

# Auckland

MAKING AN IMPACT

# NOW

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THE UNIVERSITY  
OF AUCKLAND

NEW ZEALAND

Te Whare Wānanga o Tāmaki Makaurau



Above: Margaret Hyland. Pictured on cover: Ian Parton and Adrienne Cleland

# A COLLABORATIVE BUSINESS

The University of Auckland has made a once-in-a-generation decision to establish a new campus in the heart of Newmarket. The campus, which will initially focus on engineering research, offers a unique opportunity to encourage collaboration between the University and local businesses, and to bring the benefits of University research and graduates quickly to those businesses.

In a bid to underpin 50 years of growth and establish world-leading research facilities on a site close to the existing City and Grafton Campuses, the University has purchased the five-hectare former Lion Breweries site in Newmarket.

“We saw this as a chance to prepare for the future and integrate our activities over three closely linked campuses,” says University Chancellor, Dr Ian Parton.

Adds Director of Administration, Adrienne Cleland: “The University community can now have confidence that its activities can be accommodated across the City, Grafton and Newmarket campuses for the long term. There will be a period of transition as activities currently at Epsom and Tāmaki are relocated to one of the central campuses but eventually we will reduce our land holdings to the three central sites.”

Initially the University is investing in excess of \$80 million at Newmarket on new research facilities for the Faculty of Engineering.

“Government is advocating that universities focus more of their attention on the STEM subjects [Science, Technology, Engineering, Medicine] and by expanding our engineering research we are in keeping with these proposals,” says the Chancellor. “Newmarket will also allow for better interaction and integration with business and companies that rely on engineering innovation and manufacturing.”

Professor Margaret Hyland, Deputy Dean of Engineering, says at Newmarket there will be cores of engineering expertise in built environment, structures, earthquake research, fluids and transport,

along with the wind tunnel and yacht research. “For example multi-disciplinary teams could work on new environmentally-sound structures and materials for the building industry and model these for earthquake and tsunami-resilience in NZ conditions.”

There will also be a hub of research activity around materials innovation comprising light metals, composites, plastics and polymers. This research focuses on developing new multi-material, high-value products for export.

“The guiding principle is that the Newmarket Campus will cultivate and nurture collaboration, with links to industry encouraged early on in a researcher’s career,” says Margaret.

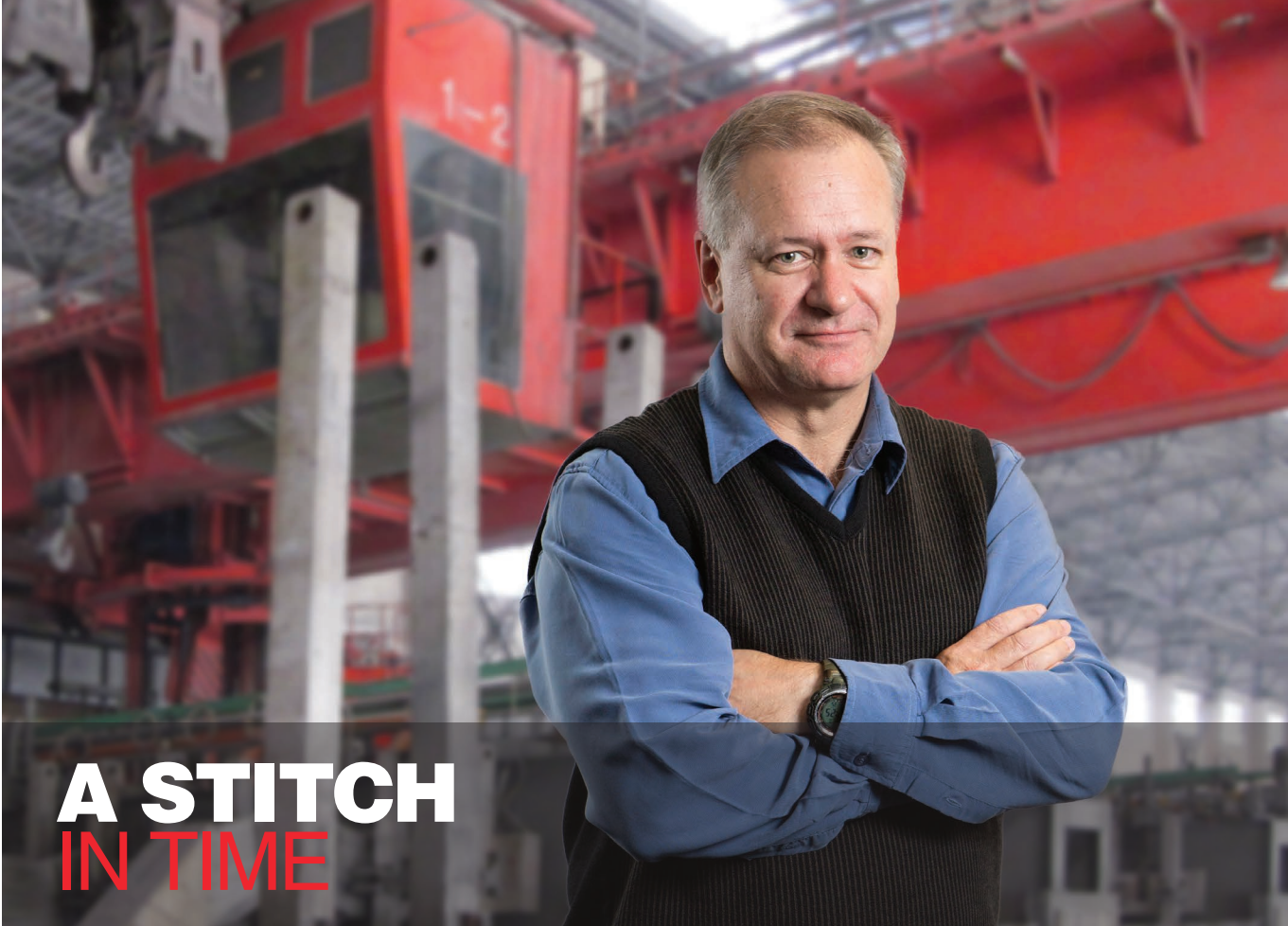
It is envisaged that the Newmarket research hub will form part of a larger tapestry that encompasses other faculties such as the Faculty of Science. Eventually industry will be able to link to the Newmarket Campus to access a whole suite of research activities.

“Because of this approach Newmarket will boost the University’s capacity to address major economic, social and environmental challenges,” says the Chancellor.

Development at Newmarket is planned over a 30-year timeframe with work beginning this winter to demolish many of the old brewery buildings. Others will be totally refurbished in a staged plan that will transform this inner-city area.

The new campus will accelerate Newmarket’s development and reputation as one of Auckland’s premier centres, predicts Dr Roger Blakeley, Chief Planning Officer for Auckland Council. “The University is a major anchor institution in Auckland contributing to the city’s GDP and its growing international reputation for tertiary study, innovation, research and development. The new campus is a win-win for both the University and Auckland.

[www.auckland.ac.nz/newmarketcampus](http://www.auckland.ac.nz/newmarketcampus)



# A STITCH IN TIME

A car goes off the road with a flat tyre. The driver fixes the tyre and heads off, but the car is soon off the road again. What's wrong?

"It could be 100 little things and unless you find the root cause it will keep happening," says Professor Mark Taylor, who chairs The University of Auckland's Light Metals Research Centre (LMRC). He uses the car analogy to explain the importance of understanding manufacturing processes and management systems to keep production on track.

The same issues apply to many kinds of processes, whether it is aluminium smelting, dairy manufacturing, steel production or advanced materials for saving energy. The LMRC encourages companies to think about production problems in a different way. It has developed high-performance software to help companies gain control of material processing rather than wait until a poor-quality product comes out at the end.

"If a company is alerted to what is happening and then understands the systemic reasons why something is wrong, they can remove the cause behind the problem in a way that it will never come back. Control is not about maintaining, it's about improving," says Mark.

For example, a smelter in the Netherlands had continual emergencies at its smelting reactors (called pots) and could not identify what was causing the pots to overheat. The LMRC diagnosed the reason and came up with a new control system to permanently stop the overheating. "It was a simple change in the end," says Mark, "but it required a wide variety of diagnostics which we were able to supply."

Mark trained as an engineer at The University of Auckland and went on to manage the \$500m expansion of the Tiwai Point smelter at Bluff. With further experience as general manager of Boyne Smelters in Queensland Ltd he began to understand that aluminium smelting could be more efficient and productive if companies took more control of their processes.

In 2003 he joined The University of Auckland's LMRC, which has become a world leader in research and consulting to support aluminium smelting, light metal alloys, alumina refining and major smelter upgrades.

The LMRC focuses on solving technical issues and developing new technologies for companies around the world. One place where this has been very successful is at TRIMET Aluminium SE in Germany.

"We have worked with the LMRC for the last five years," says CEO Dr Martin Iffert. "Together we have developed the concept of modern smelting technology which is no longer static but dynamic just as the new green energy era demands it."

"New Zealanders are great at working across different cultures and that makes us good partners internationally in technology development and transfer," adds Mark. He also works as a special adviser providing management guidance to producers in the Netherlands, Japan, the United States, China, Australia and the Gulf States.

Alongside this, he is director of the Materials Accelerator, a network of eight research providers in New Zealand led by The University of Auckland. Their research aims to broaden the range of materials used by manufacturing companies. "Many New Zealand manufacturers understand single materials well but need extra expertise and technology when it comes to developing products that combine unfamiliar materials.

"We help manufacturers understand the link between their product and materials technology. Our goal is to improve company revenues for New Zealand and develop human skills that will feed back into stronger basic research."

[www.lightmetals.co.nz](http://www.lightmetals.co.nz)



# INSIDE EARTH

When the Rwandan Government wanted to find geothermal energy reserves in the Great African Rift Valley it started by looking across the world to The University of Auckland's Institute of Earth Sciences and Engineering (IESE).

University earth science specialists visited Rwanda in 2011 and 2012 to gather information including seismic shifts in the Valley, electromagnetic make-up and surface temperatures. When they returned to the University's state-of-the-art Visualisation Centre, the field data were turned into a 3D view of what was underground in Rwanda.

"The earth science visualisations that we create are similar to those produced by a CT scan of the human body - they allow us to see what's inside solid objects," says Dr John Rugis who heads up the centre.

Up on a huge 3D screen, blocks of different-coloured shapes float like objects in weightless space. "We've created representations of what is below the surface and then selectively removed low-interest regions to reveal the properties that indicate underground geothermal activity," explains John.

The techniques developed by John's team allow them to visualise sections of the Earth's crust in 3D, typically areas of five kilometres or more. Magneto-telluric data, which show the electrical conductivity and structure of the Earth, can be viewed from any perspective including looking down through a transparent road map to show precise geographical locations.

With their combination of geological data and 3D visualisations, the IESE staff were able to assess the geothermal prospects and show the Rwandan Government where to drill for geothermal energy.

IESE scientists have also been surveying geothermal fields in Japan and Montserrat in the Caribbean as well as seismic activity in

Turkey, and they have just won a major contract with Indonesia Power.

Closer to home the scientists are working with Contact Energy to monitor and develop the geothermal field at Wairakei and have completed a 3D visualisation of the 2010 and 2011 Christchurch earthquakes to provide information for engineers and planners.

This is a new non-invasive way of seeing beneath the surface of the Earth.

Based on GNS Science data, John creates a visual 3D representation of the earthquake clusters rippling across the city over the seven months. The simulation shows their timing, depth and date as the quakes happen, with a detailed street map of Christchurch overlaid on the top.

This depth of evidence and understanding is valuable for rewriting building codes and planning future earthquake protection for the city.

"The traditional ways of gaining information about the Earth include drilling holes and taking core samples or examining structures revealed through erosion", says John. "This is a new non-invasive way of seeing beneath the surface of the Earth."

The combination of gathering and analysing data along with creating interactive 3D visualisations has made the IESE world leaders in this field.

[www.iese.co.nz](http://www.iese.co.nz)



# BOOKED UP

“My PhD was the first open book in our house,” says English Senior Lecturer Selina Tusitala Marsh (pictured). “It kept the front door open,” she laughs.

Selina is centre stage at the Aotea Centre in Auckland on the opening night of the 2013 Auckland Writers and Readers Festival and is one of eight writers from around the world who have been asked to use the phrase “an open book” to tell a true story from their lives.

“I’m not joking,” says Selina, who was the first in her family from the Pacific Island of Tuvalu to go to university.

Selina was one of many University staff members, alumni and students participating in the five-day festival of literature and ideas that brings together acclaimed writers, readers and thinkers.

“The festival fosters new talent and showcases our staff and our writing stars,” says Distinguished Professor of English Brian Boyd, who has been instrumental in connecting the festival with the University through its role as gold sponsor.

The University’s involvement crosses many faculties, including Professor of Education Alison Jones talking about her book *He Kōrero: Words Between Us* which grew out of her research on the first Māori-Pākehā conversations. A panel chaired by Distinguished alumnus Sir Don McKinnon to examine “New Zealand-ness” featured Professor of Asian Studies Manying Ip, Associate Professor of Pacific Studies Damon Salesa and Distinguished Professor of Māori Studies Dame Anne Salmond.

It was a family affair when Emeritus Professor of English CK Stead and his daughter, the author and University of Auckland alumna Charlotte Grimshaw, shared the stage to discuss how

power and politics play out in their fiction. And there was a special event at the end of the festival honouring the life and work of Albert Wendt, Emeritus Professor of English.

Brian Boyd was also involved in the Schools Programme, which provided workshops for more than 2000 school children to meet and be inspired by some of the festival’s guests.

“The festival connects young writers with our writing staff and with a vibrant international literary community. It also feeds back into the University,” says Brian. “For example, renowned Indian fiction writer Anita Desai visited the English Department to talk with Master of Creative Writing students.”

The festival began in 1999 and is now the largest of its kind in New Zealand with more than 34,000 seats filled this year. Alongside New Zealand’s top writers it showcased international stars such as novelist Kate Atkinson; journalist and foreign correspondent Max Hastings; Italian novelist Diego Marani; and Leonard Cohen’s biographer Sylvie Simmons.

“It’s a festival of ideas, intellectual discourse and expanding the mind so the University is a perfect fit as a sponsor for us,” says Festival Director Anne O’Brien.

“Together we deliver a great festival, the largest of its kind in New Zealand.”

[www.writersfestival.co.nz](http://www.writersfestival.co.nz)



Pictured from left: Ollie Farnsworth, Jake Vermunt and Alexander Worker

# COURTING CHINA

When Ollie Farnsworth, Jake Vermunt and Alex Worker met at The University of Auckland's Business School in 2008 they didn't know they would end up in Beijing, running their own company promoting New Zealand food and beverage brands in China.

But they did know they had a common interest in New Zealand's trading role across Asia and Latin America. "With New Zealand's market focus rapidly changing to these emerging markets, we were determined to find a way we could fit in and help sustainably grow New Zealand's position," says Ollie.

That was the longer-term plan – in the meantime they built up their individual experience. Ollie graduated with a BCom (Hons) in Management and International Business and worked as a supply chain consultant for Deloitte in New Zealand, Australia, and the United States. Jake added to his conjoint degree in Commerce and Property by completing his chartered accountancy while working at Ernst and Young. Alex completed a BCom (Hons) in International Business and joined Fonterra's graduate management programme and the Global Dairy Trade team.

"After four years in the corporate world we started to speak more seriously about what we could do together," says Ollie. "In 2012 we incorporated the Marianas Group, with the goal of becoming the New Zealand intermediary for food and beverages across the

Pacific Rim." The name comes from the Mariana Islands in the Pacific Ocean, a symbolic mid-point between the group's Asian, Latin American, and New Zealand markets.

The three men are now all based in Beijing and have signed up premium New Zealand brands including Astrolabe and Chard Farm Wines, Olivado, Antipodes, J Friend & Co Honey and Naturlait Infant Formula.

"The increase in wealth and a national concern around food quality have created a significant opportunity for selling food and beverages to China," says Ollie. "New Zealand generally has positive associations with being clean, green and natural, and the Free Trade Agreement gives us an advantage."

Alex says the support from The University of Auckland Business School has helped them develop their company vision and taught them what is required to take their business offshore. "We are still in close contact with former lecturers and alumni who've been very supportive," says Alex.

"We hope to be in a position to build on this by offering internships to future University students between New Zealand and China, and one day in South America too."

[www.marianas-group.com](http://www.marianas-group.com)

Auckland  
**NOW**

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