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# Conserving artesian water for future generations

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## Abstract

The Great Artesian Basin (GAB) is one of Australia's most significant national assets and it underlies 22 per cent of Australia. Much of the GAB underlies the rangelands of NSW, Queensland, South Australia and the Northern Territory. It is often the only reliable water source available to these areas, especially during the drought years. In the past 100 years it is estimated about 50 million megalitres has been extracted from the basin, mostly through free flowing bores. The Australian Government is investing close to \$140 million over fifteen years (1999-2014) through the Great Artesian Basin Sustainability Initiative (GABSI) to accelerate work on the repair of these often very old uncontrolled artesian bores and the replacement of open bore drains with piped water reticulation systems, thereby reducing the wastage of water.

## Introduction

The Great Artesian Basin (GAB) is one of Australia's most significant national assets and it underlies 22 per cent of Australia – including most of Queensland, northern New South Wales, north-east South Australia and the south-east corner of the Northern Territory. It covers a total area of 1.7 million square kilometres. The GAB extends 2,400 km from Cape York, Queensland in the north to Dubbo, NSW in the south and to Marla, South Australia in the west and the Great Dividing Range in the east. The NSW portion of the GAB covers an area of 207,000km<sup>2</sup>, which represents about 20 per cent of the area of NSW and about 12 per cent of the total area of the GAB (Figure 1).

Much of the GAB underlies the rangelands of NSW, Queensland, South Australia and the Northern Territory. It is often the only reliable water source available to these areas, especially during the drought years. It supports a population of approximately 200,000 and underpins more than \$3.5 billion of agricultural production per year.

The GAB is one of the largest freshwater basins in the world with an estimated storage of 8,700 million megalitres. Temperatures vary from 30°C in the shallower areas to 100°C in the deeper parts in Queensland. The average depth of bores is 500 metres, but some bores have been drilled to a depth of 2,000 metres. The first bore drilled in NSW was on Killara Station in 1878, followed by South Australia in 1883 and Queensland in 1889 at Charleville.



*Figure 1. NSW area of the Great Artesian Basin*

*Source: Jim Salmon, State Water*

The NSW section of the Great Artesian Basin (GAB) incorporates the Macquarie-Castlereagh, Namoi, Paroo, Warrego, Culgoa, Bokhara, Narran, Barwon, Gwydir and the border Rivers catchments of northern New South Wales some which are part of the larger Darling River Basin.

### *History since European settlement*

In the past 100 years it is estimated about 50 million megalitres has been extracted from the basin, mostly through free flowing bores. This equates to 100 times the volume of Sydney Harbour (500,000 megalitres). With water wastage at 80 per cent and often higher, the waste of water to date has been equal to more than 80 times the volume of Sydney Harbour. These flows were distributed to stock by open drains with up to 95% of this water being lost through evaporation and seepage. Wastage and uncontrolled flows have endangered the sustained access to artesian water by pastoralists, traditional use by aboriginals and the health of the now protected groundwater dependant ecosystems. New users have also had difficulties in obtaining access to the groundwater source. Of the 1,400 bores tapping the Great Artesian Basin in NSW, nearly half have stopped flowing.

### *NSW Cap and Pipe the Bores Program*

The Australian Government is investing close to \$140 million over fifteen years (1999-2014) through the Great Artesian Basin Sustainability Initiative (GABSI) to accelerate work on the repair of these often very old uncontrolled artesian bores and the replacement of open bore drains with piped water reticulation systems, thereby reducing the wastage of water. State Governments have joined with the Australian Government to fund the program.

In NSW this program is administered by Cap & Pipe the Bores program through NSW Office of Water. The Cap & Pipe the Bores program is a partnership between the Commonwealth government and NSW government who provide grants and coordination and from the landholders on the schemes who contribute through cash contributions. In NSW after ten years of capping and piping, over 220 bores have been rehabilitated or replaced, saving approximately 47,000 megalitres of water per year.

Landholders can take the opportunity to join the program by submitting an expression of interest for funding each year commencing 2010 until 2013.

### *Opportunities arising from capping and piping*

- Gives landholders the opportunity to rethink overall management of their rangelands
- Access to water gives the potential to change grazing regimes
- Troughing systems allow water to be turned off in the landscape.

### *Benefits to landholder*

Landholders who have capped and piped across the GAB offer the following potential benefits:

- Cleaner water for better stock production
- More reliable water supply for your property
- More efficient property management through better water distribution throughout the property
- Reduced stock mortality due to the better reliability of water supply
- Easier stock management, will assist with rotational grazing
- No ongoing maintenance of bore drains
- Improved access, drains across cropping paddocks can be filled in
- Increased control of feral animals as watering points can be turned off when not required
- Reduced costs for controlling weeds along bore drains
- Increase in animal productivity due to less distance travelled to water - productivity declines over distances beyond 1.5 km
- Reduced erosion and degradation of the land
- Reduced water loss/wastage (currently up to 95% wastage from bore drains)
- Conserving water for future generations
- Increased property values
- Availability of Government grant

## **Results**

*What is the Cap & Pipe the Bores program achieving?*

- Saving 47,000 megalitres of water a year
- Improvement in the management and sustainability of the Great Artesian Basin
- Improving water use efficiency and reducing water wastage
- Good water quality for stock and domestic use
- Increasing artesian pressure, which increases access to water
- Reducing salinity by 40,000 tonnes a year
- Reducing greenhouse gas emissions by 15,000 tonnes a year
- Assisting land managers to achieve sustainable property and stock management

The Cap & Pipe the Bores Program offers the landholder the opportunity to improve landscape management by offering property management planning and placing watering points at strategic locations for the adoption of alternative grazing regimes to optimise pasture growth, use available feed efficiently and profitably, enhance the persistence of desirable plant species and maintain adequate groundcover to reduce weed invasion, improve soil health and retain water in the landscape.

#### *How to get involved in NSW?*

Landholders, trusts or groups wishing to Cap & Pipe and receive funding under the GABSI III criteria will be able to register an Expression of Interest (EOI) at any time during the year, with ranking taking place in March. Cap & Pipe the Bores will advertise applications for EOI in the media to give all NSW Artesian Bore Water Users the opportunity to participate in the program.

When you lodge an Expression of Interest, you will be contacted by a Cap & Pipe Bores program representative, who will obtain further information. Meetings can be arranged to explain the program. There is no obligation to participate at this stage.

An expression of interest form is available at:

<http://www.water.nsw.gov.au/Water-Management/Water-recovery/Cap-and-pipe-bores/default.aspx>

For more information about the Cap & Pipe the Bores program or to request a registration form for EOI please contact the NSW Office of Water.

**Contact:**

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