

# SUSTAINABLE DEVELOPMENT GOALS



**UNIVERSITY OF NEWCASTLE**  
PROGRESS REPORT 2022





## **ACKNOWLEDGMENT OF COUNTRY**

The University of Newcastle acknowledges the traditional custodians of the lands within our footprint areas: Awabakal Nation, Darkinjung Nation, Biripai Nation, Worimi Nation, Wonnarua Nation and Eora Nation. We also pay respect to the wisdom of our Elders past and present.



# ACCELERATING PROGRESS

As we turn the page on another extraordinary year of local and global challenges, the 2022 Sustainable Development Goals Progress Report is an opportunity to reflect on how our organisation came together to achieve incredible progress towards a more inclusive, healthy, and sustainable planet.

This year, we have launched Research Centres and Institutes, established and strengthened community partnerships, and directed new projects to find solutions to the world's most urgent problems, emboldened by our values of Excellence, Equity, Engagement, and Sustainability.

But we can do more. We are acutely aware of the profound obligation on universities to create and share knowledge to address these challenges; to lead by example. We do this in our teaching and research, through our graduates, in the manner that we operate, and how we engage with our wider communities.

As I read through our Sustainable Development Goal (SDG) Progress Report, I am extremely proud of the initiatives led by our students, staff, research centres, start-ups and alumni, in developing a more peaceful and prosperous planet.

I think it is important for us to take the time to reflect on these positive stories, to continue to inspire and motivate our community to do what we do best – delivering global impact for our regions and the world.

We hope it stimulates further ideas, actions and collaboration opportunities and partnerships so that, together, we can play a full role in tackling the world's SDGs by 2030.

**Professor Alex Zelinsky AO**  
Vice-Chancellor and President



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**Ranked No. 1**  
in Australia for Zero Hunger 2022

**Ranked No. 2**  
in Australia for No Poverty 2022

# OUR GOALS

The University of Newcastle is continuing to align our strategic priorities to the United Nations Sustainable Development Goals (SDGs). Our University's values of Excellence, Equity, Engagement and Sustainability, reflect these SDGs and set the standards that we expect, encourage and nurture in our staff and students. They direct our decision making, and position us to achieve our purpose.

In 2022 we have focused on strengthening the economic and environmental sustainability of our operations, programs, education, research and development. We are taking leaps toward carbon neutrality and zero waste and have implemented leading water recycling strategies. We are working with government and industry partners to explore opportunities to further connect our campuses with our region and we are focused on Well-being and creating vibrant, connected communities. We are committed to being a leading advocate and driving force for excellence and equity in Higher Education. Our campuses will be digitally enabled, environmentally responsible, safe, vibrant, and accessible, adding a new dimension of engagement and collaboration beyond our physical boundaries for students, researchers and the world.



1 NO  
POVERTY



# NO POVERTY

## NURTURING INNOVATION AND ENTERPRISE

The University provides substantial assistance to the local community specifically targeting the start-up of financially and socially sustainable business. The Integrated Innovation Network (I2N) is a University of Newcastle entity that connects entrepreneurs with teams of carefully selected mentors, and other services, to support founders in their for-profit or non-profit venture journey.

I2N Hub Honeysuckle is a purpose-built facility, designed to support enterprise skill development, new venture creation, and scale-ups. I2N Hub Honeysuckle offers free coworking and meeting rooms for pre-startups.

## BUILDING FINANCIAL LITERACY

Since 2019, the University of Newcastle and Greater Bank have worked together to build financial literacy for high school students through the Greater Bank Finance Academy.

To date, over 2,000 high school students from across New South Wales have undertaken the Finance Academy. Almost 30% of high school students who have participated in the Finance Academy are located in the 10% most disadvantaged socio-economic areas of Australia.

## NO MONEY, NO TIME

The University demonstrates a significant commitment to improving the physical, social and financial welfare of its connected community. *No Money, No Time* is an online personalised nutrition program to motivate and support young Australians to adopt healthy food habits, while working within a budget. More than 400,000 users have used the program to examine their eating behaviours to promote nutrition-related health and well-being, and lower chronic disease risk. The program teaches participants to budget for healthy, satisfying meals, as well as providing tips for supermarket shopping, including low-cost food alternatives.

## CHANGING LIVES

The University provides scholarships and resources to those from Asylum Seeker backgrounds to access higher education, including the *Scholarship for Asylum Seekers Program (SASP)*. The program recognises that the challenges facing Asylum Seekers are not just related to course fees. SASP beneficiaries receive individual support to navigate academic, social, psychological, and financial challenges, such as meeting basic needs of housing, food, transport and health care.

“I’ve worked with asylum seeker students at the University of Newcastle and I get to see the difference this program makes for them. One of the big things is that this is a group that actually almost definitely couldn’t go to Uni without this support. There are also great flow on effects – a lot of students have families they are supporting.”

– Emily Fuller, SASP Donor and Live, Learn, Grow Program Facilitator within the University’s Centre of Excellence for Equity in Higher Education

“I didn’t think I would have the opportunity to attend university, but good-hearted people supported me with a scholarship. Now I am a nurse, not just a ‘refugee’.”

– Atefeh, Bachelor of Nursing Graduate

**\$26 million+**

in funding for local business start-ups

**\$320,000+**

\$320,000+ donations received on Gifting Day, creating 13 additional scholarships



*Atefeh is a successful Bachelor of Nursing alumna thanks to the support of the Scholarship for Asylum Seekers Program*





# ZERO HUNGER

## CLEANING UP THE WORLD'S SOILS

Ravi Naidu, Laureate Professor and Managing Director of Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE), will chair the International Network on Soil Pollution (INSOP), launched in 2022.

The Network was set up by the United Nations Food and Agriculture Organisation as an urgent response to scale-up global efforts to prevent contamination of arable soils, with the goal of zero pollution.

It brings together experts in soils and contamination science from around the world to understand the full cycle of soil pollution, from assessment to remediation to the food chain, and find ways to prevent and clean it up, to protect both human health and the environment.

Professor Naidu emphasised that there is mounting evidence that soil pollution directly affects the quality and safety of the world food supply and may be a growing factor in human disease and premature death.

**“If you contaminate the soil, the pollution can spread to groundwater and surface water, affecting the safety of drinking water. We have known for generations about the dire effects of air and water pollution in big cities – but the contamination of soils, and the food they produce, has been a sleeping giant.”**

– Laureate Professor Ravi Naidu

## ORGANIC FOOD RECYCLING

Organic food recycling on campus has increased by nearly 10 metric tonnes since its launch in 2019, allowing the University to produce even more fertiliser and green electricity.

Organic food collection bins allow staff and students to easily identify food scraps, coffee grounds, tea bags and certified compostable produce that can be recycled as part of the program.

## LEVERAGING CAPABILITIES

In 2021, the University's Newcastle Institute for Energy and Resources (NIER) opened the Doctoral Training Centre for Food and Agribusiness, to focus on produce science and sustainability. The Centre's Food and Agribusiness Roadmap identifies and defines priority actions necessary to accelerate major scientific outcomes for increased productivity, enhanced biosecurity, resource sustainability, quality products, and market opportunities for the food and agribusiness sector.

**“Our industry partners will benefit from having access to the University's academic excellence and world-class facilities, as they investigate solutions to sector challenges.”**

– Dr Tamara Bucher, Academic Convenor of the Food and Agribusiness Doctoral Training Centre

## GOING BEYOND

In 2022 the University of Newcastle Students' Association has provided an unprecedented level of food relief, supporting the University student body through a cost-of-living crisis. This year alone UNSA served 20,000 free lunches and partnered with OzHarvest to deliver more than 1400 grocery packs at Free Food Friday. Throughout the year more than 500 students have collected non-perishables from the UNSA Pantry, and in 2023 they will be launching a free daily breakfast service.

**“UNSA is increasingly becoming known among students as a place to turn when in need of food relief. It is without question one of our most in-demand services, and one of the things UNSA has become best known for.”**

– Jessica Philbrook, 2022 UNSA President

**400,000+**

users accessed 'No Money, No Time'  
for budget-friendly nutrition advice

**75%**

increase in organic food  
recycling since 2020



*Laureate Professor Ravi Naidu, Chair of the United Nations Food and Agriculture Organisation International Network on Soil Pollution*





# GOOD HEALTH AND WELL-BEING

## COMBATING COVID-19

Human trials are underway for a nasal spray that could help prevent COVID-19, based on research led by Associate Professor Nathan Bartlett from the School of Biomedical Sciences and Pharmacy. Nathan is working with the drug development company ENA Respiratory and has played a key role in the research leading up to the human trials. The research led to the development of the drug “INNA051,” which has been shown to be effective both before and after early exposure to the virus that causes COVID-19.

## ALL ABOARD

The University is improving access to diabetes care in rural and regional areas via the Diabetes Alliance Program.

One in 10 people in the Hunter New England region have diabetes, and over half of them are yet to be diagnosed. Those in disadvantaged areas are more likely to develop the disease and are less likely to receive timely treatment.

The Diabetes Alliance Program is specifically designed to deliver evidence-based diabetes care, and will soon see the creation of a ‘medibus’. Equipped to be a clinic on wheels, the medibus will bring diabetes care to vulnerable communities across the health district.

“The University of Newcastle is proud to be a key partner of this project, which reflects our commitment to supporting better, healthier living. The Program’s expansion through the medibus initiative is a wonderful example of cross-institution collaborative health research making an impact in our Communities.”

– Vice-Chancellor Professor Alex Zelinsky AO

## EMPOWERING PROGRESSIVE SOCIAL FORCES

The ‘*Re-imagining Quality of Life Post-COVID*’ project, conducted by the University’s Alternative Futures Research Hub, maps, connects and consolidates the remarkable transformative efforts being carried out by hundreds of Australian organisations that directly address the current intertwined ecological, social and economic crises.

Our post-COVID-19 communities are being quickly and deeply transformed from what they were in early 2020. Quality of life will be lower and, hence, poorer, as we cope with the economic downturn, fracturing of community life, and the exacerbation of inequalities.

This project reimagines ‘quality of life’ in the post-COVID-19 context by challenging its conventional concepts, and aims to transform Australia’s economic system to achieve ecological well-being and social justice.

## NATIONAL HONOURS FOR HEALTH TRAILBLAZERS

Two University of Newcastle and Hunter Medical Research Institute researchers who are trailblazing in their fields to improve the health and well-being of communities around the world, have been awarded prestigious National Health and Medical Research Council (NHMRC) awards.

World-leading dietitian researcher Laureate Professor Clare Collins received the *NHMRC Elizabeth Blackburn Investigator Grant Award for Leadership in Clinical Medicine and Science*.

Professor of Nursing Brett Mitchell, who is investigating strategies to prevent healthcare acquired infections, was awarded the *Peter Doherty Investigator Grant Award for Emerging Leadership*.

The Research Excellence Awards are presented annually to top-ranked researchers and teams following peer review of applications to NHMRC’s highly competitive grant schemes.

# 104,267

104,267 citations

# 37%

37% of all graduates are in health professions

# No. 12

No. 12 in the world for Good Health and Well-being



Professor Paul Dastoor inspecting the Needle Free Diabetes Test

## WORLD-FIRST NEEDLE-FREE DIABETES TEST

A world-first, pain-free diabetes test developed at the University of Newcastle received \$6.3 million in funding to establish a manufacturing facility. Funded under the *Medical Products Priority of the Australian Government's Modern Manufacturing Initiative*, the world-class facility will help to transition 20 years of research from the lab to retail shelves, to benefit more than 460 million people living with diabetes globally.

University of Newcastle physicist and research leader, Professor Paul Dastoor and his team at the Centre for Organic Electronics (COE) are working closely with their commercial partner and grant recipient, GBS Inc, on a purpose-built manufacturing facility to be located in the Hunter, with the first devices due to roll off the production line by 2023.

The saliva test makes painful finger-prick testing for type 1 and type 2 diabetes obsolete, representing the first major innovation since the blood glucose test was developed in the 1960s.

Professor Dastoor attributes this, in part, to inspiration from his wife, who as a primary school teacher helped young children in her care to monitor their blood glucose levels.

“It’s a heartbreaking scenario when the lunch bell rings and everyone runs to the playground, bar an unfortunate few who stay back to surrender their finger for blood testing at every mealtime. Our vision was to create a world where no one needs to bleed in order to eat.”

– Professor Paul Dastoor





# QUALITY EDUCATION

## ENABLING PARTICIPATION

New research by the University of Newcastle has found students who are victim-survivors of gender-based violence face major challenges to access and fully participate in higher education – and we are pushing for change.

The United Nations described the global prevalence of gender-based violence (GBV) as a ‘shadow pandemic’, which has only been intensified by COVID-19.

Despite the ongoing significance of this issue, no previous research had examined the question of equity in higher education through the student experience of gender-based violence.

A new research report by the University’s Centre of Excellence for Equity in Higher Education (CEEHE) aims to bridge this research gap, and is a crucial step in working to ensure our campuses continue to be a place for all. While the student experience is a central focus of the research, it also examines obstacles to obtaining entry, and puts forward a clear path for universities and service providers to support student victim-survivors to access and participate fully in higher education.

“Higher education has been shown to play a significant role in alleviating the impacts of experiences of gender-based violence. When someone is thinking about University (entering or participating) – those who have experienced or are experiencing gender-based violence should feel safe, supported and welcome.”

– Professor Penny-Jane Burke

## BUILDING BELONGING

Helping our educators create spaces of belonging for young refugees became the mission of global education experts Associate Professor Scott Imig, Dr Maura Sellars and Professor John Fischetti.

The University team scoured the globe to unearth exceptional school leadership practices and strategies, distilling the advice for other educators. After speaking to principals in the region, across Australia, and around the world, the team released their book – *‘Creating Spaces of Well-being and Belonging for Refugee and Asylum Seeker Students’* – which became a way for the team to give a voice to talented educators so that their efforts and understandings can inform other school leaders. To continue this important work, the researchers launched an online forum to support and facilitate conversations between educators around the world.

“The lives and prospects of those who survive forced migration are dependent on others for understanding, generosity and acceptance as fellow humans. As researchers, we wanted to understand how we best do that, right at that cultural intersection point, which is playing out in schools.”

– Associate Professor Scott Imig

# No. 1

No. 1 ranked university in Australia for industry collaboration

# 5 Star

Maximum rating for learning resources

# Top 200

university in the world

## GIRLS IN STEM

Female high school students in the Hunter region are being inspired to pursue meaningful careers in Science, Technology, Engineering and Maths (STEM), thanks to a unique program that aims to shift negative perceptions of STEM careers through a comprehensive program that connects students with mentors and industry.

Since its inception in 2017, more than 250 girls across the Hunter and Central Coast have participated in the HunterWiSE program. As well as meeting researchers, the girls complete STEM-inspired projects, which they then present to their teachers and families at the end of the 10-week program.

The program helps students use creative thinking and STEM to help improve people's lives and students have come up with some great ways to do just that. For example, some students from dairy-farming families created an app that connected farmers directly to buyers to help them increase their profits. Whether it's developing apps to help their local communities, working as a civil engineer or a statistician, or working with the latest robotics technology, this program shows the students that STEM careers are broad, interesting and rewarding.

## DEADLY STREAMING

The Deadly Streaming Project is a structured cultural program consisting of 16 weekly group sessions in targeted high schools and primary schools across the Hunter region. Deadly Streaming encourages students' understanding and respect of their identity and culture, and aims to improve their attendance and behaviour at school by improving their self-confidence and feelings of belonging. This increases their educational excellence and employability.

"The Deadly Streaming program has strengthened the participants' sense of culture, self-pride and identity. Students have learnt to identify strengths within themselves and the significance of respecting themselves and others, as well as making connections within community."

– Jayden Cooke, Program Supervisor at Mount View High School, a Deadly Streaming participant



The HunterWiSE Outreach program: students explore a range of STEM related fields throughout the program

## EXCELLENCE IN STUDENT ENGAGEMENT

The University's NUmates program has been recognised for fostering an amazing student experience, taking out the Universities Admissions Centre (UAC) Award for Excellence in Student Engagement.

The program was developed to address the particularly unique challenges facing students who couldn't return to their family and friends at the height of the COVID pandemic and the resulting global shutdown. The resulting 'Adopt a friend/family' summer support program harnessed the power of the University community to provide opportunities for international students to connect with their local communities and each other.

## NEWCASTLE BUSINESS SCHOOL EARNS EQUIS ACCREDITATION

The University of Newcastle Business School has been granted European Foundation for Management Development (EFMD) Quality Improvement System (EQUIS) Accreditation, joining the world's leading providers of business education. In its assessment, the Accreditation Board commended the Newcastle Business School for focusing on student-centered, research-driven teaching, with a mission to advance responsible and impactful business knowledge.





**46.1%**

46.1% of new students are first generation

# GENDER EQUALITY

## POWERING LIFE-SAVING POLICY THROUGH DATA

The team behind the *Australian Longitudinal Study on Women's Health* have been recognised for the impact their recent work has had on government policy, after producing a major Non-Traditional Research Output in the form of a portfolio of commissioned reports.

Focusing on women's mental health and the impact of the COVID-19 pandemic, the team deployed rapid fortnightly surveys to develop an evidence base. The subsequent reports on the data from these surveys has enabled the Australian Government's Department of Health to answer critical health policy questions related to the pandemic, as well as informing the next *National Plan to Reduce Violence against Women and their Children*.

## MOTIVATED BY MENTORS

The Women in STEM Mentoring Program provides an opportunity for women and non-binary undergraduate students to explore their future.

By connecting students with industry professionals and alumni through a mentoring relationship, the program aims to guide and motivate women and non-binary people studying undergraduate STEM programs, assist them to explore opportunities, and teach them career management techniques from experienced STEM professionals.

Participants also develop skills for personal and professional growth, and are encouraged to create their own professional networks.

In support of the program, the University held a panel discussion as part of 2022 International Women's Day Celebrations. The panel discussed how mentoring has helped shape their careers, forge networks, and overcome roadblocks that women typically face in a male dominated industry.

## STARTUP SPRINGBOARD

The Female Founders Program is a springboard for female founders delivered by the University's Integrated Innovation Network (I2N). Empowering women to navigate their start-up journey with confidence, the program's main aim is to level the playing field for committed female founders to build their businesses and reach their fullest potential.

The free 12-week program focuses on hands-on peer-to-peer learning, and provides access to a supportive professional network and community, with participants also given opportunities to connect with industry experts.

“The Female Founders Program has been instrumental to the growth and development of my business. Since starting the program, I expanded my team from two people to four and have refocused my energies towards prioritising roles that grow the business. I've gained in depth knowledge and insights into my customers and have discovered new ways of adding value to my product and services. I feel confident, supported and inspired through the network of incredible women I've met throughout the program.”

– Bliss Cavanagh, Creative Sensory Spaces

# 59.2%

59.2% of commencing students are female

# 71.4%

71.4% of graduating Medicine students are female

# 5 Star

Maximum rating for social equity



Professor Frances Kay-Lambkin, Chair of the NHMRC Women in Health Science Committee

## TARGETED SCHOLARSHIPS

The Newcastle Business School has partnered with more than 10 leading Hunter organisations to offer the Women in MBA (WiMBA) scholarship for aspirational and high-achieving women. The WiMBA initiative aims to redress the gender equity imbalance in leadership by offering scholarships to female students and partnering with leading organisations in our community.

Organisations who partner with the WiMBA Scholarship program show their commitment to addressing gender diversity in leadership by helping to grow the female talent pipeline and foster positive economic growth for the Newcastle region.

WiMBA students benefit from a subsidised program fee, practical support from their partner organisation to enable coursework completion and class attendance, as well as mentors to provide them with guidance, support and advice throughout their MBA program and help developing their post-MBA career pathway.

## SUPPORTING WOMEN IN HEALTH SCIENCE

In 2022, Professor Frances Kay-Lambkin was announced as the new Chair of the National Health and Medical Research Council's (NHMRC) Women in Health Science Committee.

The Women in Health Science Committee advises on interventions to improve gender equity in NHMRC's grant program, and strategies to increase participation, retention and progression in health and medical research. The advice of the Committee will help the NHMRC identify potential interventions to reduce gender disparities.

“Equity in research funding continues to be a critical and complex issue. It is really significant that NHMRC is focusing specifically on this issue, and I look forward to working with them and the Committee to make some practical inroads into redressing the gender disparities in medical research funding.”

– Professor Frances Kay-Lambkin





# CLEAN WATER AND SANITATION

## SAVING WATER

The University set an ambitious target within our Environmental Sustainability Plan, to reduce our mains water usage by 15%. Despite a 28% increase in our gross floor area, and our student numbers growing by more than 10,000 students, we managed to achieve a 24% reduction, on a 2015 baseline.

That's a saving of nearly 60,000 kilolitres. For perspective, one fire engine carries an average of 2 kilolitres of water!

To achieve these savings, the University installed rainwater tanks to irrigate sporting fields and reduce demand for potable water, in addition to constructing two million litres of stormwater retention ponds. So far, fifteen campus buildings have been fitted with rainwater re-use systems connected to internal plumbing and amenities, to offset mains water for toilet flushing.

## MODELLING ECOSYSTEM IMPACTS

The University's Environmental Engineering Research Group are developing innovative models to assess environmental impacts and management of disturbed ecosystems.

Research areas include the impact of climate variability on hydrology, moisture-soils interactions, rehabilitation of mine and low-level nuclear waste sites, storage of soil carbon, and water impacts of coal seam gas extraction.

The group is also investigating the impact of climate variability and human pressure on ecological interactions with hydrology, in-stream and estuarine ecology, sediment transport and erosion, rehabilitation of wetlands, and ecogeomorphologic rehabilitation of mine sites.

## DROUGHT DISCOVERY

Dr Anthony Kiem, of the School of Environmental and Life Sciences, collaborated with Dr Tessa Vance from the Australian Antarctic Program, to investigate Antarctic ice core records, revealing significant implications for water security and management across Australia and internationally.

Until now, we have based our understanding and predictions of climate and drought on the 150 years' worth of observations from the Interdecadal Pacific Oscillation (IPO) climate variability index. Now, using 2000 years of climate records from Antarctic ice cores to create a reconstruction of the index, the team found that our long-held belief that wetter and drier climates in Eastern Australia alternate every 15-30 years, is false.

“Our new ice core research shows that the wet periods are much shorter and less frequent than the dry phases. This has serious implications for drought and flood risk assessments, which should be re-calculated to account for dry phases being the norm, and much more likely than suggested by the last 150 years of observations.”

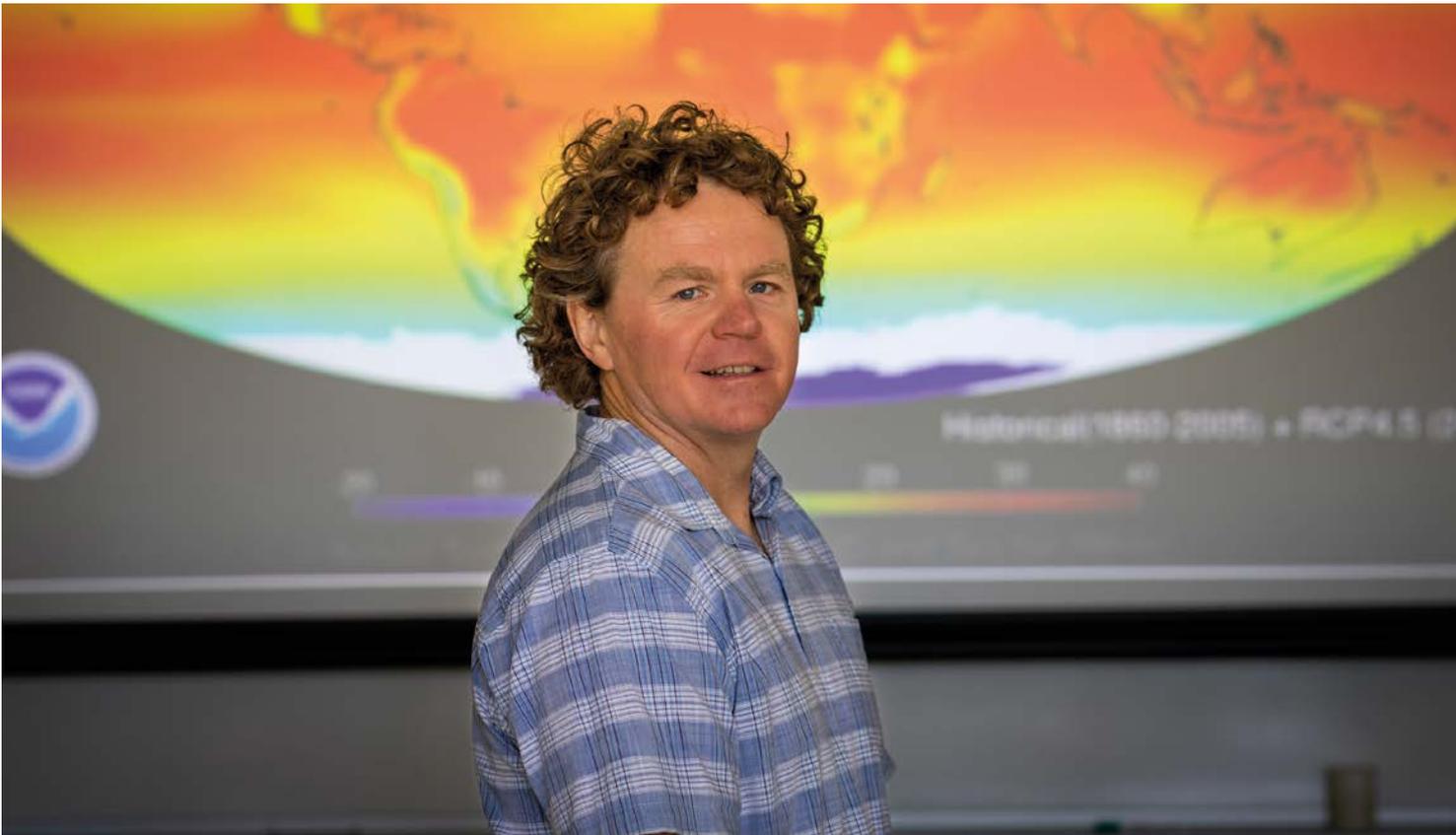
– Dr Anthony Kiem

**24%**

reduction in mains water usage

**Top 100**

in the world for Water Resources



*Dr Anthony Kiem's ice core research has significant implications for drought and flood risk assessments*

## **COAST AND CATCHMENT WATER MANAGEMENT**

Researchers at the Coastal and Marine Science Research Group are undertaking industry-led research investigating physical and biological processes that support the sustainable use of resources within coastal catchments and marine environments. One research project is determining the impacts of sewage overflows on the benthic environment in Lake Macquarie. This includes monitoring and assessing seagrass, macro vertebrates and micro communities. Researchers are using this information to develop evidence-based environmental monitoring programs to address water quality and ecosystem health within this important coastal environment.





# AFFORDABLE AND CLEAN ENERGY

## DRIVING CHANGE

Pioneering environmental advocate Stuart McBain is putting the University's printed solar cells to the ultimate test, using the technology for off-grid electric car charging on a journey around the coast of Australia.

The journey seeks to contribute to the national conversation on decarbonisation, by stimulating conversations about electric vehicles, and having honest conversations about the supporting infrastructure.

Professor Paul Dastoor, who pioneered the printed solar cell technology, said Mr McBain will provide valuable real-world insight, helping to inform the development and future deployment of printed solar.

"This is a rare and valuable opportunity for testing and feedback on our printed solar technology, in the field, in diverse environments. It will not only help us refine our technology as we progress toward commercial roll-out, but may also help inform future designs and destinations for remote roadside charging stations aimed at solving the challenge of long-haul electric vehicle use in our country and others like it."

– Professor Paul Dastoor

## TRAILBLAZING THE FUTURE OF CLEAN ENERGY

Just days after the launch of a new decarbonisation innovation hub in May 2022, the University of Newcastle in partnership with the University of NSW kicked off another multi-million dollar research commercialisation program, this time focused on recycling and clean energy.

The latest funding announcement is separate to, but complements, the new state-wide decarbonisation innovation hub launched by our two universities, which received \$15 million in initial funding from the NSW Net Zero Industry and Innovation Program.

The Australian Recycling and Clean Energy Trailblazer program is backed by \$50 million from the Federal Government, and will work to commercialise at least 63 new recycling and clean energy products, 15 spin outs, and 9 micro-factories, by 2050. The impact of the program will include 180 megatonnes of avoided greenhouse gases, and a \$15 billion contribution to Australia's Gross Domestic Profit (20 year horizon).

"This partnership between University of Newcastle and UNSW will combine the strengths of our two universities to give us the power to accelerate Australia's clean energy and recycling industries and bring more, greener technologies to Australians."

– Laureate Professor Behdad Moghtaderi

# Ranked 16th

in the world for Affordable and Clean Energy

# 18%

18% reduction in electricity usage in 2021

# 28.5

28.5 kilotonnes of carbon emissions offset by solar panels on campus



Scholarship recipient, Madeleine Novak, with the CEO of Oceanex Energy, Andy Evans

## SUPPORTING STUDENT-LED RENEWABLE ENERGY RESEARCH

A new scholarship delivered by Oceanex Energy will support University research into renewable energy options, and offshore wind farming specifically.

Development Studies (Honours) student, Madeleine Novak, is the inaugural recipient of the \$10,000 Oceanex Energy Scholarship, which will support the pursuit of her Honours research project, investigating attitudes towards offshore wind developments in Eastern Australia.

The scholarship exemplifies the value the University places on interaction with industry, and is an excellent opportunity for students to work in an environment that is bringing the world closer to a sustainable future.

## HUNTER HYDROGEN ROADMAP

The Hunter Hydrogen Roadmap provides a pathway for the Hunter to establish a thriving domestic and export hydrogen industry, outlining the targeted actions and investments across sectors and the region over the short, medium and longer terms.

The strategic vision of the Roadmap is for the Hunter to be Australia's leading hydrogen hub and technology cluster, demonstrated by excellence in research, innovation, technology and education, production, use, export and employment participation across the hydrogen supply chain.

The Roadmap articulates the strategic enablers of regional collaboration, research and development innovation and investment attraction. As a foundational framework, the Roadmap will address workforce capabilities aligned to industry development and policies, safety and standards, and community engagement.





# DECENT WORK AND ECONOMIC GROWTH

## PROFILE: PETER COCKBAIN

A distinguished innovator, entrepreneur, industrialist and philanthropist, proud alumnus Peter Cockbain AM is one of Australia's most highly regarded and influential engineers. Despite his incredible career achievements on local, national and international stages, Peter has remained steadfastly, and modestly, anchored in his home community of Newcastle.

The cofounder of Ampcontrol, one of Australia's largest privately-owned electrical engineering companies, Peter has served the University of Newcastle in numerous leadership roles since his graduation over 50 years ago, serving on Council, various committees, and the Board of University Services. Ampcontrol has also maintained strong ties with the College of Engineering, Science and Environment, including contributing to undergraduate and postgraduate scholarships, internships, lecturing and tutoring, and funding a Chair in Power Engineering.

Peter acknowledges that the University has been extremely important to his career and to the growth of Ampcontrol.

“Even after I graduated, I still relied on the University to provide a lot of information to me and my team so that we could take Ampcontrol from what it was in 1968 to what it is today, with nearly 1,000 employees. Over the years, recent undergraduates, postgraduates and even a couple of professors have joined us as we have grown and expanded outside of Newcastle, into the UK, Europe and America. Without the University, none of this would have been possible.”

– Peter Cockbain AM

In 2004, Peter was instrumental in establishing ResTech, a collaboration between Ampcontrol and the University of Newcastle, which assists in product development and research commercialisation. He is also a substantial philanthropic contributor to the University's medical research team working towards the early detection of ovarian cancer.

“The biggest thing I am proud of is that we provide hundreds or possibly thousands of jobs for people. We're now employing two further generations of some of our original employees.”

Peter's commitment to sustainable economic growth, support of University programs that promote career-ready graduates, and philanthropic support for medical research, are just a few of the reasons that Peter was awarded the 2021 Alumni Medal for Professional Excellence.

## HUNTER SELECTED FOR NATIONAL WORKPLACE INDEX PILOT

Newcastle-Hunter businesses have been invited to participate in a pilot by the Australian Workplace Index.

University researchers will form part of the team utilising the national benchmarking tool to provide free tailored programs for businesses offering insights and intelligence in leadership, well-being, and productivity.

The project has already seen great uptake from key businesses across the region – including Lake Macquarie City Council, PKF, 4UCare, and the Royal Australian Airforce Base. It is open to Hunter businesses with a minimum workforce of 15.

# \$98,800

median starting salary for postgraduate employment – above the national average

# 90.9%

of our undergraduate graduates find employment within four months of graduating



*Proud alumnus Peter Cockbain AM, one of Australia's most highly regarded and influential engineers*

## **BOOSTING REGIONAL JOBS AND DIGITAL OPPORTUNITIES**

This year, the Australian Public Service announced it will partner with the University of Newcastle to deliver a new Academy Campus.

The APS Academy Campus will offer a suite of flexible data and digital training and entry level employment opportunities for students to help kick-start their public service data and digital professional careers without leaving our region.

University of Newcastle Vice-Chancellor, Professor Alex Zelinsky welcomed the partnership announcement that will help drive new opportunities for the country, our region and students.

“In an increasingly connected and digital world, the Academy will complement our existing work in cyber security and digital innovation, boost our skilled workforce in our region, and further embed our collaboration with government and industry. It will provide our students with new pathways for data and digital professional careers through work placements, and ensure that when they graduate our students will be ready for the digital world that awaits them.”

– Professor Alex Zelinsky AO





**\$24,511,312**

\$24,511,312 in 2021 STEM research income

# INDUSTRY, INNOVATION AND INFRASTRUCTURE

## Q BUILDING OFFICIALLY OPENS

This year, the University's Q Building was officially opened by The Hon. Rob Stokes MP Minister for Infrastructure, Cities, and Active Transport.

Part of the University's City Campus, Q Building is regional NSW's first 6 Star Green Star 'Design and As Built' certified building. It has been built to create an innovation hub in the city through the I2N network and also houses the University's School of Humanities, Creative Industries and Social Sciences.

"The Q Building is a Hub of innovation where we have the living lab for our Creative Industries disciplines combined with our innovation hub called I2N. Sparking innovation in our students and our emerging entrepreneurs is on point with our commitment to serve our region. In the Q Building, we build capacity for jobs of the future and the amazing growth that is emerging in the Hunter."

– Professor John Fischetti, Pro Vice-Chancellor,  
College of Human and Social Futures

## INDUSTRY BREAKFAST INSPIRING REGIONAL INNOVATION

The University of Newcastle invites business and industry representatives to explore powerful new pathways to innovation at their regular Industry PhD Breakfast events.

Featuring inspiring accounts of local success stories, the events are an opportunity for businesses to connect with the University and start a conversation about their specific research and development (R&D) challenges.

Dean of Graduate Research, Professor Kylie Shaw said the University was committed to supporting more PhD industry placements in the region, and that students were making an impact in short and long-term placements in industries such as engineering, advanced manufacturing, defence, local government, business, health, and education.

"Global rankings schemes consistently reinforce our world-class research status across a wide range of disciplines. Our students, backed by this incredible network and cutting-edge research facilities are ideally placed to drive meaningful innovation outcomes for business and industry. By hosting this breakfast event, we hope to unearth businesses who have a problem to solve but may not have considered taking the problem into their own hands or didn't know where to look for solutions."

– Professor Kylie Shaw

# \$125 million+

invested into the Newcastle City campus over the last five years

# 450+

450+ research and development partners

## INNOVATION IN THE REGIONS

The University plays an important role in supporting pathways for research to have real-world impact, contributing to job creation and economic growth.

Facilitated through the University's new ventures network, I2N, successful ventures like renewable power pioneers, Diffuse Energy, show how integral it is to invest in the country's most innovative ideas. The brainchild of alumnus and honorary lecturer, Dr Joss Kesby, Diffuse Energy's small wind turbines have proven to be a great return on investment, having received \$400,000 in seed funding, as well as state funding as part of the New South Wales government Minimum Viable Product (MVP) scheme. They also proved the value of their technology during the 2020 bushfire season, powering critical voice and data services for NSW Police, Rural Fire Services, State Emergency Services and NSW Health.

With parts of the small wind turbine manufactured locally in the Hunter, and the controller and electronics designed by Newie Ventures, the startup is supporting the Hunter region's innovation and economy, as well as creating Work Integrated Learning opportunities for students.

## STRENGTHENING INDUSTRY COLLABORATION

The University of Newcastle has signed a historic Memorandum of Understanding (MOU) with the NSW Government to boost innovation and drive research commercialisation.

The five-year agreement seeks to strengthen collaboration between Government and our University to explore further research, innovation, education and training across areas ranging from advanced manufacturing to sustainable cities to addressing environmental challenges.

Vice-Chancellor Professor Alex Zelinsky AO welcomed the focus on the critical role that universities play in driving innovation and economic development.

“Our University is committed to being part of a strong recovery for NSW and contributing to economic growth and innovation. As our regions diversify their economies, there is great potential for us to partner with government and industry to ensure our communities not just survive but thrive.”

– Professor Alex Zelinsky AO

## INSTITUTE FOR REGIONAL FUTURES

The Institute for Regional Futures is one of the University's flagship research institutes. The team partner with organisations to improve performance and delivery, and strengthen capability. They recently worked on the Western Sydney City Deal, a tri-level government partnership between the federal and state governments, and eight local councils. The key objective of the City Deal is to plan and deliver the necessary infrastructure to support the projects that will lead recovery and growth in Sydney's west. The Deal also aims to leverage the catalytic investment opportunity provided by the new Western Sydney Airport, and the innovation hub of the Aerotropolis.

The Institute was engaged to review the City Deal's evaluation, which is crucial to tracking progress and providing accountability. The team facilitated discussions with key research, government and industry stakeholders, to consider current research priorities, gaps and areas of collaboration across housing, transport, climate and resilience, education and skills development. The findings from this work are key to shaping and resourcing the objectives of the City Deal, including delivering 200,000 jobs in the region.





# REDUCED INEQUALITIES

## CULTURAL CAPABILITY

Aboriginal and Torres Strait Islander cultural knowledge and understanding is important to how we conduct teaching and learning, how we support students and staff, and how we design and conduct research. Our Cultural Capability Framework 2020-2025 establishes a roadmap for the University to become a culturally safe, responsive and capable institution.

Importantly there is a priority focus on supporting staff to move beyond cultural awareness and along the continuum towards responsiveness. In support of this, the Office of Indigenous Strategy and Leadership developed a three-part training package. The training has been delivered to 2000 staff since March 2021, and involves completing online learning modules, an in-person workshop, and a half day or full day on Country experience, facilitated by local Indigenous community members who have in-depth cultural knowledge.

“It is critical that staff are empowered, comfortable and confident in supporting Aboriginal and Torres Strait Islander students, creating culturally safe spaces, teaching Aboriginal and Torres Strait Islander content to all students and supporting all of our students towards cultural responsiveness.”

– Nathan Towney, Pro-Vice Chancellor  
Indigenous Strategy and Leadership

## THE COLLABORATIVE ART PROJECT

Adorning the cover of the University’s Well-being Health and Safety Strategy is The Collaborative Art Project. Inspired and guided by Aunty Bronwyn Chambers, Elder in Residence at the Wollotuka Institute, The Collaborative Art Project is an example of how the bringing together of people, to share experiences, and to pool ideas in a safe and guided way, can result in an output that goes well beyond the product itself. This sense of belonging, inclusion, diversity of thought and feeling valued, are essential to psychological safety.

The artwork speaks to Reconciliation and the unique experience that is Ourimbah campus and Darkinung country.

“I was overwhelmed by the pride shown by the students and staff of the Central Coast Campus who contributed in the Collaborative Art Project. All participants demonstrated the utmost respect and enthusiasm which is evident in the beautiful artwork that depicts their place of study, work and perfectly represents Darkinung Country to them.”

– Dr Julia Coffey, Collaborative Art Project participant



The collaborative art project piece represents Darkinung Country

# Over 100

Over 100 Indigenous doctors graduated

# Over 50%

Over 50% of staff have completed cultural capability training

# 24%

24% of students are from low socioeconomic or disadvantaged backgrounds

## STUDENT SUCCESS STRATEGY

At the University of Newcastle, we take great pride in the rich diversity of our students: different cultural and socio-economic status backgrounds, different ages, experience and aspirations, and different stages of the learning journey. The University's distinctive and diverse student profile brings with it an array of challenges and requires a student-centred approach. We are committed to supporting all students, regardless of their background or circumstances, not just to gain entry, but to thrive in their field of study and to be successful as graduates.

The development of the Student Success Strategy is representative of this commitment. This Strategy, and the priority areas, builds on the considerable work that is already been done at the University to support students to succeed. This Strategy recognises the needs of the different student cohorts we have at the University to ensure the support is appropriate, timely, and geared towards providing the best chance of success. It articulates a commitment to a student-centred approach to learning, teaching and the student experience.

## THE ALLY NETWORK

The ALLY Network aims to create a more inclusive culture at the University by promoting greater visibility and awareness of those who are diverse in their sex characteristic, gender and/or sexuality.

The network offers professional development and training to staff and student leaders who are prepared to advocate on behalf of members of the University who are diverse in their sex characteristics, gender and/or sexuality (LGBTIQ+).

An Ally is an active agent of change who chooses to challenge anti-LGBTIQ+ prejudice and heteronormative values.

## A NEW DREAMING

A collaboration between the Yandaarra Collective and the University has resulted in the 2022 publication of a stunning children's picture book with strong messages about caring for Country and each other.

Recommended for primary school students, *The Dungguirr Brothers and the Caring Song of the Whale*, connects children to the landscape of the mid-north NSW coast, as well as to the unique stories of the Gumbaynggirr people.

Yandaarra, a Gumbaynggirr word meaning shifting camp together, is a research collective led by Aunty Shaa Smith, Uncle Bud Marshall and Neeyan Smith, Aunty Shaa's daughter. The collective also includes non-Indigenous academics from the University's Geography and Environmental Studies discipline, Professor Sarah Wright, Dr Lara Daley and Dr Paul Hodge.

A core value of Yandaarra is to understand how to live together on and in relationship with Mother Earth and each other. In the book, key themes of Aboriginal sovereignty, Country, belonging, history, family and community are told through a unique blend of story, song, Gumbaynggirr language and cultural information.

## NEW FUTURES HACKATHON FOR AGEING IN PLACE

New Futures Hackathon for Ageing in Place brought together multidisciplinary minds to explore the barriers around ageing at home, and examine how our elderly community can remain independent, in control, and at home while they age.

The release of Australia's final report from the Royal Commission into Aged Care revealed poor and deteriorating living standards for many in residential aged care homes, as well as extended wait times for those living at home and reliant upon Home Care support. A major finding from the report showed that the majority of people want to remain at home, rather than moving into an aged care facility.

When we support people to age in place we are helping our ageing population to remain independent, in control and connected with their community. Additionally, the cost of service per person is significantly lower when people can stay in their own home, alleviating the financial burden from governments.

Ageing at home offers significant advantages to our ageing community and our society, however there are significant barriers to overcome on the way.





## 6 Star

All new buildings will achieve a minimum six-star Green Star 'Design & As Built' by 2025

# SUSTAINABLE CITIES AND COMMUNITIES

## ENGAGING FOR THE GOALS

The second multi-disciplinary University of Newcastle online conference was held jointly by the African Postgraduate Student Association (APSA) and the Centre for African Research, Engagement and Partnerships (CARE-P) with Senior Economist Dr Enock Nyorekwa Twinoburyo, from the African Sustainable Development Centre for Africa delivering the keynote speech. He noted the challenges of achieving the targets of the United Nations SDGs by 2030, but was hopeful Africa and the world will be a better place through collaboration.

The Kenyan Education Attaché Nancy Mutai delivered a special address on inequality, COVID-19, and the achievement of Africa's 2030 SDGs. She acknowledged that COVID has made the achievements of SDGs harder for Africa, but encouraged all to adopt a transformative pathway.

## A PORTAL TO THE PAST

Our extensive Special Collections contains the University Archive; the historical and cultural memory of both the University and our regions. These treasures allow us to tell the stories of our ancestors.

Just recently, thousands of individual items were added to the University's Special Collections thanks to philanthropic contributions. Digitised items range from Hunter regional maps and subdivision plans that would cover 2.5km if laid out in a straight line, to more than 5,000 pages of historical records from children's homes.

The collection has also mapped 5,500 Aboriginal placenames across NSW, and sponsored the creation of a virtual reality 3D Aboriginal Newcastle landscape amongst other projects.

These donations are critical in sustaining and enhancing the great benefit that the Library brings to so many, enabling us to continue preserving the rich history of our region in further unlocking archives for future use.

## EXCELLENCE IN ENGINEERING

Professor Anna Giacomini's has been recognised for Excellence in Engineering or Information and Communications Technology, under the 2022 NSW Premier's Prize for Science and Engineering.

For more than 20 years, Anna has worked in rock mechanics and civil engineering, focusing on rock slope stability and rockfall analyses, in particular improving safety along major transport networks, coastlines and infrastructure, and how to prepare against hazardous events.

As extreme events are predicted to increase due to climate change, more slopes and infrastructure will be affected. These government funded projects in collaboration with industry partners help develop new technological practices to adapt to regional industry needs

"This work has a real impact, from tourists walking on the beach, to miners working at the bottom of steep rock surfaces, it's about improving safety for people throughout the region."

– Professor Anna Giacomini

## GROUND-BREAKING BIOREMEDIATION RESEARCH IN THE PACIFIC REGION

Fijian microbiologist and University of Newcastle PhD candidate Awei Bainivalu is delivering pioneering bioremediation research to help prevent a major environmental disaster in the Pacific region. Awei's research involves the use of biological organisms that have the ability to remove hazardous contaminants from the environment, and her PhD project is focused on using these organisms to deal with potential oil spills from WWII shipwrecks.

This project is a partnership between the University's Newcastle Institute for Energy and Resources, Secretariat of the Pacific Regional Environment Programme, and the Major Projects Foundation.

# Top 100

Top 100 Most Sustainable Universities in the World

# \$35 million

Australian Research Council Centre of Excellence opened to secure a low-carbon future



Professor Anna Giacomini wins the Excellence in Engineering or Information and Communications Technology Award under the 2022 NSW Premier's Prize for Science and Engineering

## INDIGENOUS LANGUAGES

People in the Hunter and around the country are using a unique community program to keep Indigenous languages alive. Muuya barrigi, meaning 'flying breath,' is a multi-media language program led by Indigenous languages researcher Dr Raymond Kelly, of the University's Wollotuka Institute.

While students learn practical aspects like pronunciation and sentence structure, the real value of the program lies in its ability to connect Indigenous students to community and Country. Participants are encouraged to consider the healing potential of the re-awakening of ancient languages, to inspire connections to place, while exploring opportunities to implement First Peoples principles and practices in the exchanging of ideas and experiences.

The program's activities address the cross-curriculum priorities in the Australian Curriculum for Aboriginal and Torres Strait Islander Histories and Cultures, designed to give students the tools and language to engage with and better understand their world at a national, regional and global level.

## DISASTER RESILIENCE

In September 2022, the University, in partnership with the Secretariat of the Pacific Regional Environment Programme, ran a partner event on disaster resilience.

Associate Professor Iftekhar Ahmed presented the project 'Drafting of Practitioner's Guideline and Introduction of Systems to enable Pacific Islands to effectively manage Disaster Waste', undertaken by the University's Disaster and Development Research Group.

The conference brought together UN Member States, intergovernmental organisations, and stakeholder groups, to accelerate progress on disaster risk reduction. With significant attention being given to predicting the impacts of climate change and building resilience in Pacific Island nations, the management of disaster waste is often overlooked, making the work of A/Prof Ahmed and events like this, crucial in addressing the UN's sustainability goals.





# RESPONSIBLE CONSUMPTION AND PRODUCTION

## WORTH FROM WASTE

Bachelor of Food Science and Human Nutrition students successfully developed four innovative products from food waste, and presented their projects at the Food Product Development Expo in October 2022.

Students showcased their innovations, which included a wrap made from vegetable waste, and muffins made from orange pulp, to a crowd of over 120 people, with representatives from Mars and Sanitarium praising the students' efforts.

The United Nations Environment Program found that in 2021, 1.3 billion tonnes of food was lost or wasted, costing hundreds of billions of dollars, and producing up to 10% of global greenhouse gases. The necessity to equip our students with the skills to face these challenges is a call the University will continue to answer.

## STEELING BENEFITS

In September 2022, The Australian Research Council announced further funding for Linkage Project grants, with Associate Professor Tom Honeyands and his team awarded \$473,854 to develop a process to separate phosphorus from steelmaking slag while the slag is still molten, reducing the time it takes to produce the steel.

Benefits are anticipated to include increased utilisation of steel slag, creation of a valuable fertiliser co-product, decreased greenhouse gas emissions, and a reduction in the penalty applied to Australian iron ores. The project will be carried out in collaboration with BHP Steelworks and the University of Wollongong.

## PARTNERS AGAINST PLASTIC

Positioned to help champion the ban on single use plastics, the University was selected as a partner in sustainability with the NSW Environment Protection Authority (EPA).

The University is part of a diverse group of organisations in the partnership, who are designing and implementing solutions to support sustainability and the single use plastic bans in NSW.

The University is deeply committed to its sustainability goals and has already implemented initiatives such as the transformation of soft plastics recycled by staff and students into outdoor benches on campus. Thanks to funding awarded from EPA as part of the partnership, the University will develop a cookbook with recipes using ingredients with plastic-free packaging to educate and inspire action in the community.

## MINERALS FOR THE FUTURE

Funded by the Australian Research Council, the ARC Centre of Excellence for Enabling Eco-Efficient Beneficiation of Minerals (COEMinerals) began its operations in earnest this year.

COEMinerals, based at the University's Newcastle Institute for Energy and Resources (NIER), develops transformational technologies for a competitive and environmentally sustainable future for Australia's mineral industries through reduced environmental footprint, reductions in energy and water use, high resources recovery, as well as supporting future leaders for the sector.

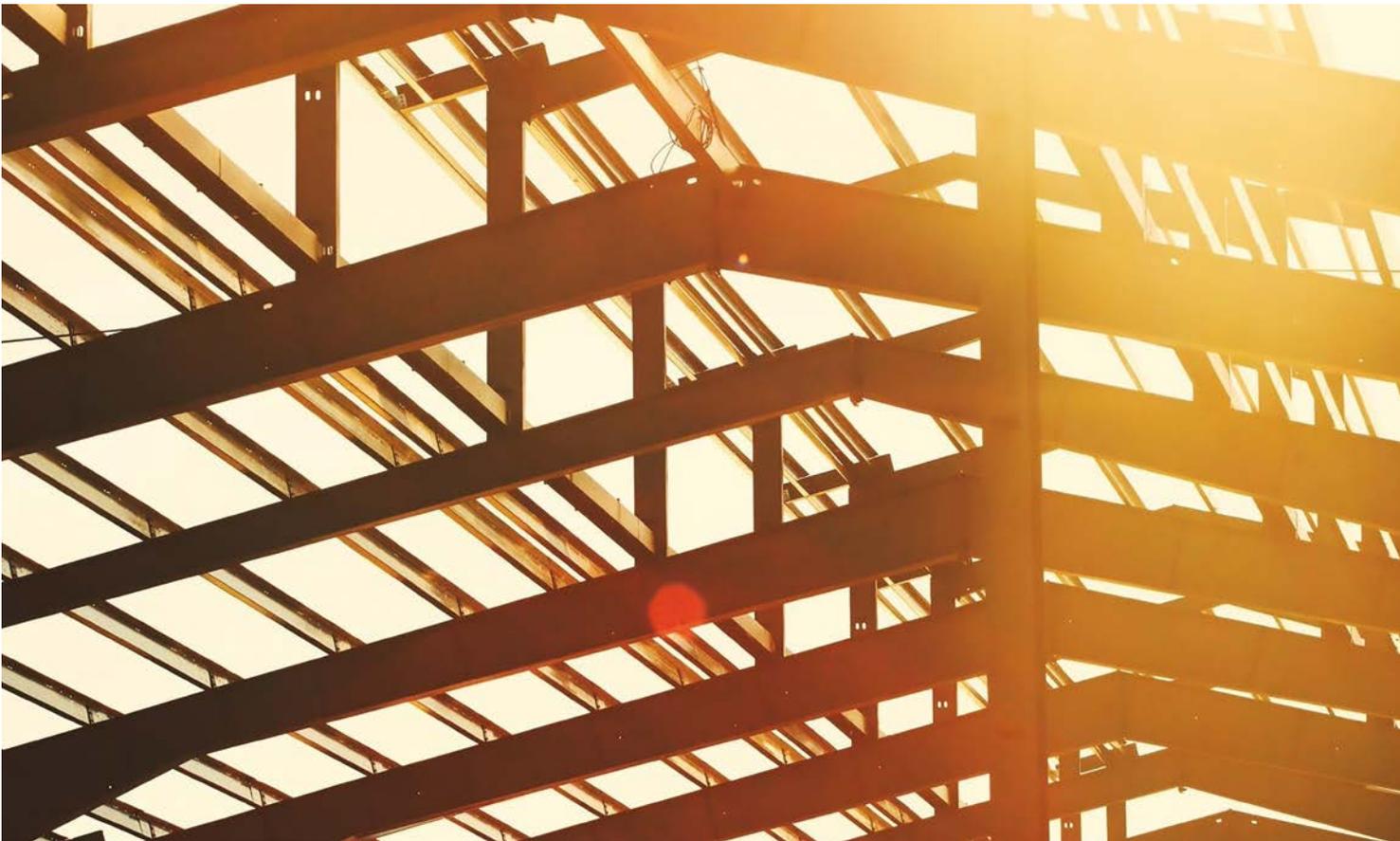
The Centre will transform the minerals industry, establishing a new generation of research leaders to support the innovation needed in creating a green economy for the future.

# 350,000+

350,000+ pieces of soft plastic recycled as part of the Bags to Benches initiative

# 17.32

17.32 metric tonnes of organic food waste was recycled in 2021



ARC Linkage Project grants will allow Associate Professor Tom Honeyands and his team to develop new processes for steelmaking

## HONE CARBON

Hone Carbon's mission is to unlock the potential for carbon storage and agricultural environments and become a global leader in the measurement, verification and optimisation of soil carbon projects, for the benefit of the land, its custodians and our shared atmosphere.

Storing carbon in soil is the most cost effective and sustainable practice for our farms. Traditional lab testing in agriculture is labor and capital intensive; Hone's hardware and software technology reduces this by 5 to 10 times. This makes generating a carbon credit accessible for all farmers and eliminates previous costly, time poor and carbon intensive processes.

Founded by three former University of Newcastle PhD students, the Hone Group delivers solutions in spectroscopy for a range of applications. Hone Ag provides handheld devices for monitoring nutrients in soil, plant tissue and commodities. Hone Liquid provides instruments for food and commodity processing. Hone Create offers Hone's machine learning platform to other organisations seeking to build their own chemometric models.





# CLIMATE ACTION

## MAPPING TSUNAMI RISK

This year, a team of marine scientists and university students investigated the causes and consequences of the submarine landslides and deep-marine canyons along Australia's Eastern edge, during a five-week voyage on CSIRO research vessel Investigator. The collaborative research project includes students, volunteers and researchers from the University of Newcastle and the University of Sydney.

The research will help identify the risks that locally generated submarine landslide-induced tsunami events can pose to communities, and inform strategies to mitigate those risks. Research to-date shows that submarine landslides have occurred along the East Coast of Australia for about 15 million years – and are expected to reoccur in the future with continued potential to generate tsunamis.

By mapping the ocean floor and collecting seafloor rock and sediment samples, the team will investigate features such as the Ulladulla underwater canyon and slope, Byron slide and canyon, and the Noosa canyon.

## DECARBONISING PARTNERSHIP

BHP will extend its partnership with the Centre for Ironmaking Materials Research (CIMR) at the University of Newcastle, with a further A\$10 million in funding to support ongoing research into decarbonising steelmaking.

The expanded research program will focus on low carbon iron and steelmaking using BHP's iron ore and metallurgical coal. This will see hydrogen utilised in conventional blast furnace ironmaking, optimising the use of resources, and giving rise to alternative low carbon ironmaking technologies.

The collaboration, with funding from BHP's US\$400 million Climate Investment Program, will last five years and help train the next generation of PhD researchers and engineers.

## JOINING THE HEAL NETWORK

The University of Newcastle joined the Healthy Environments And Lives (HEAL) network, to tackle health impacts of climate change. The network brings together Aboriginal and Torres Strait Islander knowledge, sustainable development, environmental epidemiology, and data science and communication, to address climate change and how it affects communities' health.

The University of Newcastle is contributing to two of the seven priority themes: bushfires, air pollution and extreme events, led by Associate Professor Anthony Kiem, and food, soil and water security, led by Dr Thava Palanisami.

## BACHELOR OF CLIMATE SCIENCE AND ADAPTATION

The impacts of climate variability and climate change are affecting our lives like never before, and the University of Newcastle is addressing the increasing need for graduates with the knowledge to tackle climate-related risks.

Offered from 2021, the Bachelor of Climate Science and Adaptation program allows students to turn their passion into practice, providing them with the knowledge needed to quantify climate-related risks and develop adaptation strategies (e.g. infrastructure, planning policy) that reduce the economic, environmental, and social costs of climate hazards, and are also robust across a range of plausible futures.

The Bachelor of Climate Science and Adaptation is the only undergraduate degree in Australia to offer specialised education and career pathways in both climate science and climate adaptation; preparing our graduates to not only understand the impacts of climate variability and change, but how to develop solutions that address and minimise those impacts.

**100%**

100% of energy from low-carbon sources

**0%**

0% direct investment in fossil fuels

**11,872**

11,872 research citations



Students from the College of Engineering, Science and the Environment taking part in a research study into underwater landslides on the Research Vessel Investigator





# LIFE BELOW WATER

## PROFILE: DR MEGAN HUGGETT

Dr Huggett's research focuses on the biodiversity and function of microbes in marine and coastal ecosystems.

“All organisms on Earth are intricately linked with microbial organisms, relying on them for functions such as nutrition, resilience to environmental change and resistance from disease. In particular, my research aims to understand the role of microbes as marine invertebrate larval settlement cues, in fish guts, and across both benthic microbial ecology and bacterioplankton dynamics.”

Megan's research aims to understand baseline healthy ecosystem interactions, and how these are impacted by environmental change. Dr Huggett also works on technologies for monitoring water quality and ecosystem health, developing molecular methods for tracking faecal contamination affecting local councils.

## RESEARCH GROUP: ENVIRONMENTAL WATER SCIENCE

Water is a basic component of human existence and the support system on which people and ecosystems depend. The academics in the Environmental Water Science Research Group study its importance to ecosystems and humans, its use and management as a resource, and its modification through contamination and pollution.

The objectives of the group include investigating water quality impacts and processes within drinking water catchments and storage reservoirs, to undertake research on the environmental impacts of decentralised water and wastewater systems. They also undertake research on faecal source tracking in catchments, and examine the effects of pollutants on freshwater, estuarine and marine biota, and their biological and community response to pollutant stressors. The group is also interested in the physiology of aquatic organisms and the ecology of freshwater, estuarine and marine environments.



*Dr Megan Huggett investigates the biodiversity and function of microbes in marine and coastal ecosystems*

## THREATENED CORAL PUTS ENTIRE COASTAL ECOSYSTEMS AT RISK

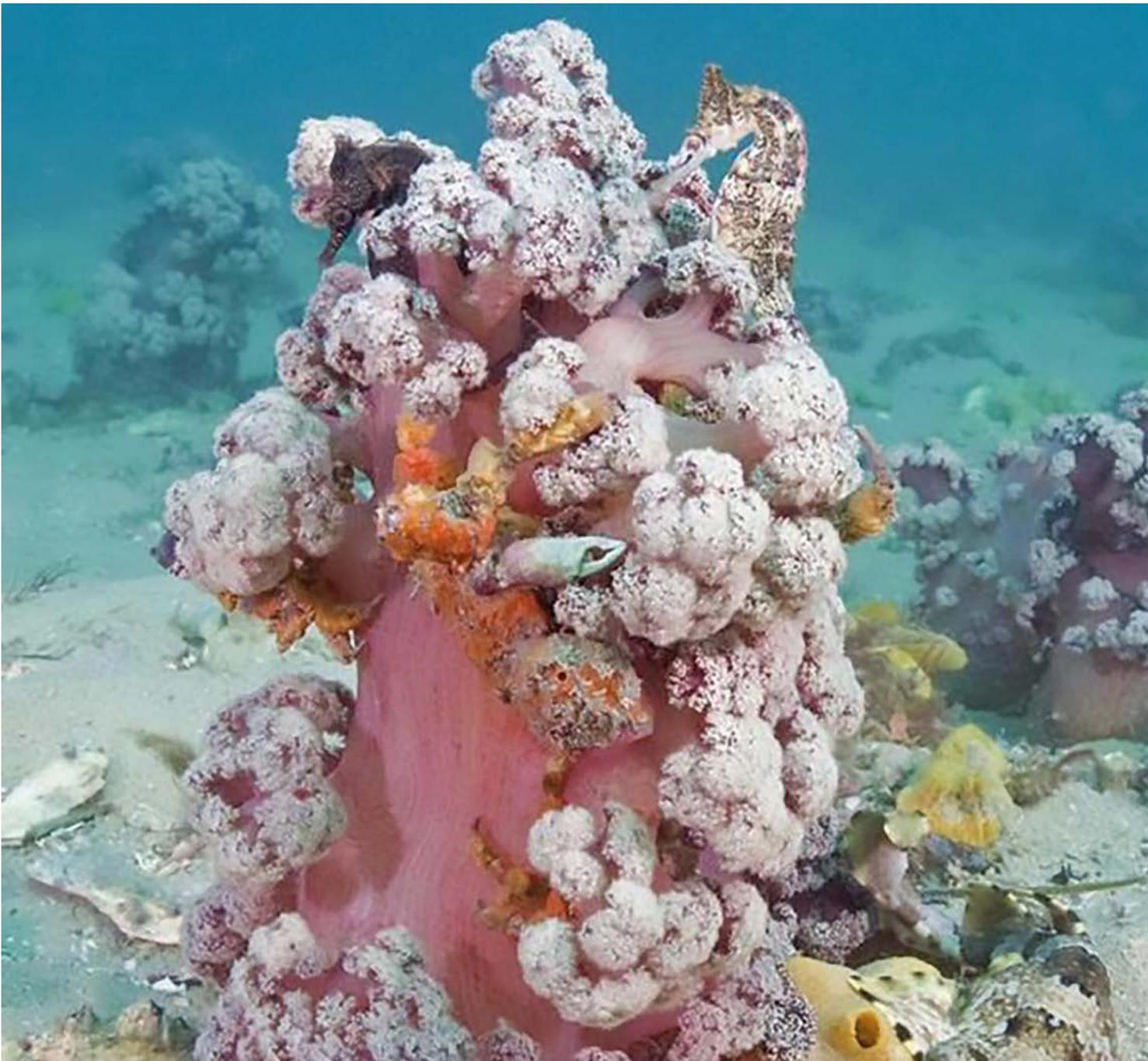
Huge declines of soft coral habitats off the NSW coast are a major cause for concern, putting entire food webs at risk, according to a study led by researchers at the University of Newcastle.

On the Central Coast and in Port Stephens, some soft coral habitats have declined by up to 90 per cent, leading to the species *Dendronephthya australis* to become the first soft coral in Australian history to be listed as 'Threatened'.

The decline is largely attributed to human interference such as boat anchoring, poorly installed boat moorings and entanglement by fishing line, as well as sand movement.

While previous work found that large fish do not directly feed on these corals, researchers found that small invertebrates relied on the corals as part of their diet and these invertebrates are important food sources for fish further up in the food web, signalling that a loss of these soft coral habitats could have broad, negative effects on our waterways.

The paper concludes by calling for remediation and management actions to ensure *Dendronephthya australis* does not become extinct in the region.



The decline of soft coral habitats has led the *Dendronephthya australis* to become the first soft coral in Australian history to be listed as 'Threatened'.





# LIFE ON LAND

## BUSHFIRE RECOVERY

A team of researchers from the University of Newcastle have been awarded \$468,000 as part of the Black Summer Bushfire Recovery Grant, to assist communities in recovery and resilience in the wake of the 2019-20 fires.

The project, called "*Climate-Smart Adaptive Resilience and Engagement for Animal Evacuation*", will be led by Associate Professor Temitope Egbelakin from the School of Architecture and Built Environment.

The project aims to upgrade and extend animal sheltering facilities, and collate logistical data requirements to better protect the wider regional agricultural sector and vulnerable communities. The project will support affected communities' economic recovery and resilience through skills-development programs, engaging communities and experienced volunteers, farmers, landholders, and welfare services across the Hunter region.

## RESEARCH GROUP: CONSERVATION SCIENCE

The Conservation Science Research Group at the University has been formed by a team of internationally recognised experts in biodiversity conservation with project experience in the natural environment and biodiversity; environmental monitoring, restoration ecology, behavioural ecology and cognition, instrumentation and analysis; marine pollution impacts; and sustainable adaptation in agriculture and forestry.

The group also brings together research scientists interested in establishing impact monitoring, conservation and management tools for Australia's unique flora, fauna and ecosystems.

## HABITAT REHABILITATION

A selection of students from the University embarked on a journey to Borneo in 2022 to experience first-hand the impact of global conservation efforts, in the fight to protect the proboscis monkeys.

Along the way they discovered different perspectives on sustainability, and rich cultural history, guided by Emeritus Professor Tim Roberts.

Since 2018 over 75 students have had the opportunity to visit the Proboscis Monkey Conservation site to see first-hand habitat rehabilitation in a global setting.

“We were fortunate to have the opportunity to visit the centre, which isn’t open to tourists. Only researchers and conservation workers are allowed in, so we were able to see, first-hand, the important rehabilitation work the centre does for the proboscis monkeys and their habitat. Seeing conservation in a different country really opens your mind to what is possible from a sustainability standpoint.”

– Alicia Watt, Environmental Science and Management Student

293

293 research  
papers published



*Dr Bonnie McBain is advocating for a more holistic approach to examining change resistant issues, building community, and modeling solutions.*

## PROFILE: DR BONNIE MCBAIN

Dr Bonnie McBain's research aims to build solutions that increase the resilience of communities and the natural environment they rely upon for their welfare. In the classroom, it's her innovative, student-led approach that empowers students to continue their own life-long learning.

Together with colleague Dr Liam Phelan, Bonnie recently co-led a project to develop learning standards for the field of environment and sustainability in collaboration with academics, employers, Aboriginal peoples, students and environmental educators from other sectors from all around Australia.

“We now have an understanding of the essential learning required of all students graduating from an environment and sustainability degree anywhere in Australia.”

Moving into the future, Bonnie is looking to further merge her research and teaching, with a focus on bottom-up change, by empowering community to increase participation in decision making.

In 2022, Bonnie was one of only nine recipients of the Award for Teaching Excellence, at the Australian Awards for University Teaching.

“When the community has the information, and community will is there, change can happen. Ever since I could remember I knew my dream job would involve ‘saving the planet’.”

## UNIQUE PHD OPPORTUNITIES

A team within the School of Environmental and Life Sciences are investigating the ecology of threatened macropods in the north-east forests of NSW. For this project they will use occupancy models derived from camera traps to assess status and habitat, and one lucky student will be focusing on trapping and collaring parma wallabies and red-necked pademelons.

The parma wallaby has not had an ecological study conducted on it for over 50 years and pademelons are not receiving much more research attention. This project seeks to rectify this by determining the response of these species to the Black Summer fires. The student will use camera traps to determine locations of the focal species, and analyse the data using occupancy models to determine the factors affecting occupancy, habitat preferences and behaviours. The more exciting part is that there is scope for the student selected for this unique project to be upgraded to a PhD.





# PEACE, JUSTICE AND STRONG INSTITUTIONS

## NEW COLOMBO SCHOLARS TO HELP STRENGTHEN TIES WITH INDO-PACIFIC

University of Newcastle students Jake Stephens, Katherine Birrell, Chelsea Harris and Emily Simpson were named the latest recipients of the Australian Government's New Colombo Plan Scholarships. Under the scholarship, the students will visit Samoa, Fiji, Japan and Hong Kong to develop their skills in fields such as development issues, cross-linguistic communication, and construction technology and management.

The initiative is designed to strengthen ties between Australia and the Indo-Pacific with the Scholarship Program offering recipients unique opportunities to enrich their learning and global citizenship.

## LAW ON THE BEACH

Law on the Beach is a free legal advice clinic held in the relaxed setting of Merewether Surf Club each January and February.

Staffed by Newcastle law students and Legal Centre lawyers, the clinics make seeking legal advice more approachable, particularly for young people.

"Sometimes young people do not have the life experience or resources to stand up for themselves in a matter involving the law. We aim to change that by providing a casual setting to have that legal conversation."

– Director of the Legal Centre, Shaun McCarthy

Despite targeting younger members of the community, everyone is welcome to book in a visit, and all questions and cases are welcome – from traffic fines to employment discrimination, and everything in between.

## PUTTING THINGS RIGHT

Associate Professor Xanthé Mallett, one of the world's leading forensic anthropologists in dissecting human behaviour, now sits at the helm of the Bridge of Hope Innocence Initiative Newcastle.

The Initiative is an opportunity for criminology and law students from across the world to work together with authorities on piecing together evidence to reinvigorate cold cases. Under the supervision of experienced practitioners, students get to apply their learnings to real cases, whilst time-poor partner authorities like the police receive the findings to help bolster their investigations.

"I've seen first-hand the impact on family and friends as a result of waiting years for answers. Not only is life stolen from the wrongfully convicted, but any further investigations cease, meaning the real perpetrator remains at large. Understandably, the effect of the injustice is felt through communities for generations. It's something I feel passionate about helping to combat."

– Professor Xanthé Mallett

# 16,199

16,199 research citations

# Top 150

in the world for sociology

# AACSB & EQUIS

accredited business school



Law on the Beach is a free legal advice clinic run by the Newcastle Law School on Newcastle's Merewether Beach

## AGAINST WEAPONISED TRADE

A significant funding boost for Australian researchers seeks to secure the nation's economic future, regardless of the uncertain relations between global powerhouses China and the United States.

Economic warfare between China and the US poses a significant economic and security threat for Australia and the region. To combat this, a research team led by Professor Lisa Toohey is examining how trade wars play out for Australian businesses, and the formulation of legal and policy responses.

*Australia and Weaponised Trade: Threats and Responses* is a two-year project funded by the Australian Department of Defence under its Strategic Policy Grants Program. With a global increase in the use of trade as an instrument of national security, the project aims to identify how to best safeguard Australia's interests, maintain global peace, and avoid unnecessary harm to Australian industry.

The research team includes collaborators Associate Professor Markus Wagner from the University of Wollongong and Associate Professor Elizabeth Thurbon from UNSW.

## FELLOWSHIP FOR PEACE AND SOCIAL JUSTICE EDUCATION

The office of the Pro Vice-Chancellor Research and Innovation announced the 2022 Research Advantage Women in Research Fellows, from an extremely strong field across the three colleges.

One recipient, Dr Nisha Thapliyal, aims to continue to develop her research trajectory in the fields of Peace and Social Justice Education. Her research has two strands: Critical Peace Education Research, and Social Movement. To this end, Nisha will co-host an interdisciplinary research symposium and complete a study with NGO and academic partners.

The Women In Research program was established in 2017 to support the development of senior research leaders from Early and Mid-Career Researchers through dedicated mentoring and support. Nisha joins alumni who credit the program with the acceleration of their research career.





# PARTNERSHIPS FOR THE GOALS

## SUPPORTING THE NEW ENERGY ECONOMY

In 2022, the University launched a third Doctoral Training Centre (DTC) in Energy.

Research focus areas for the Energy DTC include energy generation and storage, renewable energy and alternative energy sources, emissions reduction technologies, and grid systems and stability.

Professor Alan Broadfoot, Executive Director of NIER, said DTCs provide our partners with important opportunities to be invested in the next generation of industry leaders.

“Candidates are highly skilled researchers who are making significant contributions to solving industry challenges. Through their industry-embedded DTC experience, they are well positioned to emerge as the innovators of the future.”

The Energy DTC will support the Higher Degree Research (HDR) activity associated with the newly announced Australian Trailblazer for Recycling and Clean Energy (ATRaCE) program, in partnership with the University of New South Wales.

Chair of the ATRaCE Governance Board, Meg McDonald, commended the University for extending the DTC model to include energy, aligning with the ATRaCE Program. The DTC will help support industry to bring new innovations to market and fast track commercialisation, critical to meeting the demands of our energy future.

## DROUGHT RESILIENCE PARTNERSHIP

The University of Newcastle is partnering with the University of Southern Queensland to support farmers and communities to get ready for drought.

As part of the Department of Agriculture Water and the Environment (DAWE) Drought Resilience Research and Adoption Program, eight dedicated Drought Resilience Adoption and Innovation Hubs have been established around Australia to connect farmers with regional agricultural experts, innovation, and new practices.

## PARTNERING TO STRENGTHEN REGION'S FUTURE

The University has partnered with Port of Newcastle to create new learning and career pathway opportunities for students and local jobs that support the development of new economies and the long-term prosperity of Australia's deepwater global gateway and the Hunter Region. On 22 October, the organisations announced a Memorandum of Understanding, pledging to collaborate across areas of research, development and enabling platforms, talent development, innovation programs, community engagement and collaboration, and energy hub and precinct development.

## UNIVERSITY RESEARCH PARTNER NAMED NO. 1 IN CLEAN ENERGY AT COP26

Commercial research partner Mineral Carbonation International (MCI) had a huge win at COP26, taking out the Clean Energy Start-up Pitch Battle. MCI, whose Mineral Carbonation Research Pilot Plant is located at the Newcastle Institute for Energy and Resources (NIER), develop a range of solutions to address the major global challenge of reducing emissions.

They were selected as winners ahead of more than 2,700 companies around the world.

# 450+

450+ research and development partners

# 16,199

16,199 research citations

# Ranked 6th

Ranked 6th in Australia for Impact



The Aboriginal Numeracy Gala Day was run in partnership with the Newcastle Knights

## ABORIGINAL NUMERACY GALA DAY

The University, in partnership with the Newcastle Knights and Hunter and Central Coast Aboriginal Education and Consultative Groups, hosted a numeracy gala day for around 120 Aboriginal and Torres Strait Islander students in years seven and eight, from the Hunter and Central Coast regions..

Attendees engaged in numeracy activities, using rugby league as the tool, such as running drills, working out salary caps and building their dream NRL teams.

“It makes it a lot more fun because you’re enjoying it, it’s not all just about maths, it’s mixing it with something funner that you want to do.”

– Student attendee

“I loved maths at school, it would have been cool if we got to do something like this, but it was just so good watching the kids smile, kick the ball, and learn at the same time.”

– Newcastle Knights player, McKenzie Baker





**FEATURED STATISTICS AND FACTS HAVE BEEN DRAWN FROM THE FOLLOWING SOURCES:**

- Times Higher Education Impact Rankings 2022
- Environmental Sustainability Plan 2019-2025
- The University of Newcastle Data Warehouse
- 2022 THE Impact submission
- Elsevier
- Performance and Completions Power BI
- Innovation Connections Report 2014-2020
- The Good Universities Guide 2022
- QS World University Rankings 2023
- ShanghaiRanking's Global Ranking of Academic Subjects 2022
- Climate Active Emissions Inventory 2021
- QILT Graduate Outcomes Survey 2019-2021
- International Undergraduate and Postgraduate Prospectus 2023
- University of Newcastle research management system, 2021
- Department of Education Selected Higher Education Statistics 2020
- QS World University Rankings: Sustainability 2023
- QS World University Rankings by Subject 2022

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