Furthering Groundwater Research

Australian Government
National Water Commission
Australian Research Council

NATIONAL CENTRE FOR
GROUNDWATER RESEARCH AND TRAINING
sustaining a vital water resource

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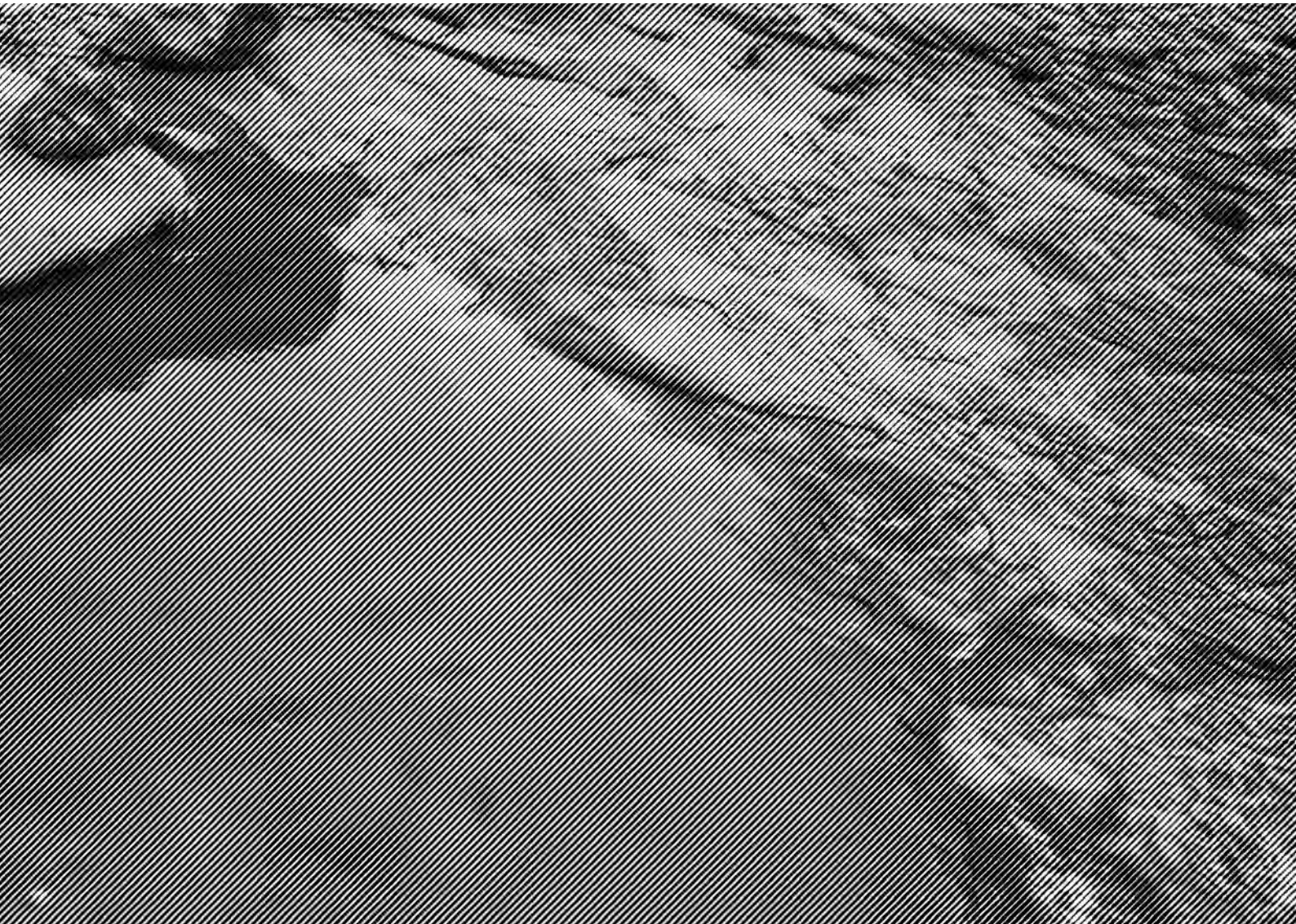

THE NATIONAL CENTRE FOR GROUNDWATER RESEARCH AND TRAINING

AN INVESTMENT IN THE FUTURE

The National Centre for Groundwater Research and Training (NCGRT) was established in June 2009 to better understand and manage Australia's precious groundwater resources.

The NCGRT brings together nearly 40 researchers at 12 universities across Australia. In addition, it has over 30 postdoctoral fellows and 50 PhD candidates along with a number of other technical staff.

The scope of the centre's research is reflective of its significance to Australia's future. The NCGRT is funded by the Australian Research Council and the National Water Commission, along with university, industry and state government partners.

Centre researchers are involved in developing flagship field research infrastructure at various locations across Australia. These 'Super Science' sites are funded by the Department of Innovation, Industry, Science and Research Education Investment Fund.

The centre is also training Australia's next generation of groundwater specialists and up-skilling the existing generation through the delivery of an industry training program.

'THE NCGRT IS BUILDING AUSTRALIA'S RESEARCH CAPACITY IN GROUNDWATER STUDIES, A FIELD WHICH IS VITAL FOR AUSTRALIA'S SUSTAINABILITY. THE RESEARCH AND TRAINING UNDERTAKEN BY THE CENTRE WILL IMPROVE OUR UNDERSTANDING OF GROUNDWATER INCLUDING ITS INTERACTION WITH OTHER NATURAL SYSTEMS AND ITS IMPORTANCE TO ALL AUSTRALIANS. IT IS ALSO TRAINING OUR NEXT GENERATION OF RESEARCHERS AND PROFESSIONALS IN GROUNDWATER RELATED FIELDS, FILLING A SIGNIFICANT GAP IN AUSTRALIA'S CURRENT RESOURCE MANAGEMENT CAPABILITIES.'

Professor Margaret Sheil
Australian Research Council

THE CENTRE IS FOCUSED ON FOUR KEY AREAS

RESEARCH

We are undertaking research into Australia's groundwater resources with a scale and focus that encourages national and international participation, collaboration and recognition, to underpin and enhance the National Water Initiative.

CAPACITY

We are developing human capacity across a range of research areas by attracting the highest calibre of researchers and students that the Australian and international groundwater academic community has to offer.

LINKAGES

We are linking existing Australian research strengths and developing relationships with major international centres and research programs in order to create interdisciplinary approaches to address significant research problems.

ENGAGEMENT

We are establishing a reputation of excellence and achievement in the wider community that will help us serve as a point of interaction among higher education institutions, governments, industry and the private sector.

'GROUNDWATER IS IMPORTANT FOR ECONOMIC PROSPERITY, THE MAINTENANCE OF SIGNIFICANT ECOSYSTEMS AND THE PROVISION OF COMMUNITY WATER SUPPLIES IN SOUTH AUSTRALIA. THE IMPROVED KNOWLEDGE BEING GENERATED THROUGH THE NATIONAL CENTRE FOR GROUNDWATER REESEARCH AND TRAINING IS HELPING US TO ENHANCE THE MANAGEMENT OF OUR PRECIOUS GROUNDWATER RESOURCES AND SECURE OUR FUTURE WATER SECURITY.'

Hon Paul Caica
SA Minister for Water

OUR RESEARCH

Through the NCGRT, researchers and professionals from multiple disciplines are for the first time able to pool their expertise in five major research programs to unlock the secrets of sub-surface water systems.

PROGRAM 1: INNOVATIVE CHARACTERISATION OF AQUIFERS AND AQUITARDS

This program is addressing the gaps in the current hydrogeologic conceptual models used by policy makers and groundwater managers. This will be achieved by using 3D geological models that link hydrogeological processes, and new techniques to trace water through complex systems.

PROGRAM 2: HYDRODYNAMICS AND MODELLING OF COMPLEX GROUNDWATER SYSTEMS

This program is using groundwater modelling as a vehicle for harnessing and integrating the ideas and expertise of researchers from multiple disciplines to better understand groundwater system dynamics. It aims to create simpler models which have greater accuracy.

PROGRAM 3: SURFACE WATER – GROUNDWATER INTERACTIONS

This program is closing fundamental knowledge gaps involving the interconnections of groundwater with rivers, lakes and wetlands. It will also help address water quality and the protection of delicate groundwater-dependent ecosystems. This will be achieved by developing new methods to systematically and consistently estimate connectivity and exchange rates between surface water and groundwater.

PROGRAM 4: GROUNDWATER–VEGETATION–ATMOSPHERE INTERACTIONS

This program is deepening our understanding of the relationship between groundwater and vegetation, and how this relationship may be affected by climate change and rainfall. This will be achieved by exploring the groundwater needs of vegetation over an entire catchment, and undertaking modelling of rainfall frequency, intensity, evaporation, plant growth and human use.

PROGRAM 5: INTEGRATING SOCIOECONOMICS, POLICY AND DECISION SUPPORT

This program is bringing together learnings from the other four programs to influence the ways we understand and make decisions about groundwater. Social scientists, environmental lawyers and policymakers are working closely with other researchers on identifying issues and developing transparent decision-making tools.

OUR TRAINING

The centre's industry training program delivers courses that respond to a range of needs for groundwater professionals across Australia.

This program extends professional development to groundwater industry staff including technicians, specialists, environmental community groups and those who are working in land and water management.

'GROUNDWATER MAKES UP APPROXIMATELY 17% OF AUSTRALIA'S ACCESSIBLE WATER RESOURCES AND ACCOUNTS FOR OVER 30% OF OUR TOTAL WATER CONSUMPTION. THE WORK BEING UNDERTAKEN BY THE NATIONAL CENTRE FOR GROUNDWATER RESEARCH AND TRAINING IS HELPING ADDRESS KNOWLEDGE GAPS AND KEY ISSUES AND ACTIONS IDENTIFIED IN THE NATIONAL WATER INITIATIVE.'

Mr James Cameron
CEO, National Water Commission

Our Research

OUR PARTNERS

As well as Flinders University in South Australia — the lead and administering organisation for the centre — we are proud to be involved in a range of partnerships that reflect our broad, integrated and innovative approach to research and training, with associations across government, industry and the research community, including:

UNIVERSITIES

- Charles Sturt University
- James Cook University
- La Trobe University
- Monash University
- Flinders University
- Queensland University of Technology
- The Australian National University
- The University of New South Wales
- The University of Queensland
- The University of Western Australia
- University of South Australia
- University of Technology, Sydney

GOVERNMENT DEPARTMENTS AND ORGANISATIONS

- CSIRO
- Geoscience Australia
- NSW Department of Primary Industries
- SA Department for Water
- NSW Office of Water

PRIVATE INDUSTRY

- RPS Aquaterra Consulting Pty Ltd
- Sinclair Knight Merz (SKM) Consulting Pty Ltd
- SA Water
- DHI Water & Environment Pty Ltd

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