



Whole-of-Basin Monitoring Network for the Great Artesian Basin

Background

Monitoring of artesian bores is currently undertaken by each jurisdiction primarily to address State and Northern Territory water management issues. Although this is important, it does not contribute greatly to whole-of-Basin monitoring. The main impediment is inconsistency in the frequency and timing of measurements across the Basin.

Whole-of-Basin Monitoring

Under the third phase of the Great Artesian Basin Sustainability Initiative (GABSI) Phase 3 a whole-of-Basin Monitoring Network (the Network) will be established to monitor the impacts of GABSI and future management approaches on the GAB. The Australian Government will invest \$4.3 million; this along with state contributions and the cooperative involvement of landholders will be invested to establish the Network. Once established information gathered by the Network will fill knowledge gap identified in the mid-term review of GABSI Phase 2, and enhance the gathering of water information required under the *Water Act 2007*.

Planning for a whole-of-Basin Monitoring Network (the Network) has been carried out by the GAB Technical Working Group (TWG). The TWG comprises hydrogeologists from NSW, Qld, NT, SA and the Australian Governments and is chartered with providing scientific support to the Great Artesian Basin Coordinating Committee by coordinating research activity within the GAB.

Funding is directed at modifying existing bore headworks to facilitate either manual monitoring or fitment of automated measuring equipment. These modifications will enable more efficient and comprehensive monitoring practices (for example, continuous monitoring of flow and pressure will now be possible at automated bores). A two stage approach to the GAB Network, proposed by the TWG, is being undertaken.

Stage 1 commenced June 2008 and involves staff from state jurisdictions working cooperatively with landholders to establish a monitoring network to measure parameters including observed pressure, temperature, pH, electrical conductivity and flow from the aquifer group tapped by bores. To ensure the accuracy of measurements and to ensure compatibility between bore pressure measurements, a survey of the elevation of each bore within the network using differential GPS is being conducted.

Stage 2 commenced June 2009 and involves expansion of the Network to include monitoring in the Cape York Peninsula, sub-artesian bore monitoring (except in Northern Territory, where such monitoring is implemented as part of *Stage 1*), spring specific monitoring and monitoring of deeper aquifers.

The Network will comprise up to 263 bores of which 130 will be located in Queensland, 59 in New South Wales, 56 in South Australia and 18 in the Northern Territory. Of these 263 bores, 26 in New South Wales, 50 in Queensland, 36 in South Australia and 12 in the Northern Territory will be fitted with automated measuring equipment.

The community of native species dependent on natural discharge of groundwater from the GAB is protected under the *Environment Protection and Biodiversity Conservation Act 1999*. The precise elevation of more than 4000 springs has already been surveyed in SA. Under Stage 2, a spring elevation survey will be carried out on an estimated 267 springs in Queensland, and 33 springs in NSW. The spring elevation survey will assist improved monitoring and management of springs within the GAB, allowing more accurate assessment of the impact on springs from current and future groundwater extractions.

The future

The Network will provide information that will help water users understand the impacts that water extraction is having on the GAB and anticipate the impacts of new proposals for water allocation. It will provide decision makers with tools to keep impacts within acceptable limits. The Network will help to provide security for water users and protect water dependant ecosystems and cultural values that depend on the natural discharge of water from the GAB. Information provided by the Network will also enable the impacts of GABSI to be better monitored and inform future management approaches on the GAB.