

THE SCHOOL OF
**CIVIL &
ENVIRONMENTAL
ENGINEERING**
ANNUAL REPORT 2024

©2025 School of Civil and Environmental Engineering
UNSW SYDNEY 2052

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ABOUT US

The School of Civil & Environmental Engineering continues to be internationally ranked as the number one School of our kind in Australia, and in the world's top twenty.

Our academic staff are recognised world leaders in their fields of expertise, while our alumni are to be found as innovators and decision makers in industry, government and the community.

With a large and talented student cohort, we offer more than ten undergraduate single and double degrees, while our postgraduate coursework degree, the MEngSc offers nine areas of technical specialisation. Our popular two-year full-time UNSW Master of Engineering in Civil Engineering or Environmental Engineering is professionally accredited by Engineers Australia.

The number and diversity of our academic staff and the breadth of our engagement with industry allows us to bring tremendous expertise to our teaching.

Our research centres and discipline groups are at the forefront of fundamental and applied research across civil and environmental engineering with strengths in construction innovation, decarbonisation, infrastructure, water engineering, transport, smart, safe and green surveying and geospatial engineering, and sustainability. Each year our staff are awarded millions of dollars of new ARC and other research grants, as we work towards innovative solutions to current challenges.

We have been pursuing excellence and innovation in education and research since our foundation in 1949. We were the first School in the country to offer a postgraduate coursework program for engineers with our Master of Technology (1958), the first to design an Environmental Engineering degree (1991), and to offer a Humanitarian Engineering minor (2017).

We continue this tradition of innovation along with our equally strong commitment to advancing a sustainable, safe and just society.

We are always embedded in the real world. Each year, our researchers work with over 140 industry, government and tertiary organisations on specific industry and community-related projects. But we don't seek to uphold the status quo, in these challenging times, we are looking for change and transformation.



“
Our research centres and discipline groups are at the forefront of fundamental and applied research across civil and environmental engineering
”

WELCOME

Welcome to the 2024 Annual Report of UNSW's School of Civil & Environmental Engineering, internationally ranked as the number one School of its kind in Australia, and in the world's top twenty (AWRU & QS Rankings 2024).



"The sky is truly the limit in what we can achieve together"

It is my privilege and honour to lead this School, with its amazing, dedicated and brilliant staff and students.

Our School maintains a strong breadth and depth of knowledge in all core areas of civil and environmental engineering as well as surveying and geospatial engineering. We offer a wide variety of undergraduate and postgraduate degree programs to over 2,400 students. The quality and diversity of our academic staff, and our intensive engagement with industry, allow us to bring an unmatched level of expertise to our research and teaching.

Our researchers continue to be awarded millions of dollars each year in industry and government funding, and are at the forefront of innovative 'blue sky' and applied research across the many facets of civil and environmental engineering. In 2024 ARC funding alone totalled \$5.43M - with three Discovery Projects (DP), four Linkage Projects (LP), and two ARC Fellowships being awarded to our staff.

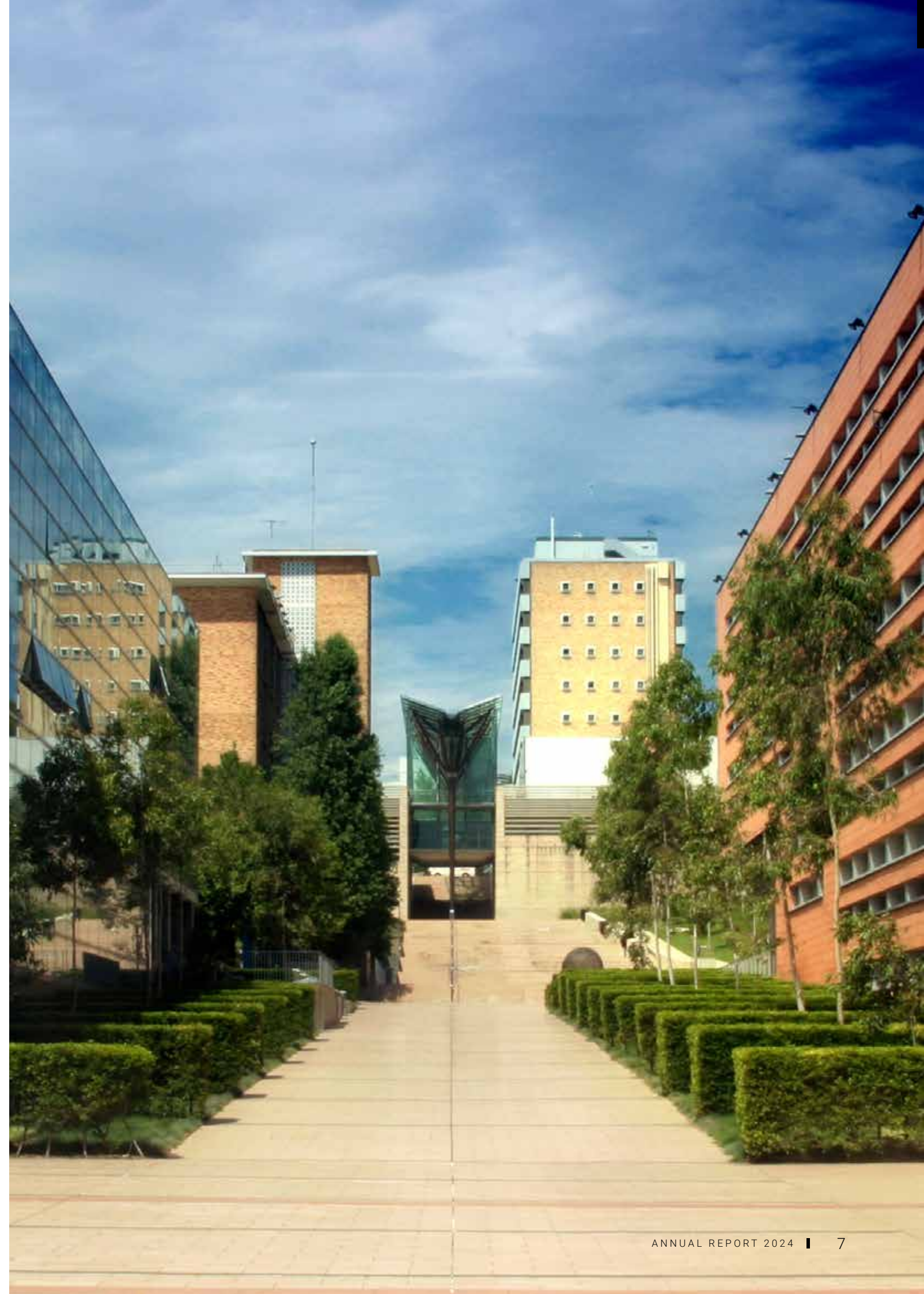
We are very mindful of our responsibilities as teachers and guides of the next generation of innovative, creative and ethical professionals. Our students are ambitious and talented, and keen to have a positive impact on their world. We want them to be well-equipped to do so.

We have never been an ivory tower School, and we are not now. At the heart of our research and teaching, and indeed of our profession, is the desire to be of service to our wider communities. In 2024 our Centres and hubs were engaged in 200 research projects with more than 140 industry and government partners.

Meanwhile 30 industry partners support our work in a variety of ways: from financial support for academic positions, providing career advice, prizes, event sponsoring and mentoring for our undergraduate students, and supporting our outreach to high school and primary school students throughout the state.

I remain incredibly grateful that I have the opportunity to contribute to the ambitious vision of one of the world's leading Schools. I believe that the sky is truly the limit in what we can achieve together in teaching, research, and community engagement as we seek to make a significant and positive contribution to Australia and the world.

Scientia and PSM Professor Nasser Khalili
Head of School



2024 OVERVIEW

IN THE WORLD'S TOP TWENTY! (AWRU & QS Rankings 2024)

No. 1
in Australia!
(AWRU & QS Rankings 2024)

OUR PROGRAMS

10 Undergraduate
Postgraduate **9**
2 Master of Engineering

STUDENTS ENROLMENT

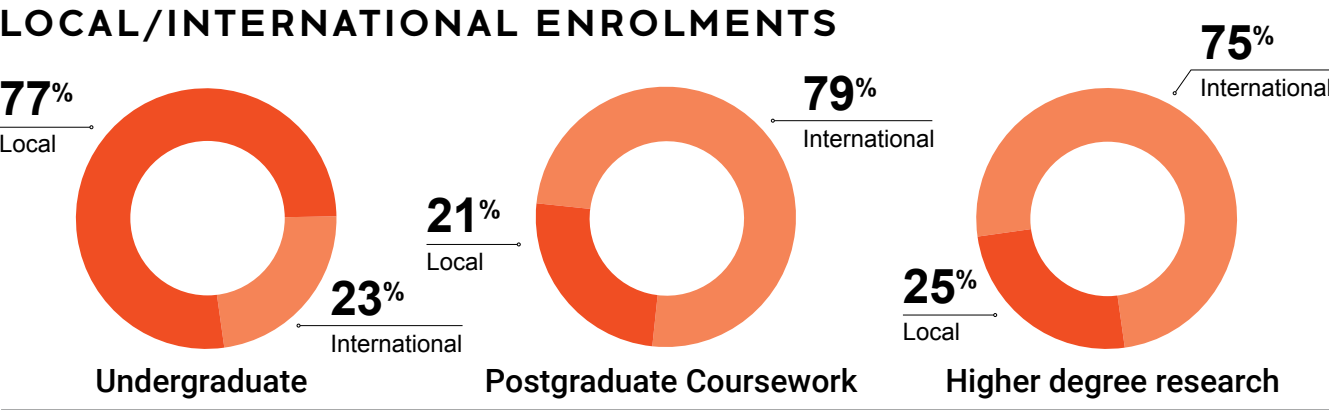
1439 Undergraduate
970 Postgraduate
235 Higher Degree Research

FEMALES

26% Undergraduate **28%** Postgraduate
36% HDR students **17%** Academic staff

MOST POPULAR UNDERGRADUATE DEGREES

771 BE (Hons) Civil Engineering students
173 BE (Hons) Civil/ BCom students
167 BE Civil with Architecture students



RESEARCH CENTRES AND HUBS

6

RESEARCH GRANT INCOME

\$16.8M

RESEARCH FUNDING

198

Number of Industry and Government funded research projects in progress in 2024

ARC GRANTS AWARDED

3 ARC Discovery
4 ARC Linkage
2 ARC Fellowships

\$5.43M

STAFF

66 Academicstaff
44 Research staff
31 Professional & technical staff
13 WRL Engineers

SOCIAL MEDIA

5,891
Nos. of LinkedIn followers by Nov 2024

PUBLICATIONS

Books 1
Book Chapters 17
Journal Papers 600
Conference Paper 32
Other 11

FINANCES

\$61.7M
Generated teaching & research income

\$21.5M
Operating Budget

SCHOOL EXECUTIVE GROUP (SEG)

The School Executive Group (SEG) is a senior leadership group which acts as an advisory group to the Head of School. It meets monthly with the Head of School to discuss key and current issues on matters of strategy, planning and policy directions for the School.

SCHOOL EXECUTIVE GROUP

NASSER KHALILI Chair & HoS	KRISTEN SPLINTER Managing Director of Water Research Laboratory
RICHARD STUETZ Deputy Head (Academic)	VINAYAK DIXIT Head of Transnational Ventures
DENIS O'CARROLL Deputy Head (Research)	BRIAN UY Staff Rep
STEVEN DAVIS Associate Head (Education)	LEKANA TOUBIA School Manager
KURT DOUGLAS Associate Head (Engagement)	

SCHOOL MANAGEMENT COMMITTEE (SMC)

The School Management Committee (SMC) represents the peak decision-making body in the School with all key decisions relating to academic matters and overall direction debated and ratified by this Committee.

SCHOOL MANAGEMENT COMMITTEE

NASSER KHALILI Chair & HoS	TAHA HOSSEIN RASHIDI Director rCITI
DENIS O'CARROLL Deputy Head (Research)	ARMAN KHOSHGHALB TSC Rep
RICHARD STUETZ Deputy Head (Academic)	LINLIN GE SAGE Rep
STEVEN DAVIS Associate Head (Education)	ELNAZ IRANNEZHAD Equity, Diversity & Inclusion Rep
KURT DOUGLAS Associate Head (Engagement)	PAUL GWYNNE OHSC Rep
FIONA JOHNSON Director WRC	LEKANA TOUBIA School Manager
KRISTEN SPLINTER Director WRL	LUCIA WONG EA to HoS & Admin
CHONGMIN SONG Director CIES	

CVEN WELCOMES NEW MANAGER

In Feb 2024 we farewelled our much-loved School Manager, Anthony Dever, and welcomed his successor Lekana Toubia.

What an amazing decade+ Anthony gifted our School. Anthony fostered and built a culture for both professional and academic staff of friendly cooperation, problem solving, information sharing, open negotiations, support for new ideas, financially prudent and yet also adventurous. In 2019 several staff nominated Anthony for a UNSW President Award for Excellence, which he won. He was a “Yes Man” – in the best possible way – always seeking solutions, bypassing obstacles, and committed to finding the way forward.

At his farewell Anthony thanked Head of School Professor Nasser Khalili for “his unwavering support and friendship, and for occasionally pushing me beyond my comfort zone! I think we have made a great team and have achieved a lot.” Anthony came from the public service, but he soon adapted to working with academics and researchers. ‘I would never have imagined how interesting concrete could be. Or how much fun researchers have working with pooey wastewater.’ As for the marvellous professional team at CVEN, Anthony’s words of praise reflected his own qualities, when he called them “loyal, supportive, hardworking, resilient and caring.” Right back at ya Boss!



Anthony Dever



New School Manager Lekana Toubia came to the School in the same year as Anthony - as our Finance Administrative Officer in 2013. She added teaching allocation to her duties in 2015, and was Student Manager from 2017 -2018. She then joined the Division of Finance & Operations as research accountant, leading to a role in management reporting and analysis, and spent the last three years as Finance Analyst at the Faculty of Engineering. As well as having her second child during that period Lekana made the sound decision of moving the family to Coogee!

Over the years, working with Anthony and with Faculty, Lekana has built up extensive experience of School people, culture and processes. In other words, she knows all about us! Already a member of the team, we welcome her to this new leadership role in a great School.



Lekana Toubia

PROJECT HALO: HARNESSING THE POWER OF NATURE-BASED SOLUTIONS

In 2024, a groundbreaking five-year mangrove research and rejuvenation program led by CVEN staff, was launched in Fiji, with support from Swire Shipping.

Coastal lands and waters in the Pacific are under intense pressures. Restoring mangrove ecosystems and natural tidal cycles may hold the solution.

Mangroves are a type of halophyte — a salt-loving plant that grows in or near tidal water sources. Mangroves store four times more carbon than terrestrial forests. Their branch and root structure provide an ideal breeding ground for juvenile coral and fish, with 30% of global fish species mangrove dependent. Mangroves are also home to various bird species, including egrets, herons, kingfishers, hawks and osprey.

Because of their remarkable environmental capabilities, we see global mangrove ecosystems as a green ring (a halo!) that encircles the earth, delivering better outcomes for people and the planet.

Mangrove ecosystem loss, however, is happening globally - resulting in reduced carbon sequestration, declines in marine and estuarine water quality, reduced biodiversity and a decrease in sustainable fishing yields.

Led by Civil & Environmental Engineering academic staff Dr Andrew Dansie and Professor Will Glamore, Project Halophyte will develop innovative floating mangrove pontoons and undertake environmental restoration in partnership with local communities along the coast of Fiji's main island Viti Levu.

With funding from Swire Shipping and endorsement from the Fiji Office of the Prime Minister for a pilot project, Project Halophyte seeks to 1) re-instate natural tidal flows in degraded coastal lands and 2) integrate mangroves within existing and new marine infrastructure.

These two nature-based solutions aim to revitalise the local mangrove ecosystems in both degraded and urban landscapes in Fiji in partnership with local communities, for the benefit of people and the environment. Over five years, collaboration between UNSW Sydney and University of the South Pacific (USP) will see researchers tracking the environmental, social, and economic outcomes of Project Halo in Fiji, with plans to scale across the Pacific with further regional and national collaborations.

The tidal restoration methodology transfers successful large-scale mangrove rejuvenation methodology from Australia to Fiji. This methodology remedies the high percentage of mangrove planting failure rates and allows large-scale ecosystem regeneration without labour intensive planting of mangroves. The novel nature-based solution to integrate the benefits of mangroves into maritime infrastructure is based on techniques developed in partnership with UNESCO in wave flumes at the School's Water Research Laboratory.

Through installing green engineering in existing and new coastal infrastructure, Project Halo aims to reduce deforestation pressures on existing mangrove habitats, increasing coastal blue carbon sequestration, improving water quality and decreasing wave energy, while fostering ecosystem services and social benefits.

More information is at <https://www.unsw.edu.au/research/project-halophyte>



“
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local mangrove
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landscapes
”

ARC GRANT SUMMARY

2024 was another very successful year for research at the School with Australian Research Council (ARC) grants totalling \$5.43M awarded for many of our innovative research projects.



Australian Government
Australian Research Council

Three Discovery Projects (\$1.96M), four Linkage Projects (\$2.67M) and two ARC Fellowships (\$797K) were awarded.

The breadth and depth of research across the School is reflected in the variety of ARC award winning project topics including the following:

- Pioneering innovations in green civil engineering by developing lightweight yet robust cementitious structures, with minimal cement usage. (Dr Da Chen, Prof Chongmin Song)
- Enhance water resource management by establishing a reservoir flow state-of-the-art forecasting framework spanning seasonal to decadal scales. (Dr Ze Jiang)
- Use a combination of observations and simulations to better understand future changes to sub-daily rainfall extremes for the eastern seaboard of Australia. (A/Prof Fiona Johnson)
- Achieve a better understanding of shear and dilatational waves in unsaturated soils - critical for diverse engineering disciplines. (Professor Nasser Khalili; Dr Babak Shahbodagh; Dr Mohsen Mousavi)



- Through developing electronic waste-derived catalysts for urine wastewater electrolysis, we aim to revolutionize hydrogen production processes, solid waste utilization, and wastewater management practices. (Prof Bing-Jie Ni)
- Refine water treatment strategies to minimise formation of toxic disinfection by-products DBPs in drinking water. (Prof Denis O'Carroll)
- Create a novel Bayesian framework for specifying hydrological models when no in-situ streamflow measurements exist. (Prof Ashish Sharma)
- Address the integrity assessment of engineering structures subjected to dynamic actions, with an innovative technology that will be robust, fully automated and highly efficient. (Prof Chongmin Song)
- Develop a wastewater nitrogen removal process that operates with near-zero Greenhouse Gas (GHG) emissions, working with two major Australian water utilities partners—jointly servicing about one-fourth of the country's population. (Associate Professor Min Zheng; Professor David Waite; Professor Bing-Jie Ni)
- Achieve a globally applicable, feasible solution to transform human urine for safe fertiliser bioproduction. (Dr Zhiqiang Zuo)

“
The breadth and depth of research across the School is reflected in the variety of ARC award winning project topics
”

WELCOME:

NEW INDUSTRY SUPPORTED ACADEMIC POSITION



Leading NSW surveying companies CMS Surveyors, Land Partners, Land Surveys, Lynton Surveys, and SDG have recognised the importance of investing in the future of the surveying industry. Their significant philanthropic donation of \$300,000, matched by the Faculty of Engineering, has established the new Industry Lecturer of Surveying, (Education Focused) position at UNSW Civil & Environmental Engineering.

In 2024 we welcomed registered surveyor Sandra Hoffman to the newly created position. Sandra, a UNSW alumnus, with a BE in Surveying and Spatial information, has been a Registered Land Surveyor since 2009, and has a depth of industry experience working on projects such as the Sydney Metro, London Cross-Rail, and Landcom Riverstone Scheduled Lands.

Addressing the skills shortage of surveyors

SAGE lecturer Dr Craig Roberts was the driving force behind the creation of the new position. "UNSW is the only university producing surveying graduates in the Sydney basin," he says, "and there is currently a huge shortage of supply. There are also only 40 female Registered Surveyors but we – the university and the industry – are working hard to address this and Sandra's appointment will certainly further this need."

At the official signing of the new agreement held at UNSW Engineering on 21 March 2024, Adrian Barden, Director, Land Partners, made the following comments.

"Studies have shown that by 2029 we will be short over 2,000 surveyors and geospatial professionals. To combat this shortage we need to train more surveyors, streamline the processes leading to registration and career progression, increase mutual recognition so that we have a more mobile and flexible workforce and utilisation of systems and technologies to improve productivity. Our five companies fully support the teaching of surveying at UNSW. Ours is a very practical vocation, and one that is best learned while engaged in industry."

"As industry partners we applaud the work of the School and look forward to continuing our involvement. For we realise that a reliable system of land administration underpins the economic development of our nation."

Dean of UNSW Engineering Professor Julien Epps thanked Dr Craig Roberts for his pivotal role in bringing together industry leaders and UNSW Engineering to establish this innovative academic position, the first of its kind within the surveying industry.

"The appointment of Sandra Hoffmann to the Faculty of Engineering is applauded by the profession and the surveying industry," said Adrian Barden. "Throughout her career, Sandra has sought to further the profession by volunteering her time to the Surveying Practice and Legislation committee and more recently in teaching at UNSW as a guest lecturer. Sandra is motivated by the just cause of serving the public interest."

"As industry partners we applaud the work of the School and look forward to continuing our involvement."

AWARDS & RECOGNITION

Em Prof Stephen Foster awarded John Connell Gold Medal

Congratulations to Emeritus Professor Stephen Foster, past Head of School (2013-2020) and Dean of UNSW Engineering (2020 -2023), for his award of the John Connell Gold Medal presented at Engineers Australia Sydney Division Excellence Awards Night in September 2024, where Sydney's most innovative engineers and engineering projects were honoured.

The John Connell Gold Medal is presented to an individual who has made a significant national and international contribution to the structural engineering profession.

Professor Foster has been honoured for his influential contributions to structural engineering. With a career spanning over 40 years, he has driven advancements in materials and design methodologies, particularly in concrete structures.

His leadership in developing industry standards and his commitment to research, education, and professional service have improved engineering practices both in Australia and internationally.

Stephen is a Fellow of ATSE, the Australian Academy of Technological Sciences and Engineering and the elected President of the International Federation for Structural Concrete (fib) (2023-24).

Stephen has over 400 publications in the field of structural concrete and concrete materials, with textbooks on Reinforced Concrete and Prestressed Concrete. His main research interests are in the fields of bringing new materials technologies to the design concrete structures, including fibre and ultra-high-performance concrete, low carbon construction materials such as Geopolymer and alkaline activated concretes and high strength reinforcing steels.



CVEN HoS Prof Nasser Khalili, Em Prof Stephen Foster with John Connell award, Dean of UNSW Engineering Prof Julien Epps - at EA Award Night 2024

"Stephen has over 400 publications in the field of structural concrete and concrete materials"

Global Leadership Role for Prof Brian Uy

Congratulations to Scientia Professor of Structural Engineering Brian Uy, who was elected in 2024 by the Council of The Institution of Structural Engineers (IStructE) as President-Elect for 2025.

IStructE is the world's largest member organisation dedicated to structural engineering with over 30,000 members in over 100 countries. Brian has been Vice President (Australasia and South-East Asia) of IStructE from 2022-2024, and previously Chairman of the Australian Regional Group of IStructE from 2012-2021.

Brian is a Fellow of the Australian Academy of Technological Sciences and Engineering (ATSE) and a Fellow of the Royal Society of New South Wales. He is also Vice President of the International Association for Bridge and Structural Engineering (IABSE).



Professor Brian Uy



Professor Bing-Jie Ni

Two of the world's most influential academics

Huge congratulations to the School's Professor Bing-Jie Ni and Professor Tommy Wiedmann who were among the world's most influential academics in 2024 in their fields.

The prestigious Highly Cited Researchers list from Clarivate annually identifies researchers who have demonstrated significant influence in their chosen field or fields through the publication of multiple highly cited papers over the last decade. Just one in every 1000 of the world's scientists and social scientists make this list, and the honour is bestowed only on those who have the most significant and broad influence in their respective fields.

Professor Bing-Jie Ni from the UNSW Water Research Centre is listed in the Clarivate Environment and Ecology category. His work in the field of environmental technology and wastewater treatment aims to transform wastes or wastewater from a troublesome pollutant to a valuable resource with a minimised carbon footprint and maximised energy recovery.

Professor Tommy Wiedmann, Professor of Sustainability Research, is listed for Cross-field research – a category for researchers who contribute multiple highly cited papers in several different fields, working at the intersection of different scientific or scholarly domains. Tommy's main research interest is in modelling sustainability transitions to explore post-growth human and planetary well-being.



Professor Tommy Wiedmann

Ailar Hajimohammadi receives VC award

Congratulations to A/Prof Ailar Hajimohammadi for receiving the Vice-Chancellor's Award for Excellence in Promoting Industry Engagement in Higher Degree Research, presented at the 2024 UNSW Education Festival.

This award is a testament to Ailar's exceptional record in initiating and supporting innovative and transformational engagement between HDR candidates and Industry Partners.

"I feel incredibly lucky to work on something I truly enjoy" she said, "helping PhD students collaborate with industry partners to tackle real-world challenges and create meaningful impact. Thank you to my students, colleagues, and industry collaborators who have made this journey so rewarding!"

Presented by Professor Jonathan Morris, Pro Vice-Chancellor of Research Training & Entrepreneurship; and Professor Penny Martens, Deputy Dean of Graduate Research; the medal reflects the shared dedication of Ailar and her PhD students towards advancing impactful research.



A/Professor Ailar Hajimohammadi
with Professor Penny Martens and
Professor Jonathan Morris

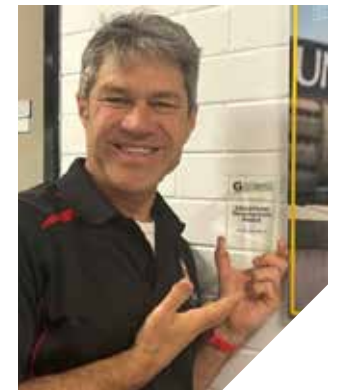
Craig Roberts receives industry award for education

Congratulations to Dr Craig Roberts, who received the Geospatial Council of Australia's Excellence Award for Educational Development in New South Wales!

Craig is a nationally recognised leader in the Surveying and Geospatial Engineering disciplines, known for his exceptional contributions that bridge the gap between industry and academia.

As the Head of the Surveying Program at UNSW, he is dedicated to delivering a modern, high-quality surveying education both at UNSW and across Australia.

The judges noted that Craig's contributions are particularly impactful within community groups, highlighting his remarkable efforts to educate school-level students about geospatial sciences.



Dr Craig Roberts

Milad Mousavi - 3 Minute Thesis – second in UNSW!

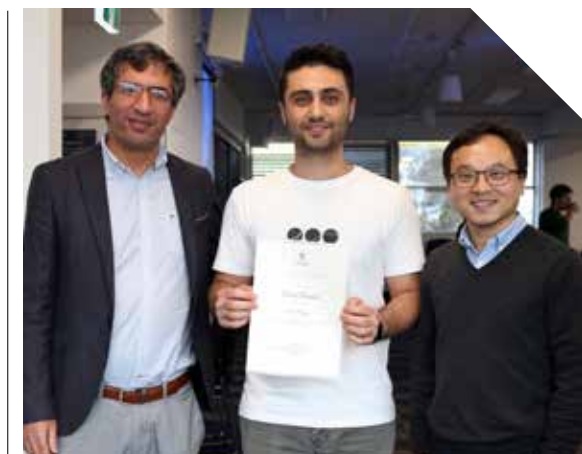
Congratulations to Milad Mousavi for being awarded first place in the 2024 School of Civil and Environmental Engineering's 3 Minute Thesis competition, followed by winning the Faculty of Engineering's and then going on to win second place in the University's 3 Minute Thesis competition!

3 Minute Thesis (3MT) is an academic competition that showcases innovative PhD candidates, who have just 3 minutes to explain their world-changing research and why it is important.

This was an outstanding result for our School and our Faculty, and an absolute testament to Milad's ability to demonstrate the impact of his research in an engaging and accessible way.

Milad's innovative research presentation, 'The Invisible Guardian of the Underground Galaxy', addresses the many lives lost in the mining sector and aims to use a digital invisible guardian to predict accidents.

Milad, pictured here with supervisors Dr Khalegh Barati and A/Prof Johnson Shen, is completing a thesis on 'Evolving and Proactive Risk Modelling in Underground Working Environments - using a Digital Twin approach.'



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UNSW & OUR SCHOOL CELEBRATE 75 YEARS!

Happy Birthday to... Us! In November 2024 we celebrated the 75th Anniversary of UNSW and the School of Civil and Environmental Engineering!



One of the eight foundation schools of UNSW, the School has come a long way from its hardscrabble origins at Sydney Technical College (STC), where in early 1948 'it would be fair to say' our first Head of School, the legendary Crawford Munro recalled, 'the School of Civil Engineering consisted of a table and chair in an office in the School of Mechanical Engineering.'

Each ensuing decade would bring its own challenges, constraints, and creative responses as the School grew through the excitements of 1950s post-war reconstruction, the introduction of innovative postgraduate coursework degrees in 1957 and its establishment of the now world famous Water Research Laboratory in 1959.

The 1960s brought a baby boomer explosion in enrolments as the School took its place, finally, on the hill of the new UNSW Kensington campus in 1966, where we remain today.

The '70s saw a period of intense social change, the first women graduates and the abandonment of student suits and ties, and slide rules. Ambitious academic staff produced seminal texts in structural engineering, civil engineering materials, public health engineering, engineering construction management, and water engineering.

A growing cultural disillusion, however, with science and technology saw a contraction in enrolments in the 1980s and a parallel struggle by the civil engineering profession to maintain its status amongst competing professions both old and new.

The '90s saw the ever-creative School introduce Australia's first environmental engineering degree in 1991, provide distance education options for its growing numbers of MEngSc students, while student numbers began to revive upwards.

Members of the Birthday LOC L-R:
Arman Khoshghalb, Gareth Swarbrick,
Lekana Toubia, Warassamon Kate Brown,
Kurt Douglas.

By the late 2000's the School had transformed itself into a veritable powerhouse of research, attracting funds and support from both Government and industry. It had established two world class research centres, the Centre for Infrastructure Engineering and Safety, and the UNSW Water Research Centre. Student enrolments grew apace. In 2007 the School also introduced another Australian first – an innovative Civil with Architecture degree.

If the first decade of the 21st century had been expansive, the second decade saw an explosion - in student numbers, in ARC research grants (\$40M) an ERA ranking of 5 out of 5, and new research centres & hubs such as the cross disciplinary Connected Water Institute, Surveying and Geospatial Engineering Group, and the Research Centre for Integrated Transport Innovation.

The third decade began, of course, with Covid-19 with its unprecedented challenges, including closed classrooms and borders. Staff and students pivoted with enormous resilience to online teaching and learning, but recovery in student numbers, in research staffing and tertiary budgets has not yet been complete.

We go on of course, rebuilding and as ambitious as ever. It was never an ivory tower School and it isn't one now. We remain intensely involved with our community, working annually with over one hundred and fifty industry, government and academic partners on a wide range of research projects, vitally aware that in many cases the work is more urgent than ever.

Our November party was a wonderful opportunity to unite alumni, family and friends in honouring the remarkable achievements of the School over the past 75 years. We were delighted to showcase our current research, provide lab tours for alumni and provide some seriously good canapes and refreshments.

Our Master of Ceremonies was Associate Head (Education), A/Prof Steven Davis. In the more formal part of the evening we heard from Head of School, Prof Nasser Khalili, followed by speakers representing each quarter-century of our history:

- First 25 years, John Moran - Class of '62;
- Second 25 years, Athena Venios – Chair of CVEN's Industry Advisory Cttee, Class of '96;
- Third 25 years, A/Prof Mitchell Harley - Class of '04 (BE) and '09 (PhD).

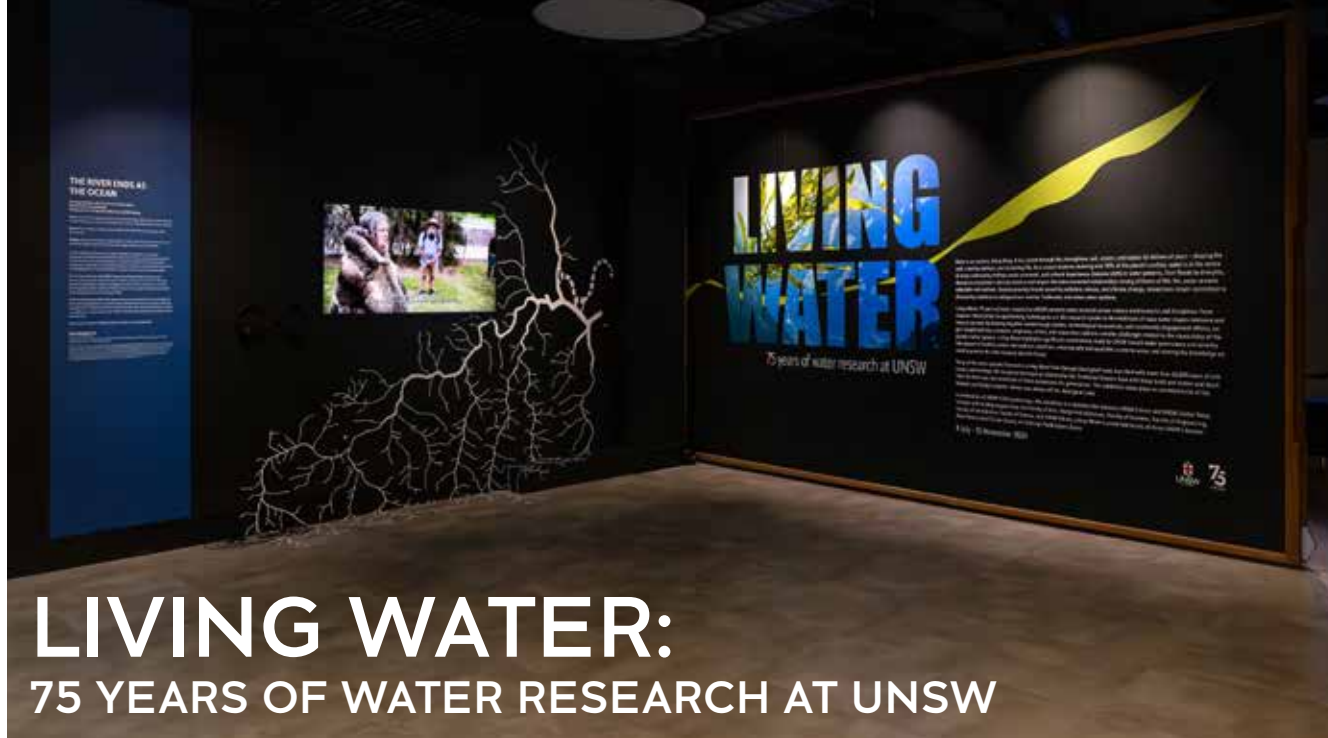
“
By the late 2000's
the School had
transformed itself into
a veritable powerhouse
of research, attracting
funds and support from
both Government and
industry.
”



Speakers - HoS Nasser Khalili,
Athena Venios, Steven Davis,
John Moran, Mitch Harley.

A LOOK BACK AT THE STATS

YEARS	1949	1959	1969	1979	1989	1999	2009	2019	2024
Head of School	Crawford Munro	Crawford Munro	Rupert Vallentine	Ian Lee	Robin Fell	Ian Gilbert	David Waite	Stephen Foster	Nasser Khalili
Undergraduates enrolled	29	604	1007	505	474	647	1173	2060	1439
Coursework	0	40	210	214	195	286	375	1365	970
Higher degree	0	24	58	67	41	90	65	172	235
% Women students	0	0	0	2	9.5	23	18	26	28
% International students	0	n/a	14	9.5	n/a	n/a	31	52	48
Cost of BE fulltime local pa (Govt supported fees)	£27	£90	\$330	\$0	\$1,800	\$4,855	\$7,412	\$9,527	\$9,314
Nos of full time academic staff	3	37	56	60	43	31	31	56	66
Nos of full time professional & technical staff	n/a	33	57	53	48	29	22	32	38
Prime Minister	Ben Chifley	Robert Menzies	John Gorton	Malcolm Fraser	Bob Hawke	John Howard	Kevin Rudd	Scott Morrison	Anthony Albanese



LIVING WATER: 75 YEARS OF WATER RESEARCH AT UNSW



To celebrate UNSW's 75th anniversary, the UNSW Global Water Institute collaborated with the UNSW Library on a fascinating exhibition that reflected, celebrated and reaffirmed our commitment to the stewardship of the planet's marine, freshwater and urban water ecosystems.

The exhibition, Living Water: 75 years of water research at UNSW, connected water research across various environments and disciplines - from seagrass reforestation to aquafarming, hydrology, art and more. The School contributed to several displays featured in the exhibition, including:

- 75 years of hydrology
- Application of Membrane Capacitive Deionisation (MCDI) to desalination of brackish groundwaters in a remote community in central Australia
- CoastSnap
- National Groundwater Recharge Observing System

Living Water Oration Series: The David Pilgrim Lecture

Living Water also held a series of four talks that recognised and celebrated past and present pioneers of water research at UNSW.

In November, "Living Water Oration Series: The David Pilgrim Lecture" reflected on the pioneering studies of civil engineer Emeritus Professor David Pilgrim (1931-2015) who lectured at the School from 1958 – 1993 and led the water engineering group for many years. His work in hydrology continues to influence water research at UNSW and well beyond. Professor Pilgrim is most well-known for his contribution to the third edition of Australia's national flood guidelines, Australian Rainfall and Runoff (AR&R), published in 1987. Its impact was profound, establishing AR&R as an authoritative resource at the forefront of international practice.

The keynote speaker was Professor Rory Nathan from the University of Melbourne, an engineering hydrologist whose current research is focussed on the impacts of climate change on floods and environmental systems. Panellists were the School's Associate Professor Stefan Felder and Ms Wenhui Wu, a CVEN PhD student whose research focus is on developing a water sensitive urban design planning model for flood mitigation. The work continues!



L-R Sue McNeil, Rebecca Want, Marika Calfas – on screen
Hermione Parsons

Diversity & Inclusion

In August 2024, the School's Research Centre for Integrated Transport Innovation (rCITI) hosted an important Women in Transport event.

This event brought together professionals, students and academics from the transport sector to discuss the pivotal role of mentorship in fostering growth and innovation within the industry.

Dr. Elnaz (Elli) Irannezhad and Professor Sue McNeil, the organisers from rCITI, extended their heartfelt thanks to all participants who contributed to the success of the event.

The event brought together an incredible group of professionals and academics committed to advancing the role of women in the transport sector. A special thank you to our esteemed panellists:

- Sue McNeil, Emeritus Professor at the Department of Civil and Environmental Engineering, University of Delaware, and Visiting Professional Fellow at UNSW Sydney;
- Marika Calfas, CEO of NSW Ports;
- Rebecca Want, Market Leader Transport at GHD; and
- Hermione Parsons, Director of the Australian Logistics Council

Their insights on mentorship, leadership, and workplace dynamics were truly enlightening and sparked meaningful conversations about the future of women in transport.

Discussions on the critical role of mentors and mentees in shaping careers within the transport sector provided valuable guidance for both emerging and established professionals.

The event was a significant step toward fostering greater inclusion and diversity in the transport industry, and we look forward to continuing these important conversations in future events.

"The event brought together an incredible group of professionals and academics committed to advancing the role of women in the transport sector."

PROMOTIONS IN 2024



Professor Stuart Clark

It was an excellent year for recognition and reward for many of our amazing staff. In 2024 UNSW promoted five of our academic staff to the position of Associate Professor and one new Professor was announced.

Huge congrats to our new Professor Stuart Clark.

Stuart's research interests are in understanding the influence on deep Earth processes on the development of sedimentary basins and the use of machine learning in developing geological models. He was the Faculty of Engineering's Academic Disability Advisor for five years before becoming the Faculty's Director of Governance, a position he currently holds.

Stuart shared on LinkedIn his thanks and reflections upon his journey:

"To my career, two arts degrees and a higher education graduate certificate were as important as two science degrees in helping me navigate the complex and competitive world out there ...I keep learning the depth to which I don't know and don't understand dynamic Earth processes even as I develop into a professor in the field. I will continue to strive to understand the mysteries of the Earth that sustains us and advocate for Earth science and engineering."

Five new Associate Professors

Congratulations also to the fabulous five new Associate Professors- Andrew Dansie, Steven Davis, Mitchell Harley, Arman Khoshghalb and Craig Roberts.

Andrew Dansie is the Academic Lead, Humanitarian Engineering at UNSW specialising in large-scale environmental systems and international development to meet environmental and social SDGs. Dansie says he is, 'ecstatic to be operating at the intersect of research and sustainable development.'

Steven Davis lectures in engineering construction and management. He is an education-focussed academic and as the School's Associate Head (Education) is the Chair of the School's Teaching and Learning Committee - leading the way since 2013.

Mitch Harley is a leading expert and recognised authority in coastal erosion and its global impacts. In 2017, he founded the CoastSnap citizen science initiative, which has since grown into the world's largest coastal monitoring program, active in 35 countries across six continents.

Arman Khoshghalb's expertise is in the mechanics of unsaturated soils, geothermal energy and energy geo-structures, advanced numerical methods and constitutive modelling in Geomechanics, and coupled analysis of porous media. He chairs the School's Estate and Technical Services Committee.

Craig Roberts is an award-winning lecturer in surveying, GPs and geodesy, well known for his energy and enthusiasm in education and in pursuing meaningful links with industry. The Geospatial Council of Australia noted that Craig's 'exceptional contributions bridge the gap between industry and academia.'

HoS Employee of the Year

Farj Elhadayri, a Technical Officer working in the School's infrastructure and Geotechnical Laboratories was awarded the 2024 Head of School's Employee of the Year Award.

Professor Nasser Khalili said he was delighted to recognise Farj for his outstanding dedication, exceptional performance and unwavering commitment to excellence.



Andrew Dansie



Steven Davis



Mitch Harley



Arman Khoshghalb



Craig Roberts



Farj Elhadayri

ALUMNI AWARD FOR LEADERSHIP

Leadership based on openness, collaboration and encouragement

Winner of the 2024 Judy Raper Award for Leadership, CVEN alumnus Belinda Virant is the Managing Director – Australia at Arcadis.

The Judy Raper Award recognises sustained and significant contribution through demonstrated leadership within the engineering discipline/profession in Australia.

Having graduated with first class honours civil engineering degree from UNSW Civil & Environmental Engineering in 1996, Belinda has more than 25 years' experience in the successful design and project management of major infrastructure projects, both in Australia and the UK.

Her management and leadership style is based on openness, collaboration and encouragement 'to leave the egos at home'. Regional and local sharing of experience, skills, learning and innovations allows each project team to not 'have to re-invent the wheel' every time. Belinda enjoys the variety of skills and responsibilities involved, from looking after people, to winning work and ensuring the business is financially successful.

Her strength in transparent communications has built strong relationships with clients over several years, and driven successful project outcomes across time, cost and quality metrics. As a recognised transport leader, she has served on the NSW Executive Review Groups for major projects such as the Warringah Freeway Upgrade and the Eastern Sydney Congestion Program.

On receiving the Leadership Award, Belinda said, "It's such an honour to be here and receive this award from Judy Raper herself. I truly feel so privileged, and I'm humbled because this really does mean a lot to me. I have a great passion for engineering and for what I do.

"All the way through my career, from being a design engineer onto a design manager to a project manager, to leading teams, to being a business leader and now being the managing director, the one constant is solving problems. That's something I just love so much. The only problem I haven't solved is why we can't attract more women into engineering. So that's a challenge I'll definitely take on."

Belinda has a passion for creating a more sustainable transport sector and enhancing workforce culture, for, as she says, 'bringing out the best in people, and providing them with an environment to succeed.' Belinda and her team were shortlisted for the 2024 Consult Australia Champions Of Change - Diversity and Inclusion award for their Women of Colour Program, and she is active in many other D&I roles, including being a reviewer for the World Business Council for Sustainable Development (WBCSD) Leading Women Awards - for inspiring women from all over the world from different industries.

Through her work as a leader, Belinda has encouraged her company as well as her profession and industry to embrace climate-aware sustainability pathways, address inclusivity and access issues for workers and for the community which engineers seek to serve, and of course, more female participation.

"Change is happening for the better. Let's all help to drive change and embrace it for a sustainable future – don't be a bystander, be an advocate, question the status quo, and be purposefully inclusive." Huge congratulations and well done Belinda Virant! Your School is very proud of you!!!



Belinda Virant

"I have a great passion for engineering and for what I do. The only problem I haven't solved is why we can't attract more women into engineering."

TEACHING & LEARNING COMMITTEE (TLC)

With 75 years of teaching experience the School continually works to improve the learning experience. We are always striving to implement the latest theory, practice and technological innovations in our programs, for the best educational outcomes.

With more than 2,400 students, we play a leading role in delivering undergraduate and postgraduate degree programs in civil engineering, environmental engineering and surveying.

THE TEACHING AND LEARNING COMMITTEE (TLC) of the School is responsible for all academic matters relating to all undergraduate and postgraduate coursework programs.

These involve encouraging teaching quality, providing teaching aids to staff, monitoring courses through student focus group surveys, interaction with student representatives, and setting policy regarding academic aspects of undergraduate and postgraduate examinations and enrolments.

The major drive behind the Committee's agenda is to improve the learning experience of students.



TLC Chair Steven Davis

TEACHING AND LEARNING COMMITTEE

STEVEN DAVIS
Chair

RUTH FISHER
Deputy Chair

RICHARD STUETZ
Deputy Head (Academic)

ANDREW DANSIE
Co-Year 1 Coord

TAEHWAN KIM
Co-Year 1 Coord (SSP)

ELENA ATROSHCHENKO
Co-Year 2 Coord

LINLIN GE
Co-Year 2 Coord

ASAL BIDARMAGHZ
Co-Year 3 Coord

MARTIN ANDERSEN
Co-Year 3 Coord

ROBERT HOLDOM
Co-Year 4 Coord

MOHSEN KALANTARI
Co-Year 4 Coord

STEVEN DAVIS
Civil Eng Program Coord &
Grievance Officer

BOJAN TAMBURIC
Enviro Eng Program Coord

ROBERT HOLDOM
Civil with Arch Program Coord

CRAIG ROBERTS
Surveying Program Coord

MICHAEL MANEFIELD
Postgrad Coursework Coord

LINLIN GE/ JINLING WANG
Industrial Training Coord

KHALEGH BARATI
Nexus Fellow

KARENNA KENT
Teaching Support Officer

EMMA COTTER
Teaching Support Officer

VICTORIA BUENO
Student Support Officer

ARJUNA EDIRISINGHE
Undergraduate Rep (CEVSOC)

ARVIN SUKIWAN
Postgraduate Rep (CEPCA)



TLC Deputy Chair Ruth Fisher



ABOUT OUR DEGREES

The School offers a range of engineering program specialisations in our Engineers Australia accredited degrees.



Our flagship degree, the four-year **Bachelor of Engineering (Honours) (Civil Engineering)** provides students with strong skills and knowledge to enter the civil engineering industry. We also offer

- Bachelor of Engineering (Honours) (Civil Engineering with Architecture)
- Bachelor of Engineering (Honours) (Environmental Engineering)
- Bachelor of Engineering (Honours) (Surveying)
- Bachelor of Engineering (Honours) (Civil)/ Bachelor of Surveying

In 2024 almost a third of our undergraduate students were enrolled in double degrees, which are five-six years in duration. The majority of those students are enrolled in the **Bachelor of Engineering (Honours)/ Bachelor of Commerce**. Also available for our students are

- Bachelor of Engineering (Honours)/ Bachelor of Science
- Bachelor of Engineering (Honours)/ Bachelor of Arts
- Bachelor of Engineering (Honours)/ Master of Biomedical Engineering
- Bachelor of Engineering (Honours)/ Bachelor of Computer Science
- Bachelor of Engineering (Hons)/ Bachelor of Engineering Science (this is a combined degree of Civil & Environmental Engineering)

Humanitarian Engineering

Also available within our Civil and Environmental Engineering degrees is the Humanitarian Engineering Minor (ENGGA2) which covers a breadth of humanitarian activities from disaster response and preparedness to long-term sustainable community development within Australia and overseas. It is a complementary skill to existing engineering disciplines and prepares students to work in challenging and diverse situations to help disadvantaged and disempowered communities and individuals.

POSTGRADUATE COURSEWORK DEGREES

UNSW Master of Engineering

- Master of Engineering (Civil Engineering)
- Master of Engineering (Environmental Engineering)

The UNSW Master of Engineering in Civil Engineering or Environmental Engineering is a two-year full-time postgraduate degree professionally accredited by Engineers Australia. This degree includes an integrated 60 days industrial training component and courses to develop technical knowledge and skills in engineering management, analysis and design.

Students undertake an extensive research project in a specific area of interest, learning valuable skills in project planning and management and the critical analysis, interpretation and communication of results. The structure of the degree also provides the opportunity for students to specialise in an area of interest such as project and construction management, transport, structural or geotechnical engineering, and water resources and wastewater treatment.

UNSW Master of Engineering Science

The MEngSc is a one to two year postgraduate degree designed for students who have a four-year accredited engineering degree, who wish to enhance their careers through cross-training, re-training or increased specialisation. To enable study by industry professionals, many of our courses are offered in the evening, as short course or partially online (blended learning). The MEngSc offers a diverse range of specialisations and subject areas, including:

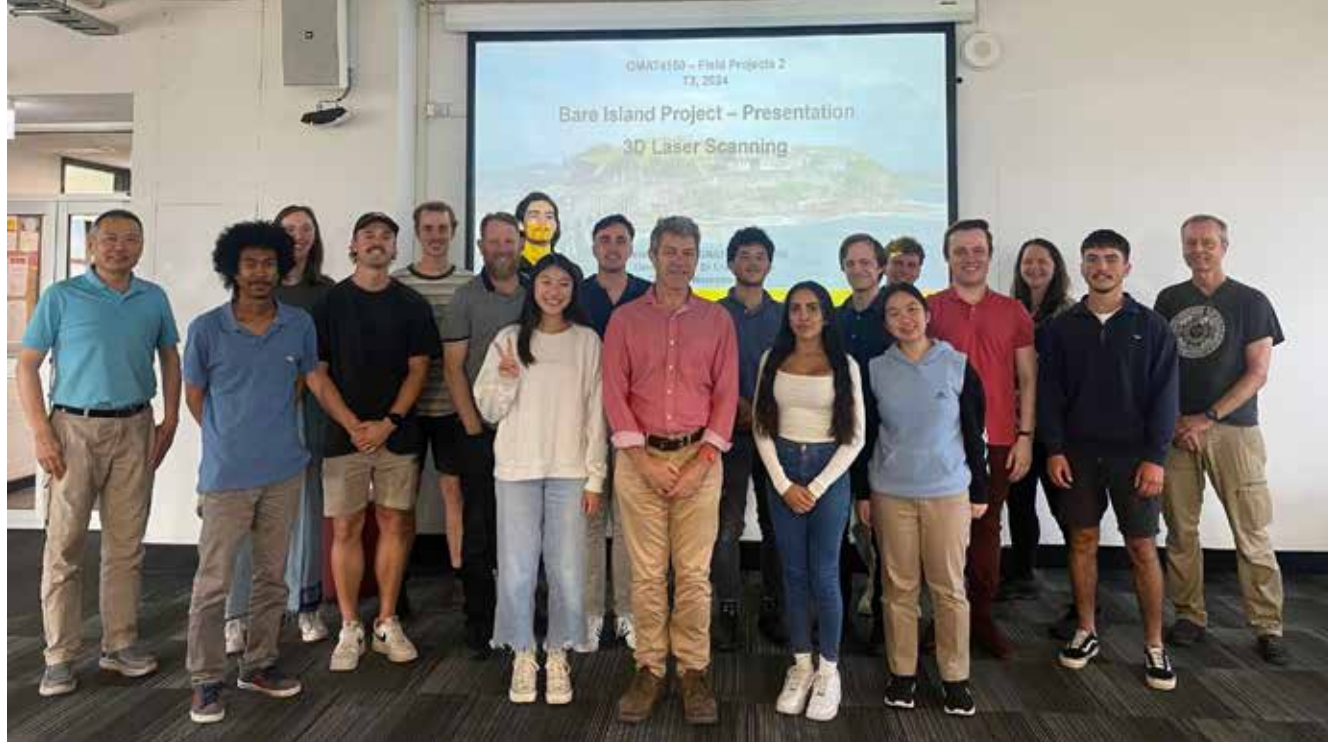
- Civil Engineering
- Environmental engineering
- Geotechnical Engineering & Engineering Geology
- Project management
- Structural engineering
- Sustainable Systems
- Transport engineering
- Water engineering - Catchment to Coasts
- Water engineering - Water, Wastewater & Waste Engineering

Graduate Diplomas are also available in Civil Engineering, Environmental Engineering, Geotechnical Engineering and Engineering Geology, Project Management, Structural engineering, Transport Engineering, Water, Wastewater and Waste Engineering, and Water Engineering: Catchments to Coasts.

Some **Graduate Certificates** are also offered.

“Our flagship degree, the four-year Bachelor of Engineering provides students with strong skills and knowledge to enter the civil engineering industry.”





TEACHERS SHARE THEIR STORIES



A/Prof Craig Roberts

A/Prof Craig Roberts, GMAT4150 Surveying Field Project 2024

15 students, 8 laser scanners, 2 cannons, 1 island and one crazy idea.

For my capstone Field Course (GMAT4150) in 2024, I decided, let's laser scan a whole island inside and out to better than a cm accuracy and georeference it to MGA2020/AHD. Simple!

Bare Island is about 10km south of UNSW campus at La Perouse. It was fortified in 1885 to defend against a possible Russian invasion during the Crimean War. It was also used as the "bad guy's lair" in the movie Mission Impossible 2. Bare Island is very 3-dimensional, with complex tunnels and side rooms, a mix of regular concrete walls, vegetation and cliffs around the outside. A big challenge!

In the first week students chose a Managing Director and a Deputy, and we collectively started attacking the project. I require students to run proper meetings with a Chair and Secretary, an agenda, minutes and action items and use this to drive progress on a tight 10-week schedule – the length of the teaching term. Everyone has a turn at Chair or Secretary. Great soft skills.

Prior to the start of term, we approached Nicole Seymour at CRKennedy and Roy Lowe at LandPartners who were very keen to help. Roy put us in touch with Glenne Blyth from Riegl to work with the students and showcase the cutting edge of laser scanners – a generous offer and great opportunity for all. We are also grateful to National Parks and Wildlife Service staff who were very accommodating.

In all we utilised 8 laser scanners: Leica RTC360, BLK360, BLK2GO and the school's Leica C5, Riegl VZ-600i, Zeb Revo (handheld), Navis and the Green Valley mobile scanner.

Students spent the first few weeks of term preparing a group literature review (120 pages by week 4), testing equipment, reconnoitring the island and preparing a plan for control and scanning. They identified a courtyard as a testing area to compare all scanners against for some analysis later in the project.



Two full field days were required. All tasks were planned and allocated in the meetings prior. The control team utilised static GNSS, total station traversing (Leica TS60) and even simultaneous reciprocal trig heighting (why not?) to transfer height and position control onto the island. They needed to coordinate the numerous scanning targets and devise a clear numbering system. Logistics and communication to work in unison with the scanning teams was challenging.

Outcomes: we captured Bare Island at LaPerouse and created 3 different point cloud deliverables (one with 2.6 billion points to sub-cm accuracy) plus animations, a huge report and a cadastral plan of survey information in La Perouse - just to round out the education. And all of this in 10 weeks!

And this is why I love my job so much! Who wouldn't love coming to work everyday and working with these future professionals? The future is in good hands. The kids are ok!

"Bare Island was fortified in 1885 to defend against a possible Russian invasion during the Crimean War."

Prof Michael Manefield: Course: DESN2000 Engineering Design and Professional Practice

As one of the best engineering schools in the world, UNSW Civil and Environmental Engineering attracts the most outrageously talented undergraduate students. This in itself goes a long way to creating a stimulating learning environment.

For the past ten weeks I have been coordinating a second year course on engineering design. This photo is from one of ten workshop classes after their final presentation. 225 students in total. Fifteen hours of presentations this week!

Students are given an open ended project to deliver a light rail stabling yard for Transport for NSW on a contaminated site in Camellia (based on a true story). They have to plan remediation of the site, design geotechnical elements (retaining walls and piles) and optimise the layout and operation of the light rail transport routes.

Add lectures and workshops on engineering design, site remediation, geotech and transport. Sprinkle in lectures on literature resource searching and ethical engineering. Stir with high expectations and detailed feedback.

This is how we nurture the most creative and employable engineers in the country.

Then they go out and create the world in which we live...so I'm going to take credit for that too.

Well done DESN2000 class of 2024. Super proud of you. The future is challenging but bright!

Thanks to UNSW CVEN colleagues Adrian Russell, Vinayak Dixit and Chris Duesterberg from Nation Partners. Thanks also to the workshop demonstrators and grading team. Final thanks to Faculty staff Ilpo Koskinen, Liam Orchard and Aditya Bansal.

LinkedIn post September 2024



Prof Michael Manefield





Dr Elnaz (Elli) Irannezhad: CVEN9421 Transport Engineering (MEngSc course)



Dr Elnaz Irannezhad

"thrilled to share the incredible learning experience our Logistics Transport Engineering students had during their recent site visit to DP World Sydney!"

The visit included an engaging tour led by Graham Boyd, inside the container yard, offering our students an up-close look at the intricate operations within. Following the tour Michael Barrett delivered a comprehensive 1-hour presentation, covering all aspects of logistics engineering and optimisations. Their detailed explanations provided a deep understanding of the processes that drive this essential industry forward. The students gained invaluable knowledge and insights that will undoubtedly enhance their academic journey.

DP World Sydney, as one of the leading container terminals in Australia, showcased its commitment to excellence in operations and productivity. The promising future that lies ahead for DP World Sydney aligns perfectly with the aspirations of our students.

A huge thank you to DP World Sydney for their dedication to education and industry collaboration, contributing 5 hours of in-kind time, providing invaluable insights into the dynamic world of logistics. Such initiatives bridge the gap between academia and real-world application, ensuring our students are well-prepared for the challenges and opportunities that lie ahead in their careers.

Thanks to Michael Barrett and Graham Boyd and everyone involved in making this site visit a resounding success!"

LinkedIn post Term One 2024

Such initiatives bridge the gap between academia and real-world applications.



Dr Milad Haghani: Course CVEN4405 Human Factors in Civil and Transport Engineering

Our Human Factors course had a special visitor this year (2024): the Vice-Chancellor of UNSW! We were delighted to welcome Attila Brungs to one of our most engaging practical classes of the term. This course explores the science behind reducing the risk of preventable deaths and injuries on roads, in crowded spaces, and in construction contexts. When the science has gaps, we strive to generate our own. This week's practical class embodied this spirit as we conducted a driving simulator experiment, designed collaboratively with students, to examine lesser-explored questions about driver distraction—purely for educational purposes.

The experiment's design is multidimensional, including a focus on how different conversation modalities affect driver performance. We also decided to investigate the impact of conversation complexity. To simulate a "complex conversation," we thought a lot about realistic scenarios. After some brainstorming, we concluded that simulating a conversation with one's boss would best capture this complexity. So, we staged a conversation with none other than the President and Vice-Chancellor of the university on important social and policy issues. And of course, the fidelity of this testing is maximised when the VC himself takes part, right?

We are incredibly fortunate that our VC graciously joined us, taking time from his busy schedule to participate as a "conversational actor" with our driver (participant) conducting very interesting conversations from the front seat, back seat, and over the phone. The experience was immensely enjoyable, and the impact on driver behaviour was evident—though the full effect will be quantified in my data analysis which I present to the class in the following week. Equally rewarding was the stimulating and insightful conversation that unfolded, with ideas and perspectives exchanged beautifully.

My deepest gratitude to Attila Brungs for creating this unique opportunity for my students. Special thanks as well to Julius Secadiningrat (TRACSLab manager), Sara Fazeli, and Beckham Liu, whose generous assistance made this possible.

LinkedIn post Term Three 2024



Dr Milad Haghani

The experiment's design is multidimensional, including a focus on how different conversation modalities affect driver performance.

STUDENT AWARDS 2024



Clarissa Lu



Jennifer Wang



Ruishan (Ashlee) Xu

University Medal in Civil Engineering

The University Medal is one of the most distinguished awards to be bestowed on any UNSW undergraduate. We congratulate our three 2024 University Medallists on their tremendous achievement.

University Medallists in Civil Engineering, **Clarissa Lu** and **Jennifer Wang**

University Medallist in Civil Engineering with Architecture, **Ruishan (Ashlee) Xu**

All three medallists have already embarked on their brilliant careers. Clarissa is a graduate structural engineer at Jacobs, Jennifer (BE Civil Engineering/BE Computer Science) is a software engineer at Macquarie Group, and Ruishan is a geotechnical engineer at Aurecon. We wish them all the best for the future.

Deans Awards 2024

The UNSW Engineering Dean's Awards recognise the Faculty's high-achieving students – undergraduates who have a minimum High Distinction average (an overall cumulative UNSW WAM of 85).

Congratulations to our students **Bailey Carruthers, Rachael Hoi Kiu Ng, Rohan Simon, Allan Tan, Jennifer Wang, Emanuel Yako** and **Zijuan Zhang**.

Undergraduate 2024 Prizes

The Alexander Wargon Prize:

For the best performance in the Structures Discipline in the Bachelor of Engineering in Civil Engineering degree program. **2024 Winner: Clarissa Lu**

The Australian Steel Institute Undergraduate Steel Design Prize:

For the best performance in CVEN3301 Structural Analysis and Modelling and CVEN3302 Structural Behaviour and Design. **2024 Winner: Graham Page**

The BOSSI Medal:

For the most outstanding performance in the final year of the Bachelor of Surveying and Spatial Information Systems.

2024 Winner: Jasmine Wing Yan Cheng

The Crawford Munro Memorial Prize:

For the best performance in CVEN3501 Water Resources Engineering.

2024 Winner: Ashvin Balaraman

The Engineers Australia Civil and Structural Engineering Prize:

For the best performance in structural design in the final year of the degree.

2024 Winner: Clarissa Lu

The Full Time Class of 1962 Civil Engineering and Surveying Alumni Prize:

For the highest WAM at the end of 3rd Year to a local female in the School of Civil and Environmental Engineering. **2024 Winner: Chloe Maree Perantuono**

The Geospatial Council of Australia Prize:

For the best performance in remote sensing and Photogrammetry courses in the Bachelor of Engineering in Surveying and Spatial Information Systems program.

2024 Winner: Ezra Miller



John Moran Class of 62 with prize winner
Chloe Perantuono

“

The University Medal is one of the most distinguished awards to be bestowed on any UNSW undergraduate.

”

The Institution of Surveyors New South Wales Prize:

The best performance by a graduating student in the Bachelor of Engineering in Surveying and Spatial Information Systems program.

2024 Winner: Claire Elizabeth Warren

The Jacob N Frenkel Prize:

For the best achievement in Civil Engineering for a first-year student.

2024 Winner: Bailey Carruthers

The Maurice Maughan Prize:

For the best student with the best total marks in GMAT2500 and GMAT2550.

2024 Winner: Jennifer Wong

The R S Mather Memorial Prize:

For outstanding performance in Geodesy courses in the Bachelor of Engineering in Surveying and Spatial Information Systems program.

2024 Winner: Ezra Miller

The Weld Australia Prize:

For the best performance in CVEN3303 Steel Structures.

2024 Winner Graham Page

Industry-Sponsored CVEN Final Year Prize Winners

At the School's annual Fourth Year dinner, the following industry sponsored prizes were awarded to seven outstanding students.

The Civil and Environmental Engineering Civil with Architecture Degree 2024 Prize
Matthew Jung Jae Kim - Sponsored by ARUP

The Civil and Environmental Engineering Environmental Discipline 2024 Prize
Georgina Robinson - Sponsored by UNSW Civil & Environmental Engineering

The Civil and Environmental Engineering Practice 2024 Prize
Christine Ha - Sponsored by Keller

The Civil and Environmental Engineering Structures Discipline 2024 Prize
Clarissa Lu - Sponsored by Aurecon

The Civil and Environmental Engineering Surveying Discipline 2024 Prize
Zachary Aubourg - Sponsored by RPS

The Civil and Environmental Engineering Transport Discipline 2024 Prize
Jennifer Wang - Sponsored by Turnbull Engineering

The Civil and Environmental Engineering Water Discipline 2024 Prize
Olivia Bourke - Sponsored by PSM



Ashvin Balaraman with
A/Prof Fiona Johnson



Matthew Jung Jae Kim prize 2024



CEVSOC STUDENT REPORT 2024

CEVSOC is the undergraduate student society for the School of Civil and Environmental Engineering. As well as fund raising through events, it receives financial and in-kind support from the School and from Arc - UNSW Student Life.

With increased revenue and outreach, we were able to scale up our events to provide more social and professional opportunities to our over 1300 active members.

As a student-run organisation, we believe that students know what students want best. We provide a platform for students to interact, socialise and develop themselves both personally and professionally by hosting a wide range of events throughout the year.

2024 was a major milestone for CEVSOC as it marked an impressive level of growth within the society. CEVSOC's main goal for 2024 was the expansion of its reach within the civil engineering cohort. This year, our team was made up of 49 subcommittee members, 12 camp coordinators and 8 executives.

Being a part of the team presented an opportunity to showcase and develop interpersonal skills such as leadership, teamwork and communication.

With this team, we ran 34 events as well as 2 programs, 2 camps and 1 case competition across 3 terms. This year we strived to work off of the feedback presented by the students whom we represent to tailor our events. This allowed us to achieve our highest ever turnout and revenue for our events. With increased revenue and outreach, we were able to scale up our events to provide more social and professional opportunities to our over 1300 active members. This included the introduction of new initiatives which supported students with their studies, helped make new connections and increased contacts with professionals.

Some highlights from each of the portfolios this year include:

Development

1. **Careers Fair:** A chance for students to network with our industry partners and learn about internship and graduate opportunities. This year we had almost 400 attendees.
2. **CEVSOC Industry Mentoring Program:** Students were paired up with industry professionals and met over four checkpoints throughout the year to develop valuable professional skills and personalised advice.

Camps

1. **First Year Camp:** Held at AGH Camp in Douglas Park, First Year Camp was a terrific opportunity for first year students to get introduced to university life. First year students were put in groups with peers they will spend their degree with, and with older students who shared their insights, tips and tricks about university life.
2. **Professional Development Camp:** The perfect blend of professional development and social fun, PDC allowed students to learn from industry professionals over a two-night three-day camp, elevating their career skills.

Socials

1. **Final Year Dinner:** An annual graduation dinner for graduating civil, environmental or surveying engineering students. Those who presented outstanding thesis works had the chance to be rewarded with prizes worth \$1000. The awards were generously supported by industry.
2. **Welcoming Nights:** A fun way to reconnect with peers and meet fresh faces to kick off every term. This year we had record-breaking attendance, it was great to see students bonding with classmates whom they may not typically get a chance to chat with throughout the term.

Community

1. **Crash Courses and Recap Workshops:** Initially an informal session held by CEVSOC members who had a passion for teaching, this new initiative has formalised into short lessons at the start and end of terms where students taking courses could learn from their peers who have previously taken the course.
2. **Blood Drive:** A meaningful opportunity for students to donate blood to those who need it most. Thank you to the students who donated blood this year to the Australian Red Cross.

Marketing

1. **Introduction of new short form content:** Social media has become one of the main platforms for CEVSOC to gain reach to civil engineering students. The marketing team worked extremely hard to push more relatable content that boosted engagement and attendance to events.
2. **Merchandise refresh:** Our yearly hoodies have been an important part of CEVSOC's identity. This year, the marketing team redesigned merchandise creating new, unique designs that captured CEVSOC's evolving identity.

In October 2024, we ran our annual AGM to elect the new CEVSOC team. They will be led by Co-Presidents: Akshara Yogesvaran and Arjuna Edirisinghe. The new team aim to continue to grow the CEVSOC team and increase engagement with students of the civil and environmental engineering School. We are keen to see what the new team will achieve next.



RESEARCH MANAGEMENT COMMITTEE (RMC)

The School's Research Management Committee (RMC) is responsible for setting research policy, enhancing research activity and output, administering the School's research budget, and manages all aspects of postgraduate research student activity -including processing applications, monitoring progress, assessment and examination.

The Committee is also engaged in monitoring and improving School publications and grant income, maintains an active seminar program, promotes School research and generally raising the research profile of the School. The RMC continues to renew and invigorate laboratory infrastructure to ensure CVEN labs are leading edge.

RESEARCH MANAGEMENT COMMITTEE

DENIS O'CARROLL Chair	MARTIN ANDERSEN WRL Rep
EHAB HAMED Deputy Chair & Postgrad Research Student Coord	TOMMY WIEDMANN Sustainability Rep
ADRIAN RUSSELL Geotech Rep	BRUCE NI Environmental Eng Rep
WEI GAO Structures Rep	MITCHELL HARLEY HDR Admissions and Scholarships Rep
WENGUI LI CIES Rep	DANIEL CHEN Taste of Research Coordinator
ELNAZ IRANNEZHAD rCITI Rep	BOJAN TAMBURIC Early Career Academic
JINLING WANG SAGE Rep	MEHRI MAKKI ALAMDARI Early Career Academic
JOHNSON SHEN Construction Rep	GRACE ZHU Admin
AILAR HAJIMOHAMMADI Materials Rep	LINJIE TANG HDR Rep
ASHISH SHARMA Water Rep	

AT A GLANCE: 2024 RESEARCH STATS

HDR students: **235**
HDR graduates: **37**
Research Journal Publications: **600**
ARC Grants awarded:
3 Discovery, **4** Linkage, **2** Fellowships Total **\$5.43M**
CVEN Investigators Research Projects in process: **198**
Apportioned Income from Research Projects: **\$16.76M**



RMC Chair Denis O'Carroll



RMC Deputy Chair Ehab Hamed



ESTATE & TECHNICAL SERVICES COMMITTEE



ETSC Chair Arman Khoshghalb



ETSC Deputy Chair Stefan Felder

The School has several well-equipped laboratories used for research and teaching purposes, located on three campuses – UNSW's main Kensington campus, its Randwick King St Campus, and the Water Research Laboratory at Manly Vale.

None of our research achievements and awards would be possible without these high use laboratories and technical facilities which are staffed by highly skilled technical officers and managers. The Estate and Technical Services Committee (ETSC) provides oversight support and management of the School's invaluable physical and technical estate.

ESTATE AND TECHNICAL SERVICES COMMITTEE

ARMAN KHOSHGHALB
Chair

STEFAN FELDER
Deputy Chair & WRL Rep

MINH NHAT LE
Water Quality Lab

PAUL GWYNNE
Geotechnical and Materials Research Labs

ZHEN-TIAN CHANG
Heavy Structures Lab

YINCAI ZHOU
SAGE Rep

JULIUS SECADININGRAT
TRACSLab Rep

HAMID VALIPOUR
Academic-in-charge Heavy Structures Lab

TAEHWAN KIM
Academic-in-charge Materials and Asphalt Labs

MICHAEL MANEFIELD
Academic-in-charge Water Quality Lab

ADRIAN RUSSELL
Academic-in-charge Geotechnical Lab

LAARNI CALUDUCAN
OHS Rep

MARIA LEE
Admin

ARC GRANT DETAILS

In 2024 Australian Research Council (ARC) funds awarded to School researchers totalled \$5.43M - with three Discovery Projects (\$1.96M), four Linkage Projects (\$2.67M) and two ARC Fellowships (\$797K) being awarded.

ARC Discovery Projects awarded in 2024

DP250104939: Wave Propagation and Attenuation in Unsaturated Soils.

INVESTIGATORS: Professor Nasser Khalili; Dr Babak Shahbodagh; Dr Mohsen Mousavi

Understanding shear and dilatational waves in unsaturated soils is critical for diverse engineering disciplines. While past research has focused on wave propagation in saturated or dry soils, studies on unsaturated soils are scarce, despite their common occurrence in real-world scenarios.

This research aims to bridge this gap by investigating the fundamentals of wave propagation in unsaturated soils through a multidisciplinary approach encompassing soil dynamics, constitutive modelling, and experimental investigation.

The expected outcome includes development of accurate correlations for characterisation of soil properties for a range of in situ conditions, offering immediate practical applications in engineering design and practice.

AMOUNT AWARDED: \$567,803.00

RESEARCH CENTRE: CIES



Prof Nasser Khalili



Dr Babak Shahbodagh



Dr Mohsen Mousavi

DP250100955: A Scaled Boundary Framework for Nonlinear Dynamic Analysis of Structures.

INVESTIGATORS: Professor Chongmin Song; Associate Professor Ean Tat Ooi

This project aims to address the integrity assessment of engineering structures subjected to dynamic actions, which are often the most critical loading cases.

An innovative scaled boundary framework will be established leveraging the power of modern computer facilities needed for dynamic nonlinear analysis of large-scale structures. Modern digital technologies for geometric modelling will be seamlessly integrated with computational mechanics.

The outcome of this project is an innovative technology and a computer simulation tool that will be robust, fully automated and highly efficient. This research will benefit Australian economy and society by enabling timely, cost-effective design, planning and management of civil engineering structures.

AMOUNT AWARDED: \$677,700.00

RESEARCH CENTRE: CIES



Prof Chongmin Song



Prof Ashish Sharma

DP250101254: A Bayesian Model for Inferred Streamflow in Absence of In-Situ Observations.

INVESTIGATORS: Professor Ashish Sharma; Professor Lucy Marshall; Dr Seokhyeon Kim; Dr Hae Na Yoon

A novel Bayesian framework for specifying hydrological models when no streamflow measurements exist is proposed. The framework uses a new likelihood function that operates with inferred, scaleless measurements of streamflow, enabling use of satellite reflectance and altimetry as surrogates of streamflow, while incorporating hydrologic signatures to introduce scale.

A new temporal differencing-based reflectance surrogate overcomes deficiencies in existing alternatives, the framework enabling semi-distributed estimation for high order catchments.

Streamflow data from Australian Hydrologic Reference Stations are to be used to assess the viability of the proposed framework, before application to ungauged catchments in remote settings worldwide.

AMOUNT AWARDED: \$715,254.00

RESEARCH CENTRE: WRC

ARC Linkage Projects awarded in 2024



A/Prof Min Zheng



Prof David Waite



Prof Bing-Jie Ni

LP230201054: Zero Emission Nitrogen Removal Process.

INVESTIGATORS: Associate Professor Min Zheng; Professor David Waite; Professor Bing-Jie Ni; Mr Peter Wardrop; Dr Ratish Permala

Eliminating greenhouse gas (GHG) emissions marks a transformative shift in the wastewater industry. This project aims to capitalise on our recent breakthrough to develop a wastewater process that operates with near-zero GHG emissions.

The project assembles a multidisciplinary team to conduct extensive laboratory investigations on this process, glean advanced insights crucial for process optimisation, and also implement comprehensive testing in real field conditions.

Two major Australian water utilities partners—jointly servicing about one-fourth of the country's population—will commit to adopting this process, to ensure consistent delivery of tangible, long-term economic, environmental, and social benefits to Australian communities.

INDUSTRY PARTNERS: Melbourne Water Corporation; Water Corporation (WA)

AMOUNT AWARDED: \$1,464,484

RESEARCH CENTRE: WRC

LP240100123: Developing Sustainable Graded Porous Cementitious Structures.

INVESTIGATORS: Dr Da Chen; Professor Chongmin Song; Dr Johnny Ho; Dr Shu Jian Chen; Professor Sritawat Kitipornchai; Mr Laian Luan; Dr Fangjie Chen

This project aims to pioneer innovations in green civil engineering by developing first-of-its-kind porous structures for Australian sustainable environment. It establishes novel graded porous geometries in cementitious structures for superior stiffness and thermal insulation. These lightweight yet robust structures with minimal cement usage are crucial to mitigating carbon footprints in civil construction and building operation with huge emissions.

The project expects to develop new knowledge and advanced simulations in porous composites. This will help Australia growing its green civil industries with significant economic benefits and to achieve the Net Zero Plan via saving building operation energy and reducing construction emissions and waste.

INDUSTRY PARTNERS: Contegrit Building Solutions Pty Ltd; and ARUP Australia Pty Ltd

RESEARCH CENTRE: CIES

AMOUNT AWARDED: \$387,261



Dr Da Chen



Prof Chongmin Song

LP240100542: Circular Economy Driven Sustainable Green Hydrogen Energy.

INVESTIGATORS: Professor Bing-Jie Ni; Dr Wei Wei; Dr Zhijie Chen

This project seeks to pioneer a Circular Economy-Driven Sustainable Green Hydrogen Energy technology for a sustainable energy system. Through developing electronic waste-derived catalysts for urine wastewater electrolysis, the project aims to revolutionize hydrogen production processes, solid waste utilization, and wastewater management practices.

Anticipated outcomes include innovative approaches to creating efficient catalysts from electronic wastes and establishing a cost-effective method for producing hydrogen fuel from urine wastewater.

These advancements are poised to deliver substantial benefits to the Australian academic communities and industries involved in hydrogen energy, water management, and resource sustainability endeavours.

INDUSTRY PARTNERS: CSD Water Service; South East Water Corporation

AMOUNT AWARDED: \$422,220

RESEARCH CENTRE: WRC



Prof Bing-Jie Ni



Assoc Prof Fiona Johnson

LP240100383: Connecting Changing Sub-Daily Precipitation Extremes to Flash Floods.

INVESTIGATORS: Associate Professor Fiona Johnson;
Dr Timothy Raupach; Professor Jason Evans;
Dr Giovanni Di Virgilio; Dr Moutassem El Rafei;
Mr Peter Cinque.

This project proposes to use a combination of observations and high-resolution climate model simulations to better understand historic and future changes to sub-daily rainfall extremes for the eastern seaboard of Australia.

This improved understanding of rainfall changes will help quantify future flood risk in this densely populated region. This is important because only simplified estimates of future rainfall changes are currently used in industry for flood design.

In partnership with the NSW Department of Climate Change, Energy, the Environment, and Water and the NSW State Emergency Service, the project will inform updated design flood guidelines improving floodplain management and emergency response in New South Wales.

INDUSTRY PARTNERS: NSW Department Of Climate Change, Energy, The Environment And Water; State Emergency Service (NSW)

AMOUNT AWARDED: \$399,304.00

RESEARCH CENTRE: WRC

School staff involved in 2024 ARC Linkage projects administered by other universities



Prof Denis O'Carroll

LP240100198: Mitigating Disinfection By-Products - Are We Creating More Toxic Chemicals?

INVESTIGATORS: Professor Frederic Leusch (Griffith University);
Professor Stuart Khan; **Professor Denis O'Carroll**;
Dr Jiaying Li; Dr Deborah Gale; Mr David Cook;
Mr Rolando Fabris; Dr Yulia Shutova; Dr Nicole Knight;
Professor Susan Richardson

Disinfection is an essential barrier to pathogenic microorganisms in drinking water. However, disinfectants such as chlorine can react with natural precursors in water to produce toxic disinfection by-products (DBPs). This presents a complex challenge for water utilities as some mitigation strategies can unintentionally produce more toxic DBPs. This project aims to refine water treatment strategies to minimise formation of toxic DBPs in drinking water. The project will combine advanced chemical and bioassay methods to evaluate DBP formation and toxicity.

The outcomes will enable water utilities to identify treatment processes to reduce DBP formation and toxicity, thus ensuring ongoing provision of safe drinking water for all Australians.

INDUSTRY PARTNERS Seqwater; South Australian Water Corporation; Sydney Water Corporation; City of Gold Coast; Water Research Australia Limited

AMOUNT AWARDED: \$913,158.00

ARC Early-Career Industry Fellowship - Dr Ze Jiang

Congratulations to Water Research Centre (WRC) research associate Dr Ze Jiang who has been awarded an ARC Early-Career Industry Fellowship.

ARC Early Career Industry Fellowships are to help build innovation in the industry, community organisation, not-for-profit, and other government and publicly funded research sectors, and to facilitate the adoption, translation and commercialisation of Australian research over time.

Dr Ze Jiang, working with industry partner WaterNSW, will receive **\$308,194** to craft a reservoir flow forecasting framework to enhance water resource management.

The funded project seeks to enhance water resource management by establishing a reservoir flow forecasting framework spanning seasonal to decadal scales. This initiative utilizes state-of-the-art climate models, hydrological simulations, and statistical methods to address an industry-identified need. It will assist utilities like WaterNSW in decision-making for water supply planning, drought preparedness, and resilience enhancement. By integrating academic innovation with industrial needs, the project aims to bolster Australia's capability to tackle the challenges posed by extreme events and climate change.

Dr Jiang specializes in hydroclimate extremes modelling and forecasting. His research focuses on understanding the impact of climate change on the water cycle, particularly investigating the effects of global warming on hydroclimate extremes such as floods and droughts. He received his PhD in Water Resources Engineering from UNSW in 2021 under the supervision of Prof Ashish Sharma and A/Prof Fiona Johnson. During his doctoral research, Dr Jiang developed a novel method known as Wavelet System Prediction (WASP), capable of predicting hydroclimate extremes. The funded project builds on this method and the associated tool he developed.



Dr Ze Jiang

ARC Early Career Researcher Award - Dr Zhiqiang Zuo

Congratulations to Water Research Centre (WRC) research associate Dr Zhiqiang Zuo who has been awarded a 2024 ARC Early-Career Researcher Award Fellowship valued at **\$488,661**

Imagine if human urine could be transformed into a safe liquid fertiliser. Dr Zuo's project hopes to lead to a globally applicable, feasible solution for fertiliser bioproduction.

This project leverages a breakthrough in nitrogen conversion microorganism to create an innovative technology for fully recovering vital nutrients—nitrogen, phosphorus, and potassium—and controlling contaminants—pathogens and micropollutants—in source-separated human urine wastewater. Expected outcomes include a globally applicable, feasible solution for fertiliser bioproduction.

By advancing the development of Australia's water utilities and agriculture, the project expects to promote sustainability, resource efficiency, and reinforce the Circular Economy.



Dr Zhiqiang Zuo

OUR RESEARCH CENTRES & HUBS

The School is a research powerhouse – our world-renowned academic staff lead over 45 researchers and 235 PhD candidates. Our success is based upon the detailed, rigorous and visionary work of our research centres and discipline groups, working together with external academic, government and industry colleagues to address current local and global challenges.

In 2024 our Centres worked with over 140 industry, government, and community partners on 198 research projects with an annual project income of \$16.76M.



The RIIS team

CIES Centre for Infrastructure Engineering & Safety

CIES Director: Professor Chongmin Song

Centre Manager: Ms Grace Zhu

W: www.cies.unsw.edu.au

E: cies@unsw.edu.au

CIES was established as a UNSW Research Centre in January 2007 to facilitate advanced research in all aspects of civil engineering infrastructure, including building structures, bridges, tunnels, roads, railways, pavements, dams and the like. Our work has expanded to include construction management, advanced systems and low-carbon technologies.

We aim to be the nexus of the various scientific disciplines including structural engineering, geotechnical engineering, engineering materials and computational mechanics, in the broad fields of engineering infrastructure; its design, evaluation, construction, performance, retrofit and reuse. We achieve this as an integral part of a circular economy, dedicated to high societal productivity and minimised waste.

RIIS: Resilient & intelligent infrastructure systems

RIIS Hub Director and Lead Chief Investigator: Professor Nasser Khalili

HUB Business Manager: Theresa Wisniewski

W: <https://riis.org.au>

P: +61 2 9348 0771

RIIS is an industry and ARC funded research and innovation hub for smart infrastructure established in 2022. It engages with industry, government, and the community to develop and implement science-based policy and integrated practical solutions to the current and future challenges facing Australia's urban, resource and energy infrastructure.

RIIS will deliver transformational technologies to address Australia's critical infrastructure needs. It will integrate advances in sensor technology, connectivity, data analytics, machine learning, robotics, smart materials, and reliable models to deliver resilient and adaptive infrastructure systems in urban, energy and resource sectors – sectors critical to Australia's prosperity and well-being.

2024 CENTRE & HUB	RESEARCH PROJECTS	GRANT INCOME
CIES	70	6,065,308
RIIS	15	2,096,000
rCITI	18	2,506,790
SAGE	7	213,524
WRC	61	3,198,650
WRL	27	2,675,239
TOTAL	198	16,755,511

rCITI Research Centre for Integrated Transport Innovation

rCITI Director: Professor Taha Rashidi

Centre Manager: Maria Lee

W: www.rciti.unsw.edu.au

E: maria.lee@unsw.edu.au

rCITI's vision is to be a world-leading organisation in integrated interdisciplinary transport research, development and education. They are well on their way to achieving the Centre's goals by providing critical expertise and experience in Mobility planning, Analytics, Operations and Technology. With a core objective to drive Efficiency, Equality and Emerging technologies (3Es) in mobility systems.

rCITI aims to pursue globally-leading interdisciplinary solutions for transport planning and management that integrate three critical aspects for societal impact:-

- (i) Emerging mobility technology
- (ii) Human behaviour & choice
- (iii) Institutional / market landscape

WRC Water Research Centre

WRC Director: A/Prof Fiona Johnson

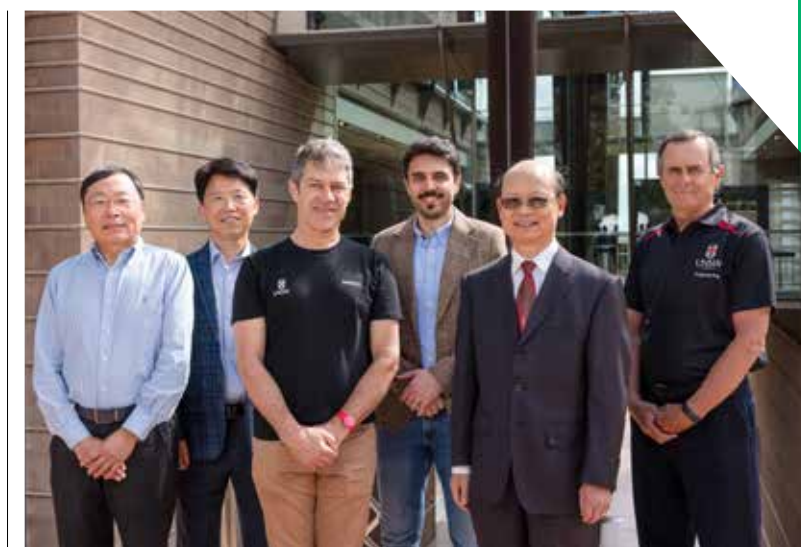
Centre Manager: Paula Ploysarak

W: www.wrc.unsw.edu.au

E: water@unsw.edu.au

The Water Research Centre (WRC) is an international leading university centre that provides multidisciplinary pure and applied research in water resources, engineering, management and the development of tools for environmental management and sustainability for improving aquatic and atmospheric environments. As a leading Australian water research organisation we apply our experience and critical thinking across more than just water, into diverse (yet related) fields.

- Water quality and treatment processes
- Lifecycle assessment and sustainability
- Waste management
- Hydroclimatology
- Carbon and water footprinting
- Issues concerning atmospheric emissions and odour
- Risk assessment



SAGE academic staff L-R: A/Prof Jinling Wang, A/Prof Samsung Lim, Dr Craig Roberts, A/Prof Mohsen Kalantari, Prof Linlin Ge, Dr Bruce Harvey.

SAGE Surveying & Geospatial Engineering Research

SAGE Academic Leader: Professor Linlin Ge

W: www.sage.unsw.edu.au

Research enquiries: l.ge@unsw.edu.au

The SAGE Research group conducts world-class research in the sub disciplines of geodesy, photo-grammetry, positioning measurement and remote sensing. Broad research topics include Satellite Navigation Technology and Applications, Geodetic Infrastructure and Analysis, Light detection and ranging (Lidar), Geospatial Information Systems, Multi-GNSS, Multi-sensor integration for positioning & mapping, Statistical theory applied to positioning, mapping, and Remote Sensing.

WRL Water Research Laboratory

WRL Managing Director: A/Prof Kristen Splinter

WRL Industry Research Director: Rrancoise Flocard

W: www.wrl.unsw.edu.au

E: info@wrl.unsw.edu.au

The Water Research Laboratory (WRL) is a world-leading research and consulting laboratory on a four-hectare site at Manly Vale that tackles the most challenging and pressing water engineering problems faced by the world today. We are the largest coastal/hydraulics research laboratory in Australia, home to state-of-the-art facilities, equipment and personnel comprised of the most experienced and creative problem solvers in their respective areas of research and industry.

Our areas of expertise include coastal, ocean, ecosystems engineering, estuarine and wetland management; riverflow and floodplain management; civil engineering hydraulics; and climate change adaptation.

PHD GRADUATES



HAFIZ MUHAMMAD ABD-UR-REHMAN
Supervisor: K Zhang, A Deletic, V Prodanovic & SJ Khan
Removal of xenobiotic organic compounds from greywater using green walls
Discipline: Water



DIANA ACKERMAN GRUNFELD
Supervisor: D O'Carroll, M Lee & A Jones
From Assessment to Remediation: Investigating PFAS Global Burden and Electrochemical Reduction with Granular Activated Carbon
Discipline: Water



KHADIJA AL NABHANI
Supervisor: A Dansie & G Allinson
Transport Pathways of Microplastics in The South Pacific
Discipline: Water



HAMID BAYAT
Supervisor: A Kashani & DC Carmichael
3D-Printing Material and Design Innovations for Energy-Efficient Buildings
Discipline: ECM



MARYAM BOSTANARA
Supervisor: TH Rashidi, A Aajmi & C Grazian
Urban Dynamics and Household Decisions: Advanced Statistical Methods in Relocation, Land Use, and Transport Planning
Discipline: Transport



YUNXUAN CUI
Supervisor: C Song, W Gao
A Scaled Boundary Finite Element Framework for Multiscale Elastoplastic Analysis
Discipline: Structural



BIN DONG
Supervisor: W Gao, C Song
Multiphysics-coupling analysis on reinforcement corrosion in reinforced concrete structures
Discipline: Structural



NIOUSHASADAT HAJI SEYED JAVADI
Supervisor: N Khalili & A Hajimohammadi
The application of waste plastics in bitumen modification
Discipline: Water



ZHIZHAO HE
Supervisor: TD Waite, J Fletcher, K Wang
Constant-current Operation and Electrode Development for Membrane Capacitive Deionization (MCDI): Scale-up Challenges and Evaluation
Discipline: Water



BRADLEY HENDERSON
Supervisor: W Glamore, T Wiedmann
A Lifecycle Approach for Understanding Mangrove Dynamics
Discipline: Water



SOHEIL HEYDARI
Supervisor: N Khalili, A Hajimohammad
The application of recycled plastic in asphalt
Discipline: Geotechnical



JIMMY HILLY
Supervisor: A Dansie, R Stuetz, L Knibbs & L Morawska
Health-related air quality in the Pacific: a study on Fiji and the Solomon Islands
Discipline: Water



MARYAMSADAT HOSSEINI
Supervisor: S Lim & X Jia
Bushfire Susceptibility Mapping Using Gene Expression Programming and Machine Learning Techniques
Discipline: SAGE



SANG HO SHAUN KIM
Supervisor: A Sharma & L A Marshall
Strategies to address structural issues in hydrologic models
Discipline: Water



XIANGTONG KONG
Supervisor: TD Waite & S Garg
Heterogeneous Catalytic Ozonation for Coal Chemical Industrial Wastewater Treatment
Discipline: Water



JIANMING KUANG
Supervisor: L Ge, G Metternicht & H Wang
Multi-source Satellite Remote Sensing Techniques for Landslide Monitoring and Characterization
Discipline: SAGE



JIEHONG LI
Supervisor: A Hajimohammadi, T Kim & H Vali Pour
The influence of PVA fibres on microstructure and mechanical properties of foam concrete
Discipline: Structural



CHANG LIU
Supervisor: L Ge, S Sepasgozar, M Ebrahimzade, S Shirowzhan & F Duarte
Large-scale Building Footprint Extraction and Damage Level Classification: Deep Learning Approaches with Satellite Imagery and Lidar Data
Discipline: SAGE



MINGYE LUAN
Supervisor: TH Rashidi, D Rey, ST Waller & X Zhang
Modeling and optimization methods for traffic congestion management in urban transportation networks via path-based pricing
Discipline: Transport



ZIQI MA
Supervisor: J Wang, C Rizos & M Kalantari
Object Detection in High-Definition Mapping for Autonomous-driving: Machine Learning Method and Quality Control
Discipline: SAGE



MAHSHID MORTAZAVI
Supervisor: TD Waite & S Garg
Optimizing Peroxone and Electro-Peroxone Processes: A Kinetic Modelling Approach
Discipline: Water



HAMID MORTAZAVI BAK
Supervisor: A Khoshghalb, N Khalili, B Shahbodaghkhan
Experimental Investigation and Numerical Modelling of Creep and Time-Dependent Behaviour of Unsaturated Soils
Discipline: Geotechnical



DIYANG QI
A Supervisor: Russell & K Douglas
The effect of pipe breakage on lateral earth pressures exerted on nearby retaining walls
Discipline: Geotechnical



SHAMEER SALEH
Supervisor: E Hamed & X Zhao
Development and Durability Assessment of Ultra-High-Performance Concrete Utilising Seawater, Sea Sand, Supplementary Cementitious Materials and FRP Confinements
Discipline: Structural



JHILAM SINHA
Supervisor: A Sharma & LA Marshall
A comprehensive characterisation of satellite soil moisture from a hydrological point of view
Discipline: Water

**YUYANG SUN**

Supervisor: TD Waite, S Garg & C Zhang
Ni-EDTA Containing Wastewater Treatment
Using Electrochemical Advanced Oxidation
Processes

Discipline: Water

**KATRINA WADDINGTON**

Supervisor: W Glarmore & L A Marshall
The tides of change: integrated estuarine
management approaches in a changing
world

Discipline: Water

**QIHAN WANG**

Supervisor: W Gao, G Li & Z Liu
Machine Learning Aided Uncertainty
Quantification for Engineering Structures

Discipline: Structural

**LEI WU**

Supervisor: TD Waite & J Xie
Metal plating wastewater treatment using
electrochemical advanced oxidation process
(EAOP)

Discipline: Water

**MINGHUI ZHANG**

Supervisor: W Gao & C song
Lattice Based Elastic Metamaterials with
Ultra-wide Stopbands at Low Frequency

Discipline: Structural

**JIN ZHU**

Supervisor: R Stuetz, B Tamburic
Effective management solutions for biogenic
odour in drinking water

Discipline: Water

MASTER OF PHILOSOPHY (CIVIL ENGINEERING)**SAMAH SAID**

Supervisor: B Shahbodaghkhan
Experimental Study of Mineralogy and
Anisotropy Effects on the Small-Strain
Dynamic Properties of Natural Sands

Discipline: Geotechnical

**WEIWEN TAN**

Supervisor: J Wang, Y Liu
Radar-based object detection and tracking in
autonomous-driving: Quality control and data
analysis

Discipline: SAGE

**LIHAO YUAN**

Supervisor: K Zhang, A Deletic, V Prodanovic
& R Stuetz
Long-term performance of Vegetated
biofiltration system (VBS) for wastewater
treatment

Discipline: Water

**SHUHENG ZHONG**

Supervisor: J Wang
Outlier Detection and Reliability Analysis for
Ultra-Wideband (UWB) Positioning

Discipline: SAGE

**HONGBO ZHU**

Supervisor: J Wang & Y Liu
Quality control in monitoring precipitable
water vapor with GNSS precise point
positioning

Discipline: SAGE

**SEYEDELHAM MOUSAVI**

Supervisor: N Khalili, B Shahbodaghkhan
Experimental Investigation of the Time-
Dependent Behavior of Unsaturated Clay

Discipline: Geotechnical

DEAN'S AWARD

FOR OUTSTANDING PHD THESES 2024

Congratulations to Dr Hamid Bayat, Dr Bin Dong, Dr Cilcia Kusumastuti and Dr Mingye Luan for receiving the UNSW 2024 Dean's Award for Outstanding PhD Theses.

This prestigious award is presented to PhD graduates who have completed their degree in a timely manner, have produced a thesis that requires only minimal corrections, received outstanding and/or excellent levels of achievement for all examination criteria, and in the opinion of examiners is in the top 10% of PhD theses they have examined.

Examiners are external to the University and are leaders in their fields. Only seventy PhD candidates across UNSW were awarded, we are delighted that four came from our School. Congratulations to Bing, Cilcia, Hamid, Mingye and their proud supervisors on this exceptional achievement.

Note: Cilcia Kusumastuti's thesis topic was in previous Annual Report:
Topic: 'Correcting systematic bias in climate model simulations in the
time-frequency domain: implications for hydrology.' Supervisors: Prof Ashish
Sharma & Dr Rajeshwar Mehrota



Dr Hamid Bayat



Dr Bin Dong



Dr Cilcia Kusumastuti



Dr Mingye Luan

PhD PROFILE: DR JIMMY HILLY**Improving air quality-related public health outcomes in the Pacific.**

In 2017, Jimmy was a Senior Environmental Health Officer in the Ministry of Health and Medical Services of the government of the Solomon Islands, working on Environmental Health policy. He completed a Masters degree in International Public Health from the University of Queensland in 2017.

Not content with solutions that target the symptoms of a problem, Jimmy was motivated to get at the root cause. This led him to investigate the sources of and factors affecting poor air quality in the Solomon Islands. What he identified led him from that government officer position to the Fiji National University and later, in 2020, to a PhD at UNSW Civil & Environmental Engineering, to establish the first long-term air quality monitoring stations in the Pacific in collaboration with UNSW and government and University partners in the Pacific.

The results have been well worth the gruelling challenges of taking a leap of faith to chart a new path. Jimmy's PhD study found poor air quality levels in Honiara, the capital of the Solomon Islands, exceeded the 2021 WHO Air Quality Guidelines. This has potential health implications for vulnerable groups such as children, mothers and people with pre-existing health conditions. Jimmy's research has laid the groundwork of peer-reviewed scientific evidence to shine a light on this important issue.

Jimmy is now working with governments across the Pacific to take ownership of the newly established air quality monitoring stations. Discussions with government partners have begun, paving the way for more work ahead to address sources of air pollution, reducing exposure to air pollution and ultimately, achieving an energy transition for the Pacific.



Dr Jimmy Hilly



Professor Bing-Jie Ni

STAFF PROFILES: MEET OUR PROFESSORS

A Professor in the Water Research Centre and a former ARC Future Fellow, Professor Bing-Jie (Bruce) Ni started his research career developing novel technologies to handle wastewater and municipal waste. But he soon realised that many of the treatment processes that were producing clean water were wreaking havoc on the environment.

"Greenhouse gas emissions, including nitrous oxide and methane carbon emissions, are all produced as a by-product of many traditional wastewater treatment processes," he says. "My research started to transition from traditional treatment technology to emission quantification and mitigation."

Today, Professor Ni is internationally acclaimed for modelling and mitigating the greenhouse gases produced by traditional wastewater management systems. In 2015, he developed a nitrous oxide emissions model that caught the attention of the Intergovernmental Panel on Climate Change (IPCC); in 2019, the agency applied his findings to their updated National Greenhouse Gas Inventories Guideline.

He has also led the development of biological treatment approaches that use microscopic organisms to break down the sewage sludge left over from treatment processes. This process reduces the release of greenhouse gases and other emissions that are produced during these processes.

The next step is to transform the sludge itself into a novel bioenergy source that has negligible impact on the environment. "We propose a novel biotransformation of sewage sludge to medium-chain fatty acids, which are very high-value products that can be very easily separated from water and that we can collect very efficiently and at low cost."

As part of this work, Professor Ni is also turning his attention to one of the most pressing problems of contemporary environmental engineering: the increasing quantities of microplastics. He and his team are exploring the use of biochar to separate plastic particles from wastewater and sewage sludge. Biochar is the carbon-rich substance left over when organic materials are subjected to high heat in zero oxygen environments.

For his efforts, Professor Ni has been named a leader in water supply and treatment research in the 2024 Research listing from The Australian, one of the fastest-rising researchers of 2023 by the prestigious Nature journal, and a 2018 Most Innovative Engineer, courtesy of Engineers Australia. He is also recognised as a highly cited researcher by the Clarivate Analytics Web of Science and the Royal Society of Chemistry and is among the top 2 per cent of cited researchers in the world, according to Mendeley Data.

Collectively, Professor Ni's research is all working towards the same goal: to shift the focus of global wastewater systems from treatment to resource recovery in service of a greener future. "I think it starts with the water sector," he says. "If we can offset the sector's remaining direct emissions of greenhouse gas by recovering valuable resources and energy from the system, then we can propose a next-generation water treatment system that will allow the whole sector to achieve zero emissions."

"My research started to transition from traditional treatment technology to emission quantification and mitigation."



L-R: Arman Khoshghalb, Ali Pirjalili, Adrian Russell, Asal Bidarmaghz.

LAB PROFILES: ENERGY GEOTECHNICS RESEARCH LABORATORY (EGRL)

UNSW School of Civil and Environmental Engineering established its first Energy Geotechnics Research Laboratory (EGRL) in 2022. The Laboratory, led by Dr. Asal Bidarmaghz and jointly supervised by Associate Professor Arman Khoshghalb and Professor Adrian Russell, is pioneering research in energy geostructures and underground climate change.

EGRL is equipped with large-scale testing equipment which enable comprehensive fundamental studies on the thermal and mechanical behaviour of energy geostructures and soil types.

Ali Pirjalili was the first PhD student to join EGRL, in 2022. His research primarily focuses on developing a simple, accurate, and reliable method to evaluate soil thermal properties—thermal conductivity and specific heat capacity—to better understand soil behavior under thermal loading.

Although these two properties function in opposite ways, with thermal conductivity indicating soil's ability to transfer heat and specific heat capacity measuring its heat retention, they interact in the heat transfer equation governing soils' response to thermal loading. Ali's research hypothesis is based on this interaction.

Ali has developed an innovative testing device, combined with a theory-based interpretation procedure, enabling these properties to be determined for saturated or dry soils using just one soil sample and one set of test results. The device allows experiments on a cylindrical soil sample that is subjected to constant thermal load at its outer boundaries. The new testing device and interpretation procedure provide reliable measurements and will have immediate application in industry or research.

Moreover, a third parameter defining the device-specific heat exchange efficiency (h) was established in this work which is independent of the soil type meaning that the device can be reliably used across different soils without the need for recalibration.

Thanks to Ali's hard work and dedication, a paper on this very successful experimental output from the EGRL has recently been published in *Geotechnique*, the world's premier geotechnics journal, marking an exciting milestone for the UNSW research team; Ali and his co-authors: Dr Asal Bidarmaghz, A/Prof Arman Khoshghalb and Prof Adrian Russell.

For more information see <https://doi.org/10.1680/jgeot.24.01232>

"The new testing device and interpretation procedure provide reliable measurements and will have immediate application in industry or research."

ACADEMIC STAFF



MARTIN ANDERSEN
Associate Professor

MSc in Engineering, PhD DTU, Denmark

Research Interests: Reactive flow and transport modeling, Investigation of geochemical processes and groundwater dynamics in the coastal zone, Surface water groundwater interactions.



RYAN ARMSTRONG
Professor and ARC Future Fellow

B.S. Bioengineering, PhD Environmental Engineering (Summa Cum Laude), Oregon State University.

Research Interests: Multidisciplinary research with aspects of applied mathematics, petroleum engineering, computer science, and fundamental physics integrated into a comprehensive framework for digital materials characterisation, porous media imaging and modelling, and multiphase flow studies related to future energy technologies. Applications include digital rock physics, in situ recovery of minerals, geological storage of hydrogen, recovery of transition fuels, geological storage of CO₂, mineral liberation analyses, and machine learning in resources engineering.



ELENA ATROSHCHENKO
Senior Lecturer

MSc in Mechanics and Applied Mathematics, Saint-Petersburg State University, PhD in Civil Engineering, University of Waterloo, Ontario

Research Interests: Computational Mechanics and Numerical Methods, with application to fracture mechanics, acoustics, bending and vibration of composite plates.



KHALEGH BARATI
Nexus Fellow in Engineering Construction and Management
MSc Sharif, PhD UNSW

Research Interests: Automation, Data Sensing, Fuel and Emissions Modeling, Optimization, Sustainability Issues, and their applications in the construction and operation of infrastructure projects.



ASAL BIDARMAGHZ
Senior Lecturer

PhD Civil Engineering (Geothermal Technologies) University of Melbourne

Research Interests: Energy geo-structures and geothermal systems, Investigating the impacts of urbanization on subsurface temperature increase at the city-scale, Uncertainty analysis of large scale subsurface hydro-thermal models.



DA (DANIEL) CHEN
ARC DECRA & Lecturer

PhD (Structural Engineering) UQ

Research Interests: Lightweight multifunctional structural forms; Architected materials; Machine learning aided analysis; Additive manufacturing; Offshore structures. Daniel is best known for his expertise in the development of functionally graded porous structural components. His DECRA project is 'Smart Optimisation of Functionally Graded Porous Structures'.



STUART CLARK
Professor and Director of Governance, UNSW Engineering

BSc.(Hons)/B. Arts (USyd), MA (U Melbourne), PhD in Geophysics (USyd), Grad Cert University T&L (UNSW)

Research Interests: Stuart's research interests are in understanding the influence on deep Earth processes on the development of sedimentary basins and the use of machine learning in developing geological models. Stuart has a passion for innovative teaching, learning from others and collaborative research solving real world research problems.



ULRIKE DACKERMANN
Lecturer

Dipl.-Ing. Univ., Technical University of Munich (TUM), PhD UTS

Research Interests: Structural Health Monitoring, Non-Destructive Testing, Damage Detection, Structural Dynamics, Artificial Intelligence, Timber Engineering.



ANDREW DANSIE
Associate Professor & Academic Lead, Humanitarian Engineering UNSW

BSc, MSc Flinders, PhD Oxford

Research Interests: Specialising in water resources, water access, air pollution, and the biogeochemistry of dust. Concerned with large-scale environmental systems and international development to meet environmental and social SDGs. Dansie has 18 years of experience in the water and development sector spanning the private sector, the United Nations, universities and an NGO.



STEVE DAVIS
Associate Professor, Associate Head (Education)

BE PhD UNSW

Research Interests: Online Assessment, Virtual Reality, Project Scheduling, Safety, Construction Defects and Rework.



VINAYAK DIXIT
Professor and Director Global Research & Innovation, UNSW

MT Institute of Technology, Delhi, PhD University of Central Florida

Research Interests: Key research interest lies in studying risk in the transportation infrastructure system as it relates to highway safety, travel time uncertainty, as well as natural and man-made disasters.



KURT DOUGLAS
Pells Sullivan Meynink Senior Lecturer of Rock Mechanics, Associate Head (Engagement)

BE (Hons1) USyd, PhD UNSW

Research Interests: Lie in the field of rock mechanics and dam engineering. Predicting field properties of rock masses continues to be a major challenge for us to address. My dams research focusses on spillway erosion and backward erosion of dams.



HAORAN DUAN
Senior Lecturer and ARC Industry Fellow

Ph.D. Advanced Water Management Centre, (UQ)

Research Interests: Haoran's research focuses on carbon and energy efficient wastewater treatment technologies, greenhouse gas emissions from wastewater treatment processes, and excess sludge management.



STEFAN FELDER
Associate Professor

Dipl.-Ing. RWTH Aachen, PhD UQ

Research Interests: Expert in hydraulic engineering and applied fluid mechanics with internationally recognised research in air-water flows, hydraulic structures engineering and fish passage. Pioneered the use of remote sensing technology for flow observations in hydraulic structures.



RUTH FISHER
Senior Lecturer

BASc/BEEng USyd, MEngSc PhD UNSW

Research Interests: Education focused academic, Environmental Engineering and Sustainability - research expertise in the sustainability and performance of waste management systems, such as wastewater treatment.



STEPHEN FOSTER
Professor

BE NSWIT, MEngSc PhD UNSW, MIEAust, FIEAust

Research Interests: Behaviour of structural systems (buildings and bridges) constructed of reinforced and prestressed concrete. I'm particularly interested in bringing new and advanced materials technologies to the engineering of structures. My interests are in the use of high and ultra-high performance concretes, fibre-reinforced concretes and geopolymer concretes and in use of carbon fibre technologies for strengthening and repair of structures and structural systems. I develop physical-mechanical models for use in advanced computational and numerical tools such as FEM and for their use in the study of behaviour of concrete structures that are subjected to extreme events.



WEI GAO
Professor and Associate Dean International – China

BE HDU, ME PhD Xidian, MIAV, MAAS

Research Interests: Uncertain modelling & uncertain methods: Vehicle-bridge interaction dynamics: Wind and/or seismic induced random vibration: Train-rail-sleeper-foundation-tunnel/bridge system: Stochastic nonlinear system: Vehicle dynamics & vehicle rollover: Structural optimization & control: Smart structures: Stability & reliability analysis.



LINLIN GE
Professor

BE, MSc Wuhan, PhD UNSW

Research Interests: Professor of remote sensing and earth observation. Integrating radar and optical remote sensing with GPS and GIS, we measure the subtle change on the surface of the Earth with minimum latency using data collected from satellite, airborne and UAV platforms.



WILLIAM GLAMORE
Professor

BE UI Boulder Colorado USA, PhD UoW

Research Interests: Primary fields of interest are related to estuarine hydrodynamics and water quality including restoration of estuarine environments, acid sulphate soils, coastal wetlands, boat wake waves, outfall hydraulics and field testing, and related physical and numerical models. William is particularly interested in restoring large wetland and riverine systems.



MILAD HAGHANI
Senior Lecturer & ARC DECRA Fellow

BSc US&T, Tehran, MSc Sharif, PhD U Melbourne

Research Interests: Milad's research and teaching is at the intersect of transport and safety research with a particular focus on human factors. He has undertaken an extensive amount of experimental and theoretical research in the areas of crowd safety, mass emergencies, public safety, public security perception, evacuation planning, pedestrian modelling and simulation, road safety and transport psychology.



AILAR HAJIMOHAMMADI
Associate Professor

Ph.D. University of Melbourne

Research Interests: Examines the chemistry of materials to develop innovative construction elements with attractive properties. She is also investigating waste management and resource recovering strategies towards the circular economy in civil and construction projects.



EHAB HAMED
Associate Professor

BSc MSc PhD Technion

Research Interests: Viscoelastic behaviour of materials and structures, strengthening of structures with FRP composite materials, sandwich panels.



MITCHELL HARLEY
Scientia Associate Professor

BE/BSc, PhD UNSW

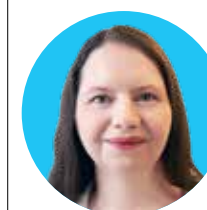
Research Interests: Leading researcher in the field of coastal hazards, wave climates, coastal monitoring and real-time early warning systems.



BRUCE HARVEY
Senior Lecturer

BSurv (Hons1), GradDip HE, PhD UNSW

Research Interests: Dr Harvey's expertise and research interests include: Least Square analysis of surveying measurements; Alternative surveying measurement analysis methods (L1 norm and grid searching); Surveying education; 3D laser scanning; High accuracy surveying; Surveying calculations and computing.



SANDRA HOFFMAN
Industry Lecturer

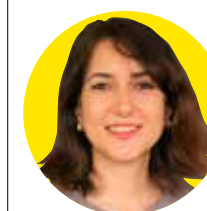
BE (Surveying & SIS) UNSW, Certificate of Competency, Board of Surveying and Spatial Information NSW

Research Interests: Sandra Hoffmann is a Lecturer in Surveying at the School of Civil and Environmental Engineering. She has been a Registered Land Surveyor since 2009, and has a depth of industry experience working on projects such as the Sydney Metro, London Cross-Rail, and Landcom Riverstone Scheduled Lands.



ROBERT HOLDOM
Senior Lecturer

Research Interests: Construction management.



ELNAZ IRANNEZHAD
Senior Lecturer

MSc Iran Uni of Science & Technology, PhD UQ

Research Interests: Elli's research contributes to the advancement of science in cross-disciplinary fields, including logistics, supply chain and freight transportation, agent-based modelling, mobility and logistics as a service, automated vehicles, and blockchain technology. Elli endeavours to align her research closely with industry to ensure a good alignment with real-world needs.



FIONA JOHNSON
Director - WRC. Associate Professor
& Scientia Fellow
BE, PhD UNSW

Research Interests: Associate Professor Johnson's areas of research and teaching focus on statistical hydrology, particularly with respect to flooding and extreme events and the use of global climate models for climate change assessments of water resources systems. She has a particular interest in solutions to climate and hydrological challenges faced by communities in the Global South and is currently undertaking research projects in Tanzania, Nepal, the Pacific and Australia.



MOHSEN KALANTARI
Associate Professor
BE (Surveying), MEng GIS - UT, Tehran,
PhD Geomatics, GradCert Uni Teaching -
U Melbourne

Research Interests: Digital Engineering, Space situational Awareness, Geospatial Data, LiDAR, Geographic Information Systems (GIS), Cadastral Surveying, Building Information Modelling (BIM), Land Administration. Mohsen is a co-founder of Faramoon, a geospatial technology company which, amongst other things, converts point cloud data to 3D models.



ALIREZA KASHANI
Senior Lecturer
BSc, MSc Amirkabir University
of Technology, Tehran PhD University
of Melbourne

Research Interests: Lecturer and Churchill Fellow in Sustainable Construction Automation and 3D Printing with extensive experience in research, development, and commercialisation of advanced and sustainable construction materials. Research areas include development of novel high-performance materials and techniques for construction 3D printing, and sustainable construction materials for the 'Circular Economy' including wastes valorisation, low-carbon construction materials and sustainable concrete.



NASSER KHALILI
UNSW Scientia & PSM Professor
BSc Teh, MSc Birm, PhD UNSW

Research Interests: Mechanics of unsaturated soils: Flow & deformation in double porosity media: Numerical methods applied to geotechnical engineering: Pavement engineering.



STEFAN FELDER
Associate Professor
Dipl.-Ing. RWTH Aachen, PhD UQ

Research Interests: Expert in hydraulic engineering and applied fluid mechanics with internationally recognised research in air-water flows, hydraulic structures engineering and fish passage. Pioneered the use of remote sensing technology for flow observations in hydraulic structures.



ARMAN KHOSHGHALB
Associate Professor
BEng, MEng, Sharif University of
Technology, Tehran, PhD UNSW

Research Interests: Mechanics of unsaturated soils, coupled analysis of porous media, advanced numerical methods in geomechanics, modelling discontinuities in porous media, large deformation analysis in geomechanics, stabilisation techniques in computational geomechanics, constitutive modelling of geomaterials, dynamic properties of geomaterials.



TAEHWAN KIM
Senior Lecturer
BSc, MSc KAIST, PhD Purdue USA

Research Interests: Advanced and sustainable infrastructure materials: Thermodynamics in cementitious materials and the modelling of their chemical process: Advanced materials characterization techniques: fundamental understanding of chemo-physical reactions in cementitious materials: Microstructure evolution of cementitious materials: Utilizing natural and waste materials to develop low carbon foot-print materials.



SAMSUNG LIM
Associate Professor
BA, MA (Maths) Seoul, PhD U
Texas at Austin

Research Interests: I develop advanced GIS technologies that allow us to improve the way we view, understand, design, plan, manage, analyse, interpret, and extract information such as patterns and trends of big data. I apply GIS to real-world problems and help decision-making in humanitarian engineering problems, including red-flagging of epidemics and natural disaster management.



WENGUI LI
ARC Future Fellow & Scientia
Associate Professor
PhD Structural Engineering, joint Tongji
University / Northwestern University (USA)

Research Interests: Multifunctional concrete and low-carbon construction materials, with a particular focus on smart concrete (e.g., self-sensing, self-healing, hydrophobicity, photocatalysis, energy-saving), recycled aggregate concrete materials and structures, solid waste recovery for construction materials, low-carbon concrete, and CO2 mineralized concrete, concrete nanotechnology, concrete durability, seawater-sea sand concrete materials and structures, fire resistance of concrete, and pavement materials and technology.



YI LIU
Scientia Fellow and Associate
Professor
MSc Environmental Mgmt, MSc
Hydrology - Vrije Universiteit Amsterdam,
PhD UNSW

Research Interests: Earth Observation, Ecohydrology, Climate Change & Extreme Events



MEHRISADAT MAKKI ALAMDARI
Senior Lecturer
BSc Sharif, MSc Iran University of
Science and Technology, Mech Eng
Manitoba, PhD UTS

Research Interests: Structural Health Monitoring, vibration analysis and testing, structural dynamics, inverse dynamic problems, signal processing and data mining. Mehri is on the Executive of the Australian Network of Structural Health Monitoring (ANSHM), and a member of The International Society for Structural Health Monitoring of Intelligent Infrastructure (ISHMII).



MICHAEL MANEFIELD
Professor
BSc, PhD UNSW

Research Interests: Prof Manefield has broad interests in environmental microbiology. Research highlights include the discovery of the first bacterial quorum sensing inhibitors, the development of RNA based stable isotope probing, development of experimental models of activated sludge floc formation, discovery of the world's first chloroform degrading bacterial culture and the discovery of isoprene respiring bacteria.



JAMES MCDONALD
Lecturer
PhD UNSW
Research Interests: Research Fellow in the School of Civil and Environmental Engineering's Water Research Centre (WRC)



PEYMAN MOSTAGHIMI
Professor
BSc/BSc in Mech & Chem (Reservoir)
Eng, MSc Mech Eng - Fluid Mechanics
(Sharif UT), PhD Imperial College
London.

Research Interests: Computational fluid dynamics, natural gas, subsurface reservoir simulation, pore-scale modelling of displacement processes and modelling flow and transport in porous media with applications to energy extraction, mineral recovery, subsurface hydrology and environmental studies.



DIVYA JAYAKUMAR NAIR
Associate Dean International – South
Asia
PhD UNSW

Research Interests: My research interests extend but are not limited to, the following topics; Transportation Engineering, Transport Infrastructure Resilience, Traffic Assignment, Network Design, Highway Engineering, Operations Research, Statistical Modelling, Data Mining, Traffic Flow Theory, Autonomous Vehicle, Humanitarian logistics.



PROFESSOR BING-JIE (BRUCE) NI,
Professor and ARC Future Fellow
Ph.D. in Environmental Engineering,
University of Science & Technology
of China (USTC).

Research Interests: Environmental technology and wastewater treatment, particularly the interface among process engineering, microbial biotechnology, materials science and mathematical modelling to develop innovative and sustainable technological solutions to achieve high-levels of pollutant removal from wastewater with a minimised carbon footprint and maximised energy recovery, in order to transform wastes or wastewater from a troublesome pollutant to a valuable resource and save large quantities of greenhouse gas emissions.



DENIS O'CARROLL
Professor, Deputy Head of School
(Research)
BASc Ottawa, MESc Clarkson, PhD U
Michigan

Research Interests: Research projects include developing nanometals for contaminated site remediation, investigating the environmental fate and ecotoxicity of nanoparticles released from commercial products, improving the understanding of the fate of nonaqueous phase liquids in the subsurface and developing climate change mitigation measures in urban areas.



DANIEL O'SHEA
Lecturer
BE (Civil), PhD UNSW

Research Interests: Computational Mechanics, Biomechanics, Continuum Mechanics, Hyperelasticity, Advanced Finite Element Methods, Shell Analysis, Fibre-Reinforced Composites. Expert in applied mathematics, computational mechanics, devising models for nonlinear material behaviour, with application to biological tissues and advanced manufactured composites.



AN NINH PHAM
Lecturer and Research Fellow
BE Hons 1, PhD UNSW

Research Interests: Dr An Ninh Pham is a Lecturer and Research Fellow with the UNSW Water Research Centre in the School of Civil and Environmental Engineering. His research interests include: Geochemistry of iron in natural systems; Kinetic modelling of chemical reactions; Acid sulfate soils; Ground water modelling; Water treatment processes.



TAHA HOSSEIN RASHIDI
Professor, Director rCITI
BSc MSc Sharif UT: PhD UI Chicago

Research Interests: A/Prof Rashidi leads rCITI's Travel Behaviour Modelling Team. Current research areas include: Travel behaviour analysis; Transport planning; Activity-based travel demand modelling; Housing search and land use modelling; Integrated land use and transportation models; Goods movement modelling; Microsimulation Modelling methods for urban activities; potential and capacity of new mobility technologies and social media data; autonomous driving.



CRAIG ROBERTS
Associate Professor
BSurv U South Australia, PhD UNSW

Research Interests: As an education-focussed academic, I am interested in the implications of datum modernisation on the geospatial community, leveraging multi-GNSS CORS infrastructure and combining UAV or laser scan data for practical application to surveying and geospatial engineering, understanding the policy implications of new measurement technologies on authoritative geospatial data management, and investigating AR/VR applications.



ADRIAN RUSSELL
Professor
BE, PhD UNSW, PGCert Bristol

Research Interests: Applied unsaturated soil mechanics; Liquefaction of variably saturated soils and tailings; Fundamental modelling of soils linking microstructure to large scale behaviour; Fundamental rock mechanics: Fibre reinforced soils.



MEEAD SABERI KALAE
Associate Professor
BSc Mashhad, MSc Portland,
PhD Northwestern University, Illinois

Research Interests: A/Prof Saberi leads rCITI's CityX research lab which focuses on scientific understanding of cities through modelling, simulation, data analytics, and visualisation. His research interests and experience include traffic flow theory & characteristics, large-scale transportation network modelling, complex networks, pedestrian crowd dynamics and simulation, and urban data analytics & visualisation.



BABAK SHAHBODAGHKHAN
Senior Lecturer
MSc Uni of Tehran, PhD Kyoto University

Research Interests: Computational Geomechanics, Dynamics of Unsaturated Soils, Constitutive Modelling of Geomaterials, Seismic Analysis of Geostrutures, Dynamic Soil-Structure Interaction.



ASHISH SHARMA
Professor
BE Roorkee, MTech IIT Delhi, PhD Utah State

Research Interests: Prof Sharma is an engineering hydrologist interested in problems involving hydrological uncertainty. Much of his research has focussed on the impact of climate change and variability on hydrological practice, along with applications related to remote sensing, formulating stochastic approaches, developing hydrological models, and the two big hydrology bread-and-butter problems - design flood estimation + water resources management



JOHNSON XUESONG SHEN
Associate Professor
BEng, MSc Nanjing, PhD Hong Kong Polytechnic University

Research Interests: Digital Twins, Artificial Intelligence, Smart Sensing, Autonomous Systems, Internet of Things, Mixed Reality, and their applications in the construction, operation, and maintenance of civil infrastructure and built environment.



CHONGMIN SONG
Professor and Director, CIES
BE ME Tsinghua, DEng Tokyo

Research Interests: Scaled Boundary Finite-Element Method, Mesh Generation, Dynamic Soil-Structure Interaction, Structural Dynamics & Earthquake Engineering, Fracture Mechanics, Elasto-Plastic-Damage Constitutive Modelling.



KRISTEN SPLINTER
Associate Professor & ARC Future Fellow, Managing Director-WRL
BSc Queens University, Kingston, Canada, MSc Florida, PhD Oregon State

Research Interests: Kristen's area of expertise is in Coastal Engineering. Her research covers broad topics including storm to inter-annual shoreline change monitoring and modelling; coastal erosion and beach recovery; dune erosion; remote sensing of the coastal environment; and reef-top hydrodynamics.



RICHARD STUETZ
Professor and Deputy Head of School
(Academic)
BSc, PhD UNSW

Research Interests: Research is in the fate of contaminants in atmospheric and aquatic systems with specific interests in: Assessment of volatile emissions: Management of emissions from water, wastewater, waste management and intensive animal operations: On-line monitoring water and wastewater quality and process control: Characterisation of complex emissions using chemical and sensorial methods: Reducing environmental impact and annoyance through improved community engagement practices.



ADNAN SUFIAN
Senior Lecturer
BE (Civil) & PhD (Civil Engineering), UNSW

Research Interests: Multi-scale and multi-phase mechanics of granular materials. My research aims to develop tools and guidelines so that geotechnical engineers can better handle, manipulate and construct with granular materials, leading to innovative solutions in the development of urban infrastructure.



BOJAN TAMBURIC
Senior Lecturer and ARC Industry Fellow
BSc, MSc, PhD Imperial College, London

Research Interests: Research to predict and control harmful algal blooms in the environment so as to preserve water quality and aquatic habitats, and how to cultivate algal biomass in order to produce useful products such as biofuels, animal feed and sustainable chemicals. ARC Fellowship to improve the resilience of Australian water supplies by advancing urban stormwater reuse.



ROHIT TIWARI
Lecturer
MEng Indian Institute of Technology, PhD Uni of Melbourne

Research Interests: Geotechnical Earthquake Engineering, Performance Based Seismic Design of Geo-structures. Rohit has a strong background in experimental investigations of seismic actions in Earth Retaining Structures and calibration of numerical non-linear material models.


IAN TURNER
Professor

BSc (Hons) USyd, MEnvEngSc UNSW, PhD USyd

Research Interests: Ian's current research interests include beach groundwater dynamics and sediment transport at the beach face, monitoring of coastal change and impacts of climate variability, coastal erosion control and coastal management, and coastal aquifer hydrogeology. Named by The Australian in 2020 as Australian Leader in the field of Ocean & Marine Engineering, recognising his extensive contribution to coastal engineering.


BRIAN UY
Scientia Professor

BE (Hons 1), PhD, UNSW FTSE, FRSN, FIEAust, FASCE, FICE, FISTRUCTE, FIABSE, FSEI, MAICD, CPEng, CEng, PE, IntPE (Aus)

Research Interests: Brian research has been highly cited in the area of steel-concrete composite structures, steel structures, structural engineering and civil engineering where he is in the top 5% cited of all researchers in all these fields. His current research team's expertise is very multidisciplinary. In the area of welded steel structures, he is using neutron diffraction techniques with senior colleagues at ANSTO and collaborating with physicists and material scientists.


HAMID VALI POUR GOUDARZI
Professor

BE, MEngSc, PhD UNSW

Research Interests: Structural mechanics; Development of innovative hybrid steel-timber-concrete structures with emphasis on sustainability and improved structural performance; Behaviour of structures subjected to extreme loads such as earthquake, impact, blast and explosion; Computational mechanics and non-linear finite element modelling of structures; Constitutive modelling of materials.


DAVID WAITE
Scientia Professor & Executive Director and CEO, UNSW CTET

BSc Tas, GradDip RMIT, MAppSc Monash, PhD MIT

Research Interests: Researcher of international standing who has made a significant contribution to the field of environmental chemistry. Particular expertise in the behaviour of elements such as iron, manganese, copper, silver and uranium in natural and engineered systems. Aims to improve our understanding of natural aquatic systems to enable prevention of environmental degradation as well as development of solutions to challenges in provision of water supply and improving human health.


JINLING WANG
Associate Professor

BSc, MSc Wuhan, PhD Curtin

Research Interests: Global Navigation Satellite Systems - GNSS (GPS, Glonass, Galileo, BeiDou System: Multi-Sensor Integration for Positioning, Mapping and Navigation: Statistical Theory and Its Applications in Positioning, Mapping and Navigation. Research Goals: The development of reliable mathematical modelling and quality control procedures for geospatial mapping and navigation applications.


THOMAS (TOMMY) WIEDMANN
Professor of Sustainability Research

MSc, PhD Ulm

Research Interests: Long-standing experience in integrated sustainability assessment and environmental footprint analysis. My main research question is how to achieve concurrent human and planetary well-being. I develop and apply environmental input-output analysis as part of a holistic concept to life cycle assessment, industrial ecology and sustainable consumption and production research. Recent research interests are related to systems change towards post-growth economies.


KEFENG ZHANG
Senior Lecturer & ARC DECRA

BSc & ME (Civil Eng – water), Southeast Uni, Nanjing, PhD Monash

Research Interests: Stormwater management and the application of nature-based solutions (NBS) such as bioretention systems, wetlands, and green walls for urban water treatment. Kefeng's expertise includes assessing pollution and risks associated with stormwater, greywater, and pre-treated wastewater, and applying NBS to effectively mitigate these risks. He also investigates nutrient dynamics and the fate of emerging contaminants in these systems.


MIN ZHENG
Scientia Associate Professor

BE (Water and Wastewater), Harbin IT, PhD in Environmental Science and Engineering, Tsinghua University, China.

Research Interests: Focused on innovative technology development and research translation outcomes to support highly efficient, energy-positive, and low-emission wastewater treatment. Min leads initiatives regarding aspects of environmental & civil engineering, across the disciplines of chemical/urban water engineering, microbiology, and biotechnology. His future research will be further dedicated to innovations and applications in biochemical processes for net-zero emissions, waste recycling and infrastructure in urban water systems.

PROFESSORS OF PRACTICE

SHANE GEHA

BE (Civil), PhD, (Town Planning) UNSW

Founding Managing Director of EG Advisory's urban planning business, Dr Shane Geha is one of the leading rezoning experts in New South Wales. He believes that we need to ensure that our urban centres are accessible, liveable and, importantly, affordable.


ROBERT CARE

BE, PhD UNSW

Independent consultant and mentor, Dr Robert Care has built and led high performance teams in diverse countries, cultures and economies. He was a leader within ARUP for three decades, both locally and globally. He is currently the Chair of RedR Australia, a leading international humanitarian response agency that selects, trains, and deploys technical specialists.

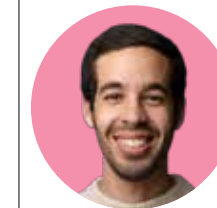
ASSOCIATE LECTURERS

DR MOHAMMAD EBADI
Associate Lecturer

BS – Petroleum, MSc – Reservoir Engineering - Islamic Azad Uni Tehran, PhD Petroleum Engineering, Skolkovo IS&T.


DR YONGJING MAO
Associate Lecturer

BSc (Eng) Harbour, Coastal and Offshore Engineering, Hohai University, China; MSc Coastal and Marine Engineering and Management, TU Delft, Netherlands; PhD - Remote Sensing and Coastal Geomorphology, UQ, Australia.


DR RAFAEL DE PAULINO
Associate Lecturer

BSc (Civil Eng) UFRN (Brazil), MSc (Civil Eng) UBC (Canada), PhD in Chemical Engineering, UNSW

EMERITUS PROFESSORS


IAN ACWORTH



JOHN BLACK



MARK BRADFORD



DAVID CARMICHAEL



ROBIN FELL



IAN GILBERT



MAX IRVINE



MIKE REGAN



CHRIS RIZOS



FRANCIS TIN-LOI



JOHN TRINDER

HONORARY & VISITING ACADEMICS

HONORARY, ADJUNCT, AND VISITING ACADEMICS (AS AT JULY 2024)

HONORARY PROFESSORS

Marshall, Lucy
Waller, Steven Travis

HONORARY ASSOCIATE PROFESSORS

Attard, Mario
Cox, Ron

HONORARY SENIOR LECTURERS

Lee, Matthew
Mehrotra,Rajeshwar
Adjunct Professors
Hilton, John Alfred (CIES)
Nezhad, Ali Akbar (CIES)
Park, Eun-Kee (WRC)
Peirson, William (WRC)
Sullivan, Caroline (WRC)
Zhao, Xiao Lin (CIES)

ADJUNCT ASSOCIATE PROFESSORS

Aldred, James (CIES)
Guan, Jing (WRC)
Lambert, Daniel (WRC)
Lundie, Sven (WRC)

ADJUNCT FELLOW LEVELS A-C

Khan, Stuart (WRC)

CONJOINT ASSOCIATE PROFESSOR

Wang, Yuan (WRC)

ADJUNCT SENIOR LECTURERS

Blacka, Matthew (WRL)
Crosbie, Nicholas (WRC)
Liu, Wei (rCITI)
Rey, David (rCITI)
Roser, David (WRC)

ADJUNCT LECTURERS

Allen, Cameron (WRC)
Prodanovic, Veljko (WRC)
Zhang, Xiang (CIES)

ADJUNCT RESEARCH FELLOW

Ashmore, David Patrick (rCITI)

Visiting Professors

McNeil, Sue (rCITI)
King, Ian (WRL)
Ronagh, Hamid Reza (CIES)

VISITING SENIOR FELLOW

Im, Eun Soon (WRC)

VISITING FELLOWS

Bai, Hongjuan (WRC)
Barczak, Radoslaw (WRC)
Guo, Xinxin (CIES)
Hanson, James (WRC)
Hou, Yanan (WRC)
Huang, Lei (SAGE)
Jian, Sisi (rCITI)
Kim, Seokhyeon (WRC)
Lei, Bin (CIES)

Lyu, Wenzhou (WRC)
Prata Jnr, Ademir Abdala (WRC)

Song, Haemin (CIES)
Swarbrick, Gareth Edward (CIES)

Vahab, Mohammad (CIES)

Xu, Bin (CIES)
Yesiller, Nazli (WRC)
Zhou, Jia (WRC)

RESEARCH STAFF

Centre for Infrastructure Engineering & Safety (CIES)

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Mousavi, Mohsen

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Alnahhal, Mohammed F E
Amani Geshnigani, Ali
Cui, Yunxuan
Lin, Gaochao
Naseem, Zunaira
Ponomar, Vitalii
Rahman, SM Arifur
Siddika, Ayesha
Song, Haemin
Wang, Yanzhi
Yu, Yang
Zhang, Penghao

RESEARCH FELLOW

Chen, Xiaojun

POSTDOCTORAL FELLOW

Dong, Wenkui
Henderson, Ian Edward James
Qu, Fulin

Research Centre for Integrated Transport Innovation (rCITI)

RESEARCH ASSOCIATES

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Najmi, Ali
Pokharel, Badal
Rahimi, Mostafa
Secadiningrat, Julius Raditya

SAGE

SENIOR RESEARCH FELLOW

Deng, Xiaoli

Water Research Centre (WRC)

ARC EARLY-CAREER INDUSTRY FELLOW

Jiang, Ze

RESEARCH FELLOW

Vogel, Elisabeth

SENIOR RESEARCH ASSOCIATES

Garg, Shikha

RESEARCH ASSOCIATES

Aryampa, Shamim
Chen, Zhijie
Hayes, James
He, Calvin
Kinsela, Andrew
Liu, Xuran
Miller, Christopher
Sun, Yingying

POSTDOCTORAL FELLOWS

Higgins, Philippa Ann (Postdoctoral Writing Fellow)
Liu, Shuang
Rajendran,Ranjith Kumar
Shagun, Shagun

Water Research Laboratory (WRL)

SENIOR RESEARCH FELLOW

Carley, James (Principal Coastal Engineer)

SENIOR RESEARCH ASSOCIATE

Waddington, Kate

RESEARCH ASSOCIATES

Henderson, Bradley
Tothova, Danica

PROFESSIONAL STAFF

SCHOOL OFFICE



LEKANA TOUBIA,
School Manager



**WARASSAMON
KATE
PHOKEPHIBOON**,
Web Coordinator



DENISE LEE,
Facilities Officer
(Faculty embedded)



ANDREAS PERMADI,
Administrator
(Faculty Embedded)



PATRICK VUONG,
Specialist Lab
Support (Faculty
Embedded)



LUCIA WONG,
Executive Assistant
to HoS



DENNIS FERRER,
Finance Officer
(Faculty Embedded)



MICHELLE GREGOR,
Administrator
(Faculty Embedded)



JAVIER VIDELA,
Project Officer
(Data Analytics)

HDR & TEACHING SUPPORT



SUNHEE LIM,
Higher Degree
Research (HDR)
Support Officer
(Faculty Embedded)



EMMA COTTER,
Teaching Support
Officer (Faculty
Embedded)



HARMONEE TSANG,
Teaching Support
Officer (Faculty
Embedded)



MEYA TANUWIJAYA,
Teaching Support
Officer (Faculty
Embedded)



KARENNA KENT,
Teaching Support
Officer (Faculty
Embedded)

RESEARCH CENTRES

RESEARCH CENTRE MANAGEMENT



**DR FRANCOIS
FLOCARD**,
Director - Industry
Research, WRL



**THERESA
WISNIEWSKI**,
Research Hub
Business Manager,
RIIS



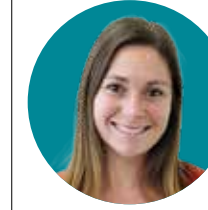
MARIA LEE,
Manager, rCITI



GRACE ZHU,
Manager, CIES.



PAULA PLOYSARAK,
Manager, Water
Research Centre (WRC)



ANNA BLACKA,
Scientific Illustration,
Graphics and
Communication, WRL
& CVEN Social Media



GRACE CARLINO,
Administrative Officer,
WRL



KATIE JACKA,
Publications Officer,
WRL



ROSS MATHEWS,
Administrative Officer,
WRL

EXTERNAL RELATIONS & COMMUNICATIONS



MARY O'CONNELL,
Digital Content
Coordinator (p/t)



TAMARA ROUSE,
Industry Relations
Special Projects (p/t)



PATRICIA TESORIERO,
Project Manager,
Community Outreach
(p/t)

TECHNICAL STAFF

TECHNICAL SERVICES

LABORATORY MANAGERS



DR ZHEN-TIAN CHANG,
Manager, Randwick
Heavy Structures
Laboratory



PAUL GWYNNE,
Manager,
Infrastructure
& Geotechnical
Laboratories,
Kensington



DR MINH NHAT LE,
Manager, Water
Quality Laboratory,
Kensington



JULIUS SECADININGRAT,
TRACSlab Manager,
rCITI

INFRASTRUCTURE & GEOTECHNICAL LABORATORIES – KENSINGTON



FARJ ELHADAYRI,
Technical Officer



WILLIAM TERRY,
Senior Technical
Officer



CALVIN YUNG,
Technical Officer

WATER LABORATORIES – KENSINGTON



DR MARK RYBCHYN,
Technical Officer



KELVIN ONG,
Technical Officer



**DR THI SONG
THAO LE,**
Technical Officer



ARTUR ZIOLKOWSKI,
Technical Officer

TECHNICAL SERVICES

WRL TECHNICAL STAFF



LARRY PAICE,
Workshop Supervisor



DR AARON COLUSSO,
Senior Technical
Officer



DAVID CLOUSTON,
Workshop Technical
Officer



ROBERT THOMPSON,
Technical Officer - IT

HEAVY STRUCTURES LABORATORY – RANDWICK CAMPUS



SANJEEWA HERATH,
Senior Technical
Officer



RONALD MONCAY,
Senior Technical
Officer



ROYCE QIU,
Technical Officer

rCITI



ALIREZA RAEI,
Full Stack Web
Developer

SAGE



PETER MUMFORD,
Technical Officer
(SAGE & rCITI)



DR YINCAI ZHOU,
Professional Officer,
SAGE

WATER RESEARCH LABORATORY (WRL)
PROJECT ENGINEERS

PRINCIPAL ENGINEERS



JAMES CARLEY
Principal Coastal
Engineer



IAN COGHLAN



ALICE HARRISON



BRETT MILLER



BEN MODRA



TOBY TUCKER

PROJECT ENGINEERS



FARID CHAAYA



JONATHAN CHAN



YARRAN DOHERTY



TOMMY FELLOWES



DANIEL GILBERT



MARGOT MASON



JIN ZHU

HEALTH & SAFETY COMMITTEE

The school is committed to protecting the health and safety of all staff, students, visitors and contractors.

Our Level 3 Health, Safety and Environment Committee meets at least quarterly. The purpose of the committee is to facilitate effective consultation with workers and students to identify and resolve health and safety issues where they arise.

Regular laboratory and workplace inspections and training sessions, combined with a wide range of communication methods, ensure that all staff and students are informed of their responsibilities.

The Committee is comprised of members elected or nominated from the workplace which are representative of all work groups within the School. Representatives are also elected from undergraduate and postgraduate student bodies.

The physical areas covered by the Committee include:

- Civil and Environmental Engineering Main Building H20
- Civil and Environmental Engineering Laboratory Block – Vallentine Annexe H22
- Water Research Centre – Vallentine Annexe H22
- Heavy Structures Laboratory, Randwick R9
- Water Research Laboratory, Manly Vale
- Hilmer Building, Level 5, Room 569 E10

H&S COMMITTEE

PAUL GWYNNE INF REP
Chair

DENIS O’CARROLL
Deputy Head (Research)

FRANCOIS FLOCARD
Deputy Chair

LAARNI CALUDUCAN
Secretary/Health, Safety &
Environment Advisor

GRACE ZHU
CIES

ALEX ONG
iCinema

ZHEN-TIAN CHANG
Heavy Structures (Randwick)

JULIUS SECADININGRAT
rCITI

PAULA PLOYSARAK
WRC

MINH NHAT LE
WQL

FRANCOIS FLOCARD
WRL

YINCAI ZHOU
SAGE

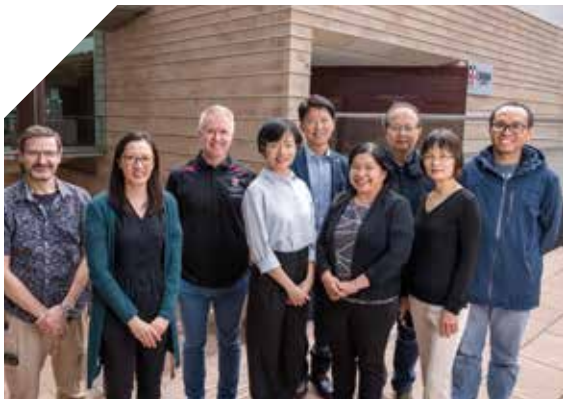
SAMSUNG LIM
Academic Rep

DENISE LEE
Admin Rep.

ARJUNA EDIRISINGHE
Undergrad Rep

SARA FAZELI
Postgrad Rep

EMILIO SALIBA
Faculty HS&E Support



Members of our H&S Team:
L-R: Paul Gwynne (Chair),
Denise Lee, Prof Denis O’Carroll,
Dr Thao Le Thi Song (WQL),
A/Prof Samsung Lim, Paula Ploysarak,
Dr Zhen-Tian Chang, Grace Zhiu,
Dr Minh Nhat Le

Absent from Pic: Laarni Caluducan,
Arjuna Edirisinghe, Sara Fazeli,
Dr Francois Flocard, Alex Ong,
Julius Secadiningrat, Dr Yincai Zhou.

“
The purpose of the
committee is to
facilitate effective
consultation
with workers and
students to identify
and resolve health
and safety issues
where they arise.
”

EXTERNAL RELATIONS COMMITTEE (ERC)

ERC members organise the promotion and representation of the School at many presentations and functions on and off campus. These include Engineering Information Days, UNSW's annual Open Day, High School visits on and off campus, Women in Engineering events, and the NSW Careers Advisors Annual Conference. The Committee works closely with Faculty of Engineering at UNSW on all their external engagement endeavours.

The Committee is responsible for the management of the CVEN Primary School Maths prize, administered by Tricia Tesoriero and the Industry Partner Program which is coordinated by the Chair Kurt Douglas and ER Manager Tamara Rouse.

The ERC liaises with the CVEN Industry Advisory Committee (IAC) and our Industry Partners on many projects, including the annual Year 10 work experience week, Elite Student/Industry Partner Breakfast, discipline prizes awarded at the CVEN 4th year dinner, and the Industry Partners Careers Market.

EXTERNAL RELATIONS COMMITTEE (ERC)

KURT DOUGLAS
Chair

CRAIG ROBERTS
Deputy Chair

KRISTEN SPLINTER
WRL

ALI KASHANI
CIES

KEFENG ZHANG
WRC

MEEAD SABERI KALAEI
rCITI

JOHNSON SHEN
CIES

ELNAZ IRANNEZHAD
Transport

MOHSEN KALANTARI
Construction Management

ADNAN SUFIAN
Geotechnical

ROBERT HOLDOM
Scholarships

TAMARA ROUSE
External Relations Manager

TRICIA TESORIERO
Outreach Projects

Communications

Anna Blacka, our Digital Communications Officer, regularly shares our staff and student successes, achievements and calls to action through a growing LinkedIn page. By the end of 2024, we had 5,891 LinkedIn followers.

Mary O'Connell, Digital Content Coordinator, works on creating and curating content for our School website, annual report and community e-newsletters.



ERC Chair Kurt Douglas



ERC Deputy Chair Craig Roberts

"
ERC members organise the promotion and representation of the School at many presentations and functions on and off campus

INDUSTRY ADVISORY COMMITTEE

Members of our Industry Advisory Committee (IAC) represent a number of distinguished employer groups, a range of professional disciplines, graduates and UNSW Engineering staff.

The IAC's role is to advise the Head of UNSW School of Civil and Environmental Engineering on industry views of undergraduate and graduate programs, as well as research directions. Particular briefs may also be provided to the IAC at various times to address specific issues. Finally, the committee may raise issues they would like to see investigated, providing advice on these to the Head of School.



ATHENA VENIOS
Chair, Managing Director, Keller Australia

Athena is the Managing Director of Keller Australia, a leading ground engineering contractor. She is a civil engineer with over 25 years of experience in developing, designing and delivering numerous complex infrastructure projects, working both for government and in the private sector. In 2016 Athena was awarded the Judy Raper Award for Leadership in Engineering, in recognition of her sustained and significant contribution through demonstrated leadership within the profession in Australia.



LUCAS JORDAN
Senior Advisor at E3 Advisory

Lucas has 15 years' experience in the development, procurement and delivery of major infrastructure and building projects, covering both the private and public sectors. Having held key delivery roles during his time at the Sydney Ports Corporation and Evans & Peck, Lucas now specialises in commercial advisory services for major project delivery and in contractual disputes.



GREG BOWYER
Manager, GHD Western Sydney,
Principal, GHD Senior Technical Director /
Infrastructure Project Director

With a background in the Australian Army, Greg specialises in managing consulting projects in the transport, energy and resources, water and property markets. He is passionate about creating leadership opportunities for junior engineers. Greg is currently driving GHD's Western Sydney community and growth, looking to integrate innovative architectural and engineering thinking, property owners, investment options, thought leadership and alternate client futures to build new and lasting communities in Western Sydney.



IAN MCINTYRE
Director at Ian McIntyre & Associates Pty Ltd

A consultant for more than three decades (for Evans & Peck and Advisian), Ian has advised on a wide range of infrastructure, building and systems integration projects throughout Australia and Asia. He is frequently retained in "trouble shooting", independent review and due diligence roles and has considerable experience in analysis of the reasons for project delivery problems. He is graded as an Arbitrator and is an experienced expert witness, presenter and facilitator. He is a member of four Dispute Boards on major projects and is a member of the Board in Region 3 (Australasia) of the Dispute Resolution Board Foundation.



SCOTT POWELL
Managing Director, Operations, Aurecon

Scott is Aurecon's Managing Director, Operations and is responsible for the performance and operational efficiency of the business. With 25 years consulting experience, including ten years in business leadership roles, he has been involved in delivering many major infrastructure projects across several industries.



JESSICA QIU
Major Project Executive,
WSP in Australia

Jessica Qiu is a project executive with international charterships. She is a highly experienced project management professional with extensive experience in the conceptualisation, planning, design, management and construction of large infrastructure projects, focusing on transport, development and social infrastructure sectors. She was the president of Engineers Australia Sydney during 2020-2021 and has led various industry initiatives such as the Innovation Network, the Western Sydney Initiative, Education Support – Cradle to Graduation, Migrant Engineer Support etc.



DES SINOVICH
Head of Careers and Pathways,
St Andrew's Cathedral School.

Des Sinovich, a Careers Counsellor, has worked in several education sectors in Australia and abroad in various roles including teaching, development and leadership. He has a particular interest in curriculum relevance.



GARETH SWARBRICK
Principal Geotechnical Engineer, PSM

Moving from academia to industry, Gareth's expertise centres on tailings dam design and operation, assessment and management of mine subsidence impacts and numerical analysis. Signature projects include protection of the Upper Canal and Hume Highway during undermining, prediction of steam pressures at Lihir Gold Mine, numerical analysis of hydromechanical coupling at Olympic Dam, Brisbane Airport Link tunnel design and investigation of the Lane Cove Tunnel collapse. He is currently a Visiting Fellow with the UNSW Water Research Laboratory.



CRAIG TURNER
Managing Director, SDG

Craig is the Managing Director of SDG, a Land Title and Survey Consultancy based in Sydney. He is a Registered Land Surveyor with over 30 years' experience in Industry and is the current President of Consulting Surveyors National



NICOLE WATERMAN
Technical Leader at Laing O'Rourke

Nicole brings more than 20 years of experience in delivering complex multidisciplinary infrastructure engineering projects across Australia, Europe, the Middle East and Asia in a range of sectors including rail, commercial, cultural and civic, sports, and the water and wastewater industries. She was the Project Technical Lead for Central Station Metro working with Sydney Metro, and is a Committee Member of EA's Sydney Division.

INDUSTRY PARTNERS & SUPPORTERS

“
Our Industry Partners Program helps fund our outreach programs with potential future students, in primary and high schools.
”

The School is well supported by industry. Three of our academic positions are funded with the support of industry. We are grateful to PSM for their support of a professorial Chair and a Senior Lectureship position in Rock Mechanics. We are grateful also to leading NSW surveying companies CMS Surveyors, Land Partners, Land Surveys, Lynton Surveys, and SDG for their support of a lectureship in Surveying.

Our **Industry Partners Program** helps fund our outreach programs with potential future students, in primary and high schools. This includes our very successful Primary School Maths Prize and Year 10 Engineering Work Experience Week. Funds are also used to run events that link our undergraduates with Industry Partners such as the Industry Partners Careers Day and our annual Elite Student Breakfast.

Outside of the IPP, Industry supporters can fund student prizes, awards, or provide in-kind support for student or outreach events.

For more information or to join- contact Chair of the External Relations Cttee Dr Kurt Douglas at k.douglas@unsw.edu.au

Industry Partners and Supporters of the School of Civil & Environmental Engineering in 2024:

ARCADIS	E3 ADVISORY	QUBIST
ARUP	JACOBS	RPS
AURECON	KELLER	SDG
BECA	LAING O'ROURKE	SMEC
CMS SURVEYORS	LAND PARTNERS	TTW
DOUGLAS PARTNERS	LAND SURVEYS	TURNBULL ENGINEERING
DOWNER	LYNTON SURVEYS	WARD CIVIL
DREYFUS ADVISORY	NORTHROP	WITT CONSULTING
DT INFRASTRUCTURE	PSM	WSP



The annual **CVEN Industry Partners Careers Market** was held in UNSW's Leighton Hall, on Wed 13 March 2024. Hundreds of undergraduate and postgraduate students attended during the day with 20 companies represented. Students took the opportunity to discuss industrial training and graduate opportunities, and to find out more about the world beyond campus.

The annual CVEN Industry Partners Careers Market



The annual **Industry Partner breakfast** with our leading students took place in Spring at the Botanic Gardens. It's always a great opportunity for students to get close to industry practitioners and get further insight. Meanwhile industry get a chance to see why we are the number one School of our kind in Australia! Because of our students!



PRIMARY SCHOOL PRIZE IN MATHEMATICS

OUR OUTREACH CONTINUES

The School encourages a lifelong interest in mathematics as one of the key requirements for a rewarding, fulfilling and socially useful engineering career.

The aim of the prize is to address the problem of falling numbers and interest in maths and science in the early high school years.

It quas aligendis as modia eaqi
simagnimi, inum quas enihicia voluptur,
consedi tatium repta seque cum fugit

The UNSW Civil and Environmental Engineering Primary School Prize in Mathematics is an initiative of the Industry Advisory Committee, developed by the School's External Relations team, and brilliantly managed by Ms Tricia Tesoriero.

The aim of the prize is to address the problem of falling numbers and interest in maths and science in the early high school years. We wanted to communicate the practical value of maths and science to students prior to that period. The School has been a significant contributor to the growing awareness on the part of schools, politicians and journalists of the mathematics crisis facing Australia.

Every year, more and more NSW schools participate in our Maths Prize, (currently 91) and we give prizes to more than 250 students. Selection criteria emphasise applications and creativity as well as class projects and test results.

School staff or alumni hand over the Prize at the end-of-year presentation events. It gives students and parents a chance to meet a real-life engineer and talk to them about the field's opportunities and rewards.

2024 Primary Maths Prize Winners

Alexandria Park Community School

Theo Bailey
Marcus Mansueto
Reilly Song
Lucas Ye

Annandale North Public School

Hal Fletcher
Damon Koo
Hannah Koskie
Harrison Sivieng

Armidale City Public School

Fynn Heaney
Mikael Kempers-Murtaza
Lachlan Macmullen
Jaylan Matthews

Arncliffe Public School

Alex Huang
Harvey Wugo

Asquith Public School

Riku Matsumoto
Nana Matsumoto
Levi Olmedo
Kiyomi Perera

Australian International Academy of Education Ltd, Kellyville

Zaki Haqq
Aydiar Kurdisan
Abdullah Momin
Musa Salimi

Balgowlah Heights Public School

Lana Chung
George Lu

Balgowlah North Public School

Julian Ciano

Bankstown West Public School

Amabella Do
Adam Etri
Marilyn Nguyen
Jayden Xian

Barramurra Public School

Shreyaa Khanal
Aarav Tukkannavar

Beaumont Hills Public School

Alex Chen
Kavish Panchal

Beauty Point Public School

Sho Nagasaka
Kabir Patel
Harison Santi
Ivy Thompson
Justin Xiao

Beecroft Public School

Adrian Hau
Ray Zhang

Bellevue Hill Public School

Jacob Goldschmidt
Oscar Hadassin
Ethan Pilsky
Jasper Vickers

Belrose Public School

Rosie Anderson
Lily Harris
Luke Jefferson
Mitchell Wang

Berrima Public School

Ace Burgess
Makenna Pulley

Beverly Hills Public School

Asher Lau
Krista Wu

Blackheath Public School

Lillian Kovari
Everett Maundrell

Blacktown West Public School

Cem Balta
Aiden Formosa
Muzamil Orya
Shorya Shah

Bondi Beach Public School

Diego Escobar Gracia
Milla Kinsella

Bondi Public School

Will Collins
Mia Maguire

Bronte Public School

Bailey McKee

Cammeray Public School

Cathy Liu

Canterbury South Public School

Stefan Maksimovic
Danielle Wang

Carlingford Public School

Aaheli Mal
Lincoln Shi

Carlton Public School

Jacob Chiang
Ethan Chua
Joshua Lin
Jamie You

Casula Public School

Kate Cheah
Ellen Tang

Chifley Public School

Evie Polain

Claremont College

Lawrence Kalantar

Clovelly Public School

Mischa Hermens

Condobolin Public School

Haylee Bell
Macauley Packham

Cowra Public School

Beau Chittick
Elijah Daley

Crescent Head Public School

Sienna Anderson
Matthew Arlidge
Rylah Hopper-Buckland
Lindon Moseley
Carson Ryder

Daceyville Public School

Tobias Boecking
Frederick Ezekiel

Double Bay Public School Dean Bakyrtsis Rory Fisher Fred Milburn Thomas Wilsdon	Harbord Public School Daniel Bullen Eva Langley Nina Ruettinger James Taylor	Matraville Public School Oma Al Raffi
Earlwood Public School Jonah Fei Vincent Zhang	Illawong Public School Hayden Gu Tristan Powell Zac Vasilareas	Middle Harbour Public School George Farr William Scoufis
Eastlakes Public School Aritree Rayan Sayed Sami Mathi Subramanian Ian Zhuang	Jasper Road Public School Saish Mahajan Bonnie Wang Xinzhou Xu Ethan Zou	Mosman Public School Jacqueline Lee Javik Yuan
Engadine Public School Emily Grant Benjamin Hall Aleksa Kochneva Kimberly Martin	Kambora Public School Oliver Gandia Ethan Yue	Mount Colah Public School Onyx Bolanos Eva Jones Alexander Zhao Amy Zhuang
Epping North Public School James Brunsdon Toby Tse	Kensington Public School Anna Chen Chengqu Ke Felix Pavlis Xiaochu Wang	Mount Druitt Public School No student names provided
Ermington Public School Angela Dou Andi Guo Nathan He Connor Szilagyi	Kurrajong Public School Liam Maher Abigail Pengelly	Niagara Park Public School Poppy Beaumont-Dennison Maison Ciren
Ermington West Public School Xavier Baluyut Francis Chai Jacob Ham Matthew Santos	Lawson Public School Logan Blackburn Oliver Dalitz	North Haven Public School Savannah Byrnes Zyggi Mann Ted Oates Nixon Ray
Ferncourt Public School Casper Addlem	Lugarno Public School AlexanderCruz-Cindric Sebastian Gallos-Habib Richelle Lin Jonathan Zhuang	North Sydney Public School Bodhi Dawkins Malakai Hart Harrison Park Henry Wearne
Ferncourt Public School TobiasHo Xanthe Knights Dominique Nguyen	Manly West Public School May Le	Northmead Public School Sanjush Arukat Andrew Ding Nolan Oei D'Andre Wapomba
Forestville Public School Lexi Kotsialos Jenson Leech William Taylor Helena Zhao	Maroubra Junction Public School Denise Chan AlexisHong Olivia Karantonis Andrey Seleznev	Our Lady of the Rosary Alvaro Dharmawan Elisha Lam Nikita Wijaya
Glenhaven Public School Harry Gray	Masada College Junior School Simon Liu Simon Liu	Pagewood Public School Azura Aliyev Ayah Assoud Safirah Ilham Kayla Kim

Parramatta North Public School Yara Elazizy	St Joseph's Primary School Austin Howard Hebe Hui Ryan Hurst Natasha Vildos	Wheeler Heights Public School Harrison Bates Mitchell McKinnon Taj Timosevski Michael Wan
Picnic Point Public School Zara Bahamad Tim Guyer Armaan Singh Jade Vo	St Peters Public School Benjamin Day Hunter Trimble	Wollondilly Anglican College Torin Ford-McGuire Ivy Sproule
Pitt Town Public School Indiana Finn Nicholas Marsonet Edward Willis Connor Wilson	St Philip's Christian College Parker Hill Charmaine Poon	Woollahra Public School Angus Dawson Christopher Girgis Peter Li Ashy Wong
Rainbow Street Public School Mingmei Zhu	Sylvania Heights Public School Harrison Deng Oscar Lin Jake Vu Emily Yang	
Randwick Public School Finn Brown	Tacking Point Public School Luca Perri Emilia Perri	
Roselea Public School Eamon Cruz John Zhang	Toongabbie Public School Razi Mohammed Aahana Narayan Hara Cho Vivan Patel	
South Coogee Public School LaiJiang	Turramurra Public School Marianne Mai Douglas Whitehouse	
South Coogee Public School Morgan Nethery Blake Schwartz Lawren Zhang	Ulladulla Public School Taj Hubbard Janelle Zamora	
St Aloysius Catholic Primary School Kate McGuinness Lucca Rocha Charles Slack Noah Sutton	Ultimo Public School Scott Jenkins Luca Liu	
St Declan's Catholic Primary School Nicholas Bertoia Zachary Chan Harrison Grubits Chelsea Serrano	West Pennant Hills Public School Lachlan Hunter Owen Li Nathan Whitson Anzhi Xu	
St John Bosco Catholic Primary School Agustin Czerwinski Zachary Wainwright	West Ryde Public School Vinh Doan Alan Ornelas Marcus Orton Ethan Tan	



