waikato to build inclusive and equitable communities, and a thriving and healthy environment.

This report demonstrates our commitment to the United Nations' 17 Sustainable Development Goals (SDGs) through four key areas:

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## Teaching

How we are inspiring the next generation to create a better tomorrow by focusing on the biggest issues facing humanity today.

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## Research

How we are making an impact through our innovative and collaborative research, recognising we are stronger when we work together.

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## Operations

How we are prioritising the wellbeing of our staff, creating a diverse and inclusive work environment, and constantly innovating to reduce waste and be smarter about our energy usage.

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## External engagement

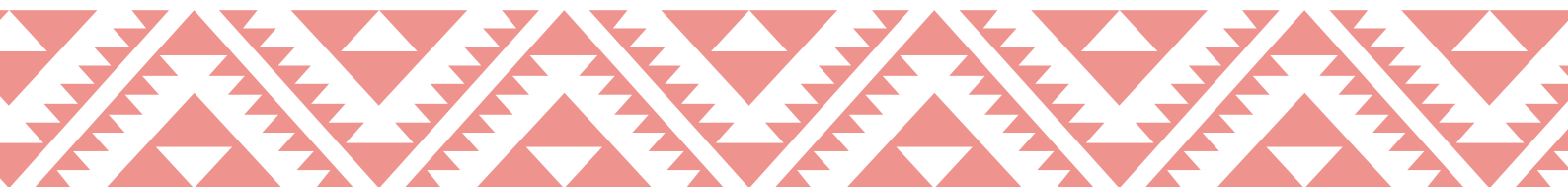
How we are creating authentic connections in our own communities and across the world.

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# A message from the Vice-Chancellor



*Photo by Stuff Limited*



## The United Nations' Sustainable Development Goals underpin our work at the University of Waikato as we strive to build a healthy and connected environment and support fair and inclusive communities.

This report outlines our proudest achievements in 2023 in pursuit of the 17 SDGs, and illustrates how our research is helping to address some of the most important challenges facing humanity.

Our ranking in the top 100 universities worldwide in the 2024 QS Sustainability, and Times Higher Education rankings affirms that our work is creating a real impact. We know that solutions are not found in isolation, so our researchers are forging multidisciplinary collaborations both on our shores and internationally to address the challenges of tomorrow.

Our health researchers are working across the health workforce and with community groups to improve health outcomes for our poorest and most marginal communities.

Our engineers are developing technologies to transition to sustainable energy and meet the global

commitment of New Zealand to carbon neutrality.

Our educators are connecting with international counterparts to ensure our children today are set up to continue our work in future generations to come.

On campus our Carbon Reduction Plan 2022–2025 continues to positively impact energy savings and has seen us install solar arrays and roll out a new fleet of electric vehicles.

The opening of The Pā in 2023 showcased a number of sustainable features including structural timber beams in place of steel, thermodynamic glazing and grey water collection. The building's cultural narrative further celebrates our diverse campus acknowledging our history and cultural heritage.

**Professor Neil Quigley**  
*Vice-Chancellor*

# Championing transformational change

In 2023 we adopted a distributed model of sustainability leadership, in the form of Sustainability Champions, to catalyse and support transformational change in all aspects of our University.



"Our Sustainability Champions are building relationships across our campuses and wider communities to inspire action and encourage change, while fostering a culture of environmental stewardship at our University."

*Professor Lynda Johnston*





This leadership model specifically addresses our University Strategy to "Foster leadership of sustainability across all areas of the University".

Sustainability Champions reach all areas of our campuses and bring like-minded staff and students together, forming networks to help implement the Sustainability Plan.

Our Champions are vital for normalising sustainability and advancing the SDGs throughout all operations. They also help to create a vibrant sustainability culture. Champions are often at the forefront of new ideas and strategies for sustainability, as well as forming strategic links and networks across the University and in our many communities.

Champions meet regularly to work on issues, such as waste management and the reduction of fossil fuel travel by staff and students.

Our Champions have been busy over the last year:

- Providing input for the University's travel policy so that we can reduce our greenhouse gas emissions
- Creating, distributing, and analysing sustainability surveys across campuses
- Promoting and supporting the use of the University's new Electric Vehicles (EVs)
- Engaging in waste audits and educating staff and students about waste reduction
- Working with Hamilton City Council to advance the creation of protected cycleways between the University and Hamilton's CBD.

**Professor Lynda Johnston**  
*Assistant Vice-Chancellor Sustainability*

# Driving carbon emissions down



## The University began replacing more than half of its existing vehicle fleet with Electric Vehicles (EVs), to reduce emissions for a more sustainable future.

The major upgrade is expected to reduce scope one emissions by 183 tonnes annually. Scope 1 emissions are direct greenhouse gases from sources controlled or owned by an organisation. For example, emissions associated with fuel combustion in vehicles.

The first rollout of our new EVs was met with much fanfare in late 2023. The vehicles and a suite of new EV charging stations have also enabled the University to streamline processes for staff. For example, the keyless systems mean no longer having to physically collect and return keys, and staff can simply park up, charge and walk away at the end of a long day.

By the end of the rollout, the University will have nearly 80 EVs available to employees.

The fleet upgrade has been supported with operational co-funding from EECA (the Energy Efficiency and Conservation Authority), which the University matched.

Moving to EVs was a natural next step for our journey towards a more sustainable University and region. We are now exploring a variety of ways to reduce 'indirect scope three emissions'. These include emissions from staff and students commuting to and from campus in private cars.



# Our University at a glance

Enduring partnerships with Māori, business and industry, research collaborators, and our community are at the heart of our University. We are driven by our commitment to a fairer, safer, and more sustainable world.

The Pā, a landmark building underpinned by cultural narratives, provides a haven and gathering site to be configured for celebrations, learning, and events for the University community

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Meeting community and industry needs with smart postgraduate degree options

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Authentic work-integrated options for all students

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Continued upgrades to our facilities and labs for world-class learning experiences

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Scholarships and targeted programmes support, value and encourage diversity in our student populations

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The development of Sustainability Champions to lead sustainability on our campuses

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Award-winning educators innovating on best practices to promote positive educational outcomes

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Extensive 65-hectare, tree-planted campus in Hamilton

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Pioneering health researchers leading the charge toward equitable health outcomes for all

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Flexible, state-of-the art performance venues

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Modern, award-winning campus in the centre of downtown Tauranga

25%

of students identify as Māori

51%

of leadership roles occupied by women

Equivalent full-time  
domestic students

8,475

Equivalent full-time  
international students

(1312 on-shore, 736 off-shore)

2,048

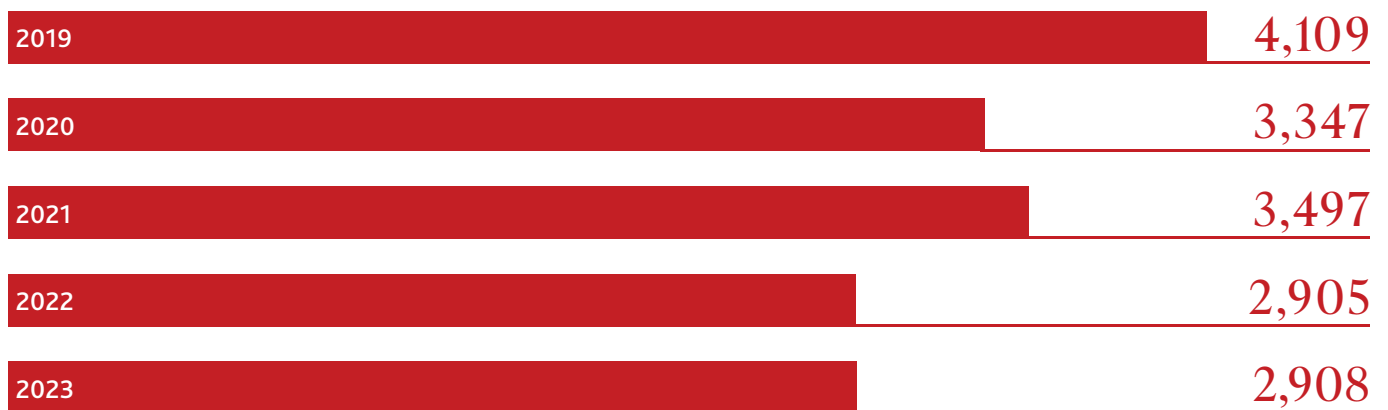
Value of active  
research contracts

\$307m

# Sustainability on campus

## Total emissions

CO<sub>2</sub>-e (Scope 1 and 2)

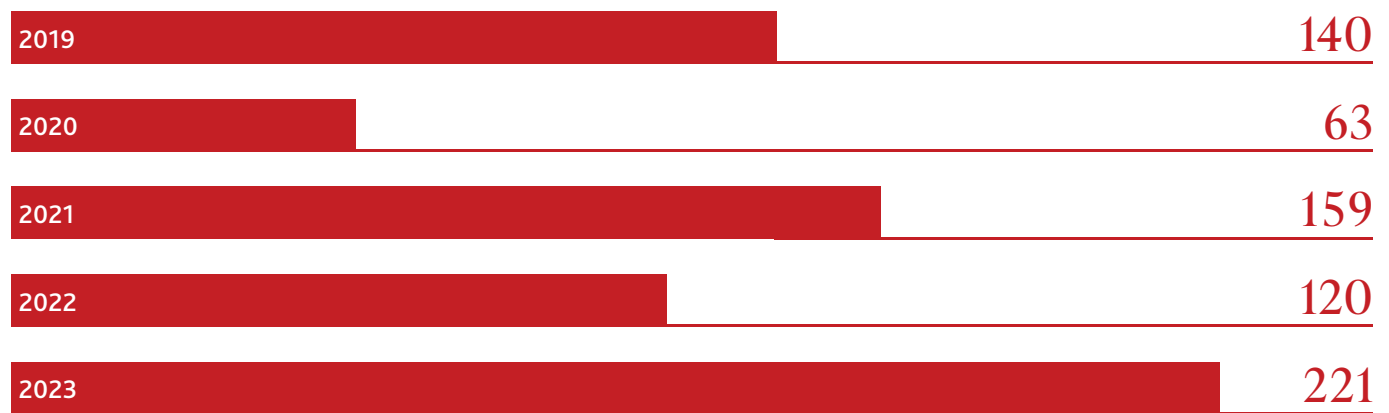


Reduction in emissions  
(against a 2019 baseline)

▼ 29%

# Waste diverted from landfill

Tonnes



# 221

tonnes of waste  
diverted from landfill  
(representing 35% of total waste)

# Water

Cubic metres



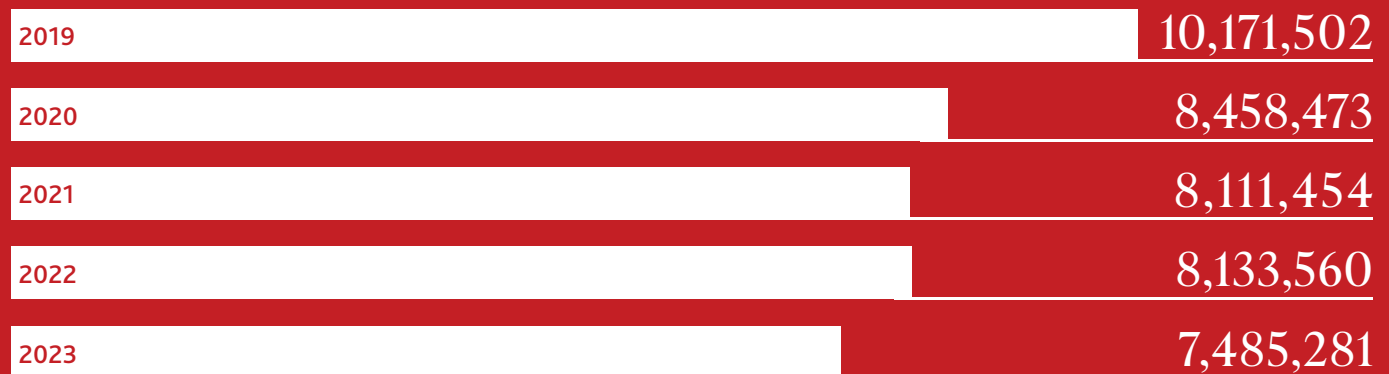
Reduction in water usage  
(against a 2019 baseline)

▼ 28%

# Energy use

## Gas use

kWh



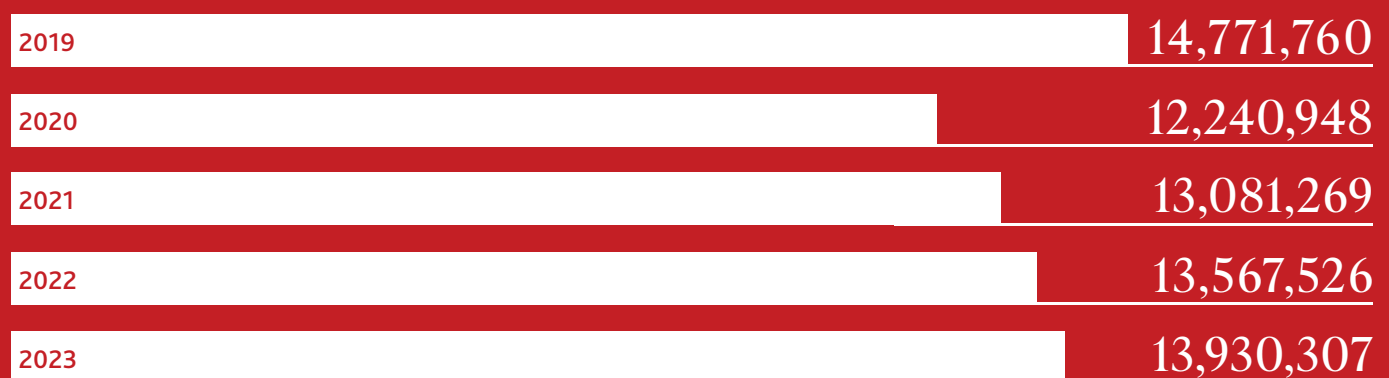
Reduction in gas

(against a 2019 baseline)

▼ 26%

## Electricity use

kWh



Reduction in electricity

(against a 2019 baseline)

▼ 5.7%



# Travel

## Domestic flights (staff)

km



Domestic air travel  
(against a 2019 baseline)

▼ 43%

## International flights (staff)

km



International air travel  
(against a 2019 baseline)

▼ 57%

The background features several large, semi-transparent Maori geometric patterns. In the top left, there is a diamond-shaped pattern with a central square and radiating lines. On the right side, there are two diagonal bands of repeating triangular motifs. The overall design is composed of various shades of blue and white.

The People  
**TE TANGATA**



Our work to bring together people and communities to celebrate, support and collaborate towards a healthy, safe and flourishing New Zealand.

# Māu, māku, mā tatou katoa

For you, for me, for all of us





The Pā – our landmark new building at the heart of the University's Hamilton campus – was opened by Kīngi Tūheitia in July 2023.

Its development reflects the University's commitment to an integrated and accessible campus that facilitates social interaction, hospitality, and culture.

The building's unique design is unparalleled in Aotearoa and possibly the world. Cultural narratives link The Pā to the history and heritage of the site and to the longstanding connections with the Kīngitanga, Waikato-Tainui, and iwi communities throughout the University's catchment.

At The Pā's heart sits Ko Te Tangata, the University's whareniui, and within its wings Te Āhurutanga, the Student Hub, a haven and gathering site for the University community that can be configured to create learning spaces or large University and community events.

Post-pandemic, people and communities have a desire to come together again, and The Pā is a key space for students, staff, and the wider community to gather face to face, kanohi ki te kanohi, to learn, share, and celebrate.

In October 2023 the University's first cohort of 2,000 students graduated at The Pā, celebrating alongside whānau, friends and supporters. It was a historic moment in the University's 59-year history and the fulfilment of a long-held vision.

The Pā also hosted a variety of national and community events throughout 2023 including the Māori Law Society Conference, a gala celebration for the Waikato Engineering Careers Association, and the launch of the 2024 Gallagher Chiefs Jersey.

We know this unique and innovative space will continue to facilitate rich and rewarding connections for generations to come.

# Putting people at the heart of health research





## We are focused on creating bold new pathways to better health outcomes for everyone in New Zealand.

We know different ethnic groups currently experience inequitable health outcomes in the health system. Our researchers are filling data gaps and striving for fairer outcomes.

University researchers are leading projects to improve diabetes management for Māori and Pacific peoples. These include research into the outcomes of prioritising medication access; understanding the

impact of new medications and technologies; and developing better, culturally informed education materials.

Dr Lynne Chepulis, Dr Ryan Paul (Ngāti Maru), and other University researchers including Public Health Professor Dr Ross Lawrenson, and Dr Rawiri Keenan (Te Atiawa, Taranaki) are working across multiple diabetes and primary care research programmes.

# Highlights from 2023

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## CULTURALLY APPROPRIATE RESOURCES

Self-management is critical for patients with Type 2 diabetes. Educational materials are important for them to be able to make effective decisions for their health.

Health researcher Rebekah Crosswell (Whakatōhea) is looking for culturally appropriate ways to update Type 2 diabetes resources for Māori managing this disease. Using te ao Māori principles and tikanga, including whakawhanaungatanga, tino rangatiratanga and Te Whare Tapa Whā, she is analysing existing materials to identify opportunities for improvement.

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## EMPOWERING MĀORI WITH TYPE 2 DIABETES

Using technology, clinical, and kaiāwhina support, Dr Lynne Chepulis is leading research into a primary healthcare model to empower Māori with Type 2 diabetes.

The model will enable patients to better understand and manage their condition, while improving relationships with their primary care providers, leading to better outcomes. The improvements will reduce the need for secondary care and hospitalisations, as better management leads to the considerable reduced risk of diabetes-related complications.

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## THE BEST START FOR ALL BABIES

Kaupapa Māori pregnancy and parenting initiatives provide meaningful and transformational change for Māori māmā hapū (pregnant women) and whānau.

Building on her work on Indigenous birthing knowledge, Dr Nikki Barrett (Ngāti Hauā, Ngāti Porou) is breaking down historic and systematic barriers that limit community and Māori providers from authentically supporting whānau.

She is co-designing a pathway of care for pregnancy and parenting initiatives, reflective of Māori needs and aspirations.

Her work is another step towards a more equitable society, where all babies born will have the best start to life possible.



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## FILLING THE DATA GAPS FOR SLE

University health researchers have teamed up with health practitioners in the community to address significant gaps in the diagnosis and management of the chronic disease, Systemic Lupus Erythematosus (SLE).

Professor Ross Lawrenson and Community General Practitioner Dr Jenny Wong are leading a team using an equity lens, to investigate if there are differences in the diagnostic pathways, referral to specialist care and management of SLE for Māori.

The work builds on earlier research by Biostatistician and Senior Research Fellow Dr Chunhuan Lao, and illustrates how strong links between health providers and University researchers can lead to robust research to make a real difference for individual patients and their whānau.

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## INNOVATIVE PATHWAYS TO BUILD HEALTHCARE WORKFORCE

In response to the chronic shortage of pharmacists in the health workforce, we are establishing a new graduate-entry Master of Pharmacy Practice degree.

About 70% of pharmacists work in a community pharmacy setting, playing a critical role in the delivery of clinically and culturally safe primary care, particularly in regional areas where access to a general practitioner is often limited.

Our innovative and complementary pathway builds on and expands options from existing Bachelor of Pharmacy qualifications. We are addressing pharmacist shortages with the result being better health outcomes for us all.

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## NEW PTSD THERAPY COMMENCES CLINICAL TRIALS

Post Traumatic Stress Disorder (PTSD) is near epidemic levels in first responders: police; firefighters; and paramedics. It places a significant burden on our people, healthcare systems, and economies.

Pacific health experts Dr Apo Aporosa and Dr Sione Vaka are leading clinical trials for a kava-based therapy, responding to international calls to identify new and innovative therapeutic approaches to treat PTSD.

The work will investigate what is happening at the clinical level, for the development of a manual for implementation.

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# Growing the future of women in sport through world-class research

Our researchers are reimagining the field of play for women, whether it is on the field, in the lab, or at the boardroom table.

As fans flocked to the first 2023 FIFA Women's World Cup matches, academics from across the globe convened at the University for the Reimagining Fields of Play: Sport and Gender Research Symposium.

The event celebrated the growing momentum globally to develop the future of women in sport through world-class research.

Sport Waikato, the New Zealand Olympic Committee, and Sport New Zealand representatives attended alongside a cohort of local and international researchers.

# Health and wellbeing for all

Across 2023 the University of Waikato supported and delivered multiple events, activities and outreach programmes across our Hamilton and Tauranga campuses.

Artistic performances, sport, public lectures and outreach support the health and wellbeing of our people and our broader community by providing the opportunity to play, to learn, to celebrate and to thrive.

## HIGHLIGHTS

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Over 18 music recitals and art performances including the University of Waikato Bach Competition and Lilburn Composition Competition.

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A series of free public lectures showcasing world-changing research ideas. Our Kaupapa Kōrero 'Bots vs Beings: How Will AI Impact Your Life and Work?' panel discussion was standing room only.

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Book launches, art exhibitions, and a Latin Film Festival showcased the work of a diverse range of artists.

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STEMfest, the Pacific Island Secondary Students' Speech Competition, Model United Nations Secondary Students Competition, New Zealand High School Esports Championships and the Refugee Employment Expo were some of the many events to welcome young people to our campuses. These showcase to young people their future opportunities and affirm that the University is a place for everyone to be a part of and belong.

The University celebrated Kīngitanga Day with hundreds of kaimahi, tauira, representatives from Waikato-Tainui, school groups, and the wider community gathering at our Hamilton and Tauranga campuses to celebrate the University's special relationships with the Kīngitanga and Waikato-Tainui. The theme centred around Te Manawaroa – resilience. Resilient institutions, people and places are foundational to who we are as a University.

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Our staff facilitated sessions off campus at Hamilton Boys' High School annual Wellbeing Day. They spoke to topics of personal wellbeing and career wellbeing to support the transition of Year 13 students to tertiary education.

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Our sports halls, fields, outdoor pool, courts, fitness island and UniRec played host to clubs, individuals, and the wider community. Thousands of people participated in hosted events including the Weetbix Tryathlon, parkrun and X-Race.



# The Environment

# **TE TAIAO**



Our work to build resilient communities and places, and to address the impacts of climate change, to assure a thriving and positive future for the people, flora and fauna of Aotearoa New Zealand.

# Building community and environment resilience for a better tomorrow

The University of Waikato's new Climate Extremes and Societal Impacts (CLESI) research group is building the resilience of people, industries and the built environment to intensifying weather events driven by climate change.

Led by award-winning climate scientist Dr Luke Harrington, CLESI has scooped funding for three research programmes to better protect our people, their homes, and the environment from the ongoing impacts of the changing climate.

Dr Harrington and CLESI are using a prestigious Marsden grant to understand how drying land could supercharge summertime warming rates in New Zealand.

An MBIE Smart Ideas grant is directed towards honing climate models to identify conceivable record-shattering drought events and heat waves. The work is fundamental to supporting the health and resilience of farms and our primary industries.

A third programme, funded by the Earthquake Commission University Research Programme, is exploring how homeowners perceive and manage risk around extreme rainfall and flooding. When buying a home many of us look to past extreme events to see if a location is 'safe'. But in a changing climate with rainfall intensification, this is going to be an increasingly inaccurate way to understand and prepare for future risks.

In a warming climate, how people and communities assess and adapt to risks is crucial to building resilience against changing weather patterns.

"Cyclone Gabrielle was a potent warning sign of what we face in our future. CLESI are looking at these extreme weather events, their impacts on society, and how we can better prepare New Zealanders for the ongoing impacts of climate change."

*Dr Luke Harrington*





# Climate ambassadors for a brighter future

Secondary school students are contributing to a better climate future, thanks to the University of Waikato's pilot Climate Ambassador programme.

The programme helps build young people's understanding of climate issues by having them work in groups to complete a case study looking at climate issues across disciplines including science, environmental planning, geography, economics, and art activism.

Climate change requires a collaborative effort and diversity of perspectives, and the programme is equipping our future leaders with the knowledge and skills needed to effect positive environmental change to shape a better world.



# Understanding successful pest invaders

Species are on the move globally, but how do they survive in new environments when they get there? Invasive species can negatively impact Indigenous ecosystems upon which key taonga species, and wellbeing, depend.

Dr Ang McGaughran is using genomic tools to test the hypothesis that more invasive species and populations have, or rapidly evolve to possess, a greater range of genetic and physical innovations that allow them to flourish in new environments.

In an ever-changing world, understanding species resilience when their environment changes is crucial. Dr McGaughran's work will aid the restoration of mauri (life force) in local ecosystems, conserve Earth's biodiversity, aid crop management, and control biological invasions.



# Highlights from 2023

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## PROTECTING OUR HOMES INTO THE FUTURE

In a world where wild weather is fast becoming the norm, a team of Waikato researchers are looking at innovative ways to help protect homes and infrastructure.

Professor Iain White, Dr Xinyu Fu, Dr Silvia Serrao-Neumann, Dr Sandi Ringham (Ngāti Kuri) and Dr Rob Bell recognised that current modelling methods fail to consider that urban development and the way we use land will look different in the future.

They are engaging directly with people and agencies involved with urban development, understanding why they build the kinds of things they do where they do, and how policy changes affect their decision making.

The resulting future hazard risk models will contribute to smarter decisions on where and how cities grow, to protect our built environment.

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## NEW CENTRE TO ADVANCE MARINE RESEARCH AND SHOWCASE OPPORTUNITIES FOR YOUNG PEOPLE

Supported by the University of Waikato, the new Raukōkore Marine Research Centre on the East Coast is the University's base for ongoing research in the eastern Moana-a-Toi and Tairāwhiti region.

The centre is geographically important for studying coastal ecosystems' response to cyclone devastation, restoration of seafood stocks, and to advance the growing aquaculture industry.

The centre will also showcase tertiary education opportunities for young people to see how they can be a force for future marine conservation and innovation in marine conservation.

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## **INTERNATIONAL COLLABORATION CONTRIBUTES VITAL EVIDENCE FOR COASTAL ECOSYSTEM RESTORATION**

Oceanographer, Professor Karin Bryan was part of an international team who used computational models to assess the effects of mangrove removal on sedimentation.

The study, published in Nature, showed contrary to common thinking, coastal mangrove removal, guided by knowledge of local-scale effects, cannot stop or mitigate mud-infilling of estuaries to restore previous sandy ecosystems.

The work provides vital evidence for organisations working on local lowland coastal ecosystem restoration. Removing mangroves will not solve sedimentation issues, and solutions will need to be found within the larger scale catchments, for example, the reduction of sedimentation loss from up-stream land-use practice.

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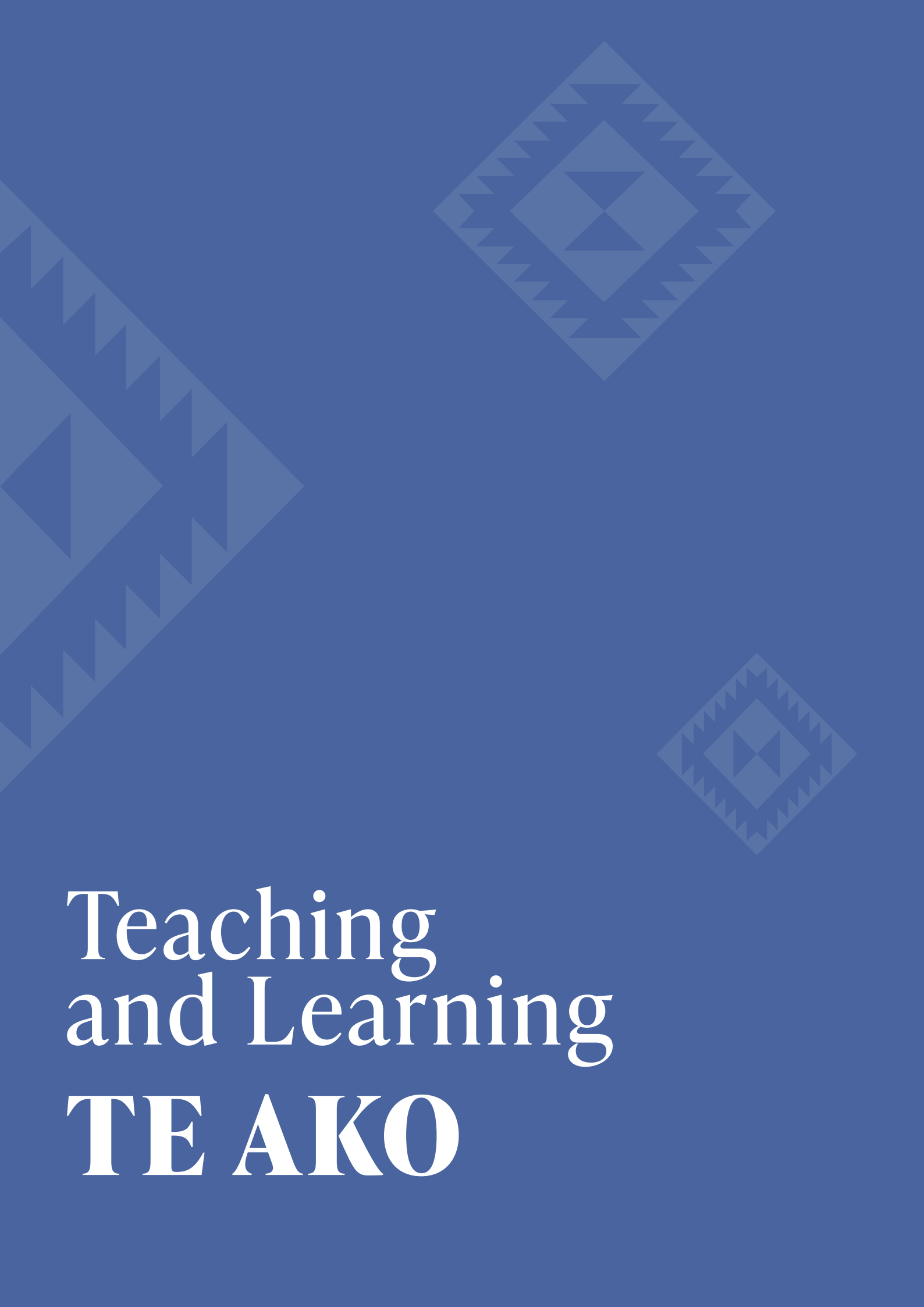
## **A SPARKLING SUCCESS**

Bioremediation trials to assess the potential of seaweed to clean up pollution from waterways have been a resounding success.

The University of Waikato ran the trials in partnership with seaweed innovation company AgriSea. Contaminated water was pumped from the Waihou River estuary into land-based tanks of sea lettuce. The sea lettuce removes excess nutrients by feeding on them.

Dr Marie Magnusson showed the final filtered water had a 90% reduction in nitrates and 70% less phosphorus.

The study is the first to show this type of bioremediation system can clean up nutrients from diffuse or scattered sources, making it an exciting tool for cleaning up some of our waterways.



Teaching  
and Learning

**TE AKO**



Our work to build resilient communities and places, and to address the impacts of climate change, for a thriving and positive future for nature and the people of Aotearoa.

# Mātauranga Māori champion honoured for outstanding contribution to education

Associate Professor in te reo Māori and tikanga, Dr Ēnoka Murphy (Ngāti Manawa, Ngāti Tūhoe, Ngāti Ruapani, Ngāti Kahungunu) is a champion for the reclamation of te reo Māori, and has been a cherished teacher at the University of Waikato.

In 2023 Dr Murphy's work as an educator was recognised with two prestigious awards: the Prime Minister's Educator of the Year Award, and a Kaupapa Māori Award at Te Whatu Kairangi – Aotearoa Tertiary Educator Awards.

Former Minister for Education, Jan Tinetti, praised Dr Murphy for the consistent positive feedback he has received over many years for excellence in teaching, mentoring, and leadership.

Dr Murphy's work to create safe teaching environments and to honour the individuality of all his students, has enabled learners to engage and thrive. With over 30 years of teaching at all levels of education, Dr Murphy strongly believes that putting students first and spending one's time and energy on them is crucial. In 2024 we farewelled Dr Murphy. We wish him well on his continued journey in education.

"True love, true compassion for others, for my students, comes from the journey I have been on. As a teacher, it is a continual learning journey. The greatest teachers have been my students. I am grateful for the students who have taught me over the years and helped me be the teacher I am today."

*Dr Ēnoka Murphy*





# Sharing and growing mātauranga







After 200 years in residence in a British Museum storeroom, Te Rā – the only known example of a traditional Māori sail in the world – arrived home to its descendants in New Zealand.

The homecoming is the culmination of in-depth research by Marsden-funded researchers, including Dr Donna Campbell (Ngā Puhi, Ngāti Ruanui), Associate Professor in Te Pua Wananga ki te Ao – Faculty of Māori and Indigenous Studies.

The research utilised high-tech imaging, sampling of the fibres, and reverse engineering weaving techniques, to uncover the mātauranga embodied within the taonga tuku iho.

Te Rā was welcomed home with a three-day wānanga for weavers, waka practitioners, tā moko artists, carvers, and scholars.

The researchers always intended the end research outputs be shared to grow the mātauranga and to encourage practitioners to innovate from the template. In turn, Te Rā was able to experience the warmth, aroha, and wairua of its people.

Hundreds of attendees were able to view, touch, and record images and footage of the sail. Te Rā was turned over each day so the working side with the visible joins was also able to be viewed.

Dr Campbell and her colleagues are now completing a book with detailed accounts of the construction method, to further disseminate and grow the knowledge and technology revealed within Te Rā.



# High-quality teaching, learning support and student outcomes confirmed by audit

The University's strategic framework in support of teaching and learning was recognised in 2023 with one of our strongest-ever results in the Academic Quality Agency audit.

The University received 19 commendations supporting the work we are doing to deliver high quality teaching and learning to a diverse student body and to support staff professional development.

The report commended the University's strategic framework, its commitment to using data to inform planning and reporting, its support for the diverse student body, staff professional teaching development opportunities, and our mature approach to managing risks to the quality and continuity of teaching and learning.

Along with commending the University's response to the Covid-19 pandemic and how our Treaty of Waitangi Statement underpins work across the University, the audit recognised the Ōritetanga Programme that supports the learning of all students but especially Māori and Pacific students, and the Work-Integrated Learning programme that helps students transition into the workplace.

The development of The Pā and the Tauranga campus was also recognised as valuable additions to the teaching and learning environment.



# Preparing young people to address the challenges of the future

Young people will encounter unique challenges across their lifetime and educators have a role to play in empowering them to take an active role as ‘science citizens’.

Associate Professor of Education  
Dr Chris Eames co-authored Agency in the Anthropocene. The supplementary document supports the Organisation for Economic Co-operation and Development’s Programme for International Student Assessment (PISA) 2025 Science Framework.

Specific to environmental issues, the report acknowledges the challenges young people will

face and the role of educators in preparing them to navigate the future. The report identifies key competencies students will require to interpret evidence and act on issues like climate change, biodiversity loss, and pollution.

The competencies include the demonstration of hope, respect for different knowledge systems, and the ability to evaluate evidence from multiple disciplines to inform decision-making.

# Picture books to promote diversity, inclusion, and language revitalisation

Respect for the cultural identities of learners and the knowledge and language they bring to the table is important for successful educational outcomes.

Picture books are a powerful form of children's literature that both reflect and influence understandings of identity, and can aid the revitalisation of Indigenous languages.

Sociolinguist and Associate Professor in the School of Education, Dr Nicola Daly has long been at the forefront of dual language picture book research. In 2023 her research reinforced the value of bilingual publications to aid language learning for young learners and their whānau.

Dr Daly with Huia Publishers and other researchers including University colleagues Dr Julie Barbour and Dr Nic Vanderschantz, are now looking to those who create and publish bilingual picture books. With Marsden Fund support she is part of a Kaupapa Māori investigation to document and explore best practices for authentic and respectful representations of Indigenous languages and identities throughout the publishing process.

# Highlights from 2023

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## THE POWER OF EDUCATION

With our strategic partner, the Hamilton Multicultural Services Trust, we launched four new scholarships to support the local refugee and migrant community.

Education is a powerful means to improve social and economic wellbeing for individuals and their communities, and these awards acknowledge that not all people have the means to study at tertiary level. They also bolster our commitment to assure equitable pathways into tertiary education.

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## GOLDEN JUBILEE FOR PIONEERING DEPARTMENT

Waikato's School of Computer Science celebrated its Golden Jubilee in 2023, recognising our trailblazing history.

For 50-years we have contributed cutting edge research and teaching from establishing New Zealand's first internet connection in 1989, to being named New Zealand's first iSchool. We also developed the country's first Cyber Security Lab and Master of Cyber Security qualification, and we continue research to identify and mitigate cyber risks to the country from current and emerging technologies.

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## HIGH-TECH LAB TO ELEVATE EXPERIENTIAL LEARNING

We opened our high-tech engineering lab Mata-Tina, providing our students with access to state-of-the-art learning tools.

Mata-Tina offers project-based and 'hands-on' learning facilities, including a machine shop, woodwork area, welding bay, concrete manufacturing area, social space, and a mezzanine that will become a 24-hour prototyping lab for students.

Mata-Tina honours the School of Engineering's longstanding commitment to hands-on learning to help grow innovative engineers to solve real-world problems.

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## **TAKING EDUCATION DIRECTLY TO COMMUNITIES IN NEED**

In response to aspirations of iwi and the local community in the Far North, and with support from the Ministry for Education's Te Hurihanganui, the University launched an education pilot to address teacher shortages.

The marae-based Bachelor of Teaching combines distance learning with wrap-around support from school communities and local iwi. Students train to become qualified teachers while remaining in their local schools.

The programme continues in 2024, addressing community needs and geographic inequities in education.

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## **CALIBRE OF ENGINEERING DEGREES CONFIRMED WITH INTERNATIONAL ACCREDITATION**

We achieved international accreditation, either full or provisional, for all eight of our Bachelor of Engineering (Honours) programmes including civil and environmental engineering being accredited for the first time.

Accreditation underscores the quality of education students can expect to receive and the calibre of graduates we provide to industry. It also reflects our commitment to delivering exceptional education in engineering.

The background of the page is a solid purple color. It features three large, faint, light-purple geometric patterns. One is a diamond shape in the top-left corner, another is a diamond shape in the bottom-left corner, and the third is a large, complex geometric shape on the right side, resembling a stylized 'H' or a series of nested triangles. The word "Safety" is written in a white, serif font, positioned in the lower-left area of the page.

Safety

**TE HAUMARU**





Our work to safeguard people and culture to create a fair, equitable and peaceful world.

# A new data revolution: Māori data sovereignty

Across the globe Indigenous communities are pushing back against data colonialism, and University of Waikato academics are part of the movement.

With the increasing datafication of multiple aspects of human life from big data, open data, and new data technologies, the risks of Indigenous data misappropriation, misuse, and exploitation is greatly amplified.

Indigenous peoples have the right to self-determine how they safeguard and govern the use of data generated by them or data collected about them.

Professor Tahu Kukutai (Ngāti Tipā, Ngāti Mahanga, Ngāti Kinohaku, Ngāti Ngawaero and Te Aupōuri), Associate Professor of Software Engineering Dr Te Taka Keegan (Waikato-Maniapoto, Ngāti Porou, Ngāti Whakaaue) and Associate Professor Maui Hudson (Whakatōhea, Ngāruahine, and Te Māhurehure) are working locally and internationally to assert the right of Māori to collectively control their own data. Together they are calling for governance models that prioritise Māori and tribal information needs, and uphold tikanga and communal values of respect and dignity.

Alongside the models, the academics are highlighting the importance of free, prior, and informed consent before data is collected from Indigenous peoples.

Many of the aspirations and values driving Indigenous data sovereignty have wider relevance for ethical and equitable data practices worldwide.





# Landmark appointment of Pacific law experts

More Pacific staff are joining the Waikato aiga (family). Appointing New Zealand's first female Pacific Professor in Law, former Justice of the Supreme Court of Samoa, Tologata Tafaoimalo Leilani Tuala-Warren was a landmark moment for the University and New Zealand as a Pacific nation.

In 2023 Te Piringa Faculty of Law also appointed Unaisi Narawa as a lecturer and Convenor for Pacific Engagement.

These appointments support our commitment and strategy to value, grow, and attract Pacific staff who are leaders in their fields. Incorporating Indigenous knowledge will ultimately illuminate and grow pathways for Pacific learners to study and careers.



# Protecting online information and cyber law

Identifying smart solutions to protect online environments from false information and hate-speech is another step towards a safer, better-informed world.

Law lecturer Rachel Tan is looking at how we can protect the veracity of information in the era of mass digitalisation.

She is examining misinformation and disinformation on social media and the impacts on public trust in government. Her work explores legislative strategies to tackle the problem in other international jurisdictions and the possibilities for New Zealand.

# Helping young people address harmful behaviour

Non-suicidal self-injury is behaviour used by over 50% of young people in New Zealand, to deal with uncomfortable and difficult emotions.

Dr Cate Curtis is building knowledge to address two types of problematic behaviour prevalent in youth. Looking at the shared factors between non-suicidal self-injury and outward directed injury, Dr Curtis' work aims to build effective treatment pathways to help the tens of thousands of young New Zealanders who engage in these injurious behaviours.

The background is a solid teal color with several geometric patterns. In the top-left corner, there is a pattern of overlapping triangles pointing downwards. In the top-right corner, there is a pattern of overlapping triangles pointing upwards. In the center-right area, there is a large, faint diamond-shaped pattern composed of smaller triangles.

Prosperity

TE

TŌNUITANGA





Our work towards thriving and sustainable business and trade models, and increased productivity where the wellbeing of people and planet are central.

# Transformational trade: An economy of mana

Professor Jason Mika (Tūhoe, Ngāti Awa, Whakatōhea, Ngāti Kahungunu) is imagining a better world where business success, sustainability, and the wellbeing of people walk hand in hand.

He has been awarded \$14.9m from the Ministry of Business, Innovation and Employment's Endeavour Fund to explore different ways of doing business to mitigate climate change and environmental harm.

Professor Mika, from the Waikato Management School leads the partnership between Māori practitioners of Indigenous trade at Te Taumata, and Māori, Indigenous, and non-Indigenous researchers at University of Waikato.

The research team will be looking to approaches where business achievement and prosperity are not measured by individual accumulation, but by the extent of their contributions to the wellbeing of others and the environment.

Using kaupapa Māori and Indigenous methodologies, the research seeks to transform trade policy to achieve the aspirations shared by Indigenous and non-Indigenous peoples — a climate-resilient economy that is equitable and produces high-value goods and services from inventive entrepreneurial activity.

It is anticipated that the framework will have multiple positive outcomes including the normalisation of Indigenous perspectives in trade policy and trade facilitation.

"We're building a new Indigenous-based framework for international trade that puts the wellbeing of te taiao (the environment) and ngā tāngata (the people) at the centre."

*Professor Jason Mika*



# Highlights from 2023

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## **BUILDING WORKER WELLBEING AND AUTHENTICITY**

A work culture that values authenticity can directly improve wellbeing, productivity, and aid worker retention.

Occupational Psychologist Dr Anna Sutton's 2023 study into the impacts of managerial psychopathic traits contributed important insights for building positive workplaces and reversing declining productivity.

Dr Sutton specialises in the application of psychology to understand and improve work experiences and workplaces. Her focus is on worker authenticity – the understanding of how people can be their 'true selves' at work, and how they can express their personality and values in a genuine way.

Her study on managerial psychopathy found that authenticity served as an important personal resource that employees could tap into to cope with challenging managerial behaviours.

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## **PROVIDING THE PLATFORM FOR POLICY TO BE TURNED INTO ACTION**

We're supporting robust debate and discussion to inform good decisions to support sustainable growth, productivity, and wellbeing for all of Aotearoa.

In the wake of Cyclone Gabrielle, the Waikato Management School hosted the third New Zealand Economics Forum, bringing together an outstanding lineup of top economists, business leaders, and public sector officials.

Expertise was shared on how to address the major challenges facing the country today, with infrastructure and climate change front of mind after the devastation of the cyclone.

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## **SPARKING YOUNG MINDS: A PARTNERSHIP TO INSPIRE STUDENTS**

We have a strong focus on giving our students practical learning experiences to prepare them for the real world.

The Waikato Management School has joined forces with Spark NZ to establish the three-year Spark Business Prize. Aimed at recognising top-performing students enrolled in the third-year paper, Modern Professional Selling, the prize gives students real-world sales experience, helping to build the Information and Communications Technology (ICT) sales workforce, and the prosperity of New Zealand.

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## **ADVANCING INDIGENOUS ASPIRATIONS THROUGH TRADE**

We hosted Te Kāhui a Kiwa on behalf of the Ministry of Foreign Affairs as part of New Zealand's host activities in its role as Chair of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).

Our researchers were part of an impressive line-up of global Indigenous speakers who presented provocative and challenging points of view on the importance of Indigenous trade and how the CPTPP is already, and can in the future, help to realise their aspirations.

Discussions ranged from the importance of Indigenous trade gaining benefits from the CPTPP free trade agreement to the need to prioritise constructive, and beneficial solutions to advance Indigenous aspirations for self-determination and wellbeing through trade.

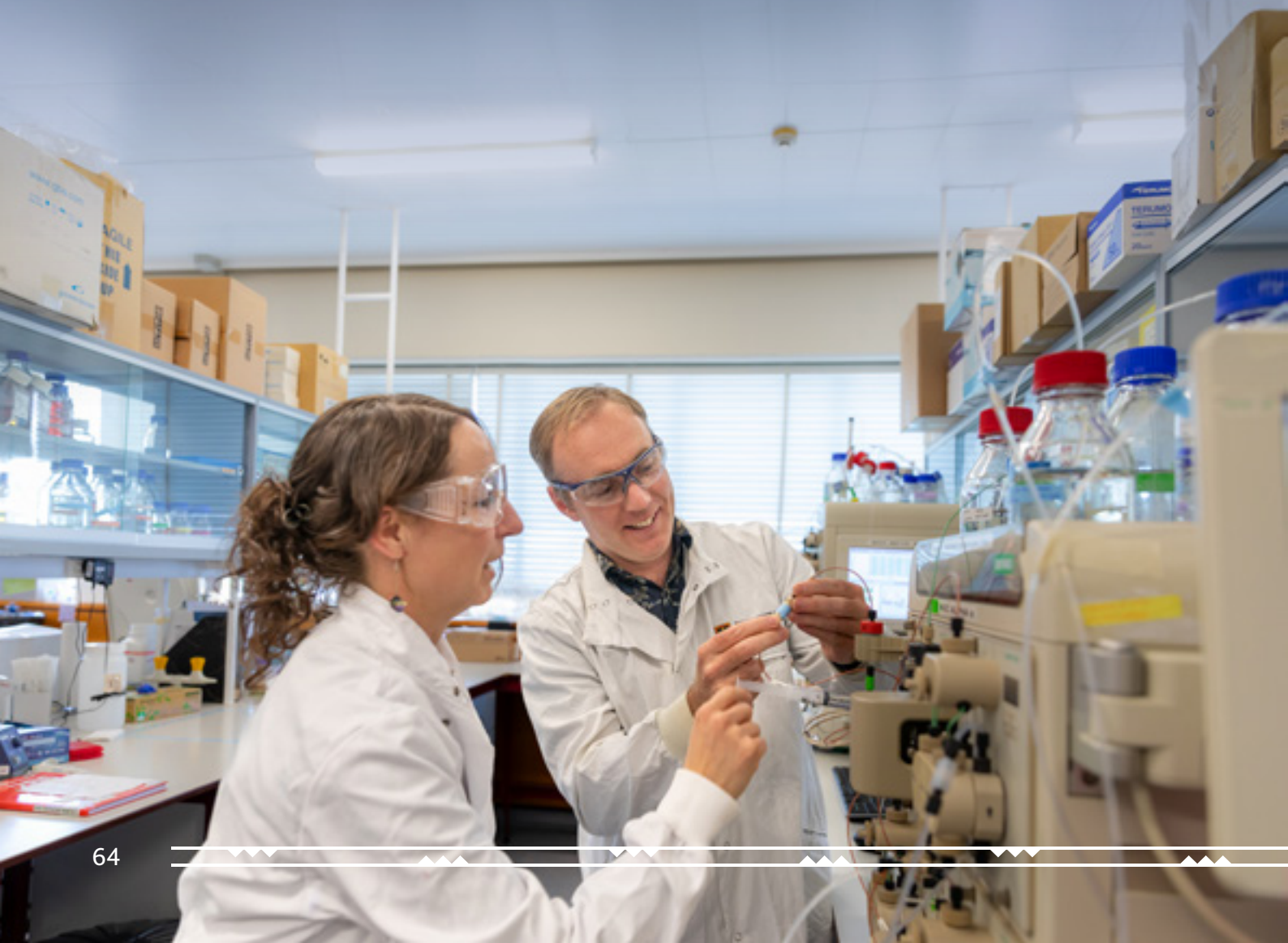
The logo for Te Pūnaha Huringa Whakātea is a large, light green diamond shape with a complex, repeating geometric pattern of smaller diamonds and triangles inside. It is positioned in the upper right quadrant of the page.

Technology  
and Innovation  
**TE PŪNAHA  
HIRINGA  
WHAKAĒA**



Our game-changing use of new technology to find smart solutions to add value and protect people and planet.

# Mighty milk: Adding value to protect people from disease outbreaks





## University of Waikato scientists are accelerating value-added technologies to drive sustainability for the agriculture sector.

They have developed a new vaccine technology to create 'hyperimmune milks' which help supplement human immunity against viral pathogens. Their work could result in readily scalable nutraceutical supplements to help people avoid or fight off viral infection.

At the height of the Covid-19 pandemic, applied immunologist Dr William Kelton, alongside structural biologist Dr Adele Williamson, and biotech innovators Ruakura Technologies, developed a proof of concept using sheep to produce milk with specific antibodies to aid the human immune response to coronavirus.

With a Ministry of Business, Innovation and Employment's Endeavour Fund Smart Ideas grant, the team is now expanding the concept by developing a hyperimmune milk with potent bioactivity against the highly contagious norovirus. Norovirus is a common virus, well known for spreading rapidly through settings like aged-care facilities, early childhood centres, and cruise ships. It currently has no effective treatments available.

By administering a lab-engineered 'smart-antigen' to sheep, scientists can stimulate an immune response to naturally produce antibodies in the animal's milk. Antibodies are produced by the body to neutralise invading viruses. Hyperimmune milk can then be used as an oral supplement to bolster humans against a specific disease-causing virus.

The estimated value of the hyperimmune milk is many times the standard milk-solid price, meaning only a few weeks of hyperimmune milk production could enable farmers to significantly reduce herd size without reducing income.

# Harnessing new tech to restore ecosystems



New Zealand has the highest proportion of threatened native species in the world. Restoration Ecologist Dr Kiri Joy Wallace is co-leading a team whose innovative use of new technologies could help to change the story for threatened species here, and globally.



Ecosystem reconstruction, which entails planting and caring for native ecosystems from scratch, is a critical step for reversing the decline of our unique flora and fauna.

Dr Wallace and her team have developed the Eco-index Ecosystem Reconstruction Map, New Zealand's first public, open-access digital tool for large-scale ecosystem reconstruction planning. It addresses demand for national biodiversity information and helps tell the story of our troubled native ecosystems.

The interactive map provides science-based information and data to support national discussion, policy, and planning for ecosystem reconstruction. It provides information and prioritisations for the different types of native ecosystems that once cloaked the country, and reconstruction targets to safeguard their future.

The Eco-index initiative is the first 'digital public good' (DPG) in New Zealand. DPGs encompass open-source software, open standards, open data, open AI systems, and open content collections that adhere to laws and best practices, do no harm, and help advance the United Nations' Sustainable Development Goals.

# Highlights from 2023

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## TRANSFORMING WASTE INTO ECO-FRIENDLY GOLD

A 300-litre compost bin using plywood offcuts from vehicle manufacturing won a sustainable design competition for a group of students at the University of Waikato.

As part of The Impact Lab, a Work-Integrated Learning paper, students worked in small groups to design a commercially viable product using excess plywood.

The winning group worked with the ethos of the circular economy, avoiding the use of additional materials by using wood joinery techniques.

The cross-disciplinary nature of the learning draws students from all disciplines. It is an opportunity to develop solutions for a real-world sustainability problem posed by a local organisation. A win for our students and the planet.

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## ENERGY STORAGE TO AID NEW ZEALAND'S ZERO-CARBON EMISSIONS TARGET

With two Ministry for Business Innovation and Employment Smart Idea's grants awarded in 2023, Dr Fei Yang is advancing sustainable energy storage.

Dr Yang is developing storage materials and technology to safely store hydrogen.

He is also looking to new thermal energy storage technology to couple renewable heat sources, such as geothermal, biomass and solar, to heat demand in process heat and electricity generation. This will reduce the need for fossil fuels in our primary processing sectors, while reducing greenhouse gas emissions.

Dr Yang's work will also mean carbon charges can be avoided by processors, reducing increases in the cost of electricity and food products to end consumers.

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## **DECISION AUTOMATION FOR ORCHARDS AND VINEYARDS**

University engineers are working in partnership with industry and others to develop 'human assist' technologies to address challenges in worker shortages and task consistency in the fruit industry. Professor Mike Duke, Dr Shen Hin Lim and Dr Benjamin McGuinness are utilising wearable devices and AI systems to capture data. Decision support systems, based on artificial intelligence and supported with latest technologies in augmented reality, translate this into support of staff, or later automated machines, to make smart decisions within the orchard and vineyard. The decision support system will be partnered with a suite of equipment to assist workers, or to automate manual activities.

The research will build industry profitability and create more certainty around food supply.

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## **SUPPORTING DIVERSE REPRESENTATION TO DELIVER NEW SOLUTIONS**

In 2023 our engineers formed a new club, WISE - Women in the School of Engineering.

The club is dedicated to empowering women in engineering and promoting diversity in the field through social activities and events.

Different perspectives and experiences are an integral part of collaborations to deliver engineering solutions for the challenges of the modern world. WISE builds on our culture of collaboration and inclusivity.

# Te reo Māori glossary

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## Kaiāwhina

An over-arching term to describe non-regulated healthcare workers committed to supporting health and holistic wellbeing outcomes.

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## Kaimahi

Worker/staff.

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## Kanohi ki te kanohi

Face to face, in person, in the flesh.

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## Kaupapa

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

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## Marae

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

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## 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).

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## Tā moko

To tattoo.

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## Taonga

Treasure, anything prized, for example, taonga species.

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## Taonga tuku iho

Heirloom, something handed down, cultural property, heritage.

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## Tauira

Student.

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## Te Whare Tapa Whā

A wellbeing model developed by leading Māori health advocate Sir Mason Durie in 1984, describing health and wellbeing as a whareniui.

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## Tikanga

Customs, protocols and procedures.

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## Tino rangatiratanga

Sovereignty, autonomy, self-government.

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## Wairua

Spirit/soul.

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## Wānanga

Seminar, conference, forum, educational seminar.

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## Whakawhanaungatanga

Process of establishing relationships, relating well to others.

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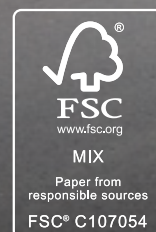
## Whānau

Family, or family group.

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TARRANCA



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