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# **GREAT ARTESIAN BASIN CHAMPIONS: A POSTER DISPLAY OF LANDHOLDERS WHO HAVE CONVERTED OPEN BORE DRAINS TO CLOSED STOCK-WATER DELIVERY SYSTEMS**

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## **ABSTRACT**

Great Artesian Basin Champions are landholders who have experienced firsthand the benefits of converting open bore drains on their properties to closed stock-water delivery systems, through the Great Artesian Basin Sustainability Initiative. They have become advocates for the judicious use of the Great Artesian Basin.

The Great Artesian Basin (GAB) is one of the world's largest fresh water artesian basins, and one of Australia's most important water resources. Following the discovery of the GAB more than one-hundred years ago, thousands of artesian bores were drilled and left to flow uncontrolled into open bore drains to supply water for stock. These bore drains waste millions of litres of water a day through seepage and evaporation and caused an unacceptable reduction in the artesian pressure that drives the Basin.

In recent years landholders and governments have worked cooperatively to control bores and rehabilitate water delivery infrastructure. Many landholders have capitalised on the opportunities offered by closed water delivery systems and are realising the benefits of using water efficiently to support their pastoral business. These posters tell the story of just a few of these GAB Champions.

## **THE GREAT ARTESIAN BASIN – A VALUABLE ASSET**

Australia's Great Artesian Basin (GAB) is an iconic aquifer system of both national and international significance. The GAB is one of the largest fresh water artesian systems in the world, and underlies about one fifth of the Australian continent. It contains approximately 64,000 million ML of mostly potable groundwater, or about 2000 times the total surface water storage of the combined Murray-Darling Basin. In many arid areas GAB bores provide the only reliable source of fresh water for all human activity. Water from the basin supports the pastoral, mining and tourism industries as well as outback towns and their associated businesses. Natural discharge from the Basin through springs support water dependent natural communities containing a wide variety of endemic species surrounded an otherwise largely waterless landscape. As well as their ecological significance, these natural springs are culturally very important to Aboriginal and non-indigenous Australians. GAB springs were the only reliable water source for Aboriginal people in central Australia for thousands of years and set the boundaries for early European exploration development through the central inland during the 19<sup>th</sup> and early 20<sup>th</sup> centuries.

## **THE GREAT ARTESIAN BASIN SUSTAINABILITY INITIATIVE**

Since discovery of the GAB in 1878, thousands of bores have been drilled into the complex aquifers. Currently there are about 3400 artesian bores and over 10 000 sub-artesian bores which access the aquifers of the GAB. For the first half-century artesian bores were uncontrolled and flowed freely into open bore drains to supply water for stock. More than

95% of the 550,000ML/day of water that flowed into these open bore drains was wasted through seepage and evaporation. These free-flowing bores also cause substantial pressure reductions over much of the Basin. The need for intervention to control the extraction of water from the GAB was recognised by governments and landholders as early as 1913. Since that time governments and landholders have continued in their efforts to control the waste of GAB water and reverse the reduction in artesian pressure.

Until recently, attempts at intervention to control bores and eliminate bore drains have only been selectively successful, due to limited technology to deal with hot pressurised water and a lack of political will. Within the last several decades a considerable investment has gone into understanding and modelling the Basin and understanding the natural ecosystems that depend on GAB springs. At the same time technologies have been developed to control hot pressurised bores and governments have cooperated with landholders to eliminate the waste of GAB water and restore pressure.

Following the completion of the GAB Strategic Management Plan in 2000 the State and Australian governments, in cooperation with landholders, agreed to a five-year \$100 million Basin-wide infrastructure rehabilitation plan called the Great Artesian Basin Sustainability Initiative (GABSI). Investment during the first five years of GABSI resulted in the rehabilitation of many high pressure bores and the conversion of about one-third of the bore drains. This investment has resulted in a substantial pressure recovery in the Basin, but there is still a long way to go. A second round of GABSI is currently will invest an additional \$100million over the next five years. The GAB Strategic Management Plan proposed that it would take in excess of \$350million over fifteen years to achieve acceptable water savings and pressure recovery across the Basin.

The water savings and artesian pressure recovery that have resulted from bore rehabilitation and bore drain conversion have helped to restore the health of the Basin and ensure natural flows from springs. Utilising water and pressure judiciously will allow managers and decision makers to develop a more sustainable approach for allocating the Basin's resources that can bring much greater benefits to the community. The water heat and pressure contained in Great Artesian Basin need to be utilised much more effectively to support the production of valuable products over a large area of Australia. The restoration of artesian pressure and the judicious use of GAB resources is an essential precursor to economic development across the Basin.

### **GAB CHAMPIONS: ADVOCATING THE BENEFITS OF CAPPING AND PIPING**

A report prepared by the Centre for International Economics (CIE) for the Department of Agriculture, Fisheries and Forestry titled *The Farm Costs, Benefits and Risks From Bore Capping and Piping in the GAB* details the public and private benefits for the capping and piping program in the GAB. The report contends that although capping and piping bores results in substantial benefits to the wider Australian community, the major benefits accrue at the property level.

At the property level, converting to controlled bores and closed water delivery systems results in a range of benefits, but also creates some issues. It changes people's business practices as well as their lifestyle. The CIE report states that landholders who converted from bore drains identified the following benefits:

### **Benefits of capping and piping — unquantified**

- The elimination of all costs associated with bore drain maintenance and repairs, such as delving, repairing breakouts and bore drain inspections;
- Reduced mustering times and much simplified mustering processes;
- Better utilisation of all natural resources on the property through better water distribution;
- Increased production because of ability to utilise entire property more efficiently
- More flexible and efficient property management — by controlling watering points, properties can be rotationally grazed, improving native vegetation and livestock performance;
- Having clean water for stock to drink;
- Having pressure and clean water at the homestead;
- Ability to better control vertebrate pests, thereby reducing control costs;
- Reduced costs of controlling weeds which can be spread along bore drains;
- Increased pumping costs avoided by utilising artesian pressure to move water around property and where artesian wells might otherwise turn sub-artesian;
- Increased security of water supplies, thereby reducing management anxiety; and
- Improved scope to better manage in times of drought.

There were also some issues identified with closed water delivery systems such as the risk of equipment failure and the cost of frequent ‘water runs’ especially in hot weather. These issues are being addressed by improved design and material in delivery systems and the use of technologies such as telemetry. Of course the capital cost of conversion and maintenance was given as the major issue with capping and piping. Some landholders feel that the capital costs are quickly repaid through the advantages gained by capping and piping while other feel that cost are totally prohibitive.

Each landholder who has converted from bore drains has their own stories to tell. The stories vary depending the location and circumstances of the properties, but there are some common themes. The posters presented at the Australian Rangelands Society conference portray updated stories from a selection GAB Champions in Queensland, South Australia, and New South Wales. The landholders will be at the conference to tell their own stories, but the posters will focus on how capping and piping GAB bores have affected the lives and businesses of landholders in the GAB.