

Research Capability Prospectus

Environment Institute



We acknowledge and pay our respects to the Kurna people, the original custodians of the Adelaide Plains and the land on which Adelaide University campuses are built. We acknowledge the deep feelings of attachment and relationship of the Kurna people to Country, and we respect and value their past, present and ongoing connection to the land and cultural beliefs. The University continues to develop respectful and reciprocal relationships with all Indigenous peoples in Australia, and with other Indigenous peoples throughout the world.



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Director's message



It is my pleasure to share the Environment Institute's capability report under Adelaide University

With expertise in both environmental and social sustainability, and a research translation pathway that sees the integration and flow of the sciences and public health to social sciences, education and law, our projects create change and transformation across communities, governments and industries.

This report highlights just a few examples of our research excellence. From developing innovative techniques to conserve Australia's unique biodiversity and ecosystems, to shaping legal and policy frameworks that mitigate bushfire risk, promote urban greening and deliver critical infrastructure to combat wildlife crime – researchers at the Environment Institute are driving ecological and social health.

Outcomes such as these are in no small part due to the enduring support of our extended community of partners, donors, volunteers, board members and professional staff, whose contributions and collaborative spirit have helped the Environment Institute to drive transformational research and achieve real and lasting impact.

As we look to a future that continues to be challenged by climate change, pollution, deforestation, and other threats to biodiversity, ecosystems and society, I remain heartened by the progress we have made and excited for the opportunities that lie ahead. Together, we will continue to lead environmental change and ensure a future that is healthy, diverse and equitable for all.

Professor Andrew Lowe

Director, Environment Institute





About the Environment Institute

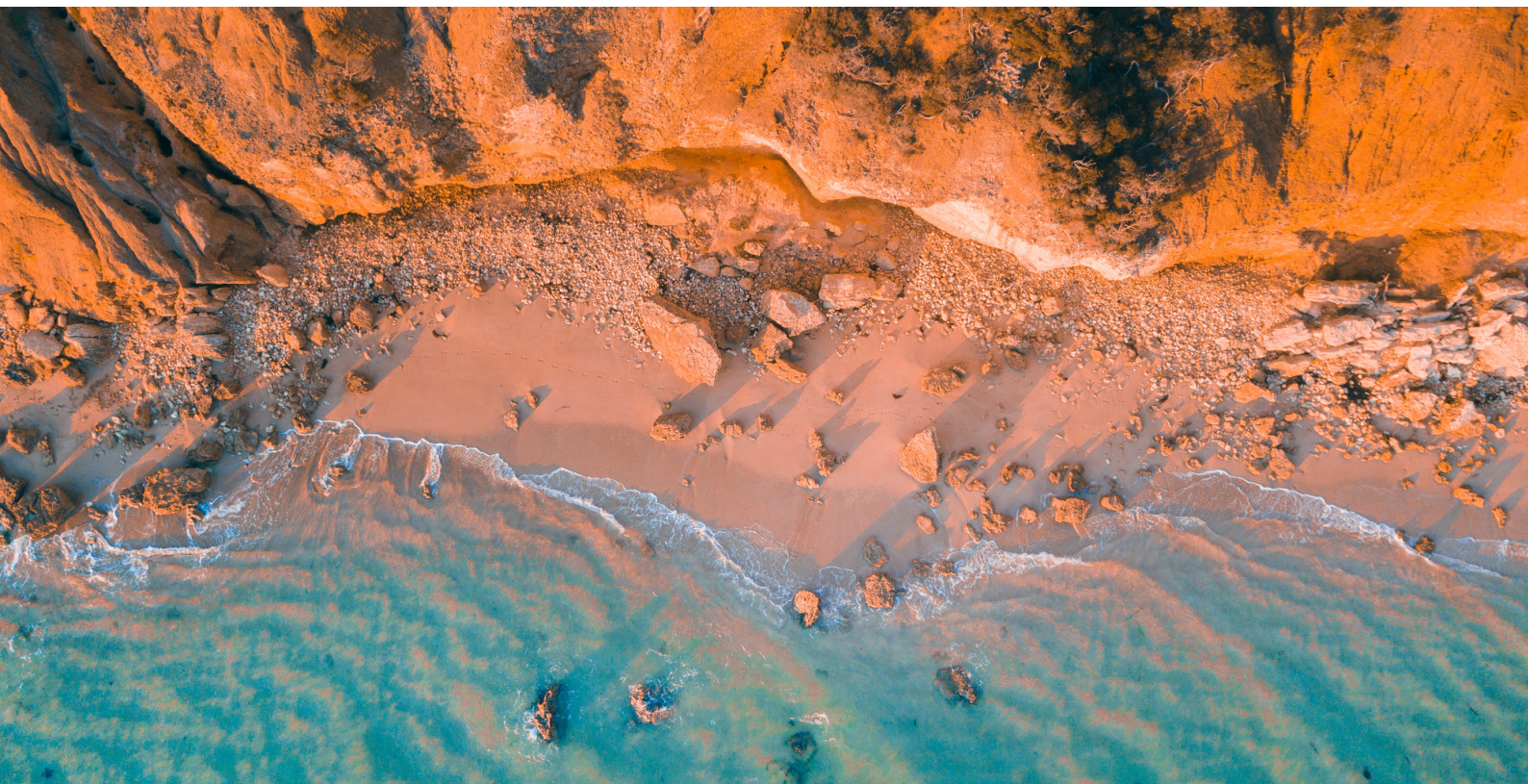
Improving the long-term wellbeing of planet and people by generating research excellence for impact

The Environment Institute (EI) brings together more than 150 researchers and 150 postgraduate students from all six colleges of Adelaide University, focussed on the conservation, management and restoration of natural resources and ecosystem assets which underpin environmental and social sustainability.

For over 15 years we have been driving transformational change by connecting multidisciplinary research excellence with the world's most critical and complex environmental challenges. Through strong partnerships with industry, government and the community, we deliver actionable solutions that protect the environment and generate lasting economic, societal and cultural benefits.

Our vision is to have resilient, thriving ecosystems supported by research and collaboration.

Our mission is to create and translate research for decision, investment, policy, and practice that sustains and regenerates nature and communities.





Our work

The Environment Institute works to address complex environmental and social sustainability challenges and create meaningful impact on a local and global scale.

We do this by:

Funding research activities that generate scholarly, sectoral and societal impact

We offer a competitive annual seed-funding scheme to support EI members in the development of research activities that align with EI's vision and research foci.

Building the capacity and capability of our members to reach their full potential

We invest in the growth of our members through a targeted leadership development program; offering training and mentoring opportunities for early- and mid-career researchers.

Fostering high-impact collaborations within the University and with external partners

We facilitate multidisciplinary partnerships to tackle environmental issues across sectors and communities

Engaging with the community on critical environmental issues

We showcase the breadth of experience and expertise across EI and encourage a deeper connection and appreciation for our natural environment.

Delivering real-world outcomes in environmental and social sustainability

EI's multidisciplinary approach focusses on safeguarding the planet's land, water, and air resources, delivering outcomes with industry, government and community.

Research Capabilities

With expertise spread across all colleges of Adelaide University, EI's multidisciplinary approach focusses on safeguarding the planet's land, water and air resources, delivering outcomes with industry, government and community.

Our work across nine broad capabilities is helping to progress the United Nations' Sustainable Development Goals, which aim to tackle the world's most pressing challenges by 2030.



Biodiversity, Environmental Change and Restoration

Providing expert research and tools to identify the causes of biodiversity change, and develop praxis and policy guidance to avert extinctions and protect and restore ecosystems



Climate and Environmental Risk

Leading new thinking and action on climate and environmental risk in an increasingly uncertain world



Combatting Wildlife and Environmental Crime

Developing tools and frameworks to protect Australia's landscapes and biodiversity, bolster our biosecurity and establish a highly exportable wildlife, fisheries and timber crime-tech research industry





Diversifying Citizen Science and Public Engagement

Investigating our natural and social worlds with diverse communities to empower research that fosters shared responsibility for the environment and collective action for a sustainable future



Green Urban Futures and Planetary Health

Building resilience to climate and societal changes to enhance community wellbeing and create vibrant, sustainable urban environments



People, Nature, Climate

Driving sustainability, enhancing environmental and social wellbeing, and supporting community-led responses to environmental decision making and development.



Pollution and Emerging Contaminants

Identifying contaminant pathways and impacts, and developing strategies to monitor, prevent, and counteract pollution and its effects



Sustainable Marine Futures

Championing the restoration of marine habitats to ensure community health and wellbeing and coastal ecosystem resilience



Water for Environment and Society

Supporting the sustainable management of our water resources through multidisciplinary research, expertise and policy development



Biodiversity, Environmental Change and Restoration

Capability Overview

Earth is on a path to devastating climate and environmental change. Our researchers have the expertise needed to identify the trajectory and causes of biodiversity responses to these changes, and to formulate evidence-based solutions to protect natural and human systems. We provide the context, tools and policy guidance needed to help mitigate future biodiversity losses and maintain resilient ecosystems in the face of shifting climates and other anthropogenic impacts. This includes, but is not limited to, expertise in ecological modelling, conservation science, environmental systems and management, palaeo and applied ecology, climatic change, and economics and decision-making

Research Spotlight

Using ancient DNA to prevent mammal extinctions

Associate Professor Damien Fordham and his team use innovative models and advances in sedimentary DNA and bulk-bone metabarcoding to reconstruct spatial patterns of native mammals and plants across Australian landscapes since 1788.

By identifying where species once thrived and through working with partners, this research helps to direct the protection and recovery of some of Australia's most threatened species by identifying the best places for reintroduction and habitat restoration, now and under future climate conditions.



Australia's unique mammals have suffered the highest rate of recent extinctions of any continent. Reversing further declines, and averting new extinctions, requires a detailed understanding of past distributions and preferred habitats."

Associate Professor Damien Fordham

Key Projects

Biodiversity, Conservation and Restoration

Climate and Environmental Change

Environmental Genomics

Major funders and partners

- Australian Government Department of Health, Disability and Ageing
- Australian Research Council
- BHP Group Limited
- National Aeronautics and Space Administration
- National Health and Medical Research Council
- New Zealand Ministry of Business, Innovation and Employment
- Parks Australia
- Royal Society of New Zealand
- U.S. National Science Foundation
- Villum Foundation

Climate and Environmental Risk

Capability Overview

As climate and environmental risks escalate, so too does the demand for sharper, more strategic responses. This capability focusses on the systemic nature of climate risk – recognising how physical, ecological and societal systems interact under stress. We develop and apply forward-looking risk frameworks that move beyond prediction, enabling decision-makers to act under uncertainty, manage compounding threats, and protect what matters most. Drawing on world-class research and interdisciplinary expertise, we work closely with partners across government, industry and communities to deliver practical, risk-informed solutions. Grounded in evidence and shaped by real-world needs, we contribute to more informed, resilient responses to the climate and environmental challenges ahead.

Key Projects

Hazard Risk (Fire and Flood)

Risk Mitigation

Planetary Boundaries

Major funders and partners

- Australian Government National Emergency Management Authority
- Australian Research Council
- Bushfire and Natural Hazards Cooperative Research Centre
- City of Mitcham
- City of Norwood, Payneham and St Peters
- Commonwealth Scientific and Industrial Research Organisation
- NSW Emergency Services
- One Basin Cooperative Research Centre
- SA Department for Environment and Water
- SmartSat Cooperative Research Centre
- South Australian Fire and Emergency Services Commission
- Spencer Foundation
- Victorian Country Fire Authority
- WA Department of Planning, Lands and Heritage

Research Spotlight

Law reform for a fire-ready future

EI Future Making Fellow Associate Professor Phillipa McCormack is assessing current fire laws in South Australia, New South Wales, and Tasmania, drawing on international case studies from Canada, Spain and the United States and uncovering new international networks for exchanging knowledge. Insights from this research are vital to informing practical pathways for law reform, assisting policy makers to enact improved fire prevention and supporting communities, agencies and ecosystems to thrive in a fire-shaped future.



“

Australia doesn't currently have the necessary legal frameworks needed to proactively mitigate bushfire risks. Understanding what our laws need to be will help us not just cope and survive as fire events become more frequent and extreme, but build environments, cities and communities that can flourish even as that change occurs.”

Associate Professor Phillipa McCormack - Future Making Fellow, EI

Combating Wildlife and Environmental Crime

Capability Overview

The pervasive impact of wildlife and environmental crime seriously endangers Australia's unique landscapes, seascapes and biodiversity, exposing us to potential disastrous biosecurity risks, and threatening our livelihoods and wellbeing. We are developing the next generation of high-tech resources, informing regulatory and legal frameworks, and translating knowledge and educational tools to enhance Australia's biosecurity reputation and generate a highly exportable wildlife, fisheries and timber crime-tech research industry.

Research Spotlight

Developing tools to fight wildlife crime

In 2023, Professor Phill Cassey received a prestigious Australian Research Council Industry Laureate Fellowship to deliver critical research and infrastructure to combat wildlife crime.

This multidisciplinary and highly collaborative project is enabling policing and enforcement activities, enhancing education and awareness efforts, improving environmental biosecurity and helping to safeguard Australia's unique biodiversity and natural environments.



The pervasive impact of wildlife and environmental crime seriously endangers Australia's unique landscapes and biodiversity, exposing us to potentially disastrous biosecurity risks and threatening our livelihoods and wellbeing. Finding an effective method to combat these challenges is crucial."

Professor Phill Cassey

Key Projects

Wildlife Crime

Illegal Logging

Fishery Provenance and Health

International Trade and Law

Major funders and partners

- Australian Department of Agriculture, Fisheries and Forestry
- Australian Department of Industry, Science and Resources
- Australian Research Council
- Centre for Invasive Species Solutions
- International Tropical Timber Organisation
- World Forest ID

Diversifying Citizen Science and Public Engagement

Capability Overview

Through participatory research, otherwise known as citizen science, communities work with EI members to advance research in diverse fields such as physics, medicine, biology, ecology and social sciences. In addition to advancing research through the collection and analysis of data and samples, the active involvement of diverse communities in research is a powerful way to engage and educate, fostering a sense of shared responsibility for the preservation of our natural world and inspiring collective action towards a more sustainable future. Key projects in this capability include Insect Investigators, iBandi and EchidnaCSI.

Key Projects

Citizen Science

Future Leaders

Major funders and partners

- Australian Department of Climate Change, Energy, the Environment & Water
- Australian Government Department of Employment and Workplace Relations
- Australian Government Department of Industry, Science, Energy and Resources
- Australian Research Council
- Country Needs People
- SA Government Department for Environment and Water

Research Spotlight

Citizen science and the harmful algal bloom

In 2025, Dr Brianna Le Busque led a study exploring the wellbeing impacts of the South Australian Harmful Algal Bloom. This cross-sectional project illustrated that the bloom coincided with marked psychological distress in South Australians and disconnected people from the ocean, a notion called eco-anxiety.

Using citizen science, this project showcases how public participation in science can buffer against eco-anxiety, giving people a chance to contribute actively and positively to the environment, and fostering a sense of shared responsibility for the protection of our natural world.



We know that citizen science produces excellent scientific data. Through environmental psychology, we are now also learning that citizen science could be good for the citizen scientist's wellbeing too."

Dr Brianna Le Busque

Green Urban Futures and Planetary Health

Capability Overview

Many cities are facing hotter, drier climates, with rising temperatures and declining rainfall threatening human health and wellbeing, ecosystems and biodiversity. To address these challenges, we conduct interdisciplinary and multidisciplinary research across the fields of built environment, biological and social sciences, economics, health and engineering, in collaboration with governments, non-governmental organisations and communities. Our aim is to build resilience to climate and societal changes – particularly for vulnerable groups such as older adults, low-income communities, outdoor workers and children – to foster more vibrant urban environments.

Research Spotlight

Green urban futures for healthier communities

Chaired by Professor Veronica Soebarto, the International Symposium on Green Urban Futures brought together prominent international, national and local speakers to address the challenges and opportunities for Adelaide and other cities around the world to achieve green urban futures.

Through lenses of policy and planning, trees and urban forests, social sciences and economics; built environment; public health; and education, this event explored the need to future-proof our cities against challenges from climate change and population growth. Through quality greenspaces, we can help drive healthier and happier communities.



The pressure from urban development and the increase in extremely hot days may have catastrophic effects on human health and adversely impact ecosystems and biodiversity. It is crucial to take impactful actions quickly and immediately to future-proof our cities against these changes.”

Professor Veronica Soebarto

Key Projects

Green Urban Futures

Planetary Health

Major funders and partners

- Australian Department of Agriculture, Water and Environment
- Australian Department of Foreign Affairs and Trade
- Australian Research Council
- Commonwealth Scientific and Industrial Research Organisation
- Cooperative Research Centre for Honeybee Products
- Green Adelaide
- National Health and Medical Research Council
- Natural Hazards Research Australia

People, Nature, Climate

Capability Overview

EI is dedicated to advancing research that protects the environment while promoting environmental and social wellbeing. We explore the critical interconnections between society and nature to develop sustainable solutions. Our work addresses the impacts of human activity through innovative approaches to pollution prevention, environmental management and policy development. Additionally, our research examines how socio-economic and cultural drivers impact resolution of environmental challenges and promotes community partnerships and engagement in decision making: from Indigenous groups to local governments and fishing communities, particularly in response to climate change and biodiversity loss.

Key Projects

Social Justice and Equity

Community, Wellbeing and Behavioural Change

Climate and People

Socio-ecological Systems Thinking

Valuing Nature: Carbon and Nature

Industry

Creating, Informing and Influencing Policy Changes

Major funders and partners

- Australian Government Department of Agriculture, Fisheries and Forestry
- Australian Government Department of Climate Change, Energy, the Environment and Water
- Australian Research Council
- Country Needs People
- Polish National Centre for Science

Research Spotlight

Diving into the desert for a sustainable future

EI Future Making Fellow Associate Professor Ania Kotarba led an investigation into how Indigenous communities managed drought and flood cycles in the Lake Eyre Basin, and how this can inform sustainable management of Australia's inland rivers today.

Combining archaeology and environmental modelling with Indigenous knowledge, the project uncovered a rich history of Indigenous environmental engineering in one of the world's last unregulated desert river systems. Findings of the project have been used to create diverse public communications and help to preserve, educate and protect the Mithaka Aboriginal Corporation's culture and country.



By incorporating the viewpoints and perspectives of Indigenous communities like the Mithaka Aboriginal Corporation, we can protect the environment, create effective policy, and preserve culture.”

Associate Professor Ania Kotarba - Future Making Fellow, EI

Pollution and Emerging Contaminants

Capability Overview

Pollution and emerging contaminants are increasingly urgent research areas, with toxic substances like pesticides, microplastics, e-waste and perfluoroalkyl and polyfluoroalkyl chemicals (PFAS) spreading globally and infiltrating our daily lives. EI researchers are studying contaminant pathways, assessing their environmental, health and community impacts, and developing strategies to monitor, mitigate and prevent pollution and its detrimental effects through supply chain redesign, changing consumption patterns and advanced technologies.

Research Spotlight

Taking the ‘forever’ out of ‘forever chemicals’

PFAS (per- and polyfluoroalkyl substances) are used in many everyday products and pose a serious threat to environmental health. Dr Cameron Shearer is leading the development of an innovative approach to degrading PFAS using renewable solar energy, removing these harmful chemicals from our ecosystems without the release of damaging byproducts.

Dr Shearer’s innovation represents a major leap forward in PFAS water treatment technologies, providing a pathway towards replenishing healthy ecosystems globally.



PFAS are used in many everyday items like non-stick cookware and firefighting foams and have already been detected in environments. Using this new degradation technique, PFAS can be safely and effectively removed from the environment, offering an exciting pathway towards cleaner and healthier ecosystems.”

Dr Cameron Shearer

Key Projects

Nutrient Pollution

PFAS

Microplastics

Major funders and partners

- Australian Government Department of Agriculture, Fisheries and Forestry
- Australian Government Department of Education
- Australian Government Department of Industry, Science and Resources
- Australian Research Council
- Australia’s Nuclear Science and Technology Organisation
- Commonwealth Scientific and Industrial Research Organisation
- Energy Sovereignty for Indigenous Peoples Global Center
- Enviropacific Services
- Fisheries and Research and Development Corporation
- National Science Foundation
- SA Government

Sustainable Marine Futures

Capability Overview

The successful restoration of lost seagrass communities, kelp forests, shellfish reefs, mangroves and saltmarshes is vital to Australia's socioeconomic wellbeing and coastal ecosystem resilience. Restoration success in a fast-changing world requires the best scientific knowledge and fit-for-purpose approaches. Our researchers are national leaders and champions of change in understanding the drivers of loss and restoration. Their multidisciplinary approach brings together marine biology, social sciences, psychology, education, economics, legal studies and community wellbeing to drive policy development, legislative change, and social and ecological progress.

Key Projects

Coastal and Reef Restoration

Blue and Teal Carbon

Climate and People

Marine Ecosystems and Environmental Change

Major funders and partners

- Australian Government Department of Agriculture, Fisheries and Forestry
- Australian Government Department of Climate Change, Energy, the Environment and Water
- Australian Research Council
- Commonwealth Scientific and Industrial Research Organisation
- Green Adelaide
- SA Government Department for Environment and Water

Research Spotlight

Bringing oyster reefs back from extinction

A productive collaboration with the South Australian Government and local communities has restored 20 hectares of lost oyster reef on the Yorke Peninsula – the largest oyster reef restoration project in the Southern Hemisphere. This pioneering work included using underwater speakers and crushed oyster shells to replicate the audio and chemical cues that baby oysters need to find a healthy habitat – dramatically improving settlement rates and reef regeneration. Today, the habitat is a thriving marine metropolis, providing hope for the future of marine ecosystems around the world.



“

Globally, 85% of oyster reefs have been lost. The rate of recovery of this restoration shows that even heavily degraded marine systems can retain a latent resilience that enables us to achieve rapid environmental recoveries through effective restoration efforts.”

Professor Sean Connell &
Dr Dominic McAfee - Future Making Fellow, EI

Water for Environment and Society

Capability Overview

Water resources are fundamental to the wellbeing of all nations, and to global biodiversity. We bring together world-class expertise to support the sustainable management of water resources. Our team of researchers includes hydrologists, ecologists, biogeochemists, engineers, architects, modellers, economists and social scientists, working in collaboration with the water sector and water users. We integrate water research across key priority areas, including urban water planning and management, groundwater research and training, climate change impacts on water systems, river and wetland ecology, remote community water access and management, and marine and freshwater plastic pollution research.

Research Spotlight

Monitoring systems for community wastewater management

Associate Professor Ben van den Akker is working to develop and implement improved monitoring systems for community wastewater management schemes (CWMS).

Working closely with local councils, Associate Prof van den Akker's project will help to identify targeted improvements to CWMS and optimise them within current constraints. Through groundbreaking research, innovation and collaboration, this project helps to bridge the gap between research and practice in a way that is directly relevant to local community needs.



Achieving sustainable wastewater treatment is not always about building new infrastructure; it is about getting the most from what already exists. Our work translates research into practice, helping councils implement improvements that enhance environmental and public health while supporting long-term sustainability of essential wastewater services.”

Associate Professor Ben van den Akker

Key Projects

Goyder Institute for Water Research

One Basin Cooperative Research Centre (CRC) Solving Antimicrobial resistance in Agribusiness, Food and Environment (SAAFE) CRC

Major funders and partners

- American Water Works Association
Water Research Foundation
- Australian Government Department of
Climate Change, Energy, the
Environment and Water
- Australian Government Department of
Industry, Science and Resources
- Australian Research Council
- City of Mitcham
- City of Norwood, Payneham and St
Peters
- Goyder Institute for Water Research
- SA Government Department for
Environment and Water
- Stormwater Management Authority

Our research community

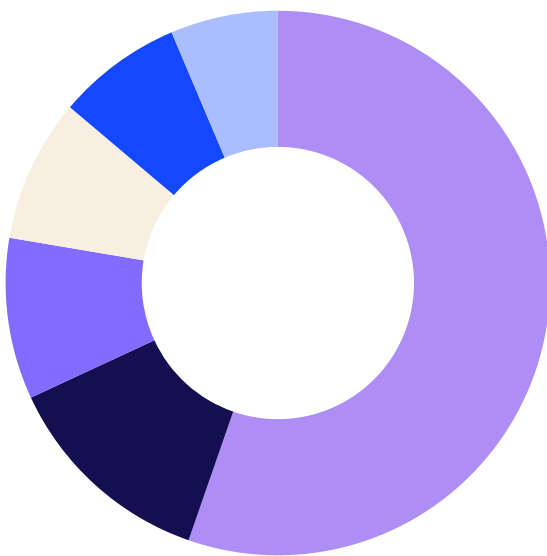
Membership breakdown

150 EI members and

150 EI Postgraduate Students span across

21 schools and

6 University colleges



Members by College

- 52%** Science
- 12%** Business and Law
- 9%** Education, Behavioural and Social Sciences
- 8%** Health
- 7%** Engineering and Information Technology
- 6%** Creative Arts, Design and Humanities



Governance

The Environment Institute engages a diverse range of leaders, helping us gain an understanding of our past and plan for our future.

The Advisory Board works with the Director on the governance and strategy of the Institute and to advocate for the Environment Institute inside and external to Adelaide University.

The Executive consists of leaders from within the Institute, helping the Institute to understand its past and plan for its future.

The Environment Institute's research excellence is supported by a management team led by Director, Professor Andrew Lowe and Institute Manager, Dr Marina Delpin.

Executive

Professor Andrew Lowe
Director, Environment Institute

Associate Professor Damien Fordham
Deputy Director, Environment Institute;
School of Biological Sciences

Professor Melissa Nursey-Bray
Deputy Director, Environment Institute;
School of Society and Culture

Dr Marina Delpin
Institute Manager, Environment Institute

Associate Professor Georgina Drew
School of Society and Culture

Professor Bronwyn Gillanders
School of Biological Sciences

Associate Professor Ania Kotarba
Future Making Fellow, Environment
Institute

Dr Brianna Le Busque
School of Physics, Chemistry and Earth
Sciences

Associate Professor Ben van den Akker
School of Civil Engineering and Construction

Professor Seth Westra
School of Civil Engineering and Construction

Advisory Board

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FAA (Chair)**
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Queensland

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Corporate Services, Department for
Environment and Water

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Science Writer and Editor

Chris Wilson
Sustainability Strategist, Regenerative
Systems Innovator, Board Advisor

Tiahni Adamson
Wildlife conservation biologist, Advocate
for Indigenous Australians and women in
STEM

Michael Cornish
Policy Lead, Australian Land Conservation
Alliance

Professor Mark Hutchinson
Pro Vice-Chancellor (Research
Excellence), Adelaide University

Key Partners

Alongside our internal research community, we partner with hundreds of local, national and international organisations to amplify our impact. Our research partners and their focus include:

Government departments:

- Federal government departments across health, environment, energy, water and innovation
- State government departments across health, environment, energy, water and human services
- Local government departments in South Australia and other jurisdictions

Industry sectors:

- Technology and innovation
- Environmental services, carbon and biodiversity markets
- Agriculture, water and natural resources
- Urban and landscape design
- Sustainable investors

Non-government organisations:

- Restoration, land and sea management
- Wildlife and conservation
- Alliances, associations and peak bodies
- Philanthropic foundations
- Indigenous communities

Other universities:

- Group of Eight and other leading organisations and research organisations in Australia
- Globally leading international universities



Driving excellence into the future

EI's research achievements are thanks to the support and dedication of our entire internal and external research community. Together, we will continue to drive transformational research and discoveries that fulfill our vision of resilient, thriving ecosystems supported by research and collaboration.

Get in touch

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Stay in contact

Scan the QR code to follow our socials, visit our website, and sign-up to our newsletter for the latest EI news.

Our website: adelaide.edu.au/environment



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