



Australian Government
National Water Commission

National Water Commission **Changing Concepts in Sustainable** **Groundwater Use**

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NWI Agreement

- Emphasis on Groundwater, including conjunctive management
- Emphasis on environmental sustainability





Groundwater

- Poorly understood compared with surface water
- Seldom linked to surface water management
- Increased utilisation since mid 1990s, esp. in MDB
- Problems with over-allocation and double counting
- Extractions exceed recharge in some locations, e.g. GAB





Environmental Sustainability

- 2007
- 2008
- 2009



The Commission considers that a number of states do not meet the requirement of the NWI to move to

While policies, plans or management frameworks to address over-allocation or stress have largely been put in place, specific results have been less evident

The Commission is disappointed to conclude that this central requirement of water reform will not be met. All reviewed water plans that identify overallocated or overused systems included pathways to return those systems to environmentally sustainable levels of extraction, but very few, if any, such systems have been successfully transitioned to within sustainable extraction limits.



Groundwater Action Plan

1. National Groundwater Assessment Initiative
\$73M
2. Centre for Groundwater Research & Training
\$30M (jointly funded by NWC/ARC)
3. Knowledge & Capacity building \$2M
4. Groundwater Technical Advisory Committee



Groundwater Assessment Initiative

1. Harmonisation of definitions and standards
2. Northern Australia Groundwater Stocktake
3. Managed aquifer recharge and recovery
4. Vulnerability of groundwater dependent ecosystems
5. Groundwater-surface water inter-connectivity
6. Strategic aquifer characterisation
7. Managing risks to groundwater quality

Over 50 flagship projects and tactical projects



Flagship Projects

- Allocating water and maintaining springs in the Great Artesian Basin \$8.23m
- Atlas of Groundwater Dependent Ecosystems \$5.4m
- National Standards on Groundwater Mapping, Definitions and Assessment \$5.0m
- Assessing and managing paleovalley groundwater resources \$4.9m
- National Assessment of GW-SW Connectivity \$2.0m





NCGRT

Status

- Joint funding ARC and NWC
- Led by Flinders University

Scope

- Australia-wide except Darwin and Hobart.
- 11 universities and 8 federal and state government organisations and private companies





Future Directions

Research
Projects



Uptake

- Audiences

- Policy makers
- Water managers
- Water planners
- Water users
- Public

- Mechanisms

- Direct engagement
- Web resources
- Training courses
- Hard copy material



Groundwater Position Statement

- Water scarcity and climate change are placing pressure on Australia's groundwater reserves
- Where groundwater is connected to surface, water planning and management should be integrated
- Compatible charging regimes for groundwater and surface water
- Unless otherwise established, it should be assumed that all surface and groundwater systems are connected
- All groundwater extractions should include adequate licensing and metering with priority on those systems approaching or at full allocation

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Groundwater position statement

The groundwater challenge
Groundwater makes up approximately 11% of Australia's commonly accessible water resources and accounts for 30% of its total water consumption. However, it is neither understood nor managed as well as it needs to be if this valuable resource is to be sustained into the future.

Continuing water scarcity and climate change are placing pressure on Australia's groundwater reserves and the security of supply. These hidden reserves are increasingly being tapped to supplement declining surface water supplies. In fact, much of our groundwater is connected to surface water with consequent impacts on stream flows, aquifer recharge, groundwater dependent ecosystems, and water quality. Groundwater sustainability requires careful management. Risks include uncontrolled urban and industrial discharges, the cross-contamination of aquifers, and seawater intrusion into heavily used coastal aquifers.

Groundwater and the National Water Initiative
Under the National Water Initiative (NWI) all governments of Australia have acknowledged the importance of groundwater and committed to a 'whole of water cycle' approach, including the following actions:

- improve our knowledge of groundwater-surface water connectivity, with significantly connected systems to be managed as one integrated resource
- develop the national framework to locate and govern systems to ensure that all sustainable levels of extraction
- improve understanding of sustainable extraction rates and regimes, and develop common approaches to achieving sustainability

develop better understanding of the relationship between groundwater resources and groundwater dependent ecosystems.

In addition, as our climate gets hotter, and dryer in southern Australia, with evaporation further affecting surface water storage, there is likely to be greater reliance on groundwater within sustainable levels of extraction. This will include potential government intervention in some instances by managed aquifer recharge.

Addressing groundwater reform
In its 2007 Biennial Assessment of Progress against the NWI, the Commission expressed considerable concern about the management of groundwater throughout Australia. The assessment identified the following areas requiring urgent additional work: over allocation of certain groundwater resources, failure to manage groundwater and surface water as a connected resource, lack of established measurement standards, and inadequate monitoring. The failure to address these issues is having a serious effect on the security of supply to consumptive users, to surface water environments, flows, and to groundwater dependent ecosystems. Given these findings the National Water Commission recommended a coordinated research effort to underpin progress on agreed groundwater policy reforms. In response, the Australian Government authorised and funded a comprehensive Groundwater Action Plan that is being managed by the Commission.

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Knowledge and Capacity Building

- Improve the knowledge base of water managers, water planners, water users, public
- Information beyond GAP projects
- Activities to date;
 - Scoping study for post-graduate hydrogeology courses by flexible learning
 - Earth science education package – Wet Rocks
 - Groundwater essentials booklet
 - Development of a Groundwater website
 - Targeted groundwater workshops for managers



Vision of Success

- Clear, evidence-based understanding of the extent and significance of surface-groundwater connectivity
- Risks to connected resources will be identified and managed
- Effective integrated planning, management and licensing arrangements will be in place to protect quantity and quality
- Integrated monitoring, accounting, compliance and enforcement arrangements will have been rolled out
- Over-allocated groundwater systems will be under recovery, unless specifically planned otherwise
- Strong technical capacity for groundwater management
- Clear understanding by groundwater users of common-pool and long response-time characteristics of groundwater

